

October 18, 2022

BPHC BOLD Dementia Assessment

Data Brief: Prevalence of Alzheimer's/Dementia and Related Risk Factors among Boston Residents

Submitted to:

Boston Public Health Commission
Division of Healthy Homes and Community Supports
1010 Massachusetts Ave, Boston, MA 02118



Health Resources in Action
Advancing Public Health and Medical Research

Introduction & Background

The BOLD Community Needs Assessment was undertaken by the Boston Public Health Commission (BPHC) in partnership with Health Resources in Action and other community partners, with funding from the CDC. The aim was to assess the needs of residents related to memory loss, Alzheimer's diseases, and related dementias and inform future planning efforts.

This data brief attempts to summarize and highlight the data available that reflect the impact/burden of Alzheimer's and other dementias among Boston residents. In the absence true prevalence and incidence data for Boston specifically, the data available for review included hospitalizations and mortality data, indicators of key health-related risk factors, and the contributing drivers of disparities such as race/ethnicity and economic stability.

Based on current research on the prevalence and incidence of Alzheimer's disease and other dementias¹, we know that about 1 in 9 people (10.7%) age 65 and older in the US has Alzheimer's dementia, with that prevalence increasing with age. Data from the Framingham Heart Study estimates the lifetime risk for Alzheimer's dementia and other dementias at age 45 to be about 1 in 5 (20%) for women and 1 in 10 (10%) for men, the risk for both growing slightly after age 65. Importantly, studies also suggest that older Black individuals are about twice as likely, and older Hispanic individuals are about one and a half times as likely to have Alzheimer's or other dementias compared to older White individuals.

These racial/ethnic disparities have remained consistent over time in the US and do not reflect the effect of genetics on risk, rather research suggests these disparities are rooted in the historic and continued marginalization of Black and Hispanic populations in US society. This, in turn, negatively impacts the social and physical environments an individual experiences across their life course, increasing the risk of chronic conditions, which are associated with higher risk of dementia (e.g., cardiovascular disease, diabetes, etc.).

Data specific to the prevalence or incidence of Alzheimer's and other dementias among Boston residents are not available, thus we cannot conclusively state the true extent to which these conditions are present in the population. But we do know that Boston is a large and complex urban city with an extremely diverse population, both racially/ethnically as well as economically, and is likely to have large segments of the population that are impacted and burdened by Alzheimer's and other dementias.

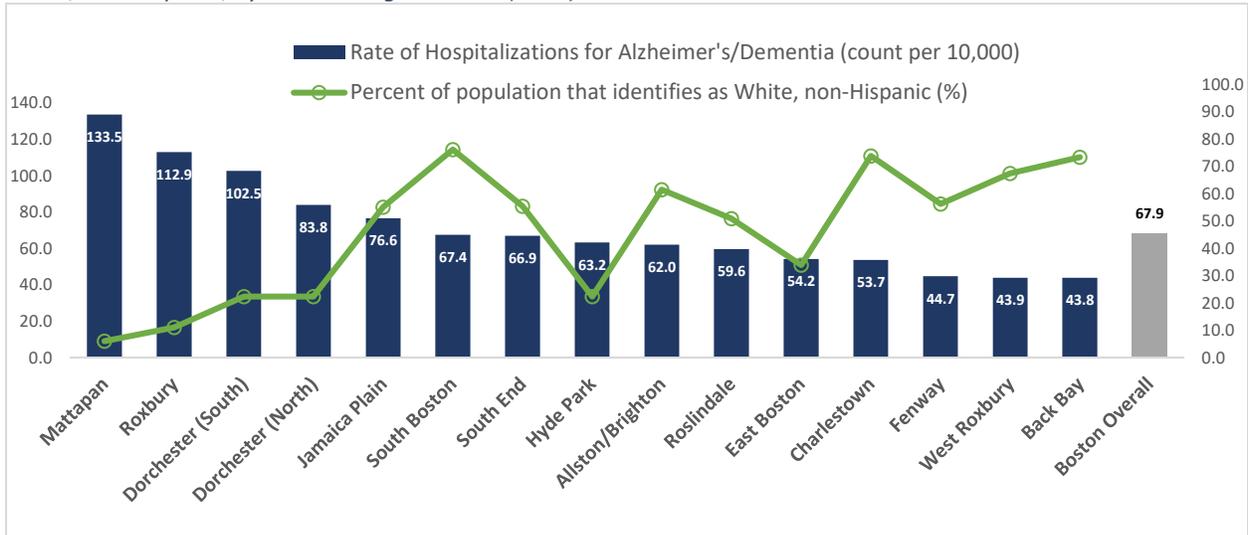
Hospitalizations and Mortality

The rate of hospitalizations for Alzheimer's or other dementias per 10,000 population among Boston residents are illustrated in **Figure 1**. Data have been stratified by neighborhood and overlaid with the percentage of the population that identified as white, non-Hispanic.

These data show that the hospitalization rates for Alzheimer's/Dementia are highest in the neighborhoods of Mattapan (133.5 per 10,000), Roxbury (112.9 per 10,000), and Dorchester (102.5 per 10,000 and 83.8 per 10,000 for South and North respectively) and lowest in the neighborhoods of Fenway (44.7 per 10,000), West Roxbury (43.9 per 10,000), and Back Bay (43.8 per 10,000).

¹ Alzheimer's Association. 2022 Alzheimer's Disease Facts and Figures. Alzheimers Dement 2022;18.

