

The Impact of State and Local Budget Cuts on Public Health Preparedness

This paper was commissioned by the Institute of Medicine under contract #IOM-2000000544, to provide background to the deliberations of the Forum on Medical and Public Health Preparedness for Catastrophic Events

June 13, 2011



Table of Contents

1. EXECUTIVE SUMMARY 3

2. INTRODUCTION..... 9

3. OVERVIEW OF STATE AND LOCAL BUDGET CUTS TO PUBLIC HEALTH DEPARTMENTS... 10

 3.1. STATE PUBLIC HEALTH FUNDING 12

 3.2. STATE AND LOCAL EMERGENCY PREPAREDNESS FUNDING 13

4. ANALYTICAL FRAMEWORK 14

5. IMPACT OF BUDGET CUTS TO KEY ELEMENTS OF PREPAREDNESS 16

 5.1. RESOURCES 16

 5.1.1. WORKFORCE SIZE 16

 5.1.2. PUBLIC HEALTH LABORATORY CAPACITY AND CAPABILITIES 17

 5.1.3. PLANNING, EXERCISES, AND TRAINING 18

 5.2. CAPABILITIES 19

 5.2.1. INCIDENT RESPONSE CAPACITY 20

 5.2.2. MEDICAL SURGE CAPACITY 20

 5.2.3. BIOSURVEILLANCE..... 22

 5.2.4. INFORMATION SHARING AND EMERGENCY COMMUNICATIONS 23

 5.3. PAST EXPERIENCE 24

 5.3.1. 2009 H1N1 PANDEMIC INFLUENZA RESPONSE 24

6. CASE STUDIES 27

 6.1. EAST TENNESSEE 28

 6.2. JACKSON COUNTY, OKLAHOMA..... 29

 6.3. KING COUNTY, WASHINGTON 29

 6.4. DETROIT, MICHIGAN..... 31

7. CONCLUSIONS 33

8. APPENDIX 35

 8.1. AUTHORS AND ACKNOWLEDGEMENTS 35

 8.2. INTERVIEWEES 36

 8.3. BIBLIOGRAPHY 37

 8.4. CONTACT INFORMATION 39

1. EXECUTIVE SUMMARY

Introduction

The Institute of Medicine's (IOM) Forum on Medical and Public Health Preparedness for Catastrophic Events commissioned this paper to provide background on the current reductions in funding of state and local public health agencies and to assess the impact these reductions are having on all-hazards preparedness and response capabilities. This paper analyzes eight elements of public health preparedness. To provide a more tangible illustration of the impacts of reduced funding, this paper then examines four case studies, including two urban and two rural settings.

Major Findings

- 1) **Robust all-hazards public health preparedness capabilities require a sustained level of sufficiently high funding.**
 - A steady, predictable, and robust public health budget enables adequate funding of the public health infrastructure, from biosurveillance activities to medical surge capacity. This ideal situation contrasts sharply with the reality at state and local health departments: significant fluctuations in public health funding marked by large infusions (American Reinvestment and Recovery Act and H1N1 funding) and followed by rapid decreases.
- 2) **The average state and local health workforce is rapidly aging, and the next generation of skilled staff and leaders is not being developed and trained.**
 - It is likely that the full impact of these budget cuts on state and local public health preparedness capabilities is yet to be seen. Roughly one-third of US public health workers will be eligible to retire in the next five years.¹ Valuable institutional knowledge and experience is likely to be lost, resulting in potentially underfunded and understaffed public health departments.
- 3) **As state and local health departments fail to invest adequately in biosurveillance infrastructure and lose their epidemiological expertise, the resulting decrease in capabilities makes the nation significantly less secure against intentional and naturally occurring health threats.**
 - Of the four capabilities examined, biosurveillance is arguably the most severely impacted by budget reductions. State and local health departments play a key role in the field investigations, data collection and early-stage analysis for biosurveillance; the necessary supporting infrastructure is not receiving adequate financial support. State and local health departments are losing a large numbers of epidemiologists to layoffs and attrition.²
- 4) **Rural health departments, which rely almost exclusively on federal funding for health security and preparedness efforts, are particularly vulnerable to the disruptions caused by unpredictable and declining federal funding.**
 - Our case studies illustrate that rural health departments rely overwhelmingly on federal grants to fund their preparedness programs. Although the recent decreases in federal health security funding have not yet had severe effects, a continued decline could cause a significantly negative

¹ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

² Multiple interviews with health department officials.

impact. Due to their smaller size, rural health departments can be severely impacted by even a handful of staff departures due to declines in federal health security funding.³

Analytical Framework and Findings

To support our assessment, the PRTM team developed an analytical framework consisting of eight elements of public health preparedness across the categories of Resources, Capabilities, and Past Experience.

Resources

Workforce Size:

Perhaps the most tangible impact of budget cuts has been on the declining number of public health employees at the state and local level. Roughly 23,000 jobs -- totaling 15 percent of the local public health workforce -- have been lost since January 2008.⁴ Cuts to state and local budgets are exacerbating a longstanding downward trend in the state/local public health workforce. The US has 50,000 fewer public health workers than it did just 20 years ago.⁵ The strong possibility of future reductions in funding is poised to make current serious shortages even more acute. Approximately one-third of US public health workers will be eligible to retire in the next five years⁶; health departments are not developing a new generation of public health workers to fill this gap. Future departments may be lacking the same degree of institutional knowledge and experience that resides in today's workforce.

Public Health Laboratory Capacity and Capabilities:

This element encompasses the ability of state and local public health laboratories to conduct timely and accurate testing and to provide training to prepare for and respond to large-scale, all-hazards events. These capabilities are also at risk. The Association of Public Health Laboratories (APHL) has identified a number of challenges currently faced by state public health laboratories.⁷ Funding for laboratory preparedness continues to decline; APHL characterizes it as inadequate to sustain preparedness and response capabilities. In FY2001, funding for these activities hovered around \$20 million. From FY2002-03, this funding shot up to almost \$200 million. From FY 2003-08, funding steadily declined to roughly \$70 million. This significant boom and bust in funding is not likely to sustain or further develop laboratory capabilities, nor the training and retention of qualified laboratory personnel.

Planning, Exercises, and Training:

This element is the capacity, in terms of financial resources and manpower, to conduct the planning, exercises, and training necessary to prepare for the full range of large-scale, all-hazards events. This capacity has also been significantly affected. Of these three areas, training has been most severely impacted by the current fiscal environment; it has been one of the first areas to be de-prioritized during budget cuts.⁸ Budgetary pressures have affected public health planning efforts at the state and local

³ Interview with subject matter expert.

⁴ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

⁵ Ibid.

⁶ Ibid.

⁷ Association of Public Health Laboratories. *Public Health Laboratories: Diminishing Resources in an Era of Evolving Threats*. Rep. June 2010. Web. <<http://www.aphl.org/aphlprograms/phpr/ahr/Documents/DiminishingResourcesEvolvingThreats.pdf>>.

⁸ Multiple interviews with health department officials and subject matter experts.

level, albeit less severely than training. Planning is still carried out fairly well, which may be due to an increased urgency to effectively leverage limited resources.⁹

As budgets have become leaner, exercises have become more limited in scope.¹⁰ Funding constraints have also caused a decrease in the number and type of participants in public health exercises. With less money available to fund travel, some exercises that were once conducted jointly at the state level are now carried out individually at the county level.

Capabilities

Incident Response Capacity:

Incident response capacity is the ability of state and local public health departments to respond quickly and robustly to large-scale events with public health implications. This element encompasses emergency medical response, quarantining and isolation, rapid communications, and several other capabilities. Incident response capacity appears to have weathered the tight fiscal climate better than many other components of preparedness. In a September 2010 report, the Centers for Disease Control and Prevention (CDC) tested a useful proxy measure for this capability: whether pre-identified staff in each state were able to acknowledge notification of emergency exercises or incidents within the target time of 60 minutes at least twice during 2007-2008.¹¹ The CDC found that 44 states and the District of Columbia were able to meet this target. No more recent data was available, and the perishability of this data could be masking a more significant impact. However, at least one local health department's capability in this area was —not seriously reduced.”¹² Another health department reported that there was “no tangible data” to suggest a decrease in their incident response capacity.¹³

Medical Surge Capacity:

Medical surge capacity is the ability of local medical capabilities to rapidly increase treatment capacity to address the spike in medical needs caused by large-scale mass casualty incidents. There is a surge capacity gap, with shortfalls in the staff, equipment, and space necessary to address a massive influx of patients at hospitals and health centers.¹⁴ State public health departments appear particularly vulnerable to any threat that requires an acute and sustained surge in effort.¹⁵

In contrast, two health departments reported capable medical surge capabilities in their jurisdictions. In one locality, grants from the Hospitals Preparedness Program (HPP) Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response (ASPR) have provided consistent funding to support surge capacity at their local hospitals.¹⁶ Another department highlighted

⁹ Interview with subject matter expert.

¹⁰ Multiple interviews with health department officials.

¹¹ Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. *Public Health Preparedness: Strengthening the Nation's Emergency Response State by State*. Rep. Sept. 2010. Web. <<http://www.bt.cdc.gov/publications/2010phprep/>>

¹² Interview with health department official.

¹³ Interview with health department official.

¹⁴ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

¹⁵ Interview with subject matter expert.

¹⁶ Interview with health department official.

substantial improvements in medical surge capacity in its jurisdiction over the past three years, due to the efforts of the regional health coordinator.¹⁷

Biosurveillance:

Biosurveillance is the process of active data-gathering with appropriate analysis and interpretation of biosphere data that might relate to disease activity and threats to human or animal health in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity.¹⁸ State and local biosurveillance capabilities are characterized as “woefully inadequate,” due primarily to the lack of technological infrastructure and associated workforce.¹⁹ Biosurveillance data is widely available, but many health departments lack the skilled staff and the technology to integrate and analyze this data. For example, one local health department lacks any backup personnel for its syndromic surveillance system, which threatens the sustainability of the system. Epidemiological research, which goes hand-in-hand with biosurveillance, has been heavily affected by budget constraints; such research is seen as expendable in the face of maintaining core non-preparedness public health programs.²⁰ These cuts can rob state and local health departments of the ability to be proactive in monitoring for potential public health threats, forcing them into a more reactive stance.

Information Sharing and Emergency Communications:

Information sharing is the routine communication of information as well as issuing of public health alerts to the public in preparation for, and in response to, events or incidents of public health significance. Information sharing capabilities have been moderately reduced by budgetary constraints.²¹ One local health department reported that the budget for both conducting risk communications and hiring communications staff has been cut.²²

Emergency communications is the ability to conduct multijurisdictional, multidisciplinary exchanges of health-related information and situational awareness data among state and local public health workers, first responders and emergency managers. These capabilities have also been moderately reduced in this tight fiscal climate.²³ This field depends largely on communications equipment, which can be costly to purchase, maintain, and upgrade.²⁴ One health department’s information technology budget for emergency communications was recently cut by 30%, which puts its communications capabilities at risk.²⁵

¹⁷ Interview with health department official.

¹⁸ United States. White House. *Homeland Security Presidential Directive-21: Public Health and Medical Preparedness*. By President George W. Bush. 18 Oct. 2007. Web. <http://www.upmc-biosecurity.org/website/resources/govt_docs/public_health_prep/whitehouse/whitehouse_homeland_security_presidential_directive_hspd21.html>.

¹⁹ Interview with subject matter expert.

²⁰ Interview with subject matter expert.

²¹ Multiple interviews with health department officials and subject matter experts.

²² Interview with health department official.

²³ Multiple interviews with health department officials and subject matter experts.

²⁴ Interview with subject matter expert.

²⁵ Interview with health department official.

