Mass General Brigham

Mass Eye and Ear

Community Health Needs Assessment Report

2022

Name of hospital organization operating hospital facility: **Massachusetts Eye and Ear Infirmary**
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Mass Eye and Ear 2022 Community Health Needs Assessment

Executive Summary

Background: Massachusetts Eye and Ear (Mass. Eye and Ear) is a specialty hospital dedicated to excellence in the care of disorders that affect the eye, ear, nose, throat, and adjacent regions of the head and neck. Like most non-profit hospitals, Mass. Eye and Ear conducts triennial community health needs assessments (CHNA) to identify priority communities, vulnerable populations, and health concerns, and to inform three-year community health improvement plans. In the summer of 2022, Mass. Eye and Ear's Community Benefit Advisory Committee embarked on its 2022 CHNA.

Like all CHNAs, the 2022 CHNA fulfills the IRS Section H/Form 990 mandate to:

- Identify health-related needs in the community, as well as community strengths and resources;
- Describe issues that affect the community overall, as well as concerns for certain sub-populations; and
- Provide data useful to the hospital and others for planning and developing programs and initiatives.

Methods: The 2022 CHNA relied upon the following data sources:

- **Patient Data:** De-identified data for a sample of 146,557 patients who sought care at Mass. Eye and Ear between March 1, 2020 – February 28, 2021 were analyzed to inform selection of the hospital's target community and vulnerable populations.
- **U.S. Census Data:** The most recently available U.S. Census and American Community Survey data were used to understand the demographics and needs related to the Social Determinants of Health in the target communities.
- **Healthy People 2030**: Local and state public health data are not available on health conditions addressed by Mass. Eye and Ear. However, the U.S. Centers for Disease Control and Prevention's Healthy People 2030 sensory and communications objectives offered insight into community health needs related to vision, hearing, balance, taste, and smell.
- **Key Informant Interviews and Surveys:** Fourteen internal and external stakeholders who have expertise and experience with specific populations and/or health issues participated in telephone interviews of up to 60-minutes in length and using a semi-structured interview guide. Interview data were reviewed for common and divergent themes about the major community health issues. Eight of the key informants also completed an online survey to describe the populations with which they work and the needs and barriers to care they see among their respective populations. A table detailing the populations served by these survey respondents is available in the appendices.

Key Findings:

While Mass. Eye and Ear cares for patients from all over the Commonwealth, targeting the communities encircled by Route 128 (the 128 belt) will allow the hospital to reach some of the most racially, ethnically, and linguistically diverse communities in the state, as well as those with the state's lowest per capita income. These communities, including Boston and its Mission Hill neighborhood, are home to large concentrations of individuals who likely face barriers to care related to discrimination, language, and or socio-economic factors.

Vision and hearing impairments and problems with balance pose significant threats to the health and safety of seniors. Children's development and overall well-being can be significantly impacted by vision and hearing impairments. The communities within the 128 belt are home to large concentrations of children and seniors, including those with lower socio-economic status (SES).

Significant needs exist within the 128 belt and among vulnerable populations related to vision, hearing, balance, and skin cancer. The CHNA identified the need for increased outreach and education to the community about prevention and treatment of these conditions and to increase awareness about Mass. Eye and Ear services to address them. The greatest obstacles to care are costs, transportation, and difficulties in understanding and navigating the health system. Access to follow-up care is particularly challenging for children, seniors, and those with low SES.

Mass. Eye and Ear could help prevent potentially disabling conditions and improve outcomes related to vision, hearing, balance, and skin cancer by partnering with community organizations, publicizing Mass. Eye and Ear's events/opportunities, and improving access to education, screenings and examinations, and follow up care.

The hospital's Community Benefit Advisory Committee met on September 26, 2022 and determined that the priority populations for the upcoming CHIP should include seniors, children, people of color, and those experience low socio-economic status. The priority clinical issues selected by the group include vision, hearing, balance, and head and neck cancers (particularly skin cancer). The group also determined that the CHIP should address barriers to care related to cost/insurance and transportation, as well as problems accessing, understanding, and navigating the health system due to low trust and health literacy.

In the upcoming CHIP, the CBAC members envision strategies that maximize existing community partnerships to address the clinical priorities and overcome barriers to care. In particular, the CBAC believes Mass. Eye and Ear should engage in greater outreach to diverse communities to build trust, extend services in the community, and offer education to improve health literacy and understanding of the health system. The group also discussed the need for improved mechanisms to ensure follow-up care is provided after a problem is detected via screening.

Mass. Eye and Ear's senior leadership reviewed the CBAC's recommendations and approved the CHNA and its conclusions.

Mass Eye and Ear 2022 Community Health Needs Assessment

I. Purpose and Scope of Community Health Needs Assessment and Community Health Improvement Plan

Massachusetts Eye and Ear (Mass. Eye and Ear) is a specialty hospital dedicated to excellence in the care of disorders that affect the eye, ear, nose, throat, and adjacent regions of the head and neck. Mass. Eye and Ear also provides primary care and serves as a referral center for outpatient and inpatient medical and surgical care. In conjunction with Harvard Medical School, Mass. Eye and Ear is committed to the education of future health care professionals, as well as the education of the public concerning the prevention, diagnosis, and treatment of the diseases in its specialties and concerning the rehabilitation of patients affected by these diseases. In order to provide the highest quality of contemporary care and greater advancements in care in the future, Mass. Eye and Ear conducts laboratory and clinical research in its areas of specialty. Mass. Eye and Ear recognizes its obligation to serve as a source of excellence in patient care, teaching, and research in Massachusetts, the United States, and the world.

Mass. Eye and Ear engaged public health consultant Hope Worden Kenefick, MSW, PhD and Master's in Public Health candidate Julia Schuler to collect and analyze data and to develop the 2022 CHNA report. In the spring of 2022, the hospital's Community Benefit Working Group (See Appendix A) began working to lay out the plan for the 2022 CHNA.

Like all CHNAs, the 2022 CHNA fulfills the IRS Section H/Form 990 mandate to:

- Identify health-related needs in the community, as well as community strengths and resources;
- Describe issues that affect the community overall, as well as concerns for certain sub-populations; and
- Provide data useful to the hospital and others for planning and developing programs and initiatives.

II. Data and Methods

The 2022 Mass. Eye and Ear Community Health Needs Assessment (CHNA) relied upon the following data sources:

(1) **Secondary Data**: For most Massachusetts hospitals, community-level data available through the Massachusetts Department of Public Health and Boston Public Health Commission are useful in understanding the specific health needs of communities and those in which disparities exist. These data are typically used to select vulnerable communities and populations and to target services to address particular health issues and disparities. Because neither the Boston Public Health Commission nor the Massachusetts Department of Public Health collect and report data on vision, hearing and other head and neck conditions in Massachusetts communities, Mass. Eye and Ear relied on the following sources to inform its 2022 CHNA:

- **Patient Data**: Most general hospitals select priority communities within their existing service area as the focus of their CHNA. As a provider of specialty care to patients from around the world, across the U.S., and all areas of Massachusetts, Mass. Eye and Ears' service area is more expansive. With the exception of the Mission Hill neighborhood of Boston, where Mass. Eye and Ear's Longwood facility is located, the hospital relied upon analysis of 12 months of its own (de-identified) patient data to better understand the

population served by the hospital and define its target community. Between March 1, 2020 and February 28, 2021, 146,557 patients utilized services at Mass. Eye and Ear's main campus and its Longwood facility. These data provided a representative sample of patients who utilized services at Mass. Eye and Ear's main campus and its Longwood facility.

- **U.S. Census Data:** The 2022 CHNA utilized the most recently available U.S. Census and American Community Survey data to understand the demographics and needs related to the Social Determinants of Health in the target communities. Along with Mass. Eye and Ear's own patient data, Census data were used to identify vulnerable populations.
- **Healthy People 2030**: While local and state public health data were not available to inform the Mass. Eye and Ear CHNA, the U.S. Centers for Disease Control and Prevention's Healthy People 2030 objectives offer insight into the highest priority public health issues. The objectives are evidence-based, using the most recently available public health data, and informed by subject matter experts from around the country. The Sensory and Communications objectives identify community health needs related to vision, hearing, balance, taste, and smell.[1]

(2) **Key Informant Interviews and Surveys:** Interviews were conducted by telephone with 14 internal and external stakeholders who have expertise and experience with specific populations and/or health issues. Conducted by phone, the interviews were up to 60 minutes long and employed a semi-structured interview tool created specifically for the CHNA. Qualitative data were analyzed to identify common and divergent themes and illustrative quotes that served to elucidate major themes. Eight of the key informants also responded to an online survey to describe the populations with which they work and the needs and barriers to care they see among them. A table detailing the populations served by these survey respondents is available in the appendices.

III. Findings

A. Target Population

Mass. Eye and Ear's patient data were used to guide the selection of target communities for the CHNA and CHIP. Among Mass. Eye and Ear's patients who live in Massachusetts, 48.2% live within the geographic area surrounded by Interstate 128 (i.e., 128 belt), either in Boston or the suburban communities around it and within the 128 belt. Additionally, 35.3% live west of Interstate 128, but still east of Interstate 495. The remaining 16.5% of patients live elsewhere in MA (e.g., west of Interstate 495 or on the Cape or Islands).

Figure 1. Geographic location of Mass. Eye and Ear patients living in Massachusetts

Boston	17,708	13.5%
Within 128 belt (except Boston)	45,322	34.7%
East of 495/West of 128	46,184	35.3%
Elsewhere in MA	21,547	16.5%

Among patients who reside in Massachusetts, Boston is home to the largest concentration of Mass. Eye and Ear patients (13.5%) followed by 15 other cities or towns (See Figure 2); all of these communities are within the 128 belt. Together with Boston, these 15 communities are home to 44,875 or 34.3% of Mass. Eye and Ear's Massachusetts patients.

