

Greater Lowell Community Health Needs Assessment

Conducted on Behalf of:

Lowell General Hospital
Saints Medical Center
Greater Lowell Health Alliance

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Executive Summary

On behalf of Lowell General Hospital (LGH), Saints Medical Center (SMC) and the Greater Lowell Health Alliance (GLHA), a team of UMass Lowell (UML) researchers and students conducted a community health needs assessment study to distinguish the unmet medical and public health needs within the Greater Lowell community. The geographic area assessed included the communities of Lowell, Billerica, Chelmsford, Dracut, Dunstable, Tewksbury, Tyngsborough and Westford. The study had two objectives. One objective was to meet state and federal requirements that the two hospitals conduct a Comprehensive Health Needs Assessment every three years. The second, ultimately more important objective was to conduct a study that would provide a foundation for the GLHA and its partners, including LGH and SMC, in working to build consensus on the area's health needs and plan coordinated activities to improve the health of the area's residents.

Information for this report was collected from multiple sources, in three different ways: (1) a web-based survey, (2) focus groups and interviews, and (3) a review of publicly-collected health and demographic statistics. The web-based survey was available to all adults residing within the study area. It was designed to elicit public feedback about the health services in the Greater Lowell area, and included both forced answer multiple choice questions and open-ended questions asking people to state what they perceived to be the strengths and weaknesses of the area's healthcare system. Of the 153 community residents who responded, the majority were white (88%), women (76%), and aged 31 to 65 (78%). These individuals reported having good access to health care, as 88% had seen their personal physician in the previous 12 months.

A total of 50 Greater Lowell professionals participated in the focus groups and interviews. This group included school nurses, hospital executives, town managers and local health department directors, as well as individuals representing the Councils on Aging, skilled nursing facilities and various community-based organizations. Through their participation in this study, these individuals were asked to speak to the strengths and weaknesses of the area's health system and suggest changes to improve it.

The health and demographic data available within the Greater Lowell area was thoroughly investigated, focusing substantially on the issues or problems indicated from the personal and focus group interviews, as well as the web-based survey. These data indicated that the Greater Lowell area saw a doubling of the rate of mental health hospitalizations between 1989 and 2006. In addition, Lowell has seen increases in problematic alcohol consumption and opiate-related mortality. The experience in the Lowell area was compared, as appropriate, with the statewide experience. This comparison was evident in the finding that use of emergency department services in Lowell was up to 39% higher than the state average in the most recent data available, 2002 through 2005. When reliable information was available,

we examined the comparative experience of different demographic subgroups. The mortality rate among Asian-Americans in the Greater Lowell area, for example, was nearly twice as high as the Massachusetts average for this group. In addition to providing supplemental information on healthcare concerns voiced by various study respondents, the data analysis also indicated other important findings, such as a substantial increase in the proportion of individuals in Lowell without health insurance between 2000 and 2008.

The larger study found consistent themes with regard to the strengths and weaknesses of the Greater Lowell health system, and generated various suggestions for. These findings are summarized below in three sections—Strengths, Weaknesses and Suggestions.

Strengths

- Convenient access to high quality health care
- A strong health care system, namely, LGH, SMC, the Lowell Community Health Center (LCHC), and the area health departments
- A mature human services system
- Strong elderly health services
- A growing awareness of the community's cultural diversity allowing providers, but especially LCHC, to provide culturally and linguistically appropriate care
- Sustained improvements over time in important health outcomes such as mortality and teen pregnancy
- A sharp decrease in infant mortality

Weaknesses

- Insufficient access to primary care resources, leading to overuse of emergency departments
- Woefully inadequate mental health resources
- Insufficient resources for health education and other public health activities
- Transportation-related limits on provider access
- Competition, rather than cooperation, between the two hospitals
- Insufficient resources to address the idiosyncratic needs of a culturally, increasingly diverse population
- Low health status levels for some, compared to the rest of the state (e.g., a much higher age-adjusted death rate for non-Hispanic whites)
- Recent deterioration in important health outcomes— more binge drinking, increased asthma hospitalization, increased opioid deaths, and possibly increased teenage pregnancy
- Despite healthcare reform, a dramatic increase in the percentage of Lowell residents uninsured

Suggestions

- Asking the two hospitals and other local health care organizations to work together in providing health education through public access television
- Developing a coordinated system for providing urgent care and after-hours primary care services
- Establishing a clearinghouse of provider information
- The Greater Lowell healthcare and public health networks, along with social service and support organizations that work with low income and immigrant communities, need to establish an integrated and effective system for identifying the health needs of immigrant and low income communities

It is necessary, however, to indicate an important caveat with regard to these findings. Our web-based survey did not include a fully representative sample of people living in the Greater Lowell area. Those less likely to participate in a web survey, notably immigrants, refugees and individuals with low levels of formal education, were not simply represented in the data collected. In addition, there was comparatively little data available from which to distinguish the health status and needs of immigrants and low income subgroups. Although we did speak with individuals who work with these populations, we readily acknowledge that such proxy reports cannot fully replace information that might come directly from the individuals themselves. Further research into the needs of disadvantaged individuals and populations is needed, and would extend our knowledge and understanding of the unmet medical and public health needs. We nevertheless hope that this document can serve as a starting point and lead to concrete steps and constructive dialog focused on improving the health of all individuals within the Greater Lowell area.

I. INTRODUCTION

On behalf of LGH, SMC and GLHA, a team of UMass Lowell (UML) researchers and students have conducted an inherently limited community health needs assessment to distinguish the unmet medical and public health needs within the Greater Lowell community—including not only the city of Lowell but also seven adjoining cities—Billerica, Chelmsford, Dracut, Dunstable, Tewksbury, Tyngsborough and Westford. This area is also known as the Community Health Network Area 10, or CHNA-10.

The study had two objectives. One objective was to meet state and federal requirements that the two hospitals conduct a Comprehensive Health Needs Assessment every three years. The second, ultimately more important objective was to conduct a study that would provide a foundation for the GLHA and its partners, including LGH and SMC, in working to build consensus on the area's health needs and plan coordinated activities to improve the health of the area's residents. We believe that the study will prove useful in deciding GLHA's long-term agenda and strategy, and sincerely hope that the healthcare and public health needs identified from this study will eventually be met—and that the area's health system can be strengthened to that purpose.

The investigation involves analysis and reporting from secondary data sources as well as three different approaches to primary data collection—(1) an anonymous web-based survey, (2) focus group interviews, and (3) personal interviews. The study was a time- and resource-limited investigation; it provides instructive insight into the medical and public needs of the Greater Lowell area. However, it is not a fully comprehensive, conclusive assessment.

Background

Both LGH and SMC, like all non-profit hospitals, are tax exempt institutions, and, in Massachusetts and other states, non-profit hospitals have a statutory obligation to provide community services. Moreover, the Massachusetts Attorney General's Office (AGO) asks hospitals to report annually on their "community benefit" activities (see definition below), and advises that they conduct a Community Health Needs Assessment study every three years. The Massachusetts AGO has the responsibility to assure the public that all healthcare organizations claiming non-profit, tax-exempt status fulfill their fiduciary obligation by providing community benefits commensurate in value to the health organization's tax savings. Voluntary principles are set forth in *The Attorney General's Community Benefits Guidelines for Non Profit Acute Care Hospitals*, in an effort to better guide the reporting and delivery of these benefits. The non-regulatory principles set forth in the *Guidelines* encourage non-profit hospitals not only to provide charitable care, but also to develop meaningful partnerships with community organizations in fulfilling their community benefits obligations. It is through collaboration between each hospital and its community that essential community benefits programs are developed and promoted. Inherent in this process is the AGO's request that hospitals and community agencies identify and collectively respond to unmet healthcare needs. *The Guidelines* also encourage hospitals and their community partners to rely upon their own expertise and knowledge to target specific unmet community needs, especially needs of the

under-served and at-risk populations, and to propose programs that support the hospital's charitable mission in serving such populations. This process is not new to the state of Massachusetts. Massachusetts' AGO first published its community benefits program guidelines in 1994, and subsequently has expanded on them.

Even though Massachusetts health care reform law, Chapter 58, was enacted in large part to reduce the numbers of uninsured and to make health insurance more affordable, affordability remains a challenge for many Massachusetts residents. In addition, a growing awareness of the challenges of health disparities across ethnic and racial groups, social inequalities, persistent poor health practices, increased incidences of substance abuse and chronic disease, and inadequate access to care has further established the need for effective community benefits programs. More recently, with the enactment of federal healthcare reform, non-profit healthcare institutions will soon be receiving additional scrutiny. For the first time, community benefits programs developed by non-profit healthcare institutions will be required to meet federal standards. Federal statute now mandates compliance and will impose a penalty on hospitals that fail to complete a Community Health Needs Assessment every three years. Additionally, for the first time, every non-profit hospital will be required to file a report with the Internal Revenue Service that indicates the unmet community health needs in its service area and describes the hospital's plans to address those needs.

Greater Lowell Community

The City of Lowell was founded in 1820 as a planned industrial community along the banks of the Merrimack River whose economy was based on textile manufacturing. By the 1850s, it had become the largest industrial center in the United States and the second largest city in New England. Much of the population growth in Lowell was attributable to immigration, with new residents coming from many parts of Europe and French-speaking Canada, creating an ethnically diverse community. During this period, Lowell served as a regional economic engine, providing goods and services to the surrounding communities, which retained a largely agricultural economy into the early 1900s. By the 1920s, however, Lowell had gone into economic decline as the U.S. textile industry moved south, and by the end of the 1950s all of the textile mills had closed. In the 1970s, Wang Laboratories located its headquarters in the city and spurred a temporary economic revival, which collapsed when the company filed for bankruptcy in 1992. While the urban core has been redeveloped as a residential community, with former textile mills being rehabilitated as condominiums and apartments, Lowell lacks a strong industrial base. In a large measure, the emergence of a high technology and biomedical economic base in Eastern Massachusetts has coincided with a decentralization of development and urban planning, with many of these new businesses locating outside city centers, along transportation corridors (e.g., Routes 128 and 495). While Lowell still provides regional services not available in the smaller communities—healthcare, education and entertainment—much of the area's recent job growth has come from the high technology sector in nearby towns such as Billerica, Chelmsford, Tewksbury, and Westford.

In the 1980s, the City of Lowell was designated as a Refugee and Resettlement Area for Cambodians in the wake of the atrocities committed by the Khmer Rouge regime. Today, Lowell

is home to the second largest Cambodian population within the U.S. In addition, many of the amenities that had served previous generations of Lowell immigrants, such as plentiful rental housing and a high geographic density of retail businesses and services, continue to attract immigrants. In the 2000 Census, more than one in five of Lowell's residents was foreign born. Contrasted with the predominantly northern and western European immigration during the city's manufacturing heyday, recent figures show that the foreign born in Lowell today are much more geographically diverse. In 2000, approximately half of all Lowell immigrants were Asian, nearly a quarter from Latin America, 16 percent from Europe (with many arriving from Portugal), and approximately six percent from Africa. With their arrival, these immigrants have also altered the service environment, with some healthcare facilities, notably the Lowell Community Health Center, adapting their services to accommodate individuals with idiosyncratic cultural and health needs, as well as providing services in an increasing number of languages.

Immigrants arriving in Lowell today, however, are greeted with a starkly different economic reality than those arriving during the industrial revolution. There are essentially no manufacturing jobs remaining in Lowell, and the majority of jobs in the new high technology sector require a college education. As a result, the majority of jobs available to new immigrants without an advanced education are service jobs, many of which do not pay a living wage. Lowell has the highest unemployment rate in the area (11.5%), and a poverty rate (16.1%) three times that of Tyngsborough (4.7%) and ten times that of Westford (1.6%). The communities surrounding Lowell have attracted far fewer immigrants, with immigrants accounting for just three to seven percent of their populations. Of the suburban communities in the Greater Lowell area, only Westford has a higher proportion foreign born (12.6%), but these immigrants are more highly educated, drawn to the town's high technology jobs.

While Lowell is no longer the economic center that it once was, Lowell is still a cultural and institutional center for the region. It is home to the University of Massachusetts Lowell, Middlesex College and the Lowell National Historical Park, as well as two hospitals, Superior and District courts, the Merrimack Repertory Theater, the Lowell Auditorium, the Tsongas Center and LaLacheur Stadium.

In 2008, the Greater Lowell area, as defined herein, had a population of 264,000 residents (see Table 1), including an estimated 97,000 people in the City of Lowell alone. Thus, the City of Lowell itself accounts for less than 40 percent of the area's population. Four other communities—Billerica, Chelmsford, Dracut and Tewksbury—each have a population of nearly 30,000 or more. We also see from Table 1 that the City of Lowell differs from its suburban neighbors in important respects—a greater percentage non-Hispanic white, a greater percentage foreign born and a higher poverty rate.

Lowell's current population is much the same as what it was in 1900, whereas the suburban communities in proximity to Lowell have seen dramatic population increases. Many residents of the suburban communities have deep roots in the City of Lowell itself.

GLHA, SMC and LGH

Although many community organizations and individuals participated in this Community Health Needs Assessment project, the project itself was commissioned by SMC, LGH, and GLHA. We anticipate that all three organizations will use our findings to address the area's unmet medical and public health needs, as best they can. We nevertheless hope that other health-related organizations and agencies within CHNA-10 will also use our findings to support their efforts in serving the health needs of the area's population.

Saints Medical Center (SMC)¹ Saints Medical Center is a non-profit, full service, acute care community hospital serving Greater Lowell since 1839. A 157-bed licensed medical center, Saints provides advanced health services to 315,000 residents in 25 towns. In Fiscal Year (FY) 2009, Saints discharged 6,290 inpatients, with an average length of stay of 3.90 days. Total hospital outpatient visits for FY 2009 are estimated at 319,026, of which 42,747 are Emergency Department encounters; and Saints surgeons performed over 1,442 inpatient and 3,464 outpatient surgeries.

With nearly 300 physicians and 1,100 employees, Saints Medical Center is well known for outstanding medical care and patient-centered facilities including its Women's Health and Wellness Center, Cancer Center, Orthopedic Center, and Cardiovascular Center. Saints offers convenient, culturally-competent, community-based care at several ambulatory sites and is dedicated to promoting health and wellness in the community. Since 2001, Saints has provided the Greater Lowell community with over \$26 million dollars in free Community Benefit and Community Service Programs, local sponsorships and employee volunteerism efforts.

The Medical Center has clinical affiliations with the leading Boston academic medical centers and is proud to be one of the top-rated hospitals in Massachusetts according to the Joint Commission for the Accreditation of Healthcare Organizations. Saints serves as a training center for the American Lung and Heart Associations, as well the Society for Critical Care Medicine and Emergency Nurse Association. Saints is a training site for the American Wound Association. Saints continues to provide comprehensive, holistic health services to all people, especially the poor and disadvantaged, in accordance with its mission.

Lowell General Hospital (LGH)² Lowell General Hospital is an independent, not-for-profit, community hospital serving the Greater Lowell area and surrounding communities. The hospital encompasses ten buildings, the latest state-of-the-art technology and a full range of medical and surgical services for patients, from newborns to seniors, including: the Regional Center for Maternal and Pediatric Care in partnership with Floating Hospital for Children at Tufts Medical Center, the Cancer Center, and the Heart and Vascular Center.

The main hospital campus offers 217 licensed beds, including 28 bassinets and a Level IIB Special Care Nursery. The hospital's satellite campus, Lowell General Chelmsford, offers a variety of outpatient services, including the Surgery Center, Imaging Center, Patient Service

¹ Section prepared by Erin Caples, Saints Medical Center.

² Section prepared by Michelle Davis, Lowell General Hospital.

