UMass Memorial Health HealthAlliance-Clinton Hospital 2021 Community Health Needs Assessment

UMass Memorial Health
HEALTHALLIANCE-CLINTON HOSPITAL

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Introduction

This report serves as UMass Memorial Health – HealthAlliance-Clinton Hospital's 2021 Community Health Needs Assessment. The following chapters present qualitative and quantitative data for the UMass Memorial Health - HealthAlliance-Clinton Hospital Service Area.

Acknowledgement

Study Partners

Partners in this study include the UMass Memorial Health - HealthAlliance-Clinton Hospital, Montachusett Regional Planning Commission (MRPC), Heywood Healthcare, North Quabbin Community Coalition (NQCC), and the Community Health Network of North Central Massachusetts CHNA 9 Group (CHNA-9). Descriptions of these organizations are provided below:

UMass Memorial Health - HealthAlliance-Clinton Hospital

UMass Memorial Health - HealthAlliance-Clinton Hospital is a not-for-profit, full service, acute care hospital with a primary service area including Ashburnham, Ashby, Bolton, Clinton, Fitchburg, Gardner, Harvard, Lancaster, Leominster, Lunenburg, Princeton, Sterling, Townsend, and Westminster. As a member of UMass Memorial Health - HealthAlliance-Clinton Hospital offers direct access to the advanced medical technology and specialty services that are part of the region's academic medical center.

The HealthAlliance-Clinton system includes:

- 163-bed community hospital with services on three campuses in Clinton, Fitchburg (Burbank) and Leominster
- Simonds-Sinon Regional Cancer Center
- Simonds-Hurd Complementary Care Center
- Outpatient physical therapy centers
- Home health and hospice agency

In total, HealthAlliance-Clinton Hospital has more than 1,600 employees and 400 physicians, providing 40 health care specialties.

Website: https://www.umassmemorialhealthcare.org/healthalliance-clinton-hospital

Montachusett Regional Planning Commission (MRPC)

The Montachusett Regional Planning Commission is in its fourth decade of providing technical planning assistance to its 22-member communities. Located in north central Massachusetts, the MRPC was formed in 1968 under the State Enabling Legislation Massachusetts General Law Chapter 40B and is one of thirteen regional planning agencies across the Commonwealth. MRPC's purpose is to carry out comprehensive

planning in the Montachusett Region, an area of approximately 685 square miles that is home to some 228,000 individuals.

Website: http://www.mrpc.org/

Heywood Healthcare

Heywood Healthcare is an independent, community-owned healthcare system serving north central Massachusetts and southern New Hampshire. It is comprised of Athol Hospital, a 25-bed not-for-profit, Critical Access Hospital in Athol, MA; Heywood Hospital, a non-profit, 134-bed acute-care hospital in Gardner, MA; Heywood Medical Group with primary care physicians and specialists located throughout the region and Urgent Care facilities in Gardner and Athol. The Quabbin Retreat in Petersham, is the newest development of Heywood Healthcare, and will provide a full continuum of financially accessible substance misuse and mental health care services for adults and adolescents. Heywood's organization includes four satellite facilities in MA: Heywood Rehabilitation Center at Heywood Hospital; West River Health Center in Orange; Winchendon Health Center and Murdock School-based Health Center in Winchendon.

Athol Hospital Website: http://www.atholhospital.org/

Heywood Hospital Website: http://www.heywood.org/

CHNA 9 Group (CHNA-9)

The Community Health Network Area of North Central Massachusetts (CHNA 9) is one of 27 CHNAs across Massachusetts created by the Massachusetts Department of Public Health in 1992. The CHNA 9 area includes the communities of Ashburnham, Ashby, Ayer, Barre, Berlin, Bolton, Clinton, Fitchburg, Gardner, Groton, Hardwick, Harvard, Hubbardston, Lancaster, Leominster, Lunenburg, New Braintree, Oakham, Pepperell, Princeton, Rutland, Shirley, Sterling, Templeton, Townsend, Westminster, and Winchendon. CHNAs are an initiative to improve health through local collaboration. CHNA 9 is a partnership between the Massachusetts Department of Public Health, residents, hospitals, local service agencies, schools, faith communities, businesses, boards of health, municipalities, and other concerned citizens working together to:

- Identify the health needs of member communities
- Find ways to address those needs
- Improve a broad scope of health in these communities

Website: http://www.chna9.com/index.html

Qualitative Activities

The qualitative work was completed with the combined efforts of the UMASS Memorial Health- Alliance Clinton Hospital, the Montachusett Regional Planning Commission, and Heywood Healthcare's Athol and Heywood Hospitals. We greatly appreciate all the organizations who helped organize our 18 Focus Groups as well as the 200+ participants.

Quantitative and Qualitative Data Analysis

Montachusett Regional Planning Commission (MPRC) staff: Executive Director Glenn Eaton, Senior Planners Jennifer Burney and Blair Haney, Principal Planners Matt Leger and Bruce Hughes, as well as interns Rhiannon Dugan and Nick Mellis.

Funding

Funding for this Community Health Needs Assessment (CHNA) was provided by UMASS Memorial Health - HealthAlliance-Clinton Hospital. A very special thanks to the HealthAlliance-Clinton Hospital's Senior Executive Team:

Executive Summary

The 2021 Community Health Needs Assessment (CHNA) of UMass Memorial Health - HealthAlliance-Clinton Hospital presents issues related to the health, wellbeing and related factors that impact the health of those living in UMass Memorial Health – HealthAlliance-Clinton Hospital's (referenced as HealthAlliance-Clinton Hospital for the remainder of this document) catchment area (from here on referred to as the "Service Area"). This study was a collaborative effort conducted by HealthAlliance-Clinton Hospital, the Montachusett Regional Planning Commission, Heywood Healthcare, and the CHNA 9 Group. Various other organizations and individuals also contributed to this effort, including community-based organizations and health service partners, as well as advocacy efforts from hospitals, health centers, rehabilitation centers, primary care physician and specialty networks, public health networks and local schools. Staff at the Montachusett Regional Planning Commission (MRPC) were responsible for conducting research and analysis efforts for this study. MRPC is located in Leominster, Massachusetts.

UMass Memorial Healthcare CHNA Introduction

About Us

HealthAlliance-Clinton Hospital is a not-for-profit, full service, acute care hospital that serves the communities in North Central Massachusetts and Southern New Hampshire. As a member of UMass Memorial Health, HealthAlliance-Clinton Hospital offers you direct access to the advanced medical technology and specialty services that are part of the region's academic medical center. HealthAlliance-Clinton Hospital's primary service area includes Ashburnham, Ashby, Bolton, Clinton, Fitchburg, Gardner, Harvard, Lancaster, Leominster, Lunenburg, Princeton, Sterling, Townsend, and Westminster.

HealthAlliance-Clinton Hospital provides services to residents across the demographic and socio-economic spectrum, but with respect to its community benefits efforts, focuses its activities on improving the health status of the low income, underserved, and otherwise vulnerable populations. The hospital recognizes its role as a tertiary resource in a larger health system and knows that to be successful it must collaborate with its community partners and those they serve. This Community Health Needs Assessment (CHNA) was completed in collaboration with the hospital's staff, health and social service partners, and the community at-large. This assessment, including the plan to develop the associated implementation strategy, exemplifies the spirit of collaboration that is such a vital part of the hospital's mission.

HealthAlliance-Clinton Hospital currently supports dozens of educational, outreach, and community health-strengthening initiatives targeting those living in its service area. In the course of these efforts the hospital collaborates with many of the service area's leading healthcare, public health, and social service organizations.

Our Mission - A Statement about Our Present and Why Our Organization Exists

HealthAlliance-Clinton Hospital is committed to improving the health of the people of our diverse communities of Central New England through culturally sensitive excellence in clinical care, service, teaching and research.

Our Vision - A Statement about Our Future and What We Want to Be

As one of the nation's most distinguished academic health care systems, UMass Memorial Health Care will provide leadership and innovation in seamless health care delivery, education and research, all of which are designed to provide exceptional value to our patients.

Our Values - A Guide to Our Decision-making as We Move to Our Future

- **C**onsistently excelling at patient-centered care
- **A**cting with personal integrity and accountability
- **R**especting one another
- **E**ffecting change through teamwork and system thinking
- **S**upporting our diverse communities

CHNA Purpose

Past CHNAs of UMass Memorial Healthcare's catchment area have been used to launch important initiatives created to address the health care needs identified in each study. This study provides a comprehensive overview of the health status, issues and concerns of residents, as well as assets that currently exist to provide services to locals in need. This study also explores relevant social issues affecting health and wellbeing that exist across the catchment area, and even cross over bordering communities. The writing of this report is intended to inform local residents, government officials, businesses, community organizations and other relevant stakeholders of the health status of their communities using the most up-to-date and comprehensive quantitative and qualitative data.

Throughout this study, special attention was paid to "communities within communities", health disparities and health equity, as well as housing and homelessness. Study researchers were careful to ensure that information and insights from under-represented racial/ethnic, socioeconomic and geographic groups were collected from Surveys and Focus Groups. Study authors made sure to take all of this insight into full consideration when analyzing data and writing the final report. This report's intent is to provide a comprehensive review of HealthAlliance-Clinton Hospital's catchment area.

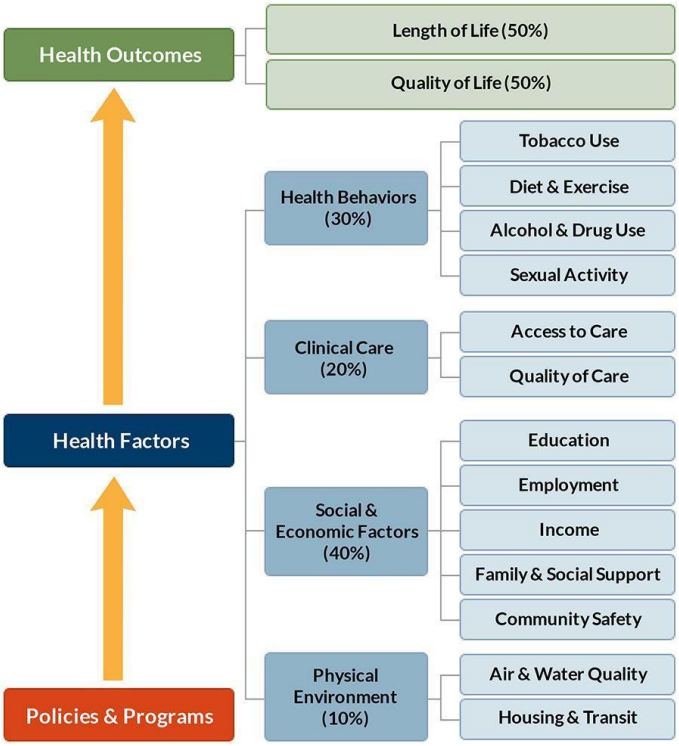
"Intersectionality of race/ethnicity and action towards helping homeless "

SDOH and health equity framework

Broader Context of the CHIP (social determinants, health equity, and health in all policies)

As stated above, the purpose of the CHIP is to serve as a roadmap for the development of a comprehensive, accessible, equitable health care system capable of providing the highest quality services in a cost effective manner to those who live and work in their service area. With this in mind, the CHNA and the CHIP provide vital information that will be used by HealthAlliance-Clinton Hospital and other stakeholders to help drive the region's community health improvement plan and identify community health strategies that will address community need and show public health value.

Figure 1: COMMUNITY HEALTH IMPROVEMENT FRAMEWORK



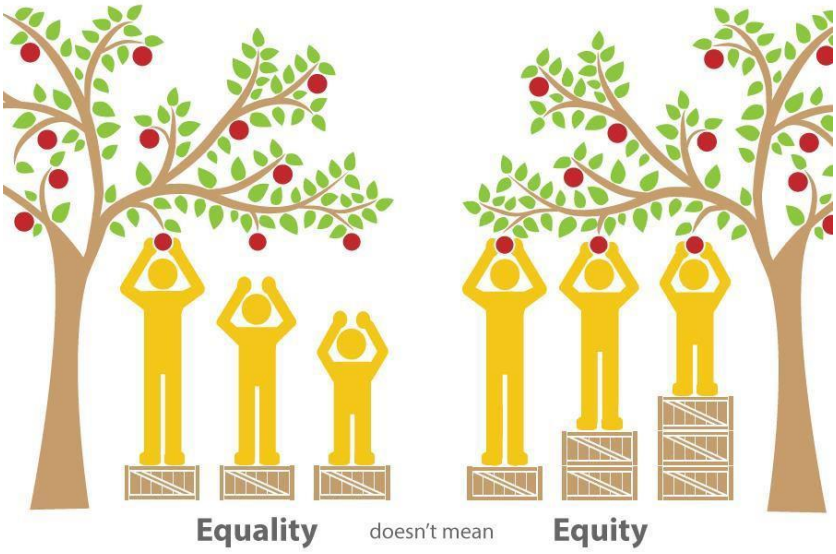
Despite HealthAlliance-Clinton Hospital's focus on clinical services and the overall health systems traditional emphasis on disease burden, physical health, and health services providers, it is important to note that the overall approach of this assessment and the Commonwealth's and the Federal governments expectations are much broader and more inclusive. For example, the Massachusetts Attorney General's Office, through the Community Benefits Guidelines, have established a set of priorities which are intended to be used to focus the community benefit work of hospitals. These priorities include: 1) Support of the Commonwealth's Health Care Reform Agenda, 2) Chronic Disease Management in Disadvantaged Populations, 3) Reducing Health Disparities, 4) and Promoting Wellness of Vulnerable Populations. Moreover, there is a growing appreciation that health system improvements related to access and the capacity and quality of health care services have a relatively limited impact on overall health status, at least on their own; research shows that only 10-20% of one's overall health is attributable to clinical services; the remainder is linked to genetics, behavior, and social and physical environments. In order to have real and sustained impact on overall well-being and the health disparities that exist in HealthAlliance-Clinton Hospital's CBSA, the Hospital and its partners must also address the underlying social determinants, inequities, and injustices that are at the root of the health status issues that exist.

In providing guidance related to the development of the CHIP, HealthAlliance-Clinton Hospital was clear that in addition to assessing health service gaps, capacity, utilization, and the distribution of health services that the assessment needed to consider a more extensive array of quantitative and qualitative data related to the underlying social determinants of health. Furthermore, HealthAlliance-Clinton

Hospital was clear that these issues needed to be considered when identifying community health priorities and developing the strategic action steps that would be at the heart of the CHIP.

HealthAlliance-Clinton Hospital was also clear that in order for the CHNA and the implementation strategy to be aligned with region's broader agenda, with respect to promoting health and well-being and addressing health disparities, the CHNA should be developed in the context health equity. Health equity is the attainment of the highest level of health for all people. Achieving health equity requires valuing everyone equally

Figure 2: HEALTH EQUITY



with focused and ongoing societal efforts to address avoidable inequalities, underlying socioeconomic factors, and historical and contemporary injustices. Ultimately, the goal of health equity is the elimination of health and health care disparities

"When it gets overwhelming, I think we need to remember that we need to address issues collaboratively with our community based partners and health systems"

"A healthy community also is a community where the healthcare providers represent the community they serve. I think that our health care provider system, right now, it's in a very, very difficult spot where the providers don't speak the languages of the community.

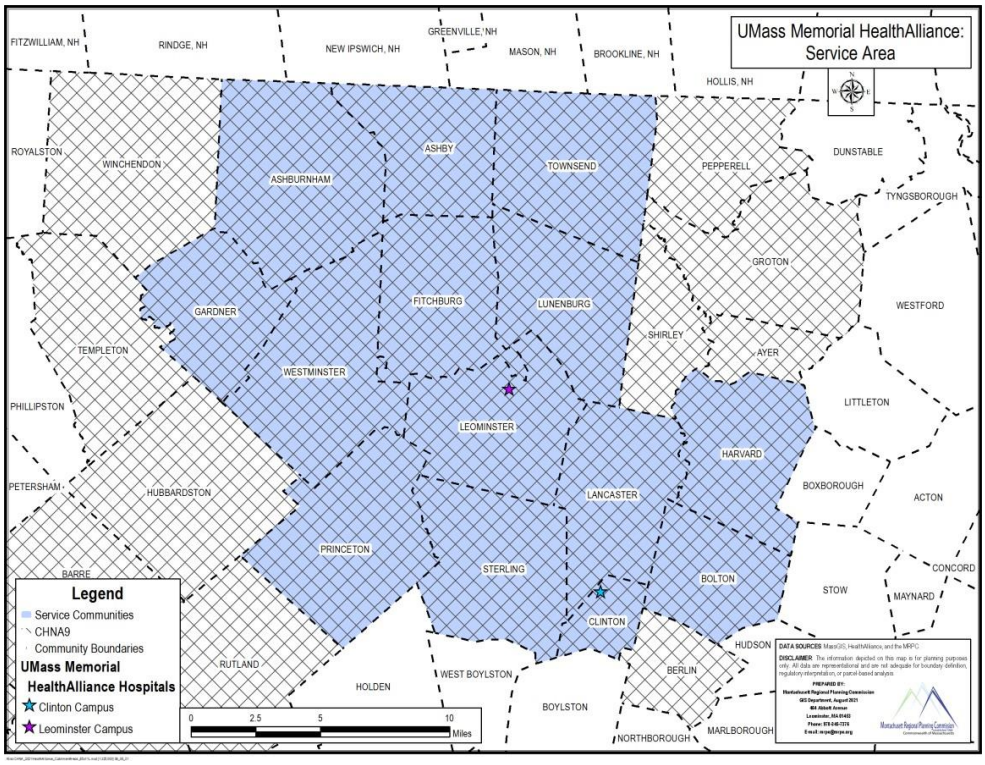
DESCRIPTION OF SERVICE AREA & PRIORITY POPULATION

HealthAlliance-Clinton Hospital Hospital's primary service area includes the quasi-urban cities Clinton, Fitchburg, Leominster and Gardner, and the more rural towns of Ashburnham, Ashby, Lunenburg, Townsend, Sterling, and Westminster. The Hospital's secondary service area includes an additional twelve towns, as seen in Figure 3. While great efforts are made to improve the health status, provide diagnostic screening, and address access barriers of all residents within these communities, special attention is given to address the needs of diverse and/or low income, vulnerable segments of the population. Census data and qualitative information from interviews and focus groups showed that many of the cities/towns in the Hospital's service area have significant proportions of low income, racially and ethnically diverse, foreign born, and/or geographically isolated residents. The challenges that these cohorts face with respect to

social determinants of health and access to care are often intense and are at the root of the challenges and poorer health outcomes faced in these communities.

Historically, HealthAlliance-Clinton Hospital's support of these cities and towns has been largely funneled through the local health departments or other municipal departments, CHNA 9, and community-based organizations.

Map – 1 Service Area Communities and Hospital Locations



Methodology and Data Sources

Framework Guiding the Community Health Needs Assessment Process

The process of organizing and crafting a Community Health Assessment is a collaborative one. Throughout the process, stakeholders across all communities that make up HealthAlliance-Clinton Hospital's Service Area were engaged in focus group sessions, discussions, and surveys that informed insights for this report. In the background, the public health professionals at HealthAlliance-Clinton Hospital and the Massachusetts Department of Public Health, as well as staff at the Montachusett Regional Planning Commission (MRPC) were hard at work collecting and analyzing quantitative data on a swath of key data points for all 14 communities in the Service Area from sources like the US Census Bureau, the American Community Survey, and the Massachusetts Department of Public Health. This section provides an overview of the process required to complete this report using a guiding framework that directed the efforts of HealthAlliance-Clinton Hospital and the MRPC.

Community Health Assessment Guiding Framework

The following section describes the process undertaken by HealthAlliance-Clinton Hospital and MRPC to conduct the 2021 Community Health Needs Assessment (CHNA).

1. Set Agenda

HealthAlliance-Clinton Hospital Senior Leadership gathered with MRPC staff in November 2020 for a planning session to discuss the CHNA process and requirements. The group established an agenda for the report, identifying key data points as desired from the healthcare group as well as those required of the CHNA according to the Internal Revenue Service (IRS). From there a timeline was crafted by the team for reaching critical milestones and tasks were delegated to UMass Memorial and MRPC staff. The HealthAlliance's staff along with MRPC also gathered input from the CHNA Advisory Group made up of department heads from HealthAlliance-Clinton Hospital, Athol and Heywood Hospitals, the CHNA-9 Group and other relevant community partners.

2. Data Collection

Qualitative and quantitative data was collected by various staff at HealthAlliance and the MRPC over the succeeding months. Healthcare professional interviews and focus groups were conducted by MRPC staff, and an online/hard copy survey was distributed across the Service Area. The data and information collected through these activities were used to provide public input on health issues facing local residents. Secondary data sources like the US Census, the American Community Survey, the Massachusetts Department of Labor and Workforce Development, and the Massachusetts Department of Public Health were used to quantify data critical to painting a full picture of the health status of the Service Area.

3. Data Analysis

The data collected during step two was then organized into tables, graphs, and graphics and analyzed by MRPC and HealthAlliance-Clinton Hospital staff. MRPC staff reviewed the latest data against the 2018 report's data to identify trends and service gaps. The analysis is summarized in beginning of each chapter under the highlights section.

4. Draft Report

The analysis done by HealthAlliance-Clinton Hospital and MRPC staff was then written into a narrative by several staff at MRPC. This was meant to provide a reader with explanations of the data to help make sense of the large amount of data in front of them.

5. Review and Edit

The draft report was then peer reviewed by subject matter experts at HealthAlliance-Clinton Hospital for quality assurance and recycled to the MRPC for final edits.

6. Public Comment

Data from the draft report was shared with the Community Benefits Advisory Committee for review and comment.

7. Board Approval

A draft report was presented to the HealthAlliance-Clinton Hospital's Board of Trustees for final approval.

Data Collection

Quantitative data for this report came from Massachusetts Public Health Information Tool (Mass PHIT) data from the Massachusetts Department of Public Health (Mass DPH); the Youth Risk Behavior Survey (YRBS) data; US Census data (including data from the American Community Survey); and other Commonwealth and Federal Government organizations and agencies. All data were subject to rigorous review, fact-checking and verification processes.

Qualitative data was gathered through Focus Groups and a community survey. Both data gathering efforts were managed by MRPC and included communities, organizations, and people from the Service Area of HealthAlliance-Clinton Hospital and Heywood Health.

18 Focus Groups	• Gardner Community Action Team (03.09.21) • Patient & Family Advisory Council (03.18.21) • Clinton Area Partnership (03.24.21) • Gardner Chamber of Commerce (03.25.21) • North Quabbin Food Alliance (03.29.21) • Clinton Community Stewards (03.30.21) • Schwartz Rounds (04.07.21) • CHNA-9 BHMHSU (04.08.21) • Youth Change Leaders (04.14.21) • Transportation Group (04.20.21) • North Central Homelessness Task Force (04.21.21) • GAIT (04.23.21) • Transportation Group II (04.28.21) • Care Transitions Group (05.04.21) • Racial Justice Group (05.17.21) • LGBTQ+ Group (05.19.21) • Disabilities Group (05.20.21) • Veterans Group (05.21.21)
Quantitative Data Sources	• US Census/American Community Survey (ACS) • Mass Department of Workforce Development (DWD) • Youth Behavior Risk Survey (YRBS) • Mass Department of Public Health (DPH) • Mass Department of Mental Health (DMH) • Behavioral Risk Factor Surveillance Survey (BRFSS)

US Census Data

The Census Bureau's *mission* is to serve as the leading source of quality data about the nation's people and economy. We honor privacy, protect confidentiality, share our expertise globally, and conduct our work openly.

We are guided on this mission by scientific objectivity, our strong and capable workforce, our devotion to research-based innovation, and our abiding commitment to our customers.

Website: https://www.census.gov/en.html

Note: Due to COVID-19, delays in the 2020 decennial Census data collection process did not allow for MRPC to use 2020 Census data for this report. The US Census Bureau will release a new data set in December of 2021. Efforts will be made to update data in this report upon that release as an addendum.

American Community Survey Data (American Fact Finder)

The American Community Survey (ACS) is a nationwide survey designed to provide communities a fresh look at how they are changing. It is a critical element in the Census Bureau's decennial census program. The ACS collects information such as age, race, income, commute time to work, home value, veteran status, and other important data. As with the 2010 decennial census, information about individuals remains confidential.

The ACS collects and produces population and housing information every year instead of every ten years. Collecting data every year provides more up-to-date information throughout the decade about the US population at the local community level. About 3.5 million housing unit addresses are selected annually, across every county in the nation.

The ACS produces 1-year estimates annually for geographic areas with a population of 65,000 or more. This includes the nation, all states and the District of Columbia, all congressional districts, approximately 800 counties, and 500 metropolitan and micropolitan statistical areas, among others.

The ACS produces 3-year estimates annually for geographic areas with a population of 20,000 or more, including the nation, all states and the District of Columbia, all congressional districts, approximately 1,800 counties, and 900 metropolitan and micropolitan statistical areas, among others.

In 2010, the Census Bureau released the first 5-year estimates for small areas. These 5-year estimates are based on ACS data collected from 2005 through 2009.

Website: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

Mass Department of Labor and Workforce Development Data

The Executive Office of Labor and Workforce Development manages the Commonwealth's workforce development and labor departments to ensure that workers, employers, and the unemployed have the tools and training needed to succeed in the Massachusetts economy.

Website: https://www.mass.gov/orgs/executive-office-of-labor-and-workforce-development

Youth Risk Behavior Surveillance System Data

The Youth Risk Behavior Surveillance System (YRBS) monitors six types of health-risk behaviors that contribute to the leading causes of death and disability among youth and adults, including:

- Behaviors that contribute to unintentional injuries and violence
- Sexual behaviors related to unintended pregnancy and sexually transmitted diseases, including HIV infection

- Alcohol and other drug use
- Tobacco use
- Unhealthy dietary behaviors
- Inadequate physical activity

YRBS also measures the prevalence of obesity and asthma and other priority health-related behaviors plus sexual identity and sex of sexual contacts.

YRBS includes a national school-based survey conducted by CDC and state, territorial, tribal, and local surveys conducted by state, territorial, and local education and health agencies and tribal governments. Website: https://www.cdc.gov/healthyyouth/data/yrbs/index.htm

Behavioral Risk Factor Surveillance System Data

The Behavioral Risk Factor Surveillance System (BRFSS) is the nation's premier system of health-related telephone surveys that collect state data about US residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. Established in 1984 with 15 states, BRFSS now collects data in all 50 states as well as the District of Columbia and three US territories. BRFSS completes more than 400,000 adult interviews each year, making it the largest continuously conducted health survey system in the world.

Website: https://www.cdc.gov/brfss/index.html

Mass Department of Public Health

DPH regulates, licenses and provides oversight of a wide range of healthcare-related professions and services. Additionally, the Department focuses on preventing disease and promoting wellness and health equity for all people. Information is available for residents, providers, researchers and stakeholders.

Website: https://www.mass.gov/orgs/department-of-public-health

Mass Department of Mental Health

Most mental health services, including medication and therapy are provided through health insurance – MassHealth (Medicaid), the Massachusetts Health Connector (health insurance marketplace) or through private insurance (employer-based). The Department of Mental Health (DMH) has a specialized role in the healthcare delivery system as DMH provides supplemental services for people with the most serious needs.

Website: https://www.mass.gov/orgs/massachusetts-department-of-mental-health

Qualitative Methodology

As is common practice in a CHNA, the qualitative data for this report was gathered from community leaders and members of the communities in HealthAlliance-Clinton Hospital's Service area. This is an incredibly important step in the CHNA process, as it is meant to collect insights on the public health concerns and assets as experienced by real people every single day. These insights were used to clarify and authenticate the concerns of local residents and deepen the researchers' understanding of the real problems occurring in these communities. Qualitative data was gathered from Focus Groups and a community survey.

All focus groups hosted by MRPC were joint focus groups for both UMass Memorial HealthAlliance-Clinton Hospital and Heywood Healthcare as an effort by both hospitals to collaborate on addressing the needs of area residents. MRPC facilitated information sharing between both hospitals.

The survey was made available to both health care organizations' Service Area using their website and email lists. The survey received 1,341 responses and 47% completion rate.

Focus Group Methodology:

Staff at MRPC held 18 focus groups with public/private sector leaders and community members across various HealthAlliance communities. All focus groups were conducted virtually via Zoom to ensure safety of participants during the pandemic. An MRPC staff member typically facilitated questioning and conversation for the session. The Focus Group sessions would last anywhere from 60 to 90 minutes.

Focus Group Facilitation and Content:

All focus groups were conducted virtually via Zoom to ensure safety of participants during the pandemic. Focus groups lasted from 60 to 90 minutes. The first 20 to 30 minutes were spent with all focus group participants in one room where they were asked two questions (see below). The groups were then broken up into 2 or 3 breakout rooms based on the communities which service area (Heywood Hospital, Athol Hospital, or HealthAlliance-Clinton Hospital) they worked or lived in. These questions were typically used as conversation starters where additional questions were asked based on responses or the area of expertise present in the room:

Provider/Community Voices Focus Group Questions

First 20 – 30 minutes:

- In your mind, how do you define a "health community"? Probe: What is the key characteristics that help you paint a picture of what a health community looks like?
- Now imagine you had an opportunity to completely rethink how healthcare services were delivered in your community…. What would you need to do to achieve your definition of a "healthy community"?

Breakout Groups:

- When it comes to HEALTH SUBJECT (e.g., food access and nutrition), what are thegreatest challenges we are experiencing the region?
- Has the HEALTH SUBJECT improved or worsened in the last few years? What has contributed to this change?
- Which population segment is most affected by this HEALTH SUBJECT?
- What do you believe are some of the underlying root causes contributing to this health issue?
- How has COVID-19 impacted this health issue if at all? (Worse, better, same?)
- Are there assets or protective factors in your area that are available to help address these issues?
- Are there any organizations or programs in the region that stand out as working well toward this issue?
- Are you aware of any innovative or creative programs/policies/best practices that have been implemented successfully elsewhere that we should try and emulate?

Analysis and Results:

Following focus group sessions, MPRC staff would use the notes to provide insight for the chapters. Direct quotes from participants are weaved throughout the report where participant quotes are directly relevant to their respective chapters. All quotes are attributed to "anonymous".

Focus Group Meetings

FOCUS GROUP	TYPE	LENGTH	SIGN UPS
GARDNER COMMUNITY ACTION TEAM	PROVIDER	90 mins	26
PATIENT & FAMILY ADVISORY COUNCIL	COMMUNITY	90 mins	13
CLINTON AREA PARTNERSHIP	PROVIDER	90 mins	6
GARDNER CHAMBER OF COMMERCE	PROVIDER	90 mins	21
NORTH QUABBIN FOOD ALLIANCE	PROVIDER	90 mins	23
CLINTON COMMUNITY STEWARDS	COMMUNITY	60 Mins	9
SCHWARTZ ROUNDS	PROVIDER	60 mins	2
CHNA-9 BHMHSU	PROVIDER	90 mins	14
YOUTH CHANGE LEADERS	COMMUNITY	45 mins	10
TRANSPORTATION GROUP	PROVIDER	60 mins	10
NORTH CENTRAL HOMELESSNESS TF	PROVIDER	90 mins	2
GAIT	PROVIDER	60 mins	12
TRANSPORTATION GROUP	PROVIDER	60 mins	6
CARE TRANSITIONS	PROVIDER	90 mins	27
RACIAL JUSTICE	PROVIDER	90 min	29
LGBTQ+	PROVIDER	60 mins	3
DISABILITIES	PROVIDER	60 mins	9
VETERANS	PROVIDER	60 mins	7
TOTAL = 18 Focus Groups			**229**

Survey Distribution:

Methodology:
Staff from HealthAlliance-Clinton Hospital, Heywood Health, and MRPC discussed and finalized 22 survey questions to be distributed to the general public for comment. A copy of the survey can be found in Appendix B. The survey was left open from January 2021 to May 2021 on SurveyMonkey.com. HealthAlliance-Clinton Hospital, Heywood Health, and MRPC advertised the survey link on their respective websites.

Analysis and Results:

Surveys filled out by community members on SurveyMonkey.com were analyzed using the "Analyze Results" feature on the MRPC's SurveyMonkey profile. Final results can be found in Appendix B.

Qualitative Data Conclusions:

Qualitative data is summarized here to provide context for the quantitative chapters to follow. Qualitative data was only included in this report when mentioned multiple times in the Focus Groups and the survey. Comments from participants provided qualitative data for the study's authors to gain insights from the community and to help expand on quantitative findings. Community input can be found throughout the report in the form of anonymous quotes in corresponding sections of the narrative.

Qualitative Data Themes:

Predominant themes throughout the 18 Focus Groups included (order reflects frequency of topic):

Healthcare Access and Health Equity:

> **"Spanish-speaking folks from the community felt that they're mistreated in our healthcare systems."**

> **"I'm scared to come out to doctors. It would help for them to have a LGBTQ designation, even if it's just self-identified, like, I'm comfortable with this population."**

- Everyone needs access to quality healthcare regardless of job status, income, immigration status, race/ethnicity, or sexual orientation/gender identity
- Health providers need more training to better understand different races/ethnicities/cultures or needs (e.g., LGBTQ, Veterans)
- Education on preventative health measures, health insurance and outreach to people in need

COVID-19 Pandemic

> **"(Our community organization) serves the limited English, they are very much isolated prior to COVID because of their lack of being able to understand and get the get to the resources that they need. A lot of that is sometimes fear, you know, insecurity. A lot of them are here by themselves without any connections. So that definitely is not just related to COVID but has definitely worsened because of it."**

- Caused limited access to health care, delayed appointments, or procedures/surgeries
- Exposed racism, health equity and racial and ethnic health disparities
- Increased mental and behavioral health needs
    - Social isolation devastating to young people, elderly, and immune-compromised
    - Increased substance abuse overdose and relapse
- Significantly impacted the wellbeing of families as they struggle to afford necessities including housing, food and childcare
    - Increased the demand for assistance with meeting basic needs (e.g., quality housing, food,childcare).
    - Women leaving the workforce to watch children at home from school.
    - Delayed public response to reach non-English speaking residents, immigrants (afraid to seek help or sign-up for vaccine).

- Digital Divide: Many low-income households had no access or limited access to the internet and computers during COVID. Broadband access provides numerous socio-economic benefits to households, including access to benefits, labor, education, healthcare and social engagement. In particular, school age children with limited broadband and/or technology access fell behind during the Pandemic. In addition, with the closure of Senior Centers and libraries, elderly individuals lacked access to basic resources as well as social interactions.

- Anecdotal evidence (with some quantitative statistics) that more children exposed to leadpoisoning due to increased time at home; significantly reduced number of children placedin DCF care due to limited contact with adults required for mandatory reporting such as teachers and doctors.

Address Social Determinants of Health

> **"The big rock that I think of that we have to move is we have to move the social determinants of health care...I think the biggest thing that we could do is to help people understand that it's better to prevent the fire than put it out. And it's a lot more cost effective. I think that would help us with getting more resources to do the work that we need to do around a healthy community.**

- Public transportation does not reach many neighborhoods or popular destinations like supermarket or health facilities; infrequency of schedule does not accommodate people with off-hour shifts or two jobs.
- The combination of rising housing costs, low paying jobs and unemployment contributed to declining housing stability costs of living contributed to declining housing stability and an increase in homelessness.
- Financial wellness has a direct correlation on physical health and social well-being. While access to basic needs, including quality housing and healthy food access, should be a priority, livable wages and employment opportunities for low-income individuals need to be addressed.

