



# The Central Mass Indicators Project

## Community Profile: Charlton, MA

### Project Overview

In February of 2016, the Central Massachusetts Regional Planning Commission (CMRPC) was awarded a mini-grant of \$8,000 through The Massachusetts Association of Health Boards (MAHB) and Massachusetts Department of Public Health (MDPH) to launch the *Central Mass Indicators Project*. In alignment with the Mass in Motion Municipal Wellness and Leadership Program, this project is intended to increase opportunities for active living and healthy eating by creating conditions that support and reinforce beneficial behaviors for people of all ages and abilities.



CMRPC has 40 member communities across Central Massachusetts, of which only two, Worcester and Northborough, participate in the Mass in Motion program. This gap alone calls for the promotion of Mass in Motion strategies across Central Massachusetts. Many of these municipalities are rural, and Worcester County is home to over 1,500 farms. However, lack of multi-modal transportation options limit the ability of low-income and minority populations to participate in healthy eating options and active living. This project allowed CMRPC to assist its member municipalities in selecting health indicators that provide insight into how well their community promotes healthy eating and active living.

CMRPC engaged with three municipalities within the Central Massachusetts region<sup>1</sup> to identify indicators of active living, healthy eating, and safe physical environments. The three partnering municipalities were Barre, Blackstone, and Charlton. The participating towns assisted with determining health indicators and

providing data to the project team. For the purposes of this project, indicators are defined as measurable data points that “monitor progress on economic and social goals. [They] describe observed societal problems or assets and help represent a normative stance on related issues.”<sup>2</sup> The goal of the project is to help our communities integrate health into their municipal planning processes through the use of indicators. Indicators allow policymakers and the general public to not only better understand the community they live in, but to also track the progress of that community on a variety of levels and sectors. The data collected and reported provides in-depth snapshots that allow municipalities to track longitudinal trends, set community goals, and prioritize action.



<sup>1</sup> Defined as the combined Regional Planning Agencies of CMRPC and the Montachusett Regional Planning Commission (MRPC)

<sup>2</sup> Boston Indicators Project. Boston Foundation. Web. <http://www.bostonindicators.org/>

## Methodology

CMRPC conducted outreach to its 40 member communities to recruit participants via email blasts and targeted emails/phone calls. CMRPC also introduced the project at a Quarterly Manager's Meeting in February 2016 and heard back from seven communities that were interested in participating. We selected three towns to be included in this project: Barre, Blackstone, and Charlton. Towns provided letters of interest to confirm their partnerships.

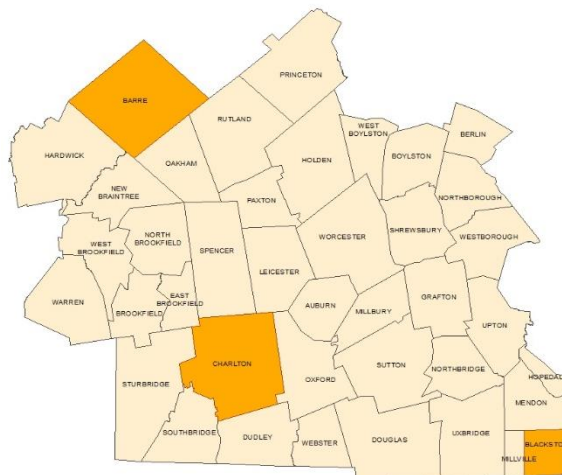


Figure 1: Participating Communities

## Technical Assistance

CMRPC engaged with a number of organizations and individuals to obtain technical assistance. CMRPC held a project kickoff with three community organizations, including Heywood Hospital, Montachusett Opportunity Council, and Pernet Family Health of Worcester. The organizations served in an advisory role and assisted with the project planning, identification of health indicators, and in the finalization of deliverables. The project team also collaborated with Dillon Sussman of the Pioneer Valley Planning Commission (PVPC) and Halley Reeves of the Massachusetts Department of Public Health (MDPH) to receive recommendations on indicator development, healthy community design initiatives, and web-visualization tools. This assistance provided the foundation for CMRPC to build a logic model to assess the indicators we wanted to use in this project.

## Indicator Development

Indicators were determined based on a combination of data collection and survey analysis. In March 2016, CMRPC distributed a survey via Survey Monkey to better understand the needs and concerns of the study towns related to health and the built environment. Users who completed the survey included the Town Administrators and the Blackstone Board of Health Chairman. The survey asked users to rate the towns' overall health and to identify key health issues, risky behaviors, and social/environmental determinants that have the greatest impact on the community's well-being. The goal of the survey was to identify the most pressing problems that can be addressed through municipal planning and community action. The survey can be viewed here: <https://www.surveymonkey.com/r/CMRPCIndicators2016>

The project team then collected and analyzed demographic, health-related, and spatial datasets from a number of sources including the U.S. Census Bureau, American Community Survey (ACS), Centers for Disease Control and Prevention (CDC), Behavioral Risk Factor Surveillance System (BRFSS), Massachusetts Department of Public Health (MDPH), Massachusetts Office of Geographic Information (MassGIS), Massachusetts Community Health Information Profile (MassCHIP), Massachusetts Department of Transportation (MassDOT), the Central Mass Grown. CMRPC staff also utilized transit and traffic data collected in-house by the Transportation Division to assess roadway conditions and transportation trends.

The selection of indicators depended on a variety of factors including availability of data, connection to existing health trends, and relationship to community goals and/or planned projects. In order for a data point to be determined as a valid indicator, the following questions<sup>3</sup> were asked:

- Can the indicator be measured? (i.e. is the data reliable and readily available?)
- Can the indicator be understood by the community?
- Does the indicator reflect a value widely held by community members?

