CHELMSFORD SURGERY CENTER, LLC
DON APPLICATION# 21010715-AS
ATTACHMENTS

APPLICATION FOR DETERMINATION OF NEED FOR AMBULATORY SURGERY SERVICES

JANUARY 19, 2021

BY

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Exhibit A (1)

1. Project Description:

Chelmsford Surgery Center, LLC ("Applicant") located at 700 Congress Street, Suite 204, Quincy, Massachusetts 02169 submits this request for a Notice of Determination of Need ("DoN") for the development of a freestanding ambulatory surgery center ("ASC") to be located at 10 Research Place, North Chelmsford, MA 01863 ("Proposed Project"). The Applicant is a newly formed joint venture established for the purpose of developing the freestanding ASC. Its members are Chelmsford ASC Holding Company, LLC, a company formed by Shields Health Care Group ("Shields"), The Lowell General Hospital ("Lowell General"), and several community-based specialty physicians ("Participating Physicians"), with representation from The Lowell General Physician Hospital Organization (PHO) – a member to the Wellforce Inc., Health Policy Commission's ("HPC") Certified Accountable Care Organization ("ACO").

Through the Proposed Project, the Applicant will transition an existing Hospital Outpatient Department ("HOPD") surgical center located at 10 Research Place, North Chelmsford, MA 01863 to a freestanding licensed ASC. At present, the existing hospital-licensed service is reimbursed on the HOPD fee schedule. The Proposed Project will convert the three (3) outpatient operating room ("OR") HOPD to a four (4) OR ASC. The Proposed Project will also transition the center from HOPD rates to the Medicare free-standing ASC fee schedule,[1] resulting in a lower cost site of care. The Proposed Project will focus on delivering Value-Based Care ("VBC") through the provision of high-quality, low-cost surgical services for the Patient Panel served in this market in a freestanding setting.

The Proposed Project consists of four (4) ORs, as well as related support and administrative areas. The ASC includes a consultation area, pre-operative space and post anesthesia care unit ("PACU"). Additional space within the ASC includes a lobby/waiting area with ample space to accommodate social distancing requirements, central sterile processing, clean supply areas, as well as administrative and patient support areas. The Proposed Project will be a state-of-the-art outpatient surgical center, providing high-quality, low-cost, timely and convenient access to care in Lowell, Chelmsford and surrounding communities.

Existing Lowell General patients predominantly receive outpatient surgical services at (or proximate to) the current location of the Proposed ASC. The establishment of a freestanding ASC at this same location will provide the patient population currently served by the Participating Physicians with continued access to convenient outpatient surgical services. The Applicant re-affirmed the location of the Proposed Project based on its accessibility and convenience for patients in the noted service area, including seamless access to public transportation via a public bus route, as well as close proximity to nearby highways and thoroughfares.

The Proposed Project will specialize in providing outpatient surgical services, including Orthopedic surgery; Total Joint ("MSK-Joints") surgery; Podiatry surgery; Spine surgery; Gynecology ("GYN") surgery; Plastic surgery; and Hand surgery.

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[1] *2021 HOPD and ASC Medicare Fee Schedule*

Historical volume data and projections for the Proposed Project show increasing demand for surgical services in the primary service area ("PSA"). Specifically, within the coming years, the demand for orthopedic services is projected to substantially increase for the 0-19 and 55+ age cohorts by 14% and 30%, respectively. Coupled with the proliferation of ACOs, VBC, and Alternative Payment Models (APMs), the Proposed Project will see an increasing demand as volume is pushed to lower-cost sites of care. Currently, over a third of U.S. healthcare payments are tied to APMs, with a recent goal of the Centers for Medicare and Medicaid Services ("CMS") to align greater than 50% of Medicare payments to APMs in the years ahead.[2] Consequently, the Proposed Project will satisfy the existing and future needs of the Applicant's Patient Panel by ensuring increased access to high-quality, low-cost surgical services in the local community.

Patients will benefit from the Proposed Project in multiple ways. First, the new ASC will be designed to utilize industry-defined best practices for quality, efficiency and effectiveness. High-quality care will be achieved through the provision of a smaller scope of procedures in comparison to a HOPD setting. Greater focus allows clinical staff to become highly proficient in providing select surgical services and procedures. Second, the Applicant will implement appropriate process improvement initiatives by reviewing quality of care outcomes, identifying best practices and implementing necessary process changes to ensure high-quality services. Third, the Applicant will transform the care experience for patients ensuring higher levels of patient satisfaction through easier physical accessibility (compared to a traditional hospital setting), reduced anxiety over the risk of hospital-borne infections, and the implementation of online pre-registration and price transparency. Fourth, the Applicant will improve quality of care for patients by providing expanded access to state-of-the-art technology in an improved facility designed to enhance patient experience. Finally, the Proposed Project will meaningfully contribute to Massachusetts' goals for cost containment by providing high-quality surgical services for clinically appropriate patients in a more cost-effective setting. With the emergence of freestanding ASCs as a high-quality care option, health care expenditures for elective and same-day surgical procedures will decrease, reducing overall provider costs and directly impacting total medical expenses ("TME"). Consequently, the Proposed Project will compete on the basis of TME and provider costs.

2. Determination of Need Narrative:

Factor 1: Applicant Patient Panel Need, Public Health Values and Operational Objectives

F1.a.i Patient Panel:

Describe your existing Patient Panel, including incidence or prevalence of disease or behavioral risk factors, acuity mix, noted health disparities, geographic breakdown expressed in zip codes or other appropriate measure, demographics including age, gender and sexual identity, race, ethnicity, socioeconomic status and other priority populations relevant to the Applicant's existing patient panel and payer mix.

The Applicant is a newly formed joint venture between Chelmsford ASC Holding Company, LLC ("HoldCo"), a company formed by Shields and a group of qualified community-based

[2] http://hcp-lan.org/workproducts/2019-APM-Progress-Press-Release.pdf

Participating Physicians, and Lowell General (see Appendix 12 for a detailed graphic of the corporate structure).

Founded in 1972 in Brockton, Massachusetts, Shields began in the health care industry with a commitment to exceptional patient care and clinical excellence within the post-acute sector. Over the next ten years, the Shields family established one of the largest regional dialysis networks in New England, bringing state-of-the-art equipment and exceptional patient care to the local community. Dedication to high quality and advanced care in a local setting quickly became a signature attribute of the Shields business model, continuing with Massachusetts' first independent regional MRI center in 1986. Today, Shields has expanded to more than 30 MRI facilities throughout New England – many of which are joint venture partnerships with community hospitals. While most Shields locations operate independently of its hospital partners, they are often on-campus or proximate to the local hospital, thereby enabling coordinated, seamless, and highly accessible care. Dedicated focus on operational and management service expertise in outpatient services allows Shields to provide service at a substantial cost savings to patients, employers, insurance providers, and joint venture partners. Simply put, Shields operates the largest, most efficient and effective outpatient services in the New England Region. Shields is recognized as part of the solution towards driving down healthcare costs.

Lowell General Hospital is a proud member of Wellforce. Wellforce is the health system formed by Tufts Medical Center, Circle Health and MelroseWakefield Healthcare. The Wellforce system brings together the strengths of academic medicine and community care in a model that respects both equally. Wellforce is the high quality, lower-cost system in Massachusetts. Wellforce focuses on care integration, population health management, patient access and operational performance. Wellforce includes 2,500 physicians, 3 community hospital campuses, an academic medical center and a children's hospital. Lowell General Hospital is a member of Circle Health, an integrated community healthcare delivery system composed of Circle Home, Lowell General Hospital, Lowell Community Health Center, and the community of local physicians. Lowell General Hospital is spread across two distinct campuses, the Main Campus located at 295 Varnum Avenue in Lowell, and the Saints Campus located at One Hospital Drive in Lowell. Both Campuses represent the not-for-profit community hospitals servicing the Greater Lowell Area and surrounding communities. Lowell General Hospital also currently operates a hospital-licensed Ambulatory Surgery Center located at 10 Research Place in Chelmsford.

Lowell General Physician Hospital Organization (PHO) is a non-profit organization comprised of approximately 400 member physicians and partners with Lowell General Hospital. The PHO was established in 1995 with the goal of developing a local integrated delivery system providing outstanding quality care to the patients in the Greater Lowell area. The Lowell PHO is an HPC certified ACO.

The Applicant was formed to operate a freestanding ASC that will offer lower-cost surgical services within the community setting. The Proposed Project will serve the communities in and around Lowell, Massachusetts, allowing the Applicant to satisfy the existing and future demand for surgical services in the primary service area (PSA).

As the Applicant is a newly formed joint venture and does not have its own Patient Panel, the Applicant relies on patient panel data from its joint venture partners to determine the need for the Proposed Project. As such, the Applicant's Patient Panel is based on existing freestanding ASC eligible patients of its joint venture partners and their affiliates. In addition to historic

Patient Panel data from the joint venture partners, the Applicant relies upon historic service line specific claims data from the Advisory Board Company ("Advisory Board"), to further demonstrate the need for ambulatory surgical services in the proposed PSA.

The PSA for the Proposed Project consists of zip codes representing approximately 75% of the patients currently served by Lowell General Hospital. The cities and towns that comprise the ASC's PSA are: Lowell, Dracut, Chelmsford, North Chelmsford, Tewksbury, Tyngsboro, Westford, Billerica, North Billerica, and Methuen.

Patient Panel Information

The Patient Panel of the Proposed Project includes patients covered by risk contracts (also referred to as managed patients) held by the joint venture participants, as well as Fee-For-Service (FFS) patients seen by the Participating Physicians over the last twenty-four months. Approximately 53% of the anticipated volume at the proposed ASC falls under a managed arrangement with the Lowell PHO or Wellforce Inc., HPC Certified ACO.

Lowell General Hospital Outpatient Surgical Volume (Patient Panel)

Lowell General Hospital's Outpatient Surgical Patient Panel, consisting of the Drum Hill Surgery Center, Lowell General's Main Campus and Lowell General Saints Campus, consisted of 10,904 unique encounters with 75% of these patients residing within the proposed ASC's PSA. Lowell General's Outpatient Surgical demographic data depicts an aging population. In the most recent full year, 46% of the Patient Panel is over the age of 55, up 2% year-over-year, and 24% of the panel is over 65 years old. In addition to the graph below a detailed analysis of the patient panel demographics is included in Appendix A (2).

Age Group	2018	2019	% of Total (2019)
0-19	1,037	1,010	9.26%
20-54	5,092	4,837	44.36%
55-64	2,404	2,388	21.9%
65+	2,565	2,669	24.48%
Total	11,098	10,904	100%

In the most recent year, 37% of the Outpatient Surgical Volume at Lowell General is attributable to patients with government-sponsored health insurance; 27% Medicare and 10% Medicaid (MassHealth). Lowell General Hospital sees a mix of patients traditionally eligible for Medicare based on age (77%) as well as patients eligible for Medicare based on disability status (23%). A detailed analysis of the payer mix is included in Appendix A (2).

Freestanding ASC Eligible Volume:

The Applicant's anticipated surgical volume is a subset of the Patient Panel that constitutes all Lowell General outpatient surgical cases. Due to a change in practice management software, only 24 months of historical volume data is readily available. Surgical volume at the proposed ASC is based on the most recent year of ASC eligible volume currently performed at the existing HOPD surgery center with additional cases migrating from Lowell General Hospital's Main Campus and Lowell General Saints Campus. ASC eligible volume is determined by including

cases reimbursed by CMS on the Medicare Freestanding ASC fee-schedule, acuity level (ASA) less than 3, and Total Joint procedures that were discharged in under 24 hours.

ASC Volume Projections:

The Applicant aggregated ASC eligible historical volume from its joint venture partners and overlaid demographic projections and population health data from the Advisory Board to develop projected volume for the proposed ASC. Historical volume is projected to grow at a conservative rate over the next 5 years given the sites' mature operations. This forecast is conservative based on growing anticipated demand from the aging population, which will increasingly require surgical services, and a continuing shift of volume from Inpatient or HOPD sites of care to freestanding ASCs. The shift of volume may be even more pronounced as some patients will seek required care at COVID-free locations such as ASCs that test their patients prior to surgeries.

Year 2 volume projections are based on FY2019 data with an estimated 2% organic growth projection for the PSA as estimated by industry experts, such as the Advisory Board, with Year 1 serving as a "ramp up" period. Growth in Year 3 and beyond continues to apply a 2% organic growth rate with additional cases migrating from the Lowell General Main Campus and Saints Campus.

Table 1: Historical Volume & Proposed 5-Year ASC Volume Projection

	Historical Volume		Volume Projections				
Service Line	2018	2019	Year 1	Year 2	Year 3	Year 4	Year 5
MSK - Joints	167	125	28	77	133	136	139
Orthopedics	1,715	1,469	1,104	1,366	1,565	1,596	1,628
Hand	884	869	722	878	988	1,008	1,028
Plastics	104	102	72	85	109	111	114
Podiatry	138	117	62	85	124	127	129
Spine	36	32	136	171	215	219	223
GYN	144	198	160	195	215	219	223
Total Cases	*3,188*	*2,912*	*2,284*	*2,858*	*3,348*	*3,415*	*3,484*

PSA-specific outpatient surgical claims data supplied by the Advisory Board indicates exponential growth across the identified service lines. Demand for Outpatient Orthopedic surgical volume is projected to grow 22% through 2023, while Total Joints performed in an outpatient setting is projected to grow 95%. The remaining service lines are projected to grow by >10% through 2023.

To determine the number of operating rooms required to serve the projected volume at the proposed ASC, the Applicant established average surgical case times for each specialty. The times include surgical case and room turnover times. Surgeries are expected to have a total time of 75 minutes of surgery and a 30-minute operating room turnover. Based on these surgical case times, the Applicant projects a sustainable utilization rate above 72% by Year 3 of operation.

F1.a.ii Need by Patient Panel:
Provide supporting data to demonstrate the need for the Proposed Project. Such data should demonstrate the disease burden, behavioral risk factors, acuity mix,

health disparities, or other objective Patient Panel measures as noted in your response to Question F1.a.i that demonstrates the need that the Proposed Project is attempting to address. If an inequity or disparity is not identified as relating to the Proposed Project, provide information justifying the need. In your description of Need, consider the principles underlying Public Health Value (see instructions) and ensure that Need is addressed in that context as well.

In considering the Proposed Project, the Applicant determined that its Patient Panel would benefit from access to a freestanding ASC that provides the proposed specialized surgical services. This determination was made based on an evaluation of the Patient Panel composition, historical and projected demand, and available resources within the market.

Need for the Proposed Surgical Services

Through the establishment of the freestanding ASC, the Applicant will increase access to community-based surgical services to serve a Patient Panel that encompasses patients from the Participating Physicians. The Proposed Project will meet the need of the evolving landscape of the healthcare delivery system, driven by efficiency, patient choice, convenience, transparency and a keen focus on driving down TME which is frequently absorbed by patients. The ASC will serve patients of all ages and socio-economic strata. In addition, as the patient population demographics continue to change, patients will require greater access to the types of lower-acuity procedures that the ASC will offer.

Need for Surgical Services in the 55+ Age Cohort

Currently, there is an ongoing trend in Massachusetts toward an aging population, particularly among those individuals within the 55+ age cohort. Findings from UMASS Donahue Institute ("UMDI") demonstrate that the Massachusetts state population is expected to increase 11.8% from 2010 to 2035.[3] Further review of UMDI's projections show a dramatic population increase in the 55+ age cohort.[4] Between 2020 and 2035, the 55+ age cohort will increase approximately 14% and will comprise 36% of the Commonwealth's population; no other age cohort will experience the same dramatic increase in growth as the 55+ cohort.[5]

Moreover, the Applicant evaluated the population projections for those cities and towns that will account for the ASC's projected PSA. The increase in the 55+ population cohort occurring statewide is also reflected within the PSA. Census data project the 55+ population to increase by 5% by just 2025.[6] Increases in demand for outpatient surgeries, including those provided in an ASC setting, will accompany the projected growth in the 55+ age cohort as the number of procedures that can be effectively performed in the ASC setting continues to grow.[7]

Accordingly, there is an ongoing demand for surgery that is related to improved life expectancy rates, quality of life and the need to treat co-morbidities.[8] Geriatric surgery demand will continue

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[3] *The Massachusetts Secretary of the Commonwealth contracted with the University of Massachusetts Donahue Institute to produce population projections by age and sex for all 351 municipalities.*
[4] *Id.*
[5] *Id.*
[6] *Advisory Board Demographic Profiler*
[7] *The report uses the cohorts as defined by the U.S. Census Bureau 2010 Census Summary, which are 0-19, 20-39, 40-64, and 65+. Figure 2.5 in the report demonstrates that where the 65+ cohort increases from 2015 to 2035, all other cohorts are predicted to decrease.*
[8] *Relin Yang et al., Unique Aspects of the Elderly Surgical Population: An Anesthesiologist's Perspective, 2*

to increase as further medical advancements are made and more is known about managing health conditions that may impact surgical recovery in this patient cohort. The 55+ age cohort has experienced the greatest increase in number of surgical procedures since 1990, which is a higher rate of growth than any other age cohort.[9] It is expected that at least half of all individuals in the 55+ age cohort will require surgery, with geriatric surgery representing as high as 53% of all surgical procedures.[10] With the projected growth anticipated to occur in Massachusetts' 55+ age cohort, the Applicant's Patient Panel will experience an increased need for resources to accommodate growing surgical demand in this population.

For aging patients, the most common and necessary type of surgery is orthopedic surgery, especially for hip, knee and spinal injuries. These types of surgeries have proven to have a significant benefit for older individuals, ensuring they can remain active and pain free as they age. Numerous studies have chronicled the public health benefits of these types of procedures for older adults, including improved clinical and quality metrics.[11] Accordingly, increased access to surgical services, especially orthopedic services will benefit the 55+ age cohort in the PSA. This population will continue to have convenient access to these services, as most patients already receive care at this same location, while volume shifting from the main campus will benefit from easier and more comfortable access outside of the hospital.

Need for Surgical Services for All Populations within the PSA

Public health data outlining chronic diseases within the Commonwealth show an increase of these conditions and diseases within the 18-64 age cohort.[12] Frequently, specific chronic conditions related to physical inactivity, poor diet, and obesity are associated with the need for orthopedic surgeries that can be performed in the ASC setting. The proposed ASC will provide convenient local access to lower cost surgical services in the community that address numerous chronic conditions.

Migration of Lower Acuity Surgical Services to Outpatient Setting

The continuously evolving healthcare delivery landscape has resulted in a shift in the provision of outpatient surgical procedures from hospitals to an ASC setting. Lower acuity procedures can be effectively provided in an ASC setting, without requiring a patient to obtain care in a hospital outpatient department.[13] This is due, in part, because ASCs focus on a subset of medical specialties and surgical procedures, including minimally and non-invasive surgeries, for the improved provision of care.[14] By performing a limited set of procedures, ASC personnel are able to gain high proficiency and efficiency performing those procedures. This achieves clinical and operational efficiencies not attainable in a hospital setting as hospital-based operating rooms must be able to accommodate a wide range of medically complex procedures in the event of an

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GERIATRIC ORTHOPAEDIC SURGERY & REHABILITATION 56 (2011), available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3597305/.

[9] *Relin, supra note 17.*

[10] *Relin, supra note 17.*

[11] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4551172/

[12] https://www.mass.gov/files/documents/2017/10/04/MDPH%202017%20SHA%20Chapter%208.pdf

[13] *Dennis C. Crawford et al.*, Clinical and Cost Implications of Inpatient Versus Outpatient Orthopedic Surgeries: A Systematic Review of the Published Literature, *7 ORTHOPEDIC REVIEW 116 (2015)*, available at *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4703913/pdf/or-2015-4-6177.pdf*

[14] *POSITION STATEMENT,' AMBULATORY SURGICAL CENTERS (Am. Ass'n of Orthopaedic Surgeons 2010)*, available at *https://www. aaos.org/uploadedFiles/1161%20Ambulatory%20Surgical%20Centers.pdf.*

emergency.[15]

Clinical outcomes in the ASC setting are comparable to that of hospital outpatient surgery departments, with the provision of surgery in ASCs associated with decreased mortality, morbidity, and hospital admission rates.[16] Patients in ASCs experience shorter surgery and recovery times overall.[17] There are no disruptions to the surgical schedule in an ASC on account of acute inpatient or emergent patient needs. As a result, patients do not experience delays that are otherwise prone to occur in a hospital outpatient department. This contributes to greater convenience for patients and their families when electing a setting for surgical procedures and drives overall demand for the provision of services in the ASC setting.

The establishment of the Applicant's ASC will result in migration of less medically complex patients in need of surgeries to a local community-based ASC. The Applicant determined that sufficient need for ASC services exists among its Patient Panel based on the number of surgical cases that could be migrated to the ASC setting. Patients will experience reduced wait times in the ASC, with care available closer to their homes and communities.[18] An additional benefit of the ASC will be the elimination of an overnight stay, which may further drive volume to the Applicant's ASC versus a hospital surgical department. The Proposed Project will allow the Applicant to shift those low-acuity surgical procedures that would otherwise go through a hospital outpatient surgical department to a more cost and operationally efficient outpatient setting that benefits patients.

Patient Comfort and Safety

On the heels of the COVID-19 pandemic, patient safety and comfort have been accentuated as paramount factors in health care delivery. Patients seeking care at an ASC rather than a traditional hospital based setting may benefit from a safer environment due to strict COVID-19 pre-surgical testing and screening protocols all patients must abide by as well as heightened cleaning and screening protocols implemented for employees. ASCs also offer a more streamlined service to provide a safer, more personalized and convenient site of care. According the CDC, approximately 8.95 in 1,000 patients developed a surgical site infection in the hospital setting. However, only 4.84 in 1,000 patients who had surgery at an ASC developed a surgical site infection requiring inpatient treatment within 30 days of surgery[19]. Given these implications, it is possible and even likely that an increasing number of patients may actively avoid outpatient surgical care in a hospital environment in favor of an ASC.

Patient Choice

The emergence of ASCs as an alternative setting for lower acuity surgical procedures provides patients with alternatives not previously available for obtaining such surgeries. Hospitals are no longer the only available location at which to have certain surgical procedures. Patients now are

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[15] *Elizabeth L. Munnich & Stephen T. Parente, Procedures Take Less Time At Ambulatory Surgery Centers, Keeping Costs Down And Ability To Meet Demand Up, 33 HEALTH AFFAIRS 764 (2014), available at https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2013.1281.*

[16] *David Cook et al., From 'Solution Shop' Model to 'Focused Factor' In Hospital Surgery: Increasing Care Value and Predictability, 33 HEALTH AFFAIRS 746 (2014), available at https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2013.1266*

[17] *Margaret J. Hall et al., Ambulatory Surgery Data From Hospitals and Ambulatory Surgery Centers: United States, 2010, 102 NAT'L HEALTH STATISTICS REPORTS 1 (2017), available at https://www.cdc.gov/nchs/data/nhsr/nhsr102.pdf*

[18] *https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2013.1281*

[19] *https://www.cdc.gov/nhsn/PDFs/dataStat/2009NHSNReport.PDF*

informed of the benefits of having a lower acuity surgery performed in an ASC. ASCs have demonstrated clinical outcomes that are as good as hospitals.[20] Patients benefit from the lack of interruptions in scheduling as well as the reduced surgical and recovery times, allowing the patient to return home faster than for the same procedure performed in a hospital.[21] The presence of an ASC within a patient's community improves access with regard to outpatient surgeries and offers a practicable alternative to a hospital outpatient department. The ASC setting further provides patients with options related to costs associated with a surgical procedure. Due to the elimination of an overnight stay and other hospital overhead costs, a surgery performed at an ASC will cost less than in a hospital.[22] The same procedure performed at a HOPD costs as much as 48% higher for a Medicare Patient.[23] For this reason, ASCs are able to compete with hospitals on the basis of cost for outpatient procedures. Patients may opt to obtain surgery at an ASC due to the lower cost. Particularly for those patients who bear a higher amount of medical costs individually, an ASC offers a lower cost alternative with clinical outcomes that are as good as a hospital and services provided by the same physician who would perform the surgery in the hospital setting.

As access to healthcare shifts, patients are seeking services that are more convenient than in a hospital. All patients in need of low-acuity surgical procedures can benefit from obtaining such care at a community-based ASC. The 55+ age cohorts would also benefit from having procedures performed in a streamlined outpatient setting rather than at a hospital, where the activity associated with a surgical department may be overwhelming. Frequently, these patients find it difficult to navigate the complex infrastructure of a hospital, finding ASC experiences less complicated and easier to access (given online registration systems, availability of cost transparency tools and accessible staff). The availability of ASCs provides patients with a choice as to where to receive care.

F1.a.iii Competition:
Provide evidence that the Proposed Project will compete on the basis of price, total medical expenses, provider costs, and other recognized measures of health care spending. When responding to this question, please consider Factor 4, Financial Feasibility and Reasonableness of Costs.

The Applicant's expansion of surgical services will not have an adverse effect on competition in the Massachusetts healthcare market based on price, TME, provider costs or other recognized measures of health care spending. Rather, the Proposed Project seeks to offer high-quality surgical care through a lower cost alternative to outpatient surgery performed in a HOPD. Annually, ASCs perform more than seven million procedures for Medicare beneficiaries needing same-day surgical, diagnostic and preventive procedures.[24] By

[20] *David Cook, et al., From 'Solution Shop' Model to 'Focused Factor' in Hospital Surgery: Increasing Care Value and Predictability, 33 HEALTH AFFAIRS 746 (2014), available at https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2013.1266*

[21] *Hall, supra note 9. See also Cook, supra note 10. The provision of a surgical procedure in an ASC eliminates an overnight stay. Depending on scheduling, a patient undergoing what would be an outpatient surgery may require hospital admission for routine recovery. An ASC by its nature is not equipped for an overnight patient stay. As a result, a patient obtaining surgery at an ASC will be discharged the same day as the surgery and will not be admitted to the hospital for recovery in the event of schedule overruns.*

[22] *Louis Levitt. The Benefits of Outpatient Surgical Centers. The Centers for Advanced Orthopedics. June 2017; available at https://www.cfaortho.com/media/news/2017/06/the-benefits-of-outpatient-surgical-centers. The costs of a procedure performed in an ASC have been found to be approximately 40% to 60% less than in a hospital. See also POSITION STATEMENT: AMBULATORY SURGICAL CENTERS, supra note 34, which indicates that ASC procedures are 84%of the cost of a hospital for the same procedure.*

[23] *2021 HOPD Medicare Fee Schedule.*

[24] *https://www.ascassociation.org/advancingsurgicalcare/reducinghealthcarecosts/paymentdisparitiesbetweenascsand*

specializing in specific procedures, ASCs are able to maximize efficiency and quality outcomes for patients.

Typically, ASCs have two goals. The first goal is to ensure that patients have the best surgical experience possible, including high-quality outcomes. The second goal is to provide cost-effective care that leads to savings for government and third-party payers, as well as patients. On average, the Medicare program and its beneficiaries share in more than $2.6 billion in savings each year when surgery is provided in an ASC. ASC reimbursement rates are up to 48% of the amount paid to HOPDs.[25] Studies provide that if half of the eligible surgical procedures were shifted from HOPDs to ASCs, Medicare would save an additional $2.5 billion annually; an additional study estimates the savings to commercial payers to be as high as $55 billion annually.[26] Similarly, Medicaid and other insurers benefit from lower prices for services performed in the ASC setting.[27] Patients also typically pay less with coinsurance for procedures performed in the ASC than in the hospital setting for comparable procedures.[28]

With the emergence of ASCs as a high-quality care option, health care expenditures for elective and same day surgical procedures will decrease, reducing overall provider costs, and directly impacting TME. Consequently, the Proposed Project will compete on the basis of TME and provider costs. With a shift in surgical volume moving from hospitals to the Applicant, the savings are estimated to be substantial.

F1.b.i Public Health Value /Evidence-Based:
Provide information on the evidence-base for the Proposed Project. That is, how does the Proposed Project address the Need that Applicant has identified?

ASC Clinical and Operational Efficiencies

ASCs offer greater clinical and operational efficiencies over traditional hospital outpatient surgery as the focus of an ASC is on performing a narrow subset of surgical procedures in a limited number of medical specialties.[29] ASCs are designed to provide care for specific categories of lower acuity surgical cases and for patients who have less risk for complications following surgery.[30] In the case of the Applicant, the proposed ASC will be offering Orthopedics, Gynecology, Podiatry, Plastics, Hand, Total Joints, and Spine surgery procedures. A majority of surgical procedures offered in ASCs are for the musculoskeletal system. The type of surgical procedures that may be performed in an ASC continues to increase over time, with estimates indicating approximately one-third of outpatient surgeries are now performed in ASCs.[31] The migration of surgeries to the ASC setting is associated with demonstrated clinical and operational advantages.

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hopds

[25] *2021 HOPD Medicare Fee Schedule.*

[26] *See also Commercial Insurance Cost Savings in Ambulatory Surgery Centers, available at https://www.ascassociation.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=629b1dd6-0b5d-9686-e57b-3e2ed4ab42ce&forceDialog=0*

[27] *Supra note 24*

[28] *Supra note 24*

[29] *POSITION STATEMENT: AMBULATORY SURGICAL CENTERS*, supra *note 6*

[30] *Crawford et al., supra note 5*

[31] *Munnich, supra note 7. The Medicare ASC fee payment schedule covers approximately 3,600 outpatient surgical procedures. This has grown over time, driving higher volumes in ASCs. Estimates indicate that outpatient surgeries performed in ASCs have increase from 4% of all outpatient surgeries in 1981 to 38% in 2005. See also POSITION STATEMENT: AMBULATORY SURGICAL CENTERS, note 5*

ASCs achieve efficiencies from the ability to tailor services to a smaller offering of low-acuity surgical procedures. Hospital operating rooms, including those dedicated to outpatient surgery, must be designed with enough space to handle a wide range of procedures in multiple clinical specialties.[32] Hospital-based operating rooms must be flexible enough to handle the range in services provided, with equipment to handle anything from a routine elective procedure to an emergency room patient in need of immediate invasive surgery. In contrast, ASCs are designed to accommodate specific surgical specialties, with the operating rooms appropriately sized to meet such needs. ASC operating rooms are equipped specifically for the types of procedures to be performed, with operating rooms frequently being used for the same type of surgery on a continuous basis each day.[33]

Hospital operating room schedules are subject to disruption when an operating room is needed for an emergent surgery, leading to delays in all subsequent surgeries scheduled for the day.[34] ASCs only accommodate routine, scheduled procedures and are not hampered by the schedule disruptions associated with a hospital surgical department.[35] Patients and staff benefit from the operational efficiencies of ASCs, with procedures performed in ASCs taking 31.8 fewer minutes on average when compared to procedures performed in a hospital. Patients experience improved procedure scheduling and shorter wait times when an outpatient surgery is performed in an ASC.[36] Recovery times for procedures performed in the ASC are typically shorter, which is also attributable to the evolution of medical devices and pharmaceuticals administered in connection with surgery.[37] Patients spend almost a quarter less time in an ASC versus in a hospital outpatient surgical department for the same procedure.

ASCs provide a lower cost alternative to hospital outpatient surgery departments. On average, ASCs are approximately 48% less expensive than a hospital.[38] In one instance, a comparison of hospital outpatient department and ASC costs resulted in the finding that procedures performed in an ASC are 64% of the cost of the same procedure performed in the hospital outpatient department.[39] Some of the savings is the result of not requiring the same overhead as a hospital surgical service, such as fewer nursing, staffing, laboratory, medication, and imaging costs. Variation associated with the need for a hospital to be able to adapt to provide care within different specialties and for varying case complexities increases overall costs for hospital outpatient surgical departments.[40] Additional ASC savings are derived from the elimination of an overnight patient stay. Overall, the ASC setting is associated with efficiencies that also reduce costs.

Provision of High Quality Surgical Services

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[32] *Munnich, supra note 7.*
[33] *Levitt, supra note 12.*
[34] *Munnich, supra note 7.*
[35] *POSITION STATEMENT: AMBULATORY SURGICAL CENTERS, supra note 6.*
[36] *See also Hall, et al, supra note 11. A patient undergoing ambulatory surgery at a hospital spends, on average, 93 minutes in the operating room, 37 minutes in surgery, and 89 minutes in postoperative care; in contrast, a patient undergoing an ambulatory procedure in an ASC spends an average of 50 minutes in the operating room, 29 minutes in surgery, and 51 minutes in postoperative care.*
[37] *Outpatient Surgeries Show Dramatic Increase, 10 Health Capital Topics 1 (2010), available at https://www.healthcapital.com/hcc/newsletter/05_10/Outpatient.pdf*
[38] *2018 HOPD Medicare Fee Schedule.*
[39] *POSITION STATEMENT: AMBULATORY SURGICAL CENTERS, supra note 6.*
[40] *Crawford, et al., supra note 5. See also Cook et al., supra note 10.*

Patients who undergo surgery in the ASC setting experience a number of benefits associated with high-quality surgical services. Rates of revisit to the hospital one week post-surgery are lower for ASC patients.[41] Infection rates for procedures performed in ASCs are half that for the same procedures performed in the hospital setting.[42] Patients experience improved pain levels and less nausea when receiving surgery in an ASC.[43] There also are better thirty day outcomes, including reductions in pneumonia, renal failure, and sepsis as well as no demonstrated increase in morbidity, mortality, or readmission.[44] In fact, major morbidity and mortality following ASC procedures are extremely rare.[45] These are all factors associated with high quality surgical service delivery.

Individualized Patient Care

With the increasing availability of ASCs, patients have greater options to choose from when selecting an appropriate setting for outpatient surgical services. Growth in minimally invasive or non-invasive procedures has led to an increase in the ability to perform surgery on an outpatient basis.[46] These surgeries are considered lower-acuity and have fewer complexities than other types of procedures, such as fewer surgical cuts or incisions and decreased blood loss.[47]

Anesthesia needs for these low-acuity procedures can be met in an ASC due to ongoing developments in the delivery of anesthetics.[48] As more low-acuity surgeries are performed in the outpatient setting, patients are able to select outpatient centers that will meet their individual needs.

The Role of an ASC in an Integrated Care Delivery System

ASCs play an important role as part of a robust and diverse care delivery system. ASCs can accommodate certain low-acuity surgical procedures that otherwise must be performed in a hospital outpatient surgery department. The presence of an ASC results in a decrease in the number of outpatient procedure performed at a hospital.[49] Lower-acuity procedures can be handled more effectively in the ASC setting instead of a hospital surgical department, allowing hospitals to better focus resources on treating more acutely ill patients. This allows migration of low-acuity procedures out of the hospital into a more clinically appropriate setting, freeing resources in order for hospitals to continue to accommodate medically complex or emergency patients.

ACOs were created as a means to improve health care delivery while also achieving savings in the provision of care.[50] Another one of the objectives of ACOs is to achieve population

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[41] *Levitt, supra note 12.*
[42] *Levitt, supra note 12.*
[43] *Crawford, et al., supra note 5. See also Cook et al., supra note 10.*
[44] *Cook et al., supra note 10.*
[45] *Crawford, et al., supra note 5. This is likely due to the selection of healthier, less medically complex patients to receive care in an ASC.*
[46] Outpatient Surgeries Show Dramatic Increase, *10 HEALTH CAPITAL TOPICS 1 (2010)*, available at *https://www.healthcapital.com/hcc/newsletter/05_10/Outpatient.pdf*
[47] *Supra note 44*
[48] *Supra note 44*
[49] *John Bian & Michael A. Morrisey, Free-Standing Ambulatory Surgery Centers and Hospital Surgery Volume, 44 INQUIRY 200 (2007), available at http://journals.sagepub.com/doi/pdf/10.5034/inquiryjrnl_44.2.200.*
[50] *Department of Healthcare Policy and Research, Virginia Commonwealth University School of Medicine, Policy Brief: Accountable Care Organizations, January 2015, available at*

health; that is, addressing factors such as social determinants of health to affect an overall increase in the health of a population.[51] This shifts the focus to a community model that requires collaboration among the members of the ACO to achieve the ACO's population health goals.

Better access to care can achieve the outcomes denoted above, meaning that the presence of an ASC in a community can improve access to value-based outpatient surgical care. Furthermore, coordinated care among members of the ACO is necessary in order to meet the health care delivery, savings, and population health goals of an ACO. ASCs play a beneficial role in ACOs as they offer a lower-cost alternative setting to hospital surgical departments for the provision of outpatient surgery.[52] The physicians who practice at the ASC are part of the ACO, allowing for coordination of care between the ASC and the physicians to eliminate fragmentation of care.

The Applicant's ASC will contribute to the overall functions of The Lowell General PHO/Wellforce Inc., ACO as it achieves the goals of cost containment, improving population health, and improving care delivery. The ASC will provide an alternative setting for ACO members in need of low-acuity outpatient surgeries. The migration of these procedures to the ASC will have associated cost savings and improved clinical outcomes through operational efficiencies at the ASC.

F.1.b.ii Public Health Value /Outcome-Oriented: Describe the impact of the Proposed Project and how the Applicant will assess such impact. Provide projections demonstrating how the Proposed Project will improve health outcomes, quality of life, or health equity. Only measures that can be tracked and reported over time should be utilized.

Improving Health Outcomes and Quality of Life

The Applicant anticipates that the Proposed Project will provide the Applicant's patients with improved health outcomes and improved quality of life through additional access to high-quality surgical services by expanding capacity in the community setting. As more fully discussed in Factor F.1.b.i., shifting patients to a freestanding ambulatory setting allows for high-quality, lower-cost care closer to home. The Proposed Project will offer greater throughput pre/post-surgery, ensuring an expedited, patient-centered experience for patients.

The Proposed Project is designed to utilize industry-defined best practices for quality, efficiency and effectiveness. High quality care is achieved in the following ways: 1) By placing a focus on specific specialties and their associated surgeries, physicians are able to provide efficient, expert care to patients; 2) Maximizing process improvement initiatives; given that the Proposed Project will focus on specific specialties and associated surgeries, clinical staff will develop and implement a robust program for reviewing quality of care outcomes, identifying best practices and implementing performance improvement initiatives; and 3) Transforming the care experience for patients in the ASC setting; clinical and administrative staff have the ability to narrow their focus to the noted specialties, which allows these staff to more effectively control scheduling, thereby eliminating delays, backlogs and rescheduled procedures. Consequently,

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https://hbp.vcu.edu/media/hbp/policybriefs/pdfs/NCU_DHPR_ACO_Finalweb.pdf

[51] *Karen Hacker and Deborah Klein Walker. Achieving Population Health in Accountable Care Organizations. Am J Public Health. 2013 July; 103(7): 1163-1167.*

[52] *ACA will bring more patients to ASCs— but will profits follow? OR Manager, Vol. 30 No.2, February 2014, available at https://www.ormanager.com/wp-content/uploads/2014/02/ORM_0214_p.25_ASC_Health_Reform.pdf*

ASCs have less unpredictability than a hospital based outpatient departments in regard to scheduling. Together these care components will transform the care process for patients, providing improved quality of life and leading to higher quality outcomes.

The Applicant will also implement amenities that assist in creating a higher level of patient satisfaction. These tools include an online pre-registration system that will allow patients to register from the comfort of their homes, rather than waiting prolonged periods of time in a clinical setting. This technology platform is available in over 70 languages to ensure all patients within the community have access to pre-registration capabilities. The Applicant also will provide price transparency, allowing patients to estimate prices for their procedures, as well as online payment portals, offering greater communication between administrative staff and patients. These tools provide transparent, expedited administrative processes for patients unlike more complicated hospital based outpatient departments.

Furthermore, the Applicant re-affirmed the location of the Proposed Project based on accessibility and convenience to patients from the noted PSA. Situated in close proximity to major thoroughfares and public transportation, the site for the Proposed Project will offer ample access improving patient experience. Accordingly, these combined care tools will ultimately lead to improved patient experience and higher quality process and clinical outcomes.

Assessing the Impact of the Proposed Project

To assess the impact of the proposed Project, the Applicant developed the following quality metrics and reporting schematic, as well as metric projections for quality indicators that will measure patient satisfaction and quality of care. The measures are discussed below:

1. Patient Satisfaction: Patients that are satisfied with their care are more likely to seek additional treatment when needed. The Applicant will review patient satisfaction levels with the ASC's surgical services.

   Measure: The Outpatient & Ambulatory Surgery Community Assessment of Healthcare Providers and Systems (OAS-CAHPS) survey will be provided to all eligible patients. The OAS-CAHPS survey focuses on six (6) key areas:
   1) Before a patient's procedure
   2) About the ASC facility and staff
   3) Communications about the patient's surgical procedure
   4) Patient recovery
   5) Overall experience
   6) Patient demographic information.

   Projections: As the ASC is not yet operational, the Applicant established a benchmark of 85.8% for the "Overall Rating of Care", which is the top decile for reporting providers.

   Monitoring: Any category receiving a less than "Good" or satisfactory rating will be evaluated, and policy changes instituted as appropriate. Metrics will be reviewed quarterly by clinical staff.

2. Clinical Quality - Surgical Site Infection Rates: This measure evaluates the number of patients with surgical site infections and aims to reduce or eliminate such occurrences

Measure: The number of patients with surgical site infections.

Projections: The ASC plans to achieve or be better than the national benchmark of 0.10% surgical site infection rates, ultimately reaching a target of 0%.

Monitoring: Reviewed quarterly by clinical staff.

3. Clinical Quality – Pre-Operative Time-Out: This measure ensures pre-operative compliance with practices aimed at ensuring high quality outcomes among members of the care team and promoting communication.

Measure: The procedure team conducts a pre-operative time out.

Projections: A pre-operative time-out will be completed 100% of the time on all surgical cases in the ASC.

Monitoring: Reviewed quarterly by clinical staff.

F1.b.iii Public Health Value /Health Equity-Focused: For Proposed Projects addressing health inequities identified within the Applicant's description of the Proposed Project's need-base, please justify how the Proposed Project will reduce the health inequity, including the operational components (e.g. culturally competent staffing). For Proposed Projects not specifically addressing a health disparity or inequity, please provide information about specific actions the Applicant is and will take to ensure equal access to the health benefits created by the Proposed Project and how these actions will promote health equity.

To ensure health equity to all populations, including underserved populations, the Proposed Project will not adversely affect accessibility of the Applicant's services for poor, medically indigent, and/or Medicaid eligible individuals. The Applicant will not discriminate based on ability to pay or payer source following implementation of the Proposed Project. As further detailed throughout this narrative, the proposed Project will increase access to high-quality surgical services for all patients by offering a low-cost alternative in the community setting. Specifically researchers have found that the highest-risk Medicare patients are less likely to visit an emergency department or be admitted to a hospital following outpatient surgery in an ASC setting.[53] Moreover, provision of care in the ASC setting is associated with efficiencies, convenience and cost savings, all of which promote patient satisfaction and lead to improved quality of life.[54]

The population within the PSA of the Proposed Project reflects diversity that necessitates implementation of culturally appropriate support services to ensure improved patient experience and higher quality outcomes. Accordingly, the Applicant will employ culturally competent staff

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[53] *Munnich & Parente, supra note 6; Levitt, supra note 9.*

[54] *HEALEY & EVANS, supra note 5; Munnich & Parents, supra note 5; POSITION STATEMENT: AMBULATORY SURGICAL CENTERS, supra note 6; ASCs: A POSITIVE TREND IN HEALTH CARE, supra note 7; Levitt, supra note 9; The ASC Cost Differential, supra note 36; SULTZ AND Young, supra note 46; Health-Related Quality of Live & Well-Being, HEALTHYTPEOPLE.GOV, https://www.healthypeople.gov/2020/topics-objectives/topic/health-related-quality-of-life-well-bewing*

and plans to develop a robust translation services program. The Applicant will offer multiple tools to address language barriers, including Language Line and InDemand interpreting to provide multiple options for translation services.

Language Line provides quality phone and video interpretation services from highly trained professional linguists in more than 240 languages 24 hours a day, 7 days a week, facilitating more than 35 million interactions a year. InDemand offers leading-edge medical interpreting solutions, such as video interpretations, allowing clinicians to provide their limited English proficient, Deaf and hard of hearing patients with access to the highest quality healthcare. Together, these solutions will eliminate language barriers for patients and ensure culturally appropriate care.

Furthermore, as previously discussed, the Applicant will offer price transparency tools to ensure that all patients have access to current pricing information. By providing this information patients may determine if specific procedures are affordable. The Applicant also will provide financial counselors for assistance in understanding insurance benefits.

F1.b.iv Provide additional information to demonstrate that the Proposed Project will result in improved health outcomes and quality of life of the Applicant's existing Patient Panel, while providing reasonable assurances of health equity.

The Proposed Project will allow for the expansion of lower-cost surgical services in the community setting. This alternative point of access, which boasts similar quality outcomes as outpatient hospital surgical services, is a convenient setting that reduces travel time for patients and offers more convenient parking options, thus keeping additional care local. The Applicant also plans to implement numerous amenities, including patient access tools, such as pre-registration functionality and a cost transparency application, to improve patient experience and ensure high rates of patient satisfaction.

F1.c Provide evidence that the Proposed Project will operate efficiently and effectively by furthering and improving continuity and coordination of care for the Applicant's Patient Panel, including, how the Proposed Project will create or ensure appropriate linkages to patients' primary care services.

Through the Proposed Project, the Applicant will combine physician engagement with a strong technology infrastructure to ensure continuity of care, improved health outcomes and care efficiencies. The technology infrastructure for the Proposed Project encompasses streamlined patient access tools that offer pre-registration functionality. These tools interface with an electronic medical record ("EMR") system to amalgamate necessary patient health information, such as medical history, allergies and medications that is reviewed by surgeons and anesthesiologists. EMR functionality also allows surgeons to share operative notes and post-operative discharge instructions with primary care physicians ("PCPs"), so both physicians may track a patient's progress post-discharge. The EMR also tracks a patient's pre-operative medications to ensure appropriate dosing, as well as necessary post-operative prescriptions.

While a strong technology foundation is the first step in providing coordinated care, the Applicant's administrative leaders will carry out other processes to ensure continuity of care, including engaging surgeons in developing policies and procedures that assist in increasing communication with PCPs. For example, in the event that a patient is unable to have surgery because they have failed to follow instructions by the surgeon, communication between the

surgeon and PCP may address the issue, so the patient is aware of appropriate preparation for surgery. Developing strategies for timely communication amongst providers ensures higher quality outcomes for patients, especially those with co-morbidities that struggle with psycho-social support needs. An assigned care manager will follow-up with the patient to determine if they have any needs post discharge. Accordingly, these efforts will ensure patients have efficient and coordinated care.

Furthermore, in an effort to improve care efficiencies and coordination, upon discharge a nurse manager will provide appropriate discharge instructions for all patients. Specifically, all patients will receive detailed written discharge instructions from their care team. A nurse will review the instructions with the patient and the family at the time of discharge. Each patient will receive a brightly colored folder to ensure the patient cannot misplace the instructions. Additionally, the surgeon has the ability to record the post-operative message, which details the surgery and post-operative instructions. This video will be embedded into electronic post-operative instructions along with the same hard-copy information the patient received at the facility. The electronic information will also be emailed, using HIPPAA-compliant protocols, so in the event that the patient or family misplaces the hard copy, they will have the same instructions in their email inbox. This affords the ASC and the surgeon the opportunity to guarantee the patient is armed with the appropriate discharge information, and ensure a safe and speedy recovery. This double-pronged approach has proven to be successful at other ASCs, and facilitates continuous communication with the patient, thereby improving patient satisfaction and quality of care.

The ASCs EMR will allow for the perioperative record to be exported and shared with the patient's primary care physician, or others on the patient's care team electronically. Additionally, the medical record is also present in the surgeon's clinic, and the surgeon can discuss the patient's outcomes even when outside the ASC.

F1.d Provide evidence of consultation, both prior to and after the Filing Date, with all Government Agencies with relevant licensure, certification, or other regulatory oversight of the Applicant or the Proposed Project.

Since a broad range of input is valuable in the planning of a project, the Applicant carried out a diverse consultative process with individuals at various regulatory agencies regarding the Proposed Projects. The following individuals are some of those consulted regarding this Project:

- Department of Public Health: Determination of Need Program; Lara Szent-Gyorgyi, Program Director; and Ben Wood, Director, Office of Community Health Planning and Engagement.
- MassHealth: Steven Sauter, Director, Acute Hospital Program
- Executive Office of Health and Human Services: Robert McLaughlin, Director of Legislative Affairs
- Health Policy Commission: Megan Wulff, Deputy Policy Director; Sasha Hayes-Rusnov, Senior Manager; Katherine Mills, Policy Director; Lois Johnson, General Counsel Sydney Birnbaum

F1.e.i Process for Determining Need/Evidence of Community Engagement:
For assistance in responding to this portion of the Application, Applicant is

encouraged to review Community Engagement Standards for Community Health Planning Guideline. With respect to the existing Patient Panel, please describe the process through which Applicant determined the need for the Proposed Project.

The Applicant's joint venture partners identified the need to establish an appropriate, community-based setting where patients can obtain low-acuity outpatient surgical services. It was determined that the establishment of a freestanding ASC would improve access to outpatient surgical services. The Applicant engaged the community in order to more fully involve patients and families regarding the proposed ASC.

To meet the community engagement standards set forth by the Department of Public Health, the Applicant and the Participating Physicians conducted two informational sessions/community forums. These forums were publicized at individual practice locations and via email invitation to patients. These presentations sought to inform community members about the ongoing global shift from inpatient to outpatient procedures as part of the evolving health care delivery landscape. Information was presented on the benefits of having surgical procedures in an ASC setting, including the convenience and cost-efficiencies that this setting affords patients.

F1.e.ii Please provide evidence of sound Community Engagement and consultation throughout the development of the Proposed Project. A successful Applicant will, at a minimum, describe the process whereby the "Public Health Value" of the Proposed Project was considered, and will describe the Community Engagement process as it occurred and is occurring currently in, at least, the following contexts: Identification of Patient Panel Need; Design/selection of DoN Project in response to "Patient Panel" need; and Linking the Proposed Project to "Public Health Value".