Population Characteristics

Chapter 1

Abstract

This chapter provides a comprehensive overview of the population characteristics in UMass Memorial Health – HealthAlliance-Clinton Hospital's 14 communities in north-central Massachusetts. Communities in the HealthAlliance-Clinton Hospital (HA-C) Service Area vary significantly in terms of their demographic, social, and economic factors. For example, some communities are rural while others are urban; some are more affluent while others are considered economically disadvantaged; some are more racially/ethnically diverse while others are considered more homogenous. Due to these factors, the health disparities and inequities experienced by people in the region vary widely from community to community.

Chapter 1 - Population Characteristics

This chapter provides a comprehensive overview of the population characteristics in UMass Memorial Health – HealthAlliance-Clinton Hospital's 14 communities in north-central Massachusetts. Communities in the HealthAlliance-Clinton Hospital (HA-C) Service Area vary significantly in terms of their demographic, social, and economic factors. For example, some communities are rural while others are urban; some are more affluent while others are considered economically disadvantaged; some are more racially/ethnically diverse while others are considered more homogenous. Due to these factors, the health disparities and inequities experienced by people in the region vary widely from community to community.

This chapter presents the following characteristics using data from the various quantitative sources listed in the introduction of this report:

- Demographics

Chapter Highlights

Demographics

- The overall population of the service area has grown by only 3.0 percent from 2010 to 2019.
- The service area median age (41.2) is 1.5 years higher than the state (39.7) and 2.7 years higher than the nation (38.5).
- Those identified as age 45 to 54 reported as higher rates than the state or nation. This indicates that HealthAlliance-Clinton Hospital has a rapidly aging population.
- From 2015 to 2019 the pop. over 65 yrs. in state increased 2%. Considerable increase in Westminster 12% to 17.5% and Sterling 14% to 18.9%.
- The Hispanic/Latino population is higher than the state percentage (12.4%) in Fitchburg (28.8%), Leominster (18.4%), and Clinton (17.3)

Demographics

The demographics section highlights population characteristics that describe the HealthAlliance-Clinton Hospital (HA-C) Service Area's residents, including population size, growth, age distribution, and age and gender. In addition, the population data quantifies several sociodemographic characteristics, including race/ethnicity, marital status, disability, and veteran status.

Population Size and Growth

The population throughout most of the service area has grown from 2010 to 2019. According to the US Census American Community Survey (ACS) 2015-2019 5-year estimates data indicated in Table PC-1 below, HealthAlliance-Clinton Hospital's service area experienced growth of 2.4%, from 172,722 to 176,829. The rate is less than half of the US overall rate (6.3%) and less than the Commonwealth of Massachusetts (5.3%). The community with the most significant population growth was Bolton at 8.2%, growing from 4,897 to 5,299. The following highest change occurred in Westminster, where the population grew from 7,277 to 7,766, a 6.7% increase. Thirteen (13) of the fourteen (14) communities saw some population growth, and only Lancaster saw population decline.

PC - 1 Population Growth in the Service Area from 2010 to 2019

Community	2010 Census	2015-2019 ACS	% change (from 2010)
Ashburnham	6,081	6,281	3.3%
Ashby	3,074	3,220	4.7%
Bolton	4,897	5,299	8.2%
Clinton	13,606	13,935	2.4%
Fitchburg	40,318	40,702	1.0%
Gardner	20,228	20,610	1.9%
Harvard	6,520	6,569	0.8%
Lancaster	8,055	8,044	-0.1%
Leominster	40,759	41,606	2.1%
Lunenburg	10,086	11,402	13.0%
Princeton	3,413	3,455	1.2%
Sterling	7,808	8,091	3.6%
Townsend	8,926	9,473	6.1%
Westminster	7,277	7,766	6.7%
Service Area Total	**181,048**	**186,453**	**3.0%**
Middlesex*	1,503,085	1,611,699	7.2%
Worcester County*	798,552	824,772	3.3%
Massachusetts*	6,547,629	6,892,503	5.3%
U.S.*	308,745,538	328,239,523	6.3%
Sources: 2010 Census; ACS 2015-2019 5-Year Estimates U.S. Census Bureau			

Note: Red and Green color scales darker shades of red and green are the higher valued cells. The lighter shades of Red and Green are the lower valued cells.

Age and Gender Distribution

The ACS's 2015-2019 5-year population estimates recorded in Table PC-2 help paint a picture of the age distribution in HA-C's service area. The largest group in HealthAlliance-Clinton Hospital's service area is 55to 64 at 16.8%, followed by 45 to 54 at 15.3%. Older age groups experienced a steady decline falling to 10.4% for the 65 to 74 age group and 1.6% for those 85 and over. The most significant increase betweentwo consecutive age groups is from minus 5 to 5 to 14 at 6.4%. The most considerable drop-off betweenthe two age groups is from 65 to 74 to 75 to 84 at 6.4%.

The total percentage of the population within the Service Area age 65 and over was 16%. The population aged 34 or younger combined for 41.9% of the population. Those aged 35 to 64 accounted for the most significant cluster concentration of the population at 45.1%.

Those identified as age 45 to 54, 55 to 64, and 65 to 74 reported such numbers as higher rates than the State and Nation. Particularly important, the census counted people aged 45 to 54 and 55 to 64 at 2.3 percent and 3.2% higher compared to the state and 2.9% and 3.9% higher compared to the nation, respectfully. These numbers indicate that the Service Area has a rapidly aging population.

PC - 2 Age Group Distribution by Community 2019

Community	< 5	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
Ashburnham	7.8%	13.5%	11.3%	11.7%	13.2%	11.9%	17.5%	11.4%	1.2%	0.7%
Ashby	3.7%	11.4%	10.9%	10.5%	11.6%	15.3%	20.7%	10.3%	4.1%	1.3%
Bolton	7.1%	15.6%	11.2%	18.6%	29.3%	25.0%	18.6%	7.7%	3.2%	2.1%
Clinton	5.9%	10.2%	13.1%	18.4%	13.0%	13.3%	13.2%	7.6%	3.6%	1.9%
Fitchburg	6.2%	13.1%	16.3%	13.6%	12.3%	12.8%	12.3%	7.7%	3.7%	2.0%
Gardner	6.2%	10.7%	10.2%	15.2%	11.8%	14.0%	16.5%	8.7%	3.8%	2.9%
Harvard	5.3%	12.3%	8.7%	10.2%	10.9%	19.8%	15.7%	13.2%	2.4%	1.4%
Lancaster	3.8%	10.3%	12.9%	27.3%	12.0%	11.8%	17.0%	8.0%	7.2%	1.7%
Leominster	6.3%	12.0%	11.0%	13.8%	12.9%	14.3%	13.9%	8.5%	5.3%	2.1%
Lunenburg	4.4%	13.0%	11.7%	10.9%	10.7%	15.6%	16.8%	10.6%	5.0%	1.3%
Princeton	3.6%	10.7%	10.3%	6.9%	9.8%	16.4%	19.6%	15.7%	5.7%	1.1%
Sterling	4.9%	12.1%	11.7%	7.1%	12.3%	18.3%	14.7%	14.3%	3.3%	1.2%
Townsend	5.0%	12.5%	11.7%	10.8%	11.4%	15.7%	17.9%	9.3%	4.0%	1.5%
Westminster	4.2%	6.8%	9.3%	12.4%	10.7%	10.5%	21.2%	13.0%	3.8%	0.7%
Service Area Ave.	**5.3%**	**11.7%**	**11.5%**	**13.4%**	**13.0%**	**15.3%**	**16.8%**	**10.4%**	**4.0%**	**1.6%**
Middlesex County*	5.2%	10.9%	13.3%	15.5%	13.3%	13.1%	13.1%	8.9%	4.6%	2.2%
Worcester County*	5.3%	11.7%	13.5%	13.1%	12.1%	13.8%	14.4%	9.5%	4.6%	2.0%
Massachusetts*	5.2%	10.9%	13.5%	14.4%	12.4%	13.0%	13.6%	9.8%	4.9%	2.3%
U.S.*	5.9%	12.5%	13.0%	13.9%	12.7%	12.4%	12.9%	9.6%	4.9%	1.9%

Sources: American Community Survey 2015-2019 5-Year Estimates U.S. Census Bureau; * 2019 American Community Survey 1-Year Estimates

Table PC-3 shows the population's median age, 65 and older living alone, and gender ratio in 2019. In terms of age distribution throughout the service area, the median age of the population is 41.2. Princeton (49.7), Sterling (46.8), and Ashby (45.9) had the highest median age. The communities with the lowest median age were Harvard at 30.9, Fitchburg at 35.5, and Clinton at 37.2. Nine of the fourteen service area communities had a median age of at least 40 years, all higher than the state (39.7 years) and national (38.5 years) medians.

Important to note is the percentage within the total population of those who are 65+ in the Service Area and living alone (26.1%) in the service area, and the high percentage in Gardner (49.2%) and Fitchburg (44.9%). It is vital to bear in mind the social isolation in areas that make it more challenging to access basic daily needs (i.e., fresh groceries). It also presents difficulties for HealthAlliance-Clinton Hospital and other home health care providers to reach those in need.

PC - 3 Median Age, 65+, 65+ Living Alone, and Gender Ratio in the Service Area 2019

Community	Median age (years)	% aged 65+	% of 65+ who are living alone	Sex ratio (males/100 females)
Ashburnham	39.10	13.2%	28.3%	97.3
Ashby	45.9	15.7%	20.5%	108.5
Bolton	43.0	13.0%	23.4%	105.0
Clinton	37.2	13.0%	20.3 %	98.1
Fitchburg	35.5	13.5%	44.9%	99.7
Gardner	41.00	15.4%	49.2%	106.6
Harvard	30.9	9.4%	21.3%	98.4
Lancaster	40.7	16.9%	19.4%	155.1
Leominster	40.5	15.9%	32.0%	90.6
Lunenburg	44.3	16.9%	24.7%	91.9
Princeton	49.7	22.4%	23.1%	108.1
Sterling	46.8	18.9%	19.3%	91.2
Townsend	38.5	14.8%	11.4%	97.0
Westminster	44.3	17.5%	27.7%	100.6
Service Area Avg	**41.2**	**15.5%**	**26.1%**	**103.4**
Middlesex County	38.8	15.7%	40.5%	96.2
Worcester County	40.30	16.1%	40.8%	96.9
Massachusetts	39.70	17.0%	68.7%	94.3
U.S.	38.50	16.5%	37.8%	97.0
Source: 2015-2019 American Community Survey 5-Year Estimates				
Note: Darker green shaded cells are higher valued cells, lighter green cells are lower valued cells				

Racial/Ethnic Populations

Table PC-4 highlights the concentration of each race/ethnicity throughout the service area to help identify potential barriers or disparities in healthcare access by race and ethnicity. Overall, the service area is predominantly white (91.5%), far above the state (77%) and nation (72%). The communities with the largest concentrations of white residents are Westminster at 99.5%, Ashburnham at 97.4%, and Townsend at 97%. Fitchburg (80.3%) has the lowest concentration of white residents.

All other races/ethnicities throughout the service area identified on US Census reports are underrepresented compared to state averages. For example, black or African Americans make up 2.6% of the population compared to 7.9% in the state and 12.8% nationally, Asian Americans make up 1.9% of the service area compared to 6.9% in the state and 5.7% nationally, and 1.6% of the population identified as "Other" compared to 4.3% in the state and 5.0% nationally. Pacific Islanders are not represented in the service area. The only exception in the service area were Native Americans, who made up 0.2% of the population, lower than the state at 0.3% and the nation at 0.9%.

PC - 4 Race/Ethnicity of Service Area Communities 2019

Community	White	Black or African American	Native American	Asian	Other	Two or More Races	Hispanic/ Latino	Foreign Born
Ashburnham	97.4%	1.1%	0.0%	0.3%	0.0%	1.2%	1.7%	13.20%
Ashby	97.3%	0.4%	0.1%	0.7%	0.3%	1.2%	2.5%	15.70%
Bolton	93.2%	0.3%	0.0%	4.2%	0.0%	2.3%	1.4%	5.5%
Clinton	89.2%	3.2%	0.8%	1.8%	3.7%	1.3%	17.3%	13.00%
Fitchburg	80.3%	5.0%	0.4%	2.3%	7.1%	4.8%	28.8%	13.50%
Gardner	87.0%	2.8%	0.1%	3.2%	2.7%	4.2%	9.3%	15.40%
Harvard	85.3%	5.6%	0.5%	5.2%	0.0%	1.7%	6.1%	11.00%
Lancaster	87.5%	7.4%	0.0%	2.0%	0.5%	2.6%	7.3%	9.60%
Leominster	81.0%	6.7%	0.2%	3.0%	5.5%	3.6%	18.4%	16.90%
Lunenburg	93.9%	1.7%	0.0%	1.4%	0.5%	2.6%	5.9%	22.90%
Princeton	96.0%	0.4%	0.0%	0.2%	0.4%	3.0%	1.5%	2.80%
Sterling	96.6%	1.3%	0.0%	0.4%	0.6%	1.1%	5.1%	14.80%
Townsend	97.0%	0.9%	0.0%	1.3%	0.5%	0.3%	3.2%	18.90%
Westminster	99.5%	0.0%	0.0%	0.2%	0.0%	0.2%	3.3%	17.50%
Service Area	**91.5%**	**2.6%**	**0.2%**	**1.9%**	**1.6%**	**2.2%**	**8.0%**	**13.62%**
Middlesex County	75.3%	5.4%	0.3%	12.4%	3.3%	3.3%	8.3%	21.40%
Worcester County	83.5%	5.1%	0.3%	5.1%	2.8%	3.2%	12.2%	12.10%
Massachusetts	77.0%	7.9%	0.3%	6.9%	4.3%	3.6%	12.4%	17.00%
U.S.	72.0%	12.8%	0.9%	5.7%	5.0%	3.4%	18.4%	13.60%
Source: 2015-2019 American Community Survey 5-Year Estimates								

Note: Green color scales: darker colored cells are higher value, lighter colored cells are lower value

Marital Status

Table PC-5 shows a complete breakdown of married-couple households by community. Overall, ten of the 14 communities in the service area have a higher percent of married-couple households when compared to the state (46.7%) and nation (47.5%). The service area average is 59.5%, with Bolton leading the way at 78.7%, and Fitchburg with the lowest percentage of married-couple households at 39.2%.

In comparing the Service Area in table PC-5, the percentage of family households in the service area is 10.4% higher than the state average and 8.4% higher than the national average. In terms of married-couple households, the service area population concentration of 59.5% is 12.8% higher than the state average of 46.7% and 12% higher than the national average of 47.5%.

PC - 5 Occupied Housing Units with Family and Married Couple Households by Community 2019

Community	% of Occupied Housing Units that are Family Households	% of Occupied Housing Units that are Married Couple Households
Ashburnham	84.4%	66.2%
Ashby	75.9%	65.9%
Bolton	82.9%	78.7%
Clinton	59.1%	42.5%
Fitchburg	61.6%	39.2%
Gardner	61.5%	40.4%
Harvard	82.1%	73.1%
Lancaster	71.7%	62.2%
Leominster	63.2%	43.4%
Lunenburg	73.8%	62.2%
Princeton	78.9%	66.4%
Sterling	81.7%	70.6%
Townsend	73.3%	60.5%
Westminster	74.3%	62.3%
Service Area Average	**73.2%**	**59.5%**
Middlesex County	64.7	51.50%
Worcester County	66.4%	50.1%
Massachusetts	62.8%	46.7%
U.S.	64.8%	47.5%
Source: 2015-2019 American Community Survey 5-Year Estimates		

Persons with Disabilities

The American Community Survey tracks a series of disabilities that have a notable impact on the health and well-being of those living with a disability. Those include hearing, vision, cognitive, ambulatory, self-care, and independent living capabilities. Unfortunately, the disabilities data is not tracked down to the town/city-specific area, but the data is tracked down to the county level. Middlesex and Worcester counties fall within the service area and have similar percentages of their respective populations living with these disabilities and similar rates compared to state and national averages, as seen in table PC-6.

"(We) can't forget the folks with physical disabilities either, who are already somewhat isolated under the best conditions.

PC - 6 Disability Status as Percentage of the Population by County, State and Nation 2019

Disability Type	Middlesex County	Worcester County	Massachusetts	United States
Hearing Difficulty				
Total Population with Disability	45,326	26,091	211,104	11,495,247
% Population with Disability	2.8%	3.2%	3.1%	3.6%
Vision Difficulty				
Total Population with Disability	22,813	14,675	112,017	7,467,040
% Population with Disability	1.4%	1.8%	1.6%	2.3%
Cognitive Difficulty				
Total Population with Disability	60,672	41,705	324,784	15,797,245
% Population with Disability	4.0%	5.4%	5.0%	5.2%
Ambulatory Difficulty				
Total Population with Disability	68,367	45,390	372,584	20,843,415
% Population with Disability	4.5%	5.9%	5.8%	6.9%
Self-Care Difficulty				
Total Population with Disability	27,453	18,857	157,832	8,004,156
% Population with Disability	1.8%	2.4%	2.4%	2.6%
Independent Living Difficulty				
Total Population with Disability	53,225	36,104	290,484	14,690,563
% Population with Disability	4.1%	5.6%	5.3%	5.9%

Source: American Community Survey 2015-2019 5-Year Estimates

Veteran Status

Table PC-7 shows that the civilian population in the service area at 6.8 percent was 1.8% higher than the state average and 0.1 % lower than the national average. Particularly notable are Ashby (7.4%), Fitchburg (8.2%), Gardner (8.4%), Harvard (8.3%), and Westminster (8.4%). Twelve communities have a higher veteran population than the state, five communities have a higher percentage than the nation, and nine communities have lower rates than the nation.

Additionally, the overall percentage of veterans living with disabilities in the service area (23.1%) ranks lower than the state (29.3%) and the nation (29.9%). Harvard has the highest percentage of veterans living with disabilities at 44.1%.

PC - 7 Veteran Status of Service Area Residents 2019

Community	# of Vets	% of Civilian Population Over Age 18 w/ Veteran Status	% of Veterans with a Disability
Ashburnham	298	6.3%	25.5%
Ashby	191	7.4%	15.7%%
Bolton	230	6.1%	10.0%
Clinton	632	5.7%	25.2%
Fitchburg	2,585	8.2%	31.0%
Gardner	1,386	8.4%	29.7%
Harvard	427	8.3%	44.1%
Lancaster	289	4.4%	12.1%
Leominster	2,308	7.1%	25.2%
Lunenburg	632	7.2%	23.7%
Princeton	126	4.6%	14.3%
Sterling	384	6.2%	20.5%
Townsend	517	6.9%	20.7%
Westminster	514	8.4%	18.9%
Service Area Average	**751**	**6.8%**	**23.1%**
Middlesex County	57,176	4.7%	28.4%
Worcester County	38,888	5.9%	30.4%
Massachusetts	277,814	5.0%	29.3%
U.S.	17,418,351	6.9%	29.9%
Source: 2015-2019 American Community Survey 5-Year Estimates			

Note: Red color scales, darker red cells are higher value, lighter red cells are lower value

Social and Economic Characteristics

Chapter 2

Abstract

This chapter provides a comprehensive overview of the social and economic characteristics of UMass Memorial Health - HealthAlliance-Clinton Hospital's 14 communities. Communities in the Service Area vary significantly in terms of their social and economic factors; some communities are rural while others are urban; some communities are affluent while others are economically disadvantaged; still, others have a strong business community, while some have little to no businesses supporting the tax base and providing employment. Due to these and other factors, the health disparities and inequities experienced by people in the region vary widely from community to community.

Chapter 2 – Social and Economic Characteristics

This chapter provides a comprehensive overview of the social and economic characteristics of UMass Memorial Health - HealthAlliance-Clinton Hospital's 14 communities. Communities in the Service Area vary significantly in terms of their social and economic factors; some communities are rural while others are urban; some communities are affluent while others are economically disadvantaged; still, others have a strong business community, while some have little to no businesses supporting the tax base and providing employment. Due to these and other factors, the health disparities and inequities experienced by people in the region vary widely from community to community.

This chapter presents the following socio-economic characteristics using data from the various quantitative sources listed in the introduction of this report:

- Income
- Poverty
- Household Composition
- Labor Force and Unemployment
- Education
- Housing and Homelessness
- Built Environment

Chapter Highlights

Income and Employment

- Fitchburg has the lowest per capita income at $27,007, with Gardner next lowest at $28,208 and Clinton at $29,464.
- Poverty rates are highest in Fitchburg (15.7%), Gardner (13.9%), Leominster (12.6%), and Clinton (11%).
- Poverty rates are concerning for the populations >65 yrs. in half of the service area communities.
- In 2020 the service area's annual average unemployment rate was 11.3 percent, which was higher than the state (9.8%) and national (8.1%) for that time period.
- Fitchburg (12.9%), Gardner (11.4%), and Leominster (10.9%) have the highest unemployment rates in the service area.
- U.S. poverty fell last year as government aid made up for lost jobs
- Education/Health/Social Services industry ranks number one with 23,376 employees, manufacturing ranks number two with 12,327 employees, retail ranks number three with 11, 580 employees.
- Healthcare is a growing industry in the area and there is a need for workforce pathways to educate and train new workers.

Education

- The high school graduation rate for the service area (20.02%) was lower than the state rate (24.4%)
- The Hispanic student population for the Service Area jumped from 13.3% in 2010 to 21.2% in 2020.
- Fitchburg (56%), Leominster (39%), Clinton (31%) and Gardner (23%) have the highest percentage of Hispanic students.
- The Fitchburg School District is now majority Hispanic student population.
- Fitchburg (75.6%), Gardner (65.4%), and Clinton (59%) school districts have high percentages of high needs students, defined as ELL, with disabilities and/or economically disadvantaged. These same three school districts have total expenditures per pupil less than the state average expenditure per pupil.

Housing and Homelessness

- All the Service Area communities have residents who are cost-burdened in their housing costs. This means they are paying >30% of their income on housing costs.
- Service Area average: 21.7% cost-burdened homeowners; 40.5% cost burdened with rent.
- Fitchburg, Gardner, Lancaster, Leominster, Sterling, Townsend, and Westminster all have >43% of their renters cost burdened.
- Ashburnham, Clinton, Fitchburg, Gardner, Leominster, Lunenburg, and Westminster all have >25% of their homeowners cost burdened.
- 3.3 percent of households have single women with children which is lower than the state (6.8%) and the nation (7.2%). However, Fitchburg (6.6%), Gardner (8%), and Leominster (7.5%) have high numbers of single mothers.
- As of 2019, 8.8% of households in the service area consisted of householders aged 65+ living alone, lower than the state (10.7%) and the nation (9.4%)

Built Environmental Influences

- Almost all of Gardner and sections of both Fitchburg and Leominster are Food Deserts where residents do not have the access to healthy food within a ½ mile of their residences.

Transportation

- Limitations on public transportation affects the ability to obtain healthcare, employment, and food. During COVID, these issues were exacerbated as low income people in rural areas of the Service Area were unable to take care of their healthcare needs.

Income

Various measures of wealth reflect the local economy's health: per capita, median household, and median family incomes. Per capita income is equal to the total income generated by a population divided by the number of persons in that area. Thus, communities with a higher number of persons per household or smaller household/family incomes would likely have lower per capita income figures.

Depicted in Table SE-1, per capita income for Massachusetts in 2019 was $43,761, while the HealthAlliance-Clinton Hospital (HA-C) Service Area was $43,090 (a difference of $671). The lowest per capita income in the region came from Fitchburg, where individual workers earned on average $23,622 and Gardner ($24,680); both were nearly over 60% lower than the Service Area average. The range in per capita income suggests that accessibility to healthcare services would vary widely from community to community, as some communities are better able to afford healthcare services. Despite being lower than the state, the average per capita income in the service area is higher than that of the nation ($34,103).

In comparing per capita incomes from the previous CHNA (2016 data), incomes have increased significantly throughout the service area. Table SE-1 shows that the Service Area per capita income increased by over 11%. Further, no individual community decreased in the three-year period.

SE - 1 Average Per Capita Income in the Service Area 2016 2019

Community	Average per capita income (2016)	Average per capita income (2019)
Ashburnham	$35,860	$39,063
Ashby	$32,514	$40,389
Bolton	$54,767	$62,060
Clinton	$30,955	$33,796
Fitchburg	$23,622	$27,007
Gardner	$24,680	$28,208
Harvard	$52,180	$59,208
Lancaster	$33,000	$33,862
Leominster	$29,529	$33,676
Lunenburg	$40,771	$44,134
Princeton	$54,940	$60,843

Sterling	$47,551	$54,066
Townsend	$38,606	$42,717
Westminster	$41,812	$44,228
Service Area Average	**$38,628**	**$43,090**
Middlesex*	$45,579	$52,228
Worcester County*	$33,272	$37,574
Massachusetts*	$38,069	$43,761
U.S.*	$29,829	$34,103
Sources: ACS 2015-2019 5-Year Estimates U.S. Census Bureau		

Another measure of wealth in a community is its median household and family income. Median Household Income (MHI) includes non-related person co-habitating, like young people living as roommates. Typically, MHI will be lower than Median Family Income (MFI).

Table SE-2 shows the service area MHI grew by 24.93% from 2016 to 2019 and the MFI grew by 24.52%. It is a positive sign that MHI kept pace with MFI. The 2019 Service Area average MHI is 24.28% higher than the state, and the MFI is 15.07%, which is again a good sign that MHI compares more favorably than MFI to the state averages.

The community with the highest MHI in 2019 was Harvard at $176,632, 74.98% higher than the service area median, 17.48% higher than the state median, and 81.06% higher than the national median. The community with the lowest median household income in 2019 was Gardner at $49,679, 63.47% lower than the state median and 26.49% lower than the national median.

Despite the Service Area averages exceeding state averages for both MHI and MFI, the table shows five communities at or below the state average for MHI: Clinton, Fitchburg, Gardner, Leominster, and Townsend.

SE - 2 Median Household and Family Incomes in the Service Area by Community 2016 and 2019

Community	Median Household Income (2016)	Median Family Income (2016)	Median Household Income (2019)	Median Family Income (2019)
Ashburnham	$86,219	$105,106	$95,625	$103,863
Ashby	$75,297	$95,207	$107,371	$118,366
Bolton	$151,023	$161,417	$173,024	$187,823
Clinton	$52,449	$66,071	$53,972	$71,667
Fitchburg	$50,617	$59,307	$57,207	$69,817
Gardner	$46,410	$59,007	$49,679	$63,843
Harvard	$131,719	$156,875	$176,632	$205,723
Lancaster	$55,322	$67,871	$99,420	$114,607
Leominster	$56,510	$71,991	$61,825	$77,757
Lunenburg	$113,816	$117,639	$113,750	$137,267
Princeton	$55,322	$67,871	$132,543	$145,305

Sterling	$104,187	$131,713	$109,952	$132,624
Townsend	$55,322	$67,871	$81,215	$108,281
Westminster	$96,953	$106,273	$100,972	$124,424
Service Area Average	**$80,798**	**$95,301**	**$100,942**	**$118,669**
Middlesex County*	$89,019	$111,926	$102,603	$128,001
Worcester County*	$65,223	$81,519	$74,069	$96,393
Massachusetts*	$66,866	$84,900	$81,215	$103,126
U.S.*	$53,046	$64,719	$62,843	$77,263
Sources: American Community Survey 2015-2019 5-Year Estimates U.S. Census Bureau				

It is also necessary to highlight veteran's economic status in the Service Area and their well-being to identify disparities in local determinants of health. Table SE-3 compares median incomes and unemployment rates of veterans compared to the overall community in 2019. The median income for veterans in the service area is lowest in Sterling at $35,491 and highest in Westminster at $86,250. The unemployment rate for veterans in most communities is notably higher as well when compared to the community overall in nearly every community. Eight communities report zero percent unemployment rates for veterans; however, the ACS estimates require sample sizes of a particular size to make the most accurate predictions.

SE - 3 Economic Well-Being of Service Area Veterans 2019

Community	Median Income of Veterans	Overall Median Income	Veteran Unemployment Rate	Overall Unemployment Rate 2019*
Ashburnham	$39,250	$95,625	0.0%	2.7%
Ashby	$65,703	$97,958	0.0%	2.6%
Bolton	$53,438	$173,024	0.0%	2.0%
Clinton	$40,250	$67,634	5.3%	3.6%
Fitchburg	$45,744	$52,207	5.5%	4.0%
Gardner	$37,260	$49,679	2.0%	3.8%
Harvard	$38,920	$156,667	0.0%	2.4%
Lancaster	$49,766	$93,646	0.0%	2.6%
Leominster	$39,832	$61,825	1.7%	3.3%
Lunenburg	$57,159	$103,228	0.0%	2.9%
Princeton	$39,688	$136,083	0.0%	2.9%
Sterling	$35,491	$121,458	12.6%	3.0%
Townsend	$39,135	$91,211	3.5%	2.6%
Westminster	$86,250	$100,972	0.0%	2.6%
Service Area Average	**$47,706**	**$100,087**	**2.2%**	**2.9%**
Middlesex County	$49,139	$102,603	3.3%	2.3%
Worcester County	$43,522	$78,679	4.2%	3.1%
Massachusetts	$44,676	$85,843	4.5%	2.9%
U.S.	$42,455	$65,712	5.3%	3.7%

Source: American Community Survey 2015-2019 5-Year Estimates *Overall Unemployment Rates for 2019 from MA Department of Labor and Workforce Development

Poverty

Table SE-4 shows that there is less poverty in the service area overall (6.3%) when compared to the state (10.3%), nation (13.4%), and even Middlesex (7.4%) and Worcester (10.4%) Counties. However, the overall poverty rates vary significantly between the cities and towns in the service area. Fitchburg, Gardner, and Leominster have the highest poverty rates at 15.7%, 13.9%, and 12.6%, respectively. At the other end of the spectrum, Bolton, Ashburnham, and Westminster have the lowest poverty rates at 1.1%, 1.8%, and 2.6%, respectively. Ten of the communities in the service area have lower poverty rates, and four have poverty rates higher, compared to the Service Area average of 6.3%.

Childhood poverty rates are higher in some of these cities and towns than the overall poverty rates. In 2019, notable communities include Fitchburg (21%), Leominster (19.6%) Gardner (17%) and Clinton (14.1%). These communities have poverty rates higher than the state (10.3%) and the national average.

These statistics can pose significant problems moving forward, as young people living in poverty struggle to get the proper nutrition and healthcare they need to develop fully and avoid future health problems.

SE - 4 Poverty Rates in the Service Area by Community 2019

Community	% of pop below 100% of poverty level by town	% of under 18 years old below poverty level in 2019	% of under 5 years old below poverty level in 2019	% of population 65+ years living below 100% of the poverty level in 2019
Ashburnham	1.8%	0.6%	0.0%	0.0%
Ashby	5.4%	6.7%	3.8%	0.0%
Bolton	1.1%	0.0%	0.0%	0.1%
Clinton	11.0%	14.1%	20.5%	8.0%
Fitchburg	15.7%	21.0%	22.0%	9.4%
Gardner	13.9%	17.0%	11.1%	10.3%
Harvard	3.4%	2.0%	0.0%	0.8%
Lancaster	4.2%	4.0%	0.0%	9.0%
Leominster	12.6%	19.6%	12.0%	7.7%
Lunenburg	2.9%	7.1%	14.9%	0.0%
Princeton	4.5%	0.0%	0.0%	0.0%
Sterling	3.0%	0.0%	0.0%	9.0%
Townsend	5.8%	2.7%	0.0%	10.0%
Westminster	2.6%	0.7%	0.0%	0.0%
Service Area Average	**6.3%**	**6.8%**	**8.3%**	**4.6%**
Middlesex County	7.4%	8.0%	9.2%	7.4%
Worcester County	10.1%	12.3%	13.4%	8.2%
Massachusetts	10.3%	13.2%	14.4%	9.0%
U.S.	13.4%	18.5%	20.3%	9.3%

Source: 2015-2019 American Community Survey 5-Year Estimates

Note: Darker shaded red cells are higher values, lighter shades are lower values

Table SE-5 shows changes in poverty rates. The table shows that compared to 2016 poverty levels, the Service Area has seen a decline in poverty overall from 8.4% to 6.1%. All communities but Lunenburg (0.7 % increase) saw declines in poverty rates from 2016 to 2019. The highest percent drop occurred in Gardner (5.1%) and Ashburnham (4.4%).

SE - 5 Percentage of Service Area Population Living Below Poverty 2016 and 2019

Community	% of pop below 100% of poverty level by town 2016	% of pop below 100% of poverty level by town 2019	% Change
Ashburnham	6.2%	1.8%	-4.4%
Ashby	7.7%	4.7%	-3.0%
Bolton	1.5%	1.1%	-0.4%
Clinton	14.5%	11.0%	-3.5%
Fitchburg	19.1%	15.7%	-3.4%
Gardner	19.0%	13.9%	-5.1%
Harvard	5.7%	3.4%	-2.3%
Lancaster	8.0%	4.2%	-3.8%
Leominster	13.7%	12.6%	-1.1%
Lunenburg	2.2%	2.9%	0.7%
Princeton	6.5%	4.8%	-1.7%
Sterling	5.5%	2.8%	-2.7%
Townsend	4.6%	3.8%	-0.8%
Westminster	2.8%	2.6%	-0.2%
Service Area Average	**8.4%**	**6.1%**	**-2.3%**
Middlesex County	7.8%	6.9%	-0.9%
Worcester County	9.5%	10.1%	0.6%
Massachusetts	10.4%	10.3%	-0.1%
U.S.	14.0%	12.3%	-1.7%
Source: 2015-2019 American Community Survey 5-Year Estimates			

Household Composition

As can be seen in Table SE-6, communities with the highest percentages of households with married couples in 2019 include Bolton (78.7%), Harvard (73.1%), and Sterling (70.6%). Throughout the Service Area, 58.9% of households have married couples. Of those married couple households, 22.8% have children under 18, slightly higher than the state (19.7%) and the nation (20.2%).

HealthAlliance-Clinton Hospital Service area includes 3.3% of households with single women and children, with higher percentages noted in Gardner (8.0%), Leominster (7.5%), and Fitchburg (6.6%). The Service Area rate of 3.3% was lower than the state (6.8%) and the nation (7.2%). Financial and child-care stresses can be exacerbated when for single head of household with a child; the Pandemic exposes many inequities due to children staying home from school.

Equally crucial to HealthAlliance-Clinton Hospital is the percentage of the *households* occupied by a person aged 65 or older and living alone; this group can be isolated from the community with limited access to socializing or other mental stimulants. As of 2019, this group comprised 8.8% of households in the Service Area, which was lower than the state (10.7%) and the nation (9.4%). By communities, the highest were Lancaster (16.3%), Leominster (12.2%), and Fitchburg (11.2%).

