

*Understanding
the
Workforce
Needs
of*

**NEW JERSEY'S
PUBLIC HEALTH
AND OTHER
DISASTER
MANAGEMENT
EMPLOYERS**

**A REPORT OF THE
READY FOR THE JOB
INITIATIVE**

Prepared for the
New Jersey
State Employment and
Training Commission

Prepared by
John J. Heldrich Center for Workforce Development
Edward J. Bloustein School of Planning and Public Policy
Rutgers, The State University of New Jersey

Summer 2007

Background: The Ready for the Job Initiative

This report is an integral part of the *Ready for the Job* initiative, which began in 2002 to determine the skill needs of New Jersey's employers. The goal of *Ready for the Job* is to improve alignment between the workforce needs of employers and the preparation of potential and current workers by providing timely and accurate information about employer skill needs to policymakers, educators, counselors, job seekers, students, and others.

The *Ready for the Job* initiative, a joint effort of the New Jersey State Employment and Training Commission, the New Jersey Department of Labor and Workforce Development, and the New Jersey Department of Education, uses industry advisory groups, interviews and focus groups with employers, and analysis of all available data to profile the workforce and skill requirements of key industries and occupations.

Two fundamental assumptions underlying *Ready for the Job* are:

- A skilled workforce is essential to the state's economic growth, and
- In order to fully participate in the economy, the state's residents must possess the skills employers need.

Ready for the Job reports have focused on the skill and workforce requirements of key industries in the state including:

- Health Care
- Construction
- Hospitality/Tourism
- Manufacturing
- Utilities/Infrastructure
- Finance
- Information Technology
- Transportation
- Public Health/Disaster Management
- Retail
- Port Newark/Elizabeth Marine Terminal

Results and reports from the *Ready for the Job* initiative are distributed through the NJNextStop website, www.njnextstop.org. NJNextStop is the State of New Jersey's primary career guidance Internet portal for high school students, counselors, teachers, and parents.

Primary authors for this report were Ronnie Kauder, Jennifer Cleary, and Aaron Fichtner, Ph.D. Robb C. Sewell edited and formatted the report with assistance from Charyl Staci Yarbrough, Ph.D.

Table of Contents

Executive Summary	1
Overview: Public Health and Disaster Management in New Jersey	5
Industry Trends Affecting the Skill and Educational Requirements of Public Health and Disaster Management Jobs.....	13
Conclusion: Priority Skill Needs of New Jersey’s Public Health and Disaster Management Employers.....	17
Endnotes	19
Appendix: List of Industry Advisory Group Members and Interviewees	21

Executive Summary

The terrorist attacks of September 11, 2001, Hurricane Katrina, and other events have raised public awareness about the need for a strong disaster prevention and response system at the national, state, and local levels. With its densely populated cities and suburbs and its proximity to both New York City and Philadelphia, New Jersey must be especially prepared to prevent and respond to disasters and public health emergencies of all types. The key to preparedness is a skilled workforce at all levels of the disaster management system.

This report explores the priority workforce needs of New Jersey's public disaster management system. An advisory group of disaster management-related employers from law enforcement and state and local public health systems and educational institutions was convened in the spring of 2006 to identify priority workforce skill needs. Researchers also conducted interviews with state officials, domestic security, public health, and disaster planning experts, as well as reviews of labor market information, state and national websites, and industry and scholarly literature. See the Appendix for a list of employers and experts consulted.

Key Findings

Finding #1: The Public Health and Skilled Volunteer Portions of New Jersey's Disaster Management System Face Important Workforce and Skill-Related Challenges

Many types of skilled workers across the public and private sectors are instrumental in preventing and responding to disasters — from law enforcement personnel, to public health workers, to “cyber-security” experts and other security officials, to public and private health care workers and volunteers. It is the public health system where experts identified some of the most pressing, and often overlooked, workforce skill-related challenges.¹ According to the advisory group of employers and other

disaster management experts convened for this study, while other segments of the response system have ongoing needs for skilled workers, the public health system faces some of the most formidable skilled worker shortages.

The public health system, in particular, functions as an important line of defense against major health threats — from the dangers of infectious diseases, to the human toll of acts of terrorism and natural disasters. Public health agencies work to preserve the health and safety of New Jersey's citizens, especially in a disaster scenario. The primary obligations of public health agencies are to: “1) prevent epidemics and the spread of disease; 2) protect against environmental hazards; 3) prevent injuries; 4) promote and encourage healthy behaviors and mental health; 5) respond to disasters and assist communities in recovery; and 6) assure the quality and accessibility of health services.”²

To accomplish its mission, the public health system requires access to a skilled and knowledgeable workforce at all levels of employment. Unfortunately, this sector faces considerable workforce challenges that range from not having steady access to the funding needed to hire an adequate number of workers in key areas related to disaster management, to having significant difficulties attracting and retaining qualified workers for existing positions. Employers report that changing federal and state funding patterns in public health make it difficult for agencies to hire the right number and types of public health workers needed to address day-to-day concerns and to respond in the best way possible to disasters. Employers also report that rules and policies, including restricted-use funding, state hiring freezes, and lengthy government hiring processes, also hamper the ability of government public health employers to hire workers for key disaster management-related positions in a timely fashion.

If funding for the public health system were to be suddenly increased to accommodate hiring new workers, however, a more fundamental

problem — a growing shortage of skilled and qualified workers to fill key existing positions — would hamper hiring efforts. Employers report difficulty finding qualified candidates for current jobs including epidemiologists, lab technicians, emergency medical technicians (EMTs), and others. At the same time, labor market analysts project that these and related occupations will grow significantly between 2004 and 2014.³ While not all of these workers will be needed within the public health system, many will be, especially in scenarios requiring disaster response.