Figure 2. 15 Communities outside of Boston that are home to largest concentrations of patients

City/town	#	%
CAMBRIDGE	2697	2.1%
QUINCY	2666	2.0%
MALDEN	2417	1.8%
MEDFORD	2283	1.7%
REVERE	2122	1.6%
BROOKLINE	1788	1.4%
SOMERVILLE	1728	1.3%
EVERETT	1529	1.2%
STONEHAM	1520	1.2%
MELROSE	1478	1.1%
LYNN	1477	1.1%
BRAINTREE	1464	1.1%
SAUGUS	1359	1.0%
CHELSEA	1348	1.0%
MILTON	1291	1.0%
TOTAL:	27167	20.8%

Boston is comprised of 21 neighborhoods (See Figure 3).

Figure 3. Neighborhoods of Boston (except Bay Village and West End)

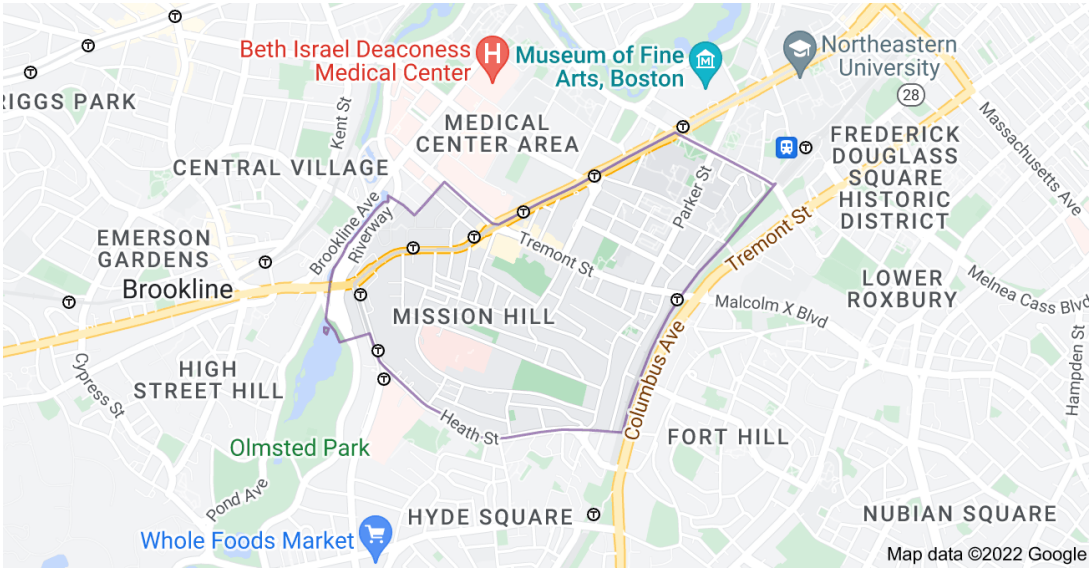
Patient data were available for 15 of the 21 Boston neighborhoods (See Figure 4). Of the 17,708 patients who reside in Boston, the largest percentages come from Dorchester (15.8%) and Back Bay (14.7%).

Figure 4. Neighborhood of Mass. Eye and Ear's patients who reside in Boston

Neighborhood	#	%
Dorchester	2806	15.8%
Back Bay	2597	14.7%
Jamaica Plain	1373	7.8%
Allston/Brighton	1135	6.4%
East Boston	1133	6.4%
Roxbury	1047	5.9%
South Boston	1019	5.8%
Fenway	1009	5.7%
Charlestown	992	5.6%
Hyde Park	944	5.3%
Roslindale	920	5.2%
South End	850	4.8%
West Roxbury	825	4.7%
Mattapan	524	3.0%
Unknown	282	1.6%
North End	252	1.4%

Mission Hill is less than one square mile in size and shares Zip Codes with the Roxbury, Jamaica Plain, and Fenway neighborhoods of Boston (See Figure 5). Because of the shared Zip Codes, it is not possible to say definitively how many Mission Hill residents received care at Mass. Eye and Ear during the period for which patient data were analyzed.

Figure 5. Map of Mission Hill Neighborhood of Boston, Massachusetts



In 2012, Mass. Eye and Ear opened its Longwood facility in Mission Hill. Since that time, the hospital has included Mission Hill in both its CHNA and implementation plan to ensure that the neighborhood benefits from Mass. Eye ad Ear's community investments.

CHNA Conclusion #1: Although Mass. Eye and Ear cares for patients from all over the Commonwealth, the hospital's primary service area includes the communities within the Route 128 belt, including Boston. This service area is the primary target of the CHNA. Mission Hill, the location of the hospital's Longwood facility, is a priority neighborhood within its target area.

B. Population Characteristics

Health care access and outcomes differ by race/ethnicity and socio-economic status, with people of color and those with low-income generally fairing worse than Whites and those with higher income.[2] Mass. Eye and Ear is committed to address barriers to care and improving health equity for vulnerable communities. To understand who, within its patient population, may be experiencing health inequities, demographic data on patients is provided below. These data were used to understand the characteristics of those who reside within the hospital's target area and to identify vulnerable populations. Although these data were for patients seen during the COVID-19 pandemic, they did not differ substantially from data analyzed in the 2019 CHNA (see Appendix E).

Sex: Over half (55.8%) of patients included in the data set are female compared to 51.5% In Massachusetts.[3]

Age: The mean age of patients in the data set was 55.92 years, with a range of 1 to 111. The mode was 75. The median age of Mass. Eye and Ear's patients was 61 compared to the median in Massachusetts of 39.6.[4]

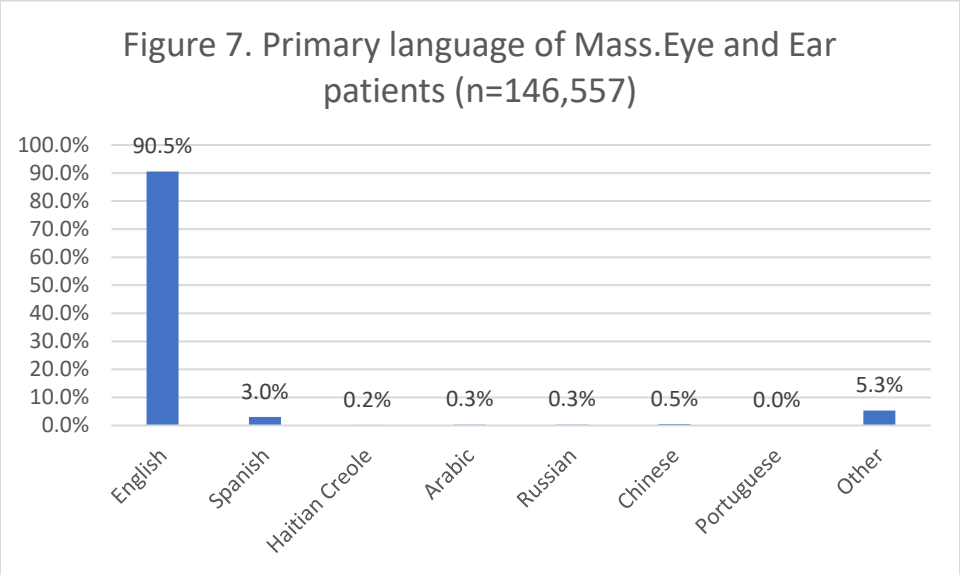
Race/ethnicity: Figure 6 below shows the racial breakdown of patients for whom data were available compared to Boston, where Mass. Eye and Ear's main campus is located, and the state. The proportion of those who are White among Mass. Eye and Ear's patients is higher than in the state population (82% versus 79.8%, respectively). The proportion of Whites among the hospital's patients was nearly 30% higher than the percentage of Whites in Boston (82% versus 52.1%, respectively). Additionally, 9,330 (7.1%) of Mass. Eye and Ear's patients for whom ethnicity data were available identified their ethnicity as Hispanic compared to 12.8% statewide and 19.5% in Boston.

Figure 6. Race and Hispanic/Latino ethnicity of Mass. Eye and Ear patients vs. Boston and Massachusetts

	Mass. Eye and Ear patients (n=134,556)	Boston (n=654,776)	Massachusetts (n=6,984,723)
	%	%	%
White	82.0%	52.1%	79.8%
Asian	4.9%	9.8%	7.5%
Black	6.4%	24.2%	9.3%
American Indian or Alaska Native	0.1%	.3%	.5%
Two or More	1.0%	7.2%	2.7%
Native Hawaiian or Other Pacific Islander	0.1%	.1%	.1%
Other	5.5%	NA	NA
Hispanic/Latino	7.1%	19.5%	12.8%

Excludes those who declined to provide data and those for whom data were otherwise not available
Source: 2021 American Community Survey available at: https://www.census.gov/quickfacts/MA

Primary language: Between 2016 and 2020 in Massachusetts, roughly 24% of individuals identified as speaking a primary language other than English.[3] Among Mass. Eye and Ear's patients, 9.5% of those who provided data on language identified as speaking a primary language other than English. The second most common primary language spoken by Mass. Eye and Ear's patients who elected to provide data on primary language is Spanish (3%) followed by Chinese (.5%). See Figure 7.



