Lawrence General Hospital

2019 Community Health Needs Assessment

FINAL

August 2019

Lawrence General Hospital

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Health Resources in Action

Advancing Public Health and Medical Research

Lawrence General Hospital
2019 Community Health Needs Assessment

Contents

EXECUTIVE SUMMARY

Background
Lawrence General Hospital undertook a Community Health Needs Assessment (CHNA) in 2019 to ensure they are achieving their vision and meeting the needs of the community. Lawrence General Hospital is a private, not-for-profit community hospital providing the Merrimack Valley with high quality, high value medical care for the whole family in a broad range of primary and specialty areas. For over 140 years, the dedicated doctors, nurses, and other staff of Lawrence General have been committed to strengthening the hospital and the community.

The Lawrence General Hospital 2019 CHNA focused on the hospital's service area, which is comprised of eight communities in Massachusetts. The primary service area of the hospital is comprised of four communities, Andover, Lawrence, Methuen and North Andover and the secondary service area includes Boxford, Georgetown, Haverhill and Middleton.

Community Health Needs Assessment Methods
The 2019 CHNA incorporated data on important social, economic, and health indicators from various sources and administered a survey completed by 630 residents and 473 health/social service providers living and/or working within the Merrimack Valley to understand public perceptions around health issues. Two focus groups and five key informant interviews were conducted with leaders in the community to explore key issue areas and populations further. **In total, over 1,100 individuals were engaged in the 2019 assessment process.**

Findings
The following provides a brief overview of key findings that emerged from this assessment.

<u>Demographics</u>

- **Population:** Between 2014 and 2017, the population of the overall service area grew by 2.8% to a total population of approximately 284,013. Lawrence remained the largest community in the service area, continuing to comprise 28% of the population, followed by Haverhill (22%) and Methuen (17%).

- **Age Distribution:** The age distribution of the population across the overall service area varied, but largely resembles the age distribution across Massachusetts. All of the communities have a higher proportion of youth under 18 compared to the state (20.4%) except for Middleton (19.1%). The City of Lawrence had the largest proportion of children under the age of 18 (26.5%), followed by Andover (25.5%).

  Through qualitative data collection participants identified the aging population as a vulnerable population with unique health needs. The proportion of the population over 65 years old has been steadily increasing in Massachusetts across the last decade, the communities in the service have also generally seen an increase in the proportion of their population over 65. The proportion of the population that is 65 years of age and older in Massachusetts has increased from 13.7% in 2011 to 15.5% in 2017.

- **Racial and Ethnic Diversity:** Participants in focus groups and interviews discussed the influx of immigrant populations in communities across the service area that increases the diversity – racially, ethnically, culturally, and linguistically. This was largely seen as an asset to the region, although for

those that speak a language other than English it was raised as a barrier to accessing care and services. Across Massachusetts the percent of the population who spoke a language other than English at home increased from 22.0% in 2014 to 23.1% in 2017. Most of the communities in the service area saw a similar increase.

Lawrence continued to have the largest Hispanic population (79.1%), North Andover had the largest non-Hispanic, Black population (2.6%), and Andover had the largest non-Hispanic, Asian population (12.3%).

Social and Physical Environment

- **Income and Poverty:** Many community members served by the hospital experience economic hardship, particularly those in Lawrence. Focus group participants shared the difficulties their constituents face meeting expenses and reported residents needing to make tradeoffs between paying for utilities, medication, transportation, and food.

"There is a huge crack of people who don't have quite enough money and are not in poverty on paper, but are very close."

– Focus Group Participant

Participants described vast differences in income and economic opportunity across the service area and quantitative data support these observations. The distribution of income ranged from 82.5% of households in Andover to 23.0% of households in Lawrence earning more than $75,000 annually. Since the 2016 CHNA the percent of families living below the Federal Poverty Level (FPL) has decreased for all communities across the service area, as well as for the state (8.3% in 2014 to 7.8% in 2017). Lawrence and Haverhill have the lowest median incomes, and also have the highest percent of families living below the FPL.

- **Employment:** From 2014 to 2017 Massachusetts saw a slight increase in unemployment from 5.7% to 6.0%, while the communities in the service area all saw reductions in the unemployment rate. Lawrence (10.8%), Methuen (6.5%), and Boxford (6.5%) continue to have higher unemployment rates than the state.

- **Education:** According to participants, educational quality in the service area varies, which was also mentioned in the 2016 report. The quantitative data support these perceptions: Andover continues to have the highest percent of residents with a college degree or more (73.7%), while Lawrence had the lowest percent of college educated residents (11.4%).

- **Housing and Homelessness:** Numerous participants mentioned housing as a community concern. Participants described high housing costs and rising rates of homelessness in their communities. The median housing costs increased for renters and decreased for owners across the state and all communities from 2014 to 2017. At the state level in 2014 the median cost to renters was $1,088 and $2,095 for owners, and in 2017 for renters it increased to $1,173 and for owners decreased to $1,679.

- **Transportation:** Transportation barriers were mentioned by participants as a challenge for residents to access services and employment opportunities. Related to accessing health care, one participant

reported, specialists tend to be located away from downtown Lawrence, making them difficult to access without a car. Participants shared that the public transportation available in Lawrence can be difficult to access and the cost of a bus pass is a barrier, while for those in outlying communities, participants reported there are few transportation options.

"Transportation is a huge problem, for everything. There is never enough."
– Focus Group Participant

- **Crime and Safety:** A few participants identified violence as a concern for the community and domestic violence was specially mentioned as an issue by a couple of participants. Crime rates reported by the Federal Bureau of Investigation's Uniform Crime Report show that from 2014 to 2017 rates of violent crimes decreased across Massachusetts from 391.4 to 358.0 offenses per 100,000 population. The two communities with the highest violent crime rates, Lawrence (723.2 offenses per 100,000) and Haverhill (618.2 offenses per 100,000), saw a decrease in violent crime rates since 2014, while the other communities all experienced an increase in violent crime rates.

Community Strengths and Assets

- Resiliency, particularly of lower income and immigrant families in Lawrence, was mentioned by a couple of participants, such as one interviewee who stated, *"They are not giving up. They are still trying. They have the energy to keep working on issues."* Strong family and community values were also described as assets.

"The community comes together to ensure that everyone is taken care of."
– Focus Group Participant

- Focus group and interview participants identified several health care assets in the community as well. Greater Lawrence Family Health Center (GLFHC) was praised for its work in the community, including its community outreach and education program. Participants also identified the positive contributions of government and social service organizations in the community.

Community Health Issues

- **Perceived Community and Individual Health:** In 2019, 31% of residents described the health of their community as excellent or very good, this is three times higher than in 2016 (10%). In contrast, 11% of providers in 2019 described the health of their patient's community as excellent or very good as compared to 8% in 2016. Drug use, depression or other mental health issues, access to health care, obesity/overweight, and diabetes were identified as top community health concerns across the region among both resident and provider respondents.

- **Premature Death:** Similar to the previous CHNA, premature mortality rates vary across the service area, from 185.8 deaths per 100,000 in Boxford to 462 deaths per 100,000 in Haverhill. From 2013 to 2016, some communities showed a reduction in premature mortality (North Andover and Georgetown), but the majority of the communities saw an increase in premature mortality.

- **Chronic Disease and Related Risk Factors:** As with the previous CHNA, participants discussed a number of chronic diseases, including asthma and obesity, as community concerns. Provider and resident survey respondents also identified diabetes and obesity as a top health concern for themselves, their families or their patients.
    - *Overweight/Obesity:* The obesity rates range across the service area from a third of adults in the City of Lawrence who are obese (33.2%) – which is above the statewide rate of 23.3% - to 16.7% of adults in Andover.

    - *Diabetes:* Participants closely associated obesity with diabetes, and providers and residents identified diabetes and obesity as top health concerns for themselves, their families or their patients. The percent of adults with diabetes varied across the service area, from 6.2% in Middleton to 11.5% in Lawrence.

    - *Healthy Eating and Physical Activity:* Participants discussed a variety of health behaviors that they associated with overweight/obesity, including nutrition and healthy eating. Across the service area fruit and vegetable consumption ranged from 14.5% of adults in Methuen eating five or more servings for fruits and vegetables a day to 25.5% in North Andover.

    - *Asthma:* Participants did not discuss asthma as much as other chronic diseases, but the high rates of asthma among youth were raised as a concern. The prevalence of asthma in children shows variation across the communities, Lawrence and Haverhill had the highest percent of students with asthma, 16.6% and 15.5%, respectively.

    - *Cardiovascular and Cerebral Health:* Survey respondents identified high blood pressure/hypertension as an important issue for themselves and their families or their patients. Quantitative data for the communities in the service area show that hospitalization rates for cardiovascular disease vary greatly across communities. In the service area cardiovascular disease hospitalizations ranged from 918.9 hospitalizations per 100,000 population in Middleton to 2,237.9 hospitalizations per 100,000 population in Lawrence.

    - *Cancer:* Cancer remains the leading cause of death in Massachusetts. The rate of all-site cancer deaths in communities across the service area varies. Middleton had the highest death rate from cancer in 2016 at 217.5 deaths per 100,000 population and Lawrence had the lowest at 113.2 deaths per 100,000 population.

- **Elderly Health:** As in 2016, participants discussed issues affecting the elderly population and voiced concerns about access and cost of health care, housing, social isolation, and chronic conditions; specifically, Alzheimer's and dementia were identified as growing concerns for elders in the community. Quantitatively, the prevalence of Alzheimer's or related dementias in the 65 years and older population varied across the service area. Both Lawrence (17.7%) and Haverhill (15.8%) had a higher percentage of the elder population with Alzheimer's disease or related dementias than the state (13.6%) while Boxford and Middleton, at 10.3% and 11.9%, had the lowest percentage of the population living with Alzheimer's or related dementias.

- **Behavioral Health:**
    - *Mental Health:* Mental health remained a key concern among participants, as in 2016. Focus group participants and interviewees described rising rates of stress; according to participants, everyday stress has been compounded by the opioid epidemic and recent gas

explosions. Homelessness and food insecurity were described as additional stressors for lower income residents. Rates of individuals hospitalized for mental disorders varied across the service area, with Haverhill (1,576.5 per 100,000) having the highest hospitalization rates – above the statewide rate (934.4 per 100,000) - and North Andover (372.5 per 100,000) having the lowest hospitalization rates. Overall, participants described limited options for mental health treatment, leading to untreated trauma and mental health issues, particularly for children and youth.

- *Substance Use and Abuse:* As in the 2016 CHNA, substance use continues to be a substantial concern among participants. As in many cities and towns across the state, the opioid epidemic has affected the Merrimack Valley. The rate of opioid-related deaths per 100,000 for residents of the service area ranged from a low of 5.7 opioid-related deaths per 100,000 in Andover to a high of 46.5 opioid-related deaths per 100,000 in Lawrence.

- *Trauma:* Trauma—especially in Lawrence—was mentioned by several participants. This was a new theme that emerged from the qualitative data collection for this report. They mentioned drugs, guns, domestic violence, and gang violence as community characteristics contributing to trauma.

- **Maternal and Child Health:** Overall in 2016, there were 3,372 births to residents in the service area, with the plurality of births occurring in Lawrence. In the service area, 8% of births were low birthweight, which is slightly higher than the state (7.5%). Quantitative data available for larger cities and towns in the Commonwealth show that Lawrence had the highest teen pregnancy rate of 34.5 teen births per 100,000 population compared to the state rate of 8.5 teen births per 100,000 population.

- **Infectious Diseases:** Infectious diseases were not a prominent concern among participants. Updated data on infectious diseases at the local level is not available across the service area. A participant mentioned an uptick in HIV in Lawrence, and the quantitative data available show that the average annual diagnosis rate from 2014-2016 in Lawrence was more than three times that of the state, 30.1 HIV diagnoses per 100,000 population compared to 9.7 HIV diagnoses per 100,000 population.

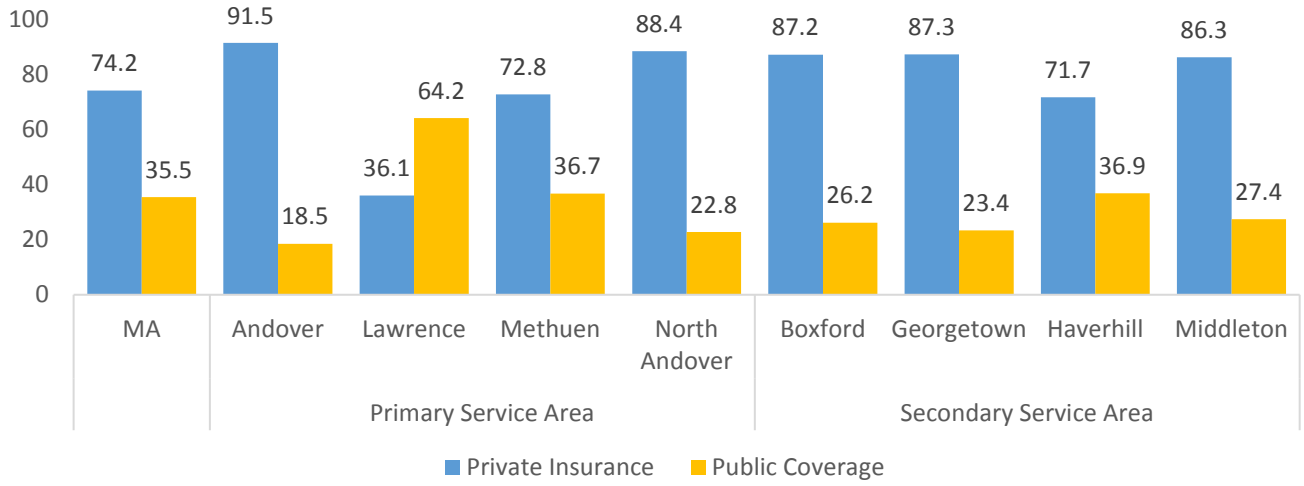
<u>Health Care Access</u>

- **Challenges to Accessing to Health Care:** Participants described access to health care - including lack of providers, cost, and insurance coverage - as challenging, especially for the lower income, homeless and immigrant populations of Lawrence.

> *"If you have anything less than MassHealth Standard, you have to go to Boston to get [behavioral health and specialty] care."*
>
> – Focus Group Participant

- **Insurance coverage:** Participants noted that for some populations – notably homeless and immigrants - lack of paperwork, including identification and documentation of citizenship status, makes it difficult, if not impossible, to enroll in public health insurance Participants identified that another challenge—for those who do have MassHealth—is that many specialists do not accept this insurance.

Insurance Coverage Type by State, Service Area and Community, 2017



Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

- **Use of Health Care**: Resident respondents to the survey largely get their medical care from a private doctor's office/primary care physician (60%) while providers see the majority of their patients receiving care at community health center (57%). As in years past, the majority of respondents answered that they were "very likely" to seek out primary care and emergency care in the Merrimack Valley. Also notable is that in 2019 a higher percent of providers responded that patients are receiving their care from a hospital-based emergency room (20%) compared to 2016 (11%).

Vision for the Future

When participants were asked about what they believed to be top issues to be addressed, residents continued to prioritize programs or services focusing on obesity/weight control, services to help the elderly stay in their homes and services focusing on the prevention of chronic diseases. In alignment with providers' concerns around depression or other mental health/behavioral issues, provider respondents identified providing more counseling or mental health services as a top priority to address in the future.

Conclusions

The following hey health issues emerged as areas of potential concern in the assessment – supported by secondary data and consistently mentioned in the community survey, interviews and focus groups: social determinants of health (housing and transportation), chronic disease (diabetes and obesity), the aging population, behavioral health (substance use disorders) and health care access. Overarching conclusions that cut across multiple topic areas include:

- The service area is demographically and economically diverse and in the past three years the Service Area has grown modestly.
- Housing and transportation were highlighted as barriers to individual's health status.
- Chronic disease, including diabetes and obesity, were identified as individual or family concerns by providers and residents.
- Over the last decade the proportion of the population 65 years old and over has increased across the service area and the unique health needs of the aging population were noted by residents and providers.

- Behavioral health, specifically access to mental health providers and substance use disorders continue to be concerns in the community.
- Residents continue to express concerns around equitable access to health care due to affordability, availability of providers, and insurance coverage.
- The service area has a strong sense of community, with participants naming resiliency, strong family and community values, and support for social service organizations as strengths of the service area.

INTRODUCTION

Background

Lawrence General Hospital is a private, not-for-profit community hospital providing the Merrimack Valley with high quality, high value medical care for the whole family in a broad range of primary and specialty areas. For over 140 years, the dedicated doctors, nurses, and other staff of Lawrence General have been committed to strengthening the hospital and the community. Lawrence General's vision for the hospital is to be a stellar regional health system known for the highest quality, highest value, service, efficiency, and compassionate care. In recent years, Lawrence General has been a trail blazer in building community coalitions of providers to improve the care of those with chronic illness, comorbidities and challenging social determinants of health with the goal of increasing quality of life and reducing the need for hospitalization. Lawrence General is actively involved in accountable care transformation work, and improving care through shared quality goals and data sharing. The hospital is clinically affiliated with Beth Israel Deaconess Medical Center and Floating Hospital for Children at Tufts Medical Center. These affiliations ensure Lawrence General's patients have an expanded roster of specialty services and clinics available locally, greatly decreasing the need to travel to Boston for quality care.

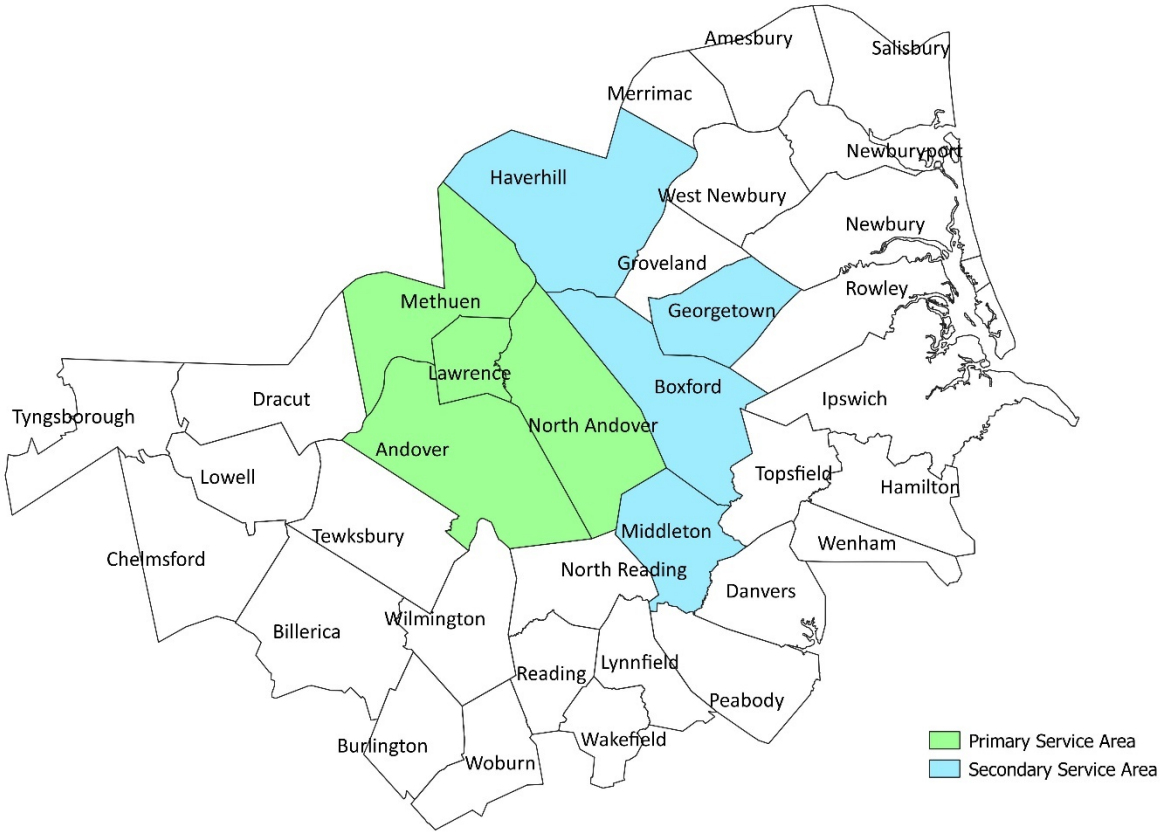
Previous Needs Assessment and Review of Initiatives

Lawrence General Hospital conducted its previous Community Health Needs Assessment (CHNA) in 2016, identifying key health issues and informing the hospital's program planning. The process culminated in the development of an implementation plan to address the identified community health needs of residents. As a result of key findings from the 2016 CHNA, Lawrence General Hospital identified three priority areas, each of which aligned with an identified community health need: 1) behavioral health, including mental health and drug addiction services; 2) chronic disease, including obesity and diabetes; and 3) health care access. Since the 2016 Needs Assessment, Lawrence General has provided a variety of services and programming to address these needs in the community. Appendix I: Review of Initiatives details the priority areas and progress of the initiatives listed in the 2016 implementation plan. For an overview of health priorities and programming identified in the previous Needs Assessment, please see the 2016 report on the Hospital's website: [https://www.lawrencegeneral.org/uploads/LGH_GLFHC%20CHNA_2016.pdf].

Definition of Community

The Lawrence General Hospital 2019 CHNA focused on the hospital's service area, which is comprised of eight communities in Massachusetts (Figure 1). The primary service area of the hospital is comprised of four communities, Andover, Lawrence, Methuen and North Andover and the secondary service area includes Boxford, Georgetown, Haverhill and Middleton.

Figure 1
Map of Lawrence General Hospital Service Area



Map created by: Health Resources in Action (2019).

METHODS

The following section describes how data for the CHNA were compiled and analyzed, as well as the broader lens used to guide this process. Specifically, the CHNA defines health in the broadest sense and recognizes that numerous factors at multiple levels impact a community's health. The approach and framework of social determinants of health that guided the overarching process of the CHNA is discussed in the next section.

Approach and Community Engagement

The process of the CHNA employed a variety of data collection methods to engage a diverse cross section of the community, stakeholders and providers across the hospital's service area. This approach helps guide the methods and questions, so they are salient to the community, as well as builds support and partnerships across the region to support the CHNA and implementation plan. Throughout the process the Hospital engaged a Steering Committee of leaders from Lawrence General Hospital and key partners (10 members), as well as a larger Community Advisory Committee (50 members), at multiple points to provide input and

feedback on data collection methods, resources and findings (see Appendix II: Committee List(s) for a list of members).
The Steering Committee met on a monthly basis, as well as communicated in between meetings through e-mails and phone calls to finalize the list of stakeholders for key informant interviews and focus groups, provide feedback on data collection instruments and utilize their networks to engage community members in the process. The Community Advisory Committee met twice during the assessment, first to brainstorm sectors and organizations to engage in data collection and then to share input on preliminary findings and priority issues identified through the CHNA.

Social Determinants of Health Framework

It is important to recognize that multiple factors influence community health and wellness. Figure 2 below provides a visual representation of this relationship, demonstrating how individual lifestyle factors, which are closest to health outcomes, are influenced by more upstream factors such as housing and educational opportunities. This report provides information on many of these factors, as well as reviews key health outcomes among the residents of the Merrimack Valley.

Figure 2
Social Determinants of Health Framework

Data Source: Health Resources in Action (2018).

Data Collection Methods

The process utilized a multi-pronged approach for data collection. This allowed for a variety of perspectives to be included in the assessment of health needs in the service area. Both quantitative and qualitative data collection methods were used, including a review of secondary data, a community and provider survey, and focus groups and interviews. The Steering Committee and Community Advisory Committee were consulted and activated to reach a broad slice of the community in the process.

Secondary Data

The CHNA incorporates data on important social, economic, and health indicators from various sources, including the U.S. Census Bureau, U.S. Bureau of Labor Statistics, Massachusetts Department of Public Health and Centers for Disease Control and Prevention. Types of data included self-report of health behaviors from large, population-based surveys such as the Behavioral Risk Factor Surveillance System (BRFSS), as well as vital statistics based on birth and death records.

Community and Provider Survey

Similar to the 2016 CHNA methods, in order to gather quantitative data that were not provided by secondary sources as well as to understand public perceptions around health issues, a brief survey was developed and administered to residents and health/social service providers within the Merrimack Valley. The survey was intentionally kept similar to the 2016 version to allow for comparisons and trends to be analyzed. For some questions, response options were removed or added to ensure it was relevant. The survey was administered online and available by hard copy in both English and Spanish. The online survey included a skip pattern where community residents were taken to one section of the survey to answer questions about their perceptions of community health needs and priorities, while health and social service providers were taken to a different section to answer similar questions about their patients, rather than exclusively about themselves.

The Steering Committee reviewed and provided feedback on the survey and disseminated the survey link to their networks and through their organizational list serves. The Community Advisory Committee also played a key role in disseminating the survey. The survey was administered for six weeks, from late February through early April. The survey used a convenience sample for gathering information, but intentional efforts were made to disseminate the survey through multiple venues to yield a broad cross-section of respondents from the region. The CHNA report provides findings from the overall resident and overall provider samples. Due to sample sizes, analyses do not focus on distinctions by specific community.

A total of 1,103 respondents (630 residents and 473 providers) who identified as living or working in the Merrimack Valley completed the survey. This is a slight increase from 2016, 971 respondents. Table 1 shows the distribution of resident and provider survey respondents by demographic characteristics and survey year.

In the previous administration of this survey more providers than residents provided responses, in 2019 the majority of respondents were residents.

Table 1
Demographics of Community Survey Respondents, 2016 and 2019

	Resident		Provider	
	2016 (N=450)	**2019 (N=630)**	**2016 (N=521)**	**2019 (N=473)**
Age				
Under 18 years old	1%	1%	0%	0%
18-29 years old	7%	12%	19%	13%
30-49 years old	27%	30%	40%	41%
50-64 years old	37%	35%	36%	36%
65 years or older	28%	22%	5%	9%
Gender				
Male	24%	23%	20%	12%
Female	75%	76%	80%	87%
Other	0%	1%	0%	1%
Race/Ethnicity				
White, non-Hispanic	50%	62%	71%	72%
Black, non-Hispanic	1%	1%	1%	0%
Hispanic	47%	32%	23%	23%
Asian, non-Hispanic	1%	1%	3%	0%
Other race, non-Hispanic	1%	2%	2%	4%
Two or more races, non-Hispanic	0%	2%	1%	1%
Educational Attainment				
HS diploma or less	33%	21%	2%	4%
Some college	24%	27%	21%	18%
College graduate or more	43%	52%	77%	78%
City/Town of Residence				
Andover, MA	6%	11%	7%	7%
Boxford, MA	1%	0%	0%	1%
Georgetown, MA	0%	0%	1%	1%
Haverhill, MA	8%	9%	10%	13%
Lawrence, MA	45%	42%	18%	21%
Methuen, MA	13%	12%	11%	12%
Middleton, MA	0%	0%	0%	0%
North Andover, MA	4%	10%	6%	7%
Other	23%	15%	47%	40%
City/Town of Employment				
Andover, MA	5%	6%	3%	5%
Boxford, MA	0%	0%	1%	0%
Georgetown, MA	0%	0%	0%	0%
Haverhill, MA	1%	7%	3%	2%
Lawrence, MA	68%	45%	86%	82%
Methuen, MA	13%	5%	4%	1%
Middleton, MA	0%	0%	0%	0%
North Andover, MA	2%	5%	2%	3%
Other	10%	31%	2%	6%

Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Frequencies were tabulated among participants who answered the question. Not all participants answered every question.
Other towns included: Lowell, Tewksbury, Amesbury, Merrimac, Boston, MA; Atkinson, NH, Plaistow, NH, Salem, NH.