Job and volunteer openings are likely to increase rapidly in public health in coming years as a growing percentage of the public health workforce is approaching retirement age. With the average age of public health workers at 48 years old, experts predict that large percentages of the workforce will become eligible for retirement in the next several years. In fact, one study estimated that nearly 16% of state workers and between 25% to 40% of local public health workers in New Jersey may retire in the next three to five years.⁴

According to employers, fewer skilled, qualified young people have been entering the field in recent years. For example, widespread shortages of skilled public health-related volunteers exist that indicate difficulties along the pipeline of skilled workers for the industry. According to employers, volunteer positions, including EMTs, crisis counselors, and other trained volunteer first-responders have traditionally served as a “feeder” source for professional public health workers. Shortages in these volunteer positions are a major concern for employers, both because of the difficulties they represent in filling key paid positions and because of the important role skilled, trained volunteers play in a disaster scenario.

Employers also cite other factors contributing to their current and anticipated difficulty finding skilled workers. These factors include limited awareness of career opportunities in public health, low pay, difficult working conditions in some public health jobs, and rising competition from the private sector for key health professionals.

Finding #2: Several Trends are Driving Changes in the Skill and Educational Requirements for Jobs in the Public Health System

To add to employers’ hiring difficulties, several industry trends are increasing and changing the skills that most current and prospective public health workers require. According to employers, these trends are:

- 1. New threats and rising demands for accountability from the public health system are increasing knowledge and skill requirements for jobs at all levels.** From emerging threats of bioterrorism and other forms of terrorist attacks, to concerns about a Bird Flu epidemic, public health and related disaster management workers must work hard to prevent and address a growing number of threats to the public. These threats, and the growing pressure from the public and federal officials to handle them effectively, is increasing the need for highly skilled and knowledgeable workers, as well as for improved training for existing employees. Today’s public health workers need better pre- and post-employment training on emerging vulnerabilities, such as terrorist threats, as well as the knowledge, skills, and education to detect, prevent, and manage the effects of these new threats.
- 2. Increasing professionalization of the public health workforce is raising educational requirements and limiting the transferability of skills between jobs.** Employers report that high educational requirements and credentialing are becoming more commonplace in the public health professions. For example, health educators must have four to six years of graduate education plus a specific credential to teach public health. Credentialing is part of a movement to professionalize the field of public health, increase its accountability, and improve the skills of workers. Employers report, however, that credentials also raise the bar on job requirements for job seekers and make it more difficult for some workers to assume additional respon-

sibilities outside of their credentialing area to prepare for, mitigate, or respond to a disaster.

Priority Skill Needs of New Jersey's Public Health Disaster Management Employers

With the complexity of many public health challenges today, workers at all levels need a higher level of skill to perform well in most jobs, especially in areas where there are not enough workers to handle the multiple missions public health employers must accomplish. In addition to specialized skills, degrees, and credentials needed for key jobs, employers identified the following priority skill and training needs for public health workers and students in the pipeline for public health jobs:

- **Strong science and technology skills** are needed for technical as well as non-technical jobs in the public health system.
- **Interdisciplinary skills in science and social science fields** are in high demand in the public health field, where workers often need to understand both science-based health concepts and demographic and other social trends.
- **Awareness of public health careers and the mission and goals of the public health system** is often limited among students and entry-level workers, according to employers. Additional opportunities to explore and gain knowledge about careers in public health are needed at all levels of education.
- **Improved pre- and post-employment training on emerging vulnerabilities**, such as terrorist threats, as well as the knowledge, skills, and education to detect, prevent, and manage the effects of these new threats.

- **Multi-disciplinary tabletop/scenario training** is also essential for workers to develop key skills. While workers receive adequate levels of training in technical/tactical specialty areas from a number of training centers in the region, including Rutgers, The State University of New Jersey and the University of Medicine and Dentistry of New Jersey, employers report a need for cross-training in **leadership and teamwork skills**, especially for non-leadership occupations, as well as operational/planning/leadership training to help officials improve communication. More workers are also needed to develop and deliver such training.

Public health agencies and related employers at the state and local levels report difficulty addressing skill and training gaps in the following types of occupations:

- Clinical Laboratory Scientist/
Medical Technologist
- Clinical Laboratory Technician/
Medical Laboratory Technician
- Emergency Medical Technician and
Paramedic
- Environmental Health Inspector
- Epidemiologist
- Health Educator
- Health Officer
- Health Planner
- Public Health Registered Nurse

To ensure that the state's public health system is prepared to meet the needs of New Jersey's citizens both on a daily basis and in a disaster scenario, state agencies should work to ensure that New Jersey's education and training systems increase awareness of public health jobs and teach skills and knowledge that prepare new and current workers to handle today's complex public health challenges.

Overview: Public Health and Disaster Management in New Jersey

The public health system functions as an important line of defense against all types of health threats. Two of public health's most pressing current concerns are fighting infectious diseases and meeting the challenges of terrorism and natural disasters.⁵ The events of September 11, 2001 raised citizen awareness about the importance of disaster preparedness. Other natural events, such as Hurricane Katrina, also spurred increased concern among the public about the ability of both the nation and the states to respond quickly and effectively in disaster scenarios.

According to its website, the U.S. Department of Homeland Security has developed 15 national planning scenarios that encompass all hazards, including chemical, biological, radiological, nuclear, explosive, food and agriculture, cyber terrorism, natural disasters, and pandemic flu.⁶ With the exception of perhaps cyber terrorism, all of these hazards have a health component that would necessitate the involvement of the public health system in preventing, planning, responding, and/or recovering from the crisis.

Public health workers play an important role in disaster management. Unlike the private health care system, which is largely concerned with the health of individuals, the field of public health is concerned with protecting and serving the public at large. The primary obligations of public health agencies are to: “1) prevent epidemics and the spread of disease; 2) protect against environmental hazards; 3) prevent injuries; 4) promote and encourage healthy behaviors and mental health; 5) respond to disasters and assist communities in recovery; and 6) assure the quality and accessibility of health services.”⁷

The Structure of Employment in Public Health

Public health employees work in a variety of settings at the state, county, municipal, or regional health commission level. According to the U.S. Department of Health and Human Services, two-thirds of public health employees work in state or local agencies.⁸ (See Figure 1.) There is also federal employment in public health within the U.S. Public Health Service, the U.S. Department of Health and Human Services, the Department of Veterans Affairs, the U.S. Environmental Protection Agency, and the military.