Socio-economic status: Determining the socioeconomic status (SES) of patients is challenging. However, for the purposes of the CHNA, means-tested public insurance plans and charitable "free" care were used as proxies for low income. Self-pay was a proxy for uninsured or under-insured.[a] Together, patients with these payer types were considered to be of low SES. Note that, in Massachusetts, several private insurance companies contract with MassHealth (i.e., the state's Medicaid program) to provide coverage for MassHealth patients. It is difficult to differentiate which patients listed as having a commercial payer actually are MassHealth patients. Thus, the exclusion of these patients from the analysis and the use of imperfect proxies likely led to an under-estimation of the percentage of low-income patients. Additionally, most patients who are 65 and over have some form of Medicare as their payment method (n=49,088 or 77.8%), which provides no indication of SES. With these caveats, the data indicate that at least 11.4% of Mass. Eye and Ear's patients are of low SES (See Figure 8). Because it isn't possible to know the income level of patients identified as likely having lower socioeconomic status, the data cannot be compared to the available data on poverty levels in Massachusetts. However, it seems clear that, based on payer data, at least 11.4% of Mass. Eye and Ear's patients have low SES.

[a] Whereas Free Care and public programs are means-tested and thus are fair estimates of those who are low-income, self-pay patients may not be low-income, but they are classified as un/under-insured because they do not have coverage for the type of services provided by Mass. Eye and Ear.

Figure 8. SES of Mass. Eye and Ear's patients using insurance as proxy (n=146,557)

Payer	#	%
Medicaid - Other	7,720	5.3%
Medicaid ACO	4,639	3.2%
Medicare/Medicaid Duals	2,974	2.0%
MassHealth Limited/HSN	1,427	1.0%
Low SES (based on insurance as proxy)	**16,760**	**11.4%**
Medicare	**50,740**	**34.6%**
All Other Payers	**79,050**	**54.0%**
TOTAL (All Patients):	**146,557**	**100.00%**

CHNA Conclusion #2: Based upon the available data, the median age of Mass. Eye and Ear's patient population is older than the state's population. Females comprise a larger proportion of Mass. Eye and Ear's patient population than the state's population overall. The patient population is also comprised of a larger percentage of White individuals than in Massachusetts. English is the primary language of the majority of patients.

Mass. Eye and Ear is dedicated to improving health equity, especially ensuring that traditionally disadvantaged populations have access to the services it offers. Thus, the CHNA focused on understanding more about where Mass. Eye and Ear's patients of color and those with low-incomes reside.

Mission Hill Profile:

According to a 2022 report released by the Boston Planning and Development Agency,[5] Over 60% of Mission Hill residents are people of color: Black/African American (13.8%), Hispanic/Latino (19%), Asian and Pacific Islanders (23.6%), and other races (4.7%)Mission Hill is home to 17,886 residents, 84.9% of whom are adults, and 7,139 housing units. Foreign-born residents make up 12.7% of the Mission Hill population and non-citizens comprise 15.7%. Among residents aged 5 and older, 43.3% speak a language other than English at home and 15.7% speak English "less than very well." With regard to educational attainment, 16.6% of Mission Hill residents have less than a high school degree, 16.9% have a high school diploma or GED, 20.7% have some college, and 28.2% have a bachelor's degree. Labor force participation among residents aged 16 and older is 59.6%. Among children aged three and older, only 6.2% are enrolled in pre-K. The vast majority (93.5%) of housing units are renter-occupied and 19.1% of family-occupied homes are headed by single mothers. The median household income is $45,392 and 39.1% of individuals live in poverty, which represents 4.9% of those who face poverty in Boston. Among children, 36.8% of those ages zero to four and 42.2% of those ages five to 17 live in poverty. Among seniors aged 65 and over, 47.6% live in poverty.

Profiles of Mass. Eye and Ear's low-income patients:

Patients with low SES or who are un/under-insured

Of the 16,332 patients who live in Massachusetts who were identified as likely to have low SES, 60.7% of live within the 128 belt, including those in Boston (See Figure 8). Of the 20,847 patients who live in Massachusetts who are persons of color, 69.2% live within the 128 belt, including those in Boston (See Figure 9).

Figure 9. Geographic location of Mass. Eye and Ear's patients who reside in Massachusetts who are low-income or un/under-insured patients (n=16,332) and people of color (n=20,847) who reside in Massachusetts

	Low SES or un/under-insured		People of color	
	#	%	#	%
Boston	3,470	21.2%	6268	30.1%
Within 128 (excl Boston)	6,449	39.5%	8160	39.1%
East of 495/West of 128	3,596	22.0%	4414	21.2%
Elsewhere in MA	2,817	17.2%	2005	9.6%

Figure 10 below shows the top 10 Massachusetts communities for six factors: (1) greatest racial diversity, (2) proportion of Hispanic residents, (3) largest percentage of residents who speak a language other than English at home, (4) lowest per capita income, and the greatest concentration of Mass. Eye and Ear patients who are (5) persons of color and (6) patients with low SES. The ten Massachusetts communities with the largest proportion of Mass. Eye and Ear's patients with low SES are Boston, Chelsea, Malden, Lynn, Everett, Revere, Quincy, Cambridge, Brockton, and Randolph (shown in gray). The same communities are home to the largest proportion of patients who are people of color (Also in gray). With the exception of Brockton and Randolph, eight of the top 10 are located within the 128 belt (including Boston). With the exception of Quincy and Cambridge, these top 10 communities have four or more of the six factors that may put people at risk for disparities in health and access to care.

CHNA Conclusion #3: The 128 belt is home to a number of communities with the state's lowest per capita income, as well as large concentrations of people who are racially/ethnically diverse and/or who speak a language other than English at home. Thus, focusing on communities within the 128 belt (including Boston and the Mission Hill neighborhood) will ensure that Mass. Eye and Ear reaches populations that are socially vulnerable as they are likely to experience barriers to care related to discrimination, language, and or socio-economic factors.

Figure 10. Top 10 communities for racial diversity, Hispanics, language other than English spoken at home, and lowest per capita income (and with greatest concentration of Mass. Eye and Ear patients of color and with low SES)

Communities	# of Factors	Most racially diverse	Largest Hispanic popula-tions	Greatest proportion of those who speak language other than English at home	Lowest per capita income	Communities with greatest concentration of Mass. Eye and Ear low SES patients	Communities with greatest concentration of Mass. Eye and Ear patients of color	Location
Boston	5	X	X	X		X	X	Boston
Chelsea	5		X	X	X	X	X	Within 128
Malden	4	X		X		X	X	Within 128
Lynn	4	X	X			X	X	Within 128
Everett	4	X		X		X	X	Within 128
Revere	4		X	X		X	X	Within 128
Quincy	3	X				X	X	Within 128
Cambridge	2					X	X	Within 128
Brockton	5	X	X	X		X	X	East of 495/West of 128
Randolph	4	X		X		X	X	East of 495/West of 128
Framingham	1	X						East of 495/West of 128
W. Newbury	1				X			East of 495/West of 128
Lawrence	3			X	X			Elsewhere in MA
Lowell	3	X	X	X				Elsewhere in MA
Holyoke	3		X	X	X			Elsewhere in MA
Springfield	2		X		X			Elsewhere in MA
New Bedford	2		X		X			Elsewhere in MA
Worcester	1		X					Elsewhere in MA
Methuen	1	X						Elsewhere in MA
Amherst	1				X			Elsewhere in MA
Orange	1				X			Elsewhere in MA
Pelham	1				X			Elsewhere in MA

Profile of Mass. Eye and Ear's geriatric and pediatric populations:

Mass. Eye and Ear has clinical expertise in serving pediatric and geriatric or senior patients. These potentially vulnerable groups were selected in FY10, during the first CHNA, as priority populations for Mass. Eye and Ear's Community Benefit Plan due to the impact of hearing/vision impairment on children's development and hearing/vision impairment and balance issues on the health and safety of elders. Since then, Mass. Eye and Ear's CHNAs have included analysis of patient data for seniors and children, as well as Census data, to look at trends that would be important to include in implementation planning.

Seniors (age 65+): Patients over 65 years of age (seniors) comprise 43% of Mass. Eye and Ear patients. During the selected timeframe, 63,072 patients aged 65 received care at Mass. Eye and Ear. Of those, 56,154 live in Massachusetts. Among the seniors that reside in Massachusetts, 57% are female. The average age of the senior group is 75 with a range of 65 to 111. For Mass. Eye and Ear's seniors in general, 48.5% live within the 128 belt, including Boston (See Figure 11).

Figure 11. Location of Mass. Eye and Ear's geriatric patients

	#	%
Boston	7,174	12.8%
Within 128 (excluding Boston)	20,034	35.7%
East of 495/West of 128	19,271	34.3%
Elsewhere in MA	9,675	17.2%

Figure 12 shows the 15 communities outside of Boston with the largest concentration of Mass. Eye and Ear's patients aged 65 and over; 20.3% of the hospital's senior patients live in these communities and all but three south shore communities (Plymouth, Hingham, Braintree) are within the 128 belt.

Figure 12. 15 Communities outside Boston with highest concentration of Mass. Eye and Ear's senior patients

1	CAMBRIDGE	1214	1.9%		9	EVERETT	697	1.1%
2	MALDEN	1178	1.9%		10	SAUGUS	690	1.1%
3	QUINCY	1172	1.9%		11	PLYMOUTH	679	1.1%
4	MEDFORD	1171	1.9%		12	SOMERVILLE	672	1.1%
5	REVERE	970	1.5%		13	HINGHAM	636	1.0%
6	STONEHAM	806	1.3%		14	BRAINTREE	630	1.0%
7	BROOKLINE	805	1.3%		15	MILTON	617	1.0%
8	MELROSE	731	1.2%					

Because most of the senior patients at Mass. Eye and Ear have some form of Medicare for health care coverage, the payer data are not a useful proxy for SES. Therefore, U.S. Census data were examined to understand the demographic profiles (i.e., proportion of seniors and those living below the poverty level) in Boston and each of the 15 other communities with the highest concentration of Mass. Eye and Ear's senior patients. Figure 13 shows that four of the communities (in gray) have a larger proportion of senior residents than the state in general. Eight communities (in gray) have a larger proportion of residents living below the poverty level than the state in general, all of which fall within the 128 belt, including Boston.

