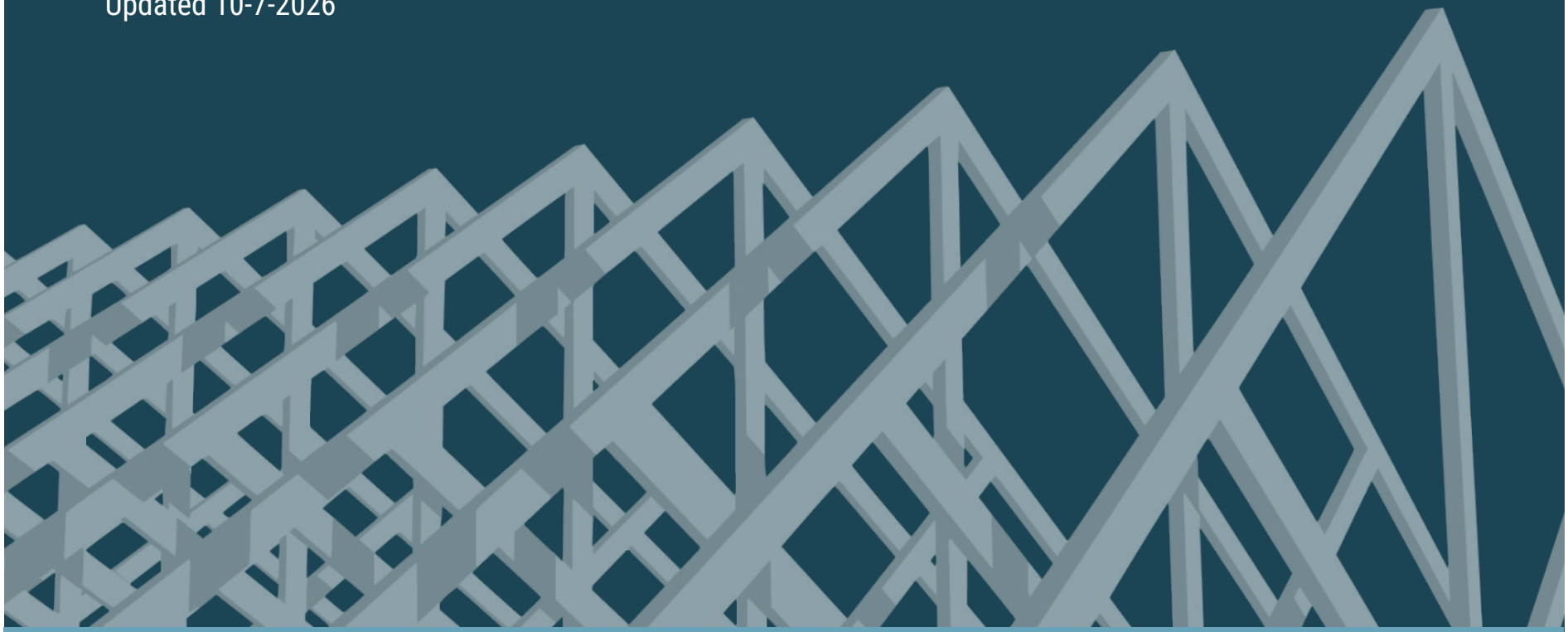
Regional Housing and Transportation Study

Central Massachusetts Regional Planning Commission

Fall 2026

Updated 10-7-2026



CENTRAL MASSACHUSETTS
Regional Planning Commission

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TOOLE DESIGN

Regional Housing and Transportation Study
Central Massachusetts Regional Planning Commission

Founded by the Legislature in 1963, **CMRPC** provides a variety of services to its constituencies and brings a regional perspective to planning and development. One of 13 Regional Planning Agencies in Massachusetts, CMRPC serves the City of Worcester and 39 surrounding communities in the southern two-thirds of Worcester County. CMRPC's programs include Transportation, Geographic Information Systems (GIS), and Regional Collaboration and Community Planning.

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Overview

Project purpose and objectives

The Regional Housing and Transportation Study is envisioned as a first step in trying to connect the interrelated issues of housing and transportation in CMRPC's work and its work with member communities. The study seeks to provide a data-driven framework for addressing regional housing and transportation challenges and support coordinated planning efforts across municipalities. By analyzing housing and transportation conditions at both local and regional scales, the study provides data, tools, and strategies that can be tailored to local needs while aligning with broader state housing and mobility goals.

A key focus of this study is the housing-transportation connection. In a largely car-dependent region, where people live directly informs their transportation costs, access to jobs and essential services, and overall quality of life. For those without vehicles, housing near transit, walkable centers, and employment hubs can improve accessibility. This study assesses how well the region's housing, transit, and transportation networks align and explores opportunities to create more connected, affordable, and resilient communities through a suitability analysis.

A few things to keep in mind while reading the study:

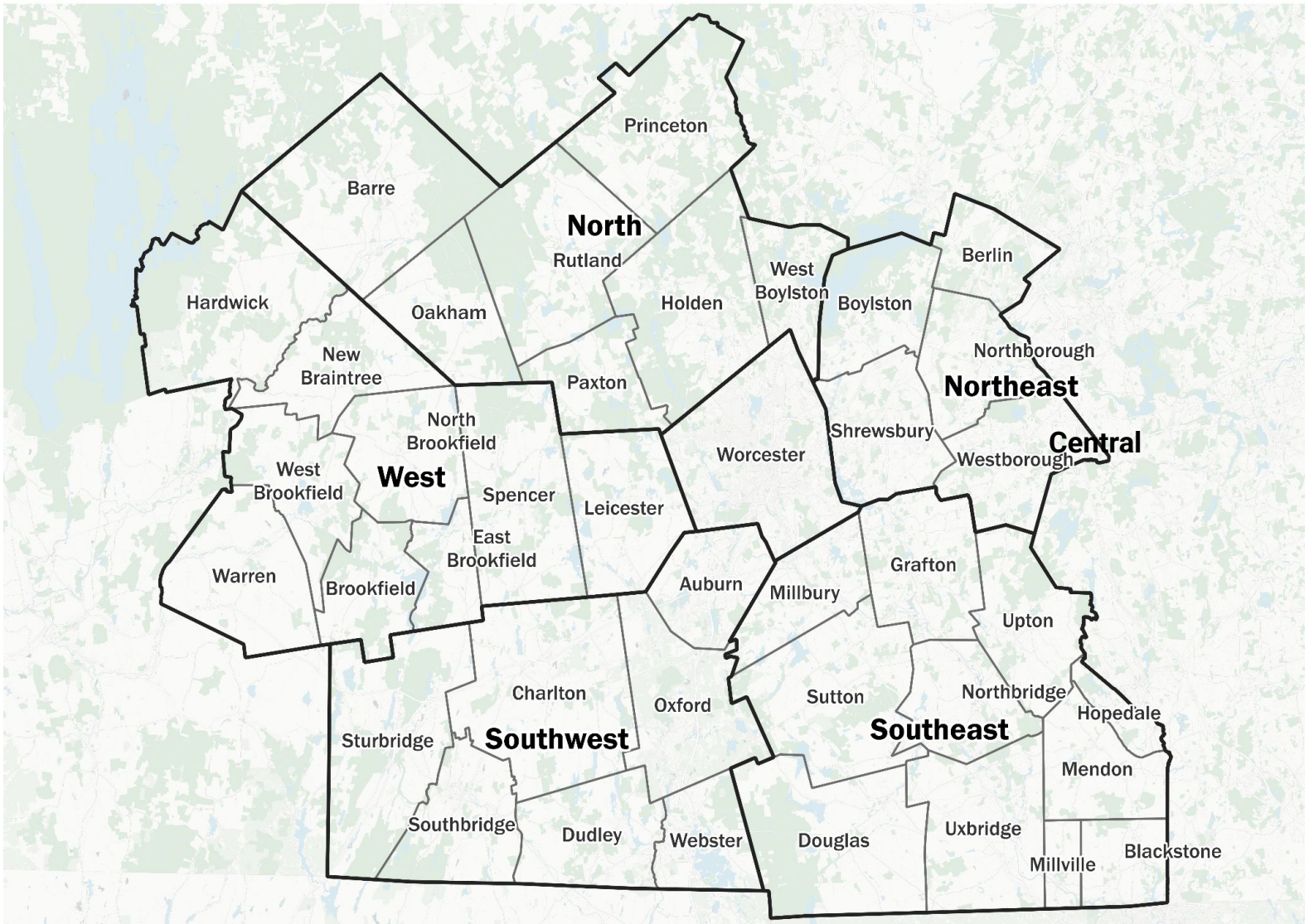
This is not a plan! This study is not intended to serve as a formal plan for the CMRPC region. As the first attempt to bring together housing and transportation issues, the aim of this study is to support local decision making with data, tools, and strategies.

This is a living study. The analyses and data included in this study have been structured to enable frequent updates, particularly via the interactive dashboard and mapping platform. This also means that updated versions of this report will be available periodically.

Regional Housing and Transportation Study objectives:

- Analyze existing housing and transportation conditions
- Identify regional housing challenges and barriers to development
- Assess the intersection of housing and transportation affordability
- Conduct a housing development suitability analysis
- Develop regional housing and transportation strategies
- Create a toolkit for municipalities

Project study area and subregions



This study includes analysis and findings for the CMRPC region overall and also breaks down key observations for each of CMRPC's six subregions.

Study contents and report sections

This report includes the following sections, including key findings in the “Main report” and detailed analysis results and recommendations in the “Supplemental report.”

Main report

Key findings
Summary of the primary observations from the study’s housing and transportation analyses.

Household profiles
Illustrative assessments of how well the housing stock serves representative households with different needs and preferences.

Suitability analysis
Assessment of barriers and opportunities for housing development with a focus on the locations that best support housing diversity and reduced transportation costs.

Strategies toolkit summary
Overview of strategies and policies tailored to address housing and transportation challenges and opportunities identified by this study.

Supplemental report

Housing assessment
Detailed analysis of household demographics and housing needs and supply across the region.

Transportation system assessment
Detailed analysis of transportation systems in the region, including bicycle, pedestrian, transit and other networks.

Housing and transportation connection
Synthesis of housing and transportation access and cost factors, including “persona” based affordability scenarios.

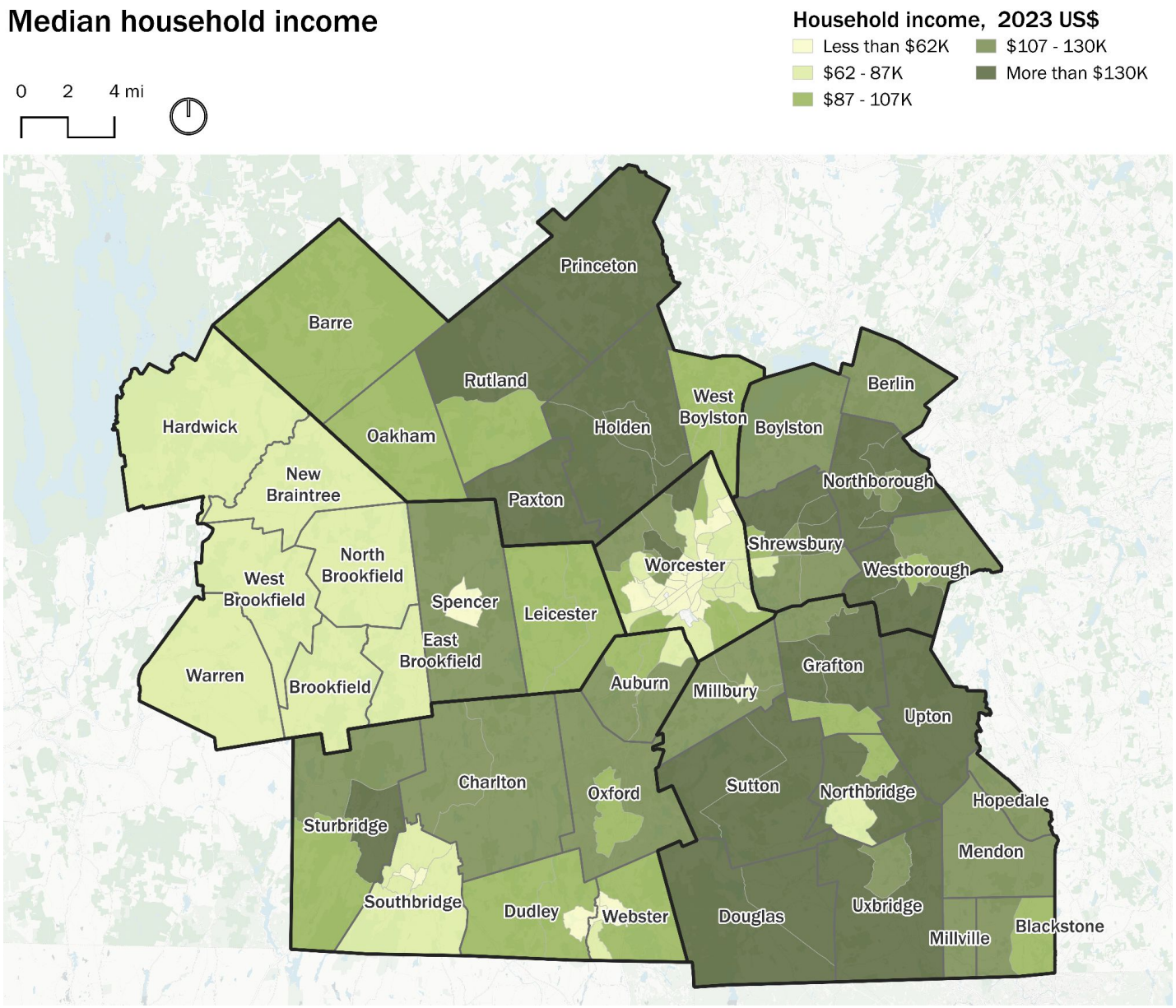
Strategies toolkit details
Detailed description of housing and transportation policy recommendations for regional and municipal stakeholders to consider.

Methodology
Description of methods and sources behind key analyses from the study.



Key findings

Household incomes unevenly distributed across the region.



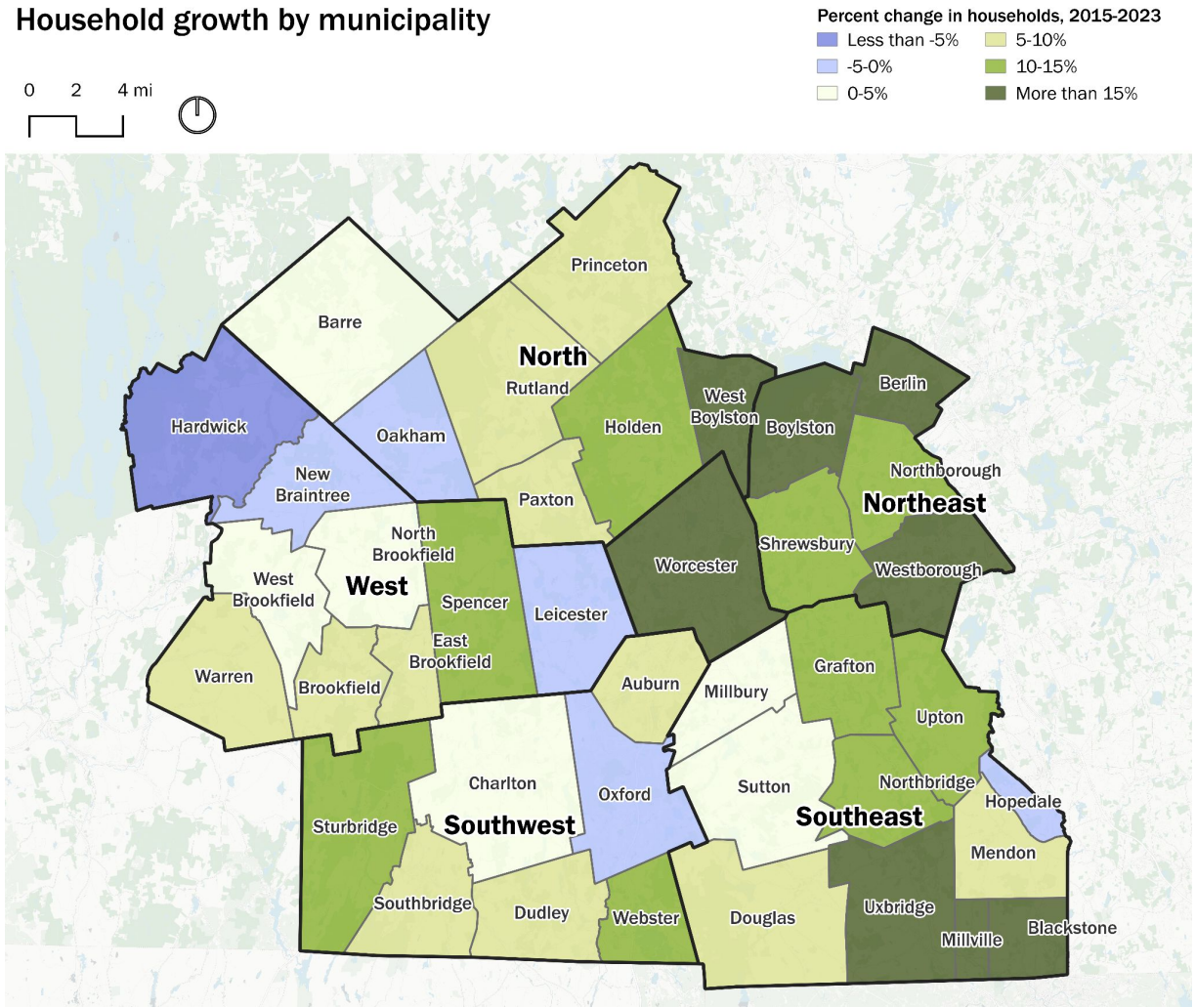
Household incomes across the CMRPC region vary considerably, with generally lower incomes to the west and higher incomes to the east. This uneven distribution contributes to significant differences in housing market conditions and households' ability to pay for housing across the region.

The region's growth is uneven, with faster growth in the east and areas of decline in the west.

Growth rates over the past 10 years are also uneven between municipalities and subregions, with those in the west experiencing only modest growth while others are growing much more quickly. Several municipalities in the western half of the region have lost households since 2015.

CMRPC subregion	Households growth rate since 2015
Central	+15.3%
Northeast	+14.3%
North	+11.7%
Southeast	+9.7%
Southwest	+6.5%
West	+3.8%

Household growth by municipality



The region is home to more smaller households, including roommates and seniors living alone.

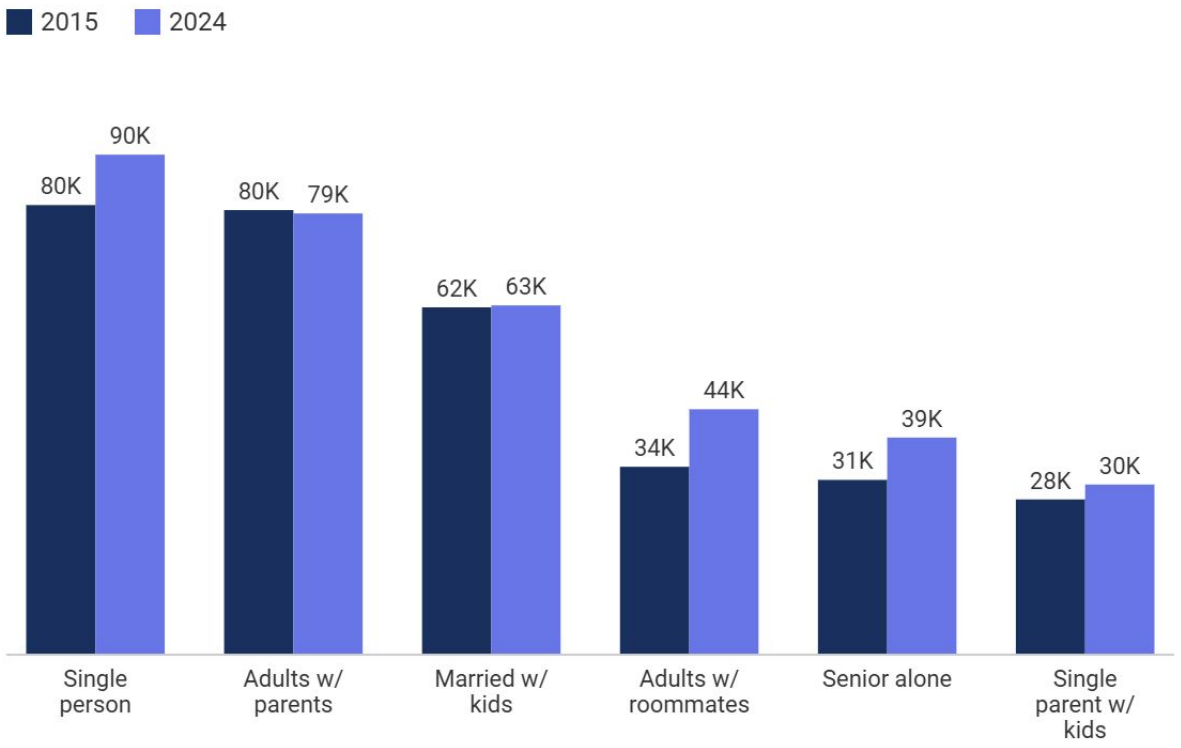
Over the past decade, most of the region's net household growth has been among smaller households. The numbers of adults living with roommates and seniors living alone increased most significantly.

The growth in single person households - and seniors living alone specifically - suggests the region will need to add more smaller units, including accessible options that accommodate aging in place.

The growth in adults living with roommates may in part suggest more young adults are unable to find housing that meets their needs and budget, requiring sharing larger, more expensive units with others.

Changing household types in CMRPC Region

Change in households by type from 2015 to 2024.



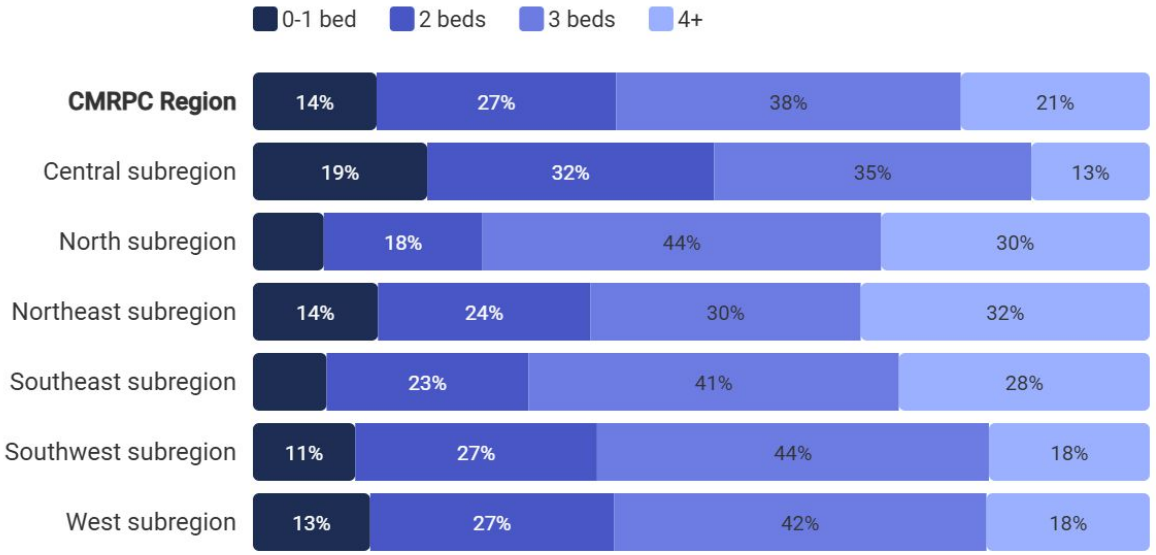
Changing demographics may demand a different mix of housing types and sizes.

As households shrink, demand for housing is likely to shift from larger houses with room for kids to smaller units that may include townhouses, condos, and apartments.

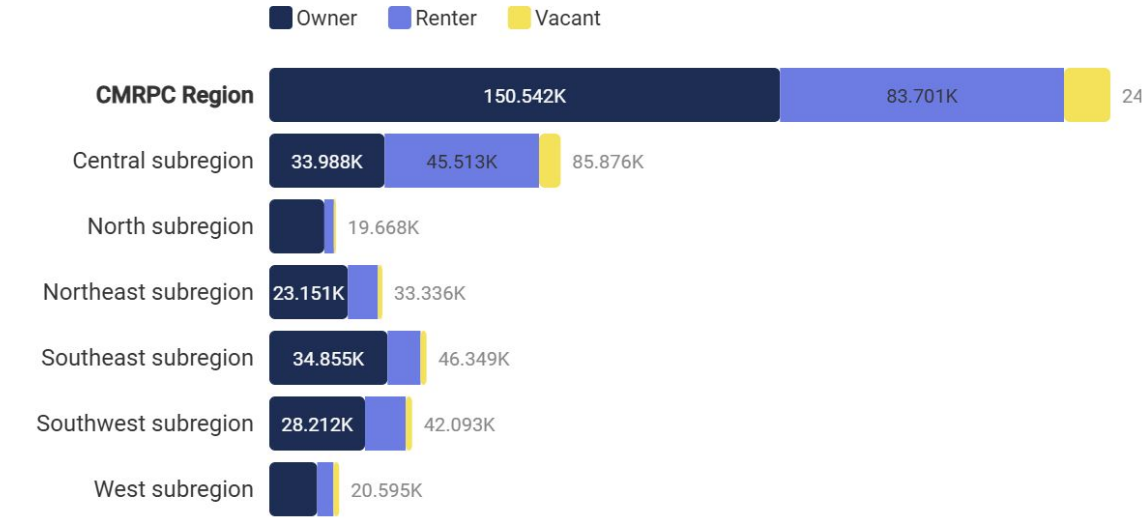
Currently, the region offers a moderate share of smaller units though this count may need to increase in some subregions moving forward to keep up with changing demand.

Many types of single households are more likely to rent than own, especially younger adults. While the Central subregion offers many rental options, there are substantially fewer of these choices in other subregions where the vast majority of units are owner-occupied.

Home sizes across sub-regions, 2024



Units by tenure across sub-regions, 2024



For most households, housing across the region is much less affordable than it was 5 or 10 years ago.

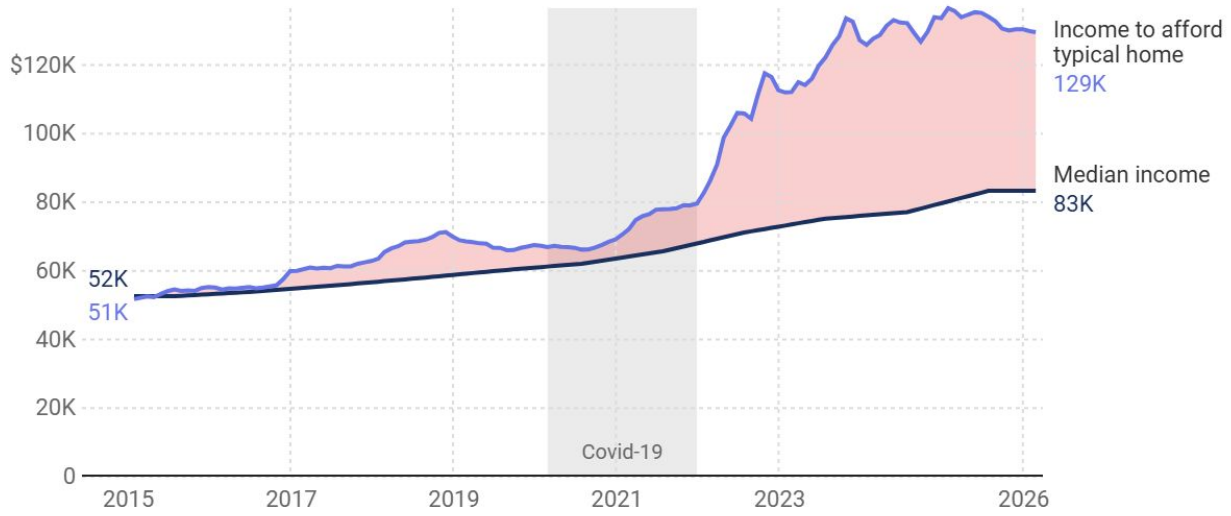
One measure of housing affordability compares the home purchase affordable to a household earning the median income with the price of typical homes on the market over the same timeframe. The CMRPC region was relatively affordable to local residents by this measure until the pandemic, at which point prices rose out of reach for most.

Most subregions report an affordability gap by this measure, though the size of the gap varies by place as driven by different median incomes and local home prices.