SE - 6 Household Composition in the Service Area by Community 2019

Community	% of Households Composed of Married Couples (2019)	% of Households Composed of Married Couples with Children Under 18 (2019)	% of Households Composed of Single Women and Children Under 18 (2019)	% of Households with Population 65+ Living Alone (2019)
Ashburnham	66.2%	26.6%	3.8%	5.2%
Ashby	65.9%	20.2%	1.8%	4.8%
Bolton	78.7%	38.8%	0.0%	7.2%
Clinton	36.2%	15.7%	3.7%	9.0%
Fitchburg	39.2%	15.6%	6.6%	11.2%
Gardner	40.4%	13.5%	8.0%	7.5%
Harvard	73.1%	31.1%	2.9%	5.6%
Lancaster	62.2%	25.0%	1.9%	16.3%
Leominster	43.4%	16.5%	7.5%	12.2%
Lunenburg	58.8%	20.9%	1.8%	10.1%
Princeton	66.4%	23.3%	1.6%	9.1%
Sterling	70.6%	26.8%	1.0%	5.6%
Townsend	60.5%	21.5%	2.2%	9.0%
Westminster	62.3%	23.5%	2.9%	9.8%
Service Area Average	**58.9%**	**22.8%**	**3.3%**	**8.8%**
Middlesex County	50.6%	21.4%	3.4%	8.4%
Worcester County	50.0%	21.9%	7.1%	18.8%
Massachusetts	46.3%	19.7%	6.8%	10.7%
U.S.	48.4%	20.2%	7.2%	9.4%
Source: 2015-2019 American Community Survey 5-Year Estimates				

Labor Force and Unemployment

Unemployment significantly hinders an individual's ability to access healthcare. With no employer to provide healthcare benefits, no income to pay medical bills, and no activity to keep physically and mentally active, some studies have shown a positive association "between unemployment and a greater risk of morbidity." HealthAlliance needs to take note of the unemployment rates among the communities it serves.

Table SE-7 below shows labor size in each community. They range from 1,862 in Ashby to 22,833 in Leominster. The unemployment rates of the Service Area communities are as low as 5.8% in Bolton and

as high as 12.9% in Fitchburg. Four of the communities have higher rates than the Commonwealth. Typically, the highest unemployment rates occur in the communities with the highest labor forces: Clinton(labor force of 8,298, unemployment of 10%), Fitchburg (labor force of 19,953, unemployment rate of 12.9%), Gardner (labor force of 9,778, unemployment rate of 11.4%) and Leominster (labor force of 22,383, unemployment rate of 10.9%).

SE - 7 Labor Force Participation and Unemployment Rates in the Service Area by Community 2020

Community	Total Labor Force	# Employed	# Unemployed	Unemployment Rate
Ashburnham	3,609	3,309	300	8.3%
Ashby	1,862	1,706	155	8.3%
Bolton	2,906	2,736	169	5.8%
Clinton	8,298	7,465	833	10.0%
Fitchburg	19,953	17,373	2,580	12.9%
Gardner	9,778	8,667	1,111	11.4%
Harvard	2,636	2,480	156	5.9%
Lancaster	3,921	3,633	288	7.3%
Leominster	22,383	19,952	2,431	10.9%
Lunenburg	6,514	5,961	553	8.5%
Princeton	1,915	1,769	146	7.6%
Sterling	4,368	4,014	354	8.1%
Townsend	5,413	4,959	454	8.4%
Westminster	4,584	4,189	395	8.6%
Service Area Overall Total	**98,140**	**88,213**	**9,925**	**11.3%**
Massachusetts	3,660,817	3,305,825	354,967	9.8%
U.S.	12,891,020	12,105,000	12,947,000	8.1%

Source: MA Department of Labor and Workforce Development

Note: Darker cells denote higher values

It is crucial to note the decline in manufacturing and retail jobs nationwide as mature manufacturing industries continue their downward slide, and e-commerce sites like Amazon.com become more popular with consumers to use as an alternative to going to local stores and malls. These trends have troubling indications for the HealthAlliance-Clinton Hospital Service Area workers, as a loss of jobs in these industries can have devastating effects on the local economy. It is important to note that hospitals in the Service Area are a top employer for local residents, and the healthcare industry continues to grow.

Table SE-8 shows the distribution of the 91,615 workers in the region, and a few industries stand out. Education/Health/Social Services ranks number one with 23,376 employees, manufacturing ranks

number two with 12,327 employees, retail ranks number three with 11, 580 employees, and professional, science, management, and waste management rank number four with 10,350 employees.

SE - 8 Employment by Sector in the Service Area by Community 2019

Community	AGR/FOR/FIS/MIN	CONS	MFG	WS	RT	TRM/WAR/UTL	INFO	FIN/INS/RE	PRO/SCI/MGN/WMS	EDU/HLTH/SS	ART/ENT/REC/FDS	OTHER	PA	Total by Community
Ashburnham	20	166	295	35	575	54	99	189	362	122	303	175	70	465
Ashby	11	273	238	30	116	73	45	47	229	455	85	90	100	1,792
Bolton	40	164	391	67	310	98	100	225	629	577	100	52	18	2,771
Clinton	30	839	1,112	205	1,000	338	103	451	816	1,696	712	184	363	7,849
Fitchburg	30	1,292	2,770	461	2,613	934	116	972	1,657	5,335	1,834	792	820	19,626
Gardner	43	538	160	184	1,262	433	58	419	713	2,661	1,085	558	354	9,868
Harvard	32	145	367	76	213	35	79	158	526	737	213	116	87	2,784
Lancaster	18	495	566	96	334	123	44	120	350	856	324	123	122	3,571
Leominster	126	1,149	3,440	518	3,023	1,021	220	1,045	2,056	5,819	1,191	999	927	21,534
Lunenburg	55	386	649	124	783	217	132	314	867	1,588	525	161	310	6,111
Princeton	14	91	236	51	221	29	30	82	376	432	153	110	67	1,892
Sterling	45	306	697	137	173	171	54	332	587	1,083	314	235	92	4,226
Townsend	18	495	693	66	634	178	156	327	723	1,067	318	186	269	5,130
Westminster	0	379	713	52	323	196	14	102	459	948	338	268	204	3,996
Service Area/Region Total	**482**	**6,718**	**12,327**	**2,102**	**11,580**	**3,900**	**1,250**	**4,783**	**10,350**	**23,376**	**7,495**	**4,049**	**3,803**	**91,615**
Region Average	**34**	**480**	**881**	**150**	**827**	**279**	**89**	**342**	**739**	**1,670**	**535**	**289**	**272**	**6,544**
Middlesex County*	1,771	41,628	87,156	16,206	75,379	25,723	27,354	63,912	165,924	252,859	63,053	38,398	29,417	888,780
Worcester County*	1,909	26,962	51,109	10,439	47,977	18,255	7,834	25,900	46,907	118,178	32,402	18,420	15,546	421,838
Massachusetts*	14,795	205,718	317,827	78,806	370,824	140,484	82,102	265,085	506,967	1,018,564	312,504	161,589	137,110	3,612,375
U.S.*	2,743,687	10,207,602	15,651,460	4,016,566	17,267,009	8,305,602	3,114,222	10,151,206	17,924,655	35,840,954	14,962,299	7,522,777	7,134,146	158,842,185

Source: American Community Survey 2015-2019 5-Year Estimates

AGR = Agriculture	CONS = Construction	TRN = Transportation	FIN = Finance	SCI = Scientific	HLTH = Health Care	REC = Recreation
FOR = Forestry	MFG = Manufacturing	WAR = Warehousing	INS = Insurance	MGN = Management	SS = Social Services	FDS = Food Service
FIS = Fishing	WS = Wholesale Trade	UTL = Utilities	RE = Real Estate	WMS = Waste Manage.	ART = Arts	OTHR = Other
MIN = Mining	RT = Retail	INFO = Information	PRO = Professional	EDU = Education	ENT = Entertainment	

Table SE-9 presents the changes that took place in the local economy from 2001 to 2019. The number of establishments in HealthAlliance-Clinton Hospital's Service Area increased by 86 establishments (26.5%). All but one of HealthAlliance-Clinton Hospital's Service Area communities (Clinton- 1.5% = 7) gained establishments during this period. Establishment growth was highest in Westminster, where they grew by 50.7% (+75), followed by Ashby at 49.1% (+28) and Harvard at 46.1% (+82). Despite increased establishments in places like Westminster, job growth has not necessarily equated to higher wages. Westminster's total wages decreased by 9.5% in that time. Conversely, Harvard added 82 new establishments since 2001 and saw wages explode to 928.24%. Only one community saw wages decrease while the remaining thirteen saw wages increase between 2.5% and 928.24%. As a result, total wages increased in the service area by $1,265,023,276.

SE - 9 Employment and Wages in the Service Area by Community 2001 v. 2019

	# of Establishments			Total Wages			Average Monthly Employment			Average Weekly Wage		
Community	2001	2019	% Change	2001	2019	% Change	2001	2019	% Change	2001	2019	% Change
Ashburnham	105	121	15.2%	$34,610,406	$49,584,278	43.3%	1,064	1,011	-5.0%	$626	$943	50.6%
Ashby	57	85	49.1%	$6,728,816	$17,007,429	152.8%	238	413	73.5%	$544	$792	45.6%
Bolton	125	169	35.2%	$97,583,330	$100,032,138	2.5%	2,286	1,717	-24.9%	$821	$1,120	36.4%
Clinton	324	319	-1.5%	$189,444,590	$241,845,820	27.7%	4,865	4,328	-11.0%	$749	$1,075	43.5%
Fitchburg	934	1,236	32.3%	$455,722,580	$623,972,048	36.9%	14,460	13,521	-6.5%	$608	$887	45.9%
Gardner	452	519	14.8%	$261,384,725	$418,898,181	60.3%	8,463	8,642	2.1%	$594	$932	56.9%
Harvard	178	260	46.1%	$37,814,304	$388,790,297	928.2%	963	5,040	423.4%	$755	$1,483	96.4%
Lancaster	147	191	29.9%	$72,513,155	$114,551,479	58.0%	2,395	2,387	-0.3%	$582	$923	58.6%
Leominster	1,160	1,452	25.2%	$573,403,307	$908,115,620	58.4%	18,685	20,249	8.4%	$590	$862	46.1%
Lunenburg	208	285	37.0%	$83,340,269	$136,714,523	64.0%	2,464	2,773	12.5%	$650	$948	45.8%
Princeton	74	90	21.6%	$19,800,803	$27,335,086	38.1%	741	825	11.3%	$514	$637	23.9%
Sterling	197	264	34.0%	$74,773,853	$136,364,628	82.4%	2,163	2,651	22.6%	$665	$989	48.7%
Townsend	176	205	16.5%	$72,124,379	$96,085,261	33.2%	2,229	2,082	-6.6%	$622	$888	42.8%
Westminster	148	223	50.7%	$158,406,240	$143,377,245	-9.5%	3,266	2,664	-18.4%	$933	$1,035	10.9%
Service Area Average	**306**	**387**	**26.5%**	**$152,689,340**	**$243,048,145**	**59.2%**	**4,592**	**4,879**	**6.3%**	**$661**	**$965**	**46.0%**
Service Area Total	**4,285**	**5,419**	**26.5%**	**$2,137,650,757**	**$3,402,674,033**	**59.2%**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
Massachusetts*	193,547	261,292	35.0%	$147,345,755,224	$274,265,224,027	**86.1%**	3,276,103	3,633,365	10.9%	865	1452	67.9%

Source: Massachusetts Division of Unemployment Assistance

"We need to look at financial health of the minorities – communities should be welcoming to all ethnicities, people of color, etc."

Education

Public Schools Available

Nine public school districts cover the 14 communities in the Service Area, with 44 individual schools contained within those districts. There are 22 elementary schools, ten middle schools, and 11 high schools. Table SE-10 shows all the individual schools and the grades served, location, enrollment total, and Service Area communities included. All of the communities in the Service Area have access to traditional academic high schools and regional technical vocational high schools.

SE - 10 Public Schools Available in the Service Area Including Enrollment Totals (2020-21)

School District	Schools Available	Grades	Location	Enrollment Total	Service Area Communities Included
Ashburnham-Westminster	John Briggs Elementary School	PK-5	Ashburnham	461	Ashburnham
	Meetinghouse Elementary School	K-1	Westminster	157	Westminster
	Westminster Elementary School	2-5	Westminster	370	
	Overlook Middle School	6-8	Ashburnham	559	
	Oakmont High School	9-12	Ashburnham	647	
	Clinton Elementary School	PK-4	Clinton	755	Clinton
	Clinton Middle School	5-8	Clinton	581	

Clinton School District	Clinton Senior High	PK-9-12	Clinton	491	
Fitchburg School District	Elementary Schools (4) Middle/Junior High (2) High School (2)	PK, K,1-8 5-8 PK-9-12	Fitchburg Fitchburg Fitchburg	2,390 1,320 1,406	Fitchburg
Gardner School District	Waterford Street School Elm Street School Gardner Middle School Gardner High School Gardner Academy for Learning & Tech.	PK-1 2-4 5-7 8-12 9-12	Gardner	370 452 544 731 114	Gardner
Harvard School District	Bromfield Hildreth Elementary School	6-12 PK, K 1-5	Harvard Harvard	593 413	Harvard
Leominster School District	Bennett Center for Technical Educ. Innovation Fall Brook School Frances Drake School Johnny Appleseed Leominster Center For Excellence Leominster High School Lincoln School Northwest Priest Street Samoset School Sky View Middle School	PK 9-12 K-5 K-5 K-5 9-12 9-12 PK K-5 K 6-8 6-8	Leominster Leominster Leominster Leominster Leominster Leominster Leominster Leominster Leominster Leominster Leominster Leominster	51 784 593 501 645 44 1,060 24 676 84 510 887	Leominster
Lunenburg School District	Lunenburg High Lunenburg Middle School Lunenburg Primary School Turkey Hill Elementary School	9-12 6-8 PK, K 1-2 3-5	Lunenburg Lunenburg Lunenburg Lunenburg	474 386 385 344	Lunenburg
Montachusett Regional Vocational Technical	Montachusett Regional Vocational Technical School				Ashburnham, Athol Gardner, Hubbardston,

School		9-12	Fitchburg	1417	Petersham, Royalston, Templeton, Westminster, Winchendon, Phillipston
Nashoba School District	Center School	PK,K 1-5	Nashoba	472	
	Florence Sawyer School	PK, K 1-8	Nashoba	717	Bolton
	Hale	6-8	Nashoba	300	Lancaster
	Luther Burbank Middle School	6-8	Nashoba	239	Stow
	Mary Rowlandson Elementary	PK, K 1-5	Nashoba	438	

Source: Massachusetts Department of Elementary and Secondary Education

Tables SE-11 shows student enrollment by race/ethnicity in Service Area schools for the 2020-2021 school year. The Hispanic student population for the Service Area (21.2%) was similar to the state (22.3%) The total percent of white student was 67.4% which was greater than the state at 56.8%. The Service Area black student population (3.3%) was well below the state (9.3%). Fitchburg, Gardner, and Monty Tech were highest in diverse student populations. The HealthAlliance-Clinton Hospital Service Area will likely continue to show change in racial/ethnic percentages, and the hospital must prepare for these changes with diverse staff especially those who speak the languages.

SE – 11 Student Enrollment by Race/Ethnicity in the Service Area School Districts 2020/2021

School District	% African American	% Asian	% Hispanic	% Native American	% White	% Native Hawaiian, Pacific Islander	% Multi-Race, Non-Hispanic
Ashburnham-Westminster	1.2%	1.0%	5.1%	0.1%	89.6%	0%	3%
Clinton School District	3.2%	1.0%	31.1%	0.0%	62.1%	0.1%	2.5%
Fitchburg School District	6.1%	4.4%	55.7%	0.0%	26.2%	0.0%	7.6%
Gardner School District	3.2%	2.4%	23.2%	0.2%	63.4%	0.0%	7.6%
Harvard School District	2.4%	12.0%	4.4%	0.0%	76.5%	0.0%	4.7%
Leominster School District	8.4%	3.5%	38.6%	0.1%	45.0%	0.0%	4.4%
Lunenburg School District	1.9%	1.5%	9.4%	0.3%	83.5%	0.6%	2.8%
Montachusett Regional Vocational Technical	2.0%	1.8%	17.2%	0.0%	74.9%	0.0%	4.1%
Nashoba	1.4%	3.7%	6.4%	0.1%	85.3%	0.1%	3.0%
Service Area Average	**3.3%**	**3.5%**	**21.2%**	**0.1%**	**67.4%**	**0.1%**	**4.4%**
Massachusetts	9.3	7.2	22.3	0.2	56.8	0.1	4.1
Source: MA DESE							

Table SE-12 shows the percent change in race/ethnicity from the 2010/2011 school year to the 2020/2021 school year. The changes to Hispanic and white students noted above is shown below by school districts. All school districts experienced these changes though some more so than others. Leominster, Gardner, Fitchburg, and Clinton experienced double digit changes. The Fitchburg School District is now a majority Hispanic student population at 56%. These changing racial and ethnic populations require healthcare providers to be aware of the needs of these growing populations, such as language barriers, as well as cultural differences. Because school district data is mandatory for submission to the state, changes in race/ethnicity can be seen sooner than typical population data sets, such as the US Census American Community Survey 5-year Estimates.

SE – 11 Percent Change in Race/Ethnicity in Service Area School Districts 2010-2011 v. 2020-2021

School District	African American % Change	Asian % Change	Hispanic % Change	Native American % Change	White % Change	Native Hawaiian, Pacific Islander % Change	Multi-Race, Non-Hispanic % Change

Ashburnham-Westminster	0.3%	-0.2%	1.6%	0.0%	-2.9%	0.0%	1.2%
Clinton School District	-0.9%	-0.4%	11.8%	-0.2%	-12.1%	0.1%	1.7%
Fitchburg School District	-0.7%	-1.3%	13.5%	-0.1%	-14.5%	0.0%	3.1%
Gardner School District	-0.1%	0.3%	12.2%	-0.1%	-17.2%	0.0%	4.9%
Harvard School District	-0.3%	5.2%	2.7%	-0.1%	-10.8%	-0.1%	3.4%
Leominster School District	2.2%	0.1%	14.5%	-0.1%	-18.5%	-0.1%	1.9%
Lunenburg School District	0.6%	0.0%	7.1%	-0.2%	-9.3%	0.3%	1.5%
Montachusett Regional Vocational Technical	0.3%	-0.3%	4.3%	-0.1%	-3.8%	-0.1%	-0.3%
Nashoba	0.3%	0.8%	3.3%	0.0%	-4.9%	0.0%	0.5%
Service Area Average	**0.2%**	**0.5%**	**7.9%**	**-0.1%**	**-10.4%**	**0.0%**	**2.0%**
Massachusetts	1.1	1.7	6.9	0.0	-11.2	0.0	1.7
Source: MA DESE							

Table SE-12 shows the percentage of English Language Learner (ELL), disabled, economically disadvantaged, and high needs students. ELL is a student whose first language is a language other than English and cannot perform ordinary classroom work in English. The state considers a student Economically Disadvantaged if the student participates in one or more of the following state-administered programs: Supplemental Nutrition Assistance Program (SNAP), Transitional Assistance for Families with Dependent Children (TAFDC), the Department of Children and Families (DCF) foster care program, and MassHealth (Medicaid). The state designates a student to be high needs if they are low-income (before the school year), ELL or former ELL, or a student with disabilities.

Economically disadvantaged is a new term for the MA Department of Elementary and Secondary Education (DESE). Before 2015, DESE quantified low-income students based on family income, and this determined whether a student could quality or free or reduced lunch. The new economically disadvantaged category includes other metrics of low-income in deciding whether students need resources.

The state calculates the percent of high needs students by summing the number of low income (pre-2015) or economically disadvantaged (post-2015), disabled, and ELL students, then dividing that total by enrollments.

SE - 12 Student Enrollment by English Language Learning, Disability, Economic Disadvantage, and High Needs (2020-2021)

School District	School	Grades	% English Language Learner (ELL)	% Students with Disabilities	% Economically Disadvantaged	% High Needs
Ashburnham-Westminster	All schools	Pre K-12	1.5	19.4	19.9	34.4
Clinton School District	All schools	Pre K-12	13.4	22.8	43.7	59
Fitchburg School District	All schools	Pre K-12	15.7	24.2	66.4	75.6
Gardner School District	All schools	Pre K-12	5	22.5	56.7	65.4
Harvard School District	All schools	Pre K-12	0.6	11.1	8.2	18.8
Leominster School District	All schools	Pre K-12	11.8	23.8	46.6	61
Lunenburg School District	All schools	Pre K-12	1.1	16.3	20.7	32.1
Monty Tech Regional Vocational Technical School	All schools	9-12	1.1	16.3	20.7	32.1
Nashoba School District	All schools	Pre K-12	3	17.4	10.2	26.5
Massachusetts	All schools	Pre K-12	10.5	18.7	36.6	51
Sources: MA DESE; National Center for Education Statistics (NCES)						

Attendance, Discipline, Graduation, and Drop-out Rates

Table SE-13 shows the attendance and retention rates for all of the Service Area school districts. Attendance rate indicates the average percentage of days in attendance for students enrolled in grades PK-12. Ashburnham School District has the highest attendance rate at 96. The district with the lowest attendance rate is Fitchburg (93.5%).

Chronically Absent is the percentage of students absent 10% or more of their total days of membership in a school. For example, a student who enrolled in a school for 50 days and missed five days, the student is counted as absent 10% or more that school year. Three of the fourteen school districts have a chronically absent rate higher than the state (13%), and the district with the highest rate is Fitchburg (22.4%). The school district with the lowest rate is Ashburnham-Westminster (6.8%).

The unexcused-absences rate is calculated based on the number of students with unexcused absences for more than nine days divided by the end of the year enrollment (including transfers, dropouts, etc.). Each local school district defines unexcused absence. The district with the highest rate of unexcused absences is Gardner (14.1%). The districts with the lowest number of unexcused absences are Clinton, Harvard, Lunenburg, and Nashoba (0%).

The state measures retention rate as the percentage of students enrolled in grades 1-12 who repeat their prior year. Gardner (1.6%) had the highest retention, and Harvard (0.1%) had the lowest retention rate. Only two districts have a greater retention rate than the state (1.2%): Gardner and Fitchburg.

SE - 13 Attendance and Retention Rates of School Districts in the Service Area (2019-2020)

School District	Attendance Rate	Average # of Days Absent	Absent 10 or more days	Chronically Absent (10% or more)	Unexcused Absences >9	Retention Rate
Ashburnham-Westminster	96	4.3	8.3	6.8	5.8	0.6
Clinton School District	94.6	5.8	18.8	13.8	0	0.4
Fitchburg School District	93.5	6.8	24.1	22.4	13.4	1.3
Gardner School District	93.8	6.3	21.1	19.1	14.1	1.6
Harvard School District	95.9	4.4	8.8	7.6	0	0.1
Leominster School District	95	5.4	16.2	14.2	11.4	0.8
Lunenburg School District	95.7	4.6	10.9	8.4	0	0.4
Monty Tech Regional Vocational Technical School	95.5	5	12.2	10.5	6.4	0.8
Nashoba School District	95.5	4.9	10.1	8	0	0.3
Massachusetts	**94.7**	**5.7**	**16**	**13**	**6.8**	**1.2**
Source: MA DESE						

Table SE-14 shows the in and out of school suspension percentages for the 14 school districts in the Service Area. Leominster has the highest in-school suspensions at 6.1, far above the other school districts and the state (1.2%). Nashoba has the lowest rate of in-school suspensions at 0.2

The district with the highest out-of-school suspension rate is Leominster at 3.1%. The district with the lowest out-of-school suspension rate is Gardner at 1.3%. A reminder that every school district has different policies and procedures regarding discipline, so comparing them may not all be equal.

SE – 14 Student Suspensions by School District in the Service Area (2019-2020)

School District	% In-School Suspension	% Out-of-School Suspension
Ashburnham-Westminster	2.6	0.4
Clinton School District	0.6	2
Fitchburg School District	1.6	2.2
Gardner School District	0.7	1.3
Harvard School District	N/A	N/A
Leominster School District	6.1	3.1
Lunenburg School District	0.9	1.9
Monty Tech Regional Vocational Technical School	2.3	3
Nashoba School District	0.2	0.5
Massachusetts	1.2	2
Source: MA DESE; NCES		

Table SE-15 presents the graduation and dropout rates for each Service Area school district. The number in Cohort is the number of students who graduated in four years, and the Percent Graduated is

based on that number. The "Percent Still in School" is the students who did not graduate within the 4 years, and the Percent Graduated is based on that number. The Percent Still in School is the students who did not graduate within the four years. Non-Grad Completer includes: 1) students who earned a certificate of attainment, 2) students who met local graduation requirements, but the district does not offer certificates of attainment, and 3) students with special needs who reached the maximum age (22) but did not graduate.

The school district with the highest percentage graduated is Lunenburg with 98%. The district with the lowest percent graduated is Gardner with 83.3%. According to the 2018 CHNA, the graduation rate for Gardner increased from 71.6 % in 2013 to 75.6% in 2017, a 4.3% increase in four years.

The percent of students who dropped out of high school was highest in Gardner at 8.1%. The percent of students who dropped out of high school was lowest in Ashburnham-Westminster at zero percent. Fortunately, no school districts permanently expelled any students from school.

SE - 15 Student Graduation and Dropout Rates by School District in the Service Area (2020)

School District	School	# in Cohort	% Graduated	% Still in School	% Non-Grad Completers	% H.S. Equivale	% Dropped	% Permanentl y
Ashburnham-Westminster	Oakmont High	172	94.2	5.8	0	0	0	0
Clinton School District	Clinton Sr. High	112	89.3	4.5	0	0.9	5.4	0
Fitchburg School District	Fitchburg Sr. High	376	87.2	6.1	0.8	0.5	5.3	0
Gardner School District	Gardner Sr. High	209	83.3	8.1	0	0.5	8.1	0
Harvard School District	Harvard Sr. High	90	96.7	2.2	0	0	1.1	0
Leominster School District	Leominster Sr. High	444	93.5	3.8	0.5	0.7	1.6	0
Lunenburg School District	Lunenburg Sr. High	99	98	1	0	0	1	0
Monty Tech Regional Vocational Technical School	Monty Tr. High	120	92.5	5	0	0	2.5	0
Nashoba School District	Nashoba Regional	220	95	0.9	0	0.5	3.6	0
Massachusetts	Total High Schools In MA	74,232	89	5.3	0.6	0.4	4.7	0
Source: MA DESE; NCES								

Table SE-16 shows the plans of students after high school graduation in the Service Area districts. The number of graduates, percent attending two and four-year colleges and universities, other post-secondary settings, work, military, other and unknown is all included. The technical high schools will typically have fewer graduates attending college as they are skilled in a trade that allows them to work right out of high school.

The district with the highest percent of graduated students attending college is Nashoba, with 89.7%. The district with the lowest percent is Fitchburg, with 54.1%.

SE - 16 Plans of High School Graduates by School District in the Service Area (2019-2020)

School District	# of Graduates	% Attending Coll./Univ.	% 2 Year Private College	% 4 Year Private College	% 2 Year Public College	% 2 Year Private College	% Other Post-Secondary	Work	Military	Other	Un-known
Ashburnham-Westminster	157	81.5	0	21.8	22.7	0	0	10.4	2.4	1.2	9.6
Clinton School District	106	63.2	0	28.4	20.9	0	2.9	11.5	1.9	1	1.9
Fitchburg School District	376	54.1	0.3	7.3	30.3	0.3	2.3	26.4	2.6	1.6	13.1
Gardner School District	209	73.8	0.5	10.1	36.4	0.5	5.1	16.7	2.5	0	2
Harvard School District	90	57.1	0	56.3	1.1	0	0	0	0	0	2.3
Leominster School District	444	67.1	0.5	7.6	20.3	0.5	2.1	22	3.3	0.2	5
Lunenburg School District	99	78.3	0	26.8	7.2	0	0	0	0	0	21.6
Monty Tech Regional Vocational Technical School	335	55.2	0	9.3	24.9	0	1.8	31.5	0.9	3.6	6.9
Nashoba School District	220	89.7	0.5	47.9	11.3	0.5	0	0.9	0.9	0.9	5.2
Massachusetts	68,223	72.2	0.1	37.2	22.6	0.1	2.1	10.3	1.7	1.7	9.6
Source: MA DESE											

Per Pupil Expenditures are calculated by dividing a district's operating expenditures by its average pupil membership, including in-district expenditures per pupil and total expenditures per pupil. Each school district must supply a comprehensive report of revenues and expenditures to the state for each fiscal year.

Table SE-17 shows that the Montachusett Regional Voc-Tech school had the highest per-pupil expenditures. This may reflect the investment in tools and machinery voc-tech schools need versus other school districts where such resources are not needed. The school district with the lowest per-pupil expenditures is the Ashburnham-Westminster school district.

SE - 17 Per Pupil Expenditure Per School District in the Service Area 2019

School District	Total Expenditure Per Pupil
Ashburnham-Westminster	$13,131
Clinton School District	$14,537
Fitchburg School District	$15,037
Gardner School District	$13,554
Harvard School District	$19,957
Leominster School District	$14,748
Lunenburg School District	$13,783
Montachusett Regional Vocational Technical	$19,770
Nashoba School District	$17,362
Massachusetts	$17,150
Source: MA DESE	

Table SE-18 shows the percentage of teachers according to race/ethnicity, and gender for the Service Area school districts. Overall, the teachers are predominantly white females. All districts in the Service Area have higher rates of white teachers than the state (88 .9%) and the nation (80%). With the growing population of Hispanic and Multi-Race students, the teacher race/ethnicity should keep up with the population trends of the students.

SE - 18 Teacher Race/Ethnicity and Gender by School District in the Service Area (2019-2020)

School District	% African American	% Asian	% Hispanic	% White	% Native American	% Native Hawaiian ,Pacific Islander	% Multi-Race, Non-Hispanic	Males	Females
Ashburnham-Westminster	1.3	0	0.7	97.4	0	0	0.7	22.9	77.1
Clinton School District	0.4	0.4	3.9	93.8	0	0	1.5	18	82
Fitchburg School District	1.7	1	9.1	87.6	0	0	0.6	18.5	81.5
Gardner School District	0.3	1.2	2.5	94.9	0	0	1.1	23.7	76.3
Harvard SchoolDistrict	0.7	1.7	2.3	94.7	0	0.7	0	19.9	80.1
Leominster School District	1.8	0.9	4.3	93.1	0	0	0	18.2	81.8
Lunenburg School District	0	0	0	99.6	0	0.4	0	18.9	81.1
Montachusett Regional Vocational Technical	0.5	0	4.4	94	1.1	0	0	42.7	57.3
Nashoba School District	0.2	1.1	0.2	98.3	0	0	0.2	19.6	80.4
Massachusetts	4.60	1.70	4.90	88.10	0.1	0.1	0.5	20.40	79.60
Source: MA DESE									

Table SE-19 shows student to teacher ratios for the Service Area school districts. These ratios can vary greatly and often will correlate with per pupil spending. School/Teacher union contracts will often cap these ratios.

SE - 19 Student/Teacher Ratio per School District in the Service Area (2020-2021)

School District	School	Grades	# of Teachers	Student/ Teacher Ratio
Ashburnham-Westminster	John Briggs Elementary School	PK-5	36.1	12.8 to 1
	Meetinghouse Elementary School	K-1	12.3	12.7 to 1
	Westminster Elementary School	2-5	23.9	15.5 to 1
	Overlook Middle School	6-8	35.7	15.7 to 1
	Oakmont High School	9-12	45.7	14.2 to 1

Clinton	Clinton Elementary School	PK-4	54.3	13.9 to 1
	Clinton Middle School	5-8	35.5	16.4 to 1
	Clinton Senior High School	9-12	37.2	13.2 to 1
Fitchburg	Arthur M Longsjo Middle School	5-8	53.2	12.5 to 1
	Crocker Elementary	PK-4	44.7	12.7 to 1
	Fitchburg High	9-12	86.7	14.6 to 1
	Goodrich Academy	9-12	9.4	14.7 to 1
	McKay Arts Academy	PK-8	47.9	13.7 to 1
	Memorial Middle School	5-8	48.3	13.6 to 1
	Reingold Elementary	PK-4	40	14.4 to 1
	South Street Elementary	PK-4	43	13.8 to 1
Gardner	Waterford Street School	PK-1	30	12.3 to 1
	Elm Street School	2-4	39.5	11.4 to 1
	Gardner Middle School	5-7	42	13.0 to 1
	Gardner High School	8-12	58.4	12.5 to 1
	Gardner Academy for Learning	9-12	7.8	14.6 to 1
Harvard	Bromfield School	6-12	56.1	10.6 to 1
	Hildreth Elementary School	PK-5	35.9	11.5 to 1
Leominster	Bennett School	PK	6	8.5 to 1
	Center for Technical Education Innovation	9-12	51.4	15.3 to 1
	Fall Brook School	k-5	38	15.6 to 1
	Frances Drake School	k-5	38.7	12.9 to 1
	Johnny Appleseed School	k-5	42	15.4 to 1
	Center for Excellence	9-12	5.6	7.9 to 1
	Leominster High School	9-12	63.7	16.6 to 1
	Lincoln School	PK	4	6.0 to 1
	Northwest School	k-5	42	16.1 to 1
	Priest Street School	k	5	16.8 to 1
	Samoset School	6-8	33.8	15.1 to 1
	Sky View Middle School	6-8	48	18.5 to 1
Lunenburg	Lunenburg High School	9-12	30.8	15.4 to 1
	Lunenburg Middle School	6-8	27.3	14.1 to 1
	Lunenburg Primary School	PK-2	25.2	15.3 to 1
	Turkey Hill Elementary School	3-5	23.9	14.4 to 1
Montachusett Regional Vocational Technical School	Montachusett Regional Vocational Technical School	9-12	105	13.5 to 1
Nashoba	Center School	pk-5	40	11.8 to 1
	Florence Sawyer School	pk-8	65.3	11.0 to 1
	Hale School	6-8	28	10.7 to 1
	Luther Burbank Middle School	6-8	24.6	9.7 to 1
	Mary Rowlandson Elementary	pk-5	40.9	10.7 to 1
	Nashoba Regional	9-12	66.4	13.9 to 1
Source: MA DESE				

Educational Attainment

Table SE-20 shows education attainment levels for each community in the Service Area. Residents in the Service Area have access to Mount Wachusett Community College (MWCC) in Gardner and Fitchburg State University in Fitchburg. MWCC offers two-year programs, and Fitchburg State

University offers four-year programs. These schools are convenient to area residents and accommodate schedules for working adults, including some online courses.

Population with a High School degree only in the Service Area (25%) was similar to the state (24%) and Middlesex County (27.8%), but higher than Worcester County (19%). The highest rates for High School degree only include Gardner (35%), Fitchburg (34.9%), Ashby (32.6%), Leominster (29.1%), and Clinton (28.9%). Of course, this group, only Ashby showed a single digit rate for No High School diploma.

SE - 20 Educational Attainment in the Service Area for Population 25 Years and Over

Community	No High School Diploma	High School Graduate	Some College, No Degree	Associate degree	Bachelor's Degree	Graduate or Professional Degree
Ashburnham	2.6%	24.4%	21.4%	11.9%	27.2%	12.6%
Ashby	6.9%	32.6%	15.6%	11.6%	21.6%	11.6%
Bolton	1.1%	11.6%	10.3%	8.1%	32.8%	36.1%
Clinton	10.6%	28.9%	19.7%	11.3%	20.6%	8.8%
Fitchburg	14.9%	34.9%	20.2%	9.1%	14.1%	6.8%
Gardner	11.0%	35.0%	22.7%	13.1%	11.+6	6.7%
Harvard	2.9%	15.4%	14.9%	3.2%	31.6%	32.1%
Lancaster	15.8%	23.0%	14.6%	7.1%	26.8%	12.6%
Leominster	12.0%	29.1%	19.5%	10.2%	19.2%	10.1%
Lunenburg	6.1%	27.0%	19.1%	10.7%	21.1%	16.0%
Princeton	2.5%	12.6%	12.9%	10.4%	32.8%	28.8%
Sterling	2.5%	21.0%	16.8%	6.9%	30.9%	21.9%
Townsend	4.9%	27.9%	22.0%	11.2%	21.8%	12.6%
Westminster	4.4%	26.5%	18.6%	10.1%	26.4%	14.0%
Service Area Average	**7.0%**	**25.0%**	**17.7%**	**9.6%**	**25.1%**	**16.5%**
Middlesex County	9.3%	27.8%	17.5%	9.1%	22.0%	14.4%
Worcester County	6.6%	19.0%	12.3%	5.8%	27.5%	28.8%
Massachusetts	9.3%	24.0%	15.4%	7.6%	24.1%	19.6%
Source: 2015-2019 American Community Survey 5-Year Estimates						

Built Environmental Influences

The built environment is the human-made elements of where we live, work, worship, travel, and play. It includes open spaces, transportation systems, infrastructure, and the systems that connect them. Built environmental characteristics have an impact on available resources and services across communities. Access to healthy food and safe places to exercise influence's a person's ability to be healthy.