Figure 13. U.S. Census data on residents 65+ and poverty in communities in which the largest concentration of Mass. Eye and Ear senior patients reside

	2021 American Community Survey population estimates	Residents 65+ (%)	Residents living below poverty level (%)
Massachusetts	6,984,723	17.4	9.4
Boston	654,796	11.8	18.0
Cambridge	117,090	11.6	12.0
Malden	65,074	13.1	15.6
Quincy	101,119	16.8	9.8
Medford	62,098	14.4	8.6
Revere	59,075	13.7	12.4
Stoneham*	23,244	19.7	5.0
Brookline*	63,191	16.0	10.8
Melrose	29,312	18.9	3.9
Everett	48,557	11.3	10.9
Saugus*	28,619	20.8	7.9
Plymouth	62,131	23.4	5.0
Somerville	79,815	8.8	11.3
Hingham	5,979	13.7	5.0
Braintree	38,822	16.7	4.3
Milton*	28,630	15.8	5.6

*2021 ACS Estimates not available; data derived from 2020 U.S. Census

CHNA Conclusion #4: By concentrating on communities within the 128 belt, Mass. Eye and Ear will have the greatest likelihood of reaching seniors, including many who live in communities that are disproportionately affected by poverty.

Children (under 18 years old): In the selected timeframe, Mass. Eye and Ear provided services to 11,196 patients under the age of 18, 10,424 of these children reside in Massachusetts. Children comprise 7.6% of the total patient population. The pediatric population is made up of more males (57.1%) than females. As shown in Figure 14, 34.6% live within the 128 belt (including Boston).

Figure 14. Geographic location of Mass. Eye and Ear's pediatric patients

	#	%
Boston	743	6.6%
Within 128 excluding Boston	3,133	28.0%
East of 495/West of 128	4,816	43.0%
Elsewhere in MA	1,732	15.5%

The payer source for these patients indicates that 25.7% are of lower SES, in other words recipients of means-tested public insurance or Free Care or without insurance to pay for services at Mass. Eye and Ear (self-pay) and thus un/under-insured (See Figure 15).

Figure 15. Insurance of Mass. Eye and Ear Pediatric patients

MassHealth Limited/HSN	12	0.4%
Medicaid - Other	1,610	58.1%
Medicaid ACO	1,148	41.4%
Low SES:	**2,678**	**25.7%**
Medicare	**0**	**0.0%**

Just under half (46.6%) of pediatric patients who are classified as having low SES live in communities within the 128 belt, including Boston (See Figure 16).

Figure 16. Geographic location of Mass. Eye and Ear's pediatric patients with low SES (n=2678)

Boston	211	7.9%
Within 128 (excluding Boston)	1036	38.7%
East of 495/West of 128	805	30.1%
Elsewhere in MA	626	19.5%

Figure 17 shows the communities outside of Boston with the highest concentration of pediatric patients, as well as those with the highest concentration of pediatric patients who have low SES. In all, 2,146 or 20.6% of Mass. Eye and Ear's pediatric patients who are Massachusetts residents live in 15 communities outside of Boston. Eight communities outside of Boston are home to the highest concentration of pediatric patients and are also home to the highest concentration of children who have low SES. Nine of the communities with the highest concentration of children with low SES are within 128 belt; 698 or 26.1% of Mass. Eye and Ear's pediatric patients with low SES live in these nine communities.

CHNA Conclusion #5: These data suggest that concentrating on communities within the 128 belt will likely reach a large proportion of Mass. Eye and Ear's pediatric patients, including many who have low SES.

Figure 17. The 15 communities outside Boston with highest concentration of Mass. Eye and Ear's pediatric patients and the 15 communities with the highest concentration of pediatric patients with low SES and/or who are un/under-insured

	Pediatric Patients		Low-income pediatric patients	
	#	%	#	%
Revere	199	1.9%	127	4.9%
Lynn	176	1.7%	124	4.7%
Chelsea	162	1.6%	131	4.6%
Quincy	150	1.6%	44	3.7%
Brockton	144	1.4%	86	3.2%
Everett	142	1.4%	100	2.8%
Cambridge	127	1.4%	36	2.7%
Malden	120	1.4%	73	4.9%
Hingham	162	1.3%		
Natick	148	1.2%		
Newton	132	1.2%		
Marshfield	123	1.2%		
Braintree	122	1.2%		
Plymouth	120	1.2%		
Framingham	119	1.1%		
Lawrence			75	2.7%
Haverhill			62	2.2%
Woburn			44	1.6%
Taunton			37	1.4%
Lowell			33	1.3%
Somerville			32	1.2%
Medford			31	1.2%

All of Suffolk County and much of Middlesex County are located within the 128 belt, where most of Mass. Eye and Ear's patients reside and where the largest concentrations of vulnerable patients (e.g., children, seniors, those with low SES) live. The U.S. Census data for Massachusetts' counties displayed in Figure 18 show that: Suffolk county is home to the largest proportion of the state's residents living below the Federal Poverty Level. Together, Suffolk and Middlesex counties are home to 23.6% of the Commonwealth's residents who live below the poverty line. Middlesex and Suffolk counties are home to 28.8% of the Commonwealth's seniors. Middlesex and Suffolk counties are home to 35.9% of the Commonwealth's children under age 18.

Figure 18. 2021 American Community Survey Estimates: Seniors, children, and those living below the poverty line in MA counties

	population	% living below poverty line	% seniors (65+)	% of children (under 18)
Massachusetts	6,984,723	9.4	17.4	19.5
Barnstable	232,411	7.7	31.8	14.4
Berkshire	128,657	10.0	24.6	16.3
Bristol	580,164	10.1	17.5	20.5
Dukes	21,097	7.5	25.6	17.5
Essex	807,074	9.0	17.9	20.9
Franklin	71,015	10.7	24.1	16.8
Hampden	462,718	14.3	17.7	21.2
Hampshire	161,572	9.3	18.8	14.2
Middlesex	1,614,742	7.1	15.9	19.6
Nantucket	14,491	5.3	15.9	20.6
Norfolk	724,505	5.9	17.3	20.6
Plymouth	533,003	7.2	19.1	20.8
Suffolk	771,245	16.5	12.9	16.3
Worcester	862,029	9.5	16.5	20.7

CHNA Conclusion #6: By concentrating on communities within the 128 belt, as well as some efforts that extend statewide (especially in the area between 128 and Interstate 495), Mass. Eye and Ear will likely reach the greatest concentration of its current patients, its most vulnerable patients (i.e., seniors, children, those with low SES), as well as non-patients who are seniors, children, and those living in poverty who may benefit from Mass. Eye and Ear's community benefit activities.

According to the Donahue Institute at the University of Massachusetts,[6] the senior population (65+) is projected to steadily increase over the next several years, whereas the population of children will remain relatively stable (See Figure 19).

Figure 19. Projected proportions of seniors and children in MA (2015-2030)

	Seniors	Children
2015	15.3%	22.9%
2020	16.9%	22.4%
2025	19.1%	22.3%
2030	21.1%	22.5%

Similarly, a Policy Academy State Profile for Massachusetts,[7] found that the population of Massachusetts residents aged 60 and older will increase by 4.4% between 2020 and 2030 (See Figure 20). However, unlike the Donahue Institute projections, the Policy Academy report suggests that the population of children ages 0 -19 will also grow between 2020 and 2030 (by 3.4%).

Figure 19. Projected proportions of seniors and children in MA (2015-20130)

	Ages 0 - 19	Age 60+
2012	25.3	19.2
2020	21.0	21.0
2030	24.4	25.4

Table uses data from UMass Donahue Institute (2013) report cited above.

These projections suggest that the need for Mass. Eye and Ear's community benefit activities targeting seniors and children will persist (and even grow for seniors) over time.

CHNA Conclusion #7: Analyses showed that large numbers of patients who are children or elderly or who have low SES reside within the 128 belt. By concentrating on the 128 belt (including Boston) and prioritizing children, seniors, people of color, and people with low SES, there is an opportunity to reach large concentrations of these group and address the factors that make them vulnerable and/or that create barriers to the kinds of services offered by Mass. Eye and Ear. Concentrating on communities and populations within the 128 belt and Boston does not suggest that residents living outside of the 128 belt do not face barriers to care for conditions for which Mass. Eye and Ear has expertise. Rather, any statewide initiatives Mass. Eye and Ear may offer in its upcoming CHIP would provide an opportunity to reach vulnerable populations outside of the 128 belt and across Massachusetts.

C. Social and Physical Environment

The key informants explained that many people lack or have inadequate insurance coverage (e.g., high deductible health plans) for the types of services Mass. Eye and Ear provides and most of them cannot afford the out of pocket costs. They described challenges families face in understanding and navigating the health system due to language issues and the need for greater health literacy. Informants also described a lack of coordination between screenings and follow-up care. Some interviewees said lack of time among working people as a limiting factor. For some, fear of COVID exposure still limits their access to care. Finally, transportation issues, as well the location of the main campus building and its physical condition and lay-out limited access for some.

> *"Language and cultural competency of health care providers [is a challenge]. The need for information about health that people can understand. Often family members are working several jobs and can not go to see health care providers or bring other family members to health care providers. Many seniors live alone and have challenges preparing and following up from procedures. Transportation for people who do not feel well can be a challenge."*

> *"Many seniors are not going in to see their primary care doctors since the COVID-19 pandemic started."*

> *"Starting most importantly with the sidewalk out front [of the main campus building] that is terrifying to navigate..."*

One key informant described an opportunity for Mass. Eye and Ear to use available technology to improve access to care for people with vision and hearing impairments.