The level of affordability and the associated affordability gap can change frequently. See the H&T Dashboard for a version of this analysis that is updated frequently with new data.

Housing affordability

In February 2026, the typical home is unaffordable. The gap is $46,269.

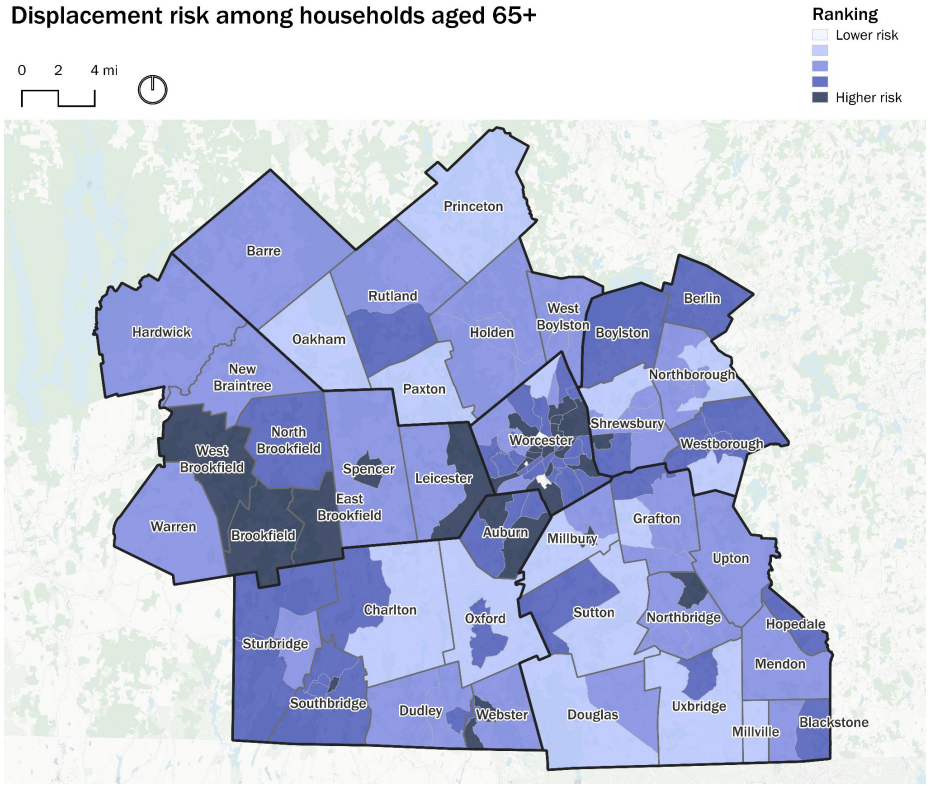


Geography	Home Price: Typical	Home Price: Affordable to median	Home Price: Gap / Surplus	Income: Required for typical	Income: Median	Income: Gap / Surplus
CMRPC Region	$512,842	$505,969	**-$6,873**	$127,165	$125,460	**-$1,704**
North Subregion	$522,962	$569,376	+$46,414	$129,928	$141,460	+$11,531
Northeast Subregion	$679,935	$624,463	**-$55,472**	$169,029	$155,239	**-$13,790**
Central Subregion	$418,106	$319,793	**-$98,314**	$105,762	$80,893	**-$24,869**
Southeast Subregion	$556,664	$575,960	+$19,296	$138,272	$143,065	+$4,793
Southwest Subregion	$456,199	$454,435	**-$1,764**	$112,593	$112,158	**-$435**
West Subregion	$413,163	$365,972	**-$47,191**	$101,892	$90,254	**-$11,638**

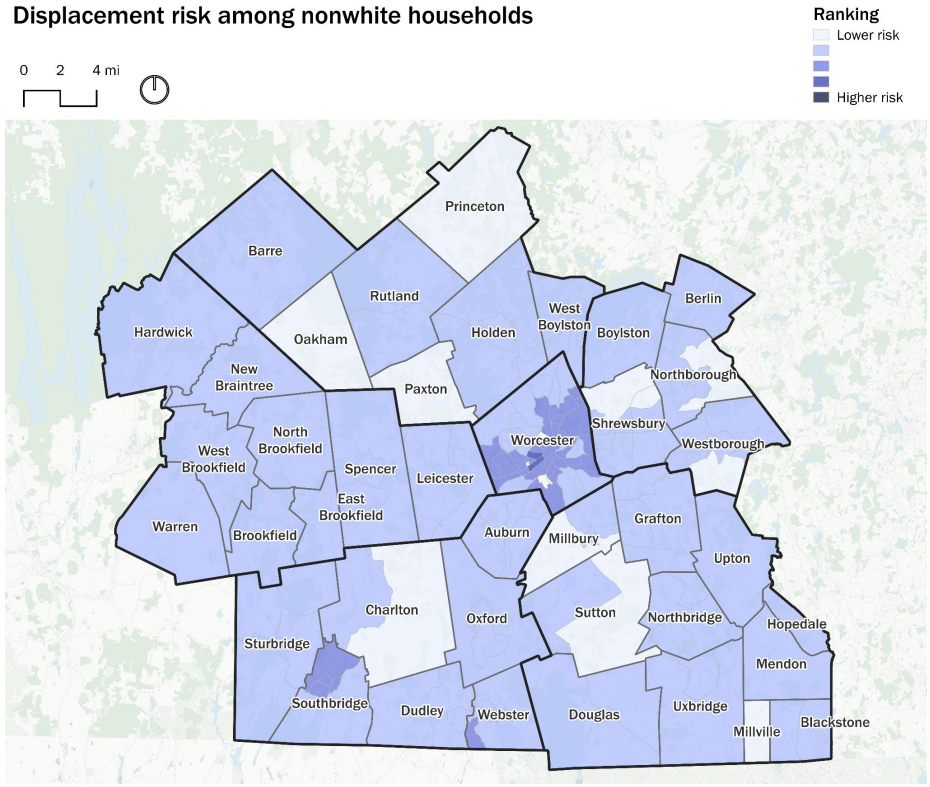
As market pressure builds across the region, some vulnerable populations are at risk of displacement.

Displacement occurs when housing or neighborhood conditions force residents to move. Displacement can be physical, when building conditions deteriorate, or economic, as costs rise. Rising prices and a more competitive housing market also impact some populations more than others. While higher-income, more upwardly mobile households may be able to absorb increased costs, other groups are more vulnerable to negative consequences such as displacement from their home communities. Displacement risk among lower-income, older households is widespread across the region. Given the region's limited ethnic diversity, displacement risk among nonwhite households is concentrated in fewer areas but still a growing concern in these localities.

Displacement risk among households aged 65+



Displacement risk among nonwhite households



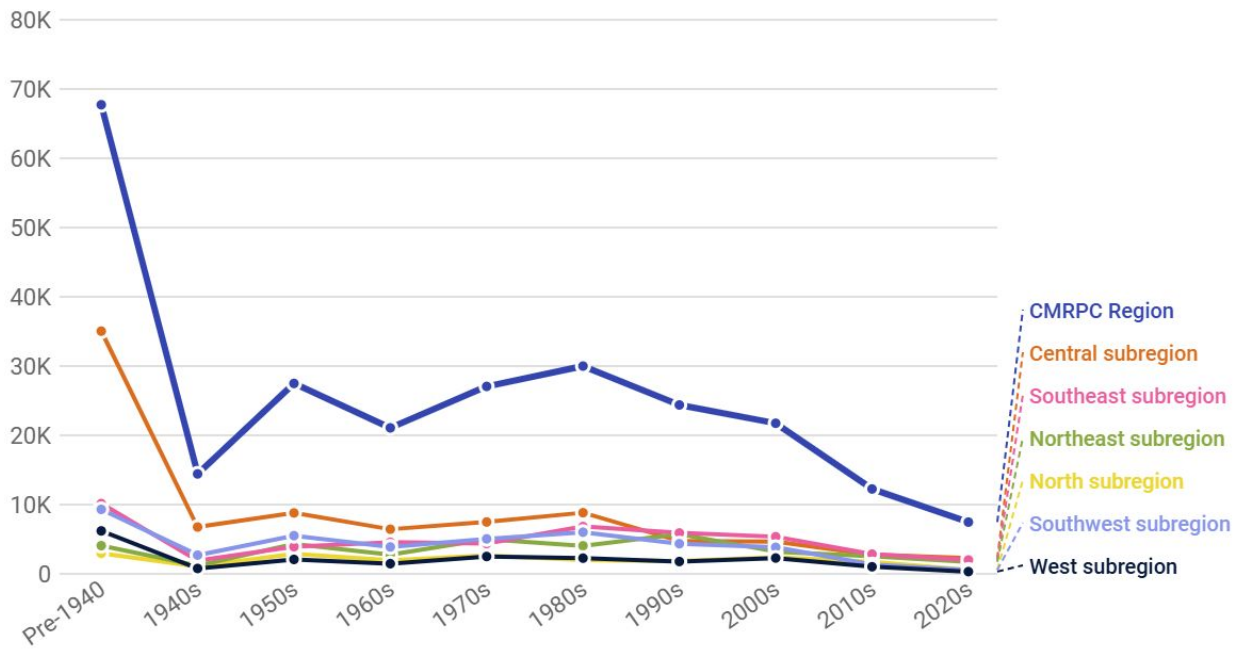
Housing production has slowed in recent decades.

The region is building new housing at a much lower rate today than in the 20th century, contributing to slower growth and potentially driving up prices through constrained supply in the face of rising demand.

The northeast subregion has produced the most new housing in the past 10 years while the southeast and west subregions have added very few new units by comparison.

Housing production by decade

ACS 2024 5-year estimates (B25034); 2020s from Building Permit Survey



Building permits by structure type since 2015

	Single Family	2 units	3-4 units	5+ units	Total
Central	913	146	44	1,943	3,046
North	1,162	30	6	14	1,212
Northeast	1,160	102	0	2,631	3,893
Southeast	987	142	11	230	1,370
Southwest	2,698	182	12	130	3,022
West	425	8	0	0	433
Region total	7,345	610	73	4,948	12,976

Zoning that allows multifamily development is limited throughout the region.

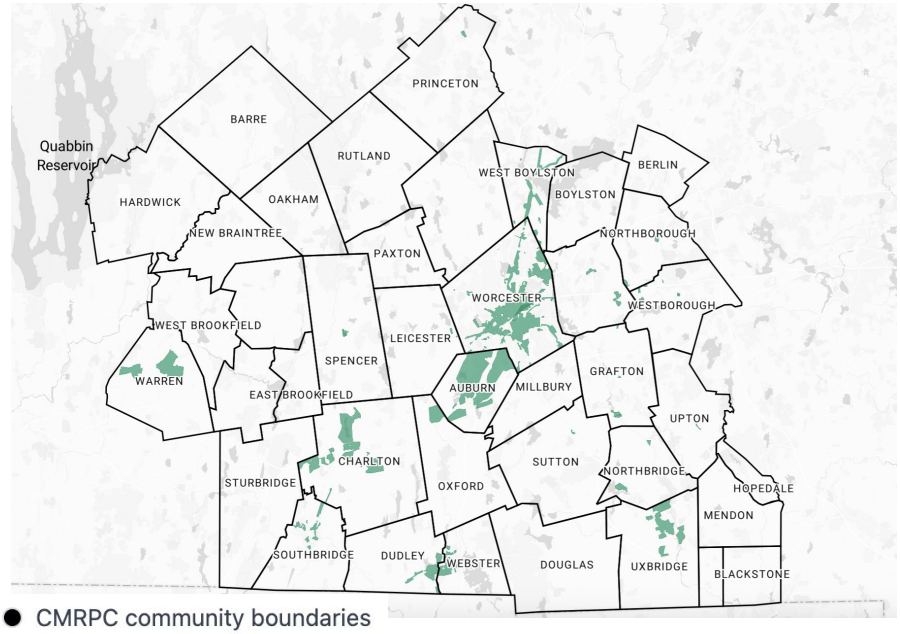
This study analyzed zoning through two lenses in order to answer the following regulatory questions:

1. **At the district scale:** Where is multifamily development allowed across the region? Is multifamily development allowed by-right or through a special permitting process?
2. **At the parcel level:** Where is there excess capacity for development given the zoning of an area? Where does current development exceed the density set forth in current zoning?

The definition of multifamily in these analyses is 3 or more units per structure, to align with the definitions of multifamily across the vast majority of CMRPC communities. Higher density levels often require a greater degree of discretionary review. Although regulation and the regulatory atmosphere vary from place to place, the majority of CMRPC communities both allow multifamily development and have the capacity within current zoning to add more multifamily development.

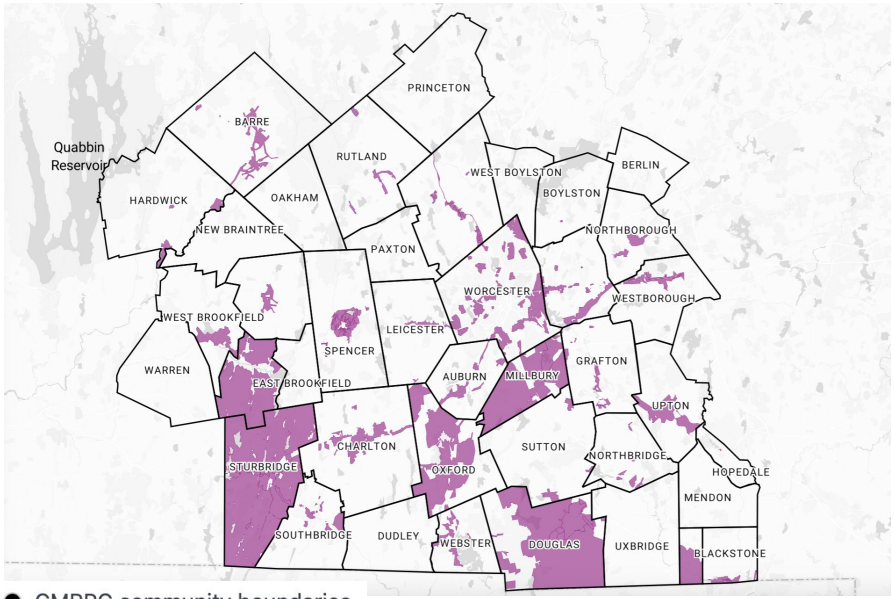
To explore zoning recommendations in greater detail, please see the interactive map.

Multifamily development allowed by right



- CMRPC community boundaries
- Multifamily allowed by-right

Multifamily development allowed by special permit

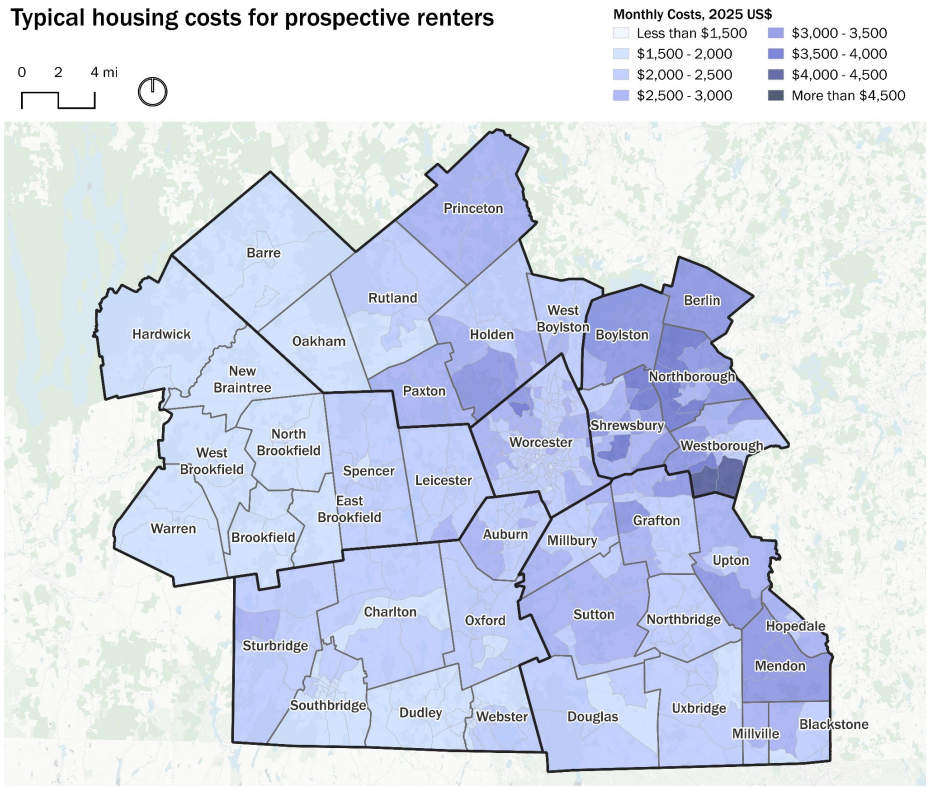


- CMRPC community boundaries
- Multifamily allowed by special permit/review

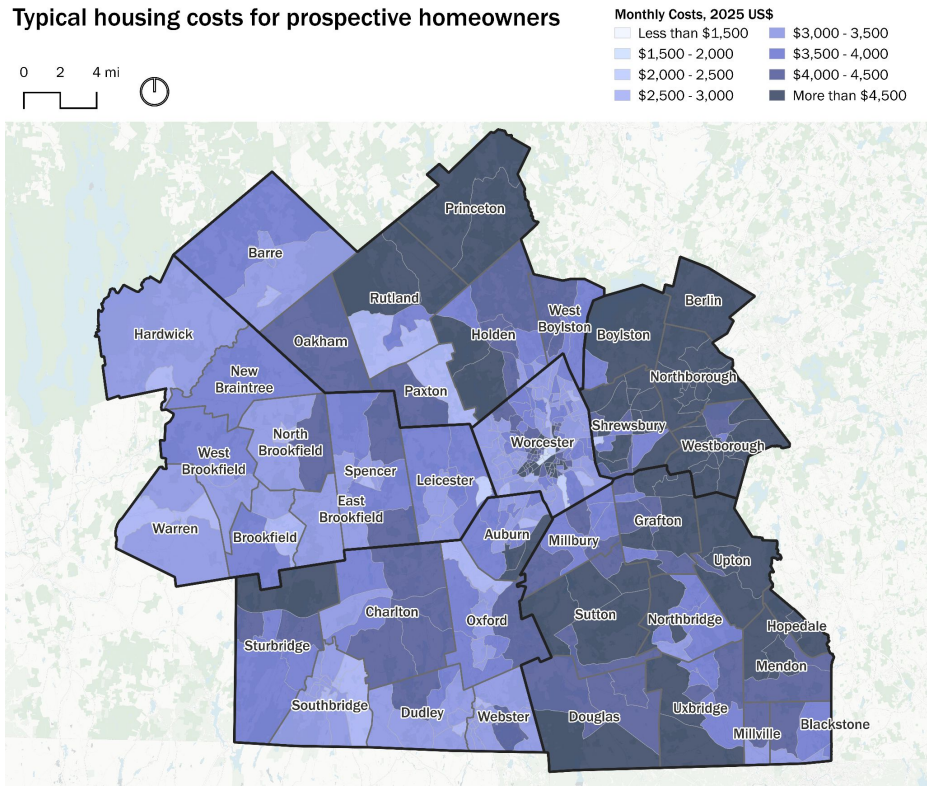
Housing costs are high, especially for homeowners, and they vary greatly from east to west.

Tracking with incomes and growth rates, the costs to own a home on today's market are significantly higher in the region's eastern communities than in the west. Rental costs share a similar regional distribution but are substantially lower overall than homeownership costs. However, most municipalities' housing stock includes relatively few rentals so, even if they are more affordable for lower- and middle-income households, they are less available too.

Typical housing costs for prospective renters



Typical housing costs for prospective homeowners

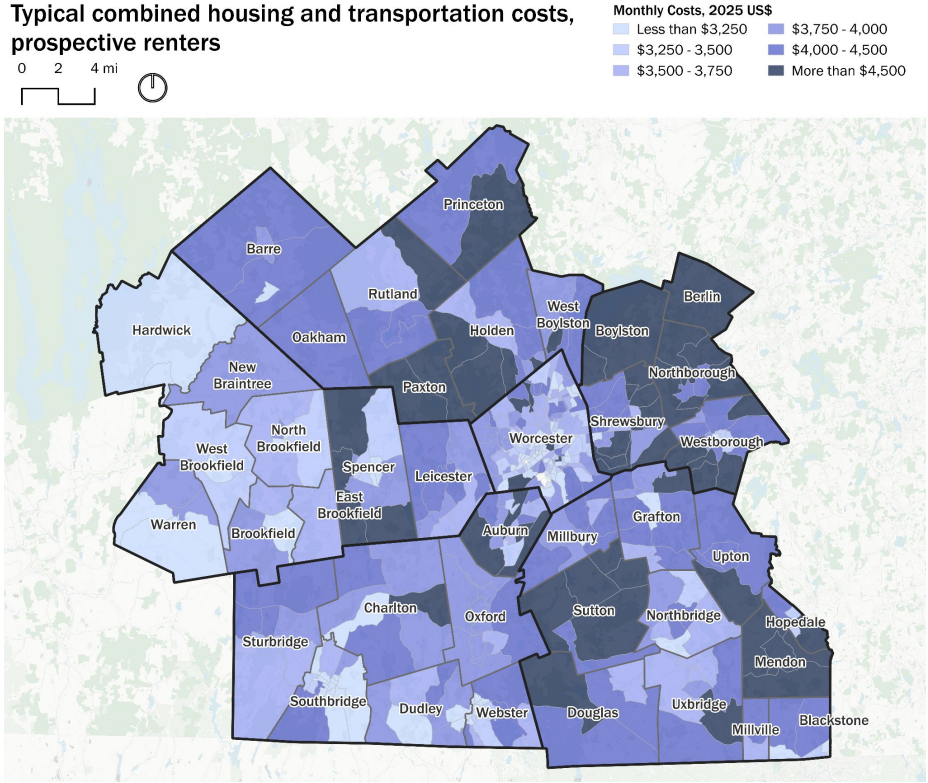


See page 163 for displacement risk methodology.

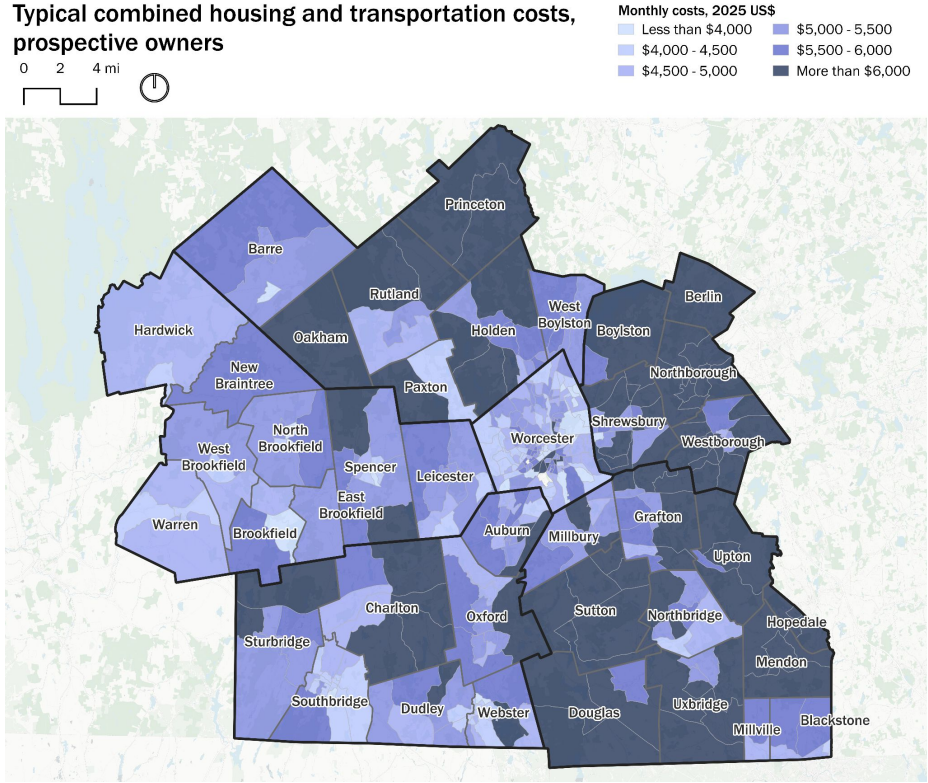
Transportation costs escalate household expenses, especially for those without alternatives to cars.

Combining housing and transportation costs reveals the degree to which the region's prevailing car dependency locks residents into higher costs of living. Across the CMRPC region, combined housing and transportation costs are high, surpassing 45% of the area median income - a typical threshold under which areas are considered relatively affordable.The key exceptions include Worcester and several other town centers, locations served by transit and/or walkable proximity to some jobs, services, and amenities which can significantly reduce vehicle miles traveled. This effect is particularly beneficial to renters by capping costs within the realm of affordability for more lower- and middle-income households in these locations.

Typical combined housing and transportation costs, prospective renters



Typical combined housing and transportation costs, prospective owners



See page 173 for additional information on transportation and housing cost estimates.

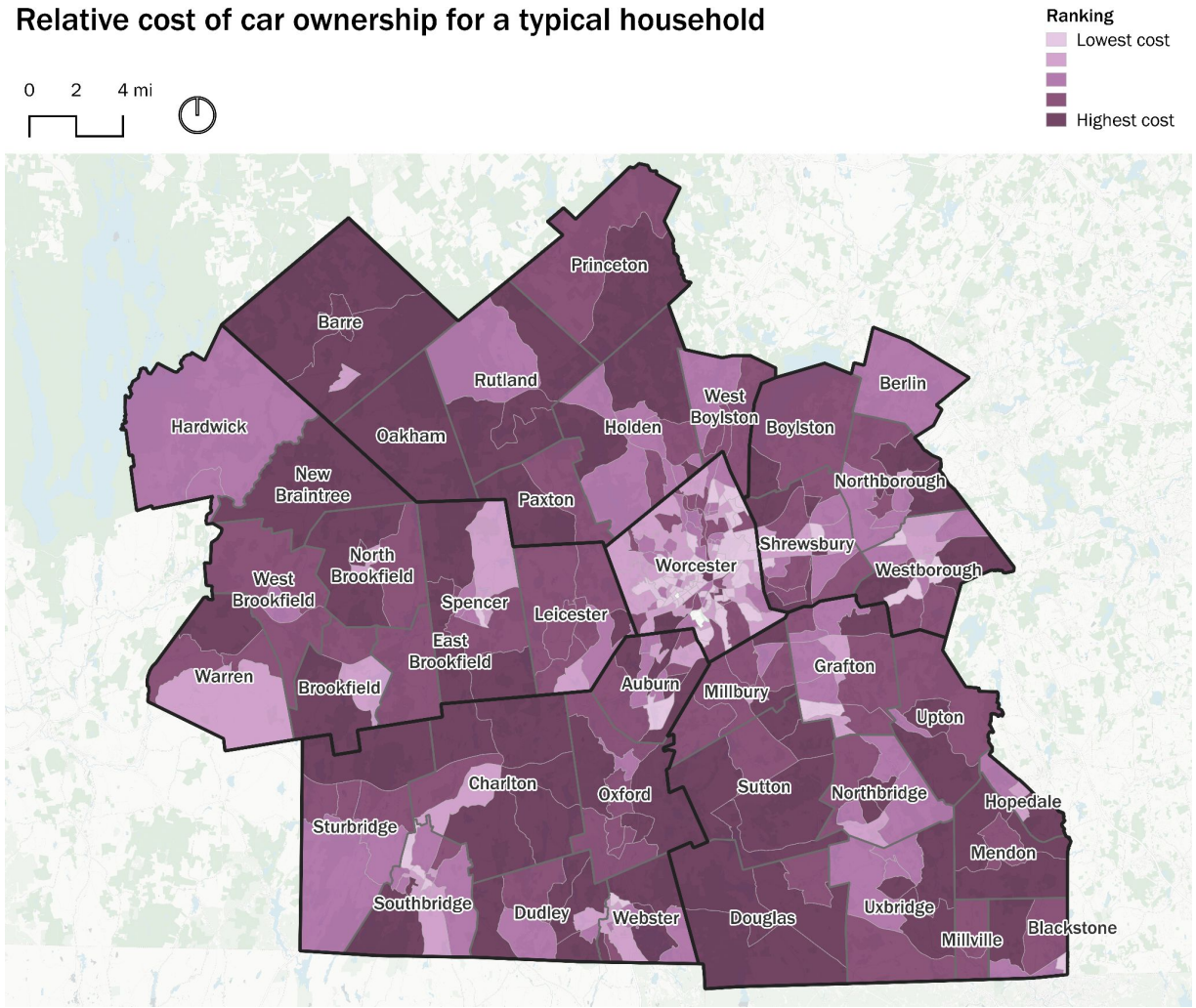
Access to cars is generally required in the CMRPC region, though in Worcester car ownership can be less expensive.