Center, Center for Weight Management and Bariatric Surgery, and Floating Hospital for Children's Pediatric Specialty Center.

Lowell General Hospital's family of services includes two health organizations which serve the community's health care needs in capacities outside of the hospital, the Visiting Nurse Association and Hospice of Greater Lowell, which provides comprehensive home health care services and the LCHC, which meets the diverse medical, cultural and multi-lingual needs of the city's population.

Greater Lowell Health Alliance (GLHA) The GLHA is comprised of healthcare providers, business leaders, educators, and civic and community leaders with a common goal to help the Greater Lowell community identify and address its health and wellness priorities. The GLHA was founded in 2005 and merged in 2008 with CHNA-10. A CHNA is a coalition that is comprised of public, non-profit, and private sector organizations and agencies working together to build healthier communities through community-based disease prevention planning and health promotion. The GLHA believes, "Working together to build healthier communities."

Definitions

Community Health Needs Assessment

1. "...the regular and systematic collection, assembly, analysis, and communication of "information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems."ⁱ
2. "A dynamic process undertaken to identify the health problems and goals of the community, to enable the community-wide establishment of health priorities, and to facilitate collaborative action planning directed at improving community health status and quality of life involving multiple sectors of the community."ⁱⁱ

Community Benefit

A term which has recently evolved over time to describe hospitals' efforts in demonstrating community commitment, involvement, and contribution. It includes programs or activities that provide treatment and/or promote health in response to identified unmet health needs of the community. Benefit categories include: charity care, government sponsored indigent health care, unpaid cost of public programs, Medicaid, SCHIP, programs for the medically indigent, programs relating to the organization's mission, programs addressing unmet community health need, meeting a need that otherwise would be provided by a government or another non-profit organization, and targeting the underserved or disenfranchised population.ⁱⁱⁱ

Community Benefits Mission Statement

"...a public declaration by a hospital or HMO that states the hospital or HMO commits to provide support to address unmet health needs and improve the health of disadvantaged populations through the development and implementation of a Community Benefits Plan. The Mission Statement should explicitly recognize the hospital's traditional partnership with the community, the value of productive collaboration, and the hospital's willingness to allocate resources to address the community's unmet health needs."^{iv}

Community Benefits Plan

A blueprint, developed in collaboration with the community, of how the hospital will proceed in response to meeting community health needs.

Programs and activities included in the plan should meet at least one of the following criteria:

- Produce a low or negative margin
- Target needs of disadvantaged/disenfranchised population
- Provide services or programs that would be discontinued or made available only through another non-profit or government agency if, on a financial basis, such services could no longer be offered
- Respond to recognized unmet community health needs
- Includes educational or research initiatives which seek to improve community health^v

CHNA-10

Also known as the Greater Lowell Community Health Network Area, this network is comprised of the city of Lowell and 7 surrounding communities: Billerica, Chelmsford, Dracut, Dunstable, Tewksbury, Tyngsboro, and Westford. Community health networks are local coalitions of non-profit, public, and private institutions and organizations working in collaboration to build healthier communities by establishing health promotion through community based prevention programs. CHNA-10 is one of 27 community health networks within the state of Massachusetts.

Table 1. Basic Demographic Data, Cities/Towns Included in the Greater Lowell Community

<i>City/Town</i>	<i>Population*</i>	<i>Pct. White*</i>	<i>Pct. Foreign Born*</i>	<i>Pct. Aged 0-18**</i>	<i>Pct. Aged 65+ **</i>	<i>Pct. Below Poverty*</i>	<i>Pct. Unemployed***</i>
Billerica	39,491	92.2%	8.3%	25.7%	8.4%	3.0%	9.2%
Chelmsford	32,402	90.7%	9.8%	25.0%	13.0%	3.1%	7.7%
Dracut	28,001	95.1%	7.1%	25.5%	11.6%	3.4%	10.2%
Dunstable	2,829	97.5%	3.4%	31.1%	6.8%	1.9%	6.7%
Lowell	97,423	62.5%	24.1%	26.9%	10.8%	16.1%	11.5%
Tewksbury	30,388	93.8%	6.1%	25.0%	11.5%	3.8%	8.7%
Tyngsborough	11,081	95.6%	4.8%	30.3%	6.6%	4.7%	9.2%
Westford	22,408	93.7%	9.7%	31.8%	7.2%	1.6%	7.4%
Total/Weighted Average	264,023	81.9%	13.9%	26.7%	10.4%	7.9%	9.7%
<i>Massachusetts</i>	<i>6,469,770</i>	<i>82.5%</i>	<i>14.4%</i>	<i>23.6%</i>	<i>13.5%</i>	<i>10.0%</i>	<i>9.3%</i>

*American Community Survey, 2006-2008

** 2000 Census

*** Massachusetts Executive Office of Labor and Workforce Development, March 2010

II. APPROACH

The study involved analysis and reporting from secondary data sources (e.g., MassCHIP) and three different approaches to primary data collection--an anonymous web-based survey, focus groups, and personal interviews. Our data and methods are described below.

Community Survey

A web-based survey was developed to inquire about unmet healthcare and public health needs, and also to understand why so many Lowell-area residents go outside the area for hospital services. It also collected demographic data on the survey respondents. In order to allow for a broad range of answers, focal questions were asked on an open-ended basis. The open-ended responses were subsequently grouped into categories. The survey was conducted on a wholly anonymous basis. The questionnaire is included as Attachment A.

Due to resource constraints, the community survey was conducted on a "convenience sample" basis, relying upon community residents with Internet access to self-select in responding to the survey. A more scientific and representative survey effort was simply not feasible. A press release about the survey was sent to area media sources which were subsequently contacted with requests to help spread the word about the survey. These and other efforts met with limited success, and notice of the survey was not received by a large percentage of the CHNA-10 population. Anyone living within CHNA-10 who learned of the survey had the opportunity to respond if they were able to access the Web-based survey. This limited outreach combined with the survey's intended audience being only those with internet access resulted in a lower than desired response rate.

Focus Groups and Personal Interviews

A focus group is a form of research in which a small group of individuals are asked about their perceptions and experiences relative to the topic being studied. Questions are asked in an interactive group setting where participants are free to share information, discuss one another's answers and indicate agreement or disagreement. Focus groups have been shown to be an efficient method for collecting information that can then be used to develop survey research or to help understand information collected through surveys.

The focus groups were led by University of Massachusetts Lowell Professor A. James Lee with the assistance of a UMass Lowell graduate student. A topic guide, included as Attachment B, was used. An audio recording was made of each focus group meeting. The focus group plan, including the types of groups to be organized and specific groups to be invited as participants, was decided collectively in consultation with LGH, SMC and the GLHA. An LGH intern and GLHA staff person coordinated administrative arrangements, including recruitment and scheduling.

Dr. Lee acted as the focus group facilitator and framed the discussion by focusing on three open-ended questions:

- 1) What are the strengths of the healthcare system within the Greater Lowell Community?

- 2) What are the weaknesses (i.e., unmet needs) of the healthcare system within the Greater Lowell Community?
- 3) How can the Greater Lowell Community work to improve its healthcare system, and address its unmet needs?

Focus group interviews were conducted with seven groups: (1) city/town managers, (2) school nurse leaders, (3) city/town public health departments, (4) ethnic organizations, (5) other community organizations, (6) the area's Councils on Aging and nursing homes, and (7) SMC executives. The names of participating organizations and individuals are provided in Attachment C. Each focus group lasted approximately ninety minutes. Focus group participation was not as complete as hoped. This often happens with focus groups involving individuals with busy schedules and tight work demands. Despite the limitation of potentially available information, the research team was able to learn much about healthcare needs within Greater Lowell.

We also conducted hour-length personal interviews with seven key respondents, individuals seen as having an informed and knowledgeable perspective on healthcare in the Greater Lowell area, but who agreed to participate as private individuals. We did not ask anyone to participate as an official spokesperson for their organization. The interviews were focused on distinguishing the unmet healthcare and public health needs within the Greater Lowell area. The topic guide and format were the same as that applied in the focus group interviews.

The interviews were conducted in-person by A. James Lee, and Kimberly Flodin, a UML graduate student. Although the interviews were not recorded, detailed notes were taken. The names of individuals interviewed are provided in Attachment C.

Analysis of Data Provided by the Massachusetts Department of Public Health and U.S. Health Surveys

Population health data available through the Massachusetts Department of Public Health was compiled to provide a broad view of the health status of the residents of CHNA-10. Faced with a vast amount of data that could have been included in this report, we chose to present a small number of key tables and figures that would provide a brief, straightforward assessment of the community's health strengths and needs. Several criteria were used to select those types of information that would be the most important to present in this report. In part, topics were selected based on findings from the community survey, the focus groups, and the key informant interviews. Additional topics were selected to highlight specific themes such as changes over time or variances from statewide parameters.

For the most part, the findings presented below investigate neither demographic health disparities, such as racial and ethnic differences, nor geographic health variation within CHNA-10. The available survey-based data did not have sufficient numbers or respondents in these and other subgroup categories to support such disaggregated reporting. By reviewing specific morbidity and mortality data, this analysis provides a snapshot of general community health

status within the catchment area of the area's two hospitals. Unfortunately, some estimates rely on a comparatively low case counts. When small case counts are disaggregated, the resulting estimates may be so imprecise as to make them useless. That said, we did make some exceptions, in an effort to provide a more nuanced picture of the overall health issues. One exception is the inclusion of results for the City of Lowell in selected charts and tables. This was important because Lowell is unquestionably the largest and most ethnically diverse municipality within the CHNA-10; and the city's residents likely have different health issues than the rest of CHNA-10. Additionally, Lowell's large population affords a more nearly adequate sample size in gauging statistically significant differences; and there were a number of other data sources, such as the national Behavioral Risk Factor Surveillance System, that provided information only for the City of Lowell. We also report population-based mortality rates by race and ethnicity.

III. FINDINGS

This section presents the study findings. The research team analyzed the collected information, which at times varied with the views of specific respondents. This report takes the range of experiences and perspectives into account and presents a general survey of the medical and public health issues and opportunities in the Greater Lowell CHNA-10.

Community Survey

A total of 153 individuals completed the web-based survey, far less than the number of respondents that we would have liked. Nevertheless, every community within CHNA-10 was represented, with 44 percent of respondents coming from Lowell, 20 percent from Billerica, 12 percent from Dracut, 11 percent from Tewksbury, six percent from Tyngsboro, and less than five percent each from three other communities (Dunstable, Chelmsford and Westford).

Given the self-selected nature of the survey, it should not be surprising that the survey response is not broadly representative of those living in the Greater Lowell area. The age distribution of respondents is markedly skewed toward middle-age, with 78 percent of respondents reporting themselves aged 31 to 65, and only six percent aged 66 and older and only 15 percent aged 18 to 30. Females represented 76 percent of respondents, and 88 percent of respondents reported their ethnicity as Caucasian/white. Nearly 60 percent of respondents have lived in the Lowell area for more than 20 years, and only 12 percent are new arrivals, having lived in the area three years or less (a category which would include new immigrants). Finally, 80 percent of respondents were employed, and 84 percent had at least some college education. We include the survey findings because they provide some, albeit limited feedback from those who live in the area and use its healthcare services. Our survey results identified system strengths, as well as system limits.

Nearly 70 percent of respondents reported their health status as either Excellent (21%) or Very Good (48%), and less than ten percent reported that their health status was only Fair (7%) or Poor (2%). Some 93 percent of respondents indicated that they had a personal physician, and 88 percent answered that they had seen their doctor within the last year. Of those surveyed, 75 percent said that they were either Very Satisfied (29%) or Somewhat Satisfied (46%) with the healthcare in the Greater Lowell area; and only ten percent said that they were either Somewhat Dissatisfied (7%) or Very Dissatisfied (3%). When asked which hospital one would choose for elective hospital admission, two-thirds indicated either LGH or SMC. Nearly 15 percent said that they would choose a Boston teaching hospital, and 20 percent indicated another hospital outside the Lowell area (predominantly Lahey Clinic, Winchester Hospital or Emerson Hospital).

In order to avoid leading respondents, key survey questions were asked as open-ended questions, as follows:

- 1) What do you see as primary strengths of the healthcare system within the Greater Lowell area?
- 2) What do you see as the greatest weaknesses of the healthcare system within the Greater Lowell area?
- 3) Why would you choose a Lowell hospital, rather than going to a hospital outside the Lowell area?
- 4) Why would you choose a hospital outside the Lowell area, rather than choosing one of the two Lowell hospitals?

The respondents' answers were then coded into major categories as appropriate for more compact reporting and discussion. We also selectively report a sampling of verbatim responses. Consider now the responses to each of these open-ended questions.

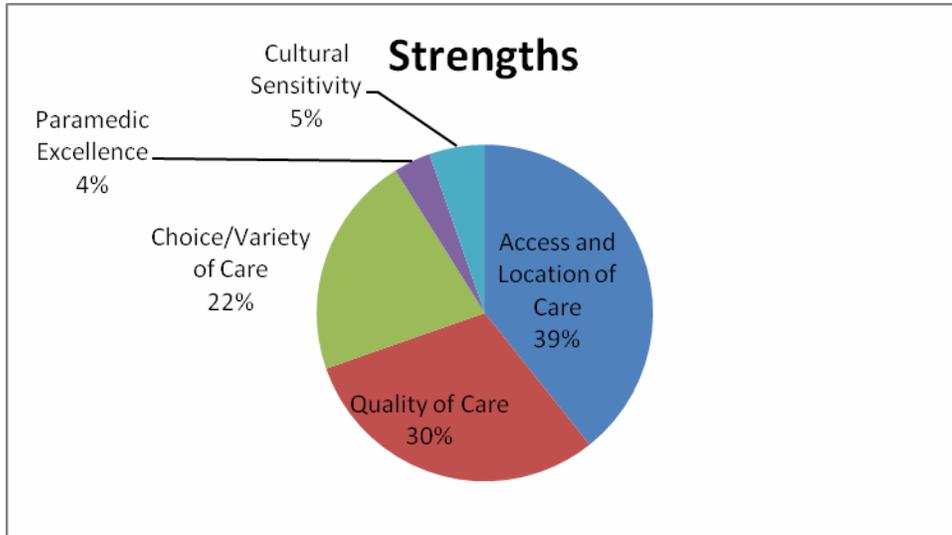
What do you see as primary strengths of the healthcare system within the Greater Lowell area? Almost two-fifths of respondents answered that "access to and location of service" was the Lowell area healthcare system's greatest strength (see Figure 1). A surprising number of respondents referenced the availability of two community hospitals. One respondent answered the question, "two good hospitals in area. You can have many things done here without going to Boston."

Quality of care was also prominently mentioned in responding to this question, this answer accounted for 29 percent of responses. One respondent said, "The physicians are top notch." "Provider choice and variety" was also mentioned as an important strength, accounting for 21 percent of responses.

Cultural sensitivity was identified as an additional important strength. One participant appreciated the health care community's "support for minorities," and another recognized the "cultural awareness and compassion." Paramedic excellence and collaboration between providers were also mentioned as significant assets.

Residents unquestionably appreciate the accessibility that two hospitals and a large community health center afford for those living within the Greater Lowell community. Additionally there is significant public awareness of the quality of care and provider choice that we have within the community. Because of Lowell's ethnic diversity, cultural sensitivity is also seen as an important asset.

