

APPENDICES /

APPENDIX I: Social Determinants of Health and Food Security

Social determinants of health including poverty, food insecurity, housing instability and transportation infrastructure are associated with some of the most pressing health problems in the nation, as well as in Malden.

Maintaining good health, consuming a nutritious diet, or managing a chronic disease can be a challenge for people struggling with poverty or food insecurity due to factors like limited finances and resources, competing priorities, and stress.⁷¹ People impacted by poverty or food insecurity may experience additional resource-related hardships, such as housing instability or difficulty paying energy bills, which can further contribute to poor health, nutrition, and disease self-management. These resource-related hardships are further exacerbated by historic and present-day systems of oppression and privilege: laws, policies and practices that unfairly advantage some and disadvantage others, such as structural racism, sexism and classism.

One such policy and practice that has had lasting impacts on poverty, food insecurity, housing instability and transportation is “redlining,” which was the practice of denying or limiting financial services to certain neighborhoods based on racial or ethnic composition. In the 1930s, the federal Home Owners Loan Corporation (HOLC) graded neighborhoods into 4 categories, largely along racial lines, and used these categories to determine riskiness of mortgages⁷². The HOLC made maps and shaded neighborhoods red that it deemed “hazardous,” where financial institutions would not invest. That risk level was largely based on the number of African Americans and immigrants living there. Neighborhoods that were undesirable would be denied federal loans forcing people to use predatory lending firms with high interest rates. The HOLC maps presented in Figures 5 & 6 show that 46% of Malden was graded “hazardous” and 52% of Malden was graded “definitely declining” in the 1930s.

71 Hartline-Grafton, H. (2017). The Impact of Poverty, Food Insecurity, and Poor Nutrition on Health and Well-Being. Washington, DC: Food Research & Action Center. Available at: <https://frac.org/wp-content/uploads/hunger-health-impact-poverty-food-insecurity-health-well-being.pdf>

72 Mapping Inequality. University of Richmond, Virginia Tech, University of Maryland, Johns Hopkins University. <https://dsl.richmond.edu/panorama/redlining/#loc=5/39.1/-94.58>

Figure 5: Home Owners Loan Corporation (HOLC) Map of Malden, 1930

Source: Mapping Inequality

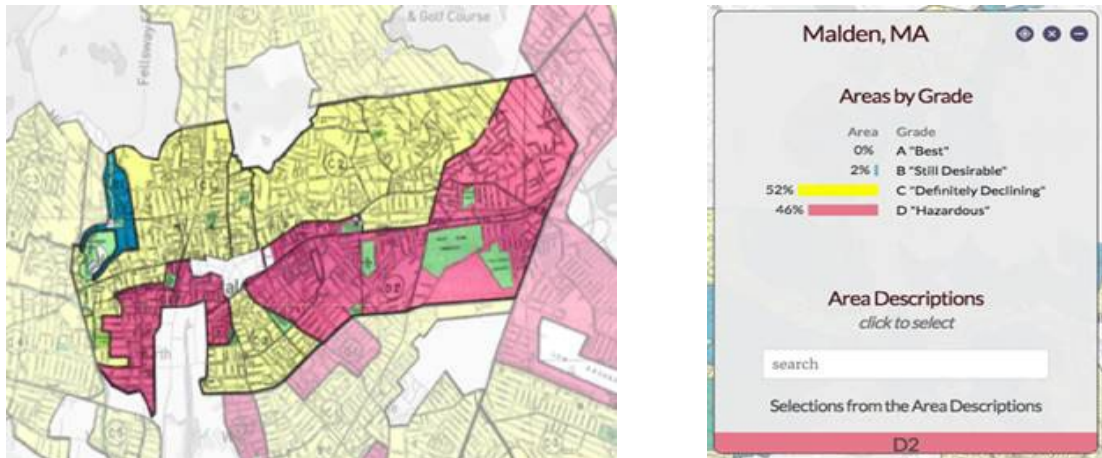
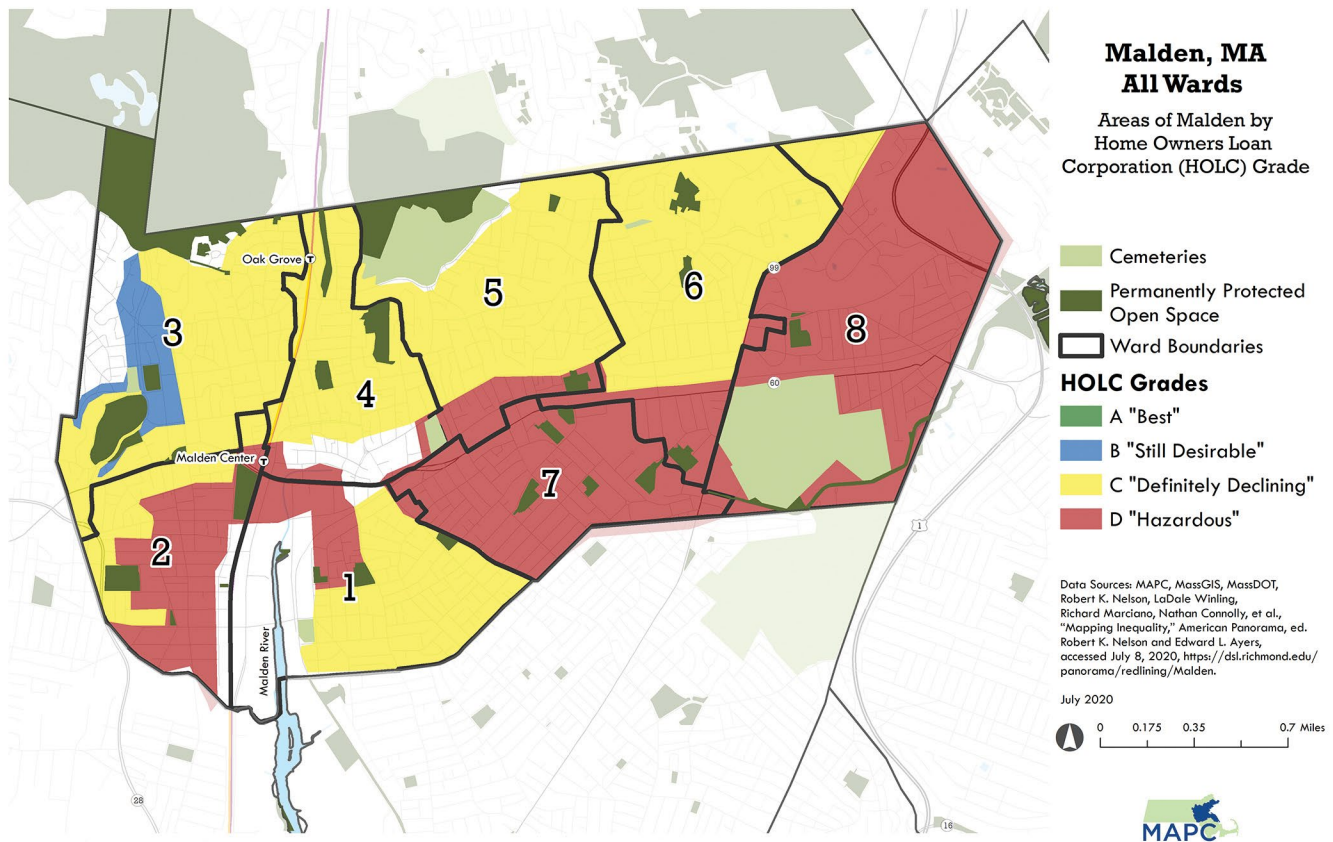