With the general exception of Worcester, households in the CMRPC region require one or more personal automobiles to access jobs, services, amenities, and other lifestyle needs. The cost of car ownership is relatively consistent across the region's outlying subregions. The Central subregion's lower car ownership cost is a result of closer proximity between housing and destinations and more transit options.

CMRPC subregion	Annual car ownership cost
North	$ 20,930
Southeast	$ 19,550
Southwest	$ 18,920
West	$ 18,450
Northeast	$ 17,500
Central	$ 12,070

Note: Car ownership cost is a function of how many cars an average household likely needs and how far they are likely to travel annually. Additional Detail in the methodology section.

Relative cost of car ownership for a typical household



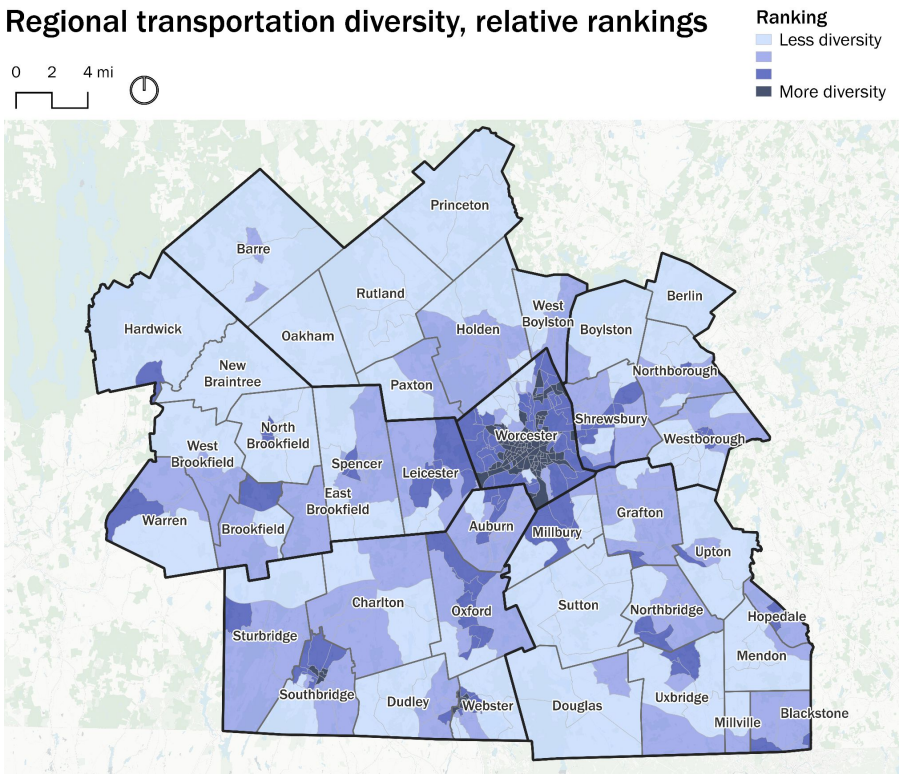
See page 173 for additional information on transportation cost estimates.

In limited parts of the region, a car-free or car-lite lifestyle may be possible.

In Worcester and the town centers of several other municipalities in the region, amenities and services are sufficiently concentrated that residents could perform some required trips by walking, mobility device, or bicycle.

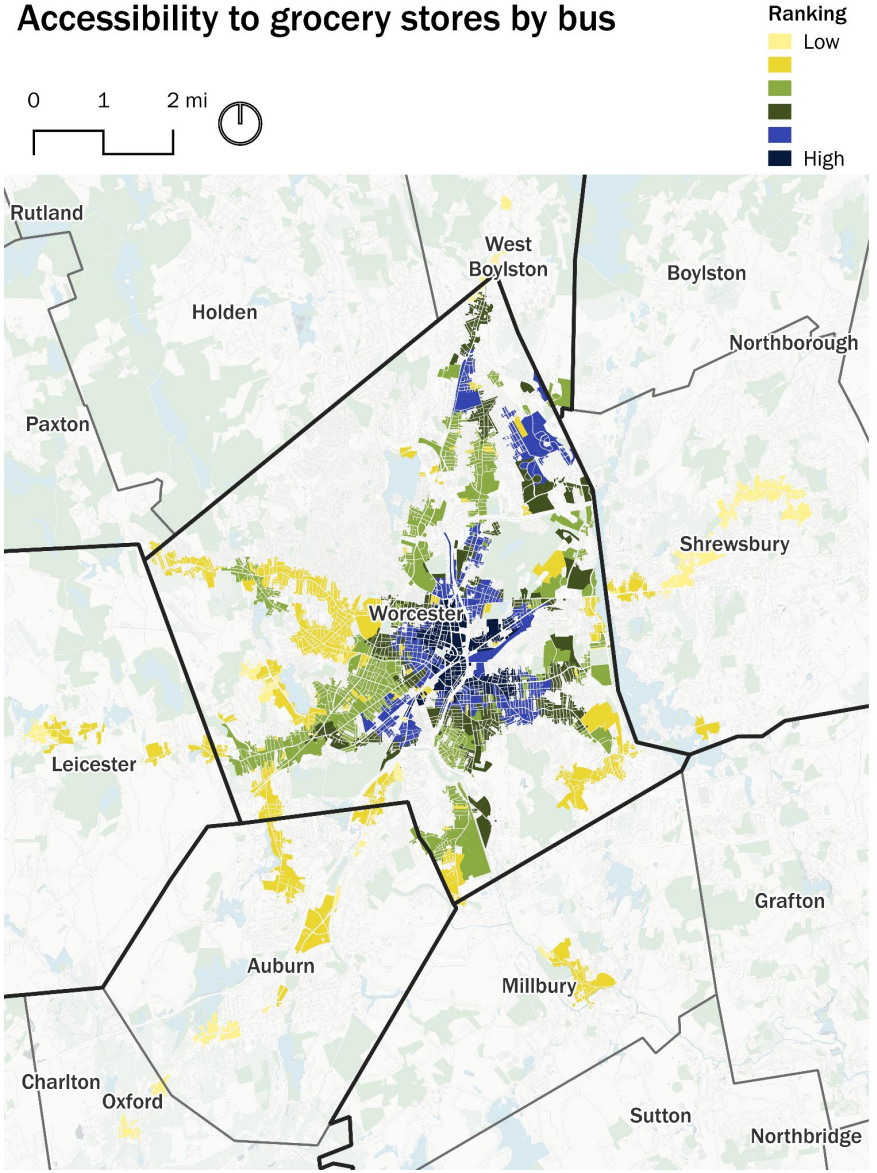
In Worcester and along certain regional corridors, transit service connects residents to destinations like grocery stores, healthcare, and jobs. These mode options could enable a household to operate with fewer cars, or at least use cars less often.

Regional transportation diversity, relative rankings



Note: Transportation diversity indicates the degree to which alternative modes to personal vehicles are a feasible option. More diverse indicates a higher level of feasibility.

Accessibility to grocery stores by bus



Note: Routes outside of Worcester use flag stopping, GTFS stops are included in this map, though a rider can be picked up elsewhere along the route.



Household profiles

Household profiles

To help illustrate how the study's analysis and findings relate people in the region, this section evaluates available housing options and access against the needs and preferences of several representative households. Each reflects a different perspective that a typical home buyer or renter might bring to the market and assesses what corresponding housing choices are available and where within the region.

	Housing at the right price	**Housing of the right type**	**Housing in the right locations**
Why this matters	To accommodate households across the income spectrum, the region needs housing at a wide range of price points. Housing affordability is a relative concept that depends on each household's family budget, considering competing expenses such as childcare, health insurance, and student loans. While car ownership or access is required to live in most parts of the region, associated transportation costs are lower in some places than others.	The regional community is comprised of a variety of household types and family structures, from young singles and couples to families with kids to empty nesters. The region's housing stock needs to include enough options to accommodate all of these configurations and life stages. Furthermore, it isn't enough that the right units exist, they also need to come to market frequently enough to keep up with demand.	The region needs to add more diverse housing options, but not all locations are equally suitable for all housing types. For example, housing built with connections to existing water and sewer infrastructure can be denser than if served by private septic. Housing served by transportation alternatives helps save on cost of living by reducing reliance on car ownership. And housing located within walking distance of amenities and services enables a car-lite lifestyle, supports quality of life, and responds to market demand for units near things to do.
Household Profiles	**1. Young family looking for a starter home.** A couple with one child earning $122k/year looking to buy a 3-4 bedroom house.	**3. Empty nester couple looking to downsize.** A couple searching for a smaller house on a compact lot that is likely to be accessible.	**5. Someone looking for housing walkable to things to do.** A household looking to live in an area with things going on, walkable destinations, a mix of land uses.
	2. Young family looking for a starter home with a challenging household budget. The same couple earning $122k/year, but with competing costs like childcare, car payments, and student loans.	**4. Young professional looking for an apartment before settling down.** A household searching for rentals in the region, without much price sensitivity.	**6. Household looking for a car-lite lifestyle.** A household trying to get by with one car, hoping to walk or take transit some of the time.

1. Young family looking for a starter home: Combining the rising costs of housing and transportation.

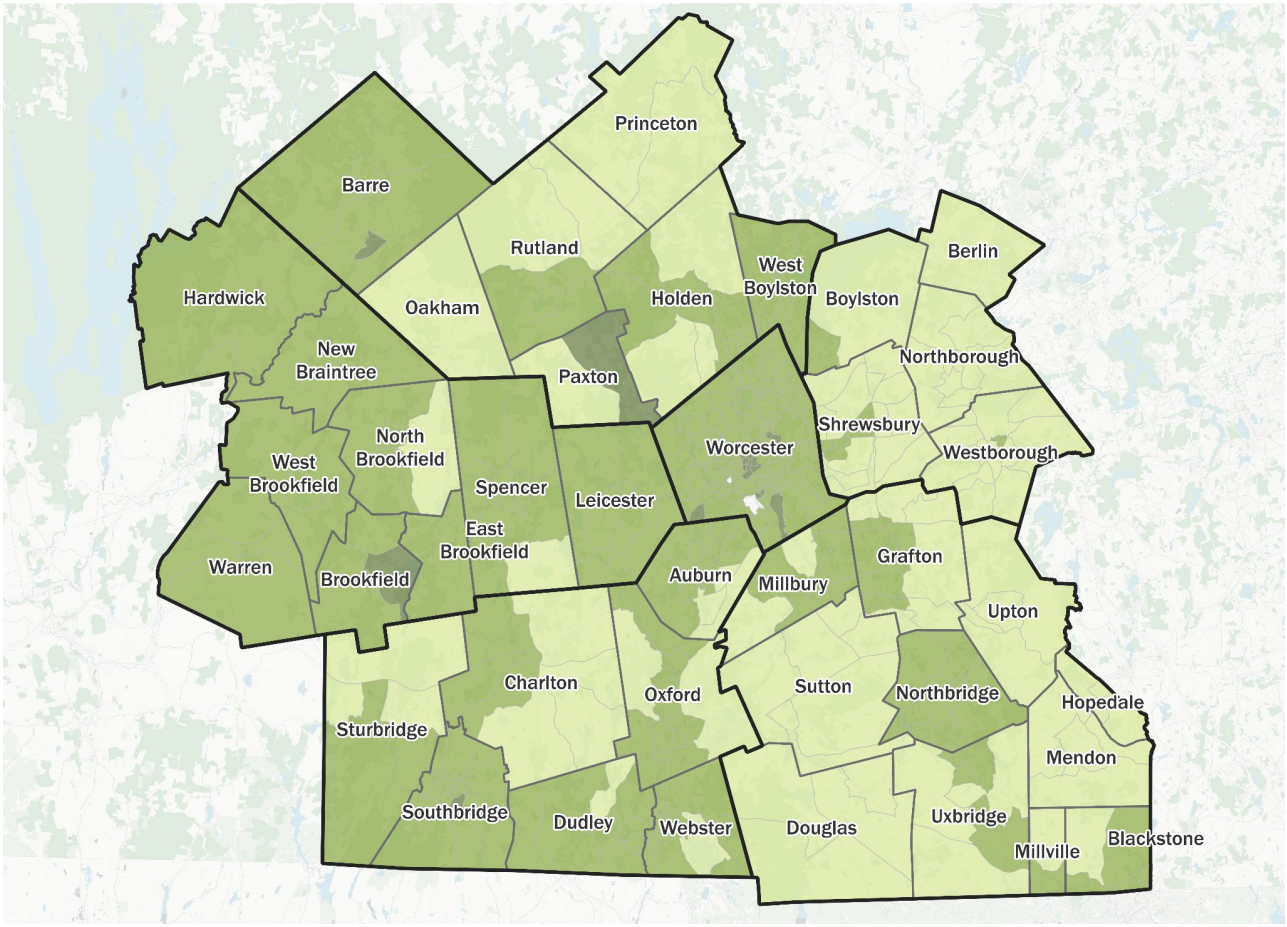
Homeownership plus transportation costs for a typical household are not at attainable levels for most of the region. The Northeast and Southeast regions are the least financially attainable, with housing and transportation costs estimated to be greater than 60% of the typical household income.

A typical 3-person household with 2 vehicles earning $122k annually is likely to only find housing that is affordable in a few parts of the region without spending more than 45% of their income on housing and transportation costs. As the map at right illustrates, most locations in the region would likely cost this household at least 45% or even 60% of their income in housing and transportation expenses alone given estimates of typical housing and transportation costs.

Typical household: Combined transportation and housing costs as a share of household income

0 2 4 mi

Share of household income
- Less than 45%
- 45-60%
- More than 60%



2. Young family looking for a starter home with a challenging household budget: The impact of reducing car ownership.

Conventionally, housing affordability is measured in terms of the share of household income dedicated to housing costs. Anything below 30% is considered relatively affordable and avoiding cost burden. However, for some households with many competing costs such as childcare, student debt, transportation, and health insurance, a more nuanced metric is needed. In the example at right, this household can only afford to spend 19% of their income on housing if the location they live in requires owning 2 cars.

While many of these costs may be fixed, transportation cost could be variable if viable housing options are available in places that do not require daily vehicle use by all household members. Based on the household budget scenario at right, reducing car ownership from 2 vehicles to 1 can increase effective purchasing power by $90k.

Affordability method	"Affordable" home price	Housing costs as share of gross income
30% of income rule	$350,950	30%
Realistic budget (2 cars)	$286,162	19%
Realistic budget (1 car)	$377,033	32%

	Owns 1 car	Owns 2 cars
Household income	**$122,200**	**$122,200**
Monthly gross	$10,183	$10,183
Federal & state taxes	*$2,240*	*$2,240*
Net monthly income	**$7,943**	**$7,943**
Childcare	*$1,792*	*$1,792*
Car ownership	*$1,625*	*$1,008*
Student loans	*$400*	*$400*
Health insurance contribution	*$633*	*$633*
Phone/internet	*$100*	*$100*
Groceries	*$600*	*$600*
Utilities	*$200*	*$200*
Child expenses (clothes, activities, etc.)	*$200*	*$200*
Retirement/savings	*$250*	*$250*
Maintenance	*$200*	*$200*
Available for housing costs	*$1,943*	**$2,560**
Attainable price	***$286,162***	***$377,033***

Data includes typical expenses in Massachusetts and/or nationally as of April, 2026.

3. Empty nester couple looking to downsize: Downsizing within the community

Source: RentCast

Given the region's rapidly growing senior population, it is likely an increasing number of older households will consider downsizing, such as from the larger home where they raised a family to a smaller home that is easier to afford and maintain as they age. These downsizing households are often looking for a home with fewer bedrooms, less square footage, and a smaller yard. They may prefer a unit built more recently because it may require fewer repairs and could be more accessible from a mobility perspective than older houses.

The table at right filters all listings since 2023 based on these criteria, revealing that very few units that actually come to market are particularly suitable for the region's downsizers. This thin inventory is complicated by the likelihood that similar units may also appeal to first time home buyers and dual income no kids households, adding market competition.

Housing criteria	Listings meeting the criteria	Share of total listings	Criteria details
Total for sale listings, 2023-2025	30,939	100%	Total pool of available for sale listings.
Max 3 bed 2 bath	10,508	34%	As 1-2 person households, they only need extra bedrooms for family and guests.
...and less than 1,800sf	8,688	28%	Downsizers generally want smaller, more efficient units.
...and 1/4 acre or less	1,553	5%	Downsizers often prefer smaller yards (or no yard) to reduce maintenance obligations.
...and built since 1990	122	0.4%	Newer units are more likely to be in better condition and to accommodate people with mobility challenges.

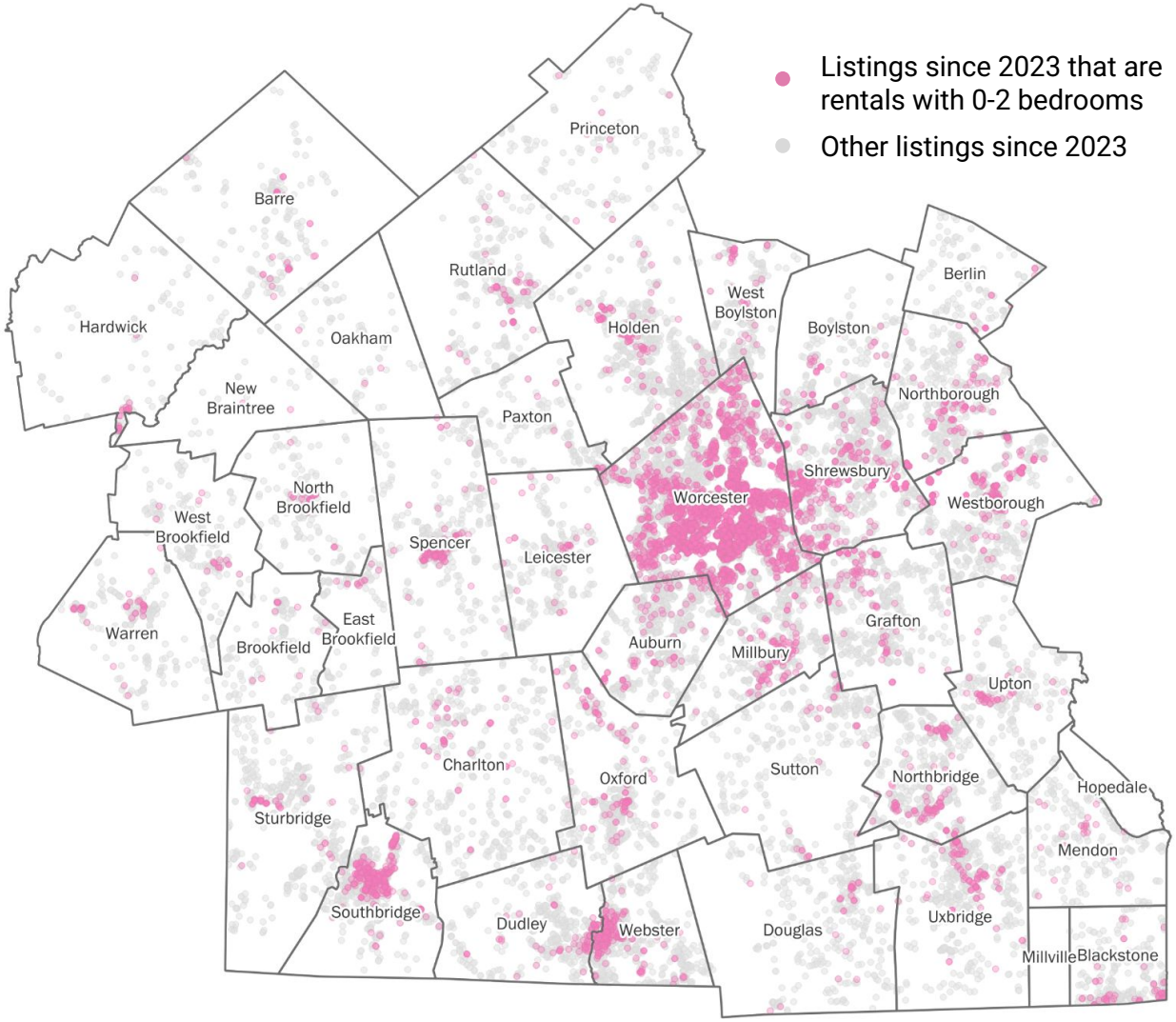
4. Young professional looking for an apartment before settling down: Renting within the community

Source: RentCast

Early-career professionals might be interested in moving to the region but may need or want to rent before buying, to get a better sense of where in the region they would want to live long term. Rentals are also a needed option for students and workers moving to the region for a shorter period of time, unsure if they will stay.

The map at right filters all listings since 2023 for rentals with two or fewer bedrooms, revealing the limited options for a renter living alone outside of the city of Worcester and several community cores.

This analysis also doesn't factor in cost considerations. A single earner household is likely to be further constrained and unlikely to be able to afford all available rental options highlighted on the map.



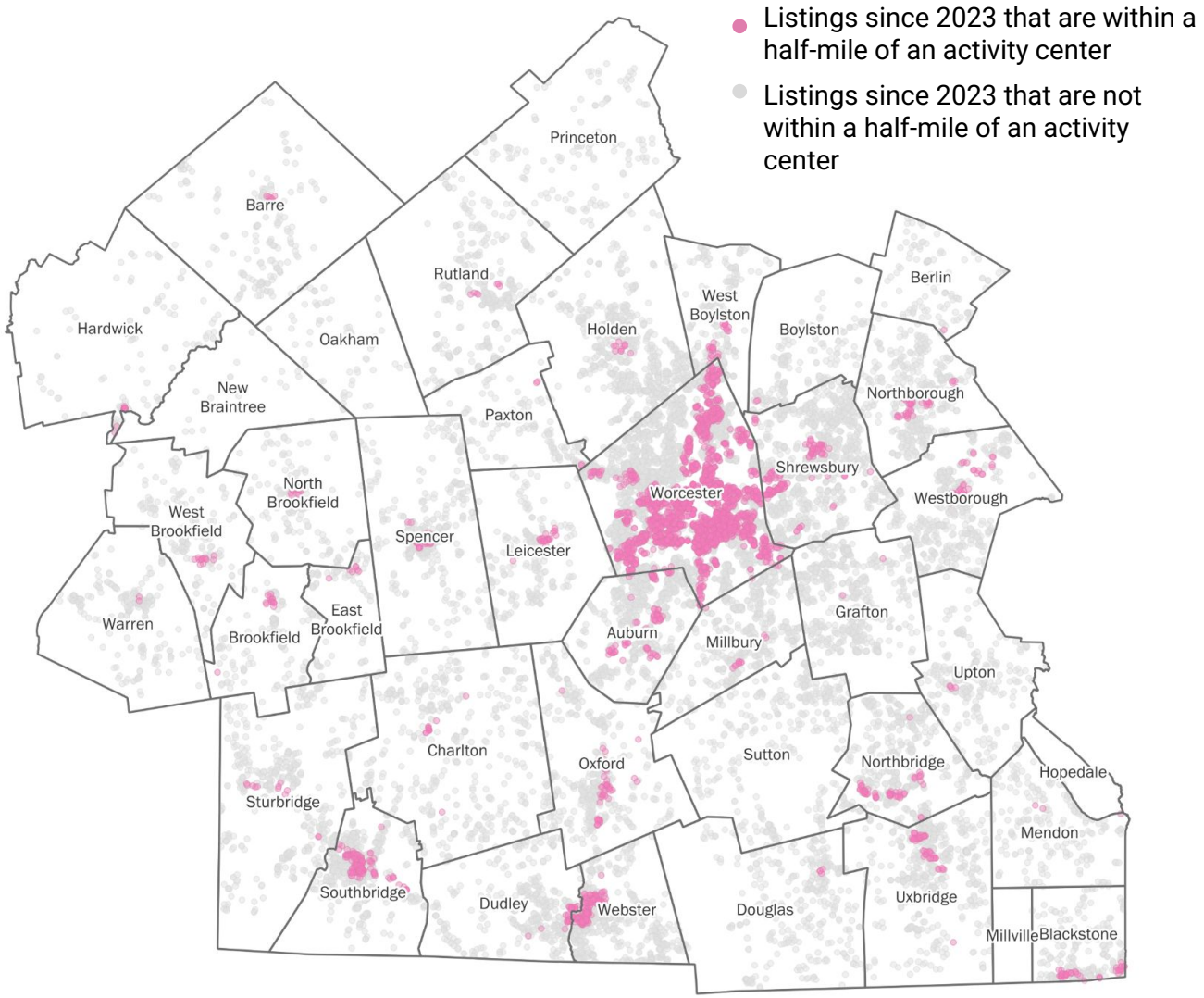
5. Someone looking for housing walkable to things to do: Places with access to amenities

Source: RentCast

Increasingly, residents nationally are interested in living within walking distance of things to do such as walk to a restaurant or an errand. Areas with diverse land uses and clusters of service-sector jobs are most likely to have the infrastructure and urban form to support that lifestyle.

The map at right filters all listings since 2023 that are within a half-mile of these activity centers.

Given the relative lack of walkable neighborhoods and activity centers outside of Worcester, listings that met the aforementioned criteria are limited. If someone is looking for a walkable neighborhood, they are primarily limited to the core of Worcester and a older town centers.



Activity centers defined by land use mix and density.

6. Housing in the right locations: Household looking for a car-lite lifestyle

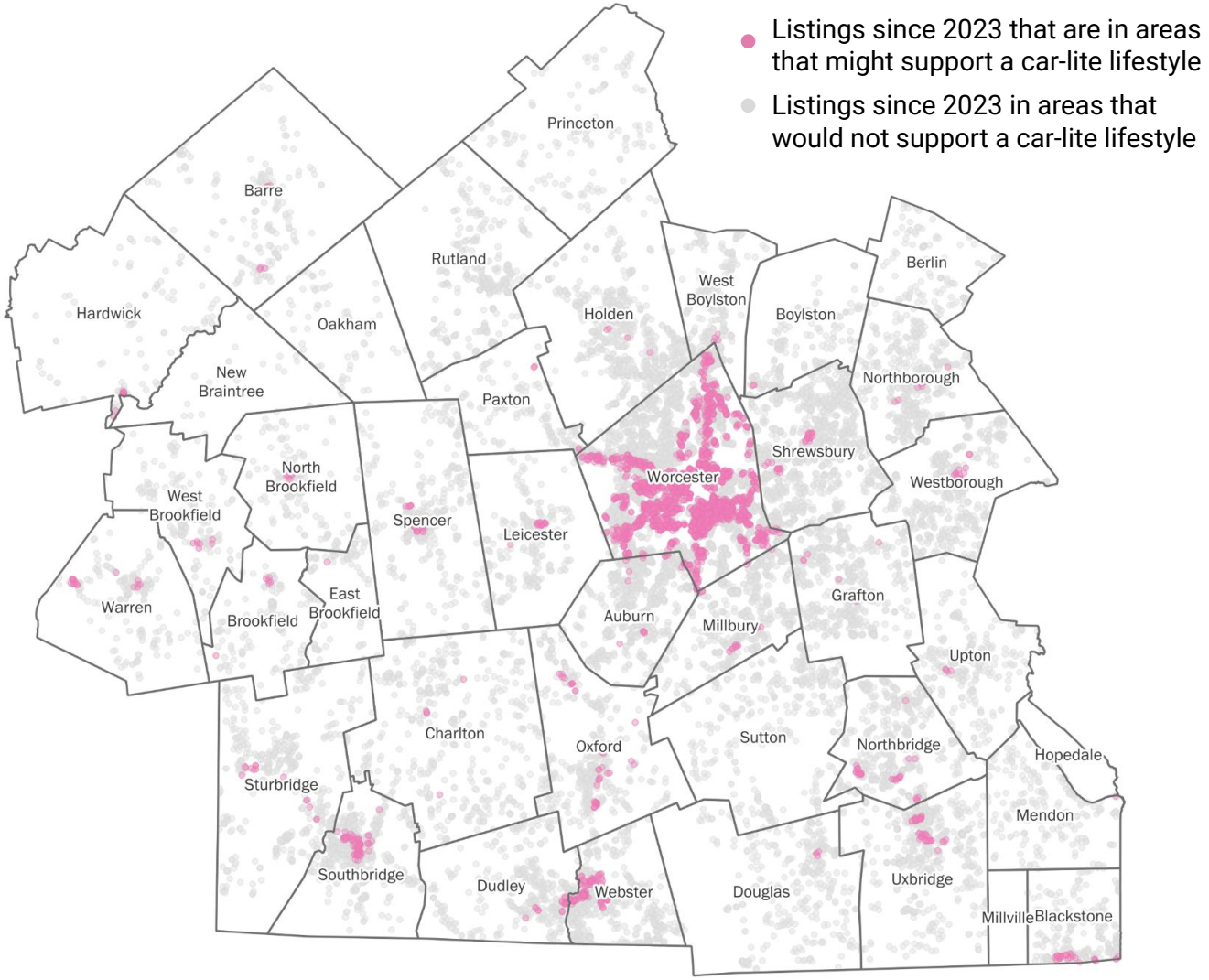
Source: RentCast

Households in the area looking to get by with fewer cars or use them less often might be looking for areas where living car-lite is possible. This aligns closely with the idea of living in close proximity to amenities and services.

