

2016

Greater Lowell Community Health Needs Assessment



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Greater Lowell Community Health Needs Assessment
Conducted on behalf of Lowell General Hospital and Greater Lowell Health Alliance
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EXECUTIVE SUMMARY

Lowell General Hospital, in partnership with the Greater Lowell Health Alliance, commissioned the University of Massachusetts Lowell to conduct an assessment of community health needs for the Greater Lowell area, which includes the towns of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford. The purpose of this assessment includes evaluating the overall health of residents by involving a broad spectrum of community members, identifying the top health issues and strengths and weaknesses of the healthcare network, recommending actions to address priority concerns, and providing information that informs a community process to build consensus around strategies to improve the health of Greater Lowell residents.

This report summarizes the major findings from our community health needs assessment. Primary data collection included interviews with four key informants and sixteen focus groups with 167 participants, and secondary data sources included demographic, socioeconomic, and public health data, as well as local reports.

The top health problems that were identified in the focus groups and interviews in order of preference and supported by public health data include mental health (e.g. depression), diabetes, substance abuse, hypertension and obesity (had the same level of preference), and respiratory diseases (e.g. asthma and chronic obstructive pulmonary disease). The residents identified at greatest risk for these and other health problems include those with mental health issues, those with substance abuse/addiction issues, immigrants, refugees, other non-English speakers, and the elderly.

The major strengths of the healthcare system identified include the increased availability and quality of health services in the area, collaboration and communication between Lowell General Hospital (LGH), the Lowell Community Health Center (LCHC), area providers, the various programs, and the community, increase in the availability of doctors and walk-in facilities, improved access to insurance, improved coverage for those with MassHealth insurance, and good translation and interpreting services, increased cultural diversity among

providers, the strong community hospital and health center, as well as a strong continuum of care.

The major weaknesses identified include fragmented care and lack of communication between providers, insufficient patient education about general health, lack of education about family planning and accessing services for family planning, inadequate transportation for patients, lack of insurance and insufficient coverage (dental and vision care especially), lack of diversity and cultural competency and awareness of LGBTQ health issues. In addition, other weaknesses included a shortage of behavioral and mental health services, a lack of integrated mental health and substance abuse services and services in general, insufficient physicians trained to work with the elderly, a lack of education among providers about pediatric mental health issues and strategies to educate diverse cultural groups about health, limited access to specialty care for non-English speakers, lack of translators and additional interpretation (especially for emergency services) and LGBTQ services, and the difficult-to-navigate insurance and healthcare system.

The key barriers to obtaining healthcare services that were identified include lack of providers, long waits for appointments for those with MassHealth, lack of access to care due to patient work hours, cultural barriers and cultural competency issues, communication difficulties between LGH and LCHC, lack of transportation (especially for referrals located in Boston), inadequate insurance and understanding of the healthcare system, insufficient services and resources for addicts, the general approach of using medicine as the first response to health problems, lack of education about health care in general and lack of self-advocacy and patient education.

Indicators of health based on public health and other secondary data are presented and discussed for Lowell, Greater Lowell, and Massachusetts on the following topics: general health, diabetes, substance abuse, mental health, cardiovascular disease, obesity, respiratory diseases, cancer, and hepatitis B. Most of the health indicators show greater need for the city of Lowell than Greater Lowell. This is expected because of socioeconomic differences

between Lowell's urban community and the surrounding suburban towns.

Social determinants of health and environmental factors that affect community health are also highlighted. Housing affordability is an issue as individuals and families may have problems affording necessities such as food, clothing, medical care and transportation. Lowell has the highest gross rent as a percent of income in the area (2010-2014 American Community Survey) and is the fourth most expensive city in Massachusetts (National Low Income Housing Coalition, 2016). Homeless individuals can have difficulty maintaining their health due to lack of basic necessities and poor insurance coverage. The majority of Lowell's housing stock is old. About half of the housing stock was built in 1939 or earlier, and 85% was built in 1979 or earlier (2010-2014 American Community Survey), leading to higher rates of lead exposure and increased exposure to asthma triggers. The large numbers of multifamily housing units in Lowell also contributes to higher exposure to environmental tobacco smoke. Access to nutritious foods is adequate, though more affordable nutritious foods are less accessible to those without transportation.

Key recommendations to improve the healthcare system from focus groups and interviews include increasing community health education on several topics including the healthcare system, as well as education for first responders on mental health patients, increases in various services, increases in homeless shelters and affordable housing and healthcare access for homeless individuals, adopting a more global approach to healthcare, increasing provider awareness of locally available social services and LGBTQ community health needs, increases in primary care providers with geriatric experience, greater provider collaborations, improvements in reimbursements, an increase in interpreters and cultural competency, integration of dental health with primary care. Recommended changes to the healthcare system are also presented, as well as suggestions from the Cambodian, African, Brazilian, Portuguese speaking, and Latino communities.

The next step is to identify top priorities and action plans using the information provided in this report. Lowell General Hospital and the Greater Lowell Health Alliance are committed to a collaborative approach involving other community stakeholders.

INTRODUCTION

In July 2012, Lowell General Hospital joined the parent organization, Circle Health, and merged Lowell General Hospital and the former Saints Medical Center into one unified system for the Greater Lowell area, including the city of Lowell and seven surrounding towns: Billerica, Chelmsford, Dracut, Dunstable, Tewksbury, Tyngsborough and Westford. The new Circle Health System unified health providers in Greater Lowell and continues to work toward significant quality improvements and cost savings in the delivery of healthcare in the region.

To fulfill its commitment to the community and statutory requirements, Lowell General Hospital, in partnership with the Greater Lowell Health Alliance, contracted with the University of Massachusetts Lowell Center for Community Research and Engagement to conduct an assessment of community health needs. The University of Massachusetts Lowell team that worked collaboratively to complete this assessment included faculty, staff, students and community partners. The objectives of this study were to:

- Assess the overall health of area residents
- Identify the strengths and weaknesses of the local healthcare system
- Determine the top health problems facing area residents and the populations at greatest risk
- Involve a broad spectrum of professionals and residents, including newer immigrant communities
- Provide recommendations to improve the healthcare system and address unmet health needs
- Inform the process to identify priority health needs and develop action plans to address these priority needs

This report summarizes the major findings from our community health needs assessment.

PARTNERS

Lowell General Hospital in partnership with the Greater Lowell Health Alliance intend to use the information within this report to inform a community process in collaboration with other stakeholders to identify priority health needs and develop action plans to improve the local healthcare system and overall community health.

Lowell General Hospital is an independent, not-for-profit, community hospital serving the Greater Lowell area and surrounding communities. With two primary campuses located in Lowell, Massachusetts, the hospital offers the latest state-of-the-art technology and a full range of medical and surgical services for patients, from newborns to seniors.

The Greater Lowell Health Alliance of the Community Health Network Area 10 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.

METHODOLOGY

This assessment involved primary data collection using focus groups and key informant interviews, as well as secondary data sources, such as the Massachusetts Department of Public Health MassCHIP database and the United States Census. A more detailed description is below.

Focus Groups

Sixteen focus groups with 167 total participants were conducted from February 2 through April 20, 2016 (see attendees who agreed to have their name published in Appendix A). Each focus group averaged 90 minutes and included 7-9 questions, depending on the group (see questions in appendix C). Focus group questions inquired about perceptions of overall health of community, top health problems in the community, who is at greatest risk, the strengths and weaknesses of healthcare in Lowell and Greater Lowell, and suggestions for improvements to the healthcare in Lowell and Greater Lowell. The Portuguese speaking, Latino, African, Cambodian and Brazilian focus groups were also asked to comment on the healthcare priorities specific to their communities and the overall quality of the healthcare system and its ability to meet needs specific to their communities.

The team of nine focus group facilitators included UMass faculty, undergraduate and graduate students, as well as individuals from the Cambodian Mutual Assistance Association and Lowell Community Health Center (see list of facilitators in appendix D). Focus groups were generally conducted in English, with the exception of the Cambodian community group which was conducted in Khmer and the Latino group, which was in Spanish. Notes were taken and recordings were made for all focus groups.

The composition and number of the focus groups organized and the list of individuals invited were determined in collaboration with Greater Lowell Health Alliance, Lowell General Hospital, and the 2016 Community Health Needs Assessment Advisory Committee, as well as other community partners.

Ten focus groups were organized by professional or organizational grouping: nonprofit organizations, organizations providing senior services, public

health directors, nurses and agents, first responders (including police, fire and ambulance), Circle Health leaders, non-Circle Health providers, physicians, Greater Lowell Health Alliance members, and Lowell General Hospital Patient Family Advisory Council members. The Non-Profit Alliance of Greater Lowell (NPA) and the Hunger and Homeless Commission allowed us to conduct the focus group during the time allotted for their March and April monthly members' meeting. The Upper Merrimack Valley Public Health Coalition helped organize and recruit their members for the public health directors, nurses and agents focus groups. Individuals were asked to participate as private individuals and not as official spokespersons for their organizations.

The other six focus groups represented various immigrant and ethnic communities including the Brazilian community, the Cambodian community, the African community, the Latino community, the Portuguese community, as well as participants of Teen Block at the Lowell Community Health Center.

Key Informant Interviews

The University of Massachusetts Lowell conducted four interviews that included an individual who requested anonymity. Individuals were identified by Lowell General Hospital, Greater Lowell Health Alliance and members of the 2016 Community Health Needs Assessment Advisory Committee, as key community informants because of their positions and knowledge of community health needs (see appendix B). These individuals were asked to participate as private individuals and not as official spokespersons for their organizations. Key informant interviews averaged 45 minutes and included the same questions used in the focus groups. As with the focus groups, notes were taken and recordings were made for all key informant interviews.

Analysis of Secondary Data Sources

Most population health data were obtained from the Massachusetts Community Health Information Profile database (MassCHIP), which is maintained by the Massachusetts Department of Public Health. We also received data on incidences of non-invasive cancers from the Massachusetts Cancer Registry. This data was used to provide an overview of health status of residents of Lowell General Hospital's

Service Area and Population

service area, the Greater Lowell Community Health Network Area (also known as CHNA-10). Data were comparatively analyzed and presented at the Lowell, Greater Lowell CHNA, and statewide levels. We analyzed and presented data on the City of Lowell because it is the largest and most diverse community and has greater health issues and needs. Data are presented using bar charts and graphs. The most important health information included was determined based on findings from focus groups and key informant interviews. Additional data sources included the US Census, the Massachusetts Health Data Consortium (courtesy of Lowell General Hospital), local newspaper articles, local governmental reports, as well as local organizational and research reports.

Limitations

The findings from the focus groups and interviews are from a qualitative, non-random sample. They reflect the opinions of those participating and are not necessarily representative of all residents the Greater Lowell community. In addition, we analyzed public health surveillance data to provide additional evidence of community health needs, but in some cases the data is 3-4 or more years old and may not reflect current health needs.

The Greater Lowell area had an estimated population of 282,520. The City of Lowell is estimated to have 108,491 residents, which represents over 38% of the area's population. Billerica is the largest community outside of Lowell with 41,446 residents. Chelmsford, Dracut and Tewksbury are next in population size, with 34,495, 30,350 and 29,718 respectively. The smallest community is Dunstable with a population of 3,299.

The City of Lowell, as the largest community, differs significantly from its surrounding suburbs. Since its founding in 1820 as a planned industrial city for textile manufacturing, the City of Lowell has been a gateway for immigrants arriving to Massachusetts. Immigration has been an important factor for Lowell's population growth in its early history and population stability over the last 30 years. In the 1800s, immigrants predominately arrived from Europe and Quebec, Canada. More recently, arrivals have come from Latin America, Asia and Africa. Accordingly, Lowell has the largest percent of foreign born at 25.2% in the service area. In contrast, most suburban communities have 10% or fewer foreign born, with Westford the exception at 13.8%. Lowell is also more diverse, with 42% non-white with Asian and Latino populations at 20.9% and 18.2% respectively. Westford and Chelmsford have sizable Asian populations, 14.8% and 8.1%, respectively, compared to other area towns.

The economy of Lowell has also changed significantly since the 1800s; it is no longer an economic center for the region. As the overall regional economy has moved from traditional manufacturing to high technology and services, the number of jobs in Lowell has declined significantly; few manufacturing jobs remain. As is common in today's economy, immigrants who lack higher education encounter a job market consisting of mainly low-paying service jobs which lack the upward mobility of the historically available manufacturing opportunities. While Lowell's unemployment rate is the highest in the region at 6.5%, it has declined from 9% in 2013. Lowell also has the highest poverty rate at 19.1%, markedly higher than other communities. Overall, Lowell is the least affluent community with a median household income of \$49,164, which is less than half the income of the towns of Westford and

Dunstable at \$125, 143 and \$116, 125 respectively. Lowell's median family income also lags behind the average for gateway cities in Massachusetts, according to a report by the Massachusetts Budget and Policy Center (Welker, 2016). Income inequality as well as other social determinants of health are discussed in more detail in the Social Determinants section.

Table - Basic Demographic Data, Cities/towns in the Greater Lowell CHNA

City/Town	Population	% White	% Foreign Born	% Aged 0-17	% Aged 65+	% Below Poverty	% Unemployed	Median Household Income	% Black	% Asian	% Hispanic
Billerica	41,446	91.0	9.1	21.2	13.0	5.6	4.8	93,761	1.7	4.8	2.8
Chelmsford	34,495	89.7	10.8	21.0	17.5	3.5	3.9	93,643	0.4	8.1	2.7
Dracut	30,350	88.5	7.5	23.1	12.8	5.0	4.3	76,786	2.9	5.0	5.2
Dunstable	3,299	94.9	5.1	26.3	12.3	1.3	3.9	116,125	0.0	3.3	0.3
Lowell	108,491	57.1	25.2	22.4	10.4	19.1	7.7	49,164	7.0	20.9	18.2
Tewksbury	29,718	93.7	6.5	20.6	15.9	4.0	4.5	87,496	1.8	2.5	1.8
Tyngsborough	11,867	91.5	7.2	22.8	10.3	7.1	7.1	93,108	0.5	5.5	2.8
Westford	22,854	82.1	13.4	29.8	11.1	2.7	3.9	125,143	0.6	14.8	2.6
Total/Weighted Average	282,520	77.2	15.3	22.6	12.6	10.1	4.6	91,903	3.5	12.0	8.8
Massachusetts	6,657,291	80.0	15.3	21.1	14.4	11.6	8.4	67,846	7.0	5.8	10.2

Data retrieved from the American Community Survey 2010-2014 5 year estimates

Findings About Community Health and Needs



Overall Perception About Community Health

The majority of professional and provider focus groups and two key informants perceived Lowell and Greater Lowell residents to be generally unhealthy. One professional focus group perceived Lowell and Greater Lowell residents to be in fairly poor health. Three professional and provider focus groups perceived Lowell and Greater Lowell residents to be generally healthy. Of the professional and provider focus groups who perceived residents as generally unhealthy or in fairly poor health, the majority are in direct delivery of care—with exception was the Physicians' focus group, which perceived residents as healthier in Westford, and readily acknowledged that income determines insurance options which often determine health choices. One key informant indicated that "there are [health] issues that are more prevalent in urban communities with low-income, immigrant, residents." The professional and provider focus groups who perceived residents as generally healthy, the majority of which are not involved in the direct delivery of care, cited that resources at Lowell Community Health Center are very good and that providers have good connections to other social service agencies.

The majority of community focus groups also perceived Lowell and Greater Lowell residents as generally unhealthy. The groups that perceived residents as generally unhealthy were the Latino focus group, African community focus group, the Cambodian focus group and the Portuguese speaking community focus group. However, the Brazilian focus group perceived their overall health status as average. Among issues cited were long working hours, lack of support networks and translated materials, insufficient understanding about medication, chronic disease, following doctors' instructions, and the high cost of healthy food. While the remaining community focus group felt that residents were generally healthy, they, too, cited lack of access to care, cultural barriers to care, low socioeconomic status (SES), and lack of access to health food as concerns for their communities.

There is an awareness among all focus groups that health varies based on SES. Among provider/professional focus groups, there is a perception that

it manifests in a geographic contrast between poorer health in the lower income urban areas of Lowell, and better health in the suburban areas, especially in the more affluent towns like Westford. As in our 2013 report, specific health issues identified as being associated with SES or geographic area include health awareness and education, diet, physical activity, insurance coverage and access to providers and healthier housing in general.

The crisis of substance abuse was acknowledged by every focus group in response to an overwhelming number of questions. Substance abuse and related mental health issues are concerns described in more detail in the sections titled Top Health Problems in the Community, Types of Residents at Greatest Risk and Major Weaknesses and Unmet Needs in the Healthcare System.

Top Health Problems in the Community

Top health problems are listed in order of importance based on the focus groups and interviews.

Mental health - The majority of both provider/professional focus groups and community focus groups identified mental health issues, including stress, depression, PTSD and anxiety, as top health issues for Lowell and Greater Lowell residents. Provider/professional focus groups acknowledged an increase in mental health issues in children and young adults. As in our 2013 report, those with mental health issues were named as a type of resident at greatest risk for poorer health and unmet needs. One key informant stated "there are a high incidence of addiction and mental health issues here." On provider/professional focus group cited an increase in dual diagnosis patients – mental health and addiction issues.

See page 24 for related public health data.

Diabetes - The majority of both provider/professional focus groups and community focus groups identified diabetes and diabetes related health concerns as top health issues for Lowell and Greater Lowell residents. Two provider/professional focus groups felt that there is a need for access to healthier food options, including healthy fast food options. Community groups also cited the lack of access

to healthy food options as well as the high cost of healthy food as concerns in their communities. One provider/professional group cited a concern for the increase in diabetes in the Cambodian community. *See page 24 for related public health data.*

Substance abuse and addiction - The majority of both provider/professional focus groups and community focus groups identified substance abuse and addiction issues, including alcohol addiction, as top health issues for Lowell and Greater Lowell residents. Two provider/professional groups expressed concern for the number of babies born with opioid addiction issues. One professional/provider group acknowledged that Lowell is a 'hot spot' for opioid issues, it is also a growing problem in surrounding towns. First responders cited an increase in drug related mental health issues among residents. Community groups expressed concern at the lack of services/care for drug and alcohol addicted in their communities. *See page 25 for related public health data.*

Hypertension – All five ethnic and immigrant community focus groups indicated that high blood pressure and related issues were health concerns for their communities. *See page 28 for related public health data.*

Obesity - The majority of both provider/professional focus groups and community focus groups identified obesity, including lack of exercise and healthy diet, lack of nutritional education, and sedentary lifestyle as top health issues for Lowell and Greater Lowell residents. One provider/professional focus group acknowledged a rise in early childhood obesity. Another expressed concern for the lack of patient understanding about healthy weight. Participants in the Teen Block community focus group shared that, while there is an increase in awareness of weight management and staying healthy, the lack of availability of healthy snacks around homes results in unhealthy snacking habits because unhealthy snacks are more readily available. *See page 30 for related public health data.*

Asthma and respiratory disease - The majority of both provider/professional focus groups and community focus groups identified asthma and

respiratory disease (including smoking related concerns and COPD) as top health issues for Lowell and Greater Lowell residents. *See page 34 for related public health data.*

Other health issues raised by provider/professional, community focus group participants and key informants include poor dental health due to lack of insurance and providers, heart disease, back pain and seasonal allergies.

Behaviors or conditions that were named as contributing to poor health include low SES, poor nutrition, smoking, domestic violence, elder abuse, and stress.

Types of Residents at Greatest Risk

Top health problems are listed in order of importance based on the focus groups and interviews.

Those with Mental Health Issues

Provider/professional as well as community focus group participants and key informants indicated that for those dealing with mental health issues, there is not enough funding for care. For those with mental health issues who have Mass Health and Medicare health plans, mental health coverage is insufficient. Access to mental health services is very difficult for the undocumented population. There are many people with dual diagnosis of substance abuse and mental health issues and there is a lack of services for this population. Participants acknowledged the link between mental health issues, drug addiction and overdose.