Figure 6: Home Owners Loan Corporation (HOLC) Map of Malden, 1930 with present-day ward overlay

Source: Mapping Inequality and MAPC



While the Community Reinvestment Act passed in 1977 outlawed this practice, it has had lasting impacts, as the median value of homes in redlined areas is approximately \$50,000 less than those in desired areas.⁷³ Redlining not only denied persons of color the ability to invest in homeownership and generate wealth that could be passed down for generations, it also dictated where retailers (such as supermarkets) would or would not locate. Lack of access to supermarkets has been strongly linked to diet, which has been strongly linked to obesity, hypertension and diabetes⁷⁴.

Therefore, inequities in rates of poverty, food insecurity, housing instability and transportation modes in Malden presented below should be examined with the equity lens discussed in our introduction, knowing that historic unjust practices like redlining have created barriers to good jobs, homes, food, and health outcomes.

To illustrate how each of these social determinants of health work together to impact the average Malden household, below is a series of average costs to understand what the **average** family of four's expenses look like (Table 3). Housing is considered affordable when it accounts for 30% or less of a household's income. Below is a snapshot of the monthly income and expenses of a 2-adult, 2-child renter household in Malden making the median income (\$64,178), which breaks down to \$5,196.75 per month, about \$30/hr.

73 Homes in Formally Redlined Areas Trailing in Value. <https://www.prnewswire.com/news-releases/homes-in-formerly-redlined-areas-trailing-in-value-300636102.html>

74 HealthyPeople.gov: Access to Foods that Support Healthy Eating Patterns

Table 3: Monthly Income and Expenses Snapshot of an “average” Malden renter household

MEDIAN HOUSEHOLD INCOME⁷⁵	
Gross household income/year	\$64,178.00
Gross household income/month	\$5,196.75
Gross Hourly Wage	\$30.56
MONTHLY HOUSING COSTS	
Median 2-bedroom rent ⁷⁶ (as of July 2020)	\$2,255.00
Percentage of income spent on rent (housing cost burden) based on median rent	42.16%
OTHER MONTHLY COSTS	
Childcare ⁷⁷	\$1,336.00
Food ⁷⁸	\$1,445.00
Transportation ⁷⁹	\$876.00
MONTHLY BALANCE	-\$563.83

Takeaway: This family, which represents the “average” household in Malden (half are above and half are below this income level) is **housing cost burdened** and will have a hard time covering other monthly expenses, as shown by the negative balance above. This snapshot uses gross income, and housing cost does not include utilities. This family could be eligible for affordable housing if it were available, as their income is less than 80% of the area median income (AMI) and considered “Low Income.” If not, they could be pushed out of traditional housing options and be one major unexpected expense away from experiencing homelessness. This has severe negative implications for public health, well-being and educational outcomes.