Areas that support a car-lite lifestyle have amenities and services sufficiently concentrated that residents could perform some required trips by walking or by bicycl and/or have access to regular transit services, to connect them to destinations like grocery stores.

The map at right filters all listings since 2023 that are within areas with enough transportation diversity to support a car-lite lifestyle.

Like the activity center analysis, this map shows the relative lack of optior outside of Worcester, driven by less transit access and fewer connected/walkable street networks.





Suitability analysis & development constraints

Suitability Analysis and Tools: Goals

A housing suitability analysis is a planning tool that attempts to identify where new housing development is best supported by existing conditions, such as infrastructure capacity, transportation access, proximity to jobs and services, and environmental constraints. By layering these factors together, through a GIS-based model, the analysis highlights areas with the strongest baseline capacity to accommodate more housing, as well as areas where development may be limited by infrastructure gaps, environmental hazards, or lack of transportation options.

Most suitability analyses stop at this baseline question of capacity: can an area physically support more housing? This study goes a step further by asking where added housing density does the most good. Rather than treating transportation access as just another input alongside infrastructure, the analysis treats transportation diversity as the lens that determines where density pays off most: areas where residents already have options beyond a car see the greatest benefit from new housing, in the form of trips shifted away from single-occupancy vehicles and reduced transportation costs. This is a normative judgment, not just a measure of physical capacity, and it shapes how this study interprets and prioritizes the suitability results that follow.

Rather than dictating where development should occur, the suitability analysis provides a shared, data-driven framework that communities and stakeholders can use to guide investment, regulatory change, and housing policy decisions, should they choose to do so. It is intended as a tool to facilitate conversations about where to prioritize regulatory change, investments, and other strategies to unlock opportunities for housing diversity across all CMRPC communities. This section outlines what the suitability tool is and how stakeholders might use it, highlighting other layers of analysis that can support the suitability layer's interpretation and utility.

Goals of the suitability analysis and associated tools

1. Establish physical barriers to development.
2. Identify neighborhoods and corridors most supportive of housing-diverse development given existing infrastructure, transportation diversity, and access to amenities.
3. Illustrate the kinds of development these areas can support, given their relative degree of transportation diversity and access to amenities. Highlight regulatory barriers to housing-diverse development.
4. Illustrate how areas that are highly suitable for residential development compare to existing patterns of interest: overall demographics, equity focus areas, development, etc. Compare with areas of relative market risk and opportunity.
5. Outline how targeted policy and investment interventions shift neighborhood suitability.

Physical barriers to development

The suitability analysis is built using standardized parcel data from the Massachusetts GIS Property Tax Parcels dataset, providing a consistent statewide foundation for evaluating land across the region.

The first step in identifying areas suitable for housing development is to exclude areas with environmental or existing land use constraints. Layer **A** shows all buildable land, or areas without environmental constraints and/or first round land use constraints. Excluded from layer A are:

- Slopes greater than 25%
- FEMA national flood hazard layer
- River Protection Act buffer
- Right-of-ways
- Preserved and Recreational Open Space (via MassGIS)

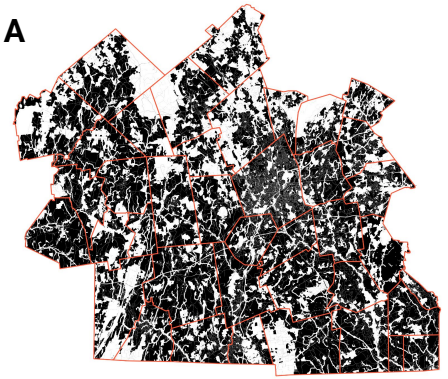
These are the same constraint factors CMRPC uses in its build-out analysis work.

Layer **B** builds on the previous, with the additional exclusion of priority preservation areas as established in the Central Massachusetts Regional Planning Commission priority development and preservation plans.

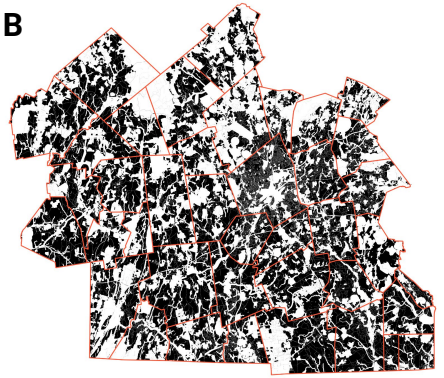
Layer **C** overlays areas served by sewer and water with the buildable land layer of layer B.

This analysis is zoning-agnostic, evaluating physical and infrastructure capacity independent of current zoning regulations. This isolates where land can fundamentally support diverse housing from where zoning currently allows it.

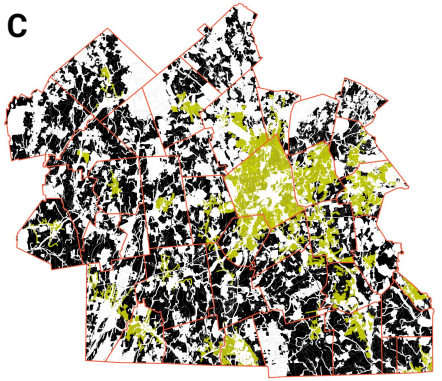
A



B



C



What makes a place "suitable" for housing development?

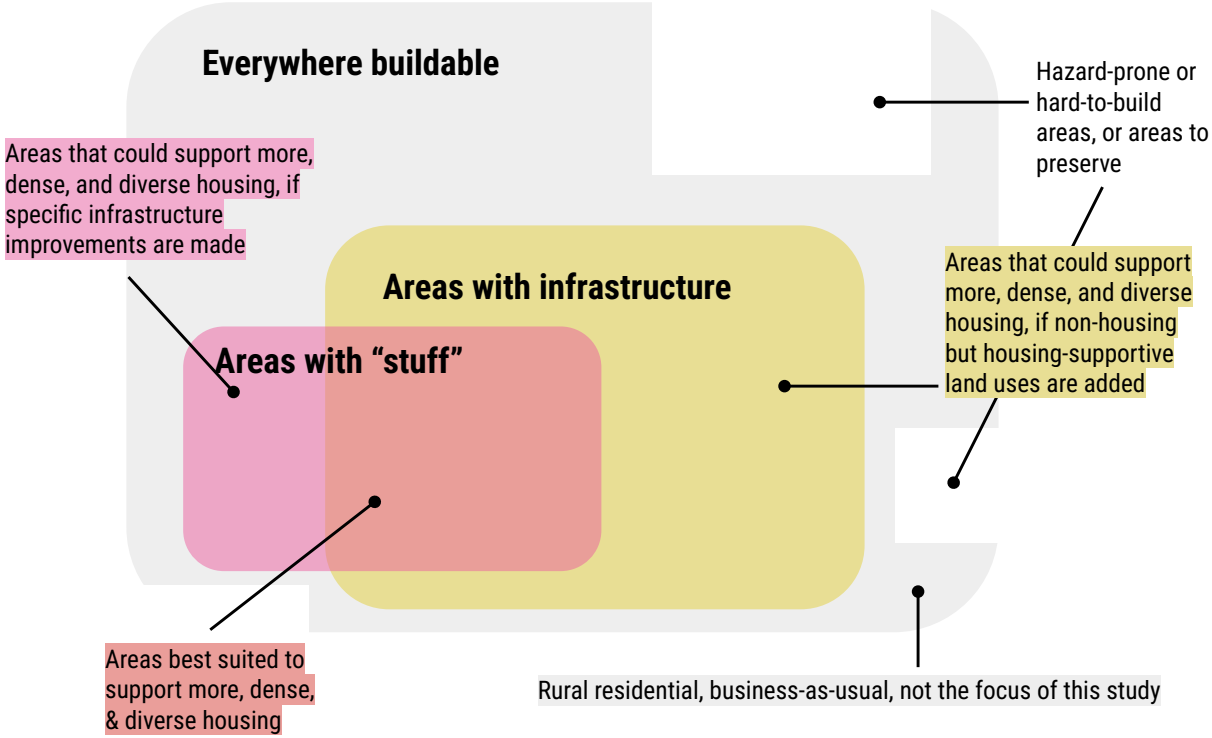
As a baseline, anywhere without development constraints could technically be suitable for housing development. Our analysis intends to more specifically highlight areas by the type of housing it can both support and the type of housing that offers the greatest transportation benefits.

For this study, areas that can support more, denser, and diverse housing are ones with some combination of infrastructure, transportation options, and "stuff".

Infrastructure: Areas with sewer and water infrastructure are likely to support higher housing densities.

Transportation diversity: Density delivers the most benefit in areas with transportation options, where residents don't always need a car to meet daily needs. The same number of units placed in a transportation-diverse area allows more residents to shift trips from single-occupancy vehicles to walking, biking, and transit, compared to that same density in a more car-dependent location.

"Stuff": Density delivers the most benefit in areas with a mix of land uses and clustered jobs and amenities, where daily destinations are already close by. The same number of units placed near this kind of activity allows more trips to be short or skipped entirely, minimizing transportation costs, compared to that same density in an area without nearby destinations.



Note: Suitability analyses often exclude land or apply lower weights to areas using cutoffs that aren't necessarily hard rules. For example, a housing developer could construct on-site sewage or water systems. However, in the presence of land options with existing infrastructure, the opportunity cost for developers is high, making such land much less desirable.

Introduction to suitability classes

After developing the baseline of buildable parcels (those without environmental and baseline development constraints) were each assigned a suitability class based on the presence of infrastructure, the degree of transportation diversity, and the degree of concentration of amenities near that parcel.

Unlike suitability analysis that specifically classify areas based on their suitability for a specific housing type, this analysis uses housing typology groups that include a range of housing types. These groups are described below and further delineated on page 34.

Group A - high

Areas that can support the most housing density and diversity. They have the right baseline infrastructure, amenity access, and relatively strong transportation diversity.

Group B - somewhat high

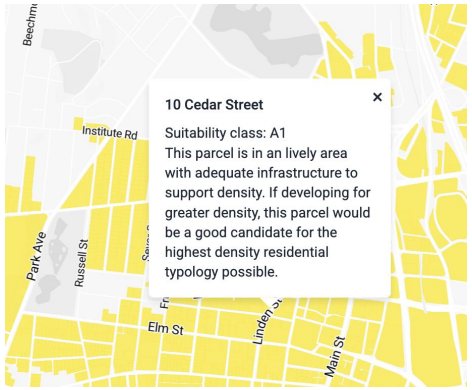
Areas that can support some housing density and diversity, have the right infrastructure, but are less transportation diverse (fewer opportunities to get around without a car) or have more limited amenity access.

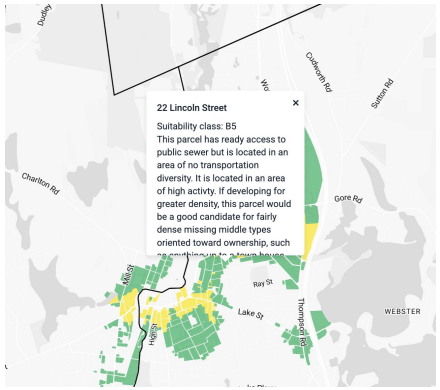
Group C - somewhat limited

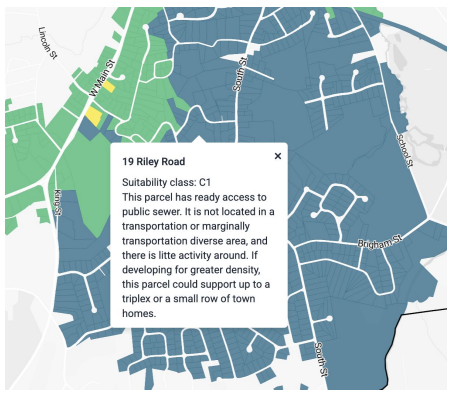
Areas lacking the sewer infrastructure needed to support more meaningful housing density. Given their proximity to activity centers, their relative transportation diversity, and/or water infrastructure, however, they may be able to support slightly more housing diversity than other areas.

Group D - limited

Areas without sewer or water infrastructure, activity centers, or transportation diversity. Still buildable, but not likely supportive of much housing diversity or density.







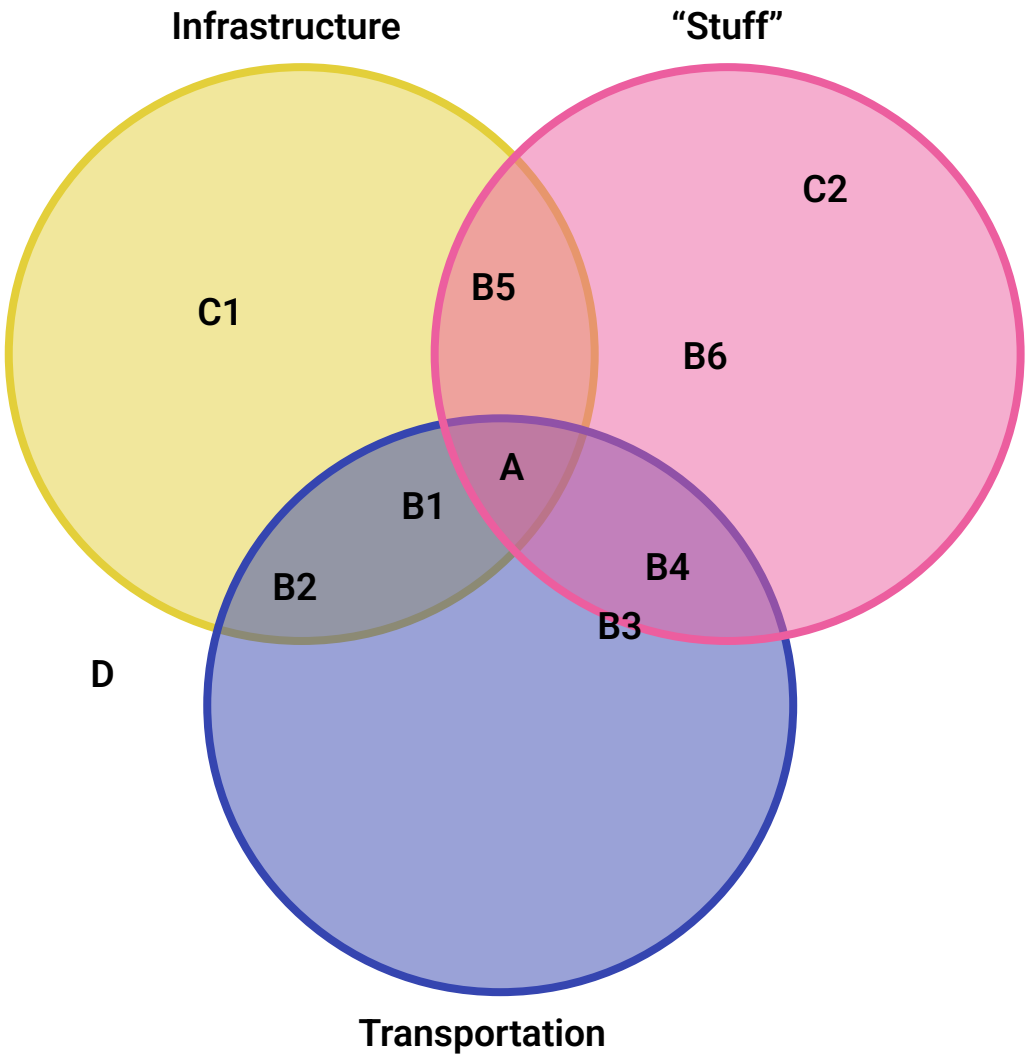


Matching suitability with development types

The suitability analysis provides a theoretical and practical framework for understanding the housing readiness of an area.

General recommendations for development and supported density were made using the suitability score and each score's contributing factors. Areas with high transportation diversity, a high mix of land uses, and sewer and water, for example, would support high density development within the CMRPC region; the development suitability group would then be the most diverse and dense. Conversely, an area with limited land use mix, no sewer, and limited transportation diversity would receive a development recommendation limited to a duplex or single family home with an ADU.

These recommendations reflect current conditions, not future potential. An area that scores low today because it lacks sewer, water, or transportation diversity could still become a viable activity center through coordinated infrastructure, transportation, and land use investment; the suitability score simply hasn't captured that possibility because it doesn't exist yet. The Strategies Toolkit offers insights into the types of investments and programs that can support higher levels of housing suitability.



Examples of development typologies by suitability class

Each suitability class is made up of a range of applicable development typology. The way to think about each group is by its associated housing diversity and density. For example, group A is designated as areas that support the greatest diversity and density of housing, whereas group D supports the least. The following describes each group in terms of housing typologies.

A. All, though the most financially feasible may be the five-pack (v) and apartment house (vi) due to higher land costs in already-developed areas. Denser development also offers the greatest benefit in these areas.

B. Smaller-scale multi-unit development such as triplexes (iii) and townhomes (iv) as well as single family variations and duplexes. Many areas in the 'B' class may lack proximity to 'stuff' or transportation infrastructure.

C. Based on lot size, these parcels may be able to support triplexes or townhomes, however a lack of sewer infrastructure keeps those development typologies from being blanket recommendations on smaller lots. Without infrastructure and ample space, 'C' parcels are most suitable for up to a duplex (ii).

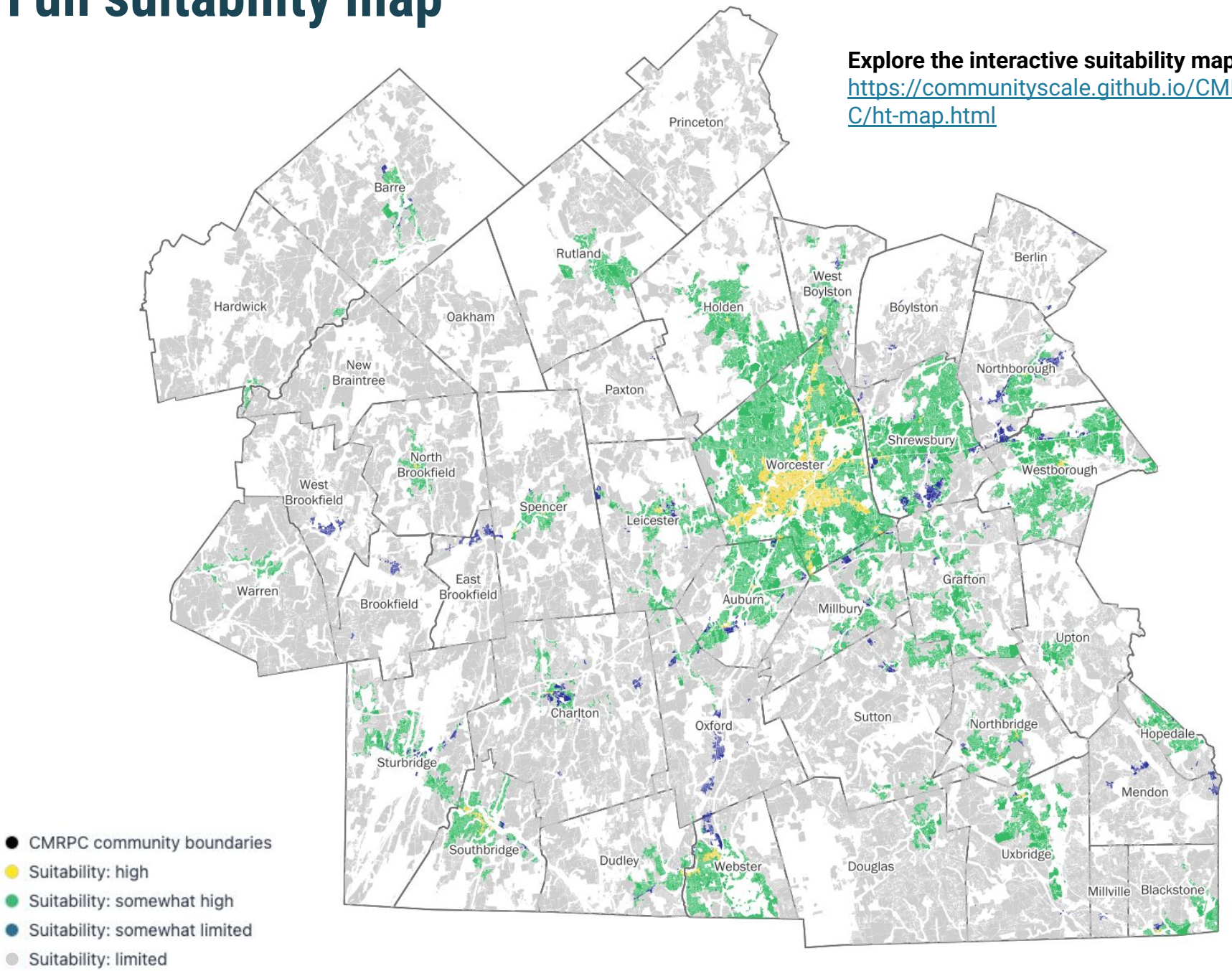
D. Generally suitable for single family dwellings, single family dwellings with an ADU (i) and duplexes (ii) without additional intervention. Class 'D' is considered the rural residential class in which greater density is hard to achieve due to form and function and also offers the fewest transportation benefits.



These are illustrative examples with example minimum lot dimensions. Larger buildings could also be suitable, and subdivisions could support different development types as well.

Full suitability map

Explore the interactive suitability map:
https://communityscale.github.io/CMRPC/ht-map.html



Highlighting regulatory barriers to housing-diverse development

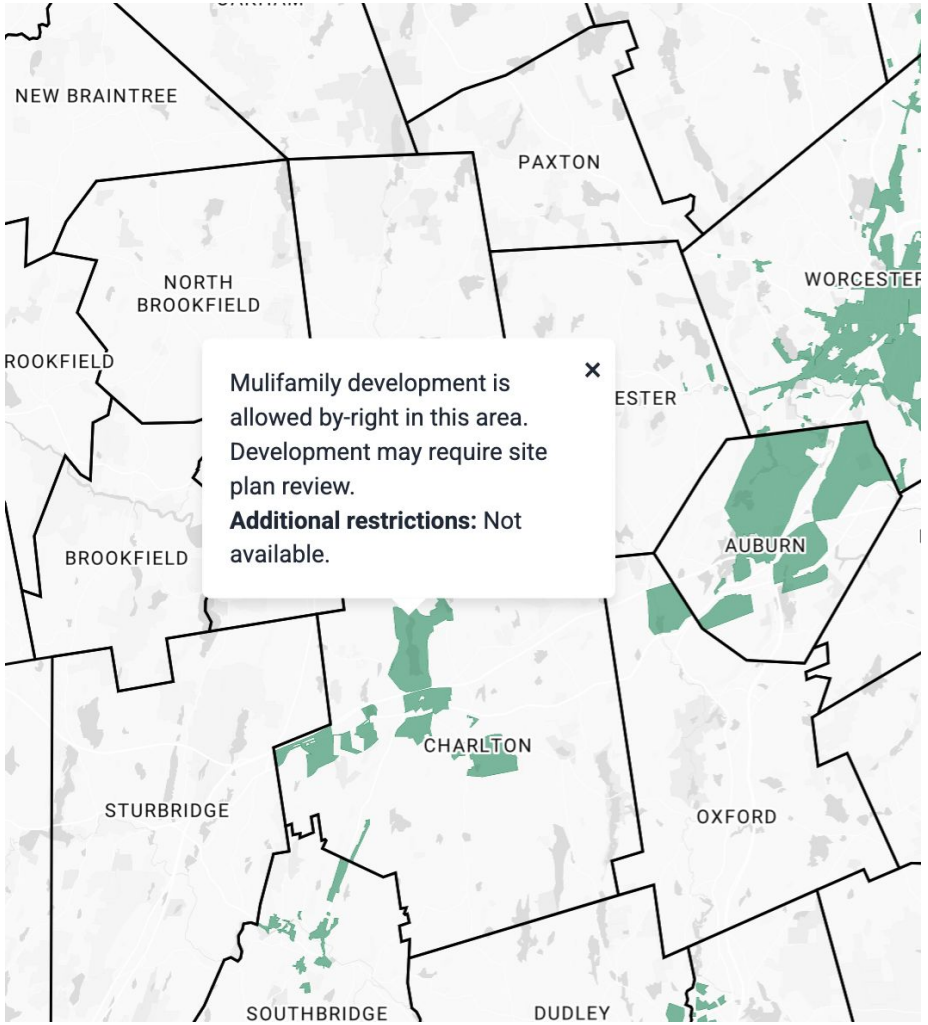
The suitability analysis and resulting development type recommendations are zoning agnostic. The real-world practice of development—particularly dense development— is not.

Regulatory barriers, such as restrictive zoning, play an important role in the basic feasibility of a project. To understand where the recommended development may be possible, the “multifamily possible” overlays highlight areas across the CMRPC region where current local zoning allows multifamily development by right, by site plan review, or by special permit.

Additional zoning layers look at areas where zoned density is both exceeded and where there is excess capacity for development to address where development potential may exist or be unlocked via upzoning.

Multifamily development, for the purpose of this study, is defined as 3 or more units on the same parcel.

Each of these layers is available on the study’s mapping platform.



Overlays: opportunities and risks

The set of overlays included in the online mapping tool were developed to highlight opportunities for and risks to development across the region. When used in conjunction with the suitability layer and other data layers, these overlays may provide additional context to the feasibility and suitability of different development types and strategies across the region.

Opportunities included both individual opportunity sites such as vacant lots and more broad opportunities such as where land is available as a discount (or premium).

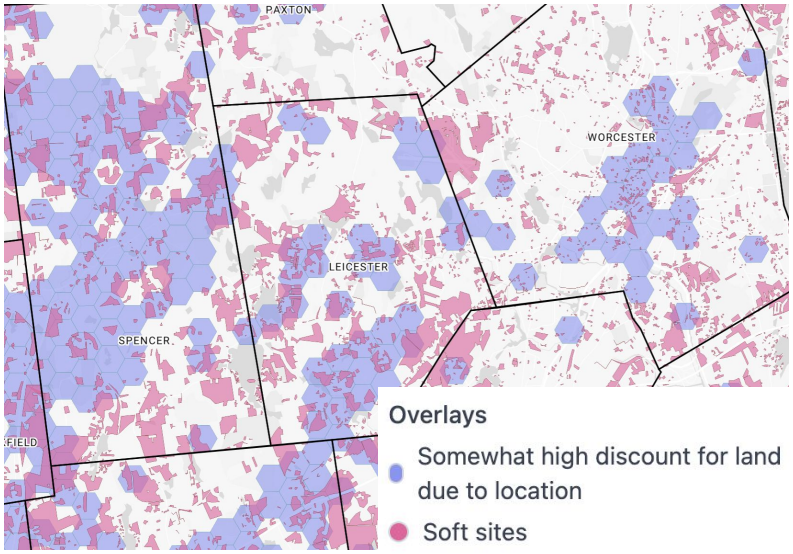
Example opportunity layers:

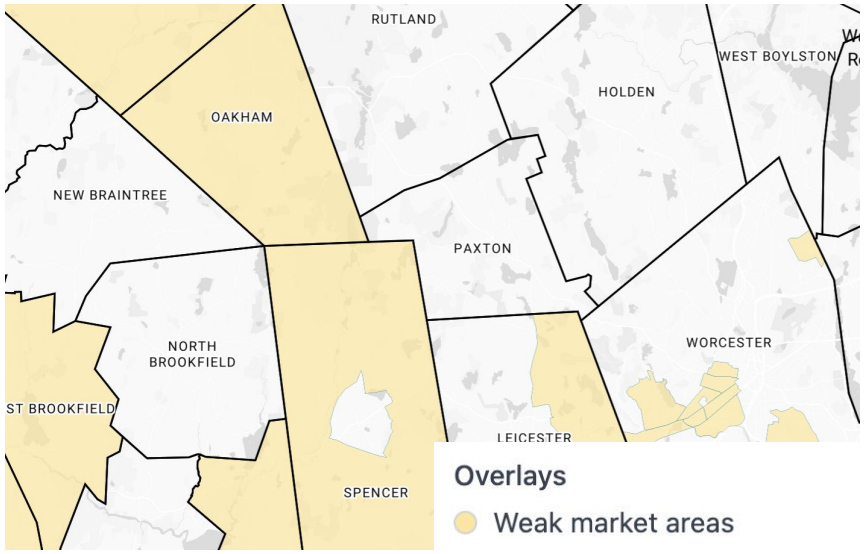
- Vacant sites
- “Soft” sites
- Land premiums and/or discounts
- Publicly held land

Risks overlays provide both policy recommendations based on market strength and awareness of potential inequity and vulnerability to market forces.