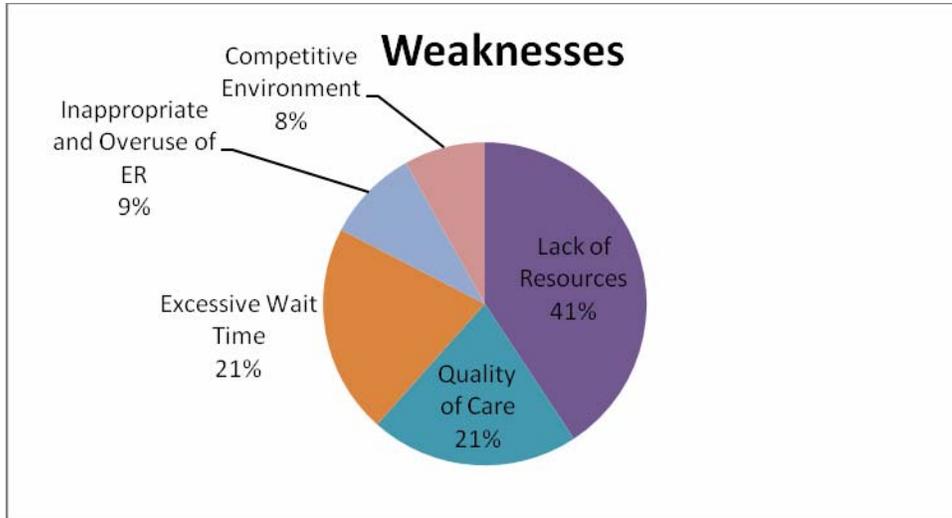
Figure 1. Strengths of the healthcare system reported by residents of CHNA-10 communities



What do you see as the greatest weaknesses of the healthcare system within the Greater Lowell area? "Lack of resources" was mentioned most often as the greatest weakness of the area's healthcare system, accounting for 41 percent of responses (see Figure 2). This response category, however, encompassed broad concerns about the adequacy of primary care resources, mental health providers and facilities, other specialized services, as well as a shortfall in community outreach resources, and crowded emergency room facilities. Although many respondents shared this general concern, we did not see a strong and consistent pattern with regard to specific resource issues. The resource concern has many dimensions.

Respondents also identified both quality of care (21%) and excessive wait times (21%) as significant issues or problems within the area's healthcare system. One respondent wrote, "It takes too long to see a physician," and another answered that the system's greatest weakness was "the unavailability of a PCP when needed, especially when going to the emergency room takes so long." Although less important, respondents also identified "inappropriate overuse of the emergency department" and the "competitive environment" as system problems. One respondent noted that, "The constant fighting and negativity between Lowell General and Saints is the biggest problem. Both are excellent facilities, and both should be allowed to co-exist. We don't need only one, we need both." We were frankly surprised at the number of times that hospital competition was cited (without prompting) as the greatest weakness within the area's healthcare system.

Figure 2. Weaknesses of the healthcare system reported by residents of CHNA-10 communities

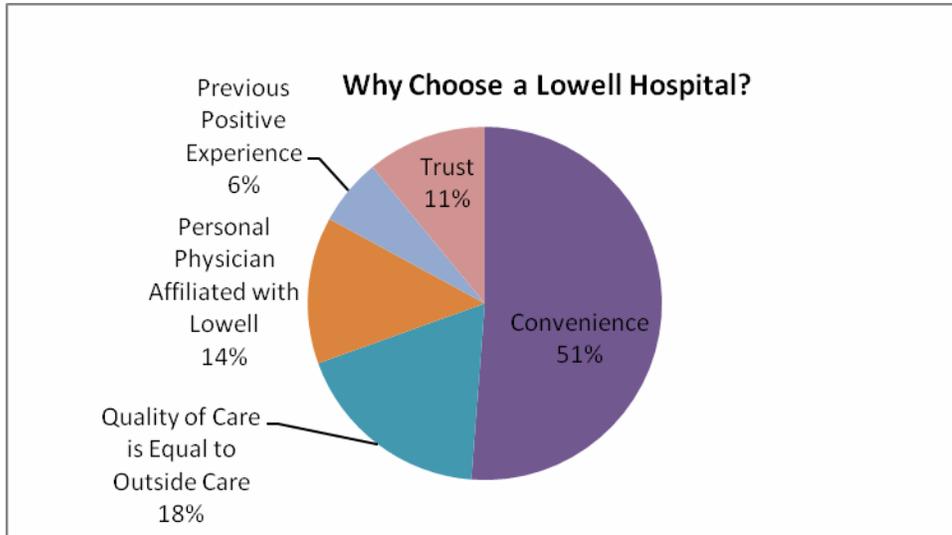


Why would you choose a Lowell hospital, rather than going to a hospital outside the Lowell area? Most respondents (51%) answered this question by saying that they chose a Lowell hospital for “convenience” reasons (see Figure 3). Nine respondents answered this question in a single word, “convenience,” and perhaps twice as many either began their response with that word or included it in their narrative response.

A fifth of respondents mentioned quality of care as the reason for choosing a local hospital. One respondent wrote, “I prefer the smaller hospitals for my inpatient stays because I feel the nursing care is more personal...” Other reasons given for choosing Lowell hospital care included personal physician affiliation, previous positive experience, and trust in the Lowell health system. One local resident said, “My experience is that ___ is as good a hospital as any other. I would only go to a Boston hospital for extraordinary health needs that can’t be met in Lowell.”

The convenience and choice provided by the two community hospitals are clearly seen as being important reasons to seek elective hospital services close to home. In addition, many respondents perceive that the quality of care is as good, if not better than that offered by hospitals outside the community.

Figure 3. Reasons to choose a Lowell hospital reported by residents of CHNA-10 communities



Why would you choose a hospital outside the Lowell area, rather than choosing one of the two Lowell hospitals? This is an important question for regional health planning. However, the number of respondents who answered this question was too small to report and discuss more comprehensively. We nevertheless note that “reputation” and “competency” each accounted for a third of the answers to this question. One respondent answered, “Reputation and word of mouth lead me to believe I'd get better care elsewhere.” Only a few respondents offered any specifics. *De facto*, it appears that the reasons given for going to a hospital outside the area are much the same as the ones given for choosing a Lowell hospital. Clearly, different residents have different perceptions of hospital capabilities and performance.

Focus Groups and Personal Interviews

Analogous to the survey, three basic questions about the area’s healthcare system were posed in both the focus groups and personal interviews. These addressed: 1) the system’s strengths, 2) the weaknesses or unmet needs of the healthcare system, and 3) soliciting suggestions for improving the healthcare system and addressing unmet needs. Our findings are reported below in these three categories: (1) Strengths, (2) Weaknesses and (3) Suggestions. Within each of these categories, the findings are reported in no particular order.

Important to note, we had asked that focus group and personal interview respondents focus on strengths, weaknesses and recommendations specific to the Greater Lowell Community. Although our healthcare system has a great many systemic issues (e.g., reimbursement and regulatory policies), these are not problems that can be addressed within the local area. Thus, to the extent possible, we have sought to focus attention on issues and opportunities that can be addressed locally.

Strengths

- *Children within the Greater Lowell area have good access to medical services, both primary care and specialized.* We were told by the school nurses that the Greater Lowell community is well supplied with pediatricians, family practice physicians and pediatric nurse practitioners, and that most pediatric specialties are readily available in Boston. Pediatric services were said to be available on short notice; we were also told that pediatric providers are often available evenings and weekends. "Pediatric access is never a problem." Moreover, unlike other communities in the Greater Boston area, the Lowell area was seen as having a strong school nursing program ("an important safety net"), with essentially all schools having a Registered Nurse onsite, at least part-time. Access to obstetric care was also said to be good.
- *The new CVS, Walgreens and other "walk in" clinics have improved access to care on evenings and weekends.* "The parents love them." Neither quality of care nor coordination issues were noted. On the other hand, comparatively few respondents reported personal familiarity with such providers.
- *We have two well regarded community hospitals that provide ready access to acute care services, and both hospitals have been working diligently to broaden their service offerings, notably through affiliation agreements, and bring specialty care services to the Lowell area.* Both hospitals appear to have strong community support. Their missions and constituencies are somewhat different, but both hospitals are widely seen as being needed and important. Furthermore, both hospitals are perceived as energetically working to assure that Lowell-area residents receive high quality, state-of-the-art healthcare. As one healthcare administrator observed, "for most services (e.g., cancer treatment), you don't have to travel into Boston anymore." "The quality of care is very good." Moreover, we were told that physicians are beginning to understand that the Lowell hospitals are much less costly than Boston teaching hospitals. The growing use of "hospitalists" at both hospitals received favorable comment from the provider community.
- *Other provider organizations are viewed very favorably.* "The VNA in Lowell is outstanding." "The emergency transport system in the Lowell area is as good as it gets." "Lowell Community Health Center is a great resource." Respondents clearly perceived that the area has some excellent infrastructure. "In many respects, we are resource rich." It was also noted that, within the greater Lowell community, there are many long-term care options, with some facilities offering specialized care.
- *The physician community is becoming better organized to meet community needs.* The area seems to have sufficient physicians to meet population needs. LGH's Physician

Hospital Association and SMC's Independent Practice Association were seen as positive structures for organizing and rationalizing medical practice.

- *The nearby Boston area has outstanding medical resources.* With proximity to Lahey Clinic and the Boston teaching hospitals, it was noted that Lowell-area residents also have ready access to highly specialized hospital and physician resources.
- *The local boards of health strengthen the system.* Their efforts in securing and distributing vaccines, and coordinating vaccination programs were much appreciated.
- *The area has strong elderly health services and systems.* Care of elder populations is provided well by the mix of senior centers, the Councils on Aging, and Road Runner services. Due to federal and state oversight, providers perceived that the overall quality of long-term care has improved considerably in recent years.
- *The Lowell area has a mature human services system.* The community agencies were reported to have good networking relationships, and work well together in "partnership" to efficiently and holistically respond to community health (e.g., H1N1 vaccination) and related needs.
- *Lowell Community Health Center (LCHC) is a culturally competent provider and delivers linguistic services in 25 different languages.* In 2011, LCHC will consolidate most of its services into a single new facility located in the new Hamilton Canal District. While LCHC is currently seen as struggling with capacity constraints and having difficulty recruiting and retaining providers, key respondents anticipate that the new facility will address these problems. LCHC was commended for its community outreach programs. LCHC is training most of the interpreters used by area providers. In general, community providers were seen as giving strong attention to cultural diversity.

Weaknesses

- *The area has a desperate shortage of mental health resources.* This is a long-standing problem, but "it's getting worse." The economic recession has increased the need for these services while budget restrictions have decreased service availability. We were told that school nurses can't find child psychiatrists or inpatient programs for children in crisis, and that they are often unable to recommend other sources of care when it is not available locally. "There is a growing and frightening problem with children in crisis." One respondent in another group spoke to "the travesty of the behavioral health system," both within the Lowell area and throughout the Commonwealth. We heard that it is not uncommon for patients, including children, to be held four or five days in the emergency department pending admission to a psychiatric hospital. In one hospital interview, we were informed that eight adults were currently in the emergency room waiting admission to a psychiatric hospital. This was not considered to be atypical.
- *Clinical deficiencies in neural surgery and gerontology were noted.* We were told that neither of the two hospitals has a neurosurgeon, and that the area has only one gerontologist.

- *Health educational limitations are pervasive.* Just about everyone perceived a need for greater patient education through various means, including “social marketing.” School nurses said that health education for parents would help them to better understand their children’s healthcare needs. The diversity of communities in the area creates challenges for providing sufficient and effective health education. Materials and services are needed in multiple languages. The material must be culturally competent as well. Efforts to address major health problems, such as obesity and its related illnesses, lack the resources to be effective throughout the community. “There’s no reimbursement or funding for health education (e.g., substance abuse education and diabetic management.”
- *The concentration of newly-arrived (and continuing to arrive) immigrants in Lowell presents extraordinary healthcare challenges.* It was reported that the Lowell Community Health Center is operating at capacity and can no longer quickly integrate new immigrants. Concerns were raised that those without documentation may not be seeking needed care. We heard that children of immigrant families have difficulty getting school-required immunizations, and that the schools cannot translate the children’s medical records, when they have them. Moreover, it was noted that many families have escaped horrific situations abroad and have significant mental health problems. Several respondents suggested that the resources provided by the Federal government are not commensurate with the costs borne by the community, and that this creates strains that the system cannot address adequately. We also heard that many undocumented aliens are reluctant to seek healthcare services, even when sick. Although the LCHC has provided outstanding service to these populations, the Greater Lowell healthcare and public health networks have not sufficiently organized to adequately address their health needs.
- *Although the community has substantial linguistic resources, we still need more.* We heard that many community providers do not have any interpreters (e.g., counseling services, physical therapy and nursing homes), and that this presents significant access and quality of care issues. It was also reported that other providers, ambulatory and inpatient, do not have enough interpreters.
- *Teen pregnancy is increasing.* School nurses said that teen pregnancy education clinics should be restarted. Until recently, the teen pregnancy rates in the Lowell area had been improving.
- *Transportation system limitations strain access to care for some residents.* For those without a personal vehicle (low income residents, older residents no longer capable of driving, those without family or friends who can provide a ride) transportation to a local healthcare facilities is often problematic. The problem is even more serious for referrals to out-of-area providers, but especially Boston-based specialists.

- *The competition between the two hospitals weakens the area's healthcare system.* Respondents noted the lack of regional health planning and expressed concern about costly duplication of services (e.g. two cancer centers).
- *Many greater Lowell area residents go outside Lowell, predominantly to Boston, for hospital and physician services that could be provided by either Lowell hospital.* One city official observed that this takes dollars out of the Lowell area economy and limits the resources available to the Lowell hospitals for strengthening their programs, expanding services and providing community benefits. The region lacks an effective campaign to encourage residents to use area health resources.
- *Local health departments lack the budgets and mandates to support health promotion campaigns.* The Westford health department, however, has taken a leadership position in this area. With exception of Westford, the area's public health departments have discontinued providing immunization and dental clinics.
- *The Greater Lowell Area lacks sufficient after-hours (i.e., night and weekend) service providers. This results in strains on the hospital emergency departments* We heard that many physician offices are routinely directing their patients to a hospital emergency department for after-hours care. Urgent care services provided in a hospital emergency department are several times more costly, involve much larger copayments for the patients, and present significant coordination of care challenges. We also heard that, for many patients, the drugstore and "walk in" clinics are not yet recognized as emergency department alternatives, and that physicians don't seem to be sending their patients to them.
- *Lowell's hospital emergency departments have difficulty meeting community needs.* Respondents reported that overutilization, limited staffing and poor management results in inappropriate delays in care.
- *The unmet need for dental care is "huge."* For many respondents, this seemed to be the "elephant in the living room," a problem not immediately mentioned because they had no idea what to do about it. "Oral health is abysmal for seniors." With exception of Westford, the area's health departments no longer conduct dental clinics as they did years ago.
- *The area's health system lacks sufficient resources to address the increasing use of illicit drugs.* Overdose admissions are increasing and opioid abuse is becoming more prevalent. The problem is overwhelming the local capacity to address and prevent the problem. This is a serious problem that requires much more attention than the currently available resources can provide.
- *Insufficient health and medical resources are available for the area's homeless population.* We heard that many homeless people have medical problems, but that most shelters will not accept a homeless person with medical needs.

Suggestions

Several interesting, provocative recommendations for improving the area's healthcare system noted below.