To ensure sound community engagement throughout the development of the Proposed Project, the Applicant engaged the community in order to more fully involve patients and families regarding the proposed ASC.

To date, the Applicant and its Participating Physicians have conducted the following engagement activities:

- Publicizing and holding of forum with Merrimack Valley Orthopaedics Association on December 7th, 2020.
- Publicizing and holding of forum with OSA Orthopaedics on December 7th, 2020
- Publicizing of a legal notice on Shields and Lowell General's websites.

For detailed information on these activities, see Appendix A (3) (a) and Appendix A (3) (b) which includes an invitation to the meetings, as well as the presentation explaining the public health value of the proposed project.

Factor 2: Health Priorities

Addresses the impact of the Proposed Project on health more broadly (that is, beyond

the Patient Panel) requiring that the Applicant demonstrate that the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment, improved public health outcomes, and delivery system transformation.

F2.a. Cost Containment:
Using objective data, please describe, for each new or expanded service, how the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment.

The goals for cost containment in Massachusetts center on providing low-cost care alternatives without sacrificing high-quality services. The Massachusetts Health Policy Commission, an independent state agency charged with monitoring health care spending growth in Massachusetts and providing data-driven policy recommendations regarding health care delivery and payment system reform, set the following goal for cost containment: Better health and better care - at a lower-cost - across the Commonwealth. Consequently, the proposed Project meets this goal by providing qualifying lower-acuity patients with high-quality surgical services in a cost-effective setting. As previously discussed, ASC reimbursement rates are 46% of the amount paid to HOPDs.[55] Studies provide that if half of the eligible surgical procedures were shifted from HOPDs to ASCs, Medicare would save an additional $2.5 billion annually. Similarly, Medicaid, other insurers and patients benefit from lower prices for services performed in the ASC setting given lower levels of reimbursement and less coinsurance payments.

Patients receiving surgical services through the proposed ASC also will have access to experienced, expert surgeons and clinical staff. This expertise leads to care and cost efficiencies, leading to overall reduced provider price, costs and TME. Accordingly, the proposed Project will lower price and in turn costs for the noted surgical services, leading to overall reduced TME and total healthcare expenditures.

F2.b. Public Health Outcomes:
Describe, as relevant, for each new or expanded service, how the Proposed Project will improve public health outcomes.

Providing access to expedited, expert surgical care in the community setting will improve public health outcomes and patient experience. First, clinical staff, including surgeons providing surgical services in ASCs focuses on specific specialty surgeries annually. Consequently, studies have shown that this narrow focus leads to greater expertise among clinical staff and creates care efficiencies that lead to improvement in process and clinical outcomes, as well as patient experience. Second, patient experience will be improved through convenient access to the facility, ample parking, and expedited scheduling of procedures. The ASC will also offer patient-centered technology, such as pre-registration system and cost transparency tools. When patients receive timely care, in the appropriate setting and achieve cost savings both the healthcare market and patients benefit.

F2.c. Delivery System Transformation:
Because the integration of social services and community-based expertise is central to goal of delivery system transformation, discuss how the needs of the patient panel have been assessed and linkages to social services organizations have been created and how the social determinants of health have been

[55] *2018 HOPD Medicare Fee Schedule*

incorporated into care planning.

As further discussed in Section F.1.c., patients will be provided with access to care management services in two ways. First, prior to discharge, patients will meet with a case manager that will screen patients for social determinant of health needs. If after screening a patient needs additional services, the individual will be linked to a care manager, who will help the individual access local resources. To facilitate these referrals, the care manager will develop relationships with primary care practices and social work resources within the ACOs that refer patients to the ASC. Accordingly, these efforts will ensure patients are linked with appropriate community resources to address social determinant of health needs.

Factor 5: Relative Merit

F5.a.i Describe the process of analysis and the conclusion that the Proposed Project, on balance, is superior to alternative and substitute methods for meeting the existing Patient Panel needs as those have been identified by the Applicant pursuant to 105 CMR 100.210(A)(1). When conducting this evaluation and articulating the relative merit determination, Applicant shall take into account, at a minimum, the quality, efficiency, and capital and operating costs of the Proposed Project relative to potential alternatives or substitutes, including alternative evidence-based strategies and public health interventions.

Proposal: Transition a Hospital Based ASC to a Freestanding Licensed ASC

Quality: Surgical services and related care provided in an ASC are high quality, with clinical outcomes that are equal to or better than HOPD surgical departments for the same procedures.

Efficiency: The specialization of services offered at the ASC will allow the Applicant to achieve clinical and operational efficiencies. Lower-acuity cases can be shifted from hospital outpatient surgical departments to the ASC, which will achieve cost savings. Clinical efficiencies will be achieved through the use of highly trained staff and the ability to maintain a more uniformed schedule, allowing for high quality patient outcomes.

Capital Expense: Establishment of the ASC will result in a one-time capital expense to renovate an existing surgery center, inclusive of adding a 4th OR.

Operating Costs: The operating expenses (excluding depreciation and interest) anticipated for Year 1, the first full year of operation of the ASC, are expected to be $5,432,984.

Projected Savings: Shifting volume from higher HOPD rates to a lower freestanding rate structure will generate downstream savings for TME.

Alternative Option for the Proposed Project:

Alternative Proposal: Do not establish a freestanding ASC and continue serving patients through the existing operating rooms at their current site of care (i.e. Hospital Outpatient Departments).

Alternative Quality: This alternative is not sufficient to meet the combined patient panel's need for low-cost and high-quality outpatient surgical services in the community. It also

does not address the needs to upgrade ORs and equipment in order to stay operational, thereby negatively impacting quality outcomes.

Alternative Efficiency: Not establishing a freestanding ASC will result in continued clinical and operational inefficiencies due to the limitation in providing on-time surgical services in a hospital setting.

Alternative Capital Expenses: Capital expenses initially would not change under this alternative, but would increase at a later time in order to renovate the existing operating rooms where care is currently provided.

Alternative Operating Costs: Taking no action to establish a freestanding ASC and continuing to offer low-acuity surgical procedures in the hospital outpatient department, ultimately would result in increased operating costs and higher TME for patients served in the market.

Exhibit A (2)

Shields ASC
Chelmsford Surgery Center
Demographic Data

Age Group	FY2018	FY2019
19 and under	9.34%	9.26%
20 - 54	45.89%	44.36%
55 - 64	21.66%	21.90%
65+	23.11%	24.48%

Town	FY2018	FY2019
Lowell	958 (30%)	869 (30%)
Dracut	374 (12%)	372 (13%)
Chelmsford	215 (7%)	227 (8%)
Tewksbury	155 (5%)	156 (5%)
Tyngsboro	139 (4%)	141 (5%)
Westford	108 (3%)	105 (4%)
North Chelmsford	90 (3%)	81 (3%)
Nashua (NH)	76 (2%)	77 (3%)
Billerica	83 (3%)	77 (3%)
Pelham (NH)	73 (2%)	70 (2%)
Subtotal: 75% Patient panel (based on 2019 data)	2,271	2,175
Remaining locations	917 (29%)	737 (25%)
Total	3,188	2,912

FY 2	
APM Contract Percentages	
ACO and APM Contracts	53%
Non-ACO and Non-APM Contracts	47%

2020 Lowell General Hospital Payer Mix	
Payer Mix-List Percentages	
Commercial PPO/Indemnity	39.50%
Commercial HMO/POS	21.73%
MassHealth	1.48%
Managed Medicaid (Private Medicaid/Medicaid MCOs)	6.61%
Commercial Medicare (Private Medicare/Medicare Advantage)	5.98%
Medicare FFS	17.23%
All Other (e.g. HSN, Self-Pay, TriCare)	7.47%

Exhibit A (3) (a)

OSA Orthopaedics invites you

to a

VIRTUAL CONVERSATION

FUTURE OF AMBULATORY SURGICAL CARE

Please join us to learn more about the high-quality affordable ambulatory surgical services we hope to bring to North Chelmsford and the surrounding community

Dec | 07 | 5:30 PM

Copy Zoom Address Below in Web Browser:

https://zoom.us/j/[illegible]

The Future of High-Value Surgical Services

FREE-STANDING AMBULATORY SURGICAL SERVICES IN NORTH CHELMSFORD, MASSACHUSETTS

Exhibit A (3) (b)

Our vision:

Welcome and thank you for your interest in this project

We are excited to share our plans to renovate Lowell General Hospital's existing ambulatory surgery center (ASC) lo
10 Research Place, North Chelmsford, Massachusetts

This project will transform the existing facility into a state-of-the-art 4 operating room (OR) ASC

The ASC will specialize in outpatient surgical services, including orthopedic; total-joint; podiatry; neuro-spine; gynec
plastic and hand surgeries

The ASC will operate on a freestanding fee schedule which will lower the cost of services

The ASC is a joint venture partnership between community physicians, Lowell General Hospital and Shields Health C
Group

This is an opportunity to introduce you to some of the individuals involved, solicit your feedback & any answer quest

What is an ambulatory surgical center (ASC)?

Medical facility that offers outpatient or "day-surgery" procedures

Patients arrive, undergo surgery and go home the same day

Provides patients with the convenience of having non-complex surgeries locally, where they live and work

ASCs have an excellent record of safety and quality and provide patient outcomes that equal or exceed th results provided by every other site of outpatient surgical care – including hospitals

Surgeries performed at ASC's cost up to 40% less* than surgeries performed in hospitals or hospital outpatien departments, which will translate to direct savings for patients in high deductible health plans.

Patients report a 92% satisfaction rate for surgeries performed at ASCs.

*Based off Medicare Fee Schedule

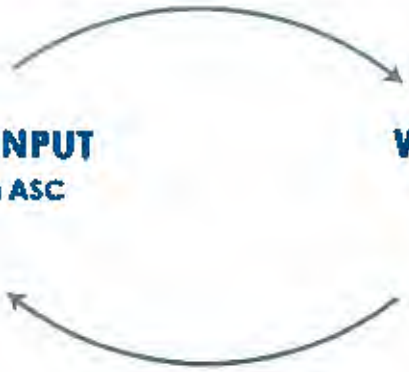
Benefits of an ASC

01	Lower costs	• procedures up to 40% less compared to inpatient or hospital outpatient settings
02	Provides greater patient experience	• greater scheduling flexibility • more personal attention • lower cost option for patients • home the same day
03	Keeps care to the community	• easy, convenient location • public transportation • provides local option for physicians to preform surgeries
04	Increases accessibility of care	• specialization in outpatient surgeries allows for greater efficiencies • shifts appropriate care from inpatient to outpatient

Summary: Chelmsford ASC

Services	• 4 Operating Rooms • Orthopedic, Total Joints, Podiatry, Neurological Spine, Gynecology, Plastic, Hand
Facility	• newly renovated state-of-the-art space • same convenient location – lower cost of care

Next Steps



WE WANT YOUR INPUT
on the concept of an ASC

WE WILL KEEP YOU INFORMED
as project progresses with DPH

Merrimack Valley Orthopaedics Association invites you to a

VIRTUAL CONVERSATION

FUTURE OF AMBULATORY SURGICAL CARE

Please join us to learn more about the high-quality affordable ambulatory surgical services we hope to bring to North Chelmsford and the surrounding community

Dec | 07 | 6:30 PM

The Future of High-Value Surgical Services

FREE-STANDING AMBULATORY SURGICAL SERVICES IN NORTH CHELMSFORD, MASSACHUSETTS

Our vision:

Welcome and thank you for your interest in this project

We are excited to share our plans to renovate Lowell General Hospital's existing ambulatory surgery center (ASC) l
10 Research Place, North Chelmsford, Massachusetts

This project will transform the existing facility into a state-of-the-art 4 operating room (OR) ASC

The ASC will specialize in outpatient surgical services, including orthopedic; total-joint; podiatry; neuro-spine; gyne
plastic and hand surgeries

The ASC will operate on a freestanding fee schedule which will lower the cost of services

The ASC is a joint venture partnership between community physicians, Lowell General Hospital and Shields Health C
Group

This is an opportunity to introduce you to some of the individuals involved, solicit your feedback & any answer ques

What is an ambulatory surgical center (ASC)?

Medical facility that offers outpatient or "day-surgery" procedures

Patients arrive, undergo surgery and go home the same day

Provides patients with the convenience of having non-complex surgeries locally, where they live and work

ASCs have an excellent record of safety and quality and provide patient outcomes that equal or exceed th results provided by every other site of outpatient surgical care – including hospitals

Surgeries performed at ASC's cost up to 40% less* than surgeries performed in hospitals or hospital outpatien departments, which will translate to direct savings for patients in high deductible health plans.

Patients report a 92% satisfaction rate for surgeries performed at ASCs.

*Based off Medicare Fee Schedule

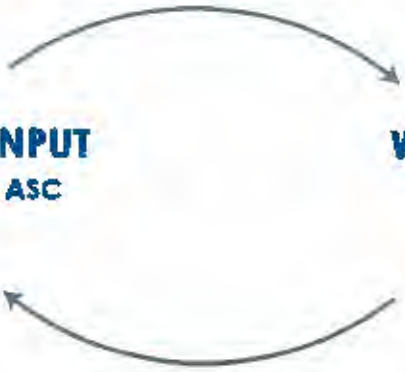
Benefits of an ASC

01	Lower costs	• procedures up to 40% less compared to inpatient or hospital outpatient settings
02	Provides greater patient experience	• greater scheduling flexibility • more personal attention • lower cost option for patients • home the same day
03	Keeps care to the community	• easy, convenient location • public transportation • provides local option for physicians to preform surgeries
04	Increases accessibility of care	• specialization in outpatient surgeries allows for greater efficiencies • shifts appropriate care from inpatient to outpatient

Summary: Chelmsford ASC

Services	• 4 Operating Rooms • Orthopedic, Total Joints, Podiatry, Neurological Spine, Gynecology, Plastic, Hand
Facility	• newly renovated state-of-the-art space • same convenient location – lower cost of care

Next Steps



WE WANT YOUR INPUT
on the concept of an ASC

WE WILL KEEP YOU INFORMED
as project progresses with DPH

Exhibit A (4) (a)

2019

Greater Lowell Community Health Needs Assessment

Lowell General Hospital
Proudly wellforce

in partnership with

GLHA
GREATER LOWELL HEALTH ALLIANCE

UMASS University of Massachusetts Lowell

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2019

Greater Lowell Community Health Needs Assessment

Conducted on behalf of:
Lowell General Hospital
Greater Lowell Health Alliance

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University of Massachusetts Lowell
September 17, 2019

Lowell General Hospital
Proudly wellforce

UMASS University of Massachusetts Lowell

GLHA
GREATER LOWELL HEALTH ALLIANCE

ACKNOWLEDGEMENTS

We would like to acknowledge and thank the following individuals and organizations for their assistance with the 2019 Community Health Needs Assessment and this report:

Krysta Brugger, UMass Lowell graduate student for her help with scheduling listening sessions, participant recruitment, and project management;

Hannah Tello, a University of Massachusetts Lowell doctoral student who designed the Greater Lowell Community Needs Assessment survey, compiled the results, and wrote the summary section for this report. UMass Lowell students Mollie McDonah, Jared Socofow, Shirley Archambault, and Larissa Medeiros, and Lowell High student Andrew Nguyen and Innovation Charter School student Joshua Cho for assistance with conducting survey outreach and inputting survey data.

Listening session facilitators and note takers listed in Appendix D.

Paul Oppedisano, MassCHIP Director from the Massachusetts Department of Public Health for providing public health data.

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Members of the 2019 Community Health Needs Assessment Advisory Committee (see Appendix E) and Greater Lowell Health Alliance, for their advice and guidance.

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The Cambodian Mutual Assistance Association (CMAA), Center of Hope and Healing, Elder Services of Merrimack Valley, Greater Lowell Interfaith Leadership Alliance, Hunger and Homeless Commission, Lowell's Early Childhood Council, Lowell Community Health Center, Lowell House, Lowell Housing Authority, Lowell Senior Center, Non-Profit Alliance of Greater Lowell (NPA), Portuguese Senior Center, RISE Coalition (Refugee and Immigrant Support & Engagement), Youth Violence Prevention Coalition, Upper Merrimack Valley Public Health Coalition for hosting listening sessions.

Natalia Melo from the UMass Lowell Saab Center for Portuguese Studies who connected us to members of the Portuguese Senior Center and Frank Sousa and Patricia Martinho Ferreira from the Saab Center for Portuguese Studies for editing the Portuguese translations of listening session questions and consent form and Luz Vasudevan from the LatinX Community Center for Empowerment (LCCE) for assistance with organizing and hosting the listening session with members of the Spanish speaking community.

We also thank all individuals who participated in the listening sessions and interviews and all who provided assistance with the community health needs assessment.

CONTENTS

EXECUTIVE SUMMARY

Lowell General Hospital, the Greater Lowell Health Alliance, and the University of Massachusetts Lowell work together to conduct an assessment of community health needs for the communities of Greater Lowell every three years. This region includes the cities and towns of Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough, and Westford. This assessment evaluates the overall health of the community members, overviews the strengths and weaknesses of the area's health services, identifies health barriers and social determinants of health, and provides recommendations to improve the health of its residents.

Information gathering for this health assessment included 20 listening sessions with over 200 participants, 19 key informant interviews, and 1,355 surveys completed by community members. Secondary resources were gathered to provide demographic, socioeconomic, and public health data.

The top priority health issues identified by the Community Health Needs Assessment Survey respondents were mental health issues, substance addiction, alcohol abuse/addiction, cancer, and nutrition. Other health issues included obesity, heart disease, diabetes, infectious diseases, and tick/insect illnesses. The top priority community safety issues are domestic violence, bullying, drug trafficking, sexual assault/rape, and unsafe/illegal gun ownership. Additional community safety issues include human trafficking, discrimination based on race, gang activity, discrimination based on immigration status, and discrimination based on class or income.

The most frequently reported health issues for Community Health Needs Assessment Survey respondents themselves are anxiety; depression; vision problems; bone, joint, and muscle illness; and high cholesterol. The most frequently reported issues for people participants know were cancer, alcohol abuse/addition, diabetes, high blood pressure, and depression. The most frequently reported health barriers for the respondents are a negative healthcare experience from their provider, inability to afford medication, inconvenient office hours, inability to afford mental health services, and inability to find a provider accepting new patients.

The top health problems revealed from the listening sessions and interviews are mental health issues, substance use/alcohol disorders, obesity, diabetes, infectious diseases, respiratory diseases (e.g. asthma and chronic obstructive pulmonary disease), cancer, and cardiovascular disease. Populations recognized in the community at greatest risk of health problems are people who identify as immigrants and refugees, the elderly population, people who earn low-wages, people who are homeless-experienced, teenagers and youth, and people who are part of the LGBTQ (lesbian, gay, bisexual, transgender, and queer) community.

The major strengths of the health system in the Greater Lowell area identified by listening sessions and interviews are the availability of the Lowell Community Health Center (LCHC) and Lowell General Hospital. Both health entities provide wide ranges of services and collaborate with other health professionals and agencies in the region to address the health concerns of the communities. Other strengths include the growing number of urgent care facilities that reduce emergency room utilization and the process of the Community Health Needs Assessment that allows community members to communicate with key stakeholders about health.

The major weaknesses identified from listening sessions and interviews include a need for culturally competent health care providers, shortages of certain types of health care providers, long wait times for appointments, and a lack of continuum of care. Lack of transportation and limited access to mental and behavioral health services were also stated. In particular, residents that speak a language other than English face greater difficulties in accessing transportation and optimal care. Community members also noted a lack of adequate proficient interpreters and translators.

The most prevalent barriers to obtain health services mentioned by listening sessions and interviews participants are transportation, health insurance, increase of medical related costs, and the stigma and discrimination related to those with substance

use disorders and mental health issues. The increase in minimum wage over time was found to be a challenge for families to qualify for subsidized health coverage. Income for some low-wage workers can put them just above the income eligibility limit, resulting in these individuals being unable to afford health insurance.

Public health indicators from secondary sources compared between Lowell, Greater Lowell communities, and state of Massachusetts include cardiovascular disease, obesity, diabetes, smoking, respiratory disease, mental health, substance use, cancer, and infectious disease. Many health indicators show a greater need for intervention in the city of Lowell compared to the Greater Lowell region. This result is not surprising due to the considerable socioeconomic impacts on health in Lowell's urban community.

This iteration of the community health needs assessment has specifically evaluated social determinants of health to better understand their impact on the health needs of the community. The social determinants of health addressed in this report include the built environment, social environment, housing, violence, education, and employment. These factors contribute to the health outcomes of the Greater Lowell region and are closely linked to the health disparities existing at both the community level and state level.

Housing affordability, access to food, and unemployment are some of the key measures that contribute the health outcomes of the area. More than 50% of the housing stock in Billerica, Chelmsford, Dracut, Lowell, and Tewksbury was built before 1979, which contributes to higher lead exposures. Excluding Dunstable, more than 40% of rental units cost more than 30% of the average household income in the area. Lowell has the highest gross rent as a percent of income and is the fourth most expensive city in the state of Massachusetts.

The population in Lowell is more than twice the population of any other town in the Greater Lowell region. Compared to other communities, Lowell has the greatest percentage of housing built before 1979, lowest median household income, and highest percentage of population who are Black, Asian, Hispanic, and born outside the U.S. Compared to neighboring communities of Greater Lowell CHNA, Lowell is the least affordable area for residents, with a Median Home Value to Median Household Income ratio of 4.5.

Listening session participants and interviewees suggested a variety of recommendations for improving health services in the Greater Lowell area. One suggestion was to increase outreach and health-related education programs. Members from the community expressed a desire to have more health resources available in multiple languages, education on navigating the health system, and development of community support teams. At the professional level, there were recommendations for more cultural competency training programs and greater focus on preventive strategies for diseases. The listening sessions and interviews also revealed that members in the community would like stronger, integrated care between medical and community health teams. There is also an increasing need for more shelters for people experiencing homelessness, mental health treatment facilities, substance use disorder crisis programs, and improved transportation system.

The collaborative approach by Lowell General Hospital, Greater Lowell Health Alliance, and the University of Massachusetts Lowell to develop this Community Health Needs Assessment will further inform the development process of a community health improvement plan (CHIP). The findings from this assessment will guide how community stakeholders will address the community's health priorities and formulate action plans to improve the health services and overall health of Greater Lowell region.

PROCESS AND METHODS

Introduction
Founded in 1891, Lowell General Hospital is a not-for-profit community hospital serving the Greater Lowell area and surrounding communities. With two primary campuses located in Lowell, Massachusetts, Lowell General Hospital offers the latest state-of-the-art technology and a full range of medical and surgical services for patients, from newborns to seniors.

As the second largest community hospital in the state, Lowell General Hospital's commitment to our community is an essential and integral part of our mission, vision and strategy. We seek to improve the health status of the community we serve, and to specifically address the health problems of at-risk and medically under-served populations. This mission is achieved by identifying existing and future health needs in the community and addressing them through health initiatives, including education, prevention and screening programs; many times in collaboration with key partners from across the Greater Lowell community. We aim to improve the capacity of our community efforts by providing Culturally and Linguistically Appropriate Services (CLAS) to all individuals in order to reduce disparities and achieve health equity.

Definition of Community
Lowell General Hospital's 2019 Needs Assessment focused on the hospital's service area, encompassing eight communities in Greater Lowell, including Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsborough and Westford, which all comprise the Community Health Network Area 10 (CHNA 10). The Greater Lowell Health Alliance of CHNA 10 is made up of healthcare providers, business leaders, educators, and civic and community leaders, all with a common goal to help the Greater Lowell Community identify and address health and wellness priorities.

A Community Health Network Area (CHNA) is a coalition that is comprised of public, non-profit and private sectors working together to build healthier communities through community-based prevention planning and health promotion. Created in 1992 by the Massachusetts Department of Public Health, the CHNA initiative involves 351 cities and towns in 27 different networks throughout Massachusetts.

The Greater Lowell Health Alliance plays a vital role in developing the Community Health Needs Assessment with Lowell General Hospital in the Greater Lowell area. In 2017, the Greater Lowell Health Alliance of CHNA 10 released the first Greater Lowell Community Health Improvement Plan (CHIP). With a goal to create a long-term strategy to strengthen the area's health systems, our CHIP was used as road map for health improvement over a three-year period, guiding the investment of resources of organizations with a stake in improving health for the residents of Lowell and the surrounding communities. Our CHIP mission: to turn data into action and working initiatives to address our community's top health priorities.

Target Populations
IMMIGRANTS AND REFUGEES • ELDERLY • LOW-INCOME INDIVIDUALS AND FAMILIES • YOUTH MINORITY POPULATIONS • INDIVIDUALS CLASSIFIED AS "AT RISK" • INDIVIDUALS WITH CHRONIC DISEASE • INDIVIDUALS AFFECTED BY BEHAVIORAL HEALTH AND/OR SUBSTANCE USE ISSUES

Previous Needs Assessment and Review of Initiatives
In 2016 Lowell General Hospital conducted its last Community Health Needs Assessment, which identified key health issues and informed the hospital's program planning. The process culminated in the development of a Community Health Improvement Plan (CHIP) to address health priorities in the area. In the 2016 Assessment, Lowell General Hospital identified the health priorities to be Access to Healthy Food, Asthma, Mental Health, Physical Activity, Substance Use Disorder and several areas which fall into the Social Determinants of Health arena.

To fulfill its commitment to the community and statutory requirements, Lowell General Hospital, in partnership with the Greater Lowell Health Alliance of the Community Health Network Area 10, contracted with the University of Massachusetts

Lowell Center for Community Research and Engagement to conduct the 2019 Community Health Needs Assessment. The University of Massachusetts Lowell team that worked collaboratively to complete this assessment included faculty, staff, students and community partners. The objectives of this study were to:

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

This report summarizes the major findings from our community health needs assessment. Lowell General Hospital, in partnership with the Greater Lowell Health Alliance, intends to use the information within this report to inform a community process in collaboration with other stakeholders to identify priority health needs and develop action plans to improve the local health services system and overall community health, and address social determinants of health.

A steering committee was formed to facilitate the 2019 Community Health Needs Assessment that included the following individuals:

David Turcotte, ScD, Research Professor, UMass Lowell

Kelechi Adejumo, Research Assistant, UMass Lowell

Kim-Judy You, Research Assistant, UMass Lowell

Krysta Brugger, UMass Lowell Graduate Student Intern at Lowell General Hospital

Kerrie D'Entremont, Executive Director, Greater Lowell Health Alliance

Kate Elkins, Community Health Coordinator, City of Lowell Health Department

Amanda Clermont, Community Engagement Coordinator, Greater Lowell Health Alliance

Lisa Taylor-Montminy, Community Benefit Manager, Lowell General Hospital

An Advisory Committee was also formed to help guide the process. The Greater Lowell Health Alliance (GLHA) is comprised of a diverse group of healthcare providers, business leaders, educators, and civic and community leaders with a common goal to help the Greater Lowell community identify and address its health and wellness priorities. As a result, the GLHA Board of Directors served as our Advisory Committee (see list of names in Appendix F). As part of our inclusive assessment process we also involved diverse organizations and community members in listening sessions and interviews. The following organizations were engaged to host listening sessions between February to April:

- Cambodian Mutual Assistance Organization (CMAA)
- Lowell's Early Childhood Council
- Hunger & Homeless Commission
- Upper Merrimack Valley Public Health Coalition
- Youth Violence Prevention Coalition
- Non-Profit Alliance of Greater Lowell
- Greater Lowell Interfaith Leadership Alliance
- RISE Coalition (Refugee and Immigrant Support & Engagement)
- Elder Services of Merrimack Valley

- Center for Hope & Healing
- Lowell Community Health Center
- Lowell Housing Authority
- Lowell House
- Greater Lowell Health Alliance

COMMUNITY HEALTH NEEDS ASSESSMENT SURVEY

An inter-agency, cross-disciplinary survey team convened to draft the 2019 Greater Lowell Community Health Needs Assessment (GLCHNA) Survey, which included representatives from the Greater Lowell Health Alliance, University of Massachusetts Lowell, Lowell General Hospital, Lowell Health Department, Lowell Community Health Center, and community activists and health workers. The survey development process involved completing a document analysis of exemplar and aspirant assessments from other regions and soliciting feedback from community leaders and key informants about their priority research areas before finalizing the survey. The GLCHNA Survey included the following sections: demographics, community health resources, health needs, health issues, community safety, health access barriers and service utilization history.

Each section had between 13-26 related responses and respondents were asked to indicate if each response was a low, medium, or high priority. They are then asked to take the top three priority responses and assign them a rank of one, two, or three. Total Rank Count was calculated by summing the number of times an item was ranked as one, two or three. The responses with the highest rank count and percentage were found to be the top priorities of each section.

In addition to providing information about themselves, the respondents were asked the same questions for people that they know. This provided their insights into other members of the community.

The GLCHNA survey was distributed to maximize the likelihood of proportionally stratified sampling by town of residency, age, race, language ability, gender, and LGBTQ identity. Online versions of the survey were available in English and Spanish and paper versions in English, Spanish, Portuguese, Khmer, Arabic, and Swahili. Paper copies were disseminated at 25 community locations (e.g. libraries, medical offices, police stations) with distribution instructions to protect anonymity. Paper copies were also distributed at community events and listening sessions over a 3-month data collection period. The online version of the survey was hosted on Qualtrics survey software platform with a secure survey link directly distributed to over 100 online groups, email lists and electronic contacts in community and government leadership positions, as well as through social media. Cell phone users could also access the survey. A total of 1,355 completed surveys were analyzed.

Listening Sessions and Key Informant Interviews

A total of 20 listening sessions with over 200 total participants were conducted between February 4 and April 26, 2019 (see attendees who agreed to have their name published in Appendix C). The average duration of each listening session was 60 minutes. The listening session discussions included between 8 and 10 discussion questions. All groups were asked about the overall health of Greater Lowell, priority health problems, populations at greatest risk, strengths and weaknesses of health services in the region, barriers and obstacles to health, and suggestions for improvement. Groups at community listening sessions were also asked about specific health needs of their communities and how existing health services are responding to their needs.

A team of 11 individuals, including UMass Lowell faculty, graduate and undergraduate students, and individuals from the Cambodian Mutual Assistance Association took part in facilitating, note taking, and interpretation and translation services for the listening sessions. The listening sessions were conducted in English with the exception of the community groups of individuals who were Khmer-speaking, Spanish-speaking, and Portuguese-speaking. For these three groups, the sessions were conducted in Khmer, Spanish, and Portuguese respectively. Notes were taken and recordings were made for all listening sessions.

The composition and number of the listening sessions organized and the list of individuals invited were determined in collaboration with the 2019 Community Health Needs Assessment (CHNA) Steering Committee and Advisory Committee, and other community partners.

The 13 listening sessions organized by professional or organizational grouping included: nonprofit organizations, organizations providing services to older adults, public health directors, nurses and agents, early childhood education professionals, immigrant and refugee advocates and service providers, professionals working on hunger and homelessness, government and public housing officials, organizations with youth, professional working to eradicate sexual violence, providers of substance use disorder services, Circle Health leaders, non-Circle Health providers, physicians, Greater Lowell Health Alliance members, and Lowell General Hospital Community Benefit Advisory Committee members.

The other 7 listening sessions included members from the Cambodian, African, Portuguese-speaking and Spanish-speaking communities, as well as participants of Teen Block at the Lowell Community Health Center, Lowell Housing Authority residents and Lowell House clients receiving services for substance use disorders. Individuals were asked to participate as private individuals and not as official spokespersons for their communities.

A total of 19 key informant interviews were conducted with first responders by UMass Lowell students. The first responders included individuals from the police department, fire department, paramedics, and emergency medical services (EMS) professionals. These individuals were asked to take part as private individuals and not official spokespersons of their organizations. A member of the 2019 CHNA Steering Committee also conducted key informant interviews with a clinical leader from Lowell General Hospital and a Lowell Community Health Center's Board of Directors Member. The average duration of the interviews was 45 minutes. The questions were the same as the community listening sessions. Notes were also taken.

Listening session and key informant interview data was analyzed using NVivo software. Top health issues were ranked based on the cumulative number of sessions that mentioned specific health topics.

Analysis of Secondary Data Sources
The Population Health Information Tool (PHIT) from the Massachusetts Department of Health provided most of the community and state level health surveillance data. This data portal provided information from the Massachusetts Cancer Registry, Massachusetts Vital Records (2016), Behavioral Risk Factor Surveillance System (BFRSS) data between 2012 and 2014, Massachusetts Bureau of Substance Abuse Services (BSAS) and hospitalization data from the Massachusetts Center for Health Information and Analysis (CHIA).

Additional information was acquired from the following sources:

- Trinity EMS
- U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates
- FBI: Uniform Crime Report Program
- Massachusetts Environmental Public Heath Tracking Portal
- USDA Food Atlas
- Community Teamwork, Inc. 2017 Community Health Survey
- Youth Behavior Risk Survey (YRBS) and Communities that Care (CTC) Results

When possible, data was compared between the City of Lowell, Greater Lowell CHNA, and the state of Massachusetts. We analyzed and presented data on Lowell as it has the greatest population diversity and generally experiences more health issues and needs. Due to the small population of Dunstable, the municipality was not included some datasets. This will be indicated in the graphs and charts.

Data Limitations
We analyzed public health surveillance data to provide additional evidence of community health status, but in some cases the data was 3-6 or more years old and may not reflect current health needs. Epidemiological data was also not available for municipalities where the numbers of cases were unstable or not significant. In these cases, the Greater Lowell CHNA measure excludes that town. Responses from listening sessions, informant interviews and surveys were not a representative sample of all the residents of Greater Lowell, but a convenience sample of individuals connected to an organization or available and interested to participate. Nevertheless, the insight or perceptions of these participants are still valuable in assessing the community health needs of this region.

POPULATION

Lowell General Hospital's Greater Lowell service area had an estimated total population of 290,258. The population of the city of Lowell makes up 38% with an estimated 110,964 residents. Billerica is the second most populated area with 42,792 residents, followed by Chelmsford, Dracut, Tewksbury, Westford, and then Tyngsborough. The least populated area is the town of Dunstable with 3,337 residents. Compared to the previous assessment, there has been a slight increase in population overall, but the population size rankings remain the same.

Lowell has the largest percentage of residents born outside the US at 26.7%. The American Community Survey 5-Year Estimates of percentage of residents born outside the United States indicate that all areas except for Dracut, Tewksbury, and Dunstable are greater than 10%. Lowell has a more diverse population with 21% of residents identifying as Asian and 20.3% as Hispanic/Latino. Westford, Chelmsford, and Tyngsborough also have a substantial population of Asian individuals of 17.7%, 9.5%, and 8.1% of residents respectively. The greatest change since the results of the 2016 Greater Lowell assessment is the percentage of residents identifying as White. Whereas most of the communities had a slight decrease in this measure, Lowell's population of White individuals increased by more than 3% from 57.1% in 2014 to 60.8% in 2017.

Within the Greater Lowell CHNA, Lowell is the least affluent community with a median household income (MHI) of $48,581, which is markedly lower than Dunstable and Westford at $138,700 and $138,006. The city also has the highest poverty rate of 22.4% and unemployment rate at 8.4%. Between the 5-year estimates from 2014 and 2017 from the American Community Survey, Lowell was the only community that experienced a decrease in median household income of $583 (-1.2%). Conversely, Dunstable's MHI increased by $22,575 (+19.4%), Westford increased by $12,865 (+9.3%), and Chelmsford by $12,789 (+12.0%) (Greater Lowell CHNA, 2016). When compared with other gateway cities including Fall River, New Bedford, Haverhill, Lawrence, Springfield, Brockton, and Worcester, Lowell's rates of poverty and unemployment are within a similar range. The range of median household income of these gateway cities were between $37,118 (Springfield) and $65,929 (Haverhill). The average poverty rate, median household income, and unemployment rate of other gateway cities were 21.2%, $46,183 and 9% respectively (not shown).

Table 1 – Basic Demographic Data, Cities/towns in the Greater Lowell CHNA

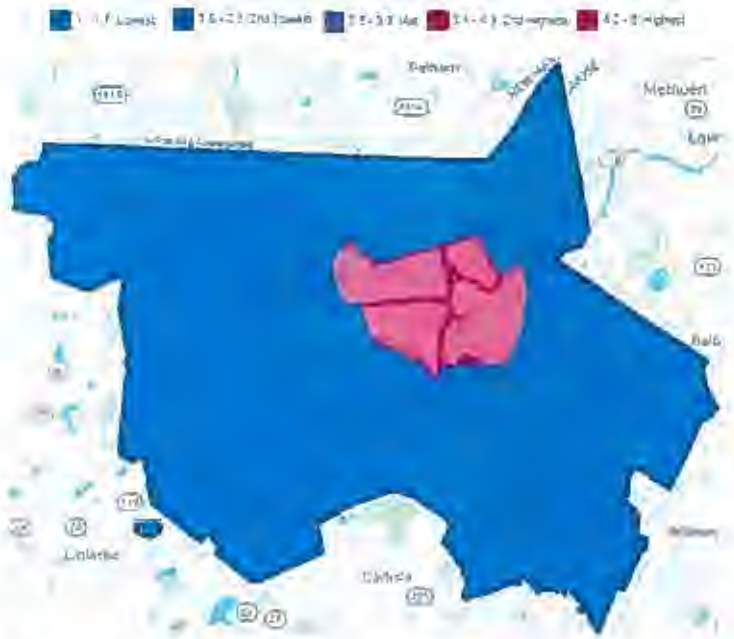
City/Town	Population	% White	% Black	% Asian	% Hispanic	% Born Outside the US	% Aged 0-17	% Aged 65+	Median Household Income	% Below Poverty Line	% Unemployment Rate*
Billerica	42,792	86.6	3.4	6.2	4.3	11.0	19.6	14.8	99,453	4.3	4.9
Chelmsford	35,067	87.2	0.8	9.5	3.7	11.2	20.4	18.0	106,432	3.6	4.2
Dracut	31,113	86.9	4.7	4.2	5.9	9.0	21.9	14.6	86,697	7.2	4.9
Dunstable	3,337	93.7	-	4.1	1.1	5.3	23.6	14.1	138,700	2.1	3.4
Lowell	110,964	60.8	7.3	21.0	20.3	26.7	22.7	10.5	48,581	22.4	8.4
Tewksbury	30,666	92.4	1.8	3.8	1.6	7.5	19.7	17.5	93,817	5.4	4.7
Tyngsborough	12,232	87.6	0.5	8.1	3.1	10.9	21.0	9.8	101,303	7.1	4.5
Westford	24,087	80.3	0.5	17.7	2.2	13.9	27.6	12.3	138,006	2.3	3.2
Total/Weighted Average	290,258	77.1	4.1	12.8	10.0	15.6	21.9	13.4	101,624	11.5	6.0
Massachusetts	6,789,319	78.9	7.4	6.3	11.2	16.2	20.4	15.5	74,167	11.1	6.0

Source: American Community Survey 2013-2017 5 year estimates

*The unemployment rate is the "number of unemployed as a percentage of the labor force (sum of employed and unemployed)." This should not be confused with "% unemployed" which refers to "people who are jobless, actively seeking work, and available to take a job" (BLS, 2015).

The Community Needs Index

Figure 2 – Greater Lowell CHNA Community Needs Index Map



Source: 2019 Dignity Health with Truven Health Analytics

The Community Need Index (CNI) score is based on community demographic and economic statistics that make up a community's overall socio-economic profile. The CNI is a calculated average of five barrier scores which include income, culture, education, insurance, and housing barriers. The overall score is interpreted as an indicator of a community's health needs. The CNI scores of the cities and towns of the report are as follows (listed from lowest need to greatest):

City/Town	Zip Code	2019 CNI Score	2016 CNI Score
Dunstable	01827	1.2	1.2
Chelmsford	01824	1.4	1.4
Tewksbury	01876	1.4	1.4

1.The "Community Needs Index" (CNI) was developed in 2004 by the nonprofit corporation, Dignity Health and the multinational company, Truven Health in order to clearly see the healthcare needs of a community. The purpose was to be able to help communities distribute resources in the most effective manner, recognizing that some areas have more health care needs than others and prioritizing accordingly. There is a CNI score for every populated zip code in the United States. There is a CNI score for every populated zip code in the United States. CNI scores range from 1.0 to 5.0, 1.0 being the lowest need, 5.0 being the highest. The barriers receive scores of 1-5, reflective of need in comparison to other zip codes across the country. The barriers are then averaged to get the CNA so that each barrier is equally represented. The accuracy of a CNI score increases as population increases. All scores are based on 2018 data.

Tyngsboro	01879	1.6	1.6
Billerica	01821	1.6	1.8
North Billerica	01862	1.8	--
Westford	01886	1.6	1.8
North Chelmsford	01863	2.0	--
Dracut	01826	2.0	2.2
Lowell	01851	3.8	4.0
Lowell	01852	3.8	3.8
Lowell	01854	4.0	4.2
Lowell	01850	4.0	4.2
Lowell Average	--	3.9	4.1

The average CNI score of Lowell's four zip codes shows a greater health need than other towns by at least 2.1 points. The other towns' CNI scores range from 1.2-2.0 while Lowell's scores range from 3.8-4.0. These scores reflect Lowell's population, which is greater in number than the other towns and comprised of more individuals who are in the lower to middle socio-economic position. As previously mentioned, there is also a greater diversity of races, cultures, and languages that potentially creates a barrier in accessing health services.

City	Population	Weighted Average 2019 CNI Score	Weighted Average 2016 CNI Score
Lowell	112,127	3.9	4.0
Lawrence	80,813	4.4	4.5
Haverhill	72,806	2.8	3.1
Fall River	106,051	3.7	3.9
New Bedford	106,968	4.0	4.0
Brockton	94,856	4.0	3.9
Worcester	181,136	3.8	3.8
Springfield	169,007	4.0	4.0

Lowell's CNI score is comparable with similarly-populated cities across the state with the exception of Haverhill as its CNI is noticeably lower with a score of 2.8. The cities in the table above were historical areas that were part of the industrial revolution with populations between 70,000 and 181,000. The average score of these seven mid-sized, urban cities is 3.8, indicating Lowell is not an exception.

Social Determinants of Health

Healthy People 2020 defines social determinants of health as "conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality of life outcomes and risks" (Social Determinants of Health, 2019). The County Health Rankings Model (2019) indicates that social and economic factors with physical environment contribute to health outcomes by 50%. In this assessment, we highlight relevant resources including built environment, social environment, housing, food access, violence, education, and employment. An assessment of the impact of social factors on health revealed how health-related behaviors were strongly shaped by socioeconomic and social factors (Braveman & Gottlieb, 2014). Factors that contribute to differences in achieving optimal health outcomes are referred to as health disparities (Disparities, 2019). Social constructs such as race and ethnicity have been linked to health disparities. Other characteristics include gender, age, socioeconomic position, geographic location, and sexual orientation (Baciu et al.,2017). By addressing these social determinants and inequities that exist in our region, we can improve health outcomes and lower health-related costs.

Built Environment

Built environment can refer to the physical aspects of communities we live and work in. During the 19th century, crowded and unsanitary living conditions contributed to disease and epidemics. Although there has been a shift in public health focus toward chronic disease, the link between environment and public health remains prevalent (Perdue et al., 2003). The design of the physical environment can be used to facilitate healthy behaviors by promoting physical activity or accessing proper nutrition. However, it can also contribute to health inequalities for vulnerable individuals due to population or infrastructure density, access of public spaces and facilities, and functional integration to promote community engagement (Gelormino et al., 2015).

Environmental Justice

Environmental justice states that "all people, regardless of income or race, have the right to fair treatment and equal involvement in environmental issues, and have the right to live in environmentally healthy neighborhoods (MEPHT, 2019). When this principle is achieved everyone has the "same degree of protection from environmental and health hazards" in addition to the decision-making process in order to have a healthy environment (EPA, 2019). This is different from environmental inequality or environmental injustice which is when "a specific social group is disproportionately affected by environmental hazards" (Brulle & Pellow, 2006).

Table 3 – Environmental Justice

Community	EJ Criteria	Percent of Block Groups in EJ	Percent of Population in EJ Block Groups
Billerica	Minority		3.3%
Chelmsford	Minority	4.5%	3.0%
Dracut	Income	5.6%	4.0%
Dunstable	--	--	--
Lowell	Minority Income English Isolation	87.5%	87.6%
Tewksbury	--	--	--
Tyngsborough	--	--	--
Westford	Minority	8.3%	10.2%
MA State	--	--	12.1%

Source: EOEEA (2010)

An environmental justice neighborhood is defined by the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) as a census block group that meets at least one of three criteria: median annual household income at or below 65% of statewide median income; 25% or more of the residents are a minority; or 25% or more of the residents are not fluent in the English language. Communities such as Lowell, where neighborhoods have more than one criteria and significantly higher percentages among key criteria are potentially more at risk for exposures from environmental and health hazards.

Open Space

Table 4 – Percent of Land Use – Open Space

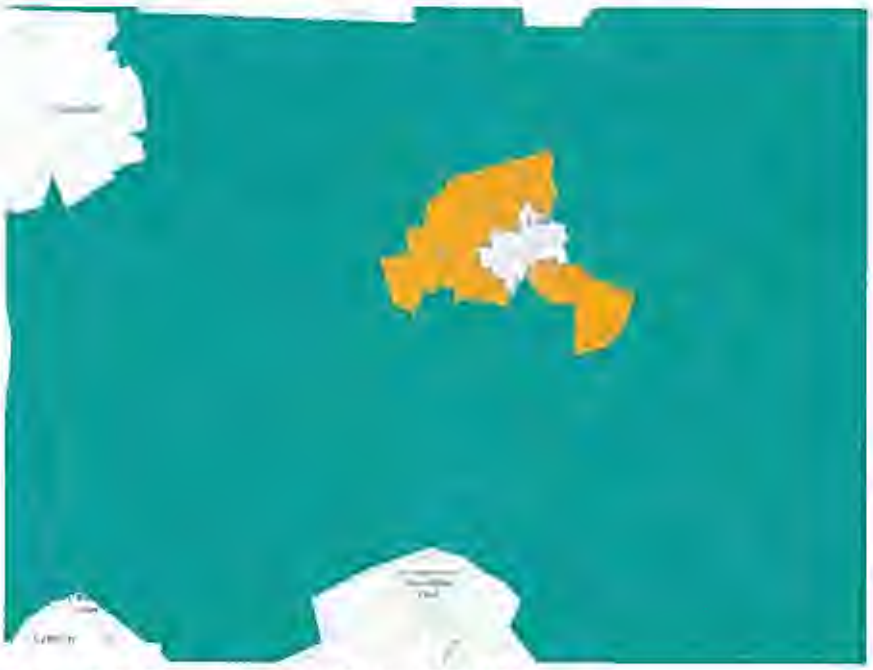
	Agriculture	Forest	Open Space	Recreation
Billerica	1.1	38.2	5.6	1.7
Chelmsford	1.7	37.1	5.9	1.5
Dracut	4.4	41.3	6.5	1.1
Dunstable	7.9	69.4	6.8	0.5
Lowell	0.2	14.9	5.1	3.4
Tewksbury	2.6	40.6	8.1	2.2
Tyngsborough	2.9	57.5	3.5	2.3
Westford	2.3	56.9	6.1	1.8

Source: MEPHT Community Profiles (2019)

Within the Greater Lowell area, there is an average of about 6% of land use dedicated as open space and less than 2% for recreation. Despite being a predominantly urban city, Lowell has the greatest amount recreation space with 3.4%. The Lowell-Dracut-Tyngsboro State Forest spreads over 1,000 acres of these three communities, including 6 miles of trails. More than half of the land in Dunstable, Tyngsborough, and Westford is forest. Dunstable has the greatest percentage of land for agriculture at nearly 8% followed by Dracut with more than 4%.

Food Environment

Figure 5 – Greater Lowell CHNA Food Atlas Map



Source: USDA Economic Research Service, ESRI (2017)

Results from the USDA's Food Atlas indicate a majority of the Greater Lowell Region as Low Access at ½ and 10 miles based on the 2015 Census tracts (Food Access Research Atlas, 2017). Census tracts are subdivisions of counties determined by the Bureau of Census to be able to collect and compare results of the U.S. Census that is completed every ten years. The areas colored green are tracts where at least 500 people or 33% of the population lives farther than ½ mile in urban areas or 10 miles in rural areas from the nearest supermarket. The orange areas also include this Low Access measure in addition to being Low Income. Low income tracts have a poverty rate of 20% or higher or those with a median income less than 80% of the state median family income. There are at least 13 census tracts in Lowell that are both Low Income and Low Access areas.