Risk layers:

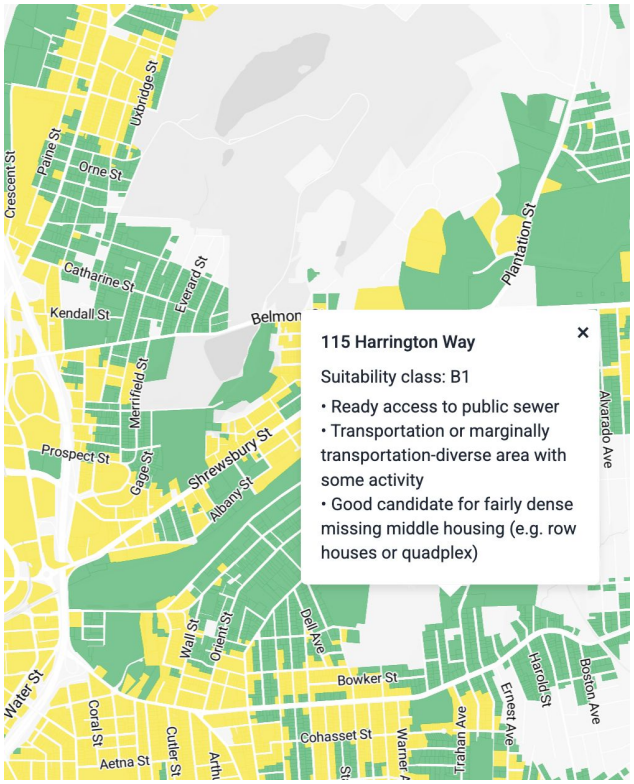
- Market strength
- REJ+ overlays
- Displacement risk





How to increase an area's suitability?

For each parcel, the variables that inform its suitability classification are outlined in the associated map "tooltip" (the text box that pops up when a user clicks on a parcel in the suitability layer). For parcels not in Group A, the inputs that keep that specific parcel from supporting greater housing diversity are outlined directly. In class B, this might be a lack of transportation infrastructure or 'stuff.'



Below is a list of potential interventions that communities can pursue to increase the suitability of a priority area of town - where housing diversity makes sense in theory, but where on the ground realities (such as gaps in walking infrastructure or a lack of access to a grocery store) limit potential. Many of these interventions, or the policies and programs that facilitate them, are outlined in further detail in this study's Strategies Toolkit.

- Increase transportation access and pedestrian quality
- Encourage a diversity of land uses in residential and commercial districts
- Expand and/or increase the capacity of critical infrastructure and utilities



Strategies toolkit summary

Strategies overview

Translating the study's analysis and engagement into opportunities for action, the strategies toolkit compiles policy and investment strategies that can help address housing and transportation challenges and opportunities uncovered through this process. These strategies are options, not explicit goals or recommendations: not every strategy will be relevant or necessary for every community, and the right combination will depend on each community's specific conditions, priorities, and capacity. The strategies in this section are primarily oriented toward public entities like cities, towns and regional planning agencies, but many of the approaches are transferable to other stakeholders and local and regional housing partners. Strategies are organized by topic and include three different levels of commitment and complexity, from policy changes to program implementation to partnership investment. The study includes this range of topics and strategy types to provide a wide range of ideas and solutions the region's municipalities and other stakeholders can draw from and apply locally as needed.

STRATEGY TOPICS

Housing Affordability and Cost Barriers: Addressing the cost of accessing and maintaining housing, especially for lower income residents, first-time homebuyers, and residents aging in place.

Housing Diversity and Development Regulations: Expanding the variety of housing types available, especially in response to gaps in the region's supply and demographic trends toward smaller households and an aging population.

Transit Access, Connectivity, and Quality: Increasing the quality and diversifying the character of transit service, while pairing infill and new development nodes with the highest quality existing infrastructure.

Active and Novel Transportation Solutions: Creating high quality facilities to support diverse transportation options by targeting transportation diverse areas and exploring novel technologies with new studies.

Coordinated Regional Land Use and Transportation Planning: Integrating how the region and its municipalities approach housing and transportation policy, planning, and investment.

STRATEGY TYPES

Policy changes a rule. These are passive actions with minimal cost, such as updating a zoning code or redirecting existing funding streams. Policies are generally enacted at the municipal level.

Program takes an active role. These involve cost and commitment, such as funding a staff position, launching a grant program, or creating an ongoing initiative. Programs may be enacted at the municipal or regional level.

Partnerships are catalytic investments with higher cost and commitment, such as contributing public land to a development, creating a municipal housing fund, or entering joint ventures with developers.

Strategies matrix

Topic	Policy	Program	Partnership
Housing Affordability and Cost Barriers	Adopt property tax stabilization for income-qualified seniors. Dedicate CPA and other local discretionary funds toward housing production and rehabilitation.	Centralize knowledge regarding state and other funding opportunities as a resource for the region's municipalities and residents. Establish a regional homebuyer education and small landlord support program.	Create municipal affordable housing trust funds with dedicated revenue. Establish a regional housing land bank and/or investment fund.
Housing Diversity and Development Regulations	Update zoning to allow multifamily and missing middle housing by right, especially in areas with high housing suitability.	Share regional planning and permitting staff and supporting resources across small communities. Develop model zoning bylaws tailored to the region's different place types.	Contribute public and nonprofit land for housing development that fills gaps in the supply. Explore strategic sewer and water infrastructure extensions that unlock potential housing sites.
Transit Access, Connectivity, and Quality	Adopt transit-supportive land use policies near existing and planned high-quality transit stops. Prioritize "transit ready" building with high intersection and activity density.	Increase transit frequency, expand service, and improve route interconnectivity where feasible and in alignment with WRTA CRTP. Consider new routing such as crosstowns to increase connectivity. Further consider limited stop routes to enhance speed of service from outlying communities. Expand microtransit service pilots and TDM partnerships connecting employers and housing to transit hubs.	Advocate for regional transit links such as Providence-to-Worcester and E-W rail, and high speed/frequency commuter busses that connect regional urban centers. Establish mobility hubs at key regional transportation nodes and transit interfaces.
Active and Novel Transportation Solutions	Require sidewalk and bicycle connections in all new residential development approvals. Prioritize installing sidewalks, bicycle racks, and ancillary active transportation amenities in areas with high intersection and activity density.	Invest in targeted sidewalk, crossing, and bus shelter improvements at key nodes. Develop human-scale zoning and urban design model policies and encourage adoption throughout transit diverse areas.	Build protected multimodal corridors connecting housing clusters to services. Pilot municipal carshare, UTV communities, and other novel technology/policy studies, specifically targeting older or lower income adults.
Coordinated Regional Land Use and Transportation Planning	Align local master plans with regional housing and transportation suitability analysis. Formalize co-location as a transportation strategy.	Fund a regional housing and transportation coordinator position at CMRPC. Develop model bylaws that compliment housing uses with increased economic activity and innovation.	Form a regional housing compact with shared infrastructure investment commitments.



Supplemental report

Supplemental report

Supporting the Main Report, this supplemental appendix provides additional detail and documentation on housing, transportation, and strategies topics as well as methodology descriptions for many of the analyses used in this study.



Housing assessment

Detailed analysis of household demographics and housing needs and supply across the region.



Transportation system assessment

Detailed analysis of transportation systems in the region, including bicycle, pedestrian, transit and other networks.



Housing and transportation connection

Synthesis of housing and transportation access and cost factors, including “persona” based affordability scenarios.



Strategies toolkit details

Detailed description of housing and transportation policy recommendations for regional and municipal stakeholders to consider.



Methodology

Description of methods and sources behind key analyses from the study.



Housing assessment

Growth: Household income

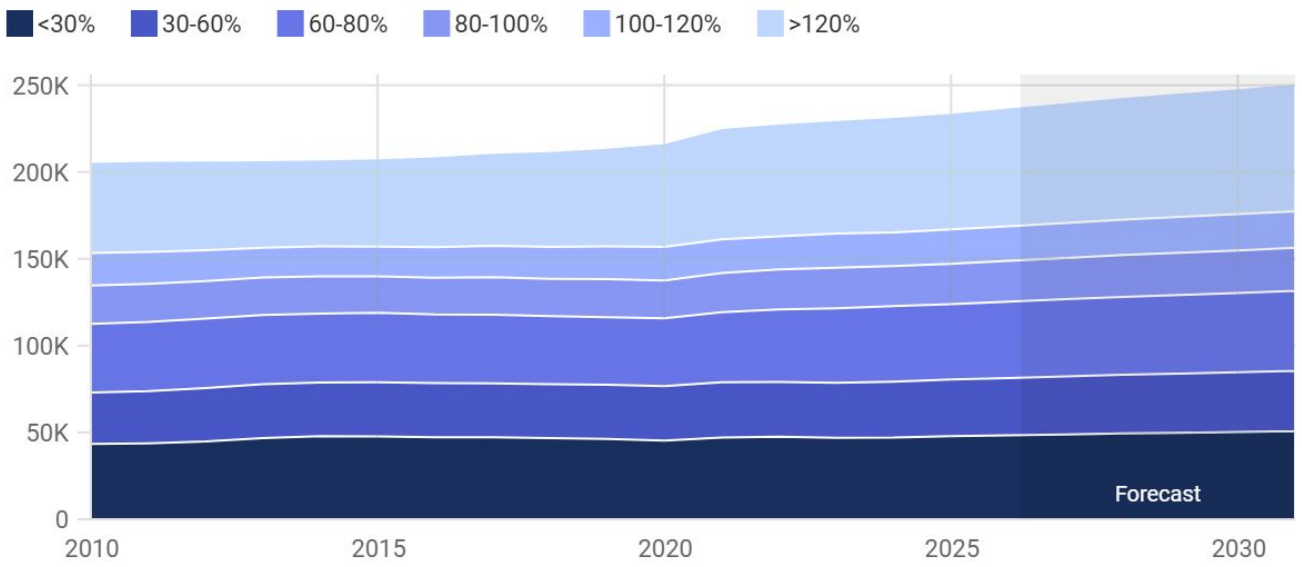
Source: 2010-2024 ACS 5-Year, CommunityScale, RTP, CPI, HUD

This study organizes household incomes by Area Median Income (AMI), a standard metric used by the US Department of Housing and Urban Development (HUD) and other agencies to compare housing affordability between households and over time. Maximum housing costs and prices are calculated as 30% of total household income, the threshold above which households are considered “cost burdened.”

In the CMRPC region, like many parts of the country, lower-income households tend to be older, with fewer wage-earning members (households with 0 earners are likely living on fixed incomes such as social security).

Household growth by income group

Projected households by AMI group through 2031.



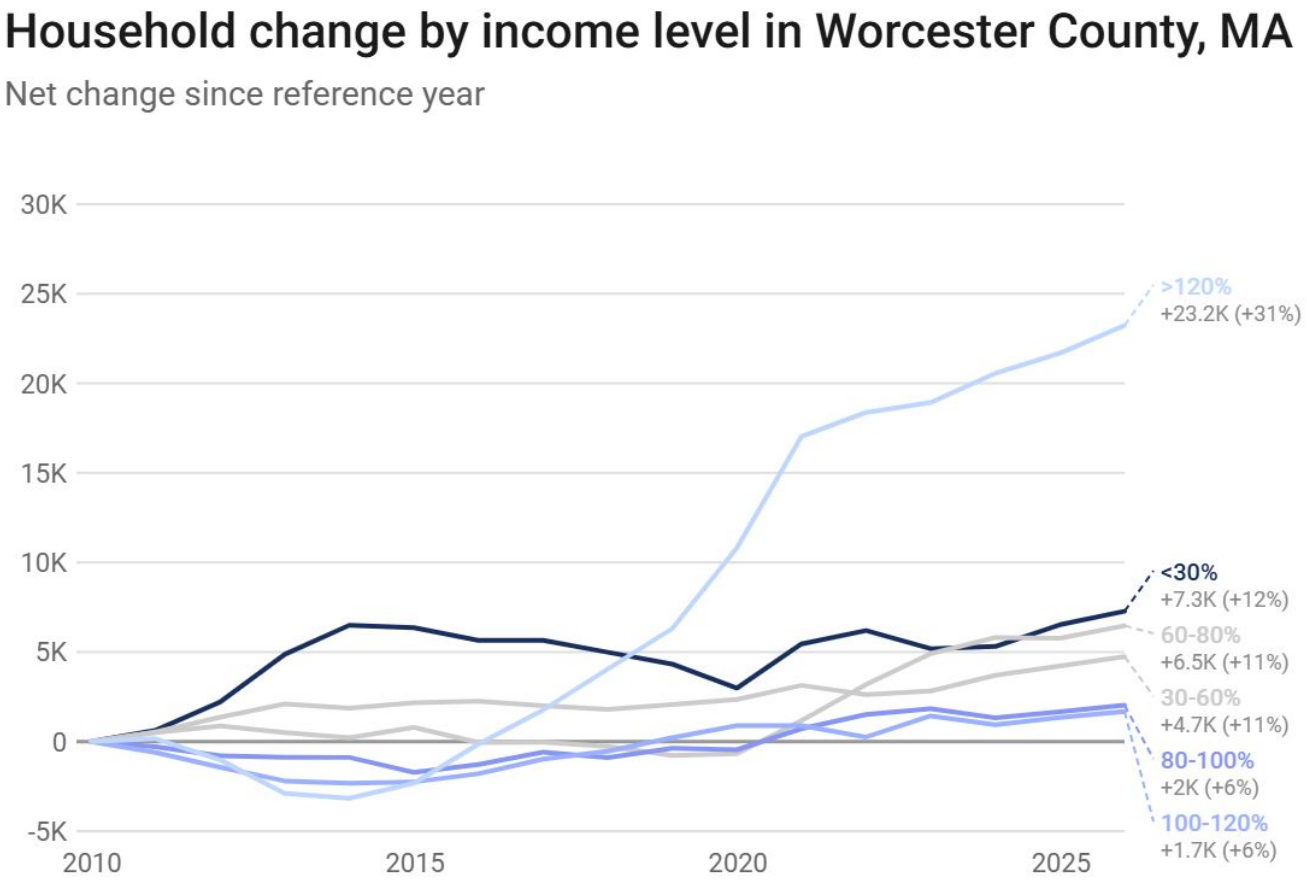
AMI Group	Income Range	Households	Max Monthly Costs	Max Purchase Price
<30% AMI	<$39K	50,055	<$981	<$154,816
30-50% AMI	$39K - $66K	33,831	<$1,640	<$259,491
50-80% AMI	$66K - $105K	43,071	<$2,619	<$414,810
80-100% AMI	$105K - $131K	23,368	<$3,277	<$520,199
100-120% AMI	$131K - $157K	20,086	<$3,939	<$624,593
>120% AMI	>$157K	69,833	>$3,939	>$624,593

Growth: Household income

Source: 2010-2024 ACS 5-Year, CommunityScale, RTP, CPI, HUD

All income groups have grown since 2010, but the highest-income cohort has grown the fastest, especially in the years leading up to the pandemic. The lowest income groups are the next fastest growing, while middle-income groups earning 80–120% AMI are growing the slowest.

Contributing factors to the growth in the highest-income cohort likely include in-migration from the Greater Boston region, aided by the expansion of remote and hybrid work; a growing college-educated workforce; and broader national trends in income polarization. Anecdotal accounts from communities throughout the CMRPC region support this, and Census Bureau county-to-county migration flow data provides some quantitative backing: net migration between Worcester County and the core Boston-area counties — Suffolk, Middlesex, and Norfolk — has been meaningful, with recent estimates indicating a net inflow of roughly 2,000 to 3,600 people annually.



Demographics: Age

Source: 2010-2024 ACS 5-Year, CommunityScale

The region is getting older, with more growth expected among the 65+ age group than others in the coming decade.

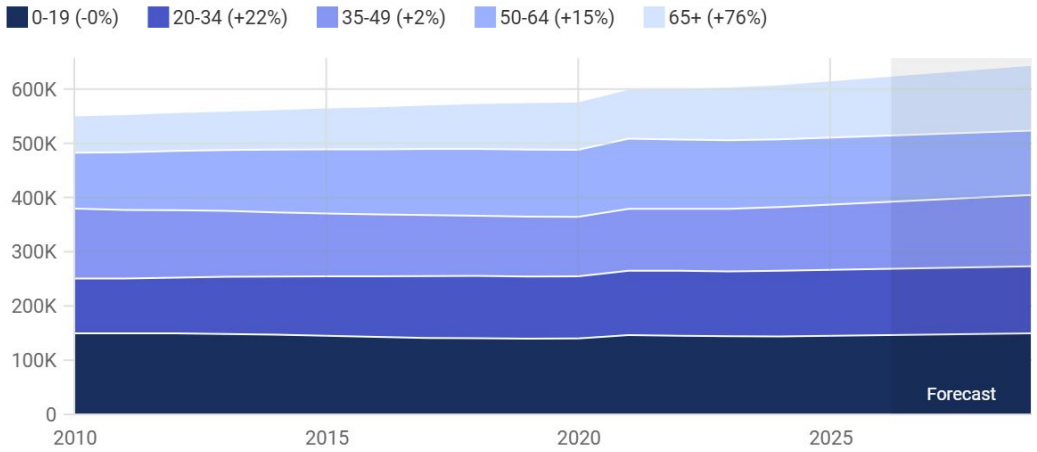
A growing senior population could translate into increased demand for downsizing opportunities, such as empty nesters trading large single family homes for smaller townhomes and condos. As outlined in subsequent pages, these housing types are of limited supply in the region and are infrequently built.

The population by age group forecast is based on cohort change ratios and differences (a modified Hamilton-Perry model) for cohorts defined by 5-year age groups and sex using Table B01001 from the 5-year ACS for years 2010-2023.

Potential downsizing seniors, 2025-2035	
65+ households of 1-2 people in 3+ bedroom units	42,259
Potential annual downsizing rate	1.0%
Downsizers (and the units needed to accommodate them) over the next 10 years	**4,226**

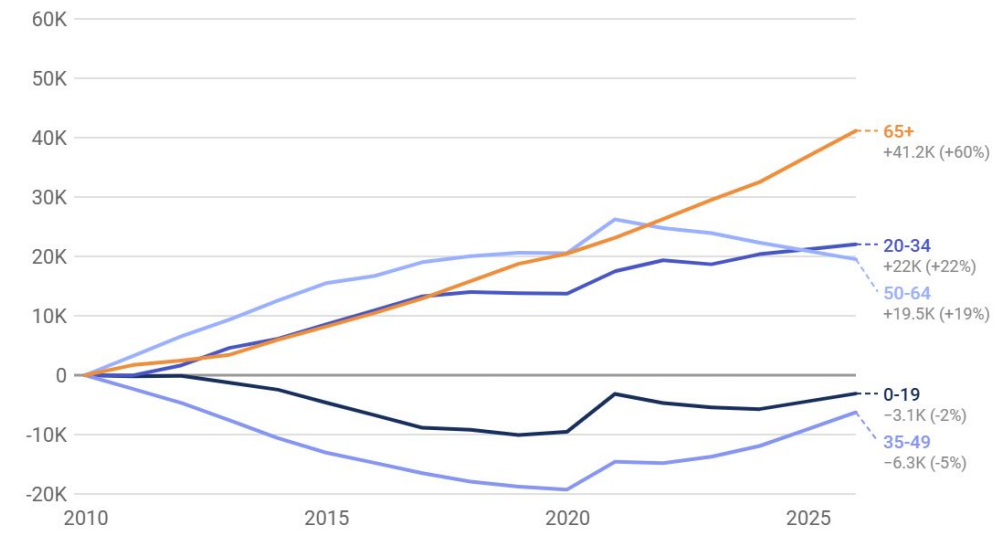
Population by Age Group

Historical and projected population from 2010 to 2029.



Population change by age group in CMRPC Region

Net change since reference year



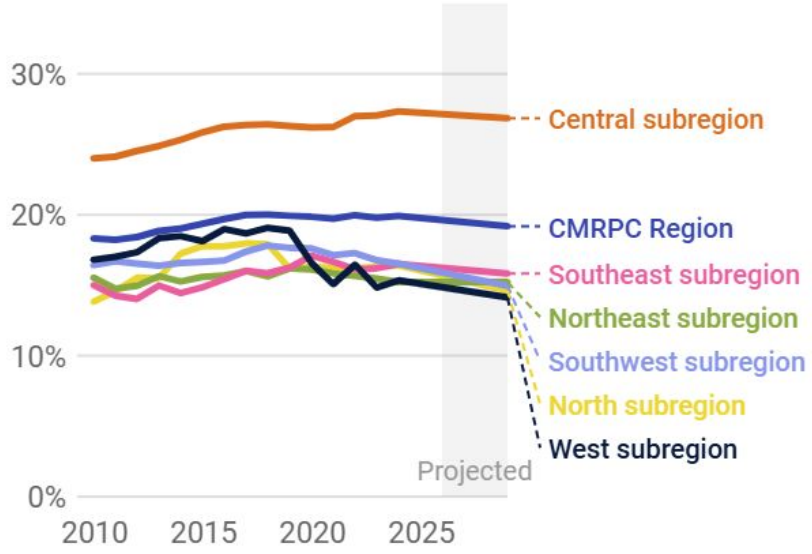
Demographics: Age

Source: 2010-2024 ACS 5-Year, CommunityScale

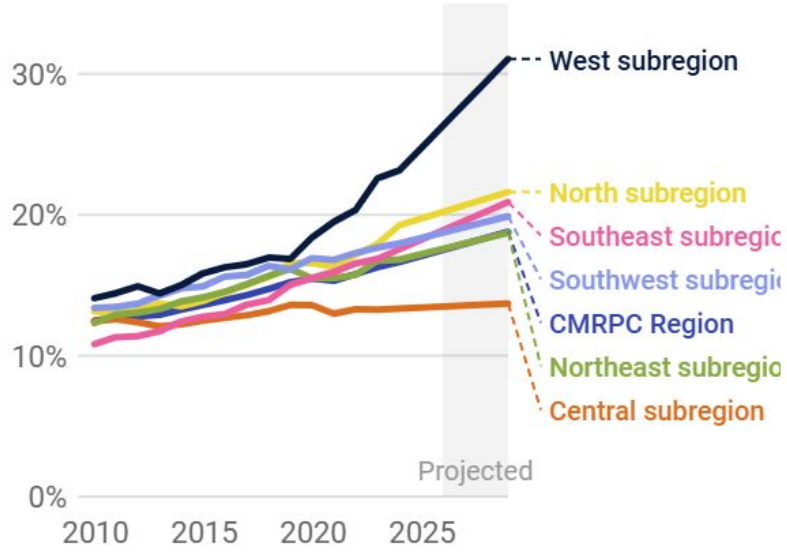
From a workforce perspective, population change by age group suggests a potentially problematic pattern in most parts of the region. In general, the share of the population entering the workforce (age 20-34) is declining while the share aging out of the workforce (age 65+) is growing. The Central subregion is least impacted by this trend whereas the West subregion reflects it most pronouncedly.

This shift carries several compounding challenges. A shrinking working-age population can make it harder for businesses to hire and retain workers, potentially leading employers to locate or expand elsewhere, with downstream effects on the regional tax base and economic vitality. On the municipal budget side, the picture is nuanced: while households with children drive the largest share of local spending through education costs, an aging population shifts demand toward senior services and away from the school-age households that have historically anchored municipal fiscal planning. The transportation implications are significant as well: seniors who can no longer drive become highly dependent on transit and other mobility options, adding pressure to a region where car dependency is already a structural challenge for many residents.

Historical and projected share of population aged 20-34



Historical and projected share of population aged 65+

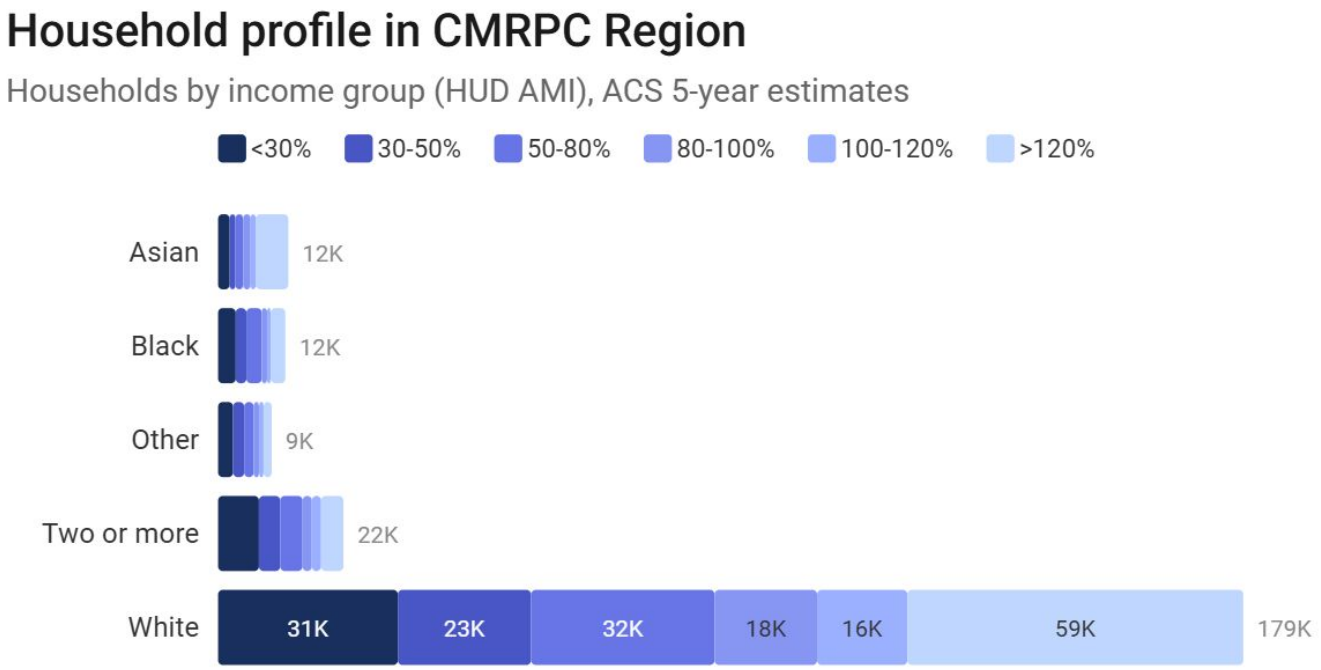


Demographics: Race

Source: 2024 ACS 5-Year, CommunityScale

The region's householder population is mostly white, with much smaller shares of non-white groups.

Each racial group is somewhat evenly distributed by income, though Asian householders are more likely to be higher income than other groups.



Demographics: Family structure

Source: 2015-2024 ACS 5-Year, CommunityScale

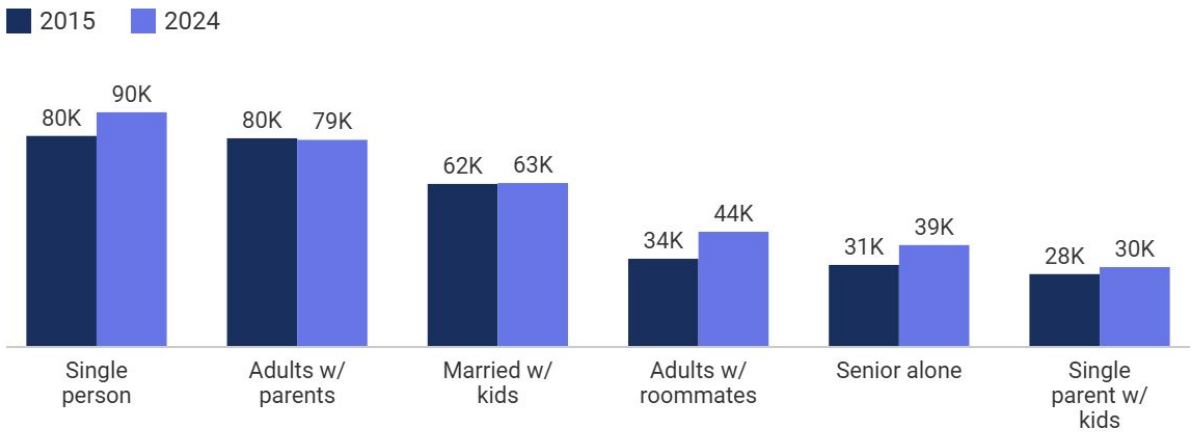
Over the past decade, household growth in the region has been driven primarily by single-person households, adults living with roommates, and seniors living alone. This is a notable shift away from the family-with-children households that have historically dominated growth across the country.