> *"We as a community can work harder to provide universal access to healthcare within the hospital with better accessibility options such as contrast coloring, voice-over technology, fewer paper*

forms, more electronic options, etc. There is SO MUCH technology available to us here on site and we could do better…"

Both those internal to Mass. Eye and Ear as well as key informants who work outside of the hospital in an array of community-based organizations are eager for increased collaboration and partnership to improve access to care for vulnerable populations. In particular, they believe there is both a need and opportunity to partner to improve education about the types of conditions Mass. Eye and Ear treats within the community. Educational forums offer an opportunity to improve understanding about how to prevent some conditions (e.g., hearing loss, skin cancer), the types of services available at Mass. Eye and Ear, and how to access and navigate the system. While some acknowledged that Mass. Eye and Ear has offered educational opportunities, they also believe more outreach and partnership is needed to publicize such learning opportunities. Through partnership with community organizations, Mass. Eye and Ear could expand its reach by publicizing events using partners' newsletters, websites, and listservs, and by making posters or flyers available in community locations such as community health centers.

The key informants offered insights about particular needs related to the Mission Hill neighborhood, seniors, children, and those who are socially and economically vulnerable.

Mission Hill: Some of the key informants described significant access issues among low-income seniors and families in the Mission Hill neighborhood. They explained that often people do not know what kinds of services are available to them through Mass. Eye and Ear. Cost and transportation were also described as barriers to care for some. The key informants said that leaders throughout Mission Hill are eager to improve the connection between Mass. Eye and Ear. They explained that organizations in Mission Hill are willing to help the hospital facilitate improved access to care for neighborhood residents. Likewise, key informants from within Mass. Eye and Ear expressed the need and desire for greater connection with community partners.

"I think the Mission Hill community could benefit from screenings – optometry and audiology as well as discounted glasses. We discussed early on but we could start to put this in place this year."

"I would like to see stronger relations between us and Mass. Eye and Ear, being there for the big issues and the small issues."

"We have this tremendous resource of expertise that is probably being underutilized. We need to find more ways to connect with interested partners to benefit the residents."

Seniors: Several key informants talked about the needs of seniors, identifying vision, hearing, balance, and skin cancer as pressing health needs Seniors were described as facing multiple barriers to care. The key informants explained that COVID-19 increased isolation for many seniors. Additionally, they said, the fear of infection caused many to delay care, which exacerbated already existing health problems, particularly related to hearing and vision. Frailness and problems with balance were described as putting seniors at risk for falls and as obstacles to care because so many seniors have trouble ambulating. The key informants also noted that seniors may not fully appreciate the risk that balance problems pose to their overall health and well-being. Some informants indicated that the physical location of Mass. Eye and Ear's main campus and the building's lay-out create challenges for those with mobility issues. Some seniors face challenges with transportation to/from the hospital. The key informants also explained that, while telehealth has increased access to care for many people, challenges with technology make it a less effective method for care delivery to seniors. Mobile or "pop up" clinics that could be held in locations

where seniors live or congregate were suggested as options for improving care delivery to this population. Seniors on fixed incomes have to make difficult choices about how they spend their money, often sacrificing their health and well-being in the process.

> *"Screenings, medications, eyeglasses, hearing aid…they are not always seen as the priorities for seniors [who are making decisions about how to spend their limited funds]."*
>
> *"Hearing aids…the cost is a lot for seniors, using them properly and correctly, more education and reliable safe places to get the hearing aids."*
>
> *"Seniors are a core part of who we take care of [at Mass. Eye and Ear} and we do a lot to take care of them already. I think we do a good job at helping them and are compassionate about them, but I think there is more we can do about accessibility within the [main campus] building."*
>
> *"For many seniors, a lot don't have families nearby. Their sons and daughters live out of state and they don't have someone who can drive them home [from the hospital}.*

Children: According to several key informants, the priority needs Mass. Eye and Ear could address among children are vision and hearing. In particularly, they linked hearing problems in children to headphone use and explained that, during the pandemic, children spent more time using headphones than ever before because they were attending school online. Some interview participants explained that parents may not sufficiently understand the importance of early or routine screenings, the impact of vision or hearing impairment on children's development, or how to access, navigate, and pay for health care services and assistive devices. Such lack of understanding makes it difficult for parents to advocate for their children's hearing and vision-related needs and, in particular, for the follow-up care children need following detection of a hearing or vision-related problem. Thus, for some parents, simply informing them of a child's screening results is not adequate to ensure follow-up care will occur. Some interviewees explained that the location of the Mass. Eye and Ear's main campus is difficult to access for those families with transportation challenges. A few key informants described how developmental, behavioral, and mental health challenges that can accompany vision and hearing impairments make children a particularly at-risk group and high priority for Mass. Eye and Ear's services. Some suggested that Mass. Eye and Ear make social workers available to families to help parents anticipate, identify, and address any developmental, behavioral, or mental health concerns that may arise due to their child's vision or hearing-related impairments.

> *"With headphone use and online learning, I think there is a lot of space for education around hearing loss prevention for kids."*
>
> *"Screenings happen but we don't know what happens after that. How do we follow up?"*
>
> *"What happens to kids after they fail an eye exam or hearing exam in a school? There seems to be a gap with follow-up."*

Socially/Economically Vulnerable Individuals: Individuals who are considered to be socially and/or economically vulnerable were considered to be a priority population among the key informants as well. Specifically, lower income and homeless populations were described as needing affordable access to vision and hearing care and as lacking sufficient follow-up care once a hearing or vision-related problem is detected. Transportation was described as particularly challenging for low-income patients.

The key informant interviews revealed that patients who are homeless have a unique set of needs that require intensive services from Mass. Eye and Ear to ensure they receive the care they need to improve their health. In 2019 in Massachusetts, over 18,000 people were homeless, the majority of whom are unaccompanied adults.[8] While patients who are homeless constitute a small number of patients seen at Mass. Eye and Ear overall, they generally present with very complex circumstances. As is true nationally,[9] many of these patients struggle with substance use disorders and/or mental health conditions. At Mass. Eye and Ear, patients who are homeless generally seek care for vision-related concerns caused by traumatic injury and/or conditions that have been exacerbated due to delayed care. Locating safe accommodations to discharge patients with such complex needs requires intensive intervention by Mass. Eye and Ear's social work staff.

CHNA Conclusion #8: The key informants pointed to vision, hearing, skin cancer, and balance as priority health concerns. The interviewees also identified the need for increased outreach and education to the community about prevention and treatment of these health conditions and to increase awareness about the services available through Mass. Eye and Ear to address them. Costs and transportation are obstacles to care, as well as the challenges individuals face in understanding and navigating the health system. Improved service coordination is also needed to bridge the gap between screenings and follow-up care. Community partners are eager to work with Mass. Eye and Ear to improve access to care for the community and populations they serve. Patients with low-incomes often struggle with paying for health care and transportation to/from the hospital. Patients who are homeless, while a small number of Mass. Eye and Ear patients overall, generally have very complex needs.

D. Community Health Issues and Outcomes

In general, the key informants called for improved education about and access to care (both screenings and follow up care) for vision, hearing, and other conditions of the head and neck, especially skin cancer and balance issues. In addition to the insights provided by the key informant interviews, the U.S. Centers for Disease Control and Prevention's sensory and communications objectives, a subset of the Healthy People 2030 objectives, offer guidance about the highest priority public health issues related to vision, hearing, balance, taste and smell. These evidence-based objectives are informed by subject matter experts from around the U.S. and use the most recently available public health data. The objectives are summarized in Figure 20 below.

Figure 20. Objectives related to vision, hearing, balance, taste and smell from the Sensory and Communication Disorder Objectives, Healthy People 2030, U.S. Centers for Disease Control and Prevention

Goal: Prevent sensory and communication disorders and improve quality of life for people who have them.
General
Reduce ear infections in children
Increase the proportion of adults who use hearing protection devices around loud sounds
Reduce the proportion of adults who have hearing loss due to noise exposure
Reduce vision loss from diabetic retinopathy
Reduce vision loss from glaucoma
Reduce vision loss from cataract
Reduce vision loss from age-related macular degeneration

Reduce vision loss from refractive errors
Understand factors that impact use of protective eyewear in occupational and recreational settings
Understand the impacts of screen time on eye development and vision loss
Increase the proportion of infants who didn't pass their hearing screening who get evaluated for hearing loss by age 3 months
Increase the proportion of infants with hearing loss who get intervention services by age 6 months
Reduce new cases of work-related hearing loss
Adolescents
Increase the proportion of children and adolescents with communication disorders wo have seen a specialist in the past year
Reduce vision loss in children and adolescents
Health Care
Increase the proportion of adults with tinnitus that started in the past 5 years who have seen a specialist
Increase the proportion of adults with dizziness or balance problems who have been referred to a specialist
Increase the proportion of adults with smell or taste disorders who discuss the problem with a provider
Increase access to vision services in community health centers
People with Disabilities
Increase the proportion of adults with hearing loss who use a hearing aid
Increase the use of vision rehab services by people with vision loss
Increase the use of assistive and adaptive devices by people with vision loss
Preventive Care
Increase the proportion of newborns who get screened for hearing loss by age 1 month
Increase the proportion of adults who have had a hearing exam in the past 5 years
Increase the proportion of children aged 3 to 5 years who get vision screening
Increase the proportion of adults who have had a comprehensive eye exam in the last 2 years
Public Health Infrastructure
Increase the number of states and DC that track eye health and access to eye care

CHNA Conclusion #9: The Healthy People 2030 objectives point to several needs that Mass. Eye and Ear, given its clinical expertise, is positioned to address. By improving access to education, screenings and examinations, and follow up care, Mass. Eye and Ear could help prevent potentially disabling conditions and improve outcomes related to vision, hearing, balance, taste and smell within the community in general and among seniors and children and adolescents in particular.