Past Experience

2009 H1N1 Pandemic Influenza Response:

This section offers an analysis of how state and local health departments responded to the 2009 H1N1 pandemic influenza outbreak. The scale of the response was unprecedented.²⁶ State and local health departments performed well in the areas of biosurveillance, laboratory testing, public and practitioner education, medical countermeasure management, and the distribution and launch of a national vaccination campaign.²⁷ One subject matter expert graded the state response as “very good to excellent.”²⁸ Public health departments were extremely effective in harnessing partnerships with the private sector, faith-based communities, and others to improve their pandemic response.²⁹ However, there is concern that if another pandemic were to occur in the near future, state and local health departments would be unable to mount the same level of response as they did in 2009 due to reduced capabilities caused by budget cuts.³⁰

Case Studies

Rural

East Tennessee:

The East Tennessee Regional Health Office (ETRO) serves approximately 600,000 people in 15 counties, ranging in population from 18,000 to 130,000. The emergency preparedness program relies completely on federal funds, and budgetary constraints have negatively impacted ETRO’s staffing levels. ETRO has taken steps to mitigate the situation by utilizing staff from other departments to assist with emergency preparedness, especially for incident response capacity. Biosurveillance has been one of the most significantly affected areas. In 2002, ETRO experienced a surge in funding for development of a biosurveillance infrastructure. Since then, dwindling funds over the last few years have degraded biosurveillance capabilities. Funding for staff, epidemiological research capacity, and syndromic surveillance systems have declined.³¹

Jackson County, Oklahoma:

In local health departments throughout Oklahoma, preparedness programs have thus far been largely immune from staff reductions. Preparedness is federally funded, and this funding has remained relatively stable; Jackson County has lost a minimal number of preparedness personnel. In fact, the department has actually added 15 preparedness staff to its department over the past year. However, local officials anticipate an uncertain future with probable cuts occurring over the next 6 to 12 months. In April 2011, Oklahoma participated in a state-wide mass vaccination exercise in preparation for a medical emergency or natural disaster. Due to budgetary restrictions, there was a lack of widespread participation from partner agencies like hospitals, law enforcement, and first responders. With an anticipated decline in Jackson County’s preparedness funding, Jackson County could potentially experience hurdles in conducting training over the next few years.³²

²⁶ Trust for America’s Health. *Ready or Not? Protecting the Public’s Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

²⁷ Ibid.

²⁸ Interview with subject matter expert.

²⁹ Multiple interviews with health department officials.

³⁰ Multiple interviews with health department officials and subject matter experts.

³¹ Interview with health department official.

³² Interview with health department official.

Urban

King County, Washington:

In King County, WA, the recession has contributed to a decline in funding towards emergency preparedness and response programs.³³ King County's health department laid off personnel across programs, and has resorted to relying on local organizations to sustain response efforts. Moreover, the aging workforce of the baby boomer generation is causing attrition and the loss of institutional knowledge and experience. Over the last several years, biosurveillance funding has decreased by 83%.³⁴ The King County Department of Public Health faces a decreased capacity for case and outbreak investigations due to staff reductions. For example, King County recently laid off an epidemiologist that performed evaluation of advanced surveillance systems.³⁵ Relying on other agencies to perform biosurveillance limits the health department in their organic analytical capacity; it is unlikely that other agencies outside of King County would have the same local knowledge possessed by the King County Department of Public Health.

Detroit, Michigan:

The decline of the automobile industry has led to a drastic reduction in Detroit's population. The city lost 25% of its population from 2000 to 2010.³⁶ The Department of Health & Wellness Promotion in Detroit is continuing to experience cuts, with the budget declining from \$83.6 million to \$75.3 million, and a deficit of \$155 million.³⁷ As a consequence, the department will continue to receive smaller federal emergency preparedness funds because the proportion of funds allocated to a city is based on the size of its population.³⁸

Conclusion

Reductions in all-hazard public health preparedness funding since 2004, and particularly in the last two years, have resulted in the loss of experienced and capable personnel, along with underinvestment in the requisite supporting infrastructure. Recent budgetary cutbacks have exacerbated a situation where preparedness programs were already —ironically underfunded.³⁹ All-hazards preparedness focuses on health emergencies that have the potential to overwhelm routine capabilities. If preparedness capabilities continue to degrade, this may go largely unnoticed by the public for some time. However, if funding trends persist, the next pandemic, natural disaster, or bioterrorism attack may provide a vivid illustration of the effects of budget cuts on public health preparedness at the state, local, and national level.

³³ Interview with health department official.

³⁴ Interview with health department official.

³⁵ Interview with health department official.

³⁶ Christoff, Chris. "Michigan Senate Approves Detroit Population, Tax Bills | Detroit Free Press | Freep.com." *Detroit Free Press*. 7 June 2011. Web. <<http://www.freep.com/article/20110607/NEWS01/110607024/Michigan-Senate-approves-Detroit-population-tax-bills>>

³⁷ Erb, Robin, and Steve Neavling. "Bing Fires Health Department Director amid Corruption Investigation | The Enquirer | Battlecreekenquirer.com." 26 May 2011. Web. 09 June 2011

³⁸ Ibid.

³⁹ Interview with subject matter expert.

2. INTRODUCTION

The recent economic recession began in December 2007 and reached its nadir in late 2008. This downturn caused significant budgetary strain at all levels of government, from the federal government to municipalities. As unemployment numbers rose and the economy weakened, all levels of government faced increasing demand for public services. Furthermore, the downturn led to a decrease in tax revenue, which decreased by 17 percent in the second quarter of 2009 as compared to the previous year. As a consequence, state budget deficits are set to reach a record at an estimated \$430 billion through the end of FY2011. Throughout the country, government officials had to address an increased demand for services with less funding at their disposal.

Addressing public health needs is one of the numerous services provided by state and local governments. Public health departments provide a wide range of services, including those that support public health preparedness, the focus for this study. All-hazards public health preparedness is defined as:

...plans, procedures, policies, training, and equipment necessary to maximize the ability to prevent, respond to, and recover from major events, including efforts that result in the capability to render an appropriate public health and medical response that will mitigate the effects of illness and injury, limit morbidity and mortality to the maximum extent possible, and sustain societal, economic, and political infrastructure.⁴⁰

Robust all-hazards public health preparedness at the state and local level is crucial to our nation's health security. Preparedness capabilities, such as biosurveillance and medical surge capacity, enable a quick and effective response to naturally occurring and deliberate health threats, from the H1N1 pandemic to hurricanes, earthquakes, tornadoes, and terrorism. State and local health departments are often the first to respond to public health events; ensuring strong preparedness programs at these departments is critically important. The National Association of City and County Health Officials (NACCHO) highlights the vital preparedness functions of state and local health departments:⁴¹

- Tracking and investigating health problems and hazards in the community
- Preparing for and responding to public health emergencies
- Leading efforts to mobilize communities around important health issues
- Achieving excellence in public health practice through a trained workforce, evaluation, and evidence-based programs

The Institute of Medicine's (IOM) Forum on Medical and Public Health Preparedness for Catastrophic Events commissioned this paper to provide background on the current cuts taking place in state and local public health agencies and to assess the impact these cuts are having on preparedness and response capabilities. To assess preparedness efforts at the state and local level, this paper analyzes eight elements of public health preparedness, as described in the analytical framework in Section 3 of this paper. To provide a more tangible illustration of these impacts, this paper then examines four case studies, including two urban and two rural settings. In conducting research for this paper, PRTM performed an extensive review of open-source literature and interviewed representatives from state and local public health departments and several subject matter experts, listed in the appendix.

⁴⁰ United States. White House. *Homeland Security Presidential Directive-21: Public Health and Medical Preparedness*. By President George W. Bush. 18 Oct. 2007. Web. <http://www.upmc-biosecurity.org/website/resources/govt_docs/public_health_prep/whitehouse/whitehouse_homeland_security_presidential_directive_hspd21.html>.

⁴¹ National Association of County and City Health Officials (NACCHO). *The Role of Local Health Departments (Fact Sheet)*. Web. <http://www.naccho.org/advocacy/marketing/toolkit/upload/Fact_Sheet_2.doc>.

3. OVERVIEW OF STATE AND LOCAL BUDGET CUTS TO PUBLIC HEALTH DEPARTMENTS

In the 1990s, the Federal Emergency Management Agency (FEMA) expanded its efforts to an all-hazards approach in order to augment resources for natural disaster preparedness. Moreover, FEMA implemented the Federal Response Plan to align response capabilities across 27 federal agencies and the Red Cross in order to assist state and local emergency managers.⁴²

In addition, the Clinton administration responded to the growing bioterrorism threat by increasing funding to improve state and local health infrastructures during the late 1990s. Instituted in 2000, the Public Health Threats and Emergencies Act of 2000 was the first law established on emergency preparedness, specifically for bioterrorism and infectious disease outbreaks. In FY2001, \$540 million was distributed to build response capabilities in public health agencies. Despite the creation of the new federal law, little attention was paid to developing a strong public health preparedness system until the 2001 anthrax bioterrorism attacks.⁴³

A decade later, federal and state budgets devoted to public health spending have dwindled and with the upcoming fiscal year in 2012, the budget is expected to decline even further. For the first several years of the economic downturn, public health preparedness was largely shielded from budgetary cuts. The American Reinvestment and Recovery Act (ARRA) provided an early infusion of funding that helped plug gaps in state and local budgets.⁴⁴ However, federal public health funding from the Centers for Disease Control and Prevention (CDC) decreased from a high of \$6.62B in 2005 to \$6.12B in 2010.⁴⁵

Just as the recession was officially ending, the United States faced another challenge: the first influenza pandemic in over 40 years. In June 2009, the World Health Organization declared that the influenza A (H1N1) outbreak was officially a pandemic. The US Congress responded by authorizing \$1.4 billion of funding for state and local health departments through Public Health Emergency Response (PHER) grants, which were administered by the CDC. These grants were intended to directly support the state and local public health response to H1N1. To varying degrees of success, state and local health departments were able to use these funds to bolster their H1N1 response, and in doing so were also able to fill more generalized shortfalls in public health preparedness programs.⁴⁶

The CDC also administers Public Health Emergency Preparedness (PHEP) funding to all 50 states and 4 highly populated metropolitan cities, including Washington, D.C., Los Angeles County, New York City

⁴² Haddow, George, and Jane Bullock. "The Future of Emergency Management." *The Future of Emergency Management*. Print.

⁴³ Frist, Bill. "Public Health And National Security: The Critical Role Of Increased Federal Support." *Health Affairs* 21.6 (2002): 117-30. Print.

⁴⁴ Association of State and Territorial Health Officials. "ASTHO Budget Cuts Impact Research Brief (2011) | State Public Health | ASTHO." Mar. 2011. Web. <<http://www.astho.org/Display/AssetDisplay.aspx?id=5827>>.

⁴⁵ Trust for America's Health. "Investing in America's Health - Trust for America's Health." *Trust for America's Health - Preventing Epidemics. Protecting People*. Mar. 2011. Web. 2011. <<http://healthyamericans.org/report/83/>>.

⁴⁶ Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. *Public Health Preparedness: Strengthening the Nation's Emergency Response State by State*. Rep. Sept. 2010. Web. <http://www.bt.cdc.gov/publications/2010phprep/>

and Chicago. Created in reaction to the 9/11 attacks, PHEP funding enables health departments across the country to provide appropriate response services in the event of an emergency.⁴⁷

Finally, in 2010, the Hospital Preparedness Program (HPP), managed by the Office of the Assistant Secretary for Preparedness and Response (ASPR), distributed \$390.5 million in grants to support hospital programs and strengthen medical surge capacity across the country.⁴⁸ In addition, FEMA's Urban Areas Security Initiative (UASI) has provided money to 31 high-risk metropolitan areas as defined by the Department of Homeland Security. In FY2011, UASI is supplying approximately \$662 million to conduct training exercises, obtain equipment, and build up response capabilities to these high-risk urban areas.⁴⁹ Between ARRA, H1N1, UASI, HPP, and PHEP funds, state and local public health preparedness programs initially weathered the recession fairly well.