<sup>3</sup> Adapted from the Cape Cod Sustainability Indicators Report. 2003. Web. <http://www.sustaincapecod.org/indicators>

- Can the indicator be linked to other social, economic and environmental issues?
- Does the indicator help inform existing and/or planned projects?
- Can an outcome be defined for the indicator?
- Can the indicator be influenced by changes in policy and/or individual behavior?

If all questions received a “yes” answer, the data point was deemed appropriate for indicator development. The project team also consulted with the technical advisers for further guidance and recommendations. Building on this, the project team analyzed all of the information obtained to finalize the set of indicators for each municipality specific to their community needs and assets.

## Location and Demographics

The Town of Charlton is located in south central Massachusetts, bordered by Spencer on the north, Leicester on the northeast, Oxford on the east, Dudley and Southbridge on the south, Sturbridge on the west, and East Brookfield on the northwest. Charlton is 17 miles southwest of Worcester and 40 miles southwest of Boston.

A rural community of 13,312 residents, Charlton’s population grew by 15.3% percent between 2000 and 2010. The Town’s total area is 43.95 square miles with land making up 42.71 square miles, and a density of 295 people per square mile.

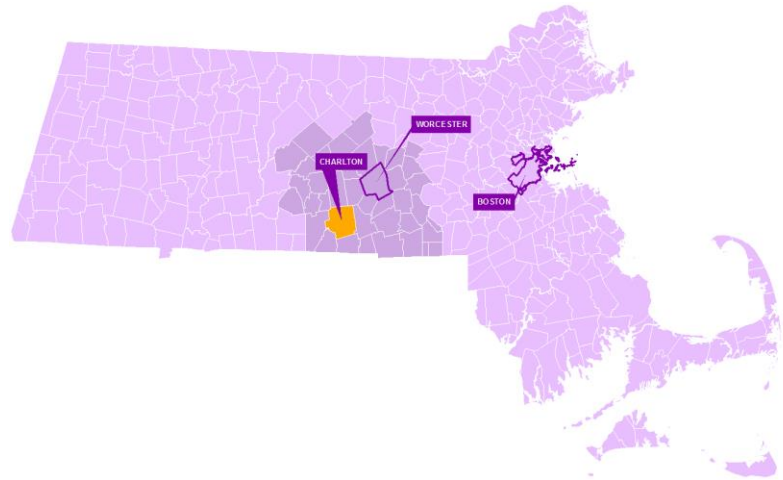


Figure 2: Regional Context

Table 1. Demographic Information

	Participating Communities			Worcester County	State	National
	Barre	Blackstone	Charlton			
Population <sup>4</sup>	5,398	9,026	12,981	798,552	6,547,629	308,745,538
Unemployment <sup>5</sup>	6.1%	5.2%	4.4%	6.20%	5.8%	5.3%
Poverty Rate <sup>6</sup>	4%	5%	5%	11.60%	11.6%	11.3%
Minority <sup>6</sup>	2.2%	6.6%	2.5%	23%	28.2%	36.7%
Median Household Income <sup>6</sup>	\$66,250	\$72,699	\$42,538	\$65,453	\$67,846	\$53,046
Female Population <sup>6</sup>	50%	52%	51%	50.70%	51.6%	50.8%
Children <sup>6</sup>	26%	24%	25%	22%	20.6%	23.1%
Elderly (65+) <sup>6</sup>	14%	13%	13.3%	13.40%	14.4%	13.7%
High School Graduate <sup>6</sup>	94%	91%	94%	89.60%	89.5%	86.3%
Owner-Occupied Housing Units <sup>6</sup>	80.2%	68%	80.7%	65.20%	62.3%	64.4%
Renter-Occupied Units <sup>6</sup>	19.8%	32%	19.3%	34.80%	37.7%	35.6%

<sup>4</sup> Data are from the 2010 U.S. Census and are available at <http://www.census.gov/>

<sup>5</sup> Data are from the Bureau of Labor Statistics and are available at [www.bls.gov](http://www.bls.gov).

<sup>6</sup> Data are from the 2010 – 2014 American Community Survey and are available on American FactFinder at [http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_13\\_5YR\\_DP03&src=pt](http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_DP03&src=pt) and [http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_13\\_5YR\\_DP05&prodType=table](http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_DP05&prodType=table)



## Survey Results

The survey results for Charlton depicted a strong need for physical activity resources and improved road infrastructure. Sidewalk and road infrastructure were described to be in inadequate shape and condition. In particular, the lack of safe bike lanes on existing roads was indicated as a contributing factor disabling healthy and active living in the town.

Regarding community amenities, access to affordable and nutritious foods, availability of farmer's markets, and farmlands were all listed as assets enabling healthy eating throughout town. Charlton also has a Garden Club that meets on the second Monday of each month. The mission of this group is to "create interest in gardening in all its branches, and encourage the beautification of home and community."<sup>7</sup>

Water contamination issues in Charlton were raised a number of times throughout the survey. Although this topic fell out of the scope for this particular project, this remains to be a significant health concern across Town. The effects of water contamination may lead to a variety of negative health outcomes including gastrointestinal illness, reproductive issues, and neurological disorders.<sup>8</sup>

The identified social determinants of negative impact were transportation options and well-contamination issues contributing to stress at home. The identified environmental determinants of negative impact were exposure to toxic substances and other physical hazards as well as water contamination.