Childhood Lead Poisoning

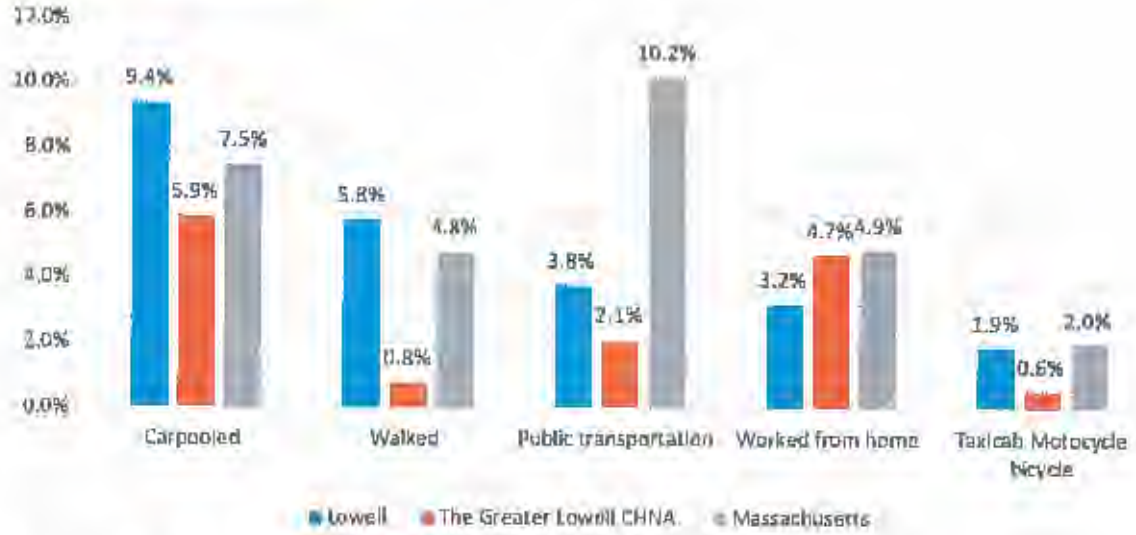
	Lead in Homes (%) (Percentage of houses built before 1978)	Lead Screening, 2017 (%) (Percentage of children age 9 months to less than 4 years screened for lead)	Prevalence of BLL ≥5ug/dL (per 1000) (5-year annual average rate per 1,000 from 2013-2017 for children age 9 months to less than 4 years with an estimated confirmed BLL ≥5ug/dL)	High Risk Status (as of 2016)
Billerica	65	71	7.9	No
Chelmsford	66	78	7.2	No
Dracut	51	72	4.4	No
Dunstable	39	93	Below state level, unstable	No
Lowell	79	68	28	Yes
Tewksbury	51	72	6.5	No
Tyngsborough	38	84	6.4	No
Westford	43	76	8	No
MA State Total	71	73	19.2	

Source: Massachusetts Environmental Public Health Tracking, Community Profiles

Another important determinant of health are risk levels associated with the living environment. A community is deemed as a high risk lead community if it meets three criteria based on: the number of old houses in stock, the percent of families with low to moderate income, and rate of first-time blood lead levels ≥10 µg/dL that occurred within the past 5 years. The reference level of 5 micrograms per deciliter (µg/dL) was set by the Center of Disease Control and Prevention (CDC) to identify children with elevated blood lead levels (Lead, 2019). Based on these measures, Lowell is the only community in the Greater Lowell region with a high risk status. Although the percent of homes with lead and the percent of lead screenings of the towns of Billerica and Chelmsford are relatively close, the prevalence of blood lead levels greater than or equal to five micrograms per deciliter is much lower than Lowell's prevalence (7.9 and 7.2 compared to 28).

Transportation

Figure 6 – Mode of Transportation to Work



Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

Transportation access and commuting time and style impact an individual's health and wellness. The most common mode of transportation to work for all areas was to drive alone. A higher proportion of residents of the Greater Lowell CHNA reported driving alone (84.6%) than those of Lowell (75.8%) or Massachusetts (70.7%) (not shown). The mean travel time to work for residents of Lowell is 25.8 minutes, for the Greater Lowell CHNA the mean travel time is 30.4 minutes and in Massachusetts the mean travel time to work is 29.3 minutes (not shown). Following driving alone, the most common modes of transportation to work for Lowell residents is to carpool (9.4%) or walk (5.8%). For the Greater Lowell CHNA, after driving alone the most common modes of transportation are carpooling (5.9%) and working from home (4.7%). For the state of Massachusetts, after driving alone the most common mode of transportation is to utilize public transportation (10.2%) followed by carpooling (7.5%).

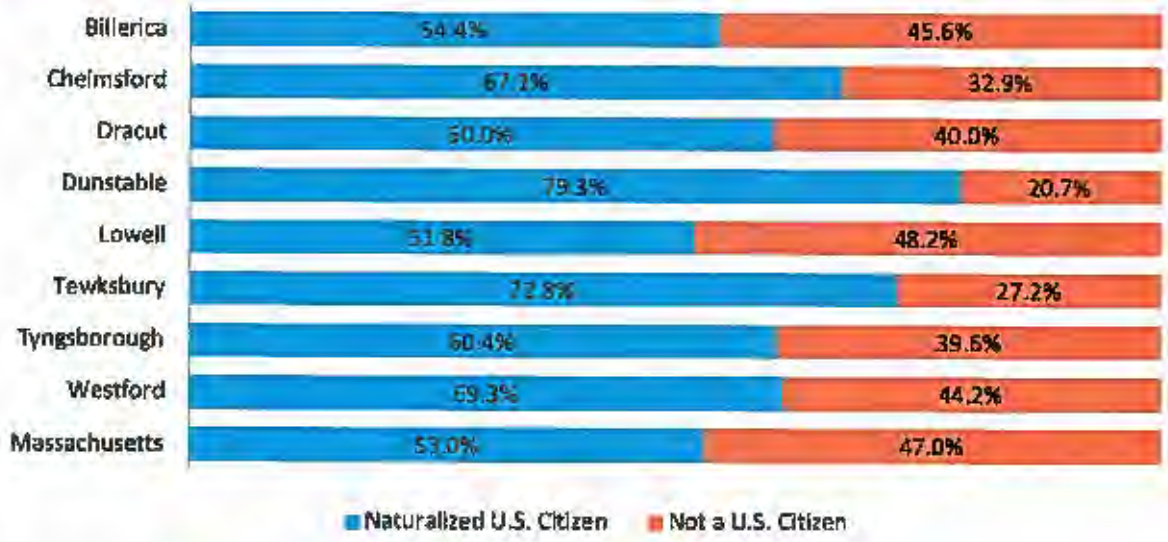
Social Environment

Social environmental factors include but are not limited to social connections, social participation, social cohesion, social capital and a neighborhood's collective efficacy (Woolf & Aron, 2013). The stability of social connections and relationships strongly influences health behavior. Social support is a mechanism that can also enhance health. It is theorized that the support that people who have immigrated to the United States provide to each other increases their health outcomes despite their level of income and education compared to other groups (Matthews et al., 2010). Having the ability to build and maintain relationships with one another through trust and norms develops this social capital.

Community Teamwork, Inc. is a community action agency, regional non-profit housing agency, and community development corporation that serves over 50,000 people with low incomes across towns of Middlesex and Essex Counties (About Us, 2019). In a report of their 2017 Community Needs Assessment the cities and towns of Billerica, Chelmsford, Dracut, Lowell, Tyngsborough, and Westford were some of the areas represented. The top three community strengths mentioned by their respondents were a sense of community and social connections, diversity, and the number of resources that exist to help people. Other strengths mentioned were a positive sense of identity, sense of pride in the community, and appreciation of history and culture (Community Needs Assessment, 2017).

Immigration

Figure 7 – Citizenship Status of Residents Born Outside the United States

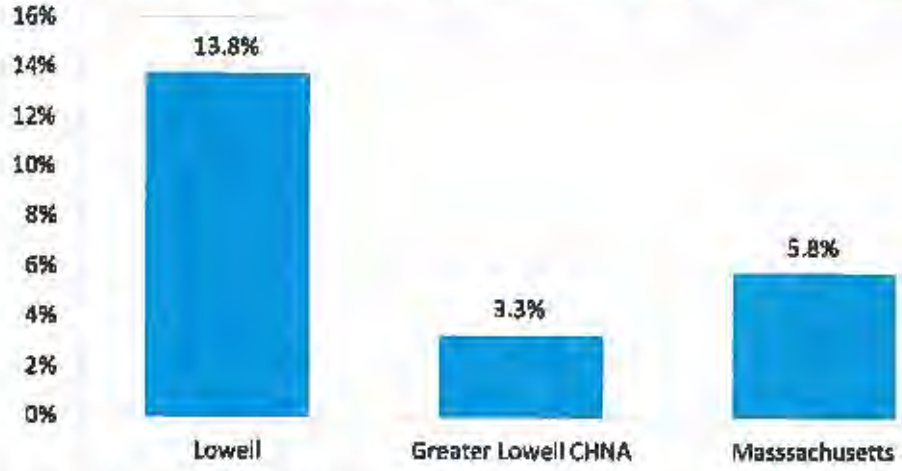


Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

As previously mentioned, Lowell has the greatest percentage of residents who were born outside the United States. Of this cohort, less than 50% are not currently U.S. Citizens and nearly 52% are naturalized citizens. Compared to the statewide level, Lowell has a slightly greater proportion of residents who were born outside the United States, who are not U.S. citizens (48.2% versus 47.0%).

Language

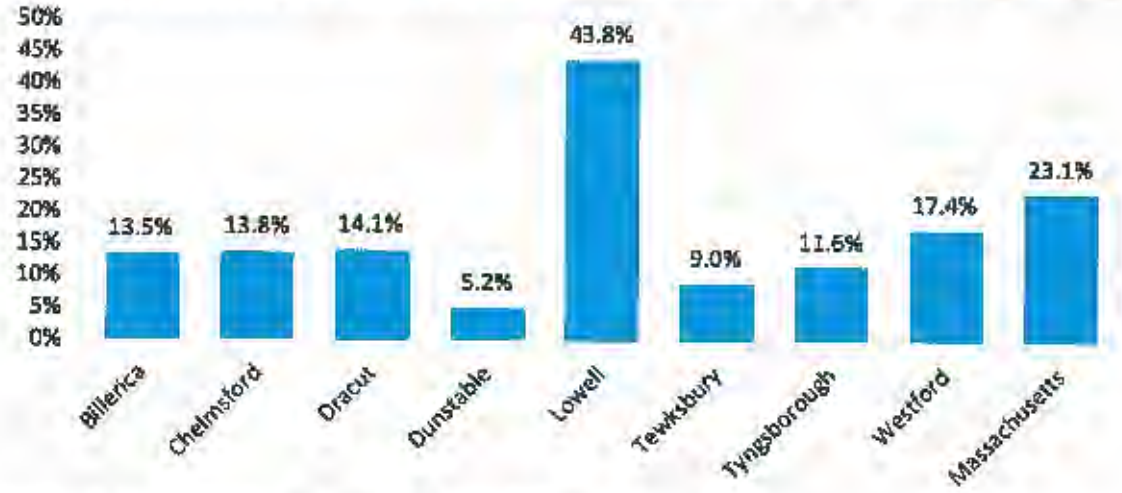
Figure 8 – Percent of Households with Residents Who Speak Limited English (All)



Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

Communication is an integral part of social cohesion. Language ability can impact health and access to services. Despite interpreter services that may exist, individuals with limited English proficiency tend to experience higher rates of medical-related errors, poorer clinical outcomes, and lower quality of care compared to counterpart individuals who speak proficient English (Green & Nze, 2017). At least 14% of all households in Lowell are households with residents who speak limited English. This is more than double the rate of the state level (5.8%) and three times the rate of all the communities of Greater Lowell (3.3%).

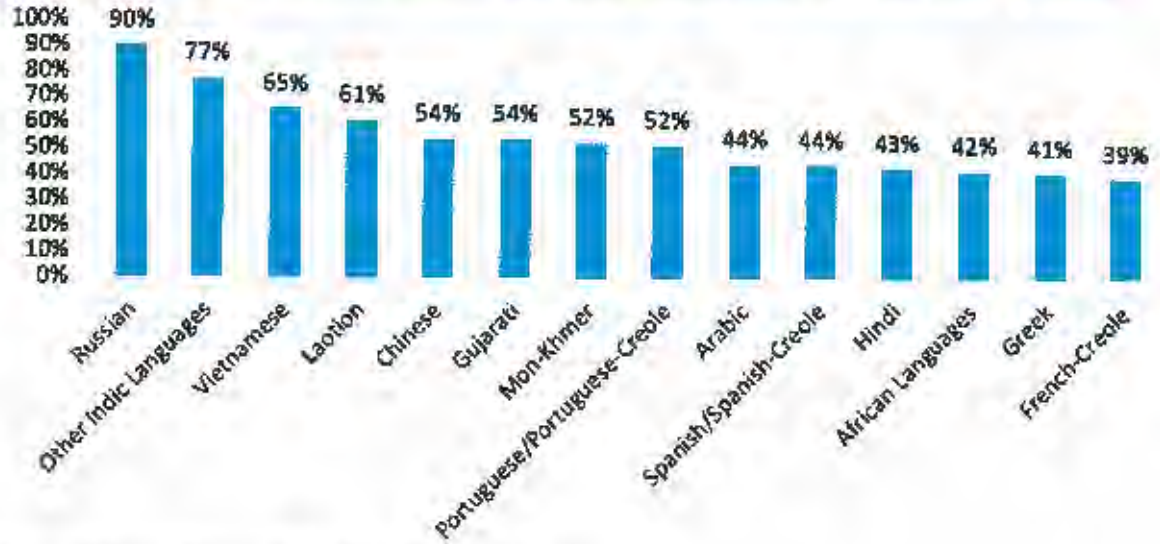
Figure 9 Percent of Population 5 Years and Over Who Speak a Language Other than English



Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

Nearly 44% of the population in Lowell speaks a language other than English at home, whereas the statewide level is at 23.1%. Within the Greater Lowell area, Westford has the second highest rate at 17.4% followed by Dracut, Chelmsford, and then Billerica. At least 95% of the population of Dunstable speaks only English.

Figure 10 – Languages Spoken at Home that Speak English Less than "Very Well" in Lowell



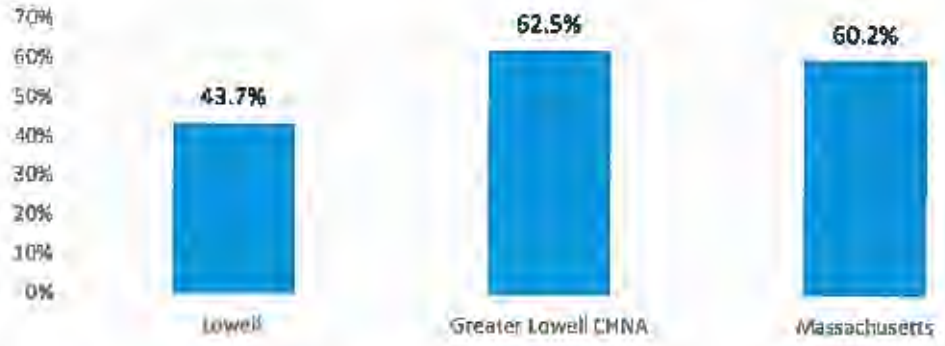
Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

Following Khmer and Spanish, the most popular spoken languages in Lowell are Portuguese or Portuguese Creole, African languages, Vietnamese, French, Laotian, and Gujarati (not shown). Lowell represents the second largest Cambodian-American population in the country with more than 12,000 residents who speak Khmer. More than 52% of those residents older than 5 years old speak English less than "very well." About 44% of the Spanish or Spanish-Creole speaking community also speak English less than "very well." Within the small population of Russian speaking residents, 53 of the 59 individuals (90%) speak English less than "very well."

The most popular languages other than English spoken by residents of Westford include Spanish or Spanish-Creole, Chinese, Hindi, French, and then Portuguese or Portuguese-Creole (not shown). Fewer than 10 of the residents in Westford speak Laotian. All of these individuals were categorized as speaking English less than "very well." This is also true for 85.5% of the Korean-speaking community.

Voting

There is a potential association between voting participation and health due to implementation of social policies or indirectly measuring social capital (BARHII,2015). In communities where there are higher levels of participation, there is also greater social capital. Higher social capital is associated with lower mortality rates and better health outcomes. In areas with lower voter participation of vulnerable populations, there is greater risk for reductions in social resources intended to support them.



Source: Massachusetts Midterm Election 2018 Results via NBC News

The 2018 voter turnout in Massachusetts was generally very high. Since it was a midterm election the actual turnout is significantly lower than a presidential election. In Massachusetts, about 2.75 million people cast a ballot in the 2018 election for a voter turnout of 60.2%. The voter turnout of the Greater Lowell region was higher than the state at 62.5%. Within the Greater Lowell area, Westford had the highest turnout with 70% of registered voters casting a ballot, and Lowell had the lowest turnout at 43%.

Voter turnout showed how active citizens are in their government on a state and federal level, as a significant economic indicator in the United States. Multiple studies have shown that higher income strongly correlates to higher voter turnout (Akee, 2019). The reason for this is not entirely clear, but there are a few possible explanations. Since education makes it easier for people to consume political information and education is linked to wealth, this might be a driving factor in the correlation. It is also possible that more education gives people a greater sense of civic duty, or they believe more strongly in the benefits of voting. Other possible reasons may include the fact the voting can be a costly activity in which you need time, skills, information, health, and transportation in order to participate, and that higher income provides people with such resources that make voting easier. Whatever the case, higher levels of income generally correlate with higher voter turnout rates in national elections (Simeonova et al., 2018).

Housing

Evidence of housing quality and accessibility has been known to be closely associated with health and morbidity (Krieger & Higgins, 2002). Chronic respiratory conditions can be exacerbated from environmental exposures from poor ventilation to pest infestations. Overcrowding in a residential space allow infectious disease to spread. Old housing stock or housing instability increases the risk of asthma, lead exposure, and malnutrition for developing children as well.

According the Out of Reach 2018 report, it is not possible for a person to afford a two-bedroom rental at the fair market rate while working a 40-hour week at minimum wage anywhere in the country. The federal standard for affordability indicates that no more than 30% of a household's gross income should be attributed to rent and utilities. Households are "cost burdened' if a household is paying over 30% of their income and "severely cost burdened" if they are paying over 50% of their income.

Lowell's median home value to median household income ratio, the basic measure to determine housing affordability was 4.95. This is the highest ratio compared to all Greater Lowell communities, making Lowell the least affordable community for existing residents in the area. Like the previous assessment in 2016, Lowell 's HUD Metro Fair Market Rents Area (HMFA) remains at the fourth most expensive area in Massachusetts (Out of Reach, 2018). This HMFA includes the cities and towns of CHNA-10 and towns of Groton and Pepperell. The minimum hourly wage to afford a two bedroom apartment in the Lowell HMFA is $26.77 per hour based on the 2018 Fiscal Year Fair Market Rent. The annual income needed to afford a two-bedroom is $55,680 or $4,640 per month without paying more than 30% of income on housing. With a minimum wage job ($11.00/hour) in 2018, a person would have to work 97 hours in one week to afford a two-bedroom apartment. In the table below, the percentage of rental units and owner costs that spend 30% or more of their household income is indicated for each city and town.

Table 11 – Housing Affordability

	Gross Rent as Percentage of Household Income		Selected Monthly Owner Costs as Percentage of Household Income		Median Home Value/Median Household Income	Median Home Value	Median Household Income
	Percent Units 30%+	Total Occupied Units Paying Rent	Percent Units 30%+	Total Housing Units with a Mortgage			
Billerica	43.4%	2,628	29.7%	8,627	3.74	371,500	99,453
Chelmsford	42.8%	2,085	24.8%	7,881	3.46	368,500	106,432
Dracut	51.1%	2,531	31.6%	6,382	3.52	304,800	86,697
Dunstable	13.2%	38	28.3%	803	3.32	460,600	138,700
Lowell	57.7%	21,282	35.1%	11,831	4.95	240,500	48,581
Tewksbury	51.3%	1,417	31.5%	7,138	3.81	357,700	93,817
Tyngsborough	40.8%	549	23.1%	2,773	3.44	348,300	101,303
Westford	42.9%	829	22.1%	5,481	3.51	458,600	138,006
Massachusetts	50.1%	918,649	31.5%	1,122,877	4.75	351,600	74,167

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

Table 12 – Housing Characteristics of Occupied Housing Units

	MA	Billerica	Chelmsford	Dracut	Dunstable	Lowell	Tewksbury	Tyngsborough	Westford
% Lacking complete plumbing	0.4%	0.4%	0.1%	1.3%	0%	0.9%	0.4%	0%	0.3%
% Lacking complete kitchen	0.8%	0.6%	1.9%	0.6%	0%	0.8%	0.7%	0%	0.3%
% No telephone service	1.7%	1.2%	1.9%	0.2%	0%	2.8%	1.3%	1.9%	1.1%

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

Table 13 – Overcrowding

	MA	Billerica	Chelmsford	Dracut	Dunstable	Lowell	Tewksbury	Tyngsborough	Westford
% of Units with 1 to 1.5 Occupants per Room	1.3%	1.2%	0.5%	1.4%	0%	2.7%	0.5%	1.9%	0.8%
% of Units with more than 1.5 Occupants per Room	0.7%	0.6%	0.2%	0.1%	0%	1.3%	0%	0.4%	0.3%

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

Substandard housing and overcrowding can potentially affect a person's physical and mental health. Limited affordable housing can force families into older homes with water leaks and poor heating or cooling systems. It can also lead to families or individuals moving in together to cover costs. Having more than two people in a bedroom or more than one family in a residence is considered overcrowding. Healthy People 2020 explain that these living conditions can increase risk of infectious disease, mental health issues, increased stress, deteriorating relationships and decreased sleep (Housing Instability, 2019). Data from the Census indicates that 1.3% of the units in Lowell has overcrowding. Nearly 2% of units in Chelmsford lack complete kitchen facilities and more than 1% of units in Dracut lack complete plumbing facilities.

Table 14 – Point-in-Time Homeless Counts in Lowell (2010-2018)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total # of Households	290	333	306	335	333	348	344	324	381
Total # of Persons	526	589	534	559	588	635	594	658	783

Source: HUD Continuum of Care

Figure 15 – Point-in-Time Counts of People Experiencing Homelessness in Lowell (2010-2018)

Source: HUD Continuum of Care

A 2018 study found that in communities where rental costs surpass 23% of income, there are more people experiencing homelessness. When this threshold passes 32%, homelessness increases at a faster-rising rate and can lead towards a homelessness crisis (Glynn & Casey, 2019). This supports the federal standard of the 30% threshold and when it is surpassed, there is an increased risk of housing insecurity and homelessness. Nearly all the communities of CHNA-10 exceed this 30% threshold for rental properties. More than half of all the rental units of Dracut, Lowell, and Tewksbury cost more than 30% of household incomes.

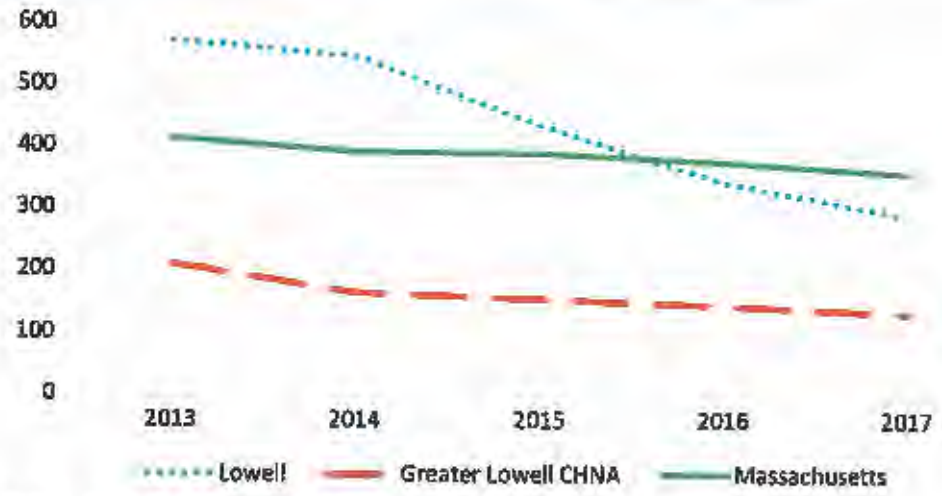
The counts of people experiencing homelessness provided by the U.S. Department of Housing and Urban Development (HUD) show that between 2010 and 2018 there has been an overall increase of people experiencing homelessness in Lowell. Between 2011-2012 and 2015-2016, there was a decrease. However, between 2016 and 2018, there was an increase of nearly 200 more individuals experiencing homelessness accounted for in Lowell. Experiencing homelessness can have significant and chronic impacts on health and mortality.

The Continuum of Care (COC) Homeless Populations and Subpopulations Reports by the Housing of Urban Development (HUD) Exchange provides Point-in-Time (PIT) counts of sheltered and unsheltered homeless persons. Of the communities in the Greater Lowell CHNA-10, Lowell is the only area that is a COC with yearly counts.

Violence

Exposure to crime or violence can lead to short and long-term effects. An individual can also be exposed from direct victimization, witnessing, or hearing about it in the community. Childhood trauma from any type of exposure to violence or crime increases the risk of poor mental and behavioral health such as depression, anxiety, and increased aggression (Crime and Violence, 2019). Having repetitive exposures to crime and violence increases the risk of negative health outcomes (Margolin et al., 2010).

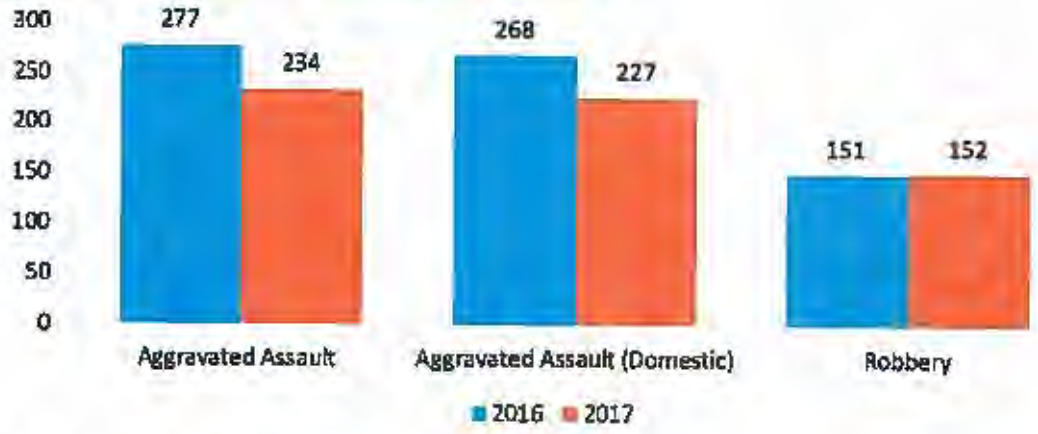
Figure 16 – Incidents of Violent Crime per 100,000 (2013-2017)



Source: FBI-Uniform Crime Report Program

Violent crime from the figure above refers to murder, non-negligent manslaughter, rape, robbery, and aggravated assault. For all three geographical areas, there has been a decreasing trend of incidents of violent crime between 2013 and 2017.

Figure 17 – Lowell Crime Summary (2016-2017)



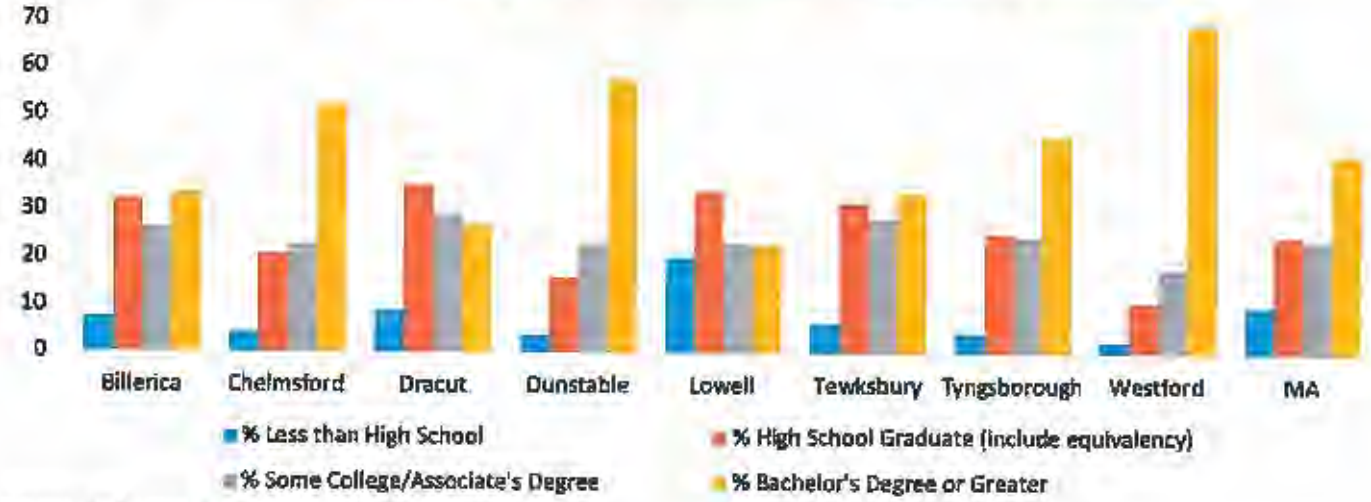
Source: Lowell Police Department Compstat Crime Summary

Between 2016 and 2017 the number of crimes attributed to aggravated assault that were both domestic and nondomestic decreased by 15% and 16% respectively (Lowell Police Department, 2018). There was one more incidence of robbery in 2017 than 2016. When combined, Lowell's violent crime rate decreased by 12% in 2017 compared to 2016.

Education

The level of educational attainment is a predictor of health outcomes (Education, 2019). Obvious returns on education include higher earnings from job opportunities. Postsecondary education has become a minimum requirement to afford resources needed for better health (Shankar et. al, 2013) In the United States, there has been a large gap of health outcomes amongst individuals with high and low education (Telfair & Shelton, 2012) Education provides an individual with "hard and soft skills" that create better opportunities to gain economic and social resources. It also allows people to navigate health care resources, participate in patient-physician communication and make better lifestyle and personal health choices. Other findings related to health include lower life expectancy of those without high school diplomas and an eight percent increase of diabetic prevalence of those without a high school education compared to college graduates (Zimmerman, Woolf & Haley, 2014). Those with higher education are also less likely to engage in risky behaviors and lower exposure to stress.

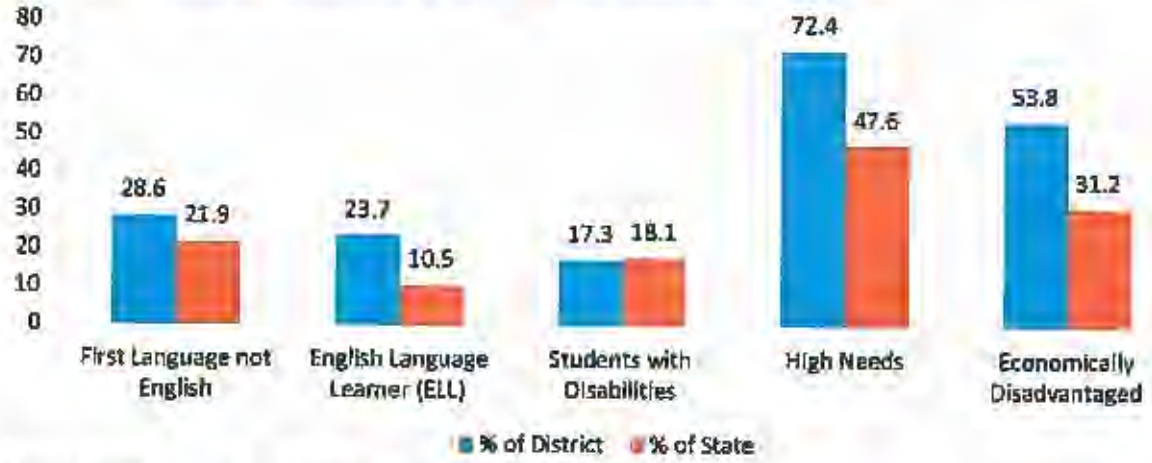
Figure 18 – Percent of Population by Highest Level of Education for Population 25 Years and Older



Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

The highest level of educational attainment for about one third (34.2%) of Lowell's population 25 years and older was graduation from high school. In Westford, graduating high school was the highest level of education for about 11% of the population. However, 69.1% of Westford's population who are 25 years and older has a bachelor's degree or greater. Chelmsford, Dunstable, Tyngsborough and Westford had higher percentages of adults who attained a bachelor's degree or higher than the Massachusetts state level. These four communities, along with Billerica and Dracut also had a lower percentage of adults with less than a high school education than the state level.

Figure 19 – Selected Populations of Lowell Public Schools (2017-2018)



Source: Massachusetts Department of Elementary and Secondary Education

Lowell has twice as many adults over the age of 25 years than state level and greater population and diversity than other towns in the Greater Lowell region. Lowell also has a greater percentage of public schools students whose first language was not English, who are designated as an English language learner (ELL), economically disadvantaged, and have high needs compared to state levels. The percentage of students with disabilities is the only category that the state level is higher, but by less than 1%. Students who are part of at least one state-administered program are considered economically disadvantaged. These programs include the 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. The measure of high needs comes from the number of students accounted for the other four categories (low-income, economically disadvantaged, ELL or former ELL, and students with disabilities) divided by the adjusted enrollment of students.

These factors further contribute to the graduation rates seen in the table below, as Lowell has a graduation rate of less than 80%. Dracut and Lowell also had a higher drop-out rate (5.3%) than the state (4.8%).

Table 20 – 4-Year Graduation Rate (2018)

	MA	Billerica	Chelmsford	Dracut	Dunstable	Lowell	Tewksbury	Tyngsborough	Westford
% Graduated	87.9	87.2	92.9	88.8	--	79.6	92.6	96.9	98.0
% Dropped Out	4.8	2.9	3.9	5.3	--	5.3	2.0	0.8	0.5

Source: Massachusetts Department of Elementary and Secondary Education

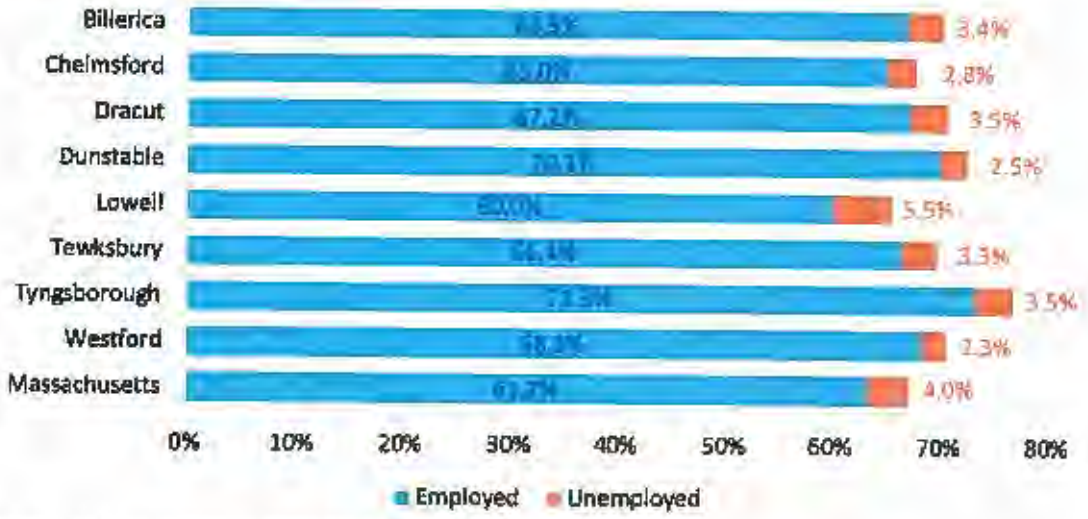
Employment

Employment allows individuals the opportunity to seek health benefits and engage in health promoting activities. Employee-sponsored health insurance provides health benefits for the employee and their dependents to access health services. A steady income and job security influences where people choose to live and what products they can afford (Employment, 2019).

However, employment type can negatively impact health. Exposures include but are not limited to: long working hours, repetitive motions, workplace hazards and unsafe working conditions, which worsen health overtime. Individuals considered "working poor" are those whose income falls below the poverty line. Rates of the individuals classified as "working poor" are twice as high amongst people who identify as Black and Hispanic compared to people who identify as White or Asian American (BLS, 2016). Socially disadvantaged groups are more likely to work in areas with low-paying wages but high occupational hazards and health risks. Despite being a working group, they are also less likely to experience the health benefits or have sick leave as those with higher earnings.

Unemployment also influences physical and mental health due to lowered income and living standards, increased stress, and behavioral health risks (RWJF, 2008). Similarly, job insecurity also contributes to poorer health. Changes of unemployment or loss of income makes it difficult to afford or seek nutritious food or health care. Risky coping behaviors of stress such as alcohol use or not taking vacation or sick leave increases health risks. Stress-related illnesses include high blood pressure, heart attack, stroke, and heart disease.

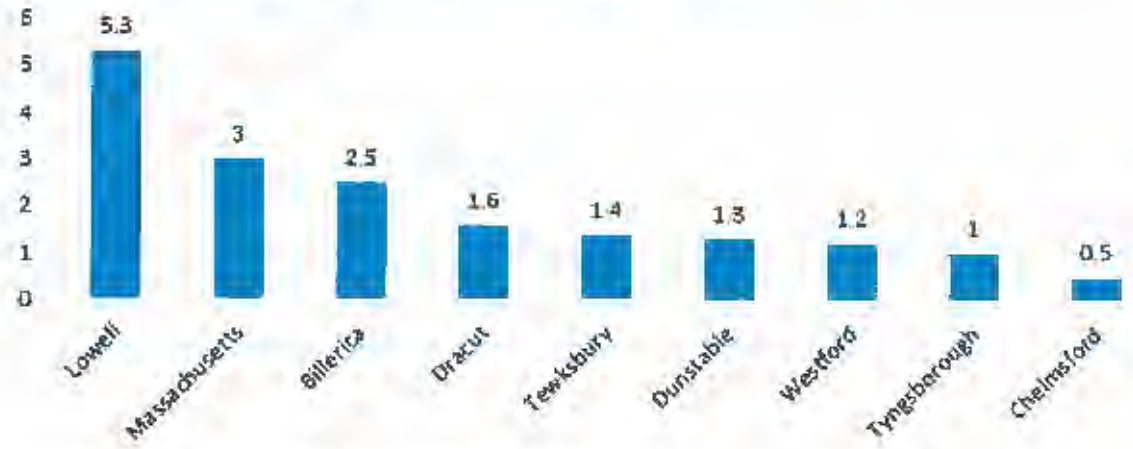
Figure 21 – Percent of Employment



Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

The average employment rates in the communities of The Greater Lowell CHNA (67.2%) are above the state rate of 62.7% (not shown). Compared to other communities of The Greater Lowell CHNA, Lowell has the lowest percent of individuals who are employed (60.0%) and highest percentage of individuals who are unemployed in the labor force at 5.5%. (Note: This is not the same as unemployment rate, see Basic Demographics Table.)

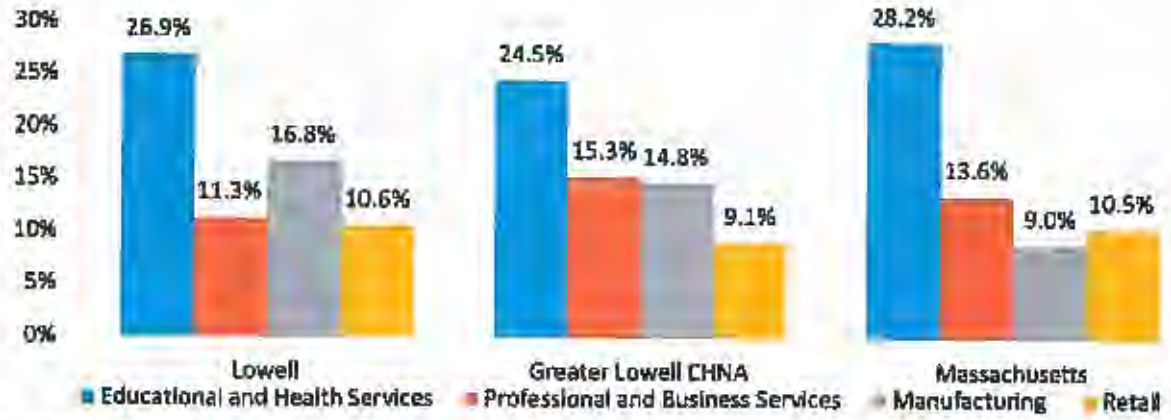
Figure 22 – Percentage of Population with No Health Insurance



Source: U.S. Census Bureau, 2013-2017 ACS 5-Year Estimates

Excluding Lowell and Billerica, less than 2% of the populations of the towns of Greater Lowell do not have any form of health insurance. The percentage of residents who did not have health insurance in Billerica was closer to the state level that was at 3%. Lowell had the highest proportion of people without public or private insurance at more than 5%.

Figure 23 – Top 4 Industries of Employment



Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates

The top four industry sectors for residents of Lowell, The Greater Lowell CHNA communities, and state of Massachusetts are shown above. For all communities the supersector of Education and Health Services employs the most people. Within the supersector, the U.S. census groups educational services with health care and social assistance. The second highest supersector of Greater Lowell CHNA communities and state are the Professional and Business Services. This includes professional, scientific, and technical services, management, administrative and support, and waste management and remediation services. Only 11.3% of Lowell residents work in these fields. Nearly 17% of Lowell's working populations are employed in the manufacturing sector, which is higher than the rate of Greater Lowell CHNA and state.

Greater Lowell CHNA Survey Summary

The 2019 Greater Lowell CHNA included a comprehensive community health and safety survey. Inclusion of the survey portion was informed by stakeholder efforts to increase community participation in the CHNA, particularly in target populations. The CHNA Survey collects data cross seven domains: Demographics, Community Health Resources, Health Needs and Issues, Community safety, Incidence of Health Issues and Access Barriers, Service Utilization History, and Open Response Feedback. **See Appendix C for complete rank order lists of the data summarized in this section.*

SURVEY DEVELOPMENT AND DATA INTERPRETATION

An inter-agency, cross-disciplinary survey team convened to draft the 2019 Greater Lowell Community Health Needs Assessment (GLCHNA) Survey. Drafting was guided by three principles for the final data set.

Principle 1: The survey was designed to be *evidence-based.* It reflects the known social determinants of health as well as physiological basis for health.

Principle 2: The survey was designed with *application* in mind. The goal of this project was to create a baseline data set that could be deployed in community, health, and research settings to guide intervention and promotion efforts that yield the greatest and most immediate positive benefits to our community.

Principle 3 The survey was intended to be , particularly of populations that are regularly identified in community health research as high-risk or high-need groups while simultaneously being underrepresented as participants in survey data.

The data summary provided in this report attempts to provide interpretation of the data with these three principles in mind.

Demographics

A total of 448 paper surveys and 907 online surveys were completed by Greater Lowell residents, for a total count of 1,355 completed surveys. Residency representation was approximately proportional according to population level representation for Lowell, Billerica, Chelmsford, Westford, and Dunstable. Dracut and Tewksbury were slightly underrepresented compared to their density of the total Greater Lowell population, and Tyngsborough was overrepresented compared to its population density in the total area.

	Count	% survey	% population
Total Count	1,355		
Lowell	539	39.8%	38%
Dracut	113	8.3%	11%
Tyngsborough	108	8%	4%
Tewksbury	93	6.9%	11%
Billerica	210	15.5%	15%
Chelmsford	194	14.3%	12%
Westford	87	6.4%	8%
Dunstable	11	.8%	1%

Participants were able to select multiple race and ethnicities categories that best represented their understanding of their racial and ethnic backgrounds. The table below includes the frequency count per each race/ethnicity category, the percent representation of each category in the survey, as well as a comparison category that indicated the area representation of the total population according to census data.

	Count	% survey	% population
Total Count	1,550		
White	1194	77%	72%
Black/African American	56	3.6%	5%
American Indian or Alaskan Native	14	.9%	0%
Asian/Asian American	126	8.1%	12%
Middle Eastern/Arabic	7	.5%	NA
Native Hawaiian/Pacific Islander	3	.2%	0%
Hispanic or Latino/a	126	8.1%	8%
Other	24	1.6%	1%

Though a full report of demographics can be found in the Community Health Needs Assessment Survey Report, other notable demographics of interest include:

- Average participant age: 47.1
- Majority participant gender: female (78%)
- Lesbian, Gay, Bisexual, Transgender, and Queer participation: 8.3%
- Non-citizen participation: 5.6%
- Annual Income Below $25,000: 16.2%
- Not working/unemployed participation: 26.3%
- Participants from multilingual homes: 30%

COMMUNITY RESOURCE NEEDS AND PRIORITIES

Participants assigned three priority ranks to their top three priority community resources. Total Rank Count was calculated by summing the number of times an item was ranked as one, two or three. The top priority community resources for all participants are: **Affordable Housing** (35.9% total rank count), **Access to Mental Health Services** (34.0%), **Access to Healthy Food** (30.0%) **High-quality Public Education** (27.7%) and **Substance Abuse Prevention Programming** (23.3%).

COMMUNITY HEALTH NEEDS AND PRIORITIES

Participants assigned three priority ranks to their top three priority community health needs and issues. The top priority community needs for all participants are **Mental Health Issues** (41.9% total rank count), **Substance Addiction** (33.8%), **Alcohol Abuse/ Addiction** (31.2%), **Cancer** (18.9%), and **Nutrition** (18.2%).

COMMUNITY SAFETY NEEDS AND PRIORITIES

Participants assigned three priority ranks to their top three priority community safety issues. The top priority community safety issues for all participants are **Domestic Violence** (31.7%,) **Bullying** (30.8%), **Drug Trafficking** (24.3%), **Sexual Assault/Rape** (23.1%), and **Unsafe/Illegal Gun Ownership** (20.1%).

HEALTH ISSUE PREVALENCE

In order to assess health issue prevalence, participants were asked to indicate if they or someone they know has ever or is currently dealing with a range of specific health issues.

The most frequently reported issues for participants themselves are **Anxiety** (33.4%), **Depression** (26.2%), **Vision Problems** (25.5%), **Bone, Joint, and Muscle Illness** (21.2%), and **High Cholesterol** (17.6%).

The most frequently reported issues for people participants know are **Cancer** (65.6%), **Alcohol Abuse/Addiction** (65.2%), **Diabetes** (63.6%), **High Blood Pressure** (61.4%), and **Depression** (60.4%).

HEALTH BARRIER PREVALENCE

In order to assess the prevalence of barriers to accessing health services, participants were asked to indicate if they or someone they know has ever or is currently dealing with a range of known health access barriers.

The most frequently reported barriers for participants themselves are **Care Received from a Healthcare Provider was Negative** (19.9%), **Cannot Afford Medication** (16.8%), **Office is Not Open During Times When I am Available** (16.0%), **Cannot Afford Mental Health Services** (12.3%), and **Cannot Find a Provider Accepting New Patients** (11.3%).

The most frequently reported barriers for people that participants know are **Cannot Afford Medication** (46.9%), **Cannot Obtain Health Insurance** (38.1%), **No Transportation to Medical Facility** (33.0%), **Cannot Afford Mental Health Services** (32.6%), and **Cannot Afford Long-Term Health Services** (29%).

PARTICIPANT COMMENTS

Participant comments were coded into thematic groups using NVivo software. Approximately 154 participants opted to include written comments. Nine themes emerged in the analysis of participant comments.

Access Barriers and Burdens: challenges participants have experienced in trying to access health services. These barriers include cost, transportation limitations, and systems failures like wait-times and understaffing.

Mental Health and Substance Use Disorders: concerns or personal experiences with mental health needs, services, or drug and substance problems.

Safety and Community Relationships: concerns about violence, safety, community climates and the role of police.

Environment, Space and Housing: concerns about the physical landscape of the community. These concerns include lack of housing, green space, and walkability.

Specific Illnesses: comments that reference participants own experience with specific illnesses or their concerns about specific illnesses that were not explicitly addressed in the report.

Negative Service Experiences: specific participant descriptions of their negative experiences seeking healthcare or other social services.

Suggestions and Requests: participants' specific ideas about how we could improve the health and safety of our community and its members.

General Negative and General Positive: general comments about either positive or negative thoughts or experiences with health and safety or with the survey itself.

SURVEY CONCLUSIONS

In line with most public health data and data from CHNA listening sessions, survey participants indicated that their top priority health needs are Mental Health, Substance Addition, Alcohol Abuse, Cancer, and Nutrition. The ability to address these needs are significantly impacted by a range of environmental and social health determinants; most specifically, survey participants cite Affordable Housing, Access to Services (including availability, cost, and physical access to via transportation), Public Education, and Prevention Programming as highest priority resources for maintaining health lives.

Importantly, the summary for this report only includes findings for the total participant group. Priorities and incidence rates change when considering, for example, responses by town, by race, by citizenship status, by age, by incomes, etc. Some of these differences are included in Appendix C to illustrate these discrepancies, and should be considered when making determinations about health priorities, needs, and barriers for specific populations and geographic locations.

FINDINGS ABOUT COMMUNITY HEALTH AND NEEDS FROM LISTENING SESSIONS/INTERVIEWS

The following statements are expressed as opinions and perceptions from participants of listening sessions and key informant interviews.

Overall Perception about Community Health

The majority of the key informants described the overall health of the community as '*good*' and described residents as relatively healthy. They based the determination of 'relatively healthy' on the community having adequate emergency services, effective collaborations with health agencies and organizations, and increased mental health awareness. It was mentioned in most listening sessions that communities in the Greater Lowell area face behavioral and mental health challenges, especially anxiety and depression, across all age groups. A professional from a listening session stated, "*I have seen folks with a lot of mental health issues in the last 6 or 9 months, a lot of new cases.*" Most professionals mentioned that communities in the Greater Lowell area are stigmatized with substance use disorder and alcohol use disorder, which lead to continuous visits to the emergency department. They also acknowledged that teens and adolescents are a high-risk population for mental and behavioral health problems and indicated they suffer from emotional distress due to family-school-work life imbalance. Participants indicated that parents also face socio-emotional distress and may eventually resort to substance use. Hence, mental and behavioral health problem remain a community health burden. In addition, the lack of support services especially during early teenage years adds to the toll of poor community health and safety.

Most key informants acknowledged that the lack of dual diagnosis services has negative consequences on the overall health of communities. Most clients have co-occuring mental and behavioral health concerns and the health care system is unfortunately limited in treatment of co-morbidities in a concurrent manner. Participants mentioned the increased demand for integrated care due to the side effects from long-term medication use, especially among the elderly. For instance, listening session participants indicated that medications used to

treat mental health problems may have negative consequences on physical health, including diseases such as diabetes, obesity, high cholesterol and heart diseases. A majority of the listening sessions acknowledged that the high prevalence of diabetes and obesity may also be attributed to a lack of appropriate nutrition.