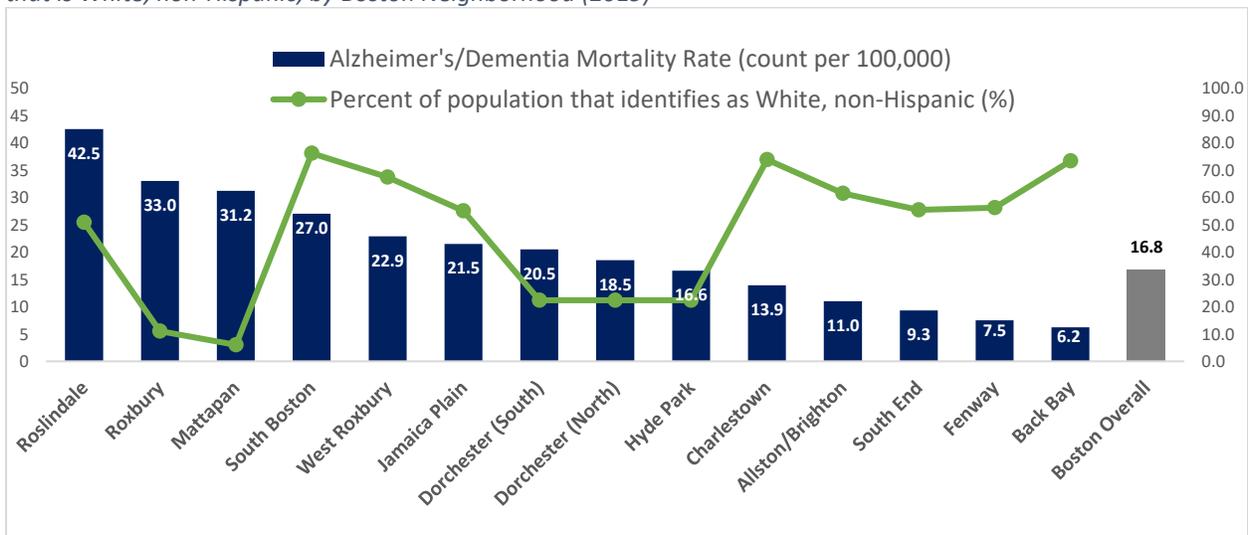
Figure 1. Hospitalizations for Alzheimer's/Dementia per 10,000 Population (2020) and Percent of Population that is White, non-Hispanic, by Boston Neighborhood (2019)



Data Source: Hospitalization data - Acute hospital case mix database, Massachusetts Center for Health Information and Analysis (2020); Demographic data - U.S. Census Bureau, American Community Survey, BPDA Research Division Analysis (2015-2019); Note: hospitalization rates shown are age-adjusted

Similarly, the mortality rates attributed to Alzheimer's/dementia per 100,000 population are illustrated in Figure 2. Data have been stratified by neighborhood and overlaid with the percentage of the population that identified as white, non-Hispanic. These data show that the mortality rates for Alzheimer's/Dementia are highest in the neighborhoods of Roslindale (42.5 per 100,000), Roxbury (33.0 per 100,000), and Mattapan (31.5 per 100,000) and lowest in the neighborhoods of Back Bay (6.2 per 100,000), Fenway (7.5 per 100,000), and the South End (9.3 per 100,000).

Figure 2. Mortality due to Alzheimer's/Dementia per 100,000 Population (2018-2021) and Percent of Population that is White, non-Hispanic, by Boston Neighborhood (2019)

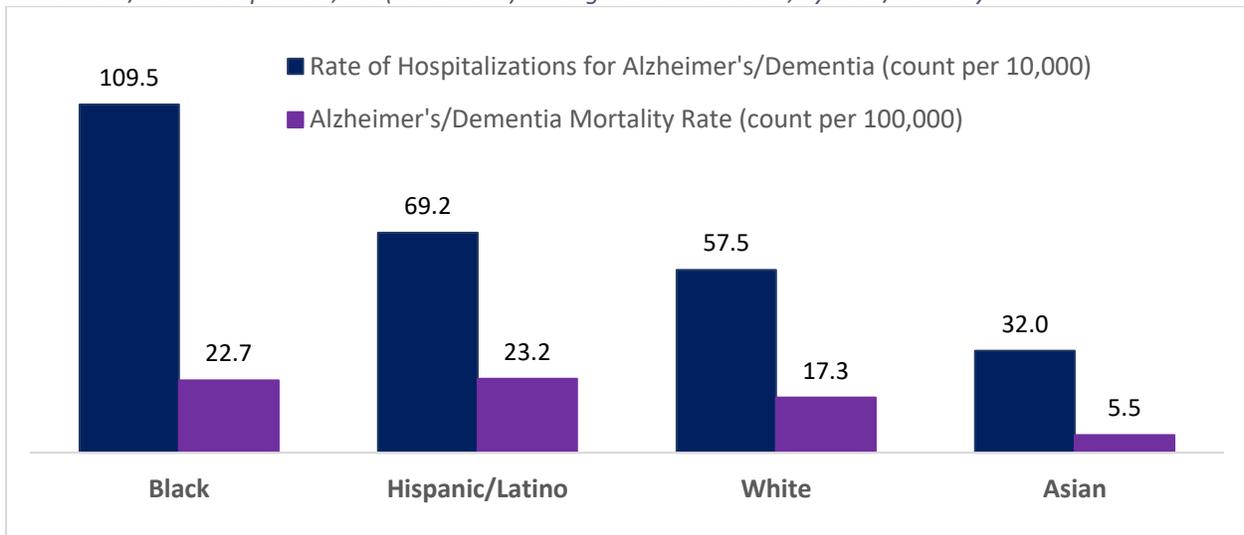


While we cannot conclusively know if the higher vs. lower rates of hospitalizations or mortality for Alzheimer's and other dementias aligns with actual prevalence/incidence, the figures above do illustrate that hospitalizations and mortality align with the racial/ethnic diversity of the population.

Specifically, those neighborhoods with higher hospitalization and mortality rates (Mattapan and Roxbury) have markedly lower percentages of the population that identify as white, non-Hispanic (6% and 11%, respectively) compared to those neighborhoods with lower hospitalization and mortality rates (Fenway and Back Bay) which have some of the highest percentages of the population that identify as white, non-Hispanic (56% and 73%, respectively).

When the hospitalization and mortality data for Alzheimer’s/Dementia among all Boston residents are stratified by race/ethnicity, this association becomes clearer (**Figure 3**). **Among all Boston residents, those who are Black have the highest rate of Hospitalizations (109.5 per 10,000) compared to other race/ethnicity groups, and both Black and Hispanic residents have higher rates of mortality due to Alzheimer’s/Dementia compared to other groups. (22.7 and 23.2 per 100,000, respectively)**

Figure 3. Hospitalizations for Alzheimer’s/Dementia per 10,000 Population (2020) and Mortality due to Alzheimer’s/Dementia per 100,000 (2018-2021) among Boston Residents, by Race/Ethnicity