IV. Key Themes and Conclusions

Mass. Eye and Ear cares for patients from all over the Commonwealth. However, by targeting the communities located within the 128 belt, including Boston and the Mission Hill neighborhood, Mass. Eye and Ear can reach some of the most racially, ethnically, and linguistically diverse communities in the state, as well as those with the state's lowest per capita income. Doing so could mean reaching large concentrations of individuals who are likely to experience barriers to care related to discrimination, language, and or socio-economic factors, as well as seniors and children who face additional risks to their well-being when dealing with impairments to hearing, vision, and balance. Additionally, by

offering some statewide initiatives, Mass. Eye and Ear could benefit vulnerable populations outside of the 128 belt and across Massachusetts.

The Healthy People 2030 objectives point to needs nationally related to vision, hearing, balance, taste and smell. However, the key informant interviews suggest that locally the highest priority health conditions are vision, hearing, balance, and skin cancer. The CHNA identified the need for increased outreach and education to the community about prevention and treatment of these health conditions and to increase awareness about the services available through Mass. Eye and Ear to address them. The greatest obstacles to care are costs, transportation, and challenges understanding and navigating the health system. Access to follow-up care is particularly challenging for children, seniors, and those with low SES. The main campus physical condition/lay-out and fear of COVID exposure are also barriers for some. Opportunities exist to use technology to improve access for those with vision and hearing impairments.

By partnering with community organizations, publicizing Mass. Eye and Ear's events/opportunities, and improving access to education, screenings and examinations, and follow up care, Mass. Eye and Ear could help prevent potentially disabling conditions and improve outcomes related to vision, hearing, balance, and skin cancer. Community partners are eager to work with Mass. Eye and Ear to improve awareness, education, and access for the community and populations they serve. The table below summarizes the findings from the 2022 CHNA.

Figure 21. Conclusions from 2022 CHNA

Target communities	Within the 128 Belt, including Boston and Mission Hill with some statewide activities to reach those outside the target communities
Vulnerable populations	Children, seniors, and people of color, those with low SES*, including those who are homeless
Clinical concerns	Vision, hearing , balance, cancer
Barriers to care	Insurance/cost, transportation, understanding and navigating the health system due to language and health literacy issues, time, and fear of COVID
Needs	Education; screenings/exams, follow-up care and coordination between them; and publicizing of opportunities available through Mass. Eye and Ear and in community
Opportunities	Available technology to improve access for those with vision and hearing impairments and desire for greater partnership/collaboration among community agencies, including opportunities to promote Mass. Eye and Ear activities and services through community partners' organizations

** While the key informants did not discuss job readiness as a significant need among community residents, they have in past needs assessments discussed employment as critical to addressing the socio-economic disadvantage of communities within Mass. Eye and Ear's target area. Job readiness was prioritized in 2019 and recognized as essential to improving the health of low-income communities, because of the relationship between poverty and poor health outcomes. Additionally, improving access to health insurance (e.g., through job-related benefits) and the ability to better afford health care were also seen as important reasons to promote job-readiness. To that end, Mass. Eye and Ear has made investments in job readiness programming in the community. The Community Benefit Advisory Committee should consider the relationship of jobs to SES, health, insurance access, and costs of care in determining its 2022 priorities.*

V. Mass General Brigham System Priorities

Context and Priorities

Mass General Brigham Community Health leads the Mass General Brigham system-wide commitment to improve the health and well-being of residents in our priority communities most impacted by health inequities. Mass General Brigham's commitment to the community is part of a $30 million pledge to fund programs aimed at dismantling racism and other forms of inequity through a comprehensive range of approaches involving our health care delivery system and community health initiatives.

While not required to conduct a CHNA under current regulations, Mass General Brigham's belief in the critical importance of system-wide, population-level approaches resulted in our decision to have every hospital conduct a 2022 CHNA. Having all our hospitals on the same three-year cycle will prove invaluable in our efforts to eliminate health inequities by identifying system-wide priorities that require system-level efforts.

In addition to the priorities each hospital identifies that are unique to its communities, Mass General Brigham identified two system-level priorities: cardiometabolic disease and substance use disorder. These priorities emerged from a review of hospital-level data and prevalent trends in population health statistics. Our efforts within these priorities will aim to reduce racial and ethnic disparities in outcomes, with the goal of improving life expectancy.

Key Findings

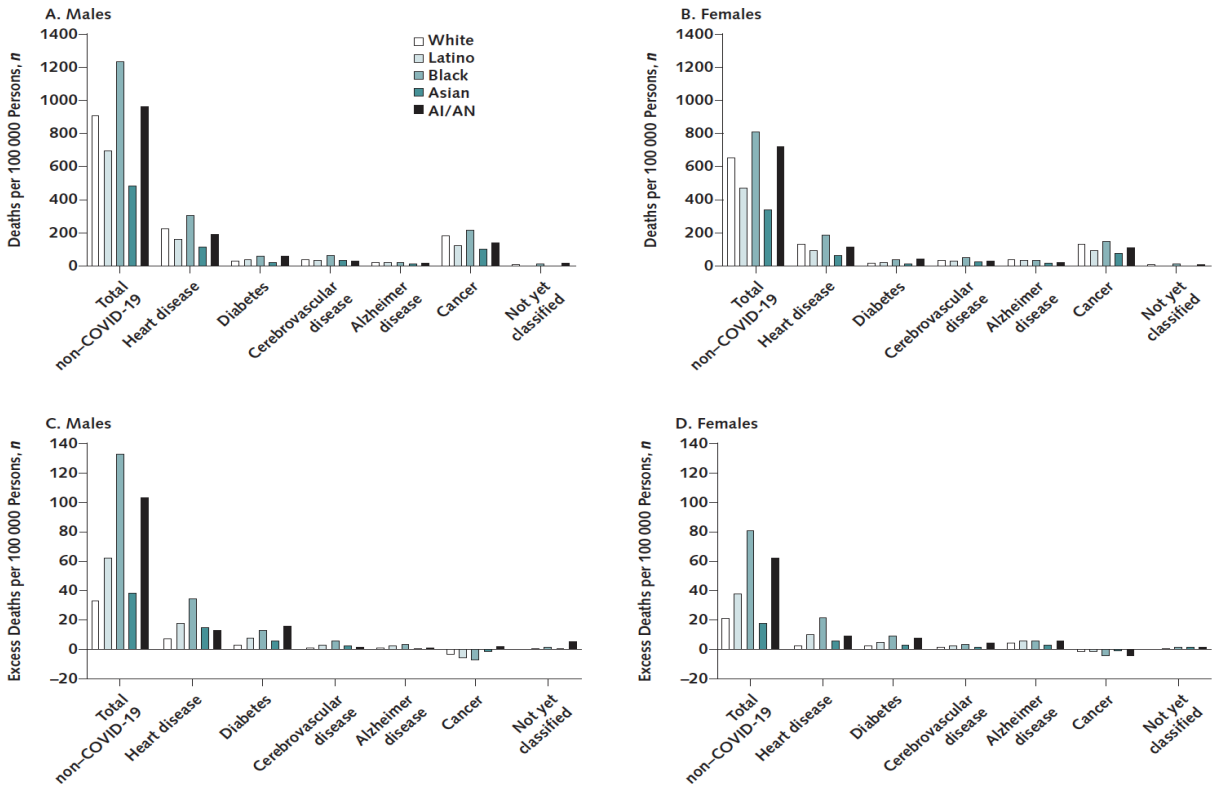
In a national study of deaths during the first wave of the COVID-19 pandemic (March to December 2020), researchers explored non-COVID deaths and excess deaths, defined as the difference between the number of observed and number of expected deaths.

Nationally, non-COVID deaths disproportionately affected Black, American Indian/Alaska Native, and Latinx persons (A. and B.) (Graphic 1)[b]. Moreover, when looking at excess deaths, the inequities worsened (C. and D.). The greatest disparities are seen for heart disease and diabetes. Inequities also exist for all cancer deaths but not excess cancer deaths.

[b] `Sheils et al. Racial and Ethnic Disparities in Excess Deaths During the COVID-19 Pandemic, March to December 2020. Annals of Internal Medicine, Vol 174 No. 12. December 2021. 1693-1699

Graphic 1: (labeled Figure 3 from XX report), Racial and Ethnic Disparities in Excess Deaths During the COVID-19 Pandemic, March to December 2020, Annals of Internal Medicine

Figure 3. Age-standardized non–COVID-19 cause-specific deaths per 100 000 persons in the United States in March to December 2020 among males (*A*) and females (*B*) and age-standardized non–COVID-19 excess cause-specific deaths per 100 000 persons among males (*C*) and females (*D*), by race/ethnicity.



AI/AN = American Indian/Alaska Native.

Massachusetts mortality data for 2019 reveal that heart disease and unintentional injuries, which include drug overdoses, account for the second and third highest causes of death. As shown in Graphic 2, the highest number of deaths among individuals from birth to age 44 were the result of unintentional injuries. However, among those 45 years of age and older, heart disease accounts for the highest or second highest cause of death across age group.