Housing

Table SE-21 shows housing characteristics for the HA communities. Housing is most often the highest household expense per month, which means high housing costs can lead to high stress for residents. Renters are most vulnerable to changing housing markets. Fitchburg, Gardner, Leominster, Sterling, Townsend, and Westminster all exceeded 40% of renters paying greater than 30% of their income towards housing. Interestingly, all but Sterling showed a median rental cost below the Service Area

average. This means low cost does not necessarily mean low percentage of income goes towards housing.

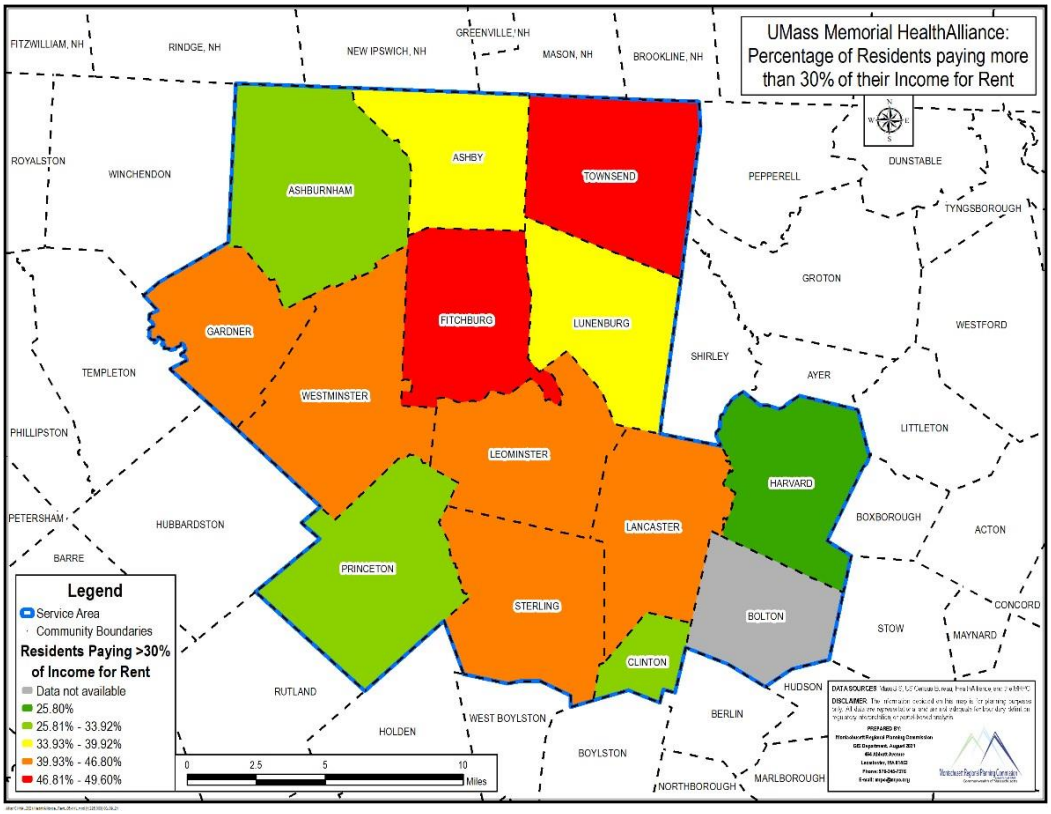
SE – 21 Housing Characteristics in the Service Area 2019

Community	Total Housing Units	# of Vacant Housing Units	Home-Owner Vacancy Rate	Rental Vacancy Rate	Median Housing Costs/Month w Mortgage	Median Rental Costs/Month	% Paying >30% of Income on Mortgage	% Paying >30% of Income on Rent	# of Public Housing Units Available*
Ashburnham	2,589	558	0.0%	0.0%	$ 1,784	$ 1,636	26.0%	30.6%	29
Ashby	1,246	79	0.0%	0.0%	$ 1,866	$ 1,101	12.8%	36.9%	0
Bolton	1,851	112	0.0%	23.1%	$ 3,149	NA	10.0%	NA	69
Clinton	5,594	493	0.9%	1.4%	$ 1,777	$ 1,167	29.5%	33.8%	547
Fitchburg	16,575	1,610	3.9%	4.1%	$ 1,652	$ 1,016	25.7%	49.6%	1581
Gardner	9,125	897	1.4%	1.1%	$ 1,580	$ 838	25.8%	45.2%	1361
Harvard	1,954	90	2.5%	0.0%	$ 2,961	$ 1,242	24.8%	25.8%	114
Lancaster	2,714	184	0.0%	0.0%	$ 2,199	$ 887	13.6%	46.8%	250
Leominster	17,725	895	1.2%	3.0%	$ 1,866	$ 973	29.9%	43.5%	1369
Lunenburg	4,573	263	0.4%	6.9%	$ 2,047	$ 1,580	32.0%	39.9%	315
Princeton	1,329	58	0.0%	0.0%	$ 2,322	$ 1,028	19.0%	33.9%	26
Sterling	2,920	143	0.0%	0.0%	$ 1,997	$ 1,304	9.9%	43.8%	72
Townsend	3,686	166	1.9%	0.0%	$ 2,070	$ 961	19.7%	49.5%	145
Westminster	3,080	210	0.0%	0.0%	$ 1,893	$ 1,104	25.7%	46.7%	87
Service Area Average	**5,354**	**411**	**0.9%**	**2.8%**	**$ 2,083**	**$ 1,141**	**21.7%**	**40.5%**	**426**
Middlesex County	6,365	32,159	0.6%	3.3%	$ 2,609	$ 1,636	19%	45%	NA
Worcester County	335,104	25,153	1.3%	3.7%	$ 1,929	$ 1,060	19.7%	47.9%	NA
Massachusetts	2897259	279762%	1.0%	3.6%	$ 2,225	$ 1,282	30.1%	49.5%	273004

Sources: US Census Bureau ACS 2015-2019 5-year Estimates; * MA DHCD Chapter 40B Subsidized Housing Inventory (SHI) as of 12/20/20

Map SE-Map 1 shows the percentage of renters paying more than 30% of their income towards housing. Renters are most vulnerable to changes in housing markets. The red and orange communities have greater than 40% of renters paying more than 30% of their income to housing.

SE – Map 1 Percent Paying More Than 30% of Income on Rent 2019



Open Space and Trails

According to MassGIS data, the Service Area is chock full of open space parcels defined for this report as any conservation land or outdoor recreation facility owned by federal, state, county, municipal or non-profit entities. These open spaces may also include town forests, parkways, agricultural land, aquifer protection land, watershed protection land, cemeteries, and forest land. Table SE-22 displays the number of public open space parcels per community, and the total length of public trails for area residents to use for hiking, walking, or biking. In total, Service Area residents have over 77,000 acres of open space, and 547 miles of trails they can use to help improve health outcomes for themselves and their families.

The rural nature of the Service Area provides ample opportunity for residents to get exercise outdoors in a tranquil environment, ultimately improving health outcomes for those who use the space. Even within the more dense/urban communities, green space is plentiful. Ensuring safe access to the open space should be a priority to the communities.

SE - 22 Open Space Parcels and Trails per Community

Community	# of Open Space Parcels	Total Acreage of Open Space	Percent of Open Space	Total Trail Length (Miles)
Ashburnham	125	7609.86	29%	20.64
Ashby	118	4826.62	31%	23.99
Bolton	202	3757.53	29%	49.53
Clinton	41	730.95	16%	10.38
Fitchburg	199	3831.62	21%	42.93
Gardner	152	4515.38	31%	34.68
Harvard	282	5388.39	31%	42.89
Lancaster	94	2351.66	13%	22.29
Leominster	236	6477.24	34%	50.42
Lunenburg	99	3837.63	22%	26.76
Princeton	318	11263.64	49%	123.20
Sterling	215	7449.95	37%	25.82
Townsend	163	8301.37	39%	45.76
Westminster	118	6921.60	29%	28.23
Service Area Average	**169**	**5518.82**	**29%**	**39.11**
Service Area Total	**2362**	**77263.43**	**31%**	**547.52**
Source: MassGIS and the MRPC 2021				

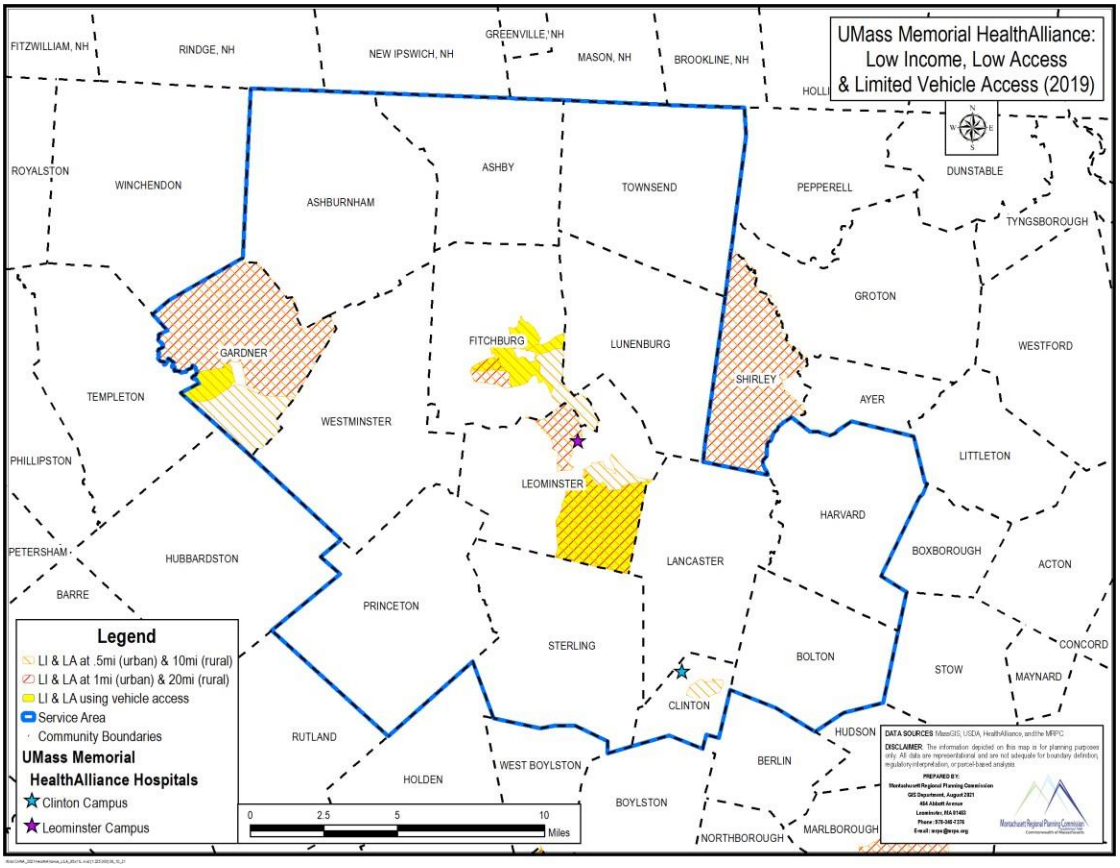
Food Deserts

The U.S. Department of Agriculture (USDA) defines a "food desert" as "parts of the country vapid of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas. This is largely due to the lack of grocery stores, farmers markets, and healthy food providers." In place of typical food stores, these food desserts instead have "local quickie marts, that provide a wealth of processed, sugar, and fat-laden foods that are known contributors to our nation's obesity epidemic."

The USDA created the "Food Access Atlas" using Census Tracts to identify locations across the country that are Low Income (LI) and have Low Access (LA) to food (within a one-half mile to one mile for urban areas and 10 to 20 miles for non-urban areas). The map also tracks which of these areas have little to no vehicle access that would allow them to get to the nearest food store. Low-Access communities qualify if they have "at least 500 people and/or at least 33% of the census tract population must reside within one mile from a supermarket or large grocery store (10 miles for rural districts).

According to the Food Access Research Atlas, almost all of the City of Gardner is considered a food desert. Sections of both Fitchburg and Leominster show evidence of limited access to food stores and or limited access to vehicles to reach a food store.

SE - Map 2 LI and LA and limited vehicle access in Service Area communities 2019



Transportation

In the post-World War II era, carpooling to work became a trendy routine for Americans. After WWII, through the 1960s and 70s, one-fifth of Americans carpooled. Since then, the story has changed in the U.S. as vehicle ownership has skyrocketed. According to the ACS 2016 estimates, 76.4 of Americans drive to work alone, 9.3% carpool, 5.1 use public transportation, and the remaining 9.2% walk, bike, take a taxi/motorcycle, or work from home.

According to Table SE-23, on average, nearly 81% of Service Area workers drove alone to their place of work, 11% higher than the state (69.9%). About 9.1% of Service Area workers carpooled, which is slightly higher than the state (7.5%). Considerably fewer workers in the Service Area used public transportation (2.4%) than the state (10.4%).

It is important to note here that commuting alone to work is not necessarily a bad thing. Research has shown a strong positive link between access to automobiles and/or public transportation and economic opportunity. A higher percentage of people driving alone suggests that people have greater access to vehicles that can help them sustain employment and have a more significant opportunity to climb the economic ladder. A 2014 report from the Urban Institute titled "Driving to Opportunity" found evidence of this link. Among the findings are the following:

- "Families with access to cars found housing in neighborhoods where environmental and social quality consistently and significantly exceed that of the neighborhoods of

households without cars."

- "Over time, households without automobiles experience less exposure to poverty and are less likely to return to high poverty neighborhoods than those without car access."
- "Keeping or gaining access to automobiles is positively related to the likelihood of employment."
- "Improved access to public transit is positively associated with maintaining employment."
- "On earning, both cars and transit access have a positive effect, though the effect of car ownership is considerably greater."

SE - 23 Means of Travel to Work by Community 2019

Community	Drove Alone	Carpooled	Public Transp	Walked	Bicycle	Taxicab, Motorcycle, Other	Worked from Home
Ashburnham	83.2%	5.0%	1.2%	2.2%	0.3%	0.0%	8.1%
Ashby	88.0%	4.0%	0.6%	0.6%	0.0%	0.0%	6.5%
Bolton	76.3%	1.5%	1.5%	0.5%	0.4%	0.4%	18.0%
Clinton	79.3%	11.9%	0.2%	2.7%	0.0%	1.5%	4.4%
Fitchburg	74.8%	11.5%	2.6%	3.3%	0.7%	3.2%	1.1%
Gardner	77.8%	11.2%	1.0%	3.5%	0.1%	2.1%	4.3%
Harvard	71.9%	4.6%	7.9%	2.2%	0.0%	0.2%	13.3%
Lancaster	86.0%	2.9%	0.8%	1.1%	0.0%	2.2%	7.0%
Leominster	81.4%	9.2%	1.1%	1.7%	0.7%	1.0%	4.8%
Lunenburg	89.0%	2.8%	1.9%	0.2%	0.0%	0.3%	5.8%
Princeton	81.7%	4.1%	1.2%	0.5%	0.5%	1.1%	10.9%
Sterling	84.3%	8.1%	0.8%	0.0%	0.0%	0.0%	6.9%
Townsend	69.9%	7.5%	10.4%	4.9%	0.9%	1.3%	5.2%
Westminster	87.4%	4.4%	2.5%	0.0%	0.0%	1.2%	4.5%
Health Area Average	**80.8%**	**9.1%**	**2.4%**	**1.7%**	**0.3%**	**1.0%**	**7.2%**
Service Area Average	**80.8%**	**9.1%**	**2.4%**	**1.7%**	**0.3%**	**1.0%**	**7.2%**
Massachusetts	69.9%	7.5%	10.4%	4.9%	0.9%	1.3%	5.2%
Sources: US Census Bureau ACS 2015-2019 5-year Estimates							

Table SE-24 shows that a higher percentage of Service Area residents have access to two vehicles (42.4%) or three or more vehicles (26.1%) compared to the state (35.5% and 16.7%, respectively). Additionally, fewer Service Area residents have no access to any vehicle (5.6%) than the state (12.4%). While no access to a car is lower than the state, Fitchburg (13.5%) and Gardner (13.1%) stick out among the other Service Area communities. The residents in these communities have a significantly higher chance of experiencing healthcare disparities due to the inability to get around to their healthcare needs and is essential for HealthAlliance-Clinton Hospital leadership to address.

SE - 24 Number of Vehicles Available for those Aged 16 and Over in Households 2019

Community	No Vehicle	1 Vehicles	2 Vehicles	3+ Vehicles
Ashburnham	1.1%	14.3%	51.2%	33.4%
Ashby	0.0%	13.8%	50.0%	36.2%
Bolton	1.5%	13.3%	51.8%	33.4%
Clinton	6.2%	37.0%	38.9%	17.9%
Fitchburg	13.5%	35.2%	37.0%	14.4%
Gardner	13.1%	36.6%	36.7%	13.6%
Harvard	0.0%	15.1%	56.4%	28.4%
Lancaster	5.9%	24.4%	40.2%	29.4%
Leominster	10.0%	36.5%	38.4%	15.1%
Lunenburg	2.2%	25.6%	40.0%	32.2%
Princeton	4.5%	12.0%	45.0%	38.5%
Sterling	2.7%	13.9%	53.3%	30.1%
Townsend	3.5%	19.5%	41.2%	35.9%
Westminster	1.5%	22.2%	50.8%	25.6%
Health Area Average	**4.7%**	**22.8%**	**45.1%**	**27.4%**
Service Area Average	**4.7%**	**22.8%**	**45.1%**	**27.4%**
Massachusetts	12.4%	35.2%	36.3%	16.2%
Sources: US Census Bureau ACS 2015-2019 5-year Estimates				

HealthAlliance-Clinton Hospital's concerns lie primarily with the commute times of Service Area residents in terms of health outcomes. In Table SE-24, the average commuting time (one way) for a resident in eight communities was higher than both the state (30.2 minutes) and national (26.9 minutes) averages. Average commute times increased from 2000 in 12 of the 14 communities. Increased commute times suggest that local jobs are becoming scarce, forcing people to seek employment outside the region or that housing costs push lower income residents further away from job centers.

SE - 24 Mean Commute Times by Community 2000-2019

Community	2000 (Minutes)	2015-2019 (Minutes)	Change in Minutes
Ashburnham	31.4	38.3	6.9
Ashby	31.4	34.9	3.5
Bolton	31.1	26.9	-4.2
Clinton	24.0	25.2	1.2
Fitchburg	23.2	27.4	4.2
Gardner	24.1	29.6	5.5
Harvard	32.2	37.6	5.4

Lancaster	26.2	32.1	5.9
Leominster	25.5	27.5	2.0
Lunenburg	26.0	34.3	8.3
Princeton	31.2	33.8	2.6
Sterling	28.8	27.5	-1.3
Townsend	36.4	38.0	1.6
Westminster	28.7	31.8	3.1
Service Area Average	28.4	31.4	3.0
Middlesex County	27.4	31.4	4.0
Worcester County	25.8	29.7	3.9
Massachusetts	27.0	30.2	3.2
U.S.	25.5	26.9	1.4
Sources: US Census Bureau ACS 2015-2019 5-year Estimates; US Census Bureau Census of Population and Housing 2000 data			

Transit

Increased mobility via the existing transit system for Montachusett area residents, that do not own automobiles or that choose to be less dependent on a personal vehicle, needs to continue. MART needs to refine and implement public transit programs designed to increase ridership especially to health care facilities. MART is open to expanding services wherever possible to fill service gaps, meet unmet regional needs and increase accessibility to health facilities and social services. Communication among all partners is encouraged (Source, https://www.mrpc.org/sites/g/files/vyhlif3491/f/uploads/4-7_transit_7_17_2019.pdf, Pp. 4-132, 4-133).

"Transportation issue is huge among my clients, 70% of my clients cannot access transit"

Crime and Incarceration

The National Incident-Based Reporting System (NIBRS), maintained by the Federal Bureau of Investigation, allows law enforcement agencies to collect detailed incident level data regarding individual offenses and arrests and submit them using prescribed data elements and data values. NIBRS presents quantitative and qualitative data that describes each incident and arrest by the community.

Data users should not rank locales because many factors cause the nature and type of crime to vary from place to place. These statistics include only jurisdictional population figures along with reported crime data. Thus, rankings ignore the uniqueness of each locale. Some factors that are known to affect the volume and type of crime occurring from place to place are:

- Population density and degree of urbanization
- Variations in composition of the population, particularly youth concentration
- Stability of the population with respect to residents, mobility, commuting patterns and transport factors

- Economic conditions, including median income, poverty level, and job availability.
- Modes of transportation and highway systems
- Cultural factors and educational, recreational and religious characteristics
- Family conditions with respect to divorce and family cohesiveness
- Effective strength of law enforcement agencies
- Administrative and investigative emphasis on law enforcement
- Policies of other components of the criminal justice system (i.e., prosecutorial, judicial, correctional, and probational).
- Citizens' attitude toward crime
- Crime reporting practices of the citizenry

Table SE-25 shows selected crime statistics for the communities in the Service Area. As mentioned above, it is not recommended to compare communities as different socio-economic circumstances occur in each community. However, comparing the Service Area crime rates to the overall state rates can be beneficial.

SE - 25 Crime Rates Per 1000 Residents for Selective Crime Statistics in the Service Area 2019

Community Police Department	Population	Assault	Homicide	Rape	Robbery	Burglary	Larceny/Theft	Arson
Ashburnham	6,330	6	0	2	0	7	18	0
Ashby	3,220	0	0	0	0	3	2	0
Bolton	5,393	2	0	0	0	2	23	0
Clinton	13,964	3	1	0	0	1	11	0
Fitchburg	40,621	154	1	26	36	94	399	3
Gardner	20,628	49	0	13	8	60	228	2
Harvard	6,569	2	0	3	0	6	20	0
Lancaster	8,136	5	0	0	0	7	32	0
Leominster	41,631	188	0	31	20	64	495	2
Lunenburg	11,781	15	0	4	4	13	115	0
Princeton	3,459	1	0	0	0	3	10	0
Sterling	8,175	1	0	3	0	2	13	0
Townsend	9,546	8	0	2	0	4	21	0
Westminster	7,902	19	0	1	0	5	36	0
Service Area Total	187,355	453	2	85	68	271	1,423	7
Massachusetts	6,892,503	16,609	152	2,204	3,613	12,331	912	302
Source: FBI Uniform Crime Reporting Data Massachusetts 2019								

A primary objective of the Massachusetts Department of Corrections (MA DOC) is to rehabilitate offenders and prepare them for successful reentry into society. After an assessment, the state enrolls the offenders identified as the highest risk in programs designed to target their specific criminogenic need to deter future criminality.

When an offender transitions from prison to the community, they face obstacles known to be associated with higher rates of recidivism: substance abuse, (Travis & Visher, 2006), unstable living arrangements or homelessness (Grunwald, Lockwood, Harris & Mennis, 2010, Halsey, 2007), being released to neighborhoods where known associates have delinquent attitudes (Megans and Weerman 2011), or returning to an area of low economic opportunities (Weiman, 2007). Mental health issues are also a concern as correctional facilities across the country manage a growing number of offenders with mental health disorders. On January 1, 2016, 30 percent of males and 70 percent of females in MA DOC custody had an open mental health case, and the doctors prescribed 21 percent of males and 56 percentof females psychotropic medication (MA DOC 2016)

According to data from the MA DOC website, as of April 1, 2018 the male inmate population had:

- 8,594 total males in the jurisdiction population, 7,978 criminally sentenced, 79 pre-trial detainees, and 537 civil commitments
- Average age of male inmates was 42 years old (youngest inmate was 18 years old and oldest inmate was 94 years old)
- 95 percent were serving a sentence of more than 3 years.
- 71 percent had a violent governing offense
- 775 were serving a governing mandatory drug offense

Data from the MA DOC website, as of January 1, 2018, states the following regarding male inmates:

- 42 percent entered MA DOC with less than a 9th grade reading level
- 44 percent entered MA DOC with less than a 6th grade math level
- The 2014 three-year recidivism rate was 32 percent for the total male population
- 31 percent were open mental health cases, 7 percent had a serious mental health illness (SMI), and 22 percent were on psychotropic medication. Note: Information provided by the Health Services Division

According to data from the MA DOC website, as of April 1, 2018, the female inmate population had:

- 545 total females in the jurisdiction population. 365 criminally sentenced, 173 pre-trial detainees, and seven civil commitments
- Average age of female inmates was 38 years old (youngest inmate was 19 years old and oldest inmate was 73 years old)
- 64 percent were serving a sentence of more than 3 years
- 56 percent had a violent governing offense
- 20 were serving a governing mandatory drug sentence

As of January 1, 2018, the MA DOC website states the following regarding female inmates

- 29 percent entered the MA DOC with less than a 9th grade reading level
- 34 percent entered the MA DOC with less than a 6th grade math level
- The 2014 three year recidivism rate was 32 percent for the total female population
- 79 percent were open mental health cases, 12 percent had a serious mental health illness (SMI) and 55 percent were on psychotropic medication. Note: information provided by Health Services Division

Most women under MA DOC custody are placed at MCI Framingham or South Middlesex Correctional Center, also in Framingham. These placements are disadvantageous for women who have children or families that visit due to the distance to travel and potential transportation issues.

According to the Department of Corrections 2015 Annual Report, to reduce recidivism, the Classification Division worked closely with the Program Services Division to identify and classify inmates to Correctional Recovery Academy (CRA) sites to increase the levels of participation.

The Optical Shop is a full-scale eyewear laboratory providing services to many providers throughout Massachusetts. The offenders working at this site grind, polish, and assemble eyeglasses for many customers. The Industrial Instructors at NCCI Gardner facilitate the process of testing offenders working in the Optical Shop to gain a certification from the American Board of Optometry, a nationally recognized organization. The test is designed to access their competency in the optical field, allowing the offender to show qualifications and work history to potential employers. These efforts enhance an offender's employability upon release.

Maternal and Infant Health

Chapter 3

Abstract

This chapter provides a comprehensive overview of the trends, disparities, and resources surrounding maternal and infant health status and health outcomes of residents in UMass Memorial Health - HealthAlliance-Clinton Hospital's 14 communities.

Chapter 3 – Maternal and Infant Health

This chapter provides a comprehensive overview of the trends, disparities, and resources surrounding maternal and infant health status and health outcomes of residents in UMass Memorial Health - HealthAlliance-Clinton Hospital's 14 communities.

This chapter presents important findings from the data gathered from the various quantitative sources listed in the introduction of this report around the following topics:

- Maternal and Infant Health

A list of related programs and resources available at HealthAlliance-Clinton Hospital (HA-C) facilities and other organizations throughout the service area is available in the Appendix section of the report.

Chapter Highlights

Maternal and Child Health

- There was a 7% decline in the number of service area births from 2016 to 2017.
- There was a decline in the number of service area teen births from 2016 to 2017.
- There was a decline in the number of service area low birth rate births from 2016 to 2017.
- There was a decline in the number of service area pre-term birth rates from 2016 to 2017.

Maternal and Child Health

The maternal and child health section of this report focuses on highlighting critical data points relevant to the health of mothers and their children. Some important data points include birth, fertility, teen pregnancy, and infant mortality rates, prenatal care, and child nutrition.
(Note: changes to regulations limit the data availability for maternity datasets after 2015. Certain tables below use 2015 data.)

Abstract

This chapter provides information on the prevalence of infectious diseases in UMass Memorial Health-HealthAlliance-Clinton Hospital's 14 communities and highlights trends and disparities among residents

1. Overall Births

Table HS-1 covers the Number of Births in the Service area in 2016 and 2017. Of the 14 communities in the Service area, all but three (Ashby, Bolton, and Townsend) saw decreases in the number of births from 2016 to 2017. The Service area saw a decrease of seven percent in the number of births from 2016 to 2017. Middlesex and Worcester Counties and Massachusetts all saw decreases in the number of births from 2016 to 2017 (-3, -2, and -1%) respectively.

HS - 1 Number of Births in the Service area in 2016 & 2017

	2016			2017			
Community	# of Births	% of Total Service Area Births	% of All MA Births	# of Births	% of Total Service Area Births	% of All MA Births	% Change 2016-2017
Ashburnham	45	2%	0%	43	2%	0.06%	-4%
Ashby	25	1%	0%	29	2%	0.04%	16%
Bolton	45	2%	0%	48	3%	0.07%	7%
Clinton	181	9%	0%	150	8%	0.21%	-17%
Fitchburg	553	28%	1%	500	28%	0.71%	-10%
Gardner	230	12%	0%	216	12%	0.31%	-6%
Harvard	38	2%	0%	32	2%	0.05%	-16%
Lancaster	60	3%	0%	49	3%	0.07%	-18%
Leominster	451	23%	1%	439	24%	0.62%	-3%
Lunenburg	110	6%	0%	100	6%	0.14%	-9%
Princeton	21	1%	0%	20	1%	0.03%	-5%
Sterling	44	2%	0%	41	2%	0.06%	-7%
Townsend	77	4%	0%	90	5%	0.13%	17%
Westminster	65	3%	0%	54	3%	0.08%	-17%
Service Area Total	**1,945**	**100%**	**3%**	**1,811**	**100%**	**2.56%**	**-7%**
Middlesex County*	17,182	-	24%	16,729	-	23.7%	-3%
Worcester County*	8,683	-	12%	8,513	-	12.0%	-2%
Massachusetts*	71,319	-	100%	70,704	-	100%	-1%
Sources: 2017 MA DPH Data, 2018 US CDC Data, 2018 MA DPH Birth Report							

2. **Teen Births**

Table HS-2 shows the number of teen births HealthAlliance-Clinton Hospital in the service area (1.80%), Franklin County (3.23%), Worcester County (3.17%), and Massachusetts (2.58%) from 2016 and 2017.

The teen birth rate declined from 2.1% in 2016 to 1.8% in 2017. In 2016, the teen birth rate was three times higher in Fitchburg (at 7.6%) than in the service area (of 2.1%), nearly three times higher in Gardner (5.7%), and about one-and-one-half-times higher in Leominster (3.5%). The service area total of 2.1% was lower than the averages for Franklin and Worcester Counties and the Commonwealth. Nationally, the US Centers for Disease Control (CDC), reported a decline in teen births from 2018 into 2019 (Source, https://www.cdc.gov/teenpregnancy/about/index.htm). Teen birth rates should be monitored in the next three years and reported in detail in the 2024 CHNA. Correlations should be identified and analyzed annually (if data will be provided by the MA DPH) so that the HA-C implementation plan can be updated and adjusted according to changing conditions.

HS - 2 Teen Births in the Service Area 2016 & 2017

Community	# of Teen Births 2016	Teen Birth % of All Resident Births 2016	# of Teen Births 2017	Teen Birth % of All Resident Births 2017
Ashburnham	--	--	0	0.0%
Ashby	0	0.0%	0	0.0%
Bolton	0	0.0%	--	--
Clinton	--	--	7	4.7%
Fitchburg	42	7.6%	35	7.0%
Gardner	13	5.7%	--	--
Harvard	0	0.0%	0	0.0%
Lancaster	--	--	--	--
Leominster	16	3.5%	12	2.7%
Lunenburg	--	--	0	0.0%
Princeton	0	0.0%	--	--
Sterling	--	--	0	0.0%
Townsend	0	0.0%	--	--
Westminster	--	--	--	--
Service Area Total/Average	**71**	**2.10%**	**54**	**1.80%**
Franklin County*	24	3.86%	18	3.23%
Worcester County*	300	3.46%	270	3.17%
Massachusetts*	1,931	2.71%	1,827	2.58%

Source: 2016 MA DPH Birth Report, 2017 MA DPH Birth Report.

3. Low Birth Weight

According to the CDC, a baby born weighing less than five and one-half pounds is considered "low birth weight". This measure is true regardless of whether the baby was born early or on time and can occur for many reasons (i.e., smoking while pregnant). Low birth weight babies are at greater risk for many health problems in the short and long term.[i]

Table HS-3 shows the number of service area low birthweight births declined from 111 in 2016 to 84 in 2017. The number of low birthweight births in Massachusetts declined from 5,341 in 2016 to 5,261 in 2017. Data for low birthweight births, from the MA DPH, was only available for six (43%) of the 14 communities in the catchment area. Six percent of the births had low birth weights for 2016 and 2017, lower than the statewide rate which was also the same for both years at 7.5%. The highest percentage for low birth weight cases was reported in Clinton (13%) for 2016. Both Sterling and Westminster tied at 11%. Gardner, Leominster, and Fitchburg fared better at 3%, 6%, and 7%, respectively. Low birth weight data were provided for only five (36%) of the 14 cities and towns for 2017. Lunenburg (8%) and Fitchburg (7%) had the highest rates Clinton fared best at only 4%.

HS - 3 Low Birth Weight in Service Area Communities 2016 & 2017

Community	# of Low Birthweight Births 2016	Low Birthweight % 2016	# of Low Birthweight Births 2017	Low Birthweight % 2017
Ashburnham	--	--	--	--
Ashby	0	0%	--	--
Bolton	--	--	--	--
Clinton	24	13%	6	4%
Fitchburg	41	7%	33	7%
Gardner	6	3%	10	5%
Harvard	--	--	--	--
Lancaster	--	--	--	--
Leominster	28	6%	27	6%
Lunenburg	--	--	8	8%
Princeton	0	0%	--	--
Sterling	5	11%	--	--
Townsend	--	--	--	--
Westminster	7	11%	--	--
Service Area Total/Average	**111**	**6%**	**84**	**6%**
Massachusetts*	5341	7.5%	5261	7.5%
Source: MA DPH Birth Reports 2016 & 2017				

4. Premature Birth Rates

According to the March of Dimes, premature birth is defined as a birth that occurs before 37 weeks of pregnancy. Table HS-4 shows preterm births declined in the service area and in Worchester County from 2016 to 2017. They slightly increased in Middlesex County and Massachusetts during the same period. Of the 14 communities in the catchment area, data from the MA DPH relating to the number of preterm births compared to all resident births were only available for eight (57%) of the municipalities in 2016 and five (36%) in 2017. For the communities studied, the percent of preterm births was lower than the averages for both Middlesex and Worcester Counties and the Commonwealth for both years and there was a decrease in the percent of preterm births from 2016 to 2017. In 2016, the communities experiencing the highest percentage of preterm births were Sterling (20.5%), Westminster (10.8%), and Clinton (10.5%). On the lower end of the scale, in 2016, Townsend and Gardner experienced the lowest percentage of preterm births at 5.6% and 6%, respectively. For the following year, Clinton remained in the top position at 9.3% followed by Fitchburg at 7.8%. Townsend and Gardner were at the other end of the spectrum at 5.6% and 6%, respectively.