Overall, the survey user rated Charlton as a somewhat healthy community and noted the following as priority areas in planning for healthy and active living:

- ❖ **Physical Activity Resources for Children and Adults**
- ❖ **Decrease in Overweight and/or Obesity in Children and Adults**



Figure 3: Charlton Town Common



Figure 4: Fay Mountain Farm located at 12 Cemetery Road in Charlton, MA



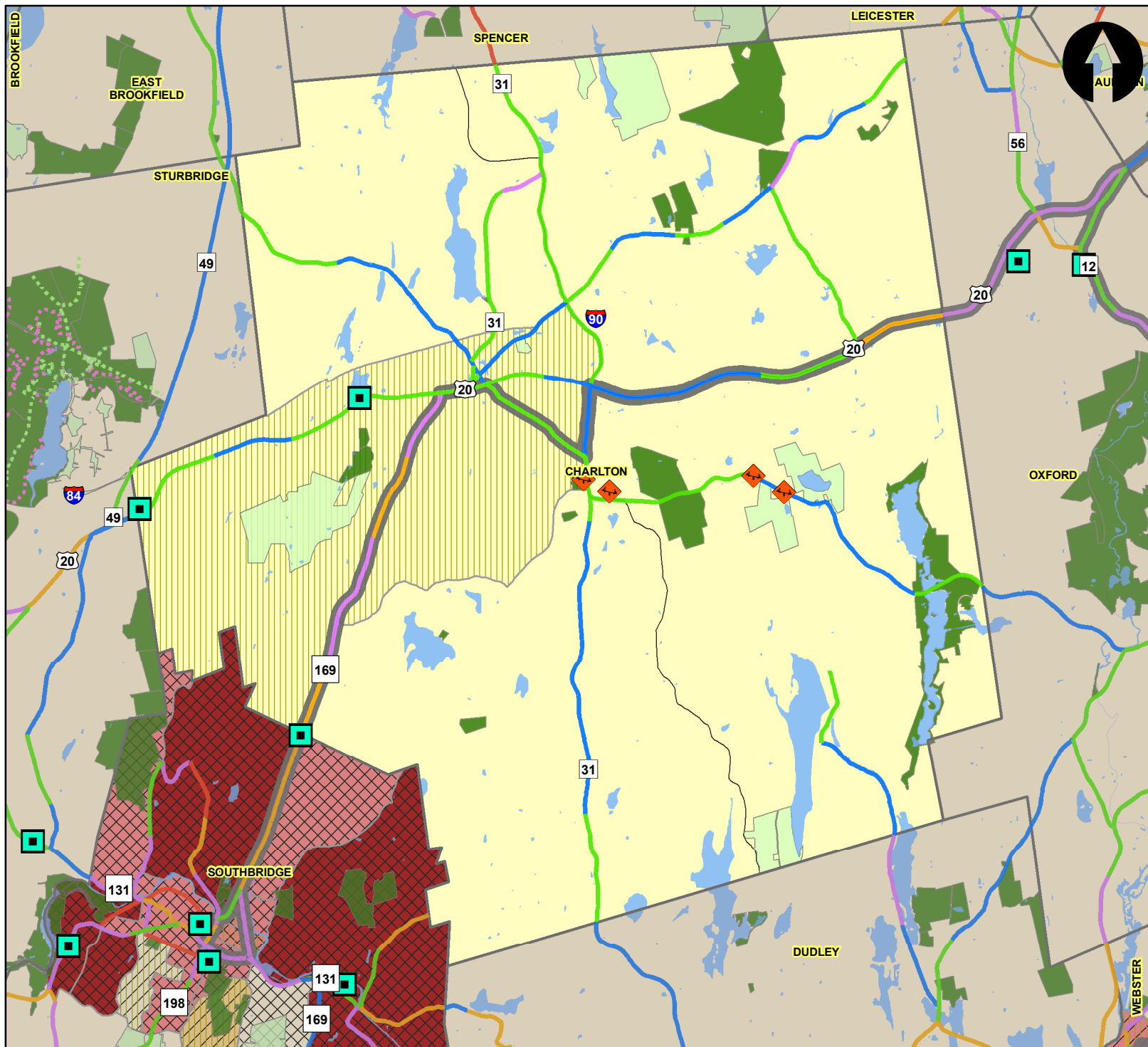
Figure 5: Boat Paddlers on Buffumville Lake in Charlton

<sup>7</sup> Charlton Garden Club. Web. <http://www.charltongardenclub.info/history.htm>

<sup>8</sup> CDC. Drinking Water. Web. [http://www.cdc.gov/healthywater/drinking/public/water\\_diseases.html](http://www.cdc.gov/healthywater/drinking/public/water_diseases.html)

# Map 1: Built Environment Factors in Charlton, MA

Document Path: Z:\GIS Library\GIS Workspaces\GIS\_Intern\Comm Health Indicators\Final Map Products\Charlton\_All Data2.mxd Date: 7/29/2016



## Healthy Food/Active Living Resources

- Farmers Markets
- Winter Markets
- Fitness Centers
- Play Areas

## Built Environment Factors

### Pavement Condition

- Excellent
- Good
- Fair
- Poor
- Very Poor

### DCR Trails

- Forest Road/Trail
- Trail
- Other

### Water Bodies

### Open Space

- Full Public Access
- Limited Public Access

### Vulnerable Populations: Household Level

- HH with persons 75+ age (+18.8%)
- Hispanic or Latino (+14.0%)
- Low Income (-\$50,259)
- Minority (+20.3%)
- Minority & Low Income

### WRTA Routes

Pavement conditions are measured along Federal-Aid eligible roadways.

Vulnerable Populations were calculated by CMRPC as part of the 2015 Mobility2040 Study. Vulnerable populations includes groups that are 150% above the CMRPC regional averages, as shown in parentheses.