Graphic 2: (labeled at Table 6 in XX report) Top Ten Leading Underlying Causes of Death by Age, MA 2019

Table 6. Top Ten Leading Underlying Causes of Death by Age, Massachusetts: 2019

	Age Groups (number of deaths)								
Rank	<1 year	1-14 years	15-24 years	25-44 years	45-64 years	65-74 years	75-84 years	85+ years	All
1	Short gestation and LBW[1] (57)	Unintentional Injuries[3] (20)	Unintentional Injuries[3] (186)	Unintentional Injuries[3] (1319)	Cancer (2781)	Cancer (3446)	Cancer (3430)	Heart Disease (5622)	**Cancer (12584)**
2	Congenital malformations (56)	Cancer (17)	Suicide (67)	Cancer (241)	Heart Disease (1585)	Heart Disease (1786)	Heart Disease (2581)	Cancer (2641)	**Heart Disease (11779)**
3	SIDS[2] (21)	Congenital malform (9)	Homicide (43)	Suicide (202)	Unintentional Injuries[3] (1138)	Chronic Lower Respiratory Disease[5] (632)	Chronic Lower Respiratory Disease[5] (893)	Stroke (1260)	**Unintentional Injuries[3] (4094)**
4	Complications of placenta (19)	Other infect (8)	Cancer (27)	Heart Disease (193)	Chronic liver disease (383)	Unintentional Injuries[3] (340)	Stroke (629)	Alzheimer's Disease (1128)	**Chronic Lower Respiratory Disease[5] (2842)**
5	Pregnancy Complications (13)	Homicide (8)	Heart Disease (7)	Homicide (77)	Chronic Lower Respiratory Disease[5] (350)	Stroke (331)	Alzheimer's Disease (415)	Chronic Lower Respiratory Disease[5] (941)	**Stroke (2463)**
6	Respiratory distress (8)	Ill-defined conditions-signs and symptoms[4] (7)	Injuries of Undetermined Intent[3] (7)	Chronic liver disease (62)	Diabetes (312)	Diabetes (300)	Unintentional Injuries[3] (381)	Unintentional Injuries[3] (709)	**Alzheimer's Disease (1662)**
7	Bacterial sepsis of newborn (7)	Influenza & Pneumonia (4)	Diabetes (6)	Ill-defined conditions-signs and symptoms[4] (37)	Suicide (281)	Nephritis (221)	Diabetes (358)	Influenza & Pneumonia (612)	**Diabetes (1386)**
8	Necrotizing entercolitis (6)	Suicide (3)	Influenza & Pneumonia (4)	Diabetes (29)	Stroke (212)	Septicemia (181)	Nephritis (339)	Nephritis (553)	**Nephritis (1280)**
9	Circulatory System (5)	Septicemia (2)	Ill-defined conditions-signs and symptoms[4] (4)	Stroke (29)	Septicemia (171)	Chronic liver disease (180)	Parkinsons (285)	Diabetes (381)	**Influenza & Pneumonia (1217)**
10	Intrauterine Hypoxia (4)	In situ neoplasms (2)	Chronic Lower Respiratory Disease[5] (2)	Injuries of Undetermined Intent[3] (26)	Nephritis (150)	Influenza & Pneumonia (179)	Influenza & Pneumonia (276)	Ill-defined conditions-signs and symptoms[4] (355)	**Septicemia (942)**
All Causes	**255**	**106**	**389**	**2,646**	**9,417**	**9,974**	**13,570**	**22,303**	**58,660**

Note: Ranking based on number of deaths. The number of deaths is shown in parentheses.

1. LBW: Low birthweight. 2. SIDS: Sudden Infant Death Syndrome. 3. Injuries are subdivided into 4 separate categories by intent: unintentional, homicide, suicide, and injuries of undetermined intent (deaths where investigation has not determined whether injuries were accidental or purposely inflicted). 4. Ill-Defined Conditions: Includes ICD-10 codes R00-R99. 5. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title).

In Boston, heart disease mortality for Black and Hispanic residents was second only to COVID-19 in 2020.

Graphic 3: (labeled as Table 2 in XX report).

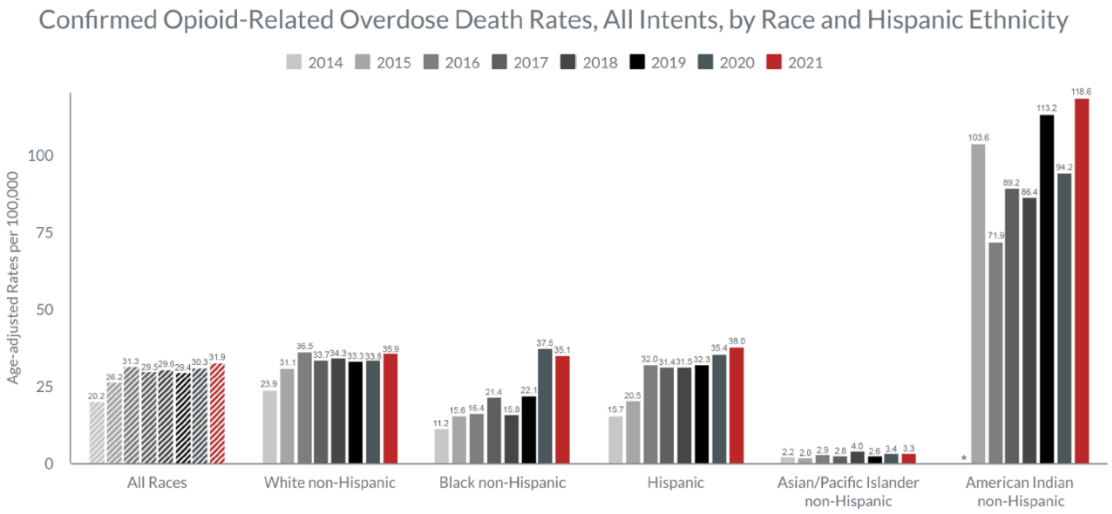
Table 2. Leading Causes of Mortality, by Boston and Race/Ethnicity, Age-Adjusted Rate per 100,000 Residents, 2020

	Boston	Asian	Black	Latino	White
1	COVID-19 138.4	COVID-19 95.1	COVID-19 238.1	COVID-19 143.5	Cancer 117.6
2	Cancer 117.4	Cancer 92.8	Heart Disease 183.6	Heart Disease 86.1	Heart Disease 113.1
3	Heart Disease 114.9	Heart Disease 55.4	Cancer 166.7	Cancer 78.8	COVID-19 103.5
4	Accidents 53.7	Cerebrovascular Diseases 22.2 †	Accidents 82.7	Accidents 59.5	Accidents 53.2
5	Cerebrovascular Diseases 27.4	Accidents 17.1 †	Cerebrovascular Diseases 52.8	Diabetes 27.4	Chronic Lower Respiratory Diseases 24.7

DATA SOURCE: Massachusetts Department of Public Health, Boston Resident Deaths, 2020
DATA ANALYSIS: Boston Public Health Commission, Research and Evaluation Office
NOTES: Please be advised that 2020-2022 data are preliminary and subject to change. Raw preliminary data may be incomplete or inaccurate, have not been fully verified, and revisions are likely to occur following the production of these data. The Massachusetts Department of Public Health strongly cautions users regarding the accuracy of statistical analyses based on preliminary data and particularly with regard to small numbers of events; Dagger (†) denotes where rates are based on 20 or fewer deaths and may be unstable

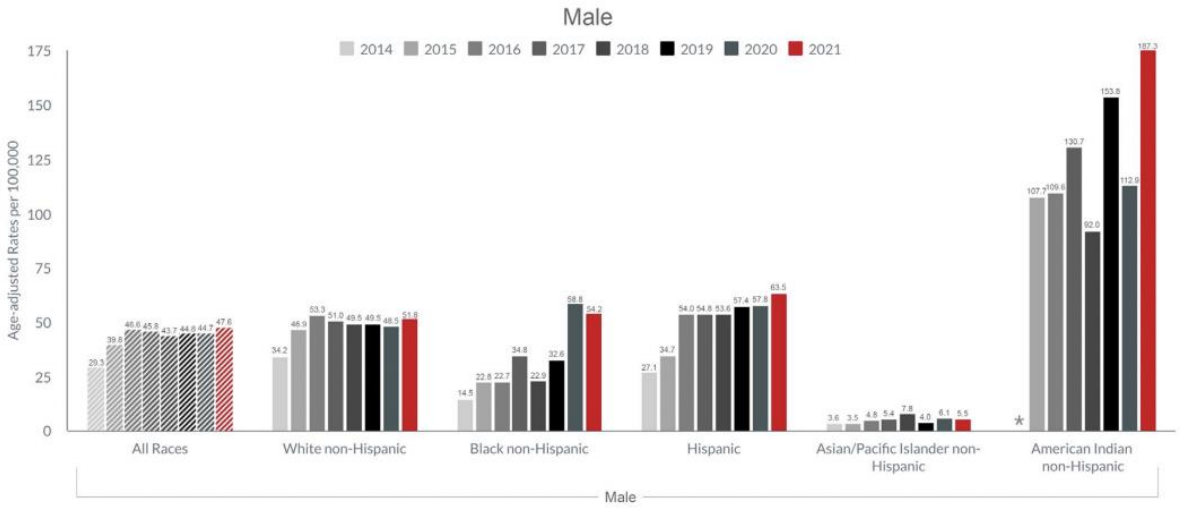
From 2014 to 2021, opioid-related overdose deaths in Massachusetts increased dramatically for Black and Hispanic residents (Graphic 4 and 5). Death rates for American Indian residents have consistently and significantly outpaced deaths rates for all other races.

Graphic 4: Massachusetts Opioid-Related Deaths, All



Data Source: MA Department of Public Health. https://www.mass.gov/doc/opioid-related-overdose-deaths-demographics-june-2022/download

Graphic 5: Massachusetts Opioid-Related Deaths, Males



Focus Areas

As Mass General Brigham develops and implements programming and supports that will reduce disparities in health outcomes for the two system priorities, our efforts will focus on the highest need communities across our hospital priority neighborhoods. We will also continue to support locally identified priorities at the hospital level.