Focus Groups and Interviews

The Community Advisory Committee was engaged to provide guidance on identifying sectors and population groups for focus groups and key informant interviews. The group brainstormed and prioritized topic areas to be further explored through qualitative data collection (e.g., behavioral health, education, food access, housing, seniors and youth). The Steering Committee was involved in this exercise and suggestions informed the identification of specific individuals and organizations for focus groups and key informant interviews. To aid in the facilitation of these interviews and focus groups, a semi-structured guide was used across discussions to ensure consistency in topics covered. Each focus group and interview was facilitated by a trained moderator, and detailed notes were taken during conversations.

During April and May 2019, two focus groups and five key informant interviews were conducted in the region to gather feedback on people's priority health concerns, community challenges to addressing these concerns, current strengths of the area, and opportunities for the future; a total of 20 community members and/or leaders participated in the interviews and focus groups. Participants represented many different sectors and voices including, education, health care, homeless/shelters, behavioral health providers, emergency food providers, and professionals who work with youth or seniors.

The notes captured during the qualitative data collection were coded and analyzed thematically, where an analyst identified key themes that emerged across multiple groups and interviews. Frequency and intensity of discussion on a specific topic were key indicators used for extracting key themes. While town differences are noted where appropriate, analyses emphasized findings common across the region. Selected quotes – without personal identifying information – are presented in the narrative of this report to further illustrate points within topic areas.

Limitations

As with all research efforts, there are several limitations related to the health assessment's research methods that should be acknowledged. There were several instances when secondary Data Sources did not provide community-level data or reported inconsistent geographic areas. This was further emphasized as a limitation when trying to look at data indicators across years as geographic parameters were often inconsistent from year to year.

Likewise, self-reported data should be interpreted with particular caution. In some instances, respondents may over report or under report behaviors and illnesses based on fear of social stigma or misunderstanding the question being asked. In addition, respondents may be prone to recall bias – that is, they may attempt to answer accurately, but they remember incorrectly. In some surveys, reporting and recall bias may differ according to a risk factor or health outcome of interest. Despite these limitations, most of the self-report data included in this report benefit from large sample sizes and repeated administrations, enabling comparison over time. However, it is important to note that the CHNA survey, which is also self-report data, used a non-random sampling method and therefore the results may not be statistically representative of the larger population. Additionally, because the size and make-up of the sample varied across time points –2016 and 2019 – it is important to use caution when drawing comparisons across the time point.

Similarly, while focus groups and interviews conducted for this study provide valuable insights, results are not statistically representative of a larger population due to non-random recruiting techniques and small sample size. Lastly, it is important to note that data were collected at one point in time, so findings, while directional and descriptive, should not be interpreted as definitive.

FINDINGS

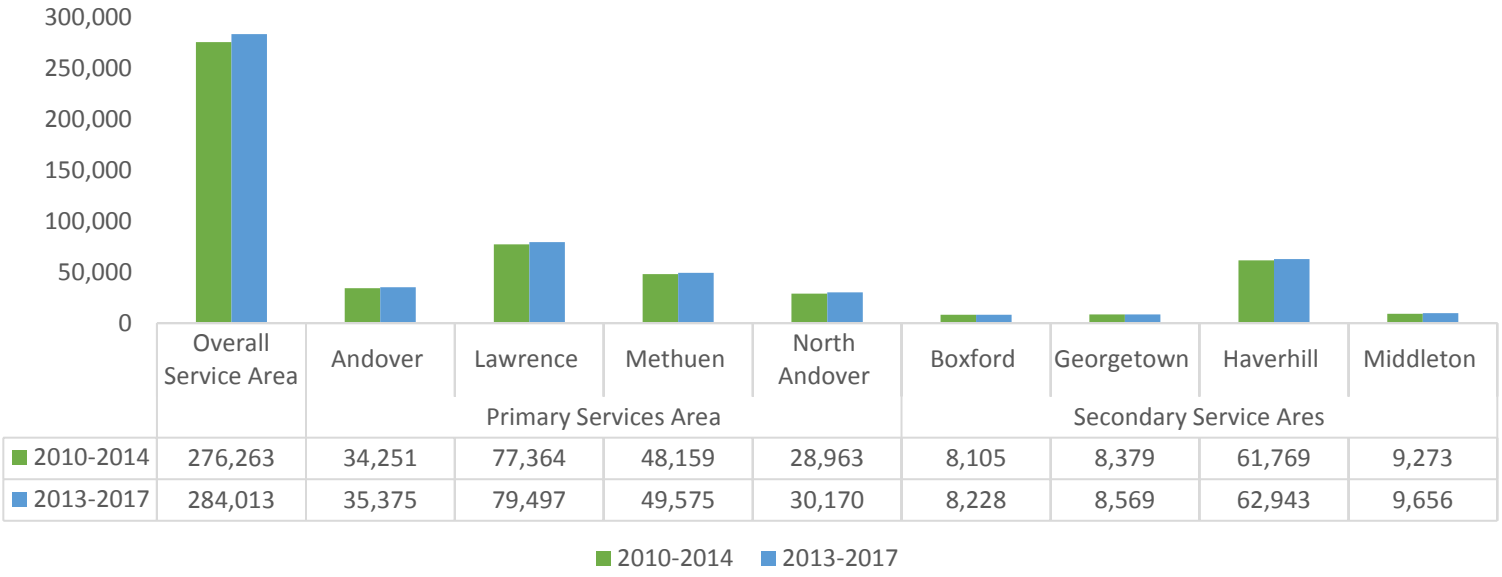
This section of the CHNA describes the demographic and other health-related characteristics of the service area. There are numerous factors associated with the health of the community including what resources and services are available to community residents. While individual characteristics such as age, gender, race, and ethnicity have an impact on resident's health, the distribution of these characteristics across a community is also critically important and can affect the services and resources available.

Demographics

Population

Between 2014 and 2017, the population of the overall service area grew by 2.8% to a total population of approximately, 284,013 (Figure 3). Lawrence remained the largest community in the service area, continuing to comprise 28% of the population. Haverhill (22%) and Methuen (17%) are the next largest communities, and Boxford remained the smallest town with about 3% of the total service population.

Figure 3
Population by Service Area and Community in 2014 and 2017

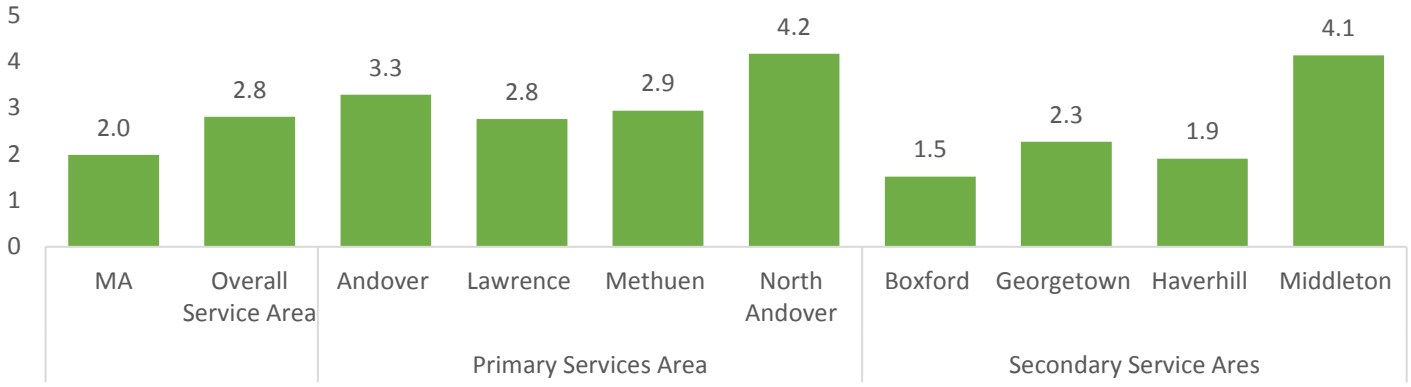


	Overall Service Area	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton
		Primary Services Area				Secondary Service Ares			
2010-2014	276,263	34,251	77,364	48,159	28,963	8,105	8,379	61,769	9,273
2013-2017	284,013	35,375	79,497	49,575	30,170	8,228	8,569	62,943	9,656

Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

All of the communities in the service area saw a growth in population from 2014 to 2017 (Figure 4). North Andover and Middleton saw the largest growth, at 4.2% and 4.1% respectively, while Boxford and Haverhill grew by just 1.5% and 1.9%.

Figure 4
Percent Population Change between 2014 and 2017, by Service Area and Community

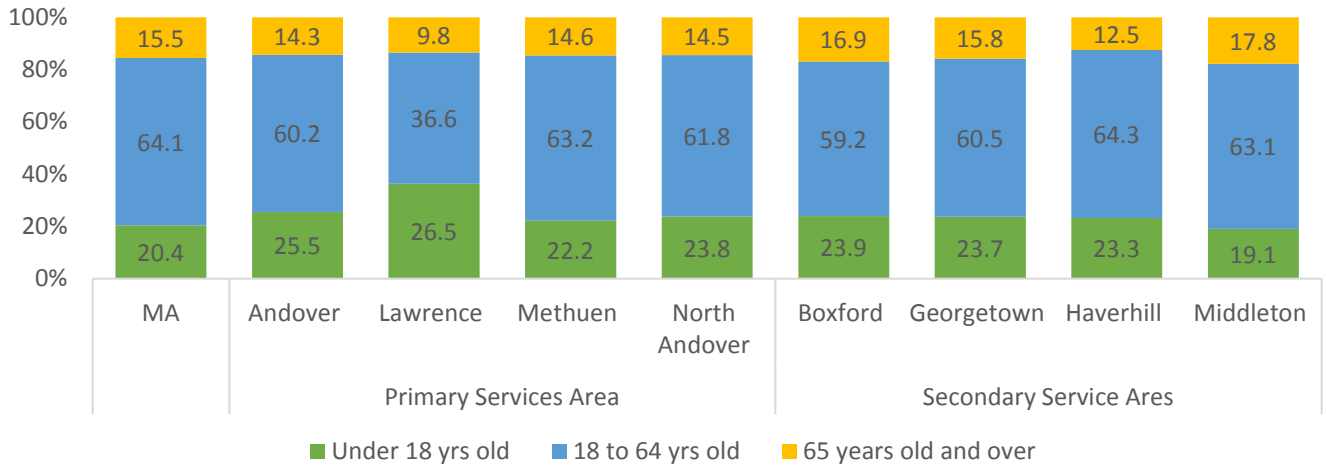


Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Age Distribution

The age distribution of the population across the overall service area varied, but largely resembles the age distribution across the State of Massachusetts. All of the communities have a higher proportion of youth under 18 compared to the state except for the Middleton (19.1%) (Figure 5). The City of Lawrence had the largest proportion of children under the age of 18 (26.5%), followed by Andover (25.5%). Across the state 15.5% of the population is 65 years and over; in the service area the population 65 years and over ranges from under 10% in Lawrence at to 17.8% in Middleton. Through qualitative data collection participants identified the aging population as a vulnerable population with unique health needs.

Figure 5
Percent Age Distribution by State, Service Area and Community, 2017

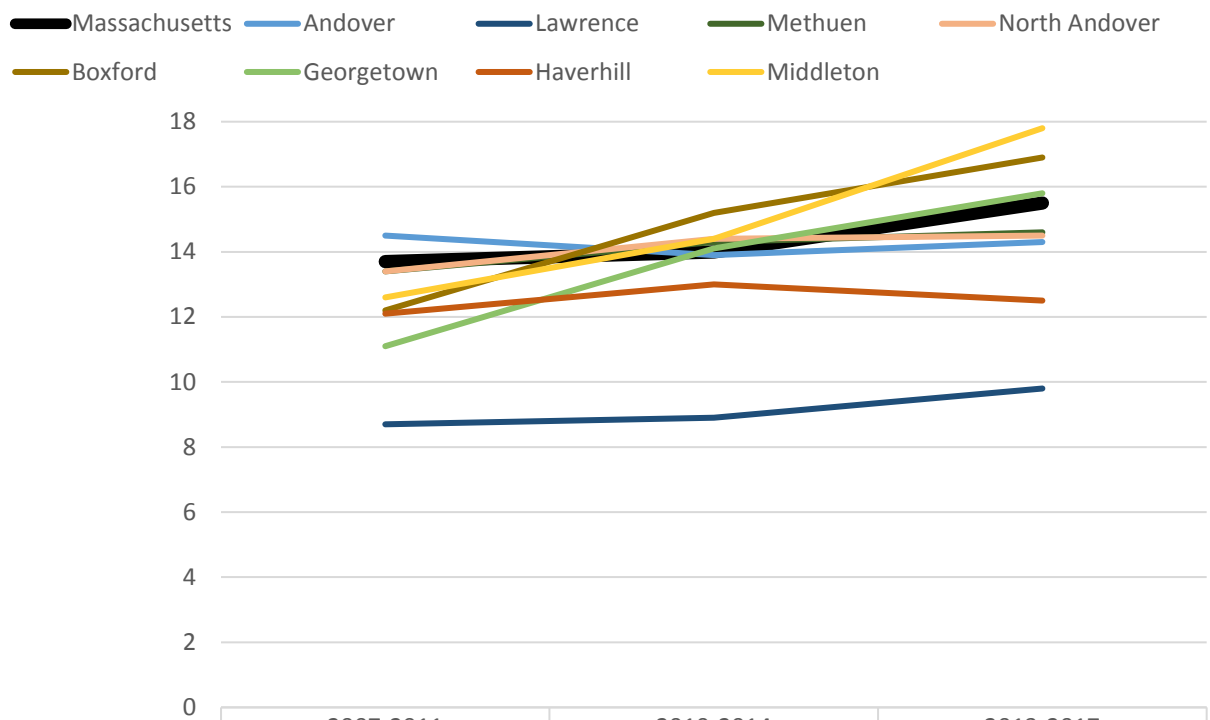


Data Source: 2017 American Community Survey 5-Year Estimates, 2013-2017

The proportion of the population 65 years old and over has been steadily increasing in Massachusetts across the last decade (Figure 6). The communities in the service area generally have also seen an increase in the

proportion of their population 65 years and over. Middleton has experienced a large growth in the percentage of the population 65 and over since 2011 (12.6% to 17.8%). While there has been an overall increase in the 65 and over population, all but two communities (North Andover and Haverhill) saw a decrease in the proportion of their under 18 population (see Appendix III: Data Tables).

Figure 6
Percent Population 65 Years of Age and Older by State and Community 2011-2017



	2007-2011	2010-2014	2013-2017
Massachusetts	13.7	14.0	15.5
Andover	14.5	13.9	14.3
Lawrence	8.7	8.9	9.8
Methuen	13.4	14.3	14.6
North Andover	13.4	14.4	14.5
Boxford	12.2	15.2	16.9
Georgetown	11.1	14.1	15.8
Haverhill	12.1	13.0	12.5
Middleton	12.6	14.4	17.8

Data Source: 2011 American Community Survey 5-Year Estimates, 2007-2011; 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Racial and Ethnic Diversity

From 2014 to 2017 the racial and ethnic diversity of the overall service area continued to increase. In 2017, Lawrence continued to have the largest Hispanic population (79.1%), North Andover had the largest non-Hispanic, Black population (2.6%), and Andover had the largest non-Hispanic Asian population (12.3%)

(Table 2). Compared to 2014, North Andover replaced Middleton for having the largest non-Hispanic Black population and Andover continued to have the largest proportion of non-Hispanic Asians.

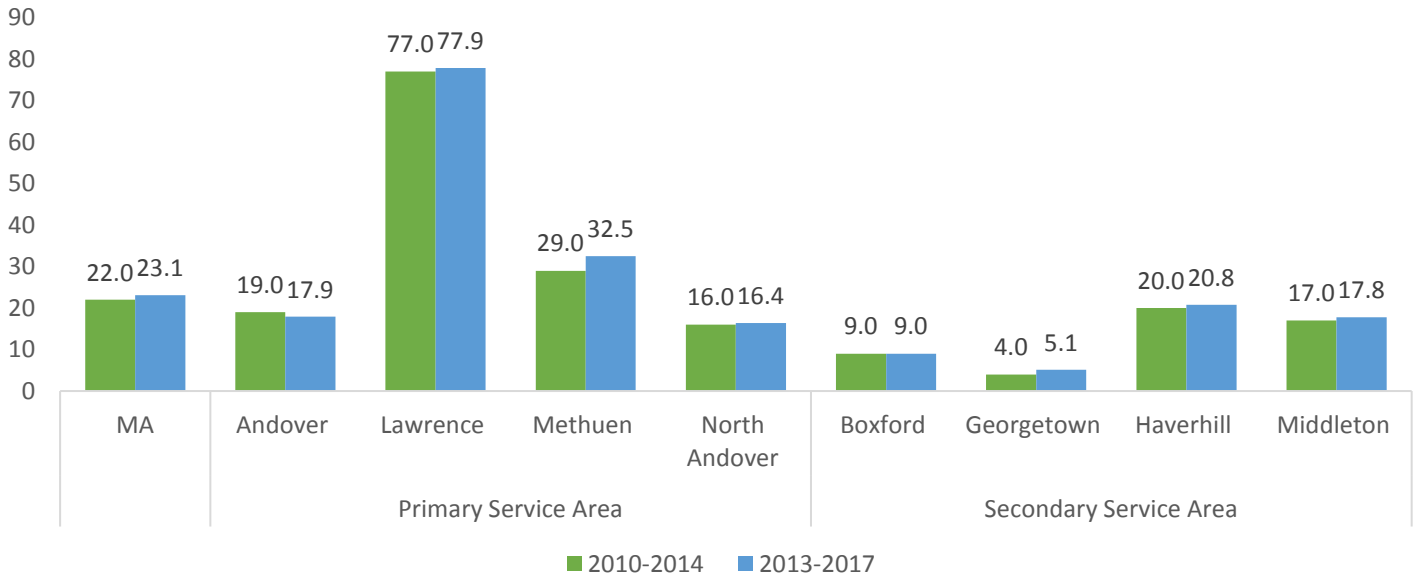
Table 2
Percent Racial/Ethnic Composition by State, Service Area and Community, 2014 and 2017

	White		Black		Asian		Hispanic		Other	
	2014	2017	2014	2017	2014	2017	2014	2017	2014	2017
Massachusetts	75.0	72.9	6.4	6.7	5.7	6.2	10.2	11.2	3.4	2.9
Primary Service Area										
Andover	80.8	79.4	1.7	2.5	11.4	12.3	4.3	3.7	1.8	2.0
Lawrence	17.7	15.5	2.3	2.5	3.3	2.3	75.7	79.1	1.0	0.9
Methuen	72.2	65.0	0.8	2.4	3.2	3.8	21.4	27.2	1.3	1.6
N. Andover	85.4	82.8	1.6	2.6	6.5	6.2	5.1	6.0	1.5	2.5
Secondary Service Area										
Boxford	92.4	90.4	0.0	0.0	4.1	4.8	1.8	1.8	1.8	3.0
Georgetown	95.4	93.0	0.5	0.6	0.6	0.9	1.0	3.8	2.6	1.7
Haverhill	76.8	73.1	2.0	2.3	1.3	1.3	17.4	21.1	2.5	2.2
Middleton	81.9	86.1	3.0	1.5	4.8	1.1	9.0	9.5	1.2	1.8

Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017
Note: White, Black and Asian include only individuals that identify as one race; Hispanic includes individuals of any race

Participants in focus groups and interviews discussed the influx of immigrant populations in communities across the service area that increases the diversity – racially, ethnically, culturally and linguistically. This diversity was largely seen as an asset to the region, although for those that speak a language other than English it was raised as a barrier to accessing care and services by participants and survey respondents. Across Massachusetts, the percent of the population who spoke a language other than English at home increased from 2014 to 2017 (Figure 7). Across the service area, all of the communities also saw an increase of the percent of the population speaking a language other than English at home, except for Andover which saw a decline from 19.0% to 17.9% and Boxford which remained at 9.0%. The most common language other than English spoken was Spanish.

Figure 7
Percent Population Who Speak Language Other Than English at Home by State, Service Area and Community, 2014 and 2017



Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Social and Physical Environment

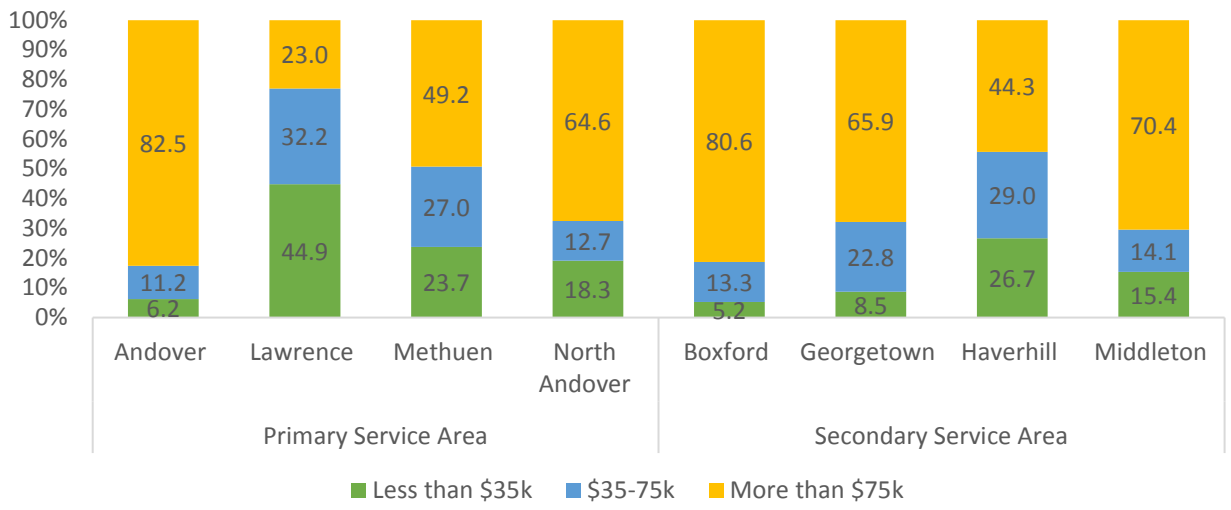
Income and Poverty

As described in the 2016 Lawrence General Hospital CHNA, many community members served by the hospital experience economic hardship, particularly those in Lawrence. Focus group participants shared the difficulties their constituents face meeting expenses and reported residents needing to make tradeoffs between paying for utilities, medication, transportation, and food. Focus group participants working with seniors shared that social security has not kept up with costs, leaving many seniors economically vulnerable.

> *"There is a huge crack of people who don't have quite enough money and are not in poverty on paper, but are very close."*
>
> – Focus Group Participant

Participants described vast differences in income and economic opportunity across the service area and the data supports these observations. The distribution of income ranged from 82.5% of households in Andover earning more than $75,000 annually to just 23.0% of households in Lawrence earning more than $75,000 a year (Figure 8).

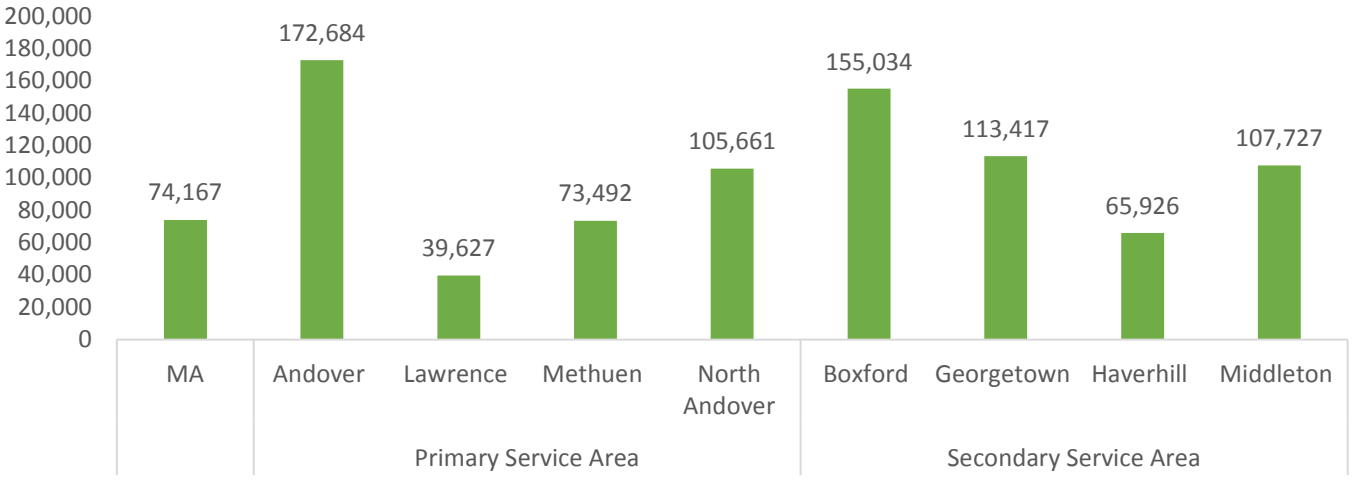
Figure 8
Percent Distribution of Household Income by Service Area and Community, 2017



Data Source: 2017 American Community Survey 5-Year Estimates, 2013-2017

The median income across the communities in the service area showed similar disparities (Figure 9). Lawrence ($39,627), Haverhill ($65,926) and Methuen ($73,492) all reported a median household income lower than the Commonwealth of Massachusetts ($74,167). This stands in stark contrast to the other five communities in the service area all showing median household incomes greater than $100,000, with Andover having the highest median income in the service area at $172,684.