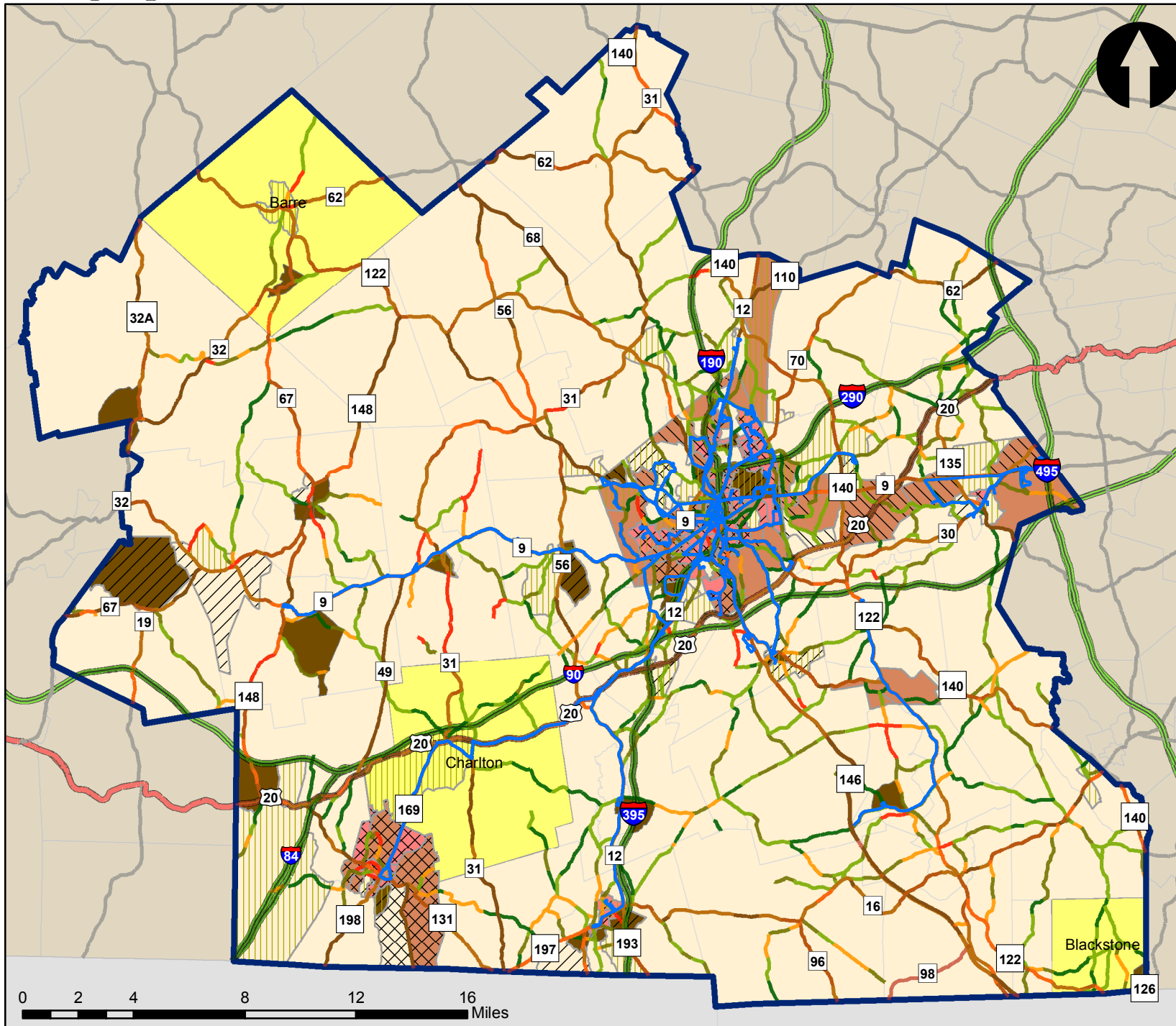
Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution when interpreting positional accuracy.

Participating towns: Barre, Blackstone, Charlton

This project was funded by the Massachusetts Association of Health Boards (MAHB) and the Massachusetts Department of Health (MDPH) 2016 Healthy Community Design & Mass in Motion Mini-Grant Program.



# Map 2: Transportation Vulnerability



## WRTA Routes



## Pavement Condition

- Excellent
- Good
- Fair
- Poor
- Very Poor

## Road Inventory

- Interstate
- U.S. Route
- State Route

## Vulnerable Populations: Household Level

- Zero Vehicle Households (+12.75%)
- Hispanic or Latino (+14.0%)
- Language Isolated Households (+9.45%)
- HH with persons 75+ age (+18.8%)
- Minority & Low Income
- Low Income (-\$50,259)
- Minority (+20.3%)

## CMRPC Region

## Participating towns

Pavement Conditions are measured along Federal-Aid eligible roadways.

Vulnerable Populations were calculated by CMRPC as part of the 2015 Mobility2040 Study. Vulnerable populations includes groups that are 150% above the CMRPC regional averages, as shown in parentheses.