HS – 4 Preterm Births in Service Area Communities 2016 & 2017

Community	# of Preterm Births 2016	Preterm Birth % of All Resident Births 2016	# of Preterm Births 2017	Preterm Birth % of All Resident Births 2017
Ashburnham	--	--	--	--
Ashby	0	0.0%	--	--
Bolton	--	--	--	--
Clinton	19	10.5%	14	9.3%
Fitchburg	46	8.3%	39	7.8%
Gardner	10	4.3%	13	6.0%
Harvard	--	--	--	--
Lancaster	5	8.3%	--	--
Leominster	38	8.4%	35	8.0%
Lunenburg	--	--	--	--
Princeton	0	0.0%	--	--
Sterling	9	20.5%	0	0.0%
Townsend	5	6.5%	5	5.6%
Westminster	7	10.8%	--	--
Service Area Total/Average	**139**	**7.8%**	**106**	**6.1%**
Middlesex County	1,430	8.3%	1,432	8.6%
Worcester County	707	8.1%	695	8.2%
Massachusetts	6,167	8.6%	6,272	8.9%

Source: Mass DPH Data 2016 and 2017 Birth Report, less than 37 weeks gestation; " --" Due to privacy (n=1-4), exact count not provided

5. Breastfeeding

Table HS-5 shows breastfeeding rates remain virtually unchanged form FY18 through Fy20. Statewide, breastfeeding rates increased only slightly (by less than a percent) from FY18 to FY20. In the North Central WIC region, for the six-month category, breastfeeding decreased 0.5% between Fy18 and FY20. For Franklin North Quabbin, there was an increase of 0.2% in the six-month category.

HS - 5 Exclusive Breastfeeding Rates for WIC North Central and FHNQ* 2021

	North Central WIC		FNHQ WIC		Statewide WIC Average	
	3 mos.	6 mos.	3 mos.	6 mos.	3 mos.	6 mos.
FY18	17.6%	14.6%	28.7%	23.8%	14.0%	10.9%
FY19	14.6%	12.7%	26.5%	28.9%	13.5%	10.9%
FY20	15.6%	14.1%	27.2%	24.0%	14.2%	11.7%
Source: WIC Offices North Central and *Franklin Hampshire North Quabbin 2021						

Environmental Health

Chapter 4

Abstract

This chapter provides information on the prevalence of Environmental Health in UMassMemorial Health-HealthAlliance-Clinton Hospital's 14 communities and highlights trends and disparities among residents

Chapter 4 - Environmental Health

This chapter provides a comprehensive overview of the environmental health for UMass Memorial Health - HealthAlliance-Clinton Hospital's 14 communities in north-central Massachusetts. Environmental hazards exposed to communities in the service area have the potential to impact health adversely.

This chapter presents the following environmental exposures that affect the health of residents in the HealthAlliance-Clinton Hospital (HA-C) Service Area:

- Ambient Air Quality
- Water Quality
- Childhood Lead Exposure
- Environmental Justice Populations
- Brownfield Sites

Chapter Highlights

Environmental Exposures

- According to MassDEP environmental tracking, there was an average of 12 days when air quality standards for fine particles and ozone exceeded the NAAQS minimum standards throughout the Service Area.
- Princeton had the highest number (15) of days above NAAQS limits in 2014-15.
- Several water quality violations were noted in the Service Area; however, they were related tomonitoring routines rather than health related violations and all entities have returned to compliance.
- Only 3 out of 4 children (75%) on average in the Service Area have been screened for Blood Lead Levels (BLL) compared to the state average of 72%
- Gardner is at the lowest percent of lead screening with 57%, Sterling 60%, and Ashby 62%.
- Fitchburg and Gardner were considered high risk lead communities in 2014-18.
- Ashby, Fitchburg, and Gardner have high asthma prevalence and low lead screening, as well as a high percentage of housing units built pre-1978.
- Fitchburg (72.9%), Gardner (79.8%) and Leominster (67.1%) have the highest percentage of EJ populations.
- There are 96 brownfields sites throughout the Service Area, mostly located in Environmental Justice neighborhoods.
- Fitchburg had the highest number of brownfield sites (32) in the Service Area in 2021, with Gardner, Clinton and Leominster each having 15 sites.

Environmental Exposures

According to the 2017 Massachusetts State Health Assessment, "environmental exposure includes results from contact with physical, chemical, biological, and radiological substances." The following factors are essential in determining whether environmental exposures can lead to health risks.

- Amount of exposure
- Source of exposure (eating, drinking, breathing, or physical contact)
- Harmfulness of the substance

This section highlights the following environmental exposure topics that impact the health of residents in the HealthAlliance-Clinton Hospital Service Area: ambient air quality, childhood, and adult lead exposure, climate health, and environmental justice populations and health.

1. Ambient Air Quality

The US Environmental Protection Agency (EPA), since the passing of the Clean Air Act, is responsible for establishing and maintaining "National Ambient Air Standards" (NAAQS) to limit the concentration of pollutants in the atmosphere. The goal is to prevent exposure to contaminants that can damage the cardiovascular and respiratory systems.

The Mass Department of Environmental Protection (MassDEP) tracks National Ambient Air Quality Standards (NAAQS) at the county level in Massachusetts. The NAAQS are standards established by the U.S. EPA to set limits on safe air pollution levels. Among the measures established by the NAAQS are ozone levels and fine particles. Ozone violations are measured in parts per million (ppm) and are not to exceed 0.075 ppm for eight hours. Fine Particles are measured in Particle Matter (PM 2,5) and cannot exceed 35 ug/m3 in 24 hours.

According to MassDEP Environmental Tracking, there was an average of 12 days where air quality standards for fine particles and ozone exceeded the NAAQS minimum standards throughout the Service Area. Notably, Princeton, Clinton, Fitchburg, Sterling, and Westminster had the highest total number of days above NAAQS standards. Conversely, Harvard and Lancaster (12 each) had the lowest number of days above the NAAQS standards.

EH - 1 Total Number of Days above NAAQS limits 2010-2014

Community	Total Number of Days Over NAAQS 2010-2014
Ashburnham	13
Ashby	13
Bolton	12
Clinton	14
Fitchburg	14
Gardner	13
Harvard	12
Lancaster	12
Leominster	13
Lunenburg	12
Princeton	15
Sterling	14
Townsend	13
Westminster	14
Service Area Average	**13**
Source: M.A. Environmental Public Health Tracking	

2. Drinking Water Quality

The U.S. EPA also sets standards for contamination levels in drinking water to protect public health. The Mass DEP Drinking Water Program is responsible for monitoring water quality throughout the Commonwealth and enforcing EPA standards. Among the contaminants tracked as part of these measurements are Arsenic, Lead, Nitrates, and Uranium.

Tables EH-2 and EH-3, which can be found on the following pages) list violations reported by water s5ervice providers in each Service Area community. The EPA monitors these reported violations. From 2014-2019, there were six major water quality violations in the HA Service Area. During the same period, HA Service Area experienced 56 non-major drinking violations. The violations primarily occurred in Bolton and Lancaster.

EH - 2 Major Drinking Water Violations in the Service Area 2014-2019

Community	# of Major Water System Violations Reported in Community Drinking Source	Name of Contaminant and Type of Violation	Year of Violation	Compliance Status	Violating Agency
Ashburnham	1	Chlorine - Monitoring and Reporting	2017	Known	Ashburnham Water Department
Bolton	5	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Bolton Office Parks
Service Area Total	**6**	--	--	--	--

Source: US Environmental Protection Agency SDWIS Federal Reporting Services System 2019

EH - 3 Non-Major Health-Related Drinking Water Violations in the Service Area 2014-2019

Community	# of Non-Major Health-Related Water Violations in Community Drinking Source	Name of Contaminant and Type of Violation	Year of Violation	Compliance Status	Violating Agency
Ashby	1	Lead and Copper Rule - Lead Consumer Notice	2019	Open	Children's Garden Nursery School
	1	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Ashby Market
	1	Revised Total Coliform Rule - Report Startup Procedures Cert Form	2020	Returned to Compliance	Camp Middlesex
	1	Coliform - Max Contaminant Level Violation	2016	Returned to Compliance	Spring Hill Wellness
Bolton	2	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Bolton Office Parks
	7	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Classic Pizza III
	2	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Great Brook Farm
	1	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Nashoba Valley Winery
	1	Radium-226 - Monitoring Regular	2018	Returned to Compliance	Sunset Ridge Condominiums
	1	Radium-228 - Monitoring Regular	2018	Returned to Compliance	Sunset Ridge Condominiums
	1	Chlorine - Monitoring and Reporting (DBP)	2016	Returned to Compliance	Regency at Bolton Condominiums
Clinton	1	Lead and Copper Rule - Lead Consumer Notice	2020	Returned to Compliance	Clinton Water Department
Fitchburg	1	Surface Water Treatment Rule - Monitoring of Treatment	2018	Returned to Compliance	Fitchburg DPW Water Division
Lancaster	3	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Kimball Farm

	1	Lead and Copper Rule - Lead Consumer Notice	2018	Open	Lancaster Woods Condominiums
	1	Lead and Copper Rule - Lead Consumer Notice	2018	Returned to Compliance	Dambrosio Eye Care
	13	Volatile Inorganic Chemicals	2018	Known	Prime Toyota
	1	Nitrite - Monitoring, Regular	2017	Returned to Compliance	Lancaster Woods Condominiums
	1	Arsenic - Monitoring, Regular	2017	Returned to Compliance	Lancaster Woods Condominiums
	1	Coliform - Maximum Contaminant Level Violation	2016	Returned to Compliance	Lancaster Water Department
	1	Arsenic - Monitoring, Regular	2016	Returned to Compliance	Dambrosio Eye Care
Leominster	1	Revised Total Coliform Rule - Maximum Contaminant Level Violation	2020	Known	DCR Leominster State Forest
	1	Revised Total Coliform Rule - Report Startup Procedures Cert Form	2019	Returned to Compliance	DCR Leominster State Forest
	2	Total Haloacetic Acids (HAAS) - Maximum Contaminant Level Violation	2019, 2018	Returned to Compliance	Leominster Water Division
	1	Surface Water Treatment Rule - Monitoring of Treatment	2017	Returned to Compliance	Leominster Water Division
Princeton	1	Revised Total Coliform Rule - Monitoring Routine	2019	Returned to Compliance	Thomas Prince School
	1	Lead and Copper Rule - Lead Consumer Notice	2017	Returned to Compliance	Wachusett Mountain Ski Area
	1	Nitrite - Monitoring, Regular	2016	Returned to Compliance	Thomas Prince School
Sterling	1	Lead and Copper Rule - Lead Consumer Notice	2019	Returned to Compliance	Sterling Water Department
Townsend	1	Consumer Confidence Rule - Consumer Confidence Failure to Report	2018	Returned to Compliance	Townsend Water Department

Westminster	1	Lead and Copper Rule - Lead Consumer Notice	2018	Returned to Compliance	Leino Park Water District
	1	Coliform - Monitoring, Repeat Minor	2016	Returned to Compliance	The Woods at Westminster
	1	E. Coli - Monitoring, Source Water	2016	Returned to Compliance	The Woods at Westminster
Service Area Total	**56**	--	--	--	--
Source: US Environmental Protection Agency SDWIS Federal Reporting Services System 2019					

3. Childhood Lead Exposure

For children, lead poisoning has been known to damage the brain, kidney, and nervous systems, slow growth, and cause behavioral problems and learning disabilities. In addition, many older homes have lead paint. When the paint chips, peels, or is removed, lead dust may be released throughout the house and ingested by unsuspecting children causing lead poisoning. In 1978, the U.S outlawed lead paint, but many homes built before 1978 in Massachusetts still have lead paint on their walls.

State and Federal require children to be screened for Blood Lead Levels (BLL) three times before turning three to monitor lead poisoning in children. The Massachusetts Department of Public Health (DPH), Bureau of Environmental Health (BEH), and Childhood Lead Poisoning Prevention Program (CLPPP) track lead-related activity throughout the Commonwealth. These agencies monitor BLL screening for children aged nine (9) months to 48 months, and the estimated confirmed cases are greater than or equal to 10 ug/dL. The agencies determine whether or not a community is considered a "high-risk lead community" based on this monitoring. High-risk lead communities are determined by the CLPPP using the number of old housing stock, the percentage of LMI residents, and the number of elevated BLL over the previous five years.

Table EH-4 shows the screening rate of children under 48 months, the results of the screenings, the percentage of housing units in each Service Area community built before 1978, and whether the community is considered a High-Risk Lead Community. Fitchburg and Gardner were considered High-Risk Lead Communities as of 2018

Throughout the Service Area, 75% of the children have been screened for BLL on average compared to the state average of 72%. The percentage of children adequately screened varies widely from community to community, with Gardner at the lowest percent with 57%, Sterling 60%, and Ashby 62%. Bolton (99%), Lunenburg (88%), Princeton (85%), and Harvard (84%) having the most success adequately screening children.

Ashby, Clinton, Fitchburg, and Gardner show low screening rates and high percentage of houses built pre-1978. Lead screening must be increased for these communities to ensure child safety and early detection.

EH - 4 Childhood Lead Screening and Pre-1978 Housing Units in the Service Area 2018

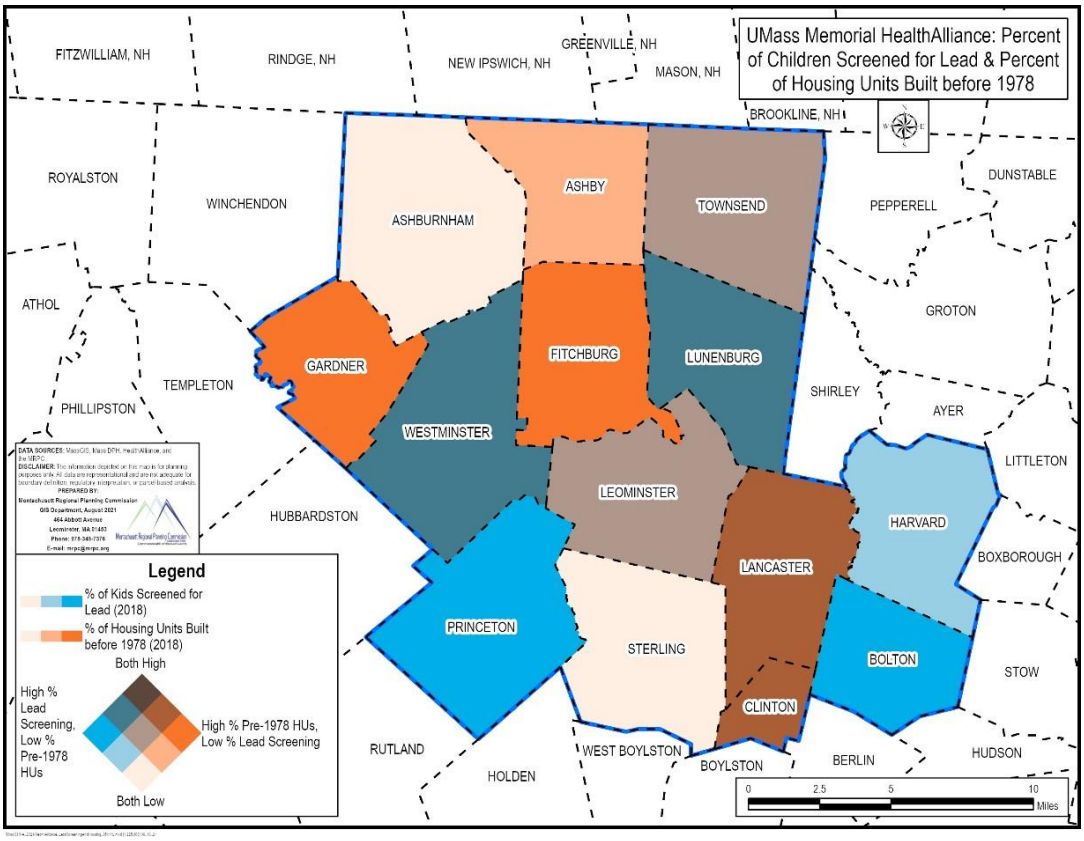
Community	% of Children 9 to <48 Months Screened for Lead	Estimated Confirmed ≥5 µg/dL	Confirmed Elevated Blood Lead Levels (BLL) ≥10 µg/dL	Percentage of Housing Units Built Before 1978	Considered a High-Risk Lead Community 2014-2018
Ashburnham	64.0%	--	0	52%	No
Ashby	62.0%	--	0	63%	No
Bolton	99.0%	0	0	38%	No
Clinton	70.0%	--	--	71%	No
Fitchburg	66.0%	20	5	78%	Yes
Gardner	57.0%	18	--	77%	Yes
Harvard	84%	--	0	55%	No
Lancaster	82%	--	0	71%	No
Leominster	77%	12	--	65%	No
Lunenburg	88%	--	--	59%	No
Princeton	85%	0	0	55%	No
Sterling	60.0%	--	0	51%	No
Townsend	70.0%	--	--	60%	No
Westminster	86%	0	0	58%	No
Service Area Total/Average	**75.0%**	**50**	**5**	**61%**	**--**
Massachusetts	72.0%	2355	493	70%	

Source: US Environmental Protection Agency SDWIS Federal Reporting Services System; US Census ACS 2015-2019

Note: In the Red color scale, is above or below Service Area Average. "—" data is suppressed because there were greater than one (1) but less than five (5) cases and could not be reported by the State for confidentiality purposes.

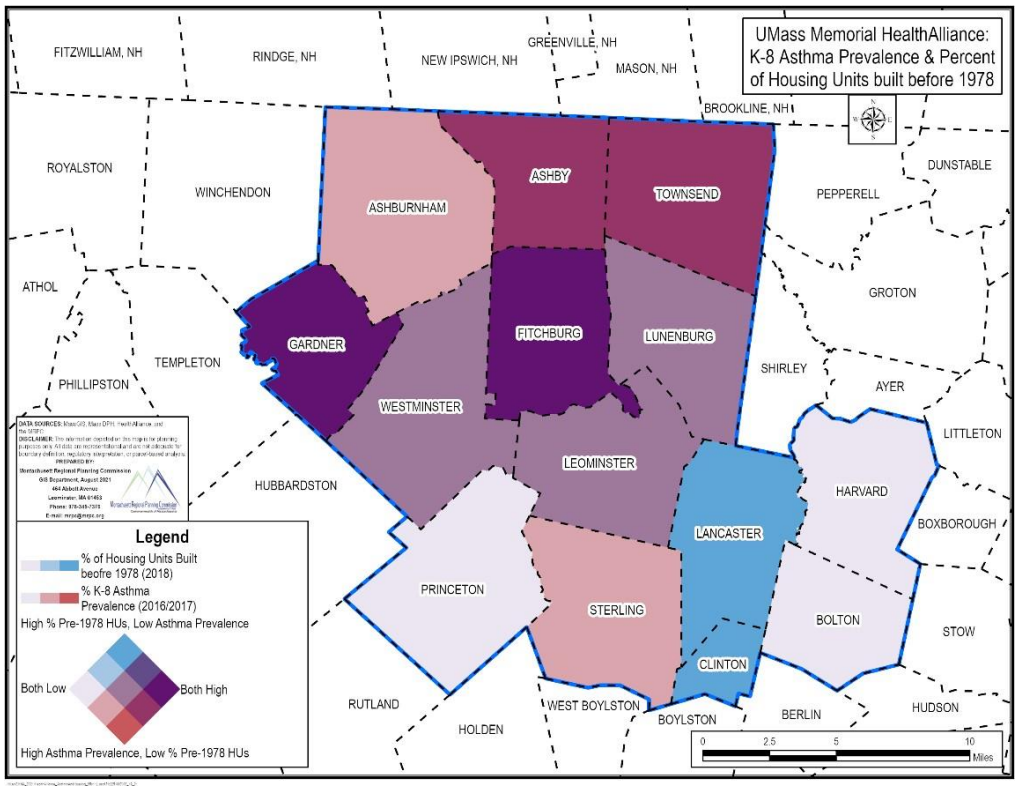
EH-Map 1 and Map 2 show the percent of children screened for lead and Asthma Prevalence and percent of Housing Units built before 1978. In EH-Map 1 the blue and grey colors indicate the percentage of kids screened for lead, and the red and orange colors indicate the percentage of housing units built before 1978.

EH – Map 1 Percent of Children Screened for Lead & Percent of Housing Units Built Before 1978



In EH-Map 2 indicates overlap of child asthma rates and rates of housing units built before 1978. The darker purple indicates areas where both rates were high. Children from these communities have a higher exposure to older housing stock that can lead to inhaling airborne dust leading to asthma development.

EH – Map 2 K-8 Asthma Prevalence & Percent of Housing Units Built Before 1978



4. Environmental Justice Populations

According to a policy of the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA), environmental justice contends that all people have a right to be protected from environmental pollution and to live in and enjoy a clean and healthful environment regardless of race, ethnicity, income, national origin, or English language proficiency.

The Commonwealth of Massachusetts designates a community as an "Environmental Justice Community" if at least one or all of the following are true:

- (I) the annual median household income is not more than 65 per cent of the statewide annual median household income.
- (M) minorities comprise 40 per cent or more of the population.
- (E) 25 per cent or more of households lack English language proficiency; or

- minorities comprise 25 per cent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 per cent of the statewide annual median household income.

Table EH-5 provides Environmental Justice (EJ) populations in the Service Area with only data available for five communities. Fitchburg (72.9%), Gardner (79.8%) and Leominster (67.1%) have the highest percentage of EJ populations. The percentage of EJ population in the Service Area is 43% as compared to the State which is 44% of the population of the Commonwealth.

EH - 5 Environmental Justice (EJ) Populations in the Service Area

Community	Environmental Justice (EJ) Criteria	Population in EJ Block Groups	Percent of Population in EJ Block Groups
Clinton	MI	4,720	33.90%
Fitchburg	MI	29,679	72.90%
Gardner	MI	16,453	79.80%
Harvard	MI	1,562	23.80%
Leominster	MIE	27,902	67.10%
Health Area Total	-	80,316	
Massachusetts	-	3,100,468	44.10%
Source: Mass.gov Environmental Justice Populations			

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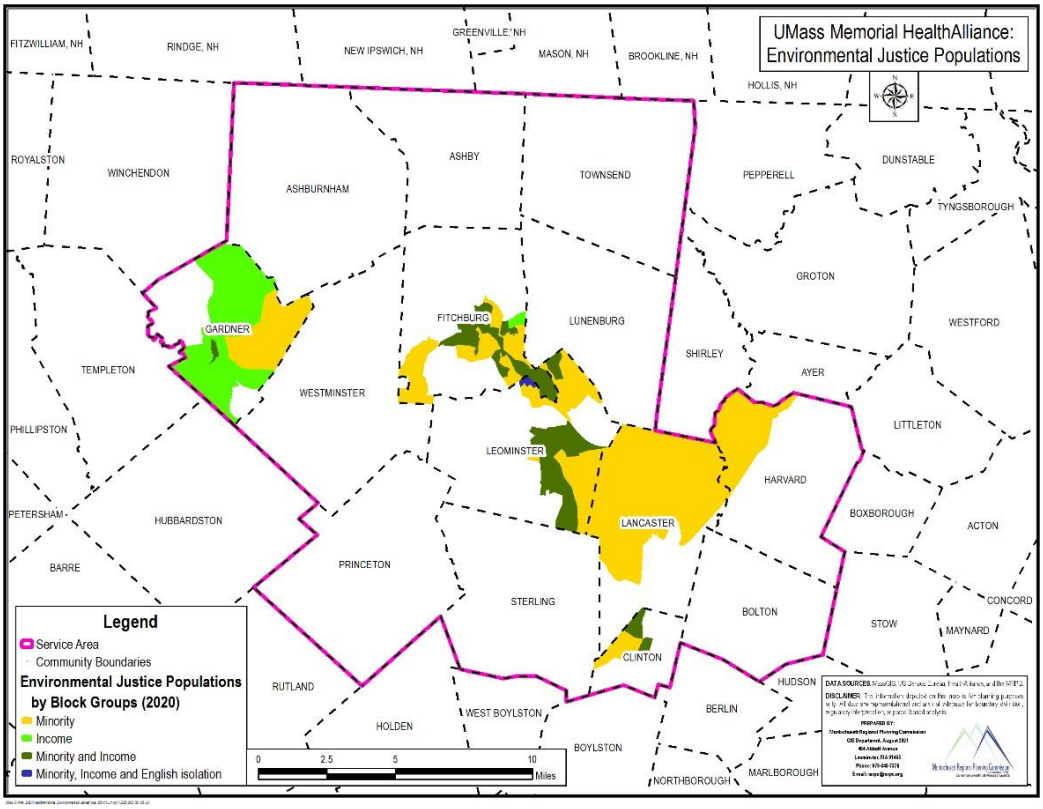
EH-Map 3 shows that Environmental Justice population block group areas in Gardner, Fitchburg, Leominster, Harvard, and Clinton.

EH-Map 3 Location of the Environmental Justice (EJ) Populations in the Service Area



5. Brownfield Sites

Table EH-6 lists the number of brownfield sites per community. According to the EPA, a brownfield is "a property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant." The Massachusetts Department of Environmental Protection (DEP) tracks brownfields sites in Massachusetts and maintains a database on the Mass.gov website.

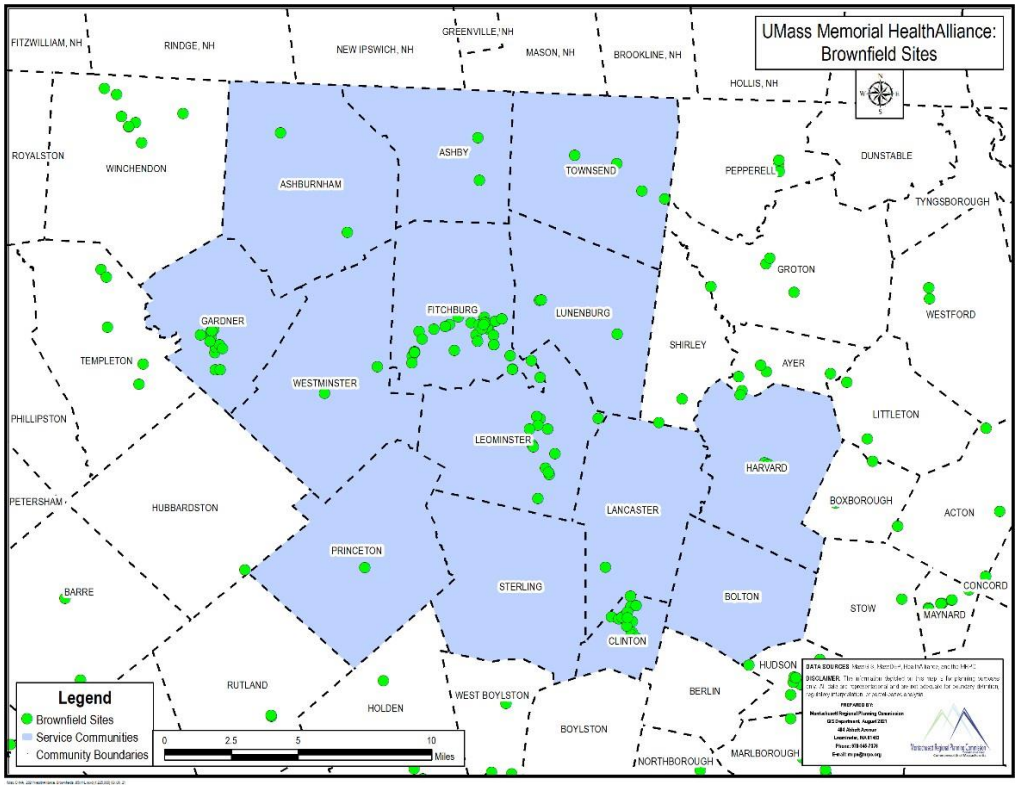
According to that database, there are 96 brownfields sites in the Service Area. The most significant numbers are Fitchburg (32), and Clinton, Gardner, and Leominster, with 15 each.

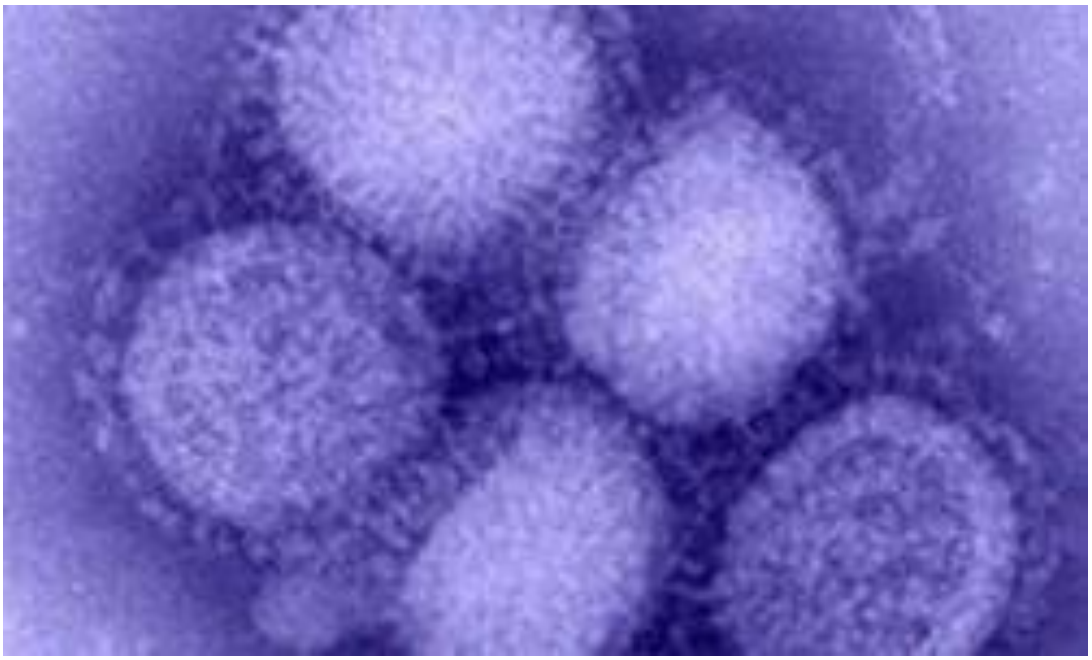
EH - 6 Brownfield Sites throughout the Service Area 2021

Community	# of Brownfield Sites
Ashburnham	2
Ashby	2
Bolton	1
Clinton	15
Fitchburg	32
Gardner	15
Harvard	2
Lancaster	1
Leominster	15
Lunenburg	3
Princeton	1
Sterling	0
Townsend	5
Westminster	2
Service Area Total	**96**
Massachusetts	1,278
Source: Mass Department of Environmental Protection 2021	

EH-Map 4 shows the location of brownfields sites within the Service Area communities. Notice that the brownfield sites within most communities are clustered to particular neighborhoods and not evenly distributed throughout the communities. These areas tend to be adjacent to or within lower income neighborhoods.

EH - Map 4 Brownfield Sites throughout the Service Area 2021





INFECTIOUS DISEASE

Chapter 5

Abstract

This chapter provides information on the prevalence of infectious diseases in UMass Memorial Health-HealthAlliance-Clinton Hospital's 14 communities and highlights trends and disparities among residents

Chapter 5 - Infectious Disease

This chapter provides information on the prevalence of infectious diseases in UMass Memorial Health - HealthAlliance-Clinton Hospital's (HA) 14 communities in north-central Massachusetts and highlights trends and disparities among residents. In addition, the chapter addresses the following infectious disease topics:

- COVID-19
- Sexually Transmitted Infections (STI)
- Influenza
- Tickborne Disease

Residents can find a list of programs and resources available at HealthAlliance-Clinton Hospital facilities and other organizations throughout the Service Area in Appendix A.

Chapter Highlights

COVID-19

- Social isolation among seniors and domestic violence increased, access to healthcare declined, and food access has been disrupted greatly impacting food security in rural communities during the pandemic.

Sexually Transmitted Infections (STIs)

- Chlamydia: The number of cases grew from 486 cases in 2016 to 644 cases in 2018
- Gonorrhea: The number of cases grew from 33 cases in 2016 to 185 cases in 2018
- Syphilis: The number of cases grew from 10 cases in 2016 to 16 cases in 2018
- HIV cases: The number of cases grew from 613 in 2016 to 646 cases in 2017 and fell to 611 cases in 2018

Influenza

- All communities have shown deaths from influenza to be declining from 2015 to 2017 except for Gardner. Fitchburg with 24 deaths and Leominster with 20 deaths had the highest number of deaths in the region from 2015 to 2017.

Tickborne Disease

- Anaplasmosis: The number of cases grew from 17 cases in 2016 to 25 cases in 2018

COVID-19

COVID-19 is a mild to severe respiratory illness that is caused by a coronavirus (Severe acute respiratory syndrome coronavirus 2 of the genus Betacoronavirus), is transmitted chiefly by contact with infectious material (such as respiratory droplets) or with objects or surfaces contaminated by the causative virus, and is characterized especially by fever, cough, and shortness of breath and may progress to pneumonia and respiratory failure. Table ID-1 shows HealthAlliance-Clinton Hospital Service Area Covid-19 data for through June 16, 2021.

Trends in Public Health Since the Onset of COVID-19

Since the onset of COVID-19, many studies have come out highlighting the negative impact of the pandemic on rural communities and communities of color. The HealthAlliance-Clinton Hospital's service area follows many of the national trends. The most prominent issues that have been heavily impacted and exacerbated by the pandemic are increasing levels of social isolation in not only elderly populations butalso among young adults, a decrease in access to healthcare, an increase in domestic violence, and an increase in food insecurity. This is in addition of the severe economic impact that the pandemic has hadon Massachusetts as well.

Economic Impact:

With the onset of COVID-19, many people throughout Massachusetts lost their employment, with only 67% of all jobs since April 2020 having been recovered (462,000) by August 2021. In Massachusetts, the industries hit hardest by the pandemic were Arts, Entertainment, and Recreation (-27.7%), Other Services (-19.4%), and Accommodation and Food Services (-19.2%) are also some of the lowest paid industries on average throughout the state. While a majority of those who lost their employment have returned to work, the employment-to-population (EPOP) ratio is still down from the pre-pandemic 66.0% (February 2020) at a current 62.5% (August 2021). Lack of employment and income has an exacerbating effect on other social determinants of health (SHOD), increasing the risk of food insecurity and worsening access to healthcare if it was previously through the former employer.

https://carsey.unh.edu/publication/COVID-19-Economic-Impact-By-State

Social Isolation:

"Chronic stress, illness with the low income populations that we're dealing with isolates people even more. So it just creates more health, mental health issues and one perpetuates the other and it becomes a vicious cycle."

Social isolation as a result of COVID-19 is a huge issue for people of all ages. According to a survey

conducted by the University of Miami, 80% of participants aged 18-35 reported "significant depressive symptoms" during the pandemic. Along with the feeling of loneliness, participants reported an increase in drug and alcohol use with 38% citing it as "severe". This has been shown using statistics from the Insurance Information institute where the total fatality rate (per 100 million vehicle miles) increased from 1.1 in 2019 to 1.35 in 2020. It is well known that youth who suffer from social isolation and loneliness have an increased risk of developing anxiety and depression. The Center for Promise at America's Promise Alliance conducted a national survey of young people aged 13-19 and found that 30% reported feeling more unhappy or depressed. When breaking down the location of youth, city dwellers were 13% more likely to have depressive symptoms than rural dwellers. Asian (44%) and Latinx (40%) youth reported a higher percentage of poor emotional and cognitive health than their white classmates.