75 2018 ACS 5 Year Estimates (2014-18)

76 <https://www.apartments.com/malden-ma/>

77 MIT Living Wage Calculator

78 <https://www.gbfb.org/news/press-releases/cost-food-massachusetts/>

79 MIT Living Wage Calculator

/POVERTY AND INCOME/

In general, Malden has higher poverty rates and lower median income compared to Massachusetts overall. An estimated 16.4% of Malden residents live below the federal poverty level, compared with 10.8% statewide.⁸⁰ As shown in Table 4, Malden has a greater percentage of residents under 18 living below poverty level compared to the state. Over 18% of Malden residents ages 65 and older are living below poverty level, compared to 9% in Massachusetts. Similarly, Malden has a greater percentage of families living below poverty level compared to the state. Single mothers and their children, people of color, and people who are disabled are more likely to experience poverty, and as a result also experience greater food insecurity.⁸¹

Table 4: Malden and Massachusetts Poverty

Source: 2018 ACS 5 Year Estimates (2014-18)

POVERTY RATES ⁸²	MALDEN	MA
Population under 18 living below poverty level	20.1%	13.9%
Population 65 and older living below poverty level	18.1%	9.0%
Families living below poverty level	13.3%	7.5%

Since 2000, median household income has increased in Malden, but so has the percentage of families living below the poverty level. As shown in Table 5, growth in median household income has increased since 2000 in Malden (by 40.6%), it has been at a slower rate of growth than the state (53.2%). Median household income (\$64,178) remains lower compared to Massachusetts overall (\$77,378). Conversely, the percentage of families living below poverty level in Malden has increased at a much higher rate than the state.

Table 5: Income and Poverty: Change Over Time

Source: 2018 ACS 5 Year Estimates (2014-18)

MEASURE	MALDEN			MA		
	2000	2018	% CHANGE	2000	2018	53.2%
Median Household Income	\$45,654	\$64,178	40.6%	\$50,502	\$77,378	53.2%
Families below poverty level	\$6.60%	13.30%	-	6.70%	7.50%	-

80 US Census Bureau American Community Survey (ACS) 2014 - 2018 5-Year Estimates

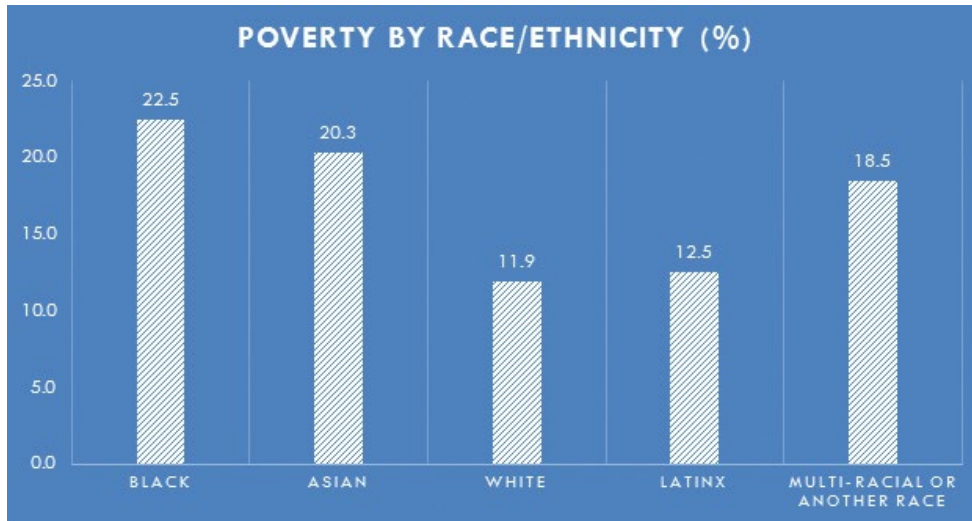
81 Massachusetts Food Insecurity: Landscape and Innovation (2014), Tufts University.

82 <https://data.census.gov/cedsci/table?q=S1701&g=0400000US25&tid=ACST5Y2018.S1701&hidePreview=true>

Both in Massachusetts and across the country, poverty is experienced disproportionately by people of color.⁸³ This is also true in Malden, as poverty rates are higher among Black, Asian, Multi-racial and Latinx residents relative to White residents (see Figure 7 below).