Those with Substance Abuse/Addiction Issues

Provider/professional as well as community focus group participants expressed concern that there is a lack of services, funding, counseling and care for those addicted to drugs and alcohol in the community. They indicated a high no show rate for the services that are available. Focus group participants indicated an increase in the number of infants born with addiction issues, and acknowledged that there is a lack of established programing in the area designed to help mothers and children with substance abuse. Participants also acknowledged the link between mental health issues,

drug addiction and overdose. A key informant indicated that children are an especially vulnerable population touched by substance abuse issues: school age children "growing up just alone in a household where drug use is a crime...it impairs their ability to be successful." Many of these children are not receiving the services needed after experiencing a drug related death and "not all family members are suited to meet immediate needs of children adopted after caretaker OD" (key informant interview). With regard to young people in the community, one key informant indicated that "people are accessing drugs from very young age, they start at age 10-14 with alcohol and marijuana, then they move to pills, then they jump to heroin, then snorting, and then to IV usage. Transitioning can be 'just a matter of days or weeks' – the pills to heroin transition happens slower, after the pills run out."

Immigrants, Refugees and Non-English Speakers

Provider/professional as well as community focus group participants identified members of immigrant non-English speakers and refugee communities as high-risk populations with unmet needs. Focus group participants acknowledged that immigrants have limited access to services – due to both lack of insurance and insufficient coverage, and lack of understanding of insurance coverage, the healthcare system and health in general. Focus groups indicated that immigrants, non-English speakers and refugees still face language and cultural barriers, and that there is a lack of cultural competency on the part of providers who serve some communities. In addition, due to economic necessity, immigrants, non-English speakers and refugees prioritize work over health in many instances. These communities may also have preexisting and poorly understood medical conditions or unaddressed mental health issues. As in 2013, community focus group participants observed that often, new refugees are the healthiest in their community, but their health and wellness declines as they assimilate to the American diet and lifestyle.

Elderly

The elderly was named by all focus group participants as a population at great risk and with unmet health related needs. The elderly tend to have poor access to the needed healthcare for several

reasons. Community groups and key informants acknowledged that healthcare is very hard to navigate for the elderly who often lack social support. Focus groups also acknowledged that the elderly can have difficulty finding caretakers within the family, difficulty understanding insurance issues and with personal costs associated with services, which can cause a reluctance to use various services, hospitals, and preventive care.

The following additional information on ethnic and immigrant communities and youth was provided by members of these communities during the focus group sessions.

Cambodian community

Health problems of concern in this community include mental health issues, stroke and diabetes in the young, high blood pressure, autism, stress and seasonal allergies. Unlike the 2013 report, Cambodian community focus group participants at the community level did not discuss Hepatitis B and its prevalence in the Cambodian community. Cambodian community focus group participants indicated that there are frequent deaths in their community. Participants also indicated a lack of understanding about how to follow a doctor's instructions about medication, lack of understanding about immunizations and chronic disease as well as a lack of understanding about diabetes and how to make healthy food choices. Participants indicated a lack of translated materials/interpreters and understanding about health services in general. Due to these issues, many wait to seek care: "sometimes senior people are stubborn too. They don't want to seek medical attention if it is only a minor condition. They rather leave their illness aside until it becomes a severe or acute case" (CMAA focus group participant). Also mentioned were long waits to get appointments with PCPs and LCHC Metta Center, and long waits in the emergency room. One participant stated that "...if someone is severely sick that needs immediate medical attention, he or she is forced to wait for a long time. That patient can die in the ER waiting room..." (CMAA focus group participant).

Portuguese community

Health problems of concern to the Portuguese community include high blood pressure, asthma,

respiratory diseases, obesity and diabetes. The Massachusetts Alliance of Portuguese Speakers (MAPS) focus group participants indicated that lack of a high concentration of low SES in their community, coupled with a lack of physical access to care, long work hours, the high expense of eating healthy food all contribute to the generally low health perceived in their community. One participant shared that “many patients are referred to Boston Medical Center and this is hard because they have to take a day off work due to the distance” (MAPS focus group participant). In addition, focus group participants indicated that lack of care for the drug and alcohol addicted, as well as general lack of education, language barriers and lack of interpreter services, inadequate transportation, and lack of care for the homeless impact general health in their community.

Brazilian community

Health problems of concern to the Brazilian community include mental health issues, back and shoulder pain, high blood pressure, asthma, obesity and diabetes thyroid disorder, cancer and lack of exercise. Focus group participants indicated that they are unhealthy because of lack of access to care, due to cultural barriers, low SES, long working hours, lack of insurance or inability to qualify for subsidized ACA or Mass Health plans. Participants cited a lack of education around accessing the emergency room, and a general lacking of information if they do not have children in schools. Many felt that parents with school age children are kept well informed of services through school announcements and those without school age children miss this important information. Others felt that there is lack of personal responsibility among the Brazilian community. The spread of unregulated weight loss pills among the community, known in the community for creating blood pressure issues, was of concern to many female participants in the focus group. Also cited was that, due to access and cost issues, some community members even return to Brazil as they cannot afford to pay for health care in the US. Focus group participants spoke extensively about food and diet and their impact on the health of their community. Many felt that there is insufficient access to fresh food: “most foods available in the country are processed including rice, grains, meat and this is not good for one’s health” (Brazilian focus

focus group participant). Several stated that ‘processed and junk food are cheaper and more available and this makes people unhealthy.’

African community

Health problems of concern to the African community include substance abuse, mental health issues, obesity, diabetes, high blood pressure, and undiagnosed sexually transmitted diseases. Community members attributed these to low SES, lack of education around access to care, lack of help navigating system, inadequate health education in general, lack of access to insurance and immigration issues. This community felt that all ages were at risk, but particularly vulnerable are refugees, especially refugee youth, immigrants, non-English speakers, those affected by substance abuse, men, new mothers, school drop-outs, those with low SES and those with no access to care or insurance.

Many members of the African community indicated that there is a patient perception of racism around tolerance of pain: “doctors do not give out the needed medication as they believe that black patients will sell the drugs for money” (African community focus group participant). Focus group participants also indicated a lack of cultural competency in providers: “many Africans are intimidated by the doctors as they make comments like parents only get benefits because their children are citizens. This is shameful to the parents hence they don’t go back to see the doctors.” As with the 2013 report, again this community group indicated a need for additional interpreters for some of the less common African languages.

Latino community

Health problems of concern to the Latino focus group include diabetes, Parkinson’s disease, Alzheimer’s disease, high blood pressure, anxiety/stress, and cancer. One focus group member stated: “everybody you talk to seems to have some health-related issue...”. Participants agreed that high cholesterol seems to be very common among this population, mainly because of diet.

Participants indicated that the youth population, those without insurance or insufficient insurance, addicts and alcoholics and non-English speakers

are most at risk for poor health in their community. Focus group participants indicated that lack of access to health care due to lack of insurance or limited insurance is an issue: “there are a lot of people without health insurance, or limited-health insurance...some people with limited health insurance have to go to Boston to have a mammography exam done...but then there are people for which it is even difficult to go to Boston because they don’t know how to or because they don’t have the resources.” Another participant stated that “there is a need for the provision of many services within the community so we don’t have to send people away.” This group noted a lack of capacity – not enough providers - and cited a rapidly growing population. A lack of communication and outreach about the health system was also mentioned, but participants recognized that the Hispanic population tends not to participate in outreach services provided by the system.

Youth

Health problems of concern to the youth/adolescent (Teen Block) focus group include back pain (in adults and teenagers), asthma, diabetes, cancer, drug problems, and addiction issues including overdose. Focus group participants indicated an increase in awareness of weight management and staying healthy in their community, but also indicated a lack of access to transportation which impacts access to healthy food. This focus group acknowledged that while many in their community have health coverage through their parents’ plans, there is still a lack of insurance for some. Focus group participants cited difficulties with health care around parental consent issues, but did not elaborate on exactly where or when these issues occur.

Major Strengths of the Healthcare System

All ten provider/professional focus groups and key informants indicated that providers and agencies in Lowell collaborate well, especially Lowell General Hospital (LGH) and Lowell Community Health Center (LCHC). They also acknowledged strong collaboration between communities, agencies and providers. Provider/professional focus group participants indicated that LGH and LCHC work well together, and that there is generally good early intervention

available in the area. A key informant indicated that “many programs...work together. These programs bring ideas together as well as the people.” An increase in availability of doctors, good 911 systems, as well as an increase in the number of walk-in facilities have made a difference in the community. Also cited as having had a positive impact on the health care system are the following: the merger of Lowell General Hospital and Saints Hospital, the strength of services provided by Lowell Community Health Center, and strong partnerships with Boston hospitals. A key informant indicated that “Lowell Community Health Center is a strength for the public.” Providers and professionals focus group participants felt that Lowell and Lowell area services have a “good public health approach.” A key informant stated that care in Lowell is “... relatively comprehensive compared to other regions – the continuum of care is strong.” Many, but not all, indicated that diverse populations and those who speak languages other than English are well served in Lowell and the Greater Lowell area. Services cited as strong by provider/professional focus groups and key informants were the following: cancer, cardiology, elder, and emergency services. Providers and professionals also noted an increase in the number of patients qualifying for Mass Health.

Community focus groups all indicated that Lowell Community Health Center (LCHC) is a great strength and resource to their communities. All felt that there is good coordination between LCHC and LGH. One community focus group participant stated that “if a patient is sent to Lowell General from the health center, all the patient’s files are readily available” (African community focus group participant). This was a sentiment echoed by other community focus groups as well. Another focus group participant stated that “...[LCHC] is also available to those with Mass Health - patients are never turned away because they don’t have health insurance” (African focus group participant). A participant in the MAPS focus group stated that LCHC “doctors are passionate and care to do better for patients.” As in the 2013 report, LCHC was seen as a great resource by immigrants and minority groups and is very accommodating to those who do not speak English well. Both the Brazilian community and the MAPS focus groups indicated that there are many interpreters available.

Community focus groups also felt that good attention to diverse communities, outreach at community events, good prevention programs, and strong services for immigrants, refugees, and the homeless at LCHC were all strengths of the healthcare system.

Major Weaknesses of the Healthcare System

All ten provider/professional focus groups and key informants indicated that the mental and behavioral health needs of the community are not being met. They acknowledged a shortage of services in general, and a shortage of mental and behavioral health services for women, children and the elderly specifically. One provider/professional focus group indicated a lack of education among providers about pediatric mental health issues. Similar to concerns raised in the 2013 report, provider/professional groups also recognized the need for integrated mental health and substance abuse services for those dealing with dual diagnosis. First responder focus group participants also noted a lack of mental health social workers specifically dedicated to those heavy users of emergency room mental health services (frequent flyers). Also noted was a lack of ability to identify high risk members of the community.

Provider/professional focus groups and two key informants indicated that there is a lack of substance abuse resources in the community. In addition to a lack of integrated care for those dealing with dual diagnosis (substance abuse and mental health issues), there is a lack of programming for women and children.

All ten provider/professional focus groups and two key informants indicated that access to care is still difficult for many Lowell and Greater Lowell residents. Lack of basic access to insurance coverage, lack of education about how to secure insurance and about available plan options, are all of concern to professionals and providers. For many residents, the health care insurance and system overall is difficult to navigate, according to a key informant. Focus group participants acknowledged that often the type of insurance a patient has

determines the type of care that patient receives. Lack of physical access to care was also acknowledged. In addition to a lack of PCPs taking patients, many experience long waits for appointments. One key informant stated that there are long lines and extended wait times for patients to see a physician at Lowell Community Health Center. A widespread lack of transportation to healthcare services for many in the community was also mentioned in many provider/professional groups. Another key informant noted that there is a lack of awareness and sensitivity to health needs within the LGBTQ community, which results in many seeking services outside the region, which often they cannot afford. This key informant stated that many healthcare providers lack an understanding of how to communicate to the LGBTQ patients, which can be perceived as a lack of respect.

The majority of provider/professional focus groups acknowledged that there is still a great need for additional interpretation and translation services. Participants in the first responder focus group noted a lack of translators for emergency situations, and added that cultural issues, including a lack of trust for those in uniform on the part of patients from different cultures makes providing care challenging. Other provider/professional focus groups indicated limited linguistic access to specialty care, specifically neurology, gastroenterology, dermatology and optometry.

Many provider/professional group participants noted a lack of case management services and health navigators, a lack of communication between emergency care and PCPs, and little or no integration between case managers for different agencies, all resulting in a perception of fragmented care. Also noted was a lack of resources for home healthcare providers.

Provider/professional group participants indicated a lack of general community health education, specifically a lack of outreach to vulnerable populations. For many patients, there is inconsistent transition from hospital to home, which often results in readmission. Similar to findings reported in 2013, some participants noted that the health care model focuses on treatment rather than prevention. Some

expressed concern that insurance companies appear to be controlling doctors.

Other weaknesses identified by provider/professional focus groups were the lack of access to dental care due to lack of insurance and dentist, lack of vision insurance, lack of geriatric specialists, inadequate diagnostic services for autism in young children, lack of family planning resources/education and rest homes for adults with disabilities.

Community focus groups all indicated that lack of access to health care is a major issue for their communities. As in the provider groups, limited access to insurance coverage, lack of education about how to secure insurance and about available plan options, are all a concern at the community level. Many community focus group participants said that health care insurance qualification requirements are difficult to understand and the health care system overall is difficult to navigate. One focus group participant said that understanding eligibility requirements for ACA plans is a challenge. Others acknowledged that often the type of insurance a patient has determines the type of care received. Many spoke of a lack of dental and vision insurance included in Mass Health plans and the high cost of accessing dental and vision care without insurance. Participants also acknowledged that physical access to care is a problem in their communities; specifically, lack of transportation to services, very limited after-hours appointments, long waits for appointments and a general lack of PCPs taking patients. One Latino focus group participant said that “there are a lot of people without health insurance, or limited-health insurance...some people with limited health insurance have to go to Boston to have a mammography exam done...but then there are people for [whom] it is even difficult to go to Boston because they don’t know how to or because they don’t have the resources...”.

Participants in community focus groups acknowledged that there is still a great need for interpretation and translation services, as well as a need for culturally competent providers and an increase in the diversity of providers available in the community. Focus group participants mentioned encountering racism when accessing services, but

also acknowledged cultural issues on the part of patients that make accessing services more challenging. There is also a perception of disorganization: one person said “often time, you see doctors and nurses talking to each other while patients are waiting to be taken care of” (Latino focus group participant).

Community group participants expressed concern about the lack of health education available in their communities. Specifically, there is insufficient education about the services available in Lowell, and about how, when and why to use the ER. While members from the Latino focus group acknowledged that their ‘population tends not to participate in outreach services provided by the system,’ they felt that there is not enough communication or outreach about the health system, access, especially among new residents in the community.

Barriers to Obtaining Health Services

Provider/professional focus groups and community groups identified the following barriers to obtaining health care services:

There is an overall shortage of providers, especially PCPs who take Mass Health. As a result, there are long wait times for appointments, which can result in an over use of Emergency Department (ED) services. This shortage is especially difficult for the refugee and immigrant community. Also noted was lack of dental care – community groups indicated a lack of dental insurance and providers.

Lack of access was identified as major a barrier to obtaining care for many in the community, including lack of access to insurance and transportation to facilities, and limited access to care due to patient work hours. Community members indicated difficulties with transportation to referrals in Boston, and difficulty qualifying for ACA plans. According to MAPS focus group participants, many in the Portuguese community do not qualify for ACA plans. The plans they are able to access have very limited coverage.

Language and cultural issues were identified as barriers by provider/professional and community

focus groups. Immigrant families have many layered issues and often, due to lack of interpreters, are told to bring their own interpreter when accessing care.

The general approach to care is seen as a barrier for some patients. Too often, medication is first line of defense. This can result in patients making health decisions based on money and ability to pay. One provider acknowledged that “medications will have side effects and end up taking more medication to counteract the side effects.” At the community level, many feel that the Metta Clinic at LCHC is unresponsive. “A patient calls Metta Clinic to set up an appointment and Metta Clinic’s staff tells the patient to call back in 2 or 3 days” (CMAA focus group participant). One provider/professional focus group cited communication difficulties between LGH and LCHC that result in slow access to care for patients.

Low SES and poverty were identified by all focus group and key informants as barriers to obtaining care. Community level groups acknowledged that often residents are forced to choose between health care and other expenses due to low income and high cost of care.

Provider/professional groups identified lack of education about health care in general and self-advocacy on the part of the patient as barriers to care.

Analysis of Public Health Data



The data represented here are the most recent available from the Massachusetts Department of Public Health. The data are presented for residents of the city of Lowell, the Greater Lowell CHNA, and Massachusetts, when available. The city of Lowell, being an urban area, is expected to have less optimal health statistics than the more suburban towns that make up the rest of the CHNA due to lower incomes, greater unemployment, greater diversity, and a larger immigrant population. Age-adjusted rates are provided when available and applicable, but some data are only available in crude rates (not age-adjusted). Age-adjustment is a statistical method that adjusts rates based on age distributions so that populations with different age distributions can be compared more accurately. This is especially important for diseases and causes of death that occur more frequently in certain age groups.

General health

General health statistics in Lowell are less optimal than the CHNA and Massachusetts, as expected for a mid-sized city. The percent of adults with fair or poor health in 2013 was 21.8 in Lowell, 12.3 in the CHNA, and 13.8 in Massachusetts (see figure 1.1). Mortality rates in Lowell tend to be slightly higher than the CHNA and the state, though mortality rates in all three geographic areas have decreased slightly between 2000 and 2012 (see figure 1.2). Teen birth rates are higher in Lowell than the CHNA and the state, although teen birth rates have been on the decline in all three areas since 1989. Infant mortality rates dropped from 2010-2012 in Lowell and the CHNA, but Massachusetts remains steady at between 4 and 5 deaths per 1,000 births (see figure 1.3). Emergency department hospitalizations are consistently higher in Lowell than the state and the CHNA, and rates have slightly increased since 2002 (see figure 1.4). In 2010, homicide death rates were higher in Lowell at 4.3 per 100,000 people than the CHNA and Massachusetts, at 2.5 and 3.2, respectively (see figure 1.5). The trend in homicide deaths over the last ten years has been inconsistent in Lowell and the CHNA, with Lowell spiking to 6.2 in 2004 and 10.5 in 2006 (see figure 1.6).

Mental health

Mental health hospitalizations overall are lower than they were in the 1990s for Lowell and the CHNA.

Mental health hospitalizations in Lowell peaked at 1,189 per 100,000 people in 1998, and have decreased below the state rate since then, with a slight upward tick since 2007 (see figure 2.1). The 2012 mental health hospitalization rates were 814 per 100,000 people for Lowell, 634 for the CHNA, and 846 for Massachusetts. Lowell's mental health hospitalizations have remained higher than the CHNA for all of the years of available data, while Massachusetts rates have been fairly consistent over the last 20 years at around 800 per 100,000 people.

Diabetes

According to 2005-2010 data, diabetes prevalence in all three regions is higher for those of Hispanic origin versus White, which has the lowest prevalence (See figure 3.1). In Lowell, diabetes prevalence is highest for Asian/Pacific Islander, followed by Hispanic, Black, and White. In the CHNA, diabetes prevalence is highest for Black, followed by Hispanic, and White. More recent data on diabetes prevalence by race was not available at the time of this assessment. The rates of those who have or have had diabetes have been increasing slowly but steadily in Massachusetts since 1999. In Lowell, rates have increased from a low of 5.3 per 100,000 in 2004 to a high of 13.6 in 2011, and decreased to 7.8 in 2013 (see figure 3.2). In 2013 Lowell, the CHNA, and Massachusetts all had about an 8% prevalence of diabetes.

Substance abuse

For overall substance abuse admissions in 2011, Lowell has the highest rate at 2,145 per 100,000, followed by Massachusetts at 1,590, and the CHNA at 1,479. Substance abuse admissions for alcohol have decreased since 1992, with Lowell's rate being consistently higher than the state, and the CHNA's rate being consistently lower than the state (see figure 4.1). This suggests a concentration of alcohol abuse admissions in Lowell versus the surrounding suburban towns. Substance abuse admissions for heroin have trended slightly upward for all three regions since 1992. Lowell's rates peaked in the early 2000's at 1,672 per 100,000 and have remained about 900 per 100,000 from 2009 to 2011 (see figure 4.2). Substance abuse admissions in all three regions has been increasing rapidly for

the category "other" which includes phencyclidine (PCP), other hallucinogens, methamphetamine, other amphetamines, other stimulants, benzodiazepines, other tranquilizers, barbiturates, other sedatives, inhalants, and over the counter drugs (see figure 4.3).