The general health of the Westford population was described as 'good' by a number of professionals in the listening sessions as health care services are not significantly utilized by community members. In addition, the Chelmsford population was perceived to have more seniors, creating geriatrics-oriented health needs. However, some professionals from a listening session mentioned that the 'Healthy' Westford and Chelmsford is a misconception since they have specific neighborhoods within the community with important health needs. A professional from a listening session stated, *"Most people in these communities are still looking for ways to get healthier."*

TOP HEALTH PROBLEMS IN THE COMMUNITY

This section lists in order of importance, the top health problems identified during 20 listening sessions and 17 key informant interviews. Complementary public health data about these topics is provided in the following section.

Mental Health Issues

Mental health issues, such as depression and anxiety, were identified as the top health problem facing Greater Lowell communities by most listening session participants. For instance, it was stated that sleep disorders associated with migraines and visual problems are common among youth, that loneliness is predominant in the aging population, and that children may increasingly develop substance use disorders due to academic pressures. Participants noted that a significant number of children in elementary school are seeing mental health specialists and are on antidepressants and anti-anxiety medications. The rationale is that children lack coping skills in managing family-school-work lifestyle challenges. In addition, it was perceived that more children suffer from Attention-Deficit Hyperactivity Disorders (ADHD). Other vulnerable populations identified include families of children on the autism spectrum and pregnant women who have limited access to health care services and are at risk of compromised mental health. Participants of the TeenBlock listening sessions mentioned that racism also brings socio-emotional stress to youth.

Substance Use/Alcohol Disorders

The majority of the listening sessions and key informant interviews acknowledged that mental health issues often co-occur with substance use disorder. One of the most vulnerable populations to substance use disorders are elders. Substance use disorders were mentioned as a major concern among people experiencing homelessness due to chronic pain or from opioid use such as methadone and suboxone use. Most key informants acknowledged that individuals with co-occurring illnesses experience opioid use disorder. A key informant specifically mentioned cocaine, heroin, and fentanyl as common among people with substance use disorders. In addition, a professional who was part of the Lowell Community Health Center Physicians and Staff listening session acknowledged that organ failure from previous substance use disorder related health issues often leads to future complications. Patients with substance use disorders often perceive unfair treatment and judgement by health care providers. A professional from one of the listening sessions stated, *"When I had pancreatitis it took me three months to go to the hospital because you get judged [for having an alcohol use disorder]."* This can cause individuals to be reluctant to identify as a patient seeking health care related to substance use. Most professional groups from the listening sessions mentioned that substance use disorder often stems from previous history of inappropriately managed physical trauma. A professional at a listening session stated: *"Sometimes the substance abuse disorder, addiction, starts at the hospital after a drug prescription."*

Obesity

The majority of listening sessions cited obesity as a major issue. Professionals in some listening sessions acknowledged mobility is a difficulty among the adult population due to joint-related chronic pain

that is predominantly associated with obesity and aging. It was also mentioned that sedentary living also adds to the disease burden. A professional at a listening session noted, "*Assisted technology is a double edge sword with muscular atrophy until you eventually can't walk or move independently.*" Others remarked that most elders who suffer from joint-related problems eventually develop disabilities. Obesity was also mentioned as a burden among children.

Diabetes
The majority of professional and community listening sessions identified diabetes and related health concerns as a top health problem. Several participants noted the risk of cellulitis and amputations among people with diabetes due to inadequate self-management including insulin use, and lack of a primary care provider to authorize prescription refills. Diabetes was observed to be increasing tremendously among children and prevalent among refugees.

Infectious Diseases
Most participants at the listening sessions remarked that communities in the Greater Lowell area experience infectious diseases including Human Immunodeficiency Virus (HIV) that lead to Acquired Immunodeficiency Syndrome (AIDS). One professional from a listening session stated: "*Clients who started the HIV medications in the 80's now have full-blown AIDS since medications from those days only slowed down the manifestation of AIDS, unlike recent medications.*" In addition, communities in the Greater Lowell area were stated to have a high burden of Hepatitis. Another professional in a listening session commented: "*Now that there are new medications for infectious diseases, people think it is not an issue anymore and so they share needles.*" Some of the listening sessions recognized the predominance of specific types of Hepatitis in specific populations including Hepatitis A among people who inject substances and people experiencing homelessness, and Hepatitis C among the refugee community. Only one listening session mentioned the recent resurgence of vaccine preventable diseases like measles.

Asthma and Chronic Obstructive Pulmonary Disease (COPD)
Respiratory illnesses, especially Asthma, were reported by listening session participants as a significant concern among children and elders. Smoking was stated to be common among the elderly population, predisposing individuals to respiratory disorders such as asthma and COPD. Asthma was also reported to be prevalent in the refugee population.

Other health related issues raised by listening session participants include cancer and cardiovascular diseases. A few listening sessions acknowledged increased cancer prevalence in the community. Although specific cancers were not mentioned during the listening sessions, it was stated that most cases of cancer were associated with smoking.

POPULATIONS AT GREATEST RISK

Older Adults
Older adults were named as a population at great risk by many participants. A professional at the Elder Services of the Merrimack Valley stated, "*People are living much longer and there are not enough resources.*" Loneliness and isolation, especially social isolation, were stated to be common among seniors. Seniors were thought to not be as enthusiastic to venture into the community and engage in social activities, preferring to be home. In addition, listening session participants indicated many elders may be overweight and obese because they do not leave the house due to the cold weather. Those who live with family may not be easily convinced to leave the house. It was reported that there are limited transportation resources for the elderly to and from doctor visits. Additionally, listening session participants expressed that seniors find it difficult to maneuver online resources and there is an increased need for home services. Another professional stated, "Seniors are home-bound and isolated. *Therefore, even with resources out there, they do not even know how to access them. No one is there to take care of them.*"

Population of People Who Work for Low Wages
Several listening session participants noted that many people who work for low wages typically do not qualify for assistance because their income is marginally above the income limit guideline. According to the Lowell Early Childhood Council listening session, the increase in minimum wage has worked against families not to qualify for services. Individuals of moderate income do not qualify for MassHealth (cannot afford health insurance with high deductibles) and Supplemental Nutritional Assistance Program (SNAP). People who work for low wages also have limited access to mental health services.

Homelessness
Many listening session participants noted that people experiencing homelessness have limited access to medical services and regularly have long wait times for medical care. Some people experiencing homelessness believe that they do not receive quality care because of substance use disorders. During the Hunger and Homeless Commission listening session, a professional stated, "*I think poverty also impacts mental health.*" Another professional also stated, "*Clients who have mental health issues might be put on a hold for 3 to 5 days.*" Other participants mentioned that when people experiencing homelessness experience substance overdoses, they may refuse medical treatment. Additionally, many individuals experiencing homelessness are hesitant to accept emergency shelter. Acquiring housing with requirements for abstinence from substances is a cumbersome process with limited accountability and can delay recovery. Listening session participants stated that many people experiencing homelessness have a criminal record which also creates complications. In addition, online resources may not be easily accessible because of barriers to access electronic devices (computers and phones).

Teenagers and Youths
Listening session participants cited several risk factors affecting youth populations. College students are at risk of housing instability due to low wages and lack of affordable housing. It was also stated that they experience food scarcity and housing problems that impact their emotional well-being and physical health. A professional at one of the listening sessions stated, "*I work in a food pantry. Lowell has food insecurity, about 23,000 people, increasing since 2011.*" There is a perceived increased proportion of teenagers experiencing poverty leading to food insecurity from limited access to food. Listening session participants mentioned that although food stamps are available for low-income populations to access, it can be complicated for immigrant youth, non-English speaking communities especially due to health insurance constraints. Adolescents in middle and high school may face social anxiety, depression, psychosocial stress and suicides. Listening session participants stated that teenagers get the flu, strep throat, and common cold outbreaks in schools. Listening session participants also spoke to the fact that children in foster care are afraid to seek support for basic needs. Moreover, there are cases of malnutrition among families from refugee camps because of limited healthy diet options here in the United States. Part of the issue was stated to be limited access to healthy foods not acculturated to the American diet. Listening session participants indicated that there are nohealthy fresh food options in food pantries. Another professional stated, "*People who travel from other parts of the world may weigh 90 pounds back then and now weigh 300 pounds.*" (See Figure 35 & 36 for data of youth obesity, overweight, or underweight.) Several participants noted that teenagers and adolescents who are at risk of emotional distress from family-school-work life imbalance go into marijuana use, vaping and alcohol use. (See figure 52 for information regarding prevalence of alcohol, tobacco, and other substance use among high school students.)

Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ) Community
Several health professionals noted limited services available to the LGBTQ community due to social stigma and marginalization in mainstream health, and a lack of awareness among providers of health needs within this community. Listening session participants mentioned that teenagers who identify as transgender can be stigmatized due to oppositions from their parents to seek hormone therapy. Therefore, they can be limited in their ability to make medical decisions for their own health and well-being, thus potentially increasing their risk of mental health issues.

Immigrants/Refugees
The majority of the listening sessions agree that immigrants are at high risk for adverse health outcomes. Participants reported that many immigrants fear seeking services because of their immigration status, which negatively impacts their options, especially with limited health insurance. People who are non-naturalized immigrants may not only live in fear but can be unaware of what health services are available. Several listening sessions noted that the immigrant community including refugees and asylum seekers find the US health system very difficult to understand, especially the health insurance system. This may be because the immigrants speak multiple languages while available language translation agencies only provide services for a few languages (mostly Spanish and Khmer). Some non-English speaking communities also have difficulties navigating the US health system and adapting to health policies different from the cultural norms of their home country, especially with prenatal care. Additionally, listening session participants stated that the non-naturalized immigrant communities may be reluctant to access health resources because of fear of deportation. Participants also mentioned that individuals who emigrated for less than 5 years do not qualify for MassHealth and non-citizens only qualify for emergency MassHealth. Several physicians acknowledged that reproductive health resources are limited in general. Additionally, teenagers were identified as being at great risk as they struggle with racism, as well as being an immigrant or refugee. Many immigrants were also stated to be unable to access western medicine partly because of language barrier and inadequate translation of native medicine by interpreters. A professional from one of the listening sessions stated, "*There are interpreters, but often only one on duty. They have a family member that can speak for them, but doesn't speak or understand the medical part of the language in English or [the] native language.*"

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

Cambodian Community
A member of the Cambodian community listening session stated, "*The Cambodian community has chronic pain and trauma. Most of the Cambodian communities are genocide survivors or the children of genocide survivors.*" Several participants contended that many members of the Cambodian community are predisposed to substance use especially among refugees who have a diagnosis of Hepatitis due to alcohol. Post-traumatic stress disorder (PTSD) and dementia was stated to be common among Cambodian elders. Another community member stated, "*Cambodian elders with PTSD believe that it does not exist as a disease.*" In addition, according to participants in the Cambodian community listening session, about 40% or more of their community are unhealthy because severe health conditions such as high blood pressure, heart disease, diabetes, and kidney disease go untreated for long periods. Many are at high risk because of a lack of compliance to scheduled doctor visits and regular check-ups due to language barrier, transportation, and negligence. A community member asserted, "*I worked with elders of the Cambodian diaspora. As you know, a study showed that 65% have mental health related issues and these lead to diabetes and depression 'very severe.'*" Listening session participants expressed fear of receiving bad news from the doctor and believe that home remedies such as coining and cupping have curing abilities. Another community member said, "*They are not educated enough to know that some cold symptoms are similar to pneumonia or other viruses that can become deadly without proper treatments.*" In addition, cancer is a community health concern according to the Cambodian community listening session.

African Community
Many from this listening session expressed concern about the health of African community members. Several noted that people who work for low wages have problems with seeking medical care because they will have to call out of work. A member of the African community mentioned that women are healthier than men because men do not pay close attention to their health. Health problems of concern of African community participants include increasing Hepatitis due to alcohol use disorder, marijuana use

by youth and obesity due to a lack of healthy eating habits that could also lead to diabetes, stroke and heart disease. Participants also mentioned the lack of knowledge about resources available to assist with health insurance including coverage and termination as well as avoidance of 911 calls in the case of an emergency because of fear of hospital and ambulance bills. Therefore, it was expressed that many believe that the lack of knowledge about the health care system in general increases the predisposition to depression and psychological stress. It was stated that suicides are common in the African community. African seniors were identified as a high-risk population. Although African seniors have access to health insurance, cultural differences, especially language barriers may make it difficult for seniors to communicate their health concerns to their primary care provider. Participants asserted that elders are more comfortable to return to their home country to seek health care from someone they identify with culturally. As community member stated, "*We don't have an African senior center like Cambodians or Spanish. They stay home because of the cultural and language barriers.*"

Spanish-speaking Community
Listening session participants stated that members of the Spanish-speaking community worry about suicidal deaths due to long wait time before a mental health specialist sees patients. Some suffer from overdoses from substance use disorders and psychosocial stress. Alcohol use was also expressed as a concern in this community. Other health problems of concern of participants include obesity among youth, cancer, and infectious diseases such as Tuberculosis, Hepatitis (A, B and C) and acquired immunodeficiency virus (AIDS) caused by the human immunodeficiency virus (HIV). Latino seniors were identified as vulnerable, as they can lack support from their families and the community, while not receiving adequate attention. Participants stated that many community members believe that some providers are not warm enough during doctor visits. One listening session participant stated, "*There is a gap between the American culture and Latino culture on how they treat the elderly.*"

Portuguese-speaking Community
The Portuguese-speaking participants identified diabetes, cardiovascular disorders, unhealthy diets, and dental care as top health problems facing the community. Nevertheless, participants acknowledged that they feel well treated by staff at Lowell General Hospital and appreciate that they do not face long wait times for their appointment, although managing the health insurance system can be difficult. They also expressed appreciation for the ease at which signs make it easy to navigate the hospital environment. A member of the Portuguese speaking community stated, "*I appreciate being well treated by medical staff here, because in Portugal it's not like that, they are harsher.*" Participants noted that the translation services could be improved and recommended that Brazilian translators should translate for patients from Brazil and Portuguese translators should translate for those patients originating from Portugal to improve the quality of communications.

Major Strengths of Health Services
Listening session participants were asked about the strengths of health services in the Greater Lowell area. The most frequently mentioned strength was the Lowell Community Health Center (LCHC) because its health care providers work closely with collaborating agencies and partners. LCHC's Opioid Based Addiction Treatment Program and the Greater Lowell Health Alliance Substance Use Prevention Taskforce were also mentioned. In addition, teenagers and youths have access to sex health education and school fitness programs. LCHC provides comprehensive care and social support services to patients. A professional stated, "*Lowell Community Health Center serves half the population of the city with trusted organization and translators too.*" Due to the strength of these collaborations, participants stated that the existing delivery system, which includes social services, has the ability to effectively address social determinants of health.

In addition to the robust community health center program offerings, the services at Lowell General Hospital were also identified as a strength. The majority of participants from listening sessions for organizations acknowledged that Lowell General

Hospital (LGH) has a well-established elderly care program that includes robust home health and hospice services, transportation services, and Medicaid service expansion. The availability of two LGH campuses has made access to emergency care services easy. The availability of urgent care facilities has eased the workload in the emergency department. Although a majority of organizations and community members mentioned the lack of mental health services in the Greater Lowell area, a few listening sessions indicated that substance use disorder services in the Greater Lowell area might have a promising future because of collaboration between the Massachusetts Department of Mental Health and LGH.

A few listening sessions acknowledged the following additional strengths of LGH: language interpretation services through video box, the availability of a Tuberculosis clinic, and the ability of patients without health insurance to enroll with MassHealth during walk-in visits. The Lowell Community Health Needs Assessment process was also acknowledged as a strength to the Greater Lowell area as it involves discussions with key stakeholders regarding their health needs and recommendations to improve the health and well-being of the community.

An additional strength to the health care system is the availability of a grant-funded recovery coach shared by the Tewksbury, Dracut and Chelmsford police departments for mental health related concerns. A key informant in the police department acknowledged that the Middlesex County Sheriff's office is invested in addressing the opioid crisis as a significant health care concern.

Major Weaknesses of Health Services

Key informants and listening session participants were asked to identify major weaknesses of the health services in the Greater Lowell area. A shortage of health care providers was noted, especially psychiatrists and health care personnel specialized in violence or sexual assault. Patients experience long wait times with specialist referrals and expressed concern that medical conditions could get worse or become fatal. Another professional from a listening session stated, "*If teenagers are dealing with suicidal, self-harming behaviors, urgent cares are not provided in the best ways for these specific needs.*" Such patients who go into short-term care programs can get discharged without referrals. This process is indicative of reduced consistency in the continuum of care, especially if patients run out of medications.

In addition, most participants mentioned that the time spent with patients during doctor visits is limited. "*Providers only have sometimes 15 minutes with a patient and this can be a disadvantage to a patient dealing with domestic violence.*" There can be long wait times during an emergency room visit according to a community listening session participant. A professional from one of the listening sessions stated, "*When they get you into the emergency room, there are not enough cubicles to put you into. So you are put into the hall until they can put you in a room.*"

The majority of the listening sessions acknowledged the increased need for culturally competent health care providers to serve the Greater Lowell area due to its ethnic diversity. For instance, some ethnic traditional/holistic approaches to health are considered malpractice in the United States.

Most listening sessions noted the limitations in language translation and interpretation services in the health system as there are not enough interpreters and translators for multiple languages. The majority of the listening sessions indicated a limitation in the availability of bilingual health care providers and support groups to service the diverse Greater Lowell area. Language barriers were also noted impact the ability to utilize the transportation system especially with interpretation of maps. Listening session participants stated that patients are reluctant to see health care providers because they feel overwhelmed with language barrier and literacy issues. Another professional stated, "*There is a big difference between translator and interpreter. They translate information without the client understanding and the communication is broken.*" There is the lack of support resources for families with language barrier challenges, especially with domestic violence when the interpreter may be the family member responsible for abuse or assault.

There are limited health resources among people experiencing homelessness to meet demand, especially with substance use disorder and alcohol use disorder according to a professional at a listening session. Listening session participants mentioned a recent epidemic of fentanyl use disorder due to underlying mental or psychological problem. There was noted to be limited access to mental health services and unavailability of mental health professionals in school systems and after-school program. The lack of continuity of health services is a concern that was expressed at several listening sessions. One example given was when youths grow to adulthood, they do not have the same mental health personnel assigned to their case management. The capacity of mental and behavioral health services is limited in specialists' care and access to health services, increasing the toll of mental and behavioral diseases and illnesses. There are difficulties with navigating mental and behavioral health services, exacerbated by limited access and transportation problems. There are also high rates of absenteeism from schools due to substance use disorders among children, indicating a need for additional education among parents.

Barriers to Obtaining Health Services

When asked to identify barriers to obtaining health services, listening session and key informant interview participants noted transportation problems to be a predominant barrier to the health systems in the Greater Lowell area. Particularly challenging instances are during cold seasons, during emergency situations, or to a substance use treatment facility. Transportation is also more challenging for people with disabilities, and people who do not speak English according to most providers/professionals at listening sessions. For instance, patients may not be able to adhere to specialist referrals because it is difficult to navigate the transportation system, and language barrier is a challenge where there is need for communication with transportation personnel. Some patients cannot afford to pay for rides, especially families with children who have special needs. Listening session participants indicated that although MassHealth covers transportation, reservations have to be made four weeks in advance, even in cases of urgent need. Walking was mentioned to not be feasible with children and those with disabilities, especially during the winter season. In addition, refugees are required to be seen at a tuberculosis clinic on arrival into the United States but can miss appointments because the public transportation system is difficult to navigate.

Another potential barrier identified was low-income guidelines as a barrier for access to subsidized health care services in the Greater Lowell area. Several listening session participants stated that individuals and families who exceed the income limit for subsidized health care services cannot afford most health care plans, which results in delay of treatment of care. Specialized care centers may not accept Medicare and Medicaid covered patients. Listening session participants also mentioned that the MassHealth connector website is complicated and difficult to navigate. Participants expressed concern that health insurance policies and procedures could predispose patients to anxiety from the risk expensive self-pay care. A professional from one of the listening sessions stated, "*I am an amputee and I need a new prosthetic because the one I have is cracked, before the 5-year guarantee time for a new replacement. MassHealth could only approve a new one in about 6 weeks and if not approved, I would have to pay $10,000 to $14,000 out of pocket.*" Physicians acknowledged that the insurance system is a barrier to health care access because in some instances it does not allow patients to see different providers or make multiple visits in one day. Physicians also noted the lack of consistency in health insurance billing. Another professional also stated, "[Health care professionals] *didn't know what the cost for the treatment would be and told me to check with my insurance.*" Some listening sessions acknowledged that medical bills are on the rise with a negative impact on co-pays and medications. For instance, co-pays for health care support services such as physical and occupational therapy or that require multiple visits per week become a financial burden to patients. There are also limits to the number of provider visits endorsed by insurance companies, which is a challenge for patients with chronic, on-going medical concerns.

Listening session participants expressed concern that many mental health issues are undiagnosed due to stigma and discrimination for those with substance use disorders and mental health issues. Many individuals and families believe a social stigma exists when seeking behavioral health services. Listening session participants noted that patients can lack the awareness of the available health and social services needed to improve their health and well-being. It was also stated that health practitioners may also lack awareness to inform patients about health and social services, resources and benefits.

Some public health professionals mentioned that some areas have faced resistance to walkable communities, such as "Healthy Westford" because many residents do not want sidewalks in front of their houses. A professional at one of the listening sessions stated, "*They want all the health benefits and say they are a great healthy community, yet there is huge resistance.*"

Analysis of Public Health Data

To complement and supplement the qualitative listening session and key informant interview data and the quantitative current local survey data, this report also includes an analysis of publically available public health data. Dependent on data availability, data was presented over time, by community within the Greater Lowell CHNA, or compared between the City of Lowell, Greater Lowell CHNA, and the state of Massachusetts.

CAUSE OF DEATH

Figure 24 – Age-Adjusted Death Rate per 100,000 (2016)

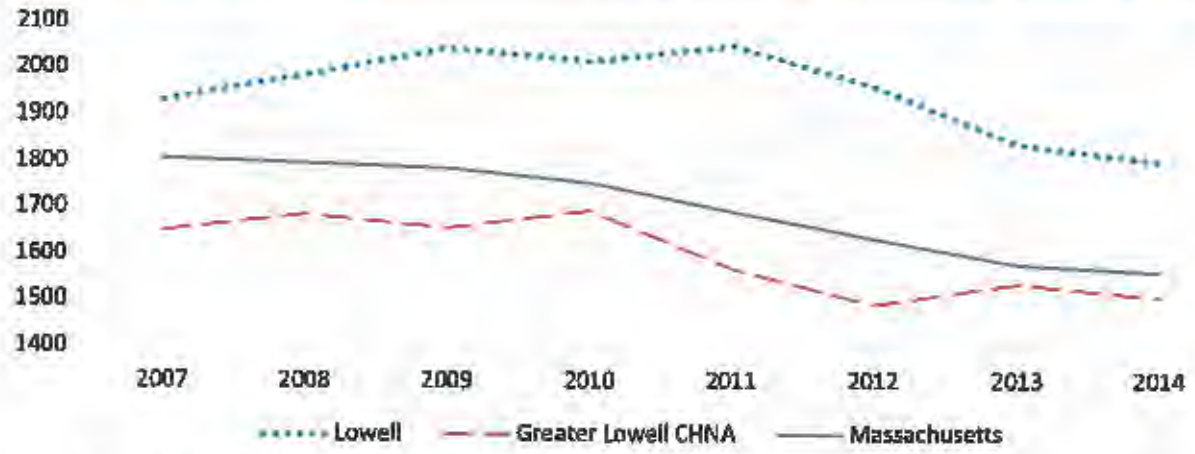
	Lowell		Greater Lowell (CHNA)		Massachusetts	
1	Heart Disease	165	Heart Disease	470	Heart Disease	11,923
2	Opioid related	67	Lung cancer	156	Lung Cancer	3,168
3	Lung Cancer	57	Opioid related	110	Chronic Lower Respiratory Disease	2,676
4	Chronic Lower Respiratory Disease	29	Chronic Lower Respiratory Disease	100	Stroke	2,468
5	Stroke	28	Stroke	81	Opioid related	2,034

Source: Massachusetts Vital Records, 2016

The leading cause of death in Massachusetts, the Greater Lowell CHNA, and Lowell in 2016 was heart disease at 11,923, 470, and 165 per 100,000 respectively. Opioid related deaths were the second highest cause of death in Lowell, at 67 per 100,000. Opioid related deaths were the 5th highest cause of death in Massachusetts and 3rd highest in the CHNA at 2,034 and 110 per 100,000 respectively.

CARDIOVASCULAR DISEASE

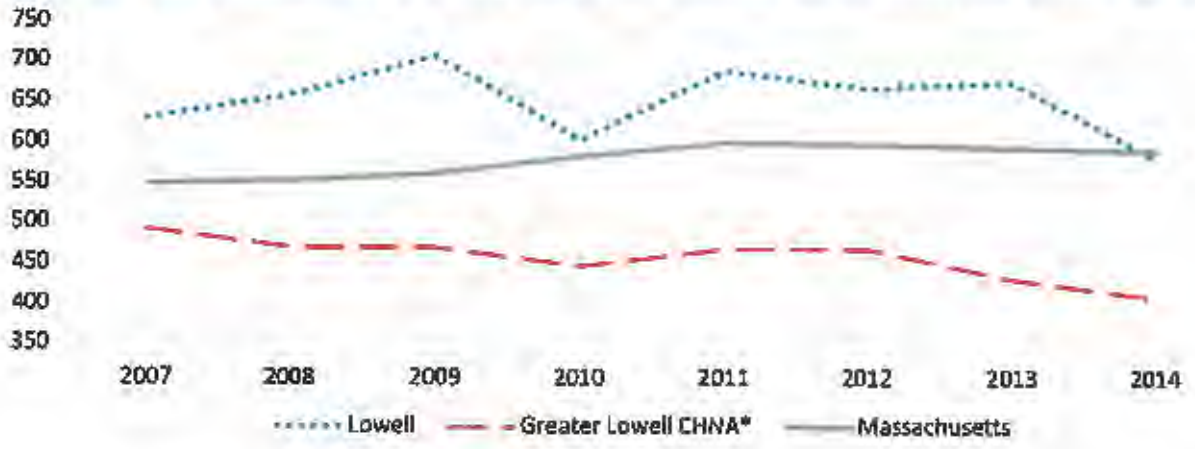
Figure 25 – Age-Adjusted Rates of Admissions/Hospitalizations for Cardiovascular Disease per 100,000



Source: Center for Health Information and Analysis (CHIA) via PHIT

Hospitalization rates for cardiovascular disease have consistently been higher in Lowell than rates at the State and CHNA levels overall. The highest hospitalization rate for Lowell was in 2011 with 1691.2 per 100,000. Since then, there has been a gradual decrease, with the lowest rate of 1798.5 per 100,000 in 2014. In 2014, the Massachusetts and Greater Lowell CHNA rates were at 1563.1 and 1505.3 respectively.

Figure 26 – Age-Adjusted Rates of Emergency Department Visits for Cardiovascular Disease per 100,000



Source: Center for Health Information and Analysis (CHIA) via PHIT

**Note: Dunstable not included in Greater Lowell CHNA data (Statistics from this area is suppressed to protect confidentiality when number of cases is ≤ 10.)*

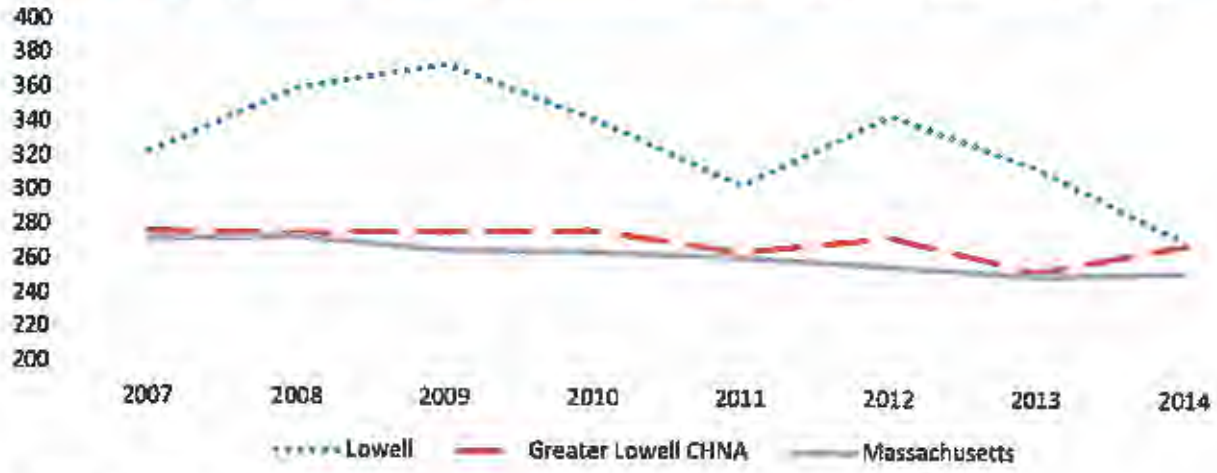
Until 2014, emergency department (ED) visits were higher in Lowell than other areas. In 2014 the statewide level rates were the highest at 590 per 100,000 than Lowell (579.8) and the Greater Lowell CHNA (407.1). Between 2013 and 2014, there was a 14% decrease in ED visits in Lowell with a change from 375.3 to 579.8. Although relatively stable compared to the other areas, there has been a consistent downward trend between 2011 and 2014 for statewide rates. The rates for the CHNA area have also been decreasing between 2012 and 2014 by about 13%.

Figure 27 – Percent of Angina or Coronary Heart Disease (CHD) Amongst Adults (2012-2014)

Source: BFRSS Results via PHIT

When major blood vessels become blocked or damage from plaque build-up and limit blood flow, a person can develop coronary heart disease (CHD). Angina or chest pain is the discomfort that occurs when the heart muscle does not receive the oxygenated or nutrient rich blood. Aggregated results from 2012, 2013, and 2014 indicate that more adults in Dracut report having angina or CHD with a prevalence rate of 4%. Lowell and Tewksbury had a prevalence rate of 3.6% to round out the top 3 communities. Tyngsborough and Westford had a prevalence rates less than 3%.

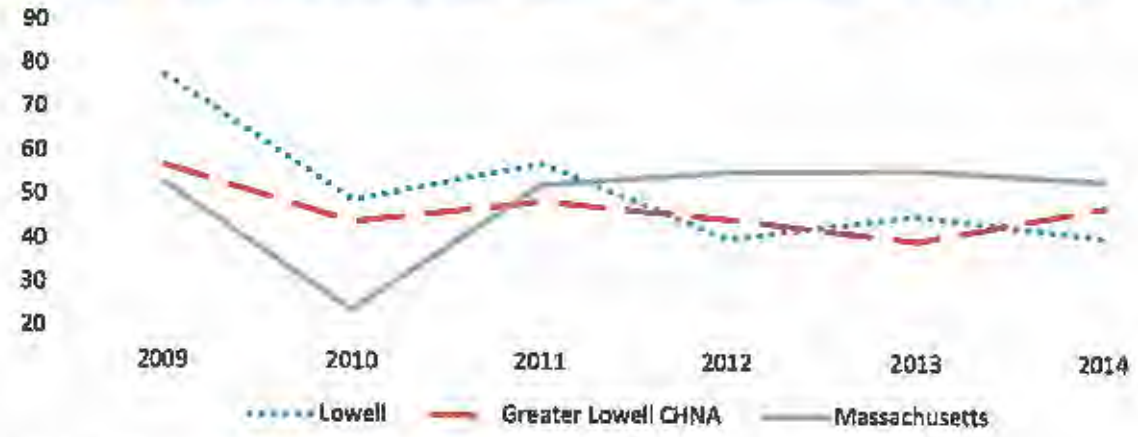
Figure 28 – Age-adjusted Rates of Hospital Admissions/Hospitalizations for Stroke per 100,000



Source: Center for Health Information and Analysis (CHIA) via PHIT

When blood flow to the brain is limited, brain cells damage and result in a stroke. The rates of hospitalizations related to stroke have been relatively high for Lowell compared to the other geographies with the highest rate of 374.6 per 100,000 in 2009. Beginning 2012, there has been a decreasing trend in Lowell with a 26.8% decrease by 2014 (from 345.9 to 272.8). By 2014 the rates of these hospitalizations were much closer to Greater Lowell CHNA and the overall state rates at 270.9 and 255.1 respectively.

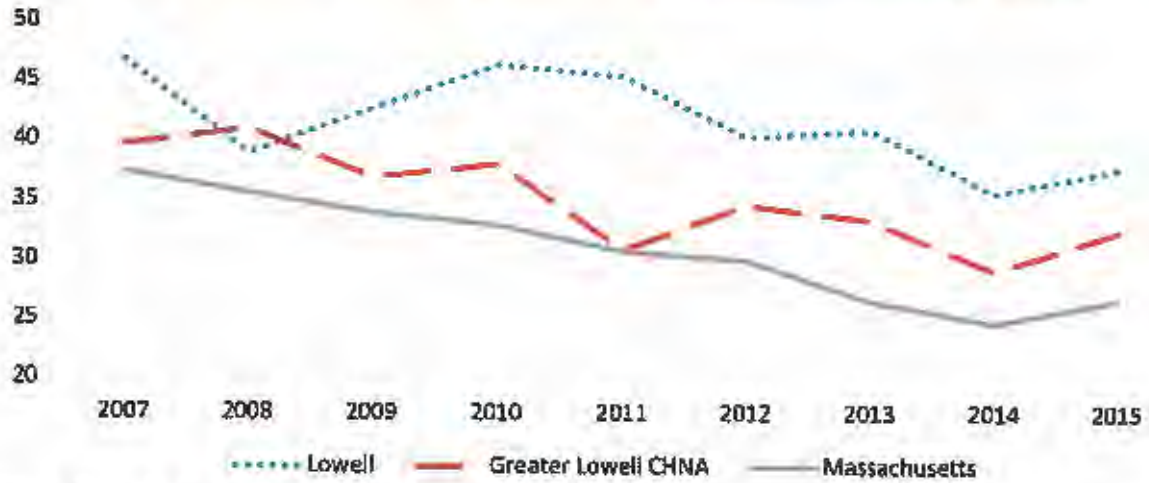
Figure 29 – Age-Adjusted Rates of Emergency Department Visits for Stroke per 100,000



Source: Center for Health Information and Analysis (CHIA) via PHIT

While hospitalization rates for stroke were higher for Lowell, the rates for emergency department (ED) visits for the state of Massachusetts were higher for this measure. Beginning 2010, there has been an increasing trend of ED visits at the state level with a dramatic rate increase of 28.8 more in 2011 (52.8) from the previous year (24.0). By 2014, the city of Lowell had the lowest rate of 41.4 per 100,000 when compared to Greater Lowell (48.2) and Massachusetts (54.2).

Figure 30 – Age-Adjusted Rates of Hospitalizations for Myocardial Infarction per 10,000

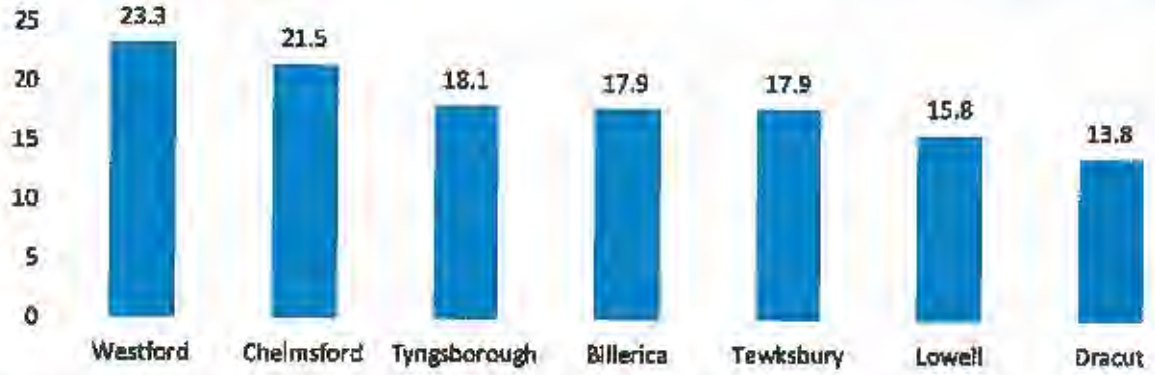


Source: Center for Health Information and Analysis (CHIA) via PHIT

A myocardial infarction is another term used for heart attack. When blood is not able to flow to the heart muscle from a blockage it can lead to tissue damage. Of the three geographic areas, Lowell has a higher rate of hospitalizations for myocardial infarctions than the Greater Lowell CHNA region and Massachusetts. Between 2008 and 2010 there was a 19.4% increase of hospitalization rates from 39 to 46.3 per 10,000. In 2014, all areas had its lowest rate of hospitalizations with 35.7 for Lowell, 29.1 for Greater Lowell CHNA, and 24.8 for Massachusetts. There was also an increase the following year.

DIET/OBESITY

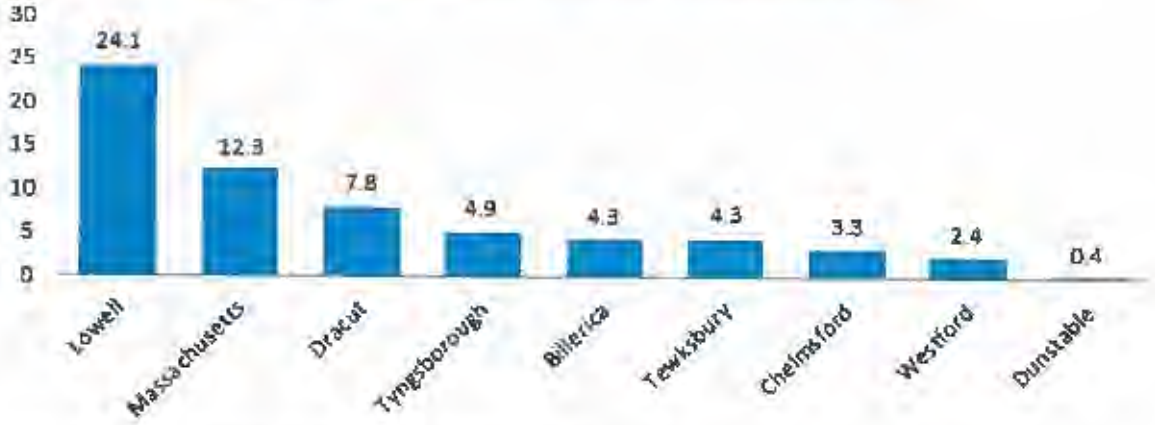
Figure 31 – Percent adequate fruit and vegetable intake amongst Adult (5+ Servings of Fruits and Vegetables Daily) (2011, 2013, 2015)



Source: BFRSS Results via PHIT

Aggregated results from the BFRSS show that more adults in Westford had the recommended five or more servings of fruits and vegetables per day at 23.3%. The community with the lowest percent of adults doing so was Dracut with 13.8%.

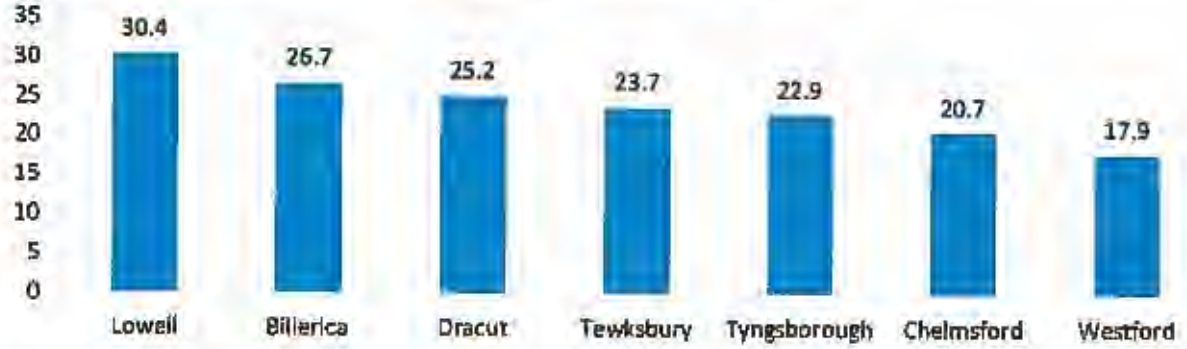
Figure 32 – Percentage of Population with Food Stamp/SNAP Benefits in Past 12 Months



Source: U.S. Census Bureau, 2013-2017 ACS 5-Year Estimates

The highest percentage of residents on Food Stamps or with SNAP benefits in the previous year was from Lowell at 24%. This is twice as much as the state average that was at about 12%. Within the Greater Lowell area, Dracut was the second highest at about 8% of their population. The proportion of the population in the other six towns who had these benefits was less than 5%, with Dunstable being the lowest at less than 1%.

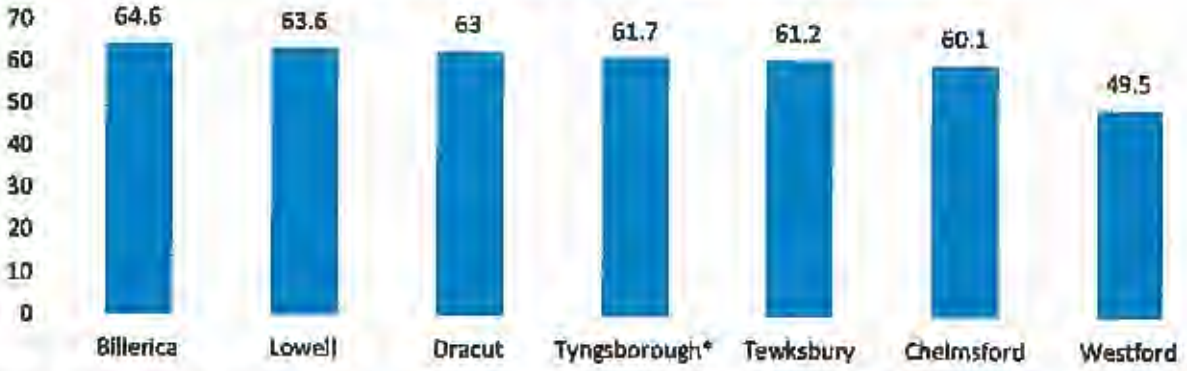
Figure 33 – Prevalence of Adults with Obesity - Percent (2012-2014)



Source: BFRSS Results via PHIT

The CHNA assessment from 2016 showed that obesity rates have substantially increased between 1998 and 2010 for all areas of Lowell, the Greater Lowell CHNA, and Massachusetts. If you were to divide a person's weight in kilograms by the square of height in meters and the quotient is 30.0 or higher, they fall within the range of obese (Defining Adult Obesity, 2019). Aggregated data from 2012, 2013, and 2014 indicate that Lowell has the largest percent of adults with obesity at 30.4%. The lowest prevalence was in the Westford community at 17.9 percent. The previous figure __ had Westford, Chelmsford, and Tyngsborough as the top three towns with highest healthy food intake. In this figure, the same three towns are the bottom three in regards to prevalence of adults with obesity.

Figure 34 – Prevalence of Adults Categorized as Overweight - Percent (2012-2014)

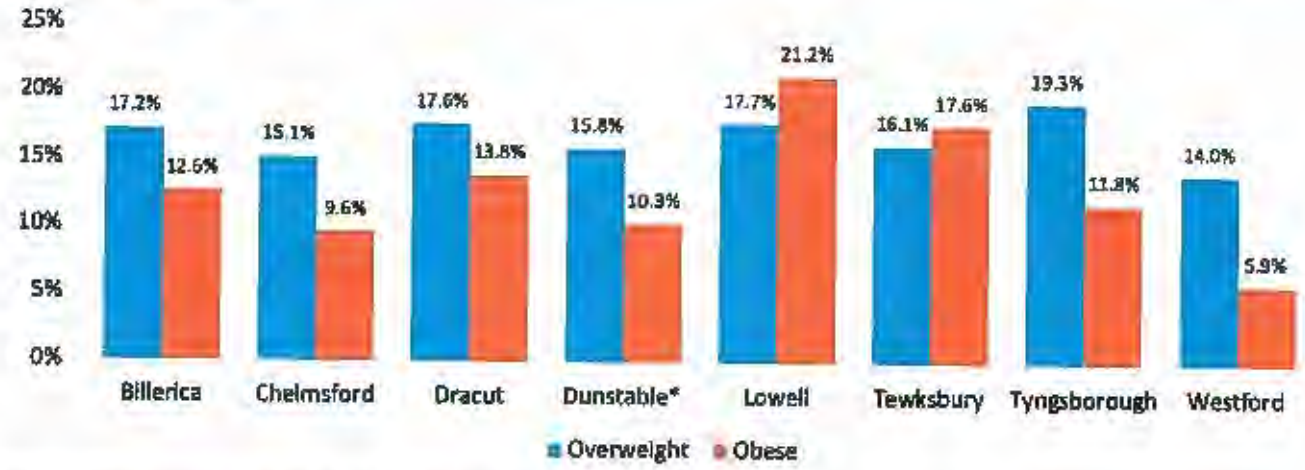


Source: BFRSS Results via PHIT

**Note: We include town level estimates that may be based on relatively few respondents or have standard errors that are larger than average. The confidence interval for this community is wider than the normal limits set by MDPH. Therefore, the estimate for this town should be interpreted with caution.*

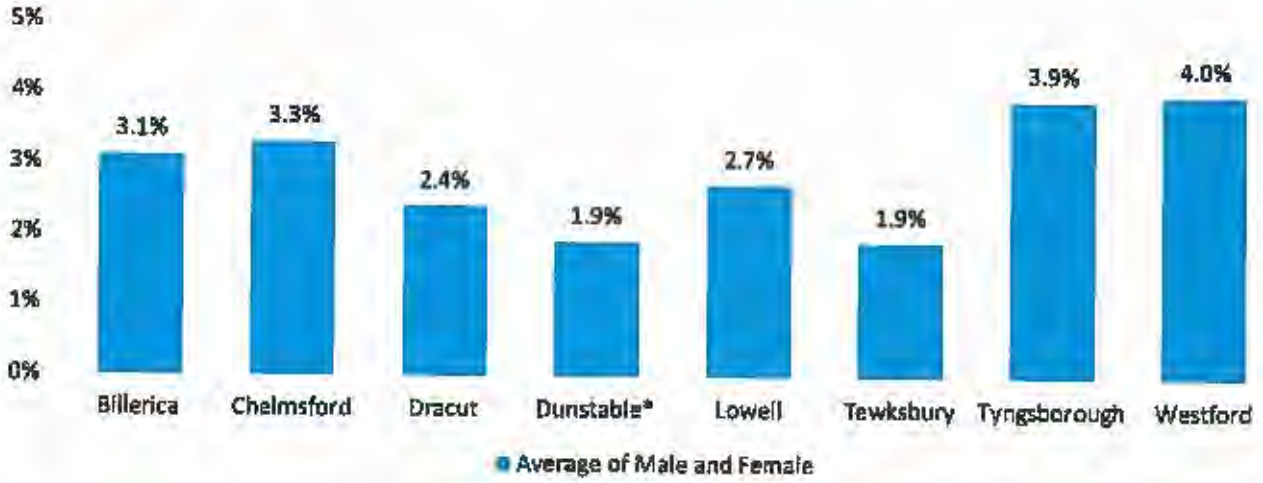
The CDC categorizes the overweight range if the calculated Body Mass Index (BMI) is between 25.0 to <30 (Defining Adult Obesity, 2019). Except for Westford, the data available shows that at least 60% of all adults in the region are overweight. The prevalence in Westford is 49.5%.

Figure 35 – Percent of Children with Obesity or Categorized as Overweight in Grades 1,4,7,10 in MA School Districts (2014-2015)



Source: BMI Screening in MA Public School Districts (2017)
** Dunstable data from Groton-Dunstable Regional School District*
**Children with a calculated BMI of ≥30.0 are obese*

Figure 36 – Percent of Children Categorized as Underweight in Grades 1, 4, 7, 10 in MA School Districts (2014-2015)

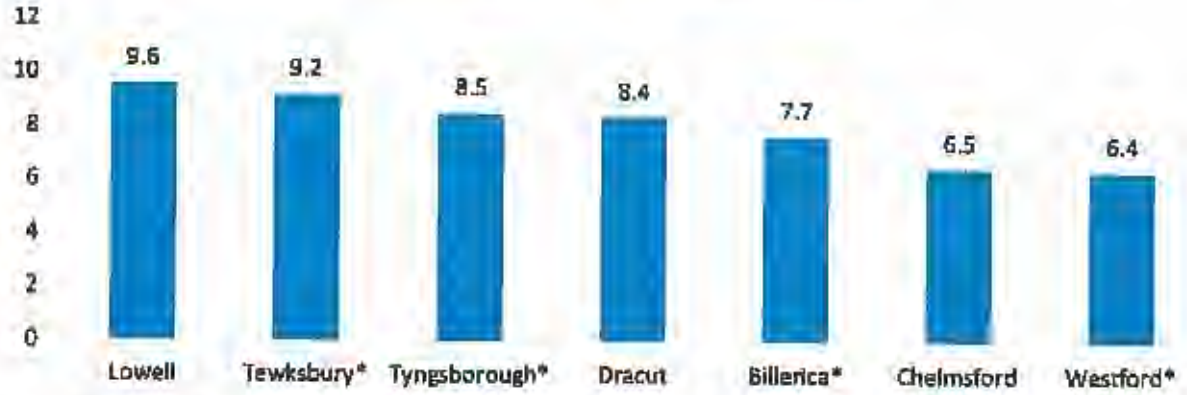


Source: BMI Screening in MA Public School Districts (2017)
** Dunstable data from Groton-Dunstable Regional School District*

Based on the 2017 Massachusetts Public School District Screening, the overall average of children in these grades who are categorized as overweight is about 17% and the average prevalence of children with obesity is at 13%. The highest prevalence of children who are categorized as overweight is from Tyngsborough (19%) and the lowest from Westford (14%). The highest prevalence of children with obesity is from Lowell at 21% and the lowest from Westford at 6%. About 4% of children from Tyngsborough and Westford were categorized as underweight. Tewksbury and Dunstable had the lowest prevalence at nearly 2%.