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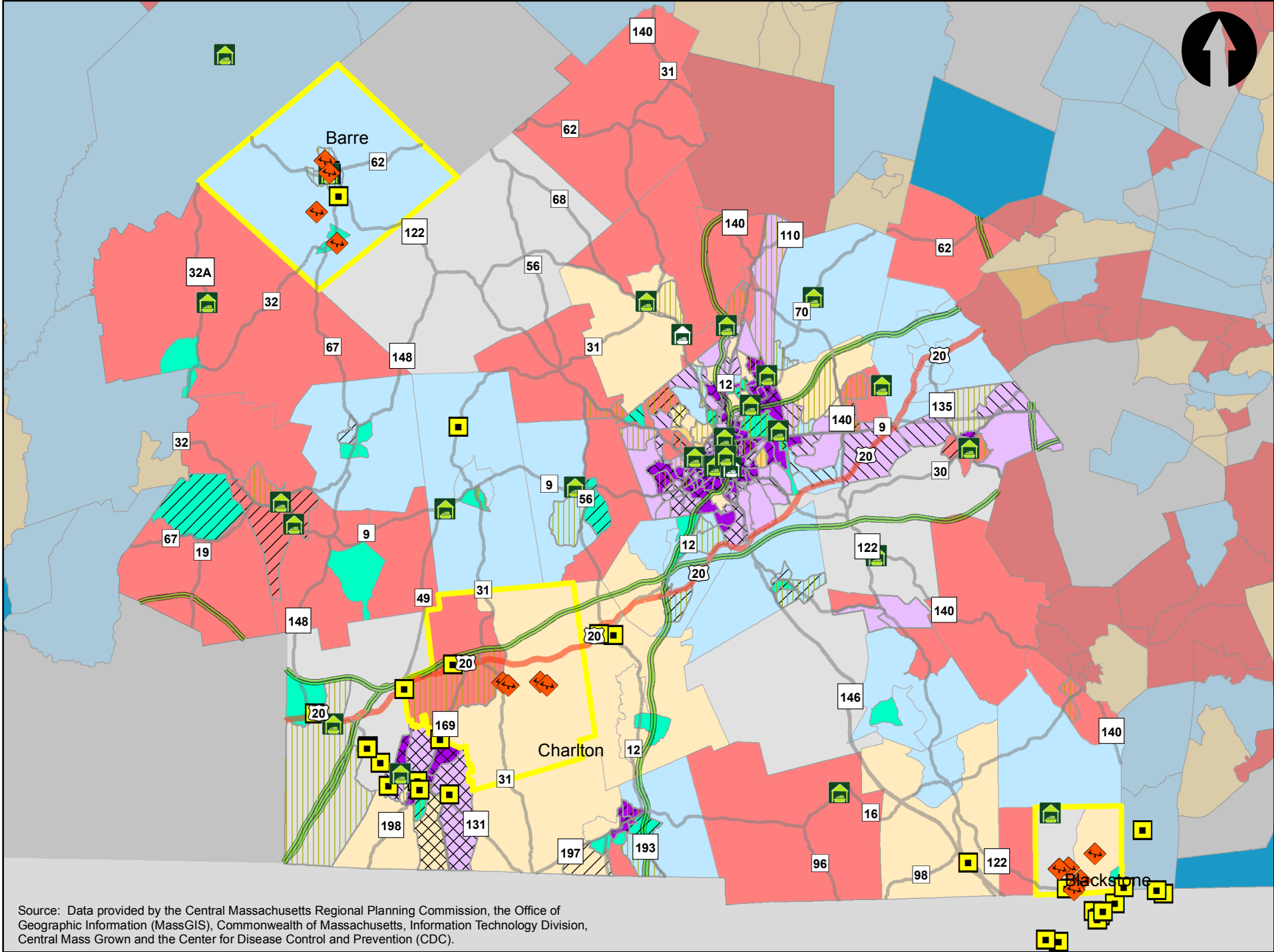
Participating towns: Barre, Blackstone, Charlton

This project was funded by the Massachusetts Association of Health Boards (MAHB) and the Massachusetts Department of Health (MDPH) 2016 Healthy Community Design & Mass in Motion Mini-Grant Program.





# Map 3: Healthy Food and Fitness Resources



## Healthy Food/Active Living Resources

- Play Areas
- Farmers Markets
- Winter Markets
- Fitness Centers

## mRFEI\* Score by Census Tract

- No healthy food outlet within census tract
  - 0.1-5
  - 5.1-10
  - 10.1-37.5
  - 37.5-100
  - Null Value
- \*Modified Retail Food Environment Index (mRFEI)
- Lower mRFEI scores indicate census tracts that contain many convenience stores and fast food restaurants compared to the number of healthy food retailers. See diagram below the legend for details on how the index score was calculated.

## Vulnerable Populations: Household Level

- HH with persons 75+ age (+18.8%)
  - Hispanic or Latino (+14.0%)
  - Language Isolated Households (+9.45%)
  - Zero Vehicle Households (+12.75%)
  - Low Income (-\$50,259)
  - Minority (+20.3%)
  - Minority & Low Income
- Vulnerable Populations were calculated by CMRPC as part of the 2015 Mobility2040 Study. Vulnerable populations includes groups that are 150% above the CMRPC regional averages, as shown in parentheses.

## Road Inventory

- Interstate
- U.S. Route
- State Route
- Participating Towns
- CMRPC Region Outline

$$mRFEI = 100 \times \frac{\# \text{ Healthy Food Retailers}}{\# \text{ Healthy Food Retailers} + \# \text{ Less Healthy Food Retailers}}$$

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution for interpreting positional accuracy.

This project was funded by the Massachusetts Association of Health Boards (MAHB) and the Massachusetts Department of Health (MDPH) 2016 Healthy Community Design and Mass in Motion Mini-Grant Program.

Source: Data provided by the Central Massachusetts Regional Planning Commission, the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division, Central Mass Grown and the Center for Disease Control and Prevention (CDC).



## Discussion of Indicators

### Access to Transportation

**Goal →** *Engage with the Worcester Regional Transit Authority (WRTA) to expand the existing route to other parts of Town or to establish a second route along the southwestern part of town to ensure affordable and reliable transportation.*

#### Why is This Important?

Lack of access to transportation creates barriers to essential services including employment, health care, and nutritious foods. These barriers result in health disparities that traditionally isolate minority populations, low-income families, households in rural areas, and people with disabilities. Lack of transportation can lead to unemployment, delayed care, unhealthy diets, malnourishment, etc. Neighborhoods served by adequate transit access to more distant amenities allow residents connect to jobs, health care facilities, and other services throughout the community.