Although the recession officially ended in June/July 2009, the US continues to experience slow economic growth and prolonged high unemployment. State and local budgets appear to be under greater strain now than they have been in decades; ARRA funds are no longer available to fill gaps in state and local budgets. As for state and local health departments, they have also lost the H1N1 funding that had done so much to sustain them through a difficult period. Moreover, PHEP funding dropped from \$970 million in FY2003 to \$689 million in FY2009.⁵⁰

⁴⁷ Centers for Disease Control and Prevention. "Funding Guidance and Technical Assistance to States." *CDC-PHPR-Funding Guidance and Technical Assistance to States*. Web. <Center for Disease Control and Prevention, "Funding Supporting Public Health Preparedness and Response." N.p., 21 Sept 2010. Web. 9 Jun 2011. .>.

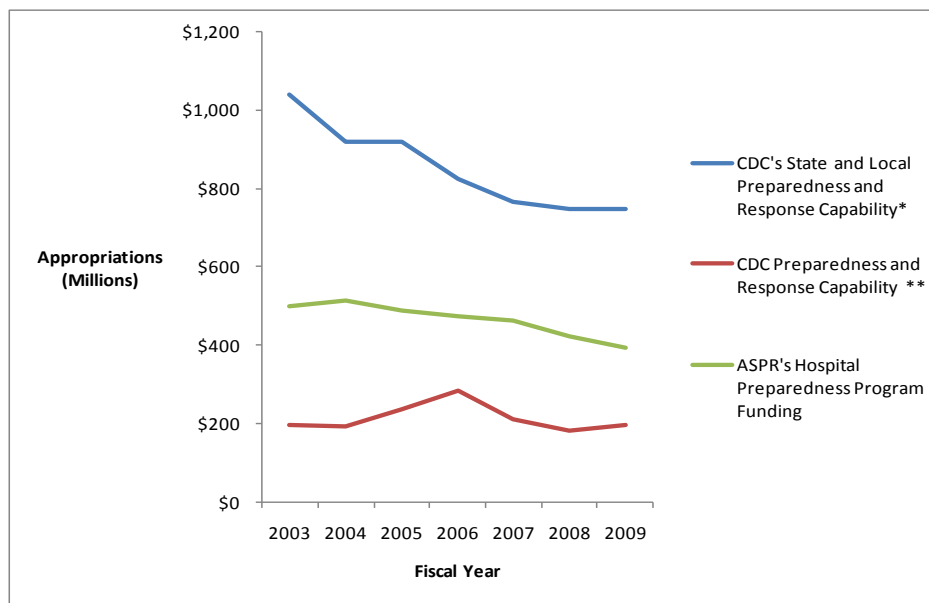
⁴⁸ U.S. Dept of Health and Human Services. "Hospital Preparedness Program." *Hospital Preparedness Program - PHE*. 9 May 2011. Web. <<http://www.phe.gov/preparedness/planning/hpp/pages/default.aspx>>.

⁴⁹ Federal Emergency Management Agency. "FEMA: FY 2011 Homeland Security Grant Program (HSGP)." *FEMA | Federal Emergency Management Agency*. 20 May 2011. Web. 09 June 2011. <<http://www.fema.gov/government/grant/hsgp/>>.

⁵⁰ Centers for Disease Control and Prevention. "Funding Guidance and Technical Assistance to States." *CDC-PHPR-Funding Guidance and Technical Assistance to States*. Web. <Center for Disease Control and Prevention, "Funding Supporting Public Health Preparedness and Response." N.p., 21 Sept 2010. Web. 9 Jun 2011. .>.

Figure 1 below illustrates the decline in the federal funding of state and local preparedness capabilities over the last decade:

Figure 1. Decline in Federal Funding, FY 2003-2009⁵¹



*Includes Public Health Emergency Preparedness (PHEP) cooperative agreement, Centers for Public Health Preparedness, Advanced Practice Centers (FY 2004-09), Health Alert Network (FY 2002-03), Cities Readiness Initiative, U.S. Postal Service Costs (FY 2004), All Other State and Local Capacity, and Smallpox Supplement (FY 2003)

**Includes Upgrading CDC Capacity, Anthrax, BioSense (FY2004-09), Quarantine (FY2004-09) and Real Time Lab Reporting (FY 2005-09)

3.1. State Public Health Funding

In 2011, the budgetary picture looks different. Approximately half of state health departments receive funding from the federal government.⁵² At the state level, 33 states and Washington, D.C. have reported budget cuts in public health from FY08-09 to FY09-10. In 2000, state and local public health spending was two and a half times the federal level of spending. During this time, state and local public health departments spent a combined average of \$44.29 per person.⁵³

In 2010, an estimated one quarter of state health departments reported a higher budget in comparison to FY2009, due to a one-time federal funding surge. Fifteen state health departments received one-time grants that composed 5-10% of their budget and 10 departments obtained one-time funding that made up 10% of their budget. In spite of this, state funding levels are predicted to remain below pre-recession

⁵¹ Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. *Public Health Preparedness: Strengthening the Nation's Emergency Response State by State*. Rep. Sept. 2010. Web. <http://www.bt.cdc.gov/publications/2010phprep/>; and

Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>

⁵² Association of State and Territorial Health Officials. "ASTHO Budget Cuts Impact Research Brief (2011) | State Public Health | ASTHO." Mar. 2011. Web. <<http://www.astho.org/Display/AssetDisplay.aspx?id=5827>>.

⁵³ Trust for America's Health. "Investing in America's Health - Trust for America's Health." *Trust for America's Health - Preventing Epidemics. Protecting People*. Mar. 2011. Web. 2011. <<http://healthyamericans.org/report/83/>>.

2008 levels based on the slow resurgence of the economy and expected decrease of ARRA funds in FY2012.⁵⁴

3.2. State and Local Emergency Preparedness Funding

According to a 2010 survey distributed across local health departments (LHD) nationally, LHD funding varies depending on the size of the population served. With populations under 25,000, the median per capita expenditures for preparedness activities was \$2.35, while LHDs serving populations of 500,000 or more have a median per capita expenditures of \$1.99.⁵⁵ In Dec 2008, approximately 27% of LHDs were functioning with lower budgets than in the previous year, and in 2011, this decline was expected to expand up to 47% of LHDs.⁵⁶

At the local level, LHD revenues come from various sources. Preparedness activities are funded through sources such as private foundations/grants and federal pass-throughs.⁵⁷ Pass-through funding is defined as funds that are given by the federal government directly to a local organization, such as the Assistance to Firefighters Grants. Pass-through funding requires states to apply for a grant; it is then delivered as a federal grant to local agencies, such as LHDs, when requested.⁵⁸

Local funds come from levies, property tax revenues, and sales tax. The recession has led to shrinking job and housing markets, leading a decline in the development of new businesses, which decreases fee revenue from services. Stable funding sources are necessary to provide steady public health services to communities.⁵⁹

⁵⁴ Association of State and Territorial Health Officials. "ASTHO Budget Cuts Impact Research Brief (2011) | State Public Health | ASTHO." Mar. 2011. Web. <<http://www.astho.org/Display/AssetDisplay.aspx?id=5827>>

⁵⁵ Shah, Gulzar, Jack Herrmann, Anne Drabczyk, Scott Fisher, and Carolyn Leep. *Local Public Health Emergency Preparedness: Situation of Funding, Types of Hazard Events Responded to and Involvement of Volunteers*. Proc. of 2011 Public Health Preparedness Summit, Atlanta. Print.

⁵⁶ National Association of City and County Health Officials, "Local Health Department Job Losses and Program Cut." N.p., 2010. Web. <<http://www.naccho.org/topics/infrastructure/lhdbudget/index.cfm>>.

⁵⁷ Shah, Gulzar, Jack Herrmann, Anne Drabczyk, Scott Fisher, and Carolyn Leep. *Local Public Health Emergency Preparedness: Situation of Funding, Types of Hazard Events Responded to and Involvement of Volunteers*. Proc. of 2011 Public Health Preparedness Summit, Atlanta. Print.

⁵⁸ Homeland Security Today. "2009 Guide to Grants—Pass-through vs. Direct Funding." *2009 Guide to Grants—Pass-through vs. Direct Funding*. 1 Feb. 2009. Web. <<http://www.hstoday.us/resources/hstoday-guide-to-grants/single-article/2009-guide-to-grants-pass-through-vs-direct-funding/36f60f58a34cdca14e0e023fdeb7dee4.html>>.

⁵⁹ National Association of City and County Health Officials, "NACCHO Survey of Local Health Department Budget Cuts and Workforce Reductions." N.p., Jan 2009. Web. <<http://www.naccho.org/advocacy/upload/2008-LHD-budget-cut-report.pdf>>.

4. ANALYTICAL FRAMEWORK

To support our assessment of state and local budget cuts and their implications for preparedness, the PRTM team developed an analytical framework consisting of eight elements of public health preparedness across the categories of Resources, Capabilities, and Past Experience:

Resources

1. **Workforce Size:** The number of public health employees at the state and local level.
2. **Public Health Laboratory Capacity and Capabilities:** The ability of state and local public health laboratories to conduct timely and accurate testing, and provide training to prepare for and respond to large-scale, all-hazards events.
3. **Planning, Exercises, and Training:** The capacity, in terms of financial resources and manpower, to conduct the planning, exercises, and training necessary to prepare for the full range of large-scale, all-hazards events.

Capabilities

4. **Incident Response Capacity:** The ability of state and local public health departments to respond quickly and robustly to a large-scale, all-hazards event with public health implications. This element encompasses emergency medical response, quarantining and isolation, rapid communications, and several other capabilities.
5. **Medical Surge Capacity:** The ability of local medical capabilities to rapidly increase treatment capacity to address the spike in medical needs caused by large-scale, all-hazards events.
6. **Biosurveillance:** The process of active data-gathering with appropriate analysis and interpretation of biosphere data that might relate to disease activity and threats to human or animal health – whether infectious, toxic, metabolic, or otherwise, and regardless of intentional or natural origin – in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity.⁶⁰
7. **Information Sharing and Emergency Communications:** Information sharing is the routine communication of information as well as issuing of public health alerts to the public in preparation for, and in response to, events or incidents of public health significance. Emergency communications is the ability to conduct multijurisdictional, multidisciplinary exchanges of health-related information and situational awareness data among state and local public health workers and first responders.

Past Experience

8. **2009 H1N1 Pandemic Influenza Response:** An analysis of how state and local health departments responded to the 2009 H1N1 pandemic influenza outbreak. Areas for analysis included stockpiling and distribution of influenza vaccines and antiviral treatments, influenza testing, and medical surge capacity.

⁶⁰ United States. White House. *Homeland Security Presidential Directive-21: Public Health and Medical Preparedness*. By President George W. Bush. 18 Oct. 2007. Web. <http://www.upmc-biosecurity.org/website/resources/govt_docs/public_health_prep/whitehouse/whitehouse_homeland_security_presidential_directive_hspd21.html>.