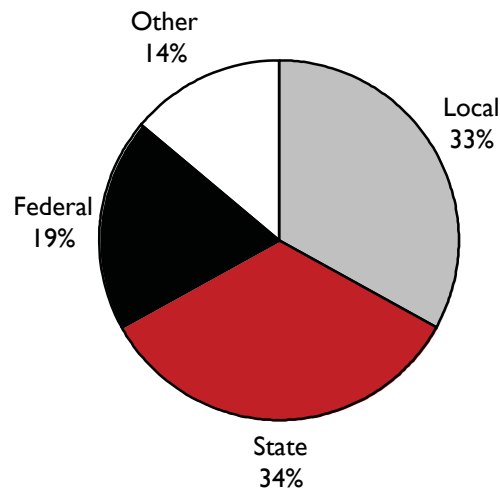
Besides government settings, public health workers can also be found at colleges and universities, hospitals, community health centers, and private industry, such as health care consulting agencies, research firms, health insurance companies, nonprofit research centers, and pharmaceutical companies.⁹

The Public Health System in New Jersey

In a disaster situation, public health workers must work within a larger state disaster management system. In New Jersey, the Office of Emergency Management (OEM), in coordination with the Governor's Office, handles most aspects of large-scale disasters and other emergencies. OEM works directly with appropriate federal and state agencies and departments to respond to different types of disasters. (See Table I for a list of OEM partners.)

In the case of a disaster that affects the health of the public, the Office of Emergency Management would coordinate activities with the New Jersey Department of Health and Senior Services (NJDHSS), the lead agency in charge of handling public health-related areas of disaster management. NJDHSS, in turn, would provide direction

Figure 1
Percentage of Workers in Public Health Settings, 2005



Source: U.S. Department of Health and Human Services, Health Resources and Services Administration, 2000. *The Public Health Workforce, Enumeration 2000*.

to the appropriate public and private entities under its jurisdiction — such as local health departments and hospitals — to ensure that health matters are properly addressed within the context of local, county, state, and federal disaster protocols.

Each of New Jersey’s 22 “county” health departments (one for each county except Cumberland and Salem, which are combined, and one each for the cities of Newark and Paterson) play an important role in disaster management, according to the industry advisory group convened for this study. Each of these offices receives federal bioterrorism preparedness funds to support five to six disaster management-related positions in each county health department, including a public health nurse, an epidemiologist, a health educator/risk communicator, a local information network and communications system coordinator, a health planner, and an information technology or administrative specialist. Each county also receives a grant from the state Department of Environmental Protection to conduct air, water, hazardous materials, and other health-related environmental inspections, which are carried out by epidemiologists and environmental health inspectors.

Health educators, public health nurses, and other public health workers at New Jersey’s 98 municipal health departments also provide supportive services before, during, and after a disaster, according to employers. Since staffing and capacity vary greatly at municipal health departments, according to employers, the functions of each office may vary significantly. Municipal health offices, however, generally collaborate with state and county authorities, as well as with private hospitals, to organize local disaster response activities.

Four Phases of Disaster Management

During a disaster scenario, many of the functions of the public health system are carried out in coordination with other key actors within an “all-hazards” model of disaster preparedness. Employers report that this model, which was developed by the U.S. Department of Homeland Security and the Federal Emergency Management Agency, involves four primary phases of disaster management: mitigation, preparedness, response, and recovery. A description of these four phases, provided by employers, follows:

Table 1
State and Federal Agencies Involved in Disaster Management

Federal Agencies

- U.S. Department of Homeland Security
- Federal Emergency Management Agency
- Centers for Disease Control and Prevention
- National Oceanic and Atmospheric Administration
- National Weather Service

State Departments and Agencies

- New Jersey Attorney General's Office
- New Jersey Domestic Security Preparedness Task Force
- New Jersey State Police
- New Jersey Homeland Security
- New Jersey Office of Counter-Terrorism
- New Jersey Board of Public Utilities
- New Jersey Department of Agriculture
- New Jersey Department of Community Affairs
- New Jersey Division of Fire Safety
- New Jersey Department of Education
- New Jersey Department of Environmental Protection
- New Jersey Department of Health and Senior Services
- New Jersey Disaster Mental Health System
- New Jersey Department of Human Services
- New Jersey Department of Military and Veterans Affairs
- New Jersey Department of Transportation
- New Jersey Transit
- New Jersey Turnpike Authority
- South Jersey Transportation Authority
- New Jersey Office of Information Technology
- Port Authority of New York and New Jersey

Local and Other New Jersey Agencies

- Directory of New Jersey's County Offices of Emergency Management
- New Jersey Emergency Management Association
- New Jersey Voluntary Organizations Active in Disaster

Other Agencies

- American Red Cross
- The Salvation Army
- National Voluntary Organizations Active in Disaster

Source: Office of Emergency Management website, <http://www.state.nj.us/njoem/about/partners.html>, accessed June 20, 2006.

Mitigation

According to employers that participated in the industry advisory group, mitigation activities are designed to minimize or eliminate the risks associated with a natural or manmade hazard. Many mitigation activities are prevention related and take place prior to a disaster event, such as the surveillance and detection of diseases, natural events, and terrorist activity. Other mitigation activities are designed to limit the spread or effects of a hazard. For example, in the case of a pandemic flu, employers report that mitigation activities may also include disease containment, treatment, and rehabilitation. Since many mitigation activities occur before a disaster, this is considered the first phase of disaster response.

In the area of public health, occupations involved in mitigation activities for a disease outbreak or other health emergency can range from state, county, and municipal health officers and planners who develop mitigation plans, to epidemiologists and environmental health inspectors who monitor the path and effects of diseases and pollutants, to clinical lab workers who perform vital tests, to public health nurses who treat individual patients. By enforcing quarantines or other containment measures, or taking other steps to limit the impact or spread of a hazard, first responders such as police, fire, and emergency medical technicians can also be involved in mitigation activities.