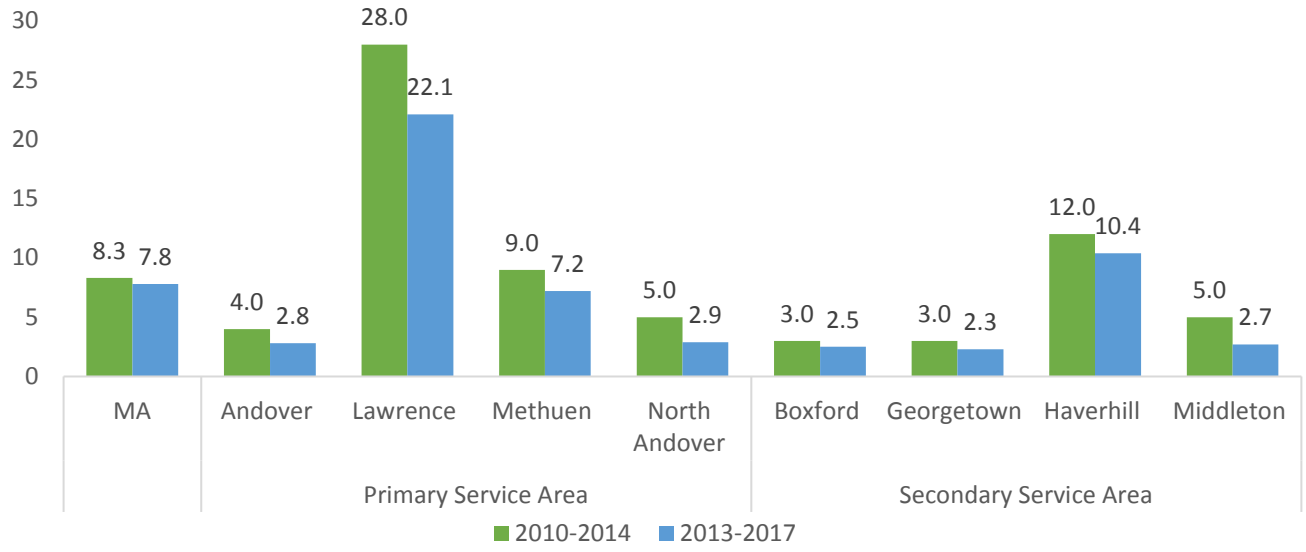
Figure 9
Median Household Income by State, Service Area and Community, 2017



Data Source: 2017 American Community Survey 5-Year Estimates, 2013-2017

Since the 2016 CHNA the percent of families living below the federal poverty level (FPL) has decreased for all communities across the service area, as well as for the state (Figure 10). The communities with the lowest median incomes also had the highest percent of families living below the FPL. While Lawrence saw a drop in the percent of families living below the FPL from 28.0% in 2014 to 22.1% in 2017, it continued to be the community with the highest percentage of families living below the FPL. The five communities: Andover, North Andover, Boxford, Georgetown and Middleton, with median incomes over $100,000 were well below the state poverty level (7.8%), with none of those towns having more than 3% of families living below FPL.

Figure 10
Percent of Families Below the Federal Poverty Level by State, Service Area and Community, 2014 and 2017

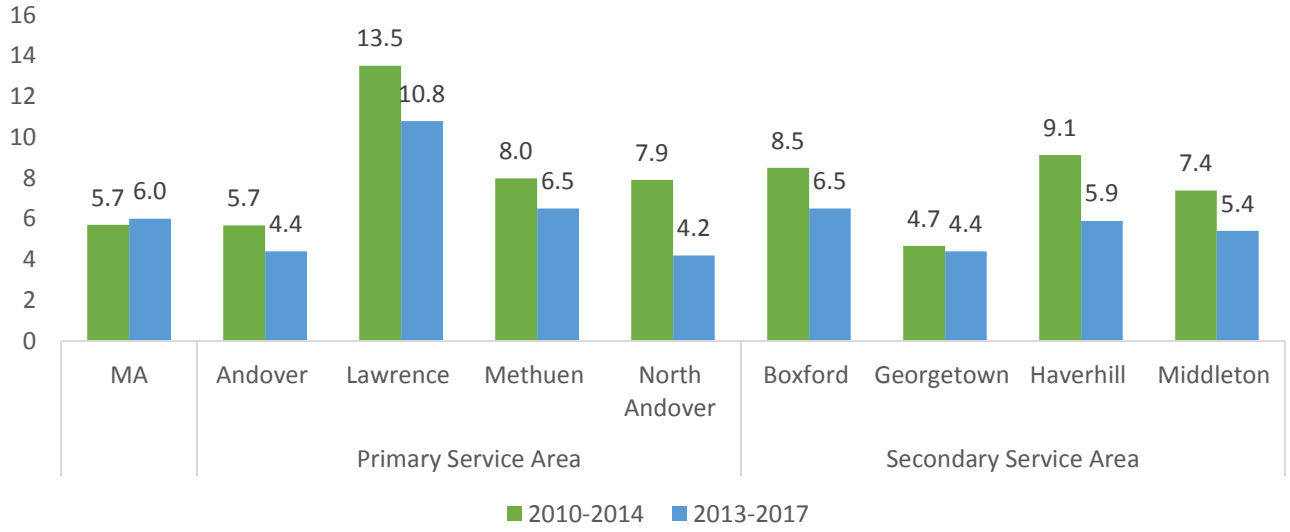


Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Employment

From 2014 to 2017 Massachusetts saw a slight increase in unemployment from 5.7% to 6.0%, while the communities in the service area all saw reductions in the unemployment rate (Figure 11). Lawrence (10.8%), Methuen (6.5%), and Boxford (6.5%) continue to have higher unemployment rates than the state, while all other communities have lower unemployment. In the last report (2014 data) only Georgetown had a lower unemployment than the state.

Figure 11
Percent of Population Age 16 Years and Older Unemployed by State, Service Area and Community, 2014 and 2017



Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Education

According to participants, educational quality in the service area varies, which was also mentioned in the 2016 report. Lawrence schools were perceived to be of lower quality although participants mentioned that resources to the high school have increased and a new superintendent is in place. The challenge for Lawrence parents, according to participants, is knowing how to advocate for themselves and their children. In contrast, parents in Andover were described as over-engaged, *"helicopter"* parents, behavior that one focus group participant stated, "*hinders their youths' development of skills in the face of adversity*." Students in the Andover school district were described as high achieving but also highly stressed.

The quantitative data supports these perceptions of participants that educational attainment varied across the communities (Table 3). As in the 2016 report, Andover continues to have the highest percent of residents with a college degree or more (73.7%), while Lawrence had the lowest (11.4%) percent of college educated residents.

Table 3
Percent Educational Attainment Adults 25 Years and Older by Service Area and Community, 2014 and 2017

	No H.S. Diploma		H.S. Diploma		Some College/Associates		College Degree or More	
	2014	2017	2014	2017	2014	2017	2014	2017
MA	10.5	9.7	25.6	24.7	24.0	23.5	40.0	42.1
Primary Service Area								
Andover	2.8	2.6	11.4	8.5	12.3	15.2	70.5	73.7
Lawrence	31.5	32.4	32.0	32.3	24.6	24.0	12.0	11.4
Methuen	11.7	11.8	31.2	30.6	28.3	28.4	28.8	29.2
North Andover	3.0	2.9	19.6	14.9	19.9	20.4	57.5	61.9
Secondary Service Area								
Boxford	2.1	2.4	15.2	12.8	23.2	24.3	59.7	60.5
Georgetown	2.5	2.4	22.1	21.3	26.0	28.6	49.4	47.8
Haverhill	12.5	10.7	28.3	29.1	30.5	30.3	28.7	29.9
Middleton	8.5	7.6	31.0	27.4	24.6	24.8	35.9	40.1

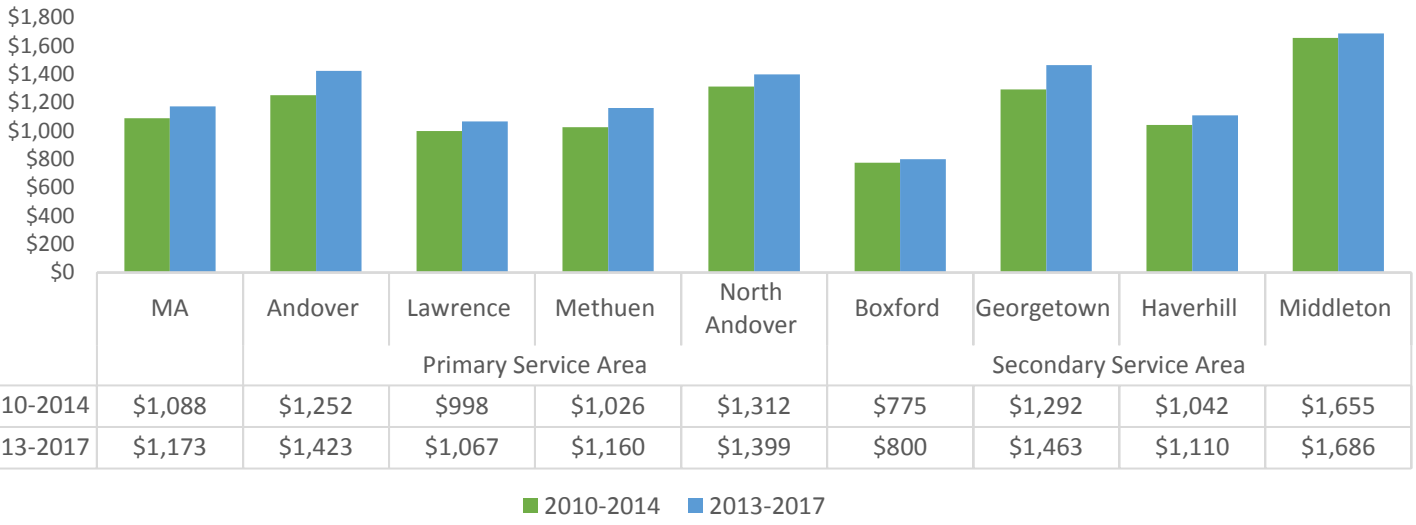
Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Housing and Homelessness

Similar to the 2016 Lawrence General Hospital CHNA, numerous participants mentioned housing as a community concern. Participants described high housing costs and rising rates of homelessness. Lack of safe, stable, and affordable housing was mentioned as a substantial challenge in the community and an issue that, according to one participant, has not been prioritized by community leaders promoting community economic development.

Median housing costs for residents, renters and owners, varied across the service area, with some communities falling below the median level for the state and others being much higher. For renters, monthly median rental costs ranged from $800 in Boxford to $1,686 in Middleton (Figure 12) and monthly mortgage costs for owners ranged from $1,522 in Lawrence to $2,726 in Boxford (Figure 13). The median housing costs increased for renters and decreased for owners across all communities from 2014 to 2017.

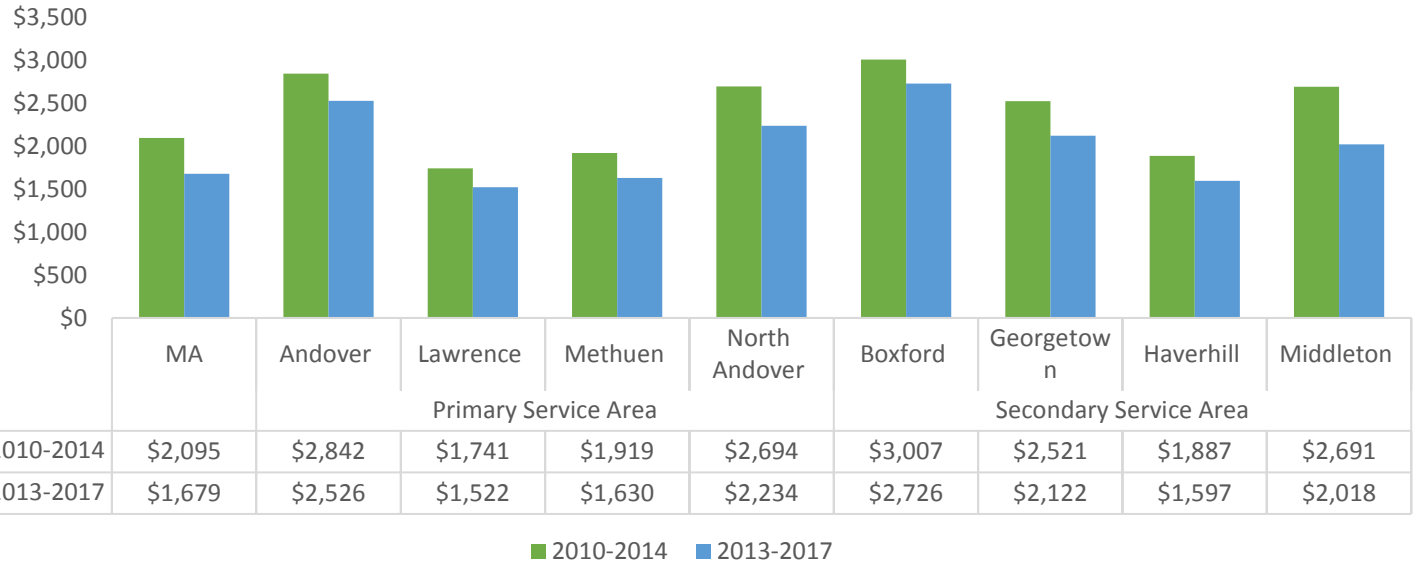
Figure 12
Monthly Median Housing Costs for Renters by Massachusetts and Primary Service Area, 2010-2014 and 2013-2017



	MA	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton
		Primary Service Area				Secondary Service Area			
2010-2014	$1,088	$1,252	$998	$1,026	$1,312	$775	$1,292	$1,042	$1,655
2013-2017	$1,173	$1,423	$1,067	$1,160	$1,399	$800	$1,463	$1,110	$1,686

Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Figure 13
Monthly Median Housing Costs for Owners by Massachusetts and Primary Service Area, 2010-2014 and 2013-2017



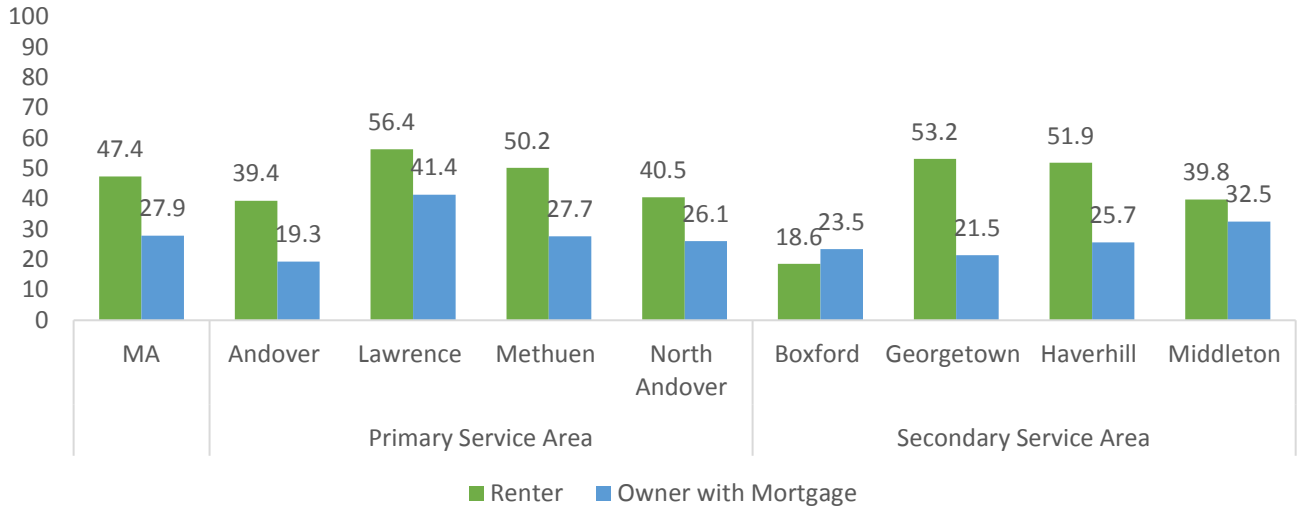
	MA	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton
		Primary Service Area				Secondary Service Area			
2010-2014	$2,095	$2,842	$1,741	$1,919	$2,694	$3,007	$2,521	$1,887	$2,691
2013-2017	$1,679	$2,526	$1,522	$1,630	$2,234	$2,726	$2,122	$1,597	$2,018

Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Statewide almost one-half (47.4%) of renters and a little more than a quarter (27.9%) of owners had housing costs that represented 30% or more of their household income (Figure 14). In the service area, Lawrence

had the highest percentage of renters and owners with housing costs representing 30% or more of their household income (56.4% and 41.4%, respectively) and Boxford had the lowest for renters (18.6%) and Andover for owners (19.3%).

Figure 14
Percent of Residents Whose Housing Costs are 30% or more of Household Income by Massachusetts and Primary Service Area, 2013-2017



Data Source: 2017 American Community Survey 5-Year Estimates, 2013-2017

Focus group participants reported that there is a multi-year waitlist for Section 8 housing and limited housing that meets the needs of seniors (accessible with opportunities for assisted living). While participants could name numerous programs in the community – a variety of shelters, including Midge's Place, Maya's House, Pegasus House and Casa Nueva Vida—and there are some programs to help people with housing costs, such as emergency grants – these resources were said to be stretched. Additionally, participants shared that young adults who are experiencing homelessness often do not feel comfortable or safe in shelters and therefore tend to avoid them. As one interviewee stated, *"young people would rather sleep on a couch than go to a shelter."*

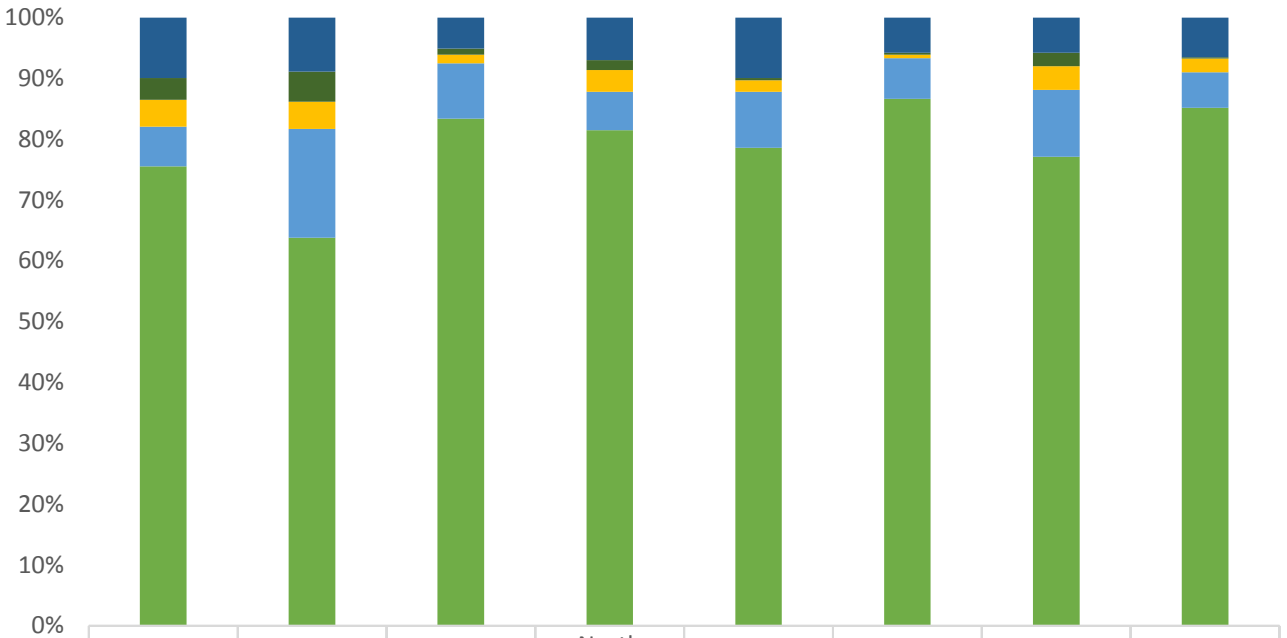
Transportation

Transportation barriers were mentioned by participants as a challenge for residents to access services and employment opportunities. According to participants, there is a bus system in Lawrence, but it can be difficult to access, and the cost of bus passes is a barrier for some residents. Related to health care, one participant reported, specialists tend to be located away from downtown Lawrence, making them difficult to access without a car. In outlying communities, participants shared, there are few transportation options: there is no public transportation and no ride services such as taxi, Lyft or Uber. As one participant who works with seniors mentioned, *"transportation is a huge problem, for everything. There is never enough."* Participants noted that many programs for seniors provide transportation for their clients and senior centers provide bus transportation to health care for older residents.

Quantitatively, data from the American Community Survey shows the transportation utilization for commuting purposes across the service area. The data shows that the majority of workers drive alone to get to work ranging from 86.8% in Georgetown to 63.8% in Lawrence (Figure 15). Lawrence had the highest

utilization of public transportation (4.5%) and individuals walking (4.9%) to get to work. The median commute time ranged from 23.4 minutes for residents of Lawrence to 38.3 minutes for residents of Boxford.

Figure 15
Means of Transportation to Work for Workers Aged 16 Years and Older by Community, 2017



	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton
	Primary Service Area				Secondary Service Area			
Other (including WFH)	9.9	8.9	5.1	7.0	9.9	5.8	5.8	6.5
Walk	3.6	4.9	1.0	1.6	0.4	0.3	2.2	0.2
Public Transit	4.4	4.5	1.4	3.6	1.9	0.6	3.9	2.3
Carpool	6.5	17.9	9.1	6.3	9.2	6.7	11.0	5.8
Drive Alone	75.5	63.8	83.4	81.4	78.5	86.8	77.2	85.2

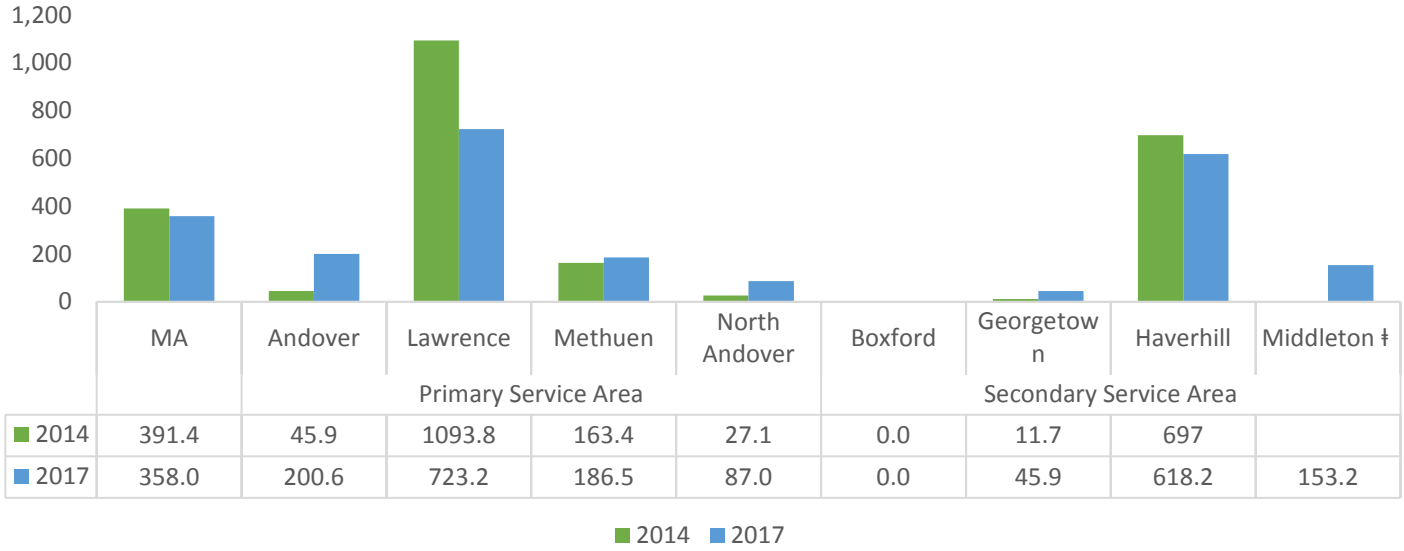
Data Source: 2017 American Community Survey 5-Year Estimates, 2013-2017
Note: Other includes individuals who report working from home

Crime and Safety

A few participants identified violence and safety as a concern for the community and domestic violence was specially mentioned as an issue by a couple of participants; many women in shelters, one interviewee reported, are fleeing abusive relationships.

Crime rates reported by the Federal Bureau of Investigation's Uniform Crime Report show that from 2014-2017 rates of violent crimes decreased across Massachusetts from 391.4 to 358.0 offenses per 100,000 population (Figure 16). The two communities with the highest violent crime rates, Lawrence (723.2 offenses per 100,000) and Haverhill (618.2 offenses per 100,000), saw a decrease in violent crime rates since 2014, while the other communities all experienced an increase in violent crime rates.

Figure 16
Violent Crime Offenses Known to Law Enforcement per 100,000 Population by Massachusetts and Primary and Secondary Service Area, 2014 and 2017

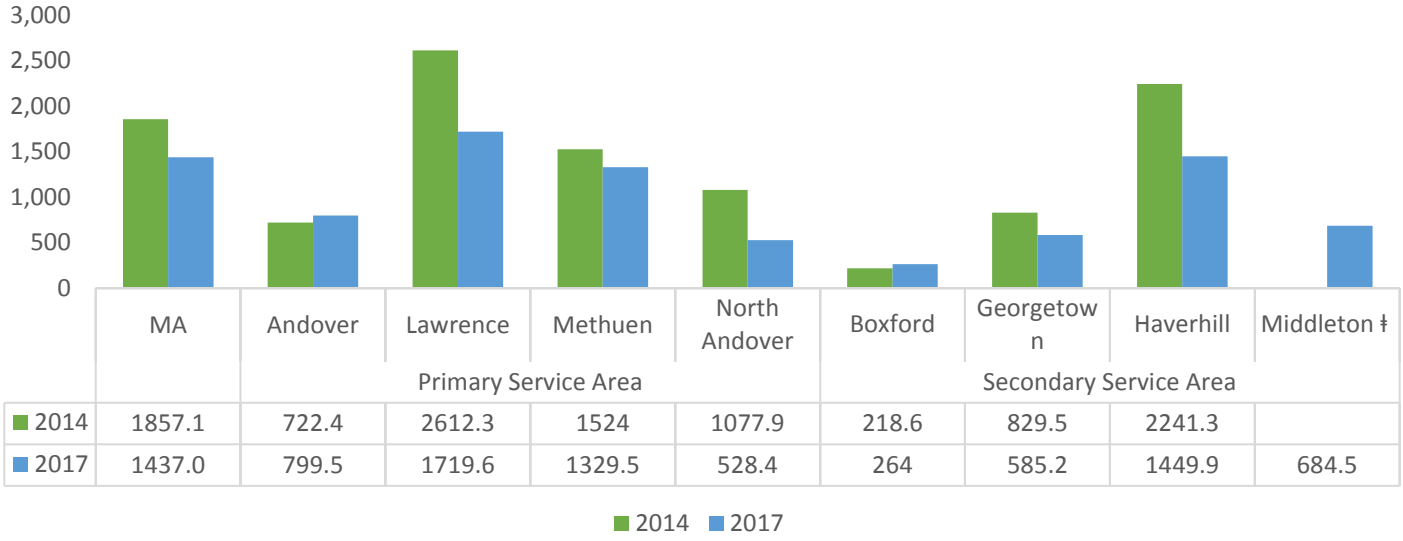


	MA	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton ǂ
		Primary Service Area				Secondary Service Area			
2014	391.4	45.9	1093.8	163.4	27.1	0.0	11.7	697	
2017	358.0	200.6	723.2	186.5	87.0	0.0	45.9	618.2	153.2

Data Source: Federal Bureau of Investigation (2014 and 2017), Uniform Crime Reports, Offenses Known to Law Enforcement, by State, by City, 2014 and 2017
Note: ǂ Crime data were not available for Middleton, MA in 2014; Violent crime includes: murder and non-negligent manslaughter; forcible rape; robbery; and aggravated assault

Similarly, the property crime rate for the Commonwealth of Massachusetts fell from 1,857.1 offences per 100,000 population in 2014 to 1,437.0 offenses per 100,000 population in 2017 (Figure 17). Lawrence and Haverhill also had the highest property crime rates in the service area (1,719.6 and 1,449.9 per 100,000 respectively), these rates decreased from 2014. Only Andover and Boxford experienced an increase in property crime rates.