Opioid Abuse

According to the Massachusetts Health Policy Commission, there has been a 201% increase in heroin-related hospital visits between 2007 and 2014 in Massachusetts. The demographic at greatest risk of an opioid-related inpatient admission is 25-30 years old men. Residents of lower-income communities are also more likely to experience an inpatient admission.

Overdoses and Deaths in Middlesex County and Lowell

According to a report from the Middlesex County district attorney's office, in 2014, there were 145 overdose deaths in Middlesex County, with heroin contributing to 103 of them. In 2015, there were 185 deaths, of which 142 were caused by heroin. The number of overdose deaths in Middlesex County is expected to increase in 2016. As of March 28, 2016, Middlesex county saw 56 overdoses and heroin was responsible for 41 of those deaths. The city of Lowell has also seen a drastic rise in overdose deaths and opioid usage in recent years. In 2015 there was a 180 percent increase in overdose deaths compared to the previous year (Sobey, 2016). 22% of the 185 drug-related deaths in Middlesex County in 2015 were among Lowell residents (Middlesex County Fatal Overdose Stats, 2016). Overdose deaths in area towns have also noticeably increased, as fatal overdoses in Billerica increased from one in 2012 to 12 in 2014. Opioid overdose deaths per 100,000 data indicates that several towns have rates higher than the statewide average of 20.7, including Lowell (43.3), Tyngsborough (42.1), Tewksbury (26.9) and Billerica (24.1) per 100,000 deaths (see figure 4.4). Data from the Lowell Police Department show 46 opioid overdoses in Lowell in 2015, more than double the overdoses that occurred in 2012 (see figure 4.5). The figure for 2016 is expected to be much higher, with first half of 2016 already at 40 overdoses.

Opioid-related Healthcare Utilization

Data from the Massachusetts health Data Consortium shows an upward trend in opioid related emergency department, inpatient, and observation visits for both Lowell and the CHNA (see figure 4.6). Of all residents in the Greater Lowell CHNA, Lowell residents have tended to account for about half of the opioid related visits from 2009 to 2014.

Local Countermeasures against the Opioid Epidemic

The median age of overdose victims in Lowell in 2015 was 35, meaning overdoses among parents of young children is becoming too common. The Middlesex District Attorney's Office, the Lowell Police Department and the Mental Health Association of Greater Lowell have come together to find new ways to combat the opioid epidemic. Their newest initiative is called Project C.A.R.E. (Child Assessment and Response Evaluation). The objective is to help children cope with trauma and prevent them from succumbing to substance abuse later in life. This is done by providing 24/7 rapid responses for children who witness a parent or loved one suffer an overdose (Sobey, 2016). Upon notification of an incident the Lowell Police Department, partners from the Lowell Fire Department and the city's three EMS providers notify the on-call clinical supervisor at the Mental Health Association of Greater Lowell and file report with the Department of Children and Families (DCF). The case is then triaged remotely by the clinical supervisor, who determines the immediate plan for the first 48 hours. Then, the mental health agency coordinates with the DCF, local schools, and other partners (Sobey, 2016).

Cardiovascular disease

The trend in emergency room visits for all circulatory system diseases has remained fairly the same since 1989 except in Lowell which slightly decreased (see figure 5.1). In 2012 the rate was higher in Lowell (1,903) than the CHNA (1,635) and Massachusetts (1,321) (see figure 5.2). However, emergency visit hospitalizations for hypertension are trending upward. All three areas begin at about 20-24 per 100,000 in 1989 (See figure 5.3). In 2012 rates were higher in Lowell than the CHNA and Massachusetts, at 70, 52, and 43 per 100,000, respectively (see figure 5.4).

Obesity

Fruit and vegetable intake in all three regions trended slightly downward from 1994-2009. In 2009, 22% of Lowell's residents had adequate fruit and vegetable intake, and about 26% of residents in the CHNA and Massachusetts had adequate fruit and vegetable intake (see figure 6.1). In 2013, the rates were even lower, with Lowell at 15%, the CHNA at 13%, and Massachusetts at 19% (See figure 6.2). The consistently lower numbers in Lowell and the CHNA compared to the state may indicate difficulty accessing fresh fruits and vegetables. The percent of adults who engaged in physical activity for exercise in Lowell in 2013 was 71.5. The percentages are higher in the CHNA and the state at 74.3 and 76.5, respectively (see figure 6.3). In the general population, obesity is on the rise for all three areas. Obesity rates have increased substantially from 1998-2010 for all three geographic areas, but Lowell and the CHNA have had higher rates than the state for the most part. Obesity rates may have leveled off more recently between 2011 and 2013 (see figure 6.4). In 2013, 24% of Lowell residents were obese, with 26% in the CHNA and 24% in the state (see figure 6.5). The percent overweight has also been on the rise since 1998, with Lowell and the CHNA at 57% in 1998 and 60% in 2010. The state is slightly lower at 50% in 1998 and 58% in 2010 (see figures 6.6 and 6.7).

Respiratory diseases

Emergency department visit hospitalizations for respiratory system diseases have been fairly steady since 1989, with Lowell higher than the CHNA and Massachusetts. There was an upward trend between 2007 and 2009 for all three areas, probably mostly due to the upward trend in Lowell (see figure 7.1). The rates have since decreased. The 2012 rates are 1,326 per 100,000 in Lowell, 1,069 in the CHNA, and 1,025 in Massachusetts (see figure 7.2). Asthma related hospitalizations for children ages 0-4 have had an upward trend since 1995. In Lowell, the low was 617 per 100,000 in 1995, and the rate peaked at 1,888 in 2008, resting at 805 in 2012. The CHNA and the state also dropped since 2008, resting at 507 and 361 in 2012 (see figure 7.3).

In 2009 there was a large disparity in asthma hospitalizations between non-Hispanic Whites

and Hispanics in Lowell compared to the disparity in Massachusetts (see figure 7.4). The hospitalization rate for Hispanics in Lowell was almost 5 times higher than that of non-Hispanic Whites at 782 per 100,000 versus 159 (see figure 7.5). Asthma hospitalization rates for Asian/Pacific Islanders in Lowell are also higher than Massachusetts at 237 versus 88, respectively. More recent asthma hospitalization data by race was not available at the time of this assessment.

Chronic obstructive pulmonary disease (COPD) hospitalization rates have been increasing since 1989, but Lowell's rates have been consistently higher than the CHNA and Massachusetts. In 1989 the rates were 387, 283, and 266, respectively, and in 2012 the rates were 531, 345, and 325, respectively (see figure 7.6).

Smoking is a major risk factor for COPD and asthma. There tend to be higher rates of smoking in Lowell than the CHNA and the state. In 2013, 22.5% of Lowell residents smoked cigarettes, with 20.7% in the CHNA, and 16.6% in Massachusetts (see figure 7.7). Despite the higher rates of smoking in Lowell, smoking has been on the decline since 1998 in all three areas (see figure 7.8).

Cancer

Invasive cancer rates in all three regions have been slowly rising since 1985 (see figure 8.1). In 1985, the rates were about 430-450 per 100,000, and in 2012 the CHNA had the highest rate of 535, Massachusetts had a rate of 472, and Lowell had the lowest rate of 475 (see figure 8.2). However, the frequency of non-invasive cancers remained fairly the same from 2000 to 2013; and the frequency in CHNA was 4 times greater than in Lowell (see figure 8.3).

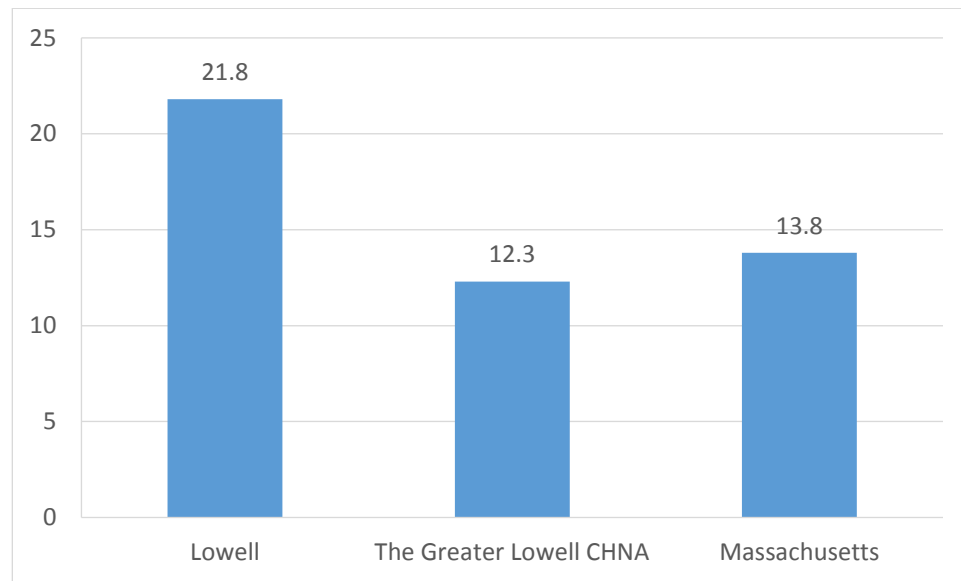
Hepatitis B

Although hepatitis B was not raised as a top health concern, the data indicate that incidence rates have been on the rise in Lowell, the CHNA, and the state since the previous needs assessment was conducted. Rates of hepatitis B have been consistently higher in Lowell than the CHNA and Massachusetts. In 1992 rates were low – Lowell was 6.7, the CHNA was 3.9, and Massachusetts was 3.7 per 100,000. Rates rose

and peaked in 2001 and Lowell reached a high of 120, pulling the rates up for the CHNA and Massachusetts (see figure 9.1). The latest data for 2013 still show a higher rate for Lowell at 81.7, with the CHNA at 39.2 and Massachusetts at 24.5 (see figure 9.2). These rates are higher than they were in 2009, the latest year for which data was reported in the previous needs assessment.

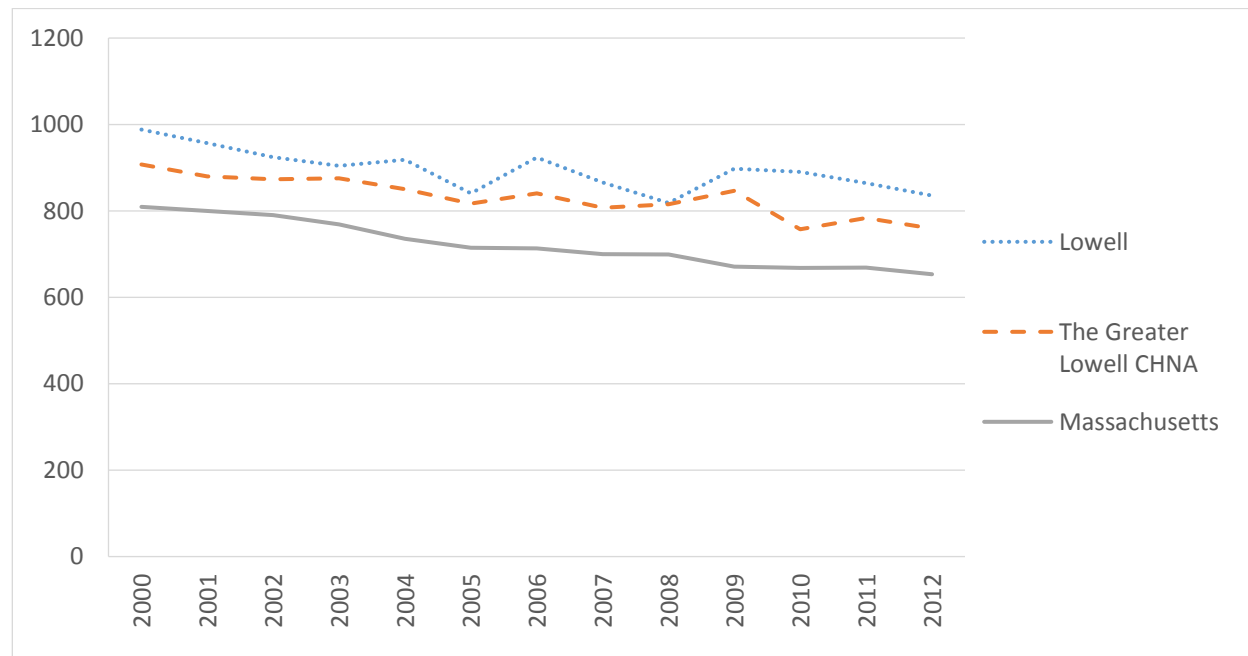
Figures - General Health

Figure 1.1 Percent of adults with fair or poor health, 2013



Source: Massachusetts Department of Public Health

Figure 1.2 Age-adjusted mortality rates*, 2000-2012



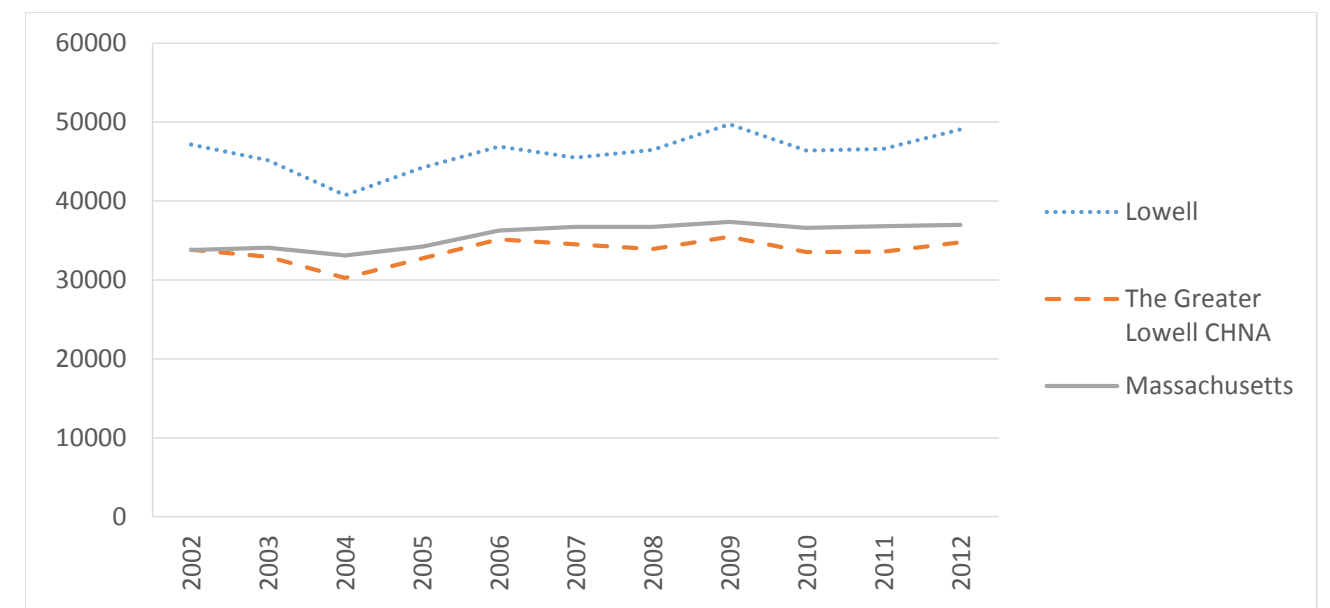
*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figure 1.3 Infant mortality rates per 1000 live births, 1999-2012



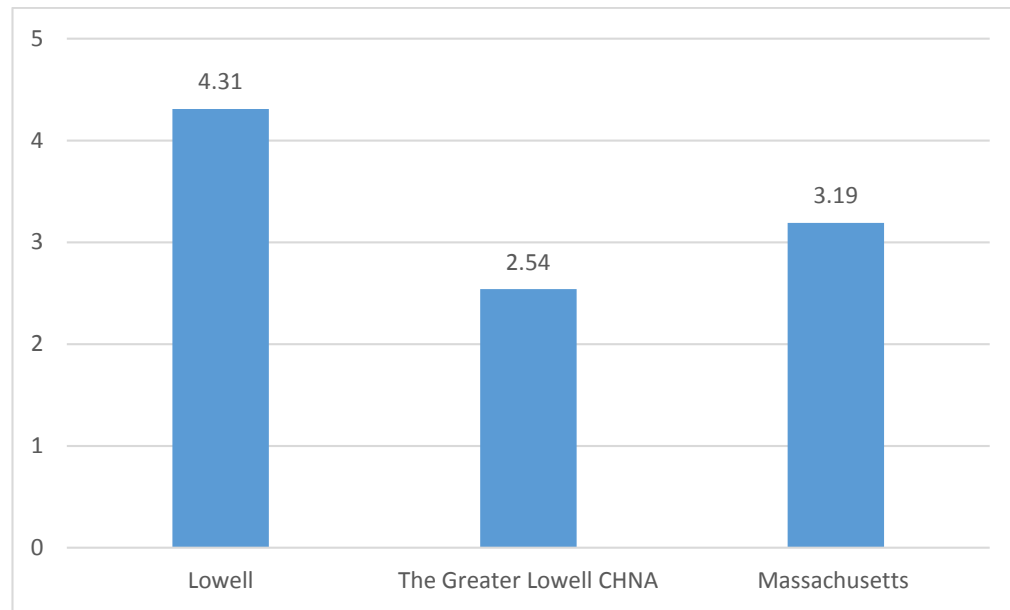
Source: Massachusetts Department of Public Health

Figure 1.4 Age-adjusted rates* of emergency department hospitalizations, 2002-2012



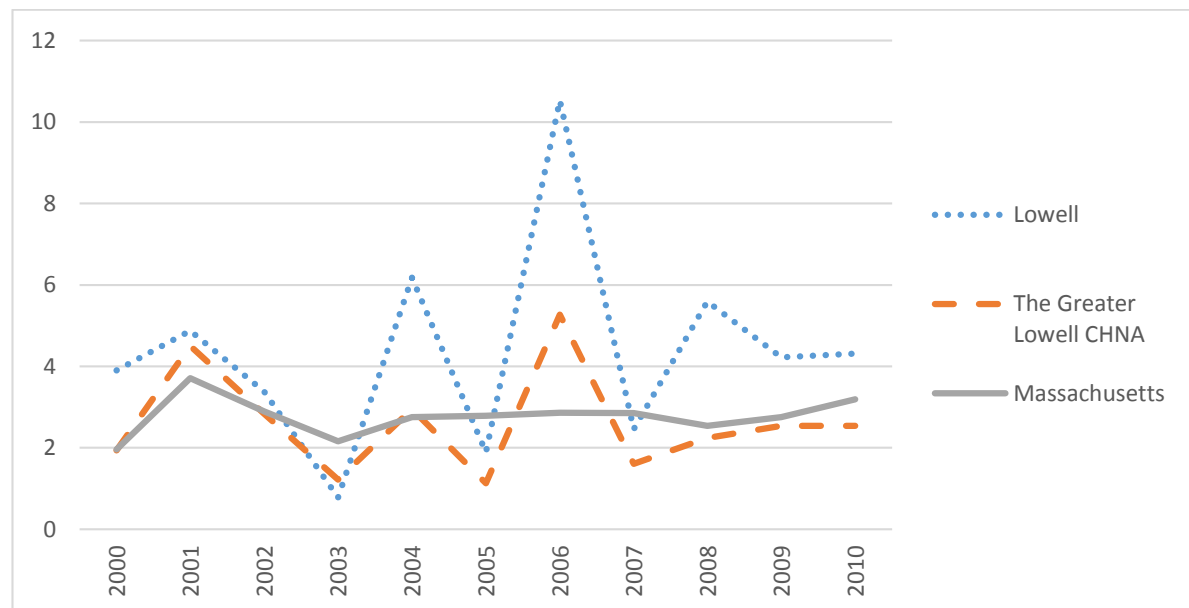
*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figure 1.5 Age-adjusted homicide death rates*, 2010