VI. Conclusions

Mass. Eye and Ear draws patients from around the world and across the U.S. Within Massachusetts, the hospital cares for patients statewide. However, by targeting the communities encircled by the Route 128 belt for its Community Health Improvement Plan, Mass. Eye and Ear could reach some of the most racially, ethnically, and linguistically diverse communities in the state, as well as those with the state's lowest per capita income. These communities, including Boston and its Mission Hill neighborhood, are home to large concentrations of individuals who likely face barriers to care related to discrimination, language, and or socio-economic factors.

The health and safety of seniors are threatened by impairments in vision and hearing and problems with balance. Vision and hearing impairments also pose threats to the development and overall well-being of children. Large concentrations of both children and seniors, including those with low SES, reside within the 128 belt.

The CHNA found that significant needs exist within the 128 belt and among vulnerable populations related to vision, hearing, balance, and skin cancer. The CHNA also identified the need for increased outreach and education to the community about prevention and treatment of these conditions and to increase awareness about Mass. Eye and Ear services to address them. The greatest obstacles to care are costs, transportation, and difficulties in understanding and navigating the health system. Access to follow-up care is particularly challenging for children, seniors, and those with low SES.

Mass. Eye and Ear could help prevent potentially disabling conditions and improve outcomes related to vision, hearing, balance, and skin cancer by partnering with community organizations, publicizing Mass. Eye and Ear's events and opportunities, and improving access to education, screenings and examinations, and follow-up care.

The Mass. Eye and Ear Community Benefit Advisory Committee met on September 26 to review and discuss the CHNA findings and select priorities for the upcoming CHIP.

A. Summary of Vulnerable Populations in the Community

The CBAC determined that Mass. Eye and Ear's next CHIP should focus on the communities within the 128 belt, including Boston and Mission Hill. They further determined that the CHIP should focus on children and seniors, as well as populations of color and those with low SES.

B. Priorities Identified and How to Address the Needs of the Community

The CBAC decided the 2023 CHIP should address the clinical priorities of vision, hearing, balance, and head and neck cancers (particularly skin cancers) and address the primary barriers to care faced by seniors, children, racially/ethnically diverse communities, and those with low SES (See Figure 22 below).

The CBAC members believe the CHIP should maximize existing community partnerships to address the clinical priorities and overcome barriers that priority populations face in accessing care. In particular, the group discussed the need for greater outreach to diverse communities to build trust, extend services in the community, and offer education to improve health literacy and understanding of the health system. Additionally, the CBAC discussed the need for improved mechanisms to ensure follow-up care is provided after a problem is detected via screening.

Figure 22. CBAC selected priorities for the 2023 Mass. Eye and Ear CHIP

Clinical priorities	• Hearing • Vision • Balance • Head and Neck Cancers (particularly skin cancers)
Improving access to care	• Insurance/cost • Transportation • Difficulty accessing, understanding, and navigating health system due to language, health literacy, and trust issues

Mass. Eye and Ear's senior leadership reviewed the CBAC's recommendations and approved the CHNA and its conclusions.

C. Next Steps and Considerations toward the Implementation Plan

The CBAC will reconvene in the fall and winter to develop a CHIP with strategies to address the selected priorities over the next three years. In compliance with IRS requirements, the CHIP will be completed by February 15, 2023.

Appendices

Mass General Brigham
Mass Eye and Ear

Appendix A:

Community Benefit Working Group, Community Advisory Board, and Executive Leadership Council Members

Community Benefit Working Group

Erin Duggan, Senior Director of Communications and External Relations
Colleen Hernandez, Senior Project Manager, Mass. Eye and Ear
Hope Kenefick, M.S.W., Ph.D., Independent Consultant
Julia Schuler, Research Assistant

Community Benefit Advisory Committee

Erin Duggan, Senior Director of Communications and External Relations, Mass. Eye and Ear
Colleen Hernandez, Senior Project Manager, Mass. Eye and Ear
Kate Hannigan, Events Manager, Mass. Eye and Ear
Becky Brown, Director of Patient Access, Mass. Eye and Ear
Amy Watts, Director of Vision Rehabilitation Services and Director of Optometry and Contact Lens Service, Mass. Eye and Ear
Jenny Callahan, Director of Operations and Partnerships, Camp Harbor View
Mary McNulty-Anglin, RN, Neighborhood House Charter School (Nurse)
Jennifer Farmer, Patient Access Manager, Mass. Eye and Ear
Meaghan Reed, Director of Clinical Audiology, Camp Harbor View
Tony Rossetti, Manager, Care Coordination, Mass. Eye and Ear
Rebecca Froncki, Director, Project Management Office, Camp Harbor View
Greg Donnelly, President and CEO, The Carroll Center for the Blind
Jenifer Whitmore, Program Director, Polus Center for Social and Economic Development
Karen Gately, Executive Director, Roxbury Tenants of Harvard
Greg Randolph, Director, General and Thyroid/Parathyroid Endocrine Surgical Divisions
Hope Kenefick, M.S.W., Ph.D., Independent Consultant

Executive Leadership Council

John Fernandez, President
Joan W. Miller, MD, Chief of Ophthalmology
Mark A. Varvares, MD, Chief of Otolaryngology-Head and Neck Surgery
Aalok Agarwala, MD, MBA, Chief Medical Officer (Interim Chief of Anesthesia)
Mary Elizabeth Cunnane, MD, Chief of Radiology
Martha Pyle Farrell, Regional SVP of Human Resources for Specialty Hospitals
Michael Gilmore, Chief Scientific Officer
Eileen Lowell, RN, MM, Chief Nursing Officer and SVP Patient Services
Pernell T. Reid, MD, SVP of Otolaryngology-Head and Neck Surgery
Debra Rogers, SVP of Ophthalmology
Hernan Santana, VP Research
Carol Ann Williams, Chief Operating Officer and Chief Financial Officer

Appendix B: List of Key Informants

Camp Harbor View	Jenny Callahan
Mission Hill Health Fair	MaryAnn Nelson
Employment Now Initiative	Jen Whitmore
Elderly Housing Development and Operations Corporation	Tracy Campbell
Boston Symphony Orchestra	Joan Jolley
Mass. Eye and Ear/OHNS	Greg Randolph
Mass. Eye and Ear/ DEI Leadership	Aalok Agarwala
Mass. Eye and Ear Department of Care Coordination	Tony Rossetti
Mass. Eye and Ear/ Patient Access	Becky Brown
Mission Hill Neighborhood Housing Services	Patricia Flaherty
The Carroll Center for the Blind	Greg Donnelly
Mass. Eye and Ear/Year Up Internships	Rebecca Froncki
Mass. Eye and Ear Audiologist	Naomi Fireman
Mass. Eye and Ear Director of Clinical Audiology	Meaghan Reed

Appendix C

Audiences Served by Partner Survey Respondents

	1	2	3	4	5	6	7	8
Children 0 to 12							x	x
Youth 12 to 18				x		x		x
Young adults 19 to 25		x				x	x	x
Adults 26 to 64	x	x				x		x
Seniors 65+	x		x		x			x
Low-income individuals	x	x	x	x	x	x	x	x
Individual/communities of color	x	x		x		x	x	x
Individuals/families in Mission Hill	x		x			x	x	
Individuals/families in Boston	x	x		x		x	x	
Individuals/families within 128 belt							x	
Individuals/families statewide								x
Those experiencing housing instability or homelessness		x		x				x
Those experiencing mental health issues	x			x		x		
Those experiencing substance use disorders								
Those experiencing un/under employment or who want to obtain or advance in their jobs		x						x
Those without health insurance/coverage	x			x				x
Those who face barriers to care (i.e., accessing and/or navigating health care)		x			x			x
Those who want to further their educational/professional training	x							x
Other	x							x

Appendix D. Sample size and demographics for Mass. Eye and Ear patients 2022 vs. 2019

Geographic location of Mass. Eye and Ear patients living in Massachusetts 2022 vs. 2019

	2022	2019
Boston	13.5%	18.2%
Within 128 belt (except Boston)	34.7%	35.4%
East of 495/West of 128	35.3%	31.05
Elsewhere in MA	16.5%	15.4%

Sample size, sex, and age for Mass. Eye and Ear patients 2022 vs. 2019

	2022	2019
Patient data "n" (MA patients)	146,557	134,709
Sex	55.8% female	55.5% female
Age:	Mean 55.9 Mode: 75 Median: 61 Range: 1 to 111	Mean: 53.08 Mode: 71 Median: 58 Range: 0 to 108

Race and Hispanic/Latino ethnicity of Mass. Eye and Ear patients 2022 vs. 2019

	2022 (n=134,556)	2019 (n=128,185)
	%	%
White	82.0%	82.0%
Asian	4.9%	5.5%
Black	6.4%	6.9%
American Indian or Alaska Native	0.1%	.2%
Two or More	1.0%	NA
Native Hawaiian or Other Pacific Islander	0.1%	.1%
Other	5.5%	5.4%
Hispanic/Latino	7.1%	5.5%

Excludes those who declined to provide data and those for whom data were otherwise not available

Primary Language of Mass. Eye and Ear patients 2022 vs. 2019

	2022 (n=146,557)	2019 (n=8,800)*
English	90.5%	94.1%
Spanish	3.0%	3.1%
Portuguese	0.0%	0.5%
Chinese	0.5%	0.7%
Haitian Creole	0.2%	0.3%
Russian	0.3%	0.4%
Arabic	0.3%	0.4%
Other	5.3%	0.6%

*limited data on language were available in 2019

References:

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[3] United State Census, Quick Facts accessed on September 7, 2022 at https://www.census.gov/quickfacts/MA

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