#### Indicators

- **WRTA Bus Routes**

As shown in *Maps 1 and 2*, Charlton is the only community among the three participating towns with a WRTA Route (#29) that passes through the community. The route can be depicted in blue and travels along Route 20, Masonic Home Road, North Main St, and Route 169, before stopping in Southbridge. This route does not pick up or drop off on Route 20 due to safety concerns. This bus route connects to two other bus routes (#27 and #42) and provides access to a number of areas including: the Charlton Town Hall, Overlook Masonic Health Center in Charlton, Charlton Family Practice, Harrington Hospital Clinic in Charlton, and the Charlton Public Library.

- **Miles of Bike Lanes on Existing Roads**

This data is not yet available, however it is anticipated that this information will be collected as part of CMRPC's regional bicycle and pedestrian planning and pavement management efforts. This inventory will include the location of bike lanes along federal-aid eligible roads as well as descriptive information such as width and general condition. Data collection efforts in Charlton are anticipated to begin in July 2016.

### Pavement Conditions

**Goal →** *Identify priority segments for pavement maintenance and/or repair to help support accessibility and mobility throughout Town.*

#### Why is This Important?

All roadways are in a constant state of deterioration because of time, weather, and traffic load. As a result, neighborhoods with inadequate road infrastructure and limited access to walkable streets present a major barrier to pedestrian activity and accessibility. Streets and highways without sidewalks and/or bike lanes discourage walking and/or biking. This contributes to unhealthy, sedentary lifestyles and obesity rates, putting individuals at serious risk for chronic illnesses such as diabetes.

#### Indicators

- **Pavement Conditions along Federal-Aid Eligible Roadways**

The key to having an efficient and effective pavement management program lies in the prioritization process. As depicted in *Map 1*, the pavement in Charlton is overall in excellent to good condition (shown in blue and green lines). However, there are a few road segments towards Southbridge that



are in fair or poor condition, particularly along route 169. Additionally, there is an area on the eastern boarder of Charlton and Oxford with a segment of roads in poor condition along route 20. Together, these segments could be identified as priority areas for pavement maintenance. Priority segments can be used to inform decision makers choosing projects for *the Transportation Improvement Program (TIP) and Long-Range Transportation Plan*. It also assists with determining the most cost-effective strategies to address the region's deteriorating roadway conditions.

## Access to Parks

**Goal → Provide residents of all ages with safe, physical activity opportunities in parks and improve access to outdoor space to increase fitness and wellbeing.**

### Why is This Important?

Access to parks allows people to improve their health and wellness through interaction with nature and outdoor spaces. Physical activity opportunities (i.e. green exercise, personal and/or community gardening, and nature-based recreational activities) help combat overweight and obesity while promoting general wellness. This results in lower levels of illness and mortality, and improved quality of life. Trees and vegetation can also help mitigate climate, air, and water pollution impacts on public health. However, fees for use of recreational facilities and activities, neighborhood safety, and access to walkable spaces continue to be major challenges to active living.

### Indicators

- **Department of Conservation and Recreation (DCR) Roads and Trails**

In the Town of Charlton, there are no DCR Roads and Trails available to the public. This is concluded based on the DCR Roads and Trails datalayer, provided by MassGIS, which contains all legal roads and trails as identified by DCR staff and consultants on DCR DSPR properties.

- **Open Space and Recreational Facilities**

As reported by MassGIS, open space data is represented in *Map 1* in two colors. The darker green indicates open space with full public access and the lighter green indicates limited public access, which is defined as open space where “members only” have access to the space. The Town of Charlton has a present combination of both limited access and full public access land throughout the town. Two of the four play areas are located near land with limited public access.

- **Number of Parks within Half-Mile**

The American Association of Retired Persons (AARP) Livability Index is a web-based tool created by the AARP Public Policy Institute used to track community livability across seven categories: housing, neighborhood, transportation, environment, engagement, and opportunity. Livability is measured at the neighborhood level on a scale of 0 to 100, with higher values illustrating greater livability for people of all ages.

The Town of Charlton has an AARP Livability score of 50. While the US average for a score in regards to distance to parks is 0.0, the Town of Charlton has a score of 0.7 (the same as Blackstone), indicating a higher number of parks within a half-mile of neighborhoods than an average US neighborhood score. Similar to Blackstone, the Town of Charlton currently has no policy towards a commitment to livability, whereby state and local plans are aimed at creating age-friendly communities, as defined by the AARP Livability Index.

## Physical Activity

**Goal** → Establish pedestrian friendly and walkable neighborhoods by ensuring safe, equitable access to physical activity opportunities for people of all ages.

### Why is This Important?

Insufficient physical activity is a risky behavior associated with overweight and obesity, which may lead to preventable chronic illnesses. According to the CDC, regular and adequate participation in physical activity offers a wide range of health benefits such as reduced risk of cardiovascular disease, weight control, strengthening of bones, and improved mental health<sup>9</sup>.

### Indicators

- **Walk Trips per Household**

Healthy transit options, such as walking and/or biking, provide residents with convenient, accessible, and low-cost alternatives to public transit and driving. Table 2 shows the number of estimated walk trips per household per day measured at the neighborhood scale by the AARP Livability Index. Charlton has a value of 0.61, which is approximately 10% less than the average US neighborhood. However Charlton's score is in line with Barre and Blackstone suggesting that these towns are somewhat walkable areas.

Table 2. Estimated Walk Trips per Household per Day (AARP Livability Index)

Geographic Location	Score
Barre	0.55
Blackstone	0.61
Charlton	0.61
Median U.S. Neighborhood	0.73

- **Adult Participation of Regular Physical Activity**

Individuals who participate in regular physical activity and eat nutritious foods have a better quality of life and are less likely to develop preventable chronic illnesses.