*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

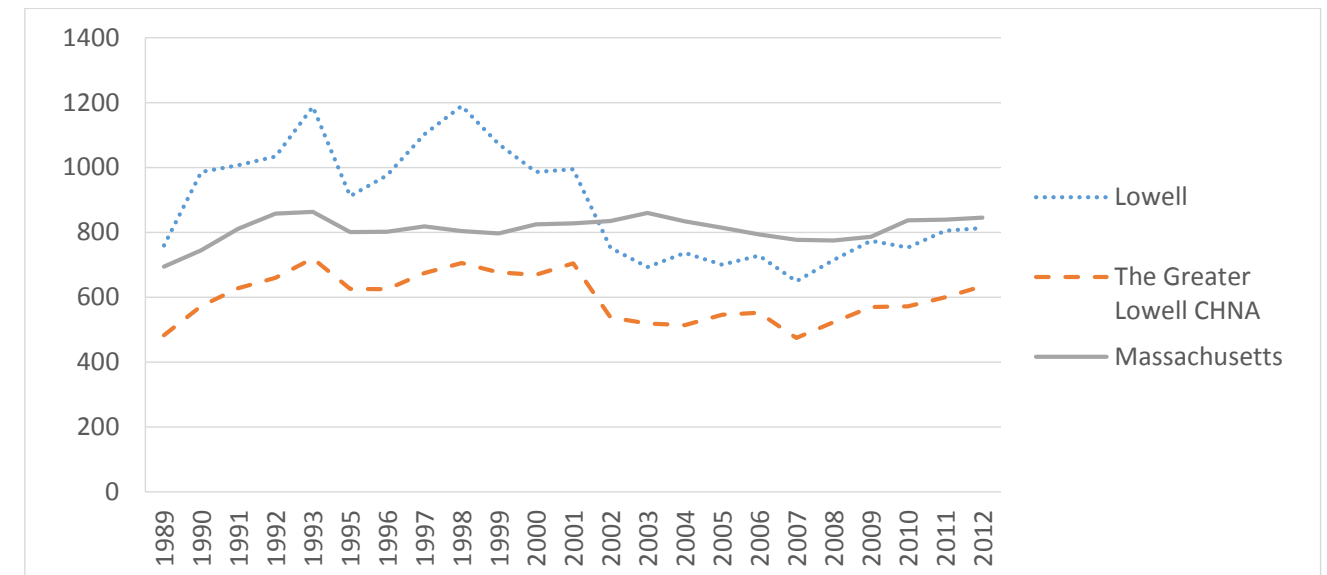
Figure 1.6 Age-adjusted homicide death rates*, 2000-2010



*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figures - Mental Health

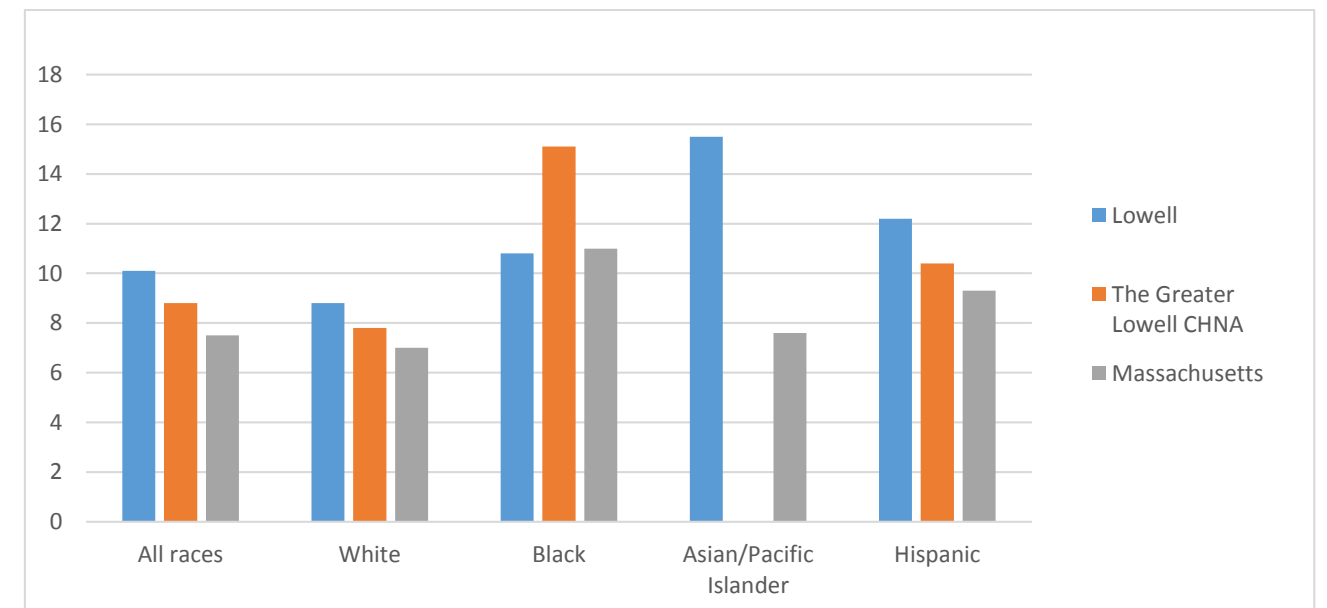
Figure 2.1 Age-adjusted mental health hospitalization rates*, 1989-2012



*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

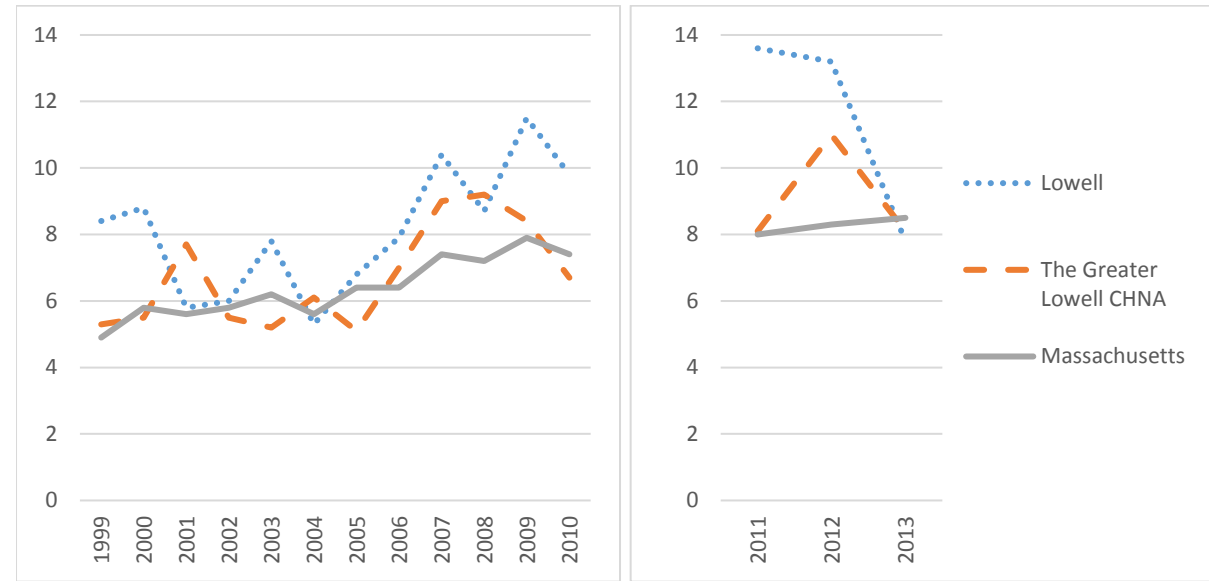
Figures - Diabetes

Figure 3.1 Prevalence of diabetes – percent, 2005-2010



Source: Massachusetts Department of Public Health
Note: No data available for Asian/Pacific Islander category for the Greater Lowell CHNA.

Figure 3.2 Percent of those who have or have had diabetes, 1999-2010 and 2011-2013*

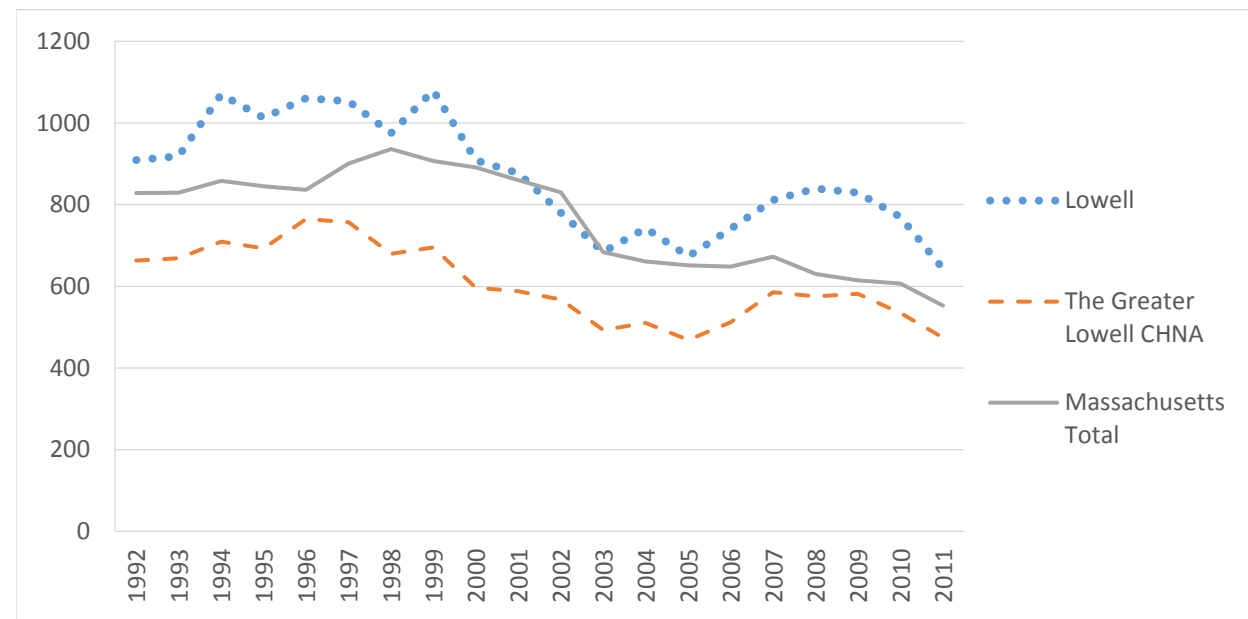


Source: Massachusetts Department of Public Health

*This data originates from the Behavioral Risk Factor Surveillance System (BRFSS). Since there was a change in methodology, data from 2010 and prior should not be compared directly with post-2010 data. Thus, the data are presented in separate charts.

Figures - Substance Abuse

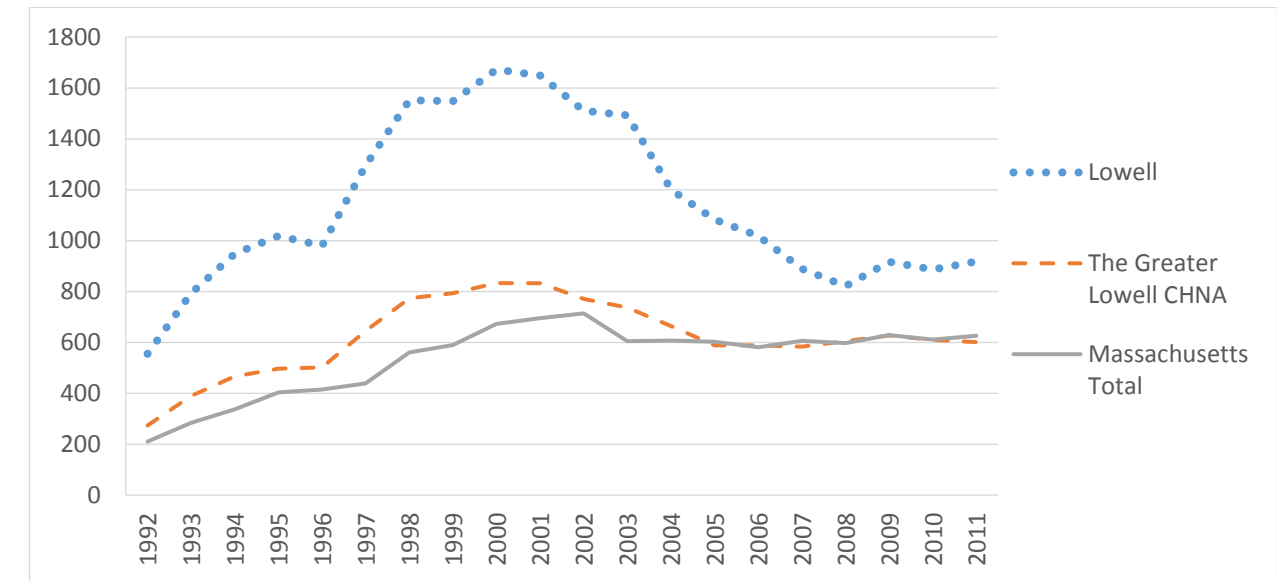
Figure 4.1 Crude rates* of substance abuse admissions – Alcohol was primary substance, 1992-2011



*Rate is per 100,000 persons

Source: Massachusetts Department of Public Health

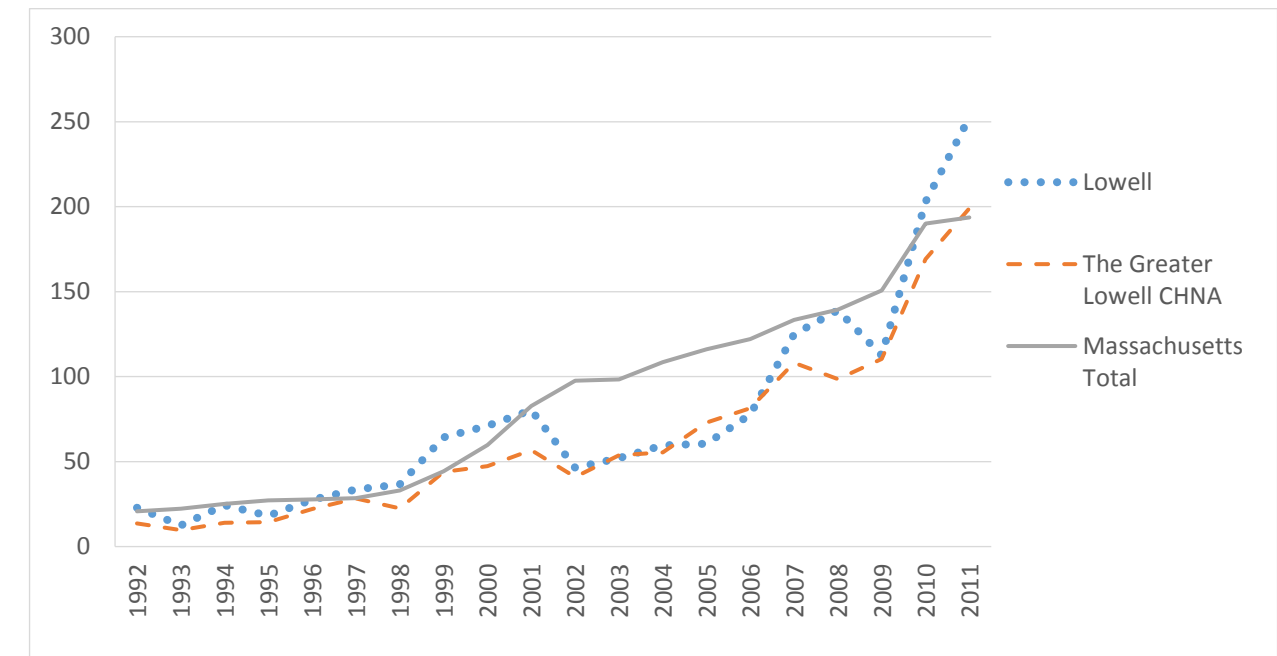
Figure 4.2 Crude rates* of substance abuse admissions – Heroin was primary substance, 1992-2011



*Rate is per 100,000 persons

Source: Massachusetts Department of Public Health

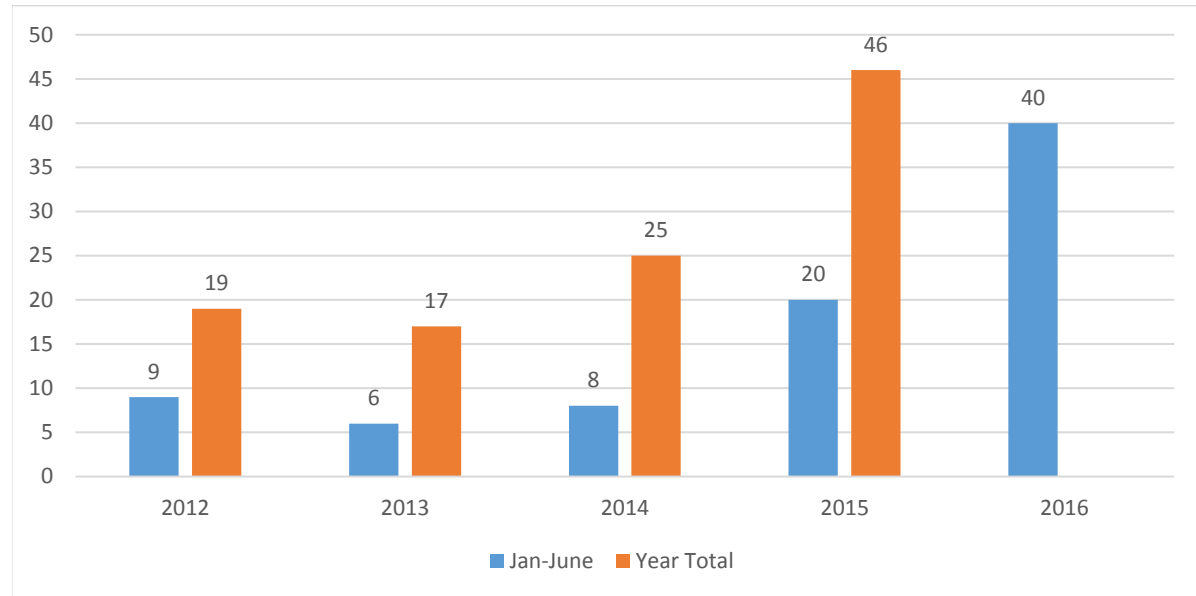
Figure 4.3 Crude rates* of substance abuse admissions – Other** was primary substance, 1992-2011



*Rate is per 100,000 persons

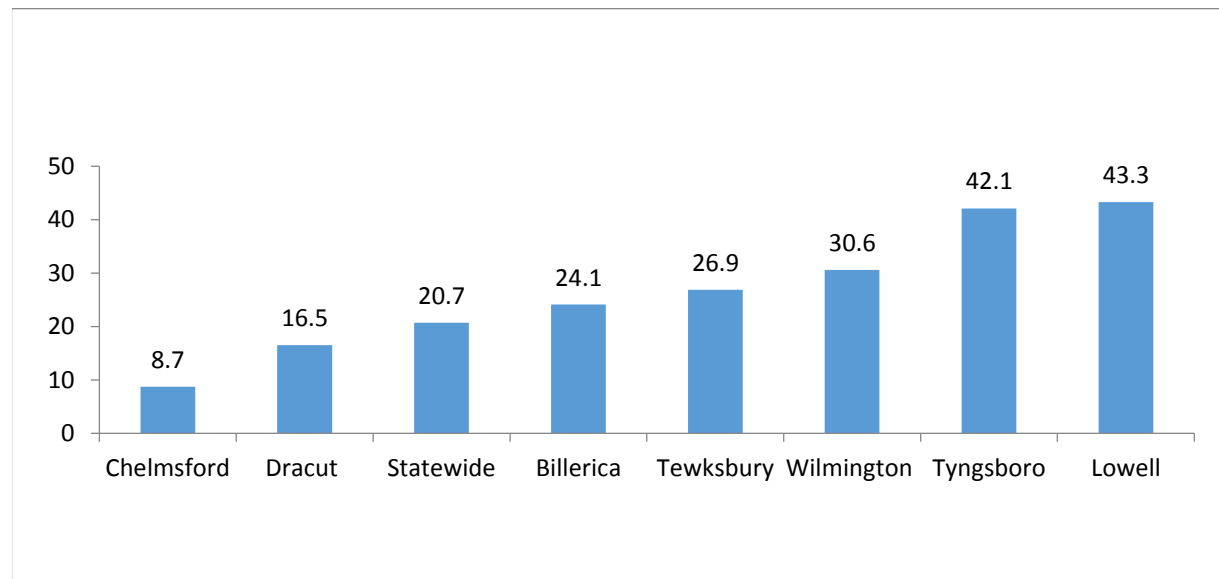
** "Other" includes phencyclidine (PCP), other hallucinogens, methamphetamine, other amphetamines, other stimulants, benzodiazepines, other tranquilizers, barbiturates, other sedatives, inhalants, and over the counter drugs.