These changes in household composition have direct implications for housing demand. Smaller households, particularly seniors living alone, tend to benefit from smaller units with proximity to services, amenities, and healthcare rather than the larger single-family homes that make up the majority of the region's existing housing stock.

The significant growth in adults living with roommates may signal something different: pent-up demand for lower-cost or alternative housing options, where people are doubling up not by preference but because they cannot afford to rent or buy alone, or because suitable options simply aren't available. Taken together, these trends reinforce other indicators from this study suggesting that diverse housing development — more unit types, more sizes, more tenure options — is likely to become increasingly important to the region over the coming decade.

Changing household types in CMRPC Region

Change in households by type from 2015 to 2024.



Demographics: Families with children

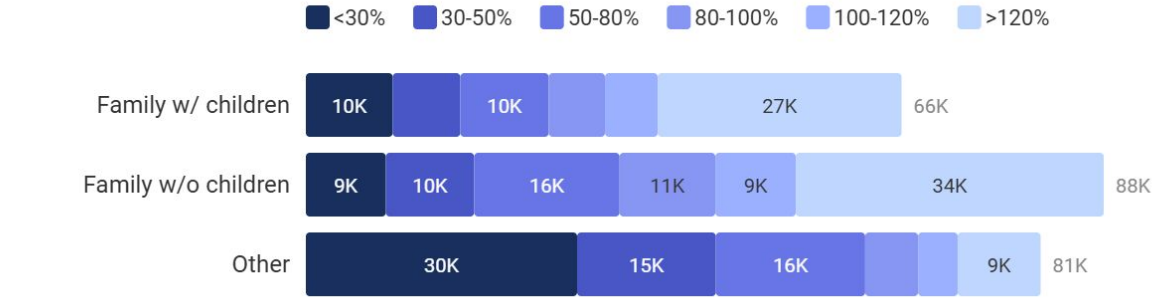
Source: 2015-2024 ACS 5-Year, CommunityScale

Across the region, families without children are the most common household type, and nonfamily households — including single-person households — are growing the fastest. Families with children are declining in some subregions and growing only slowly in others, with the Central subregion as a notable exception where all household types are growing at a more comparable pace.

These shifts reinforce the broader pattern emerging across the region's demographic data: household makeup may be moving away from those that demand larger single-family homes traditionally built for growing families and toward smaller units suited to singles, couples, and other non-family arrangements. For a housing stock that skews heavily toward larger detached units, this represents a meaningful and growing mismatch between what exists and what an increasing share of households may actually need.

Household profile in CMRPC Region

Households by income group (HUD AMI), ACS 5-year estimates



Change in family type by subregion

	Families with Children			Families without Children			Nonfamily Households		
	2015	2024	Change	2015	2024	Change	2015	2024	Change
CMRPC Region	67,622	71,689	**+6%**	71,532	81,695	**+14%**	69,557	80,859	**+16%**
North Subregion	5,697	5,977	**+5%**	6,897	8,140	**+18%**	4,122	4,910	**+19%**
Northeast Subregion	10,529	11,299	**+7%**	10,135	11,541	**+14%**	7,020	9,174	**+31%**
Central Subregion	19,974	22,903	**+15%**	19,196	22,299	**+16%**	29,406	34,299	**+17%**
Southeast Subregion	14,797	14,538	**-2%**	14,559	17,623	**+21%**	10,901	12,422	**+14%**
Southwest Subregion	11,867	12,634	**+6%**	13,427	13,992	**+4%**	11,997	13,571	**+13%**
West Subregion	4,758	4,338	**-9%**	7,318	8,100	**+11%**	6,111	6,483	**+6%**

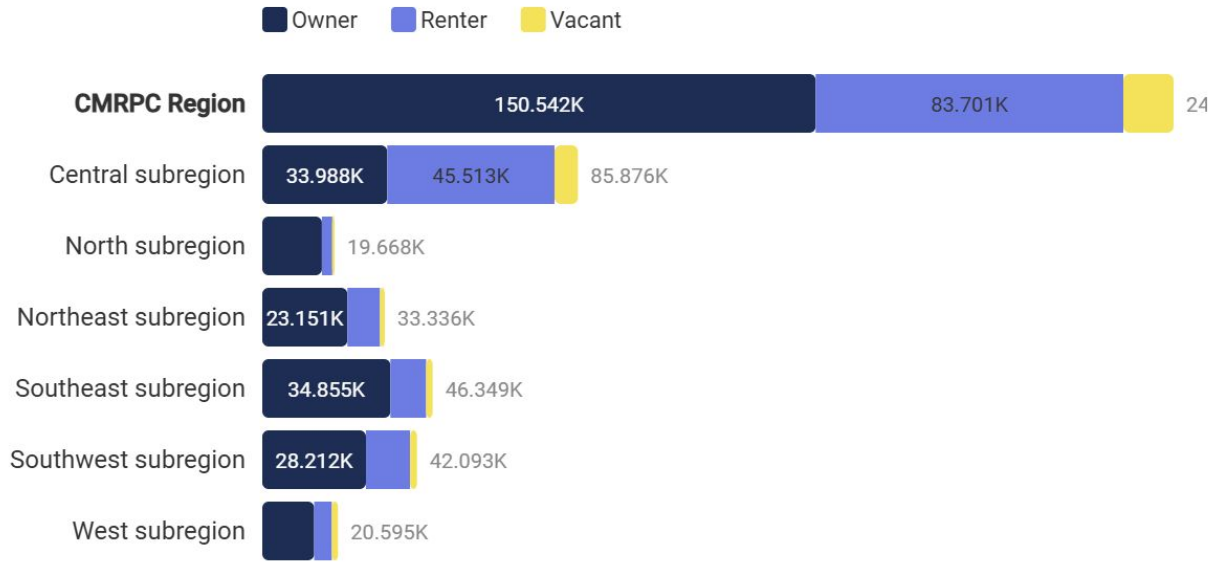
Housing stock: By tenure

Source: 2024 ACS 5-Year, CommunityScale

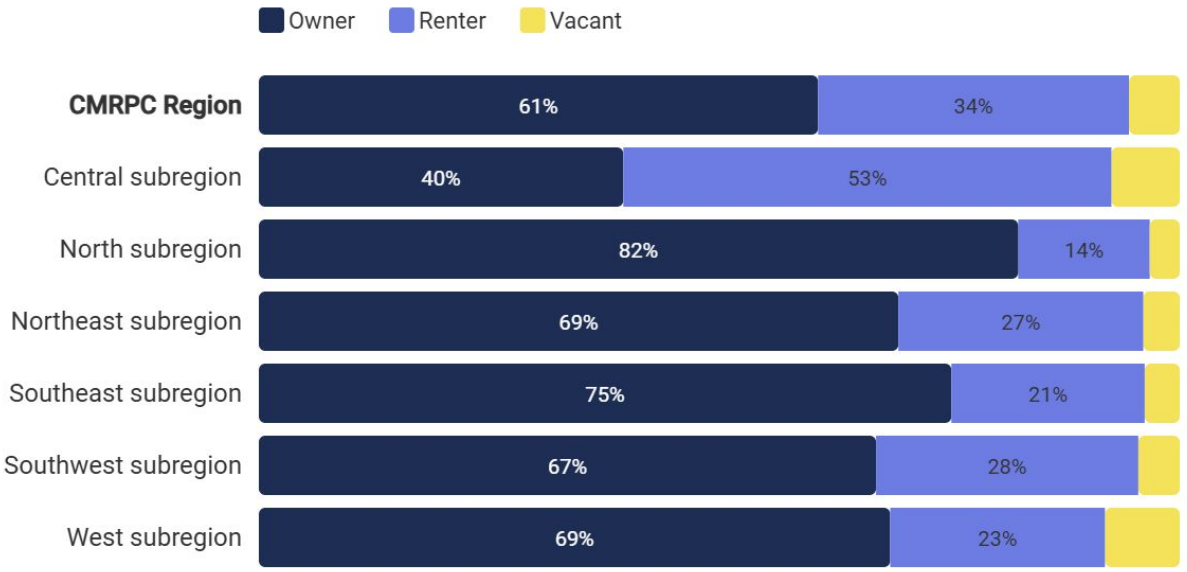
Outside of the Central subregion, the region's housing stock is overwhelmingly oriented toward ownership, with ownership units making up more than 70% of all units in most subregions and detached single-family homes dominating that ownership stock. This concentration leaves limited choices for households seeking alternatives to homeownership — a growing share of the population, as the demographic trends outlined previously suggest.

The rental market is particularly thin in subregions like the North and West, where few rental units exist at any price point. While those subregions do offer lower rental costs relative to their eastern counterparts, the scarcity of options means that affordability alone doesn't translate into meaningful acces for prospective renters. For households seeking a range of rental opportunities, the Central subregion currently stands out as the best-positioned part of the region. This is a reflection of Worcester's comparatively denser and more diverse housing stock.

Housing stock by tenure, total units



Housing stock by tenure, share of total units

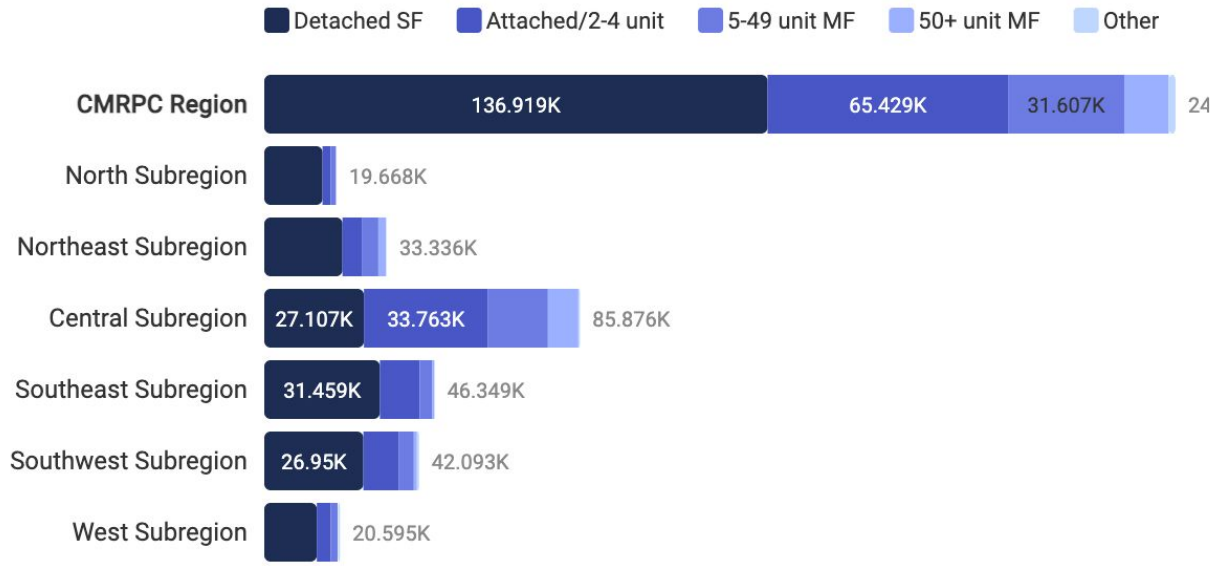


Housing stock: Structure type

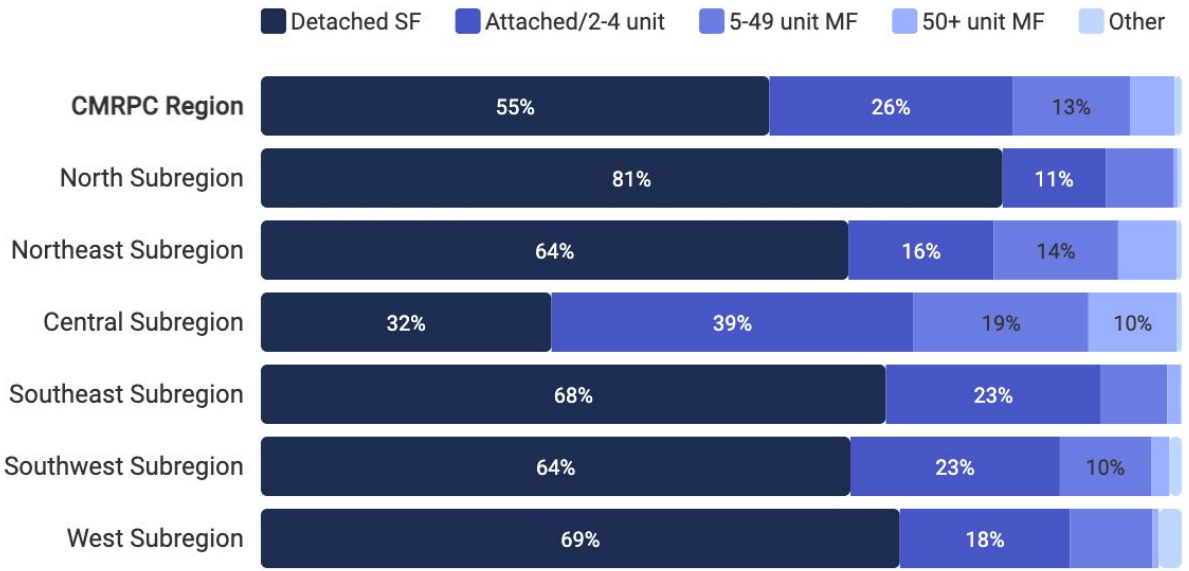
Source: 2024 ACS 5-Year, CommunityScale

The region's housing stock is dominated by detached single-family homes across nearly every subregion, with the Central subregion as the notable exception where the majority of units are in attached two-to-four unit configurations. In subregions like the North and West, multifamily housing is scarce, leaving households seeking alternatives to detached single-family ownership with few viable options locally.

Housing stock by structure type, total units



Housing stock by structure type, share of total units

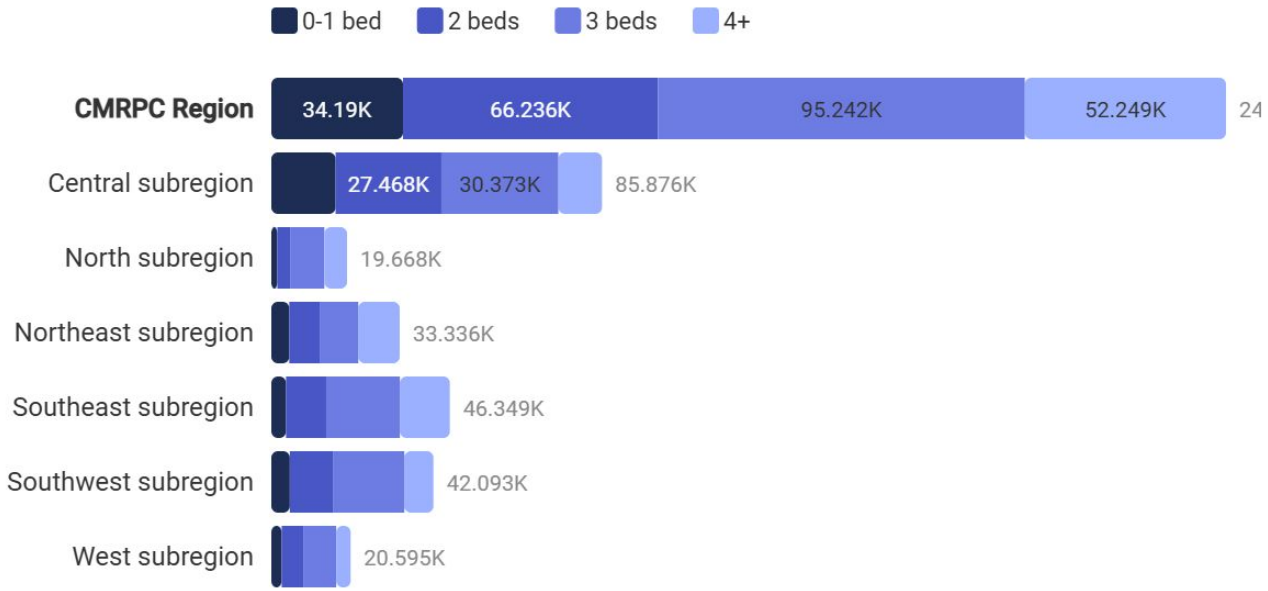


Housing stock: Unit size

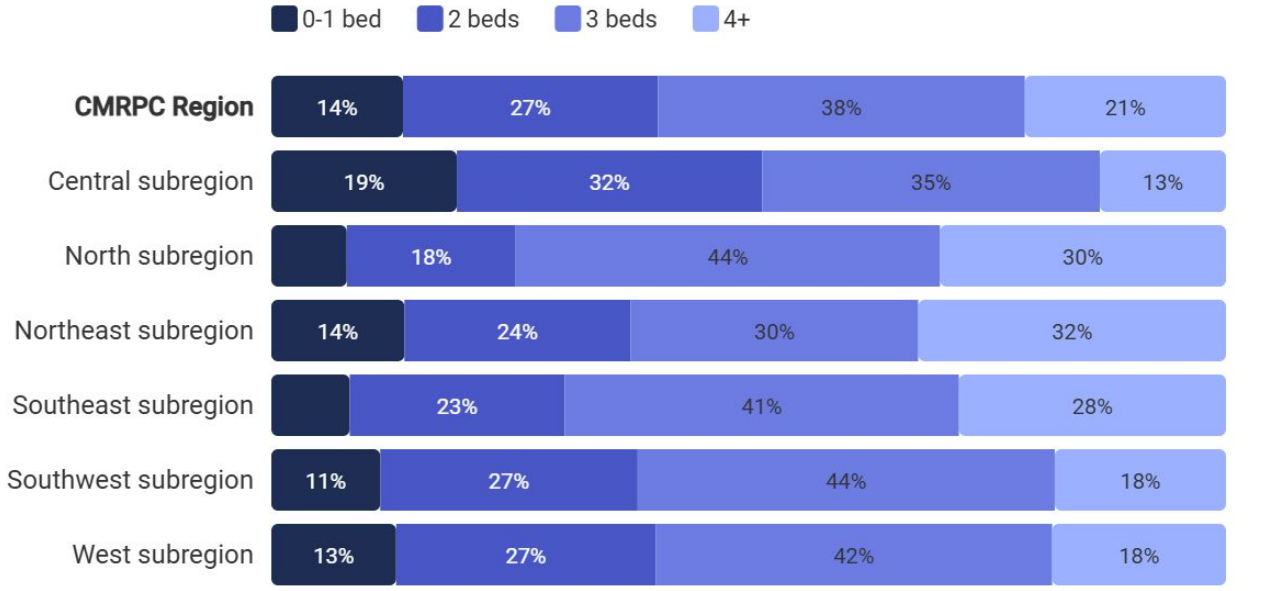
Source: 2024 ACS 5-Year, CommunityScale

Most units across the region contain 3 or more bedrooms, a format ideal for families with children. However, given demographic trends toward fewer families and smaller households, the region is too weighted toward larger units and may lack enough smaller choices to keep up with shifting demand away from large houses.

Housing stock by unit size, total units



Housing stock by unit size, share of total units



Housing stock: Production by decade

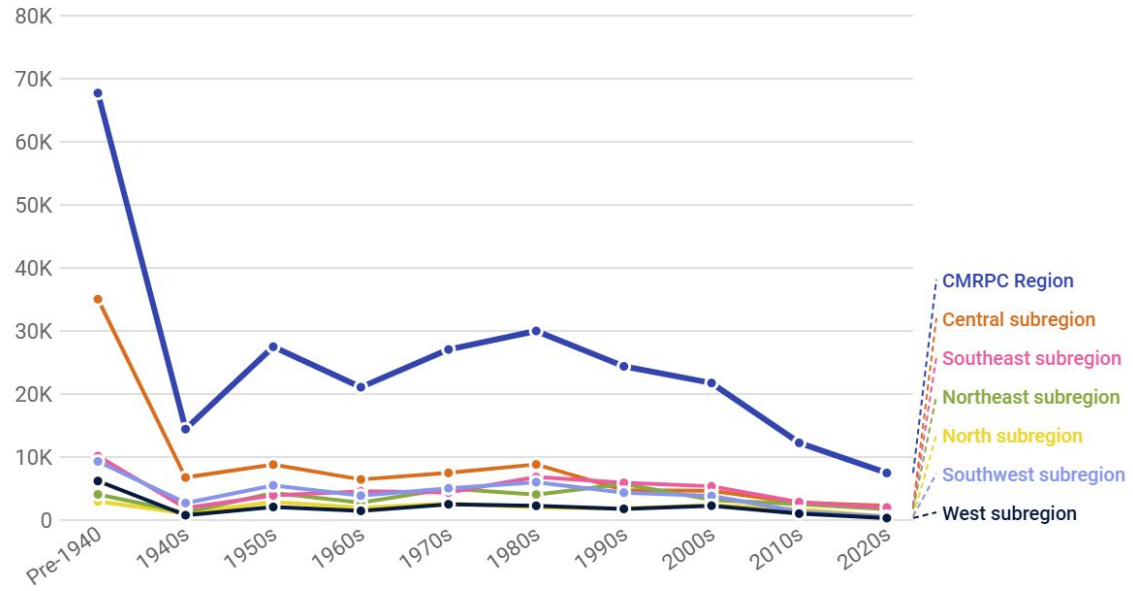
Source: 2024 ACS 5-Year, Census Building Permit Survey, CommunityScale

Housing production across the region has slowed considerably compared to the 1980s and 1990s, a trend that cuts across all subregions even as the pace of development varies between them. This slowdown has happened against a backdrop of growing demand and a housing stock already misaligned with shifting household needs. This is a combination that puts meaningful pressure on affordability and availability.

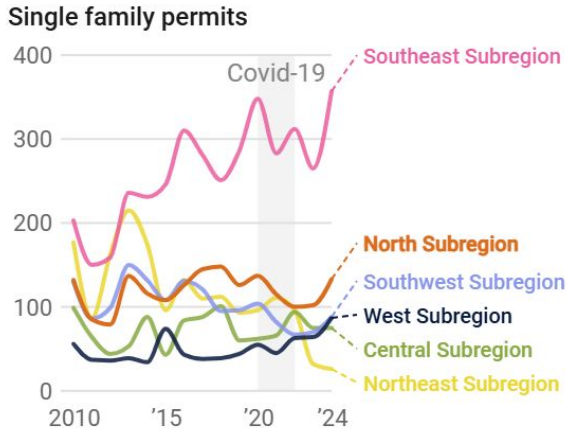
Building permit data offers a more current window into where and what the region is building. The Southeast subregion is producing single-family homes at a rate that rivals the rest of the region combined, while multifamily development remains concentrated almost entirely in the Central subregion.

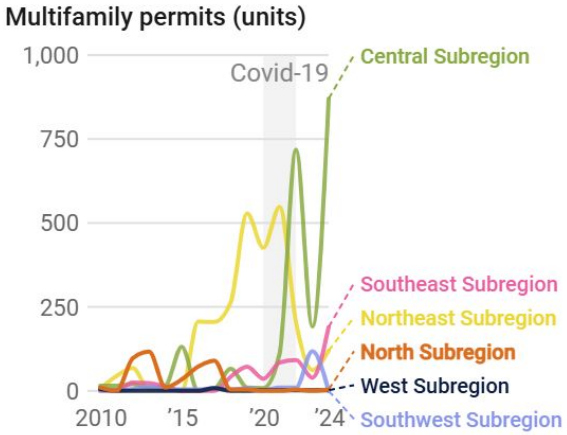
Housing production by decade

ACS 2024 5-year estimates (B25034); 2020s from Building Permit Survey



Annual Building Permits





Housing stock: Ownership prices and costs

Source: Zillow, CPI, FRED, Census ACS 2015-2024, CommunityScale

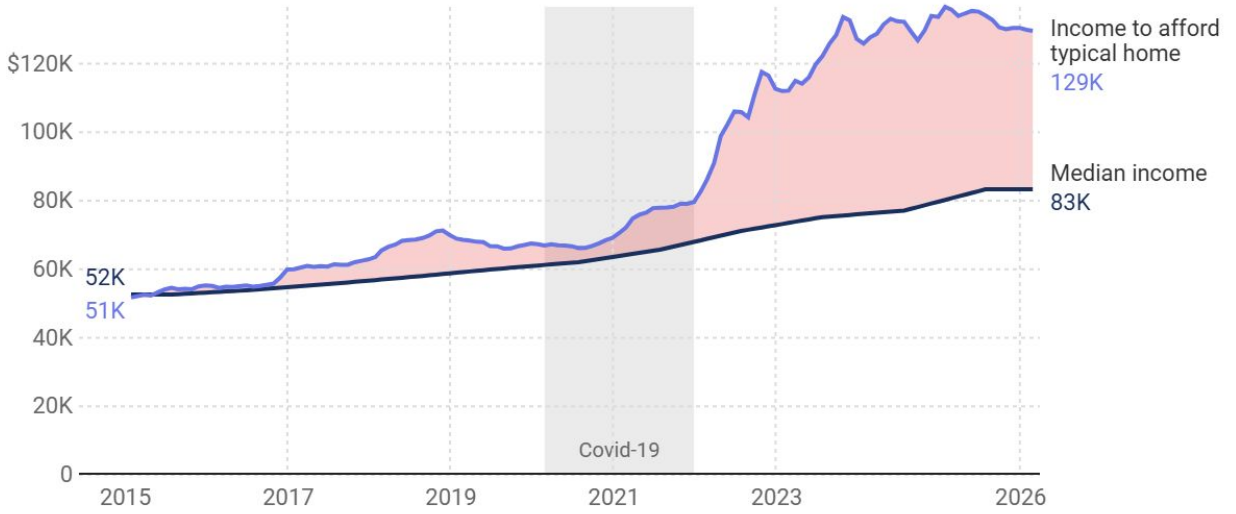
One measure of housing affordability compares what a household earning the median income could reasonably afford to spend on a home against what homes are actually selling for over the same timeframe. When the affordable price and the typical market price are close, the market is considered relatively accessible to median-income households; when market prices exceed what those households can afford, an affordability gap exists.

By this measure, the CMRPC region was relatively accessible until the pandemic, at which point a rapid rise in home prices pushed typical market values out of reach for most median-income households. Most subregions now report an affordability gap, though its size varies across the region, driven by differences in both local median incomes and prevailing home prices.

It is worth noting that this analysis describes conditions at the midpoint of the income distribution, not a floor. Even in a scenario where median-income households could afford typical homes, roughly half of all households earn less than the median and would face an even wider affordability gap. The measure is a useful indicator of regional market conditions, but it understates the affordability challenge facing a significant share of the region's residents.

Housing affordability

In February 2026, the typical home is unaffordable. The gap is $46,269.



Note: The affordable purchase price is estimated by assuming a household spends no more than 30% of its gross income on housing costs and working backward from that monthly budget to estimate the total home price it could support, accounting for a typical mortgage rate, property taxes, and insurance.

	Home Price			Income		
Geography	Typical	Affordable to median	Gap / Surplus	Required for typical	Median	Gap / Surplus
CMRPC Region	$512,842	$505,969	**-$6,873**	$127,165	$125,460	**-$1,704**
North Subregion	$522,962	$569,376	+$46,414	$129,928	$141,460	+$11,531
Northeast Subregion	$679,935	$624,463	**-$55,472**	$169,029	$155,239	**-$13,790**
Central Subregion	$418,106	$319,793	**-$98,314**	$105,762	$80,893	**-$24,869**
Southeast Subregion	$556,664	$575,960	+$19,296	$138,272	$143,065	+$4,793
Southwest Subregion	$456,199	$454,435	**-$1,764**	$112,593	$112,158	**-$435**
West Subregion	$413,163	$365,972	**-$47,191**	$101,892	$90,254	**-$11,638**

Housing stock: Rental prices and costs

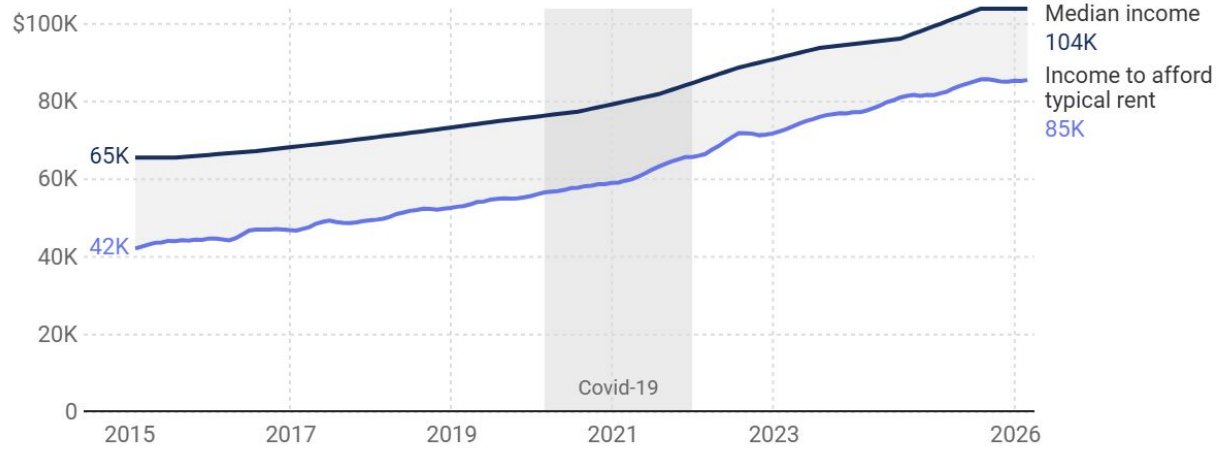
Source: Zillow, Census ACS 2015-2024, CommunityScale

In contrast to the homeownership market, rental housing is generally affordable to households earning the median income across most of the region. However, the median-income comparison is a less meaningful benchmark here than it is for ownership, because the renter population is not evenly distributed across the income spectrum. Higher-income households are more likely to own, which means renters are disproportionately lower-income — and for those households, even rents that appear affordable at the median can be well out of reach. In practice, the population most dependent on rental housing is also the population least able to afford it.