Social Isolation within the elder population has also been a large concern during the pandemic. In June 2020, 56% of people over the age of 50 reported feeling isolated often. The same survey was conducted in 2018 where only 27% of people over 50 felt isolated. Social connections were difficult to maintain, with 46% of older adults reporting infrequent interactions with a friend compared to 28% in 2018. Older adults with access to technology reported less loneliness. Social isolation in older adults can have serious health consequences including a 50% increase in risk of dementia, 29% increased risk of heart disease, 32% increased risk of stroke, higher rates of anxiety, depression, suicide, and an increase in hospitalization. The serious mental and physical health risks of social isolation in the elder community make this population a priority.

"Chronic stress, illness with the low income populations that we're dealing with isolates people even more. So it just creates more health, mental health issues and one perpetuates the other and it becomes a vicious cycle."

https://www.medicalnewstoday.com/articles/alarming-covid-19-study-shows-80-of-respondents-report-significant-symptoms-of-depression#How-the-team-conducted-the-study

https://www.bankrate.com/insurance/car/drunk-driving/

https://www.americaspromise.org/sites/default/files/d8/YouthDuringCOVID_FINAL%20%281%29.pdf

https://labblog.uofmhealth.org/rounds/loneliness-doubled-for-older-adults-first-months-of-covid-19

https://www.cdc.gov/aging/publications/features/lonely-older-adults.html

Access to Healthcare:

"We need to be prepared for mental health of the population after the pandemic as well as during the pandemic"

According to the CDC, May 2020 had the lowest rates of access to healthcare during the entire pandemic. During this time the national average for percentage of people who did not get the care they needed or got delayed care was 45.5% with Massachusetts being at 37.2%. During this time, females had a disproportionately more difficult time getting access to healthcare with 49% of females not having access and 42.2% of males not having proper access.

The most recent data from the CDC (June-July 2021) on lack of healthcare access shows a national average of 18.6% and the Massachusetts average of 18.3%. The same inequality as last year is still present with 20.3% of females having improper access compared to 16.7% of males. There is also a large disparity between disabled and non-disabled people. Currently 34.0% of people with a disability in the US have had delayed or no care at all in the last 4 weeks. Compared to 16.2% for people without a disability.

As a result of the pandemic, many healthcare providers are moving to a telehealth format to increase access. Based on the most up to date CDC data, 22.2% of households in the US and 26% in Massachusetts had a child attend a medical appointment via videoconferencing. The amount of adults who had a telehealth appointment within the last 4 weeks in the US is 24.5% and 30.8% in Massachusetts. The largest percentage of children who had a telehealth appointment in the last 4 weeks was in Connecticut (32.2%) and for adults is the District of Columbia (39.6%).

https://www.cdc.gov/nchs/covid19/pulse/reduced-access-to-care.htm

Domestic Violence:

During the COVID-19 pandemic, victims were forced to isolate themselves with their abusers. Nationwide statistics show an increase in intimate partner abuse and child abuse and a decrease in traffic through helplines and domestic abuse shelters. One article describes access as the number one roadblock to getting help, with online reporting either not existent or not accessible for many people. In more rural areas, where public transportation is lacking, it is nearly impossible for victims without access to cars to seek help privately. In the case of child abuse, the isolation from other caring adults such as teachers, and day care providers reduces the detection of the signs of abuse. Recommendations include advertising domestic violence reporting locations or phone numbers and increasing broadband access in rural areas. To catch signs of child abuse without in person interaction, teachers could provide a virtual survey for students to fill out during class time.

Food Insecurity:

"Every handoff is a is a potential gap."

The pandemic has disrupted food access and greatly impacted food security across many rural communities in America. In one study conducted in Vermont using the US Department of Agriculture's food security measurements, it was found that there was a ⅓ increase in household food insecurity since the onset of COVID-19. Another study using United States survey data found that 44% of low-income adults self-identified as being food insecure. Based on Feeding America's Map the Meal Gap

(MMG), there is a direct correlation between food insecurity and poverty. According to the Harvard School of Public Health, within the United States, the percentage of children who are food insecure has doubled from 14% to 28%. Along with this, 2.5 million children have fallen below the poverty line from October to May 2020.

https://www.mdpi.com/2072-6643/12/7/2096

https://www.mdpi.com/2072-6643/12/6/1648

https://feedingamericaaction.org/resources/state-by-state-resource-the-impact-of-coronavirus-on-food-insecurity/

https://www.hsph.harvard.edu/news/hsph-in-the-news/childrens-food-insecurity-increasing-during-covid-19-pandemic/

Covid-19 Cases & Tests:

The Massachusetts Department of Public Health's Vaccine Equity Initiative designated 20 communities within Massachusetts for prioritization to increase trust in the vaccine's safety and efficacy, identify and reduce barriers for accessing the vaccine, and increase vaccine access for priority populations through several programs.

Fitchburg and Leominster were 2 of the 20 communities that were selected for prioritization to curb the spread of covid and mitigate the impacts as much as possible. In this effort, 12 organizations serving Fitchburg received $1,145,996 to supplement vaccine equity programs, and from March 3 to June 30, 2021, Fitchburg was allocated a total of 8,080 equity vaccine doses. Leominster had 12 organizations serving the community that received $999,996 through the Vaccine Equity Imitative and was allocated a total of 7,460 equity vaccine doses from March 3 to July 30, 2021.

https://www.mass.gov/info-details/fitchburg-covid-19-vaccine-equity-initiative

https://www.mass.gov/info-details/leominster-covid-19-vaccine-equity-initiative

Within the Service Area, Fitchburg and Leominster alone were responsible for more than half of the total cases reported (54%), and nearly half of the total tests performed (47%) up to June 26, 2021. Fitchburg reported the second highest number of total cases (4,807) but had the most tests performed (97,233) and the second highest 14-day positivity (.52%). Leominster had the highest number of total cases reported (5,007) and the second highest number of tests performed (94,413) and the highest 14-day positivity (.67%).

Only two other communities in the Service Area reported over one thousand total cases of covid-19, Clinton (1,608) and Gardner (2,330), with several, Ashby (177), Harvard (141), and Princeton (147), reporting fewer than two hundred total cases as of June 26. No community in the service area has reported a 14-day positivity rate greater than that of the state. Each community can be examined in Table ID-1 for their total cases, tests, and 14-day positivity.

ID - 1 Covid-19 Cases & Tests in the Service Area through June 26, 2021

Community	Total Cases	Total Tests	14 Day Positivity
Ashburnham	422	16,352	0
Ashby	177	4,880	0
Bolton	223	12,694	0
Clinton	1,608	29,830	0.18%
Fitchburg	4,807	97,233	0.52%
Gardner	2,330	45,021	0.25%
Harvard	141	11,130	0
Lancaster	554	16,630	0
Leominster	5,007	94,413	0.67%
Lunenburg	754	20,618	0.26%
Princeton	147	7,884	0
Sterling	712	21,305	0
Townsend	471	14,995	0
Westminster	553	14,957	0
Service Area Total/Rate	**17,906**	**407,942**	**0**
Massachusetts	663,822	23,825,346	1
Source: Mass DPH Covid-19 Dashboard			

Sexually Transmitted Infections (STI)

Sexually Transmitted Infections (STIs) include Chlamydia, Gonorrhea, Syphilis, HIV, Viral Hepatitis, and Hepatitis C. STIs are infectious diseases primarily spread through sexual activity that can cause damage to reproductive organs or cause general body infections. The following sections examine common STIs in the HealthAlliance-Clinton Hospital (HA-C) service area.

It is important to note that cells in tables portrayed as double dash marks or "- -" are in communities where greater than 0 but less than 5 cases were reported but are suppressed to protect confidentiality. Thus, the overall count still includes the suppressed data for a specific dataset.

1. Chlamydia

According to the Centers for Disease Control (CDC), Chlamydia is a common STI frequently experienced by both men and women that can cause severe damage to a woman's reproductive system if left untreated. This damage can make it more difficult for women to get pregnant in the future and could even cause "potentially fatal ectopic pregnancy (pregnancy that occurs outside of the womb)."

The Mass Department of Public Health (DPH) tracks reported cases of Chlamydia throughout Massachusetts using public health data collected from Massachusetts hospitals and calculates per

100,000 rates using decennial census data. Chlamydia cases in the service area are in Table ID-2.

For the entire Service Area in 2018, Fitchburg reported the highest number of Chlamydia cases (270) but had just the second-highest rate (663.4 per 100,000). Rates for the Service Area and the State in 2018 were higher than in 2016. This trend existed among all but four communities as well.

ID - 2 Reported Cases of Chlamydia in the Service Area from 2016 to 2018

Community	2016		2017		2018	
	Count	Rate	Count	Rate	Count	Rate
Ashburnham	8	127.4	11	175.1	8	127.4
Ashby	--	--	8	248.4	5	155.3
Bolton	--	--	14	264.2	6	113.2
Clinton	50	358.8	37	265.5	39	279.9
Fitchburg	177	434.9	195	479.1	270	663.4
Gardner	53	257.2	53	257.2	71	344.5
Harvard	5	76.1	9	137.0	--	--
Lancaster	--	--	14	174.0	10	124.3
Leominster	112	269.2	156	374.9	150	360.5
Lunenburg	28	245.6	24	210.5	27	236.8
Princeton	0	0.0	--	--	0	0.0
Sterling	12	148.3	16	197.8	17	210.1
Townsend	20	211.1	28	295.6	18	190.0
Westminster	21	270.4	15	193.1	23	296.2
Service Area Total/Rate	**486**	**215.8**	**580**	**257.6**	**644**	**286.0**
Massachusetts	26,455	383.8	29,199	423.6	30,311	439.8

Source: Count data uses yearly data from Mass DPH, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.
The total counts and rates for Massachusetts uses yearly data from the Center for Disease Control.

2. Gonorrhea

The CDC reports that Gonorrhea is an STI that "can cause infections in the genitals, rectum, and throat." This STI can be easily treated and cured with medication but can cause severe complications like pelvic inflammatory disease (PID) in women and cause a man to become sterile. Table ID-3 shows a breakdown of Gonorrhea cases in the Service Area.

Throughout the Service Area, there are a minimal number of Gonorrhea cases. From 2016 to 2018, only Fitchburg and Leominster reported enough cases where the data would not be suppressed. Fitchburg had a steady rise in Gonorrhea cases from 2016 to 2018. Cases of Gonorrhea in Leominster rose from 11 in 2016 to 49 in 2017 and fell slightly to 44 in 2018.

ID - 3 Reported Cases of Gonorrhea in the Service Area from 2016 to 2018

Community	2016		2017		2018	
	Count	Rate	Count	Rate	Count	Rate
Ashburnham	--	--	--	--	--	--
Ashby	0	0.0	--	--	--	--
Bolton	--	--	0	0.0	--	--
Clinton	--	--	7	50.2	6	43.1
Fitchburg	22	54.1	79	194.1	109	267.8
Gardner	--	--	17	82.5	19	92.2
Harvard	0	0.0	--	--	0	0.0
Lancaster	--	--	7	87.0	7	87.0
Leominster	11	26.4	49	117.8	44	105.8
Lunenburg	--	--	6	52.6	--	--
Princeton	0	0.0	--	--	0	0.0
Sterling	--	--	--	--	--	--
Townsend	0	0.0	--	--	--	--
Westminster	--	--	--	--	--	--
Service Area Total/Rate	**33**	**18.7**	**165**	**93.3**	**185**	**104.6**
Massachusetts	4,980	73.0	7,737	112.8	8,076	117.1

Source: Count data uses yearly data from Mass DPH, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.
The total counts and rates for Massachusetts uses yearly data from the Center for Disease Control.

3. Syphilis

Syphilis is a treatable and curable STI that can cause serious health problems if left untreated. Syphilis occurs in several stages: primary, secondary, latent, and tertiary. At any stage, Syphilis can infect the brain or nervous systems or the eyes, causing further complications.

Not enough communities reported cases throughout the Service Area to compare trends. With the information available, the Service Area overall rose from 10 cases in 2016 to 18 cases in 2017 and

slightly fell to 16 cases in 2018.

ID - 4 Reported Cases of Primary and Secondary Syphilis in the Service Area from 2016 to 2018

Community	2016		2017		2018	
	Count	Rate	Count	Rate	Count	Rate
Ashburnham	--	--	--	--	0	0.0
Ashby	0	0.0	0	0.0	0	0.0
Bolton	--	--	0	0.0	0	0.0
Clinton	--	--	5	35.9	--	--
Fitchburg	10	24.6	8	19.7	11	27.0
Gardner	--	--	0	0.0	--	--
Harvard	0	0.0	--	--	0	0.0
Lancaster	0	0.0	--	--	0	0.0
Leominster	--	--	5	12.0	5	12.0
Lunenburg	--	--	--	--	--	--
Princeton	0	0.0	0	0.0	0	0.0
Sterling	--	--	--	--	0	0.0
Townsend	0	0.0	0	0.0	0	0.0
Westminster	0	0.0	--	--	0	0.0
Service Area Total/Rate	**10**	**5.7**	**18**	**10.2**	**16**	**9.0**
Massachusetts	1,036	15.0	1,102	16.0	1,164	16.9
Source: Count data uses yearly data from Mass DPH, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.						

4. Human Immunodeficiency Virus (HIV)

Human Immunodeficiency Virus (HIV) is a virus spread through the transfer of bodily fluids from one infected individual to a non-infected individual. HIV is transferred by semen, vaginal fluid, blood, or breast milk but not by tears, sweat, feces, or urine. Once infected, HIV takes over the body's T-cells responsible for powering the body's immune system defense against other pathogens. The Virus turns the T-cell into a "virus factory….forcing the cell to produce thousands of copies of the virus". Over time, HIV weakens the body's immune system, making it very difficult for the infected person to stay healthy.

Table ID-5 shows cases and rates from 2015 to 2017. In the Service Area, data were only available for Fitchburg in 2015. In 2017, Massachusetts reported 611 cases.

ID - 5 Reported Cases of HIV in the Service Area from 2015 to 2017

Community	2015		2016		2017	
	Count	Rate	Count	Rate	Count	Rate
Ashburnham	0	0.0	NA	NA	NA	NA
Ashby	0	0.0	NA	NA	NA	NA
Bolton	0	0.0	NA	NA	NA	NA
Clinton	0	0.0	NA	NA	NA	NA
Fitchburg	8	19.7	NA	NA	NA	NA
Gardner	--	--	0	0.0	0	0.0
Harvard	0	0.0	0	0.0	0	0.0
Lancaster	0	0.0	0	0.0	0	0.0
Leominster	--	--	--	--	--	--
Lunenburg	0	0.0	--	--	0	0.0
Princeton	0	0.0	0	0.0	0	0.0
Sterling	0	0.0	0	0.0	0	0.0
Townsend	0	0.0	0	0.0	0	0.0
Westminster	0	0.0	0	0.0	0	0.0
Service Area Total/Rate	**8**	**4.5**	**0**	**0.0**	**0**	**0.0**
Massachusetts	613	8.9	646	9.4	611	8.9

Source: Count data uses yearly data from Mass DPH, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.

5. Hepatitis C

Hepatitis C is a bloodborne virus that, like Hepatitis B, can cause acute and chronic infection of the liver. The disease can be transferred through contact with bodily fluid, most commonly blood. Hepatitis C is most often asymptomatic, meaning it shows no symptoms and is very rarely life threatening. Most infected individuals clear the disease within six months of infection without treatment.

Table ID-6 shows cases and rates of Hepatitis C in the Service Area from 2015 to 2017. Of those communities who reported the number of Hepatitis C cases accurately, Clinton (24 to 6), Fitchburg (50 to 36), and Gardner (59 to 29) saw decreases in Hepatitis C cases from 2015 to 2017. Leominster in that period went from 30 cases to 50 to 41. Overall, the Service Area and State saw a decrease in cases from 2015 to 2017.

ID - 6 Reported Cases of Hepatitis C in the Service Area from 2015 to 2017

Community	2015		2016		2017	
	Count	Rate	Count	Rate	Count	Rate
Ashburnham	--	--	5		8	
Ashby	--	--	--	--	--	--
Bolton	--	--	--	--	0	0.0
Clinton	24	172.2	14	100.5	6	43.1
Fitchburg	50	122.8	57	140.0	36	88.4
Gardner	59	286.3	46	223.2	29	140.7
Harvard	--	--	--	--	--	--
Lancaster	--	--	--	--	--	--
Leominster	30	72.1	50	120.2	41	98.5
Lunenburg	7	61.4	6	52.6	7	61.4
Princeton	0	0.0	--	--	--	--
Sterling	--	--	5		6	
Townsend	13	137.2	5	52.8	6	63.3
Westminster	--	--	5	64.4	7	90.1
Service Area Total/Rate	**183**	**852**	**193**	**754**	**146**	**586**
Massachusetts	7,708	111.8	7,786	113.0	6,770	98.2
Source: Mass DPH Bureau of Infectious Disease and Laboratory Sciences, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.						

Influenza

The Influenza virus, otherwise known as the flu, is a contagious respiratory illness that can infect an individual's nose, throat, and lungs. Symptoms can range from mild to severe and include fever, cough, sore throat, muscle aches, fatigue, vomiting, and diarrhea. Influenza can be fatal in some cases.

Table ID-7 shows all communities have deaths from influenza declining from 2015 to 2017 except for Gardner, which had three deaths in 2015 and 2016 increasing to six deaths in 2017. The communities with the greatest number of deaths from 2015 to 2017 were Fitchburg with 24 deaths and Leominster with 20 deaths.

ID - 7 Deaths by Influenza in the Service Area from 2015 to 2017

Community	2015	2016	2017
Ashburnham	0	0	0
Ashby	0	1	0
Bolton	1	0	1
Clinton	4	5	2
Fitchburg	10	9	5
Gardner	3	3	6
Harvard	2	2	0
Lancaster	3	2	1
Leominster	11	5	4
Lunenburg	0	2	0
Princeton	0	0	0
Sterling	1	0	0
Townsend	0	3	2
Westminster	0	2	0
Service Area Total	**35**	**34**	**21**
Massachusetts	1512	1243	1434
Source: Mass DPH Death Reports 2015, 2016, & 2017			

Tickborne Disease

Tick bites spread tick-borne diseases. Ticks can carry a wide range of pathogens that can transmit infections like Lyme Disease, Babesiosis, and Anaplasmosis to humans. Tick-borne diseases are prevalent in New England. Anaplasmosis is a tick-borne disease that can cause fever, headache, sweats, chills, anorexia, nausea, muscle pain, malaise, and rash, among other symptoms. If not treated correctly, Anaplasmosis can be fatal.

ID-8 shows cases of Anaplasmosis from 2016 to 2018. There were very few cases throughout the Service Area in 2016-2018 except for Harvard, which reported 17, 27, and 10 cases. Leominster only reported 5 cases in 2017. Princeton reported five cases in 2018, Lunenburg reported six in 2017 and five in 2018, and Townsend had 11 cases in 2017 and five in 2018. The number of cases in the state grew from 874 in 2016 to 1,218 in 2017 but fell to 655 in 2018.

ID - 8 Reported Cases of Anaplasmosis in the Service Area from 2016 to 2018

Community	2016	2017	2018
Ashburnham	0	--	--
Ashby	0	0	--
Bolton	--	--	--
Clinton	0	--	--
Fitchburg	0	--	--
Gardner	0	0	--
Harvard	17	27	10
Lancaster	--	--	0
Leominster	--	5	--
Lunenburg	--	6	5
Princeton	--	--	5
Sterling	--	--	--
Townsend	--	11	5
Westminster	0	0	0
Service Area Total/Rate	**17**	**49**	**25**
Massachusetts	874	1,218	655
Source: Mass DPH Bureau of Infectious Disease and Laboratory Sciences			

Injuries and Violence

Chapter 6

Abstract

This chapter provides a comprehensive overview of injury and violence issues in UMass Memorial Healthcare's 14 communities. In addition, trends and disparities related to injuries and violence are highlighted and emphasized.

Chapter 6 - Injuries and Violence

This chapter provides a comprehensive overview of injury and violence issues in UMass Memorial Healthcare's 14 communities. In addition, trends and disparities related to injuries and violence are highlighted and emphasized.

This chapter presents the following injury and violence topics that affect the health of Service Area residents:

- Injuries and Poisonings
- Vehicle-Related Mortality
- Violence & Child Maltreatment

Chapter Highlights

Injuries and Poisonings

- High rate of injuries and deaths compared to the Commonwealth.

Vehicle-Related Mortality

- Nearly double the state's motor vehicle related mortality rate.

Violence & Child Maltreatment

- A rising homicide rate in the service area has grown to eclipse the state's.
- High assault rates concentrated in a third of the SA's communities raise questions regarding potential exacerbating factors.
- Despite declining, rates of recorded child maltreatment remain a challenge.
- Hispanic/Latino and black families are disproportionately represented in DCF's SA clientele.
- A majority of children placed in protective custody remain there for over a year.
- Restraining orders in Fitchburg DA nearly doubled between FY 2008 and FY 2020.

Injuries and Poisonings

1. Injuries and Poisonings Deaths

Table IV-2 shows that the Service Area had 25 self-inflicted injuries and poisonings deaths in 2017. Nine of those 25 were in Fitchburg. The next leading community was Leominster with five (5). Four (4) communities had zero injuries and poisoning deaths, those being Harvard, Lancaster, Princeton, and Sterling. The death due to self-inflicted injuries and poisonings in the Service Area was 14.1 per 100,000 residents, which was higher than the state rate of 9.4.

IV - 1 Self-Inflicted Injuries and Poisonings Deaths and Death Rates in Service Area Communities 2017

Community	Self-Inflicted Injuries and Poisoning Deaths	Self-Inflicted Injuries and Poisoning Death Rate per 100,000
Ashburnham	2	31.8
Ashby	1	31.1
Bolton	1	18.9
Clinton	3	21.5
Fitchburg	9	22.1
Gardner	2	9.7
Harvard	0	0.0
Lancaster	0	0.0
Leominster	5	12.0
Lunenburg	1	8.8
Princeton	0	0.0
Sterling	0	0.0
Townsend	1	10.6
Westminster	0	0.0
Service Area Total/Rate	**25**	**14.1**
Massachusetts*	647	9.4
Source: 2017 Mass DPH Data, *2019 CDC WISQARS, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.		

Vehicle-Related Mortality Rates

Motor vehicle-related mortality refers to instances of death caused by motor vehicle accidents.

Table IV-3 shows sixteen (16) motor vehicle-related deaths from 2017. The Service Area vehicle-related death rate was 9.0 per 100,000, higher than the state rate of 5.7.

IV - 2 Vehicle-Related Deaths and Death Rates in Service Area Communities 2017

Community	Vehicle-Related Deaths	Vehicle-Related Death Rate per 100,000
Ashburnham	1	15.9

Ashby	0	0.0
Bolton	0	0.0
Clinton	1	7.2
Fitchburg	5	12.3
Gardner	2	9.7
Harvard	0	0.0
Lancaster	2	24.9
Leominster	3	7.2
Lunenburg	1	8.8
Princeton	0	0.0
Sterling	0	0.0
Townsend	0	0.0
Westminster	1	12.9
Service Area Total/Rate	**16**	**9.0**
Massachusetts	396	5.7
Source: 2017 Mass DPH Data, *2019 CDC WISQARS, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.		

Violence & Child Maltreatment

Violence is a significant public health issue across the United States and the Commonwealth, including the HA Service Area. Though it is often viewed through a criminal justice lens, violence is a critical threat to community health that must be prevented whenever possible. As is demonstrated below, it is often precipitated and exacerbated by external factors, bringing questions of equity to bear as well. This section highlights various categories of violence experienced by Service Area residents and analyzes the trends and disparities connected to them.

1. Homicide

Table IV-4 shows homicide rates for the Service Area. From 2013 to 2017, there was a total of 14 homicides throughout the Service Area. The first occurred in Fitchburg in 2013, another five between 2014 and 2017, and eight in 2017. Five of these occurred in Fitchburg and Leominster each, two in Clinton, and one each in Sterling and Gardner. Though below the Commonwealth's figure in 2013, the Service Area's homicide rate has risen steadily since then, climbing to 4.5 deaths per 100,000 residentsin 2017. This was well above the state's rate of 2.5 for that same year.

IV - 3 Homicides and Homicide Rates in Service Area Communities 2013-2017

Community	2013 Homicides	2013 Homicide Rates	2014 - 2016 Homicides	2014 - 2016 Homicide Rates	2017 Homicides	2017 Homicide Rates
Ashburnham	0	0.0	0	0.0	0	0.0
Ashby	0	0.0	0	0.0	0	0.0
Bolton	0	0.0	0	0.0	0	0.0
Clinton	0	0.0	0	0.0	2	14.4
Fitchburg	1	2.5	4	9.8	0	0.0
Gardner	0	0.0	0	0.0	1	4.9
Harvard	0	0.0	0	0.0	0	0.0
Lancaster	0	0.0	0	0.0	0	0.0
Leominster	0	0.0	1	2.4	4	9.6
Lunenburg	0	0.0	0	0.0	0	0.0
Princeton	0	0.0	0	0.0	0	0.0
Sterling	0	0.0	0	0.0	1	12.4
Townsend	0	0.0	0	0.0	0	0.0
Westminster	0	0.0	0	0.0	0	0.0
Service Area Total/Rate	**1**	**0.6**	**5**	**2.8**	**8**	**4.5**
Massachusetts	144	2.14	414	2.03	171	2.49

Source: https://ucr.fbi.gov/crime-in-the-u.s. *2013-2017 CDC WISQARS, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.

2. Assaults

Table IV-5 below presents the number of assaults in the Service Area communities and the state for 2019. There were 453 assaults in the Service Area for 2019, and the Service Area rate (2.6) was higher than the state's (1.7). However, these occurrences appear to be geographically concentrated, as only five of the Service Area's 14 communities boasted assault rates at or above the state's figure. This raises significant questions regarding equity and exacerbating factors. Assault rates in Leominster (4.5) and Fitchburg (3.8) in particular exceeded both the state and Service Area figures.

IV - 4 Assaults and Assault Rates in the Service Area 2019

Community	2019 Assaults	2019 Assault Rate per 1,000
Ashburnham	6	1.0
Ashby	0	0.0
Bolton	2	0.4
Clinton	3	0.2
Fitchburg	154	3.8
Gardner	49	2.4
Harvard	2	0.3
Lancaster	5	0.6
Leominster	188	4.5
Lunenburg	15	1.3
Princeton	1	0.3
Sterling	1	0.1
Townsend	8	0.8
Westminster	19	2.4
Service Area Total/Rate	**453**	**2.6**
Massachusetts	11,785	1.7
Source: FBI Crime Data Explorer, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.		

3. Child Maltreatment

Family structure, stability, and home environments often dictate the health outcomes of children. For example, various studies have shown that growing up with an unstable family structure can lead to inadequate cognitive, behavioral, and physical development. More importantly, children who experience multiple transitions in family structure may face worse developmental outcomes than children raised in stable, two-parent families and perhaps even children raised in stable one-parent families. In addition, children raised in physically or emotionally abusive households where they are mistreated by adults often develop significant behavioral, emotional, and learning problems with severe and wide-ranging implications for long-term health outcomes.

Unfortunately, child maltreatment is a pervasive problem throughout the Service Area. The Commonwealth tasks its Department of Children and Families (DCF) offices in Greater Lowell, Worcester East, Worcester West, and North Central Mass with handling child maltreatment for the Service Area. These agencies help families develop stable home environments or find safer homes for children in abusive households.

Table IV-5 (see next page) shows that as of the first quarter of FY 2020 (the most recent data available),there were 8,094 child cases between all four DCF offices, with 1,885 in Greater Lowell, 2,195 in North Central, 2,012 in Worcester East, and 2,002 in Worcester West. Of those, an average of 217 clinical cases opened and 256 were closed each month of FY 2020's first quarter.

While there does appear to have been a reduction in new cases between FY 2018 and FY 2019, thevolume of caseloads remains challenging to manage, leaving many children stranded in unstable, unsafe, and unhealthy environments for prolonged periods. This long-term exposure significantly increases the chances of poor health outcomes over time.

IV - 5 DCF Caseload at Greater Lowell, Worcester, and North Central Offices FY18 Quarter 1 & FY20 Quarter 1

Caseload	Greater Lowell		North Central		Worcester East		Worcester West	
	FY 2018 Q1	FY 2020 Q1	FY 2018 Q1	FY 2020 Q1	FY 2018 Q1	FY 2020 Q1	FY 2018 Q1	FY 2020 Q1
Ave Clinical Cases Opened per Month	83	70	65	48	71	55	53	44
Ave Clinical Cases Closed per Month	84	79	74	67	72	51	56	57
Children <18 Pending Response	174	170	145	135	132	114	142	134
Children <18 in Caseload	2149	1885	2462	2195.0	2215	2012	1922	2002
Children <18 Pending Placement	411	341	577	472	445	402	402	363
% of Child Caseload in Placement	19.0	18.0	23.0	22.0	20.0	20.0	21.0	18.0
Clinical Cases	1110	987	1233	1074	1149	1025	287	1037
Adoption Cases	84	91	156	129	100	90	90	86
Clinical Cases w/Child <18 in Placement	194	145	226	166	203	171	185	171
% Clinical Cases that are Placement Cases	17.0	15.0	18.0	15.0	18.0	17.0	19.0	16.0
Adoptions Legalized	3	6	10	4	7	14	5	4
Guardianships Legalized	1	4	5	11	1	8	7	4
Source: Mass Department of Children and Families Quarterly Profile, FY 18 Q1 and FY 20 Q1								

A review of DCF consumers throughout the Service Area by race and ethnicity sheds light on disparities of need. As shown in Table IV-7, as of Q1 of FY 2020, 7,354 (44%) of DCF consumers were white, 5,882 (35%) were Hispanic/Latino, and 1,462 (9%) were Black. These rates of consumers are alarming given that the population of the Service Area is 91.5% white, 8% are Hispanic/Latino, and only 2.6% Black (see Chapter1).

Comparing their representation amongst the Service Area's general populace to their representation amongst DCF's clientele, Hispanic/Latinoand Black families are far more likely to need family service assistance than their white/Caucasian counterparts. This has notable implications for the health outcomes of non-white children moving forward and is a significant challenge to address if the Service Area is to achieve health equity over time.

IV - 6 Race/Ethnicity of DCF Consumers at Greater Lowell, North Central, Worcester East/West Offices

Race	Greater Lowell	North Central	Worcester East	Worcester West	Total
White	1,648	2432	1,583	1691	**7,354**
Hispanic/Latino	1,177	1511	1715	1479	**5,882**
Black	248	249	484	481	**1,462**
Asian	256	26	39	62	**383**
Native Americans	6	4	5	4	**19**
Pacific Islander	0	3	2	2	**7**
Multi-Racial	135	182	135	168	**620**
Unknown	157	179	195	119	**650**
Missing	301	75	62	68	**506**
Total	**3,928**	**4,661**	**4,220**	**4,074**	**16,883**

Source: Mass Department of Child and Families Quarterly Profile FY 2020 Q1 - *for Adults and Children

Table IV-8 shows that of those children in placement mentioned in Table IV-7, 314 were less than three years old, 270 were three to five yearsold, 469 were six to eleven years old, and 525 were twelve to seventeen.

IV - 7 Total Children in Placement at Greater Lowell, North Central, Worcester East/West DCF Offices

Age Group	Greater Lowell	North Central	Worcester East	Worcester West	Total
0-2 Years	66	92	67	89	**314**
3-5 Years	49	89	65	67	**270**
6-11 Years	95	142	132	100	**469**
12-17 Years	131	149	138	107	**525**
Total	**341**	**472**	**402**	**363**	**1,578**

Source: Mass Department of Child and Families Quarterly Profile FY 2020 Q1

As seen in Table IV-9, between the Greater Lowell, North Central, Worcester East, and Worcester West offices, the state placed 1,493 children in Protective Services. These children came from homes where DCF investigations could substantiate abuse or neglect. Alternative Response is a step below Protective Services for investigations that did not fully confirm neglect or abuse, thus allowing the agency to be flexible with its response to the case. In addition, services can be made available to homes based on the needs of the family. There were three children in Alternative Response, and the remaining cases were in Voluntary Request (17), Children Requiring Assistance (35), Court Referral (23), or Other/Unspecified (7).

IV - 8 Children in Placement at Greater Lowell, North Central, Worcester East/West DCF Offices

Most Recent Intake	Greater Lowell	North Central	Worcester East	Worcester West	Total
Protective	323	448	382	340	**1,493**
Alternative Response	1	0	1	1	**3**
Voluntary Request	1	8	1	7	**17**
CFA Referral (Children Requiring Assistance)	8	5	10	12	**35**
Court Referral	7	6	7	3	**23**
Other/Unspecified	1	5	1	0	**7**
Total	**341**	**472**	**813**	**1285**	**2,911**

Source: Mass Department of Child and Families Quarterly Profile FY 2020 Q1

Of those children in placement, a plurality of cases (411) in the area covered by the four offices stay in placement for six months or less. Still,the remaining 1,167 cases (85%) coming through these DCF offices are in placement for six months or more with a majority remaining for atleast a year, as can be seen in Table IV-10

IV - 9 Average Time in Placement for Children at Greater Lowell, North Central, Worcester East/West DCF

Time in Placement	Greater Lowell	North Central	Worcester East	Worcester West	Total
.5 years or less	97	110	118	86	**411**
>.5 years to 1 year	52	105	70	82	**309**
>1 year to 2 years	67	106	96	81	**350**
>2 years to 4 years	92	88	73	81	**334**
>4 years	33	63	45	33	**174**
Total	**341**	**472**	**813**	**1285**	**2,911**

Source: Mass Department of Child and Families Quarterly Profile FY 2020 Q1

Table IV-11 shows that as of the first quarter of FY2020 there were 6,515 children not in placement from all four offices in the service area, which is more than twice the number of those children in placement. The most significant number of children awaiting placement were ages six to eleven.

IV - 10 Total Children Not in Placement at Greater Lowell, North Central, Worcester East/West DCF Offices

Age Group	Greater Lowell	North Central	Worcester East	Worcester West	Total
0-2 Years	321	345	276	323	**1,265**
3-5 Years	262	311	292	281	**1,146**
6-11 Years	529	580	588	565	**2,262**
12-17 Years	432	486	454	470	**1,842**
Total	1,544	1,722	1,610	1,639	**6,515**

Source: Mass Department of Child and Families Quarterly Profile FY 2020 Q1

The vast majority of children not in placement (97% or 6,328) are those in the protective category. These cases are under investigation orawaiting investigation for abuse or neglect. Only 0.1% (9) are also awaiting alternative response services, as seen below in Table IV-12

IV - 11 Children Not in Placement at Greater Lowell, North Central, Worcester East/West DCF Offices

Most Recent Intake	Greater Lowell	North Central	Worcester East	Worcester West	Total
Protective	1,504	1689	1,539	1596	6,328
Alternative Response	0	4	5	0	9
Voluntary Request	3	13	4	5	25
CFA Referral (Children Requiring Assistance)	16	1	31	25	73
Court Referral	21	16	29	11	77
Other/Unspecified	0	0	2	2	4
Total	1544	1723	1610	1639	6516

Source: Mass Department of Child and Families Quarterly Profile FY 2020 Q1

4. Interpersonal Violence

According to the 2017 Annual Report on the State of the Massachusetts Court System, the Trial Court's internet-based e-Learning Centerenabled more than 5,400 judges and employees to complete five mandatory online training modules on topics related to interpersonal violence, including the impact of interpersonal violence on children, risk assessment, and information about interpersonal violence.