Figure 7: Malden Poverty Estimates by Race and Ethnicity

Source: ACS 2013-2017

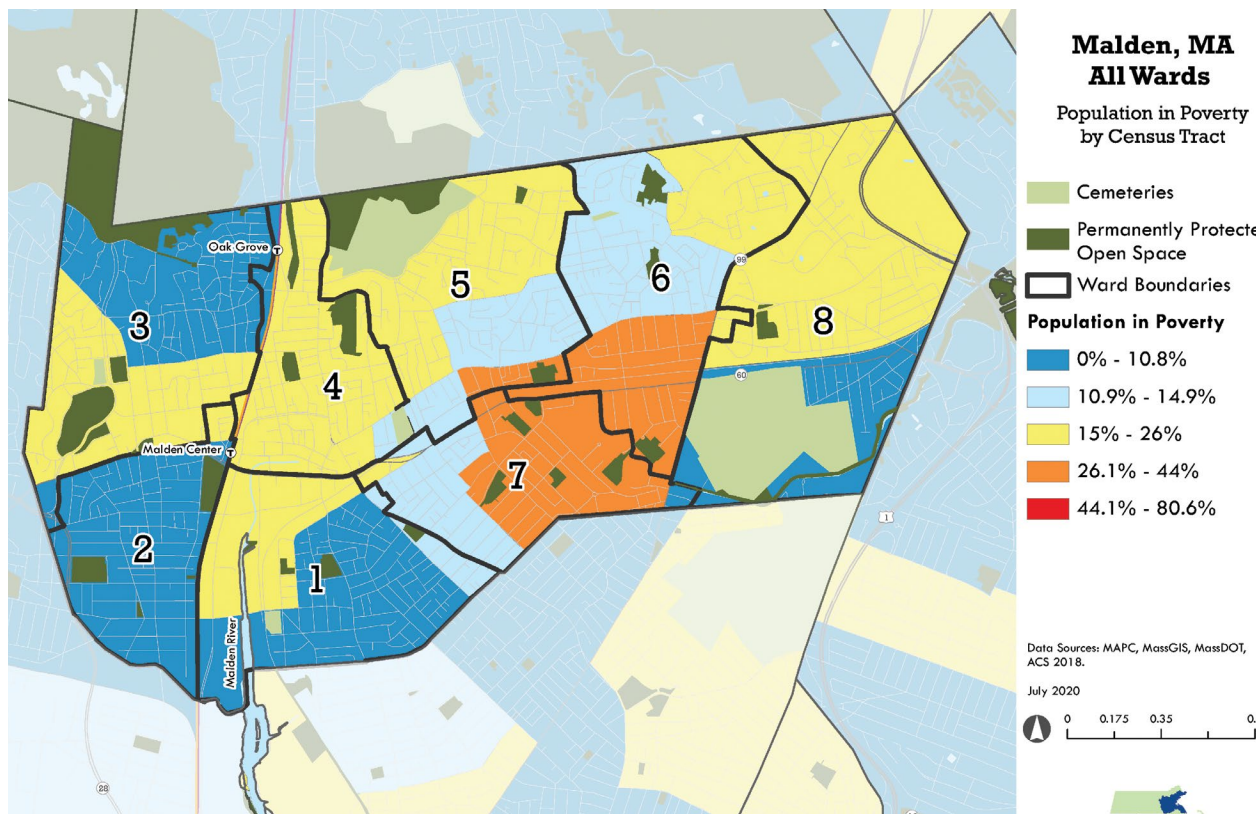


83 US Census (2015 and 2016). Income and Poverty in the United States: 2016, Table 3: People in Poverty by Selected Characteristics 2015 and 2016. Retrieved July 2018 from <https://www.census.gov/content/dam/Census/library/publications/2017/demo/P60-259.pdf>.

Poverty is also experienced to varying degrees across Malden's geography. Figure 8 below shows the percentage of the population living below the poverty level by Census Tract. Ward boundaries are also shown to better understand poverty within political jurisdictions of the City. It shows that all wards except Ward 2 have portions of the population living below the poverty level at a higher rate than the state average, which is 10.8%.

Figure 8: Malden Poverty Estimates

Source: U.S. Census Bureau American Community Survey (ACS) 2014-2018 Five-Year Estimates



Food Insecurity

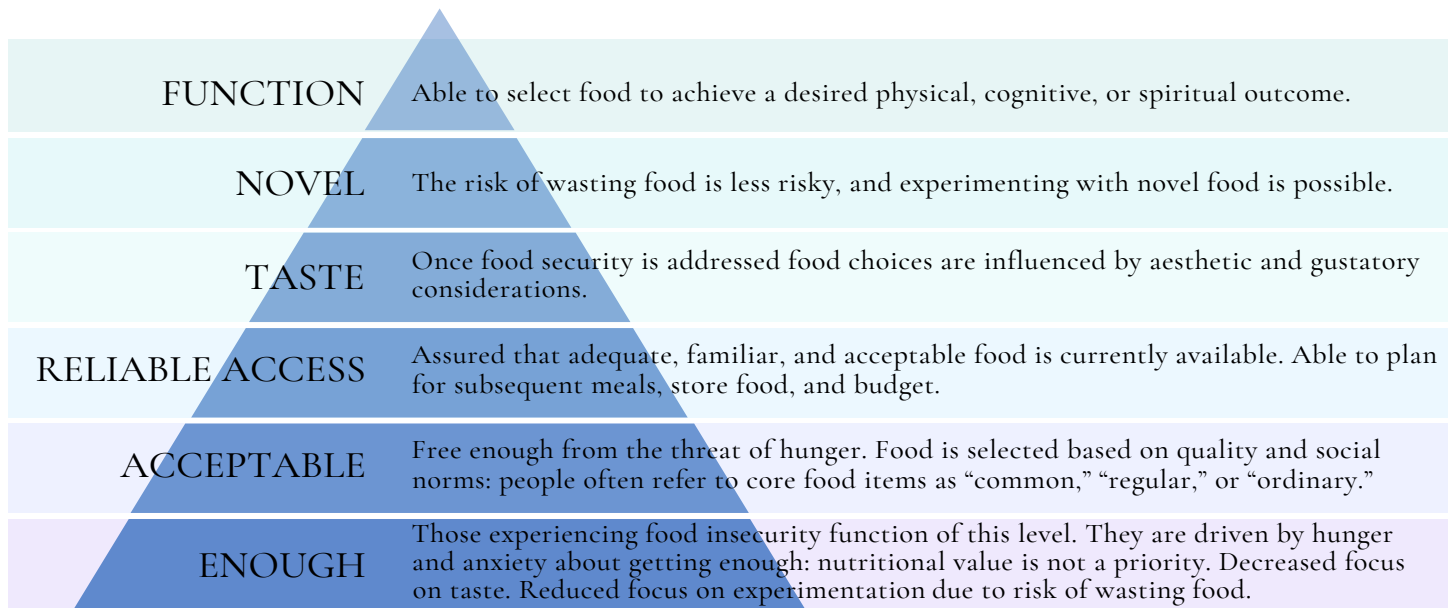
The USDA defines food security as the condition of having access at all times to enough food for an active, healthy life. Closely related, food insecurity and hunger are distinct concepts. Food insecurity describes the condition of having limited financial resources to buy food, whereas hunger refers to the personal, physical sensation of discomfort from not having eaten enough.