Preparedness

Preparedness activities generally involve developing response plans, organizing personnel and equipment, coordinating communication and activities among key stakeholders, and ensuring that workers are trained to implement plans and work effectively with others during a disaster. From equipment inventories, to written planning documents, to tabletop training sessions, to tactical and technical training sessions designed for frontline health and emergency workers, employers report that preparedness activities are designed to improve the organization and follow-through of emergency responders.

According to employers, many public health workers are heavily involved with disaster preparedness activities. Public health workers receive various levels of training to improve their disaster management skills. In addition, many of these workers develop or contribute to written disaster management plans and procedures, or engage in other support activities, such as organizing and testing equipment. For example, public health officers work with other public officials to develop state, county, and local action plans for organizing volunteers and hospital workers during a disaster; creating standardized procedures for identifying and handling the dead, sick, and injured; maintaining communication; and other issues. Workers such as environmental health inspectors and health planners, who have specific expertise, often contribute to development of disaster-related public health action plans. Emergency medical technicians and other health-related first responders may be involved in more supportive activities such as equipment checks and inventories, reviewing local plans and procedures, and participating in required training sessions.

Response

According to employers, response activities refer to the tactical actions emergency response, public health, and other disaster workers take immediately before, during, and after a disaster event. The goal of response activities is to quickly and effectively meet the health and safety needs of the public and to limit damage to property through coordinated response activities. In general, the response phase of disaster management involves implementing the plans and procedures developed in the preparedness phase. According to employers, response activities can include carrying out inter-agency and public information communication plans; securing shelter, food, and other necessary items for disaster victims; providing needed medical, mental health, and other types of care; managing fatalities; implementing systems of accountability; and tracking expenditures related to an event.

Public health workers — from health officers and planners, to epidemiologists and laboratory technicians — are involved in disaster response

activities. Public health agencies are often in charge of managing volunteers at a disaster site, as well as organizing ways to handle in-kind donations from the public. Health officers often play a vital role in coordinating the care provided by hospitals during a disaster. Health educators and health officers are also responsible for developing and disseminating public health messages about water, sanitation, air quality, and other factors that may affect the health of victims and the public-at-large to improve health outcomes.

Recovery

Recovery efforts involve cleaning up following a disaster, including dealing with the short- and long-term public health effects and other lingering problems caused by the initial event. Once the immediate health and safety needs of the public have been addressed in the response phase, planners and workers shift focus to attend to problems that affect the economy, the environment, or quality of life for individuals and communities. According to employers, short-term recovery activities can include debris and waste removal, ensuring adequate staffing in key government areas, managing volunteers, identifying missing records or documents, identifying resources to help businesses reopen, and prioritizing activities for long-term recovery. Long-term recovery efforts may include damage assessments; rebuilding homes, businesses, and community structures; and identifying additional funding sources to help individuals and employers recover from the effects of a disaster.

Employers report that workers ranging from planners and health officers, to social and mental health workers and others have roles to play in the recovery phase of a disaster. For example, health officers and planners oversee the development and implementation of health recovery plans that might involve long-term rehabilitation or the re-establishment of critical health care infrastructure and service. Epidemiologists or environmental health inspectors may be involved in monitoring diseases or pollutant levels. Finally, public health educators develop materials and provide public education about long-term physical and mental health recovery, while men-

tal health professionals and public health nurses may be involved in carrying out short- and long-term recovery plans that help the public to return to a more typical level of functioning and health.

Key Workforce Challenges in New Jersey's Public Health System

Employers and educators in public health face two primary workforce challenges:

1. Limited Ability to Employ Sufficient Numbers of Workers, and
2. Attracting, Recruiting, and Retaining Skilled Workers.

Workforce Challenge #1: Limited Ability to Employ Sufficient Numbers of Workers

Employers consulted for this study report that they are limited in their ability to hire a sufficient number of public health workers to adequately handle public health emergencies, especially during a major disaster. According to a study released by the U.S. Department of Health and Human Services in 2000, New Jersey is on the low end in its ratio of public health workers to population, employing 65 per 100,000 vs. a national average of 158 per 100,000.¹⁰

Employers identified factors that are common contributors to the difficulty public agencies face in hiring a sufficient number of workers, including budget constraints, few guidelines about what constitutes “sufficient capacity,” and bureaucratic hiring processes.

In most areas of the nation, the single biggest impediment to adequate staffing of public health agencies is budget constraints.¹¹ According to employers and public officials in New Jersey, there is increasing pressure on state and local governments to cut taxes and curb spending. This limits funds available to hire public health

The most difficult challenges state and local public health agencies face in developing the capacity to respond to terrorist events, emerging infectious diseases, and other public health threats and emergencies is assuring a qualified workforce is available to carry out these functions.

Source: Association of State and Territorial Health Officials, State Public Health Employee Worker Shortage Report: A Civil Service Recruitment and Retention Crisis (2004, p.2).

workers and other emergency workers. Although there has been increased funding since 9/11 from the federal government for bioterrorism and preparedness, employers report that other sources of funding have been reduced. In addition, employers report that there is less federal money available to New Jersey for bioterrorism and disease surveillance in the next fiscal year than there was in the previous year.

Limited funding is only one aspect of the budget constraints that make it difficult to hire needed workers. Federal and state funding priorities have also tended to shift from one health priority area to another over time. Industry advisory group members report that the mission of local health departments has become skewed toward health threats that policymakers consider to be important at a given time (e.g., SARS, AIDS, flu), while other areas, especially chronic issues or lesser-known threats, tend to be under-funded. Consequently, public health agencies in New Jersey are finding it increasingly difficult to hire the types of workers they need to respond to a wide range of hazards and disasters. The inflexibility of various funding streams also makes it difficult for individuals in some professions, especially those with special licenses and credentials that can only be applied in a limited area, to move from one position to another within a public health department in order to serve effectively during a disaster.

Unlike law enforcement, where the state requires a minimum number of police officers based on population size, employers in the industry advisory group report that there is no system to mandate a particular ratio of public health workers to the population in New Jersey.