Table IV-13 below shows the restraining orders for interpersonal violence (formerly known as Domestic Violence or Intimate Partner Violence)since 2008. The overall increase since 2008 is significant for the state (23%), as well as Fitchburg (93%) and Leominster (28%) district courts, but not for Ayer (3%) and Clinton (-12%) DCs. There was a significant uptick in filings during the Great Recession between FY08 and FY11, indicating economic pressures affecting domestic relationships. Except for Fitchburg DC, which saw an increase from FY 17 to FY20, all other District Courts saw a sharp decrease in filings from FY17 to FY 20.

IV - 12 Restraining Orders Filed in the Service Area District Courts FY08-FY20

District Court	ABUSE PREVENTION FILED		*RESTRAINING ORDERS FILED			
	FY08	FY11	FY14	FY17	FY20	Percent Change FY08-FY20
Ayer	297	389	334	367	305	3%
Clinton	203	279	210	233	178	-12%
Fitchburg	347	600	658	610	670	93%

Leominster	284	401	422	419	364	28%
Massachusetts	27,076	38,865	36,809	36,985	33,509	24%

*Abuse Prevention was renamed Restraining Order by FY2010
Source: Massachusetts Probate and Family Court Department Website

Behavioral Health and Substance Misuse

Chapter 7

Abstract

This chapter provides a comprehensive overview of behavioral health and substance misuse in UMass HealthAlliance-Clinton Hospital's 14communities.

Chapter 7 - Behavioral Health and Substance Misuse

This chapter provides a comprehensive overview of behavioral health and substance misuse in UMass HealthAlliance-Clinton Hospital's 14communities.

This chapter presents the following behavioral health and substance misuse topics that affect the health of Service Area residents:

- Mental Health
- Self-Inflicted Injuries & Suicide
- Substance Use

A list of related programs and resources available at HealthAlliance's facilities and other organizations throughout the Service Area can befound in Appendix A.

Chapter Highlights

Mental Health

- Elevated suicide rate.

Tobacco Use

- The Service Area smoking rate of 16.9 % is higher than the state rate of 13.7%
- In 2017, 20.1% of high school youth reported current use of electronic nicotine products.
- In 2017, 11.4% of high school youth reported current use of all other tobacco products.

Opioid-Related Fatal Overdose

- Opioid-Related fatal overdoses per 100,000 increased by 9.05% from 2015 to 2019

Mental Health

According to the US Substance Abuse and Mental Health Services Administration "Behavioral health is a state of mental/emotional being and/or choices and actions that affect wellness. Substance abuse and misuse are one set of behavioral health problems. Others include (but are not limited to) serious psychological distress, suicide, and mental illness. Such problems are far-reaching and exact an enormous toll on individuals, their families and communities, and the broader society." This section highlights data critical to understanding the mental health status of Service Area residents overall.

Self-Inflicted Injuries & Suicide

Table BHA-1 shows the Service Area community with the highest number of suicides was Fitchburg (9) and Leominster (5). The former of theseis particularly concerning as it represents a rate that is over twice the state's. Still, the Service Area's overall rate of 13.4 suicide deaths per 100,000 was only slightly higher than the State rate of 10.

BHA - 1 Suicide Deaths in Service Area Communities in 2017

Community	Deaths	Deaths Per 100K
Ashburnham	2	31.8
Ashby	1	31.1
Bolton	1	18.9
Clinton	3	21.5
Fitchburg	9	22.1
Gardner	2	9.7
Harvard	0	0.0
Lancaster	0	0.0
Leominster	5	12.0
Lunenburg	1	8.8
Princeton	0	0.0
Sterling	0	0.0
Townsend	1	10.6
Westminster	0	0.0
Service Area Total/Rate	**25**	**13.4**
Massachusetts	692	10.0

Source: 2017 Mass DPH Data, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.

Table BHA-2 demonstrates that self-reported mental health issues increase as students transition from middle to high school grade levels. This illustrates the need to reach children early in their lives before issues arise and assist them in a proactive manner.

BHA - 2 Self-Reported Mental Health Responses from
2018 Nashoba Regional YRBS

	Grade Level	
Mental Health	**8th Grade**	**High School (10th & 12th)**
Felt sad or hopeless for 2 weeks or more (past 12 months)	17%	23%
Seriously considered suicide (past 12 months)	9%	11%
Made a plan about how to attempt suicide (past 12 months)	6%	8%
Attempted suicide (past 12 months)	2%	4%
Attempted suicide that resulted in treatment by doctor or nurse (past 12 months)	0%	1%
Sources: 2018 Nashoba Regional YRBS		

Substance Misuse

"What health insurance allows for I think, is very complicated and is confusing for families. And it's, it just create so many roadblocks for people, particularly around mental health and substance use."

According to the World Health Organization (WHO), "substance abuse refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs". Substance abuse is often a side effect of mental health disorders and has wide ranging implications for the health status and health outcomes of people with living with mental health problems. This section highlights data around substance abuse, heretofore referred to as "Substance Misuse" or "Substance Use Disorder", in the Service Area including binge drinking, smoking, and opioid/heroin use. It also includes the SA's mortality rates and the number of Emergency Department (ED) visitors.

1. Tobacco

The Mass Department of Public Health tracks smoking rates and retail tobacco regulations across Massachusetts communities. They maintain an interactive database that can be found at makesmokinghistory.org where users can select communities to compare tobacco related information across the State. The most updated map includes community population, median incomes from the 2010 census and smoking rates using Massachusetts' 2014-2018 *Behavioral Risk Factor Surveillance System* (BRFSS) data.

According to Table BHA-3, the Service Area smoking rate was 16.9% which was higher than the Massachusetts average of 13.7%. The highest smoking rates (Fitchburg, Gardner, and Leominster) also have the three lowest Median Incomes for the Service Area. The correlation between lower income neighborhoods and higher rates of smoking is well documented. Early education is key; community leaders must also focus on vaping rates.

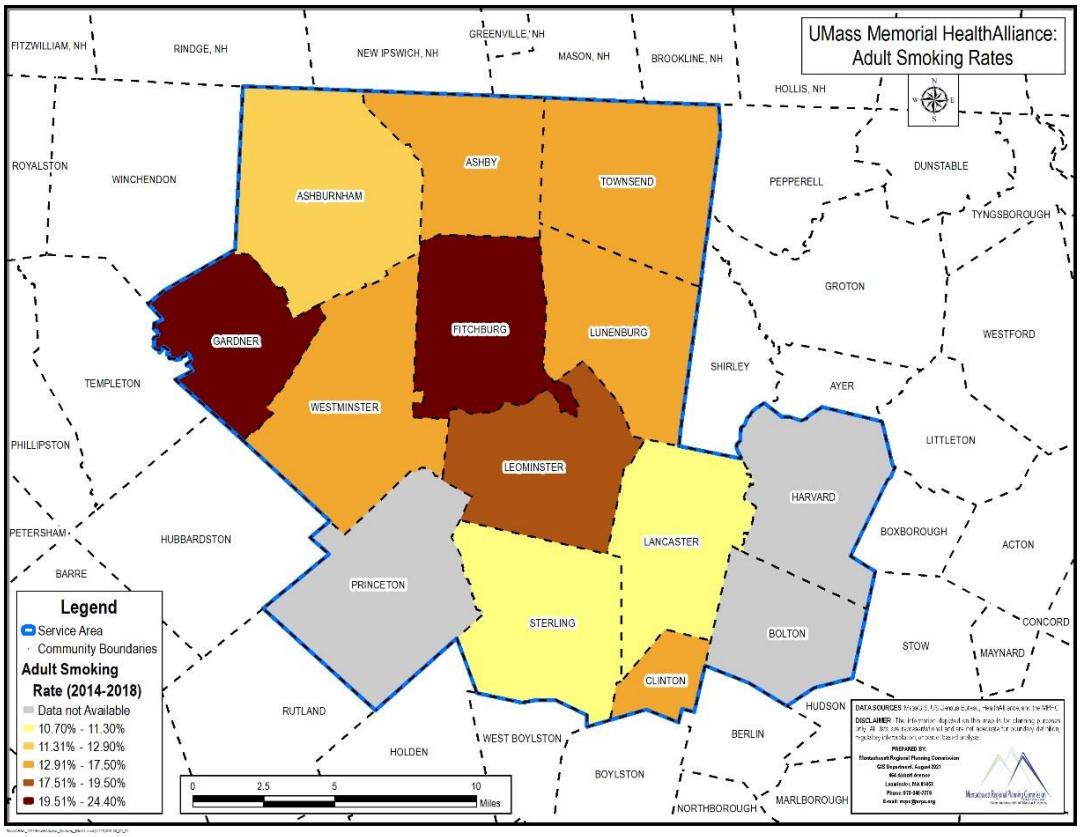
BHA - 3 Population, Median Income and Smoking Rates in Service Area Communities 2014-2018

Community	Total Population	Median Income*	Smoking Rates**
Ashburnham	6,281	$95,625	12.9%
Ashby	3,220	$97,958	16.6%
Bolton	5,299	$173,024	-
Clinton	13,935	$67,634	16.0%
Fitchburg	40,702	$52,207	24.4%
Gardner	20,610	$49,679	24.3%
Harvard	6,569	$156,667	-
Lancaster	8,044	$93,646	11.3%
Leominster	41,606	$61,825	19.5%
Lunenburg	11,402	$103,228	16.3%
Princeton	3,455	$136,083	-
Sterling	8,091	$121,458	10.7%
Townsend	9,473	$91,211	17.5%
Westminster	7,766	$100,972	16.4%
Service Area Total/Ave/Rate	**186,453**	**$100,087**	**16.9%**
Massachusetts	$6,547,629	$85,843	13.7%

Source: Mass DPH 2014-2018 Adult Smoking Rates - Make Smoking History * Median Income and Population from 2015-2019 ACS **Smoking Rates calculated using Small Area Estimates from the 2014-2018 Mass BRFSS

BHA- Map 1 illustrates the extent of smoking rates in the service area communities. Most of the higher rates concentrate to the geographic center of the Service Area in Fitchburg and Leominster.

BHA – Map 1 Smoking Rates in Service Area Communities 2014-2018



In 2015, 23.7% of high school youth reported "current use" of electronic nicotine products while 15.9% reported current use of all other tobacco products. These rates each fell slightly in 2017 to 20.1% and 11.4%, respectively. These trends are encouraging, however in 2016/2017 293,042 students enrolled in state high schools. The 20.1% students who use e-cigarettes, or vaping, translates to 58,901 students statewide. Table BHA- 6 shows that vaping use is highest among white high school students. Health care professionals must continue to monitor vaping trends since the service area student population is 74.7% white as of 2021.

BHA – 5 Electronic Nicotine Product Use by Race
Among High School Students 2017

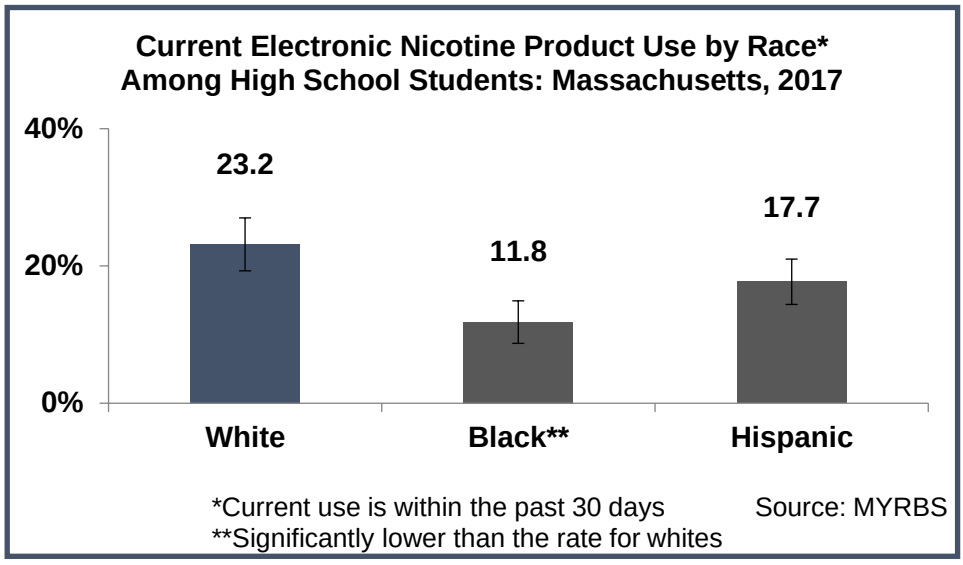


Table BHA-6 is a checklist of all retail tobacco policies implemented by Service Area communities according to the Mass DPH Make Smoking History Program. As seen below most communities in the service area have banned tobacco sale in pharmacies, put a cap on the number of retail licenses, put restrictions on packaging of cheap cigars, and restricted sales of flavored tobacco products. Of the communities who did not place many bans or limits, Gardner and Lunenburg have above average smoking rates.

BHA - 6 Retail Tobacco Policies by Service Area
Community

Community	Ban of Tobacco Sale in Pharmacies	Cap on # of Retail Licenses	Minimum Legal Sale Age of 21	Restriction on Packaging of Cheap Cigars	Restriction on Sale of Flavored Products	No Retail Tobacco Policies
Ashburnham	Y	Y	Y	Y	Y	N

Ashby	Y	Y	Y	Y	Y	N
Bolton	Y	Y	Y	Y	Y	N
Clinton	Y	Y	Y	Y	Y	N
Fitchburg	Y	Y	Y	Y	Y	N
Gardner	Y	N	N	Y	Y	N
Harvard	Y	Y	Y	Y	Y	N
Lancaster	Y	Y	Y	Y	Y	N
Leominster	Y	N	Y	Y	Y	N
Lunenburg	N	N	N	N	N	Y
Princeton	N	N	N	N	N	Y
Sterling	N	N	N	N	N	Y
Townsend	Y	Y	Y	Y	Y	N
Westminster	N	Y	N	Y	Y	N
Source: Mass DPH Make Smoking History - Local Tobacco Regulations in Massachusetts						

Mass DPH developed the QuitWorks program as part of its Make Smoking History initiative to help clinicians refer their patients to the Massachusetts Smokers' Helpline. QuitWorks is "a free, evidence-based stop-smoking service developed by the Massachusetts Department of Public Health in collaboration with all major health plans in Massachusetts".[ii]

Table BHA-7 displays the number of smokers in the Service Area enrolled in QuitWorks from 2018 to 2020. The community with the largest enrollment was Fitchburg with 7,599 enrollees. It is encouraging to see Fitchburg and Gardner with the highest rates of enrollees as they are above average in rate of smokers, too.

BHA - 7 Number of Smokers in Service Area Enrolled in QuitWorks 2018-2020

Community	2018 - 2020	
	Count	Rate/100,000
Ashburnham	583	9,282
Ashby	386	11,988
Bolton	-	-

Clinton	1,705	12,235
Fitchburg	7,599	18,222
Gardner	3,893	18,889
Harvard	-	-
Lancaster	719	8,938
Leominster	6,135	14,745
Lunenburg	1,269	11,130
Princeton	-	-
Sterling	631	7,799
Townsend	1,174	12,393
Westminster	910	11,718
Service Area Total/Rate	**25,004**	**14,140**
Source: Make Smoking History, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.		

One inhibitor to the ability of a community to limit tobacco use is access to a tobacco retail store for area residents. Table BHA-9 shows that in order Fitchburg, Leominster, Gardner, Clinton, and Lunenburg have the highest number of stores that sell tobacco.

BHA - 8 Number and Rate of Tobacco Retail Stores in Service Area Communities 2020

Community	2020	
	Count	Rate per 1,000
Ashburnham	6	1.0
Ashby	3	0.9
Bolton	3	0.6
Clinton	19	1.4
Fitchburg	50	1.2
Gardner	24	1.2
Harvard	1	0.2
Lancaster	3	0.4
Leominster	41	1.0
Lunenburg	15	1.3
Princeton	2	0.6
Sterling	4	0.5
Townsend	8	0.8
Westminster	7	0.9
Service Area Total/Rate	**186**	**1.1**
Source: Make Smoking History, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.		

2. Opioids

"I think like law enforcement has done a lot of work around helping to break that stigma with folks that struggle with substance use disorder, because now there's, you know, they're not punishing, they're doing knock and talks, right, post overdose, a police officer will go to recovery coach to someone's home and say, how are you? Is there something that we can do to help you"

One form of substance misuse is unprescribed use of opioids which has become an epidemic in Massachusetts and across the US. In some instances, the illicit use of opioids can result in fatal overdose (OD).

Mass DPH releases quarterly reports on opioid-related fatal overdoses for each town throughout Massachusetts. Table BHA-10 presents overdose totals and the OD rate per 100,000. The number of ODs in the Service Area did not fluctuate much between *2016* and 2019, but the rate in the Service Area increased by 9.05% from 2015 to 2019.

All communities with greater than five ODs during the 5-year period, except for Clinton, saw an increase in the percent change. The trend of fatal ODs, according to the table below, increased and must still be treated as a high level priority by communities and healthcare providers.

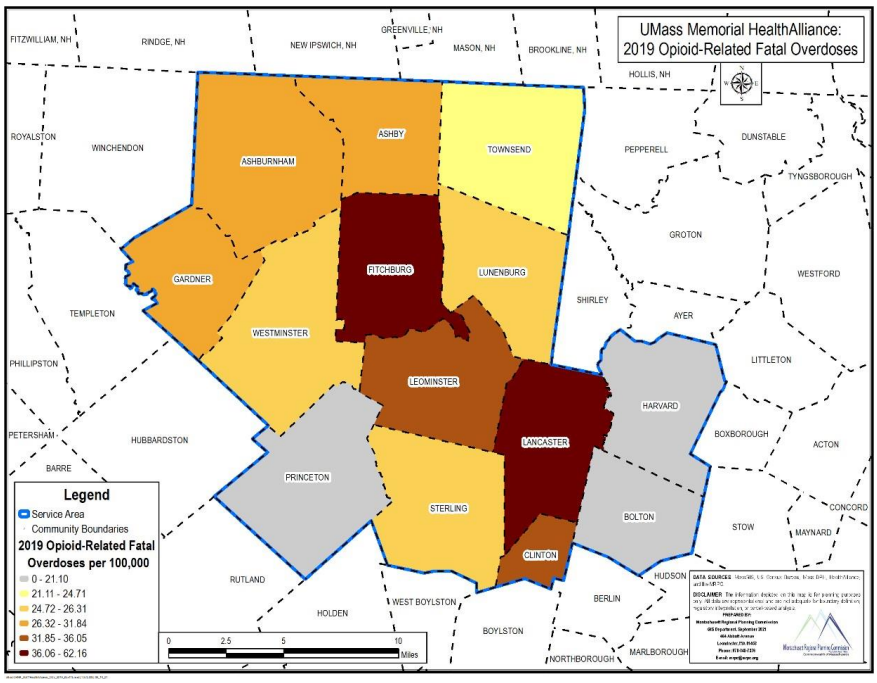
BHA - 9 Opioid-Related Fatal Overdoses in Service Area Communities 2015-2019

	Total Opioid-Related Fatal Overdoses								
Community	**2015**	**2016**	**2017**	**2018**	**2019**	**Total**	**% Change 2015 - 2019**	**OD Rate per 100,000 - 2015**	**OD Rate per 100,000 - 2019**
Ashburnham	1	2	0	1	2	6	100%	15.92	31.84
Ashby	0	0	0	0	1	1	100%	0.00	31.06
Fitchburg	19	23	24	15	20	101	5%	46.68	49.14
Gardner	6	8	8	12	6	40	0%	29.11	29.11
Leominster	7	13	16	12	15	63	114%	16.82	36.05
Lunenburg	2	1	2	3	3	11	50%	17.54	26.31
Townsend	1	2	4	2	2	11	100%	10.56	21.11
Westminster	0	0	2	4	2	8	200%	0.00	25.75
Bolton	2	1	0	1	0	4	-100%	37.74	0.00
Clinton	6	7	2	5	5	25	-17%	43.06	35.88
Harvard	0	0	0	1	0	1	0%	0.00	0.00
Lancaster	2	1	2	0	5	10	150%	24.86	62.16
Princeton	1	1	0	1	0	3	-100%	28.94	0.00
Sterling	0	2	1	2	2	7	200%	0.00	24.72
Service Area Total/Rate	**47**	**61**	**61**	**59**	**63**	**291**	**34%**	**26.58**	**35.63**

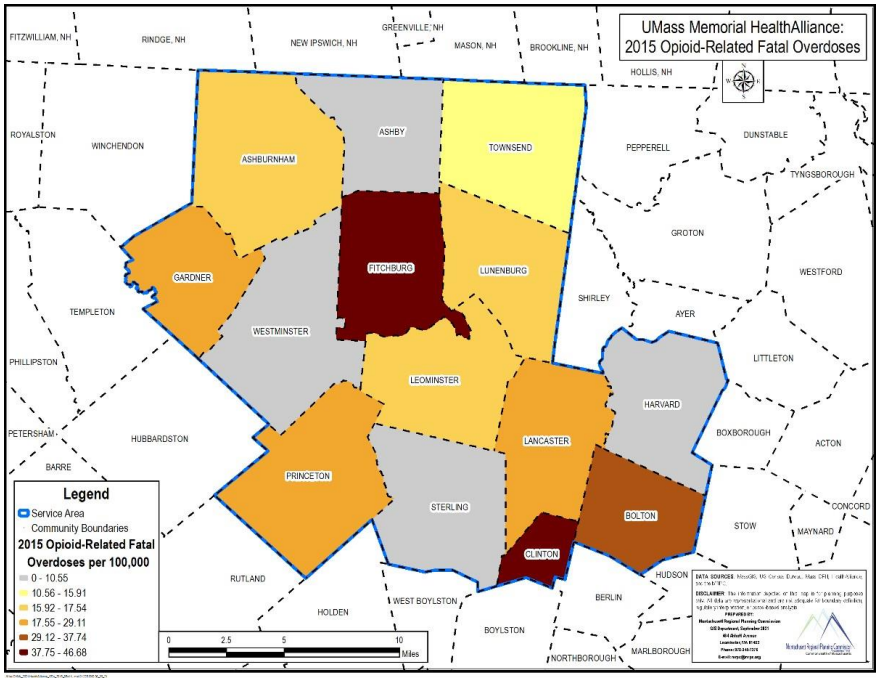
Source: Mass DPH February 2021 Quarterly Report of Opioid-Related Fatal Overdose Deaths by City/Town - *OD Rates for 2015 and 2019 were calculated using ACS population estimates for 2019

BHA-Map 2 and BHA-Map 3 show Opioid-Related Fatal Overdoses in Service Area Communities in 2015 and 2019.

BHA – Map 2 Opioid-Related Fatal Overdoses in Service Area Communities 2015



BHA – Map 3 Opioid-Related Fatal Overdoses in Service Area Communities 2019



Wellness, Chronic disease, and Mortality

Chapter 8

Abstract

This chapter provides a comprehensive overview of wellness and chronic disease in UMass Memorial Health - HealthAlliance-Clinton Hospital's 14 communities, with analyses of related trends and disparities

Chapter 8 – Wellness, Chronic disease, and Mortality

This chapter provides a comprehensive overview of wellness and chronic disease in UMass Memorial Health - HealthAlliance-Clinton Hospital's 14 communities, with analyses of related trends and disparities, including:

- Health & Wellness
- Chronic Disease
- Mortality

A list of related programs and resources available at HealthAlliance-Clinton Hospital (HA-C) facilities and other organizations throughout the Service Area can be found in Appendix A.

Chapter Highlights

Health & Wellness

- In 2019, portions of Fitchburg, Gardner, Leominster, and Clinton were considered food deserts.
- Middle and High School students self-reported 3-4 hours per day of screen time, but only 79% of middle school students reported 3 days or more of vigorous activity, and only 71% in high school students.
-

Chronic Disease

- Cerebrovascular death rate in the Service Area (62.2) was nearly double the state rate (34.4).
- Death rate in Gardner for heart disease (135.9) and cerebrovascular (300) far exceeded Service Area and state averages.
-

Mortality

- Heart disease and cancer caused over 40% of all deaths in the Service Area for 2017.

- The pre-mature mortality rate for the Service Area (436) was significantly higher than the state rate (282).

Health & Wellness

1. Nutrition & Activity

Proper nutrition is a key determinant of health status and health outcomes for all humans. Poor diets have been linked to several chronic conditions and illnesses that could be prevented with better eating habits including type 2 diabetes, cancer, and obesity. This section discusses the nutritional determinants of health relevant to the health status of Service Area residents including access to healthy foods.

"Access to healthy foods is an equity issue; and education of what is a healthy food and access to healthy foods"

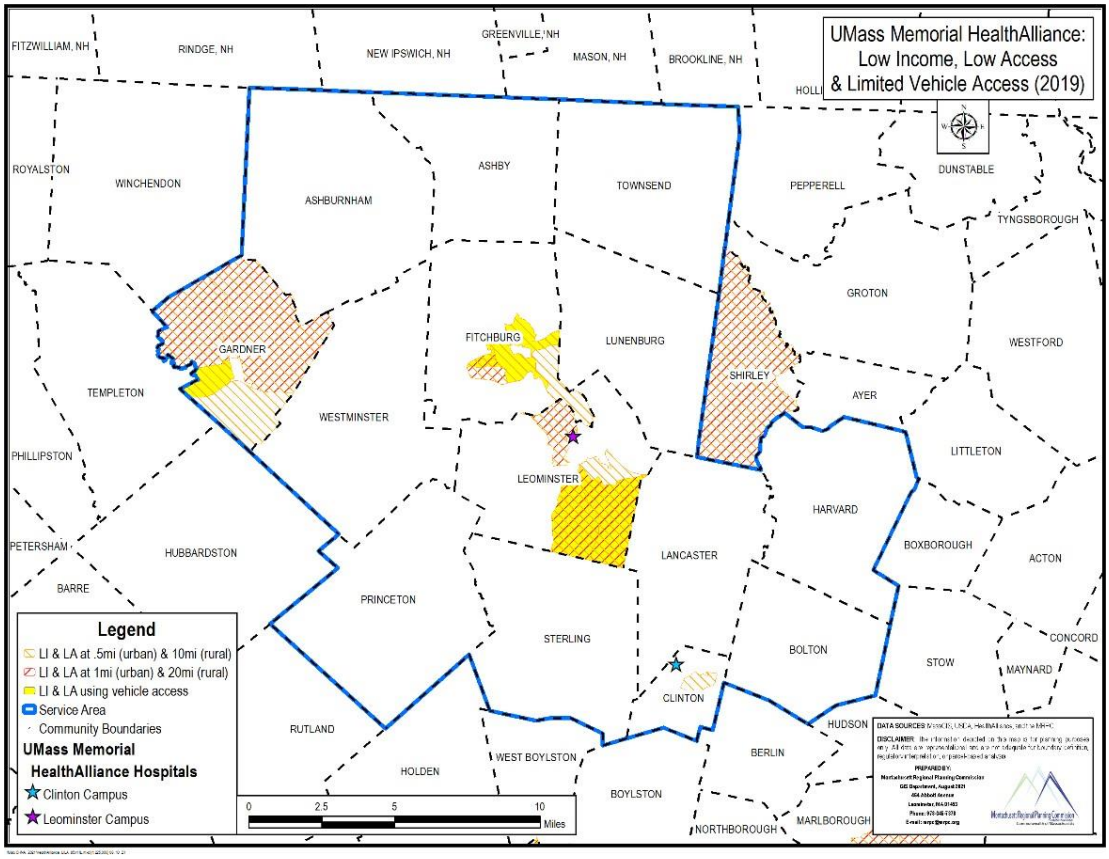
A. Adults

As noted in chapter 2 of this report, the US Department of Agriculture (USDA) defines a "food desert" as "parts of the country vapid of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas. This is largely due to a lack of grocery stores, farmers' markets, and healthy food providers. "In place of what should be food stores filled with fresh fruit and whole foods, these locations are often" heavy on local quickie marts that provide a wealth of processed, sugar, and fat laden foods that are known contributors to our nation's obesity epidemic".[iii]

As part of this effort, the USDA created the "Food Access Research Atlas" using Census tracts to identify locations across the country that are Low Income (LI) and have Low-Access (LA) to food within one-half to one-mile for urban areas, and 10 to 20 miles for rural areas.[iv] The map alsotracks which of those area have little to no vehicle access that would allow them to get to the nearest food store. Low-access communities qualify as such if they have "at least 500 people and/or at least 33% of the census tracts population must reside within one mile from a supermarket or large grocery store (10 miles for rural districts)".[v]

The solid colors in WCD-Map 1 and WCD-Map 2 show low income and low access areas for 2019 and the hatched areas show the same for 2015in the HealthAlliance-Clinton Hospital Service Area. According to the Food Access Research Atlas portions of Gardner, Fitchburg, Leominster, and Clinton are food deserts.

WCD – Map 1 LI and LA and limited vehicle access in Service Area communities 2019



B. Children Nutrition & Activity

For a child growing up healthy, it is vitally important they are eating nutritious foods that will help them develop properly. The only recent data available to help analyze the nutritional habits of Service Area children is through the Nashoba Regional Youth Risk Behavior Survey (YRBS) from 2018 shown in Table WCD-1.

Table WCD-1 shows that good nutrition habits such as eating breakfast seven days a week decrease from eighth grade to high school and unhealthy nutrition habits such as drinking caffeinated beverages increase from eighth grade to high school.

"We brought into the Fitchburg schools and community, a health program which is a telehealth program. We are actually the first school system in the state of Massachusetts to get on board."

WCD - 1 Child Nutrition for Nashoba Regional YRBS
2018

Child Nutrition	8th Grade	High School
Ate breakfast all 7 days in the past week	54%	41%
Ate breakfast fewer than 5 days in the past week	27%	40%
Drank a caffeinated beverage at least once in the past week	63%	73%
Drank a caffeinated beverage 1 or more times per day in the past week	8%	21%
Source: 2018 Nashoba Regional YRBS		

Obesity and activity in young people often appear together. Tables WCD-2 and WCD-3 present self-reported answers by middle and high school students at Nashoba in 2018. For all grades, child obesity was reported in 19% of students, whereas 61% reported proper weight, and 18% underweight. Media screen time is a frequent distraction to physical activity.

WCD - 2 Child Obesity for Nashoba Regional 2018
YRBS

Wellness Category	Under-weight	About the right weight	Slightly Overweight	Very Overweight
How do you describe your weight? (Grades: 6, 8, 10 & 12)	18%	61%	19%	2%
Source: 2018 Nashoba Regional YRBS				

Table WCD-3 shows the physical activity, screen time, and nightly sleep students reported. The percent of students reporting vigorous exercise for three or more hours a week is 79% for 8th graders and 71% of high schoolers. Most of the physical activity students had been through playingon at least one sports team this past year; 69% of 8th graders and 56% of high schoolers. It is encouraging to see that 79% and 71% of middle and high school students, respectively, participated in vigorous activity at least three days per week. Of concern is that three days is less than half ofa week, and the percentage drops a not-insignificant amount from 8th grade to high school. The YRBS shows that students log 3-4 hours average screen time per day, taking away from any physical activity. In the 2016 YRBS, 60% of 8th graders and 82% of high schoolers reported sleeping on average of seven (7) or fewer hours per night. The 2018 YRBS asked a slightly different question regarding number of hours of sleep gained on a school night, with the median time being seven (7) hours.

WCD - 3 Child Activity for Nashoba Regional 2018
YRBS

Child Physical Activity	8th Grade	High School (10 & 12th)
Participated in Vigorous Exercise 3 or more Days in Past Week	79%	71%
Median Hours of Screen Time on Average School Days	3	4
Played on at least one sports team this past year	69%	56%
Sleeps an Average of 7 or Fewer Hours Per Night (2016)	60%	82%
Median Hours of Sleep on School Nights (2018)	7	7
Source: 2018 Nashoba Regional YRBS		

Effects of the Pandemic on Adult and Child Nutrition/Food Insecurity

"According to a recently published study, before the pandemic, 8.2 percent of Massachusetts households experienced food insecurity. The hunger crisis peaked in the early stages of the pandemic, with 19.6 percent of households estimated to be food insecure in spring, 2020. The coronavirus pandemic fueled a hunger crisis unlike any other in our lifetime the study said. Going hungry has long lasting consequences, especially in growing children. Hungry children don't focus well in class, visit the nurse's office more often, have lower test scores, lower graduation rates and fewer adult successes. Hungry adults face more chronic disease and higher mortality. From February through June of 2021, the average percent of food insecure households with children was 15.9 percent. By July it had inched back up to 17.2 percent.

Not only are people of color in Massachusetts disproportionately affected by food insecurity but minority households are recovering from the pandemic significantly slower than white households, according to the study. From December 2020 to May 2021, one in seven white households with children experienced food insecurity. For Black and Latino households with children, the rate was one in three.

In response to 'pandemic-fueled food insecurity' in mid-August 2021 the U.S. Department of Agriculture announced the largest permanent increase in benefits since the program's inception. Beginning in October 2021, more than 950,000 Massachusetts residents will see their benefits increase on average by $36.00 per person each month." Source: Boston Globe, August 23, 2021

Chronic Disease

1. Diabetes

Diabetes deaths in the Service Area was the 7th highest cause of death and comprised 3% of all deaths (see WDC - 9). At 53 total deaths (WCD – 4), diabetes was 4.0% of statewide diabetes deaths however the Service Area population was approximately 2.6% of statewide population.

WCD – 4 Diabetes Deaths in the Service Area 2017

Community	Diabetes Deaths
Ashburnham	0
Ashby	1
Bolton	2
Clinton	3
Fitchburg	9
Gardner	5
Harvard	0
Lancaster	4
Leominster	16
Lunenburg	2
Princeton	1
Sterling	3
Townsend	4
Westminster	3
Service Area Total	**53**
Massachusetts	1323
Source: Mass DPH Death Report 2017	

2. Asthma K-8 Students

Table WCD-5 shows the prevalence of asthma in children K-8th grade for the 2016/2017 school year. Asthma is a chronic disease that is difficult to outgrow. The Service Area average was similar to the state average, as well as for both boys and girls. The males were higher than the girls for the Service Area. Asthma rates in Gardner (17.5%), Fitchburg (16.7%), Ashby (16.6%), and Townsend (15.7%) far exceeded other area communities.

WCD - 5 K-8 Asthma Prevalence in Service Area Communities 2016/2017

Community	K-8 Asthma Prevalence - Male	K-8 Asthma Prevalence - Female	K-8 Asthma Prevalence
Ashburnham	10.3	9.9	10.7
Ashby	21.1	13.2	16.6
Bolton	6.7	3.8	5
Clinton	8	6.7	7.8
Fitchburg	20.2	14.1	16.7
Gardner	21.1	14.6	17.5
Harvard	9.5	5.1	7.2
Lancaster	12.7	7	9.8
Leominster	15.5	10.9	13.2
Lunenburg	13	9.7	11.6
Princeton	4.6	7.7	6.4
Sterling	12.8	8	10.6
Townsend	18.9	12.3	15.7
Westminster	13.3	10.2	11.6
Service Area Avg	**13.4**	**9.5**	**11.5**
Massachusetts	**14**	**10.4**	**12.1**
Source: Mass DPH PHIT			

3. Cerebrovascular

Cerebrovascular deaths in the HealthAlliance-Clinton Hospital Service Area comprised 4.6% of statewide deaths, with only 2.6% of the statewide population. Further, the rate per 100,000 in the Service Area was nearly double the state. High concentrations of deaths existed inGardner (28), Leominster (28), and Fitchburg (23). Fitchburg, though, did not exceed the state rate per 100,000. Stroke deaths were the number three cause of death for the Service Area in 2017.