Figure 9: Hierarchy of Food Needs

Source: Ellyn Satter Institute⁸⁴

E. SATTER HIERARCHY OF FOOD NEEDS

We have to allow ourselves “enough” food before we can become selective.



“Map the Meal Gap 2019,” the latest report by Feeding America® and the Greater Boston Food Bank (GBFB), the largest hunger-relief organization in New England, details food insecurity and the cost of food in the United States at the county and congressional district level. This report reveals that food insecurity exists in every county in the country, including all nine counties in GBFB’s service area (Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, and Suffolk).

Three counties in GBFB’s service area - Barnstable, Middlesex, and Suffolk - are among the top 50 counties in the United States in terms of cost of food. Massachusetts was the fourth-most expensive state in terms of cost of food in last year’s report, becoming the most expensive state this year. Massachusetts is the most expensive state in the country in terms of the cost of a meal. Additionally, residents of Eastern Massachusetts, GBFB’s service area, have the highest food costs in the state⁸⁵.

84 <https://www.ellynsatterinstitute.org/family-meals-focus/56-hierarchy-of-food-need/>

85 <https://www.gbfb.org/news/press-releases/cost-food-massachusetts/>

The estimated rate of household food insecurity in Massachusetts was 9.1% in 2018, which is lower than the national rate of 12.5%, while in Malden the rate was 15.1%.⁸⁶ Malden’s level of food insecurity qualified most of the schools within the district to participate in the USDA “Breakfast After The Bell” program.⁸⁷ The prevalence of food insecurity is higher in some parts of Malden than in others, as shown in Figure 10 below.