Figure 17
Property Crime Offenses Known to Law Enforcement per 100,000 Population by Massachusetts and Primary and Secondary Service Area, 2014 and 2017



	MA	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton ǂ
		Primary Service Area				Secondary Service Area			
2014	1857.1	722.4	2612.3	1524	1077.9	218.6	829.5	2241.3	
2017	1437.0	799.5	1719.6	1329.5	528.4	264	585.2	1449.9	684.5

Data Source: Federal Bureau of Investigation (2014 and 2017), Uniform Crime Reports, Offenses Known to Law Enforcement, by State, by City, 2014 and 2017
Note: ǂ Crime data were not available for Middleton, MA in 2014; Property crime includes: burglary; larceny-theft; motor vehicle theft; and arson

Community Strengths and Assets

Participants identified several community strengths. Resiliency, particularly of lower income and immigrant families in Lawrence, was mentioned by a couple of participants, such as one interviewee who stated, *"They are not giving up. They are still trying. They have the energy to keep working on issues."* Strong family and community values were also described as assets. A participant of another focus group drew the same conclusion, stating**,** "*I think the gas [explosion] tragedy [in Lawrence, Andover and North Andover] speaks to how community-oriented people are here; they all came out and supported each other."* Community member support for social service organizations was also mentioned as an example of the civic-mindedness of community residents.

> *"The community comes together to ensure that everyone is taken care of."*
> – Focus Group Participant

Focus group and interview participants identified several health care assets in the community as well. Greater Lawrence Family Health Center (GLFHC) was praised for its work in the community, including its community outreach and education program and the fact that it has many sites in the community that offer primary care. Participants shared that there has also been a growth of minute clinics and urgent care in the community, leading one focus group participant to observe, *"Our communities are getting saturated with urgent care and minute clinics."*

Participants also identified the positive contributions of government and social service organizations in the community. They mentioned educational programs on health and wellness sponsored by the Mayor's office,

the Serving Health Insurance Needs of Everyone (SHINE) Program, the Lawrence Senior Center, and the Merrimack Valley Prevention and Substance Abuse Project (MVPASAP). Strong connections across community organizations was mentioned in one focus group. As one participant shared, *"very good connection between all agencies, it does speak volumes about how communities come together."* Overall, participants reported fewer services in the smaller, more rural communities outside of Lawrence.

Community Health Issues

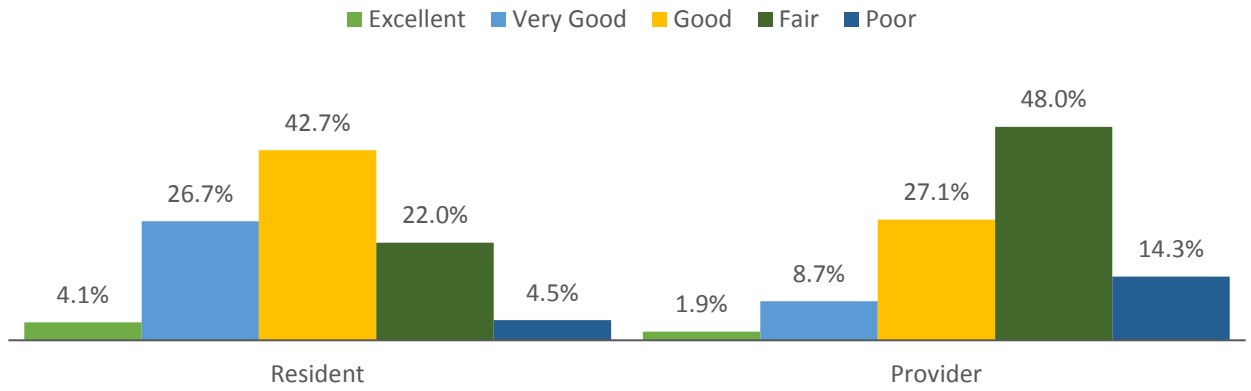
This section of the report provides an overview of leading health conditions in the service area by examining self-reported behaviors, incidence rates, hospitalization rates, and mortality-rate data, as well as discussing the pressing concerns that stakeholders identified during interviews, focus groups, and the community survey. Due to availability of secondary data, this section reports data at the state, regional, or city level dependent on availability.

Perceived Community and Individual Health

In the CHNA survey, residents were asked to describe the health of their community, while providers were asked to comment on the health of their patients' overall community.

In 2019, 31% of residents described the health of their community as excellent or very good (Figure 18), this is three times higher than in 2016 (10%)(see Appendix III: Data Tables for multi-year results). In contrast, 11% of providers in 2019 described the health of their patients' community as excellent or very good as compared to 8% in 2016.

Figure 18
Perceived Community Health Status by Survey Respondent Role, 2019



Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2019

Respondents were also asked to choose the top five health concerns facing their community, or their patients' community from a list of 18 health issues, and also had the opportunity to specify additional health issues of concern. As in 2016, both residents and providers identified drug use as the top health concern for the community (Table 4). Overall providers identified the same top five health concerns for the community as they did in 2016 and residents identified the same concerns, but depression and mental health moved up to the second most identified concern switching places with overweight/obesity. For a full, ranked list of health concerns from 2013, 2016 and 2019 please see Appendix III: Data Tables.

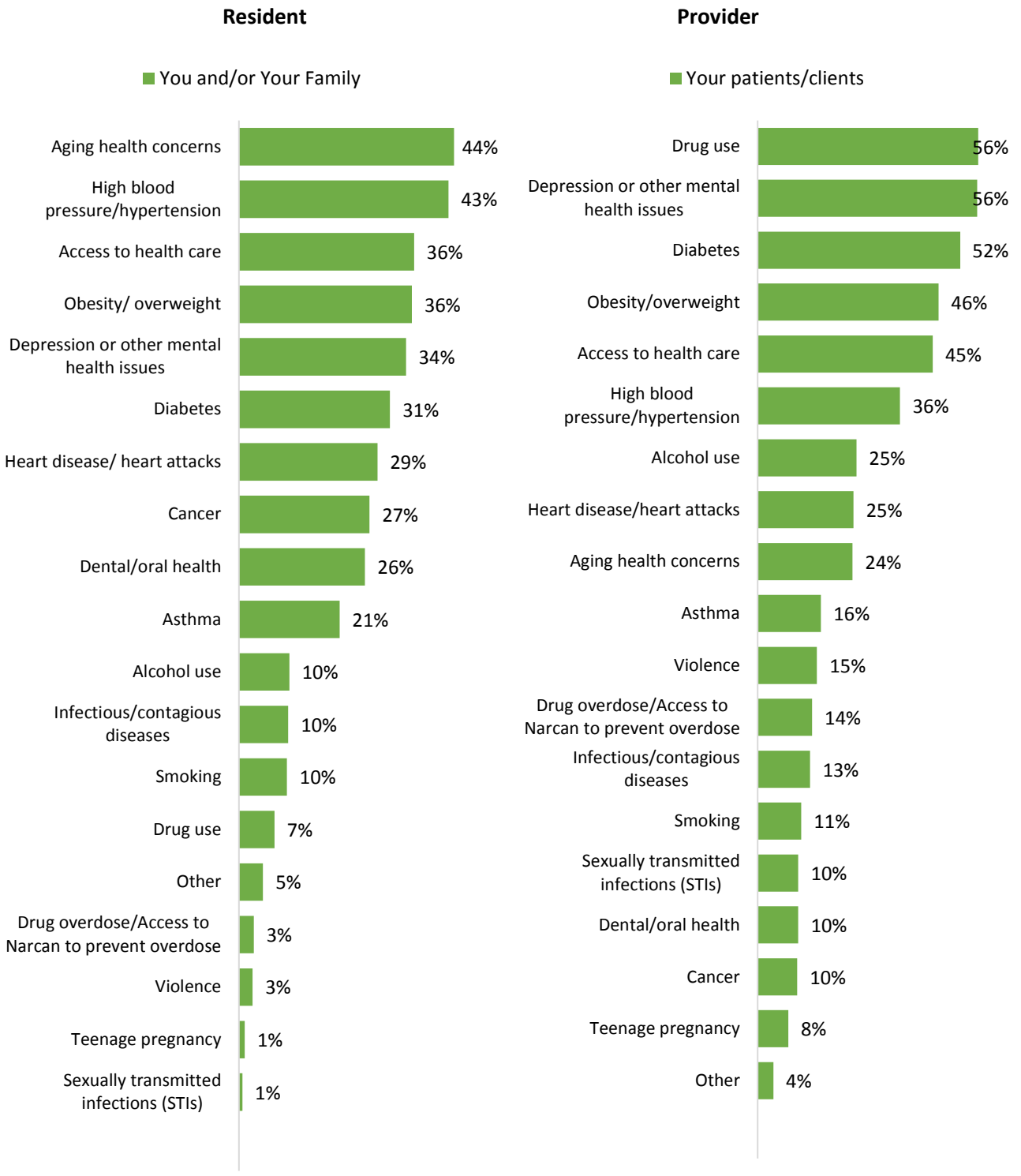
Table 4
Top Five Community Health Concerns by Survey Respondent Role, Changes from 2016 to 2019

Resident Community Concerns		Provider Community Concerns	
2019	Change from 2016	2019	Change from 2016
Drug use	-	Drug use	-
Depression or other mental health issues	↑ (4)	Depression or other mental health/behavioral health issues	-
Access to health care	-	Access to health care	-
Obesity/ overweight	↓ (2)	Obesity/overweight	-
Drug overdose/Access to Narcan to prevent opioid overdose	-	Diabetes	-

Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Up or down arrow indicates increase or decrease of ranking of issue in 2016 compared to 2016 survey; dashes (-) indicate no change in ranking of issue from 2016 to 2019

Residents and providers responding to the survey were also asked about top concerns for themselves/their family or patients, in addition to the community at large. Residents had different perceptions of health issues for themselves/their patients compared to the community (Figure 19). While residents identified drug use as the top concern for the community (53%), only 7% of respondents identified it as a top concern for themselves/their family. Conversely, aging health concerns and high blood pressure/hypertension were the health issues of most concern for residents or their families but did not register as top health concerns for the community.

Figure 19
Top Health Issues for You/Your Family or Your Patients, by Survey Respondent Role, 2019



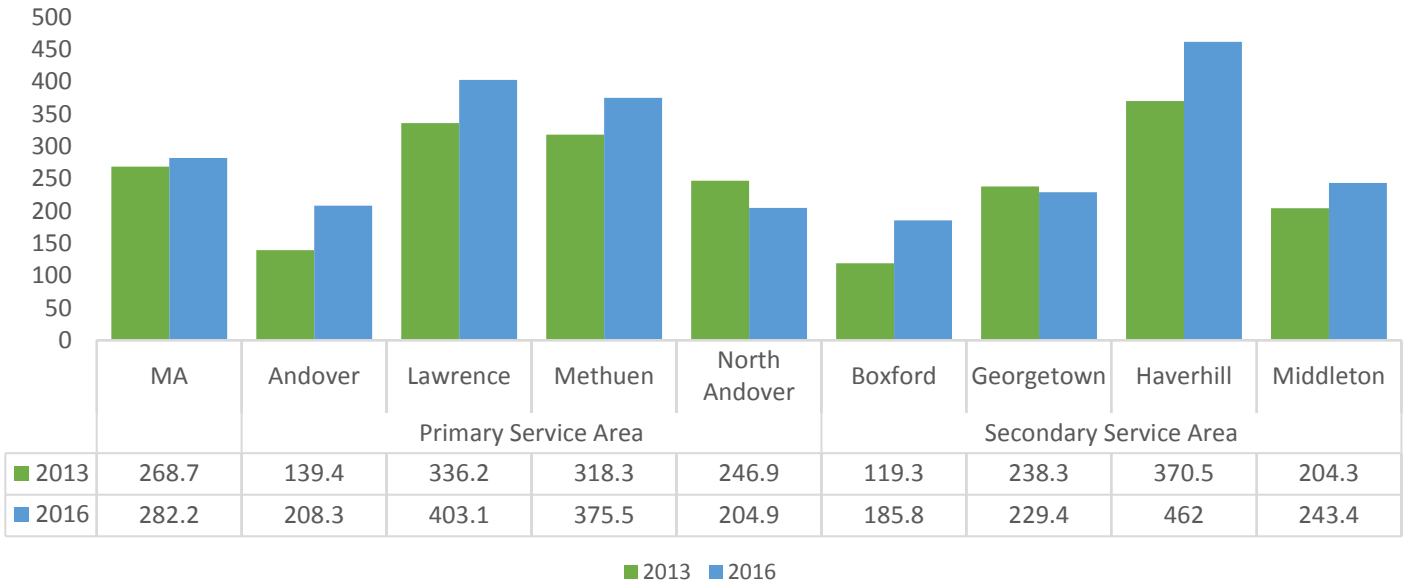
Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Sorted by community concern in descending order; Respondents chose Top 5, so percentages do not total 100%

Premature Death

Similar to the previous CHNA, premature mortality rates vary across the service area. In 2016, some communities showed a reduction in premature mortality (North Andover and Georgetown), but the majority of the communities saw an increase in premature mortality (Figure 20). Haverhill had the highest premature mortality rate, 462.0 premature deaths per 100,000 population while Boxford had the lowest in the service area at 185.8 premature deaths per 100,000 population.

Figure 20

Premature Mortality Rate per 100,000 Population by State, Service Area and Community, 2013 and 2016



	MA	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton
		Primary Service Area				Secondary Service Area			
2013	268.7	139.4	336.2	318.3	246.9	119.3	238.3	370.5	204.3
2016	282.2	208.3	403.1	375.5	204.9	185.8	229.4	462	243.4

Data Source: Massachusetts Department of Public Health, Office of Data Management and Outcomes Assessment, Massachusetts Deaths, 2013 and 2016

Note: Premature Mortality Rate is defined as deaths that occur before the age of 75 years per 100,000, age-adjusted to the 2000 US standard population under 75 years of age

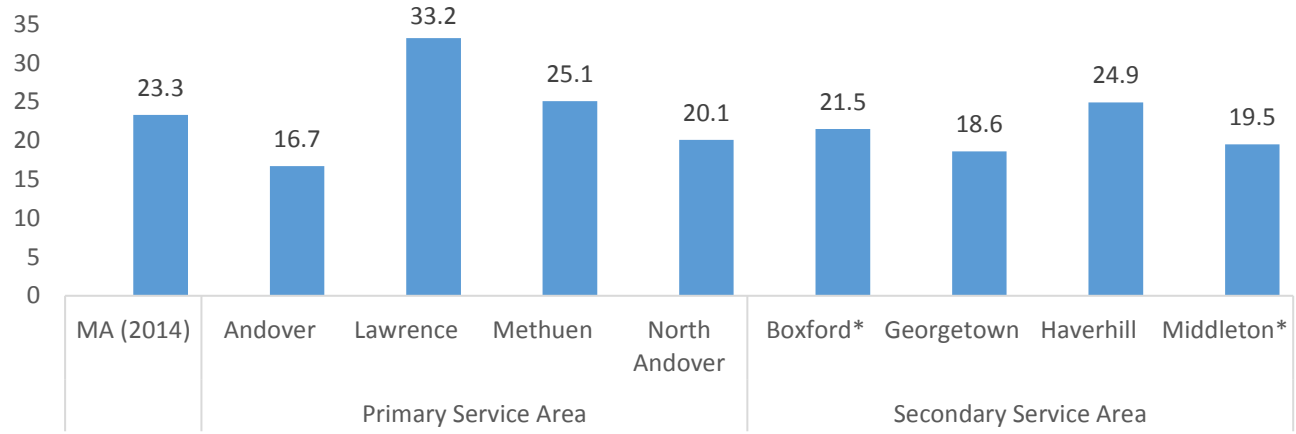
Chronic Disease and Related Risk Factors

Participants discussed a number of chronic diseases, including asthma and obesity. Provider and resident survey respondents also identified diabetes and obesity as top health concerns for themselves, their families or their patients.

Overweight/Obesity

Overweight and obesity remain top concerns of the community, among residents and providers alike. Youth obesity was mentioned as a concern by participants, as was the growing risk of diabetes among young people. Participants working with seniors mentioned the prevalence of chronic disease, including diabetes and heart disease, among this population. In Figure 21 the adult obesity rates for the state and service area are shown. The obesity rates range across the service area from a third of adults in the City of Lawrence who are obese – which is above the statewide rate of 23.3% - to 16.7% of adults in Andover.

Figure 21
Percent of Obese Adults by State and Communities, 2012-2014

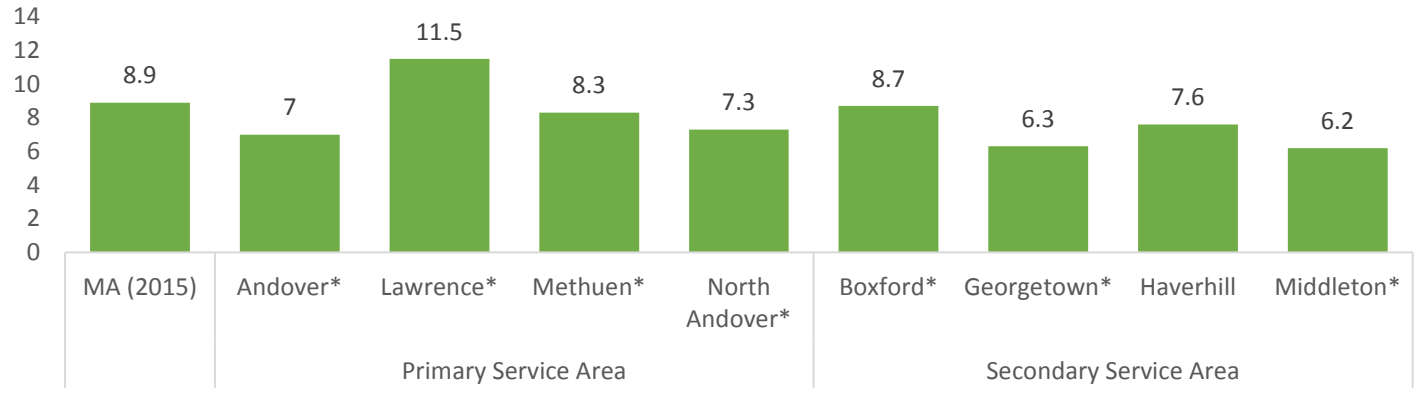


Data source: Massachusetts Department of Public Health, BRFSS, 2012, 2013, 2014; for state level data, BRFSS 2015
Notes: * We include town level estimates that may be based on relatively few respondents or have standard errors that are larger than average. The confidence interval for this community is wider than the normal limits set by MDPH. Therefore, the estimate for this town should be interpreted with caution.

Diabetes

Participants closely associated obesity with diabetes, and providers and residents identified diabetes and obesity as top health concerns for themselves, their families or their patients. The percent of adults with diabetes varied across the service area, from 6.2% in Middleton to 11.5% in Lawrence (Figure 22). The City of Lawrence is the only community in the service area with a higher percent of adults with diabetes than the state, 8.9%.

Figure 22
Percent of Adults with Diabetes by State and Communities, 2012, 2013 and 2014



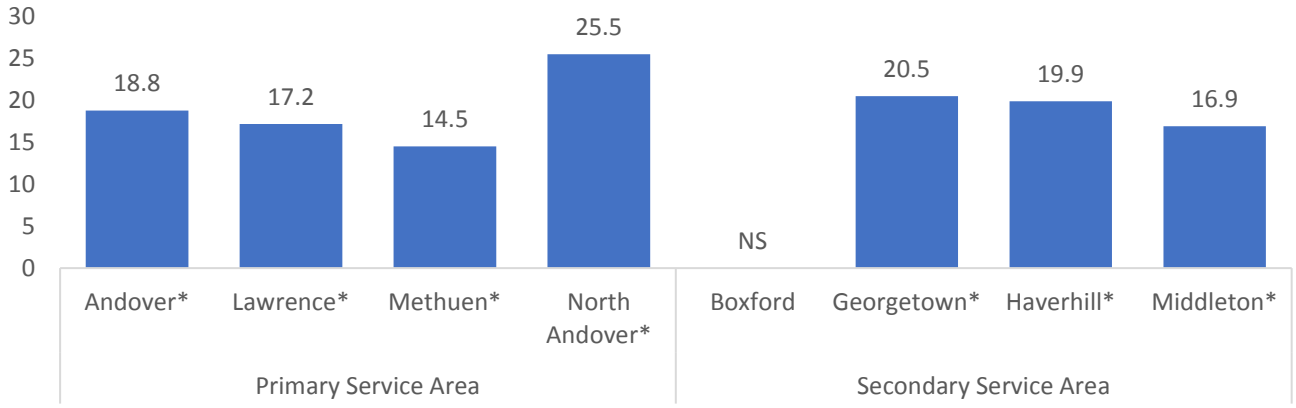
Data source: Massachusetts Department of Public Health, BRFSS, 2012, 2013, 2014; for state level data, BRFSS 2015
Notes: * We include town level estimates that may be based on relatively few respondents or have standard errors that are larger than average. The confidence interval for this community is wider than the normal limits set by MDPH. Therefore, the estimate for this town should be interpreted with caution.

Healthy Eating and Physical Activity

Participants discussed a variety of health behaviors that they associated with overweight/obesity, including nutrition and healthy eating. Across the service area, fruit and vegetable consumption ranged from 14.5% of adults in Methuen eating five or more servings for fruits and vegetables a day to 25.5% in North Andover (Figure 23).

Figure 23

Percent of Adults Who Consume 5 or More Fruit and Vegetable Daily by Primary Service Area, 2011,2013 and 2015



Data Source: Massachusetts Department of Public Health, Behavioral Risk Factor Surveillance Survey Data
Note: * Town level estimates that may be based on relatively few respondents or have standard errors that are larger than average. NS = Data not shown due to insufficient sample size.

As in 2016, a number of participants mentioned food insecurity as a community concern. Participants described high utilization of mobile markets, meals on wheels, food pantries, and backpack food programs in schools. Participants working in schools expressed concern that a growing number of students are coming to school without having eaten breakfast. Participants working with seniors shared that for reasons of pride, seniors will not mention that they go hungry.

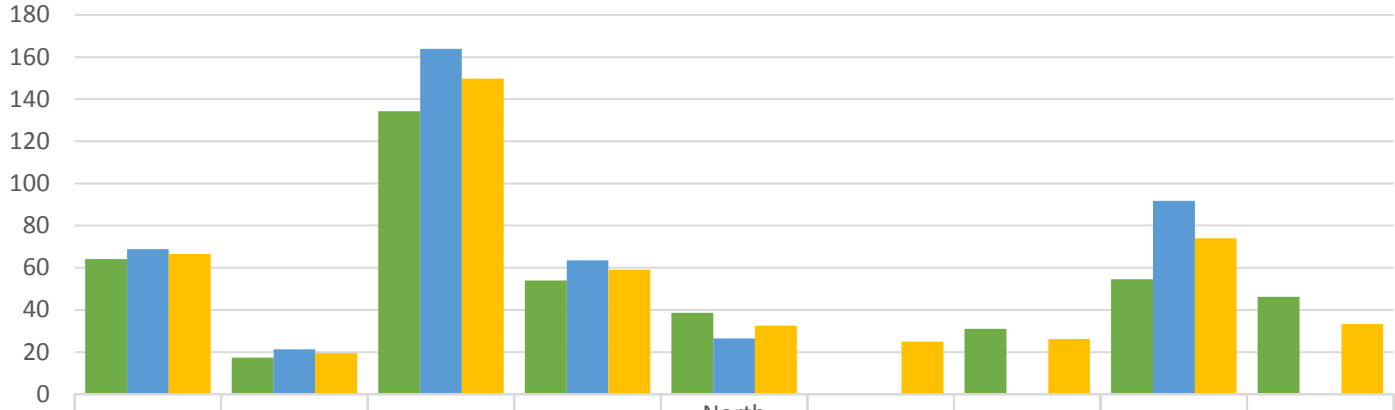
> *"People don't have money to procure food."* – Focus Group Participant

Participants reported that the community has opportunities for physical activity and cited examples such as the YMCA, Groundwork Lawrence, and Movement City (part of Lawrence Community Works). The challenge, according to participants, is the cost associated with these programs. As in 2016, declining opportunities for physical activity in schools was reported to be a concern. Community level data on physical activity for youth or adults was not available for the service area.

Asthma

Participants did not discuss asthma as much as other chronic diseases, but the high rates of asthma among youth were raised as a concern. Updated local level data on the prevalence of adult asthma was not available across the service area, but at the state level adults with current asthma is 11.5%. Looking at asthma-related Emergency Department (ED) visits, Lawrence had the highest rate of asthma-related ED visits, 149.8 visits per 10,000 people, followed by Haverhill (73.9 visits per 10,000) – both of which were above the statewide rate (66.5 visits per 10,000) (Figure 24).