Figure 4.4 Lowell opioid overdoses, 2012-2016



Source: Lowell Sun 7/22/2016. Data from the Lowell Police Department.

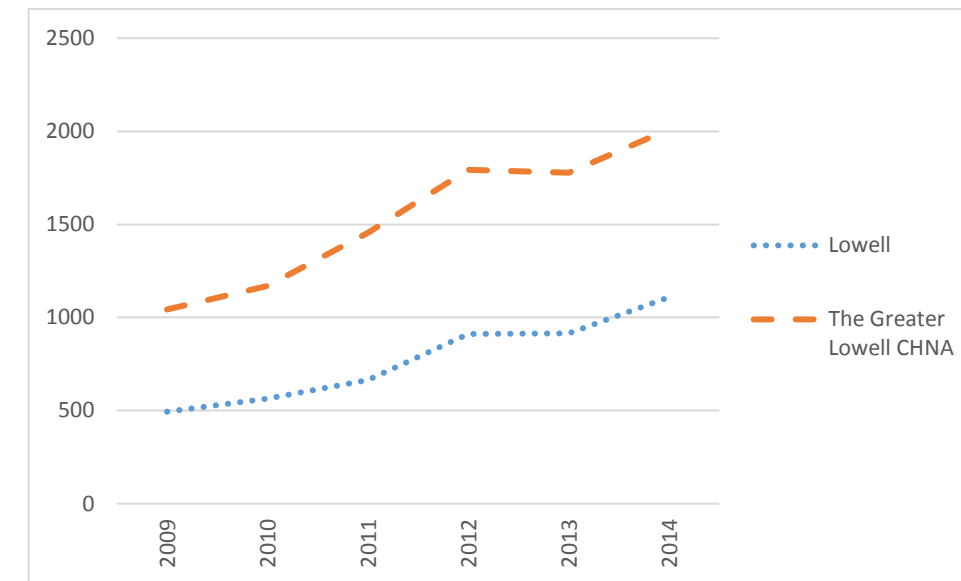
Figure 4.5 *Opioid overdose deaths in 2015



*Rate is per 100,000 persons

Source: Massachusetts Department of Public Health Registry of Vital Records and Statistics

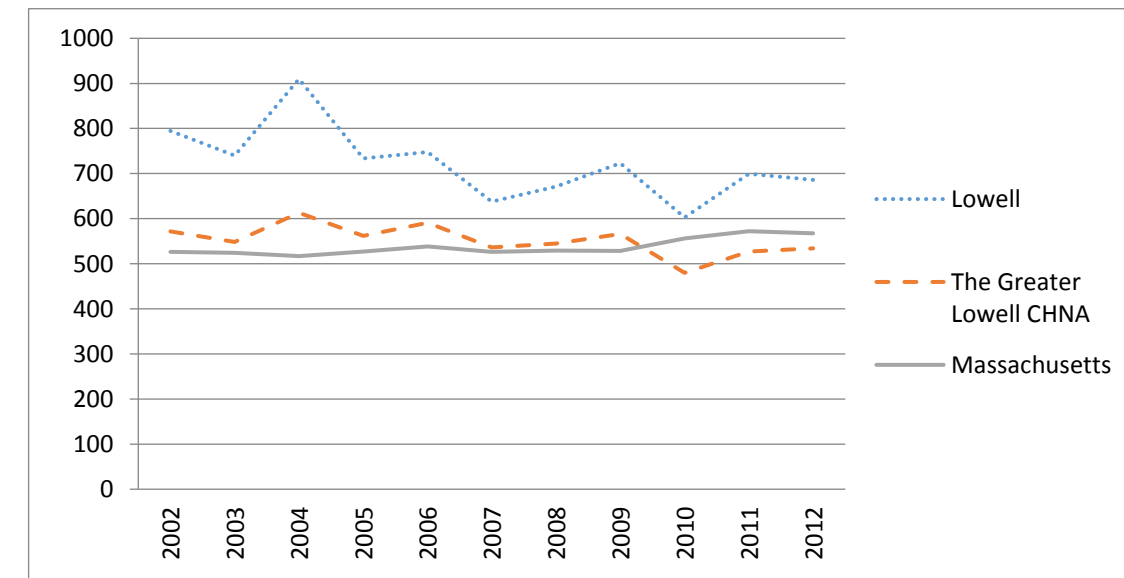
Figure 4.6 Opioid related emergency department, inpatient, and observation visits, 2009-2014



Source: Massachusetts Health Data Consortium

Figures - Cardiovascular Disease

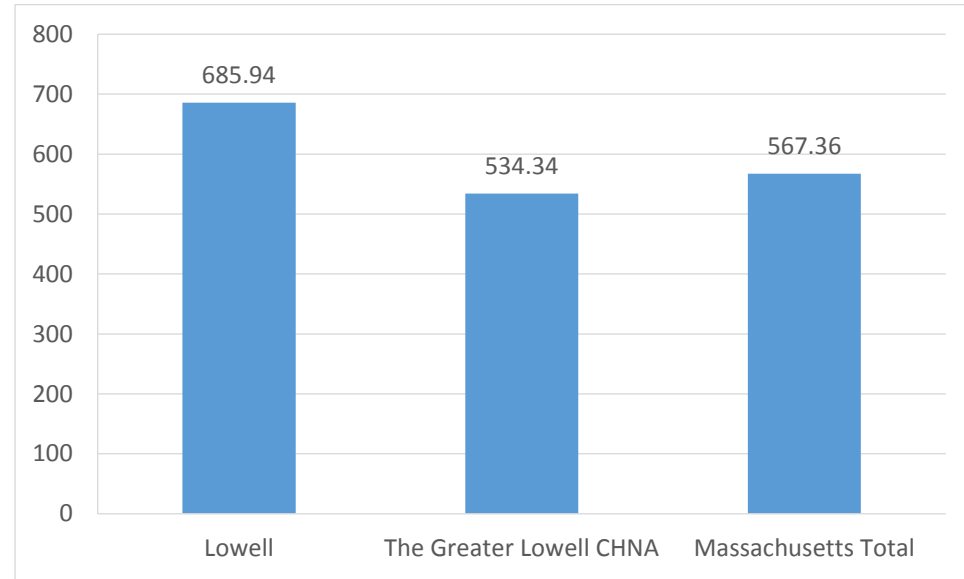
Figure 5.1 Age-adjusted rates* of emergency visit hospitalizations for all circulatory system diseases, 2002-2012



*Rate is per 100,000 persons

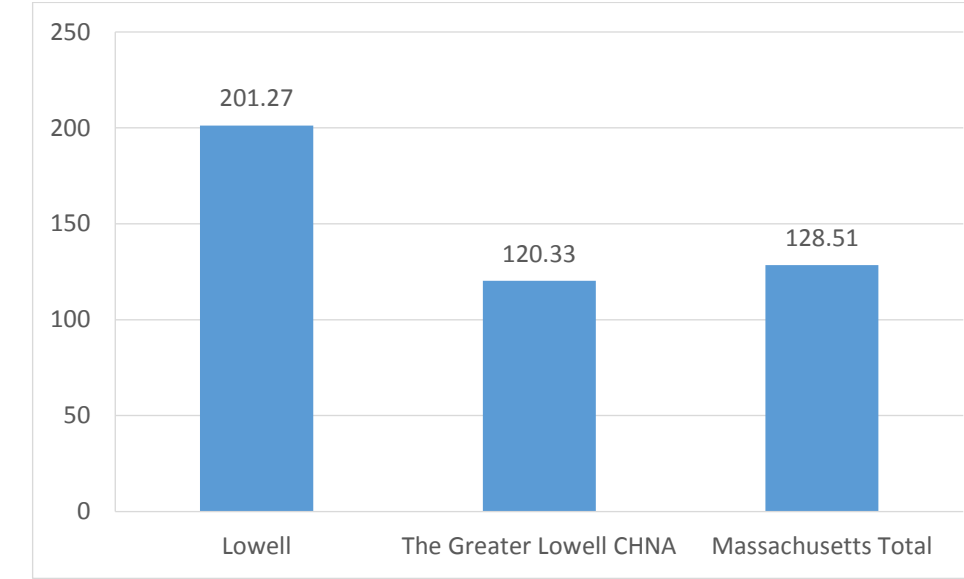
Source: Massachusetts Department of Public Health

Figure 5.2 Age-adjusted rates* of emergency visit hospitalizations for all circulatory system diseases, 2012



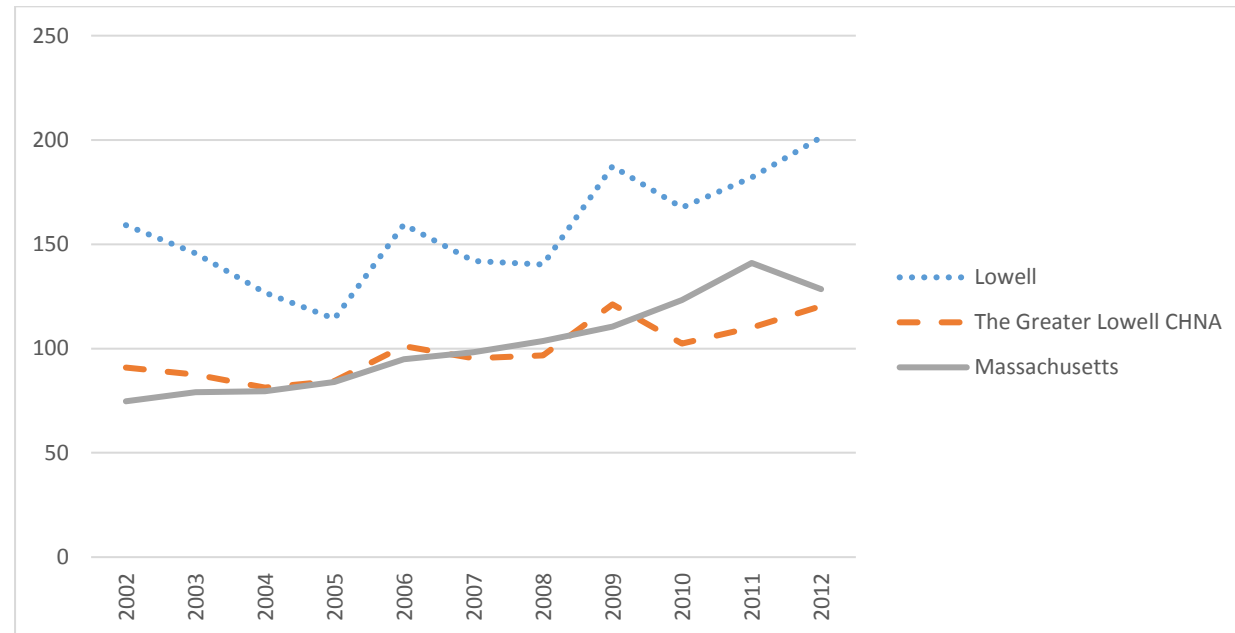
*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figure 5.4 Age adjusted rate* of emergency visit hospitalizations for hypertension, 2012



*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

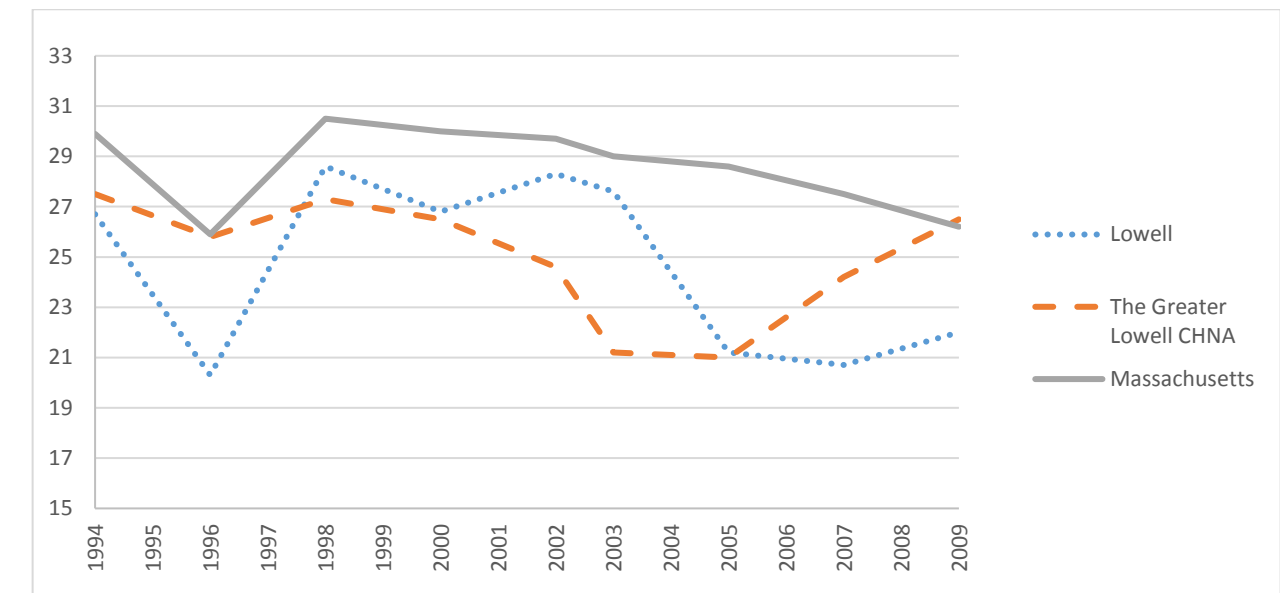
Figure 5.3 Age-adjusted rates* of emergency visit hospitalizations for hypertension, 2002-2012



*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

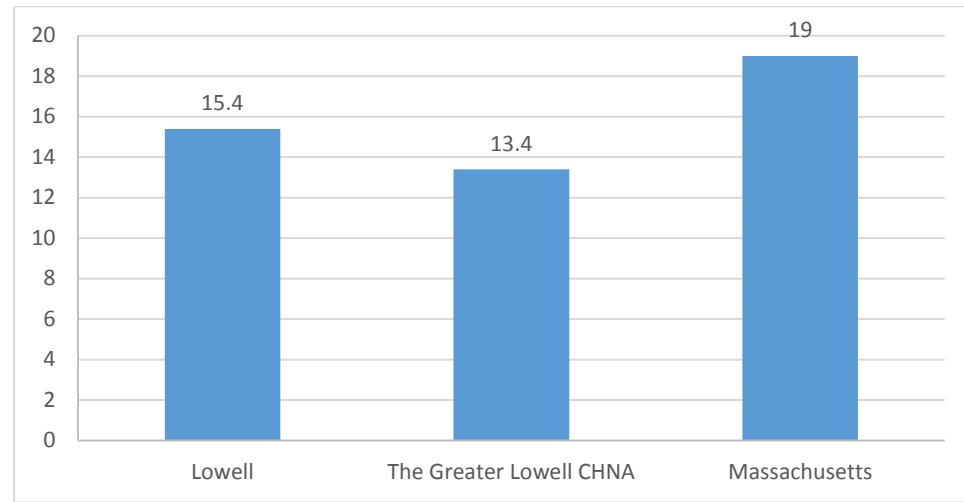
Figures - Obesity

Figure 6.1 Percent adequate fruit and vegetable intake (5+ servings per day), 1992-2009*



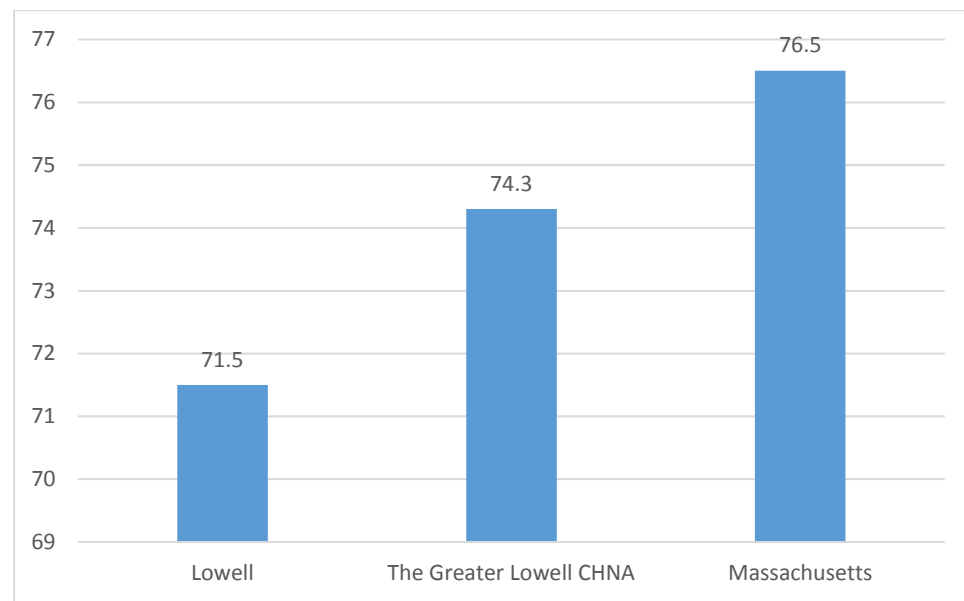
Source: Massachusetts Department of Public Health
*This data originates from the Behavioral Risk Factor Surveillance System (BRFSS). Since there was a change in methodology, data from 2010 and prior should not be compared directly with post-2010 data. Thus, the data are presented in separate charts.