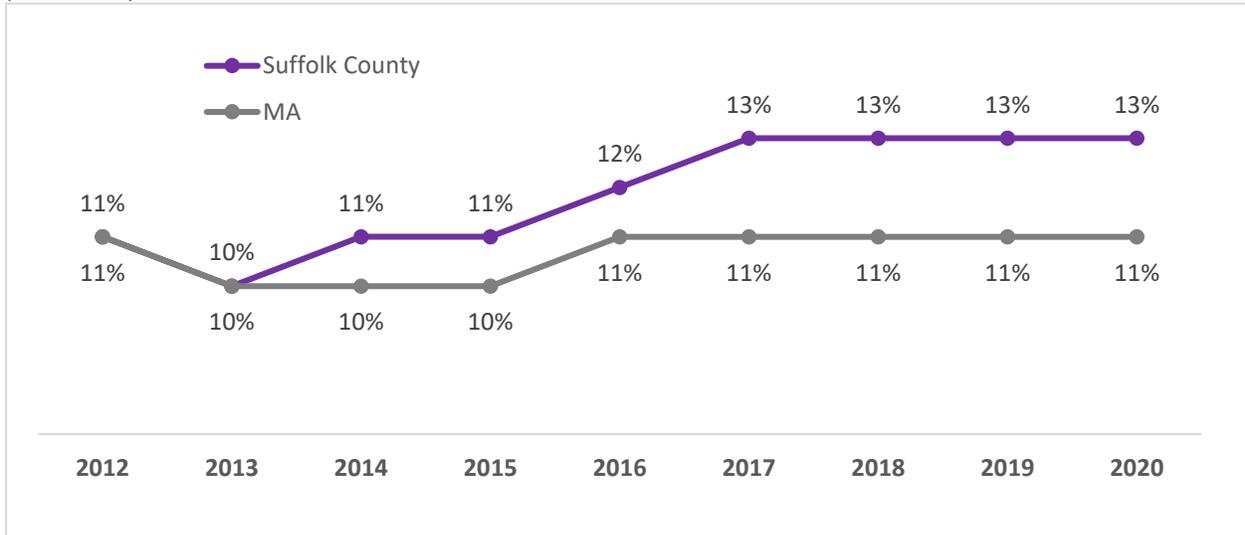


Data Source: Hospitalization data - Acute hospital case mix database, Massachusetts Center for Health Information and Analysis (2020); Mortality data - Massachusetts Department of Public Health (2018-2021 combined, please be advised that 2020-2021 data are preliminary and subject to change); Note: hospitalization rates shown are age-adjusted

Regional Prevalence among Medicare Recipients

Data based on Medicare beneficiaries residing in Suffolk County, which includes Boston, Chelsea, Revere, and Winthrop, are available and provide some insight into the prevalence of Alzheimer’s and dementia in the region (**Figure 4**). As of 2020, the prevalence of Alzheimer’s disease, related disorders, or age-related dementia among Medicare recipients was 13% among residents of Suffolk County. This is slightly higher than for Massachusetts as a whole (11%) and the US overall (10%). The trend does appear stable from 2017 onward.

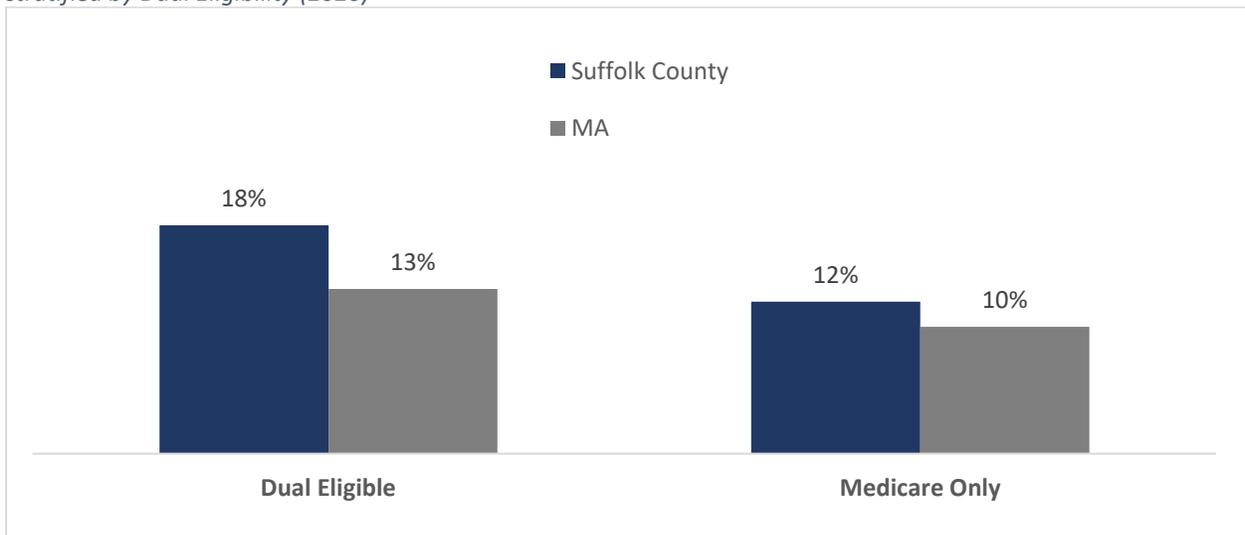
Figure 4. Prevalence of Alzheimer's Disease, Related Disorders, or Senile Dementia among Medicare Beneficiaries (2012-2020)



Data Source: Mapping Medicare Disparities Tool, Centers for Medicare & Medicaid Services Office of Minority Health

When Medicare data are stratified by beneficiaries' dual eligibility, that is comparing those who are eligible for both Medicare and Medicaid, and thus very low income or disabled vs. those who are eligible only for Medicare, the prevalence of Alzheimer's Disease, related disorders, or senile dementia is higher among those who are dual eligible (Figure 5). These data are consistent with what is known about the influence of income and poverty on the risk of Alzheimer's and related dementias.