Compounding this, rental options are geographically concentrated. Outside of Worcester and a handful of larger surrounding communities, most of the region's municipalities have very few rental units at any price point. Limited supply constrains choice regardless of cost, meaning that even where rents are nominally affordable, the practical challenge of finding an available unit in a suitable location remains significant for many lower-income households across much of the region.

Rental affordability

In February 2026, the typical rent is affordable to most existing local residents. The surplus between median income and income required is $18,372.



Employment: Jobs by sector

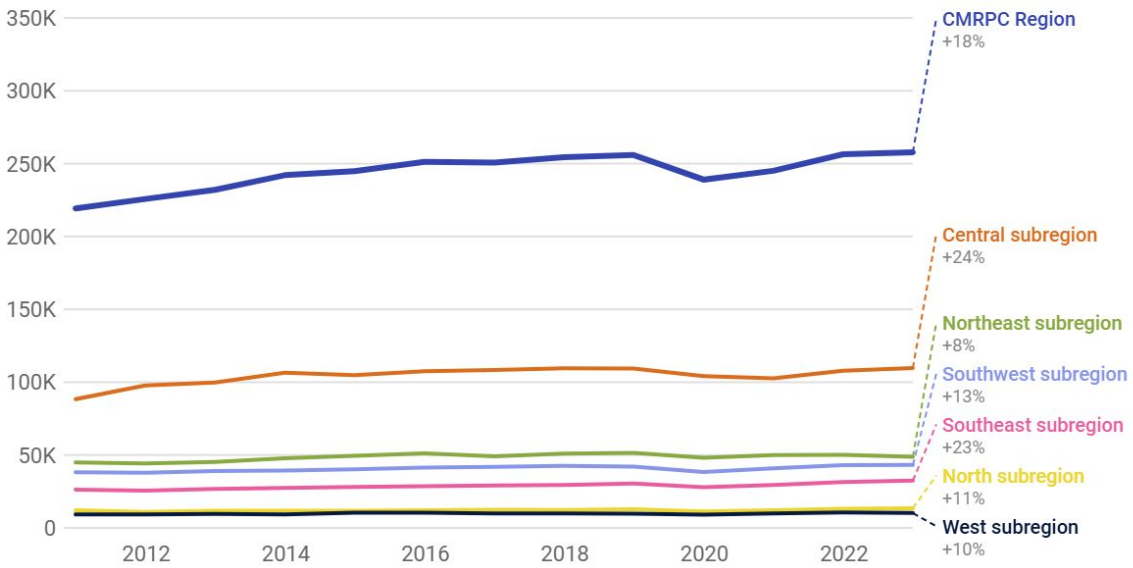
Source: 2024 ACS 5-Year, 2023 LEHD, CommunityScale

The region's overall job count has remained relatively stable in recent years, but the composition of employment varies by subregion. Service sector jobs dominate across all subregions, accounting for between 50% and over 70% of total employment — with the Central subregion at the high end, where nearly three in four jobs are in the service sector. The Northeast stands out for its relatively larger share of knowledge sector employment, at 23% of jobs, while the Southwest and West subregions have the highest concentrations of blue collar work, making up over 27% of employment in those areas.

This sectoral variation matters in the context of the affordability trends described previously. Knowledge sector and education, medical, and public administration jobs generally command higher wages, making homeownership and stable rental housing more attainable for workers in those fields. Blue collar and service sector employees, who make up the overwhelming majority of the workforce across the region, are working with incomes that have less room to absorb rising housing costs. These workers face growing pressure to find housing they can afford, and housing close enough to where they work to make the region's car-dependent commuting patterns financially viable.

Total jobs

Number of jobs by year (LEHD LODES WAC).



Jobs by sector

Employment by industry group, 2023 (LEHD LODES WAC).

	Knowledge	Blue collar	Service	Eds, meds, public	Total jobs
CMRPC Region	**33,778**	**46,029**	**160,895**	**17,074**	**257,776**
Central subregion	13,146	11,067	78,986	6,513	**109,712**
North subregion	778	2,330	8,363	1,949	**13,420**
Northeast subregion	11,325	9,601	25,706	2,154	**48,786**
Southeast subregion	2,937	8,279	18,570	2,662	**32,448**
Southwest subregion	4,938	11,955	23,716	2,572	**43,181**
West subregion	654	2,797	5,554	1,224	**10,229**

Employment: Wages by occupation

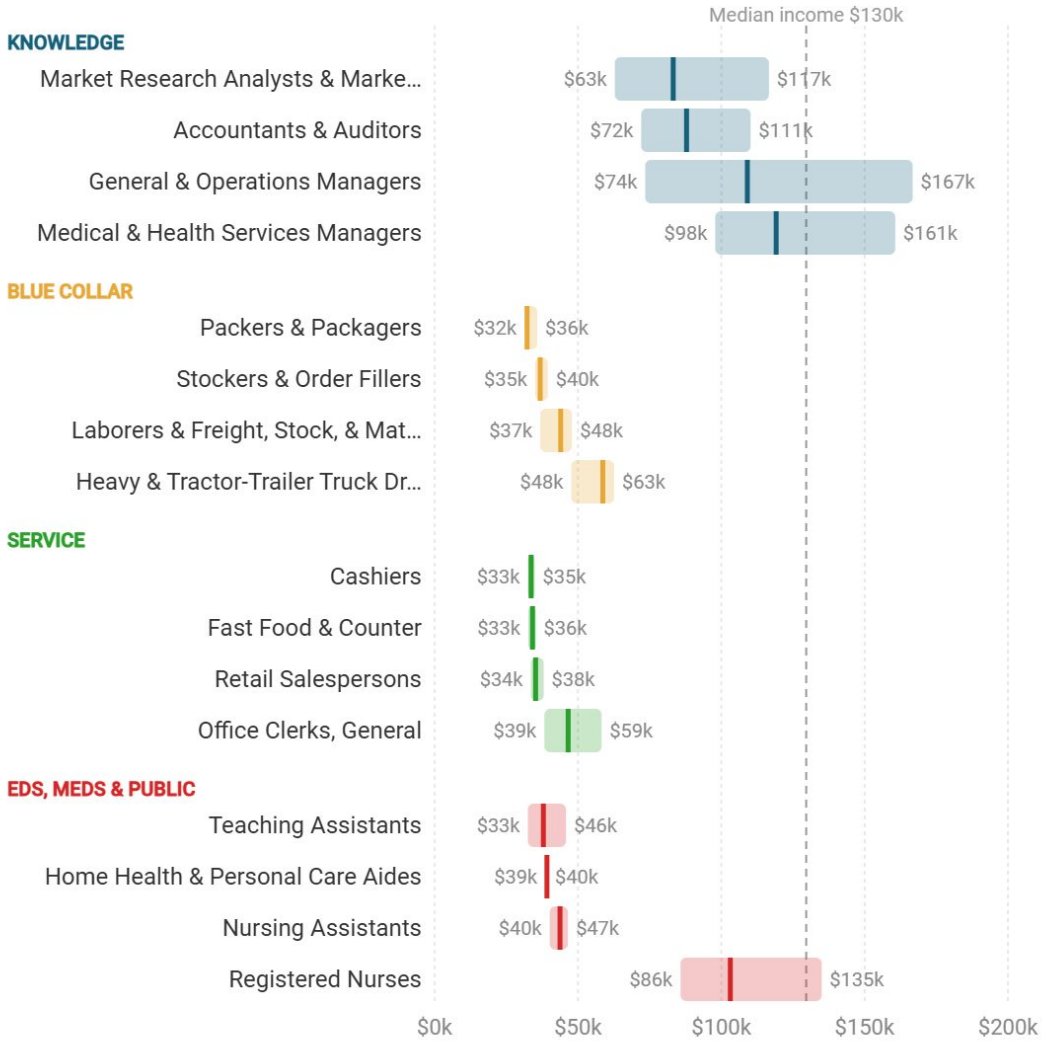
Source: 2024 BLS OEWS, CommunityScale

A household's ability to afford housing is closely tied to the total wage(s) earned by the worker(s) living in the unit. This chart summarizes typical salaries by sector, referencing the most common occupations in each.

Most households combine multiple jobs and sources of income to comprise their total household income. Therefore, most people working these jobs do not entirely rely on these individual salaries to pay for housing and other costs of living. However, as demographics trend toward smaller households and more singles living alone, a growing share of the population must cover their costs with a single salary.

Wages by occupation

25th–75th percentile annual salary (2024), Worcester, MA MSA



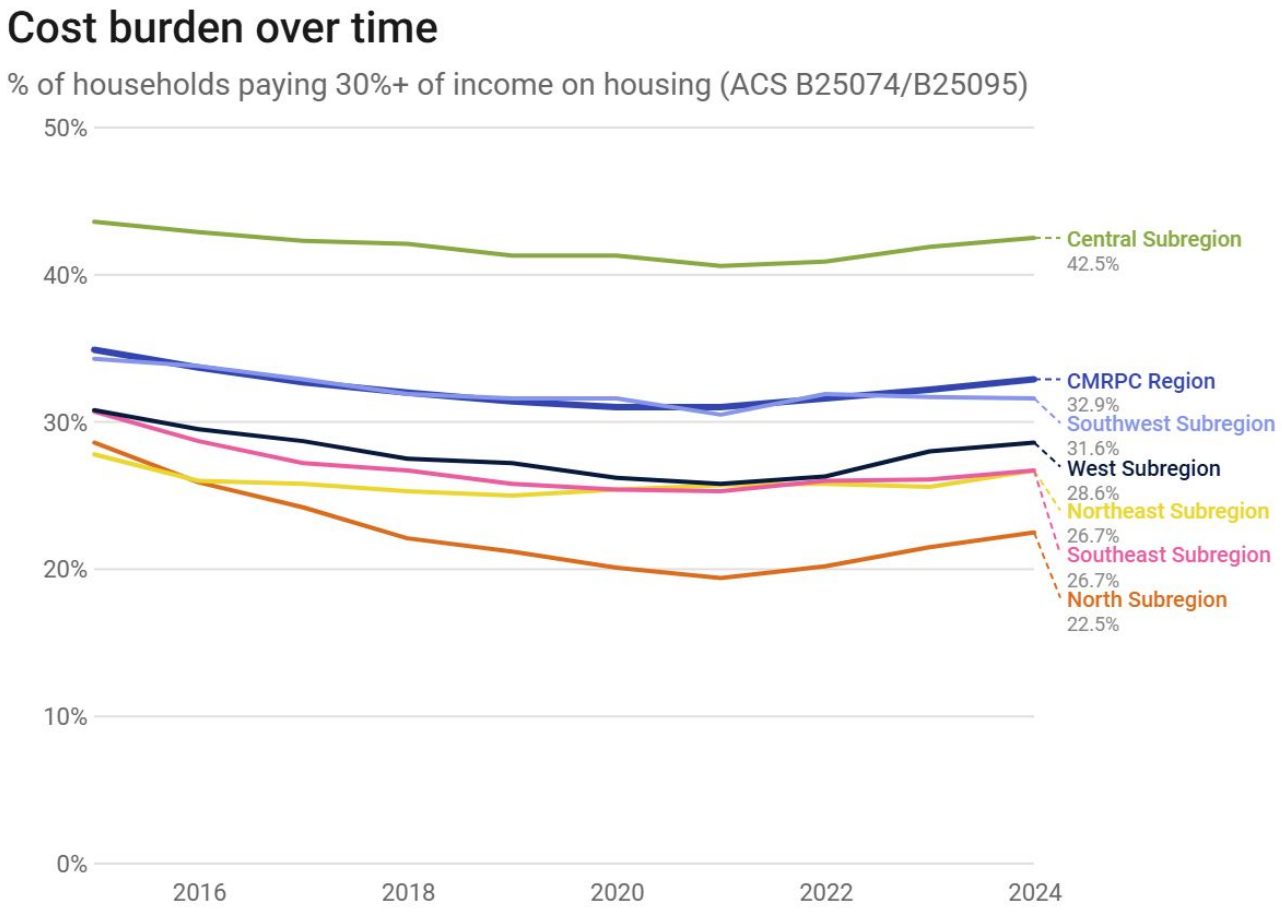
Affordability: Cost burden

Source: 2015-2024 ACS 5-Year, CommunityScale

Cost burdened households are typically defined as those paying more than 30% of their income on housing. Across the region, cost burden rates were declining in the years leading up to the pandemic, but that trend has since reversed and rates are currently on the rise.

This pattern broadly tracks statewide trends, though with an important divergence by tenure: between 2015 and 2023, Massachusetts owner cost burden declined from 30.4% to 26.1%, while renter cost burden ticked up from 47.8% to 48.2% — reflecting the same dynamic visible in the regional data, where renters face a more persistent affordability challenge than owners.

The recent rise in cost burden has coincided with a significant increase in general inflation, compounding the pressure on household budgets. Rising costs for food, gas, and energy reduce the share of income available for housing, meaning households can find themselves cost burdened even when their rent or mortgage payment hasn't changed.



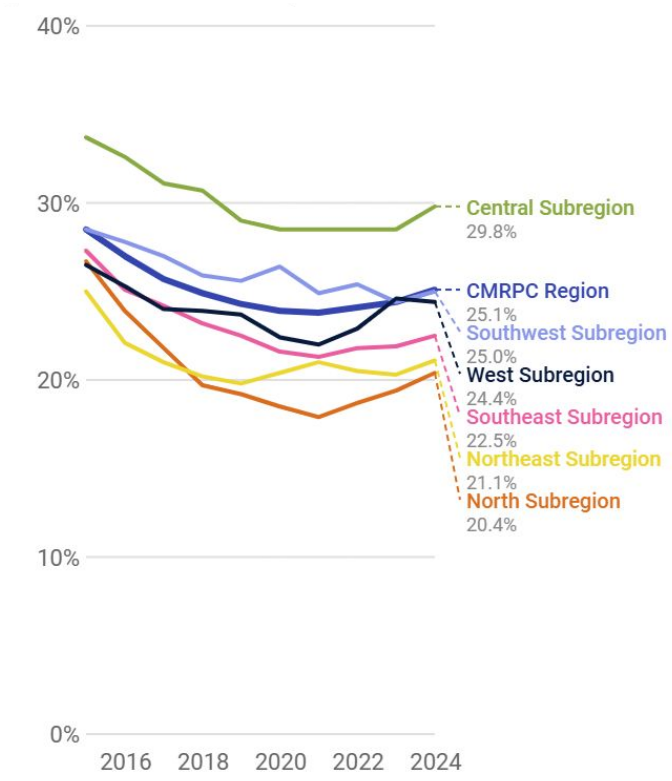
Affordability: Cost burden by tenure

Source: 2015-2024 ACS 5-Year, CommunityScale

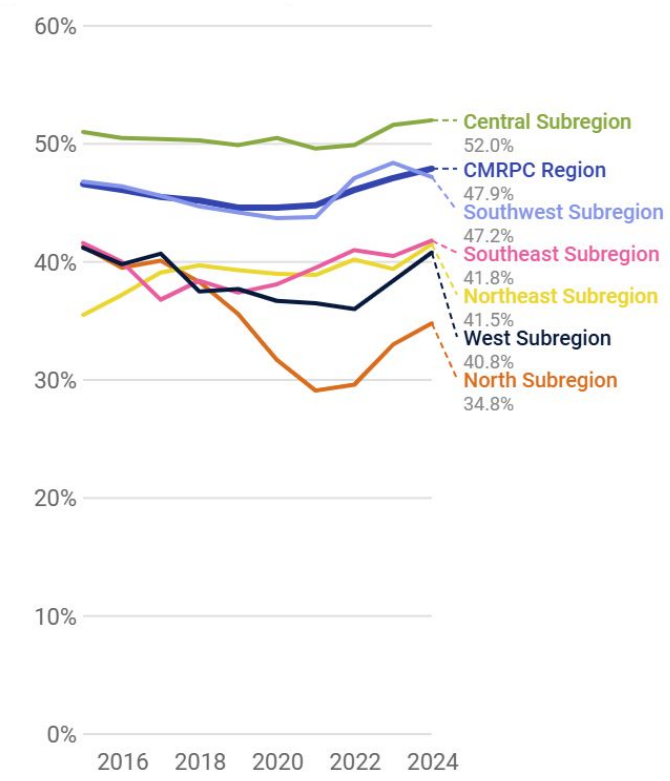
Cost burden is much more prevalent among renters than homeowners. Region-wide, the rate of cost burdened renters is nearly twice the rate of cost burdened homeowners.

In most parts of the region, cost burden rates among both homeowners and renters was trending down before the pandemic but has since trended up.

Share of homeowners that are cost burdened



Share of renters that are cost burdened



Affordability: Utilities as a cost factor

Source: Census ACS 2023, RentCast, Zillow ZORI, CommunityScale

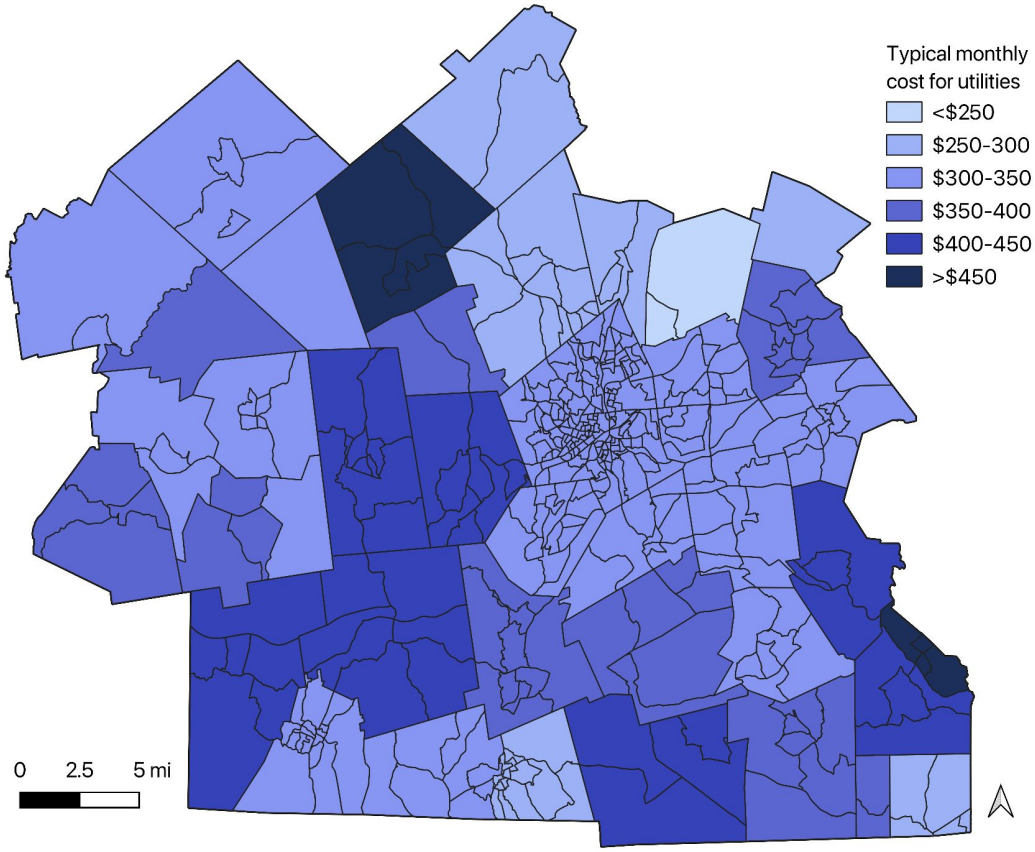
Utility expenses can be a significant driver of housing costs, especially in areas with older, less efficient homes and expensive heating fuels and electricity rates.

The map to the right isolates utility costs as a component of total shelter costs, combining rental and ownership data. Utility costs include electricity, water, sewer, gas, and other heating fuels as applicable.

The distribution of these costs vary significantly from place to place across the region, meaning people in some communities are burdened more by utility costs than other.

The typical monthly utility cost region wide is $339.

Typical monthly cost for utilities by block group



5 Year Production target: About 14,675 units by 2031

Source: CommunityScale

Housing challenges encompass national, regional, and local factors. Individual municipalities make land use decisions independently, but housing markets operate at each level to varying degrees. A shortage in one community can affect demand and prices in neighboring ones, and production gaps can compound across a region over time. Establishing a regional production target provides a common reference point for understanding the scale of need regionwide, and measuring progress collectively.

The analysis translates projected household growth into a target for housing supply and related production over the next 5 years. Rather than simply projecting new households forward, the calculation includes several adjustments intended to address underlying market pressures that constrain affordability even before new household growth is accounted for, such as insufficient vacancy, limited rental availability, and a share of substandard units. The result is a target that reflects not just anticipated growth but the additional production needed to bring the region's housing market into healthier balance.

To keep up with growth and fill current housing shortages, CMRPC Region needs 14,675 new units over the next 5 years.

8,455	**Units needed to keep up with expected growth** Projected total household growth from 2026 to 2031.
3.6%	Projected household growth rate Expected increase in total households from 238,126 in 2026 to 246,581 in 2031.
6,220	**Units to address shortages in existing housing stock** Production needs to address vacancy rates and other factors.
1,132	Replacement housing Effective annual loss rate is **0.9** per 1,000 units.
1,539	Ownership vacancy adjustment Owner-occupied vacancy is **0.5%**. This is below the minimum stable target of 1.5%.
3,549	Rental vacancy adjustment Rental vacancy is **3.7%**. This is below the minimum stable target of 7.4%.
14,675	**Total 5-year housing production need (2026-2031)**
2,935	Annual production pace Average units needed per year to meet 5-year need
5.9%	Total housing unit growth Percent increase in housing stock over 5 years
1.2%	Annual housing unit growth Average percent increase in housing stock per year

10 Year Production target: About 30,515 units by 2036

Source: CommunityScale

Growth across the region is uneven, and production targets here reflect that variation. The Central and North subregions face the largest proportional need at 14.6% and 14.5% growth respectively, followed by the West at 12.8%. Each subregion's target is calibrated to its own growth trajectory and underlying market conditions rather than distributed evenly across the region.

Beyond total unit counts, the composition of new housing matters as much as the quantity. The region's current stock is heavily weighted toward three-bedroom and larger units and detached single-family homes — formats that aligned well with the family-with-children households that drove growth in prior decades but are increasingly misaligned with today's demand. Projections suggest the next wave of housing should skew toward smaller units and a more diverse mix of structure types, with two-bedroom units and attached configurations playing a larger role than they have in recent production. This may mean more townhomes, smaller multifamily buildings, and accessory dwelling units than the region has historically built.

For context, the Commonwealth's 2025 "A Home For Everyone" statewide housing needs assessment suggests the CMRPC region should plan to add 7.5–10.0% more housing than its 2020 total — broadly consistent with the targets outlined here.

10-year Production target by sub-region, 2026-2036

	Units	Growth
Region total	**30,515**	**12.3%**
Central	12,564	14.6%
West	2,632	12.8%
North	2,851	14.5%
Northeast	3,761	11.3%
Southeast	4,977	10.7%
Southwest	4,712	11.2%

Note: subregions may not add up to region total exactly.

Suggested change in course to meet current and emerging demand

	0-1 bedroom	2 bedrooms	3 bedrooms	4+ bedrooms
Current stock	13.8%	26.3%	39.0%	20.9%
Last 10 years	17.4%	9.5%	38.1%	35.0%
Next 10 years	22.0%	33.1%	27.6%	17.2%

	Detached SF	Attached 1-4	5-49	50+	Other
Current stock	55.3%	26.6%	12.5%	4.9%	0.7%
Net new last 10 years	59.3%	17.5%	12.8%	10.4%	0.0%
Next 10 years	37.4%	29.8%	20.1%	11.4%	1.3%

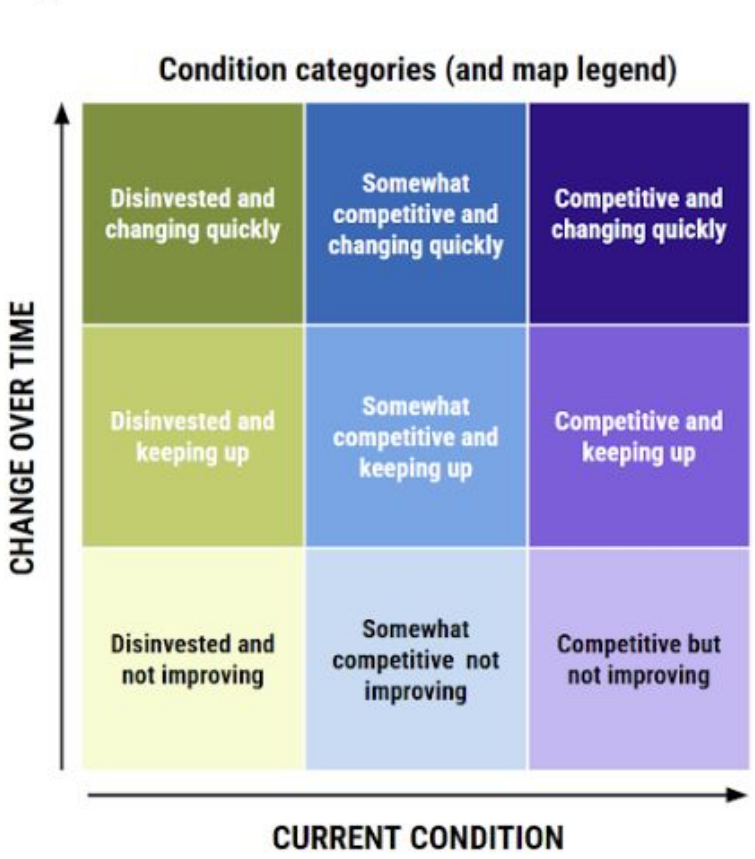
Neighborhood conditions: quantifying present conditions and change over time

Where are housing market and quality of life dynamics changing? Where are they staying the same?

The neighborhood conditions assessment is a form of market value analysis that seeks to quantify change and current conditions through relative indexing within the region. Disinvested areas score less favorably across the slew of current conditions variables, including mortgage denial rates, intersection density, and rates of cost burden; competitive areas score more favorably.

The 'not improving' ←→ 'changing quickly' continuum considers the magnitude and direction of change, relative to areas within the region, over the last five years.

The results of the assessment are mapped on the following page. The results are additionally interpreted as market strength overlays to link current conditions and change to market-based recommendations.