With this framework as a lens, the team began by surveying these components at the national level and drew the following observations:

Table 1. National-Level Observations by Element of Preparedness⁶¹

Category	Elements of Preparedness	Observations and Implications for Public Health Preparedness
Resources	Workforce Size	<ul style="list-style-type: none"> Approximately 23,000 jobs – equal to 15% of the local public health workforce – have been lost since January 2008 At the state and territorial level, 87% of health departments have experienced job losses since July 2008 The US has 50,000 fewer public health workers than it did just 20 years ago
	Public Health Laboratory Capacity and Capabilities	<ul style="list-style-type: none"> From FY 2003-08, funding steadily declined from roughly \$200M to \$70M Funding and staffing shortfalls are likely to degrade the capabilities of public health laboratories, making it difficult to implement new technologies and maintain existing capabilities
	Planning, Exercises, and Training	<ul style="list-style-type: none"> State and local health departments are low on the funding, human resources, and time necessary to train staff Budgetary pressures have affected public health planning efforts at the state and local level, albeit less severely than training Exercises have become more limited in scope, and less well attended
Capabilities	Incident Response Capacity	<ul style="list-style-type: none"> Incident response capacity appears to have weathered the tight fiscal climate better than many other components of preparedness The CDC tested whether pre-identified staff in each state were able to acknowledge notification of emergency exercises or incidents within the target time of 60 minutes at least twice during 2007-2008; 44 states and the District of Columbia were able to meet this target
	Medical Surge Capacity	<ul style="list-style-type: none"> A surge capacity gap, with shortfalls in the staff, equipment, and space necessary to address a massive influx of patients Two health departments reported strong medical surge capabilities in their local jurisdictions, crediting ASPR grants and work done by a regional health coordinator
	Biosurveillance	<ul style="list-style-type: none"> State and local biosurveillance capabilities characterized as “woefully inadequate,” due primarily to the lack of technological infrastructure and workforce Epidemiological research has been heavily affected by budget constraints; research is seen as expendable in the face of maintaining core non-preparedness public health programs
	Information Sharing and Emergency Communications	<ul style="list-style-type: none"> Budget cuts have hindered departments’ ability to communicate with the public, especially vulnerable and at-risk populations Emergency communications capabilities have been moderately reduced in this tight fiscal climate; communications equipment can be costly to purchase, maintain, and upgrade. Interoperable communications and redundant systems are at risk
Past Experience	2009 H1N1 Pandemic Influenza Response	<ul style="list-style-type: none"> State and local health departments performed well in the areas of biosurveillance, laboratory testing, public and practitioner education, medical countermeasure management, and the distribution and launch of a national vaccination campaign Concern that were another pandemic to occur in the near future, state and local health departments would be unable to mount the same level of response as they did in 2009

⁶¹ Based on interviews with health department officials, interviews with subject matter experts, and literature review; further details provided in Section 5.

5. IMPACT OF BUDGET CUTS TO KEY ELEMENTS OF PREPAREDNESS

PRTM assessed the impact of budget cuts on each of the key elements of public health preparedness outlined in the analytical framework. This assessment is informed by the document review and interviews with subject matter experts. This analysis forms the basis for the observations in Table 1.

5.1. Resources

Resources for public health preparedness include workforce size; laboratory capacity and capabilities; and planning, exercises, and training.

5.1.1. Workforce Size

Perhaps the most tangible impact of budget cuts has been on the state and local public health workforce. As of December 2010, roughly 23,000 jobs -- totaling 15 percent of the local public health workforce -- have been lost since January 2008.⁶² In 2008, more than half of local health departments had either laid off employees or lost them through attrition; most departments have been unable to replace them due to budget limitations.⁶³ At the state and territorial level, 87% of health departments have experienced job losses since July 2008.⁶⁴ Cuts to state and local budgets are exacerbating a longstanding downward trend in the state/local public health workforce. The US has 50,000 fewer public health workers than it did just 20 years ago.⁶⁵ Moreover, many small local health departments have cut costs by reducing staff hours or placing employees on temporary furlough, rather than laying off staff.⁶⁶

Beyond the obvious impacts, these cuts in staff levels have had more subtle effects. The staff shortage has prevented many local health departments from taking advantage of all available federal dollars. A decrease in staff hours may result in reduced local health department revenue from inspections, clinic fees, and reimbursable services. Moreover, these effects are felt more strongly in the aftermath of the recession; the need for public health services has increased as a result of job losses and foreclosures.⁶⁷ An increased need for public health services can strain the overall resources of health departments, which can then detract from preparedness efforts.

⁶² Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

⁶³ National Association of City and County Health Officials, "NACCHO Survey of Local Health Department Budget Cuts and Workforce Reductions." N.p., Jan 2009. Web. <<http://www.naccho.org/advocacy/upload/2008-LHD-budget-cut-report.pdf>>.

⁶⁴ Association of State and Territorial Health Officials. "ASTHO Budget Cuts Impact Research Brief (2011) | State Public Health | ASTHO." Mar. 2011. Web. <<http://www.astho.org/Display/AssetDisplay.aspx?id=5827>>.

⁶⁵ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

⁶⁶ National Association of City and County Health Officials, "NACCHO Survey of Local Health Department Budget Cuts and Workforce Reductions." N.p., Jan 2009. Web. <<http://www.naccho.org/advocacy/upload/2008-LHD-budget-cut-report.pdf>>.

⁶⁷ Ibid.

Future trends are poised to make a serious shortage even more acute. Approximately one-third of US public health workers will be eligible to retire in the next five years.⁶⁸ If the currently widespread practice of eliminating vacated positions persists, then workforce shortages will increase in severity. As funding for new positions and training continues to decrease, health departments are not developing a new generation of public health workers to fill this gap.

It is difficult to quantify the effect that these job cuts will have on institutional knowledge. With the looming retirement of a huge portion of the nation's state/local public health workforce, institutional knowledge will fade unless it is passed on to younger public health staff. However, the budget situation restricts new hiring and reduces training opportunities, which could constrain the transfer of institutional knowledge. Even if the fiscal situation improves in 10-15 years and the public health workforce returns to previous levels, they may be lacking the same degree of institutional knowledge that resides in today's workforce. On the other hand, one health department reported that recent budget cuts had not had a tangible effect on their department's institutional knowledge.⁶⁹ This suggests that if state/local public health leadership makes the preservation of institutional knowledge a priority, then it can be transferred, even in a climate of budget cuts and workforce reductions.

This potential loss in institutional knowledge is symptomatic of a larger theme: developing and maintaining robust public health capabilities, in terms of human capital and public health infrastructure, requires sustained and adequate funding levels.⁷⁰ Sharp swings in public health funding, as seen before and after the 2009 H1N1 pandemic, hinder this sustained approach.

5.1.2. Public Health Laboratory Capacity and Capabilities

Public health laboratories are an important part of state and local public health capabilities. Their testing and diagnostic capabilities represent a major component of emergency response. The ability to quickly detect and determine the extent of infectious disease outbreaks and incidents based on biological threats is critical to mitigating the impact of these events. Given their reliance on potentially costly technology and skilled personnel, state and local public health laboratory capacity can be a target of funding cuts.

Of the \$600 million for pandemic preparedness that was distributed to states in FY 2006-2007, public health laboratories received little funding.⁷¹ In the midst of the 2009 H1N1 pandemic, an emergency supplemental funding bill was signed in June 2009; once again, public health laboratories were largely left out. Public health laboratories were on the front lines of the H1N1 outbreak, utilizing diagnostic capabilities that are found in few other laboratories. Health departments report that public health laboratory capacity is one area that has suffered under recent budget constraints.⁷²

The Association of Public Health Laboratories (APHL) has identified a number of challenges currently faced by state public health laboratories.⁷³ Funding for laboratory preparedness continues to decline; APHL characterizes it as inadequate to sustain preparedness and response capabilities. Public health emergency preparedness funding for laboratory activities has varied widely over the past decade. In

⁶⁸ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

⁶⁹ Interview with health department official.

⁷⁰ Multiple interviews with health department officials and subject matter experts.

⁷¹ Ibid.

⁷² Multiple interviews with health department officials and subject matter experts.

⁷³ Ibid.

FY2001, funding for these activities hovered around \$20 million. From FY2002-03, this funding shot up to almost \$200 million. From FY2003-08, funding steadily declined to roughly \$70 million. These significant oscillations in funding are not conducive to the sustained development of laboratory capabilities or the training and retention of qualified personnel.

The public health laboratory workforce is not immune to the same trends affecting the public health workforce overall. APHL argues: —Resources to recruit, hire, retain, and train a skilled and dedicated workforce are severely lacking.”⁷⁴ In the fall of 2010, APHL conducted a survey of state public health laboratories and their staffing levels. Three states and the District of Columbia reported not having sufficient manpower to work five, 12-hour days for six to eight weeks in response to an infectious disease outbreak. This lack of surge capacity is particularly troubling for the District of Columbia, which is thought to be one of the top potential bioterrorism targets in the country. Although this staffing shortage is currently limited to just these four jurisdictions, current trends could lead it to spread to other states.

The confluence of funding and staffing shortfalls is likely to degrade the capabilities of public health laboratories. This trend makes it difficult to implement new technologies and maintain existing capabilities.⁷⁵ Moreover, like the broader public health workforce, laboratory staff are less able to attend training, national meetings, and conferences.

5.1.3. Planning, Exercises, and Training

Although planning, exercises, and training represent different preparedness capabilities, there is a common thread: these activities take place pre-event and play an important role in preparing the public health workforce to respond effectively to events. Public health plans provide the “playbook” for state and local health departments; comprehensive plans are key enablers of an effective response. Exercises provide the opportunity for public health workers to test out their playbooks before an actual event. From table-top exercises to more realistic event simulations, exercises provide a chance to analyze the strengths, weaknesses, and areas for improvement in public health response. Finally, training provides public health workers with the requisite skills and knowledge to perform at an optimal level.

All of these activities have been affected by tightening budgets, albeit in different ways. Of these three areas, training has been most severely impacted by the current fiscal environment; it has been one of the first areas to be de-prioritized during budget cuts.⁷⁶ In general, state and local health departments are running low on funding, human resources, and time necessary to train staff. Even when funding is available for training, many employees cannot attend because their departments cannot support back-up staff or overtime costs to cover their normal shifts. Due to the extra cost, training opportunities that require travel are particularly vulnerable. Efforts to standardize and align training throughout states, such as by integrating core curricula and standardizing core competencies, have also suffered.

Budgetary pressures have affected public health planning efforts at the state and local level, although less severely than training. Planning is still carried out fairly well, which may be due to an increased urgency

⁷⁴ Association of Public Health Laboratories. *Public Health Laboratories: Diminishing Resources in an Era of Evolving Threats*. Rep. June 2010. Web.

<<http://www.aphl.org/aphlprograms/phpr/ahr/Documents/DiminishingResourcesEvolvingThreats.pdf>>.

⁷⁵ Ibid.

⁷⁶ Multiple interviews with health department officials and subject matter experts.

to effectively leverage limited resources.⁷⁷ On the other hand, budget constraints have led to resource gaps that may hinder efforts to execute these plans.⁷⁸ Even the most effective plans are rendered useless without sufficient resources to execute them.

In terms of the impact of budget cuts, public health exercises fall somewhere between training and planning. Unlike training, there has not been a great drop-off in the number of exercises being conducted at the state and local level. However, as budgets have become leaner, exercises have become more limited in scope.⁷⁹ Most notably, there has been a sharp decrease in the number of exercises that are conducted by external consultants.⁸⁰ As a general rule, this has led to a decrease in the scope and sophistication of these exercises, as many state and local public health departments lack the resident expertise and staffing capacity to dedicate to more complex exercises.⁸¹ Additionally, lower funding has made it more difficult to effectively leverage these exercises.⁸² For example, one health department conducted a successful exercise, but it lacked the resources to then follow up on any of the lessons learned.⁸³

Funding constraints have also caused a decrease in the number and type of participants in public health exercises. With less money available to fund travel, some exercises that were once conducted jointly at the state level are now carried out individually, at the county level. State and local public health departments have fewer staff available to attend these exercises, and their participation can be more limited as a result. The same dynamic is at work for partner departments – such as fire, emergency medical services, and police – that public health departments often work with during these exercises. With partner departments sending fewer personnel, the exercises cannot simulate the interagency collaboration that is needed during an actual, large-scale event.