Figure 5. Prevalence of Alzheimer's Disease, Related Disorders, or Senile Dementia among Medicare Beneficiaries, stratified by Dual Eligibility (2020)



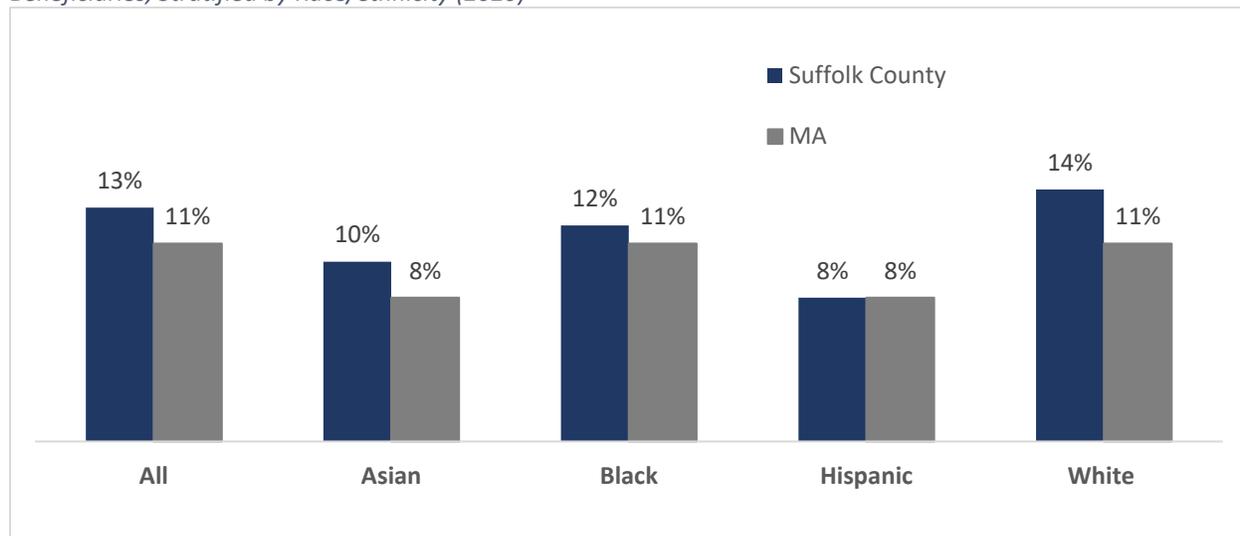
Data Source: Mapping Medicare Disparities Tool, Centers for Medicare & Medicaid Services Office of Minority Health

When Medicare data are stratified by race and ethnicity (Figure 6), Medicare beneficiaries in Suffolk County who are White, non-Hispanic have the highest prevalence (14%) of Alzheimer's/Dementia, while beneficiaries who are Hispanic have the lowest prevalence (8%). These differences by race/ethnicity conflict with what is known about the rate of Alzheimer's/Dementia diagnoses in different populations where Black adults are 2 times and Hispanic adults are 1 and ½ times more likely than white adults to

develop the condition. However, this may be partially explained by the very real limitations of the dataset, which excludes individuals who are not eligible for Medicare. Still, the data do support the idea that Boston-area residents are experiencing higher than average rates of Alzheimer’s disease and other dementias compared to MA overall or the US as a whole.

It is important to note these data are reflective only of the population served by Medicare, and may disproportionately exclude individuals without permanent residence status, those with insufficient work records, and others who do not qualify for Medicare benefits. Still, these data provide some indication of what the prevalence may be among a segment of Boston residents.

Figure 6. Prevalence of Alzheimer's Disease, Related Disorders, or Senile Dementia among all Medicare Beneficiaries, Stratified by Race/ethnicity (2020)



Data Source: Mapping Medicare Disparities Tool, Centers for Medicare & Medicaid Services Office of Minority Health

Perceptions of Memory Loss

Individuals working directly with Boston-area adults aged 65 and older, including social service, healthcare, and personal care providers, offer a unique perspective on the prevalence and impact of Alzheimer’s disease among the older adult population. With this in mind, a survey of Boston social service providers (the ‘Provider Survey’) was fielded as part of the BOLD community needs assessment.

Table 1 shows the perceived prevalence of Alzheimer’s disease and other dementias among the 36 respondents to the Provider Survey. Notably, zero respondents indicated that none of their older adult clients are experiencing memory loss, a symptom of Alzheimer’s disease or other dementias. Rather, half of the providers (50.0%) reported that many of their clients were affected by memory loss.

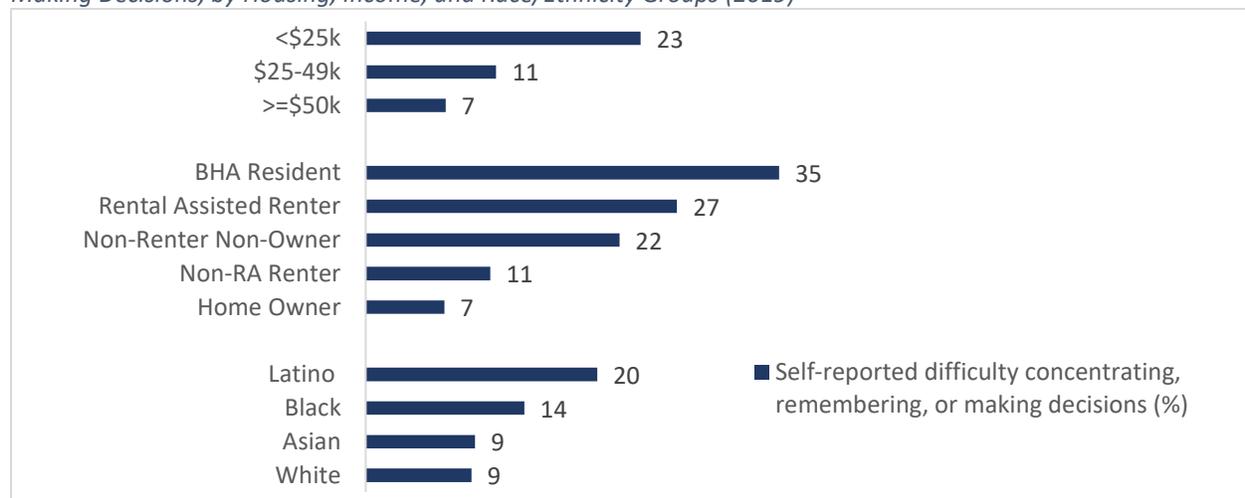
Table 1. Proportion of Clients Estimated to be Experiencing Memory Loss (n=36)

	Frequency	Percent
All of them	4	11%
Many of them	18	50%
Some of them	7	19%
A few of them	7	19%
None of them	0	0%

DATA SOURCE: Provider Survey, 2022

There is also recent data from the Behavioral Risk Factor Surveillance Survey (BRFSS) pertaining to Boston residents' self-reported difficulty concentrating, remembering, or making decisions (Figure 7). Percentages are highest among low-income households (23%), BHA residents (35%), and Hispanic/Latino adults (20%). It should be clearly noted that these data are entirely self-reported. Thus, data may or may not reflect actual symptoms of memory decline or presence of Alzheimer's or other dementias. However, these data do provide some insight into the percentage of adults who have identified a change in their cognition and should be prompted to follow-up with a physician for examination.