- *A 24/7 public access television channel could help meet the area's health education needs.* The programming might include a mix of syndicated and locally-produced content, and perhaps close captioned or broadcast in multiple languages. Local health provider organizations indicated a willingness to contribute programming. This was viewed as a useful way to provide health information to the elderly.
- *The area needs one or more urgent care clinics, or other alternatives, for providing primary care services on an after-hours basis.* One provider anticipated that the area's primary care physicians would come together and cooperate in evolving a "medical home" model of care that addresses the need more systemically. At present, both LCHC and Harvard Vanguard in Chelmsford maintain evening and Saturday morning clinics. The question was asked whether these clinics might also be used by patients who go elsewhere for scheduled primary care services.
- *Develop a clearinghouse of information on the area's healthcare providers, their services, capacity and policies.* This would help area residents be better informed about the services available. A web-based resource could be helpful for sharing information on the area's healthcare system and capabilities—and it might even be helpful in redirecting area residents to providers within the community.
- *The Greater Lowell healthcare and public health networks, along with social service and support organizations that work with low income and immigrant communities, need to establish an integrated and effective system for identifying the health needs of immigrant and low income communities.*

Analysis of Data Provided by the Massachusetts Department of Public Health and U.S. Health Surveys

The findings from analysis of data available from the Massachusetts Department of Public Health and various U.S. health surveys are broadly consistent with the survey and interview findings reported above. Although the available secondary data are "silent" on many questions, the data clearly indicates the same pattern of unmet needs as perceived by those living and working within the community. Moreover, the data also attest to significant healthcare progress within the Greater Lowell area.

Infant mortality has declined sharply since 1990, when CHNA-10 saw 11.6 infant deaths per 1,000 live births, a number more than 50% higher than the state average of 7.0 per 1,000 births (Figure 4). In 2007, the CHNA-10 infant mortality rate was lower than that of the state (4.2 per 1,000 births, compared to 4.9 per 1,000 births). Much of this reduction appears to have come from a decrease in infant mortality in Lowell, from 14.8 to 5.5 deaths per 1000 births. Despite recent declines in infant mortality, a number of modifiable risk factors remain that could be changed to achieve further improvements (Figure 5). For example, children born in the CHNA-10 region in 2007 were more likely than those in Massachusetts as a whole to be

born to mothers who smoked while pregnant (9.1% compared to 7.5%) and who did not receive adequate prenatal care (13.9% compared to 8.9%).

Between the late 1980s and the early 2000s, asthma hospitalizations among children aged 0-4 in CHNA-10, and also Lowell by itself, followed patterns similar to those in the rest of Massachusetts. These rates peaked in the early 1990s and declined steadily through the end of the decade. After 2003, however, CHNA-10 and Lowell saw a sharp rebound in rates. By 2006, these rates had climbed to 517 per 100,000 for CHNA-10 and 813 per 100,000 for Lowell, rates that were over 25% and 100% higher than the state rate of 394 per 100,000 (Figure 6).

The teen birth rate in Massachusetts has declined steadily since 1989. The teen birth rates in Lowell and CHNA-10 dropped sharply between 1989 and 2003, but have stagnated since then. In 2008, the birth rate to mothers aged 15-19 in Lowell was 48.7 per 1000, compared to 25.7 per 1000 for CHNA-10 and 20.0 per 1000 for the entire state (Figure 7). In contrast, the Chlamydia infection rate among 15-19 year olds in Massachusetts rose steadily between 1995 and 2008, while the rates for 15-19 year old residents of Lowell and CHNA-10 declined steadily from 2002 to 2008 (Figure 8). In 2008, the infection rate in this age group was 1091 per 100,000 in Lowell, 619 per 100,000 in CHNA-10, and 1133 in all of Massachusetts.

Consistent with reports from the focus groups and key informant interviews, opioid overdose mortality has increased substantially since 1996 in CHNA-10, and also in Massachusetts as a whole. During that time, opioid overdose mortality rose from 2.7 per 100,000 to 10.8 per 100,000 in CHNA-10, and it increased from 2.7 per 100,000 to 9.6 per 100,000 for all Massachusetts residents (Figure 9). Between 2006 and 2007, Lowell experienced a startling increase from 10.9 per 100,000 to 17.7 per 100,000.

In 2006, mental health hospitalizations in Lowell (3676 per 100,000) were at parity with the state rate (Figure 10), while the rate for CHNA-10 as a whole was much lower (3059 per 100,000). While these local rates are not problematic, compared to the state, they are the result of almost two decades of nearly continuous, annual increases. The mental health hospitalization rates in Lowell and CHNA-10 are each more than twice those observed in 1989, and not surprisingly result in backlogs and waiting lists for treatment, given that the mental health infrastructure has not been similarly increased.

High rates of using the emergency department among Lowell residents may also be putting a strain on the medical system. Between 2002 and 2005, Lowell residents used the emergency department between 23% and 39% more often than Massachusetts residents generally. In 2005, Lowell residents visited the emergency department at a rate of 44,235 visits per 100,000 residents, compared to 34,223 per 100,000 for all Massachusetts residents (Figure 11). This high rate of emergency department utilization may be partly rooted in difficulties that Lowell residents have accessing regular care.

Despite improvements since 2000, nearly 16% of Lowell residents in 2008 said that they do not have a personal care provider or medical home where they get treatment (Figure 12). Over 10% of Lowell residents in 2008 claimed to have been unable to obtain needed health

care in the previous month due to the cost of that treatment, a figure that is virtually unchanged since 2000. And despite the enactment of Massachusetts health care reform in 2006, the rate of uninsured Lowell residents actually increased between 2000 and 2008, from 5.3% to 8.1%. These shortcomings in health care access were extended to dental care, as well, with fewer than 70% of Lowell residents in 2008 receiving at least one dental exam in the previous year, nearly 10 percentage points below the Massachusetts average (Figure 13).

While measures of health care access did not differ substantially between CHNA-10 and Massachusetts as a whole, trends apparent in this data provide important information in terms of monitoring social inequalities (Table 2). During the first decade of this century, non-Hispanic whites in CHNA-10 were substantially more likely to have a personal health care provider (89.6%), compared to Asian (78.8%) and Hispanic (67.6%) residents. Non-Hispanic blacks were three times as likely as non-Hispanic whites to report being unable to see a doctor due to cost, and Hispanics were four times as likely as non-Hispanic whites to report having no health insurance. Those living in households with an income of less than \$50,000 per year fared substantially worse on all three measures, compared to those in households with an annual income of \$50,000 or more.

In 1999, the top three causes of death in CHNA-10 were heart disease, cancer, and stroke, in that order (Figure 14). By 2007, cancer had replaced heart disease as the leading killer, and stroke had fallen behind chronic lower respiratory disease and unintentional injuries and poisonings in terms of importance. The largest proportional increase in frequency was for deaths due to mental disorders, a category that includes such illnesses as dementia, substance abuse, delusional disorders, mood disorders, and behavioral disorders. Between 1994 and 2007, reductions in mortality for residents of Lowell and CHNA-10 mirrored a similar decline for all of Massachusetts (Figure 15). During this time, age-adjusted mortality was reduced from 1099 per 100,000 to 867 per 100,000 in Lowell, and from 938 per 100,000 to 807 per 100,000 in CHNA-10. Despite these reductions, these figures are both substantially higher than the 2007 state average of 700 per 100,000, indicating that there are still many improvements that can be made in the lives of the area's residents.

The most recent mortality data also reveal racial and ethnic health differences (Figure 16). In 2007, on a statewide basis, Asians had the lowest age adjusted mortality rates, followed by Hispanics, non-Hispanic Whites and non-Hispanic blacks. The comparatively better health of Asian and Hispanic people living in this country is generally attributed to the fact that these groups are disproportionately composed of immigrants. Recently-arrived immigrants tend to have better health profiles than native-born Americans, and even better than immigrants already assimilated. Hispanics and non-Hispanic Blacks in Lowell had nearly the same age-adjusted mortality rates as Hispanics and non-Hispanic Blacks living elsewhere in Massachusetts. Non-Hispanic whites in Lowell, on the other hand, had a 26% higher age-adjusted chance of dying, and Lowell's Asians were almost twice as likely to die as similarly-aged Asians living elsewhere Massachusetts.

The recent evidence is mixed regarding improvements in behavior-related risk factors for chronic disease in Lowell. The percentage of smokers in Lowell did decrease 1.5 percentage points to 24.2% between 2000 and 2008 (Figure 17). The comparable decrease for all of Massachusetts, however, was 3.8 percentage points, and the 2008 statewide figure was 16.1%, indicating that Lowell started with a higher proportion of smokers and that its smoker rate is decreasing more slowly. Over the same interval, the proportion of Lowell residents who had a binge drinking episode in the previous month increased from 19.1% to 22.7% (Figure 17). More encouraging, between 2000 and 2008, the proportion of Lowell residents who had participating in a leisure-time physical activity during the prior month increased from 62.6% to 73.4% (Figure 18). While this may be an indicator of more frequent activity, there is little evidence that monthly exercise has any impact on health outcomes. In fact, over the same interval, the proportion of Lowell residents classified as being overweight or obese (with a body mass index over 25 kg/m²) rose from 54.0% to 63.0% (Figure 18).

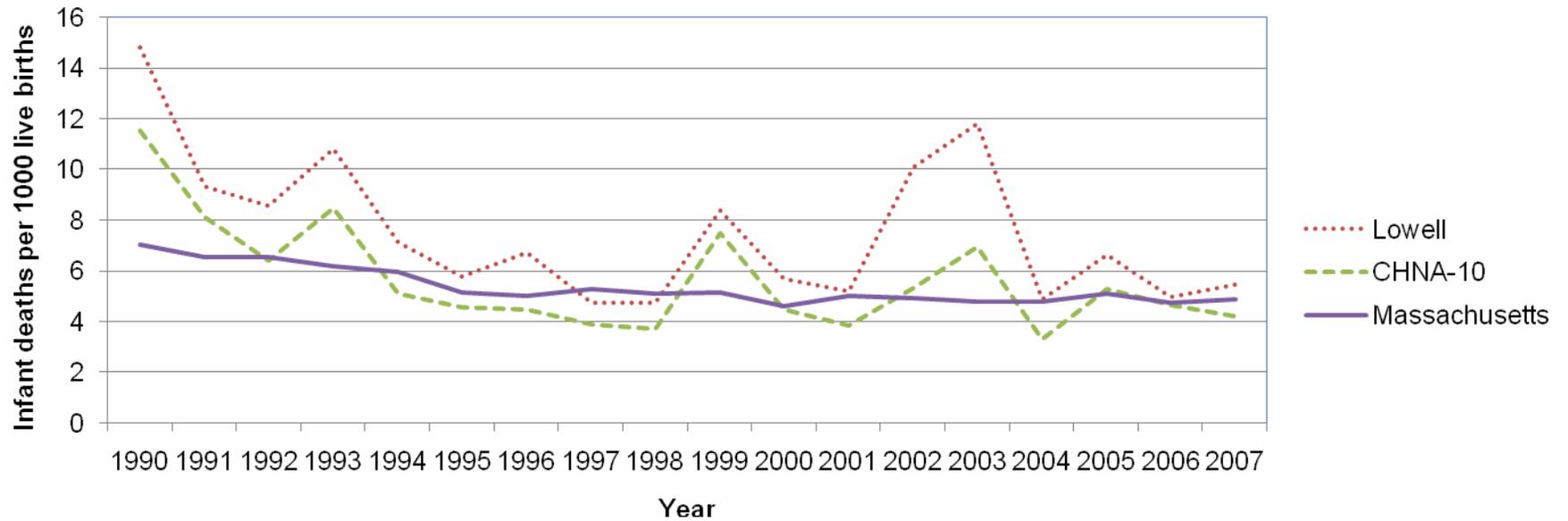
Table 2. Health Care Access Measures in the Greater Lowell Area and Massachusetts

	Percentage of adults who have a personal health care provider (2002-2007)		Percentage of adults who could not see a doctor due to cost (2003-2007)		Percentage of adults with no health insurance (2002-2007)	
	CHNA-10	Massachusetts	CHNA-10	Massachusetts	CHNA-10	Massachusetts
<i>Total</i>	87.1	87.8	8.1	7.7	8.5	7.6
Race/Ethnicity						
Non Hispanic White	89.6	90.2	6.9	6.3	6.3	5.9
Non Hispanic Black	85.0	84.6	21.0	13.6	13.0	11.9
Hispanic	67.6	68.0	14.8	17.1	27.2	21.4
Asian	78.8	78.8	9.3	6.3	11.2	7.1
Household Income						
< \$50,000	82.4	83.2	12.1	13.2	14.7	14.2
\$50,000+	90.9	92.2	3.4	3.3	3.7	2.5

Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

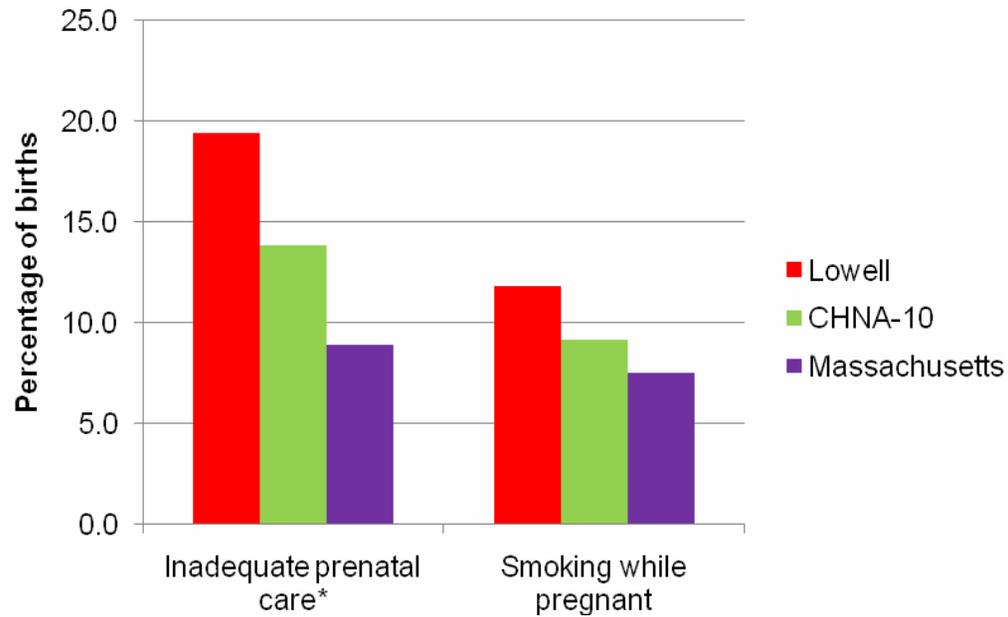
Figure 4. Infant mortality rates per 1000 live births in Lowell, CHNA-10, and Massachusetts; 1990-2007



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

Figure 5. Percentage of children exposed to pregnancy-related risk factors in utero in Lowell, CHNA-10 and Massachusetts; 2007