Planning, exercises, and training are important tools for maximizing human capital. These tools are most effective when supported by consistent and sufficient levels of funding. For instance, new plans must be drawn up on a semi-annual basis to address new and evolving threats. Even plans for longstanding threats must be maintained and updated on a fairly regular basis. Large, temporary infusions of funding followed by leaner years are suboptimal for getting the most utility from public health plans. In this respect, planning, exercises, and training are similar to the public health workforce itself: developing and maintaining capabilities requires sustained and adequate funding levels.

5.2. Capabilities

Capabilities required for public health preparedness include incident response capacity, medical surge capacity, biosurveillance, as well as information sharing and emergency communications.

⁷⁷ Interview with subject matter expert.

⁷⁸ Multiple interviews with health department officials and subject matter experts.

⁷⁹ Multiple interviews with health department officials and subject matter experts.

⁸⁰ Multiple interviews with health department officials and subject matter experts.

⁸¹ Multiple interviews with health department officials and subject matter experts.

⁸² Multiple interviews with health department officials and subject matter experts.

⁸³ Interview with health department official.

5.2.1. Incident Response Capacity

Incident response capacity is the ability of state and local public health departments to respond rapidly and effectively to a large-scale event. This element encompasses emergency medical response, quarantining and isolation, rapid communications, and several other capabilities. For many events with public health implications, a quick response is vital to minimizing the loss of life and social disruption. A rapid response is a critical component in dealing any large-scale threat to health security. Without quick and effective action, containment and response strategies can be hindered or even fail, which puts the public's health at risk. For example, individuals exposed to a contagious and highly virulent bioterrorism threat agent or infectious disease would need to be quickly quarantined. At the state and local level, incident response capacity is a highly important capability. By their very nature, state and local health departments are usually closer to public health events, and they are often on the scene before federal capabilities.

Incident response capacity appears to have weathered the tight fiscal climate better than many other elements of preparedness. In a September 2010 report, the CDC tested a useful proxy measure for this capability. The CDC tested whether pre-identified staff in each state were able to acknowledge notification of emergency exercises or incidents within the target time of 60 minutes at least twice during 2007-2008. The CDC found that 44 states and the District of Columbia were able to meet this target. While this is a worthwhile proxy, it is important to note that this assessment was carried out in 2007-2008. The recession began in December 2007, and became more severe in September 2008. No more recent data was available on this proxy measure; it is likely that state and local health departments did not yet feel the full force of declining budgets in 2007-2008. The perishability of the data could be masking an even more significant impact.

However, health departments report that incident response capacity has not been strongly affected by budget cuts.⁸⁴ One local health department's capability in this area was "not seriously reduced," while another health department reported "no tangible data" to suggest a decrease in their health department's incident response capacity.

One health department has experienced increased scrutiny of costs associated with incident response, such as an increase in the documentation required to cover travel to a specific incident.⁸⁵ While the increase in documentation and red tape caused some frustration, it did not appear to seriously hamper the incident response capacity.

5.2.2. Medical Surge Capacity

Medical surge capacity is a critical component of the public health response to any large-scale event with public health implications. In the event of a catastrophic bioterrorism attack, large-scale natural disaster or a severe influenza pandemic, state/local public health authorities would need to rapidly increase hospitalization, treatment, and mass triage capabilities. Without this rapid scaling up of capacity, the loss of life, social order, and confidence in government could be considerably more severe.

⁸⁴ Multiple interviews with health department officials.

⁸⁵ Interview with health department official.

There is a surge capacity gap, with shortfalls in the staff, equipment, and space necessary to address a massive influx of patients at hospitals and health centers.⁸⁶ State public health departments appear particularly vulnerable to any threat that requires a rapid and sustained surge in effort.⁸⁷ Other issues include crisis care standards, alternative care sites, and ensuring adequate liability protection for volunteers and clinicians.⁸⁸

State public health departments are particularly vulnerable to any threat that requires an acute and sustained surge in effort.⁸⁹ Specifically, there are weaknesses in mass medical care, fatality management, and diagnostic capabilities.⁹⁰ Local jurisdictions are generally very far behind in creating a robust medical surge capacity.⁹¹ One particular issue was a frequent lack of consensus between the private health care sector and the state/local public health department on how they would partner to provide adequate surge capacity.⁹² However, such an issue requires a political solution, and cannot be addressed merely through changes in funding.

In contrast to these more pessimistic assessments, two health departments reported capable medical surge capabilities in their local jurisdictions. One health department reported that grants from the HPP have provided consistent funding to support surge capacity at their local hospitals.⁹³ Furthermore, another health department highlighted substantial improvements in medical surge capacity in their jurisdiction over the past three years.⁹⁴ This department credited the efforts of the regional health coordinator, who had made this area a clear priority and made significant progress.

In terms of funding, medical surge capacity is perhaps more susceptible to the “out of sight, out of mind” conundrum than any of the other elements of preparedness.⁹⁵ In an era of economic hardship and budgetary tightness, the demands placed on the social and welfare systems of state and local governments increase, just as the fiscal resources available decrease. State and local officials face difficult trade-offs when deciding between funding priorities. When faced with tangible human needs, it can be difficult for state and local authorities to devote money to preparing for low probability, high consequence events by enhancing surge capacity. However, it is important to note that medical surge capacity is most important during these types of events. Surge capacity may not be missed for most of the year, but during large-scale events, it is a critical component of response.

⁸⁶ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

⁸⁷ Interview with subject matter expert.

⁸⁸ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

⁸⁹ Interview with subject matter expert.

⁹⁰ Interview with subject matter expert.

⁹¹ Interview with subject matter expert.

⁹² Interview with subject matter expert.

⁹³ Interview with health department official.

⁹⁴ Interview with health department official.

⁹⁵ Interview with subject matter expert.

5.2.3. Biosurveillance

Homeland Security Presidential Directive 21 (HSPD-21) defines biosurveillance as:

The process of active data-gathering with appropriate analysis and interpretation of biosphere data that might relate to disease activity and threats to human or animal health – whether infectious, toxic, metabolic, or otherwise, and regardless of intentional or natural origin – in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity.⁹⁶

Although much of the US biosurveillance capability resides in federal departments, state and local health departments have an important role to play. Given their more local presence, state and local health departments are critical for data collection, along with a somewhat limited analytical role. These roles need to mesh with federal responsibilities for managing the oversight and operations for biodetection programs, such as Biowatch, and much of the data analysis and interpretation for large-scale events.

State and local biosurveillance capabilities are characterized as “woefully inadequate,” due primarily to the lack of technological infrastructure and associated workforce.⁹⁷ These two critical components are both greatly affected by budget cuts. Biosurveillance data is widely available, but many health departments lack the skilled staff and the technology to integrate and analyze this data. For example, one local health department lacks any backup personnel for its syndromic surveillance system, which threatens the sustainability of the system’s operation. This health department lacks the funding to hire another epidemiologist with the expertise to fill this need.

Increased funding during the H1N1 pandemic allowed many health departments to take great strides in acquiring technological infrastructure. Many health departments moved from fax machines to computers and email during this increased funding period.⁹⁸ However, the technology is still far from up-to-date. Conducting biosurveillance can become more cost effective as technology increases. Even if the technology is in place, biosurveillance still requires a workforce to integrate, analyze and coordinate data. Staff reductions translate into a diminished ability to focus on biosurveillance and collaborate with partners. There is a need for federal, state and local health departments and private health care providers to all work together to track information surrounding health threats and coordinate a joint response.⁹⁹ This collaboration is essential to successful biosurveillance efforts.

Epidemiological research, which goes hand-in-hand with biosurveillance, has been heavily affected by budget constraints; this research is seen as expendable in the face of maintaining core non-public health preparedness programs.¹⁰⁰ One health department eliminated an epidemiologist position for the evaluation of advanced surveillance systems, which has reduced their ability to conduct epidemiological research.¹⁰¹ Anecdotes such as these appear common in state and local health

⁹⁶ United States. White House. *Homeland Security Presidential Directive-21: Public Health and Medical Preparedness*. By President George W. Bush. 18 Oct. 2007. Web. <http://www.upmc-biosecurity.org/website/resources/govt_docs/public_health_prep/whitehouse/whitehouse_homeland_security_presidential_directive_hspd21.html>.

⁹⁷ Interview with subject matter expert.

⁹⁸ Interview with health department official.

⁹⁹ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

¹⁰⁰ Interview with health department official.

¹⁰¹ Interview with health department official.

departments throughout the country. These cuts can rob state and local health departments of the ability to be proactive in addressing public health threats, forcing them into a more reactive stance.

5.2.4. Information Sharing and Emergency Communications

This element of preparedness encompasses two different aspects of communications conducted by state and local public health departments. First, information sharing is the routine communication of information as well as issuing of public health alerts to the public in preparation for, and in response to, events or incidents of public health significance. Second, emergency communications represent the ability to conduct multijurisdictional, multidisciplinary exchanges of health-related information and situational awareness data among state and local public health workers, first responders, and emergency managers. Both aspects of communications are widely seen as falling short: over the past 15 years, communication has been frequently cited as a primary problem in after-action reports of public health drills and exercises.¹⁰²

Information sharing capabilities have been moderately reduced by budgetary constraints.¹⁰³ One local health department stated that the budget for both conducting risk communications and hiring communications staff has been cut.¹⁰⁴ This has hindered the department's ability to communicate with the public, especially with vulnerable and at-risk populations. One health department formerly relied on a printing company to produce the press releases and printed materials for a large-scale event, but they no longer have the funding to retain this company's services.¹⁰⁵ Information sharing with the public will likely remain a difficulty regardless of resources; the public tends to pay little attention to public health communications unless in the midst of a large-scale event.¹⁰⁶

There are some bright spots in this area. Public health departments are now better able to leverage lower cost means of communicating with the public.¹⁰⁷ Examples include harnessing electronic social media and utilizing partnerships with community leaders. However, funding shortfalls could impede health departments from developing partnerships with community leaders.¹⁰⁸

Emergency communications capabilities have also been moderately reduced in this tight fiscal climate.¹⁰⁹ This field depends largely on communications equipment, which can be costly to purchase, maintain, and upgrade.¹¹⁰ One health department's information technology budget for emergency communications was recently cut by 30%, which puts their communications capabilities at risk.¹¹¹ This department had put a great deal of effort into establishing interoperable communications and highly redundant systems, but these communications capabilities are now at risk. In terms of human capital, staffing reductions have also adversely affected emergency communications. One health department reports lacking the staffing depth to ensure a robust emergency communications capacity.¹¹²

¹⁰² Interview with subject matter expert.

¹⁰³ Multiple interviews with health department officials and subject matter experts.

¹⁰⁴ Interview with health department official.

¹⁰⁵ Interview with health department official.

¹⁰⁶ Interview with subject matter expert.

¹⁰⁷ Interview with subject matter expert.

¹⁰⁸ Interview with subject matter expert.

¹⁰⁹ Multiple interviews with health department officials and subject matter experts.

¹¹⁰ Interview with subject matter expert.

¹¹¹ Interview with health department official.

¹¹² Interview with health department official.

Emergency communications may be less vulnerable to budget cuts because new technology could provide for cost-savings, thus making it easier to absorb the impact of budget cuts.¹¹³ One health department reports that it has not necessarily seen a fall in its emergency communications capability, but that costs associated with this area have come under greater scrutiny and require more extensive justification.¹¹⁴

5.3. Past Experience

Given the nature of the incident, experience with the 2009 H1N1 pandemic influenza may be compared across most state and local health departments.