Figure 24
Rate of Asthma Emergency Department Visits per 10,000 People by Massachusetts and Service Area, 2015

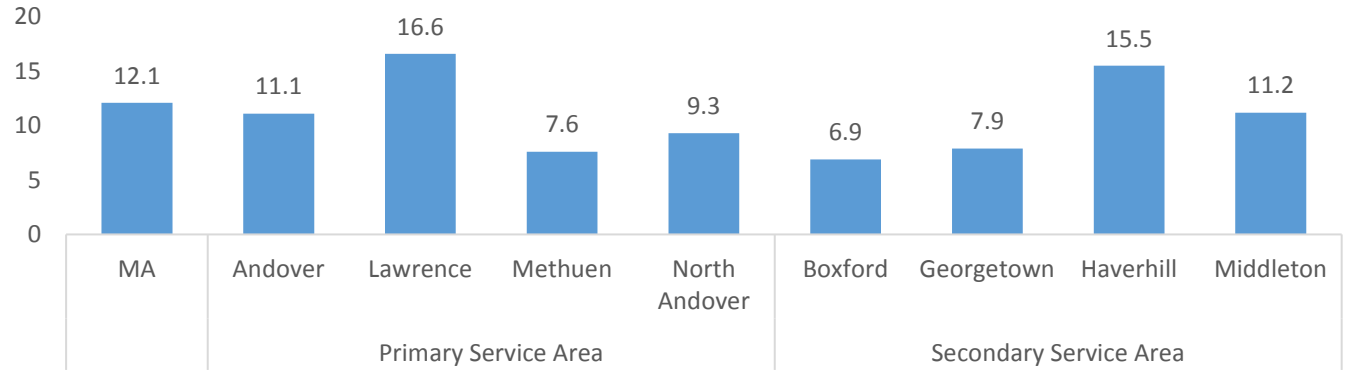


	MA	Andover	Lawrence	Methuen	North Andover	Boxford	Georgetown	Haverhill	Middleton
		Primary Service Area				Secondary Service Area			
Male	64.1	17.3	134.3	54.0	38.6	0.0	31.0	54.6	46.1
Female	68.9	21.3	163.9	63.5	26.5	0.0	0.0	91.7	0.0
All	66.5	19.5	149.8	59.1	32.6	25.0	26.2	73.9	33.3

Data Source: Massachusetts Department of Public Health, Bureau of Environmental Health, MA Environmental Public Health Tracking, 2015
Note: *Not shown. Statistics are suppressed to protect confidentiality when the number of cases is ≤10.

The prevalence of asthma in children shows similar variation across the communities to asthma-related ED visits. Lawrence and Haverhill had the highest percent of students with asthma, 16.6% and 15.5% respectively (Figure 25).

Figure 25
Percent of Students with Pediatric Asthma by State, Service Area and Community, 2016-2017 School Year



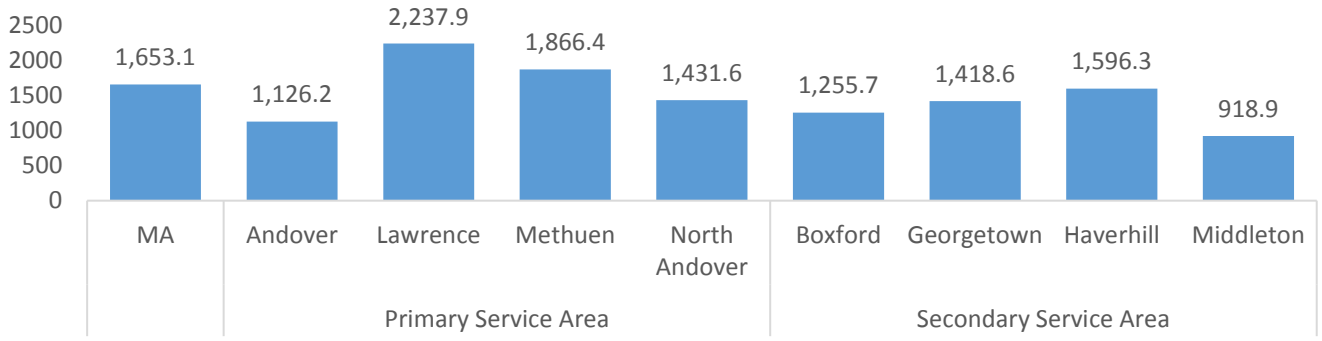
Data Source: Bureau of Environmental Health Massachusetts Department of Public Health.
Note: Asthma prevalence is only for children enrolled in grades Kindergarten through 8th grade.

Cardiovascular and Cerebral Health

Survey respondents identified high blood pressure/hypertension as an important issue for themselves and their families or their patients. While this was an important health issue for individuals it did not emerge as a top concern for the community among survey respondents. Quantitative data for the communities in the service area show that hospitalization rates for cardiovascular disease (e.g., chronic rheumatic heart disease, hypertensive disease, ischemic heart disease, etc.) vary greatly across communities. Across the state there were 1,653.1 hospitalizations per 100,000 population, and in the service area cardiovascular disease hospitalizations ranged from 918.9 hospitalizations per 100,000 population in Middleton to 2,237.9 hospitalizations per 100,000 population in Lawrence (Figure 26).

Figure 26

Age-Adjusted Rate of Cardiovascular Disease Hospitalization per 100,000 Population by State, Service Area and Community, 2014

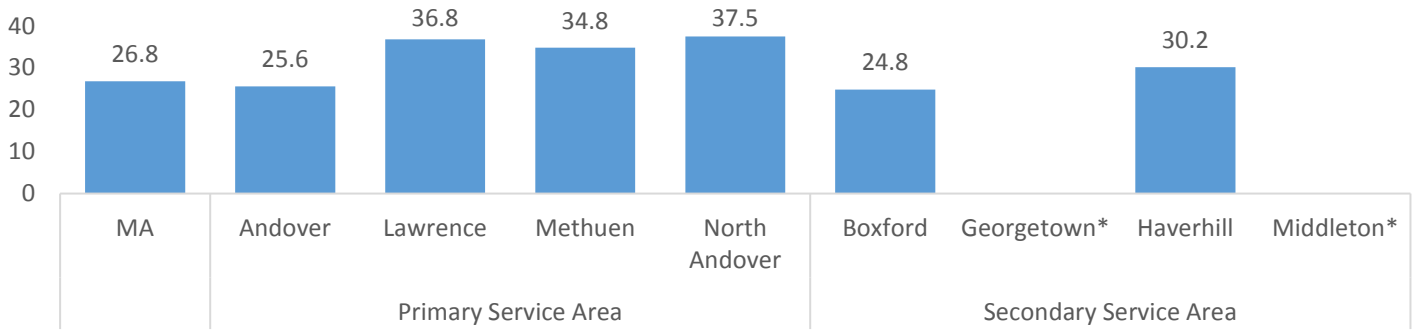


Data Source: Center for Health Information and Analysis (CHIA)
Note: Cardiovascular disease is defined primary diagnosis of ICD Codes 390*-449*, 451*-459*.

Hospitalization rates for heart attacks show less variance across the service area. North Andover had the highest rate, 37.5 heart attack hospitalizations per 10,000 population - above the statewide rate (26.8 hospitalizations per 10,000) - and Boxford had the lowest rate at 24.8 heart attack hospitalizations per 10,000 population (Figure 27).

Figure 27

Age-Adjusted Rate of Heart Attack Hospitalizations per 10,000 Population by State, Service Area and Community, 2015

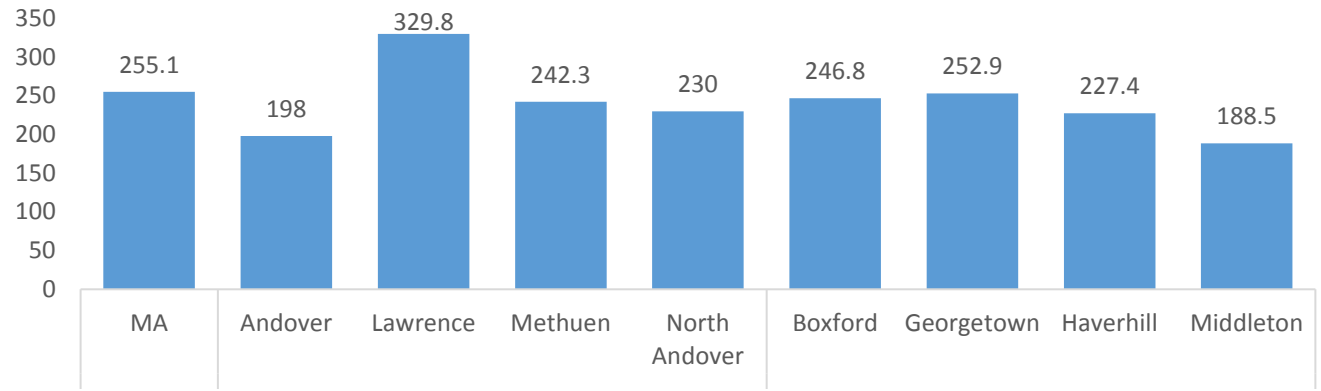


Data Source: Center for Health Information and Analysis (CHIA)
Note: * statistics are suppressed to protect confidentiality when the number of cases is ≤10. Myocardial Infarction is defined by primary diagnosis of ICD-9CM Codes 410* and ICD -10CMCodes I21*, I22*.

When looking at cerebral health the rate of stroke hospitalization increased across the state from 220.0 to 255.1 hospitalizations per 100,000 population between 2012 and 2014. Lawrence had the highest stroke hospitalization rate at 329.8 hospitalizations per 100,000 population, above the statewide rate. All other communities had a stroke hospitalization rate below that of the state (Figure 28).

Figure 28

Age-Adjusted Rate of Stroke Hospitalization per 100,000 Population by State, Service Area and Community, 2014



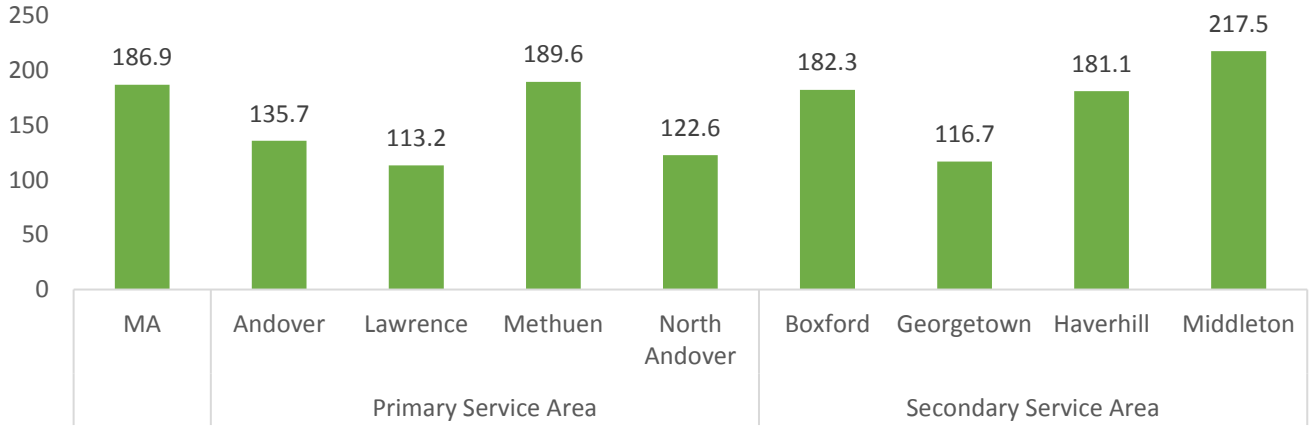
Data Source: Center for Health Information and Analysis (CHIA)
Note: Stroke is defined primary diagnosis of ICD Codes 430*-438*.

Cancer

Cancer remains the leading cause of death in Massachusetts. The rate of all-site cancer deaths in communities across the service area varies. Middleton had the highest death rate from cancer in 2016 at 217.5 deaths per 100,000 population and Lawrence had the lowest at 113.2 deaths per 100,000 population (Figure 29). The statewide death rate was 186.9 deaths per 100,000 population, only Methuen and Lawrence had higher rates in the service area.

Figure 29

All-Site Cancer Death Rate per 100,000 Population by State and by Community, 2016



Data Source: Massachusetts Department of Public Health, Bureau of Health Information, Statistics, Research, and Evaluations, Massachusetts Deaths, 2016
Note: These data have been standardized to the population data from the U.S. Department of Commerce, Bureau of the Census, American Community Survey 5-Year Estimates, 2013-2017

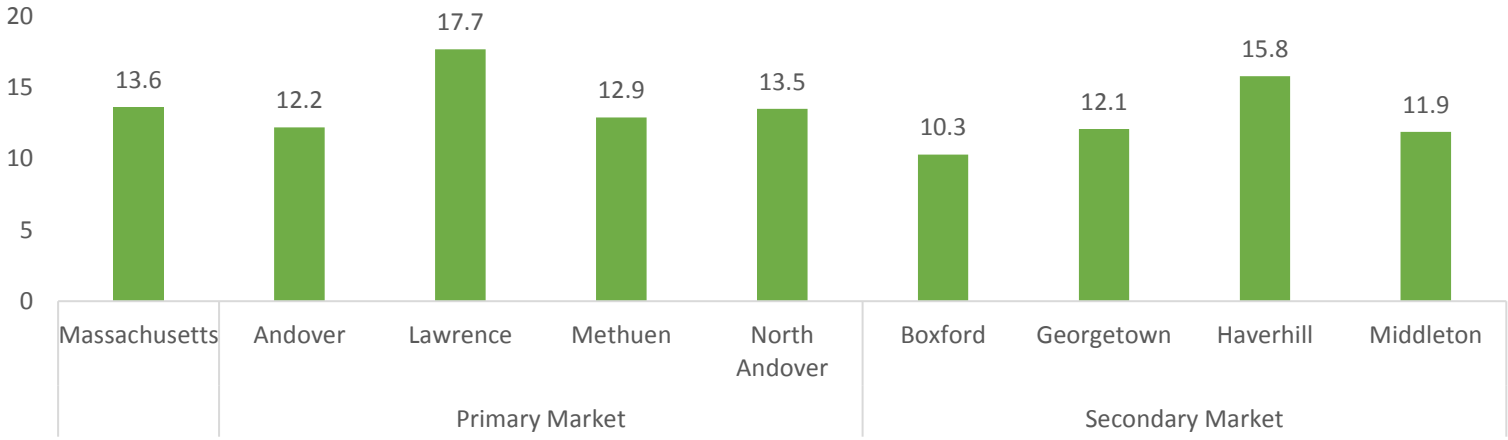
Elderly Health

As in 2016, participants discussed issues affecting the elderly population and voiced concerns about access and cost of health care, housing, social isolation, and chronic conditions; specifically, Alzheimer's and dementia were identified as growing concerns for elders in the community. Survey respondents also identified aging health as a top concern for themselves/their families or their patients. Participants discussed the desire for many elders to age in place, but that it can be difficult for individuals or families to equip homes with the necessary accommodations as well as afford to stay in their homes.

Quantitatively, the prevalence of Alzheimer's or related dementias in the 65 years and older population varied across the service area. Both Lawrence (17.7%) and Haverhill (15.8%) had a higher percentage of the elder population with Alzheimer's disease or related dementias than the state (13.6%) (Figure 30). Boxford and Middleton, at 10.3% and 11.9%, had the lowest percentage of the population living with Alzheimer's or related dementias.

Figure 30

Percent of Population 65 Years and Older with Alzheimer's Disease or Related Dementias by State, Service Area and Community, 2014-2015



Data Source: Tufts Health Plan Foundation, 2018 Massachusetts Health Aging Community Profile, Centers for Medicare and Medicaid Services Master Beneficiary Summary File (2014-2015)

Behavioral Health

Mental Health

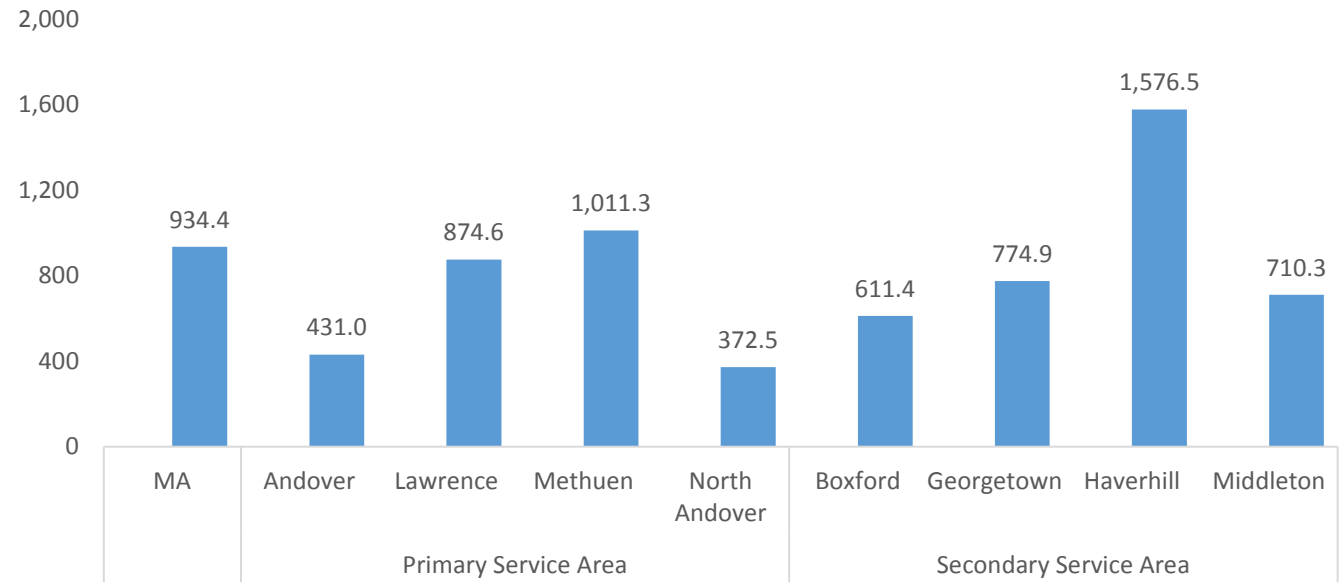
Mental health remained a key concern among participants, as in 2016. Focus group participants and interviewees described rising rates of stress; according to participants, everyday stress has been compounded by the opioid epidemic and recent gas explosions. [1] Homelessness and food insecurity were described as additional stressors for lower income residents.

Rates of individuals hospitalized for mental disorders varied across the service area, with Haverhill (1,576.5 per 100,000) and Methuen (1,011.3 per 100,000) having the highest hospitalization rates – above the

[1] In September 2018 there was a series of gas explosions in Lawrence, Andover and North Andover resulting in fires, evacuations and one death. https://www.wbur.org/news/2018/09/13/multiple-explosions-fires-lawrence-andover-north-andover

statewide rate (934.4 per 100,000) - and North Andover (372.5 per 100,000) and Andover (431 per 100,000) having the lowest hospitalization rates (Figure 31).

Figure 31
Age-Adjusted Mental disorder Hospitalization per 100,000 Population by State, Service Area and Community, 2014



Data Source: Center for Health Information and Analysis (CHIA)
Note: Mental Disorder is defined primary diagnosis of ICD Codes 290*-319*.

Rising rates of mental health issues in younger children were also mentioned. One focus group participant working with youth stated, *"Most youth's anxiety comes from 'where am I going to sleep tonight' and 'what am I going to eat tonight'."* In higher income communities such as Andover, pressure or anxiety to succeed in school was noted by participants as contributing to mental health concerns. While data isn't available at the local level, at the state level the Youth Risk Behavior Survey has shown an increase in students reporting feeling sad or hopeless almost every day for two weeks or more in a row so that they stopped doing some usual activities in the year prior to the survey.

Participants reported that schools have mental health resources, including guidance counselors, mental health specialists, and/or social workers. They cited examples of non-traditional programs designed to keep students in school while addressing their mental health concerns including ALPHA, the Night School Program, and Bridge. Participants noted, however, that these services are not available in all schools. Overall, participants described limited options for mental health treatment, leading to untreated trauma and mental health issues, particularly for children and youth. These perspectives were also reported in the 2016 CHNA. As one interviewee shared, *"Untreated mental health illness, it spirals and impacts every aspect of someone's life – it can cause someone to struggle to get to or function at school or work."*

Participants shared numerous reasons for limited mental health services in the Lawrence General Hospital service area. They cited lack of mental health providers, including psychiatrists, and those who can provide medication adjustments. Additionally, participants noted that some mental health providers do not accept MassHealth which contributes to long wait lists for services. While one interviewee reported that the

MassHealth Behavioral Health Partnership (MBHP) is a good option for mental health services, many people were not assigned to this particular health plan.

> *"Finding someone that accepts MassHealth is huge, finding someone that accepts MassHealth and doesn't have a huge waiting list is like you've won the lottery."* – Focus Group Participant

Low pay was also identified as a challenge to hiring and retaining additional providers; participants identified low reimbursement rates from insurance companies for mental health services as the main contributor to the low pay. Participants also noted that the closing of Arbour Counseling has made a difficult situation worse.

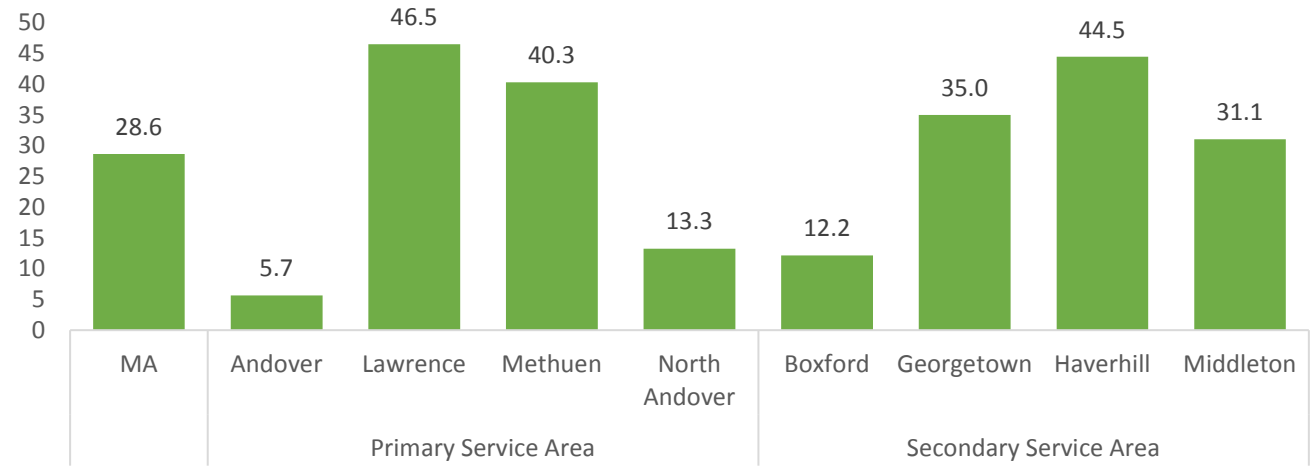
Substance Use and Abuse

As in the 2016 Lawrence General Hospital CHNA, substance use continues to be a substantial concern among participants. As in many cities and towns across the state, the opioid epidemic has affected the Merrimack Valley. One interviewee reported that the city of Lawrence has become a hub for drug users from other communities and states because of the ease of access to drugs; another participant attributed the high number of drug users in Lawrence to the availability of services (e.g., shelters, food pantries, etc.) in Lawrence compared to surrounding communities.

The rate of opioid-related deaths per 100,000 population for residents of the service area ranged from a low of 5.7 opioid-related deaths per 100,000 population in Andover to a high of 46.5 opioid-related deaths per 100,000 population in Lawrence (Figure 32). This range covers the statewide rate of 28.6 opioid-related deaths per 100,000 population with three of the communities falling below that rate and the other five exceeding the rate of the state.

Figure 32

Rate per 100,000 Population of Confirmed Opioid-related Overdose Deaths for all Intents by Community of Residence for the Decedent, among MA Residents, 2017

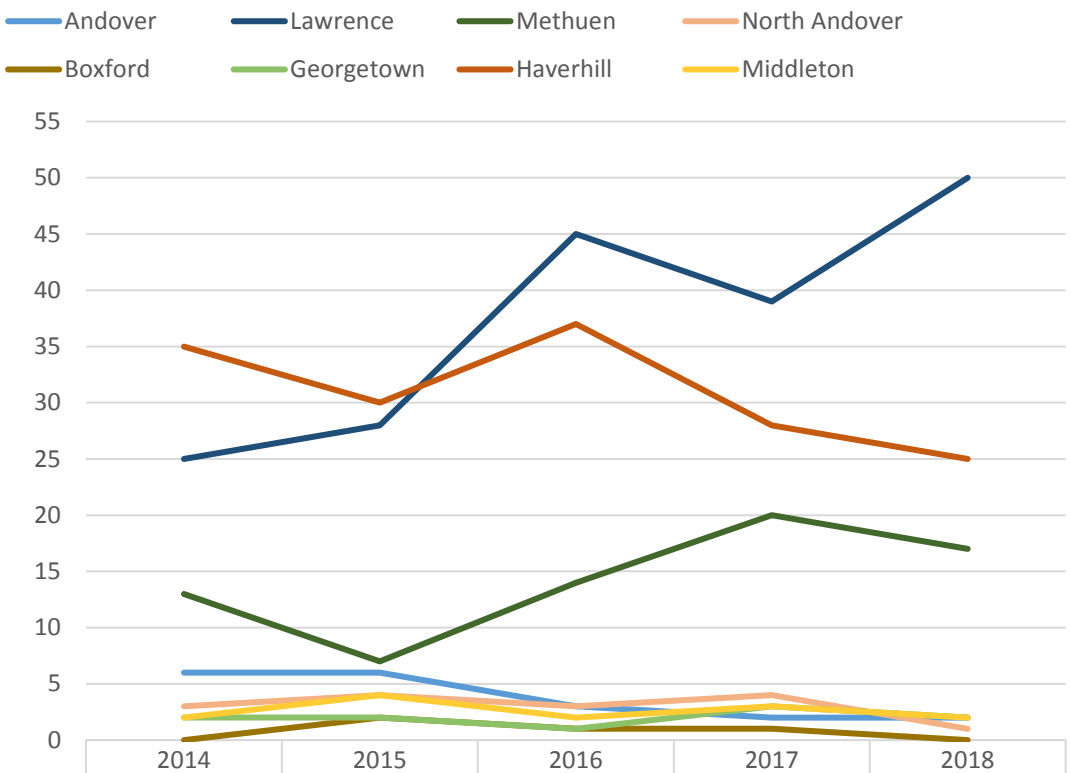


Data Source: Massachusetts Registry of Vital Records and Statistics, MDPH

Notes: For 2017 additional cases are still being confirmed by the Office of the Chief Medical Examiner. Last updated 4/8/2019. Only includes confirmed cases. Rates are calculated based upon ACS total population estimates for 2013-2017 and should be considered mortality rate estimates only.

Figure 33 shows the number of confirmed opioid-related deaths for residents of the communities in the service area from 2014-2018. Of the two largest communities, Lawrence saw an increase of the number of opioid-related deaths from 2017 to 2018 and Haverhill saw a lower number of opioid-related deaths from 2017 to 2018 (preliminary numbers).

Figure 33
Number of Confirmed Opioid-Related Overdose Deaths for all Intents by Community of the Death Occurrence, 2014-2018.