Figure 10: Malden Food Insecurity Estimates

Source: Map the Meal Gap and Greater Boston Food Bank, 2016

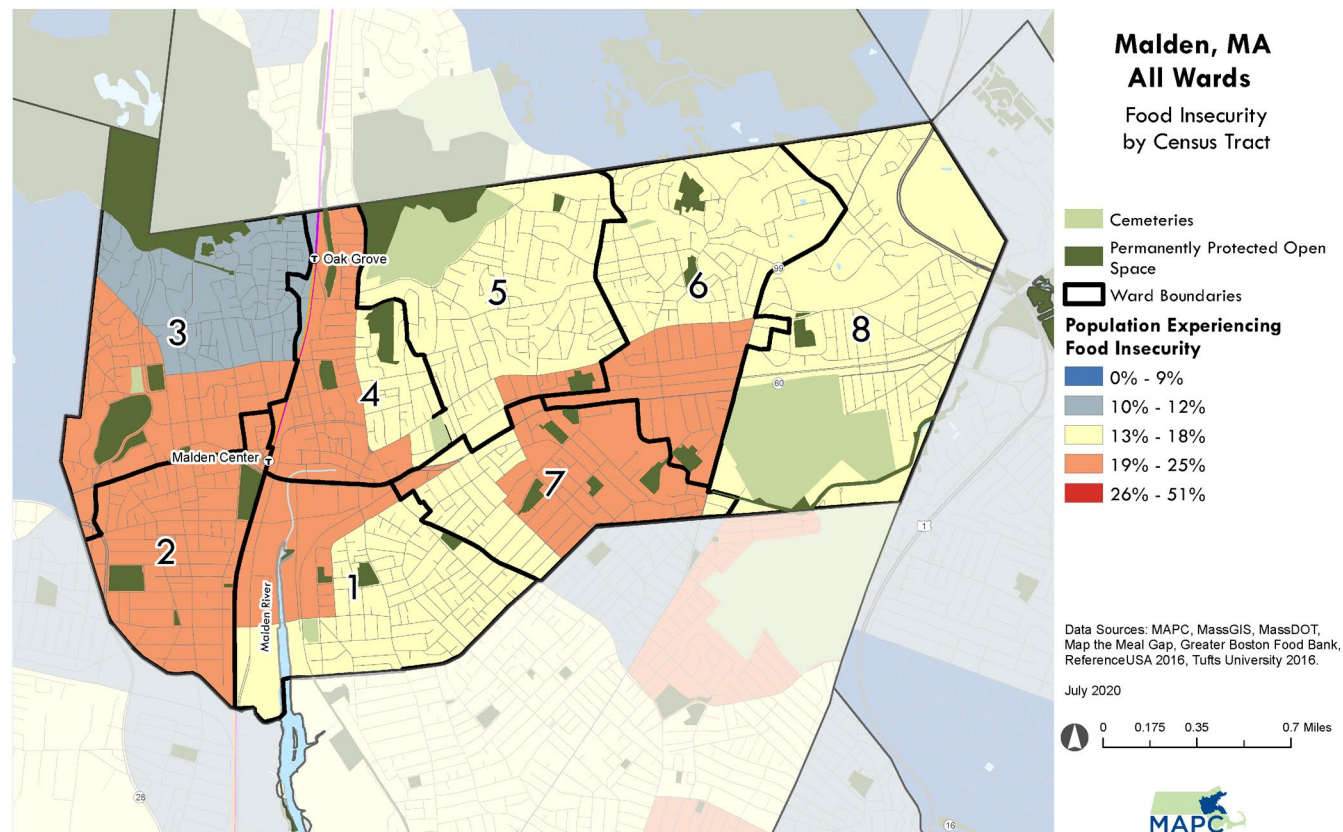


Figure 10 shows food insecurity estimates by census tract, collected through the Greater Boston Food Bank and Feeding America’s 2016 report. All census tracts in Malden have at least 13% of the population experiencing food insecurity, and the highest rates (between 19% and 25%) occur in the western part of the city (all of Ward 2 and portions of Wards 3, 4 and 1) as well as portions of wards 6 and 7. It is important to note that while poverty and food insecurity are usually intertwined, the data sources used for the poverty map in Figure 8 and this food insecurity map are different, so the rates do not match up⁸⁸.

86 Feeding America, Map the Meal Gap, Food Insecurity in the United States and Massachusetts. Retrieved September 27, 2019 from <https://map.feedingamerica.org/>. Gundersen, C., A. Dewey, A. Crumbaugh, M. Kato & E. Engelhard. Map the Meal Gap 2018: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2016. Feeding America, 2018. Courtesy of The Greater Boston Food Bank

87 <http://www.doe.mass.edu/cnp/nprograms/sbp/2019-1108mandate-breakfast.html>

88 The population in poverty map (Figure 4) relies on the 2014-2018 ACS, while the food insecurity map uses the Greater Boston Food Bank and Feeding America’s 2015 report. The ACS collects survey information continuously, nearly every day of the year, and then aggregates results over a specific time period - in this case 5 years - so as to not over-represent any given moment in a year. This contrasts with “point-in-time” estimates, like the Feeding America survey, which goes out once and represents a snapshot of households in that moment. Finally, the time periods on these data sets, while overlapping, are different.

APPENDICES RESULTS OF CONSUMPTION SURVEY: EXPERIENCES WITH FOOD INSECURITY FOR MALDEN RESIDENTS

Housing Instability

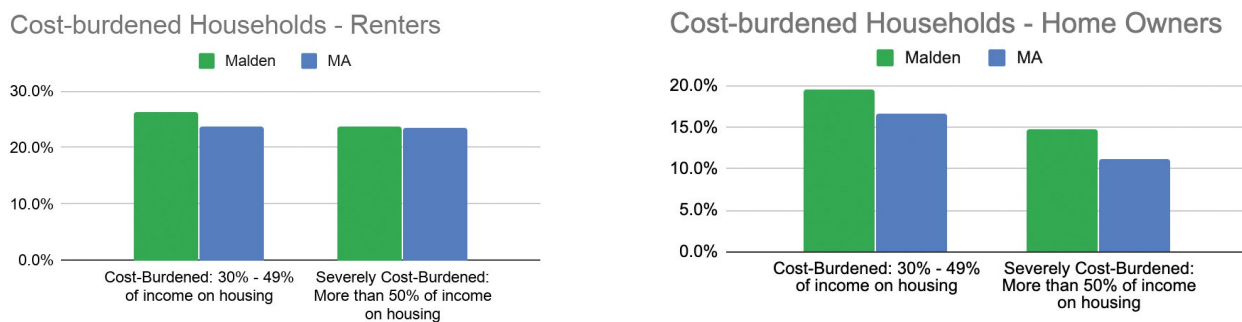
Housing instability encompasses a number of challenges, such as having trouble paying rent, overcrowding, moving frequently, staying with relatives, or spending the bulk of household income on housing.⁸⁹ These experiences may negatively affect physical health and make it harder to access health care.⁹⁰

Households are considered to be **housing cost burdened** if they spend more than 30% of their income on housing, and **severely housing cost burdened** if they spend more than 50% of their income on housing; these households have little left over each month to spend on other necessities such as food, clothing, utilities, and health care⁹¹. Across the U.S., Black and Hispanic households are almost twice as likely as White households to be cost burdened.⁹²

In Malden, renters make up a majority of the occupied housing units (59% are renters while 41% are owners), and renters carry this housing cost burden more than owners. As the graph below shows, 26.3% of Malden renters are spending between 30% - 49% of their income on housing (cost burdened), and 23.7% are spending more than 50% of their income on rent (severely cost-burdened), bringing the total of renters who are cost-burdened or severely cost burdened to 50%, while 19.6% of Malden home owners are cost-burdened and 14.8% are severely cost-burdened, making a total of 34.4%.