5.3.1. 2009 H1N1 Pandemic Influenza Response

The 2009 H1N1 pandemic influenza outbreak was a recent, large-scale event with public health implications that affected the entire nation. It provides an ideal empirical lens through which to assess the response of state and local health departments throughout the country. Most health officials and subject matter experts assess that state and local health departments performed well during the response to the 2009 H1N1 pandemic.¹¹⁵ However, recent budget cuts, in a span of only two years, have already degraded capabilities to the extent that another pandemic in 2012 could be met with a less robust response.¹¹⁶

The scale of the H1N1 response was unprecedented.¹¹⁷ State and local health departments performed well in the areas of biosurveillance, laboratory testing, public and practitioner education, medical countermeasure management, and the distribution and launch of a national vaccination campaign.¹¹⁸ One subject matter expert graded the state response as “very good to excellent.”¹¹⁹ Public health departments were extremely effective in harnessing partnerships with the private sector, faith-based communities, and others to improve their pandemic response.¹²⁰ One health department maintained close relationships with the media, which was a key enabler to effective information sharing with the public.¹²¹ However, concern was expressed that were another pandemic to occur in the near future, state and local health departments would be unable to mount the same level of response as they did in 2009 due to reduced capabilities caused by budget cuts.¹²²

The H1N1 response leveraged foundational work over the preceding decade that helped take preparedness to the next level.¹²³ Although the H1N1 response was also supported by emergency supplemental funding, it is clear that without the long-term effort to enhance pandemic response

¹¹³ Interview with subject matter expert.

¹¹⁴ Interview with health department official.

¹¹⁵ Multiple interviews with health department officials and subject matter experts.

¹¹⁶ Multiple interviews with health department officials and subject matter experts.

¹¹⁷ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

¹¹⁸ Ibid.

¹¹⁹ Interview with subject matter expert.

¹²⁰ Multiple interviews with health department officials.

¹²¹ Interview with health department official.

¹²² Multiple interviews with health department officials and subject matter experts.

¹²³ Ibid.

infrastructure and capabilities, the response would have been less robust. The CDC provides further detail on this long-term foundational funding:

Recognizing the need to prepare for a possible influenza pandemic, Congress appropriated two other sources of funding specifically for pandemic influenza preparedness activities. Beginning in 2005 and continuing through 2008, CDC awarded approximately \$524 million in Pandemic Influenza Supplement funds to the 62 PHEP-funded states, localities, and U.S. insular areas for program operations to prepare for and respond to an influenza pandemic.¹²⁴

This long-term funding had tangible results. For example, in 2003, only 13 states had developed public health plans focused on pandemic influenza. By early 2009, before the H1N1 outbreak, all 50 states and the District of Columbia had developed such plans.¹²⁵

As previously noted, emergency supplemental funding also played a major role in enabling a robust response to H1N1. Congress provided funding support through the, –2009 Supplemental Appropriations Act 28 for the Public Health and Social Services Emergency Fund to prepare for and respond to an influenza pandemic.¹²⁶ Through this fund, the CDC administered roughly \$1.4 billion through PHER grants, which directly supported the state and local public health response to H1N1. These funds were utilized to assess response capabilities, and address gaps in the following areas: vaccination, antiviral dispensing, laboratory capacity, epidemiological research, and biosurveillance.

However, state and local health departments were challenged by several aspects of this relatively mild pandemic. Although every state had laboratories with active pandemic response plans, many were operating on a reduced staffing basis.¹²⁷ The CDC cites two additional challenges: obtaining approved testing supplies and equipment, and training public health staff on new testing protocols.

There is concern that pandemic influenza preparedness will suffer from the same highly variable funding cycle seen in other preparedness efforts.¹²⁸ Congress infused the nation's public health system with an estimated \$1.5 billion during the H1N1 pandemic.¹²⁹ Large, one-time infusions such as this are of limited utility; it is more effective to have sustained, robust funding that can be usefully incorporated into the public health system. The CDC highlighted the same dynamic occurring in public health laboratories throughout the country. The CDC argues:

¹²⁴ Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. *Public Health Preparedness: Strengthening the Nation's Emergency Response State by State*. Rep. Sept. 2010. Web. <<http://www.bt.cdc.gov/publications/2010phprep/>>

¹²⁵ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

¹²⁶ Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. *Public Health Preparedness: Strengthening the Nation's Emergency Response State by State*. Rep. Sept. 2010. Web. <<http://www.bt.cdc.gov/publications/2010phprep/>>

¹²⁷ Ibid.

¹²⁸ Multiple interviews with health department officials and subject matter experts.

¹²⁹ Interview with subject matter expert.

While public health staff across the nation met these challenges by working long hours for several months, the response placed increased and unsustainable strain on a system already weakened by workforce shortages. Preparing adequately for future public health responses requires predictable and adequate long-term funding to improve infrastructure, staffing, and training in public health laboratories.¹³⁰

There is concern that were another pandemic to occur in the near future, state and local health departments would be unable to mount the same level of response as they did in 2009.¹³¹ Recent cuts have diminished the state and local response capabilities that performed well during H1N1.¹³² Cuts in staffing capacity are a potential impediment to responding effectively to a future pandemic. Moreover, it is important to note that H1N1 was a relatively mild pandemic. A more severe pandemic would likely have provided a much greater strain on their departments in 2009, let alone current capabilities that have been degraded by recent funding cuts.¹³³

¹³⁰ Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. *Public Health Preparedness: Strengthening the Nation's Emergency Response State by State*. Rep. Sept. 2010. Web. <<http://www.bt.cdc.gov/publications/2010phprep/>>

¹³¹ Multiple interviews with health department officials and subject matter experts.

¹³² Multiple interviews with health department officials and subject matter experts.

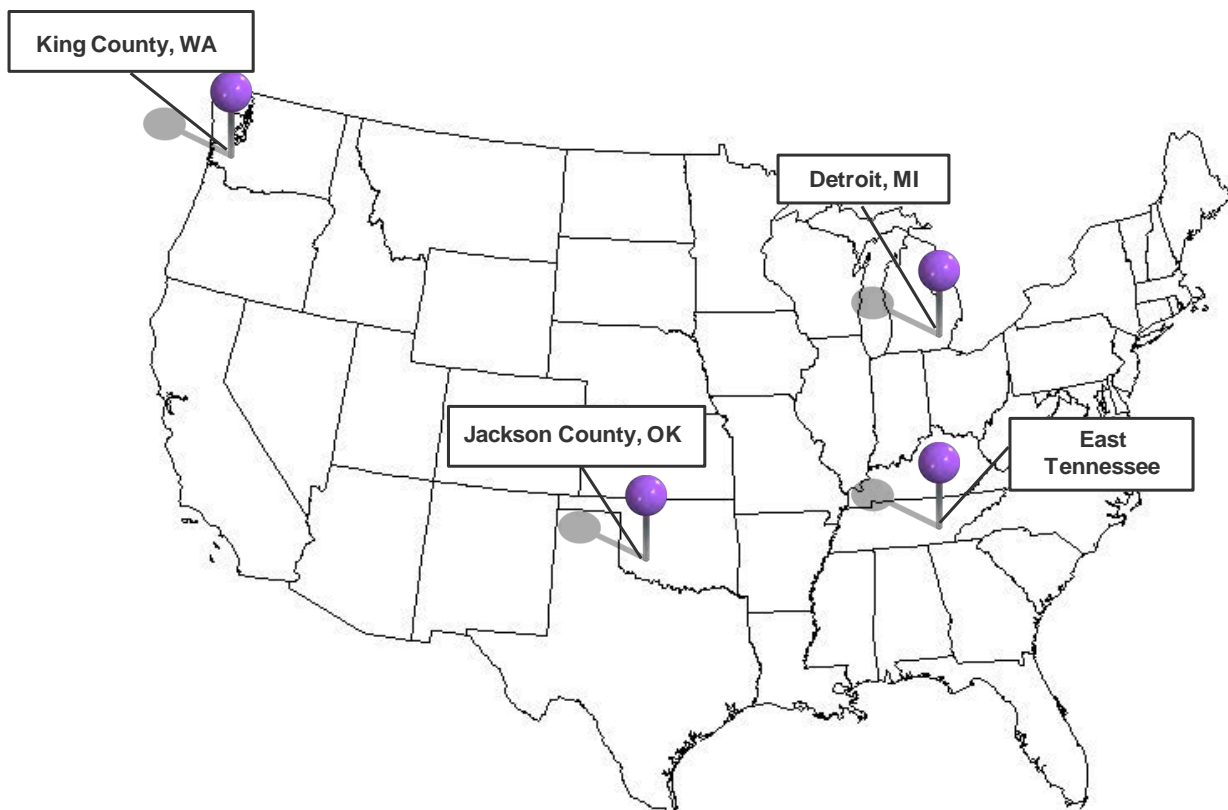
¹³³ Multiple interviews with health department officials and subject matter experts.

6. CASE STUDIES

To understand how these budget cuts are affecting real communities and how their impacts may vary, this study included an examination of four case studies, including two rural and two urban, shown in Figure 2 below:

Rural Cases	Urban Cases
<ul style="list-style-type: none"> • East Tennessee Regional Office 	<ul style="list-style-type: none"> • King County, Washington
<ul style="list-style-type: none"> • Jackson County, Oklahoma 	<ul style="list-style-type: none"> • Detroit, Michigan

Figure 2. Map of Case Studies



6.1. East Tennessee

The East Tennessee Regional Health Office (ETRO) serves approximately 600,000 people in 15 counties, ranging in population from 18,000 to 130,000. Changing budget levels in the Eastern Tennessee region have had a major impact on emergency preparedness and response capabilities. The emergency preparedness program relies completely on federal funds.¹³⁴

Biosurveillance and the Workforce: In 2002, ETRO experienced a surge in funding for development of a biosurveillance infrastructure. Since then, dwindling funds over the last few years have degraded biosurveillance capabilities. Funding for technical epidemiological research capacity and syndromic surveillance systems have declined. In addition, ETRO recently lost most of their environmental epidemiologist staff due to budget cuts. ETRO predicts that in the future, the department may lose administrative staff and other critical members, such as its bioterrorism nurse consultant. ETRO has taken steps to mitigate the situation by utilizing staff from other departments to assist with emergency preparedness, especially for incident response capacity. Finally, state-wide training activities have been curtailed with recent budget cuts. ETRO performs regional training exercises in lieu of state-wide training, but this impedes the alignment of public health plans among Tennessee's regional health offices.¹³⁵

Emergency Preparedness Infrastructure: To prepare for a medical surge during a disaster, ETRO has a regional hospital coordinator on staff to meet with hospitals on a monthly basis and to create plans for the sharing of equipment and personnel when necessary. ETRO has successfully expanded their medical surge capabilities over the last three years. Lastly, ETRO's capability to share information with the public during a health emergency remains intact, although there is less funding available to regularly test the emergency communications system. Other challenges faced by ETRO include the elimination of their videoconferencing capabilities and a loss of network technical specialists due to a lack of funding.¹³⁶

During the 2009 H1N1 flu pandemic, Tennessee demonstrated its capacity to respond to a health event; the response was aided by a large, one-time increase in federal funding. Moreover, the state health department utilized resources that were not funded by preparedness grants and relied on expertise outside of preparedness programs. Tennessee's health departments were characterized as "pioneering" in their efforts to expand capacity through partnerships with the private sector and other governmental departments.¹³⁷

Preparedness Planning: Medical and incident response capacities are some of the critical components of emergency preparedness. It is impossible to effectively treat mass populations without planning, practicing, and exercising preparedness plans. The Tennessee Department of Health has all-hazards preparedness plans that have helped the local health departments to deal with threats. During the H1N1 pandemic, one of Memphis' children's hospitals leveraged past training and exercises to set up tents in their parking lots to expand treatment and vaccination coverage.¹³⁸

¹³⁴ Interview with health department official.