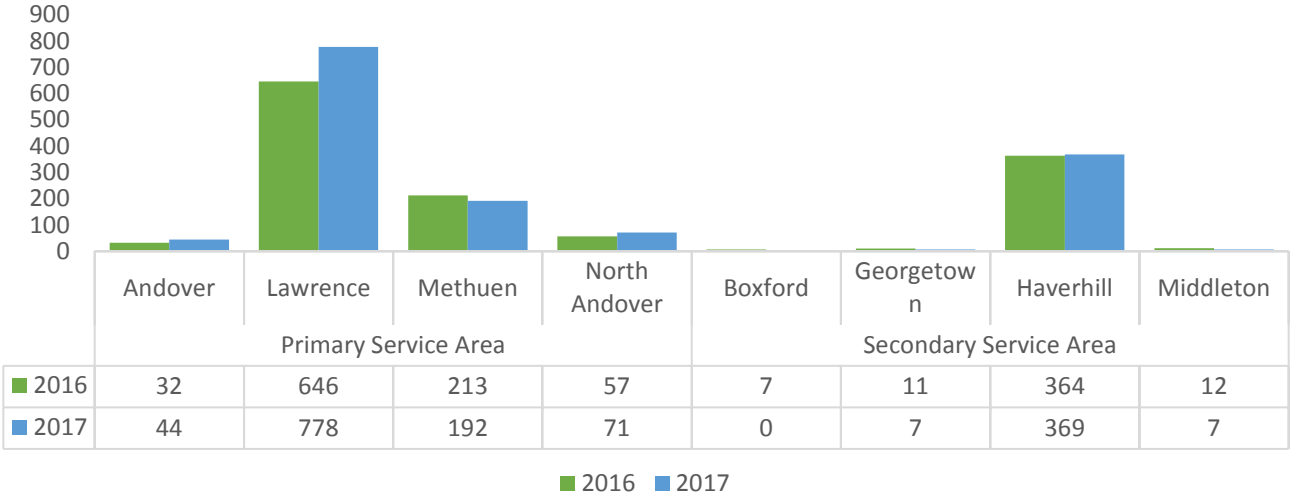


	2014	2015	2016	2017	2018
Andover	6	6	3	2	2
Lawrence	25	28	45	39	50
Methuen	13	7	14	20	17
North Andover	3	4	3	4	1
Boxford	0	2	1	1	0
Georgetown	2	2	1	3	2
Haverhill	35	30	37	28	25
Middleton	2	4	2	3	2

Data Source: Massachusetts Registry of Vital Records and Statistics, MDPH
Note: For 2017 and 2018, additional cases are still being confirmed by the Office of the Chief Medical Examiner. Last updated 4/8/2019. Only includes confirmed cases.

Most of the opioid-related deaths, overdoses, and EMS incidents occurred in the larger communities over the previous two years, as seen in Figure 33 and Figure 34. The preliminary number of opioid deaths that occurred in these communities increased from 2017 to 2018, and the number of EMS incidents that were opioid-related increased as well.

Figure 34
Opioid-Related EMS Incidents by Community, 2016-2017



Data Source: Office of Emergency Medical Services, Bureau of Health Care Safety and Quality, MDPH

The Massachusetts Bureau of Substance Addiction Services reports the primary substance of patients who are seeking treatment (Table 5). In the last report, from 2012-2014 the decline in alcohol and almost doubling of heroin as the primary substance was noted; from 2015-2017 most communities continued to see a decline in alcohol as the primary substance but the sharp rise in heroin did not continue.

Table 5
Primary Substance of Use When Seek Treatment, Percent Distribution by Primary Drug, Community, 2015-2017

	2015					2016					2017				
	Alcohol	Crack/ Cocaine	Heroin	Marijuana	Other Opioids	Alcohol	Crack/ Cocaine	Heroin	Marijuana	Other Opioids	Alcohol	Crack/Cocaine	Heroin	Marijuana	Other Opioids
MA	33.2	2.9	53.9	3.5	4.9	31.7	3.2	55.1	3.7	4.5	32.8	4.1	52.8	3.5	4.6
Primary Service Area															
Andover	54.5	---	35.8	---	---	44.8	---	37	7.8	4.4	37.7	---	42.1	6.9	8.2
Lawrence	24.8	1.6	65.2	5	2.8	21.3	3.9	65.3	4.3	3.8	20.8	4.2	62.6	5.9	4.3
Methuen	32.7	2	55.2	2.4	6.5	26.6	2.3	59.3	6.7	4.6	29.6	2.8	56.1	5.1	5
North Andover	50	---	39	7.1	---	42.9	---	42.4	3.3	7.1	51.2	---	37.3	4	5.5
Secondary Service Area															
Boxford	64.9	---	18.9	---	---	62.5	---	33.3	---	---	55.9	---	20.6	---	---
Georgetown	48.4	---	43.8	---	---	41	---	39.8	---	---	39.7	---	47.6	---	---
Haverhill	31.2	2.1	55.5	5.2	4.7	30.7	4.1	51.3	7	5.8	31.6	3.4	49.1	5.7	7.5
Middleton	51.3	---	44.7	---	---	41.8	---	47.3	---	---	48.1	---	36.4	---	---

Data Source: Massachusetts Department of Public Health, Bureau of Substance Addiction Services, Office of Statistics and Evaluation
Note: --- number too small to report

Vaping among youth was described as a growing issue by school staff focus group participants, especially in Methuen and Andover. In contrast, marijuana was seen as a bigger issue in Lawrence. Participants also identified opioid use as an issue with students, as well as parents. Alcohol use among youth was also reported as concern across the region. Local level quantitative data about youth substance use was not available.

As with mental health, participants described that there are limited detox facilities. As one participant observed, *"[There are] no programs here that will offer a long-term detox and [people] end up back on the street and using again."*

Syringes in parks were also mentioned as a growing safety concern as the opioid epidemic increasingly takes hold. As one interviewee explained, *"There hasn't been enough support for people to have them dispose of syringes or give them better places to use. No parents let their kids play in park because of the fear of syringes."*

Trauma

Trauma—especially in Lawrence—was mentioned by several participants. This was a new theme that emerged from the qualitative data collection for this report. They mentioned drugs, guns, domestic violence, and gang violence as community characteristics contributing to trauma. In the Fall of 2018, there were a series of gas explosions in Lawrence, Andover and North Andover resulting in fires, evacuations, and one death. This incident was noted by participants as an additional source of trauma for residents. As one participant shared, *"We assume anyone who is from Lawrence has experienced trauma, at least vicariously."* A participant shared a similar view saying, *"It is a very tough city to live in."*

The gas explosions were not only described as a source of trauma, but also as a display of the resiliency and sense of community in the region. A participant stated**,** "*I think the gas tragedy [in Lawrence, Andover and North Andover] speaks to how community-oriented people are here; they all came out and supported each other."*

Maternal and Child Health

While maternal and child health did not emerge as a community concern, one interviewee mentioned that Lawrence has high rates of teen pregnancy. Quantitative data available for larger cities and towns in the Commonwealth show that Lawrence had the highest teen pregnancy rate of 34.5 teen births per 100,000 compared to the state at 8.5 teen births per 100,000 (Table 6). The participant mentioned the lack of, or inadequate sex education in the community as a potential driver of these higher rates.

Table 6
Birth Rate to Teenage Mothers (15-19) per 100,000 by State and Community, 2016

	Birth Rate per 100,000
MA	8.5
Primary Service Area	
Lawrence	34.5
Methuen	9.2
Secondary Service Area	
Haverhill	17.3

Data Source: Massachusetts Department of Public Health, Bureau of Health Information, Statistics, Research, and Evaluations, Massachusetts Births, 2016

Table 7 shows that in 2016, there were 3,372 births to residents in the service area, with the plurality of births occurring in Lawrence. In the service area, 8% of births were low birthweight, which is slightly higher than the state (7.5%).

Table 7
Number of Resident Births and Low Birthweight Births by State and Community, 2016

	Number of Births	**Number of Low Birthweight**
MA	71,319	5,341
Primary Service Area		
Andover	257	9
Lawrence	1,417	131
Methuen	521	42
North Andover	247	10
Secondary Service Area		
Boxford	60	*
Georgetown	74	6
Haverhill	726	65
Middleton	70	6

Data Source: Massachusetts Department of Public Health, Bureau of Health Information, Statistics, Research, and Evaluations, Massachusetts Births, 2016
Note: * too small to report; Low Birthweight <2500 g

Infectious Diseases

Updated data on infectious diseases at the local level is not available across the service area, but for the larger communities there is some data available. A participant mentioned an uptick in HIV in Lawrence, and the quantitative data available show that the average annual diagnosis rate from 2014-2016 in Lawrence was more than three times that of the state, 30.1 HIV diagnoses per 100,000 population compared to 9.7 HIV diagnoses per 100,000 population. The prevalence of HIV in Lawrence is also nearly double that of the state (670.4 HIV cases per 100,000 population compared to 337.7 HIV cases per 100,000 population).

When asked about trends in vaccination among students, school staff focus group participants observed an increase in the number of parents who do not want their children immunized. These participants identified a need for more education about the importance of vaccination.

Health Care Access and Utilization

Access to health care - including lack of providers, cost, and insurance coverage - was described as challenging, especially for the lower income, homeless and immigrant populations of Lawrence. According to participants, this is partially due to a decreasing number of health care access points. One participant noted that clinics have been closing, merging, and getting bought out. Another participant stated that there are few physicians willing to work in the community.

Resident respondents to the survey largely get their medical care from a private doctor's office/primary care physician (60%) while providers see the majority of their patients receiving care at community health center (57%) (Table 8). Also notable is that in 2019 a higher percent of providers responded that patients are receiving their care from a hospital-based emergency room (20%) compared to 2016 (11%).

Table 8
Survey Respondents' Personal (by Resident) or Patient's/Client's (by Provider) Provider of Main Medical Care 2016 and 2019

	Residents		Providers	
	2016	**2019**	**2016**	**2019**
Private doctor's office/primary care physician	65%	60%	26%	18%
Community health center/clinic (i.e., Greater Lawrence Family Health Center or similar)	27%	33%	60%	57%
Hospital-based Emergency Room	3%	1%	11%	20%
Urgent Care Center (i.e., Doctors Express or similar)	2%	2%	0%	3%
Veteran's Affairs (VA)	0%	1%	0%	0%
Other	3%	3%	3%	2%

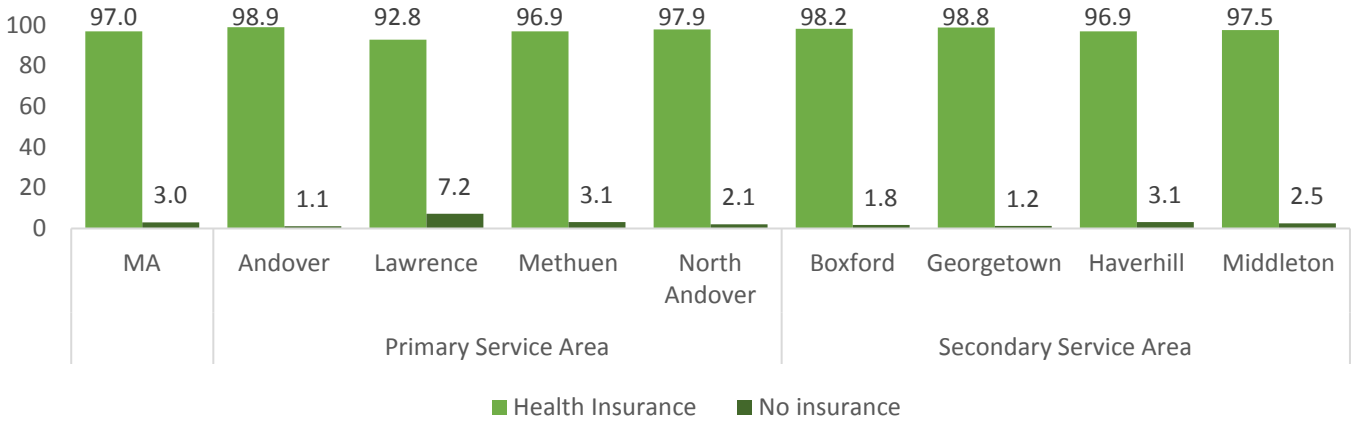
Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019

Participants identified the cost of health care, including medications, as a barrier to access; this was mentioned as a barrier in 2016 CHNA as well. Affordability of prescription medications was a substantial area of concern among participants who work with seniors, with some reporting that seniors may go without medication because they cannot afford the cost.

Insurance coverage was also noted as a barrier to accessing health care. Participants noted that for some populations – notably homeless and immigrants - lack of paperwork, including identification and documentation of citizenship status, makes it difficult, if not impossible, to enroll in public health insurance.

In Massachusetts, the percent of individuals without any insurance is low, 3%; across the service area most communities see a similarly low uninsured rate with the exception of Lawrence where 7.2% of individuals are uninsured (Figure 35).

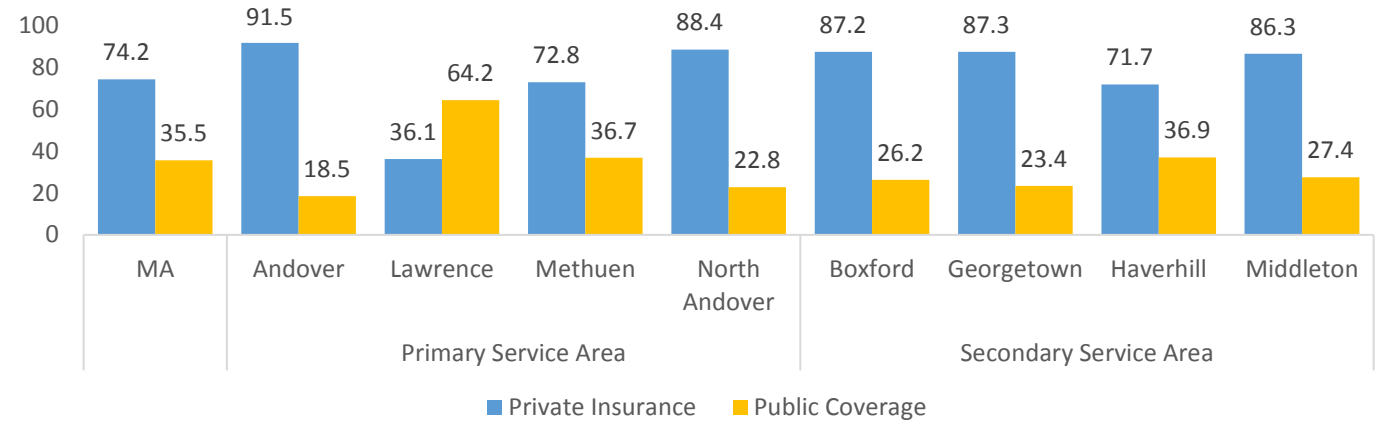
Figure 35
Insurance Coverage by State, Service Area and Community, 2017



Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Participants identified that another challenge—for those who do have MassHealth—is that many specialists do not accept this insurance. As one participant explained, *"If you have anything less than MassHealth Standard, you have to go to Boston to get [behavioral health and specialty] care."* Additionally, participants shared that many specialist providers, such as those who provide substance use treatment and mental health services, do not accept public insurance. According to participants, these challenges are particularly important for communities across the service area with more residents relying on public insurance. Quantitative data show that Lawrence, (64.2%), Haverhill (36.9%), and Methuen (36.7%) have the highest proportion of residents with public insurance coverage across the service area, above that of the state (35.5%)(Figure 36).

Figure 36
Insurance Coverage Type by State, Service Area and Community, 2017



Data Source: 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Similar to secondary data from the American Community Survey, respondents to the survey self-identified or identified their patients as uninsured at a similar rate (4% and 5%, respectively) (Table 9). Of the resident survey respondents, 25% identified public insurance, Medicare or Medicaid as their source of health care coverage, while 70% of providers identified Medicare or Medicaid as their patient's insurance.

Table 9
Survey Respondents' Personal (by Resident) or Patient's/Client's (by Provider) Health Care Coverage Provider, 2013, 2016 and 2019

	Residents		Providers	
	2016	**2019**	**2016**	**2019**
Yes, private insurance (through employer/spouse's employer/parents)	64%	54%	4%	9%
Yes, through the Massachusetts Health Connector †	-	13%	-	16%
Yes, Medicare	11%	16%	16%	10%
Yes, other government plan (Medicaid/MassHealth or other)	22%	9%	74%	60%
No health insurance	2%	5%	1%	1%
Other	1%	4%	4%	5%

Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Cross (†) denotes addition or slight change in response option from 2016 to 2019 survey

Some particularly vulnerable populations were identified by participants as facing additional barriers to accessing health care. For example, people who were previously incarcerated were described as often experiencing a delay in activation of their MassHealth insurance when they are released, which means they must wait to access health care. According to service providers, the homeless population of Lawrence has experienced substantial challenges with the movement to accountable care organizations (ACOs); because ACOs are assigned based on last address, some homeless individuals now have providers who are far away and inaccessible.

As in years past, the majority of respondents answered that they were "very likely" to seek out primary care and emergency care in the Merrimack Valley (Table 10). Residents were least likely to seek out local care for Neurosurgery/Brain care, Cancer Care and Cardiac/Heart care and surgeries.

Table 10
Survey Respondents' Likelihood of Personally Seeking Health/Medical Services in the Merrimack Valley by Role, 2016 and 2019

	Residents		Providers	
	2016	**2019**	**2016**	**2019**
Primary care				
Not likely at all	12%	13%	13%	11%
Somewhat likely	15%	13%	18%	21%
Very likely	73%	74%	69%	68%
Emergency care				
Not likely at all	11%	8%	12%	11%
Somewhat likely	19%	18%	23%	25%
Very likely	70%	74%	65%	65%
Pediatric/Child care and surgeries				
Not likely at all	24%	28%	36%	32%
Somewhat likely	30%	27%	34%	36%
Very likely	46%	46%	30%	32%
OB/GYN Services (Including child birth)				
Not likely at all	13%	21%	21%	19%
Somewhat likely	29%	22%	26%	32%
Very likely	58%	57%	53%	50%
Orthopedic care and surgeries				
Not likely at all	25%	24%	23%	23%
Somewhat likely	29%	28%	34%	33%
Very likely	46%	47%	42%	45%
Cancer care				
Not likely at all	49%	41%	52%	50%
Somewhat likely	25%	35%	31%	30%
Very likely	26%	24%	17%	20%
Cardiac/Heart care and surgeries				
Not likely at all	44%	36%	48%	45%
Somewhat likely	27%	37%	33%	37%
Very likely	29%	28%	18%	18%
Mental/behavioral health treatment/counseling				
Not likely at all	18%	15%	28%	22%
Somewhat likely	34%	38%	35%	40%
Very likely	48%	47%	38%	38%
Alcohol and drug abuse treatment/counseling				
Not likely at all	18%	20%	31%	24%
Somewhat likely	34%	36%	34%	41%
Very likely	47%	44%	35%	35%
Chronic conditions such as heart problems, lung problems, diabetes, asthma				
Not likely at all	23%	24%	26%	21%
Somewhat likely	32%	28%	33%	35%

Very likely	45%	47%	41%	44%
Chronic infections such as HIV/Hepatitis C				
Not likely at all	25%	25%	30%	22%
Somewhat likely	33%	33%	33%	35%
Very likely	42%	42%	37%	43%
Other minor surgeries				
Not likely at all	17%	14%	18%	12%
Somewhat likely	33%	32%	34%	32%
Very likely	51%	55%	48%	56%
Neurosurgery/Brain care				
Not likely at all	56%	57%	68%	70%
Somewhat likely	21%	23%	20%	22%
Very likely	23%	20%	12%	9%

Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019

Providers perception of their patients' reasons for not seeking services in the Merrimack Valley aligned very closely with residents' responses (Table 11). The percent of respondent's reasons for not seeking care in the Merrimack Valley also remained consistent from responses in 2016. The most common reason for not seeking services locally remained patients questioning the quality of services.

Table 11
Survey Respondents' Personal (by Resident) or Perceived Patient's/Client's (by Provider) Reasoning for Not Seeking Services in the Merrimack Valley, 2016 and 2019

	Residents		Providers	
	2016	**2019**	**2016**	**2019**
I question the quality of services locally	43%	45%	48%	49%
There aren't enough specialty services available locally	31%	33%	33%	34%
Others (e.g., friends, family members) have recommended services outside of the Merrimack Valley	31%	31%	24%	26%
My primary care doctor refers me outside of the Merrimack Valley	25%	26%	22%	18%
Long wait times to get an appointment	24%	22%	16%	17%
My health insurance is only accepted outside of the Merrimack Valley	5%	2%	4%	5%
I have transportation problems locally	7%	4%	2%	3%
Other	18%	17%	22%	18%

Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019

Survey respondents were also asked to comment on either their level of satisfaction or their perceptions of their patient's /client's level of satisfaction with the availability of services. About half of respondents remained "very satisfied" with the overall health or medical services in the area, 50% of residents and 43% of providers (Table 12). This year the survey asked separately about homeless services and half of residents and providers were "not satisfied at all;" affordable housing, alcohol or drug treatment services and the cost of medicine were other services with high dissatisfaction.

Table 12
Survey Respondents' Personal (by Resident) and Perceived Client (by Provider) Satisfaction with the Availability of Services by Role, 2016 and 2019

	Residents		Provider	
	2016	**2019**	**2016**	**2019**
Overall health or medical services in the area				
Not satisfied at all	3%	5%	3%	4%
Somewhat satisfied	44%	45%	53%	53%
Very satisfied	53%	50%	44%	43%
Alcohol or drug treatment services				
Not satisfied at all	29%	36%	58%	55%
Somewhat satisfied	50%	45%	35%	35%
Very satisfied	21%	19%	7%	9%
Medication assisted treatment (MAT) for drug treatment †				
Not satisfied at all	-	35%	-	32%
Somewhat satisfied	-	45%	-	53%
Very satisfied	-	20%	-	15%
Counseling or mental health services				
Not satisfied at all	28%	26%	60%	56%
Somewhat satisfied	46%	48%	31%	32%
Very satisfied	26%	26%	9%	11%
Public transportation to area health service				
Not satisfied at all	22%	27%	26%	23%
Somewhat satisfied	47%	41%	51%	54%
Very satisfied	31%	32%	23%	22%
Birth control/sexual health services for youth				
Not satisfied at all	18%	23%	11%	14%
Somewhat satisfied	45%	46%	50%	51%
Very satisfied	36%	31%	38%	35%
Dental services in the area				
Not satisfied at all	14%	11%	25%	16%
Somewhat satisfied	31%	37%	41%	46%
Very satisfied	55%	52%	34%	38%
Programs or services to help people quit smoking				
Not satisfied at all	17%	21%	20%	17%
Somewhat satisfied	47%	52%	51%	54%
Very satisfied	36%	27%	29%	28%
Primary care providers				
Not satisfied at all	7%	11%	4%	5%
Somewhat satisfied	42%	43%	39%	41%
Very satisfied	51%	45%	57%	54%
Health or medical providers who take your insurance				
Not satisfied at all	9%	9%	8%	9%

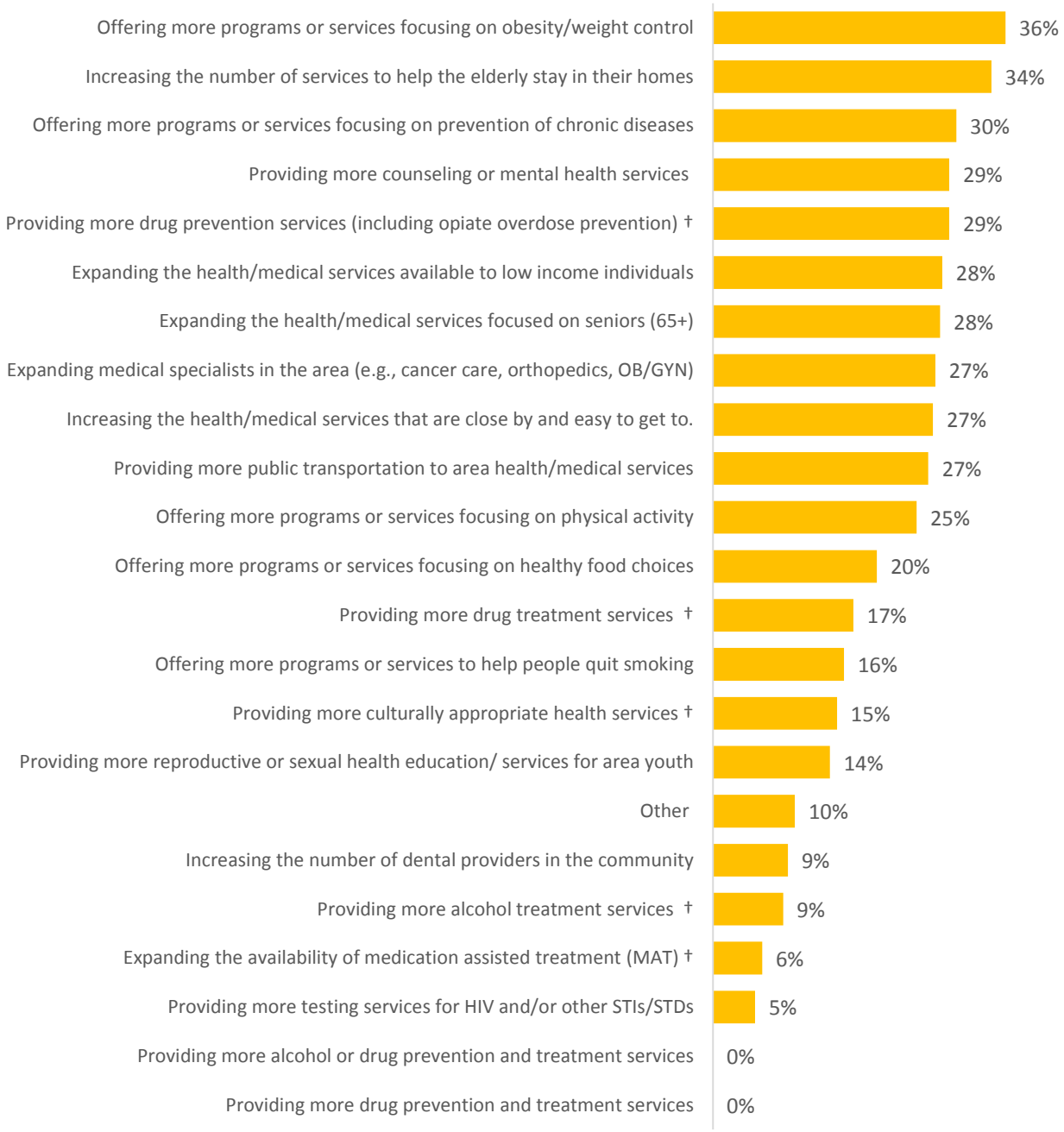
Somewhat satisfied	38%	37%	50%	50%
Very satisfied	52%	54%	43%	40%
Cost of medicine (e.g., medicine assistance, low-cost medicine)				
Not satisfied at all	29%	35%	30%	37%
Somewhat satisfied	41%	41%	50%	45%
Very satisfied	30%	24%	21%	18%
Medical specialists in the area (e.g., cancer care, orthopedics)				
Not satisfied at all	14%	14%	11%	11%
Somewhat satisfied	47%	48%	50%	47%
Very satisfied	39%	38%	39%	42%
Interpreter services during medical visits and when receiving health information				
Not satisfied at all	15%	8%	16%	15%
Somewhat satisfied	41%	35%	41%	40%
Very satisfied	43%	57%	42%	45%
Food assistance (e.g., food stamps/SNAP)				
Not satisfied at all	18%	15%	8%	5%
Somewhat satisfied	39%	40%	58%	50%
Very satisfied	43%	44%	35%	45%
Access to healthy foods (e.g., Meals on Wheels, access to fruits and vegetables)				
Not satisfied at all	18%	14%	24%	15%
Somewhat satisfied	43%	39%	51%	53%
Very satisfied	40%	47%	25%	32%
Affordable housing services (e.g., Section 8) †				
Not satisfied at all	32%	47%	32%	37%
Somewhat satisfied	41%	33%	50%	43%
Very satisfied	27%	21%	17%	20%
Homeless Services (e.g., shelters) †				
Not satisfied at all	-	49%	-	50%
Somewhat satisfied	-	34%	-	37%
Very satisfied	-	18%	-	12%
Other				
Not satisfied at all	44%	50%	50%	53%
Somewhat satisfied	31%	33%	35%	25%
Very satisfied	25%	17%	15%	22%

Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: "Not sure/Don't know" responses excluded from analyses; Cross (†) denotes addition or slight change in response option from 2016 to 2019 survey

Vision for the Future and Opportunities for the Hospital

Respondents were asked to identify the top five areas for their community to be addressed in the future. As seen in Figure 37, residents continued to prioritize programs or services focusing on obesity/weight control, services to help the elderly stay in their homes and services focusing on the prevention of chronic diseases.