WCD - 6 Cerebrovascular Deaths in the Service Area in 2017

Community	Cerebrovascular Deaths	Cerebrovascular Death Rates per 100,000
Ashburnham	1	15.9
Ashby	0	0.0
Bolton	1	18.9
Clinton	8	57.4
Fitchburg	23	56.5
Gardner	28	135.9
Harvard	1	15.2
Lancaster	4	49.7
Leominster	28	67.3
Lunenburg	9	78.9
Princeton	0	0.0
Sterling	3	37.1
Townsend	2	21.1
Westminster	2	25.8
Service Area Total/Rate	**110**	**62.2**
Massachusetts	2370	34.4

Source: Mass DPH Death Report 2017, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.

4. Heart Disease

Table WCD-7 shows heart disease deaths for the Service Area in 2017. The Area rate of 204.2 per 100,000 was higher than the state rate at 176.5. Heart disease was the number one cause of death in 2017 for the Service Area. Per 100,000 residents, Gardner (300.8), Clinton (265.5), and Leominster (233.1) exceeded the Service Area rate.

WCD - 7 Coronary Heart Disease Deaths in the Service Area in 2017

Community	Heart Disease Deaths	Heart Disease Death Rate per 100,000
Ashburnham	8	127.4
Ashby	5	155.3
Bolton	5	94.4
Clinton	37	265.5
Fitchburg	69	169.5
Gardner	62	300.8
Harvard	4	60.9
Lancaster	13	161.6
Leominster	97	233.1
Lunenburg	23	201.7
Princeton	3	86.8
Sterling	14	173.0
Townsend	8	84.5
Westminster	13	167.4
Service Area Total/Rate	**361**	**204.2**
Massachusetts	12165	176.5
Source: Mass DPH Death Report 2017, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.		

5. Cancer

Cancer was the number two cause of death in 2017 for HealthAlliance-Clinton Hospital Service Area residents. Total deaths due to cancer were 359, of which 77 were lung cancer, and 35 were breast cancer in women. The rate of total deaths and breast cancer deaths slightly exceeded the state rate; lung cancer death rate was slightly below the state rate. For total deaths, the rates in Ashburnham (334.3), Ashby (279.5), Lunenburg(271.9), and Gardner (213.5) exceeded the Service Area rate.

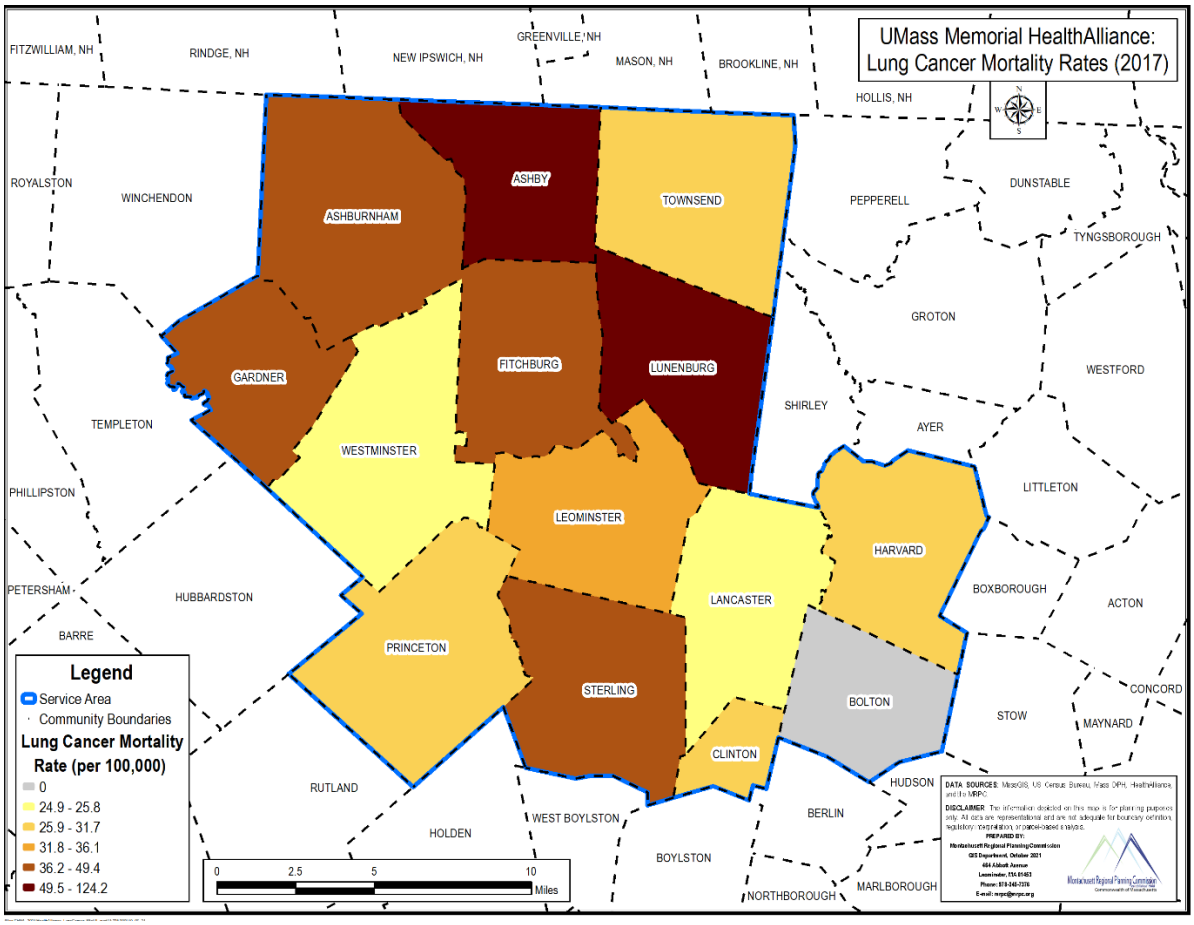
WCD - 8 Cancer Deaths and Death Rates in the Service Area in 2017

Community	Cancer Deaths	Cancer Death Rates	Lung Cancer Deaths	Lung Cancer Death Rates	Breast Cancer (Female) Deaths	Breast Cancer (Female) Death Rates
Ashburnham	21	334.3	3	47.8	4	63.7
Ashby	9	279.5	4	124.2	0	0.0
Bolton	4	75.5	0	0.0	0	0.0
Clinton	30	215.3	4	28.7	1	7.2
Fitchburg	68	167.1	18	44.2	5	12.3
Gardner	44	213.5	9	43.7	6	29.1
Harvard	12	182.7	2	30.4	1	15.2
Lancaster	11	136.7	2	24.9	0	0.0
Leominster	75	180.3	15	36.1	8	19.2
Lunenburg	31	271.9	10	87.7	3	26.3
Princeton	4	115.8	1	28.9	0	0.0
Sterling	18	222.5	4	49.4	4	49.4
Townsend	18	190.0	3	31.7	3	31.7
Westminster	14	180.3	2	25.8	0	0.0
Service Area Total/Rate	**359**	**203.0**	**77**	**43.5**	**35**	**19.8**
Massachusetts	12937	187.7	3074	44.6	894	13.0

Source: Mass DPH Death Report 2017, Rates were calculated using 2015-2019 American Community Survey 5-year Estimates population data.

WCD-Map 2 shows where lung cancer deaths occurred in the Service Area for 2017 based on rates per 100,000. The northern section of the Service Area appears to have higher rates, this includes Lunenburg, Ashby, and Ashburnham.

WCD – Map 2 Lung Cancer Death Rates in the Service Area in 2017



Mortality

1. Top Causes

Over 40% of all deaths in the HealthAlliance-Clinton Hospital Service Area were caused by heart disease and cancer, as seen in Table WCD-9. Many forms of both chronic illnesses are preventable which should be a focus of health care providers. Female breast cancer ranked 8th but effected only half the population. Continued outreach and education to all residents will help with early detection.

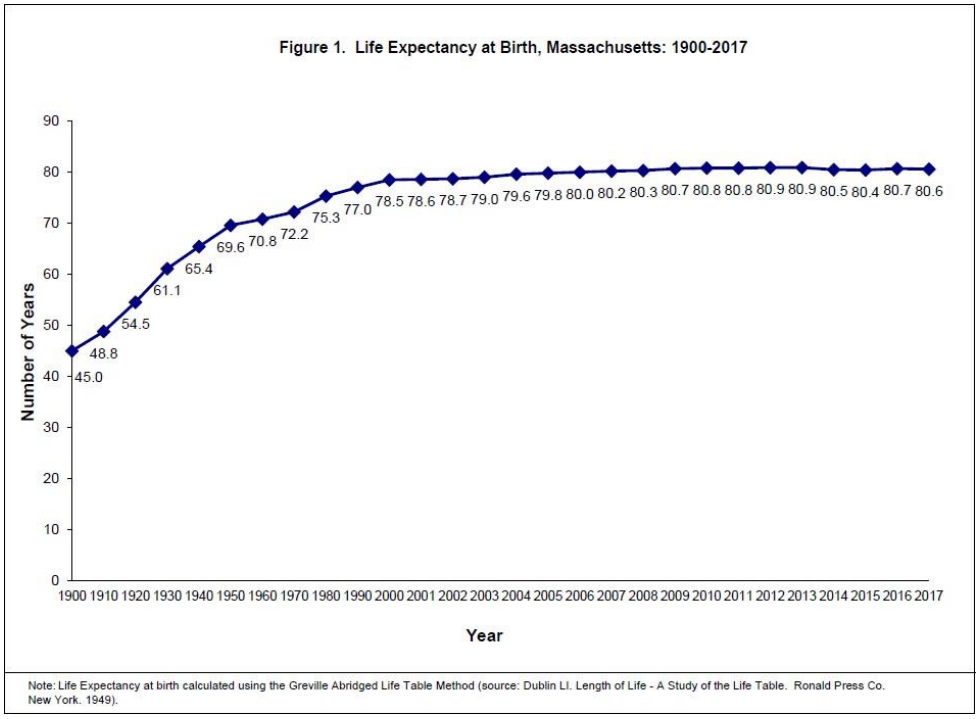
WCD – 9 Top Ten Causes of Death in the Service Area
2017

RANK	Mortality Cause	Number of Deaths	% of all Service Area Deaths
1	Heart Disease	361	20.40%
2	Total Cancer	359	20.30%
3	Stroke	110	6.20%
4	CLRD	92	5.20%
5	Lung Cancer	73	4.10%
6	Opioid Related	60	3.40%
7	Diabetes	53	3.00%
8	Female Breast Cancer	35	2.00%
9	Suicide	25	1.40%
10	Influenza & Pneumonia	21	1.20%
Source: Mass DPH Death Report 2017			

2. Life Expectancy

Table WCD-10 shows the changes to life expectancy for the statewide population. The average age has not changed much since about 2006 and remains just under 81 years old.

WCD - 10 Life Expectancy at Birth in Massachusetts
1900-2017



3. Mortality Rate

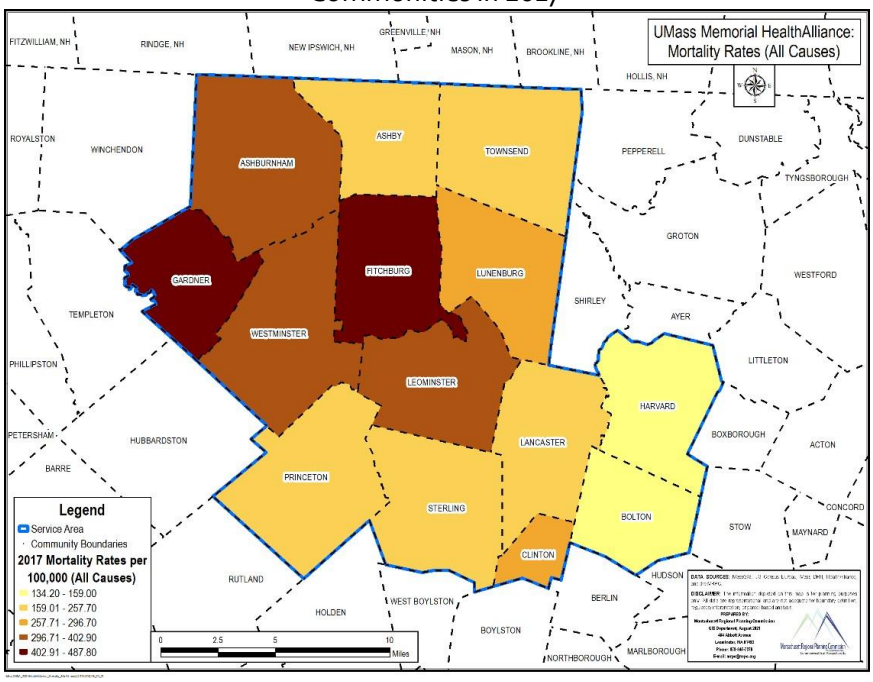
Table WCD-11 shows the overall mortality rate for Service Area communities in 2017. The Service Area rate (740.3) was above the state rate (675.7). The total deaths (1,764) in the Service Area comprised 3% of total state deaths. Gardner (938.9), Clinton (920.8), Fitchburg (874.8), Ashburnham (871.8), and Leominster (835) were the top five communities for death rate per 100,000.

WCD - 11 Mortality Rates in Service Area Communities 2017

Community	Mortality (All Causes)	Mortality Rate per 100,000
Ashburnham	52	871.8
Ashby	24	760.0
Bolton	23	457.7
Clinton	139	920.8
Fitchburg	395	874.8
Gardner	256	938.9
Harvard	38	696.5
Lancaster	61	641.4
Leominster	458	835.0
Lunenburg	103	787.3
Princeton	17	464.7
Sterling	72	570.7
Townsend	66	769.1
Westminster	60	775.5
Service Area Total/Rate	**1764**	**740.3**
Massachusetts	58844	675.7
Source: Mass DPH Death Report 2017		

WCD-Map 3 presents the above table in an area map. The concentration of area death rate is visible in Gardner and Fitchburg, but also the nearby communities like Ashburnham, Westminster, and Leominster.

WCD – Map 3 Mortality Rates in Service Area Communities in 2017



4. Pre-Mature Mortality Rate

Pre-mature mortality in Service Area communities for 2017 is shown below in Table WCD-12. The Service Area rate per 100,000 (436) was well above the state rate (282.6). The rate in Gardner (487.8), Fitchburg (428.2), and Leominster (402.9) exceeded 400, however Leominster was slightly below the Service Area rate.

WCD - 12 Pre-Mature Mortality Rates in Service Area Communities 2017

Community	Pre-Mature Mortality (All Causes)	Pre-Mature Mortality Rate per 100,000
Ashburnham	28	344.5
Ashby	11	240.1
Bolton	11	159.0
Clinton	47	296.6
Fitchburg	185	428.2
Gardner	117	487.8
Harvard	12	214.7
Lancaster	26	257.7
Leominster	192	402.9
Lunenburg	45	296.7
Princeton	10	237.0
Sterling	27	237.9
Townsend	29	241.9
Westminster	31	354.7
Service Area Total/Rate	**771**	**436.0**
Massachusetts	22909	282.6
Source: Mass DPH Death Report 2017		

[1] https://ephtracking.cdc.gov/showRbLBWGrowthRetardationEnv.action

[1] http://quitworks.makesmokinghistory.org/about/welcome-to-quitworks.html

[1] http://americannutritionassociation.org/newsletter/usda-defines-food-deserts

[1] https://www.ers.usda.gov/data/fooddesert/

[1] http://americannutritionassociation.org/newsletter/usda-defines-food-deserts

APPENDIX A - Regional Partners and Community Resources

UMass HealthAlliance-Clinton Hospital Community Health Needs Assessment 2021
Inventory of Regional Partners and Community Resources

**Indicates organization is a partner of UMass HealthAlliance-Clinton Hospital.*

Regional Health-Related Coalitions
Community Health Network of Central Massachusetts (CHNA 9) and Membership*
Montachusett Public Health Network*
Municipal Health Departments
Local Boards of Health and Public Health*
Leominster Wellness Committee*

Hospitals
Heywood Hospital*
UMass HealthAlliance-Clinton Hospital

Primary Care / Specialty Care
Active Life Adult Day Health Care
Community Health Connections*
GVNA Health Care *
Montachusett Home Care*
Aging Services of North Central MA

Philanthropic and Charitable Organizations
The Health Foundation of Central Massachusetts*
United Way of North Central Massachusetts*
Community Foundation of Central Massachusetts*

Mental Health and Substance Use
Alyssa's Place Peer Recovery and Resource Center
Central Massachusetts Tobacco Free Community Partnership*
Clean Slate
Community Health Link*
Fitchburg Comprehensive Treatment Center
GAAMHA*
Leominster Opioid Task Force*
Leominster Police Substance Abuse Outreach Program*
LUK, Inc.*
Montachusett Recovery Center
Montachusett Suicide Prevention Taskforce*
National Alliance on Mental Health (NAMI)*
Recovery Centers of America*
Recovery Resource Center
Revive of the USA
Right Choice Health Group
Spring Hill Recovery Center

The SHINE Initiative*
YOU, Inc.

Regional Planning and Transportation
Massachusetts Department of Transitional Assistance
Montachusett Regional Planning Commission*
Montachusett Regional Transit Authority

Elder Services
Councils on Aging*
Friends of Sterling Seniors
Senior Centers*
Aging Services of North Central MA

Education
Clinton Adult Learning Center
Gardner Public Schools*
Leominster Public Schools*
Fitchburg Public Library
Fitchburg Public Schools*
Fitchburg State University*
Local Public Schools*
Montachusett Regional Vocational Technical School*
Mount Wachusett Community College*
Sizer School*
Clinton Public Schools
The Clinton Early Childhood Resource Center

Children & Youth Services
At Home and Afar
Boys & Girls Club of Fitchburg and Leominster*
JUMP, Inc.
Clinton Community Partnership*
Fitchburg Art Museum

First Responders
Local Fire Departments*
Local Police Departments*

Housing and Homeless Services
AIDS Project Worcester
Habitat for Humanity of Central Massachusetts*
North Star Family Services (formerly Montachusett Interfaith Hospitality Network)*
Our Father's House*
New Vue Communities
Salvation Army of North Central*

Food Access
Clear Path for Veterans
Interfaith Hospitality Network of 14 Churches

Growing Places*
Loaves and Fishes*
Making Opportunity Count*
North Central Mass Faith Based Community Coalition
Ginny's Helping Hand, Inc.
Salvation Army of North Central*
Somerville Hispanic Association for Community Development
- Sprout Change/Germinemos

WHEAT Community Connections

Multi-Service Organizations
Community Healthlink*
Salvation Army*
Spanish American Center
United Way of Tri-County WHEAT Community Connections*
Making Opportunity Count*

Economic Opportunity/Workforce Development
Making Opportunity Count*
Nashoba Valley Chamber of Commerce*
North Central Massachusetts Chamber of Commerce
North Central Massachusetts Community Financial Organization
Montachusett Regional Planning Commission
City of Fitchburg Economic Dev. Office

Appendix B Summary of Community Benefits Evaluation of Impact 2018-2020

UMass Memorial Health HealthAlliance-Clinton Hospital

Evaluation of Impact, 2018-2021

UMass Memorial Health – HealthAlliance-Clinton Hospital developed and approved an Implementation Strategy to address significant health needs identified in the 2018-2021 Community Health Needs Assessment (CHA). These programs support the Community Health Improvement Plan (CHIP) which was developed collaboratively with CHNA9, NorthCentral stakeholders, residents, grassroots minority lead organizations, and the Montachusett Public Health Network. The Implementation Strategy closely aligns the CHIP and addresses the following health needs through a commitment of Community Benefit programs and resources:

Priority Areas:

- **Healthy Eating and Active Living**
  Goal: Create an environment that supports people's ability to make healthy eating and active living choices in their community.

- **Individuals and Families in Healthy and Safe Relationships**
  Goal: Improve and sustain the safety and overall security of the region's children, families, and individuals.

- **Behavioral Health and Substance Abuse**
  Goal: Improve overall behavioral health and wellbeing, including preventing substance abuse, in a culturally diverse, responsive, and holistic manner.

- **Transportation and Access**
  Goal: Improve transportation services and systems to ensure equitable access for our diverse communities.

To accomplish the Implementation Strategy, goals were established that indicated the expected changes in the health needs as a result of community programs and activities. Strategies to address the priority health needs/domains were identified and impact measures tracked. The following tables outline the impact made on the selected significant health needs since the completion of the 2018 Community Health Needs Assessment and Implementation Plan. UMass Memorial has a dedicated Community Benefits Department that works closely with community organizations and reports activities to the UMass Memorial Health – HealthAlliance-Clinton Hospital.

Domain 1: Healthy Eating and Active Living		
Goal	**Programs/Strategies to Address HealthNeed**	**Outcomes/Impact**
Create an environment that supports people's ability to make healthy eating and active living choices in their community.	"Walk with a Doc" program launched in Fitchburg (2018) and Clinton (2018) as "Walk N' Talk". This national grassroots initiative led by local practitioners to encourage healthy physical activity, allowing community members to engage in an opportunity for learning and sharingfrom a health care professional on health- related topics chosen by the participants	2018- 60 adult participants participated in Leominster2019- 30 adults participated in Clinton 2020- As a result of COVID, program wasn't offered
	In collaboration with Bigelow Library andBayPath Elder Services, offered Healthy Living with Diabetes (HLWD) in Spanish –this high-level evidence-based workshop for people who have diabetes.	2018- 12 Spanish speaking individuals with diabetes diagnosis accomplished individual goal setting and action plans to improve their mental, nutrition andexercise decision making
	Supported and coordinated a feeding program at the WHEAT Community Caféfor populations living in poverty. ClintonHospital partnered with Morrison HealthCare Food Services and WHEAT Community Services to provide hot, nutritious meals to families in need free of charge. Employees from the hospital volunteered to help with this effort by serving meals to community members at the WHEAT Café.	2018- 60 Community members per month/(over 500 people) 2019- 60-70 people monthly (Services provided annually approx. food servicesprovided: 720) 2020 - This effort served between 60-70 people monthly (Services providedannually approx. food services provided: approx. 800)
	Address food insecurity by addressingsystemic barriers	2020- Organized and supported food security and food access projects targetedat public housing sites
	Expansion of Community Gardens as healthy fresh food options for target populations. Supported the coordination of the community garden located on Clinton Hospital grounds. In collaboration with Growing Places, the Parent Guild program, and Girl Scouts developed and	2018- 10 families in Clinton harvested and accessed healthy foods 2019- Fifteen participants have access to healthy food in both Fitchburg andClinton 2020- As a result of COVID, program wasn't offered

	implemented gardening lessons for the parents in the Parent Guild program.	
	In collaboration with Oriole Health Care, offered A Matter of Balance, a free, eight-week program that teaches how to prevent and manage falls through strength and balance exercises, and by making small changes in the home. The program also shares tips on how to control falls and minimize fall-related injuries.	2018- 13 participants complete the program.
	HA-C provides leadership to the CHNAHealthy Eating/Active Focus area	2018-Present: CB Director serves as co-lead of the HE/AF Working Group
	HS outreach: Middlesex High School: Physical Therapy exercise education, and Lancaster Wellness Fair: Physical Therapy balance education.	2018- Middlesex: 100 high school aged youth attended: Lancaster: 100 children,adults and elderly attended

Domain 2: Individuals and Families in Healthyand Safe Relationships		
Goal	**Programs/Strategies to Address Health Need**	**Outcomes/Impact**
Improve and sustain the safety and overall security of the region's children, families, and individuals.	Community awareness regarding domestic violence/impact on community-YWCA (Daybreak) Display at Leominster and Clinton campus: "Empty Place at the Table" is an art exhibition which features dinner place settings, representing real victims of domestic violence missing fromtheir family's lives. It presents a sobering picture of the lethality of domestic violence, including stories about the lives of our community victims. These victims lost their lives at the hands of an intimatepartner. The display allows our community to mourn the loss of these victims together.	2018- Raised awareness to over 100 community members. 2019- Raised awareness to over 200 community members. 2020- As a result of COVID, program wasn't offered

Domain 3: Behavioral Health and SubstanceAbuse		
Goal	**Programs/Strategies to Address Health Need**	**Outcomes/Impact**
Improve overall behavioral health and wellbeing, including preventing substance abuse, in a culturally diverse, responsive, and holistic manner.	Create a multi-sector (internal and external) committee to identify andimplement strategies to address the opioid epidemic in our local communities	2020- Resumed the Opioid Task Force with stakeholders throughout the community, including representatives from police, fire, first responders, publichealth departments, and other community organizations
	Expand Mental Health First Aid training tocommunity and partners	2018-2020 - Worked with CHNA 9's Steering committee, Behavioral Health Workgroup to organize Mental Health First Aid workshops for priority populations
	Development of a sharp/needle disposalsite at the HA-C Clinton Campus. With the support of the Montachusett Public Health Network, Clinton campus has a sharps disposal - the sharps disposalprogram allows community members to dispose of their needles.	2018- Collected over 1,000 needles 2019- Collected over 1,000 needles 2020- Due to COVID, reporting not available
	HA-C to provide a meeting space for National Alliance on Mental Illness – to conduct a support group for anyone livingwith a mental illness. The group offers an opportunity to share concerns and learn from others who are experiencing similar challenges.	2018- Attendance of 12 participants per meeting x 12 2019- Attendance of 12-13 participants per meeting x 12 2020- As a result of COVID, program wasn't offered monthly
	Collaborated with community partners Seven Hills, the Michael Wallace Foundation, North Central MA Chamberof Commerce Community Leadership Institute team and PPAL (Parent Professional Advocacy League) on establishing "Healthier Minds Social", a drop-in mental health support group for community members and caregivers withlived experienced around personal challenges with mental health to visit a supportive group monthly at the Leominster campus. The group is facilitated by PPAL (Parent Professional Advocacy League).	2018- 15-20 attendees monthly x 12 months 2019- 15-20 attendees monthly x 12 months 2020- As a result of COVID, program wasn't offered

	Leominster High School: Smoking Cessation/Tobacco Treatment Education Day	2018- 50 high school aged youth participated

Domain 4: Transportation and Access		
Goal	**Programs/Strategies to Address Health Need**	**Outcomes/Impact**
Improve transportation services and systems toensure equitable access for our diverse communities.	Access to health insurance and public benefits	Enrolled and educated community members about existing health insurance andSupplemental Nutrition Assistance Program (SNAP). ➢ *2018- 500 community members were provided resources* ➢ *2019- 500 community members were provided resources* ➢ 2020- *300 community members were provided resources*
	Access to community resources	2020- Adopted and linked people to community resources using new on-lineresource inventory (CommunityHelp.net) – 17 programs enrolled
	Ensure that priority populations had access to Census	2020- CB Director chaired Census 2020 Complete Count (Clinton)

Other		
Goal	**Programs/Strategies to Address HealthNeed**	**Outcomes/Impact**
DoN Fund Distribution	Distribute $2.35m in DoN funds competitively and tie directly to outcomesof projects aligned with the hospital's 2018 Community Health Needs Assessment	2019 to Present: UMass Memorial Health - HealthAlliance-Clinton Hospital begandistributing funds in the community through the Determination of Needs (DoN) funding from the hospital's emergency department capital project. To date, $836,000 has been provided to community-based organizations to addressSDOH/health equity in the four focus areas. While Level I funds were made available beginning in 2019, Level II and Levell III funds were made available in Q2 of 2021. Reporting from the grantees will begin in 2022. Funding will continue to be made available through FY'24
Role to Address Public Health Needs/SDOH	Community Health Network Area of NorthCentral Massachusetts (CHNA 9) and CHNA9 Steering Committee- As part of a statewide effort to develop implement	2018- current: Community Benefit Director works in collaboration with the CHNA9 as an active steering committee member, help facilitate the CommunityHealth Improvement (CHIP) process, convene community stakeholders to implement the CHIP, identified four priority areas based on the needs identified

	and integrate community projects to effectively utilize community resources to create healthier communities. Community Health Director works in collaboration with the CHNA9 as an active steering committee member, help facilitate the Community Health Improvement (CHIP) process, convene community stakeholders to implement the CHIP, identified four priority areas based on the needs identified in the 2012-2015 Community Health Needs assessment, and reviews grant proposals submitted by not-for-profit community - based organizations that address the North Central MA priority areas	in the 2012-2015 Community Health Needs assessment, and reviews grantproposals submitted by not-for-profit community-based organizations thataddress the North Central MA priority areas.
Health Equity/Diversity	Form a Minority Advisory Council (MAC)with hospital and community representation	2020- Present MAC Committee created and continues to be active with bothcommunity and hospital representation
	HA-C provides leadership to the CHNARacial Justice Priority Area	2018- Present: CB Director serves as co-lead of the Racial Justice Working Group
	Support CHNA 9 of North Central MA's work to address racism, particularly with respect to behavioral health services	2018-Present: Championed behavioral health integration and promotion ofequitable care and support for those with limited English proficiency among community partners and medical/hospital organizations
SDOH- Workforce, Education and EconomicEquity	Support local workforce efforts for both healthcare but also other workforce/ economic opportunities using a DEI lens.	2020- Present: Support Local Career Centers to conduct ESOL, GED, basic computer skills course, citizenship, and financial literacy classes – received Englishfor New Bostonian Award
	HA-C Internship Program- Expand healthcare workforce opportunities to targeted high schools in the region. The Summer Internship Program is designed to allow college bound high school graduates, or students currently enrolledin a college degree program, an opportunity to gain professional experience in a hospital setting. It requires a commitment of 20 paid hours per week for 9 weeks. Funds for the	2018- HA-C provided 28 students with an internship opportunity. 2019- HA-C provided 29 students with an internship opportunity. 2020- As a result of COVID, program wasn't offered

	internship program come for the hospital's annual golf tournament.	
	HealthAlliance-Clinton Hospital Scholarship Program- HA-C Hospital provides $2,000 scholarships to local highschool graduates interested in pursuing a health career.	2018- 4 scholarships awarded 2019- 4 scholarships awarded 2020- 4 scholarships awarded
Community Activities/Engagement	**HealthAlliance-Clinton Health & Wellness Community Day:** The Hospital's community coordinator organized a one-day event annually that reached out and educated community members on health-related topics, resources, tools for exercising, health screenings, and services. Participating hospital departments included the Cancer Center, Nutrition & Diabetes, Sodexo, Smoking Cessation/Tobacco Treatment, Physical Therapy, Mohs, Mammography, Radiology, Interpreter Services, Endoscopy, Cardiac Rehab/Pulmonary Rehab, Pastoral Care, Emergency Department, HealthAlliance Home Health & Hospice, Opioid Task Force, Speech, Language & Hearing, and Urgent Care Leominster & Fitchburg.	2018- Held in Fitchburg 200 attendees 2019- Held in Clinton- 300 attendees 2020- As a result of COVID, program wasn't offered
	Held screenings and educational sessions at the request of, and in collaboration with targeted community-based organizations. Aligning with priority needs identified in the hospital's 2018 Community Health Needs Assessment (CHA) of North Central Massachusetts, these focused on nutrition/healthy eating, cancer prevention, smoking cessation, blood pressure, medication safety and mental health support services.	**2018:** Attended several local health fairs from elementary schools to senior centers to educate community members and students on: smoking cessation, nutrition, breast cancer, mammography, mental illness/substance abuse, physicaltherapy, medication safety and continuing to support health education and screenings related to chronic diseases and prevalent health conditions in the community including breast and lung cancers, heart health, depression, and diabetes and established **a** mental health support group. (reached over 200 community members) • Sizer School: Smoking Cessation/Tobacco Treatment, 100 middle school andhigh school aged youth • Keller Williams: Nutrition Presentation to Staff, 25 adult participants • Go Red Day, Blood Pressure Screenings provided by ED nurses: 100 attendees

		• United States Postal Service Employee Health Fair: Blood Pressure Screenings &Smoking Cessation education provided. 50 adult attendees • Family Fiesta, Clinton Childcare & Education: 400 attendees (Nutritionattended) • Montachusett Home Care, As We Age Health Expo: 300 attendees(Mammography & Mohs Skin Cancer Team attended) •Partnered with Leominster public schools to implement Footsteps2Brilliance reading program: reached 50 students •Public Health, City of Leominster event: 100 adult attendees (Pharmacy medication safety education) • Clinton Parks & Recreation, Community Safety Rodeo: 100 children, adults and elderly attended (Community Outreach educated community on support groups at hospital campuses) •WIC Community Baby Shower: 400 women, children attendees (HealthAlliance Fitchburg Family Practice participated) • Salvation Army Fair: 100 participants, children, adults, and elderly (FitchburgFamily Practice provided health screenings and physicals) •Ladies Night Out, City of Leominster: 450 participants, women, children, andmen (Cancer Center/Mammography provided breast self-exam education) •Riverside Village Apartments, POWWer Up Community Event: 100 attendees, children, adults, and elderly (Smoking Cessation/Tobacco Treatment participated) •Fitchburg Community Resource Fair: 200 attendees (Fitchburg Family Practiceparticipated) • What's Up Doc Lecture Series, Open to the Public: 50 participants, adults, and elderly **2019:** • Educational sessions on smoking cessation, medication safety, healthy eatingand mental health support/education targeted for youth were also held by request at the Clinton, Fitchburg, and Leominster Public Schools.

		• Attended several local health fairs from elementary schools to senior centers toeducate community members and students on: smoking cessation, nutrition, breast cancer, mammography, mental illness/substance abuse, physical therapy, medication safety and continuing to support health education and screenings related to chronic diseases and prevalent health conditions in the community including breast and lung cancers, heart health, depression, and diabetes and established a mental health support group. (reached over 200 community members) •Family Fiesta, Clinton Childcare & Education: 400 attendees (Nutrition attended) • Montachusett Home Care, As We Age Health Expo: 300 attendees(Mammography & Mohs Skin Cancer Team attended) • Free Community Narcan Training at Clinton and Leominster campus: Participants learned about Opiate/Opioid overdose Education, how to effectively,and rapidly assess a person that may be overdosing, steps to take during an overdose, such as administering Narcan, and rescue breathing and harm reduction. 100 attendees received 2 Narcan 2020: Due to Covid, Community Activities did not occur

UMass Memorial Health
HEALTHALLIANCE-CLINTON HOSPITAL

About UMass Memorial Health - HealthAlliance-Clinton Hospital:

UMass Memorial Health - HealthAlliance-Clinton Hospital is a full-service, 163 bed community hospital serving communities in North Central Massachusetts and surrounding cities and towns with a team of over 400 physicians across 40 health care specialties. We provide a full complement of services on our three campuses in Clinton, Fitchburg and Leominster including two 24-hour state-of-the-art emergency departments; urgent care center; primary care, behavioral health, a complementary care center and specialty care such as the Simonds-Sinon Regional Cancer Center, home health and hospice, physical therapy centers, and geriatric psychiatry programs and services.

Visit healthallianceclinton.com for more information.

Clinton Campus: 978-368-3000
Fitchburg Campus: 978-343-5000
Leominster Campus: 978-466-2000

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Our Mission:
HealthAlliance-Clinton Hospital is committed to improving the health of the people of our diverse communities of Central New England through culturally sensitive excellence in clinical care, service, teaching and research.

Our Vision:
As part of one of the nation's most distinguished academic health care systems, UMass Memorial Health, our vision is to provide leadership and innovation in seamless health care delivery, education and research, all of which are designed to provide exceptional value to our patients.

Our Values:
Consistently excelling at patient-centered care
Acting with personal integrity and accountability
Respecting one another
Effecting change through teamwork and system thinking
Supporting our diverse communities