Table 3 represents the percentage of adults lacking regular physical activity over a five-year average, as calculated by the BRFSS. Approximately 49% of residents in Charlton reported lacking regular physical activity, compared to 44% in Blackstone, 50% in Worcester County, and 48% across the state. There was no data available for Barre.

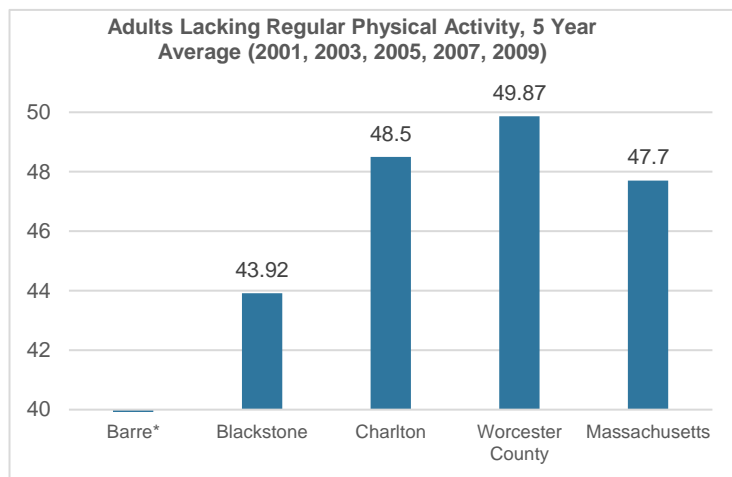


Table 3. Adults Lacking Regular Physical Activity on 5-Year Average (BRFSS)

- **Fitness Centers**

CMRPC collected locational data of both public and private fitness centers for each community via Yellow Pages and geo-coded the locations. Charlton currently has three fitness centers in Town.

<sup>9</sup> "Physical Activity." Centers for Disease Control and Prevention (CDC). Web. <https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm>

However, there are a number of bordering fitness centers along the town of Sturbridge and Southbridge, which are likely also used by residents of Charlton.

- **Play Areas**

CMRPC collected locational data of play areas via <http://mapofplay.kaboom.org> for each community, confirmed the data with the towns' DPW Departments, and geo-coded the locations in ArcGIS. Play areas refer to indoor and outdoor spaces designed for children and youth to participate in recreational activities. Charlton has four available playgrounds, three of which are located at public schools (see Map 1). Bay Path Regional Vocational Technical High School, Charlton Middle School, and Heritage School each have a playground available to the public. The official public park within Charlton is the Charlton Community Playground at Memorial Field, located behind the library off Main Street. This park opened in September 2015 and has since become a site of active play for the community.

## Overweight and Obesity

**Goal → Reduce the prevalence of adult/childhood obesity and chronic disease by increasing physical activity opportunities in schools, businesses, and outdoor spaces while decreasing exposure to high-calorie intake or unhealthy foods.**

### Why is This Important?

Diet and body weight are directly linked to individual health status. According to Healthy People 2020, obesity is a major risk factor for high-cost, preventable chronic diseases such as hypertension, asthma, type II diabetes, heart disease, strokes, and some cancers.<sup>10</sup> Prevalence of overweight and obesity also impacts mental health and wellbeing, increasing the risk of stress, depression, social detachment, and suicide.

### Indicators

- **Adult Obesity**

As our society is becoming increasingly sedentary, the rates of obesity in the nation are rising. Table 4 below shows the percentage of adults classified as obese between the three participating towns, Worcester County and the State of Massachusetts. In Charlton, approximately 26% of adults are considered obese, the highest percentage of adult obesity across all geographies. This percentage is also slightly higher than the Massachusetts average by a little over 3%.

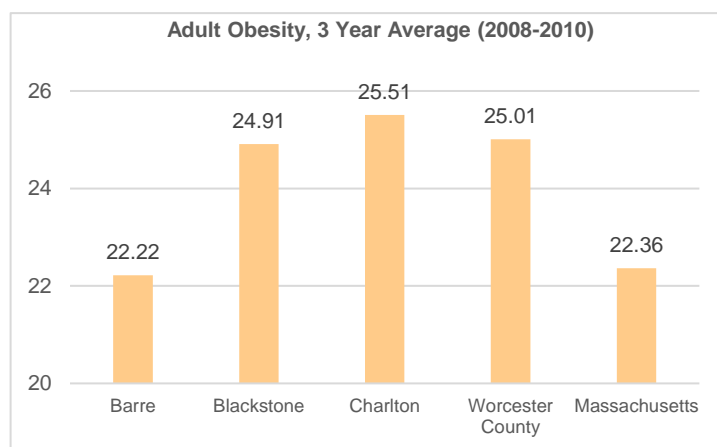


Table 4. Percent of Adult Obesity on a 3-Year Average (BRFSS)

<sup>10</sup> "Nutrition and Weight Status." Healthy People 2020. U.S. Dept. of Health and Human Services, Office of Disease Prevention and Health Promotion. Web. <https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status>



## Nutrition

**Goal →** *Ensure all people in town have equal access to nutritious foods and produce by connecting local farmers to corner store initiatives, community gardens, and/or mobile grocers; and implement educational shopping/cooking programs in schools to encourage healthy food decision-making.*

### Why is This Important?

Limited access to and high costs of healthy foods are major barriers to active living for underserved groups such as low-income, minority, single-family households, elderly, and disabled populations. These individuals often live in food insecure locations that inhibit them from accessing local fruits and vegetables. As a result, alternative food options may result in unhealthy items found in gas stations, fast-food restaurants, and grocers. Although all Towns noted in the survey that the availability of nutritious/local produce was not a major barrier to healthy eating, there are still groups that are disproportionately affected due to high food costs and lack of transportation.