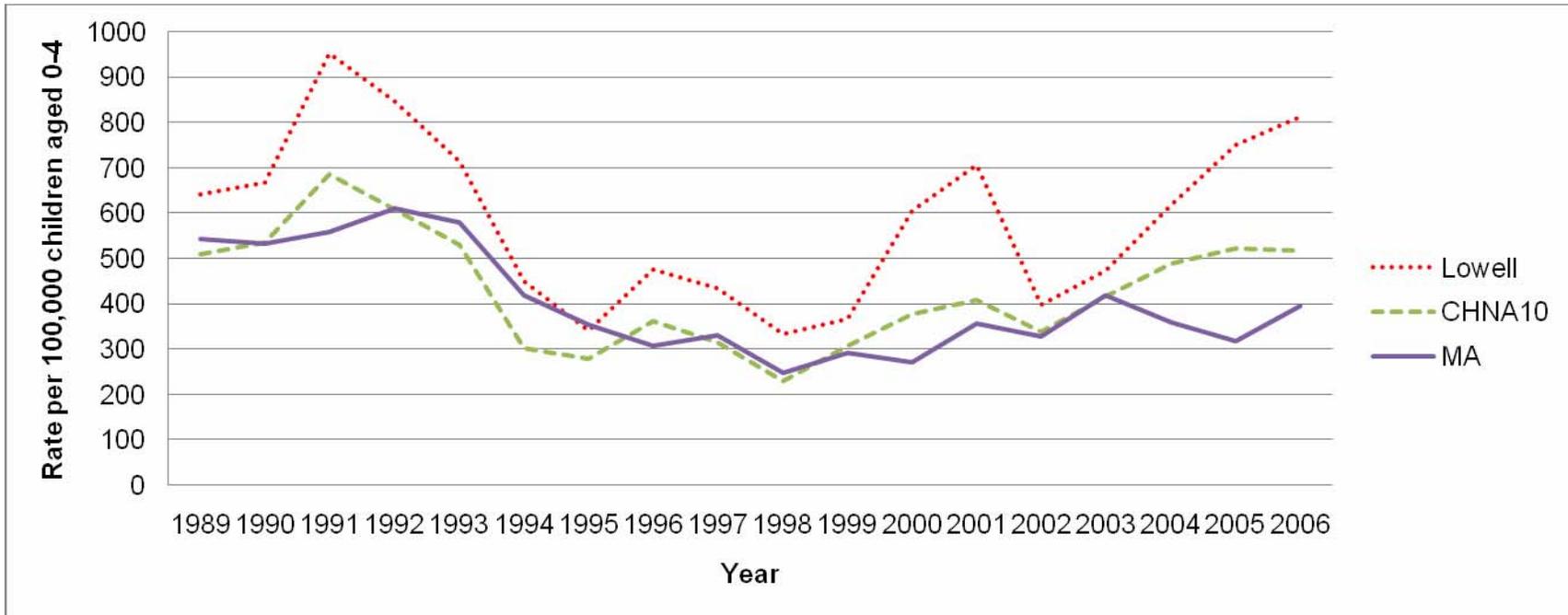


* Inadequacy of care measured using the Adequacy of Prenatal Care Utilization (APNCU) Index

Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

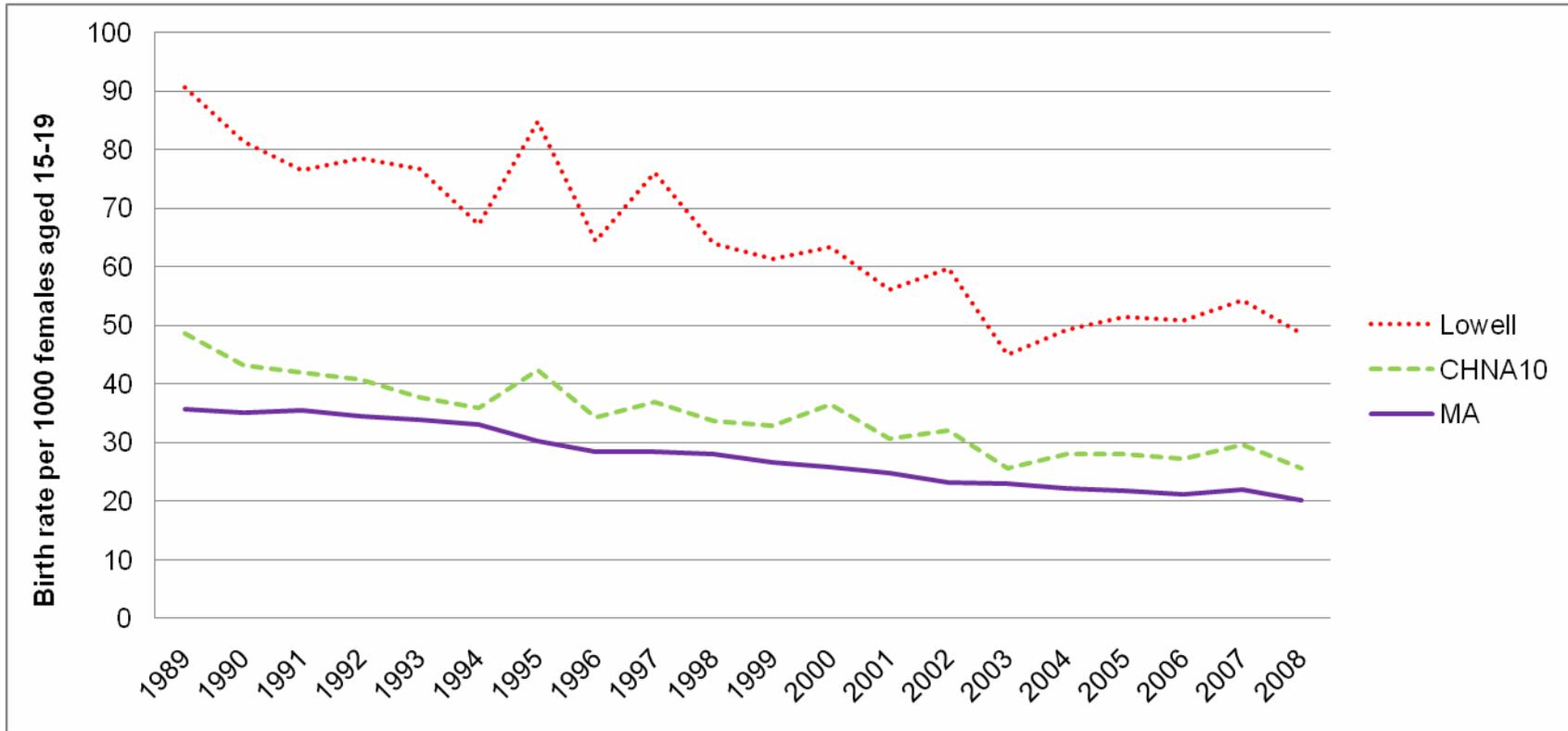
Figure 6. Asthma hospitalization rates per 100,000 for children aged 0-4 in Lowell, CHNA-10, and Massachusetts; 1989-2006



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

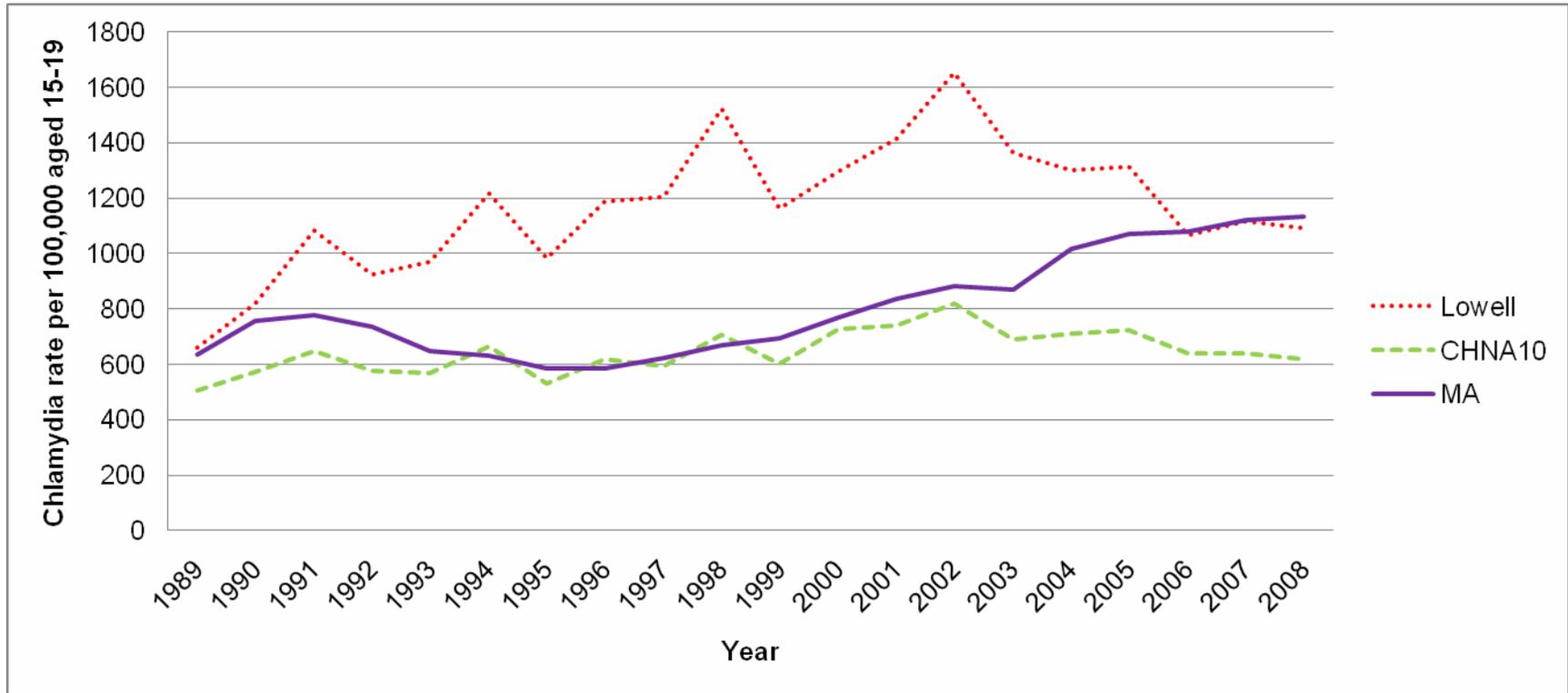
Figure 7. Birth rate per 1000 females aged 15-19 in Lowell, CHNA-10, and Massachusetts; 1989-2008



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

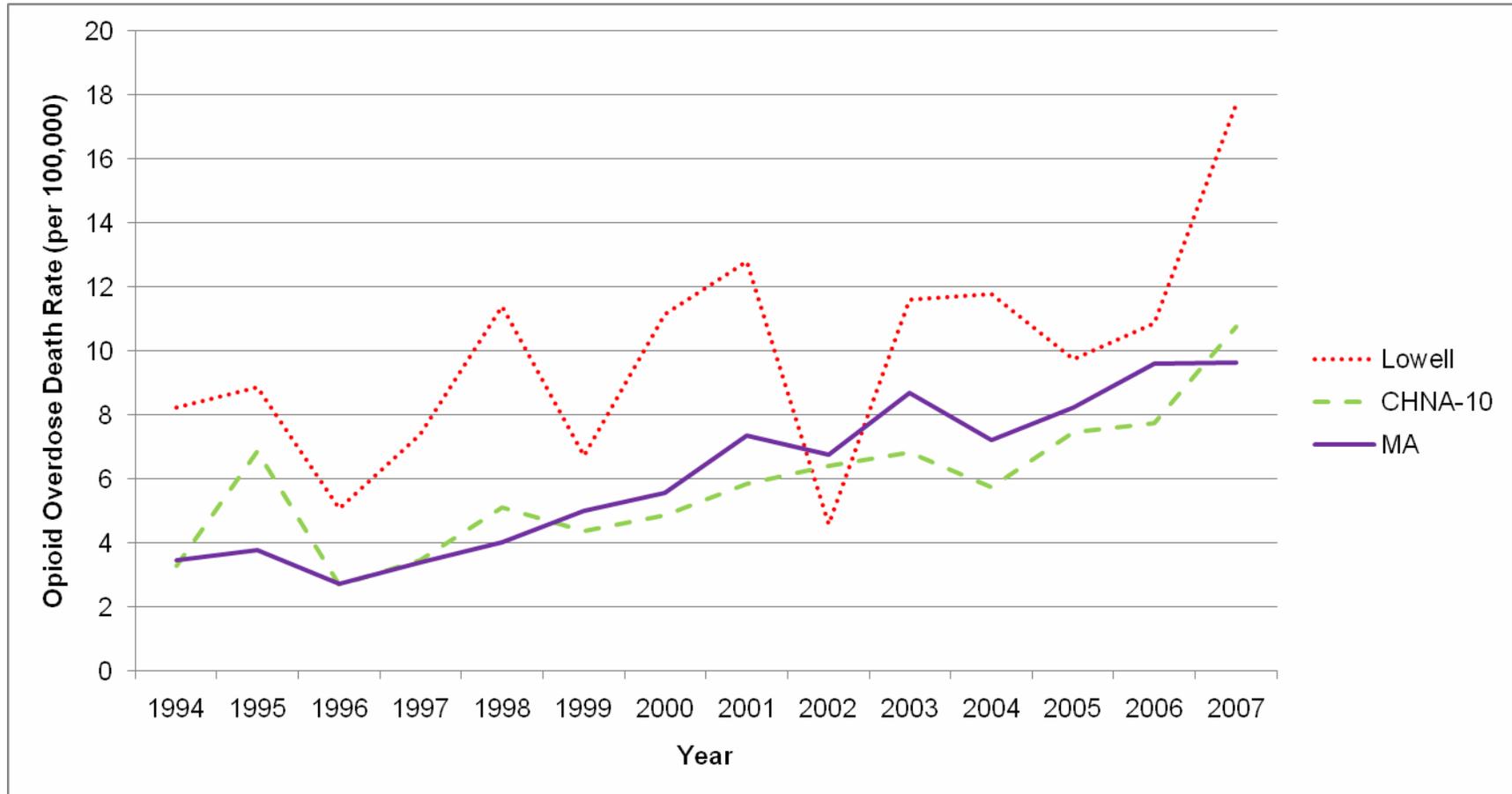
Figure 8. Chlamydia rate per 100,000 aged 15-19 in Lowell, CHNA-10, and Massachusetts; 1989-2008



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

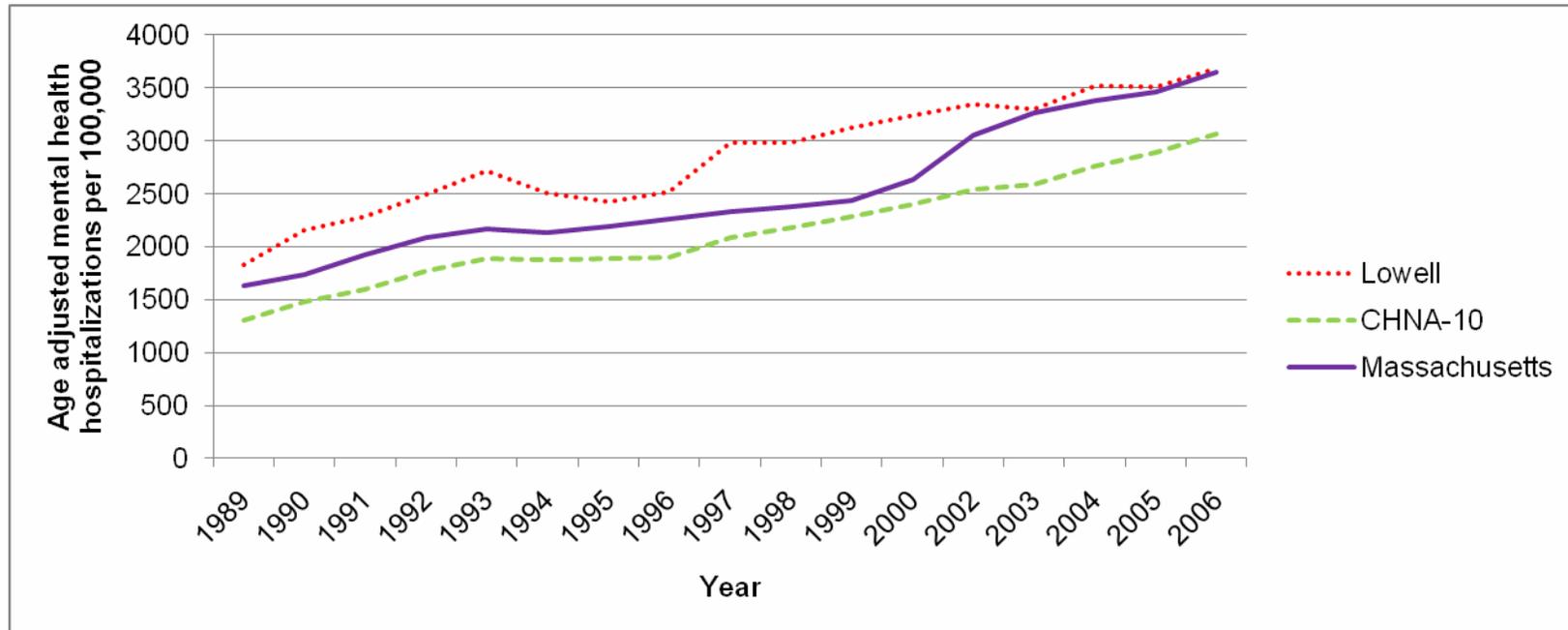
Figure 9. Opioid overdose mortality rates per 100,000 in Lowell, CHNA-10, Massachusetts; 1994-2007