Employers also report that bureaucratic hiring systems with lengthy processing periods for new hires makes it difficult to hire workers in critical areas even when money is available. The industry advisory group members report that this is a particular issue in the New Jersey Department of Health and Senior Services. In addition, the recent hiring freeze in NJDHSS prevents the hiring of some needed workers altogether, even though the source of funds is federal, according to employers.

Changing Funding Patterns

Following two decades of decreased federal spending for public health, employers report that federal funding was only increased recently in response to emerging bioterrorism and other threats. Officials agree that the recent influx of funding in public health, while necessary, is insufficient to cover the “surge capacity” level of personnel needed during a disaster. According to employers, current funding levels have simply restored funding lost over the years, as opposed to leading to a net increase in the number of public health workers.

In addition, employers report that funding is often restricted and bureaucratic rules are rigid, making it difficult for the public health system to respond flexibly to new and emerging threats. As noted by one speaker during the 2002 Congressional hearings on bioterrorism funding, “We have a long history of funding the disease or public health issue ‘du jour’ and then abandoning these programs.”¹² The result, according to employers, is that it is often difficult to hire the types of workers needed to respond to the other types of threats, whether pre-existing or new and emerging. Employers also report that bureaucratic hiring processes make it difficult to hire needed workers in a timely fashion.

Workforce Challenge #2: Attracting, Recruiting, and Retaining Skilled Workers

Each of the 30 states that responded to the 2002 Association of State and Territorial Health Officials survey was experiencing shortages

of public health nurses. Half had shortages of epidemiologists, and almost half reported shortages of laboratory workers and environmental health specialists.¹³ Public health employers consulted for this study concur with these findings and also report shortages in additional areas, such as health educators and officers. (See Table 2 for a full list of occupations employers selected.) All of these occupations are expected to grow between 18% to 29% during the period 2004-2014.¹⁴

Industry advisory group participants cite a lack of awareness of public health as a career that causes too few people to pursue training in the field. These employers and experts report that public health has no clear image, or “brand,” that potential employees and the general public can relate to or recognize. This is in contrast to other public workforces involved in responding to a health emergency, such as police and fire services, which they believe are more visible, better understood, and more appreciated by the general public.

According to employers, public health salary structures, especially at the county and municipal levels, are low compared to the private-sector employers with whom they compete for a workforce. Industry advisory group members estimate that a public health nurse with a Bachelor’s degree earns about half of what a similarly

Factors Contributing to Hiring Difficulties in Public Health

Employers identified factors that are common contributors to the difficulty public health employers face in attracting, recruiting, and retaining skilled workers:

- Lack of awareness of public health careers and occupational skill requirements,
- Low pay compared to similar private-sector jobs,
- Limited career paths,
- Difficult work environment for some jobs, and
- Worker retirement (affecting retention only).

Source: Industry Workforce Advisory Group, 2006

Table 2
Summary of Public Health Occupations New Jersey Employers Report are the Focus of Multiple Workforce Challenges

Occupation	Job Description
Clinical Laboratory Scientist/ Medical Technologist	Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. Responsibilities include emergency preparedness and response activities.
Clinical Laboratory Technician/ Medical Laboratory Technician	Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.
Emergency Medical Technician and Paramedic	Assess injuries, administer emergency medical care, and extricate trapped individuals. Transport injured or sick persons to medical facilities.
Environmental Health Inspector	Perform laboratory and field tests to monitor the environment and investigate sources of pollution, including those that affect health. Under direction of an environmental scientist or specialist, may collect samples of gases, soil, water, and other materials for testing and take corrective actions as assigned.
Epidemiologist	Monitor health status, diagnose and investigate health hazards and events, and evaluate the effectiveness of health services. Investigate and describe the determinants and distribution of disease, disability, and other health outcomes and develop the means for prevention and control.
Health Educator	Promote, maintain, and improve individual and community health by assisting individuals and communities to adopt healthy behaviors. Collect and analyze data to identify community needs prior to planning, implementing, monitoring, and evaluating programs designed to encourage healthy lifestyles, policies, and environments. May also serve as a resource to assist individuals, other professionals, or the community, and may administer fiscal resources for health education programs.
Health Officer	Apply preventive medicine and public health knowledge, techniques, and skills to minimize the incidence and impact of communicable diseases, occupational illnesses, and food-borne diseases across a geographical area or community. Plan, direct, or coordinate public health agencies or similar organizations.
Health Planner	Develop public health emergency preparedness plans to prepare the workforce to respond to a bioterrorism incident, disaster, or other public health emergency in an appropriate and timely manner. Collaborate with other planning officials and help identify training opportunities to increase preparedness response. May lead strategic planning efforts and foster partnerships with community groups and organizations.*
Registered Nurse	Instruct individuals on preventive care, nutrition, and child care. Arrange for immunizations, blood pressure screening. Work with community leaders to promote health education.

Source: U.S. Department of Labor, O*Net Jobs Database.

* Health planner is a new occupation not yet included in the O*Net jobs database, the U.S. Department of Labor's compendium of the skill and educational requirements of all occupations. Heldrich Center researchers compiled the job description for this occupation from interviews with New Jersey employers.

qualified nurse would in a hospital. Public health employers also compete with pharmaceutical industry companies for epidemiologists and lab technicians, according to employers. In addition, some occupations in public health, such as EMTs, are unpaid, volunteer positions in many New Jersey communities. Employers report that volunteers are becoming more difficult to recruit.

Employers also report that the method by which pay rates are set at the county and municipal levels may not take into account the difficulty of attracting particular skill sets. In many counties, pay rates are negotiated in collective bargaining agreements that liken public health jobs to others with similar educational requirements that are not in as much demand in the labor market. An example is equating the pay of a public health nurse with that of a librarian because both require a Master's degree. In addition, some areas of the state pay less than others. Employers report that the lower-paying areas consistently lose their public health workers to higher-paying areas or to the state.