DIABETES

Figure 37 – Prevalence of Adults with Diabetes - Percent (2012-2014)



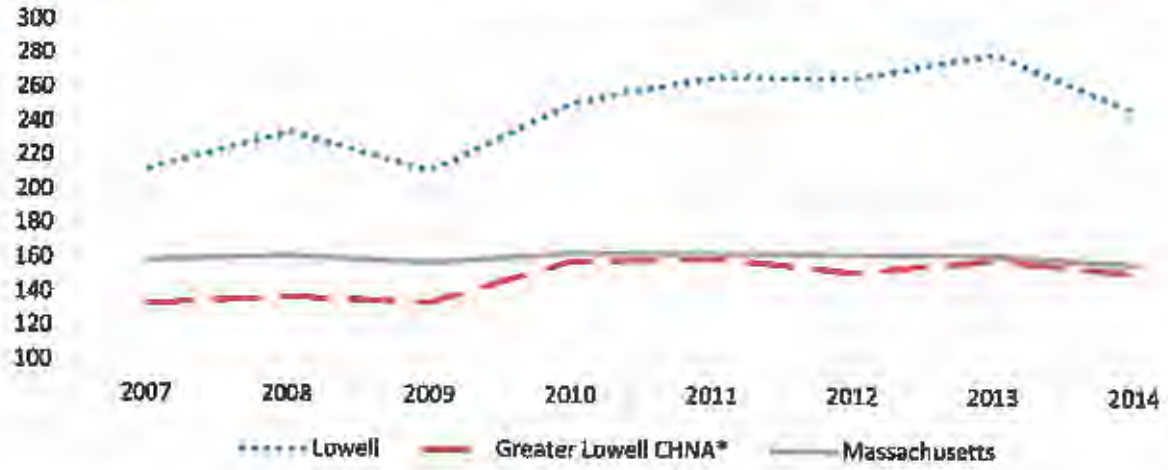
Source: BFRSS Results via PHIT

**Note: We include town level estimates that may be based on relatively few respondents or have standard errors that are larger than average. The confidence interval for this community is wider than the normal limits set by MDPH. Therefore, the estimate for this town should be interpreted with caution.*

Aggregated results from 2012, 2013, and 2014 in the towns with available data have an average prevalence of adults with diabetes of 8%. Lowell had the highest prevalence at 9.6% and Westford with the lowest at 6.4%. (Data from the previous CHNA in 2016 indicated the percent of adults who have or have had diabetes has been decreasing for Lowell and Greater Lowell CHNA area between 2012 and 2013. Since the current data includes an aggregate calculation, we cannot compare those yearly results to this data.)

At the state level, results from the 2015 BFRSS indicate that prevalence of diabetes among adults by race and ethnicity was higher in individuals who identify as Black, Non-Hispanic (12.3%) followed by Hispanic (11.7%) and White, non-Hispanic (8.7%). When comparing rates of diabetes related mortality, Asian, non-Hispanic residents had the lowest rate at 8.5 per 100,000. Black, non-Hispanic residents had the highest rate at 29.5 per 100,000 which was more than twice the rate of White, non-Hispanic at 13.8 per 100,000. (Massachusetts Diabetes Data, 2019)

Figure 38 – Age-Adjusted Rates of Hospital Admissions/Observations per 100,000 for Diabetes

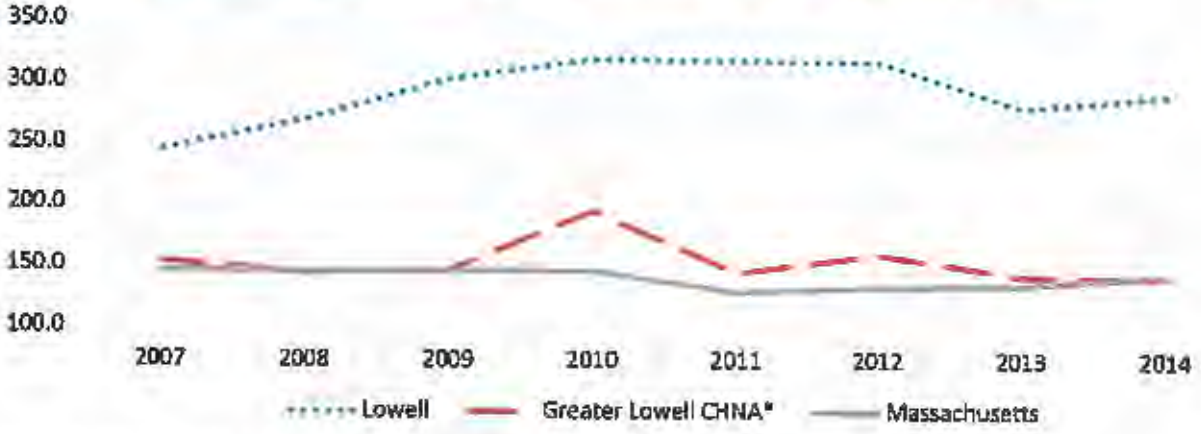


Source: Center for Health Information and Analysis (CHIA) via PHIT

**Note: Dunstable, Tyngsboro, Westford not included in Greater Lowell CHNA data (Statistics from these areas are suppressed to protect confidentiality when number of cases is ≤ 10.)*

The hospitalizations rates per 100,000 for diabetes have substantially been higher in Lowell than other areas. Massachusetts's diabetes-related hospitalizations have been consistently stable and hovering at the 160 rate. Excluding Dunstable, Tyngsborough, and Westford the rates for all the other areas of Greater Lowell CHNA have been slightly below the state rates as well. In 2013, Lowell's highest rate was at 283 per 100,000. By 2014 the age-adjusted rates of hospitalizations for Lowell, Massachusetts, and the CHNA were 249, 160, and 154 per 100,000 respectively.

Figure 39 – Age-Adjusted Rates of Emergency Department Visits per 100,000 for Diabetes



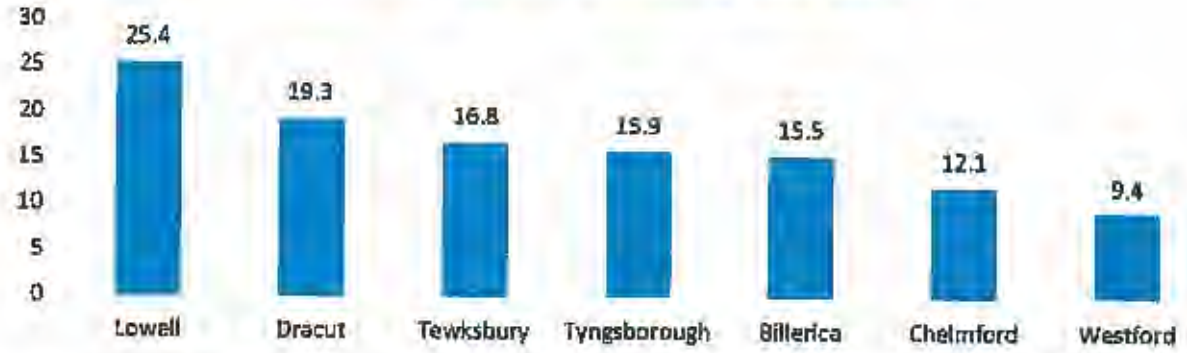
Source: Center for Health Information and Analysis (CHIA) via PHIT

**Note: Dunstable, Tyngsboro, Westford not included in Greater Lowell CHNA data (Statistics from these areas are suppressed to protect confidentiality when number of cases is ≤ 10.)*

Unlike the previous figure, between 2009 and 2013 age-adjusted rates of ED visits for diabetes from the Greater Lowell CHNA area (excluding Dunstable, Tyngsboro and Westford) were higher that the statewide level. Massachusetts level rates of ED visits have consistently been below 150, with a slow and gradual increase starting in 2011. By 2014, the rate of the CHNA area was at 140.9 compared to the state's rate of 143.1 per 100,000. The rate for Lowell in 2014 was at 289.0 per 100,000.

SMOKING

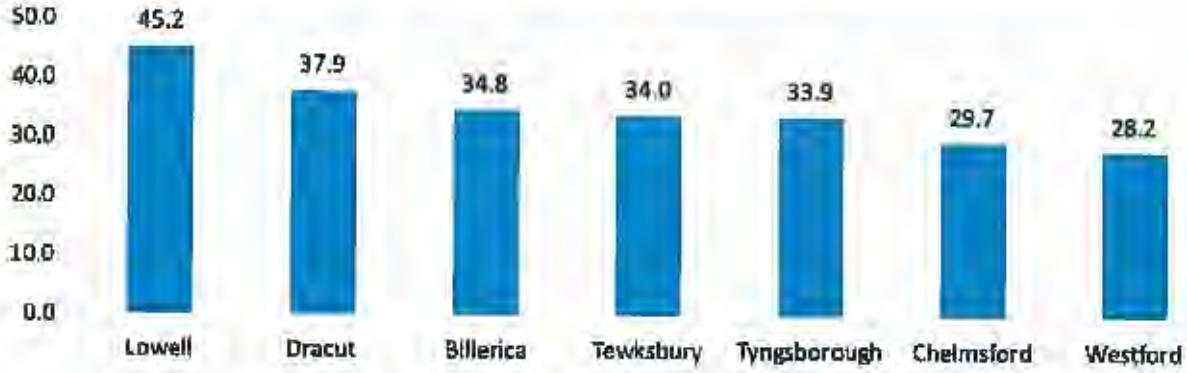
Figure 1.3 Prevalence of adults who report current smoking (2012-2014)



Source: BFRSS Results via PHIT

Prevalence of current smoking among adults is a valuable measure of the health and economic burden of tobacco and provides a baseline for evaluating the effectiveness of tobacco control programs over time. In The Greater Lowell CHNA, the average percentage of adults identifying as current smokers is 16.3%. Lowell has the highest percentage of current smokers at 25.4%, followed by Dracut at 19.3%. Tewksbury, Tyngsborough, and Billerica have similar percentages of adults identifying as current smokers, all near the average. Chelmsford and Westford have percentages lower than the average at 12.1 and 9.4% respectively.

Figure 1.4 Prevalence of adults reporting exposure to secondhand smoke (2012-2014)

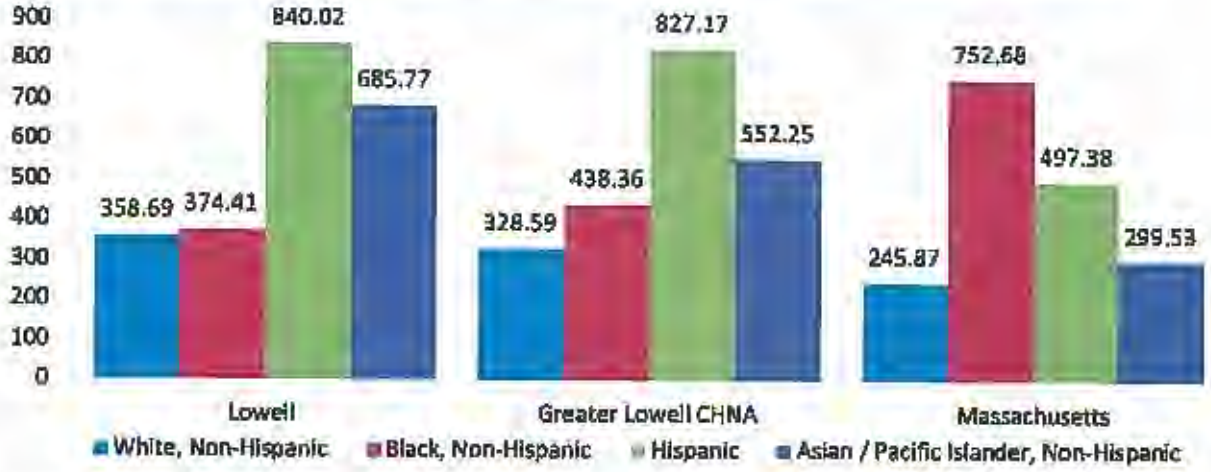


Source: BFRSS Results via PHIT

Secondhand smoke is smoke from burning tobacco products and smoke that has been exhaled by the person smoking. Tobacco smoke contains thousands of chemicals, including hundreds that are toxic and about 70 that can cause cancer (Asthma, 2019). More adults report exposure to secondhand smoke than those that identify as current smokers, with the minimum percentage of adults reporting exposure to secondhand smoke over one-quarter of the population. The prevalence by community follows a similar trend to that of adults who identify as current smokers, Lowell has the highest percentage of adults exposed to secondhand smoke at 45.2%, followed by Dracut at 37.9%. Billerica, Tewksbury, and Tyngsborough have similar percentages all near the average of 34.8%. Chelmsford and Westford have percentages lower than average at 29.7 and 28.2%.

RESPIRATORY DISEASES

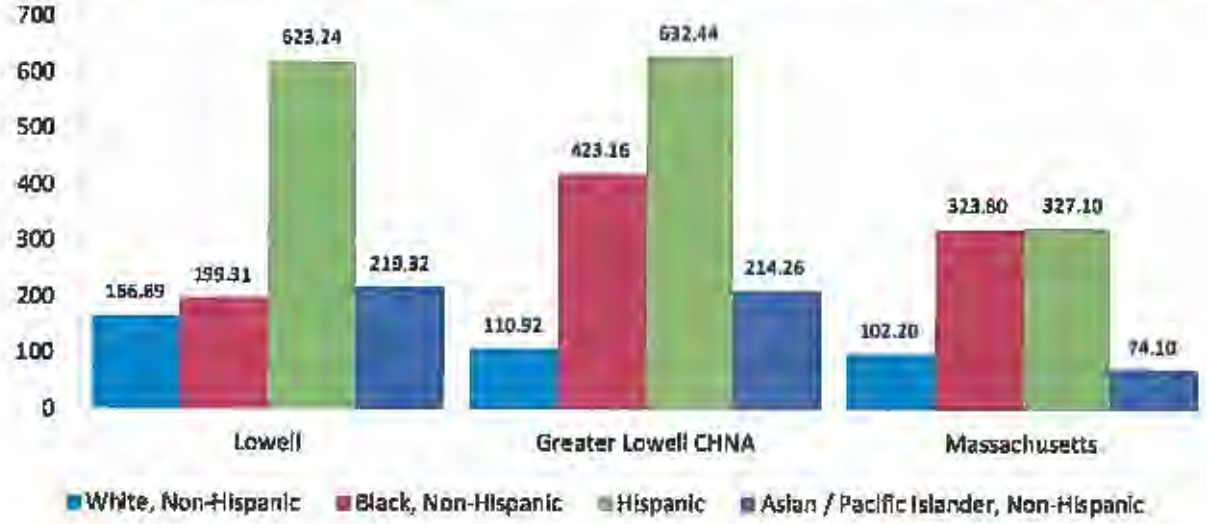
Figure 40 – Asthma Hospitalization Rates per 100,000 for Children Ages 0-4 (2002-2014)



Source: Massachusetts Casemix Discharge Database, Massachusetts Center for Health Information and Analysis (CHIA)

Asthma is a chronic health issue characterized by recurrent inflammation of airways causing wheezing, chest tightness, shortness of breath, and coughing. When distributed by racial and ethnic categories, Lowell and The Greater Lowell CHNA have similar patterns of asthma hospitalization rates per 100,000 for children ages 0-4, with individuals from the Hispanic population experiencing the most hospitalization, followed by those from the Asian/Pacific Islander, Non-Hispanic population, then those from the Black, Non-Hispanic population and those from the White, Non-Hispanic population. This differs from the distribution seen state-wide in Massachusetts, where the rates of asthma hospitalizations for children ages 0-4 are highest among individuals from the Black, Non-Hispanic population.

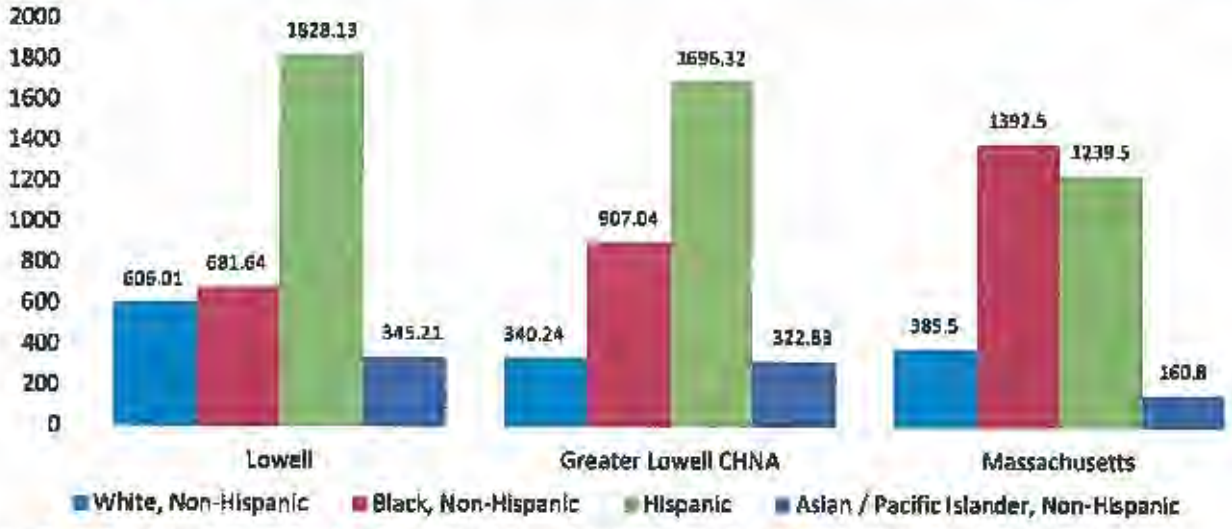
Figure 41 – Age-Adjusted 5–Year Average Annual Asthma Hospitalization Rates per 100,000 (2002-2014)



Source: Massachusetts Casemix Discharge Database, Massachusetts Center for Health Information and Analysis CHIA)

The racial and ethnic distribution of rates of 5-year average annual asthma hospitalization rates per 100,000 follow a similar pattern for the asthma hospitalization rates for children ages 0-4 years in Lowell and the Greater Lowell CHNA. The highest hospitalization rates are among the Hispanic population followed by the population of Black, non-Hispanic individuals, then Asian/Pacific Islander, Non-Hispanic individuals, then White, Non-Hispanic individuals. The asthma hospitalization rates in the Greater Lowell CHNA are higher within the Black, Non-Hispanic population than in Lowell. In the state of Massachusetts, the asthma hospitalization rates are almost equivalent between the Hispanic population and the population of Black, Non-Hispanic individuals. This is a marked difference than in Lowell, the Greater Lowell CHNA, and also different than the distribution of rates for asthma hospitalizations in the state for children ages 0-4 years.

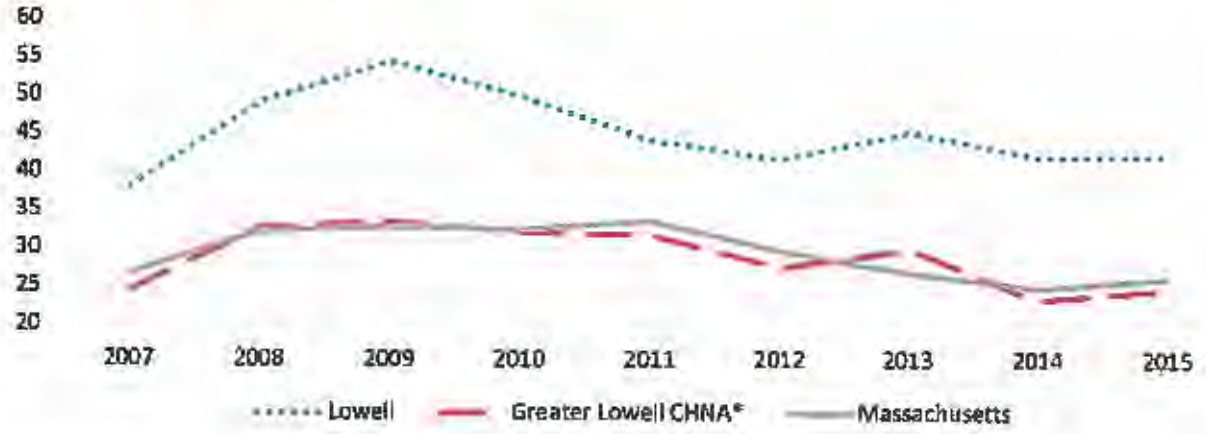
Figure 42 – Age-Adjusted 5-Year Average Annual Emergency Department Visit Rates per 100,000 for Asthma (2002-2014)



Source: Massachusetts Casemix Discharge Database, Massachusetts Center for Health Information and Analysis (CHIA)

The racial and ethnic distribution of the age-adjusted 5-year average annual emergency department (ED) visit rates per 100,000 for asthma are similar between Lowell and The Greater Lowell CHNA. The population with the highest rate of ED visits for asthma is the Hispanic population followed by the Black, Non-Hispanic population. In the Greater Lowell CHNA, the rates of ED visits for asthma are similar between the White, Non-Hispanic population and the Asian/Pacific Islander, Non-Hispanic population. In Lowell, the rate of ED visits for asthma are higher in the White, non-Hispanic population than that of the Asian/Pacific Islander non-Hispanic population. In Massachusetts the White, Non-Hispanic rate of ED visit for asthma is also higher than that of the Asian/Pacific Islander population. The Massachusetts distribution differs from that of Lowell and the Greater Lowell CHNA in that the population with the highest rate of ED visits for asthma is the Black, Non-Hispanic population.

Figure 43 – Age-Adjusted Rates of Hospital Admission for chronic obstructive pulmonary disease per 10,000

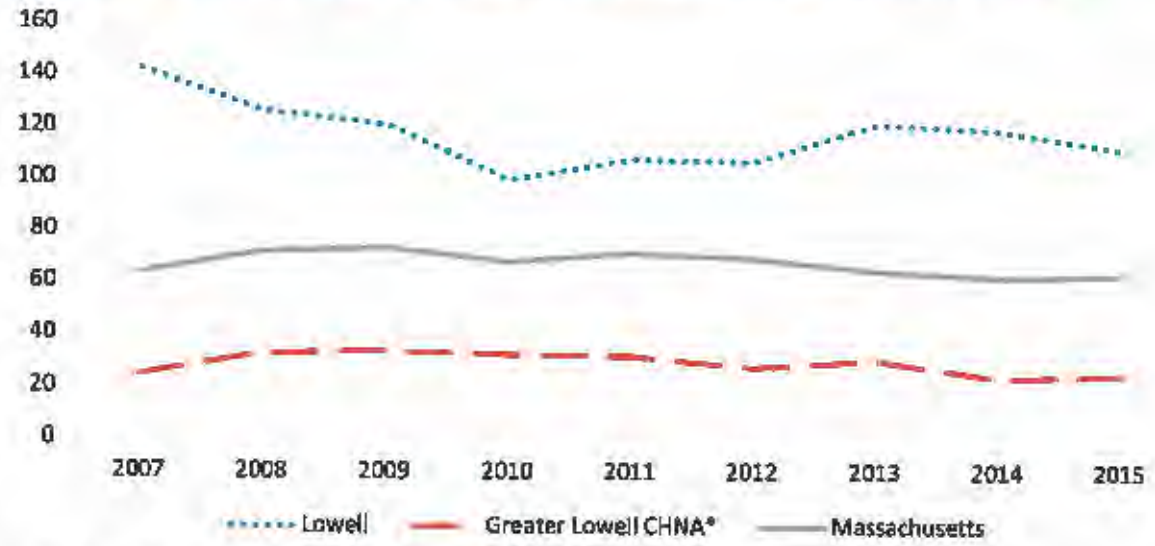


Source: Center for Health Information and Analysis (CHIA) via PHIT

**Note: Dunstable not included in Greater Lowell CHNA data (Statistics from this area is suppressed to protect confidentiality when number of cases is ≤ 10.)*

Chronic obstructive pulmonary disease (COPD) is a health issue that makes it hard to breathe as progressively less air flows in an out of the airways. COPD can include emphysema, chronic bronchitis, and refractory (non-reversible) asthma. The rate of hospital admission for COPD per 10,000 has followed similar, slowly decreasing trends in Lowell, The Greater Lowell CHNA, and Massachusetts. The Greater Lowell CHNA has had comparable rates to that of Massachusetts since 2007. The rate of hospital admission for COPD has been markedly higher in Lowell.

Figure 44 – Age-Adjusted Rates of Emergency Department Visits per 10,000 for COPD

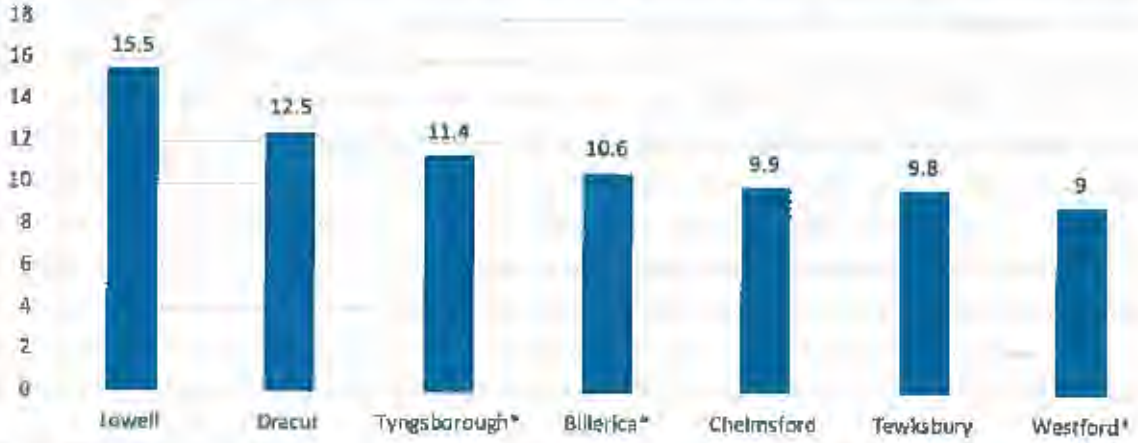


Source: Center for Health Information and Analysis (CHIA) via PHIT
**Note: Dunstable not included in Greater Lowell CHNA data*

The age-adjusted rate of Emergency Department (ED) visits per 10,000 has remained steady in The Greater Lowell CHNA and the state of Massachusetts, with The Greater Lowell CHNA consistently having a lower rate than that of the state. The rate of ED visits per 10,000 in Lowell has consistently been higher than both the state and Greater Lowell CHNA rates, and has also been more variable.

MENTAL HEALTH

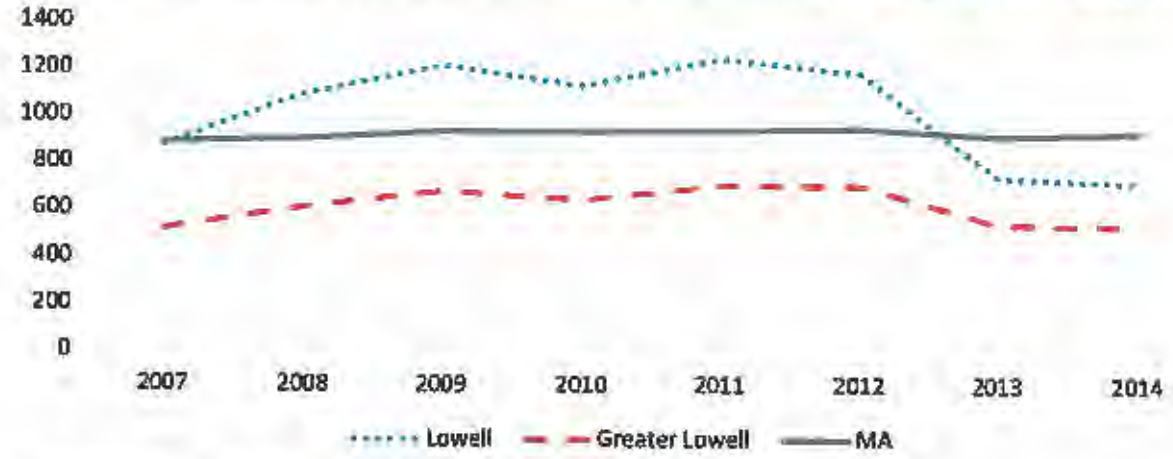
Figure 45 – Percent of Adults Reporting Poor Mental Health for 15 or more days (2012-2014)



Source: BFRSS Results via PHIT
**Note: We include town level estimates that may be based on relatively few respondents or have standard errors that are larger than average. The confidence interval for this community is wider than the normal limits set by MDPH. Therefore, the estimate for this town should be interpreted with caution.*

Self-reported mental health has been shown to be an important indicator of overall health (Levinson & Kaplan, 2014). The average percent of adults reporting poor mental health for 15 or more days in the Greater Lowell CHNA was 11.2%. Lowell and Dracut have percentages higher than the average at 15.5 and 12.5% respectively. The percent of adults reporting poor mental health for 15 days or more in Tyngsborough was 11.4%, similar to the average. Billerica, Chelmsford, Tewksbury, and Westford had lower than average percentages of adults reporting poor mental health for 15 or more days at 10.6, 9.9, 9.8 and 9% respectively.

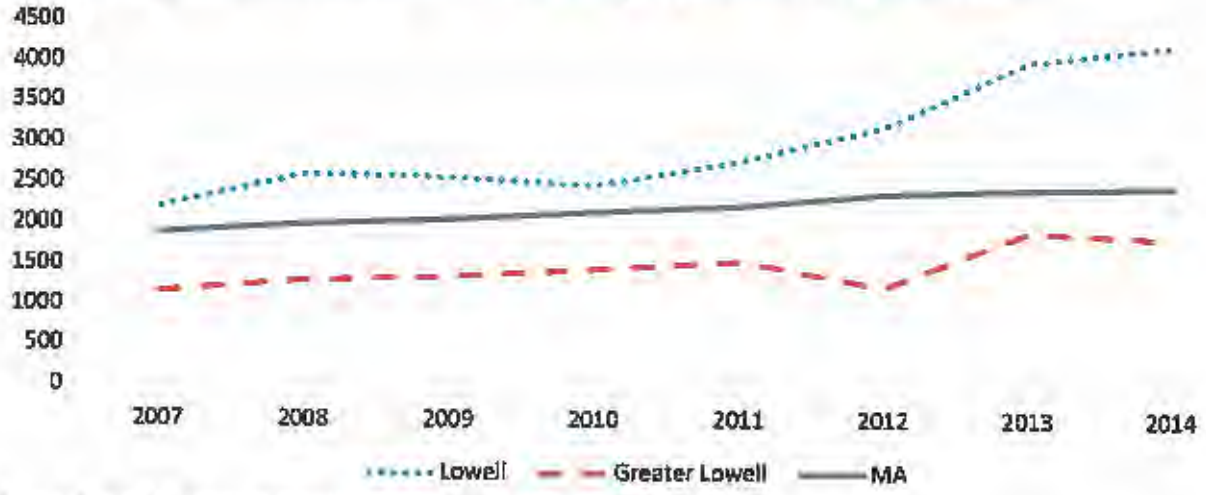
Figure 46 – Age-Adjusted Rates of Mental Health Hospitalizations per 100,000 (2007-2014)



Source: Center for Health Information and Analysis (CHIA) via PHIT

The 2014 mental health hospitalization rates were 719 per 100,000 people for Lowell, 541 for the Greater Lowell CHNA, and 934 for Massachusetts. Massachusetts rates have been relatively consistent. While Lowell's mental health hospitalizations have remained higher than the CHNA for all of the years of available data, there was a marked decrease in mental health hospitalizations in Lowell between 2012 and 2013, resulting in a rate in Lowell lower than the Massachusetts rate in 2013 and 2014.

Figure 47 – Age-Adjusted Mental Health Emergency Department Visits per 100,000

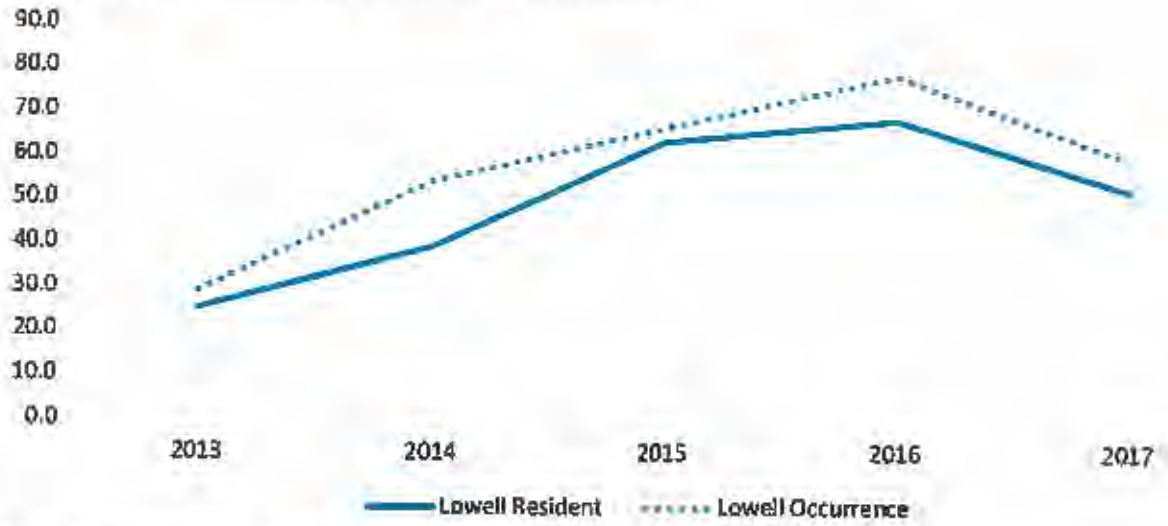


Source: Center for Health Information and Analysis (CHIA) via PHIT

The 2014 mental health emergency department visits were 4199 per 100,000 people for Lowell, 2466 for Massachusetts and 1834 for the Greater Lowell CHNA. While the mental health hospitalization rate in Lowell has decreased in recent years, the mental health emergency department visit rate has increased. The Massachusetts rate has also increased, but at a slower rate. The CHNA rate decreased slightly between 2013 and 2014.

SUBSTANCE USE DISORDER

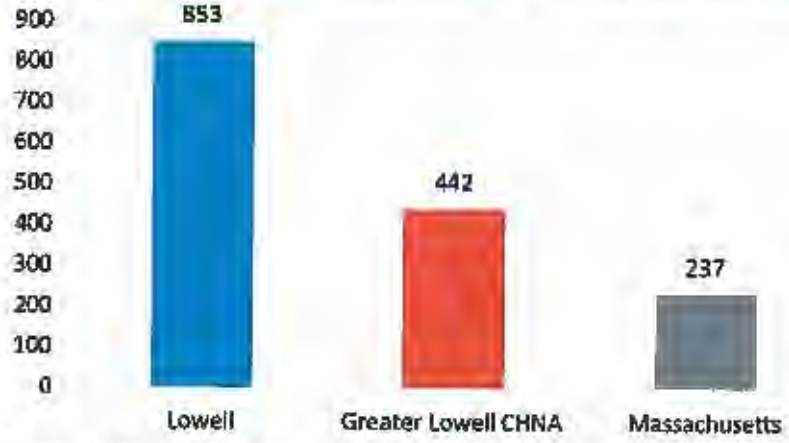
Figure 48 – Opioid Overdose Death Rate per 100,000



Source: Massachusetts Department of Health

The rate of opioid overdose death decreased in the city of Lowell from 2016 to 2017 after an increase from 2013 to 2016. The rate of opioid overdose death has consistently been lower among Lowell residents than among decedents in Lowell regardless of residency. The trend is similar between residents of Lowell and overdoses that occur in Lowell regardless of residency of the decedent.

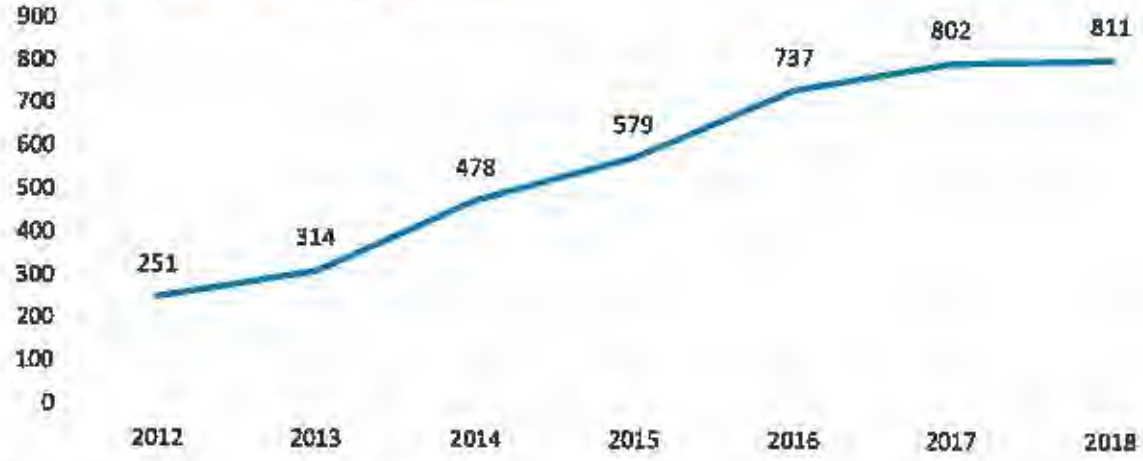
Figure 49 – Opioid-Related EMS Incidents per 100,000 in 2018



Source: Massachusetts Department of Health

Lowell has the highest rate of opioid related EMS incidents in 2018 at 853 per 100,000, followed by the Greater Lowell CHNA at 442, and Massachusetts at 237. Aside from Lowell, the only other community in the Greater Lowell CHNA with a rate higher than the state in Massachusetts was Tewksbury at 333 (not shown).

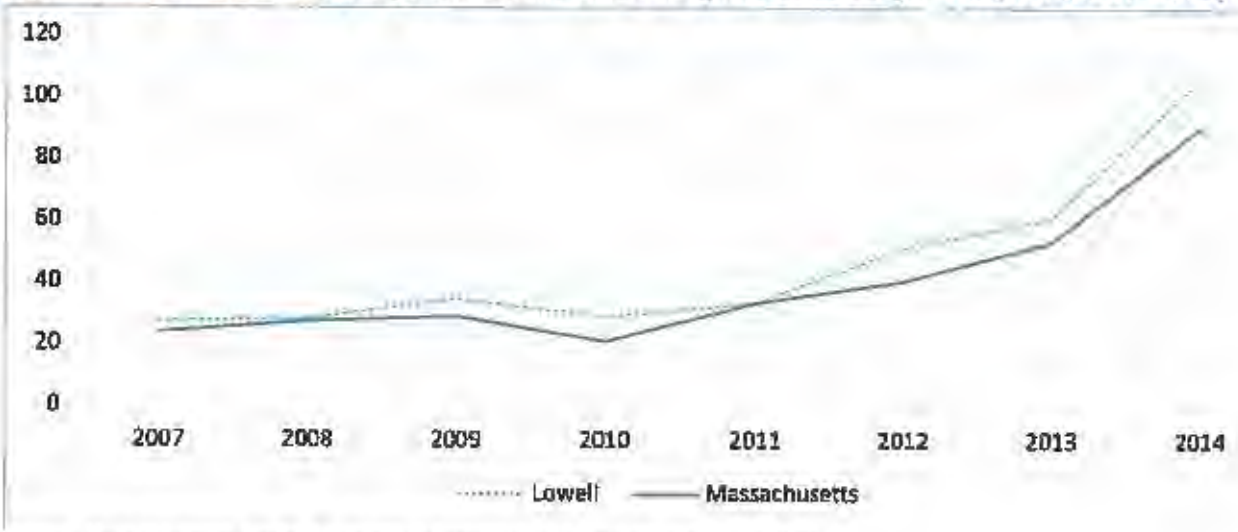
Figure 50 – Opioid-Related Trinity EMS Calls



Source: Trinity Emergency Medical Services, Inc.

The number of opioid related calls through Trinity EMS, Inc., an ambulance service in Lowell, has increased annually since 2012. The number of opioid related calls has been increasing at a slower rate since 2016. The annual percent increase in 2016 was 27% from 2015. From 2016 to 2017 the increase was 9%, from 2017-2018 the increase was 1%.

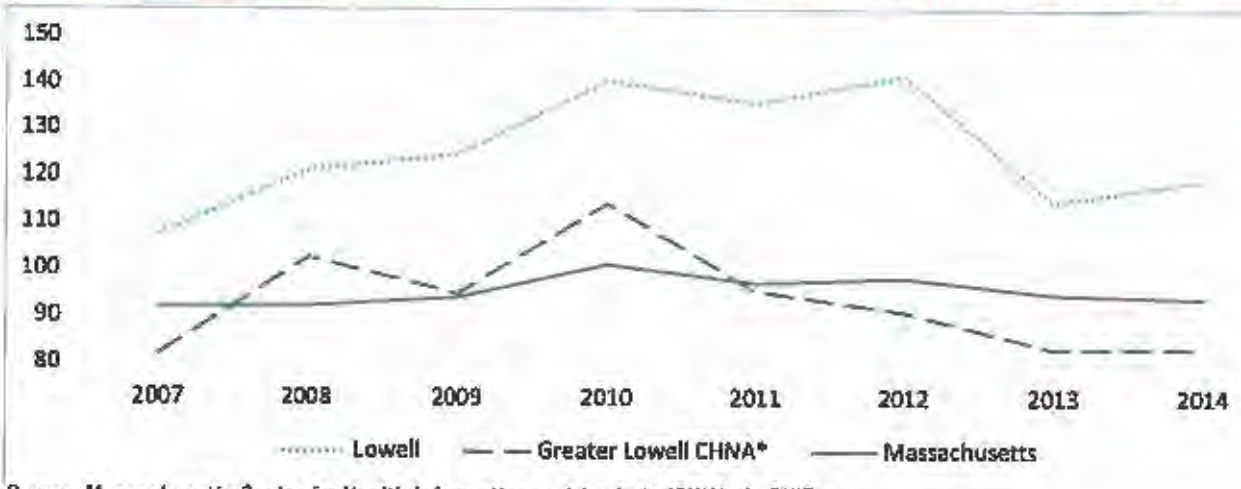
Age-Adjusted Rate of Emergency Department Visits for Opioid Overdose per 100,000 (2007-2014)



Source: Massachusetts Center for Health Information and Analysis (CHIA) via PHIT

The emergency department visit rate for opioid overdoses began a sharp and accelerating increase in 2010. The rates in Lowell exceed those of Massachusetts. The increase in rates in Lowell and the state of Massachusetts have been comparable.

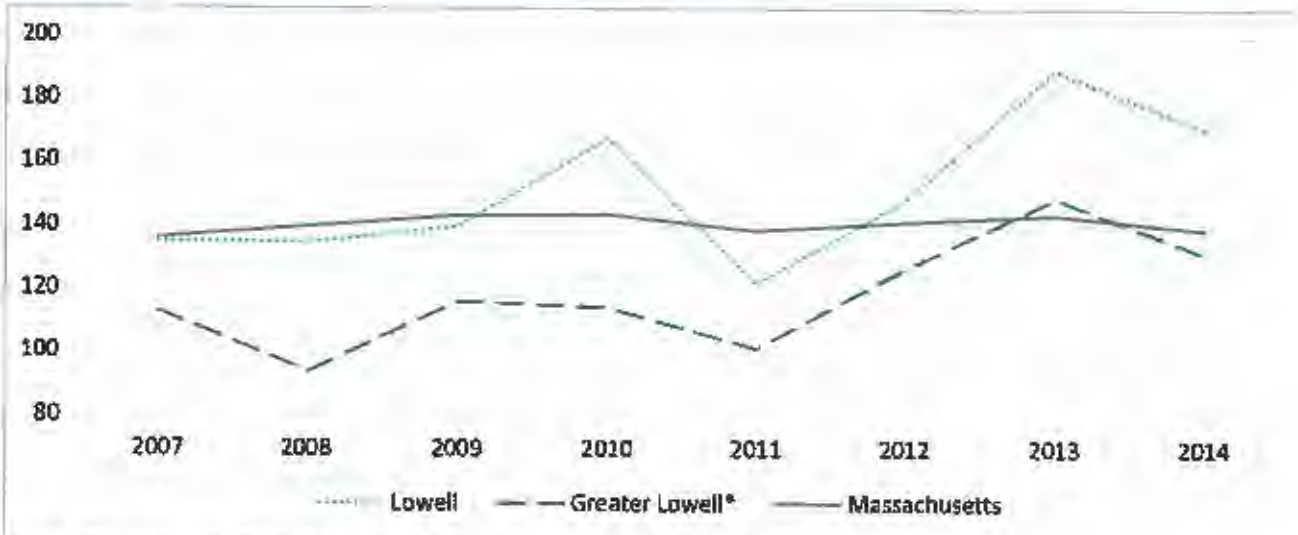
Age-Adjusted Rate of Admissions/Observations for Non-Opioid Substance Overdose per 100,000 (2007-2014)



Source: Massachusetts Center for Health Information and Analysis (CHIA) via PHIT
**Greater Lowell excludes Dunstable, Tyngsborough, Westford*

The rates of admissions and observations for non-opioid substance overdoses have consistently been higher in Lowell than in the Greater Lowell CHNA and in the state of Massachusetts. The rate within the Greater Lowell CHNA has been variable, with a decrease in 2011 that placed it below the rate of the state of Massachusetts.

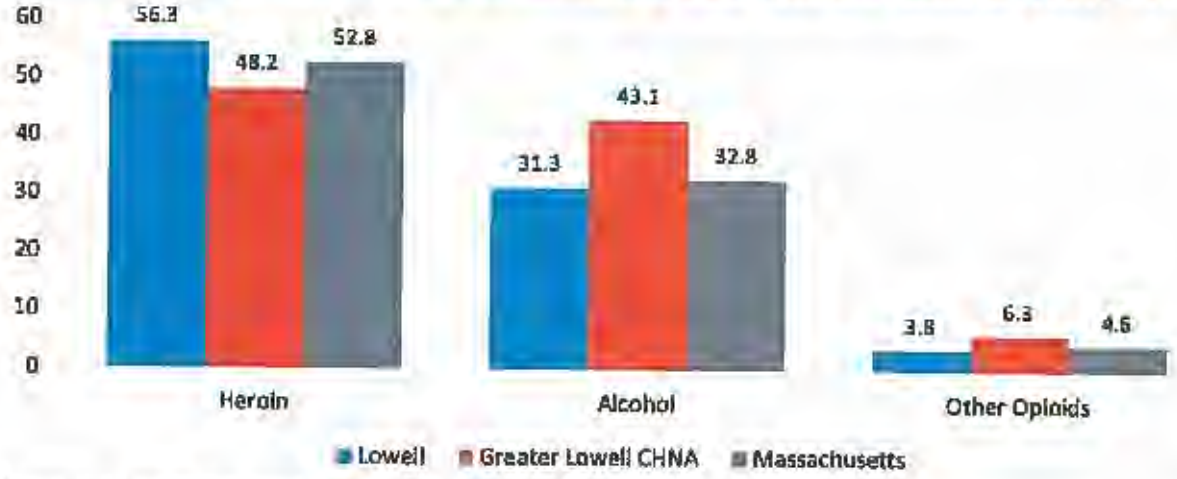
Age-Adjusted Rate of Emergency Department Visits for Non-Opioid Substance Overdose per 100,000 (2007-2014)



Source: Massachusetts Center for Health Information and Analysis (CHIA) via PHIT
**Greater Lowell excludes Dunstable, Tyngsborough, Westford*

Rates of emergency department visits for non-opioid substances have remained consistent in the state of Massachusetts. More variation has been seen in Lowell and the Greater Lowell CHNA, with Lowell appearing to drive the rates in the Greater Lowell CHNA by maintaining higher rates. The rates of non-opioid substance overdose emergency department visits have differed from the rates of hospital admissions/observations in that the rate of in Lowell has not been markedly higher than that of the state.

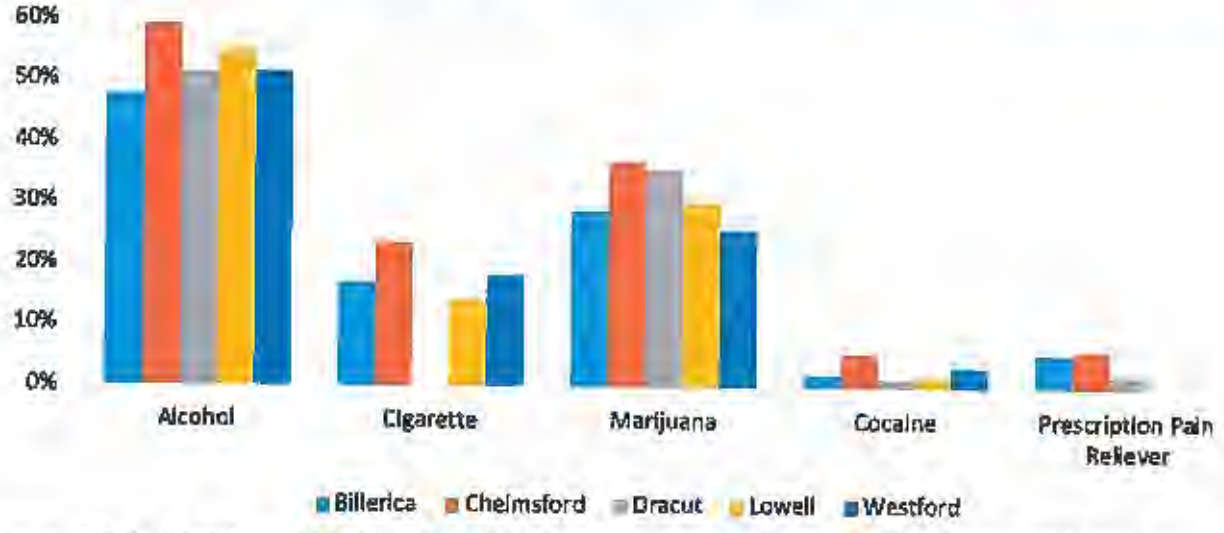
Figure 51 – Primary Substance of Use on Admission to State Treatment Facility in FY2017 – Percent



Source: BSAS via Massachusetts Department of Public Health
Note: "Other opioids" refer to Non-Rx Methadone, Other Opiates, Oxycodone, Non-Rx Suboxone, Rx Opiates, and Non-Rx Opiates.