Figure 7. Percent of Boston Residents (all adults) that Self-reported Difficulty Concentrating, Remembering, or Making Decisions, by Housing, Income, and Race/Ethnicity Groups (2019)



Data Source: Self-report data - Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission, data reflect 2019; Note: data reflect responses among all Boston adults

Prevalence of Health-Related Risk Factors

Beyond age, genetics, and family-history, all of which are non-modifiable risk factors for Alzheimer's disease or dementia, a range of modifiable health-related risk factors have been identified (Table 2). Researchers have suggested that addressing modifiable risk factors might prevent or delay up to 40% of dementia cases². Of course, the earlier in the life course these risk factors can be addressed or mitigated, the greater preventative impact will be achieved. Furthermore, these risk factors are known to differ greatly by race/ethnicity and by socioeconomic status, providing targets for efforts seeking to moderate the known disparities in Alzheimer's/Dementia incidence rates.

Table 2. Modifiable Risk Factors for Alzheimer's Disease and Dementia²

Risk Factors	
Air pollution	Hypertension
Depression	Lower/limited education
Diabetes	Obesity
Excessive alcohol intake	Physical inactivity
Head injury	Smoking
Hearing impairment	Social isolation

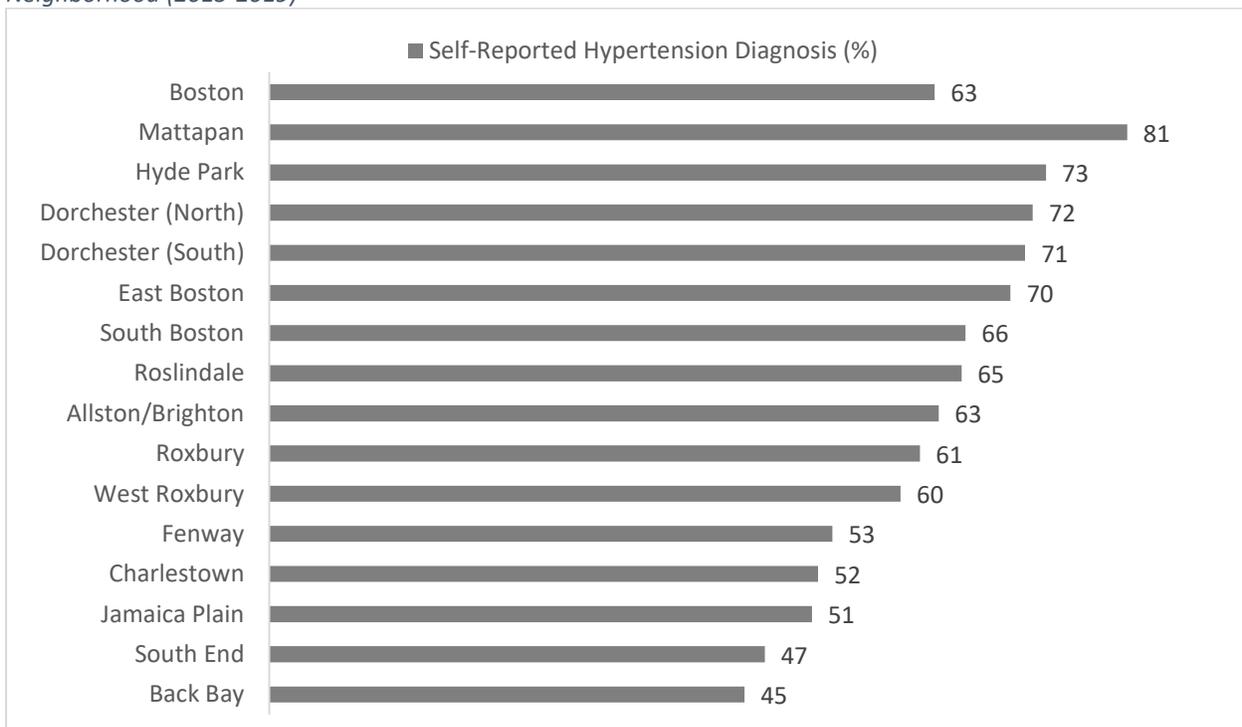
² Livingston, Gill, et al. "Dementia prevention, intervention, and care: 2020 report of the Lancet Commission." The Lancet 396.10248 (2020): 413-446.

Given what is known about the risk and contributing factors for the development of Alzheimer’s and other dementias, many Boston residents are likely to be at high risk for these conditions. While local data were not consistently available for all modifiable risk factors shown above, data for several of the most important health-related risk factors were available, including hypertension and diabetes. The data presented below provide some insight into these risk factors and explore them stratified by race/ethnicity, neighborhood, and socio-economic status when possible.

Hypertension

Figure 8 Summarizes the percentage of Boston residents who are age 65 and older that self-reported they have hypertension by neighborhood. Overall, 63% self-reported hypertension, however the percentages are higher in the neighborhoods of Mattapan (81%), Hyde Park (73%), and Dorchester (72% North and 71% South). In contrast, older adults in Back Bay (45%) and the South End (47%) have lower percentages of self-reported hypertension, though these are still close to half of all adults age 65+.

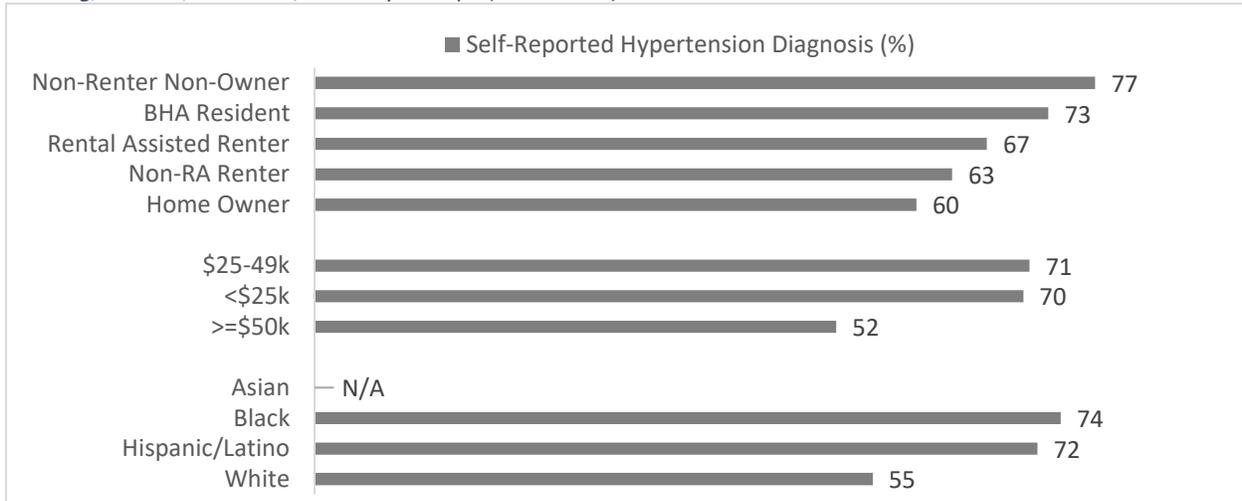
Figure 8. Percent of Boston Residents Aged 65+ that Self-reported Having Received a Hypertension Diagnosis, by Neighborhood (2015-2019)