The limited availability and visibility of career paths in public health is also a barrier. According to employers, there are few simple ways to advance to higher positions, especially at the county and municipal levels. In some cases, credential and licensing requirements limit job transferability for some occupations. For example, environmental health inspectors cannot easily transfer to a different type of job without new training. In addition, advancing to higher positions in public health often requires additional education and training, making it difficult for entry-level workers to advance easily to a position of higher responsibility. The small size of many local health departments also makes career advancement more difficult.

According to employers consulted for this study, public health can be a difficult work environment. There are increasing requirements to work 24/7 shifts in some jobs, such as EMTs and health officers. Although there are new EMTs certified every year in New Jersey, there are still shortages of volunteer EMTs, especially during daytime hours, according to industry advisory group members. Because EMTs are generally

volunteer positions, there are many reasons for turnover in this particular position. In some cases, volunteer EMTs go on to salaried jobs in the police or fire departments, become paramedics, or work for hospital-based ambulance services. In other cases, personality clashes, burnout, and local volunteer leadership issues are the causes of turnover in these jobs.

In general, as noted earlier in this report, employers state that educational requirements for licensing and credentialing are rising in public health. There are also some restrictions on which educational institutions are allowed to offer courses needed for these credentials. Both the requirements and restrictions make it more difficult to qualify for jobs and thus limit the pool of qualified workers.

According to the industry advisory group, many workers in public health are approaching retirement age, while there are too few younger replacements to fill needed positions. The average age of state public health employees across the nation is 46.6. In New Jersey, the age is 48. New Jersey state workers averaged 14 years of service, or about 3 1/2 years more than the national average.¹⁵

In 2002, New Jersey state public health officials predicted that almost 16% of state public health workers would be eligible for retirement in the next five years as compared to the national average of 24%. The New Jersey Health Officers Association estimates that retirements of county and local public health officials within the next three to five years could be as high as 25% to 40%.¹⁶

Industry Trends Affecting the Skill and Educational Requirements of Public Health and Disaster Management Jobs

The industry advisory group convened for this study, as well as other sources, identified several broad trends that are affecting the workforce needs of public health employers and changing the skill requirements for public health jobs that have disaster management responsibilities. These trends are:

1. Emerging Global Threats to Public Health, and
2. The Increasing Professionalization of the Public Health Workforce.

Trend #1: Emerging Global Threats to Public Health

Since September 11, 2001, the United States has become increasingly aware of the growing problem of international terrorism and its potential to devastate American citizens on American soil. In addition, some experts believe that some types of natural disasters, such as hurricanes, are becoming more frequent and more severe due to global warming. Pandemic diseases are also more of a threat in a world where international travel is commonplace. Since 9/11 alone, there have been a number of public health challenges with possible disastrous effects — Anthrax, Severe Acute Respiratory Syndrome (SARS), West Nile Virus, and Bird Flu, to name just a few.

Key Skill and Education Implications for Workers

In the face of increased threats to public health, employers in the industry advisory group report that there is growing pressure on state and local health authorities to prepare effectively for all types of threats. This heightens the need for better training for incumbent workers. In addition, employers report that they are looking for

workers who are highly skilled and knowledgeable about a wide range of disasters and the latest technologies, equipment, and practices to handle them effectively.

Trend #2: Increasing Professionalization of the Public Health Workforce

According to employers in the industry advisory group, there is a movement within the public health community toward increased use of credentials for many public health jobs. Many public health jobs require some postsecondary education and some jobs require very high levels of education, such as an epidemiologist who needs an advanced science degree. An increasing number of employers require specific credentials for many public health occupations, however. For example, employers report that health educators must have a Bachelor's or a Master's degree, as well as a credential as a Certified Health Education Specialist. Similarly, environmental health inspectors must have a four-year degree as well as one or more credentials, including the Certified Environmental Health Technician credential, as well as more specialized credentials such as the Registered Hazardous Substances Specialist certification.

Key Skill and Education Implications for Workers

The intent of credentials in public health is to increase accountability, expertise, and professionalism in the field, according to employers. Employers report, however, that credentialing has unintended consequences that make it more difficult for public health agencies to cultivate the workforce needed to respond effectively, especially in a disaster scenario. First, employers recognize that credentials make it harder

for potential workers to enter key public health occupations because they increase the level of training and education a worker must possess. Even volunteers must obtain a number of certifications to do their jobs, such as CPR certification. Employers also report that the use of credentials as a job requirement make it more difficult for some highly educated and qualified public health workers to flexibly assume needed roles, especially in a disaster situation.

Conclusion: Priority Skill Needs of New Jersey's Public Health and Disaster Management Employers

A highly skilled public health workforce is needed to protect New Jersey's citizens in the case of a disaster. A variety of broad trends in public health are contributing to employer workforce challenges. According to employers, changing funding patterns and an aging workforce that is approaching retirement make it difficult for employers to hire sufficient numbers of skilled workers to meet growing daily and disaster-related public health needs. In addition, a growing number of threats to public health and increasing professionalization of public health jobs contribute to rising skill requirements for public health workers.

Most public health agencies in New Jersey need to hire workers with experience, according to employers. Many health departments are small and cannot train public health workers on the job. An example of this is the health educator position in each county, which employers report requires someone fully able to function on the job upon hire. In other cases, the demands on the local health department are so great that they cannot afford the time to train inexperienced workers.

The field of public health is in itself, an interdisciplinary field. Contributions from sociology, psychology and other behavioral sciences combine with the clinical perspectives from medicine, nursing, dentistry, and nutrition. Add in the skills of planning, administration, and policy studies combined with journalism and the rigor of biostatistics and epidemiology, and the result is a comprehensive, interdisciplinary team that has the theories, methods, and skills necessary to address the broad ranging obligations [of public health].

Source: Kimberly I. Shoaf and Steven J. Rothman (guest editors), *The Role of Public Health in Disaster Preparedness, Mitigation, Response and Recovery, Prehospital and Disaster Medicine*, 2000, 15(4).