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

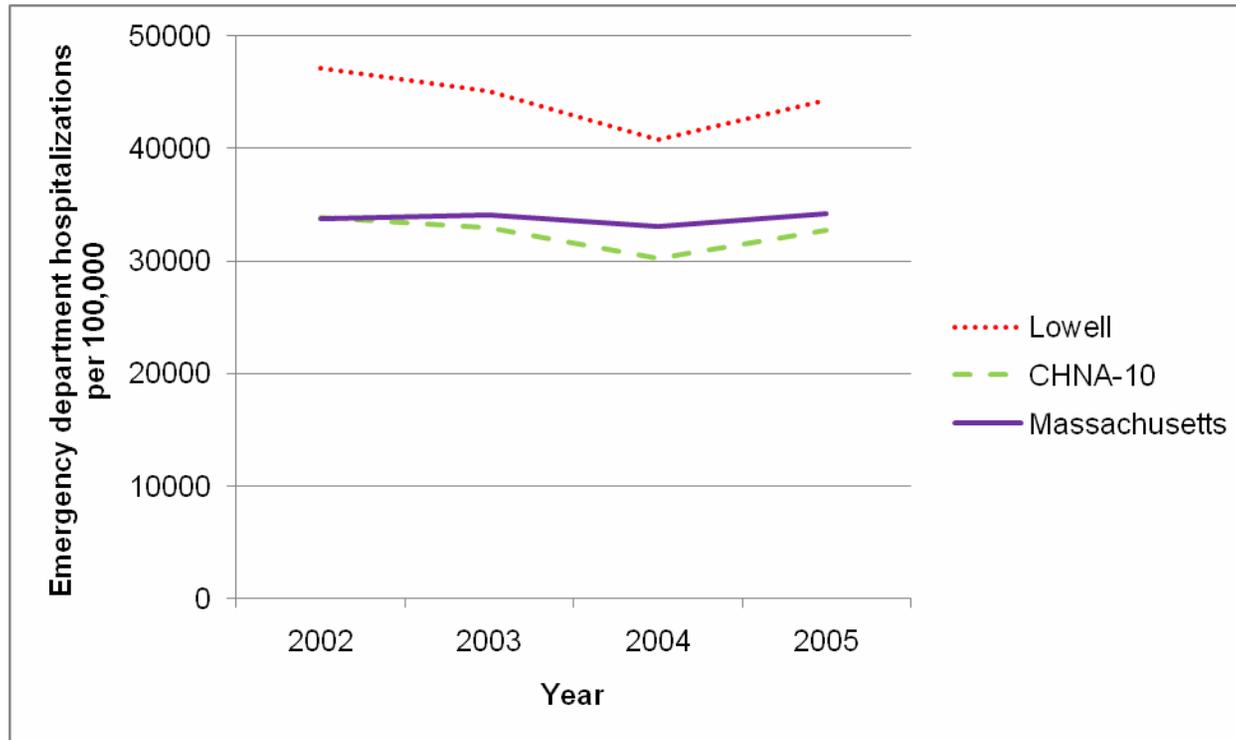
Figure 10. Age-adjusted mental health hospitalization rate per 100,000 in Lowell, CHNA-10, and Massachusetts; 1989-2006



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

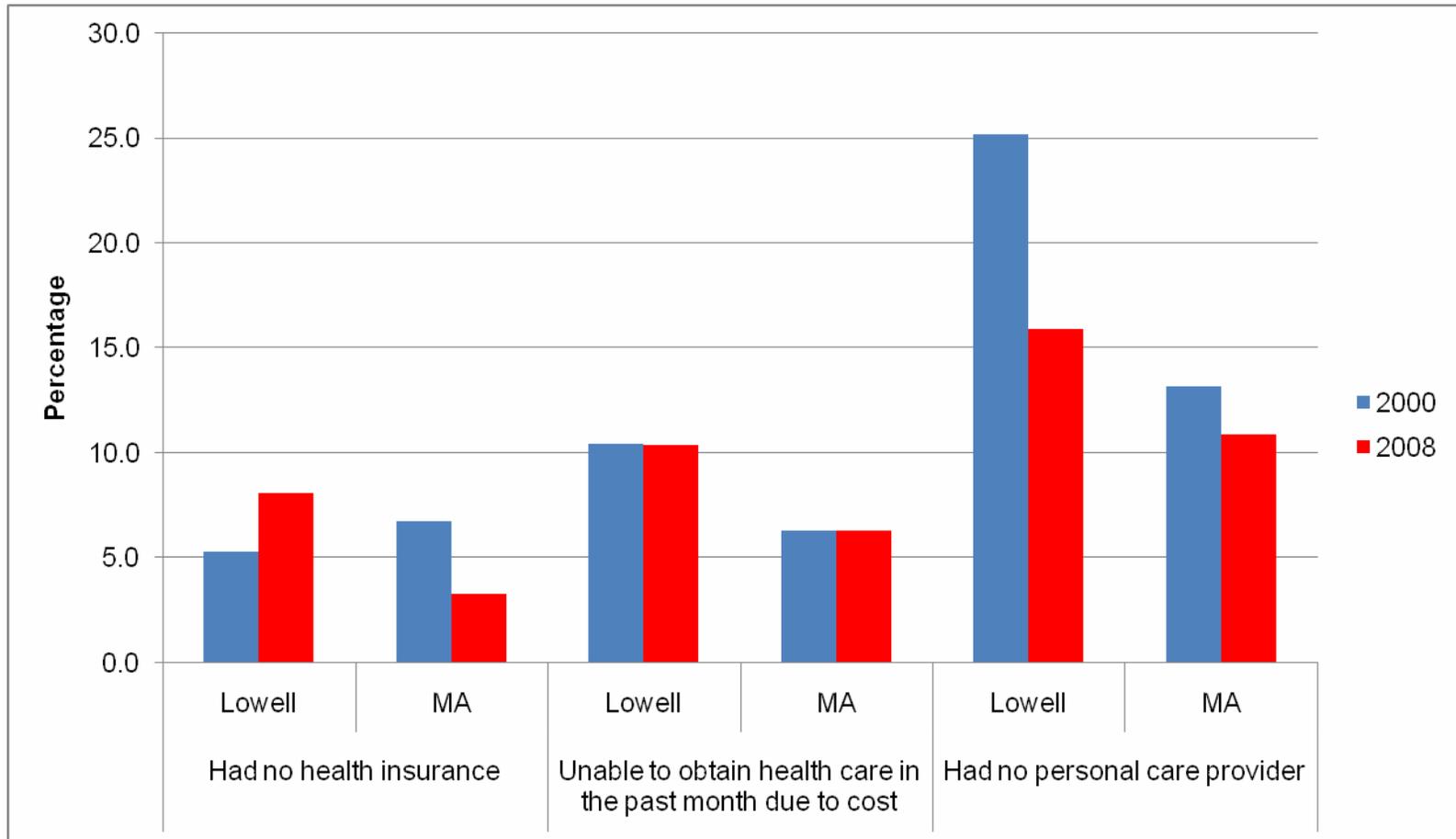
Figure 11. Age-adjusted rate of emergency department hospitalizations per 100,000 in Lowell, CHNA-10, and Massachusetts; 2002-2005



Source: Massachusetts Department of Public Health, 2009

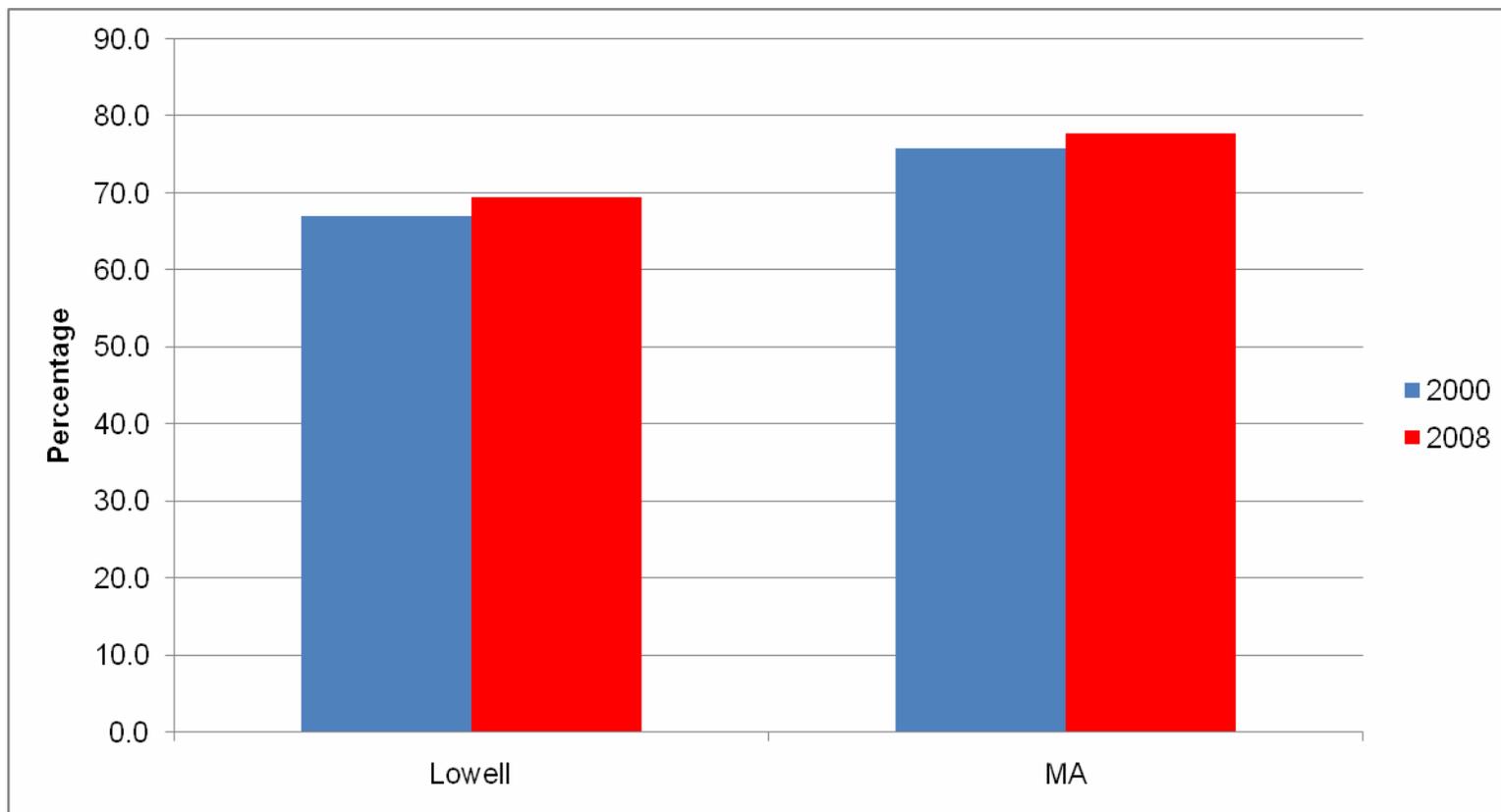
Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

Figure 12. Health care access characteristics in Lowell and Massachusetts; 2000 and 2008



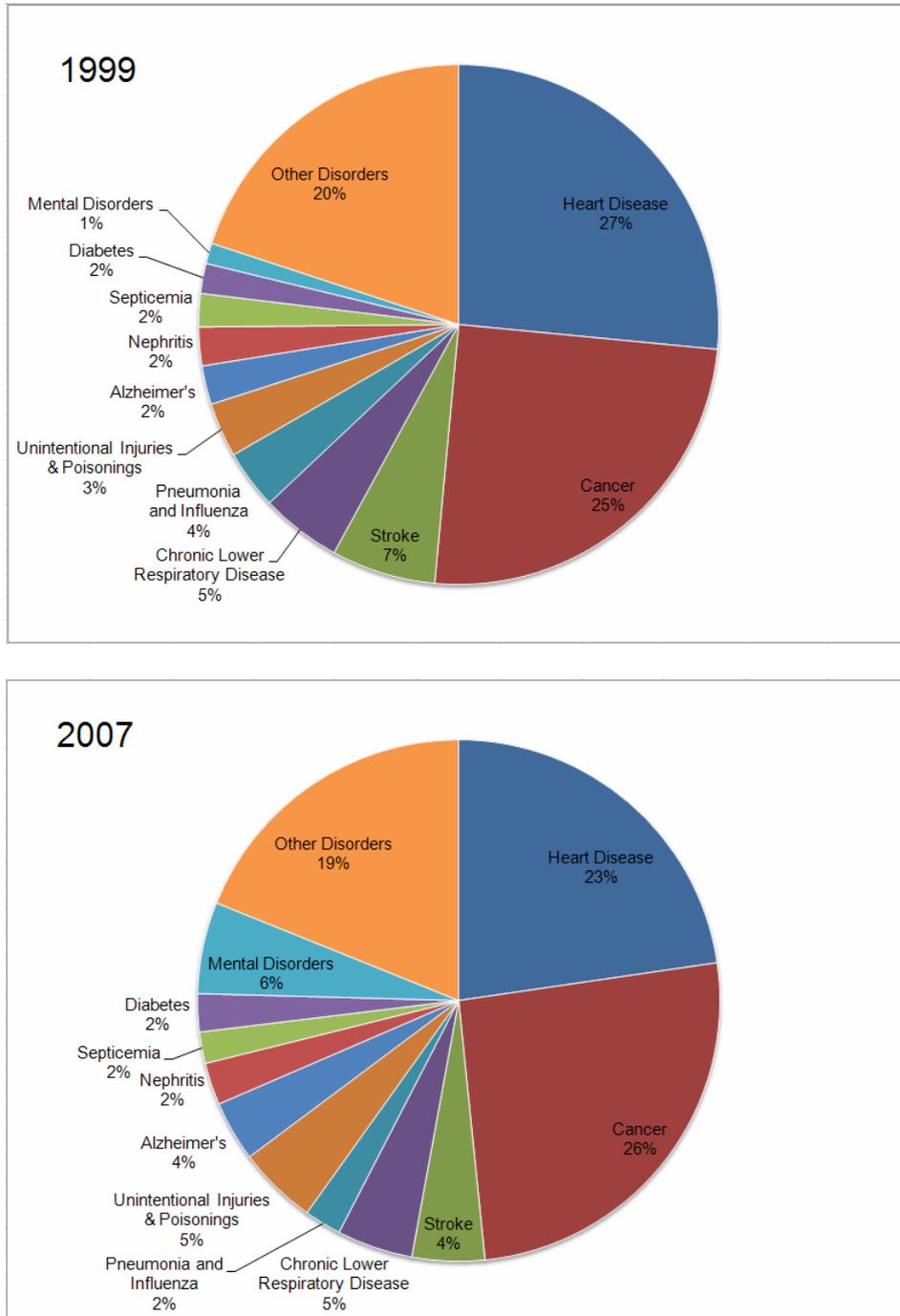
Source: Massachusetts Department of Public Health, 2009