### Indicators

- **Food Deserts**

The Modified Retail Food Environment Index (mRFEI)<sup>11</sup> is a composite measurement of the retail food environment and represents the percentage of healthy food vendors located within a 0.5 mile buffer of a Census Tract. The mRFEI score indicates the number of healthy food retailers divided by the number of healthy and less healthy food retailers, providing an index score of the balance of healthy to non-healthy food resources. The lower the mRFEI score, the more convenience stores and fast food restaurants (and less healthy food resources) that are present in that area.

The Town of Charlton has an mRFEI index score of 9.09 for Census Tract 25027756102 reflective of a fair number of healthy food resources, when compared to the number of non-healthy food resources; Census Tract 756101 has a score of 0, indicative of no healthy food resources available in that tract (see Map 3: *Healthy Food and Fitness Resources*). While their score is not on the higher end, it is the same as the majority of Blackstone and Uxbridge. Charlton could improve their mRFEI score for both tracts by working to increase the number of healthy food retailers locally available.

- **Adults Consuming Five or More Fruits and Vegetables per day**

Regular fruit and vegetable intake contributes to an overall healthy diet. Table 5 depicts the percentage of adults consuming five or more fruits and vegetables per day in Massachusetts on a three-year average, as calculated by BRFSS. The table below indicates the percentage of adults consuming 5 or more fruits and/or vegetables per day, on the scale of a three year average, with a comparison

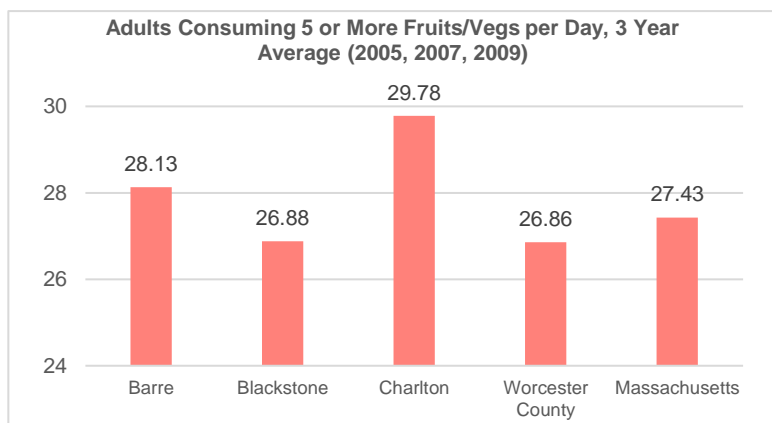


Table 5. Adult Daily Intake of Fruits/Vegetables on 3-Year Average (BRFSS)

<sup>11</sup> Census Tract Level State Maps of the Modified Retail Food Environment Index (mRFEI). Atlanta, GA: National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity, 2012. Web. [ftp://ftp.cdc.gov/pub/Publications/dnpao/census-tract-level-state-maps-mrfei\\_TAG508.pdf](ftp://ftp.cdc.gov/pub/Publications/dnpao/census-tract-level-state-maps-mrfei_TAG508.pdf)

between the three participating towns, Worcester County and the State of Massachusetts. The percentage of adults in Charlton who are consuming 5 or more fruits and/or vegetables is almost 30% and remains slightly higher than the average of Worcester County.

- **Farmer's Markets**

The data shows the locations of Farmers Markets and Winter Markets across Central Massachusetts, as provided by the Central Mass Grown, a community-based organization of farmers and buy local advocates. This data was adapted from the existing farmer's market layer from MassGIS, and modified to include additional markets in the central mass region that were not part of the initial analysis. The markets are the only measurement of available healthy food options for this project.

Charlton does not currently have any Farmer's Markets that are regularly available. This is a barrier that prohibits residential access to locally grown and healthy foods and should become a priority in working to improve the healthy eating habits of residents.

## Next Steps and Recommendations

Table 6. Recommendations and Strategies to Ensure Community Livability

What Can We Do?	
RESIDENTS	MUNICIPALITIES
<ul style="list-style-type: none"> <li>• Volunteer and serve on local boards and committees including Open Space and Recreation Plan Committees and Master Plan Committees</li> <li>• Participate in the Safe Route's to School Program</li> <li>• Attend Town Meeting as well as meetings of local boards and committees such as the Planning Board to ensure that your voice is heard on matters related to transportation, healthy eating and active living</li> <li>• Support local farms by buying local whenever possible.</li> <li>• Assist with local community projects such as community gardens.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase bus service to areas of need. Resources include Central Massachusetts Metropolitan Planning Organization (CMMPO) and Worcester Regional Transit Authority (WRTA).</li> <li>• Continue to implement the Complete Streets Program in partnership with CMRPC.</li> <li>• Participate in the Mass Safe Routes to School Program to increase sidewalk connectivity and safety around schools.</li> <li>• Consider participating in the Worcester Bike Rack Program in partnership with CMRPC.</li> <li>• Continue to update the Open Space and Recreation Plan and consider updating the Master Plan. Have a public health advocate serve on the committee for each plan. CMRPC is available to provide assistance.</li> <li>• Revise zoning regulations to remove barriers to agriculture, promote walkable smart growth development, encourage mixed-use districts, and reduce parking requirements. Consider adopting a version of the Model Village Center by-law, which CMRPC can assist with.</li> <li>• Develop a sidewalk inventory and maintenance program</li> <li>• Conduct a connectivity study to connect open space and critical health resources.</li> <li>• Improve design of existing open space and municipal buildings to encourage walkability. For example, allow the stairs to be easily accessible to residents.</li> <li>• Work with Central Mass Grown to increase fresh produce retail and distribution.</li> <li>• Facilitate and establish joint use agreements and public-private partnerships between communities and areas of local open space including schools and local gyms.</li> <li>• Encourage the use of local produce in schools and in local convenience stores.</li> </ul>