¹³⁵ Interview with health department official.

¹³⁶ Interview with health department official.

¹³⁷ Interview with health department official.

¹³⁸ Interview with health department official.

6.2. Jackson County, Oklahoma

Approximately 10% of Jackson County Health Department funding comes from the state budget, while the remainder of the funding comes from the federal level. Some of the biggest threats Oklahoma faces are natural disasters, but the prioritization of threats varies regionally. For example, southwest Oklahoma prepares differently than northeast Oklahoma based on each region's vulnerabilities. The northern and eastern regions are at risk for tornados, while the southwest region of the state is at greater risk for drought and wildfires.¹³⁹

Workforce Capabilities: In local health departments throughout Oklahoma, preparedness programs have thus far been largely immune from staff reductions. Preparedness is federally funded and this funding has remained relatively stable; Jackson County has lost a minimal number of preparedness personnel. In fact, the department has actually added 15 preparedness staff to its department over the past year. However, local officials anticipate an uncertain future with probable cuts occurring over the next 6 to 12 months. There is concern that a significant amount of institutional knowledge could be lost as a result of staff reductions.¹⁴⁰

Jackson County's health department has been able to operate through Medical Emergency Response Centers (MERCs), which are hospital-focused emergency operations centers that function for disaster-relief. Oklahoma's health departments collaborate with MERCs to provide mass triage, hospitalization, and treatment. Currently, there is one MERC facility in the Jackson County region.¹⁴¹

Training Efforts: In April 2011, Oklahoma participated in a state-wide exercise for mass vaccinations in preparation of a medical emergency or natural disaster. As the first state in the country to partake in this type of exercise, Oklahoma successfully created 35 mock warehouses and performed mock immunization prophylaxis strategies (MIPS) that were given by the CDC. Due to budget restrictions, there was a lack of widespread participation from partner agencies such as hospitals, fire departments, and law enforcement.¹⁴²

In addition, through the Oklahoma Homeland Security department, local health departments receive training but at the cost of local jurisdictions. With the recent decline in funds, Jackson County could potentially experience hurdles in conducting training over the next few years.¹⁴³

6.3. King County, Washington

In contrast to rural settings, health departments in metropolitan areas are experiencing different challenges as a result of financial restrictions. In King County, WA, emergency preparedness funding comes from grants and federal funding. The economic recession has contributed to a decline in funding towards emergency preparedness and response programs. Since 2002, King County has experienced a 45% decrease in federal emergency preparedness funds. King County health officials have determined that

¹³⁹ Interview with health department official.

¹⁴⁰ Interview with health department official.

¹⁴¹ Interview with health department official.

¹⁴² Interview with health department official.

¹⁴³ Interview with health department official.

natural disasters are one of the biggest threats to King County, based on its proximity to the ocean and an earthquake zone.¹⁴⁴

Impact of Staff Layoffs: Like many other local health departments across the country, King County's health department has had to make layoffs across programs. Furthermore, there is less clinical staff to respond and provide their expertise when it is required. King County has resorted to relying on local organizations to sustain response efforts. In addition to the layoffs, the aging workforce of the baby boomer generation is resulting in the natural attrition and the loss of institutional knowledge. Finally, with staffing cuts on the horizon and the lack of a training budget, conducting frequent training exercises and working with external partners, such as fire and police departments, have become a challenge.¹⁴⁵

Syndromic Surveillance Programs: Over the last several years, biosurveillance funding has decreased by 83%. King County Department of Public Health faces a decreased capacity for case and outbreak investigations because of reductions in staff. In addition, backup personnel do not exist for syndromic surveillance, which threatens the sustainability of current operations. Finally, evaluation and research capabilities have experienced an impact from the loss of personnel. Specifically, King County has had to lay off an epidemiologist that performs evaluation of advanced surveillance systems.¹⁴⁶

2009 H1N1 Pandemic Flu Experience: During the 2009 H1N1 pandemic, the King County Department of Public Health functioned well, and collaborated effectively with others in the local community. Leveraging years of training and preparedness exercises, King County was able to respond effectively during the H1N1 pandemic. In addition, the department had additional funds to bring in temporary epidemiological staff, which proved to be greatly beneficial. Moreover, the relationships built with external stakeholders helped with delivering vaccines to the community. Lastly, one of the most well developed areas of the response efforts during H1N1 Pandemic Flu was the communication system. For example, King County was able to respond to 24,000 public queries through its hotline during the pandemic.¹⁴⁷

Future of Emergency Preparedness: Despite King County Department of Public Health's success during the H1N1 crisis, health officials are worried that with recent budget cuts, they may no longer be able to respond as effectively to such an event. Health officials in King County forecast that the additional loss of key members, including individuals responsible for coordinating operations, will hinder response efforts. Decreased funding also means less equipment for hospital preparedness, evacuations, triage facilities, and nursing homes.¹⁴⁸

¹⁴⁴ Interview with health department official.

¹⁴⁵ Interview with health department official.

¹⁴⁶ Interview with health department official.

¹⁴⁷ Interview with health department official.

¹⁴⁸ Interview with health department official.

6.4. Detroit, Michigan

Over the last few years, Detroit, Michigan, has faced a severe financial crisis. The decline of the automobile industry has led to a drastic reduction in population. The city lost 25% of its population from 2000 to 2010.¹⁴⁹ The Department of Health & Wellness Promotion in Detroit is continuing to experience cuts, with the budget declining from \$83.6 million to \$75.3 million, and a deficit of \$155 million.¹⁵⁰ As a consequence, the department will continue to receive smaller federal emergency preparedness funds because the proportion of funds allocated to a city is based on the size of its population.¹⁵¹

Simultaneously, the state of Michigan has experienced extreme budget cuts that have threatened emergency preparedness offices. Over 75% of the Michigan Department of Community Health's funding comes from federal funding. However, every dollar spent on emergency preparedness comes from federal money.¹⁵²

Biosurveillance: The erosion of biosurveillance and epidemiological research has influenced the ability of Detroit to perform adequately in these areas. Detroit's health officials are concerned as to whether they will be able to respond to disease outbreaks or natural disasters without staff to perform investigations on diseases and epidemics.¹⁵³ Some regions in the Michigan area are also functioning without epidemiologists, and additional budget cuts will threaten their existing epidemiological capabilities.¹⁵⁴

Workforce Capabilities: The significant budget cut has impacted Detroit's Department of Health & Wellness Promotion workforce. The department is continuing to see the loss of the workforce across the entire department, including in the emergency preparedness office.¹⁵⁵ In addition, the Michigan Department of Community Health has recently lost a quarter of its emergency preparedness staff and will continue to see layoffs in the coming year. Various factors have contributed to severe cutbacks in staffing, including funding. To prevent the loss of institutional knowledge in the emergency preparedness program, there has been an emphasis on cross-training, which requires employees to be trained in the duties of other employees. Overall,

¹⁴⁹ Christoff, Chris. "Michigan Senate Approves Detroit Population, Tax Bills | Detroit Free Press | Freep.com." *Detroit Free Press*. 7 June 2011. Web. <<http://www.freep.com/article/20110607/NEWS01/110607024/Michigan-Senate-approves-Detroit-population-tax-bills>>

¹⁵⁰ Erb, Robin. "Wayne Co. and Detroit Could Merge Health Departments | Detroit Free Press | Freep.com." *Detroit Free Press | Detroit News, Sports, Community, Entertainment, and Classifieds. Serving Detroit, Michigan | Freep.com*. 16 May 2011. Web. 09 June 2011. <<http://www.freep.com/article/20110516/NEWS06/105160323/Wayne-Co-Detroit-could-merge-health-departments>>.

¹⁵¹ Ibid.

¹⁵² Interview with health department official.

¹⁵³ Erb, Robin. "Wayne Co. and Detroit Could Merge Health Departments | Detroit Free Press | Freep.com." *Detroit Free Press | Detroit News, Sports, Community, Entertainment, and Classifieds. Serving Detroit, Michigan | Freep.com*. 16 May 2011. Web. 09 June 2011. <<http://www.freep.com/article/20110516/NEWS06/105160323/Wayne-Co-Detroit-could-merge-health-departments>>.

¹⁵⁴ Interview with health department official.

¹⁵⁵ Erb, Robin, and Steve Neavling. "Bing Fires Health Department Director amid Corruption Investigation | The Enquirer | Battlecreekenquirer.com." 26 May 2011. Web. 09 June 2011. <<http://www.battlecreekenquirer.com/article/C4/20110526/NEWS01/105260558/Bing-fires-health-department-director-amid-corruption-investigation>>.

the financial crisis has left staff in preparedness program offices with low morale, though they have thus far continued to meet performance measures. The Michigan Department of Community Health reports that they can operate at current funding levels, but they are uncertain as to how additional budget cuts will impact their emergency preparedness program.¹⁵⁶

Laboratory Capabilities: Michigan's local hospitals have recently merged into a larger system. The results have been beneficial, and officials are confident that the state is prepared to handle a mass casualty incident. However, public health laboratories have suffered as a result of budget cuts. Two Laboratory Response Network (LRN) facilities have closed. The State Health Department predicts additional budget cuts will force a closure of another lab.¹⁵⁷

Training Efforts: Building resources and training the workforce for catastrophic events are critical components in sustaining a strong emergency preparedness infrastructure. Since the start of the budget crisis in Detroit, the Department of Health & Wellness Promotion has curtailed office resources and travel expenses.¹⁵⁸ In addition, emergency exercises are currently performed at a bare minimum level in Michigan. In order to save the department money, workshops and table top exercises are conducted. In another cost-cutting measure, the state health department no longer hires consultants to develop large-scale emergency preparedness exercises. Recently, the state health department participated in an emergency exercise with the National Guard. The results illustrated that when the department leveraged staff from non-emergency preparedness offices, the lack of training for those individuals slowed down response activities. Furthermore, the office was barely able to maintain 8 hour shifts. The emergency preparedness office is concerned that an actual emergency incident could lead to the closure of the emergency operations center, because they have insufficient back-up staffing capacity.

¹⁵⁶ Interview with health department official.

¹⁵⁷ Interview with health department official.

¹⁵⁸ Erb, Robin. "Wayne Co. and Detroit Could Merge Health Departments | Detroit Free Press | Freep.com." *Detroit Free Press | Detroit News, Sports, Community, Entertainment, and Classifieds. Serving Detroit, Michigan | Freep.com*. 16 May 2011. Web. 09 June 2011.