Figure 6.2 Percent adequate fruit and vegetable intake (5+ servings per day), 2013



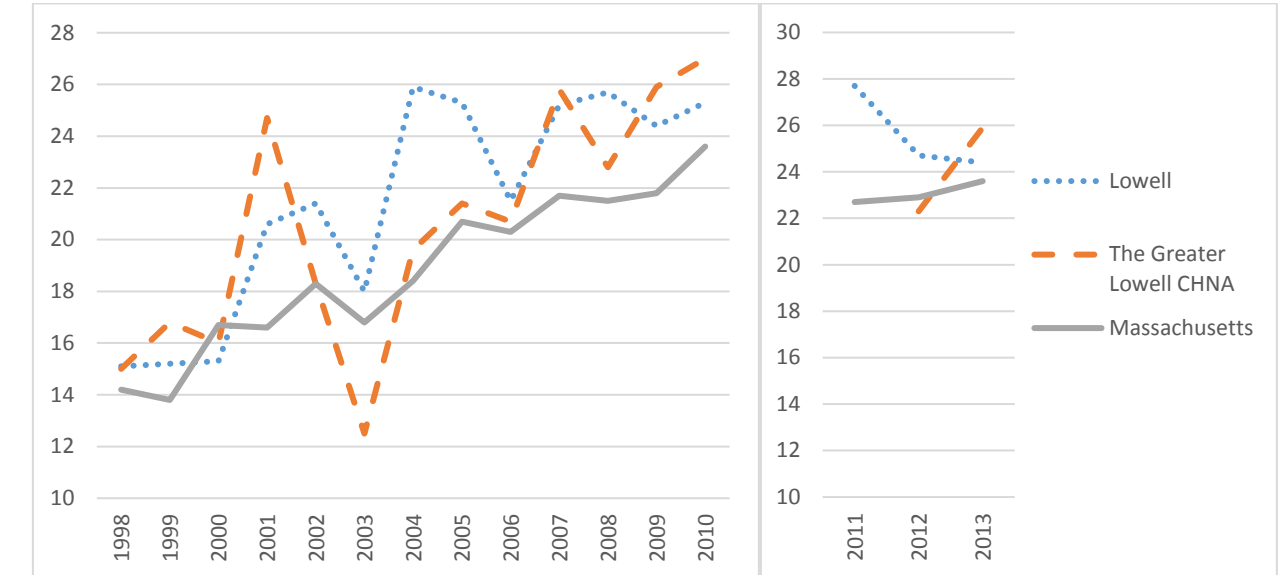
Source: Massachusetts Department of Public Health

Figure 6.3 Percent of adults who participated in physical activity for exercise in the last month, 2013



Source: Massachusetts Department of Public Health

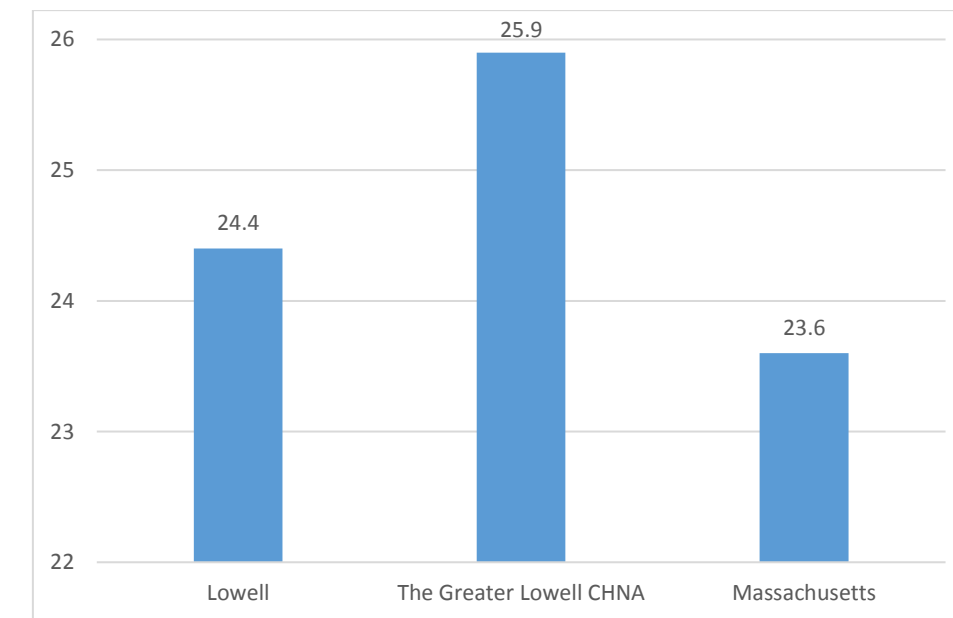
Figure 6.4 Percent Obese, 1998-2010 and 2011-2013



Source: Massachusetts Department of Public Health

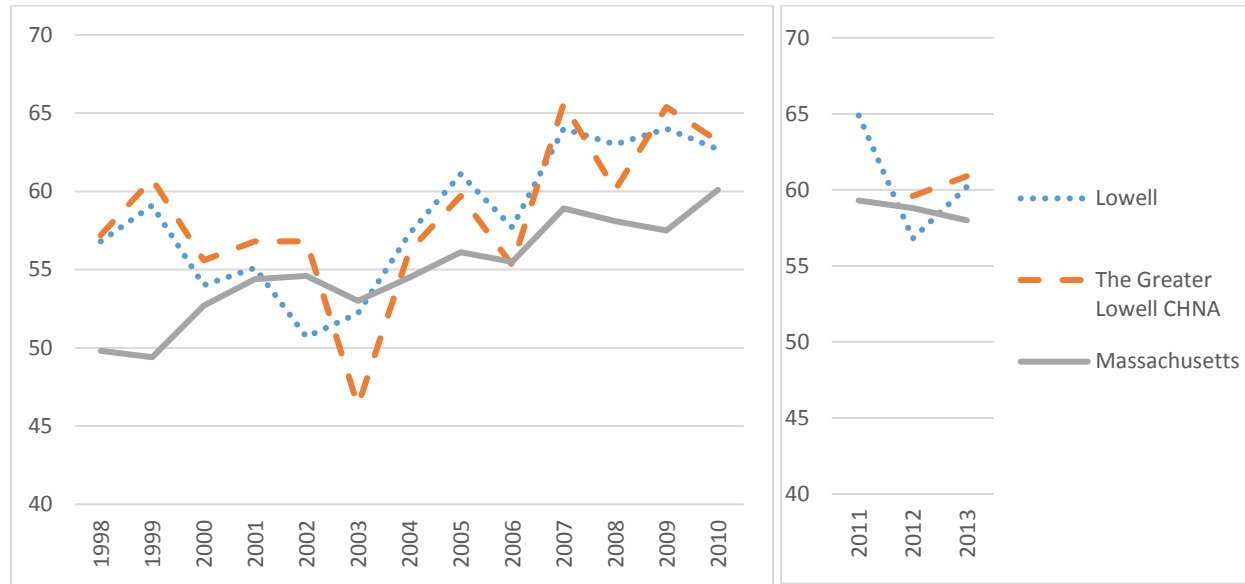
*This data originates from the Behavioral Risk Factor Surveillance System (BRFSS). Since there was a change in methodology, data from 2010 and prior should not be compared directly with post-2010 data. Thus, the data are presented in separate charts.

Figure 6.5 Percent Obese, 2013



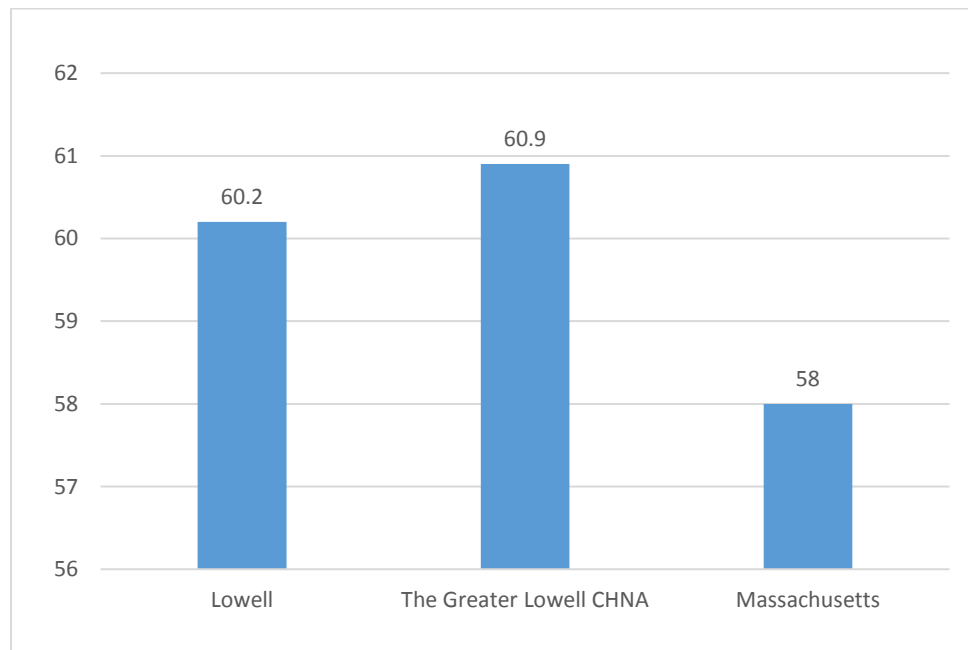
Source: Massachusetts Department of Public Health

Figure 6.6 Percent Overweight, 1998-2010 and 2011-2013



Source: Massachusetts Department of Public Health
 *This data originates from the Behavioral Risk Factor Surveillance System (BRFSS). Since there was a change in methodology, data from 2010 and prior should not be compared directly with post-2010 data. Thus, the data are presented in separate charts.

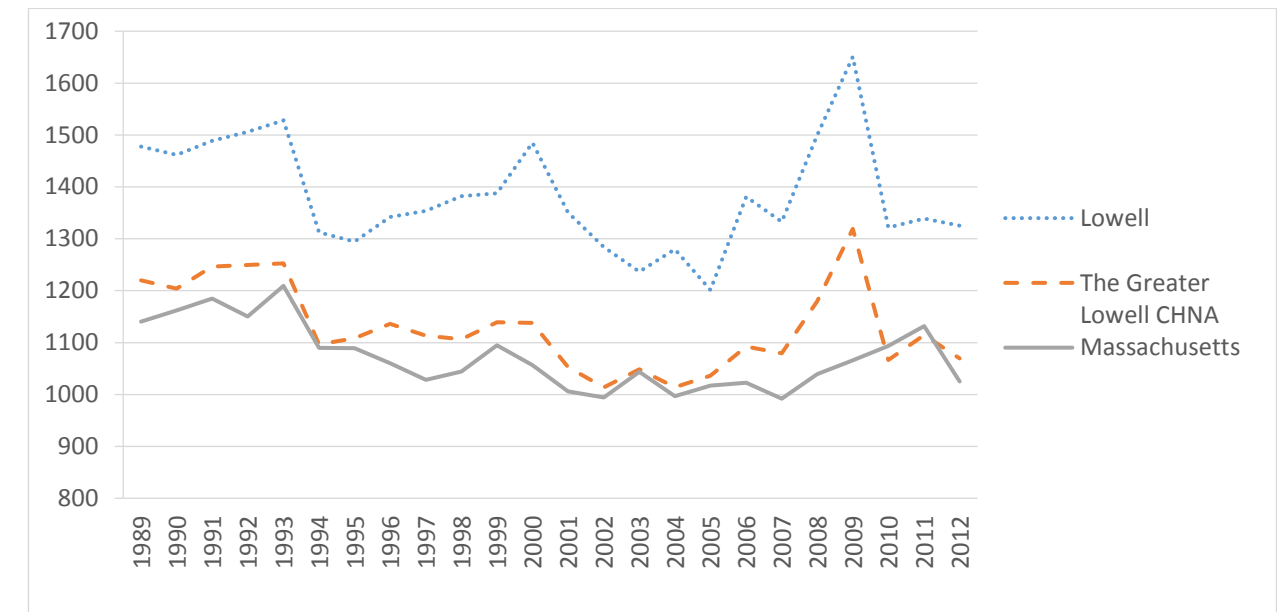
Figure 6.7 Percent Overweight, 2013



Source: Massachusetts Department of Public Health

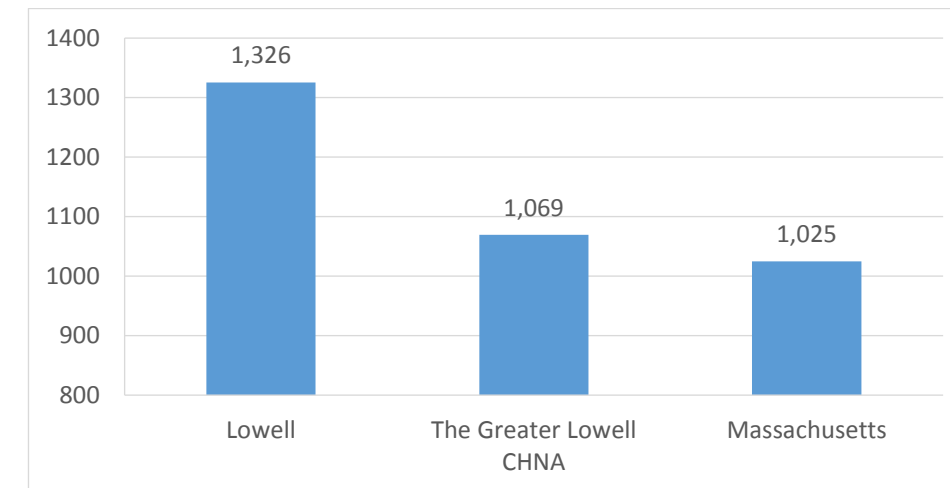
Figures - Respiratory Diseases

Figure 2.1 Age-adjusted mental health hospitalization rates*, 1989-2012



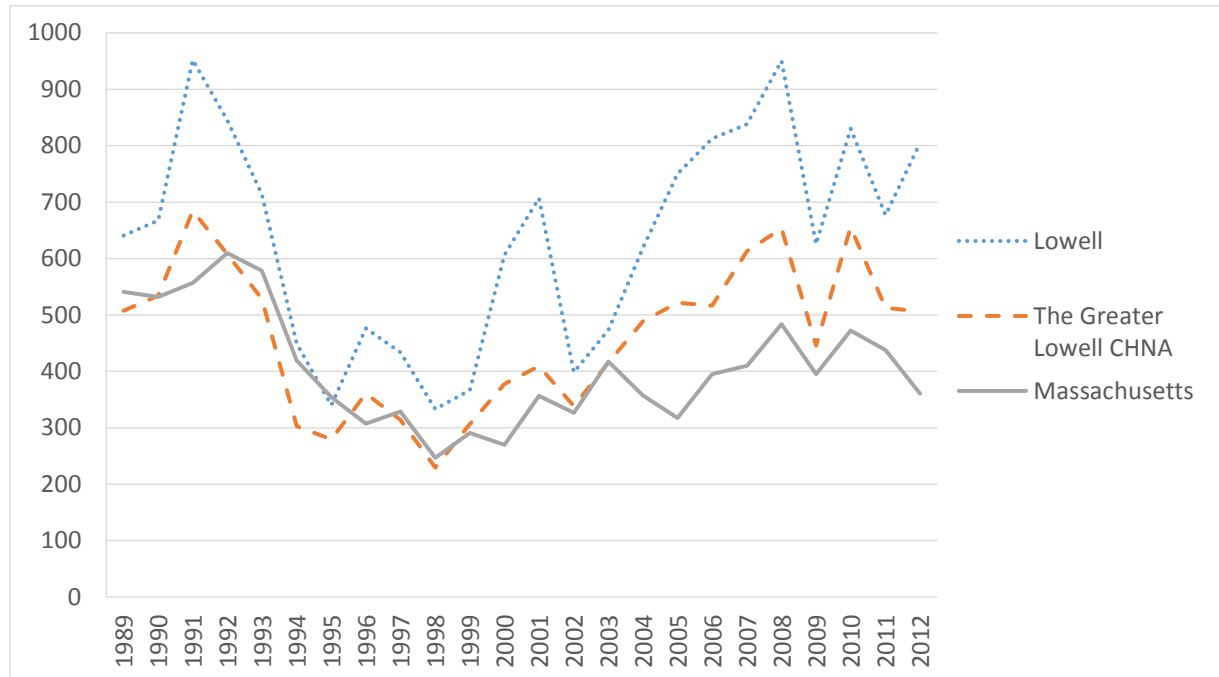
*Rate is per 100,000 persons
 Source: Massachusetts Department of Public Health

Figure 7.2 Age-adjusted rates* of emergency visit hospitalizations for all respiratory system diseases, 2012



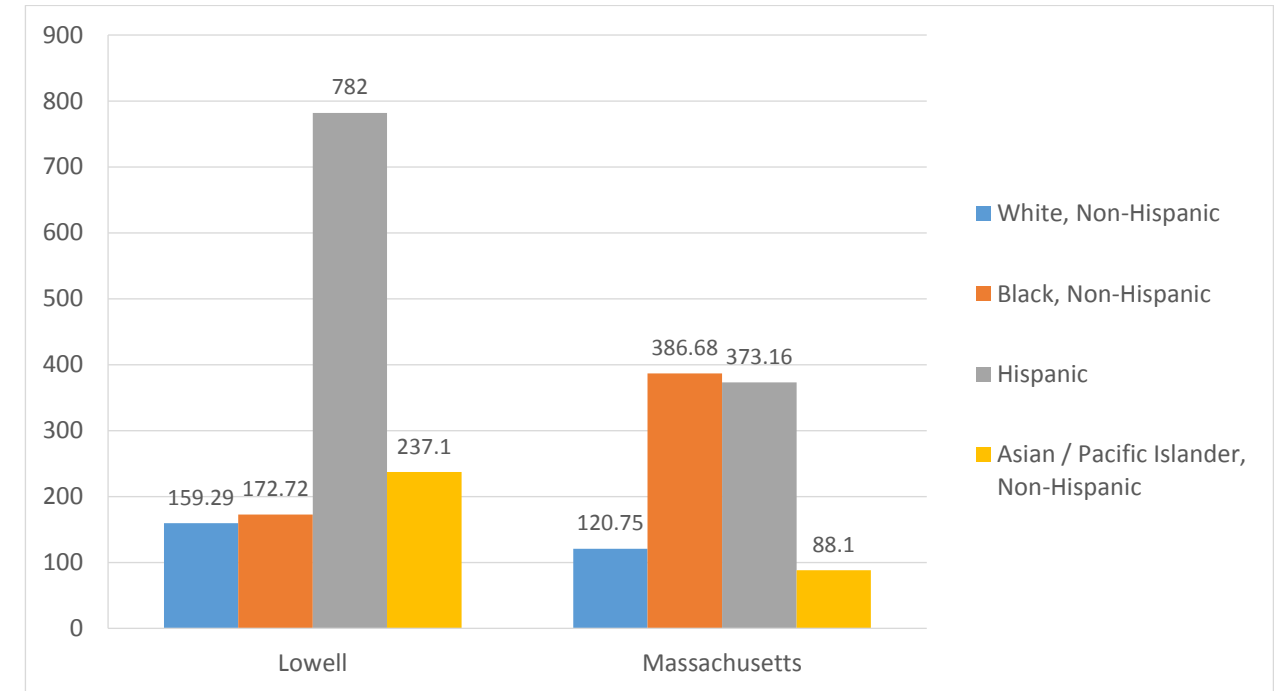
*Rate is per 100,000 persons
 Source: Massachusetts Department of Public Health

Figure 7.3 Asthma related hospitalization rates* for children ages 0-4, 1989-2012



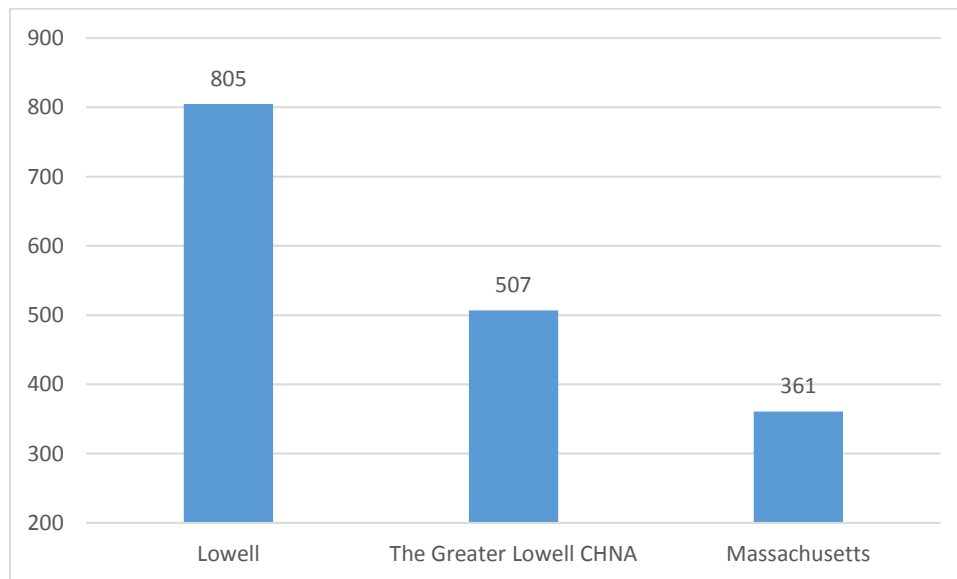
*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figure 7.5 Age-adjusted asthma hospitalization rates*, 2009