The primary substance of use on admission to a state treatment facility in FY 2017 was heroin in Massachusetts, the Greater Lowell CHNA, and Lowell at 53%, 48% and 56% respectively. The second most common primary substance of use was alcohol, followed by other opioids. Lowell's rate of admissions for alcohol use (31%) were lower than the Greater Lowell CHNA (43%) and Massachusetts (33%). Lowell's rate of admissions for heroin use were higher than Massachusetts and the Greater Lowell CHNA (not shown).

Figure 52 – Overall Lifetime Use of Alcohol, Tobacco, and Other Drugs (ATOD) of High School Students - Percent

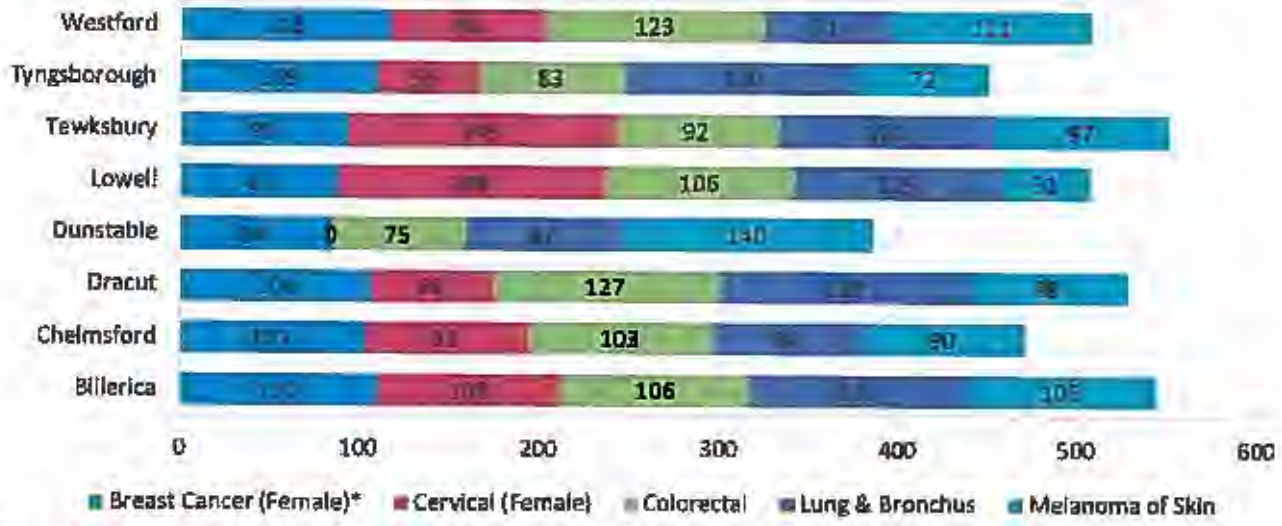


Source: Billerica 2015 CTCYS, Chelmsford 2014 YRBS, Dracut 2015 YBRS, Lowell 2016 CTCYS, Westford 2014 YRBS
Note: No information was available for Cigarette Use in Dracut and Prescription Rain Reliever Use in Lowell and Westford.

Results from Youth Risk Behavior Survey (YRBS) and the Communities that Care Youth Survey (CTCYS), from high school students indicate that more than half (53%) of these students reported ever drinking alcohol. When asked about drinking alcohol within the past thirty days about 33% of high school students in these areas reported do so (not shown). About 32% percent of high school students reported ever using marijuana in their lifetime. This was highest in the towns of Chelmsford (37%) and Dracut (36%). The highest lifetime prevalence of use for cigarette smoking was from Chelmsford (24%), followed by Westford (18%), Billerica (17%), and Lowell (14%). Other than the 6% of high school students from Chelmsford, less than 4% of students from other areas reported having ever used any form of cocaine. Results from Billerica, Chelmsford, and Dracut also provided information for prescription pain reliever usage (without it being prescribed) with about 6%, 6%, and 2% respectively.

CANCER

Figure 53 – Standardized Incidence Ratio of Selected Cancers by Town (2011-2015)



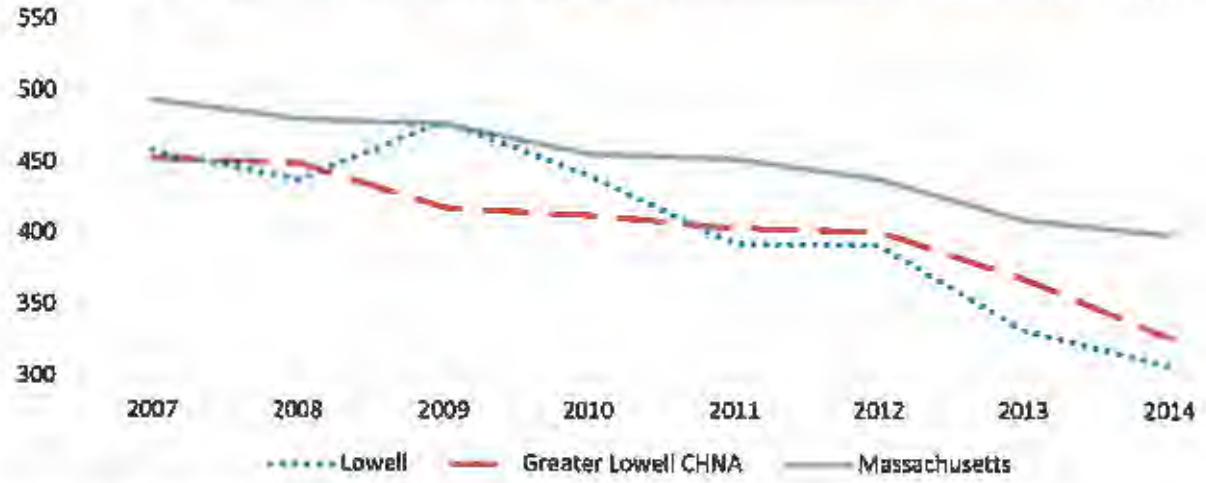
Source: Massachusetts Cancer Registry via Massachusetts Department of Public Health
Note: The SIR was not calculated for the Town of Dunstable because observations were <5 cases.

The above data represent standardized incidence ratios (SIR) of cancer incidence. An SIR is an indirect method of adjustment for age and sex that describes in numerical terms a town's average experience in 2011-2015 compared with that of the state as a whole. An SIR of exactly 100 indicates that a town's incidence for a certain type of cancer is equal to that expected based on statewide average age-specific incidence rates. An SIR of more than 100 indicates that a town's incidence for a certain type of cancer is higher than expected, and an SIR of less than 100 indicates that a town's incidence for a certain type of cancer is lower than expected.

The highest SIR of cancers in Dracut, Tyngsborough, and Billerica were lung and bronchus cancer (139, 130 and 121 respectively). In Lowell and Tewksbury, the highest rates were of cervical cancer with SIRs of 149 in each town. Colorectal cancer had the highest SIR in Westford (123). Melanoma of the skin had the highest SIR (140) of the cancers measured in Dunstable. Colorectal cancer and breast cancer had the highest SIRs of cancers seen in Chelmsford (103 each). Chelmsford's rates were the lowest among all the communities with two SIRs slightly above 100. Billerica's rates were the highest, with every cancer higher than 100.

Cancer incidence rates over time by town show a wide variety of patterns (not shown). Across all towns, the most variable cancer rate is that of cervical cancer, which shows high variability in Billerica, Dracut, Dunstable, Lowell, Tewksbury and Westford. The rate of lung and bronchus cancer has remained steady throughout most communities, as has melanoma of the skin.

Figure 54 – Age-Adjusted Rate of Cancer Hospitalizations (Admissions/Observations) per 100,000



Source: Center for Health Information and Analysis (CHIA) via PHIT

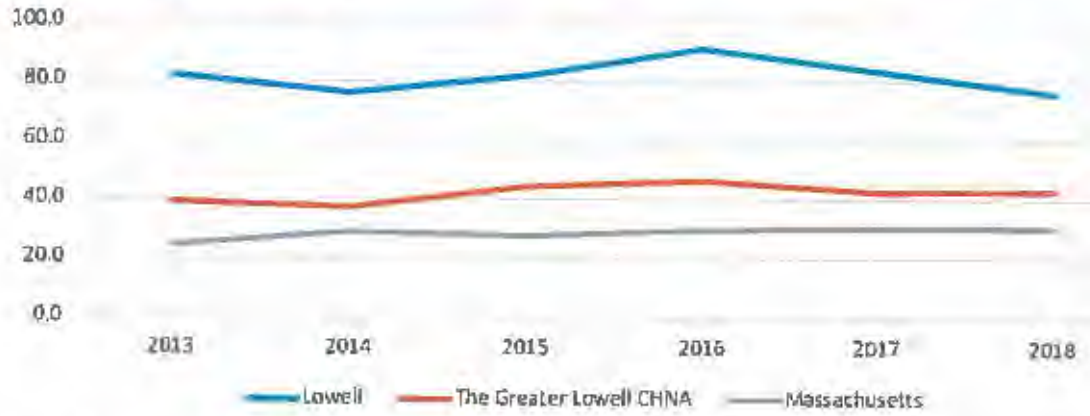
Patients with cancer are often hospitalized for acute conditions or refractory symptoms with increasing frequency in the last months of life (Numico et al, 2015). The age adjusted rate of cancer hospitalizations per 100,000 has decreased since 2007 in Lowell, the Greater Lowell CHNA, and in the state of Massachusetts. Lowell has seen the largest decrease and, as of the most recent available data, has a lower rate of cancer hospitalizations than the Greater Lowell CHNA or Massachusetts.

Figure 55 – Age-Adjusted Rate of Cancer Emergency Department Visits per 100,000 (2007-2014)

Source: Center for Health Information and Analysis (CHIA) via PHIT

Patients with cancer often seek treatment in the Emergency Department (ED). The age-adjusted rate of ED visit per 100,000 in the state of Massachusetts has increased slightly and slowly since 2007. In Lowell, the rate of cancer ED visits has varied greatly with a marked increase in 2009, decrease in 2010, an increase in 2012 and finally a decrease in 2014 to below the Massachusetts rate.

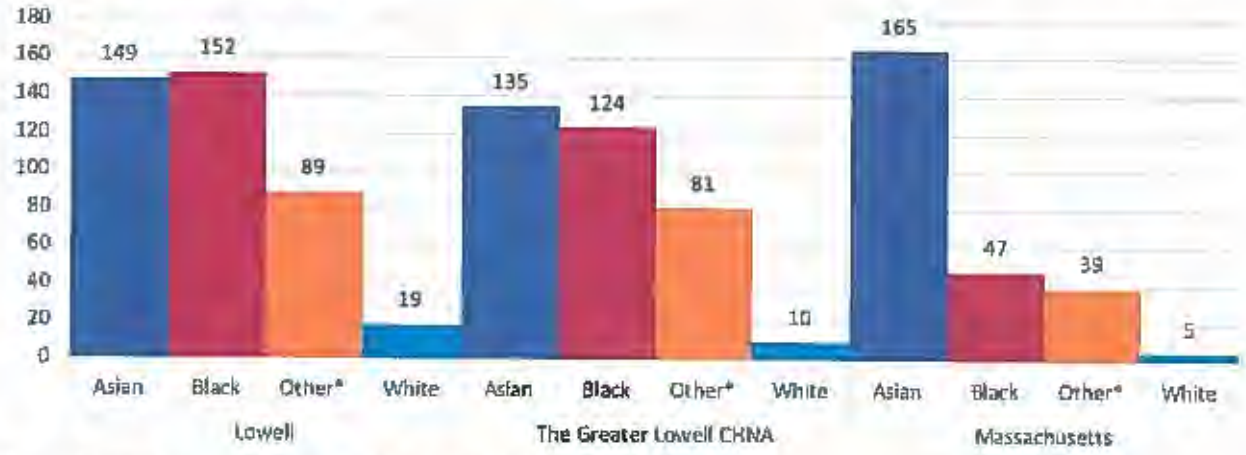
Figure 56 – Newly Reported Confirmed and Probable Chronic Hepatitis B Cases in Selected Geographic Region per 100,000 (2013-2018)



Source: Massachusetts Department of Public Health

Hepatitis B is a liver infection caused by the hepatitis B virus that is transmitted through blood or another body fluid. Hepatitis B can be prevented through vaccination. The rates of hepatitis B have remained steady between 2013 and 2018. The rate in Lowell has consistently remained higher than that of The Greater Lowell CHNA which has also been higher than the state of Massachusetts.

Figure 57 – Newly Reported Confirmed and Probable Chronic Hepatitis B Cases by Race in Selected Geographic Region per 100,000 (2018) *

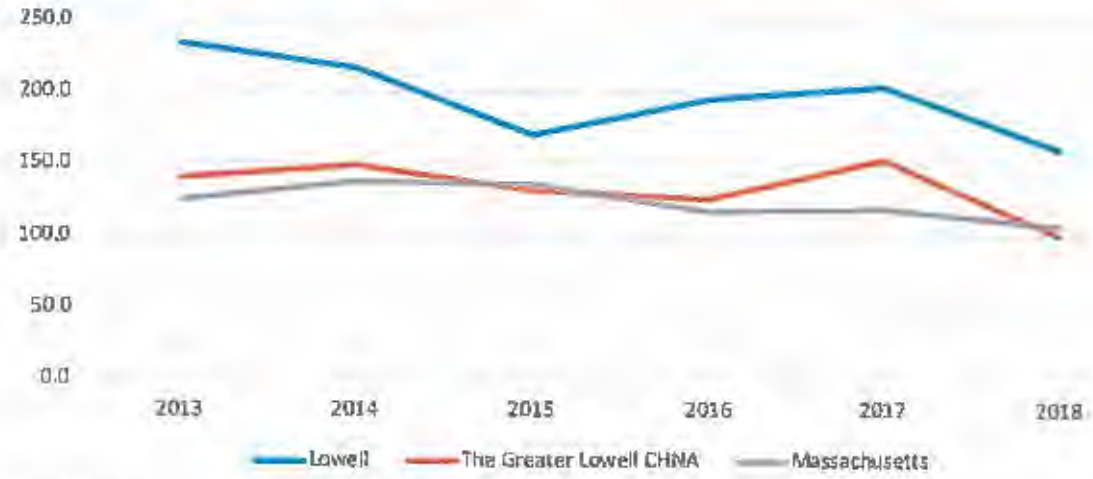


Source: Massachusetts Department of Public Health

** Other race may include American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, other races and individuals reporting more than one race.*

The distribution of hepatitis B infection rate by race follows a similar pattern between The Greater Lowell CHNA and the state of Massachusetts with the highest rate in the Asian population followed by the Black population, then the population categorized as other, then the White population. In Lowell, the hepatitis B infection rate is higher in the Black population than the Asian population. While the hepatitis B infection rate in the Asian and Black populations in the Greater Lowell CHNA and Lowell are comparable, the Asian population of Massachusetts is markedly higher than the Black population.

Figure 58 – Rate per 100,000 of Newly Reported Confirmed and Probable Hepatitis C Cases in Selected Geographic Region (2013-2018)**

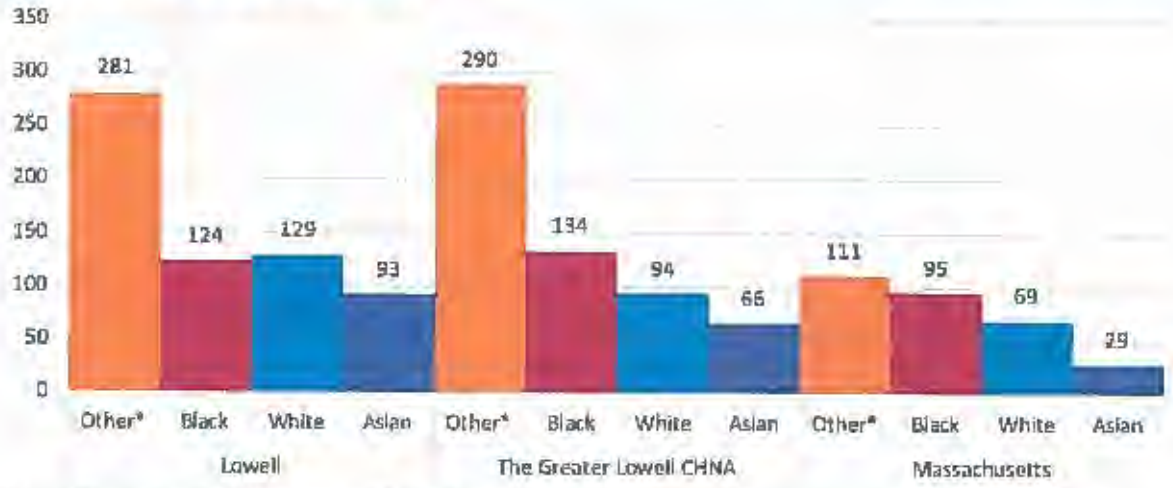


Source: Massachusetts Department of Public Health

*** The surveillance case classification for hepatitis C changed in 2016. Individuals with positive antibody results with negative RNA results within one year of initial report and no other tests in that time period indicating virus is present, are no longer considered confirmed or probable cases. Prior to 2016, individuals with either past or present infections may have been considered confirmed or probable.*

Hepatitis C is a liver infection caused by the hepatitis C virus that is transmitted through blood. There is no vaccine for hepatitis C. The rate of hepatitis C cases has been slowly declining in Lowell, The Greater Lowell CHNA, and Massachusetts since 2013. In 2018, the Greater Lowell CHNA rate decreased below that of the state of Massachusetts. The rate of hepatitis C cases in Lowell has been consistently higher than that of the Greater Lowell CHNA and the state of Massachusetts.

Figure 59 – Rate per 100,000 of Newly Reported Confirmed and Probable Hepatitis C Cases by Race in Selected Geographic Region (2017)

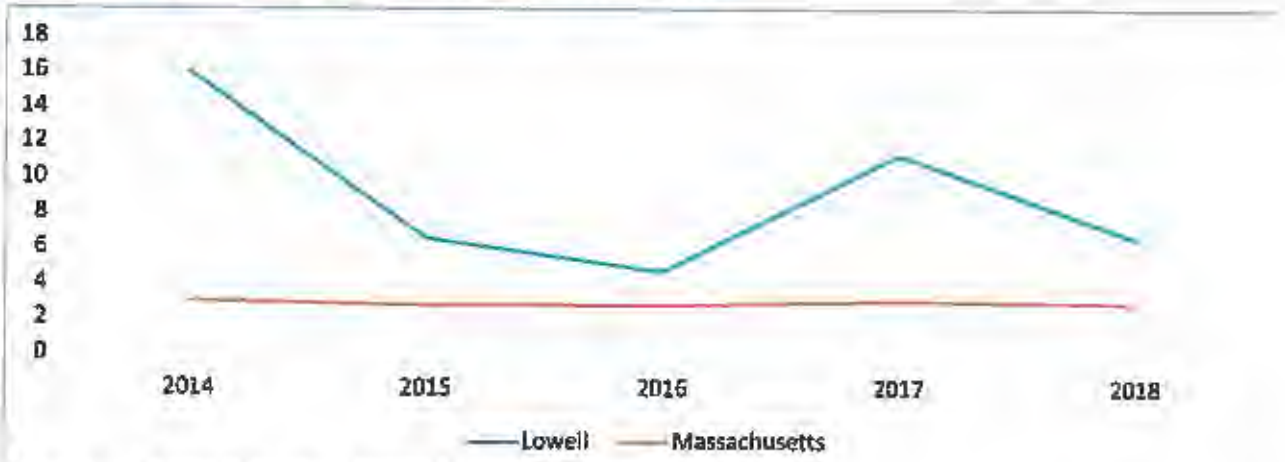


Source: Massachusetts Department of Public Health

** Other race may include American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, other races and individuals reporting more than one race.*

The distribution of hepatitis C cases by racial category in Massachusetts and The Greater Lowell CHNA follow similar patterns, with the population with the highest rate of hepatitis C impacting individuals in the population of race categorized as other, followed by the population of Black individuals, then the population of White individuals, then the population of Asian individuals. In Lowell, the rate of hepatitis C is higher in the population of White individuals than the population of Black individuals. The racial distribution for hepatitis C infections differs significantly from that of hepatitis B.

Figure 60 – Tuberculosis Rate per 100,000 (2014-2018)



Source: MDPH Bureau of Infectious Disease & Laboratory Sciences

Tuberculosis (TB) is a bacterial infection usually found in the lungs that is spread through the air from one person to another. TB rates per 100,000 have consistently been higher in Lowell than the statewide rates. The five year average for the state has remained at 2.9 per 100,000. The rate for Lowell was three times higher at 9 per 100,000 between 2014 and 2018. Between 2014 and 2016 there was a decline from 16 to 5 cases per 100,000. In 2017 there was an increase to 11 per 100,000 before decreasing again in 2018 to 7 per 100,000.

Figure 61 – Number of Individuals Diagnosed with HIV or AIDS in Lowell (2007-2016)

Source: MDPH Bureau of Infectious Disease and Laboratory Sciences

Human Immunodeficiency Virus (HIV) is a viral infection that compromises a person's immune system and is spread through transmission of bodily fluids – most often through sexual behaviors or needle or syringe use. Acquired Immunodeficiency Syndrome (AIDS) is the most serious stage of HIV infection and is determined by the diagnosis of certain opportunistic infections or low CD4 blood cell counts. The number of individuals newly diagnosed with HIV in Lowell has varied over time, with its lowest count in 2010 (14 cases) and highest in 2014 (30 cases). There were 25 individuals newly diagnosed in 2016. The number of individuals diagnosed with AIDS in Lowell has also varied, but has seen a downward trend and has remained consistently lower than the number of individuals diagnosed with HIV. In 2012, there was a high of 20 individuals diagnosed with AIDS, while 2016 saw 7 individuals diagnosed.

Recommendations to Improve the Health and Quality of Life of Residents

Participants of listening sessions with providers, professionals and community members were asked for recommendations to improve the health and quality of life of the Greater Lowell Community.

Most of the provider, professional and community listening sessions recommended outreach programs and education to improve the health and quality of life of the community. Professional groups specifically recommended the design of standardized education programs that better increase community awareness on disease symptoms, viral infections and environmental risk factors to prevent negligence to health and safety in the long term. They also recognized the importance of education, health promotion and outreach events at social gatherings including schools, faith-based organizations, and non-profit organizations. Additional suggestions were resources available in multiple native languages to align with the cultural and ethnic backgrounds of the community. One key informant recommended organizing regular listening sessions to engage the community in discussions regarding their health and social well-being. Listening session participants also identified the need for a culturally competent health system with alternative forms of therapy integrated into clinical practice for a more holistic approach to health. Youth participants noted that cultural competency training programs would be important for all health care providers and the larger community. Most listening sessions stated that immigrants needed a better health care navigation system through health promotion and funding programs such as the State Health Benefits Programs. A key informant also mentioned the importance of creating a training program that will build qualified community support teams to bridge the gap between community and the health care system.

The majority of the providers, professional and community groups recommended educating the community on navigating health care regulations and guidelines. For instance, there is the increasing need for a smooth transition of patients' medical information between social service centers, hospitals and clinics in the Greater Lowell area. A professional from the police department mentioned the need to strategize with community partners in coordinating appropriate sharing of health information among service providers while maintaining HIPAA (Health Insurance Portability and Accountability Act) regulations. Listening sessions also cited the increased need for the community to understand how the health insurance system works including health care coverage, reimbursements and co-pays. A key informant also mentioned the need for the creation of educational institutes whose goal is to create strategies to ease navigation of federal level policies and procedures. Immigrants and people who do not speak English would benefit from additional education on the laws regarding the right to interpretation services while seeking medical care. Most professional groups recommended disease prevention strategies, especially for young school-age children and families. Suggestions included the need for available health and wellness programs to adopt a preventive approach rather than focus on best treatment options.

Listening session participants recognized the need for an easy-to-navigate transportation system especially for immigrants, seniors, and people with disabilities. Other key recommendations to improve the health care transportation system included, using Uber health and expanding the availability of public transportation system outside peak hours and weekends. One key informant recommended a transportation summit with community members to discuss ways to improve the transportation system including funding opportunities, proximity of central locations within the CHNA communities and special transportation services for the aging population and the disabled.

Other important recommendations mentioned in listening sessions included the need for integrated care through effective communication between the medical team and the community health team, more mental health facilities and substance use disorder crisis programs, more shelters for people experiencing homelessness and expanded support services for caregivers of individuals with dementia and Alzheimer's disease due to the current need. They also recommended increased advocacy for policies and procedures to improve the health

and safety of vulnerable populations including pregnant women, children, and the elderly. Several professional listening sessions advocated for expanding affordable and safe housing in the Greater Lowell area. One key informant recognized the need for recovery coaches to work in the hospitals and primary care facilities so that follow ups can be done for people with mental health issues or substance use disorders.

The African/faith community had the following suggestions for additional changes to improve the health of the African community:

- More engagement with African leaders on ways to improve the health of the African community.
- Expanded outreach efforts and education on mental health and safety awareness programs.
- Create strategies on how to destigmatize the African community and increase trust with communicating their HIV/AIDS and STD status with health care providers and family members.
- Increase efforts to address alcohol use disorder, especially its impact on women.

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

- More listening sessions on a regular basis to share and have discussions on their issues, problems and learn about resources available to the community.
- More community engagement with the health system through education organized by the community health center.
- More access to mental health services.

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

- Increase the number of workshops/trainings/ info-sessions within the Cambodian community on certain health risks and on why it is important to go see a doctor on a regular basis.
- More increased outreach efforts to enhance community awareness on resources available to the local community
- More education and outreach materials translated in Khmer language.

The Portuguese community had the following suggestions for additional changes to improve the health of their community:

- Community health education on diabetes and healthy diet
- More availability of language interpretation and translation services because sometimes most translators are Brazilians and not Portuguese.

References and Appendix

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Appendix A

Description of Resources Potentially Available

Multi-sector Collaboratives & Community Health Partnerships
Billerica Substance Abuse Prevention Committee
Centerville Neighborhood Action Group
Greater Lowell Health Alliance
Lowell Alliance for Families and Neighborhoods
Lowell Hunger Homeless Commission
Local Health Departments
Billerica Board of Health
Chelmsford Board of Health
Dracut Health Department
Lowell Health and Human Services Department
Tewksbury Police Department
Tyngsboro Health Department
Westford Health Department
Wilmington Health Department
Worcester Department of Public Health
Private, Community-based Social Service & Community Health Agencies
Adult Education
Lowell Adult Education Center
Merrimack Valley Area Health Education Center(AHEC)
Services for the Formerly Incarcerated
THRIVE Communities
Early Childhood, Youth, and Adolescent Services
Early Childhood Services
Acre Family Child Care
Community Teamwork Inc.
Healthy Families
Lowell Women, Infants and Children (WIC)
March of Dimes
Maternal Child Health Task Force-Greater Lowell Health Alliance
Project BEAM Early Intervention
South Bay Community Services
Thom Anne Sullivan Center
Elder Services
Atrius Health-Chelmsford
Caregiver Homes
Chelmsford Senior Center
Circle Home
D'Youville Life and Wellness Community
Elder Services of the Merrimack Valley
Element Care
Fairhaven Healthcare
Fallon Health

Genesis Healthcare
Glenwood Care and Rehab
Greater Lowell Elder Mental Health Collaborative
Home Away from Home
Lowell Senior Center
Senior Whole Health
Summit Elder Care-Lowell
Town and Country Healthcare Center
Employment Services
Greater Lowell Workforce Board
Merrimack Valley Workforce Investment Board
Faith-based Organizations
Bethany Christian Services
Chelmsford Unitarian Church
Christ Jubilee International Ministries
Merrimack Valley Catholic Charities
Salvation Army
Food Security and Healthy Eating
Community Garden Programs
Mill City Grows
Food Bank
Merrimack Valley Food Bank
Food Pantries
Central Food Ministry
Chelmsford Community Exchange
Christ Church United
Christ Jubilee Food Pantry
Community Christian Fellowship
Dharma Food Pantry
Dracut Food Pantry
Dwelling House of Hope
Hope Dove
Lowell Public Schools Pantry-Rogers Street
Merrimack Valley Catholic Charities
Open Pantry Greater Lowell
Salvation Army
Tewksbury Community Food Pantry
Westford Food Pantry

Legal Aid Services
Justice Resource Institute CBS
Merrimack Valley Legal Services, Inc.
Northeast Legal Aid
Multi-Service Cultural Agencies
African Center of the Merrimack Valley
Asian Task Force Against Domestic Violence
Cambodian Mutual Assistance Association (CMAA)
International Institute of New England-Lowell
Latin American Health Institute
Massachusetts Alliance of Portuguese Speakers (MAPS)
PFLAG
Recreational Services
Chelmsford Wellness Center
Cultivating Qi
Greater Lowell YMCA
Lowell National Historical Parks
Lowell Parks and Conservation Trust, Inc.
Lowell Parks and Recreation
Shape Up Somerville
SLS Fitness
Shelter & Domestic Violence Services
Alternative House
Brigid's Crossing
House of Hope
Living Waters, Center of Hope
Lowell Transitional Living Center
Transportation
Mighty Drum
Youth & Adolescents
Boys and Girls Club of Greater Lowell
Greater Lowell Pediatrics
Healthy Futures
History UnErased
Middlesex Partnership for Youth
Safe Families for Children
Safe Routes to School
Tewksbury Cares
United Teen Equality Center (UTEC)

Wayside Youth and Family Support Network
The NAN Project
YWCA of Lowell
Other Community-Based Organizations
Health Care Services
Hospital Services/Primary Care and Medical Specialty Care Services
Blue Cross Blue Shield of Massachusetts
Boston Medical Center HealthNet Plan
CHC Nursing
Circle Health
Damien Folch Family Practice
Fallon Community Health Plan
Greater Lawrence Family Health Center
Hallmark Health
Healthcare for All
Healthcentric Advisors
Lahey Emergency Services
Lowell Community Health Center
Lowell Crisis Team
Lowell General Hospital
Mass Health
Metta Health Center
Network Health
Pawtucket Pharmacy
Tewksbury Hospital
United Health Care
Walgreens Pharmacy
Wellforce
Behavioral Health (Mental Health & Substance Use)
Adcare
Arbour Counseling Services Haverhill
Billerica Substance Abuse Program
Bridgewell/Pathfinder
Center for Hope and Healing
Clean Slate Centers
Column Health
Farnum Center
Habit Opco, Inc.
Institute for Health and Recovery
Lahey Health Behavioral Services
Learn to Cope
Life Connection Center
Lowell House Addiction Treatment and Recovery Inc.
Lowell & Lawrence Drug Courts

Lowell Tobacco Control
Massachusetts Department of Mental Health
Megan's House
Mental Health Association of Greater Lowell
Northeast Behavioral Health
Northeast Tobacco Free Partnership
Northeast Recovery Learning Community
Place of Promise
Samaritans of the Merrimack Valley
Solomon Mental Health Center
Tewksbury Detox Center
Tewksbury Treatment Center
Tobacco Free Mass
The Phoenix
Vinfen
Post-Acute Services
Afya Home Care
Care One
Hand Delivered Hope
Northeast Independent Living Center
Next Step Living
New England Community Cares
Ambulance Services
Lowell General Hospital-Paramedics
PRIDEStar EMS
Trinity EMS
Education, Advocacy, Research & Planning Organizations
Academic
Billerica Public Schools
Chelmsford Public Schools
Dracut Public Schools
Greater Lowell Technical High School
Innovation Academy Charter School
Lowell Middlesex Academy Charter School
Lowell Public Schools
Middlesex Community College
Salem State University
Tewksbury Public Schools
Tyngsboro Public Schools
University of Massachusetts Lowell
Westford Public Schools
Wilmington Public Schools

Business and Community Development
Aramark
Coalition for a Better Acre
Entrepreneurship for All (E for All)- Lowell
Eastern Bank
Enterprise Bank
Gallagher & Cavanaugh, LLP
Greater Lowell Chamber of Commerce
Lowell Telecommunications Corporation
Marcia Cassidy Communications
Project Learn
Health Education & Advocacy
Philanthropy
Greater Lowell Community Foundation
Resource Inventory
WellConnected.net

Appendix B

Evaluation of Impact since 2013 Greater Lowell CHNA

ACCESS TO HEALTHY FOOD

Eat the Rainbow – Eat the Rainbow was a healthy snacking program the hospital offered at Girls, Inc., which included education about healthy eating and healthy snack sampling for the young girls throughout the year. This program served over 75 girls ages 8-12.

Mobile Market Partnerships – The hospital hosted (21) Mobile Markets with Mill City Grows (MCG) from June thru October once a week at both hospital campuses in Lowell. Between both locations, there were 883 purchases of fresh, locally grown vegetables and fruits, and 165 of those purchases were with SNAP/WIC. The hospital also participated in the Community Market Program over the summer with the Merrimack Valley Food Bank. The Community Market Program serves residents of four Lowell Housing Authority properties, offering them the opportunity to supplement their food by enjoying fresh produce at no cost. Staff volunteers attended the weekly markets to provide nutrition education and blood pressure screenings to approximately 150 residents in need.

School Garden Program – Through its partnership with Fresh Start Food Gardens, the hospital was able to provide Girls, Inc. of Lowell with onsite gardens to teach 50 young girls how to grow their own fresh vegetables, the importance of healthy eating and why it matters to our health, gardening skills and the science behind gardening success.

ASTHMA

CME Asthma Education – The hospital's medical library provided one Continuing Medical Education (CME) program for 60 physicians to improve education about accurately diagnosing and providing referrals for effective asthma management.

Media Campaign for Asthma – Lowell General's marketing team helped disseminate approximately 50 informative messages on the hospital's social media accounts to help raise awareness about asthma triggers and how to minimize risk of asthma complications in adults and children. We reach nearly 6,000 followers on Facebook and 3,503 on Twitter.

MENTAL HEALTH

Mental Health First Aid Trainings – The hospital supported the internationally recognized and evidence-based curriculum known as Mental Health First Aid. Mental Health First Aid is an 8-hour training program that teaches members of the public how to help a person who is developing or struggling with a mental health problem or in a mental health crisis. In partnership with the American Foundation for Suicide Prevention, the hospital offered four trainings. Altogether, we served 73 people in need.

Wellforce Care Plan Launch – The hospital, in partnership with Fallon Health and Wellforce members Tufts Medical Center and Melrose Wakefield Healthcare, launched the Wellforce Care Plan, a MassHealth Accountable Care Organization (ACO) Partnership Plan on March 1, 2018, which affects 30,000 community members covered by MassHealth.

PHYSICAL ACTIVITY

Fitness Classes – In FY 2018, the hospital offered over 40 fitness programs to the public for both adults and children. We provide sessions on-site at the hospital and partner with local organizations to provide programs upon request. In total, we served more than 460 adults and 300 youths.

Project Fit Funding – This year Lowell General Hospital funded over $21,000 to implement Project Fit America (PFA) at the McAuliffe Elementary School in Lowell. This grant provides the school with a state of the art outdoor "Fit Pit" playground specifically designed to address the deficit areas where children fail fitness tests, as well as indoor fitness equipment, installation of the equipment, and a dynamic curriculum with games, activities and challenges for kids with the PFA outdoor & indoor equipment.

SOCIAL DETERMINANTS OF HEALTH

Careers in Healthcare Program – Our Careers in Healthcare program immerses high school students considering a career in healthcare. In FY 2018, we collaborated with 11 local high schools to provide a 4-hour Careers in Healthcare Tour each month during the school year for students interested in the medical field. During each tour, students meet with clinical and nonclinical staff, tour departments, and get a broad overview of different careers available in healthcare. Additionally for students seeking an extended program, the hospital provides the Careers in Healthcare Experience Program, a weeklong summer camp for 20 high school students who are interested in pursuing a career in the healthcare field. This program gives high school students from within Greater Lowell hands-on experience in various departments and disciplines.

Internship Programs – Lowell General Hospital has built strong relationships with local colleges and universities to provide workforce development opportunities to students of various degrees and clinical programs. In FY 2018, the hospital dedicated approximately 10,500staff hours to more than 1,000 students.

SUBSTANCE ABUSE

Hackathon Opioid Project – In the fall of 2017, we sponsored the health and wellness track in the 2017 America East Hackathon hosted at UMass Lowell in order to attract innovative and preventative solutions to address the opioid epidemic in Greater Lowell. The hackathon is designed to gather America East students to solve real world challenges by developing software and hardware projects that address them.

Opioid Awareness Campaign – Throughout 2018, the hospital assisted in disseminating opioid awareness campaign materials (large posters, coffee sleeves, and bus ads) to provide education and awareness on opioid misuse and addiction. As part of the Substance Use and Prevention (SUP) Task Force of the Greater Lowell Health Alliance, we aid in the work to strengthen new and existing collaborations in the Greater Lowell community to prevent and reduce the use of substances among our community members. The SUP Task Force partnerships have led to engagement of over 2,500 residents and drug prevention education to over 2,000 students (grades 3-12) annually.

Appendix C

Complete Rank Orders for Total Survey Participants

Rank Order of First, Second, and Third Priority Resources, in Total Rank Order, All Participants

Rank	Resource	Rank 1		Rank 2		Rank 3		Total Rank Count	
		%	n	%	n	%	n	%	n
1	Affordable housing	17.6%	238	11.6%	157	6.79%	92	35.9%	487
2	Access to mental health services	14.2%	192	10.3%	139	9.59%	130	34.0%	461
3	Access to healthy food	13.3%	180	10.1%	137	6.57%	89	30.0%	406
4	High-quality public education	10.0%	136	8.9%	121	8.78%	119	27.7%	376
5	Substance abuse prevention programming	8.0%	109	6.3%	86	8.93%	121	23.3%	316
6	Affordable prescription drugs	3.8%	51	6.8%	92	5.54%	75	16.1%	218
7	Preventative health services	2.7%	37	4.9%	67	6.35%	86	14.0%	190
8	Emergency health services	3.2%	43	4.9%	67	5.54%	75	13.7%	185
9	Services for seniors	2.3%	31	3.4%	46	5.54%	75	11.2%	152
10	Services for adolescents	0.7%	10	3.2%	44	3.32%	45	7.3%	99
11	Accessibility for people with disabilities	2.0%	27	2.1%	29	2.95%	40	7.1%	96
12	Public transportation	1.0%	14	2.8%	38	3.03%	41	6.9%	93
13	Public parks	0.3%	4	1.4%	19	2.21%	30	3.9%	53
14	Emergency housing	0.5%	7	1.3%	17	2.14%	29	3.9%	53
15	Dental services	0.4%	5	0.7%	10	0.81%	11	1.9%	26
16	Vision care services	0.1%	2	0.5%	7	0.89%	12	1.5%	21

Rank Order of First, Second, and Third Priority Health Issues, in Total Rank Order, All Participants

Rank	Health Issue	Rank 1		Rank 2		Rank 3		Total Rank Count	
		%	n	%	n	%	n	%	n
1	Mental health issues	16.5%	224	13.7%	186	11.7%	158	41.9%	568
2	Substance Addiction	13.9%	188	12.0%	162	8.0%	108	33.8%	458
3	Alcohol abuse/addiction	14.0%	190	8.5%	115	8.7%	118	31.2%	423
4	Cancer	7.5%	102	6.3%	86	5.0%	68	18.9%	256
5	Nutrition	5.9%	80	5.6%	76	6.6%	90	18.2%	246
6	Obesity	2.8%	38	3.8%	52	6.3%	86	13.0%	176
7	Heart disease	3.4%	46	4.7%	64	4.3%	58	12.4%	168
8	Diabetes	2.3%	31	5.6%	76	3.5%	48	11.4%	155
9	Infectious diseases	2.0%	27	1.9%	26	5.2%	71	9.2%	124
10	Tick/insect illnesses	1.7%	23	1.8%	25	3.2%	43	6.7%	91
11	Prenatal care	1.0%	13	2.2%	30	2.3%	31	5.5%	74
12	Post-partum health	0.3%	4	1.7%	23	2.2%	30	4.2%	57
13	High blood pressure	0.7%	9	1.8%	25	1.4%	19	3.9%	53
14	Bone, joint, and muscle health	0.7%	9	1.5%	21	1.4%	19	3.6%	49
15	Asthma	1.2%	16	1.0%	13	0.9%	12	3.0%	41
16	HIV/AIDS	0.8%	11	0.5%	7	1.4%	19	2.7%	37
17	Breastfeeding	0.5%	7	1.0%	13	1.0%	13	2.4%	33
18	Hepatitis	0.1%	1	0.7%	10	0.5%	7	1.3%	18
19	Chronic Lung disease	0.2%	3	0.4%	6	0.6%	8	1.3%	17

Rank Order of First, Second, and Third Priority Community Safety Issues, in Total Rank Order, All Participants

Rank	Safety Issue	Rank 1		Rank 2		Rank 3		Total Rank Count	
		%	n	%	n	%	n	%	n
1	Domestic violence	11.1%	151	12.5%	169	8.1%	110	31.7%	430
2	Bullying	15.8%	214	6.8%	92	8.2%	111	30.8%	417
3	Drug trafficking	8.9%	121	8.5%	115	6.9%	93	24.3%	329
4	Sexual assault/rape	6.0%	81	8.9%	121	8.2%	111	23.1%	313
5	Unsafe/illegal gun ownership	8.3%	112	4.4%	59	7.5%	101	20.1%	272
6	Human trafficking	4.6%	63	6.5%	88	5.5%	74	16.6%	225
7	Discrimination based on race	5.0%	68	5.0%	68	4.9%	66	14.9%	202
8	Gang activity	2.3%	31	3.2%	43	4.7%	64	10.2%	138
9	Discrimination based on immigration status	3.3%	45	3.5%	47	2.4%	32	9.2%	124
10	Discrimination based on class or income	2.7%	36	2.7%	36	3.5%	47	8.8%	119
11	Discrimination based on gender identity	1.4%	19	2.9%	39	2.6%	35	6.9%	93
12	Theft	1.2%	16	2.8%	38	2.9%	39	6.9%	93
13	Discrimination based on sexuality	0.7%	10	1.6%	22	2.1%	28	4.4%	60
14	Discrimination based on sexism	0.7%	9	1.7%	23	1.5%	21	3.9%	53
15	Vandalism	0.4%	6	0.7%	9	1.7%	23	2.8%	38
16	Street harassment/cat-calling	0.3%	4	0.4%	6	0.9%	12	1.6%	22

Health Issue Prevalence, Self and Others, In Rank Order by Participant Prevalence, All Participants

Rank	Health Issue				
		n	%	n	%
1	Anxiety	33.4%	453	56.0%	759
2	Depression	26.2%	355	60.4%	819
3	Vision problems	25.5%	345	44.4%	602
4	Bone, joint, and muscle illness	21.2%	287	41.3%	560
5	High cholesterol	17.6%	238	48.4%	656
6	High blood pressure	17.5%	237	61.4%	832
7	Obesity and related illnesses	16.2%	219	49.4%	669
8	Asthma	15.6%	211	49.1%	665
9	Hearing problems	9.8%	133	46.6%	631
10	Other mood/personality disorders	9.2%	125	52.8%	716
11	Diabetes	9.0%	122	63.6%	862
12	Limited mobility	8.6%	116	41.5%	563
13	Post-partum health problems	7.4%	100	27.0%	366
14	Suicide/suicidal thoughts	7.3%	99	42.7%	579
15	Cancer	6.6%	89	65.6%	889
16	Heart disease	5.7%	77	56.7%	768
17	Chronic lung disease	4.2%	57	29.6%	401
18	Alcohol abuse/addiction	4.2%	57	65.2%	883
19	Tick/insect illnesses	4.0%	54	39.4%	534
20	Hepatitis C	3.2%	44	19.3%	261
21	Hepatitis B	3.0%	41	15.6%	212
22	HIV/AIDS	3.0%	40	20.6%	279
23	Substance addiction	2.8%	38	52.2%	707

Barriers to Healthcare Prevalence, Self and Others, In Rank Order by Participant Prevalence, All Participants

Rank	Barrier	I have experienced this barrier		Someone I know experienced this barrier	
		%	n	%	n
1	Care received from a healthcare provider was negative (rude, disrespectful, etc.)	19.9%	269	26.1%	354
2	Cannot afford prescription medication	16.8%	227	46.9%	636
3	Office is not open during times when I am available	16.0%	217	21.5%	291
4	Cannot afford regular mental health services (therapy, counseling, etc.)	12.3%	166	32.6%	442
5	Cannot find a provider accepting new patients	11.3%	153	26.2%	355
6	Cannot find a provider that accepts my insurance	9.0%	122	22.5%	305
7	Cannot find a specialist with expertise in my health issue	8.1%	110	17.7%	240
8	No transportation to medical facility	6.7%	91	33.0%	447
9	Cannot obtain health insurance	6.7%	91	38.1%	516
10	Cannot afford long term health services (hospice, in-home care, etc.)	5.6%	76	29.0%	393
11	Do not know how to find a provider	4.4%	60	16.8%	228
12	Cannot find a doctor who respects my culture	3.3%	45	15.1%	205
13	Cannot find a doctor who speaks my language	2.9%	39	17.5%	237

Ranked Community Resource Priorities, by Selected Participant City

Rank	Lowell	Dracut	Tyngsborough	Tewksbury	Chelmsford
1	Affordable Housing	Mental Health Services	Mental Health Services	Mental Health Services	Affordable Housing
2	Mental Health Services	Affordable Housing	High-Quality Public Education	Affordable Prescription Drugs	Healthy Food
3	Healthy Food	Healthy Food	Healthy Food	Substance Abuse Prevention	Mental Health Services
4	High-Quality Public Education	High-Quality Public Education	Substance Abuse Prevention	Affordable Housing	High-Quality Public Education
5	Substance Abuse Prevention	Substance Abuse Prevention	Affordable Housing	High-Quality Public Education	Affordable Prescription Drugs

Ranked Health Issue Priorities, by Selected Participant City

Rank	Lowell	Dracut	Tyngsborough	Tewksbury	Chelmsford	Billerica	Westford
1	Mental Health	Mental Health	Mental Health	Mental Health	Mental Health	Mental Health	Mental Health
2	Substance Use	Alcohol Abuse	Alcohol Abuse	Substance Use	Substance Use	Substance Use	Alcohol Abuse
3	Alcohol Abuse	Substance Use	Substance Use	Alcohol Abuse	Alcohol Abuse	Alcohol Abuse	Substance Use
4	Cancer	Nutrition	Cancer	Cancer	Nutrition	Cancer	Cancer
5	Nutrition	Cancer	Nutrition	Diabetes	Cancer	Nutrition	Tick/ insect illnesses

Ranked Safety Issue Priorities, by Participant Race

Rank	White	Non-white
1	Domestic Violence	Bullying
2	Bullying	Discrimination based on race
3	Drug trafficking	Domestic Violence
4	Sexual Assault	Discrimination based on Immigration Status
5	Unsafe gun ownership	Sexual Assault

Appendix C
Listening Session Participants

Phillip Abad
Lisa Abramouich
Mercy Anampiu
Shirley Archambault
Barney Arnold
Gerouge Asamouah
Veronica Baez
Felicia Balbi
Stephanie Barry
Frank E. Baskin
Leslie H. Baskin
Laurie Blair
Andrea Blanchard
Lisa Bourdea
Matt Brown
Stephanie Buchholz
Elizabeth Cannon
Carla Caraballo
Migdalia Castro
Sacheat Chan
Elizabeth Chenng
Yun-Ju Choi
Elmoundion Chukuiezi
Bernadette Chukwuego
Maria Clauto
Amanda Clermont
Nancy Coan
Paul Cohen
Domaris Coistenanos
Darcie Coleman
John C. Curran
Johanna Danas
Colleen DaSilva
Kerrie D'entremont
Hope Desruisseaux
Laura Diaz
Emily Donovan
Alyson Downs
Christine Durkin
Barbara Duusford
Jim Dyment
Olivia Echteler
Kate Elkins
Aurora Erickson
Marie N. Eugene
John Feeley
Levcnia Fereesa
Elaine Fernandes
Amrith Fernandes Prabu
Dulu A. Ferreira
Levinia Ferresa
Eduardo Ferrev
Cheryl Finney
Cheryl Finney
Becca Fipphen
Stephen Fisher
David Fitzgerald
Suzanne Flechette
Wilmary Flores
Karen Frederick
Lindaura Freitas
Evengelina Furtado
William Garr
Julia Gavin
Siboney Gomez
Ana Gonzalez
Andres Gonzalez
Shantay Gonzalez
Brenda Govid
Marilyn Graham
Amada Gregory
Ellen Grondirie
Laurie Guay
Gordon Halm
Kathy Hicking
Heather Hilbert
Jeff Hillam
Edina A. Hint
Elizabeth Hughes
Denise Hulse
Daniela Johnson
Eric Johnson
Gail Johnson
Michael Jordan
Maria Jose Dias
Ruth Joseph
Erika Kennedy
Sauda Keo
Lindsay Kilgour
Lorna Kiplagat
Harry Kortikere
Aime Kouadio
Julie Le
Jenny Lee
Diego Leonardo
Jay Linnehan
Ines Madrid
Ed Mahoney
Richard Makokha
Tami Marshall
Connie Martin
Pamela Maynard

Karen Meyers
Nadode A. Mukamyarwaya
Stephany Munoz
Nandi Munson
Roger Muyanja
Carnie Nagle
Hussein Nahimana
Peter Naihi
Danial Nakamoto
Diana Newell
Lucy Nyanburg Nyotu
Sheila Och
Lori O'Connor
Meghan O'Connor
Ruth Ogumbo
Abisola Ogunsaye
Evelyn Ortiz
David Ouellette
Kerri C. Oun
Stephanie Owen
Lucy Paynter
Manuela Pereira
Janelle M. Perez
Deborah Perry
Amy Pessia
Maria Helena Piana
Roger Pin
Catherine Porrier

Heather Prince Doss
Rosa Realejo
Eda Recarte
Emily Reiniger
Domingo Reis
Grazielle Reis
Maria A. Reis
Ruth Richards
Rev Sylvia T. Robinson
Cindy Robles
Luisa Rodriguez
Sue Rosa
Maria Ruggiero
Julie Salvato
Dawn Saune
Susan Sawyer
Dean Shapley
Meghan Siembor
Maria Silva
Michael Silva
Francey Slater
Mckenzie Smith
Pam Smith
Angelina Sok
Sousalina Sok
Thiva Son
Kerry Sorrentino
Keanhuy Sour

Kate Sout Sorm
Jeff Stephens
Connor Stuart
Imogene Stulken
Amanda Sullivan
Patricia Sylvester
Mary Tauras
Susan Taylor
Eva Terzis
Susan Thomson Tripathy
Moiyka Tieng
Sokha Van
Lisa Van Thiel
Sreypov Vary
Luz Vasudevan
Kerran Vigroux
Troy Vongpheth
Sialy Wamunyu
Jackie Wangutusi
Bernard Wasaidy
Diane Welch
Christine West
Kelly Will
Kristen Williams
Jeffrey Winward
Isa Woldeguiorguis
Patron Yemery
Juana E. Zapato

Appendix D

Listening Session and Interview Questions

1. Could you tell me your thoughts about the overall health of the populations that you are aware of in the Greater Lowell region?