Data Source: Self-report data - Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission, data were aggregated across 2015, 2017, and 2019; Note: data reflect responses among Boston adults aged 65+ only

Examined by sub-group (**Figure 9**), the data further shows that the percentages of Boston adults age 65 and older with self-reported hypertension are higher among Black (74%) and Hispanic/Latino (72%) individuals, among lower income households (approximately 70% if income < \$50,000), and among non-renter/non-owners (77%) and BHA residents (73%).

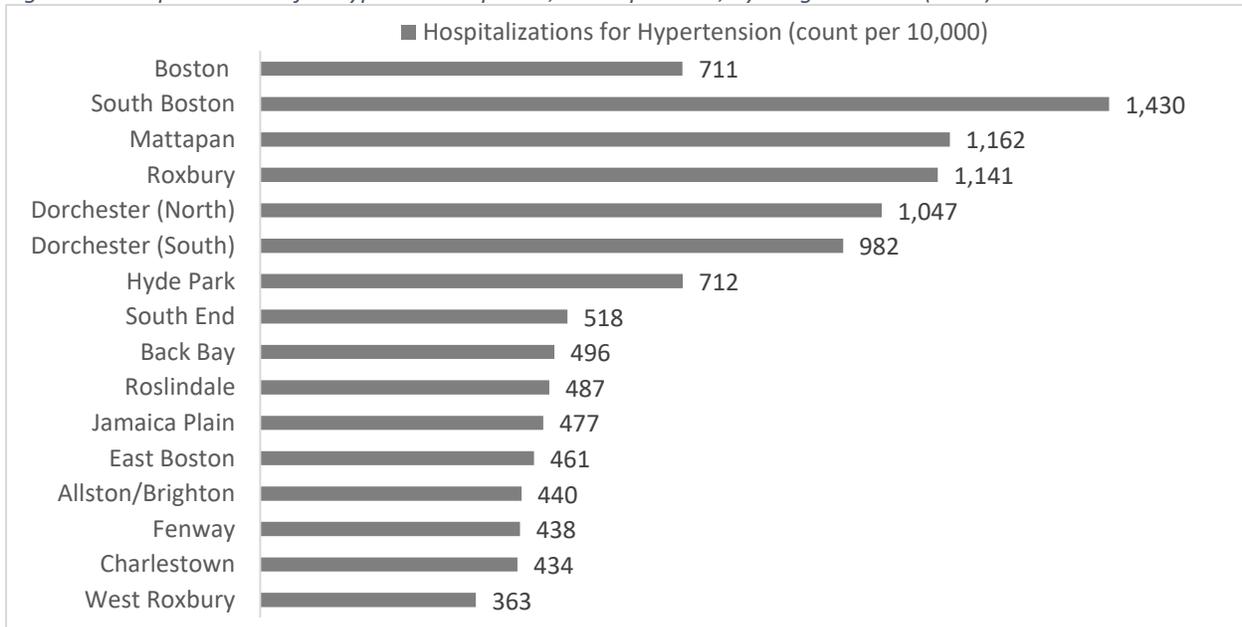
Figure 9. Percent of Boston Residents Aged 65+ that Self-reported Having Received a Hypertension Diagnosis, by Housing, Income, and Race/Ethnicity Groups (2015-2019)



Data Source: Self-report data - Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission, data were aggregated across 2015, 2017, and 2019; Note: data reflect responses among Boston adults aged 65+ only

Age-adjusted hospitalization rates for Hypertension among Boston residents are summarized by neighborhood in **Figure 10**. Hypertension-related hospitalizations are highest among residents of South Boston (1,430 per 10,000), Mattapan (1,162 per 10,000), and Roxbury (1,141 per 10,000). Rates are lowest among residents in West Roxbury (363 per 10,000).

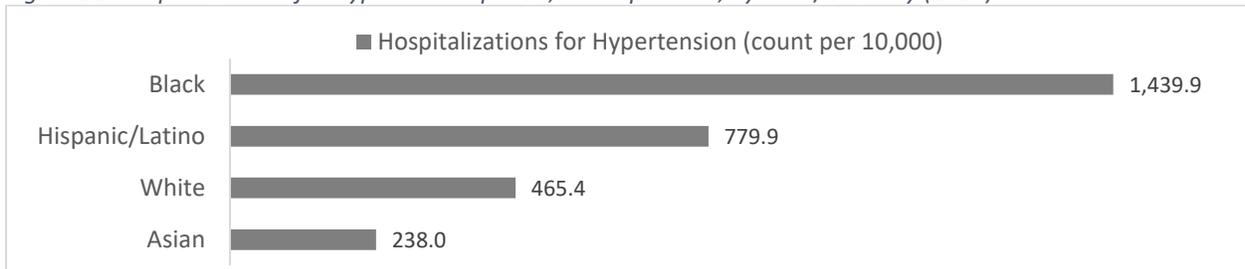
Figure 10. Hospitalizations for Hypertension per 10,000 Population, by Neighborhood (2020)



Data Source: Hospitalization data - Acute hospital case mix database, Massachusetts Center for Health Information and Analysis (2020); Note: hospitalization rates shown are age-adjusted

When stratified by race (**Figure 11**), data indicate that Boston residents who are Black experience hospitalizations for hypertension at rates much higher than other racial/ethnic groups (1,439.9 per 10,000 vs. <800 per 10,000 in other groups).