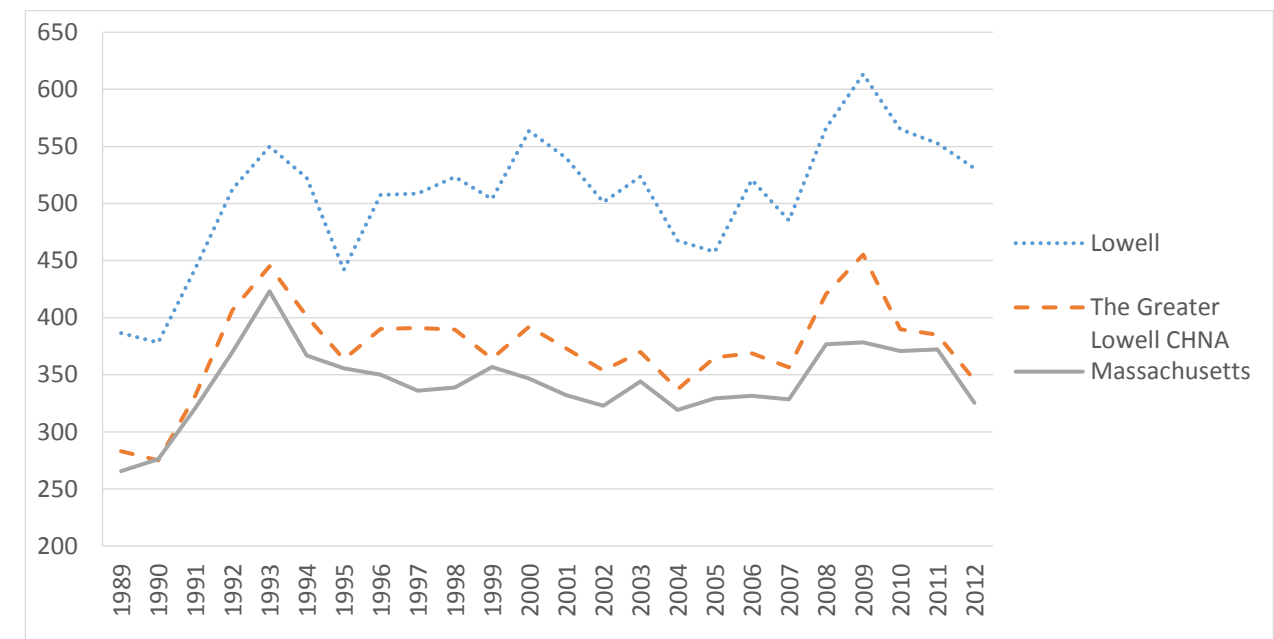
*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figure 7.4 Asthma hospitalization rates* for children ages 0-4, 2012



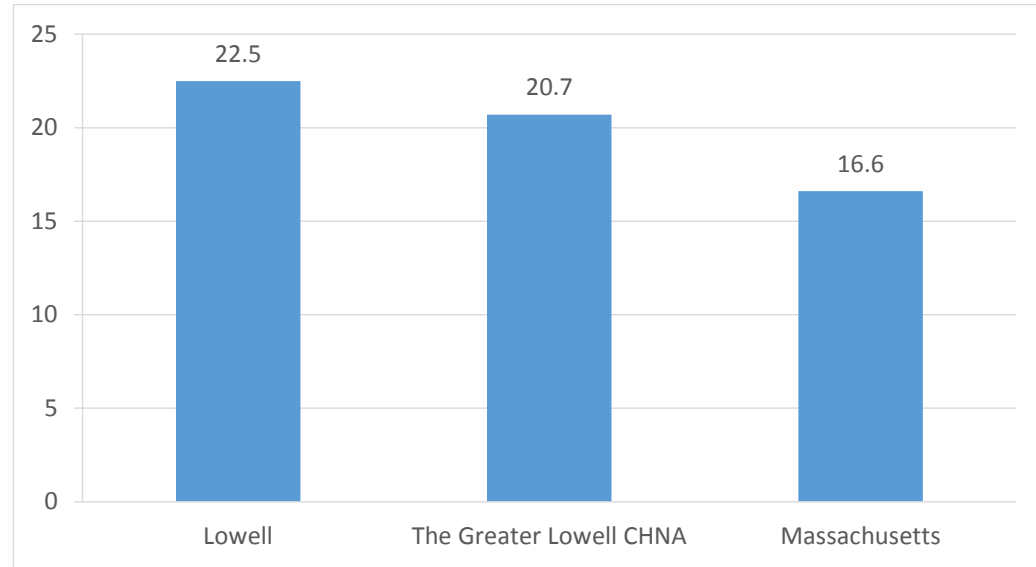
*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figure 7.6 Age-adjusted hospitalization rates* for chronic obstructive pulmonary disease (COPD), 1989-2012



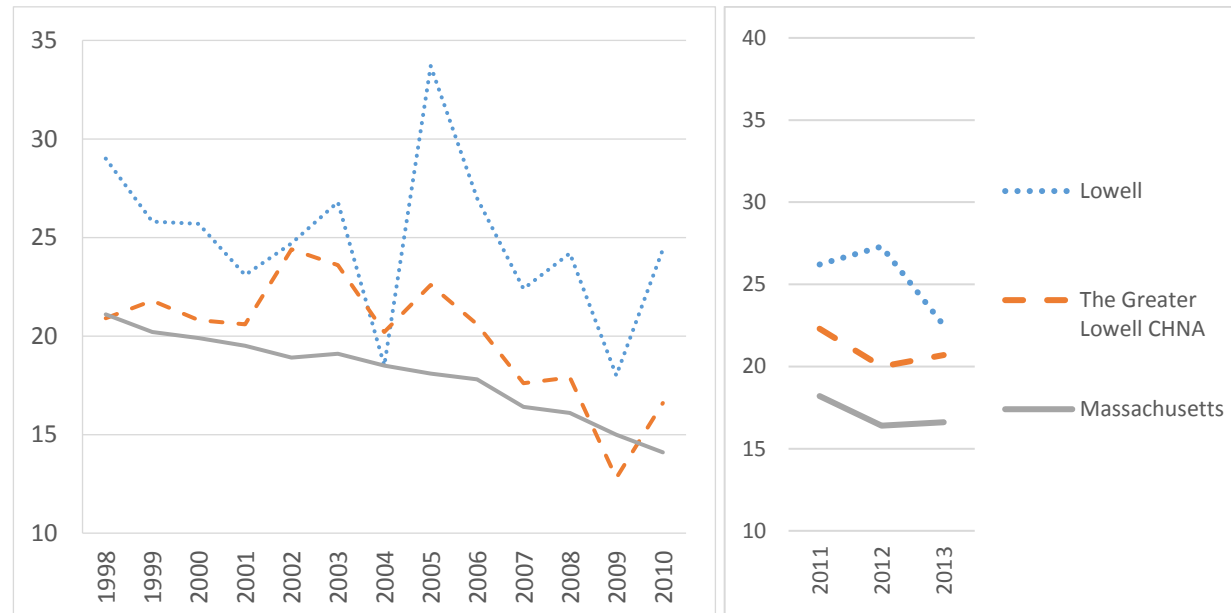
*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figure 7.3 Asthma related hospitalization rates* for children ages 0-4, 1989-2012



Source: Massachusetts Department of Public Health

Figure 7.8 Percent Current Smokers, 1998-2010 and 2011-2013*

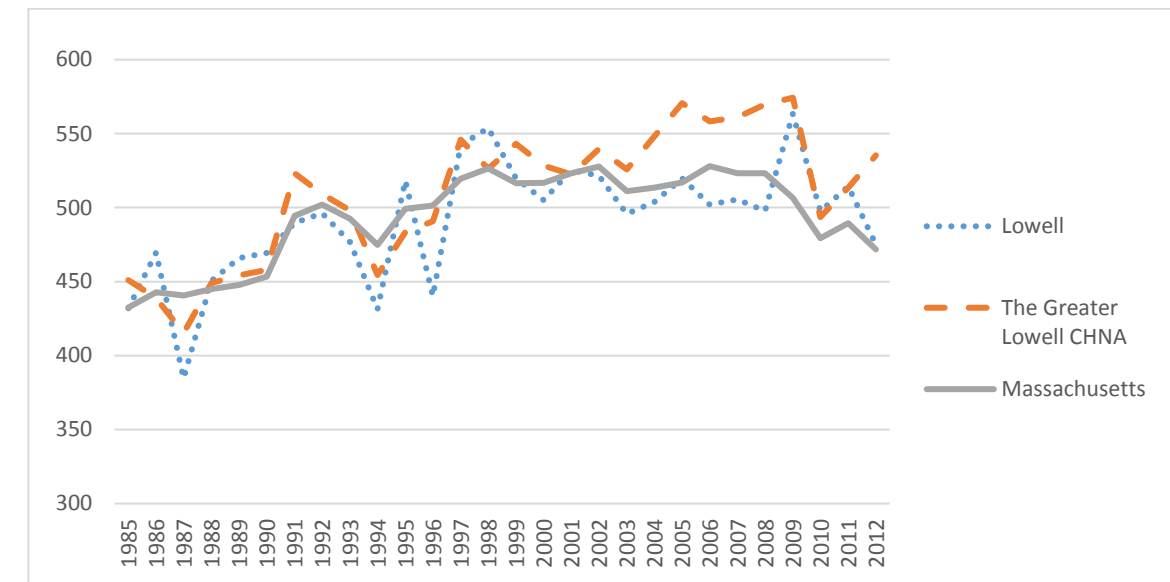


Source: Massachusetts Department of Public Health

*This data originates from the Behavioral Risk Factor Surveillance System (BRFSS). Since there was a change in methodology, data from 2010 and prior should not be compared directly with post-2010 data. Thus, the data are presented in separate charts.

Figures - Cancer

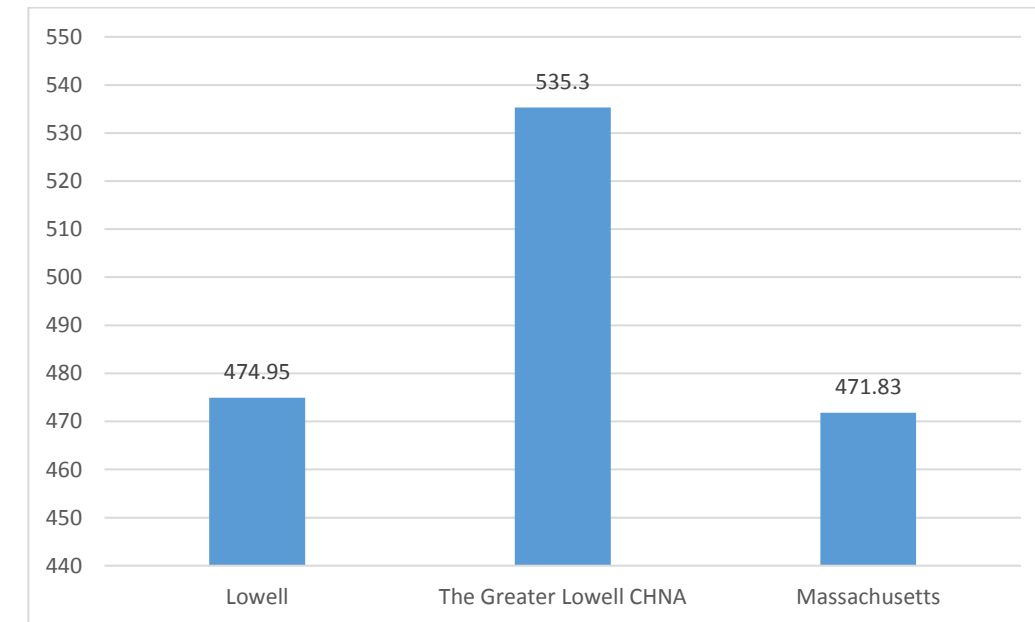
Figure 8.1 Age-adjusted cancer incidence rates* for cancers (invasive), 1989-2012



*Rate is per 100,000 persons

Source: Massachusetts Department of Public Health

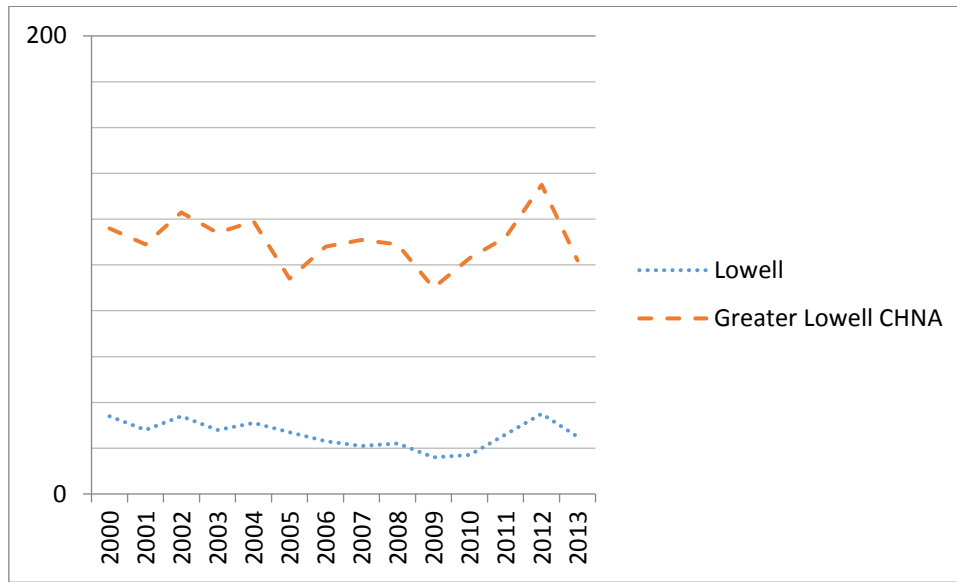
Figure 8.2 Age-adjusted incidence rates* for cancers (invasive), 2012



*Rate is per 100,000 persons

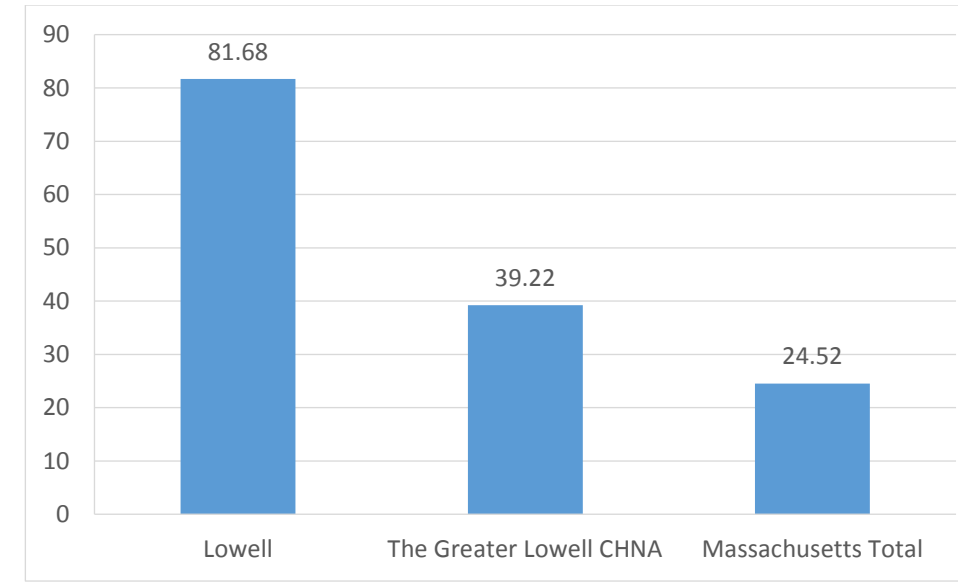
Source: Massachusetts Department of Public Health

Figure 8.3 Frequency* of cancers (non-invasive), 2000-2013



*Frequency
Source: Massachusetts Department of Public Health

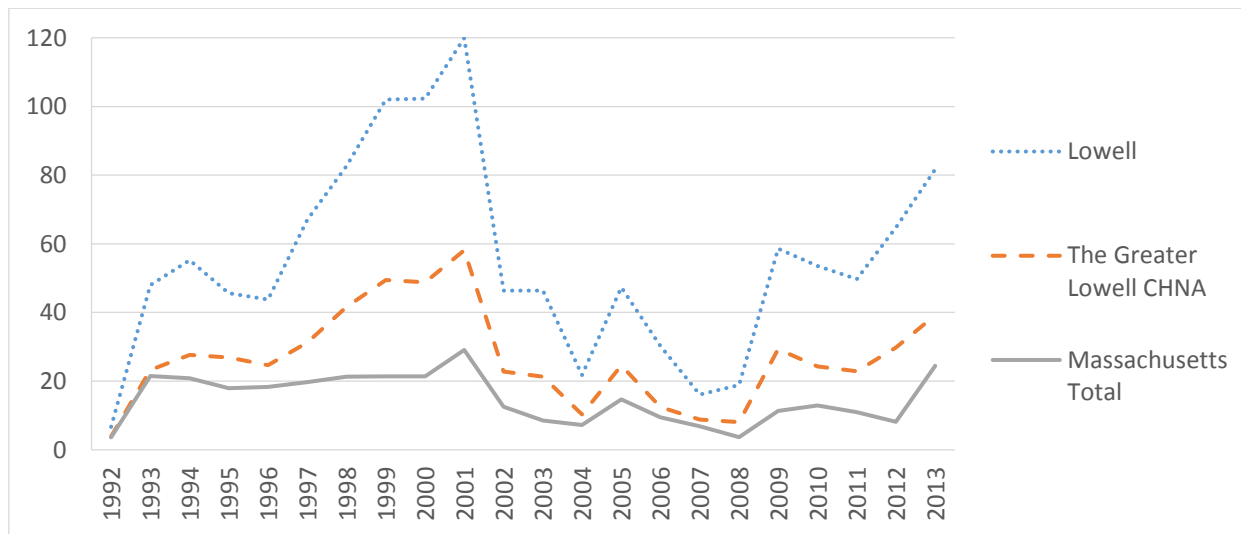
Figure 9.2 Crude rates* of hepatitis B incidence, 2013



*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Figures - Hepatitis B

Figure 9.1 Crude rates* of hepatitis B incidence, 1992-2013



*Rate is per 100,000 persons
Source: Massachusetts Department of Public Health

Social Determinants and Environmental Factors Affecting Community Health



Certain social and environmental characteristics of a community affect the health of its residents. According to the World Health Organization, “social determinants of health are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels.” Additionally, the United States Department of Health and Human Services Healthy People 2020 defines social determinants of health as “conditions in the environments in which people live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks” (Social Determinants of Health, 2016). Research now shows that social and economic factors as well as the physical environment are responsible for 50% of health outcomes (Rankings Background, 2016). Healthy People 2020 identified five key areas of social determinants of health: economic stability, education, social and community context, health and health care, and the neighborhood and built environment. Income, employment status, poverty level, foreign born status, homelessness, physical housing characteristics, and access to nutritious food all contribute to health and healthcare access. Some characteristics are known to be linked to discrimination or exclusion and can influence health. For example, some disparities are linked directly to race and ethnicity (United States Department of Health and Human Services, 2011). Income, race/ethnicity, employment status, poverty level, and foreign born status are all presented on page 6. This community health needs assessment is not intended to address social determinants of health in depth, but rather to provide a brief summary of some factors contributing to social determinants that complement other topics covered in the assessment.