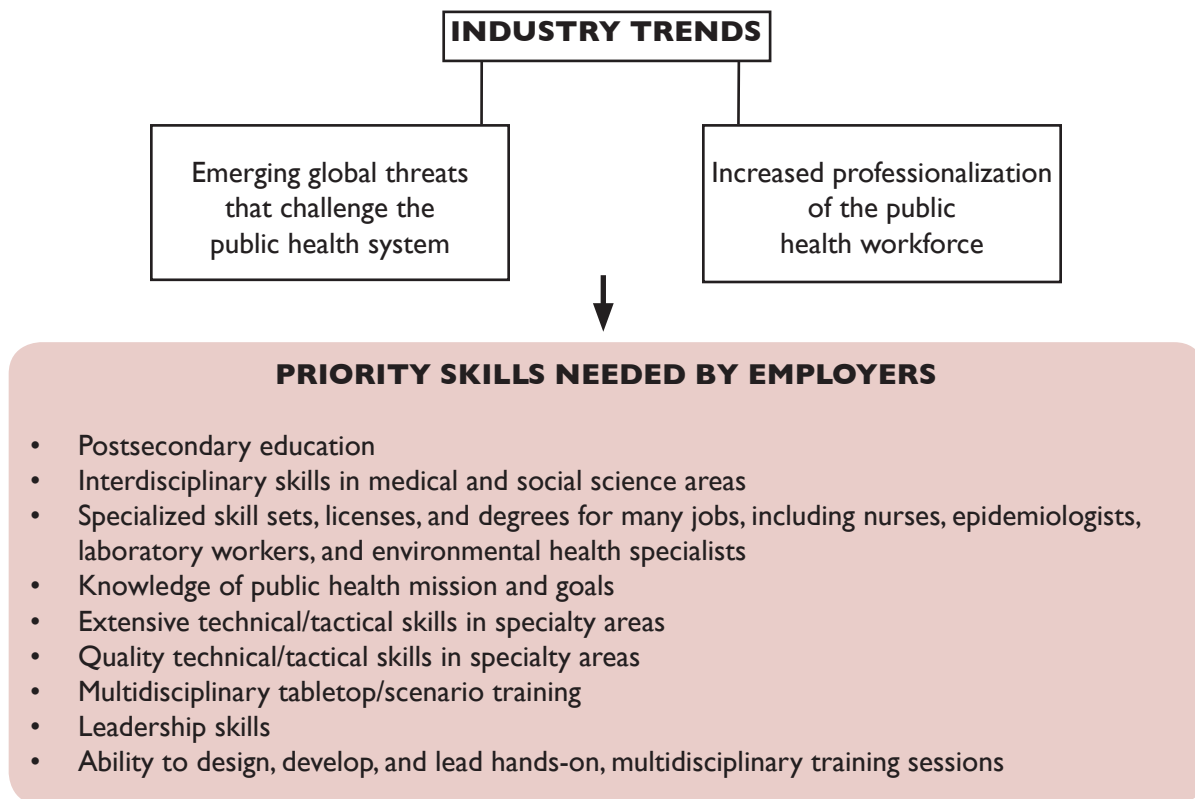
In addition to experience and specialized skill sets, licenses, and degrees for key jobs, employers identified several skill and training priorities for workers that are increasingly important in allowing the public health system to respond effectively to disaster scenarios. These skills include **strong science and technology skills**, which many public health workers need to succeed in the rigorous training and education programs required for many jobs.

Employers also stress the need for workers at many levels of the public health system to develop **strong interdisciplinary skills in both medical and social science areas**. Workers such as epidemiologists must be skilled in statistics as well as understanding disease processes. Since much of public health involves understanding and communicating information about health effects on populations, many types of workers need at least a basic background in statistics, sociology, or related disciplines. Knowledge of multiple science disciplines, such as biology and chemistry, is also desirable to understand the myriad types of public health threats that may arise in a disaster scenario.

Key Interdisciplinary Skills Needed for Public Health Jobs

Employers need more entry-level workers who are knowledgeable about the **goals and mission of the public health system**, as well as the varied career opportunities available in the field. Public health is typically only included in the last two years of the Bachelor's degree nursing programs, according to employers, and still may not provide sufficient training in core functions of public health. Important concepts include general health promotion, surveillance, and protection, according to employers. In addition, students need to develop strong critical thinking and creative problem-solving skills required for public health positions.

Major Trends Affecting the Priority Skills Needed by Employers



A recent study of the public health workforce in six states noted a general need for training in **core public health concepts**, including knowledge of the mission and goals of the public health system. This is especially important for staff without formal public health training and access to advanced education, including Baccalaureate nursing and graduate studies. The study found that public health workers with formal public health training, such as a Master of Public Health, most commonly worked in state health departments or as leaders of large public health agencies. They were needed, but rarely available, in small, local public health organizations.¹⁷

In the face of increased threats to public health, employers in the industry advisory group report that there is growing pressure on state and local health authorities to prepare effectively for all types of threats. Employers report that they are looking for workers who are highly skilled and knowledgeable about a wide range of disasters and the latest technologies, equipment, and practices to handle them effectively.

According to employers, the amount and quality of training in discreet technical/tactical specialty areas, such as incident command systems; biological, chemical, and radiological agents; and psychosocial effects and the like, is sufficient. Several training centers in the region provide access to a range of programs to upgrade the skills of current workers. One of the largest of these is the New York/New Jersey Public Health Training Center, a partnership among the Mailman School of Public Health, Columbia University, the School of Public Health at the University of Medicine and Dentistry of New Jersey (UMDNJ), and the School of Public Health Continuing Education at the University at Albany. One of 14 such centers in the nation funded by the Health Resources and Services Administration, the New York/New Jersey Public Health Training Center provides training that combines academic theory with practical knowledge in public health.

Rutgers University and UMDNJ are designated training providers for the public health workforce to receive disaster-related training and credentials. The New Jersey Center for Public Health Preparedness at UMDNJ's School of Public Health is one of 50 university-based training centers funded by the Centers for Disease Control and Prevention to train public health workers in disaster preparedness issues. Rutgers University is New Jersey's designated provider of Community Emergency Response Team certification, a basic disaster management credential required for many public health workers, according to members of the industry advisory group.