Figure 11. Hospitalizations for Hypertension per 10,000 Population, by Race/Ethnicity (2020)

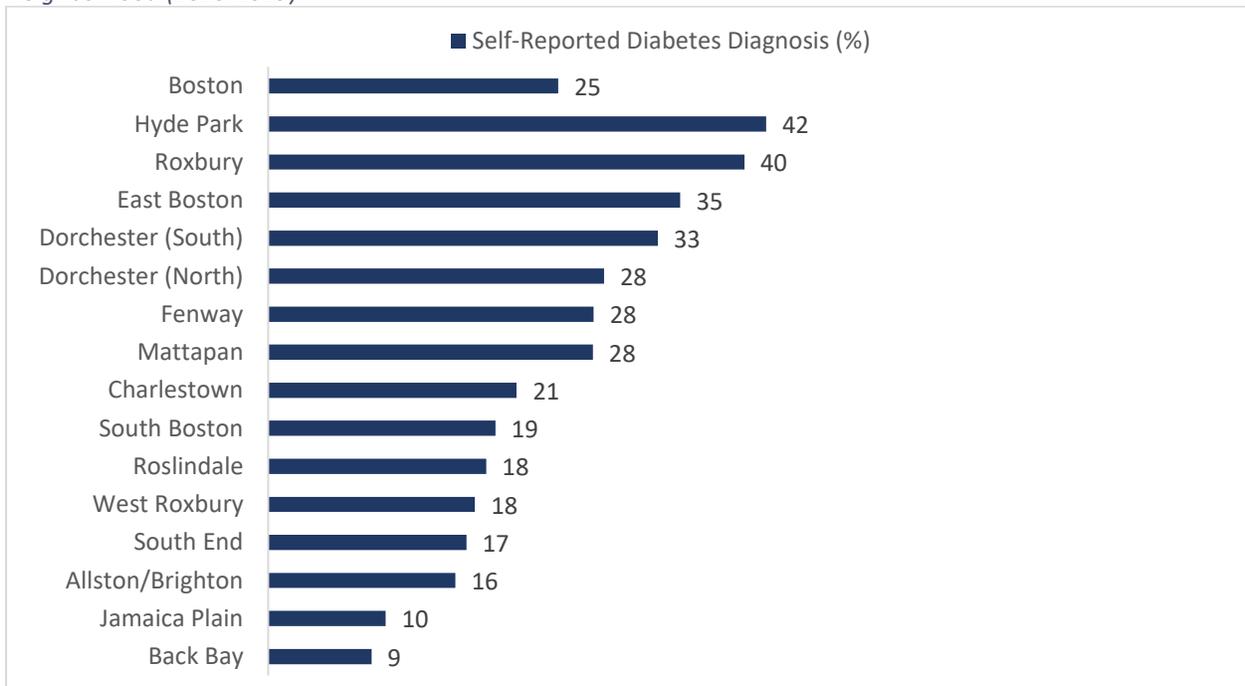


Data Source: Hospitalization data - Acute hospital case mix database, Massachusetts Center for Health Information and Analysis (2020); Note: hospitalization rates shown are age-adjusted

Diabetes

Figure 12 summarizes the percentage of Boston residents who are age 65 and older that self-reported they have diabetes by neighborhood. Overall, 25% self-reported diabetes, however the percentages are higher in the neighborhoods of Hyde Park (42%), Roxbury (40%), and East Boston (35%). In contrast, older adults in Back Bay (9%) and Jamaica Plain (10%) have lower percentages.

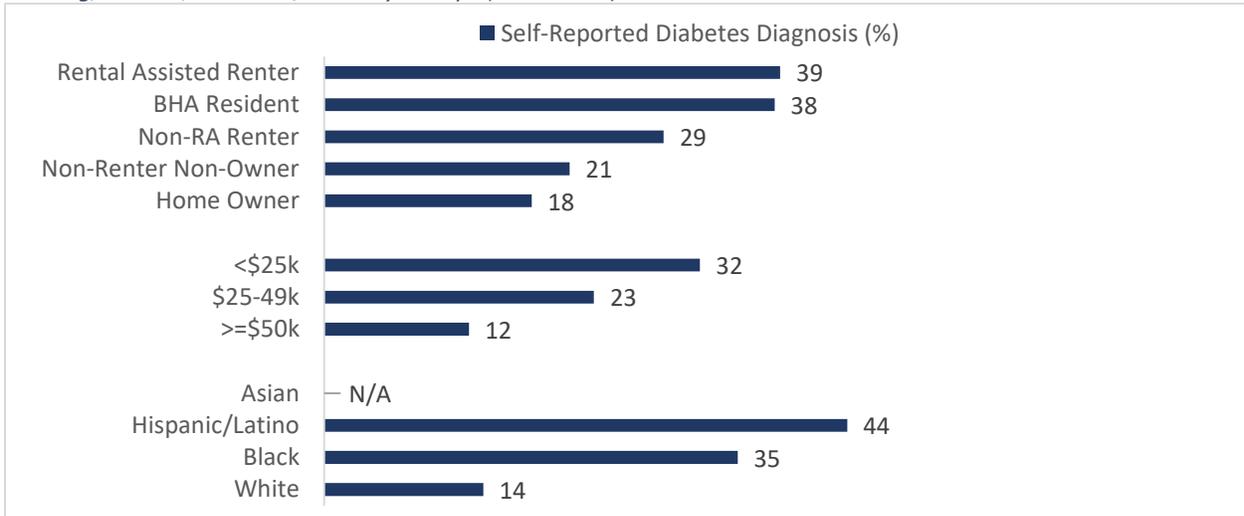
Figure 12. Percent of Boston Residents Aged 65+ that Self-reported Having Received a Diabetes Diagnosis, by Neighborhood (2015-2019)



Data Source: Self-report data - Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission, data were aggregated across 2015, 2017, and 2019; Note: data reflect responses among Boston adults aged 65+ only

Examining data by sub-group (Figure 13) further shows that the percentages of Boston adults age 65 and older with self-reported diabetes are higher among Hispanic/Latino (44%) individuals, among lower income households (32% of income < \$25,000), and among rent assisted renters (39%) and BHA residents (38%).