Figure 11: Malden Renter and Home Owner Housing Cost Burden

Source: U.S. Census Bureau, American Community Survey 2014 - 2018



Poverty, food insecurity, housing instability, and chronic hunger have long-term impacts on educational achievement, workforce productivity, chronic disease risk, and mental health. For example, children’s academic performance may be negatively affected by food insecurity, and food insecure adults have higher rates of absenteeism at work. Food insecurity is also correlated with higher rates of obesity, which remains one of the most prevalent health problems in the United States.

89 Healthy People 2020. Housing Instability. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/housing-instability>
 90 Kushel MB, Gupta R, Gee L, Haas JS. Housing instability and food insecurity as barriers to health care among low-income Americans. *J Gen Intern Med.* 2006;21(1):71-7. doi: 10.1111/j.1525-1497.2005.00278
 91 Healthy People 2020. Housing Instability. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/housing-instability>
 92 Joint Center for Housing Studies. The state of the nation’s housing 2014 [Internet]. Boston: Harvard University; 2014 Jun 26 [cited 2017 Nov 27]. Available from: http://www.jchs.harvard.edu/sites/default/files/sonhr14-color-full_0.pdf

Transportation

Transportation mode is consistently a key factor affecting food access. Different modes of transportation incur different trade offs including time, cost, and ease of travel with groceries. While groceries at a convenience store may be more expensive, the time to travel and the cost of a bus or taxi to get lower priced groceries at a supermarket is often not worth it when accounting for other factors.