Despite this robust training system, industry advisory group attendees report managers and supervisors need better **leadership skills** and **teamwork skills** to manage inter-agency interactions effectively. Employers also called for more cross-training in leadership for non-leadership occupations (training in leading groups, setting up pods, taking charge when needed) as well as operational/planning/leadership training to help officials improve communication. This heightens the need for better **multi-disciplinary and tabletop training for incumbent workers**.

Industry advisory group members indicate a need for more people who can **design, develop, and lead effective training sessions**, especially those that involve teaching leadership skills to those in non-leadership positions, and training focused on building the capacity of government agencies to work and communicate more effectively with each other and with the private sector in a disaster scenario.

According to employers in the industry advisory group, employers have difficulty finding and or keeping workers in key public health and disaster management jobs including:

- Clinical Laboratory Scientist/
Medical Technologist
- Clinical Laboratory Technician/
Medical Laboratory Technician
- Emergency Medical Technician and
Paramedic
- Environmental Health Inspector
- Epidemiologist
- Health Educator
- Health Officer
- Health Planner
- Public Health Registered Nurse

Endnotes

1 New Jersey officials also noted that there were skilled worker shortages in the private health care system, as well as in an area officials referred to as “cyber-security,” which includes employers dedicated to developing and using high-end technologies designed to prevent or mitigate a disaster. The workforce needs of New Jersey’s health care industry are documented in a previous *Ready for the Job* report titled *Understanding Occupational and Skill Demand in New Jersey’s Healthcare Industry*. That report, as well as a more recent update on the occupational skill shortages and other workforce challenges facing the health care industry, can be accessed at www.NJNextStop.org. An update on the workforce needs of the health care industry is planned in future rounds of the *Ready for the Job* project. The workforce needs of “cyber-security” employers are also not covered in this report as they were determined to be outside the scope of this study due to the fact that many of these employers are not physically based in the state, according to officials. As a result, their workforce needs are dispersed nationally and even internationally and may not be addressed effectively by New Jersey-based partnerships and policy solutions.

2 Kimberley I. Shoaf and Steven J. Rottman, “The Role of Public Health in Disaster Preparedness, Mitigation, Response, and Recovery,” *Prehospital and Disaster Medicine*, 2000: 15(4).

3 New Jersey Department of Labor and Workforce Development, *State of New Jersey Employment Estimates and Projections by Detailed Occupation, 2004 and 2014* (Trenton, NJ: Author, 2005).

4 Association of State and Territorial Health Officials, *State Public Health Employee Worker Shortage Report: A Civil Service Recruitment and Retention Crisis* (Arlington, VA: Author, 2004).

5 Association of Schools of Public Health website, www.whatispublichealth.org, accessed May 1, 2006.

6 U.S. Department of Homeland Security, *Universal Task List* (Washington, D.C.: Author, 2006).

7 Shoaf and Rottman, “The Role of Public Health in Disaster Preparedness, Mitigation, Response, and Recovery.”

8 U.S. Department of Health and Human Services, Health Resources and Services Administration, *The Public Health Workforce, Enumeration 2000* (Washington, D.C.: Author, 2000).

9 Ibid.

10 Ibid.

11 U.S. Department of Health and Human Services, Health Resources and Services Administration, *Bureau of Health Professions, Public Health Workforce Study* (Washington, D.C.: Author, 2005).

12 University of Pittsburgh Medical Center, Center for Biosecurity, Testimony of Tara O’Toole, M.D., M.P.H., Director, Center for Civilian Biodefense Strategies, The Johns Hopkins University, Bloomberg School of Public Health, February 28, 2002.

13 Association of State and Territorial Health Officials, *State Public Health Employee Worker Shortage Report*.

14 New Jersey Department of Labor and Workforce Development, *State of New Jersey Employment Estimates and Projections by Detailed Occupation, 2004 and 2014*.

15 Association of State and Territorial Health Officials, *State Public Health Employee Worker Shortage Report: A Civil Service Recruitment and Retention Crisis*.

16 Ibid.

17 U.S. Department of Health and Human Services, Health Resources and Services Administration, *Bureau of Health Professions, Public Health Workforce Study*.

Appendix: List of Industry Group Members and Interviewees

The Heldrich Center conducted background interviews with industry experts in May 2006. An industry advisory group consisting of employers and others knowledgeable about the field of disaster management and public health was held on June 28, 2006.

Individuals Interviewed

Bill Marshall
New Jersey Homeland Security Technology Systems Center at the New Jersey Institute of Technology (NJIT)

Dennis Quinn
Executive Assistant to the Attorney General
Member, New Jersey Domestic Security Preparedness Task Force

Mitchel Rosen
New Jersey Center for Public Health Preparedness at the University of Medicine and Dentistry of New Jersey (UMDNJ)

Mitchell Sklar
New Jersey State Association of Chiefs of Police

Industry Advisory Group Members

Parvin Amadkhanlou
New Jersey Department of Health and Human Services

Robert Clawson
New Jersey Department of Health and Human Services

Miriam Cohen
New Jersey Primary Care Association

Steve Crimando
New Jersey Department of Human Services,
Disaster Mental Health Services

Janet DeGraaf
New Jersey Department of Health and Senior Services

Lt. Col. Thomas Gilbert
New Jersey State Police

Drew Harris
New Jersey Center for Public Health Preparedness of UMDNJ

Bill Marshall
New Jersey Homeland Security Technology Systems Center at NJIT

Susan Mikorski
New Jersey Department of Health and Human Services

Norman Pallotto
New Jersey Office of Homeland Security and Preparedness

Sgt. Mike Rehr
Delaware River Port Authority

Representative
New Jersey Transit Police

Mitchel Rosen
New Jersey Center for Public Health Preparedness of UMDNJ

Howard Steinberg
County Health Officers Association

Kevin Sumner
Middlebrook Regional Health Commission