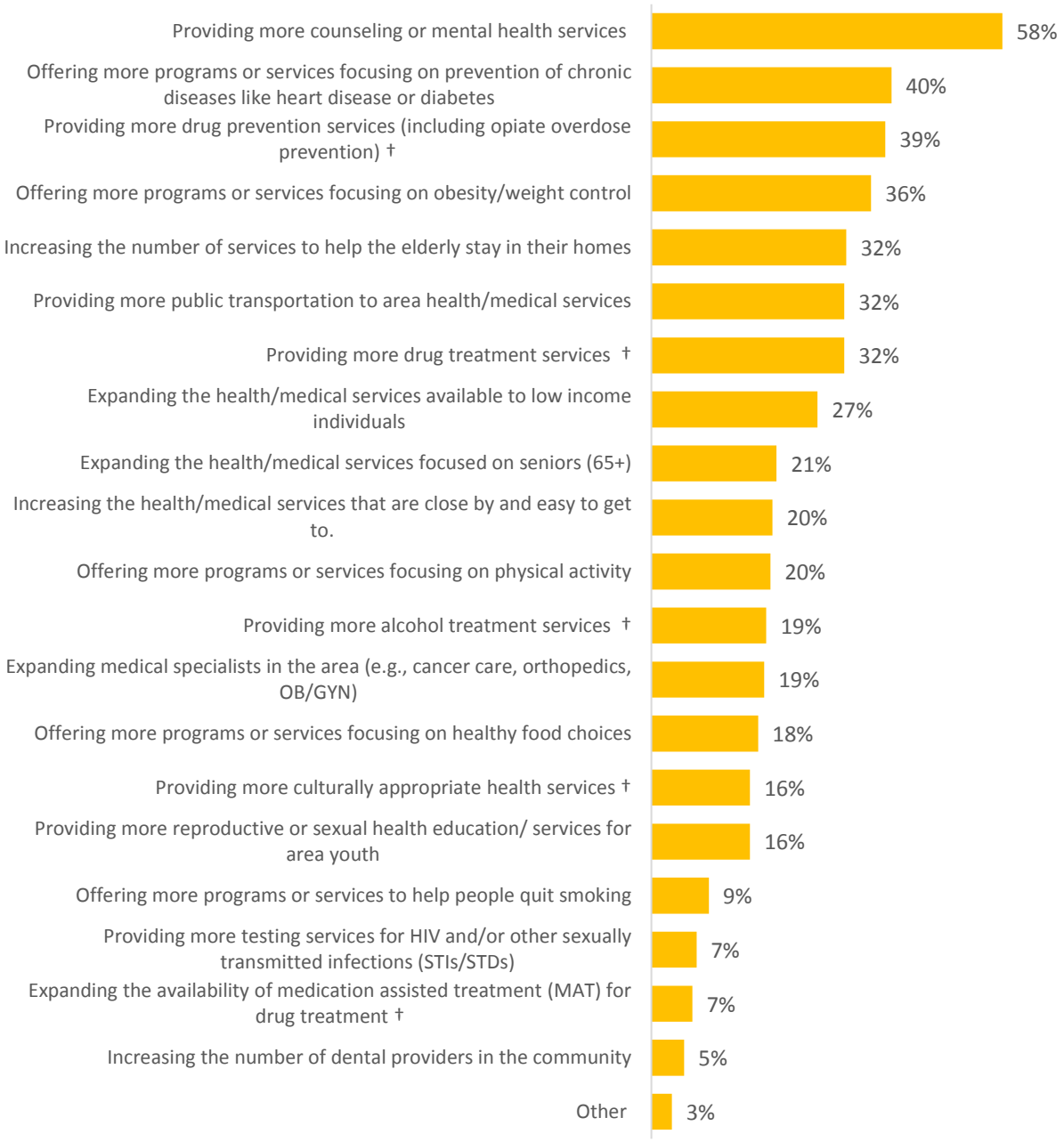
Figure 37
Residents' Top Priority Areas for the Future, 2019



Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Cross (†) denotes addition or slight change in response option from 2016 to 2019 survey; respondents were asked to select top 5 issues; therefore, percentages may not sum to 100%

In alignment with providers' concerns around depression or other mental health/behavioral issues, provider respondents identified providing more counseling or mental health services as a top priority to address in the future (Figure 38). This also resonates with what participants described as a shortage of mental health providers and difficulty identifying those services in the service area. The other priorities that rose to the top for providers were similar to those of residents.

Figure 38
Providers Top Priority Areas for the Future, 2019



Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Cross (†) denotes addition or slight change in response option from 2016 to 2019 survey; respondents were asked to select top 5 issues; therefore, percentages may not sum to 100%

When participants were asked about what they believed to be top issues to be addressed and what the hospital's role could be, they shared several thoughts including:

- ***Expand behavioral health services.*** Participants cited a need for more mental health and substance use treatment services including case managers, counseling and detox. Addressing unmet needs for behavioral health services was also identified as a key recommendation in the 2016 CHNA. One interviewee suggested that the hospital could ensure that community organizations and first responders are supplied with Narcan. Other participants reported that they would like the hospital to do more to reduce the stigma about mental health and promote positive messaging about mental health, especially within schools. One participant suggested more mental health-related support groups.
- ***Support prevention programs*.** Numerous participants reported that the hospital could play a greater role in promoting prevention. They suggested several activities including underwriting YMCA/gym membership for children and youth at risk for obesity, increasing education about pregnancy prevention and access to birth control, sponsoring low cost or free immunizations, and establishing a diabetes clinic for children and youth (to avoid the need to travel to Boston).
- ***Provide more community education.*** More community education was also suggested by focus group participants and interviewees. This too was a prominent theme in the 2016 CHNA. As one participant mentioned, *"I think hospitals should do outreach as far as health issues. Whether it is holding forums or something else. I see them as getting out the messages out into the community regarding health."* Participants provided several ideas for community education topics, including more information about vaccination to correct the misinformation about vaccines, diabetes prevention education, new parent training, and information about STDs. Additional formats for providing community education included health fairs and educational summer programs.
- ***Support health care navigation.*** Participants working with seniors suggested that the hospital support health care navigation services, including those for mental health care. As one person stated, *"Having that one person to help at the doctor's office to help connect would be really beneficial."*
- ***Centralize social services and supports***. Some participants from social services suggested establishing co-located services – a *"one-stop shop"* in the words of one participant where residents could access multiple services. This was seen as a way to address transportation barriers residents face in accessing services. Another suggestion was to streamline the process of applying for benefits and social services through the use of a common application form.
- ***Convene stakeholders:*** In addition to providing high-quality health care, one interviewee suggested that the hospital *"use its position in the community as an influencer to convene different stakeholders to help understand the related areas (e.g., nutrition, food, etc.). Not tackle it on their own, but raise awareness – bring people [together]."*
- ***Engage more with community-based organizations***. Interviewees from community-based organizations invited the hospital to collaborate with them to expand services and reach populations the hospital may have trouble reaching. As one participant shared, *"If they are not working in a community-based setting…they don't know what the experience or struggle is like, so they don't know how to talk or communicate with them."* Collaboration with other organizations also emerged as a recommendation in 2016. Participants identified potential partners in the community that Lawrence General could either develop or expand partnerships to address community health needs:
    - The Mayor's Behavioral Health Task Force & Mayor's Task Force on Homelessness
    - Lawrence Family Resource Center
    - Corun Um at St Patrick's, Food for the World, and Neighbors in Need relative to food access.
    - Food for the World
    - Shelters and libraries

    - Lazarus House and The Psychological Center
    - Commonwealth Trust
    - The methadone clinic in Lawrence
- ***Address social determinants of health*.**
    - **Transportation**. A couple of participants suggested the hospital support transportation services for patients by working with community-based organizations and doctor's offices to coordinate appointment scheduling.
    - **Homeless.** Interviewees working with the homeless population recommended that the hospital address long-term needs of homeless patients, including assisting with housing after a hospital stay and connecting them to other needed social services. One participant suggested that the hospital establish a department for homelessness.

Perceptions of Lawrence General Hospital

When focus group participants and interviewees were asked about their perceptions of the hospital it was seen as a strong community resource. It was described a good hospital, with high community trust. Participants working with seniors reported that they refer seniors to mental health services at the hospital. As one person stated, *"Lawrence General has a very good reputation for getting people in and out well."* At the same time, some participants shared that due to the location of the hospital being in "*not the best area of Lawrence*" there is stigma about going to that area of the city.

However, one interviewee shared a negative perspective, saying that *"The only feedback I have is that when individuals go into the ER they are not treated too well (as people) and when they are released they are just put back on the street without the connection to resources they might need."*

When asked about LGH's community-based work, as in 2016, few informants for this CHNA could cite specific examples, with most noting that they were not aware of nor had heard of any. Those working in schools reported some collaboration with the hospital. One interviewee reported increased collaboration around addressing the needs of those who come to the Emergency Department for substance use. Others reported little collaboration with the hospital; as one participant shared, *"We don't have a lot of communication with [hospitals] until there is a crisis."*

CONCLUSIONS

This report utilized available secondary data, a community resident and provider survey, and interviews and focus groups with community leaders to provide an overview of the health of the Lawrence General Hospital service area. Overall this report provides a portrait of the health conditions and behaviors affecting the service area residents and perceived strengths and challenges in the current environment.

The key health issues that emerged as areas of potential concern in the CHNA were mentioned in the community resident and provider survey, interviews and focus groups, and supported by secondary data. Many of the following 2019 themes resonate with the 2016 assessment findings:

- Social Determinants of Health
  - Housing
  - Transportation
- Chronic Disease
  - Diabetes
  - Obesity
- Aging Population
- Behavioral Health
  - Mental Health
  - Substance Use Disorders
- Health Care Access

Overarching conclusions that cut across multiple topic areas include:

- **The service area is demographically and economically diverse and in the past three years the service area has grown modestly.** The majority of the population in the service area is 18-64, but some communities have a higher proportion of under 18, like Andover and Lawrence, while Middleton and Boxford have a higher proportion of adults 65 years and older. While many communities in the service area are majority non-Hispanic White, there are communities like Lawrence, Haverhill and Methuen where large segments of the population are minority (in particular Hispanic). The distribution of these demographics also has a clear economic relationship. For example, Lawrence, Haverhill and Methuen have the lowest median household incomes and highest number of families in poverty in the service area. Generally, these trends were seen in the 2016 report as well.

  Race/ethnicity, age, education and income have all been associated with health disparities – the findings of this report further exemplify this association for the service area's residents. Through the report process specific populations were identified (e.g., youth, homeless, immigrant) as priority populations to learn about specific health needs. As was reported in the 2016 report, the cultural, language, and economic diversity of area residents presents significant challenges when delivering services and care that aim to meet the multitude of needs across the region.

- **Housing and transportation were highlighted as barriers to individual's health status.** Participants discussed a growing concern for the well-being of those who are experiencing homelessness, as well as for Lawrence as a whole, as it creates a negative perception of the community. Respondents reported high levels of dissatisfaction with affordable housing in the area, and community level data showed that over half of renters in four of the eight communities spend more than 30% of their income on rent. Transportation was also discussed by participants as a barrier in accessing services

in the community including health care. This was particularly noted as a concern in the smaller communities without a public transportation system.

- **Chronic disease, including diabetes and obesity, were identified as individual or family concerns by providers and residents. Interview and focus group** participants discussed the prevalence and impact of chronic diseases and their related risk factors. Behaviors like unhealthy eating and lack of physical activity were mentioned as barriers for many individuals, due to the high cost of health foods and limited opportunities for affordable physical activity programs.

- **Over the last decade the proportion of the population 65 years old and over has increased across the service area and the unique health needs of the aging population were noted by residents and providers.** Participants discussed issues affecting the elderly population and voiced concerns about access to and cost of health care, housing, social isolation, and chronic conditions. Specifically, Alzheimer's and dementia were identified as growing concerns for elders in the community. Across the service area incidence ranges from a low in Boxford of 10.3% of adults 65 years and older with Alzheimer's disease or related dementia to the highest of 17.7% in Lawrence. Participants discussed the desire for many elders to age in place, but that it can be difficult for individuals or families to equip homes with the necessary accommodations as well as afford to stay in their homes.

- **Behavioral health, specifically access to mental health providers and substance use disorders continue to be concerns in the community.** As in 2016, interview and focus group participants as well as survey respondents raised concerns around the need for mental health services and the difficulty obtaining those services for the community. Participants identified a shortage of mental health providers and lack of providers who accept MassHealth as barriers. Provider survey respondents identified providing more counseling or mental health services as a top priority to address in the future.

  Residents and providers again named drug use as the top community health concern. Community level data showed continued opioid-use, overdose and opioid-related death across the service area. The need for prevention and treatment programs were highlighted by participants.

- **Residents continue to express concerns around equitable access to health care.** Access to health care - including cost, lack of providers, affordability of prescriptions, and insurance coverage - was described as challenging, especially for the lower income, homeless and immigrant populations of Lawrence. According to participants, this is partially due to a decreasing number of health care access points from clinics closing, merging, and getting bought out. Participants also discussed the type of health insurance you have as another challenge—for those who do have MassHealth many specialists do not accept this insurance. Across the service area for those with health insurance who have public coverage (e.g., MassHealth, Medicare) it ranges from 18.5% in Andover to 64.2% in Lawrence.

- **Strong sense of community.** Participants often named resiliency, particularly of lower income and immigrant families in Lawrence as a strength of the community. The community was described as having strong family and community values, where everyone supports each other. Community member support for social service organizations was also mentioned as an example of the civic-mindedness of community residents.

PRIORITY HEALTH NEEDS OF THE COMMUNITY

In July 2019, members of the Steering Committee reviewed the needs identified by the CHNA, including the magnitude and severity of these issues and their impact on the most vulnerable populations. This included mapping current and emerging programs against these needs. This process determined that all of the needs identified in the CHNA are being addressed by Lawrence General Hospital in collaboration with community partners and will be included in the implementation strategy in the following categories:

- Chronic Disease
    - Diabetes
    - Obesity
- Aging Population
- Behavioral Health
    - Mental Health
    - Substance Use Disorders
- Health Care Access

Lawrence General Hospital also recognizes the important role that social determinants of health across these needs.

Appendices

Appendix I: Review of Initiatives

As a result of the key findings from the 2016 Community Health Needs Assessment (CHNA), Lawrence General Hospital identified three priority areas, each of which aligned with an identified community health need: 1) behavioral health, including mental health and drug addiction services; 2) chronic disease, including obesity and diabetes; and 3) health care access. Since the 2016 Needs Assessment, Lawrence General Hospital has provided a variety of services and programming to address these specific needs in the community.

Activities, Services and Programs listed in 2016 Implementation Strategy	Comment on Activity, Service and/or Program	Number of Community Residents Served, Number of Classes Offered, etc.		
		FY 2016	FY 2017	FY 2018
Priority Area: Behavioral Health (Mental Health and Drug Addiction Services)				
Added resources in primary care setting, integrated primary care and behavioral health	Developed a plan for the hospital-based psychiatrist to offer outpatient psych at Community Medical Associates (CMA).	Plan for outpatient psychiatry at CMA was put on hold when hospital-based psychiatrist left the hospital to take another position out of state.	Partnered with Greater Lawrence Family Health Center and Always Health Partners to form an accountable care organization for qualifying Medicaid beneficiaries. ACO design goals included integration of and improved access to behavioral health services.	• Opened recruitment for Psychiatrist at CMA. • Increased access to BH providers and care management for My Care Family accountable care organization members (Approximately 34,000 area residents).
Establish closer partnerships with community-based providers	Established close alignment and collaboration with community-based providers and community organizations to manage total cost of care and quality within risk contracts.	Management of behavioral health super utilizers in emergency, in close coordination with Greater Lawrence Family Health Center and optimizing relationship with Lahey Behavioral Health	Developed new partnerships with social service and behavioral health organizations to plan for Medicaid ACO transition.	My Care Family (Medicaid ACO) Community Partner program launched, 740 members enrolled in behavioral health care management program, 426 enrolled in long term social supports program.
Revising substance abuse protocols on the inpatient side to increase use of suboxone,	1) Revision of EtOH Withdrawal Orders 2) Pain Management Education Series	1) Initiated benzo w/d protocol	2) Scope of Pain Grand Round Series	3) Addiction Grand Round Series

Activities, Services and Programs listed in 2016 Implementation Strategy	Comment on Activity, Service and/or Program	Number of Community Residents Served, Number of Classes Offered, etc.		
		FY 2016	FY 2017	FY 2018
in partnership with Greater Lawrence Family Health Center on the outpatient side	3) Addiction Management Education Series 4) SUD Consult Service 5) Review of Hospital Discharge Narcotic Rxs 6) Revision of Opioid Withdrawal protocols 7) Bridge Clinic MAT Initiation 8) Narcan Training for Security Team		5) Reviewed outliers in narcotic Rxs. In compliance. 6) Opioid withdrawal/Methadone replacement protocol initiation. PDSA cycle demonstrating decreased AMA discharges.	4) Initiation of Inpatient Consult service. 50 patients evaluated and initiated or maintained on MAT 7) planning for Bridge Clinic 8) Training of Narcan administration by security team
Develop more effective protocols to address the medical and social needs of Neonatal Abstinence Syndrome babies and mothers with opioid use disorder.	Recipient of Health Policy Commission (HPC) grant to improve care of NAS babies. Interventions included dedicated Social Worker, outreach to pregnant moms using opioids or methadone, development of robust volunteer infant cuddler program to reduce need for pharmacological treatment of NAS.	Planning and PDSA cycles on protocols for NAS program expansion	• 23 families served. • >1000 volunteer infant cuddler service hours (increased from 320 hours in FY 2016). • Staff education to raise awareness, increase empathy for NAS babies/families.	• 29 families served. • >750 volunteer infant cuddler service hours. • Dedicated RN Care Manager to follow families post-discharge.
Identify socially complex patients with substance abuse and behavioral health needs for more intensive management post-discharge	Recipient of Community Hospital Acceleration, Revitalization, and Transformation (CHART) grant (2015-2017). Screened all admitted patients for risk of readmission, partnered with Elder Services of Merrimack Valley (ESMV) to improve care transitions and coordination, address social determinants of health, and prevent re-hospitalizations.	Average of 39 patients enrolled monthly.	• Average of 71 patients enrolled monthly. • CHART grant completed at the end of June 2017.	CHART team reallocated to My Care Family ACO care management team, lessons learned from CHART used to inform care delivery redesign.
Priority Area: Chronic Disease (Diabetes and Obesity)				
Public education sessions on obesity treatment options and surgery	Offer bimonthly informational sessions to discuss complications of morbid obesity as well as bariatric surgery options and outcomes.	12 English sessions and 12 Spanish sessions offered annually, serving approx. 120 residents.	12 English sessions and 12 Spanish sessions annually, serving approx. 240 residents.	12 English sessions and 12 Spanish sessions annually, serving approx. 360 residents.

Activities, Services and Programs listed in 2016 Implementation Strategy	Comment on Activity, Service and/or Program	Number of Community Residents Served, Number of Classes Offered, etc.		
		FY 2016	FY 2017	FY 2018
Community-based programs to support Diabetes control among patients	Provided support to community physicians to engage patients with diabetes in preventive screenings for retinopathy, neuropathy, HbA1c, and blood pressure control.	Population Health management assistance provided to BIDCO physicians to ensure diabetes-related quality metrics were achieved.	Population Health management assistance provided to BIDCO physicians to ensure diabetes-related quality metrics were achieved.	Population Health management assistance provided to BIDCO and My Care Family physicians to ensure diabetes-related quality metrics were achieved.
Expanded bariatric surgery program, with bilingual providers	Expanded bariatric surgery program, with bilingual providers.	Bariatric staff expanded to include a bilingual office coordinator, and medical assistant.	Expanded staff to include bilingual psychologist.	Medical Assistant and Office Coordinator certified as hospital-approved medical interpreters.
Wellness programming including Weight Watchers, running club, Let's Get Healthy, etc. for the 1800 employees of LGH, who are working in the community	Employee Wellness programming expanded over three years to include additional opportunities to pursue weight management, physical activity, stress reduction, mindfulness and a healthy lifestyle. Offerings included: • Onsite Weight Watchers, yoga, exercise, Reiki therapy, massage therapy, cooking and nutrition, mindfulness meditation, and smoking cessation • Biometric screenings • Annual Wellness and Fitness Fairs • Running club with local 5K races • Discounted gym memberships	Biometric Screenings: 187 screenings; Weight Watchers Program: 19 participants; Walking Challenge: 30 participants; Walking on Wednesdays: 25 part; Yoga Classes: 10 part; Massage Therapy: 110 sessions; Cooking Class: 8 participants Wellness Fair – 200+ participants	Weight Watchers -12 part; Wellness Challenge -22 part.; Walking on Wednesdays – 20 part; Yoga Classes- 30 part; Mindfulness Meditation 5week series – 20 part; Smoking Cessation Seminar: 12 part; Reiki Therapy; 60 sessions; Massage Therapy: 130 sessions; 4 Nutritional Education classes – 20 part; Wellness Fair – 300+	Fitness Fair – 200+; HealthyWage Weight Loss Challenge – 44 part. Total weight loss 500lbs; Walking/ Step Challenge: 12 part.; Healthy Meal Prep Classes: 17 part; Chair Yoga & Various exercise classes: 40 parts. Gardening Club – 5 part; Massage Therapy: 140 sessions; Reiki Therapy: 120 sessions; Diabetes Education Workshop: 20 part.; Wellness Fair: 350+ Meditation Mondays; 30+
Community health events sponsorship and participation throughout the year	Varied presence and contributions at local events, including diabetes education, childhood trauma/ trauma prevention information, breast health outreach/ screenings, medication education, heart disease and stroke prevention, vaping/ smoking and nutritional education, cancer outreach/ screenings, etc.	Presence at community events related to: Breast Health, Prostate Health, Car Seat Safety, Rape Crisis, Childhood Trauma, Bike Safety/ Injury Prevention, Diabetes, ARC Blood Drives, Stroke, Heart	Presence at community events related to: Latina Breast Health, Prostate Health, Car Seat Safety, Rape Crisis, Childhood Trauma, Bike Safety/ Injury Prevention, ARC Blood Drives, Stroke, Heart Health, Active	Presence at community events related to: Neighborhood Health discussions, Breast & Prostate Health, Car Seat Safety, Rape Crisis, Childhood Trauma, Bike Safety/ Injury Prevention, ARC Blood Drives, Stroke,

Activities, Services and Programs listed in 2016 Implementation Strategy	Comment on Activity, Service and/or Program	Number of Community Residents Served, Number of Classes Offered, etc.		
		FY 2016	FY 2017	FY 2018
	Created various partnerships throughout the Merrimack Valley in collaboration with health education and preventive programming, screenings, bike helmet giveaways/ fittings and health & wellness events.	Health, Active Living, Skin and Cancer screenings, youth risk and attended 7 wellness/ health fairs. - Sponsored various health initiatives in the Merrimack Valley supporting access to healthcare & healthy food programs, rehabilitation, physical activities, road races, health education and preventative programs for youth, adult and elder populations. - Donated EMS personnel and ambulance presence at multiple public events including bike safety programs, health fairs, road races, promoting community building, wellness, health and safety initiatives.	Living, Drivers Class for Aging population, Skin and Cancer screenings, and attended 10 wellness/ health fairs. - Sponsored various health initiatives in the Merrimack Valley supporting access to healthcare & healthy food programs, physical activities, road races, health education and preventative programs for youth, adult and elder populations. - Donated EMS personnel and ambulance presence at multiple public events including bike safety programs, health fairs, road races, promoting community building, wellness, health and safety initiatives.	Cardiovascular Health, Risks/ Disease Prevention, Active Living, Skin and Cancer screenings, Smoking/Vaping education, nutrition education and attended 12 wellness/ health fairs. - Sponsored various health initiatives in the Merrimack Valley supporting access to healthcare & healthy food programs, physical activities, road races, health education and preventative programs for youth, adult and elder populations. - Donated EMS personnel and ambulance presence at multiple public events including bike safety programs, health fairs, road races, promoting community building, wellness, health and safety initiatives. - Donated EMS personnel and ambulance presence at multiple public events including bike safety programs, health fairs, road races, promoting