7. CONCLUSIONS

This study analyzed the impact of budget cuts on state and local public health preparedness capabilities. The assessment encompassed seven resource and capabilities elements of public health preparedness: capacity in these areas was generally in decline, with a few elements staying relatively stable. As for the eighth element, the H1N1 response, there is widespread concern that were a pandemic to occur in the near future, funding cuts would prevent a repeat of what health officials and subject matter experts felt was a robust 2009 response.¹⁵⁹

Several predominant themes emerged from the interviews and document review:

- 1) **Robust all-hazards public health preparedness capabilities require a sustained level of sufficiently high funding.**
 - A strong and steady public health budget enables adequate funding of the public health infrastructure, from biosurveillance activity to medical surge capacity. This ideal situation contrasts sharply with the reality at state and local health departments: significant fluctuations in public health funding marked by large infusions (ARRA and H1N1 funding) and followed by rapid decreases. In this volatile cycle, we see public health laboratory funding climb from \$20 million in FY2001 to almost \$200 million in FY2003, before steadily declining to \$70 million in FY2008. The case studies provide tangible examples of the consequences at the state and local level: cutbacks in staff and decreased funding for public health infrastructure.
- 2) **The average state and local health workforce is rapidly aging, and the next generation of skilled staff and leaders is not being developed and trained.**
 - It is likely that the full impact of these budget cuts on state and local public health preparedness capabilities is yet to be seen. Roughly one-third of US public health workers will be eligible to retire in the next five years.¹⁶⁰ If the currently widespread practice of eliminating vacated positions persists, then workforce shortages will increase in severity. In addition to the shortage in manpower, valuable institutional knowledge and experience is likely to be lost, resulting in potentially underfunded and understaffed public health departments.
- 3) **As state and local health departments fail to invest adequately in biosurveillance infrastructure and lose their epidemiological expertise, the resulting decrease in capabilities makes the nation significantly less secure against intentional and naturally occurring health threats.**
 - Of the four capabilities examined, biosurveillance is arguably the most severely impacted by budget cuts. State and local health departments play a key role in the data collection and early-stage analysis for biosurveillance; the supporting infrastructure is not receiving adequate financial support. State and local health departments are losing a great number of epidemiologists to layoffs and attrition; capacity in this field appears to be declining even more rapidly than the general trend

¹⁵⁹ Multiple interviews with health department officials and subject matter experts.

¹⁶⁰ Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

for public health workers.¹⁶¹ State and local health departments often have the first opportunity to detect health threats, from a pandemic to a bioterrorist attack. While there has been a proliferation of new tools for biosurveillance, adequate funding is necessary to purchase these tools and pay the associated workforce. If capabilities continue to decline in this area, it could seriously impact our nation's health security.

4) Rural health departments, which rely almost exclusively on federal funding for health security and preparedness efforts, are particularly vulnerable to the disruptions caused by unpredictable and declining federal funding.

- The case studies illustrate that rural health departments rely overwhelmingly on federal grants to fund their preparedness programs. With a smaller tax base to support the fixed costs associated with their health security programs, rural health departments simply have less state and local funding at their disposal. Although the recent decreases in federal health security funding have not yet had severe effects, a continued decline could cause a significantly negative impact. Due to their smaller size, rural health departments can be severely impacted by even a handful of staff departures due to declines in federal health security funding.¹⁶²

Some state and local health departments have had moderate success in mitigating the effects of budget cuts on preparedness programs. Health departments are now placing a greater emphasis on cross-training exercises for staff in emergency preparedness offices; this helps staff to become capable of handling a wide range of responsibilities. This activity will also diminish the loss of institutional knowledge and strengthen the general expertise. Finally, in an effort to cut costs, departments are conducting their own workshops rather than funding employee travel to off-site, in-person training.

Collaboration between the public health sector and private health care industry is another approach that can alleviate the impact of reduced funding. Pharmacies, emergency medical services, and hospitals are critical components in emergency response efforts; creating partnerships between these organizations and public health departments is significantly beneficial to emergency preparedness capabilities. For example, improved coordination between hospitals and a local health department can augment medical surge capacity. Furthermore, relying on community organizations and faith-based organizations has improved many elements of preparedness, such as information sharing with the public during a health emergency. However, there is concern that the utility of mitigation strategies may soon expire, and that the leveraging of partnerships and other such strategies are ~~near~~ nearing the end of their rope.¹⁶³

Reductions in all-hazard public health preparedness funding since 2003, and particularly in the last two years, have resulted in the loss of experienced and cable personnel, along with underinvestment in the requisite supporting infrastructure. Recent budgetary cutbacks have exacerbated a situation where preparedness programs were already ~~chronically~~ chronically underfunded.¹⁶⁴ All-hazards preparedness focuses on health emergencies that have the potential to overwhelm routine capabilities. If preparedness capabilities continue to degrade, this may go largely unnoticed by the public for some time. However, if funding trends persist, the next pandemic, natural disaster, or bioterrorist attack may provide a vivid illustration of the effects of budget cuts on public health preparedness at the state, local, and national level.

¹⁶¹ Multiple interviews with health department officials and subject matter experts.

¹⁶² Interview with subject matter expert.

¹⁶³ Interview with subject matter expert.

¹⁶⁴ Interview with subject matter expert.

8. APPENDIX

8.1. Authors and Acknowledgements

James Guyton and Joseph Buccina are the lead authors of this white paper. The following PRTM team members served as co-writers or contributors to this effort:

- Roshni Chengappa
- Sheana Cavitt
- Dr. Chandresh Harjivan

PRTM enjoyed the privilege of working with the Institute of Medicine. PRTM would like to thank Bruce Altevogt, who served as an immensely helpful point of contact. PRTM expresses its gratitude to the IOM's Forum on Medical and Public Health Preparedness for Catastrophic Events for the opportunity to contribute to its mission.

PRTM interviewed 13 subject matter experts on this topic. The team would like to thank each of them for their time and their keen insights.

8.2. Interviewees

List of Interviews

The following is a list of individuals who were interviewed by PRTM for the purpose of this White Paper. Affiliations listed reflect the individual's primary association as of the date of the interview.

Dr. Damon Arnold, *Illinois Department of Public Health*

Gerrit Bakker, *Association of State and Territorial Health Officials (ASTHO)*

James Blumenstock, *Association of State and Territorial Health Officials (ASTHO)*

Jack Cochran, *East Tennessee Regional Health Office*

Monte Combs, *Jackson County Health Department*

Susan Cooper, *Tennessee State Health Department*

Carina Elsenboss, *King County Department of Public Health*

Dr. Gary Goldbaum, *Everett County Health Department*

Jack Herrmann, *National Association of City and County Health Officials (NACCHO)*

John Kavanagh, *Department of Homeland Security (retired)*

Dr. Irwin Redlener, *The Joseph L. Mailman School of Public Health of Columbia University*

Dr. Jacqueline Scott, *Michigan Department of Community Health*

Laura Segal, *Trust for America's Health (TFAH)*

8.3. Bibliography

Association of Public Health Laboratories. *Public Health Laboratories: Diminishing Resources in an Era of Evolving Threats*. Rep. June 2010. Web.

<<http://www.aphl.org/aphlprograms/phpr/ahr/Documents/DiminishingResourcesEvolvingThreats.pdf>>.

Association of State and Territorial Health Officials. "ASTHO Budget Cuts Impact Research Brief (2011) | State Public Health | ASTHO." Mar. 2011. Web.

<<http://www.astho.org/Display/AssetDisplay.aspx?id=5827>>.

Centers for Disease Control and Prevention. "Funding Guidance and Technical Assistance to States." *CDC-PHPR-Funding Guidance and Technical Assistance to States*. Web. <Center for Disease Control and Prevention, "Funding Supporting Public Health Preparedness and Response." N.p., 21 Sept 2010. Web. 9 Jun 2011. .>.

Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. *Public Health Preparedness: Strengthening the Nation's Emergency Response State by State*. Rep. Sept. 2010. Web. <<http://www.bt.cdc.gov/publications/2010phprep/>>

Christoff, Chris. "Michigan Senate Approves Detroit Population, Tax Bills | Detroit Free Press | Freep.com." *Detroit Free Press*. 7 June 2011. Web.

<<http://www.freep.com/article/20110607/NEWS01/110607024/Michigan-Senate-approves-Detroit-population-tax-bills>>

Erb, Robin, and Steve Neavling. "Bing Fires Health Department Director amid Corruption Investigation | The Enquirer | Battlecreekenquirer.com." 26 May 2011. Web. 09 June 2011.

<<http://www.battlecreekenquirer.com/article/C4/20110526/NEWS01/105260558/Bing-fires-health-department-director-amid-corruption-investigation>>.

Erb, Robin. "Wayne Co. and Detroit Could Merge Health Departments | Detroit Free Press | Freep.com." *Detroit Free Press | Detroit News, Sports, Community, Entertainment, and Classifieds. Serving Detroit, Michigan | Freep.com*. 16 May 2011. Web. 09 June 2011.

<<http://www.freep.com/article/20110516/NEWS06/105160323/Wayne-Co-Detroit-could-merge-health-departments>>.

Federal Emergency Management Agency. "FEMA: FY 2011 Homeland Security Grant Program (HSGP)." *FEMA | Federal Emergency Management Agency*. 20 May 2011. Web. 09 June 2011.

<<http://www.fema.gov/government/grant/hsgp/>>.

Frist, Bill. "Public Health And National Security: The Critical Role Of Increased Federal Support." *Health Affairs* 21.6 (2002): 117-30. Print.

Haddow, George, and Jane Bullock. "The Future of Emergency Management." *The Future of Emergency Management*. Print.

Homeland Security Today. "2009 Guide to Grants—Pass-through vs. Direct Funding." *2009 Guide to Grants—Pass-through vs. Direct Funding*. 1 Feb. 2009. Web. <<http://www.hstoday.us/resources/hstoday->

guide-to-grants/single-article/2009-guide-to-grants-pass-through-vs-direct-funding/36f60f58a34cdca14e0e023fdeb7dee4.html>.

National Association of City and County Health Officials. "NACHHO Survey of Local Health Department Budget Cuts and Workforce Reductions." N.p., Jan 2009. Web. <<http://www.naccho.org/advocacy/upload/2008-LHD-budget-cut-report.pdf>>.

National Association of City and County Health Officials. "Local Health Department Job Losses and Program Cut." N.p., 2010. Web. <<http://www.naccho.org/topics/infrastructure/lhdbudget/index.cfm>>.

Shah, Gulzar, Jack Herrmann, Anne Drabczyk, Scott Fisher, and Carolyn Leep. *Local Public Health Emergency Preparedness: Situation of Funding, Types of Hazard Events Responded to and Involvement of Volunteers*. Proc. of 2011 Public Health Preparedness Summit, Atlanta. Print.

Trust for America's Health. "Investing in America's Health - Trust for America's Health." *Trust for America's Health - Preventing Epidemics. Protecting People*. Mar. 2011. Web. 2011. <<http://healthyamericans.org/report/83/>>.

Trust for America's Health. *Ready or Not? Protecting the Public's Health from Diseases, Disasters, and Bioterrorism 2010*. Rep. Dec. 2010. Web. <<http://www.healthyamericans.org/reports/bioterror10/>>.

U.S. Dept of Health and Human Services. "Hospital Preparedness Program." *Hospital Preparedness Program -PHE*. 9 May 2011. Web. <<http://www.phe.gov/preparedness/planning/hpp/pages/default.aspx>>.

United States. White House. *Homeland Security Presidential Directive-21: Public Health and Medical Preparedness*. By President George W. Bush. 18 Oct. 2007. Web. <http://www.upmc-biosecurity.org/website/resources/govt_docs/public_health_prep/whitehouse/whitehouse_homeland_security_presidential_directive_hspd21.html>.

8.4. Contact Information

Chandresh Harjivan, PharmD

Director

PRTM Management Consultants, LLC
1730 Pennsylvania Avenue NW
Suite 600
Washington, DC 20006
charjivan@prtm.com
301-455-0450

Joseph Buccina

Associate

PRTM Management Consultants, LLC
1730 Pennsylvania Avenue NW
Suite 600
Washington, DC 20006
jbuccina@prtm.com
202-657-3628

James Guyton

Principal

PRTM Management Consultants, LLC
1730 Pennsylvania Avenue NW
Suite 600
Washington, DC 20006
jguyton@prtm.com
410-428-3259

Roshni Chengappa

Consultant

PRTM Management Consultants, LLC
1730 Pennsylvania Avenue NW
Suite 600
Washington, DC 20006
rchengappa@prtm.com
919-614-2833