2. What do you think are the top three health problems facing these populations in the Greater Lowell region?

3. Which populations are at greatest risk or have the greatest unmet needs and why?

4. What are the strengths of current health services provided within Greater Lowell?

5. What are the weaknesses or unmet needs of current health services provided within Greater Lowell?

6. Can you describe an example or of an obstacle your clients or patients or others faced in accessing health services?

7. Are there other barriers to improve the health of these populations and their individual health needs?

8. What does the Greater Lowell community need to do to improve the health and quality of life of its residents?

9. How good a job do you think the Greater Lowell health services system is doing at meeting the health needs of the [mention specific group] community, specifically?

10. What are the specific health problems you would like to see the health services system become more involved with, for the community in general? What should their top health priorities be in order to address the needs and improve the health of the community?

Appendix E

Listening Session and Interview Facilitators and Note Takers

Valerie Acquaye	University of Massachusetts Lowell
Kelechi Adejumo	University of Massachusetts Lowell
Krysta Brugger	University of Massachusetts Lowell
Raphael Marinho	University of Massachusetts Lowell
Veronica Mukundi	University of Massachusetts Lowell
Am Ngeth	Cambodian Mutual Assistance Association
Naike Saint-Pierre	University of Massachusetts Lowell
Resmi Thekkedath	University of Massachusetts Lowell
Van Tooch	Cambodian Mutual Assistance Association
Kim-Judy You	University of Massachusetts Lowell

Appendix F

2019 Community Health Needs Assessment Advisory Committee

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Jeannine Durkin

Irene Egan

Damian Folch

Karen Frederick

Cecelia "Cece" Lynch

Deirdra A. Murphy

Sovanna Pouv

Susan M. Rosa

Andrea Saunders Batchelder

Jeffrey P. Stephens

Kerran Vigroux

Susan West Levine

Exhibit A (4) (b)

Vision

A healthier community through collaboration, education and the coordination of resources

GLHA
GREATER LOWELL HEALTH ALLIANCE

Acknowledgments

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Members of the GLHA Task Forces & Subcommittees

Behavioral Health
Chronic Disease & Wellness
Health Equity
Housing & Built Environment
Maternal Child Health
Substance Use and Prevention

Members of the Asthma Coalition of Greater Lowell

Chair, David Turcotte – University of Massachusetts Lowell

Center for Hope & Healing – for their expertise in the area of "Safety & Violence"

And to all our community partner agencies!

This Community Health Improvement Planning process was conducted from November 2019 through October 2020. It serves as the basis of action for health improvement efforts carried out by the Greater Lowell Health Alliance of CHNA 10 and our many community partners. Built on priorities set by the 2019 Greater Lowell Community Health Needs Assessment, this Community Health Improvement Plan (CHIP) identifies the goals, objectives and recommended strategies to improve health through collaboration.

Annual updates and revisions will be made available online and through public community events. **For more information please visit www.greaterlowellhealthalliance.org/CHIP**

Table of Contents

Executive Summary

The community we live in influences our health. For some, good health means reducing the rate of diabetes or asthma, while for others it is providing access to education and economic stability. In either case, to achieve optimal health it is imperative that we improve the region where we live, learn, work and play. To do this, collaboration is key to developing the best strategies to address the needs of the community.

In 2019, Lowell General Hospital, in partnership with the Greater Lowell Health Alliance, commissioned the University of Massachusetts Lowell to conduct and assessment of community health needs for the Greater Lowell area, which includes, Billerica, Chelmsford, Dracut, Dunstable, Lowell, Tewksbury, Tyngsboro and Westford. The purpose of this assessment includes evaluating the overall health of residents by involving a broad spectrum of community members, identifying the top health issues and strengths and weaknesses of the healthcare network, recommending actions to address priority concerns, and providing information that informs a community process to build consensus around strategies to improve the health of Greater Lowell residents.

The top priority health problems identified by the 2019 Greater Lowell Community Health Needs Assessment (GLCHNA) through focus groups, interviews, and surveys, in order of preference and supported by public health data include mental health (e.g. depression), substance addiction, alcohol abuse/addiction, cancer, and nutrition. Other health issues included obesity, heart disease, diabetes, infectious diseases, and tick/insect illness. The top priority community safety issues identified are domestic violence, bullying, drug trafficking, sexual assault/rape, and unsafe/illegal gun ownership. Additional community safety issues include human trafficking, discrimination based on race, gang activity, discrimination based on immigration status, and discrimination based on class or income.

Shortly after the completion of the 2019 Greater Lowell Community Health Needs Assessment, the planning process for the Greater Lowell Community Health Improvement Plan (CHIP) began. Utilizing the data and recommendations provided by the CHNA, and the input of over 100 individuals from over 50 different organizations, the CHIP began to take shape. The Greater Lowell Health Alliance (GLHA) task forces served as working groups for each of these areas to develop strategies for each objective. Interviews with experts in each of these areas as well as round table discussions also took place. The GLHA Health Equity Task Force was developed from the current Cultural Competency task force. They convened to assess all proposed objectives and strategies through a lens of Health Equity. The task force members decided to incorporate a plan to meet the National Standards for Culturally and Linguistically Appropriate Services (CLAS) in health and health care into the CHIP process in order to reduce disparities and achieve health equity. After refinement from the staff, interns, and volunteers of the GLHA, seven health priority areas, 21 focus areas under each objectives and strategic recommendations were finalized. These items are within a larger framework with one overarching goal: health equity.

One Goal: Health Equity

The Robert Wood Johnson Foundation defines health equity as "all people, regardless of ethnicity, socio-economic status, sex or age, have equal opportunity to develop and maintain health through equal access to resources." In the initial meeting of the CHIP process, community partners agreed to work towards equity, as a shared goal, in all priority areas as equity was defined as success in community health improvement. The community partners of the region are all in agreement that the community deserves the opportunity to be healthy, making equity the ultimate goal.

Key Component: Cultural Competency/Cultural Responsiveness

Greater Lowell region has a diverse population. To ensure that the work done through the CHIP grows towards health equity, all priority areas need to be culturally competent. National CLAS standards will be used to guide community partners towards this shift.

In the initial meeting of the CHIP process, community partners agreed to work towards equity, as a shared goal, in all priority areas as equity was defined as success in community health improvement.

Seven Priority Areas and Sub-Categories of Focus

Alcohol & Substance Misuse
- Prevention & Education
- Services & Treatment

Housing & Built Environment
- Affordable Housing
- Transportation & Accessibility

Infectious Disease
- Emergency Preparedness
- HIV/Hep C
- Insect Illness and Vaccines

Maternal Child Health
- Maternal Mortality
- Perinatal Mental Health
- Teen Pregnancy
- Infant Feeding

Mental Health
- Service Access
- Workforce Development
- Suicide

Safety & Violence
- Domestic Violence
- Sexual Assault
- Bullying
- Determination

Wellness & Chronic Disease
- Prevention & Education
- Community Resources
- Advocacy

Introduction and Background

Greater Lowell Community Health Improvement Plan (CHIP)

A Community Health Improvement Plan (CHIP) is a long-term, systematic effort to address public health problems in a community. The plan is based on the results of community health assessment activities, and is part of a community health improvement process, helping to set priorities, coordinate efforts, and target resources. It should define the vision for the health of the community through a collaborative process and should address the gamut of strengths, weaknesses, challenges, and opportunities that exist in the community to improve the health status of that community (Source: Public Health Accreditation Board)

A CHIP for Greater Lowell

With a goal to create a long-term strategy to strengthen the area's health systems, our CHIP will be used as road map for health improvement over a three-year period, guiding the investment of resources of organizations with a stake in improving health for the residents of Lowell and the surrounding communities. Our CHIP mission: to turn data into action and working initiatives to address our community's top health priorities. While addressing specific health priorities, the overarching goal is always one of health equity, meeting the health needs not just for some, but for all.

Who Is Involved

A CHIP's value and significance stems from the involvement of the community. Over this past year, the GLHA has engaged more than 100 people from more than fifty community organizations to develop our first Community Health Improvement Plan, with many more partner agencies and organizations expected to join in the coming year.

Our Plan in Action

In 2019 the GLHA held dozens of high-energy CHIP planning process meetings that enabled us to join with community members and leaders to further identify our community's top health priorities by drilling deeper into our health needs assessment. Through those meetings, we worked to develop SMART goals and objectives — those that are specific, measurable, achievable, results-focused, and time-bound — to leverage and maximize community resources to fill gaps and avoid duplication of efforts in these priority areas. The GLHA task forces and the GLHA Steering committee, comprising a small group of interested partners in each area of expertise, will continually measure health progress and indicators that will then be reported back to the community.

Creating Impact

Although our CHIP is a working document in its early stages, it is already creating impact. The CHIP process helped determine priority areas for grants, enabling the GLHA to distribute funds to the organizations on the front line of addressing our area's unmet health needs. Our 2020 Community Health Initiatives Grants were awarded around health priorities and programs that met the specific areas of focus identified by the CHIP process, Mental Health, Alcohol & Substance Misuse, Wellness & Chronic Disease, Infectious Disease, Maternal Child Health, Housing & Built Environment, and Safety & Violence.

ALCOHOL/SUBSTANCE MISUSE

Rationale

Approximated 1 in 10 people over the age of 18 experience substance use disorder (SAMHSA). Alcohol and substance misuse were identified as a top five health need from participants in every Greater Lowell community and demographic group included in the 2019 CHNA. Alcohol and substance misuse were identified by CHNA participants as particularly critical issues for include adolescents, people experiencing emotional distress, members of immigrant and refugee communities, and people diagnosed with hepatitis

Progress and Successes

In 2018, the GLHA released the Merrimack Valley Substance Use Disorder Resource Guide, providing valuable information for community members and service providers to access services. Agencies like the Massachusetts Opioid Abuse Prevention Collaborative have made great strides in changing the policy and practice around Greater Lowell. The 2020 CHIP outlines several evidence-based approaches designed to bolster ongoing community efforts to address Substance Use Disorder (SUD) and alcohol addiction.

UPCOMING ACTIONS

Prevention and Education

Education and preventative care are upstream strategies to reduce future SUD and addiction. Evidence-Based Programming will provide education and resources to young people who may be especially vulnerable to substance use. Simultaneously, ensuring that service providers feel equipped with the most current, evidence-based information to deliver culturally competent best-practices are essential for care quality. Grand-Rounds Training to Physicians and Providers will serve as a crucial resource for maintaining evidence-based care continuums for community members.

Services and Treatment

In order to ensure that SUD care and services are culturally competent and adhering to best-practices, a Best-Practice and Community Needs Audit will inform the care system about assets and gaps in care delivery and quality. This audit will also address social determinants of health, and should include a Transportation Asset/Needs Assessment as well as an assessment of Barriers to Services and Treatment, particularly for populations affected by racism, homophobia, poverty, and homelessness. These combined efforts will contribute to our community goal of Reducing Opiate Overdose Death by 40%, an objective set forth by the HEALing Communities Study as part of the NIH HEAL Initative and our community partnership with Boston Medical Center.

RATIONALE	**Prevention and Education:** Primary prevention of alcohol and substance use were identified in the CHNA as priority need areas in the promotion of community wellbeing. These findings are also supported at the state and national level as critical to the management of substance misuse.
Goal	- Increase the number of community residents receiving comprehensive evidence-based prevention education addressing a range of substances, as well as increase the understanding of evidence-based and cultural competent practices related to substance use prevention and treatment.
Objectives	- Provide evidence-based education via trainings or materials in each of the Greater Lowell communities with a specific focus on youth. - Provide grand-rounds training to physicians/ providers on evidence-based best practices for management of substance use disorder. - Conduct an audit of current practices and needs regarding treatment, bias and stigma for areas of focus (SUDs, LGBTQ+ engagement of pediatricians, provider burnout, etc.)
Deliverables	- Record of trainings delivered via materials, educational campaigns, and trainings, with a target of ten (10) coordinated efforts per year. - One (1) comprehensive provider audit.
Current and Continuing Actions	- Merrimack Valley Substance Use Disorder (MVSUD) Symposium (virtual, winter 2020) - Merrimack Valley Substance Use Disorder Resource Guide - HEALing Communities Media ToolKit - MVC study: provider audit for LGBTQ competencies
Equity Questions	- How has this information been made accessible to people with limited access transportation, internet services, or other tangibles? How have adjustments in approaches reflected the disparate impact of COVID-19? What considerations have been made to protect the confidentiality of participants in programs?

RATIONALE	**Services and Treatment:** Support and resources for people experiencing alcohol and/or substance misuse are a key priority area identified in both the CHNA, as well as state assessments, with particular emphasis on reducing mortality and increasing access to treatment.
Goal	- Increase the accessibility of available treatment for alcohol and SUD, as well as reduce the number of individuals dying from opiate overdose.
Objectives	- Conduct a gaps analysis of barriers to services and treatment particularly for areas of focus (transportation barriers/ sustainability, re-entering from incarceration, refugees/ immigrants, youth). - Reduce opiate overdose death by 40% from baseline.
Deliverables	- Gaps analysis report with suggestions for best practices. - Reported decrease of 40% from baseline.
Current and Continuing Actions	- Mixed Methods Gaps Audit (Collaboration with Behavioral Health Task Force) (winter 2020) - Lowell House Accessibility Project (GLHA Grant Recipient) - The Phoenix Volunteer Engagement Project (GLHA Grant Recipient) - Place of Promise Adult Residential Addiction Recovery Project (GLHA Grant Recipient) - Phase 5: Implementation of HEALing Communities Study (January 2021)
Equity Questions	- How have these interventions taken into account the disproportionate effects of alcohol and SUD on different populations and communities? - How will these programs include the voices of people affected by alcohol and SUD in their design, implementation, and evaluation?

BEHAVIORAL HEALTH

Rationale

Behavioral and mental health needs remain the top health priority area across nearly every community and demographic group assessed in the 2019 CHNA. Barriers to mental health service—such as long waiting lists, confusion about navigating the mental health system, limited language capacity, and prohibitive costs—inhibit the efficacy of mental health services and interventions in the Greater Lowell area. Specific needs for youth, people with SUD, immigrants/refugees, veterans, and elders are also of particular concern in the Greater Lowell community.

UPCOMING ACTIONS

Service Access

Several strategies will be deployed to increase Access to Behavioral Health Services across all of the Greater Lowell communities. Specifically, a targeted gaps analysis that identifies actionable interventions will deployed in Year 1, followed by an action plan to increase the number of providers across a range of service capacities in the community.

Workforce Development

Supporting the behavior health workforce requires both Support for Creative Approach to Improve Recruitment and Retention of a Diverse and Credentialed Workforce, as well as promoting evidence-based specialization capacities in the existing behaviors health workforce. These efforts will specifically target increasing the capacity of the behavioral health workforce to meet the needs of underserved groups, including LGBTQ community members, youth and adolescents, veterans, elders, and people experiencing homelessness, SUD, and/or violence and discrimination.

Suicide

Suicide and suicidal ideation is of particular importance in the CHIP due to its disproportional impacts on people who are LGBTQ, veterans, and/or youth. Increasing our understanding of the current state of suicide/suicidal ideation in populations of interest via Data Collection and Program Deployment, particularly in school-based models, is critical for sustaining a long-term community-based response.

RATIONALE	**Workforce Development:** The CHNA identified a lack of specific providers, as well as challenges in recruiting and retaining service providers.
Goal	- Support creative and strategic approaches to improving the recruitment and retention of a diverse and credentialed mental health workforce at the local and state level to improve service access
Objectives	- Establish a training circuit for existing providers relevant to service delivery to populations of focus. - Increase the number of psychiatrists, social workers, recovery coaches, providers offering services for children, and providers/personnel who are multilingual. - Engage in three (3) policy actions (e.g. letters of support, providing expert testimony etc.) per year on issues relevant to the development of the mental health workforce.
Deliverables	- Six (6) to eight (8) trainings reported by organizations/provider relevant to target groups in three (3) years (or every year). - Percent increase as reported through asset assessment/BLS. - Three (3) reported policy actions recorded through Task Force notes.
Equity Questions	- Are trainings evidence-based and vetted as being culturally competent? Do trainings incorporate anti-racism and anti-bias education and skills? - How do these programs engage providers in smaller practices or in non-traditional settings, including providers who serve clients primarily through telehealth? - How do recruitment strategies ensure diverse candidate pools?

RATIONALE	**Service Access:** Data from the CHNA-identified gaps in services offered and services accessed, as well as limitations in services to meet specific needs of children, adolescents, elders, veterans, people whose primary language is not English and the LGBTQ community.
Goals	- Increase access to behavioral health services through increasing understanding of services offered, decreasing stigma regarding mental health needs, and diversifying the range of services to specifically target gaps in services available to particular populations - Increase the number of residents in Greater Lowell who access behavioral health services
Objectives	- Conduct a gaps analysis to determine current baseline data relevant to the diversity of mental and behavioral health services in the Greater Lowell area - Increase the number of service providers specializing in services for youth, elders, veterans, people whose primary language is not English, and LGBTQ community members - Expand capacity of support groups in each community
Deliverables	- One (1) gaps/asset analysis report (collaboration with Alcohol/ Substance Misuse) - Clinicians with specializations tied in community organizations on record of trainings to increase existing capacity - 10% increase in residents reporting accessing behavioral health services - Average waiting time decrease of 10% from Y1 to Y3.
Current and Continuing Action	- Anne Sullivan Center Access to Telehealth Project (GLHA Grant Recipient)
Equity Questions	- How have these programs considered tangible factors that might limit access to services like exposure to/risk of COVID-19 infection, transportation, insurance/cost, mobility, language, etc.? - How have these programs addresses the impact of racism and other forms of discrimination on service access? - Does this program address the needs of populations outside of Lowell and in surrounding communities? Are leaders on this team also members of key stakeholder groups?

RATIONALE	**Suicide:** In addition to being identified as an area of concern in national and state data sets, the CHNA identified elevated risk for suicide and suicidal ideation among specific participants, including youth, LGBTQ, and veteran participants.
Goals	- Increase understanding of current state of suicide/ ideation in our community via data collection and program deployment. - Decrease the rates of suicide, suicide attempts and suicidal ideation.
Objectives	- Expand currently deployed suicide prevention curriculum to additional three (3) sites per year - Advocate for funding/policy changes to address limitations on services for target populations relevant to suicide prevention (e.g. access to in-patient treatment for youth, etc.).
Deliverables	- Report of curriculum delivered to three (3) additional districts or school systems - At least three (3) policy engagement actions (e.g. letters of support, expert testimony, lobby days, etc.) recorded in Task Force notes. - 10% reduction in rate of of suicide or suicidal ideation
Equity Questions	- How do interventions specifically address disparate rates of suicide or suicidal ideation among specific groups, including youth, LGBTQ, and veterans? - How do interventions incorporate the changing landscape of mental health needs in the context of COVID-19, including emerging trends in suicidal ideation as they unfold?

HOUSING AND THE BUILT ENVIRONMENT

Rationale

The 2019 CHNA identifies housing as one of the most important social determinants of health. Access to safe, affordable housing impacts health in direct (i.e. air quality, neighborhood safety) and indirect (i.e. impact on financial security) ways. Transportation, in particular accessibility to transportation, was also identified in the CHNA as a critical factor in community health and wellbeing.

Progress and Successes

The previous CHNA and CHIP established the Social Determinants of Health Task Force; the 2019 CHNA identified housing and transportation as specific social determinants requiring immediate actions and engagement. As a result, the GLHA transitioned the Social Determinants of Health Task Force to the Housing and Built Environment Task Force; social determinants that were not related to housing or the built environment, like racism and language capacity, were absorbed into the Health Equity Task Force, which oversees all actions within the task forces to ensure equity is central to all GLHA actions.

UPCOMING ACTIONS

Community Resources

The most critical resource in a community is the Availability of Safe, Affordable Housing. Increased access to affordable, safe housing required local engagement in state and federal housing policy decision making, as well as local enforcement of safe housing standards related to housing quality.

Transportation and Accessibility

In the absence of high-order, large-scale community transportation plans, individual organizations work diligently to meet the needs of their clients in the effort to create service accessibility. Efforts the Support the Capacity of Organizations or Entities to Increase Accessibility of Services ensures a commitment to equitable service delivery in the Greater Lowell Community.

RATIONALE	**Affordable Housing:** Access to safe, affordable housing was identified in the CHNA as community member's top priority community resource, and the cost of housing has a significant impact on individuals' and families' ability to meet their health and wellness needs.
Goal	- Increase the number of community members in safe, stable, affordable housing reporting that less than 30% of their household income is spent on meeting housing needs
Objective	- Establish a workflow plan to promote community engagement in policy and advocacy actions
Deliverables	- Identification and description of community workflow plans re: policy engagement - Reduce number of CHNA participants reporting greater than 30% of income spent on house by 10%
Current and Continuing Action	- Habitat for Humanity Building in Billerica (GLHA Grant recipient)
Equity Questions	- Do these interventions consider the varying and disparate burdens of housing for homeowners, renters, multi-family homes, people who are homeless, etc.? - How have these actions addressed the emerging housing needs associated with the effects of COVID-19? - Do these actions also incorporate understanding of the role of systemic racism and disenfranchisement of minority populations?

RATIONALE	**Transportation and Accessibility:** Limitations on individuals' ability to access community resources as a function of limited transportation access or accessibility was identified in the CHNA as a significant barrier to wellness and health.
Goal	Increase the accessibility of public spaces in the Greater Lowell area, particularly for people with limited mobility due to age or disability status
Objectives	- Support organization capacity to assess and/or respond to transportation access needs in regards to service delivery - Facilitate collaboration between local stakeholder agencies and advocacy groups to conduct transportation audit
Deliverable	Demonstration of support (e.g. funding, in-kind, hosted events, materials, policy actions) provided
Current and Continuing Action	Lowell Parks and Conservation Trust Concord River Greenway Community Outreach and Trail Use Assessment (GLHA Grant Recipient)
Equity Question	How has this intervention ensured that input from diverse and varied stakeholders will be included?

MATERNAL CHILD HEALTH

Rationale

Most poor maternal health outcomes are preventable and can be traced to untimely management or inadequate maternal care. Addressing barriers to successful maternal health outcomes including protecting access to reproductive care and promoting policies and actions that aim to reduce racism-driven disparities. Locally, disparities in the burden of unplanning pregnancy, low infant birth weight, and breastfeeding disproportionately impact young people, and people who are Southeast Asian and/or Hispanic. Additionally, Black women are three times more likely to die during childbirth than their white counterparts. (Harvard Public Health). This significant health equity issue exposes the systemic problem of racial barriers in terms of healthcare, service quality, and education

Progress and Successes

Several community agencies, in partnership with clinical providers, continue to offer breastfeeding classes and childbirth classes, many adapting to provide these services via telehealth

UPCOMING ACTIONS

Teen Pregnancy

Comprehensive sexuality education programming to high school aged youth, as well as establishing free condom pick-up sites in each community, are effective strategies in Decreasing Unplanned Pregnancies. It is also important to increase the availability and quality of resources for young parents.

Perinatal and Mental Health

Increasing Perinatal Mental Health Screening Tools and Facilitating Access to Perinatal Resources will improve the perinatal health outcomes for all mothers. Existing resources can also be evaluated and scaled up to ensure mothers are receiving quality care when referred to perinatal mental health services.

Maternal-Infant Mortality and Morbidity

Meaningfully impacting the maternal mortality crisis requires aggressive intervention, but that begins with Increasing Awareness and Deployment of Interventions Addressing Disparities. A data collection initiative is another strategy to help capture the perinatal experience for specific Greater Lowell populations

Infant Feeding

Optimal, safe infant feeding is a preventative strategy to ensure wellness. Improving Resources to Families Wanting to Breastfeed and Promoting Standards for Safe Bottle-Feeding is a frontline strategy to set families up for lifelong wellbeing.

RATIONALE	**Teen Pregnancy:** The 2017 MA State Health Assessment identifies teen pregnancy as a critical intervention area for both primary prevention as well as increased social support and resource access. Disparities in the burden of teen pregnancy are also highlighted, especially for Black and Hispanic young people, and Southeast Asian young people in the Greater Lowell area specifically.
Goal	- Decrease the rate of unplanned pregnancy as well as increase the quality of/ accessibility to resources for young parents
Objectives	- Deliver comprehensive sexuality education programming to 75% of our high school-aged youth - Increase the attendance of young parents in perinatal education and support groups across the reporting period - Establish and supply ten (10) free condom pick up sites in each community
Deliverables	- Record of 80% of participating youth attending at least 75% of sessions - Increase number of programs including telehealth, offering perinatal education to young parents by 10% - Ten (10) condom sites established, and 500 condoms provided.
Equity Questions	- How have these interventions taken into consideration participants' need for flexible scheduling, transportation, childcare, or internet service support? - What considerations have been made for language accessibility? - Do these interventions consider the varying cultural values of participants as they relate to use of contraception, parenting responsibilities, or safe birth practices?

RATIONALE	**Perinatal Mental Health:** Strategies that promote maternal mental health in the postpartum period, as well as programs that offer evidence-based support for mothers entering the perinatal period with a mental health diagnosis, are a critical need area.
Goal	- Increase effective perinatal mental health screening tools to facilitate the access of resources to support mothers and their families during the perinatal period
Objectives	- Increase the utilization of the screening tools for postpartum mental health needs - Conduct three (3) trainings for pediatric providers regarding screening for and responding to perinatal mental health needs
Deliverables	- 100% of providers utilizing tool - Three trainings provided, or 20 training materials and resources delivered
Current and Continuing Action	Matthew's Gift CuddleCots and Family Support Project (GLHA Grant Recipient)
Equity Question	- How have materials been adapted to meet language and cultural diversity considerations?

RATIONALE	**Maternal-Infant Mortality and Morbidity:** Maternal-infant mortality rates remain disproportionately high for Black women, with risk approximately 2-3 times that of White women.
Goal	- Increase awareness/ deployment of evidence-based interventions addressing disparities in maternal-infant mortality and morbidity, particularly for Black mothers and babies
Objectives	- Host three (3) events (with CEUs when appropriate) on approaches to addressing maternal mortality, particularly in regards the role of racism in maternal mortality - Establish a data-collection strategy for capturing the perinatal experience for specific Greater Lowell populations of interest. - Increase the percent of people attending prenatal care appointments
Deliverables	- Three (3) events hosted per year with a goal of 150 participants - Draft and pilot of data collection approach, including sustainability - Percent of people attending prenatal care appointments to 90%
Equity Questions	- How has event planning and execution engaged with members of the population of interest as key stakeholders? - How have initiatives specifically addressed or considered disparate rates of maternal and infant mortality and morbidity as a function of systemic racism?

RATIONALE	**Infant Feeding:** The prioritizing the provision of human milk for infants is a priority health intervention to promote lifelong wellness; similarly, the safe preparation of infant formula is also a critical area for promoting infant health.
Goal	- Increase the quality/ availability of resources available to families who want to breastfeed their babies, as well as promote standards for safe bottle-feeding
Objective	- Increase the number of providers, particularly pediatric providers, engaging in the promotion of optimal infant feeding
Deliverable	- Deliver educational materials or training to 60% of pediatric providers
Current and Continuing Action	- Convening of Breastfeeding Working Group of Maternal-Child Health Task Force in collaboration with REACH LoWell.
Equity Question	- How have these trainings and materials incorporated cultural and language considerations into the creation and distribution?

Our vision is to create a healthier community through collaboration, education and the coordination of resources.

INFECTIOUS DISEASE

Rationale

Infectious disease concerns, ranging from HIV and Hepatitis C to tick and insect illnesses, were identified in the 2019 CHNA. Importantly, data collection for the 2019 CHNA concluded prior to the COVID-19 pandemic, suggesting that this priority would rank even higher were data collection to be repeated. Preventative efforts, like vaccination and prevention education, as well as response strategies, such as emergency preparedness, were both identified as critical to infectious disease response.

Progress and Successes

Infectious disease emerged in the 2019 CHNA as a new priority area. Disproportionate rates of infection in the Lowell areas for Hepatitis B, Hepatitis C, Tuberculosis, and HIV/AIDS contribute to increasing community concern for disease management and mitigation. The convening of several working groups and task forces in response to COVID-19 will be sustained through the reporting period to continue to engage the community in meaningful response. GLHA also commits to supporting efforts of local governments via tangible support and data sharing as they coordinate responses to pandemics and other infectious disease concerns.

UPCOMING ACTIONS

Emergency Preparedness

The emergent COVID-19 pandemic clearly demonstrated the need to increase the Capacity of Community Response to an infectious disease event. While emergency preparedness may look different across each Greater Lowell community, efforts to identify, establish, and convene an emergency preparedness task force whose primary objective is assessing and evaluating current barriers and resources is a critical first step.

HIV/Hepatitis C

Decreasing the Rate of New HIV/Hepatitis C Infection through targeted support for scale-up of existing community-based programs is critical for responding to the disparities in infection across racial/ethnic groups in the Greater Lowell area. Additionally, efforts to increase the capacity of providers to respond to and treat people presenting with HIV/Hepatitis C infection is critical to reducing stigma is increasing service access.

Tick and Insect Illnesses

Increase Awareness for Tick and Other Insect-Borne Illnesses. As tick and insect illnesses were identified as top priority concerns in the CHNA, it is necessary to Increase Awareness for Tick and Other Insect-Borne Illnesses. We aim to increase the knowledge of evidence-based prevention and management of tick and other insect borne illnesses.

Vaccines

Vaccines remain the frontline of defense against a vast majority of infectious diseases in our community. Therefore, Increasing the Proportion of Invduals Reporting Timely and Appropriate Vaccinations through the deployment of evidence-based education campaigns was identified as a priority task.

RATIONALE	**Vaccines:** Vaccinations are an effective, simple, and safe strategy for the primary prevention of infectious disease across the lifespan but especially in childhood.
Goal	- Increase the proportion of individuals reporting timely and appropriate vaccinations (including childhood vaccinations and yearly vaccinations, like the flu shot)
Objective	- Conduct yearly evidence-based educational campaigns based on CDC recommendations describing the benefits, risks and safety of the both childhood and seasonable vaccinations as well as support community-based vaccine sites
Deliverables	- Two (2) promotion campaigns conducted yearly - Number of CHNA participants reporting flu shot increased by 10% - Increase number of children receiving timely and appropriate vaccinations by 10%
Equity Question	- How have these trainings and materials incorporated cultural and language considerations into the creation and distribution?

RATIONALE	**Emergency Preparedness:** Though emergency preparedness in response to a pandemic outbreak was not identified in the CHNA, this is largely a function of the needs assessment being conducted in the FA18/SP19 time period, during which COVID-19 emerged as a critical need area.
Goal	- Increase the capacity of the community response to a major disease outbreak event across all sectors of critical need including health care access, food security, housing stability, etc.
Objective	- Identify an emergency preparedness task force or subcommittee with the primary objective of assessing and evaluating current resources/barriers relevant to supporting the Greater Lowell community in the event of a major infectious disease event.
Deliverable	- Emergency Preparedness team identified and convened quarterly
Current and Continuing Action	- International Institute COVID-19 Health Access Project (GLHA Grant Recipient)
Equity Questions	- How has this intervention collaborated across all communities in Greater Lowell, including cultural communities? - How has this intervention incorporated knowledge from the experience of the current global pandemic of COVID-19? - How has this intervention incorporated the role that racism and income disparities have on disparate rates of infection and disease management?

RATIONALE	**HIV/Hepatitis C (Hep C):** The Greater Lowell area reports a higher than typical burden of HIV and Hep C infections.
Goals	- Decrease the new infection rate of both HIV and Hep C - Increase the accessibility of evidence-based services for people living with HIV and/or Hep C
Objectives	- Support and scale up the capacity of existing community programs working to prevent HIV/Hep C infection and support people living with HIV/Hep C - Conduct five (5) educational events and trainings for community members and providers regarding best practices for the treatment and management of HIV and Hep C, with a specific focus on issues of cultural competence and stigma.
Deliverables	- Support (e.g. funding, events hosted, in kind, etc.) delivered to existing programs. Five (5) trainings provided or training materials and resources delivered
Equity Question	- How have these interventions considered the specific needs of people living with HIV/Hep C who are also homeless, speak a language other than English, or have limited access to transportation for treatment?

RATIONALE	**Tick and Insect Illnesses:** Tick and insect illnesses were high-priority concerns, particularly for more suburban and rural communities in Greater Lowell according to CHNA data.
Goal	- Increase knowledge of the evidence-based prevention and management of tick and other insect-borne illnesses
Objective	- Ensure the distribution of city-specific materials relevant to the community management of and response to insect-borne illnesses
Deliverable	- 100 materials distributed yearly
Equity Questions	- How has event planning and execution engaged with members of the population of interest as key stakeholders?

SAFETY AND VIOLENCE

Rationale

Domestic violence and sexual assault/rape are identified in the CHNA as top community safety issues in the Greater Lowell area. Domestic and sexual violence typically occurs in a range of intersecting contexts including substance abuse, housing insecurity, poverty, sex work, and other forms of abuse. Community safety also extends more broadly to the role of discrimination and bullying, particularly in regard to community violence based on race, ethnicity, immigration status, gender/gender identity, sexuality, and age.

Progress and Successes

This is the first reporting year that Safety and Violence items were including in the CHNA. Community-based Safety and Violence initiatives are especially critical in the context of racism-driven violence, nationally and more locally. The GLHA coordinated efforts to ensure that racism and other forms of discrimination were regarded as central to all GLHA actions; ongoing discussion about the feasibility and function of a safety and violence task force continues.

UPCOMING ACTIONS

Domestic Violence

Supporting the efforts of current programs serving domestic violence survivors and promoting domestic violence prevention education will Improve Resources for People Experiencing Domestic Violence, serving as both a primary and secondary intervention method.

Sexual Assault

Through primary prevention efforts as well as programs that support survivors, we can provide survivors with useful resources. Workshops, training, or educational programs on the basis of reducing gender-based violence are all beneficial mechanisms for primary prevention are strategies in our efforts to Reduce the Occurrence of Sexual Assault/Rape.

Bullying

Efforts to Increase Awareness and Deploy Interventions Addressing Interpersonal Violence and Bullying provides opportunities for community members to learn about preventing, addressing, and responding to bullying. It is important to deploy these evidence-based interventions to the community, especially in high-risk institutions like schools or elder-care facilities.

Discrimination

Anti-violence efforts must address systemic and interpersonal deployment of discrimination as a strategy for oppression. A strong network of existing community programs, as well as increased capacity for these programs to deploy anti-discrimination services and trainings, will Decrease Discrimination on the Basis of Race, Ethnicity, Sexuality, Class/Income, and Gender/Gender Identity.

RATIONALE	**Domestic Violence: Participants in the CHNA identified domestic violence as the number one priority safety concern across all communities in the Greater Lowell area.**
Goal	- Increase knowledge/ accessibility of resources for people experiencing domestic violence
Objective	- Support efforts to build capacity of existing community programs to prevent domestic violence and support survivors and their families
Deliverable	- Demonstration of support (funding, in-kind, hosted events, materials, policy actions) provided to domestic violence prevention/ response initiatives and programs
Equity Questions	- How have these interventions taken into consideration participants' need for flexible scheduling, transportation, or childcare? - Does this intervention reflect the way things like racism, housing, poverty, mental health, immigration status, and substance use impact domestic violence? - How have interventions demonstrated considerations for prevention and intervention in the context of COVID-19?

RATIONALE	**Sexual Assault:** Rape and sexual assault were identified as priority safety issues in the CHNA.
Goal	- Reduce the occurrence of sexual assault and rape through both primary prevention efforts as well as programs that support survivors
Objectives	- Conduct three (3) workshops, trainings or programs that provide education and resources to reduce gender-based violence, including workshops that address healthy masculinity, violence in the LGBTQ community, and the prevention of sexual violence - Create, distribute, and make visible resources available to people who have experienced rape/sexual assault
Deliverables	- Three (3) workshops, trainings or programs conducted - Resources created, distributed, and tracked - Reported rate of sexual violence reduced by 10%
Equity Questions	- How do these efforts incorporate language and cultural diversity? - Has this program considered gender and sexual identity diversity? - What efforts have been made to ensure representation of the community in the leadership of this program/agency?

RATIONALE	**Bullying:** Bullying in schools, workplaces, and elder care facilities was identified as a high priority safety issue in the CHNA.
Goal	- Increase awareness/ deployment of evidence-based interventions addressing interpersonal violence/ bullying in high-risk settings including schools and elder care facilities.
Objective	Host five (5) events (e.g. film screenings, panel discussions, trainings) for community members on approaches to preventing, addressing, and responding to bullying and interpersonal violence.
Deliverable	- Five (5) events hosted by Year three with a goal of 100 participants
Equity Questions	- How has event planning and execution engaged with members of the population of interest as key stakeholders? - How have these interventions consulted or engaged with members of the disability community?

RATIONALE	**Discrimination:** The CHNA identified several key areas of discrimination as critical, including discrimination on the basis of race/ethnicity, immigration status, gender/gender identity, class/income, and sexuality.
Goal	- Decrease perpetration of discrimination, particularly perpetration of discrimination by public workers, care providers, or others in positions of leadership and power
Objective	- Support efforts to build the capacity of existing community programs to prevent discrimination and violence, and to support anti-discrimination advocates in their programming and policy actions
Deliverable	- Documentation of support (e.g. funding, in-kind, hosted events, materials, policy actions) provided to anti-discrimination initiative and programs.
Current and Continuing Action	- Boys and Girls Club Racism, Discrimination and Health Initiative (GLHA Grant Recipient)
Equity Questions	- How have efforts been made to prevent retaliatory effects? - How have these intervention incorporated community leaders with historical knowledge of the role of racism, classism, sexism and/or discrimination against immigrants in our communities?

WELLNESS AND CHRONIC DISEASE

Rationale

Approximate six or ten adults are affected by chronic diseases in the United States (CDC). The USDA identified Lowell as one of Massachusetts' food deserts, placing community members at high risk for food insecurity (USDA Food Access Research Atlas). The 2019 CHNA reported disproportionately higher rates of a range of chronic conditions in the Greater Lowell area, including diabetes, obesity, smoking, and asthma. Increased and diversified service and resource access is crucial to both prevention and management of chronic illness, as well as preservation and promotion of wellness across the lifespan.

Progress and Successes

Wellness initiatives since the last reporting period have spanned a range of areas of focus, including comprehensive sex education, programs to address food insecurity, and smoking/vaping cessation efforts. Targeted efforts by the Asthma Coalition have reduced the disparate burden of asthma in young people and Hispanic populations. Prevention efforts include breastfeeding promotion and education and resources for healthy eating and active living throughout the lifespan.

UPCOMING ACTIONS

Prevention and Education

Efforts to Increase Knowledge of Health Resources to Individuals and Providers aims to support individuals with health services while simultaneously ensuring providers have access to up-to-date best practices for the prevention and management of chronic illness.

Community Resources

The Consolidation of Resources for Food/Shelter/Healthcare/Housing is critical to this effort. In order to measure progress towards our goals, efforts that Establish Baseline Data on Available Services will ensure our ability to measure progress and identify ongoing and emergent needs. To bolster the efficacy of ongoing community efforts, GLHA also Supports the Scale-up of Existing Programs to increase resource access throughout the CHNA 10 catchment area.

Policy and Advocacy

By engaging with policy and advocacy work at both the local and state level, our community will Promote Equitable Availability and Accessibility of Healthy Foods, particularly in the context of address disparate access to healthy foods and the urgent need for food accessibility in the context of instability and insecurity created by COVID-19.

RATIONALE	**Policy and Advocacy: Given the substantial impact of local, state, and federal policy actions that directly impact wellness and chronic disease outcomes, objectives related to policy and advocacy engagement are also included in this CHIP.**
Goal	- Promote equitable availability/accessibility of healthy foods through engagement with policy/advocacy work at the local and state level
Objective	- Support the establishment of local food policy action groups in the Greater Lowell community
Deliverable	- Food action groups or campaigns established in each community
Equity Questions	- How has event planning and execution engaged with members of the population of interest as key stakeholders? - How do these programs support food security and access in communities beyond Lowell? - How do these interventions honor and protect local food communities within neighborhoods or community groups?

RATIONALE	**Prevention and Education:** Data from the CHNA and stakeholder feedback identified specific interest in bolstering efforts that focus on the primary prevention, secondary intervention, and long-term maintenance of chronic conditions, including diabetes, heart disease, asthma/COPD, and cancer.
Goal	- Increase the knowledge of/access to community and health resources relevant to prevention and management of chronic diseases
Objectives	- Provide wellness/chronic disease educational materials, trainings, or programs each year - Conduct 15 educational programs or policy actions relevant to smoking/vaping safety/risk
Deliverables	- Record of 25 coordinated efforts delivered to 200 participants each year - 15 workshops presented or policy actions recorded
Current and Continuing Actions	- Mill City Grows recipe distribution programs - Lowell Housing Authority Healthy Living Seniors Program (GLHA Grant Recipient)
Equity Questions	- How have these interventions taken into consideration participants' need for flexible scheduling, transportation, or childcare? - Do these interventions consider the impact of racism and/or discrimination based on immigration or national origin in their design and implementation? - How have these interventions been specifically selected or designed to address disparate rates of chronic illness in BIPOC and immigrant/refugee communities or populations?

RATIONALE	**Community Resources:** The CHNA identified the crucial need for community members to have equitable access to a range of tangible and information resources in order to identify and manage chronic health needs, or to support their efforts to promote individual and community wellbeing.
Goals	- Increase accessibility of community resources that serve needs for food, shelter, healthcare, housing assistance, childcare, etc., which are vital for promoting and protecting wellness - Support the scale up of existing community wellness programs to communities within the Greater Lowell area outside of the Lowell
Objectives	- Create a consolidated resource hub with updated and maintained links and referrals to community resources and information. - Conduct a food audit. - Provide education, awareness, and resources regarding asthma treatment and management.
Deliverables	- Establishment of the resource hub - Food Assessment Report. - Increase capacity of the asthma spacer program.
Current and Continuing Actions	- Mill City Grows Community Food Assessment (GLHA Grant Recipient) - Town of Chelmsford Gardens for Good Project (GLHA Grant Recipient) - Dwelling House of Hope Food Pantry Project (GLHA Grant Recipient) - REACH LoWell Project (LCHC)
Equity Questions	- How have materials been adapted to meet language and cultural diversity considerations? - Do these projects reflect the needs of all communities within Greater Lowell, particularly in regards to which communities have access to which resources?

Our Community Partners

The success of the Greater Lowell Health Alliance is due to collaborative relationships with many diverse partner organizations. We are honored to partner with more than 200 energized organizations to help fulfill our mission to improve the overall health and wellness of those living in the Greater Lowell region. **Find a list of these valued community partners at greaterlowellhealthalliance.org.**

HELP IMPLEMENT THE 2020 COMMUNITY HEALTH IMPROVEMENT PLAN!

The new Greater Lowell Community Health Improvement Plan (CHIP) will guide our region's investment of resources over the next three years—but we need you to make it happen! Making Greater Lowell stronger and healthier is a huge initiative, but with your involvement and commitment, we can succeed. We are inviting individuals and organizations to please join us and CHIP In to help make our community the healthiest it can be. Go to our website today and tell us your areas of interest and how you would like to CHIP In! From participating or leading a work group to providing staffing to promoting within your own organization, you will be an integral part of this important community initiative!

"Chip In" today at www.greaterlowellhealthalliance.org/CHIP.

The GLHA Needs You

The success of the Greater Lowell Health Alliance relies on the participation and engagement of individuals and organizations to enable us to inform, consult, involve, collaborate, and empower our communities. There are many ways you can become involved and support the GLHA.

Join a task force

The GLHA is always looking for new community members to join task forces and to collaborate on addressing the issues our community faces. All task force meetings are open to the public—whether virtual or in person—and all are welcome.

Participate in the Age-Friendly Lowell Initiative

We need your input as we gather critical data on the needs of older Lowell residents for this project, which will help to promote their health, independence, and quality of life. Please go to our website at greaterlowellhealthalliance.org to participate in this important Tufts Health Plan Foundation Systems and Best Practices Grant initiative.

Donate

As the GLHA grows in both scope and impact, so does our need for resources. As a nonprofit 501(c)(3), we rely on donations from organizations and individuals to sustain our mission, grow our programs, and keep our events free and accessible to everyone. **Please consider donating to the Greater Lowell Health Alliance at greaterlowellhealthalliance.org/donate.**

For more information on these initiatives and other ways to get involved with the Greater Lowell Health Alliance, visit greaterlowellhealthalliance.org.

GLHA
GREATER LOWELL HEALTH ALLIANCE

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Exhibit A (5)

PHARMACIES ALLEGEDLY FILLED INVALID PRESCRIPTIONS

Feds sue Walmart over opioid crisis

By Michael Balsamo and Anne D'Innocenzio
Associated Press

WASHINGTON — The Justice Department sued Walmart on Tuesday, accusing it of fueling the nation's opioid crisis by pressuring its pharmacies to fill even potentially suspicious prescriptions for the powerful painkillers.

The civil complaint filed Tuesday points to the role Walmart's pharmacies may have played in the crisis by filling opioid prescriptions and by unlawfully dispensing controlled substances to the pharmacies during the height of the opioid crisis.

Walmart operates more than 5,000 pharmacies in its stores around the country. The Justice Department alleges Walmart violated federal law by selling thousands of prescriptions for controlled substances that its pharmacists "knew were invalid," said Jeffrey Clark, the acting assistant attorney general in charge of the Justice Department's civil division.

Federal law required Walmart to spot suspicious orders for controlled substances and report those to the Drug Enforcement Administration, but prosecutors charge the company didn't do that.

"Walmart knew that its distribution centers were using an inadequate system for detecting and reporting suspicious orders," said Jason Dunn, the U.S. attorney in Colorado.

"As a result of this inadequate system, for years Walmart reported virtually no suspicious orders at all. In other words, Walmart's pharmacies ordered opioids in a way that went essentially unmonitored and unregulated."

The 160-page suit alleges that Walmart made it difficult for its pharmacists to follow the rules, putting "enormous pressure" on them to fill a high volume of prescriptions as fast as possible, while at the same time denying them the authority to categorically refuse to fill prescriptions issued by prescribers the pharmacists knew were continually issuing invalid prescriptions.

Walmart fought back in an emailed statement to The Associated Press, saying that the Justice Department's investigation is "tainted by historical ethics violations."

It said the "lawsuit invents a legal theory that unlawfully forces pharmacists to come between patients and their doctors, and is riddled with factual inaccuracies and cherry-picked documents taken out of context."

A large poster announces new prices inside the Walmart pharmacy in Clearwater, Fla., in September 2006.

Walmart noted it always empowered its pharmacists to refuse to fill problematic opioids prescriptions and said they refused to fill hundreds of thousands of such prescriptions.

Council

FROM PAGE 1A

School Department to pay its bills on time.

"Is it carelessness? Is it laziness? Is it lack of training?" Councilor Daniel Rourke said. "Why does this keep happening in the School Department?"

Because the "bad bills" were from fiscal year 2020, which ended June 30, the School Department needs a two-thirds vote of approval from the City Council to pay the bills from its current fiscal 2021 funds.

"Please note that most of these bills arrived after the cutoff point from City Hall despite our reminders to school staff and emails to vendors to submit all of their invoices in a timely fashion," school Assistant Superintendent of Finance Billie Jo Turner wrote in a memo to city Chief Financial Officer Conor Baldwin. "We are unaware of any additional outstanding invoices or bills."

In October 2019, the council approved the School Department's request for $31,000 in late bills, Baldwin said.

Councilor Rodney Elliott said he would not support paying the late bills due to the School Department's broken promises that it wouldn't happen again.