Activities, Services and Programs listed in 2016 Implementation Strategy	Comment on Activity, Service and/or Program	Number of Community Residents Served, Number of Classes Offered, etc.		
		FY 2016	FY 2017	FY 2018
				community building, wellness, health and safety initiative
Shared Palliative Care nurse practitioner resource to address chronic disease management	Palliative Care NP shared with Home Health VNA (HHVNA) to provide outpatient palliative support and bridge patients to hospice as needed.	Palliative Care NP hired, protocols developed for delivering palliative support to patients discharged home with HHVNA services.	Palliative Care NP position vacated.	New partnership formed with Pathways VNA, a physician-led homecare company able to provide outpatient palliative support as needed.
Priority Area: Health Care Access				
Opening multi-specialty suite of services in Andover to provide a variety of surgical specialty, i.e. Vascular, thoracic and women's health (GYN surgery, fertility, women's health rehabilitation services)	Opening multi-specialty suite of services in Andover to provide a variety of surgical specialty, i.e. Vascular, thoracic and women's health (GYN surgery, fertility, women's health rehabilitation services)	Plan to open Multi-specialty Clinic and Outpatient Rehabilitation Services at Andover Medical Center (AMC)	Construction in process for new West Tower of Andover Medical Center	Opened Multi-specialty Suite and Outpatient Physical, Occupational, and Speech Therapy at Andover Medical Center. Multispecialty services inclusive of Weight Management Clinic, Vascular Clinic, and Pedi Cardiology Clinic.
Increasing primary care locations in the hospital service area to offer more access to primary care	Increasing primary care locations in the hospital service area to offer more access to primary care	-Plan to open Andover location for Community Medical Associates Primary Care at YMCA. -Opened three new PC sites in Methuen, Andover and Salem, NH in partnership with Beth Israel Deaconess Healthcare (additional 5 providers)	Opened Community Medical Associates primary care clinic at the Andover/N Andover YMCA, -additional CMA provider Andover -Added additional primary care provider Salem, NH	Continued to serve surrounding communities and grow patient panels in Methuen, Andover, and Salem, NH, -additional provider at CMA Lawrence
Expanding capacity of the Lawrence General Interpreter services, use of Stratus online interpreter tool	1. Ensure adequate interpreter coverage to meet patient needs 24/7	ED: 24/7 Live Interpreter Coverage. • 1 Day Interpreters	ED: 24/7 Live Interpreter Coverage. • 1 Day Interpreters	ED: 24/7 Live Interpreter Coverage. • 1 Day Interpreters

Activities, Services and Programs listed in 2016 Implementation Strategy	Comment on Activity, Service and/or Program	Number of Community Residents Served, Number of Classes Offered, etc.		
		FY 2016	FY 2017	FY 2018
	2. All interpreters round on all units to ensure appropriate preferred language is documented for the patient in the EHR. 3. Stratus: Video Remote Interpreting (VRI) located in each unit. – All languages available 4. IPOP: Interpreter Phone on a Pole (IPOPs) located in each unit. – All languages	• 1 Evening • 1 Night • VRI/IPOP Equipment: In-house: 630am-Midnight Live Interpreter Coverage. • 4 Day Interpreters • 1 Evening Interpreter (330-12) • All unit phones have sticker for toll-free Stratus on demand phone interpreters. • VRI/IPOP Equipment: 1 of each on each unit	• 1 Evening • 1 Night • VRI/IPOP Equipment: In-house: 630am-Midnight Live Interpreter Coverage. • 4 Day Interpreters • 1 Evening Interpreter (330-12) • All unit phones have a Phone Interpreter Sticker on it toll-free Stratus on demand phone interpreters. • VRI/IPOP Equipment: 1 of each on each unit	• 1 Evening • 1 Night • VRI/IPOP Equipment: In-house: 630am-Midnight Live Interpreter Coverage. • 4 Day Interpreters • 1 Evening Interpreter (330-12) • All unit phones have a Phone Interpreter Sticker on it toll-free Stratus on demand phone interpreters. • VRI/IPOP Equipment: 1 of each on each unit
Ongoing development of onsite medical and surgical specialty services to keep patients local	Increase surgical team and half-time dietician to support and grow the Bariatric program. Provide bi-lingual Bariatric education information sessions. Increase clinical staff to support spine, hips and knees surgical procedures. Complete construction of new state of the art surgical center with hybrid surgical room.	-Final phase of master facility plan of new surgical center. -Introduction of ortho-traumatology service, with employed surgeon	Added 2 Bariatric surgeons to surgical team. Also, a full time Nurse Practitioner. Added Nurse Coordinator to provide comprehensive pre-surgical, peri and post-surgical continuity to Spine program. 2 additional upper extremity ortho surgeons brought to community Opening of the Santagati Surgical Center with hybrid surgical room.	Added an additional Bariatric surgeon and full time Dietician. Added Hips & Knees to the Nurse Coordinator responsibilities for similar program development. Reinvigorated Vascular Surgery program to serve growing need for local resource, in concert with new surgical capabilities Provided new access to thoracic surgery through partnership with Lahey Health

Activities, Services and Programs listed in 2016 Implementation Strategy	Comment on Activity, Service and/or Program	Number of Community Residents Served, Number of Classes Offered, etc.		
		FY 2016	FY 2017	FY 2018
Increased capacity for intensive care services, preventing the need to transfer into Boston	Decreased patient transfers to Boston through consolidation of Intensive Care services, addition of physician intensivist services, and close oversight by an interdisciplinary Transfer Review Team.	• Combined 2 intensive care units to form a 19 bed ICU with physician intensivist oversight. • Expanded access to specialists, increased surgical services, provided education and training to ICU staff, new workflows to expedite patient flow from ED to ICU.	Continued work begun in FY16 with Transfer Review team oversight.	Over 40% reduction in transfers.
Continued collaboration with a network of post-acute partners, creating co-managed clinical guidelines and protocols to further assist in coordination of care of our shared patients across the continuum.	Established community collaborative consisting of preferred post-acute providers to improve care transitions and prevent readmissions.	Hosted regular meetings with community collaborative members, facilitated dialogue. Included select community-based post acutes in Physician-Hospital Organization to increase collaboration	Continued to develop existing relationships through community meetings and PHO work and relationships. Added more post-acute members to PHO.	-Changed name of PHO to Merrimack Health Network to better represent the continuum of provider members. -Implemented a single CHF patient education tool that follows patients across the care continuum to improve self-management and decrease readmissions.

Appendix II: Committee List(s)

STEERING COMMITTEE		
Name	**Title**	**Organization**
Steve Crowell	Development Associate	Greater Lawrence Family Health Center
Elizabeth Delgado	Project Coordinator	Lawrence General Hospital
Bill Ewing	Marketing & Communications Operations Manager	Lawrence General Hospital
Nicole Garabedian	Director of Integrated Care	Lawrence General Hospital
Robin Hynds - RN	Chief Clinical Integration Officer, VP of Care Continuum & Network Development, Executive Director of Merrimack Health Network	Lawrence General Hospital
Jill McDonald Halsey	Chief Marketing & Communications Officer	Lawrence General Hospital
Gabrielle Ross	Board of Trustee	Lawrence General Hospital
LaShaun Shaw	Director of Operations	My Care My Family - MVACO
Sandra Silva	Assistant Vice President of Community Support Services	Greater Lawrence Family Health Center
Christina Wolf - RN	Director of Population Health	Lawrence General Hospital

ADVISORY COMMITTEE	
Name	**Company**
Adriana Estevez	YouForward
Amy Ewing	Town of Methuen
Annmary Connor	Town of Andover
Brian LaGrasse	Town of North Andover
Captain Kevin Mahoney	Methuen Police Department
Carina Pappalardo	The Psychological Center
Caroline Ibbitson	Town of North Andover
Cheryl Barczak	North Andover Public Schools
Cheryl Barczak	North Andover Public Schools
Christine Tardiff	Elder Services of Merrimack Valley
Claudia Soo Hoo	Merrimack Valley YMCA
Diane Martin	Greater Lawrence Family Health Center
Dianne Anderson	Lawrence General Hospital
Donna Deaveau	Home Health VNA/ MV Hospice Homecare
Dr. Nathan Macedo	Greater Lawrence Family Health Center
Dr. Torkom Garabedian	Community Medical Associates
Elecia Miller	City of Lawrence (Mayor's Health Task Force)

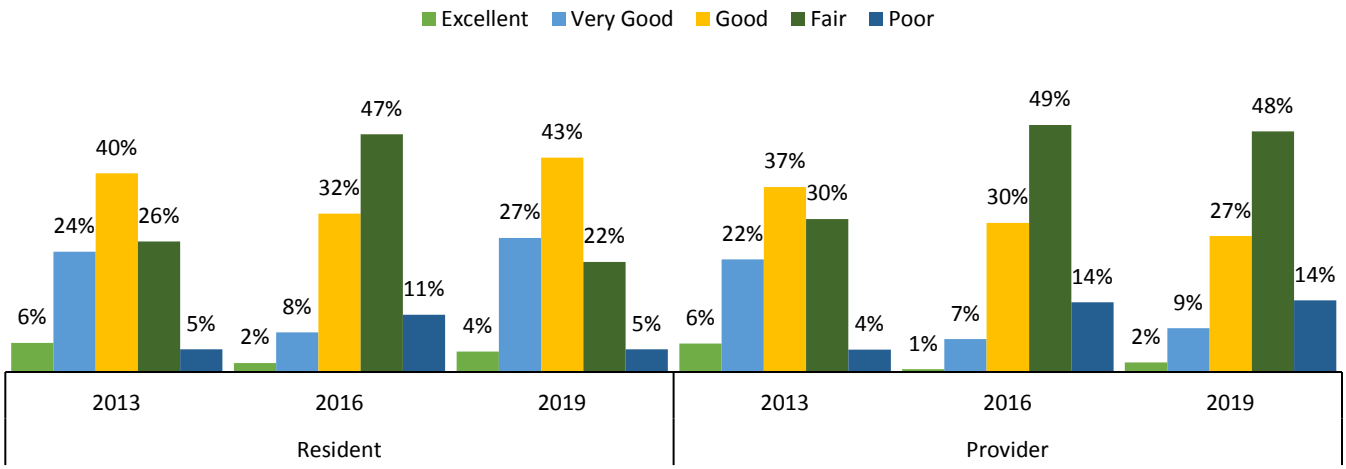
Evelin Velez	ACO – My Care Family
Fran Moss	Lawrence General Hospital
Heather Topp	Lawrence General Hospital
Jackie Aguilar	City of Lawrence
Janel D'Agata-Lynch	Northern Essex Community College
Jeffrey Osgood	Methuen Public Schools
Jessica Hatch	Pentucket Medical Associates
John Crocker	Methuen Public Schools
Kelly Clark	Lawrence General Hospital
Lee Schurter	Communities Together, Inc.
Lindsey Lerit	YMCA Merrimack Valley
Liz Sweeney	Family Services of Merrimack Valley
Lizoette Young	Lawrence Public Schools
Lt. Dan Fleming	Lawrence Police Department
Mark Kempic	Columbia Gas Disaster Contact
Martha Velez	Lawrence Senior Center
Melissa Carroll	Lawrence General Hospital
Minerva Grullon	City of Lawrence (Mayor's Health Task Force)
Natalie Stahl, MD	Greater Lawrence Family Health Center
Ninda Munson	Elder Services of Merrimack Valley
Nelson Butten	Lawrence Public Schools
Nicholas Weida	Greater Lawrence Family Health Center
Nieves Rios Moya	Lawrence General Hospital
Paul Brennan	Lawrence General Hospital
Russ Cullen	Motion Physical Therapy
Ryan Dono	Greater Lawrence Family Health Center
Sitha Bou	Mary Immaculate Nursing/ Restorative Center
State Rep, Marcos Devers	Commonwealth of Massachusetts
Sue Colby	Lawrence General Hospital
Tarsira Melo	Lawrence Police Department
Thomas Carbone	Town of Andover
Tyrone Scott	Lahey Behavioral Health Services
Wismelda Perez	City of Lawrence (Mayor's Health Task Force)

Appendix III: Data Tables

Percent Age Distribution by Service Area and Community, 2014 and 2017										
	Under 18 yrs old		18 to 24 yrs old		25 to 44 yrs old		45 to 64 yrs old		65 yrs and older	
	2014	2017	2014	2017	2014	2017	2014	2017	2014	2017
Primary Service Area										
Andover	26.4	25.5	8.6	8.9	19.8	19.4	31.3	31.9	13.9	14.3
Lawrence	28.0	26.5	12.5	12.5	28.3	29.1	22.3	22.0	8.9	9.8
Methuen	23.5	22.2	8.7	9.8	25.5	25.4	28.2	28.0	14.3	14.6
N. Andover	23.5	23.8	9.4	9.4	23.3	23.3	29.5	29.1	14.4	14.5
Secondary Service Area										
Boxford	25.4	23.9	4.5	6.1	21.0	19.4	34.1	33.7	15.2	16.9
Georgetown	26.9	23.7	5.9	5.7	20.7	19.4	32.4	35.4	14.1	15.8
Haverhill	22.9	23.3	8.5	7.8	27.9	28.0	27.7	28.5	13.0	12.5
Middleton	19.9	19.1	8.0	10.9	28.6	21.7	29.2	30.5	14.4	17.8

Data Source: 2011 American Community Survey 5-Year Estimates, 2007-2011; 2014 American Community Survey 5-Year Estimates, 2010-2014; 2017 American Community Survey 5-Year Estimates, 2013-2017

Perceived Community Health Status by Survey Respondent Role, 2013, 2016 and 2019



Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2013; Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019

Top Five Community Concerns by Survey Respondent Role, 2013, 2016, and 2019

Resident Community Concerns			Provider Community Concerns		
2013	2016	2019	2013	2016	2019
Obesity/ overweight	Drug use	Drug use	Diabetes	Drug use	Drug use
Alcohol use/Drug Use	Obesity/ overweight	Depression or other mental health issues	Obesity/ overweight	Depression or other mental health issues	Depression or other mental health/behavioral health issues
Cancer	Access to health care	Access to health care	Alcohol use/Drug Use	Access to health care	Access to health care
Depression or other mental health issues	Depression or other mental health issues	Obesity/ overweight	Depression or other mental health issues	Obesity/ overweight	Obesity/overweight
Diabetes	Drug overdose/Access to Narcan	Drug overdose/Access to Narcan to prevent opioid overdose	Heart disease/ heart attacks	Diabetes	Diabetes

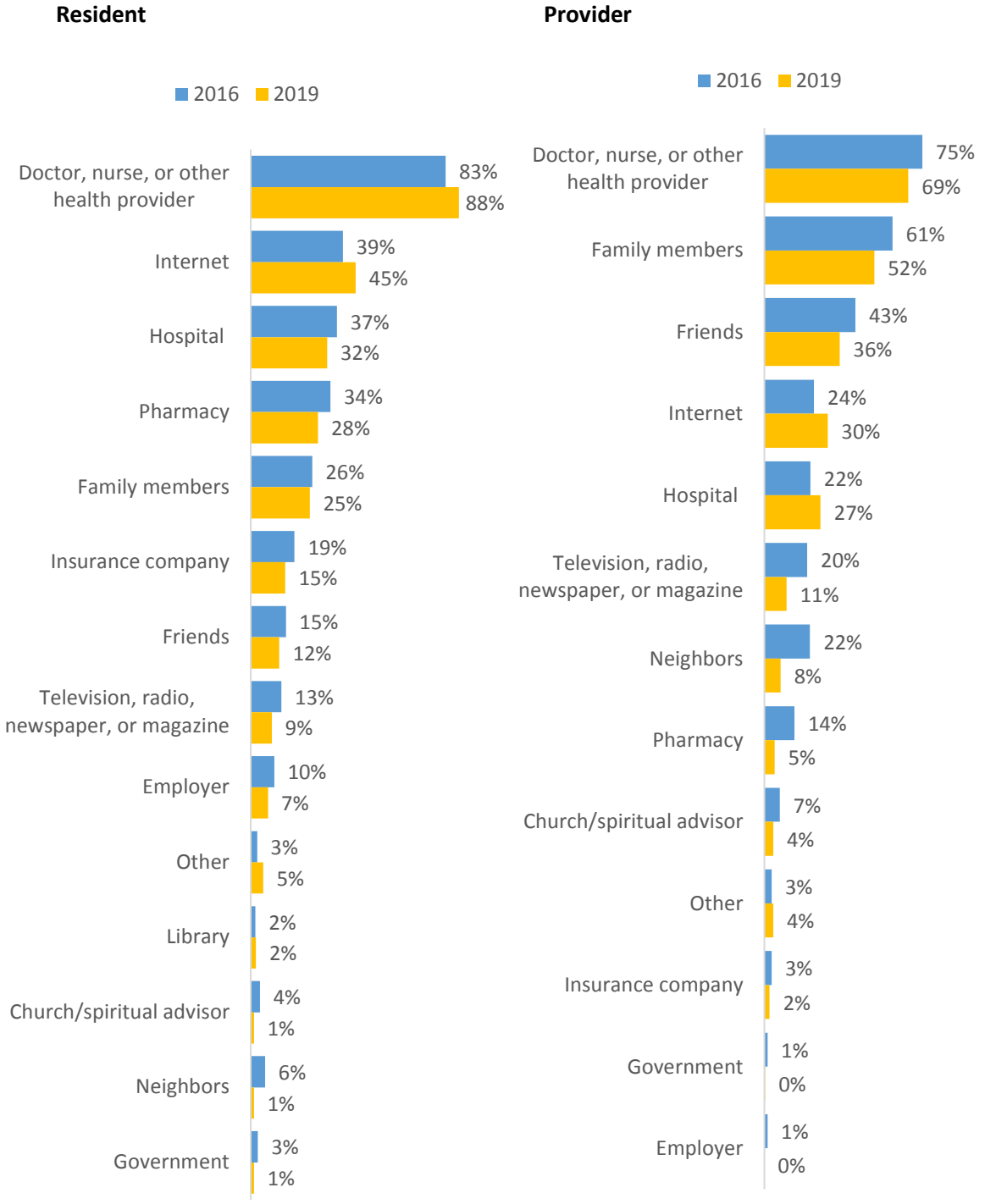
Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2013; Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019

Table 13
Percent of Respondents who Perceived the Following Statements to be True about their (their Patient/Client's) Community by Role, 2016 and 2019

	Residents		Providers	
	2016	**2019**	**2016**	**2019**
The health care institutions in my (my patient's/client's) community should provide more education on prevention of diseases or health conditions	87%	82%	87%	88%
Public transportation is not always convenient when trying to get to medical/dental services *	69%	70%	75%	71%
When trying to get medical care, I (my patient's/client's) have had a negative experience with office staff	38%	37%	43%	40%
I (my patient/client) or someone in my (my patient's/client's) household has not received the medical care needed because the costs were too high	38%	37%	45%	52%
When trying to get medical care, I have felt discriminated against because of my race, ethnicity, or language	9%	8%	27%	32%
When trying to get medical care, I have felt discriminated against because of my income	17%	13%	28%	30%
If I needed medical services I (my patient/client) would know where to go for them	87%	85%	58%	54%
Medical services are available at convenient times	77%	72%	75%	76%
Medical services are available at convenient locations	83%	81%	81%	79%

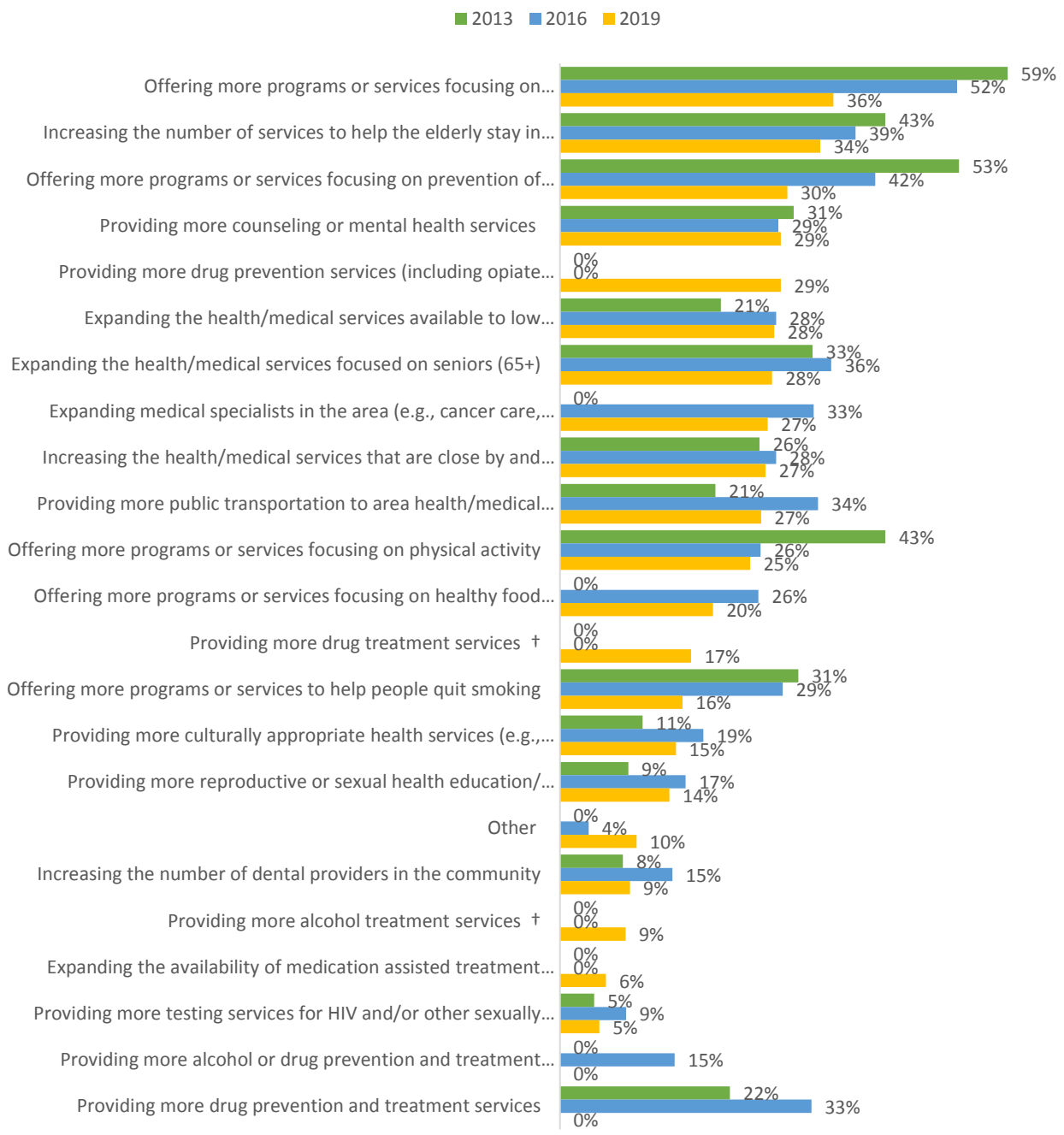
Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Asterisk (*) denotes slight change in wording from 2013 to 2016

Survey Respondents' Sources of Health Information, by Respondent Role, 2016 and 2019



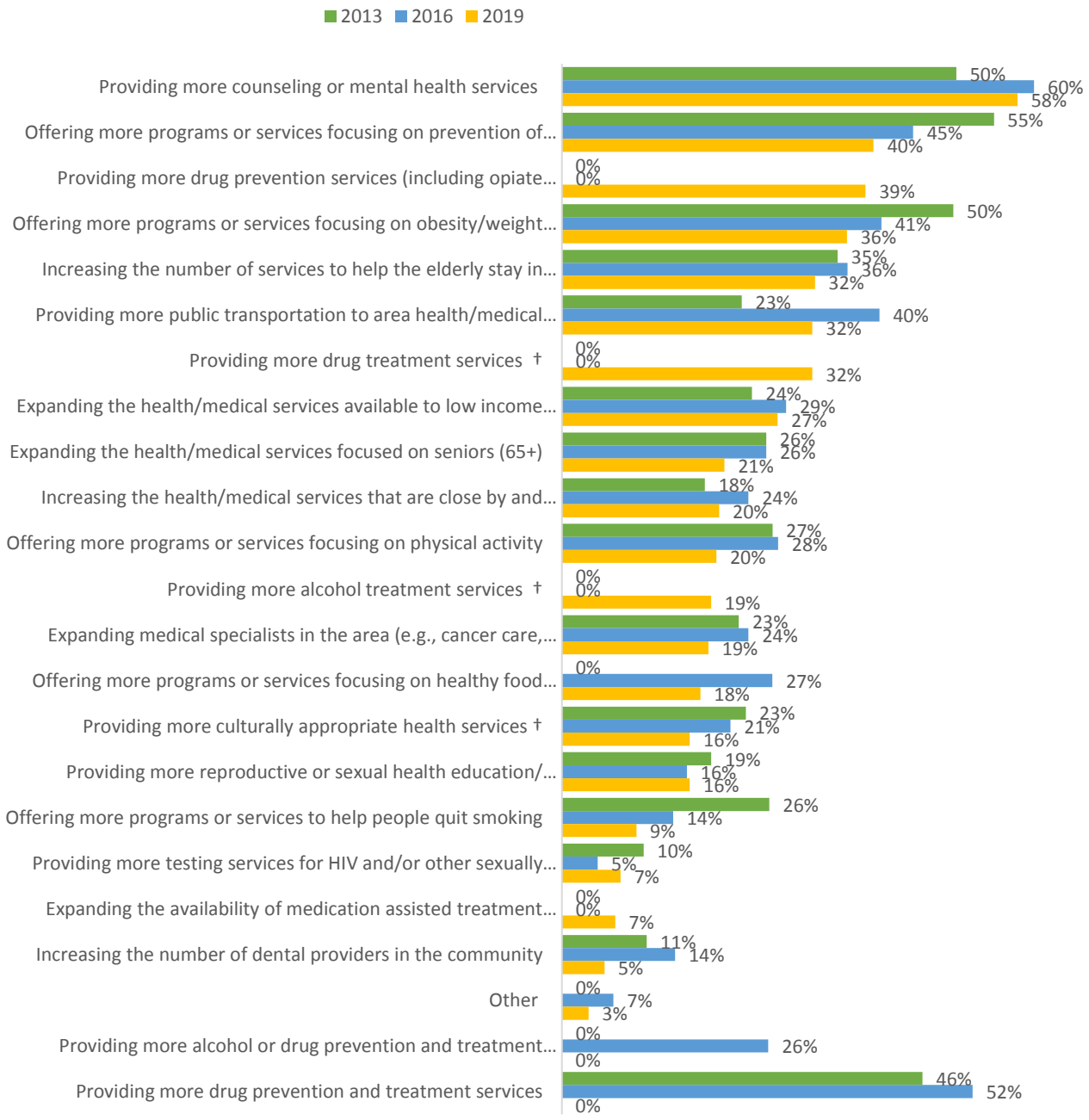
Data Source: Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019

Residents' Top Priority Areas for the Future, 2013, 2016 and 2019



Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2013; Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Cross (†) denotes addition or slight change in response option from 2016 to 2019 survey; respondents were asked to select top 5 issues; therefore, percentages may not sum to 100%

Providers Top Priority Areas for the Future, 2013, 2016 and 2019



Data Source: Lawrence General Hospital Community Health Needs Assessment Survey, 2013; Lawrence General Hospital and Greater Lawrence Family Health Center Community Health Needs Assessment Survey, 2016; Lawrence General Hospital Community Health Needs Assessment Survey, 2019
Note: Cross (†) denotes addition or slight change in response option from 2016 to 2019 survey; respondents were asked to select top 5 issues; therefore, percentages may not sum to 100%