Figure 13. Individuals reporting having had a dental exam in the previous year in Lowell and Massachusetts; 2000 and 2008



Source: Massachusetts Department of Public Health, 2009

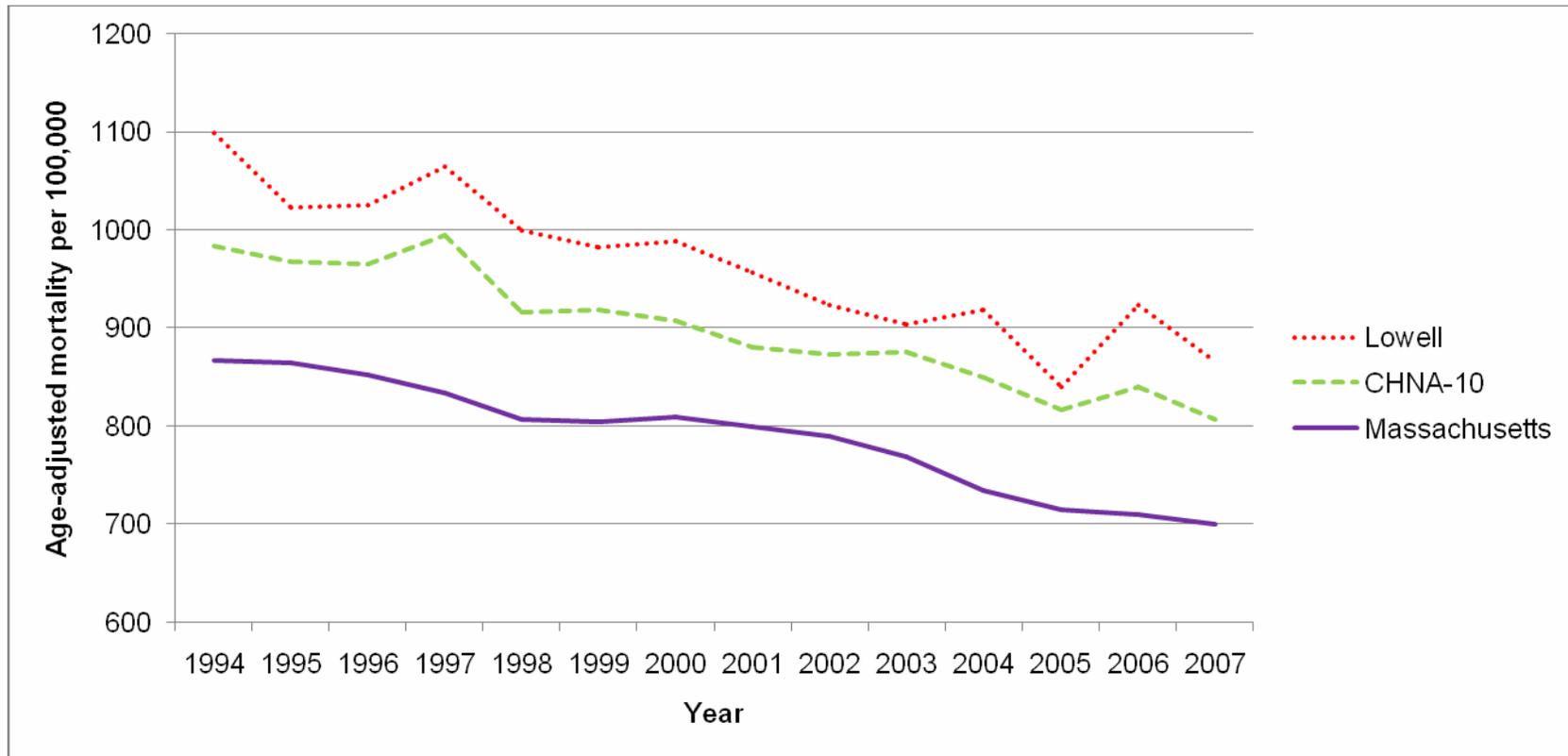
Figure 14. Distribution of deaths by cause within CHNA-10; 1999 and 2007



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

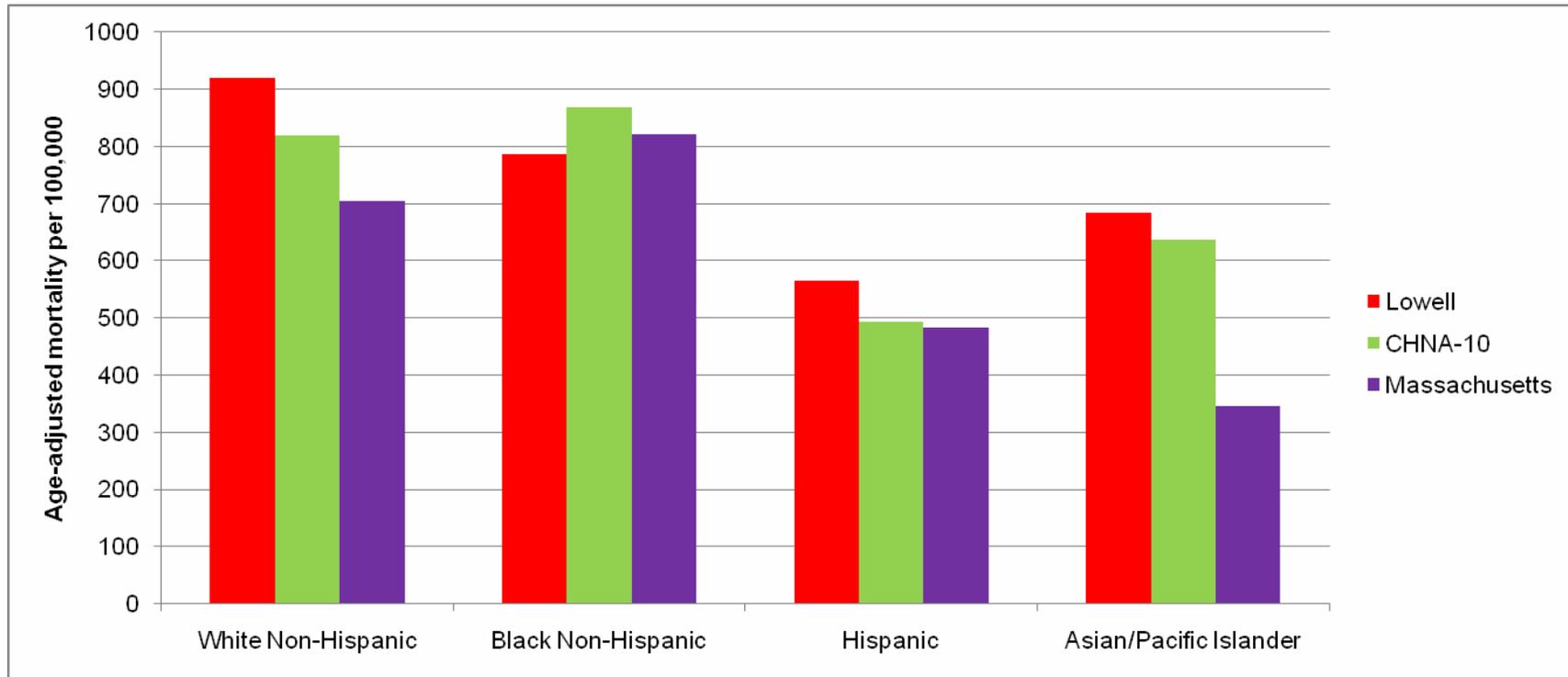
Figure 15. Age-adjusted mortality per 100,000 in Lowell, CHNA-10, and Massachusetts; 1994-2007



Source: Massachusetts Department of Public Health, 2009

Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

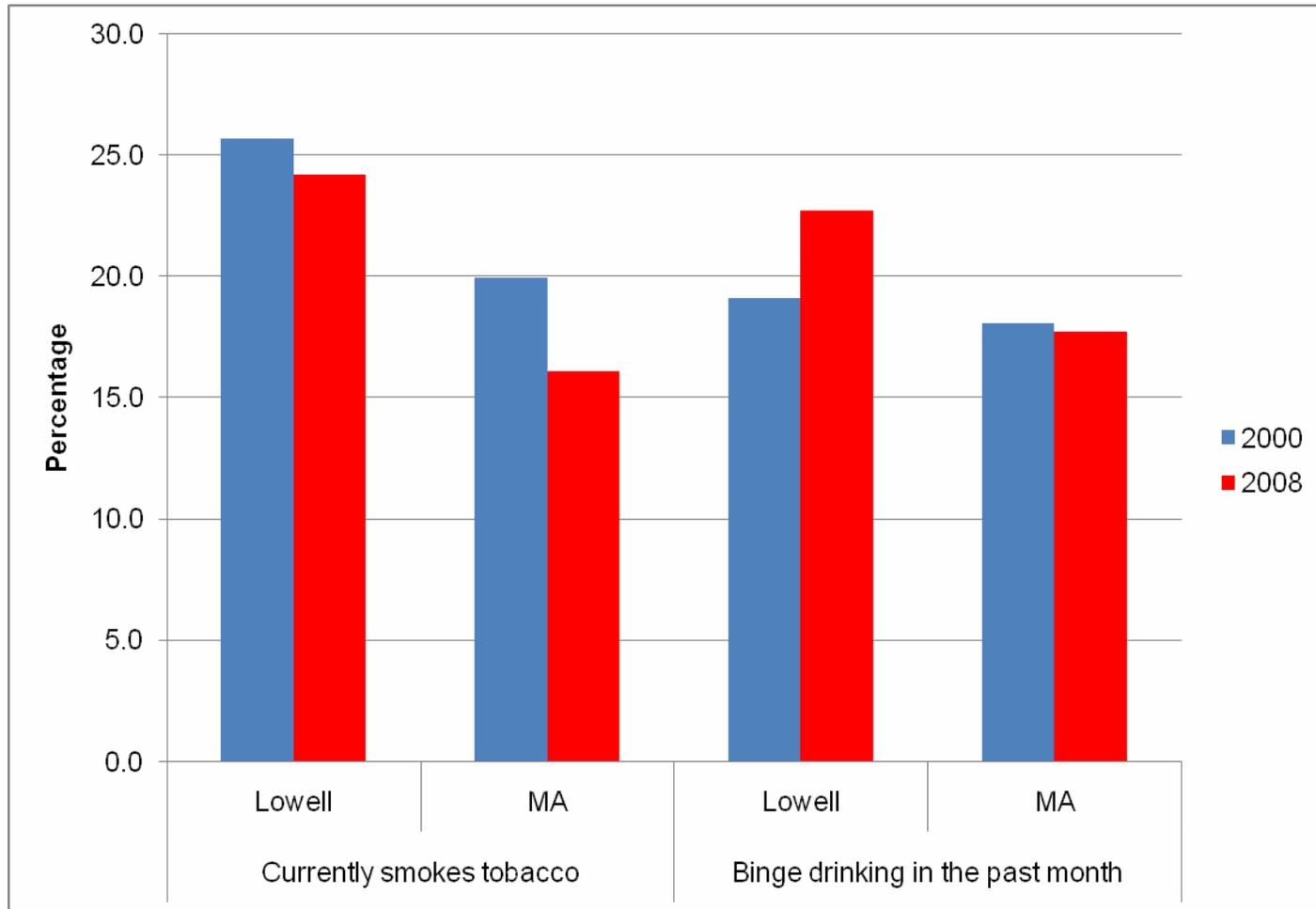
Figure 16. Age-adjusted mortality per 100,000 by race/ethnicity in Lowell, CHNA-10, and Massachusetts, 2007



Source: Massachusetts Department of Public Health, 2009

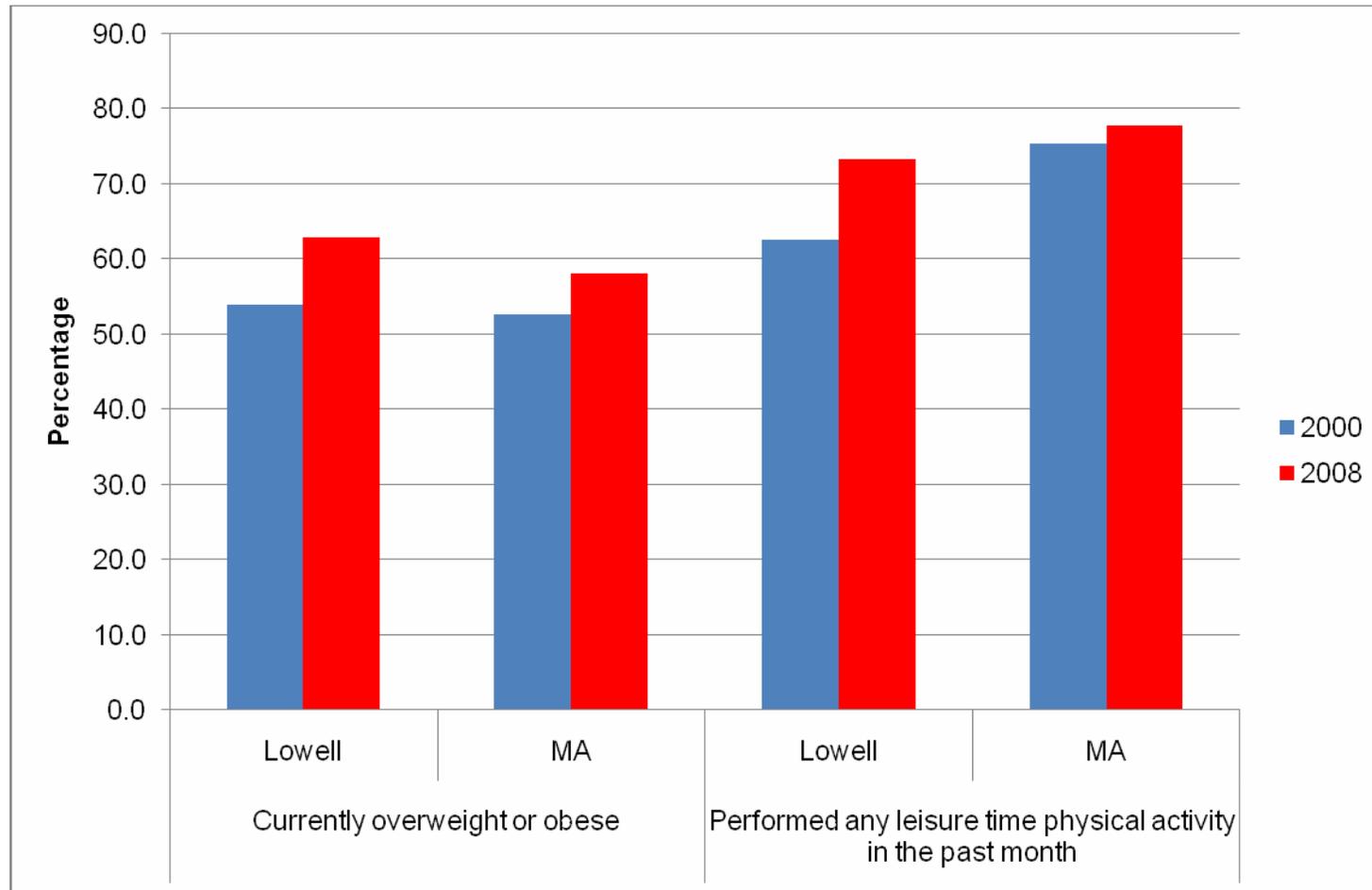
Note: CHNA-10 consists of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford

Figure 17. Tobacco and alcohol related health behaviors among residents of Lowell and Massachusetts; 2000 and 2008



Source: Massachusetts Department of Public Health, 2009

Figure 18. Obesity and physical activity among residents of Lowell and Massachusetts; 2000 and 2008



Source: Massachusetts Department of Public Health, 2009

IV. DISCUSSION OF FINDINGS

Our findings indicated several seeming contradictions with respect to health and healthcare within the CHNA-10 communities. One such paradox is related to the perceived adequacy of healthcare services provided. In general, this investigation suggested that the health services available within the area are comprehensive and sufficient to serve most resident healthcare needs. As evidence of this, the study participants pointed to the diverse range of high quality primary and secondary care available from area providers—namely, LGH and SMC, Lowell Community Health Center, the numerous independent physicians and other healthcare providers. We heard consistently that we have a “resource rich healthcare community.”