The Community Needs Index

The Community Need Index (CNI) scores take into account community demographics and economic state, as well as other factors that make up a community’s overall socioeconomic profile. The index is calculated using five scores for income barriers, cultural barriers, education barriers, insurance barriers, and housing barriers. There is a difference between scores for Lowell versus the surrounding towns. The CNI scores of the cities and towns included in this report are as follows, listed from lowest need to greatest:

City/Town	Zip Code	CNI Score
Dunstable	01827	1.2
Chelmsford	01824	1.4
Tewksbury	01876	1.4
Tyngsboro	01879	1.6
Billerica	01821	1.8
Westford	01886	1.8
Dracut	01826	2.2
Lowell	01852	3.8
Lowell	01851	4.0
Lowell	01850	4.2
Lowell	01854	4.2
Lowell Average	--	4.1

The average of Lowell’s four zip codes shows a greater health need than the other towns by at least 1.9 points. The other towns’ CNI scores range from 1.2-2.2 while Lowell’s CNI scores range from 3.8-4.2. These numbers reflect the fact that Lowell’s population is comprised largely of people who are of lower to middle socioeconomic status, and that there are a large variety of different races, cultures and

¹The “Community Needs Index” (CNI) was developed in 2004 by the nonprofit corporation, Dignity Health and the multinational company, Truven Health in order to clearly see the healthcare needs of a community. The purpose was to be able to help communities distribute resources in the most effective manner, recognizing that some areas have more health care needs than others and prioritizing accordingly. There is a CNI score for every populated zip code in the United States. There is a CNI score for every populated zip code in the United States. CNI scores range from 1.0 to 5.0, 1.0 being the lowest need, 5.0 being the highest. They are found by taking into account the community’s demographics and economic state, as well as other factors that make up the community’s overall socioeconomic profile, and using the information to calculate five barriers: the Income Barrier, the Cultural Barrier, the Education Barrier, the Insurance Barrier, and the Housing Barrier. The barriers receive scores of 1-5, reflective of need in comparison to other zip codes across the country. The barriers are then averaged to get the CNA so that each barrier is equally represented. The accuracy of a CNI score increases as population increases. All scores are based on 2015 data.

languages that might cause social friction or difficulty communicating. Higher crime rates and drug use statistics are also influential contributors to the increased health needs of Lowell over other towns in Middlesex County.

City	Population	Weighted Average CNI
Lowell	110,455	4.0
Lawrence	80,448	4.5
Haverhill	71,638	3.1
Fall River	105,781	3.9
New Bedford	106,703	4.0
Brockton	93,908	3.9
Worcester	180,858	3.8
Springfield	169,639	4.0

In comparison to similarly-populated cities in other counties across Massachusetts, Lowell's CNI is typical. The cities being compared are shown in the table below. The cities shown below have populations between roughly 70,000 and 180,000 and most have histories of being part of the industrial revolution. Their CNIs average at 3.9, with Lawrence appearing to be a group outlier with a 4.5 CNI. This shows that one can expect a mid-sized urban community to have a CNI that's close to 3.9 and that Lowell is no exception.

Housing Affordability

Affordable housing is an ever present issue not only in Massachusetts, but all over the United States. When looking at gross rent as a percentage of household income (GRAPHI) of Lowell, just over 53% of its renters are paying 30% or more of income towards rent, according to the American Community Survey 2010-2014 estimates. The U.S. Department of Housing and Urban Development (HUD) states that families who spend over 30% of their income on housing are "cost burdened" and may have problems affording necessities such as food, clothing, medical care, and transportation. Homeowners as well face a similar problem, as 42.9% of households (5,217) are paying 30% or more for housing. Lowell's median home value (MHV) to median household income (MHI) ratio (the basic measure to determine housing affordability) was at 4.64. According to the National Low Income Housing Coalition's Out of Reach 2016 report, Lowell was ranked as the fourth most expensive city in Massachusetts, as the minimum housing wage needed to afford a two-bedroom is \$23.33 for a 40-hour work week. Additionally, when working a minimum wage job (\$10.00/hour), a person would need to work 104 hours in one week to afford a two-bedroom apartment. Data for the other towns in the CHNA are presented in the table below.

	Gross Rent as a Percentage of Household Income		Selected Monthly Owner Costs as a Percentage of Household Income		Median Home Value/Median Household Income
	Percent units 30%+	Total occupied units paying rent	Percent units 30%+	Total housing units with a mortgage	
Billerica	42.7%	2,376	35.0%	9,069	3.63
Chelmsford	47.8%	2,232	29.3%	8,067	3.66
Dracut	44.2%	2,048	33.9%	6,573	3.71
Dunstable	33.3%	48	31.8%	714	3.71
Lowell	53.2%	20,770	42.9%	12,154	4.64
Tewksbury	43.2%	1,595	35.5%	6,711	3.74
Tyngsborough	42.0%	495	31.5%	2,560	3.69
Westford	48.6%	629	24.3%	5,433	3.64

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

Homelessness

According to the 2015 Point in Time Census, there were 635 homeless people in the Lowell area. This was up from 588 in 2014 (United States Department of Housing and Urban Development, 2011). Data from the 2015 Point in Time Census show that about 64% of homeless families in Lowell have at least one child. Homeless individuals face many difficulties to maintaining good health. Lack of access to transportation, lack of access to nutritious food such as fresh fruits and vegetables, susceptibility to the elements, and inability to establish consistent healthcare necessities like insurance and primary care all contribute to deteriorating health.

Physical housing characteristics

Lead

Lowell is considered a High Risk Community for childhood lead poisoning according to the Massachusetts Department of Public Health Childhood Lead Poisoning Prevention Program. According to public health data of children who were screened within Lowell between 2011 to 2015, 4.9 per 1,000 children screened between 9-48 months of age had elevated blood lead levels (>10 mcg/dL). In Massachusetts 2.8 per 1,000 children screened between 9-48 months of age had elevated blood lead levels. Although the long-term trend is downward, the cases of elevated blood lead levels in children are consistently higher in Lowell than the state. Elevated blood lead levels are predominantly caused by exposure to lead-based paint in homes built before 1979. About 85% of the housing stock in Lowell was built before 1979. The city of Lowell Office of Lead Poisoning Prevention has worked extensively through the HUD-funded Lead Paint Abatement Program to provide lead abatement services and education and outreach in Lowell.

Asthma triggers

Since Lowell's housing stock is older than surrounding towns, there is a high prevalence of substandard units, especially among low income and rental units (City of Lowell Office of Lead Poisoning Prevention, 2013). Poor quality housing tends to have poor indoor air quality and is a major factor for exacerbation of asthma, especially in children and the elderly. Asthma can be negatively affected by

by mold, dust, dust mites, carpeting, pests such as cockroaches and mice, cleaning chemicals and fragrances, combustion, excessive humidity or dryness, smoking, and pets, among other things. The HUD-funded Healthy Homes program at the University of Massachusetts Lowell observed that of participating households in two studies, a total of 26% of homes enrolled in the program had signs of rodents and 28% had signs of cockroaches, while 45% of homes had mold on some surface in the home, usually in the bathroom. Most homes, 64%, had some rug or carpet, and 63% of homes had gas stoves. Gas stoves can be problematic especially if they are older, pilot-light style stoves that produce constant combustion, as they produce by-products such as nitrogen dioxide that can get trapped indoors and contribute to lung inflammation.

Smoking

According to the Massachusetts Department of Public Health, Lowell's rate of adult smokers is 53% higher than statewide. Additionally, smoking during pregnancy is 74% higher in Lowell than statewide (2014), putting fetuses at risk of being born prematurely and/or developing various birth defects such as cleft palate. Smoking during pregnancy has also been linked to sudden infant death syndrome (SIDS). Lung cancer incidence among men is 30% higher in Lowell than Massachusetts. Smoking multiplies the risk of lung cancer by 23 for men and 13 for women. Mortality from lung cancer is also 24% higher in Lowell than Massachusetts (Tobacco Community Fact Sheet, 2016). Massachusetts has made available resources to combat smoking, such as the Massachusetts Tobacco Cessation and Prevention Program (MTCP) and the Tobacco-Free Community Partnership.

Smoking indoors is another common health issue related to housing. Residents who don't smoke in their housing unit may still be exposed to secondhand smoke from outdoor sources or those smoking in other units. This is especially true for those who live in multifamily buildings. Recognizing this issue, the Lowell Housing Authority went smoke-free in 2015 with 1,839 units of public housing. Additional privately owned properties in Lowell went smoke free in 2014 and 2015, including Rogers Hall with 60 units, Mazur Park with 50 units, and

Wentworth House with 40 units. The Coalition for a Better Acre also went smoke-free this year with their 473 residential units. Chelmsford Housing Authority went smoke free with 269 units and Westford's Princeton Westford property went smoke free with 200 units. In addition, Billerica Housing Authority will be going smoke free with its 177 units by January 1, 2017.

Access to nutritious and affordable food

Open Pantry in Lowell has seen upward and downward trends in the total number of people served between 2009 and 2015. From 2009 to 2011, the number of people served monthly dropped from approximately 1,744 to 1,448. Over the next year, the number rose by roughly 200 people per month and from then on it has continued to increase back to the 2009 level. Open Pantry serves the most people in the month of November. Most people served are either White or Latino. In Lowell about 22% of households receive assistance from the Supplemental Nutrition Assistance Program, while 0-7% of households in the other Greater Lowell CHNA towns receive food stamps.

Recommendation to Improve the Healthcare System



Provider/professional focus groups had the following recommendations for changes impacting the general population as well as suggestions for their own colleagues:

All provider/professional groups recommended an increase in general health education for the community. In addition to general health, specifically mentioned were education about facilities and available services in the Greater Lowell area, HIPPA rules, and education about when to use the hospital emergency department (ED) and 911. Several participants recommended an increase in education around personal responsibility for health as well as an increase education about insurance in general, and how to make informed choices about insurance plans. Also suggested was additional education for first responders who interact with patients experiencing mental health issues.

All provider/professional groups recommended an increase in services in general. These recommendations included more screening for HIV and substance abuse for pregnant mothers, increased interpreter and navigator services, support groups and an increase in culturally sensitive resources/services for immigrant communities. All provider/professional groups recommended an increase in mental health and substance abuse services for both adults and children. Participants also suggested an increase in the number of shelters available for those who are homeless. Further suggestions for homeless populations include removing or reducing copays for those who are homeless, creating healthcare services for the homeless modeled after Boston's Healthcare for the Homeless program.

Participants in provider/professional focus groups not involved with direct delivery of services recommended that providers adopt a more global approach to health care and integrate social services with healthcare. They suggested that providers increase their understanding of resources available in the community so as to more thoroughly advise their patients, and recommended the creation of a centralized list of resources to facilitate this. These provider/professional groups also recommended that community leaders communicate better with hospitals and healthcare providers.

Key informants had the following recommendations:

Key informants recommended an increase in the availability of PCPs with geriatric background. They suggested that collaboration between providers around identified weaknesses in healthcare system be increased. Specifically, they recommended that reimbursement system for Mass Health be improved. Key informants also recommended that the number of interpreters be increased and acknowledged that this will involve increased funding. Like provider/professional groups, they also recommended that providers increase cultural competency. They also recommended that PCPs connect to oral health services so that patients are more aware of the importance of oral health to overall health. Other recommendations include raising awareness of the importance to dispose of unused opiates and increasing awareness and sensitivities of medical providers to LGBTQ community health needs.

Community focus groups had recommendations for changes to the healthcare system consistent in many cases with the recommendations of the provider/professional groups. Community focus groups recommended the following:

Like provider/professional groups, community focus group participants recommended an increase in general health education for the community, as well as education about the health care system, to be accomplished through an increase in community outreach. One proposal, while well intended, illustrates the lack of education about how the health care system works: "Schools communicate information with parents about events or meetings at their places. When parents know about that, they choose to attend or not to attend the event or meeting; it's their choice. Hospitals should have similar systems to make our community well informed and healthier. Once or twice a month or once a week, a doctor should come to talk to the community, not on his behalf or his time. It should be part of his time with the hospital - to inform the community about the hospital's services" (community focus group participant). Related to education, participants recommended that patients be encouraged to advocate for themselves in health care matters. In addition to education about health in general, and the health care system, community groups saw a need for an increase in education about alcoholism.

Community groups recommended an increase in services in general. Like the provider/professional groups, these recommendations included an increase in mental health and substance abuse services, an increased interpreter and health navigator services, as well as an increase in availability of PCPs, especially PCPs from diverse communities. Community focus group participants also recommended an increase in community participation on hospital boards which will help improve education strategies that address health care needs specific to diverse cultural groups.

Community group participants had suggestions about changes to the insurance system, including lower healthcare prices, lower cost ambulance services for people who cannot afford to pay, and an increase in specialists nearby who accept Mass Health. In addition, participants had recommendations about the logistics of accessing care. They recommended an increase in transportation services as well as an increase in afterhours care.

The Cambodian community had the following suggestions for additional changes to health care for their community:

- Metta Clinic (LCHC) and hospitals should triage patients according to severity of illness
- The doctors should organize workshops at CMAA once or twice a month to communicate information from hospitals to the communities.
- Create health education section in the Cambodian newspaper
- Increase Cambodian staff in ambulances in Lowell

The African/faith community had the following suggestions for additional changes to health care for their community:

- Increase the number of mental health care providers
- Educate people around mental health to dispel stigma that keeps people from seeking mental health services
- Address racism – this is an issue for children in schools and is causing stress and health issues

The Brazilian community had the following suggestions for additional changes to health care for their community:

- Increase services for non-English speakers
- Address stigma and embarrassment around seeing a doctor for those who do not speak English
- Increase the availability of dental care
- Address the existence of illegal doctors who work from home and perform dangerous procedures – many Brazilians still go to them

The MAPS community had the following suggestions for additional changes to health care for their community:

- Increase alternatives to allopathic care available in the community
- Increase the number of community health workers and patient navigators
- Increase general health education, especially for those who cannot afford health care
- Increase information on insurance availability
- Educate people in Spanish and Portuguese speaking communities about health facilities in the area
- Increase the number of PCPs in the community

The Latino community had the following suggestions for additional changes to health care for their community:

- Increase education on major health issues
- Increase education on the importance of screenings
- Increase education on the importance of family planning
- Increase community awareness in health related activities and programs
- Increase the availability of medically trained translators
- Create a local broadcasting station dedicated to spread health-related information to the community

Next Steps: Identifying Top Priorities and Action Plans



An aim of the community health needs assessment report is to provide information about the health status and needs of area residents and the strength and weaknesses of the healthcare system. This information will be used to inform a process that will identify priority health needs and develop action plans to address these priorities. Lowell General Hospital and the Greater Lowell Health Alliance are committed to a collaborative approach involving other community stakeholders with the goal to identify top priorities and formulate action steps that will improve the area healthcare system and overall community health. To maximize community involvement, Lowell General Hospital and the Greater Lowell Health Alliance will schedule community events to develop action steps that address priority needs.

References and Appendices



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APPENDIX A

Focus Group Attendees

Eunice Agyn-Yankson
Channou Aing
Mercy Anampiu
Haley Anderson
Adrienne Anderson-Floyd
Ruby Antonetty
Richard Barry
Patricia Bergin
Richard Berube
Heather Biedrzycki
Joseph Blanco
Jonathan Blank
Wendy Blom
Edina Braga
Sheryll Brink
Lisa Brown
Lynne Brown-Zounes
Geoff Bryant
Gloria Burnham
Tanya Cameron
Candace Campbell
David Corbett
John Corrigan
Sandra M. Collins
Sabrina Coste
Brandon Crocker
Maria Crooker
Anne-Marie D'Angelo Florent
Aparecida Da Silveira
Richard J. Day
Carlos De Jesus
Laura De Jesus
Michael De Lucia
Rafael De Souza
Altair Demoraes
Lira Demoraes
Katherine Deschene
Sara Diaz
Rae Dick
Mary Donnelly
Maureen Drouin
Elaine Duguette
James Dymont
Frank E. Baskin
Irene Egan
Kevin Fahy
Ann Marie Craft

Kylee Farnkoff
Polyanna Figueiredo
Ira Francis
Suzanne Frechette
Julia Garcia
Katrina Garcia
Angela Gautier
Amanda Glaser
Linda Goff
Marilyn Graham
Clare Gunther
Neia Illingworth
Devin Ingersoll
Teresa Irrizarry
Duncan Irura
Dianne James
Janice Jaraslow
Gail Johnson
Shandra Kim
John King
C.R Krieger
Jenny Lee
Carolyn S. Loofe
Heather Prince Doss
Elizabeth M. Cannon
Levenia Furusa Mavingire.
Alessandra Lopes
Senghong Lun
Elizabeth Lydstone
Alice Maina
Mayele Malango
Isabel Maldonado
Allan Marsh
Paula McHatton
Hayley McMeniman
Sheila Morehouse
Lucas Muiruri
Paul F. Murray
Naney Muturi
Daniel Nakamoto
Niem Naykret
Esther Nganga
Peter Nhini
Damaris Njenga
Grace Njogu
Ito Nou
George Nugent

APPENDIX B

Individuals Interviewed

Rachel Chaddock
Dorias Grigg-Saito
Nic Wildes

Mary Nuy
Daniel O'Conner
Frederick M. O'Keefe
Ruth Ogembo
Gardenia Osorio
Kerri C. Oua
Catherine Pere
Maria E. Pereira
Assunta Perez
Amy L. Pessia
Hannah Phan
Thida Pheng
Marcia Philbrica
Bin Porang
Judith R. Nay
Melinda Raboin
Diane Regan
Paulette Renault Caragianes
Marcia Reni
Robert F. Richards
Susan Rosa
Brent Rourke
Maria Ruggiero
Jennifer Sanborn
Lina M. Sanchez
Regina Santos
Jennifer Sawyer
Sarita Silva
Debra Siriani
Cynthia Smith
Christine Soundara
Jeffrey P. Stephens
Kody Thach
Sylvia M. Torres
Dahvy Tran
Celeste Tromblay
George Tuffour
Tammy Turcotte
Luz Vasuderan
Raquel Vilde
Mary Vilela
Scott Wallace
Jackie Wangutusi
Jennie Welch
Christine West
Tevin Yi
Ethel Zuvabadoka

APPENDIX C

Focus group and interview questions

1. Could you tell me your thoughts about the overall health of residents in the Greater Lowell region? To what extent do you feel like people are healthy or unhealthy?
2. What do you think are the top three health problems facing residents in your community?
3. What types of people are at greatest risk or have the greatest unmet needs?
4. What are the strengths of the healthcare system within the Greater Lowell area?
5. What are the weaknesses or unmet needs of the healthcare system within the Greater Lowell area?
6. Have you or anyone you know experienced any problems in accessing healthcare in the Greater Lowell area? If so, what was the problem and where did it happen?
7. How can the Greater Lowell Community work to improve its healthcare system, and address its unmet needs?

FOR THE PORTUGUESE SPEAKING/LATINO/ AFRICAN/CAMBODIAN GROUPS ONLY

8. How good a job do you think the Greater Lowell healthcare system is doing at meeting the health needs of the [mention specific group] community, specifically?
9. What are the specific health problems you would like to see the healthcare system become more involved with, for the community in general? What should their top health priorities be in order to address the needs of the community?

APPENDIX D

Focus Group, Interview Facilitators and Note Takers

Facilitators

Mercy Anampiu - Lowell Community Health Center
Carla Carabello - Lowell Community Health Center
Anusha Garikpati - University of Massachusetts Lowell
Lorna Kiplagat - Lowell Community Health Center
Amy Lamont - University of Massachusetts Lowell
Nareth Muong - Cambodian Mutual Assistance Association
Michele Ross - University of Massachusetts Lowell
Melanie Stefanakis - University of Massachusetts Lowell
David Turcotte - University of Massachusetts Lowell

Notetakers

Anusha Garikpati - University of Massachusetts Lowell
Zachary Hamhoomis - University of Massachusetts Lowell
Amy Lamont - University of Massachusetts Lowell
Lola Odesanya - University of Massachusetts Lowell
Katerin Ramirez - University of Massachusetts Lowell
Christine Soundara - Greater Lowell Health Alliance
Michelle Ross - University of Massachusetts Lowell
Melanie Stefanakis - University of Massachusetts Lowell

APPENDIX E

2016 Community Health Needs Assessment Advisory Committee Members

Claudia Antolini
Rachel Chaddock
Amanda Clermont
Sandy Collins
Michelle Davis
Kerrie D'Entremont
Irene Egan
Karen Frederick
Bill Garr
Heather Hilbert
David Hudson
Pamela Huntley
Diane Knight
Karen Myers
Stacey Neudeck
Sonith Peou
Kelly Petravicz
Sovanna Pou
Maria Ruggiero
Jennifer Shuart
Sochenda Uch
Jennie Welch
Isa Woldeguiorguis
Emily Young