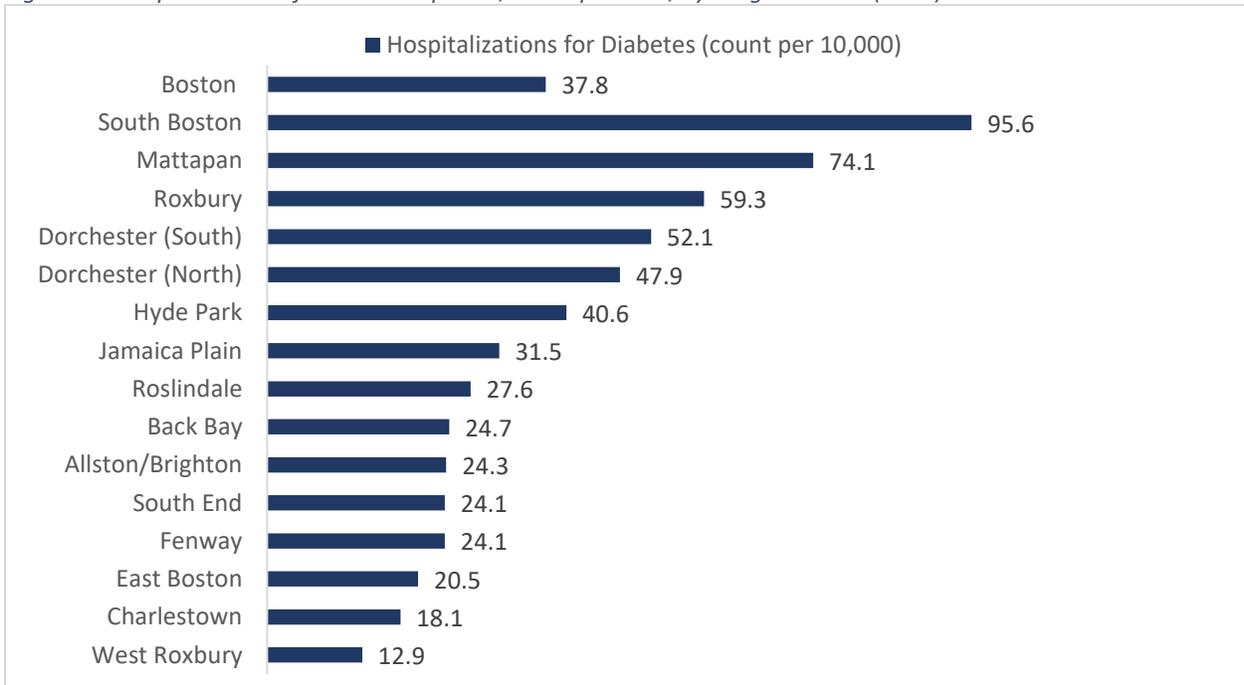
Figure 13. Percent of Boston Residents Aged 65+ that Self-reported Having Received a Diabetes Diagnosis, by Housing, Income, and Race/Ethnicity Groups (2015-2019)



Data Source: Self-report data - Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission, data were aggregated across 2015, 2017, and 2019; Note: data reflect responses among Boston adults aged 65+ only

Age-adjusted hospitalization rates for diabetes among Boston residents are summarized by neighborhood in **Figure 14**. Diabetes-related hospitalizations are highest among residents of South Boston (95.6 per 10,000), Mattapan (74.1 per 10,000), and Roxbury (59.3 per 10,000). Rates are lowest among residents in West Roxbury (12.9 per 10,000).

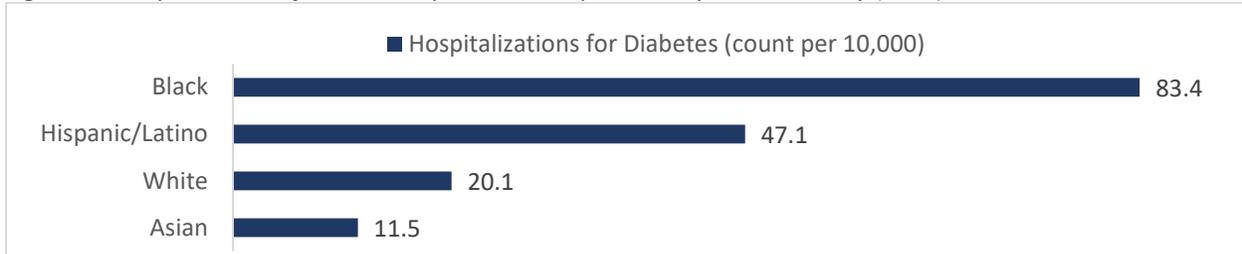
Figure 14. Hospitalizations for Diabetes per 10,000 Population, by Neighborhood (2020)



Data Source: Hospitalization data - Acute hospital case mix database, Massachusetts Center for Health Information and Analysis (2020); Note: hospitalization rates shown are age-adjusted

When stratified by race (**Figure 15**) data indicate that Boston residents who are Black are experiencing hospitalizations for diabetes at rates much higher than other racial/ethnic groups (83.4 per 10,000 vs. <50 per 10,000 in other groups).

Figure 15. Hospitalizations for Diabetes per 10,000 Population, by Race/Ethnicity (2020)



Data Source: Hospitalization data - Acute hospital case mix database, Massachusetts Center for Health Information and Analysis (2020); Note: hospitalization rates shown are age-adjusted

Other Risk Factors

Self-reported data for a number of other risk factors among Boston adults aged 65 and older are summarized in **Table 3**. These include behaviors such as binge drinking, smoking, and physical activity, as well as the presence of sadness and anxiety, which may indicate social isolation/loneliness or other mental health concerns. Generally, these risk factors are all more prevalent among low-income households and many are more prevalent among Black and/or Hispanic individuals and those residing in BHA housing. Importantly, these are all modifiable risk factors and represent opportunities to reduce the development and progression of Alzheimer’s and other dementias.

Table 3. Percent of Boston Residents Aged 65+ that Self-reported Additional Modifiable Risk Factors for Alzheimer’s Disease and Dementia (2015-2019)

Risk Factor	%	Sub-Group Differences
Binge drinks	7%	--
Smokes	11%	Higher among Black adults, Higher among BHA residents, Higher among all renters, Higher among low-income households
Meets CDC physical activity guidelines	18%	Lower among Black and Hispanic adults, Lower among all renters, Lower in North Dorchester, Lower among low-income households
Experiences persistent sadness	12%	Higher among Hispanic adults, Higher among BHA residents, Higher among rental assisted renters, Higher among low-income households
Experiences persistent anxiety	16%	Higher among BHA residents, Higher among low-income households
Rates overall health is Fair or Poor	30%	Higher among BHA residents, Higher among rental assisted renters, Higher among low-income households

Data Source: Self-report data - Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission, data were aggregated across 2015, 2017, and 2019; Note: data reflect responses among Boston adults aged 65+ only