While comprehensive, high quality care is available for those who have access to it, we nevertheless had reports that such access does not extend to everyone within the larger community. Some survey respondents noted difficulties receiving primary care and specialist appointments, due to provider availability, practice restrictions or a lack of service on evenings and weekends. Such problems are mirrored in the increasing popularity of pharmacy-based walk-in clinics and the inappropriate use of emergency departments for routine or minor care. Those respondents working in the human services field, i.e., the ones with close ties to the disadvantaged residents living in the Greater Lowell area, described even greater barriers to care within these groups. It was reported that services are frequently unavailable to immigrants, individuals with low education, those with inadequate health coverage, the very old, and the young. Barriers include not only language but also transportation, inability to pay for care, time constraints for those working long hours or with family responsibilities, and cognitive deficiencies that preclude an individual’s ability to schedule, arrive at, understand and pay for services. Moreover, MassHealth members are finding it increasingly difficult to find physicians, both primary care and specialists, who will accept them as patients. Such individuals were largely missed in our community survey, even though they constitute a very substantial proportion of the area’s population. Finally, providers and residents alike noted specific access issues, notably pediatric and adult mental health facilities, but also dental care, neural surgery, and gerontology. The voiced perception that the area has a “resource rich healthcare community” misses the mark when these resources are not accessible to a significant part of the population and when some critically needed services are woefully lacking.

Another more global paradox seems to be the tension that exists between the provision of medical services and the promotion of public health. Traditionally, the focus of healthcare professionals has been providing excellent medical care. While this is a noble goal, it is, in and of itself, not sufficient to improve the health of the public, since the most important influences on health are related to the broader environment and personal health behaviors. For example, the principal healthcare response to obesity, a major emerging public health concern in CHNA-10 and the rest of the country, is to recommend weight loss and provide encouragement and information about exercising and eating a healthy diet. This intervention, however, is dwarfed by the social, commercial and media messages that an individual receives encouraging him or

her to consume large portions of high-calorie, low-nutrient foods and beverages, items that are inexpensive, convenient, and readily available, and widely associated with sedentary entertainment activities such as watching television and playing video games.

The study finding of increased misuse of controlled substances is another example of the need to coordinate medical services and public health programs in such a way as to reduce and prevent the problem. The medical professionals who prescribe potentially addictive (i.e., Schedule IV) substances, the patients and the community all need effective training, directed towards preventing drug misuse, addiction, overdose and fatality.

Additionally, while pregnant women in Lowell receive excellent prenatal care, the recent stagnation and suggested increase in the teen birth rate, after years of decline, signals that teens are not receiving adequate sex education and reproductive health services. We need to give renewed attention to this issue, and put in place an effective program that will support teenagers' sexual and reproductive health needs.

The two hospitals provide strong emergency department services. Yet our respondents told us that such services are strained and overused. In light of this consistent observation, it is difficult not to conclude that more primary care access is needed – not only in the number of facilities and providers, but more importantly in the availability of primary care (i.e., medical home) services on a 24-hour/7 day per week basis. Additionally, the study showed that transportation to healthcare services is not sufficient for community members without personal vehicles, easy access to public transportation (which is limited), and those whose disabilities inhibit their use of either a personal vehicle or public transportation.

The immigrant and refugee communities in Lowell have specific medical and public health needs. The study showed strong agreement that the Lowell Community Health Center (LCHC) leads the country in providing culturally competent care. Its Metta Health Center has been widely recognized for providing culturally-competent healthcare to Lowell's Southeast Asian population and uniquely focusing on their idiosyncratic healthcare needs. Nevertheless, we were told that newly arrived immigrants are having difficulty accessing any healthcare, and that LCHC's present capacity constraints limit its ability to address their needs.

Members of several focus groups decried the barriers that new immigrant and refugee families face when trying to access local healthcare services for their children. The children are often held out of school for months, until they can meet the Commonwealth's immunization requirements. In this area, it has long been school policy to require that all children provide written documentation of their immunization status before letting them into the classroom. Due to the circumstances under which many refugee or immigrant children departed their countries of origin, health records were often left behind or non-existent. In consequence, these children are dependent upon local healthcare providers to document their immunization status before they can go to school. In February 2010, the Commonwealth's Executive Office of Health and Human Services began encouraging more permissive school access, so that the children are not excluded from school until the immunization requirements have been met. As a community, we should come together and address this problem.

Consistent with a national dialog about health disparities, it is no surprise that the healthcare system of CHNA-10 (Greater Lowell) demonstrates weaknesses in its capacity to meet the health needs of immigrant and low income populations. Finding these weaknesses is more an indication of problems that we face as a nation than failings at the local level. Nonetheless, the finding reminds us again that we need to improve services for these underserved populations. The Greater Lowell healthcare and public health networks, along with social service and support organizations that work with low income and immigrant communities, need to establish an integrated and effective system for identifying the health needs of immigrant and low income communities. Though this will be challenging, the successful measures built around the Lowell Community Health Center's innovative efforts provide us with opportunities to establish a system that can become a national model of excellence.

Finally, we cannot end this report without speaking to the egregious problems in accessing mental health services, not only in Greater Lowell but also throughout the Commonwealth. One provider opened our conversation with the following statement:

"We need to first talk about the travesty of the behavioral health system. Lowell is suffering from a dearth of behavioral health providers, beds, and resources, and agencies. This is the principal problem with healthcare in Lowell."

Although others didn't say it so forcefully, we heard much the same from every focus group and every personal interview. Moreover, unlike other healthcare issues or problems, lack of access to quality mental and behavioral healthcare is a problem for almost all in the Greater Lowell area. In recent time, both the Solomon Mental Health Center has closed, and LGH's inpatient unit have closed. The demand for mental health services appears to be growing at the same time that the area's provider capacity has been shrinking.

This is not a problem that the Greater Lowell community itself can resolve by itself. In healthcare (like any other industry), capacity depends importantly upon willingness to pay; and, for whatever reason, the Massachusetts health plans (including MassHealth) aren't willing to pay what it takes to support psychiatric and related mental health services. The current reimbursement structures do not support the provision of sufficient, good quality mental and behavioral health services – including hospitalization and other 24-hour services, intensive community services, ambulatory or outpatient services, medical management, case management, and other forms of treatment that address the community's needs.

The area's paucity of mental health resources is an important and urgent problem, albeit one that can only be addressed at the state level. The Lowell community needs to have a loud and effective lobby in voicing its concerns about mental health services to the Massachusetts Legislature and elsewhere, and otherwise work to publicize the problem and establish its priority for all concerned, including medical and other human service providers, employers, employees, young people and the aged. We must all work together to move this agenda.

In closing, we should say that we have intentionally avoided indicating clearly stated conclusions. It is not our role to do so. We have provided information, ideas and questions on the strengths, weaknesses and opportunities for improving medical and public healthcare within

the Greater Lowell area. We trust that others will review this report and collectively decide what it means and where to go next. While we have many strengths within our healthcare system, we also confront a multitude of problems, and, truth be told, it will not be easy to develop and build consensus on how these problems should be addressed. Much work remains to be done.



Greater Lowell Health Needs Survey

Page 1 - Question 1 - Choice - One Answer (Bullets)

[Mandatory]

Where do you live?

- Lowell
- Dracut
- Chelmsford
- Billerica
- Dunstable
- Tewksbury
- Tyngsborough
- Westford
- Other [Screen Out]

Page 2 - Question 2 - Choice - One Answer (Bullets)

[Mandatory]

How old are you?

- Under 18 [Screen Out]
- 18-30
- 31-40
- 41-50
- 51-65
- 66-75
- Over 75

Page 3 - Question 3 - Choice - One Answer (Bullets)

How would you rate your satisfaction with health care services in the Greater Lowell area?

- Very Satisfied
- Somewhat satisfied
- Neutral
- Somewhat dissatisfied
- Very dissatisfied

Page 3 - Question 4 - Open Ended - Comments Box

What do you see as primary strengths of the healthcare system within the Greater Lowell area?

What do you see as the greatest weaknesses of the healthcare system within the Greater Lowell area?

[Mandatory]

Which of the following hospitals would you choose for elective hospital admission?

- Lowell General Hospital [Skip to 5]
- Saints Medical Center [Skip to 5]
- Emerson Hospital [Skip to 4]
- Lahey Clinic [Skip to 4]
- Winchester Hospital [Skip to 4]
- One of the Boston teaching hospitals [Skip to 4]
- None of the above [Skip to 4]

Why would you choose a hospital outside the Lowell area, rather than choosing one of the two Lowell hospitals?

[Skip Unconditionally to 6]

Why would you choose a Lowell hospital, rather than going to a hospital outside the Lowell area?

[Skip Unconditionally to 6]

Do you have a personal doctor (i.e., a specific doctor who you see when sick)?

- Yes
- No

Have you seen your personal doctor within the last year?

- Yes
- No

Page 6 - Question 11 - Choice - One Answer (Bullets)

How long have you lived in the Lowell area?

- New to the community
- 1-3 years
- 4-10 years
- 10 to 20 years
- More than 20 years

Page 6 - Question 12 - Choice - One Answer (Bullets)

How would you rate your present health status?

- Excellent
- Very good
- Good
- Fair
- Poor

Page 6 - Question 13 - Choice - One Answer (Bullets)

Are you Male or Female?

- Male
- Female

Page 6 - Question 14 - Choice - One Answer (Bullets)

Please specify your ethnicity/race?

- Asian
- Black/ African American
- Caucasian/White
- Hispanic
- American Indian/Alaska Native
- Native Hawaiian/Pacific Islander
- Other, please specify

Page 6 - Question 15 - Choice - One Answer (Bullets)

What is the highest education level you have completed?

- Less than high school graduate
- High school graduate (incl. equivalency)
- Some college of Associates degree
- Bachelor's degree or higher

Page 6 - Question 16 - Choice - One Answer (Bullets)

What is your current employment status?

- Employed full time

- Employed part time
- Unemployed/looking for work
- Student
- Homemaker
- Retired
- Other

Thank You Page

Again, thank you for participating in our survey. Later this year survey findings will be summarized in a report made available to the public. This report will provide a foundation for Lowell General Hospital, Saints Medical Center, the Greater Lowell Health Alliance and others to work together in building consensus to determine what the area's health needs are, what should be done about them, and who should do it.

Screen Out Page

Thank you for your willingness to participate, however we are looking for people who are age 18 and over and who live within the following communities: Lowell, Dracut, Chelmsford, Billerica, Dunstable, Tewksbury, Tynsborough, and Westford.

Survey Closed Page

Again, thank you for participating in our survey. Later this year survey findings will be summarized in a report made available to the public. This report will provide a foundation for Lowell General Hospital, Saints Medical Center, the Greater Lowell Health Alliance and others to work together in building consensus to determine what the area's health needs are, what should be done about them, and who should do it.

Attachment B

Focus Group and Personal Interview Topic Guide

Greater Lowell Community Health Needs Assessment

Introductions

Study Background/Purpose

Provider Issues—Adequacy, Access, and Cost

- Primary Care
- Specialty Care
- Inpatient Acute Care (i.e., hospital)
- Home Health Care
- Other Long-Term Care (e.g., nursing home)
- Other Healthcare Services (specify)

Unmet Health Needs—By Stage of Life

- Obstetric and Newborn Infant
- Small Children
- Juveniles
- Non-Aged Adults
- Older Adults

Unmet Health Needs—By Ethnicity and Socioeconomic Status

- Ethnicity
- Socioeconomic Status

Perceptions

- Community Health Strengths
- Community Health Weaknesses
- Opportunities for Community Health Improvement

Conclusions and Recommendations

Attachment C

Focus Group Attendees

School Nurses

Diane Reid	Chelmsford
Lisa Golden	Lowell
Carol Butze	Billerica
Beverly Johnson	Dunstable
Marcia Osterman	Tewksbury
Joan Mitchell	Westford
Phyllis Lang	Dunstable

Ethnic Organizations

Yvette Gomez	LHI
Rebecca Feldman	International Institute of Lowell
Mayra Garcia	OneLowell
Ronnie Mouth	CMAA

Public Health Departments

Christine Connolly	Lowell
Tom Bomil	Dracut
Frank Singleton	Lowell

Saints Medical Center Executives

Judy Casagrande, Chief Operating Officer
Kevin Coughlin, Vice President, Government and Community Affairs
Susan Lavalee, Director, Emergency Services
Catherine Seeley, Vice President, Mission and Ethics
Donna Buckley, Director, Dialysis Services
Marie Dalpe, Coordinator, Interpreter Services, Transport & Patient Services
Heidi Parker, Social Worker, Cancer Center
Cathy Curtis, Director, Caring Well Institute
Erin Caples, Administrator, Advocacy and Corporate Culture
Paul Gardner, Chaplain, Pastoral Care

Community Organizations

Jaclene Morton	Southbay Mental Health
Kenneth Powers	Lowell House Inc.
Marilyn Graham	WIC

Town Managers

John Curran	Billerica
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Jodi Ross	Westford
Bernie Lynch	Lowell
Dennis Piendak	Dracut
Norman Thidemann	Tyngsborough

Councils on Aging & Nursing Homes

Boran Yi	Lowell Senior Center
Diana Ryder	Chelmsford
Kathleen Carroll	Lowell Senior Center
Amy Leal	Lowell Senior Center
Maria Melo	Radius Northwood
Donna Popkin	Billerica Senior Center
Elizabeth Rozzie	Genesis HCC (Heritage)
Judith Ramirez	Westford Council on Aging
Dann Hobbs	Elder Services of Merrimack Valley
Tammy Hamilton	Life Care Center-Merrimack Valley
Erin Burns	Life Care Center-Merrimack Valley

Individuals Interviewed

Naomi Prendergast
Executive Director
D'Youville Senior Care Center

Rachel Chaddock
Executive Director
Lowell Visiting Nurses Association

Gina O'Connor
Director of Case Management
Lowell General Hospital

Dorcas Grigg-Saito
Executive Director
Lowell Community Health Center

Margi Larsen-Byrnes
Executive Director
Harvard Vanguard Medical Associates/Chelmsford

Dr David Pickul
President
LGH Physician Hospital Organization

Laura Hilliard
Senior Community Health Specialist

Northeast Center for Healthy Communities

ⁱ Friedman, D. J. & Parrish, R. G. (2009). Is Community Health Assessment Worthwhile? *Journal Public Health Management Practice*, 15(1), 3.

ⁱⁱ Myers, S.S. & Stoto, M. A. (2004). *Criteria for Assessing the Usefulness of Community Health Assessments: A Literature Review*. Retrieved from [http:// www.health.state.ny.us/statistics/chac/usefulcha/findings.html](http://www.health.state.ny.us/statistics/chac/usefulcha/findings.html)

ⁱⁱⁱ ACHE North Florida Chapter *Meeting Resources* <http://nfl.ache.org/x90.xml>

^{iv} Office of Attorney General Martha Coakley. (2009). *The Attorney General's Community Benefits Guidelines for Non Profit Hospitals*. Boston, MA. p 7

^v ACHE North Florida Chapter *Meeting Resources* <http://nfl.ache.org/x90.xml>