"We've had a number of subcommittee meetings on this, and we've been assured that the last time was going to be the last time," he said.

Elliott said he recognized that bills such as the nearly $4,000 invoice from Westford Public Schools for transportation services that wasn't received until the end of September wasn't the School Department's fault, but the overall pattern of late bills has been going on for too many years.

He said the city auditor does her job as required by law and doesn't continue spending after the end of the fiscal year and everybody else in the city government has to abide by purchase and procurement regulations. Elliott said it doesn't make any sense that the council continues to see these bad bills from the School Department.

"The question is, when is it going to stop?" said Councilor Vesna Nuon.

Nuon said he was tempted to vote against the bills to send a message to the School Department, but was more concerned that not paying the bills now would only lead to lawsuits and having to expend additional resources later. He also wondered how the vendors could wait this long to be paid. In order to prevent this from recurring in the future, Baldwin said better communication between the central business office and the school sites would be helpful, along with repetition and training.

"I think that we all understand that some things became more difficult this year because of COVID and because some of the school sites were closed, but the city side has to go through the same process every year," Baldwin said. "The auditor sends out a communication, and all the departments, even the offsite departments that are not here in City Hall, have to have filed their paperwork into the auditor's office by the deadline."

Councilor Dave Conway said he thought when the council discussed the matter last year that they requested the city and school financial leaders meet on a regular basis so the problem wouldn't persist. Last year, he said, the problem was blamed on the former superintendent.

"Well, the former superintendent is not here today, so I don't know who we're going to blame it on now," Conway said. "But the fact is, we cannot keep on doing this and working like this — it's working sloppy, that's what it is."

As a former principal, Councilor Bill Samaras said when then-Superintendent George Tsapatsaris encountered a period of late bills, Tsapatsaris wasn't afraid to place the blame on the individuals who didn't follow the proper procedures rather than letting the School Department as a whole take responsibility. All of the principals had to listen to what was expected of them and meet the appropriate timelines, Samaras said.

Councilor Rita Mercier said she had been in touch with another vendor in the city that was still waiting to be paid and had spoken with Turner to make sure it was addressed. However, that vendor and amount were missing from the School Department's request, Mercier said.

The council ultimately voted to table the bills until more information and any other potential outstanding bills could be obtained from the School Department.

Enterprise

FROM PAGE 1A

fortunately, I think people who are struggling the most were people who were struggling before."

Clancy said he and George Duncan, Enterprise's board chairman and bank founder, spoke for about "two seconds" before deciding to make the donation on behalf of their employees.

Clancy said he appreciates The Sun's long-time support of the community through Sun Santa.

In the past, Enterprise employees raised money for Sun Santa through a breakfast run by two departments, a baked potato day, and a raffle run by the bank.

Clancy said he's confident Enterprise's charity efforts will increase in 2021 if life post-coronavirus returns to normal.

"We're going to have the biggest blowout next year," Clancy said.

The Sun Santa Fund was founded in 1968 after the Lowell Sun Charities determined scores of Lowell-area families were struggling to make ends meet.

Duncan made it clear that Clancy deserves the credit for the $10,000 donation. But the bank's founder said he's long been impressed by Enterprise employees.

"Since the day the Sun Santa started, we've been involved," Duncan said. "We have a lot of like-minded people who get involved in the community. It's something we're pretty proud of."

Duncan said it's no surprise Enterprise was ranked the state's No. 1 place to work among large businesses by the Boston Globe in 2019 and 2020.

Alison Burns, the community relations and customer experience officer for Enterprise, said the bank has a team approach to community building.

"We felt it was important to continue our support of Sun Santa," Burns said.

McCarthy said "it's absolutely more challenging" trying to raise money for Sun Santa this year with the coronavirus dominating people's lives since March.

"But the people that have been giving have been very generous," he said.

McCarthy said Enterprise's donation is much appreciated.

"I think it's just unbelievable," he said. "But that's exactly what they are. They're very, very generous people. They've always been generous to Sun Santa. They just do so much for the community. It's a tremendous gift. It's just unbelievable for them to do something like this. I just can't say enough about them."

McCarthy said one of his favorite fundraising events every year is Enterprise's baked potato day. Every potato topping under the sun is available and all proceeds go to Sun Santa. Clancy said last year's event included approximately 225 of the bank's 575 downtown employees, demonstrating a strong spirit of giving.

Despite thousands of local residents being out of work, McCarthy is confident more than $200,000 will be raised this year for Sun Santa.

"It's going to be a great year. We're going to be able to give a lot to a lot of people," he said.

Pandemic or no pandemic, Enterprise has again made one thing clear: If Sun Santa needs help, Clancy & Co. can be counted on to help.

Enterprise Bank held its annual Christmas breakfast to benefit the Sun Santa last December. Here, financial analyst Joe Lucas of Medford and financial adviser Rachelle Packard of Woburn serve food to fellow employees.

'We're going to have the biggest blowout next year.'

— Enterprise Bank CEO Jack Clancy, speaking about plans for a bigger Sun Santa fundraiser in 2021

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12 23 2021

1) "Public Announcement Concerning a Proposed Health Care Project" page A16, Legal Notice Section.

2) "Public Announcement Concerning a Proposed Health Care Project" page A06, News Section.

A Stamas

Signature

Amanda Stamas

Name

Classified Advertising Consultant

Title

Exhibit A (6)

Chelmsford Surgery Center, LLC

Analysis of the Reasonableness of Assumptions Used For and Feasibility of Projected Financials of Chelmsford Surgery Center, LLC For the First Five Years of Operation

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January 11, 2021

Mr. Robert Andrew Wilkinson
Director of Financial Planning and Analysis
Ambulatory Surgery
Shields Health Care Group
700 Congress Street, Suite 204
Quincy, MA 02169

RE: **Analysis of the Reasonableness of Assumptions and Projections Used to Support the Financial Feasibility and Sustainability of the Proposed Ambulatory Surgery Center in Chelmsford, MA by Chelmsford Surgery Center, LLC**

Dear Mr. Wilkinson:

I have performed an independent analysis of the financial projections prepared by Shields Health Care Group ("Shields") detailing the projected operations of Chelmsford Surgery Center, LLC ("the Chelmsford ASC"). This report details my analysis and findings with regards to the reasonableness of assumptions used in the preparation and feasibility of the financial forecast prepared by the management of Shields ("Management") for the operation of the Chelmsford ASC. This report is to be used by Chelmsford Surgery Center, LLC in its Determination of Need ("DoN") Application – Factor 4(a) and should not be distributed for any other purpose.

I. EXECUTIVE SUMMARY

The scope of my analysis was limited to an analysis of the five-year financial projections (the "Projections") prepared by Shields for the operation of the Chelmsford ASC, and the supporting documentation in order to render an opinion as to the reasonableness of assumptions used in the preparation and feasibility of the Projections.

The Projections exhibit a net pre-tax profit margin ranging from 25.9% to 25.1% for years 2 through 5 of the project. Based upon my review of the relevant documents and analysis of the projected financial statements, I determined the project and continued operating surplus are reasonable expectations and are based upon feasible financial assumptions. Accordingly, I determined that the Projections are feasible and sustainable and not likely to have a negative impact on the patient panel or result in a liquidation of assets of the Chelmsford ASC.

II. RELEVANT BACKGROUND INFORMATION

Shields was founded in 1972 and in 1986 opened its first MRI center. It currently operates over 30 centers throughout New England offering MRI, PET/CT and radiation therapy services. In addition to imaging services, Shields is now partnering with major healthcare providers to develop and manage multi-specialty ambulatory surgery centers. The joint venture partners include the Chelmsford ASC Holding Company, LLC, a company formed by Shields and several community-based specialty physicians, and The Lowell General Hospital (LGH).

The Proposed Project will specialize in providing outpatient surgical services, including orthopedic surgery; total joint surgery; podiatry surgery; spine surgery; gynecology surgery; plastic surgery; and hand surgery. Please refer to the DoN application for a further description of the proposed project and the rationale for the expenditures.

III. SCOPE OF REPORT

The scope of this report is limited to an analysis of the five-year financial projections prepared by Shields (the "Projections") and the supporting documentation in order to render an opinion as to the reasonableness of assumptions used in the preparation and feasibility of the Projections. My analysis of the Projections and conclusions contained within this report are based upon my detailed review of all relevant information (see Section IV which references the sources of information). I have gained an understanding of Shields and the Chelmsford ASC through my review of the information provided as well as a review of Shields website and the DoN application.

Reasonableness is defined within the context of this report as supportable and proper, given the underlying information. Feasibility is defined as based on the assumptions used, the plan is not likely to result in insufficient "funds available for capital and ongoing operating costs necessary to support the Proposed Project without negative impacts or consequences to the Applicant's existing Patient Panel" (per Determination of Need, Factor 4(a)).

This report is based upon prospective financial information provided to me by Management. If I had audited the underlying data, matters may have come to my attention that would have resulted in my using amounts that differ from those provided. Accordingly, I do not express an opinion or any other assurances on the underlying data presented or relied upon in this report. I do not provide assurance on the achievability of the results forecasted by Shields because events and circumstances frequently do not occur as expected, and the achievement of the forecasted results are dependent on the actions, plans, and assumptions of management. I reserve the right to update my analysis in the event that I am provided with additional information.

IV. PRIMARY SOURCES OF INFORMATION UTILIZED

In formulating my opinions and conclusions contained in this report, I reviewed documents produced by Management. The documents and information upon which I relied are identified below or are otherwise referenced in this report:

1. Chelmsford Surgery Center, LLC 5-Year Projected Financial Statements and Assumptions received from Management on October 2, 2020 and updated on December 4, 2020.

2. Medicare rates and base rate calculations, received from Management on December 7 and December 14, 2020.
3. Chelmsford Surgery Center, LLC draft DoN Application as of December 2, 2020
4. Determination of Need Application Instructions dated March 2017
5. CMS.gov (Medicare) Ambulatory Surgical Center Payment System website
6. Mass.gov Executive Office of Health and Human Services
7. Becker's ASC website https://www.beckersasc.com
8. VMG Health Intellimarker Multi-Specialty ASC Study 2017
9. Shields Health Care Group company website https://shields.com.

V. REVIEW OF THE PROJECTIONS

This section of my report summarizes my review of the reasonableness of the assumptions used and feasibility of the Projections. The following table presents the key metrics, as defined below, which compares the operating results of the Projections for the first five years of operations.

Shields Health Care Group Chelmsford ASC
Summary of Ratios - As Provided
Projected for Years 1 - 5

Ratio	Year 1	Year 2	Year 3	Year 4	Year 5
Liquidity Ratios					
Current Ratio	2.78	2.30	2.26	2.18	2.17
Days in Accounts Receivable	87.96	60.00	45.00	45.00	45.00
Operating Ratios					
EBITDA ($)	$ 1,600,282	$ 2,772,500	$ 3,697,210	$ 3,427,379	$ 3,439,393
EBITDA Margin	22.8%	30.1%	32.2%	29.0%	28.2%
Lease Ratio	4.12	6.27	7.84	7.18	7.04
Net Profit Margin	17.1%	25.9%	29.1%	25.9%	25.1%
Debt Service Coverage (ratio)	6.45	1.62	13.06	12.11	12.15
Solvency Ratios					
Debt to Capitalization (%)	23.7%	15.2%	13.9%	12.5%	11.0%
Total Equity	$ 12,153,011	$ 12,216,107	$ 12,233,806	$ 12,291,411	$ 12,381,682

The Key Metrics fall into three primary categories: liquidity, operating and solvency. Liquidity metrics, such as the Current Ratio and Days in Accounts Receivable measure the quality and adequacy of assets to meet current obligations as they come due. Operating metrics, such as earnings before interest, taxes, depreciation and amortization ("EBITDA"), EBITDA Margin, Lease Ratio, Net Profit Margin and Debt Service Coverage are used to assist in the evaluation of management performance in how efficiently resources are utilized. Solvency metrics, such as Debt to Capitalization and Members' Equity, measure the company's ability to service debt obligations. Additionally, certain metrics can be applicable to multiple categories. The table below shows how each of the Key Metrics are calculated.

Ratio	Calculation
Liquidity Ratios	
Current Ratio	Current assets divided by current liabilities
Days in Accounts Receivables	Accounts receivables divided by (net patient service revenue divided by 365 days)
Operating Ratios	
EBITDA	Earnings before interest, taxes, depreciation and amortization
EBITDA Margin	EBITDA divided by net patient service revenue
Lease Ratio	Earnings before interest, taxes, depreciation, amortization and rent divided by lease payments
Net Profit Margin	Net profit divided by net patient service revenue
Debt Service Coverage (ratio)	Debt service coverage ratio (ratio) = (Net income (loss) + depreciation expense + amortization expense + interest expense) / (Principal payments + interest expense)
Solvency Ratios	
Debt to Capitalization (%)	Debt to Capitalization (%) = (Current portion of long-term obligation + long-term obligations) / (Current portion of long-term obligations + long-term obligations + member's equity)
Total Equity	Net equity of the Company

I. Revenues

I analyzed the revenues identified by the Chelmsford ASC in the Projections. Based upon my discussions with Management, the projected volume was based on historical data at the existing LGH's outpatient surgery center and a gradual ramp-up schedule from 48% utilization in year 1 of operations to a sustained 74% to 75% utilization level for years 4 and 5 of the projection. The payer mix was based on the multiple disciplines of the Chelmsford ASC, including orthopedic, joint replacement, hand, gynecology (GYN), podiatry, spine and plastic surgery services. Reimbursement rates were based upon current Medicare ASC rates, Medicaid rates and expected Commercial Insurance contracted rates based on discussions with Commercial Insurance providers. In order to determine the reasonableness of the projected revenues, I reviewed the underlying assumptions upon which Management relied.

I first reviewed the Projections to determine the reasonableness of the projected volume. LGH provided historical case volume data at their current outpatient surgery center. Shields then created a utilization table, using conservative estimates from the volume contributions and benchmark data for operating room and procedure room average minutes to arrive at year 1 cases and procedures. These cases and procedures were then ramped up until year 4, when full utilization is achieved. Full utilization is considered 75% of available time. I compared the benchmark data to an outside, independent survey of ambulatory surgery centers completed using 2017 data and found that the benchmark data used was reasonable, and that the number of projected cases and procedures per operating room at full utilization were within the ranges of currently operating ambulatory surgery centers as determined by the independent survey.

Next, I reviewed the Projections to determine the reasonableness of the payer mix and reimbursement rates selected for the first five years of operations. To determine the reasonableness of the payer mix in the projections, I compared them to the aforementioned independent survey's payer mix for the Northeast United States, and found them to be within the ranges published by the survey. The Medicare rates are standard rates, using the Medicare Outpatient Prospective Payment System (OPPS) rates as a guide, adjusted for inflation and by a wage index for the specific geographic location of the facility. Medicare also specifies which procedures are able to be performed in an ASC. I compared the Medicare rates used for year 1 of the Projections to the Medicare rates effective January 1, 2021 as adjusted by inflation and the wage index, included in the 2021 OPPS and ASC Proposed Final Rule, published by CMS on December 2, 2020. The current Medicare rates include a 2% reduction, or sequestration. This was not included in the proposed Medicare rates. However, the impact of a 2% sequestration would be less than .5% of total revenue. The Medicaid rates used in the projection are 80% of the Medicare rate. I tested this assumption by selecting the highest volume cases and procedures from the Shields projections. I then compared the Medicare payment rate, tested above, to the Medicaid rate for Massachusetts taken from the regulations published in 101 CMR 347.00, Freestanding Ambulatory Surgery Centers, which establishes the payment rates for cases and procedures in free standing ambulatory surgical facilities. I then calculated the percentage difference between the two rates. I found the average Medicaid rate to be approximately 74% of the applicable Medicare rate. So, the assumption of Medicaid rates being equal to 80% of the Medicare rates is reasonable, especially considering the relatively low Medicaid utilization. The Commercial Insurance rates were based on Management's estimate and experience with similar facilities. It is expected that these rates will be approved at a level of 170% of the Medicare rate. The private pay rates are set as 100% of the Medicare rate and appear reasonable when compared to the Commercial Insurance rates. All of the rates were increased by 1.0% for each of the succeeding years.

Based upon the foregoing, it is my opinion that the revenue projected by Management reflects a reasonable estimation of future revenues of the Chelmsford ASC.

2. Expenses

I analyzed the Salary and Benefits, as well as the Other Operating Expenses for reasonableness and feasibility as related to the Projection of the Chelmsford ASC.

Salaries and Benefits were analyzed both for wage rates used and, as related to clinical care, for the amount of clinical staff hours provided. The staffing hours were compared to the previously mentioned independent survey and were found to be consistent with the survey results. The wage rates for all clinical and administrative categories were also compared to the survey and found that, after considering inflation, the wage rates were also consistent with the survey results for the Northeast United States. Wages rates were also compared to Massachusetts median wages for 2020 and found to be consistent.

Medical Surgical Supplies included in the projections were compared to the previously mentioned independent survey and found to be consistent with the ranges included in the survey. Other expenses were also compared to the survey and found to be reasonable.

Salaries and benefits are projected to increase by 3% per year after year 3. Clinical expenses are projected to increase by 3% per year after achieving full utilization. Most other expenses are projected to increase by 2.5% to 3% per year after achieving full utilization.

It is my opinion that the operating expenses projected by Management are reasonable in nature.

3. Lease Agreement, Capital Expenditures and Cash Flows

I reviewed the lease terms, projected capital expenditures and future cash flows of the Chelmsford ASC in order to determine whether sufficient funds would be available to support the lease of the Chelmsford ASC, payment of the financed equipment debt service and whether the cash flow would be able to support the continued operations.

Based upon my review of the Projections and my discussions with Management, it is my understanding that up to 14,700 square feet of space will be leased to the Chelmsford ASC by LGH Medical Building Services, Inc. a real estate entity related to LGH. Rent and common area maintenance charges will be approximately $35 per square foot. The lease will include a 2.5% increase every year and common area maintenance charges will increase 3% annually.

Accordingly, I determined that the pro-forma capital expenditures, facility lease, terms of equipment and working capital financing and the resulting impact on the cash flows of the Chelmsford ASC are reasonable.

VI. FEASIBILITY

I analyzed the Projections and Key Metrics for the Chelmsford ASC. In preparing my analysis I considered multiple sources of information. It is important to note that the Projections do not account for any anticipated changes in accounting standards. These standards, which may have a material impact on individual future years, are not anticipated to have a material impact on the aggregate Projections.

Based upon my review of the relevant documents and analysis of the projected financial statements, I determined the project and continued operating surplus are reasonable and are based upon feasible financial assumptions. Accordingly, I determined that the Projections are feasible and sustainable and not likely to have a negative impact on the patient panel or result in a liquidation of assets of the Chelmsford ASC.

Respectively submitted,

Bernard L. Donohue, III, CPA

Bernard L. Donohue, III, CPA

Exhibit A (7)

MASSACHUSETTS
HEALTH POLICY COMMISSION

NOTICE OF MATERIAL CHANGE FORM

Health Policy Commission
50 Milk Street, 8th Floor
Boston, MA 02109

NOTICE OF MATERIAL CHANGE

DATE OF NOTICE: 9-21-20

1. Name: Chelmsford ASC Holding Company, LLC

	Federal TAX ID #	MA DPH Facility ID #	NPI #
2.	N/A	N/A	N/A

CONTACT INFORMATION

3. Business Address 1: 700 Congress Street
4. Business Address 2: Suite 204
5. City: Quincy State: MA Zip Code: 02169
6. Business Website: shields.com
7. Contact First Name: Peter Contact Last Name: Ferrari
8. Title: President
9. Contact Phone: 617-376-7400 Extension:
10. Contact Email: pferrari@shields.com

DESCRIPTION OF ORGANIZATION

11. *Briefly* describe your organization.

Chelmsford ASC Holding Company, LLC ("HoldCo") is a holding company formed by Shields Health Care Group and a group of qualified physicians. HoldCo will serve to finance the acquisition of, and hold an interest in, a free-standing surgery center.

TYPE OF MATERIAL CHANGE

12. Check the box that most accurately describes the proposed Material Change involving a Provider or Provider Organization:

- ☐ A Merger or affiliation with, or Acquisition of or by, a Carrier;
- ☐ A Merger with or Acquisition of or by a Hospital or a hospital system;
- ☐ Any other Acquisition, Merger, or affiliation (such as a Corporate Affiliation, Contracting Affiliation, or employment of Health Care Professionals) of, by, or with another Provider, Providers (such as multiple Health Care Professionals from the same Provider or Provider Organization), or Provider Organization that would result in an increase in annual Net Patient Service Revenue of the Provider or Provider Organization of ten million dollars or more, or in the Provider or Provider Organization having a near-majority of market share in a given service or region;
- ☐ Any Clinical Affiliation between two or more Providers or Provider Organizations that each had annual Net Patient Service Revenue of $25 million or more in the preceding fiscal year, provided that this shall not include a Clinical Affiliation solely for the purpose of collaborating on clinical trials or graduate medical education programs; and
- ☑ Any formation of a partnership, joint venture, accountable care organization, parent corporation, management services organization, or other organization created for administering contracts with Carriers or third-party administrators or current or future contracting on behalf of one or more Providers or Provider Organizations.

13. What is the proposed effective date of the proposed Material Change? upon receipt of regulatory approvals

Material Change Narrative

14. *Briefly* describe the nature and objectives of the proposed Material Change, including any exchange of funds between the parties (such as any arrangement in which one party agrees to furnish the other party with a discount, rebate, or any other type of refund or remuneration in exchange for, or in any way related to, the provision of Health Care Services) and whether any changes in Health Care Services are anticipated in connection with the proposed Material Change:

The proposed Material Change is a joint venture partnership ("JV") to establish and operate a free-standing ambulatory surgery Center ("ASC") located at 10 Research Place in North Chelmsford, Massachusetts. Lowell General Hospital owns and operates the existing hospital-licensed ASC at the same location, and the proposed Material Change seeks to replace the hospital-licensed service with a free-standing ASC owned and operated by the JV. The JV parties are Lowell General Hospital and Chelmsford ASC Holding Company, LLC ("HoldCo"), an entity owned and organized by a group of qualified physicians and Shields Health Care Group ("Shields"). HoldCo and Lowell General Hospital ("the Parties"), seek to develop an ASC that will be both quality driven and cost-effective.

15. *Briefly* describe the anticipated impact of the proposed Material Change, including but not limited to any anticipated impact on reimbursement rates, care referral patterns, access to needed services, and/or quality of care:

The establishment of a free-standing ASC will allow the Parties to offer routine outpatient surgical care in a cost effective free-standing setting. The new ASC will replace the existing hospital-licensed ASC, effectively reducing the cost of providing these services by transitioning them to a free-standing rate.

Development of the Material Change

16. Describe any other Material Changes you anticipate making in the next 12 months:

Shields anticipates filing a Material Change Notice related to advanced diagnostic imaging.

17. Indicate the date and nature of any applications, forms, notices or other materials you have submitted regarding the proposed Material Change to any other state or federal agency:

HoldCo will provide any notice and filings with other government agencies as may be required in support of the Material Change.

This signed and notarized Affidavit of Truthfulness and Proper Submission is required for a complete submission.

AFFIDAVIT OF TRUTHFULNESS AND PROPER SUBMISSION

I, the undersigned, certify that:

1. I have read 958 CMR 7.00, Notices of Material Change and Cost and Market Impact Reviews.
2. I have read this Notice of Material Change and the information contained therein is accurate and true.
3. I have submitted the required copies of this Notice to the Health Policy Commission, the Office of the Attorney General, and the Center for Health Information and Analysis as required.

Signed on the 21 day of September, 2020, under the pains and penalties of perjury.

Signature: 

Name: Peter Ferrari

Title: President

FORM MUST BE NOTARIZED IN THE SPACE PROVIDED BELOW:

STEPHAINE R MONTICONE
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
February 5, 2021


Notary Signature

Copies of this application have been submitted electronically as follows:

Office of the Attorney General (1)

Center for Health Information and Analysis (1)

GENERAL INSTRUCTIONS

The attached form should be used by a Provider or Provider Organization to provide a Notice of Material Change ("Notice") to the Health Policy Commission ("Commission"), as required under M.G.L. c. 6D, § 13 and 958 CMR 7.00, Notices of Material Change and Cost and Market Impact Reviews. To complete the Notice, it is necessary to read and comply with 958 CMR 7.00, a copy of which may be obtained on the Commission's website at www.mass.gov/hpc. Capitalized terms in this Notice are defined in 958 CMR 7.02. Additional sub-regulatory guidance may be available on the Commission's website (e.g., Technical Bulletins, FAQs). For further assistance, please contact the Health Policy Commission at HPC-Notice@state.ma.us. This form is subject to statutory and regulatory changes that may take place from time to time.

REQUIREMENT TO FILE

This Notice must be submitted by any Provider or Provider Organization with $25 million or more in Net Patient Service Revenue in the preceding fiscal year that is proposing a Material Change, as defined in 958 CMR 7.02. Notice must be filed with the Commission not fewer than 60 days before the consummation or closing of the transaction (i.e., the proposed effective date of the proposed Material Change).

SUBMISSION OF NOTICE

One electronic copy of the Notice, in a portable document form (pdf), should be submitted to the following:

Health Policy Commission HPC-Notice@state.ma.us;

Office of the Attorney General HCD-6D-NOTICE@state.ma.us;

Center for Health Information and Analysis CHIA-Legal@state.ma.us

PRELIMINARY REVIEW AND NOTICE OF COST AND MARKET IMPACT REVIEW

If the Commission considers the Notice to be incomplete, or if the Commission requires clarification of any information to make its determination, the Commission may, within 30 days of receipt of the Notice, notify the Provider or Provider Organization of the information or clarification necessary to complete the Notice.

The Commission will inform each notifying Provider or Provider Organization of any determination to initiate a Cost and Market Impact Review within 30 days of its receipt of a completed Notice and all required information, or by a later date as may be set by mutual agreement of the Provider or Provider Organization and the Commission.

CONFIDENTIALITY

Information on this Notice form itself shall be a public record and will be posted on the Commission's website. Pursuant to 958 CMR 7.09, the Commission shall keep confidential all nonpublic information and documents obtained in connection with a Notice of Material Change and shall not disclose the information or documents to any person without the consent of the Provider or Payer that produced the information or documents, except in a Preliminary Report or Final Report of a Cost and Market Impact Review if the Commission believes that such disclosure should be made in the public interest after taking into account any privacy, trade secret or anti-competitive considerations. The confidential information and documents shall not be public records and shall be exempt from disclosure under M.G.L. c. 4, § 7 cl. 26 or M.G.L. c. 66, § 10.

NOTICE OF MATERIAL CHANGE

DATE OF NOTICE: 9 11 20

1. Name: Lowell General Hospital

2.

Federal TAX ID #	MA DPH Facility ID #	NPI #
04-2103590	V1YC	1407804669

CONTACT INFORMATION

3. Business Address 1: 295 Varnum Ave
4. Business Address 2:
5. City: Lowell State: MA Zip Code: 01854
6. Business Website: lowellgeneral.org
7. Contact First Name: Zachary Contact Last Name: Redmond
8. Title: SVP & Deputy GC, Wellforce
9. Contact Phone: 617 636 8058 Extension:
10. Contact Email: zredmond@tuftsmedicalcenter.org

DESCRIPTION OF ORGANIZATION

11. *Briefly* describe your organization.

Lowell General Hospital is an acute care hosptial located in Lowell, Massachusetts, with 250 beds on its Main Campus located at 295 Varnum Ave in Lowell, MA and 157 beds located at its Saints Campus located at 1 Hospital Drive Lowell, MA

TYPE OF MATERIAL CHANGE

12. Check the box that most accurately describes the proposed Material Change involving a Provider or Provider Organization:

- ☐ A Merger or affiliation with, or Acquisition of or by, a Carrier;
- ☐ A Merger with or Acquisition of or by a Hospital or a hospital system;
- ☐ Any other Acquisition, Merger, or affiliation (such as a Corporate Affiliation, Contracting Affiliation, or employment of Health Care Professionals) of, by, or with another Provider, Providers (such as multiple Health Care Professionals from the same Provider or Provider Organization), or Provider Organization that would result in an increase in annual Net Patient Service Revenue of the Provider or Provider Organization of ten million dollars or more, or in the Provider or Provider Organization having a near-majority of market share in a given service or region;
- ☐ Any Clinical Affiliation between two or more Providers or Provider Organizations that each had annual Net Patient Service Revenue of $25 million or more in the preceding fiscal year; provided that this shall not include a Clinical Affiliation solely for the purpose of collaborating on clinical trials or graduate medical education programs; and
- ☑ Any formation of a partnership, joint venture, accountable care organization, parent corporation, management services organization, or other organization created for administering contracts with Carriers or third-party administrators or current or future contracting on behalf of one or more Providers or Provider Organizations.

13. What is the proposed effective date of the proposed Material Change? Upon receipt of regulatory approvals

Material Change Narrative

14. *Briefly* describe the nature and objectives of the proposed Material Change, including any exchange of funds between the parties (such as any arrangement in which one party agrees to furnish the other party with a discount, rebate, or any other type of refund or remuneration in exchange for, or in any way related to, the provision of Health Care Services) and whether any changes in Health Care Services are anticipated in connection with the proposed Material Change:

The proposed Material Change is a joint venture partnership ("JV") to establish and operate a free-standing ambulatory surgery center (ASC) located at 10 Research Place in North Chelmsford, Massachusetts. Lowell General Hospital owns and operates the existing hospital-licensed ASC at the same location, and the proposed Material Change seeks to replace the hospital-licensed service with a free-standing ASC owned and operated by the JV. The JV parties are Lowell General Hospital and Chelmsford ASC Holding Company, LLC ("HoldCo"), an entity owned and organized by a group of qualified physicians and Shields Health Care Group. HoldCo and Lowell General Hospital ("the Parties"), seek to develop an ASC that will be both quality driven and cost-effective.

15. *Briefly* describe the anticipated impact of the proposed Material Change, including but not limited to any anticipated impact on reimbursement rates, care referral patterns, access to needed services, and/or quality of care:

The establishment of a free-standing ASC will allow the Parties to offer routine outpatient surgical care in a cost effective free-standing setting. The new ASC will replace the existing hospital-licensed ASC, effectively reducing the cost of providing these services by transitioning them to a free-standing rate.

Development of the Material Change

16. Describe any other Material Changes you anticipate making in the next 12 months:

none

17. Indicate the date and nature of any applications, forms, notices or other materials you have submitted regarding the proposed Material Change to any other state or federal agency:

LGH will provide any notices and filings with other government agencies as may be required in support of the Material Change.

Supplemental Materials

18. Submit the following materials, if applicable, under separate cover to HPC-Notice@state.ma.us.

The Health Policy Commission shall keep confidential all nonpublic information, as requested by the parties, in accordance with M.G.L. c. 6D, § 13(e), as amended by 2013 Mass. Acts, c. 38, § 20 (July 12, 2013).

a. Copies of all current agreement(s) (with accompanying appendices and exhibits) governing the proposed Material Change (e.g., definitive agreements, affiliation agreements);
b. A current organizational chart of your organization
c. Any analytic support for your responses to Questions 14 and 15 above.

[Remainder of this page intentionally left blank]

This signed and notarized Affidavit of Truthfulness and Proper Submission is required for a complete submission.

I, the undersigned, certify that:

1. I have read 958 CMR 7.00, Notices of Material Change and Cost and Market Impact Reviews.
2. I have read this Notice of Material Change and the information contained therein is accurate and true.
3. I have submitted the required copies of this Notice to the Health Policy Commission, the Office of the Attorney General, and the Center for Health Information and Analysis as required.

Signed on the 11th day of September, 2020, under the pains and penalties of perjury.

Signature: [signature]

Name: Zach Redmond

Title: SVP / Deputy General Counsel

FORM MUST BE NOTARIZED IN THE SPACE PROVIDED BELOW:

MAURA HERNANDEZ
Notary Public
Commonwealth of Massachusetts
My Commission Expires
June 3, 2022

[signature]
Notary Signature

Copies of this application have been submitted electronically as follows:

Office of the Attorney General (1)

Center for Health Information and Analysis (1)

EXPLANATIONS AND DEFINITIONS

1.	Name	Legal business name as reported with Internal Revenue Service. This may be the parent organization or local Provider Organization name
2.	Federal TAX ID #	9-digit federal tax identification number also known as an employer identification number (EIN) assigned by the internal revenue service.
	MA DPH Facility ID #	If applicable, Massachusetts Department of Public Health Facility Identification Number.
	National Provider Identification Number (NPI)	10-digit National Provider identification number issued by the Centers for Medicare and Medicaid Services (CMS). This element pertains to the organization or entity directly providing service.
3.	Business Address 1	Address location/site of applicant
4.	Business Address 2	Address location/site of applicant continued often used to capture suite number, etc.
5.	City, State, Zip Code	Indicate the City, State, and Zip Code for the Provider Organization as defined by the US Postal Service.
6.	Business Website	Business website URL
7.	Contact Last Name, First Name	Last name and first name of the primary administrator completing the registration form.
8.	Title:	Professional title of the administrator completing the registration form.
9.	Contact Telephone and Extension	10-digit telephone number and telephone extension (if applicable) for administrator completing the registration form.
10.	Contact Email	Contact email for administrator
11.	Description of Organization	Provide a brief description of the notifying organization's ownership, governance, and operational structure, including but not limited to Provider type (acute Hospital, physician group, skilled nursing facilities, independent practice organization, etc.), number of licensed beds, ownership type (corporation, partnership, limited liability corporation, etc.), service lines and service area(s).
12.	Type of Material Change	Indicate the nature of the proposed Material Change. *Definitions of terms* "Carrier", an insurer licensed or otherwise authorized to transact accident or health insurance under M.G.L. c. 175; a nonprofit hospital service corporation organized under M.G.L. c. 176A; a nonprofit medical service corporation organized under M.G.L. c. 176B; a health maintenance organization organized under M.G.L. c. 176G; and an organization entering into a preferred provider arrangement under M.G.L. c. 176I, provided, that this shall not include an employer purchasing coverage or acting on behalf of its employees or the employees of one or more subsidiaries or affiliated corporations of the employer, provided that, unless otherwise noted, the term "Carrier" shall not include any entity to the extent it offers a policy, certificate or contract that provides coverage solely for dental care services or visions care services.

		"Hospital", any hospital licensed under section 51 of chapter 111, the teaching hospital of the University of Massachusetts Medical School and any psychiatric facility licensed under section 19 of chapter 19. "Net Patient Service Revenue", the total revenue received for patient care from any third party Payer net of any contractual adjustments. For Hospitals, Net Patient Service Revenue should be as reported to the Center under M.G.L. c. 12C, § 8. For other Providers or Provider Organizations, Net Patient Service Revenue shall include the total revenue received for patient care from any third Party payer net of any contractual adjustments, including: (1) prior year third party settlements, and (2) premium revenue, which means per-member-per-month amounts received from a third party Payer to provide comprehensive Health Care Services for that period, for all Providers represented by the Provider or Provider Organization in contracting with Carriers, for all Providers represented by the Provider or Provider Organization in contracting with third party Payers.. "Provider", any person, corporation, partnership, governmental unit, state institution or any other entity qualified under the laws of the Commonwealth to perform or provide Health Care Services. "Provider Organization", any corporation, partnership, business trust, association or organized group of persons, which is in the business of health care delivery or management, whether incorporated or not that represents one or more health care Providers in contracting with Carriers or third-party administrators for the payments of Health Care Services, provided, that a Provider Organization shall include, but not be limited to, physician organizations, physician-hospital organizations, independent practice associations, Provider networks, accountable care organizations and any other organization that contracts with Carriers for payment for Health Care Services.
13.	Proposed Effective Date of the Proposed Material Change	Indicate the effective date of the proposed Material Change. NOTE: The effective date may not be fewer than 60 days from the date of the filing of the Notice.
14.	Description of the Proposed Material Change	Provide a brief narrative describing the nature and objectives of the proposed Material Change, including any exchange of funds between the parties (such as any arrangement in which one party agrees to furnish the other party with a discount, rebate, or any other type of refund or remuneration in exchange for, or in any way related to, the provision of Health Care Services). Include organizational charts and other supporting materials as necessary to illustrate the proposed change in ownership, governance, or operational structure.
15.	Impact of the Proposed Material Change	Provide a brief description of any analysis conducted by the notifying organization as to the anticipated impact of the proposed Material Change including, but not limited to, the following factors, as applicable: • Costs • Prices, including prices of the Provider or Provider Organization involved in the proposed Merger, Acquisition, affiliation or other proposed Material Change • Utilization • Health Status Adjusted Total Medical Expenses • Market Share • Referral Patterns • Payer Mix • Service Area(s) • Service Line(s) • Service Mix

Exhibit A (8)

MA SOC Filing Number: 202016367120 Date: 12/3/2020 1:50:00 PM

The Commonwealth of Massachusetts
William Francis Galvin

Minimum Fee: $500.00

Secretary of the Commonwealth, Corporations Division
One Ashburton Place, 17th floor
Boston, MA 02108-1512
Telephone: (617) 727-9640

Certificate of Organization
(General Laws, Chapter)

Identification Number: 001473254

1. The exact name of the limited liability company is: CHELMSFORD SURGERY CENTER, LLC

2a. Location of its principal office:
No. and Street: 10 RESEARCH PLACE
City or Town: NORTH CHELMSFORD State: MA Zip: 01863 Country: USA

2b. Street address of the office in the Commonwealth at which the records will be maintained:
No. and Street: 700 CONGRESS STREET
SUITE 204
City or Town: QUINCY State: MA Zip: 02169 Country: USA

3. The general character of business, and if the limited liability company is organized to render professional service, the service to be rendered:
TO ENGAGE IN ANY OR ALL LAWFUL ACTIVITIES FOR WHICH LIMITED LIABILITY COMPANIES MAY BE ORGANIZED UNDER THE MASSACHUSETTS LIMITED LIABILITY COMPANY ACT, INCLUDING BUT NOT LIMITED TO THE OWNERSHIP, DEVELOPMENT AND MANAGEMENT OF AMBULATORY SURGERY CENTERS.

4. The latest date of dissolution, if specified:

5. Name and address of the Resident Agent:
Name: SHIELDS HEALTH CARE GROUP, INC.
No. and Street: 700 CONGRESS STREET - SUITE 204
City or Town: QUINCY State: MA Zip: 02169 Country: USA

I, SHIELDS HEALTH CARE GROUP INC. BY PETER FERRARI, PRES. resident agent of the above limited liability company, consent to my appointment as the resident agent of the above limited liability company pursuant to G. L. Chapter 156C Section 12.

6. The name and business address of each manager, if any:

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code

7. The name and business address of the person(s) in addition to the manager(s), authorized to execute documents to be filed with the Corporations Division, and at least one person shall be named if there are no managers.

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code
SOC SIGNATORY	THOMAS A. SHIELDS -	700 CONGRESS ST., STE. 204 QUINCY, MA 02169 USA
SOC SIGNATORY	PETER FERRARI	700 CONGRESS ST., SUITE 204 QUINCY, MA 02169 USA

8. The name and business address of the person(s) authorized to execute, acknowledge, deliver and record any recordable instrument purporting to affect an interest in real property:

Title	Individual Name First, Middle, Last, Suffix	Address (no PO Box) Address, City or Town, State, Zip Code
REAL PROPERTY	PETER FERRARI	700 CONGRESS ST., SUITE 204 QUINCY, MA 02169 USA
REAL PROPERTY	THOMAS A. SHIELDS	700 CONGRESS STREET - SUITE 204 QUINCY, MA 02169 USA

9. Additional matters:

SIGNED UNDER THE PENALTIES OF PERJURY, this 3 Day of December, 2020,
PETER FERRARI

(The certificate must be signed by the person forming the LLC.)

Exhibit A (9)

Massachusetts Department of Public Health
Determination of Need
Affidavit of Truthfulness and Compliance with Law and Disclosure Form 100.405(B)

Version: 7-6-17

Instructions: Complete information below. When complete check the box "This document is ready to print". This will date stamp and lock the form. Print Form. Each person must sign and date the form. When all signatures have been collected, scan the document and e-mail to: **dph.don@state.ma.us** Include all attachments as requested.

Application Number: _____ Original Application Date: _____

Applicant Name: Chelmsford Surgery Center, LLC

Application Type: Ambulatory Surgery

Applicant's Business Type: ○ Corporation ○ Limited Partnership ○ Partnership ○ Trust ◉ LLC ○ Other

Is the Applicant the sole member or sole shareholder of the Health Facility(ies) that are the subject of this Application? ◉ Yes ○ No

The undersigned certifies under the pains and penalties of perjury:

1. The Applicant is the sole corporate member or sole shareholder of the Health Facility[ies] that are the subject of this Application;
2. I have read 105 CMR 100.000, the Massachusetts Determination of Need Regulation;
3. I understand and agree to the expected and appropriate conduct of the Applicant pursuant to 105 CMR 100.800;
4. I have read this application for Determination of Need including all exhibits and attachments, and certify that all of the information contained herein is accurate and true;
5. I have submitted the correct Filing Fee and understand it is nonrefundable pursuant to 105 CMR 100.405(B);
6. I have submitted the required copies of this application to the Determination of Need Program, and, as applicable, to all Parties of Record and other parties as required pursuant to 105 CMR 100.405(B);
7. I have caused, as required, notices of intent to be published and duplicate copies to be submitted to all Parties of Record, and all carriers or third-party administrators, public and commercial, for the payment of health care services with which the Applicant contracts, and with Medicare and Medicaid, as required by 105 CMR 100.405(C), et seq.;
8. I have caused proper notification and submissions to the Secretary of Environmental Affairs pursuant to 105 CMR 100.405(E) and 301 CMR 11.00;
9. If subject to M.G.L. c. 6D, § 13 and 958 CMR 7.00, I have submitted such Notice of Material Change to the HPC - in accordance with 105 CMR 100.405(G);
10. Pursuant to 105 CMR 100.210(A)(3), I certify that both the Applicant and the Proposed Project are in material and substantial compliance and good standing with relevant federal, state, and local laws and regulations, as well as with all previously issued Notices of Determination of Need and the terms and Conditions attached therein;
11. I have read and understand the limitations on solicitation of funding from the general public prior to receiving a Notice of Determination of Need as established in 105 CMR 100.415;
12. I understand that, if Approved, the Applicant, as Holder of the DoN, shall become obligated to all Standard Conditions pursuant to 105 CMR 100.310, as well as any applicable Other Conditions as outlined within 105 CMR 100.000 or that otherwise become a part of the Final Action pursuant to 105 CMR 100.360;
13. Pursuant to 105 CMR 100.705(A), I certify that the Applicant has Sufficient Interest in the Site or facility; and
14. Pursuant to 105 CMR 100.705(A), I certify that the Proposed Project is authorized under applicable zoning by-laws or ordinances, whether or not a special permit is required; or,
    a. If the Proposed Project is not authorized under applicable zoning by-laws or ordinances, a variance has been received to permit such Proposed Project; or,
    b. The Proposed Project is exempt from zoning by-laws or ordinances.

LLC

All parties must sign. Add additional names as needed.

Name:	Signature:	Date
Thomas Shields		12/18/2020

This document is ready to print: ☐ Date/time Stamp: _____

Exhibit A (10)

Shields Health Care Group, Inc.

90261134

REFERENCE	INV DATE	INV DESCRIPTION	GROSS AMOUNT	DISCOUNT TAKEN	NET AMOUNT PAID
DEC 28 2020	12/28/2020	Determination of Need Filing Fee	12,672.00	0.00	12,672.00
TOTAL >			12,672.00	0.00	12,672.00

Shields Health Care Group, Inc.

55 Christy's Drive
Brockton, MA 02301
Fed ID# 04-3164965
75860002874

90261134

DATE 12/28/2020
AMOUNT ***12,672.00

Acct#

PAY Twelve Thousand Six Hundred Seventy-Two and 00/100*****

TO THE ORDER OF
Commonwealth of MA
Attn Determination of Need Program
250 Washington St
6th Floor
Boston, MA 02108

Void if not Cashed After 90 Days

Shields Health Care Group, Inc.

90261134

VENDOR NO 1875 NAME Commonwealth of MA CHECK DATE 12/28/2020

REFERENCE	INV DATE	INV DESCRIPTION	GROSS AMOUNT	DISCOUNT TAKEN	NET AMOUNT PAID
DEC 28 2020	12/28/2020	Determination of Need Filing Fee	12,672.00	0.00	12,672.00
TOTAL >			12,672.00	0.00	12,672.00

Shields Health Care Group, Inc

55 Christy's Drive
Brockton, MA 02301
Fed ID# 04-3164965
75860002874

Santander Bank
5-7515/0110

90261134

DATE 12/28/2020
AMOUNT ***12,672.00

Acct#

PAY Twelve Thousand Six Hundred Seventy-Two and 00/100*****

TO THE ORDER OF
Commonwealth of MA
Attn Determination of Need Program
250 Washington St
6th Floor
Boston, MA 02108

Void if not Cashed After 90 Days

⑈90261134⑈ ⑆011075150⑆ 75860002874⑈

The Commonwealth of Massachusetts
HEALTH POLICY COMMISSION
50 MILK STREET, 8TH FLOOR
BOSTON, MASSACHUSETTS 02109
(617) 979-1400

STUART H. ALTMAN
CHAIR

DAVID M. SELTZ
EXECUTIVE DIRECTOR

December 23, 2019

Melisa Schuyler
Wellforce, Inc.
800 District Ave, #520
Burlington, MA 01803

RE: ACO Certification

Dear Ms. Schuyler:

Congratulations! The Health Policy Commission (HPC) is pleased to inform you that Wellforce, Inc. meets the requirements for ACO Certification. This certification is effective from the date of this letter through December 31, 2021.

The ACO Certification program, in alignment with other state agencies including MassHealth, is designed to accelerate care delivery transformation in Massachusetts and promote a high quality, efficient health system. ACOs participating in the program have met a set of objective criteria focused on core ACO capabilities including supporting patient-centered care and governance, using data to drive quality improvement, and investing in population health. Wellforce, Inc. meets those criteria.

The HPC will promote Wellforce, Inc. as a Certified ACO on our website and in our marketing and public materials. In addition, a logo is enclosed for your use in accordance with the attached Terms of Use. We hope you will use the logo to highlight the ACO Certification to your patients, payers, and others.

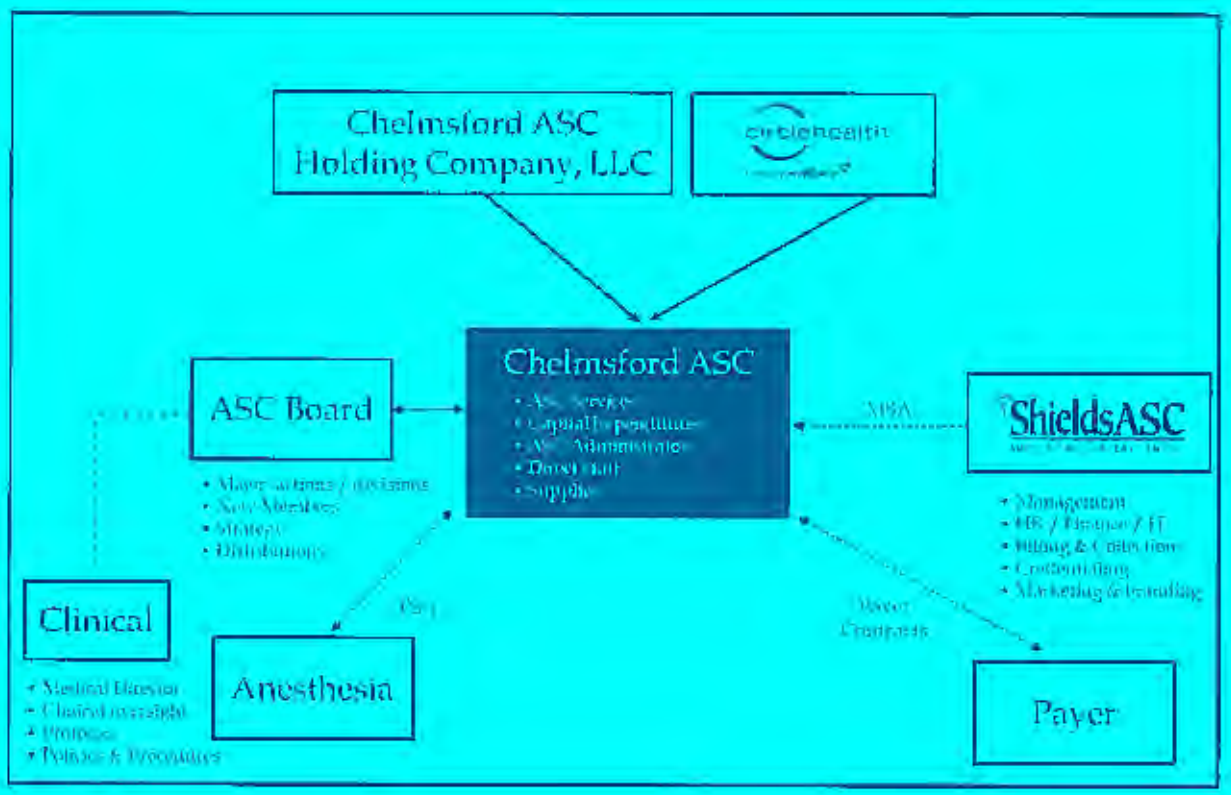
The HPC looks forward to your continued engagement in the ACO Certification program over the next two years.

Thank you for your dedication to providing accountable, coordinated health care to your patients. If you have any questions about this letter or the ACO Certification program, please do not hesitate to contact Mike Stanek, Manager, at HPC-Certification@mass.gov or (617) 757-1649.

Best wishes,

David Seltz
Executive Director

Exhibit A (12)


Chelmsford ASC Holding Company, LLC
Chelmsford ASC
ASC Board
Clinical
Anesthesia
Payer
ShieldsASC