Figure 12: Malden Food Access Score Along Walking Network

Source: MAPC

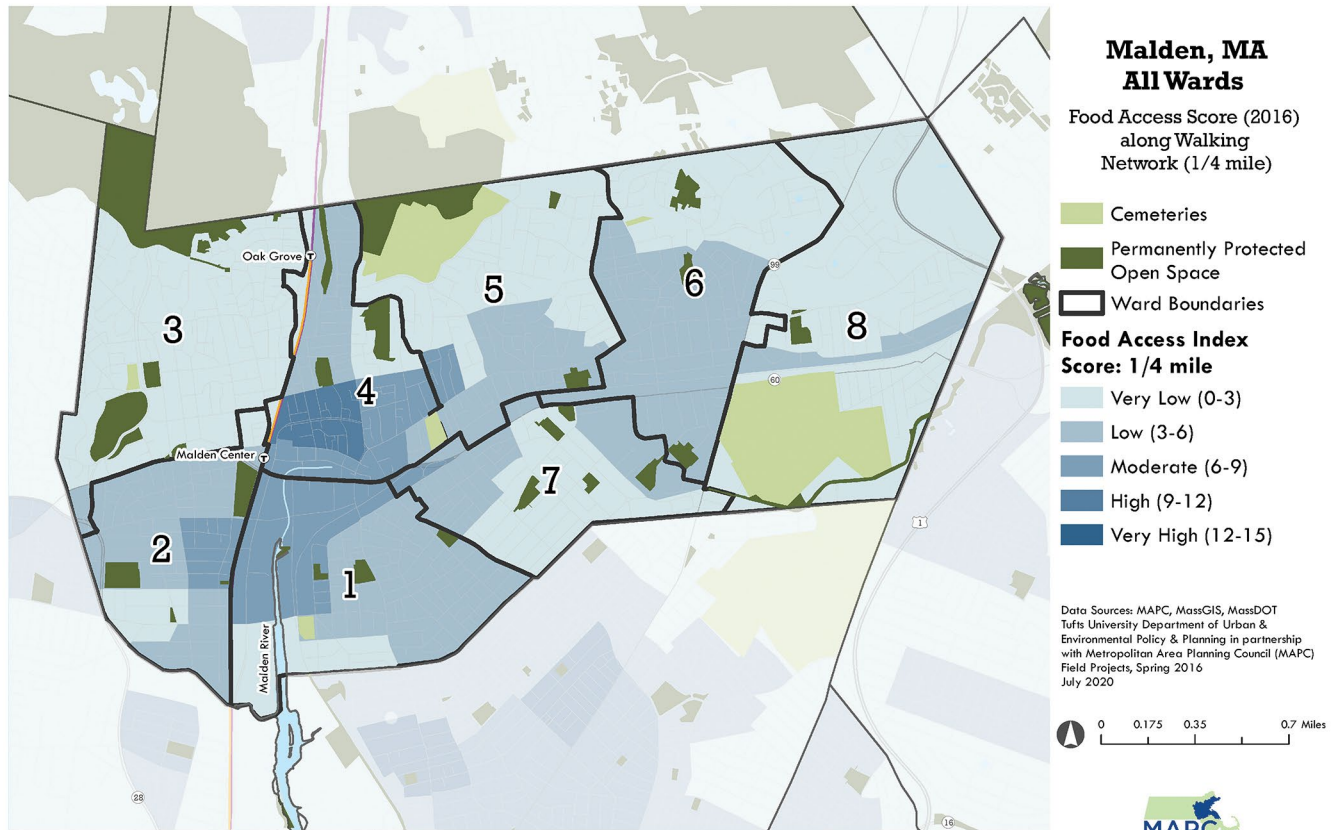
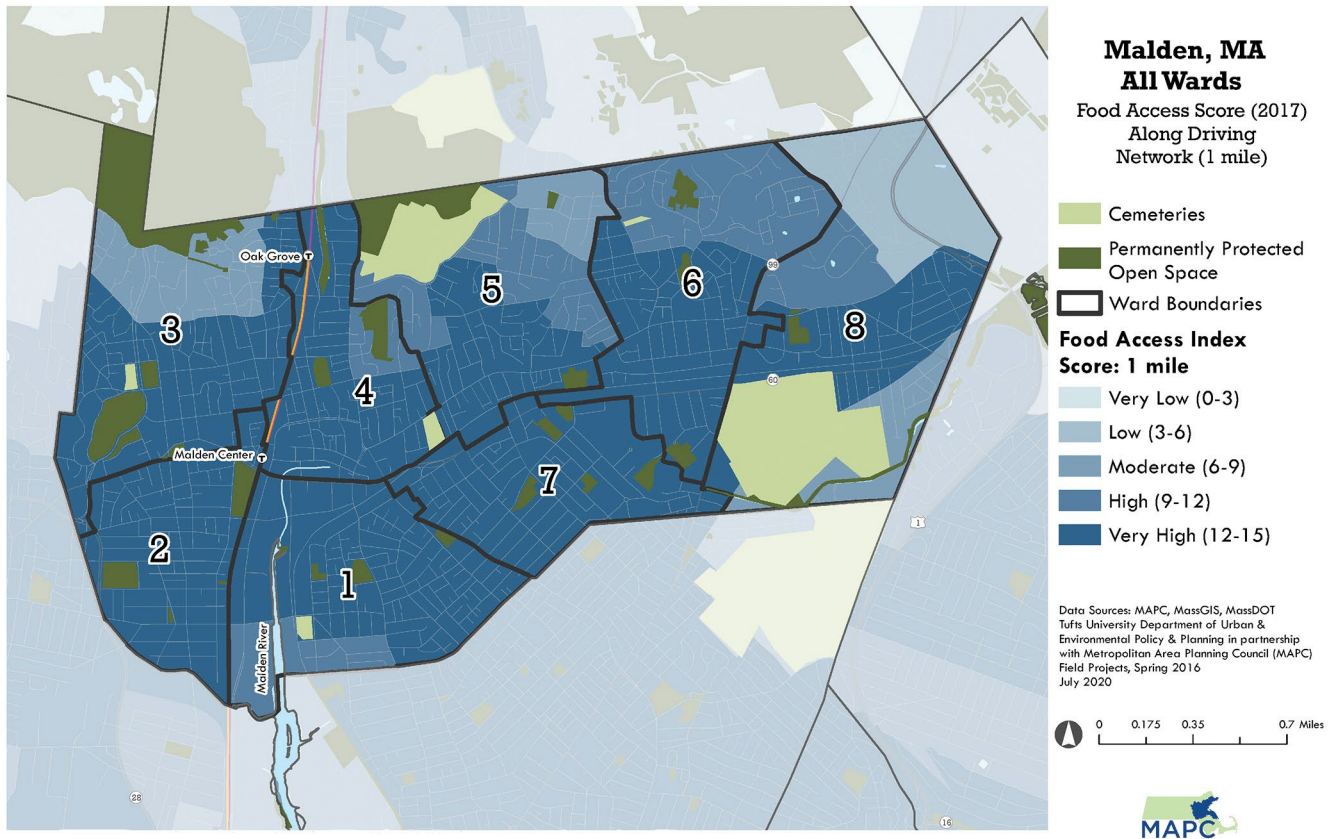


Figure 13: Malden Food Access Score Along Driving Network

Source: MAPC



Recent mapping by MAPC shows that residents in Ward 4 that walk have access to a variety of food stores with a range of food products. In other areas within Malden, there is a challenge for those residents to walk to food stores. Mapping shows that for those that drive, food access is significantly improved. Across most parts of Malden, for those that drive, there is ‘very high’ access to a variety of food stores with a range of food products.

In Malden, the most frequently utilized bus lines have stops within walking distance of 2 of the 3 supermarkets. The third supermarket has multiple bus routes stopping near it as well, however analysis of ridership shows less people are getting on and off at the stops near the third grocery store. As seen during the COVID-19 pandemic, a disruption of transportation services has a disproportionate impact on the food security of those dependent upon public transportation.

The Food Security survey results showed that the highest number of people drove to get groceries and the second highest number walked. During COVID of the 373 people surveyed 41% that drove thought it was easy compared to 55% who walked and found it difficult. Similarly, with biking 67% thought it was easy opposed to 33% thought it was difficult. (Slide #34 during COVID ease of transportation.