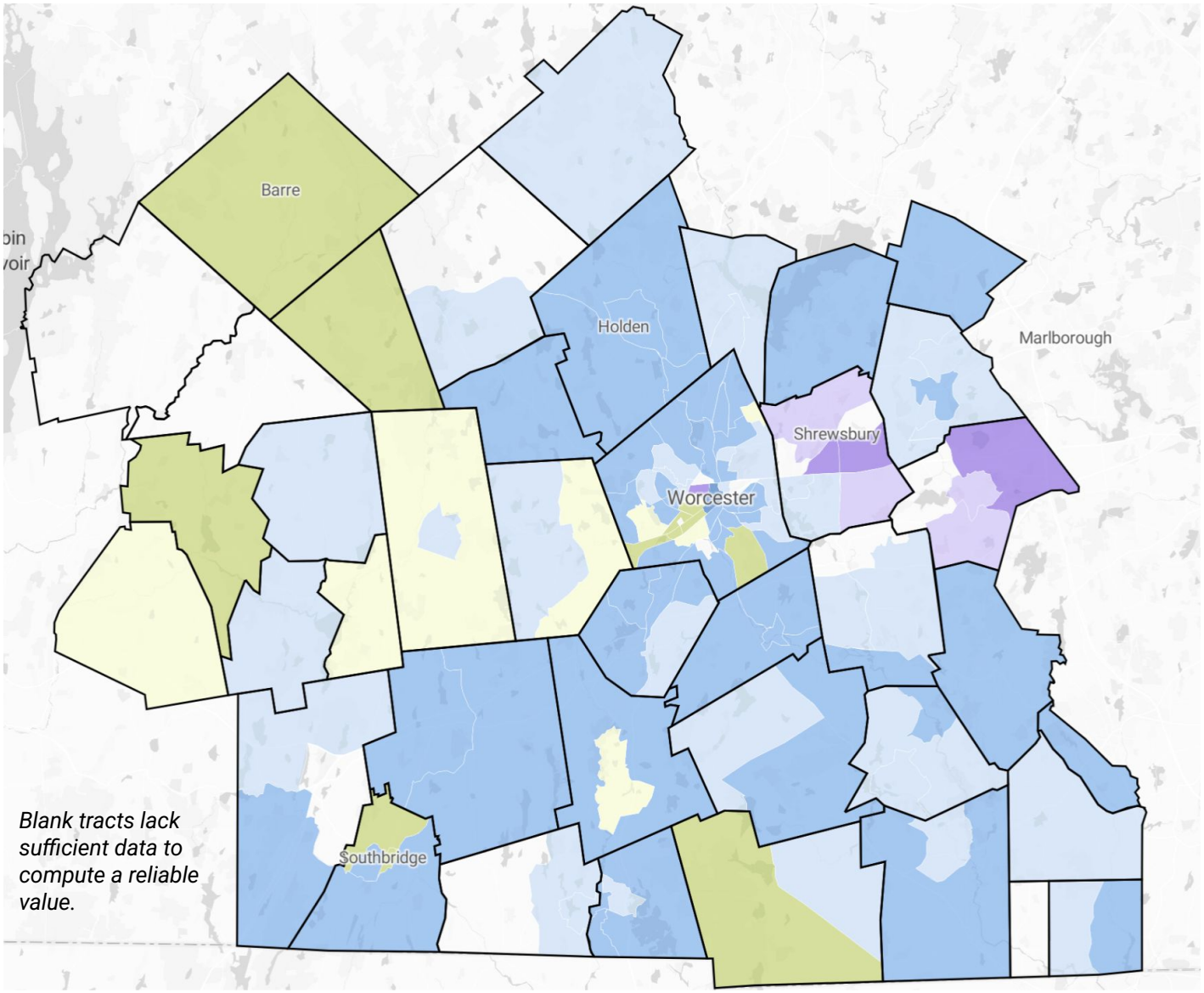


Neighborhood condition assessment

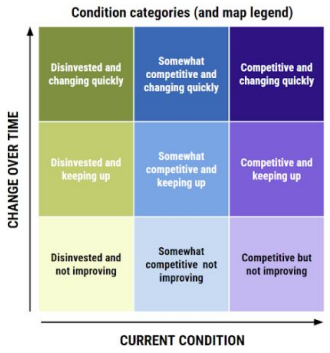
Source: ACS 2020, 2023 5-year Estimates; Zillow 2020, 2025; Realtor.com 2020, 2025; FFIEC 2020, 2024; TIGER/Line 2020, 2024 Road Networks; CommunityScale. For more on methodology, see page 153.

This market condition analysis assigns two composite scores to a given place to inform where that place falls along a bivariate spectrum of investment and improvement over the past five years.

At the regional view, it appears that the results follow patterns of population density, population count, and proximity to the Greater Boston market, insofar as these characteristics dictate investments and interest in an area.



Legend

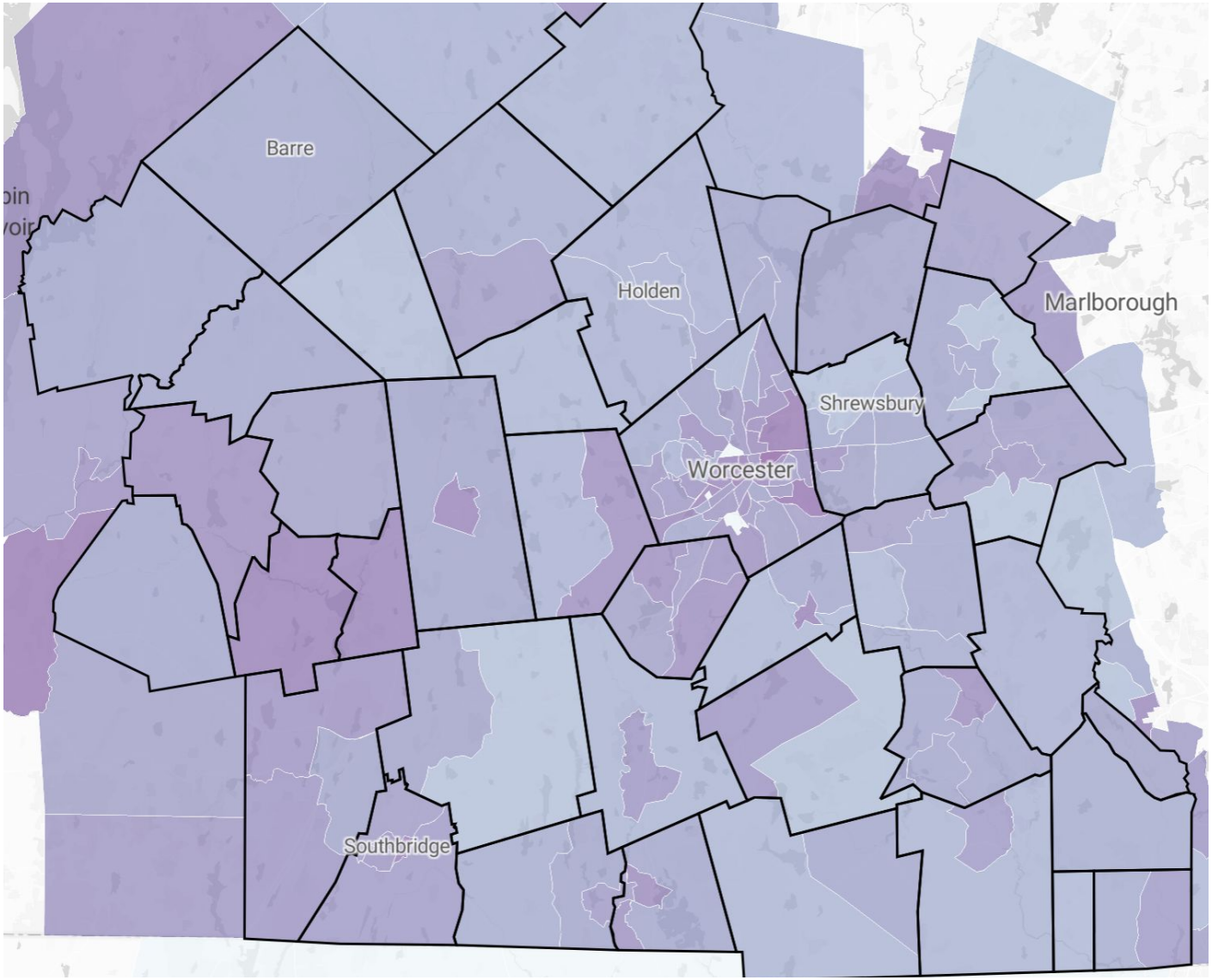


Overlays

- CMRPC community boundaries

Displacement risk assessment: Seniors

Source: ACS 2020, 2023 5-year Estimates, CommunityScale, For more on methodology, see page 153.



Seniors are often referenced as a key demographic of concern as housing costs rise because many are living on fixed incomes or have minimal opportunities for additional income streams

This map indicates the areas where seniors are most at risk of displacement due to rising housing costs and other cost of living pressures.

Risk of Displacement Index

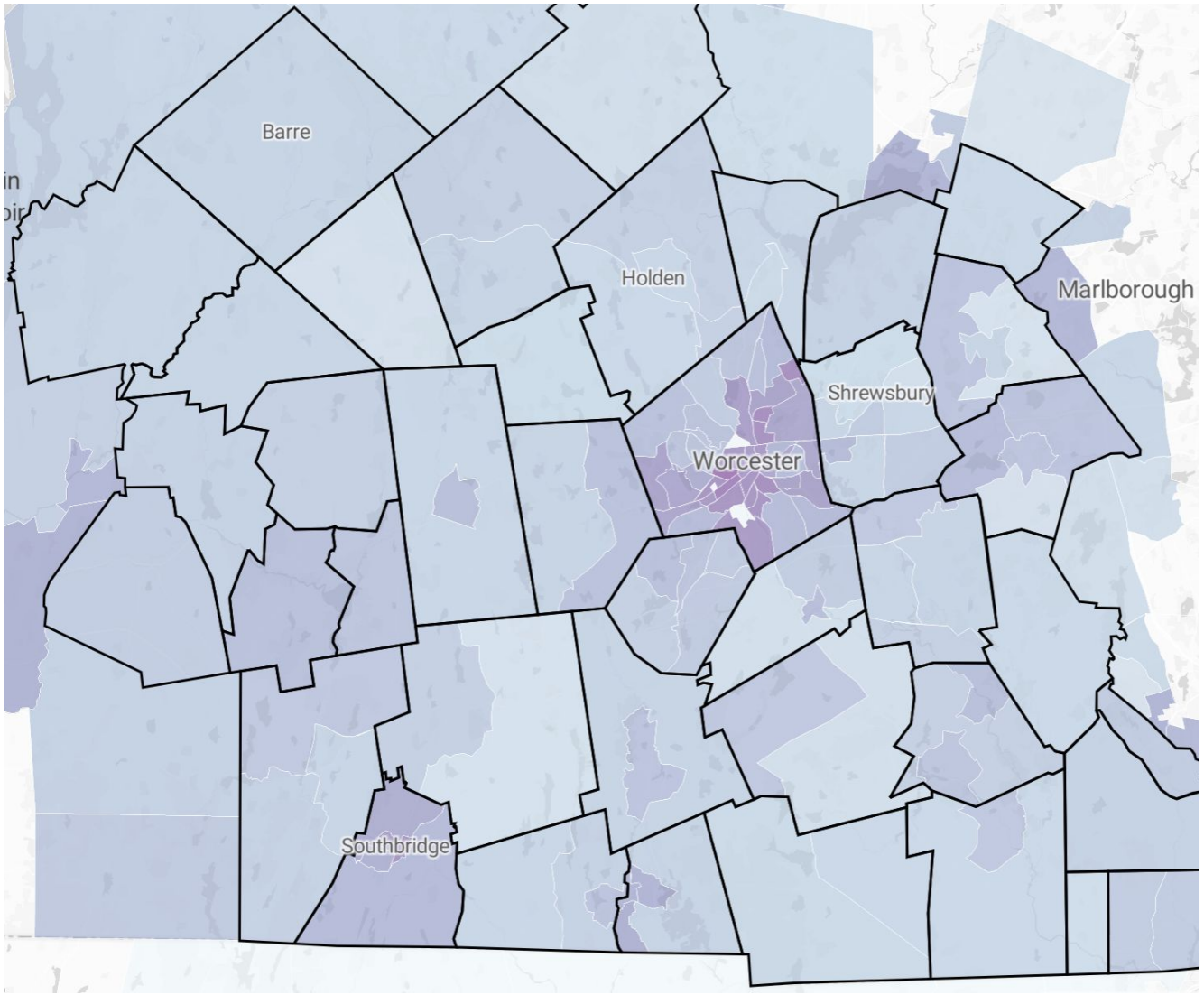
Most risk

Least risk

Data: ACS 2023 5-Year Estimates, CommunityScale

Displacement risk assessment: Historically marginalized populations

Source: ACS 2020, 2023 5-year Estimates, CommunityScale, For more on methodology, see page 153.



Black and Hispanic households, who are more likely to be lower-income and to have faced historical barriers to homeownership and wealth accumulation, may be more exposed to the kind of market pressures that lead to displacement.

This map indicates the areas where historically marginalized residents are most at risk of displacement due to rising housing costs and other cost of living pressures.

Risk of Displacement Index

Most risk

Least risk

Data: ACS 2023 5-Year Estimates, CommunityScale



Transportation system assessment

Transportation Inventory

Source: MassDOT GIS, MassDOT Vehicle Census, MassGIS

Active vehicles: 482,602 (per MassDOT 2025)

Average daily miles driven: 32.1

Total daily Vehicle Miles Traveled (VMT): 15,480,354

Interstates: 6 (I-84, I-90, I-190, I-290, I-395, I-495)

MBTA Commuter Rail stops: 3 (Worcester, Grafton, Westborough)

WRTA stops: 1,031 (272 or 26% are moderate/high frequency)

WRTA ridership: +4.5M/year

Total Centerline Road Miles:

Sidewalks both sides: 920 miles (8.6% of regional centerline road miles)

Sidewalks at least one side: 2230 miles (21%)

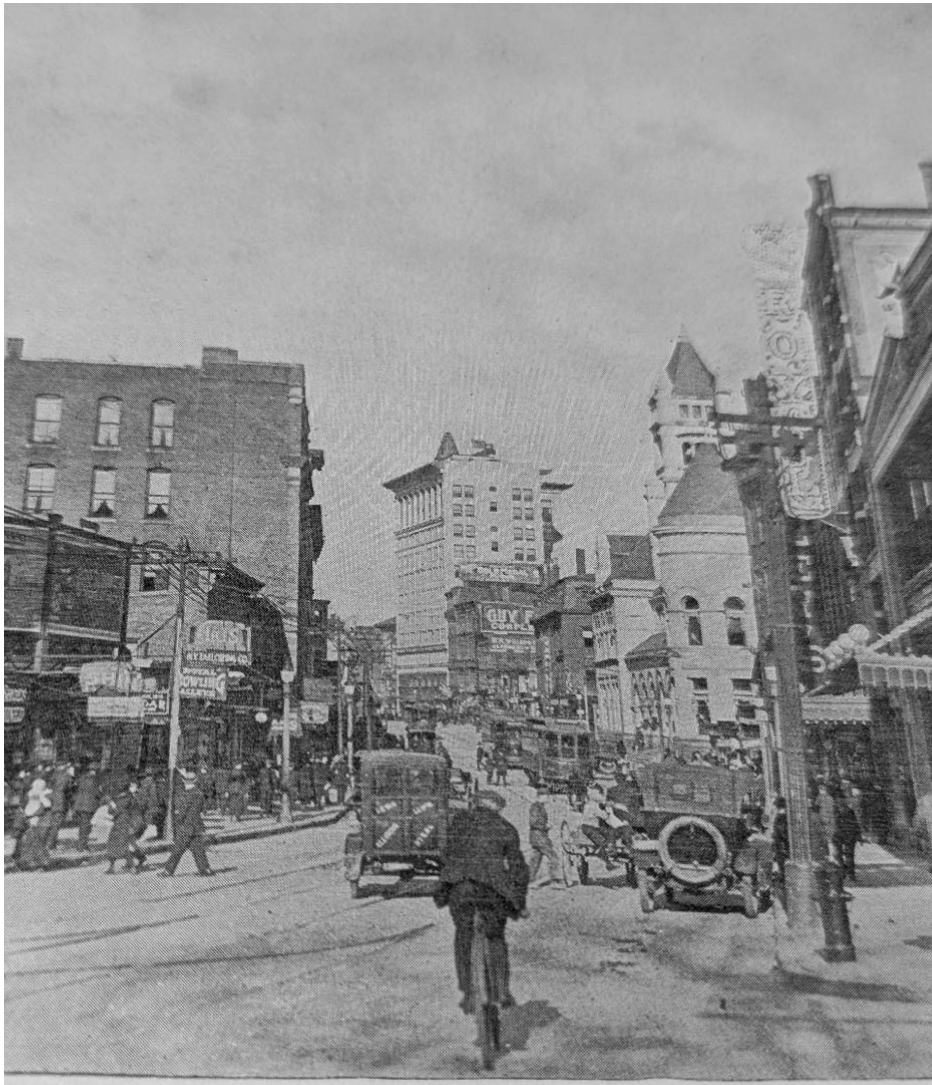
Low AADT roads: 130 miles (1.2%)

Low speed roads: 5504 miles (52%)

Existing bicycle facilities: 110 miles (72% protected/path)

Planned bicycle facilities: 125 miles (80% protected/path)

Ridehailing pickups: +3.13M annually (per MassDOT 2024)



Main St., North from Madison St., Worcester, Mass.

Roadway networks, vehicle access, and commuting patterns

Source: ACS 5 year 2019-2023

A useful way to evaluate commuting patterns in a region is to calculate a job-worker differential. This is the difference between total workers living in an area and total jobs located there. Areas with more jobs than workers likely draw commuters in each day, while those with more workers than jobs see many residents leave the area for work.

Across the CMRPC region, most subregions have a negative differential. The Southeast is the most pronounced, with roughly 62,000 workers but only about 31,500 jobs, representing a gap of more than 30,000. This means that a significant share of Southeast residents commute out of the subregion daily. The North and West subregions show similar patterns at smaller scales. The Southwest is closer to balanced but still negative.

The Central and Northeast subregions are the exceptions, each running a positive differential. The Central subregion accounts for 42% of the region's jobs while housing 33% of its workers, and the Northeast shows a similar though smaller imbalance. Together, these two subregions absorb much of the commuting demand generated elsewhere in the region.

Job-Worker Differential

Subregion	Workers	%	Jobs	%	Differential
Southeast	62,186	20%	31,499	12%	-30,687
North	25,927	9%	13,172	5%	-12,755
West	23,160	8%	10,682	4%	-12,478
Central	100,375	33%	107,895	42%	7,520
Northeast	43,481	14%	50,081	20%	6,600
Southwest	49,062	16%	43,116	17%	-5,946
Region	304,191	100%	256,445	100%	-47,746

At the regional level, the differential is nearly -48,000, meaning the CMRPC region as a whole exports a substantial number of workers to jobs outside its boundaries. This is predominantly toward Greater Boston. This pattern reinforces the extent to which long-distance commuting is a structural feature of daily life across much of the region, with direct implications for transportation costs, vehicle dependency, and the importance of housing near employment centers.

Note: Anecdotally, during engagement with the CMRPC towns, many (especially the eastern towns) indicated that they are seeing in-migration of Boston area workers looking for more affordable housing options. Though not evaluated in detail here, this may be a contributing factor to the region’s overall differential.

Roadway networks, vehicle access, and commuting patterns

Source: ACS 5 year 2019-2023

Commute mode share across subregions also demonstrates the extent to which car dependency is a current feature of the CMRPC region.

Driving alone accounts for the majority of commute trips in every subregion, ranging from about 66% in the Central subregion to nearly 80% in the West. Carpooling adds another 5–7% in most subregions, with the Central subregion again an outlier at nearly 12%.

Transit, walking, and biking together remain a marginal share of commutes across most of the region. Public transit peaks in the Central subregion at 2.7% and the Northeast at 1.7%, the two subregions with the most extensive transit options, and falls below 1% everywhere else. Walking follows a similar pattern, reaching 5.5% in Central while staying at or below 2% in all other subregions. Bicycling is negligible across the board.

Work-from-home rates vary considerably and are worth noting as a factor that reduces commute mode share but doesn't necessarily shift modes for non-work trips. The Northeast has the highest share at nearly 24%, consistent with its larger concentration of knowledge sector workers in roles that lend themselves to remote work.

Taken together, the data make clear that meaningful alternatives to single-occupancy vehicle commuting exist in only limited parts of the region today.

Regional Commute Mode Share

% of Total Workers	Southeast	North	West	Central	Northeast	Southwest
Drove Alone	74.23%	74.58%	79.39%	65.83%	67.14%	77.84%
Carpool	5.26%	6.11%	6.46%	11.61%	5.24%	7.34%
Public Transit	0.86%	0.73%	0.70%	2.72%	1.67%	0.47%
Taxicab	0.01%	0.03%	0.00%	1.42%	0.08%	0.25%
Motorcycle	0.03%	0.00%	0.15%	0.01%	0.03%	0.13%
Bicycle	0.04%	0.08%	0.15%	0.20%	0.00%	0.27%
Walk	0.93%	1.33%	1.36%	5.47%	1.19%	2.20%
Other	1.17%	0.81%	0.22%	2.04%	1.08%	1.41%
Work From Home	17.47%	16.33%	11.56%	10.71%	23.57%	10.09%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Note: This data represents travel behavior for work trips and may not represent non-work trip mode share.

System Analysis: Overview

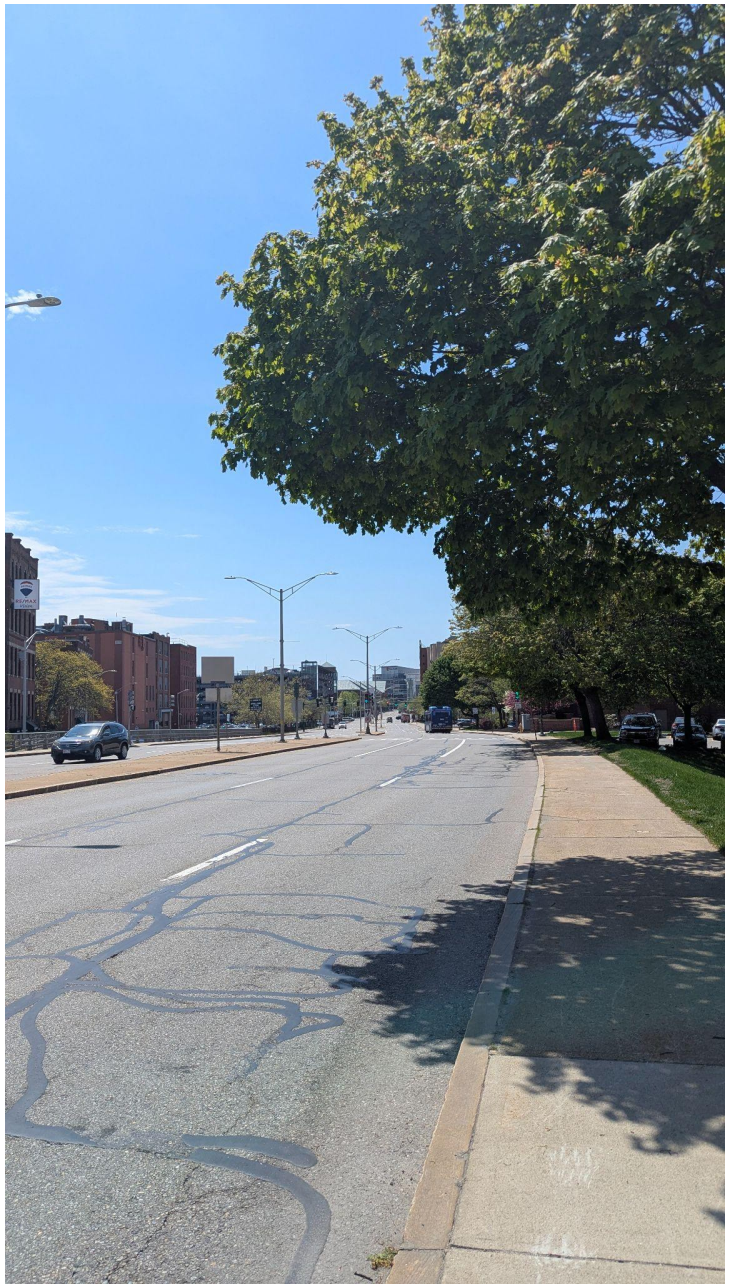
Source: Toole Design

The transportation system analysis examines the availability of transportation options across the region at the parcel level, with a particular focus on where residents have meaningful alternatives to car travel and where they do not.Three distinct components make up this analysis:

Transportation Diversity Index (TDI)
A parcel-level assessment of the availability of pedestrian, bicycle, and transit options across the region. The TDI classifies parcels along a spectrum from transportation-diverse to vehicle-dependent, revealing where housing development would coincide with meaningful transportation benefits, and where infrastructure or service improvements would be needed before new development could benefit from multiple viable transportation options. (For additional detail on the TDI, see the accompanying memo)

TDI Equity Assessment
Places with limited transportation diversity were compared against MassDOT's Regional Environmental Justice categories to identify where the burdens of car dependency fall disproportionately on populations that are least able to absorb its costs.

TNC/Transit Screening Exercise
Emerging data on ride-hailing activity offers a new lens for understanding travel demand and identifying potential opportunities in the existing transit network. This section presents a screening exercise exploring how this data source could be used to inform future transit planning and investment decisions.



TDI Development: Pedestrian/Bicycle Potential overview

Source: Toole Design

The TDI development begins with an assessment of pedestrian and bicycle potential. This is a foundational layer for understanding where non-car transportation is a realistic option for daily trips. Rather than a detailed audit of walking and biking facility quality, this analysis identifies which parcels sit along a base network of roads suitable for walking or biking, and classifies them by intersection density as a proxy for connectivity. Higher intersection density generally means more route options, shorter travel distances to destinations, and a street environment more conducive to active transportation.

This starting point matters for housing production decisions. Development on cheaper land at the edges of village centers can appear attractive from a cost standpoint, but the land use patterns in these locations — lower density, fewer nearby destinations, less connected street networks — make walking and biking impractical for most trips. Households in these locations become more reliant on car travel by default, with real consequences for transportation spending and overall cost of living. These costs are not borne by households alone: fringe development also tends to impose higher per-unit costs on municipalities through the need to extend and maintain roads, utilities, and other infrastructure across greater distances to serve relatively few units. Pedestrian and bicycle potential is therefore not just a measure of current infrastructure but an early indicator of where new housing is likely to generate additional vehicle dependency, and where it isn't.



Limited access highways (such as I-90) were not included on the base network.



State highways with sidewalks were included in the base network, but often have low intersection density outside of village venters.

TDI Development: Defining the pedestrian and bike network

Source: Toole Design

We start the evaluation of bike and pedestrian potential by building of a pedestrian and bike network. A road segment is included in the network if it meets at least one of the following criteria:

- Sidewalks are present on either side
- Has a name + *local* federal functional classification
- The AADT is <1500 or speed limit is under 35 mph
- All other segments excluded

Is this "walkable"? It is worth being clear about what this network represents. This is a deliberately generous definition. It identifies roads where a person could reasonably walk or bike short distances if they had sufficient reason to do so, not roads that are necessarily comfortable, safe, or attractive to walk along.

Many segments included in this network have high speeds, limited crossings, no dedicated pedestrian or bicycle infrastructure, and other conditions that fall well short of what most people would consider a pleasant or safe environment.

Example walking network









Dunkin Donuts Walkability: "Would people walk on this road if there was a Dunkin on it?"

TDI Development: Bicycle Considerations

Source: Toole Design



Bicycles are an affordable way to increase mobility and are well-suited for short local trips, which are usually only a few miles. E-bicycles are proving to be a strong replacement for many car trips. Still, concerns about safety and distance can prevent many people, especially those without advanced bicycling skills, from riding.

Most new riders start with short, safe trips. The places where these trips are possible are often those with high pedestrian potential. In Massachusetts, this is sometimes made easier by the allowance of sidewalk riding in many locations.

Though the transportation diversity analysis focuses on pedestrian and transit quality as the foundation for reducing vehicle ownership and encouraging people to shift modes, we have also included barrier or grade protected bicycle lanes and shared use paths. However these represent a variety of conditions, some unlikely to move the needle on vehicle dependency (e.g. unpaved recreational path).

This does not take into account that some people are able to greatly improve their access to amenities by biking longer distances.

TDI Development: Adding bicycle facilities

Source: Toole Design

Bicycle access is more uncertain than pedestrian access. Bicycles can extend a household's active transportation range significantly, but use by low-skill cyclists outside of a town center, or for reasons other than recreation, is limited. Whereas everyone is a pedestrian at some point, bicycle use is a more deliberate choice. Our inclusion of bicycle facilities is similarly limited due to these circumstances.

- Most parcels are connected by streets on our pedestrian/bicycle network, bicycle facilities extend the network in some places.
- Most on-street bicycle facilities coincide with pedestrian facilities.
- On street facilities may not be sufficient for the traffic stress if they are not protected.
- Connections between parcels and shared use paths, particularly rail trails may not be well-defined, uniform, or consistently maintained, in contrast to sidewalks and walkable roads which exist within traditional street right of ways.
- Parcels may abutt a shared use path without having meaningful access to it (ex: a trail on an old railroad embankment).

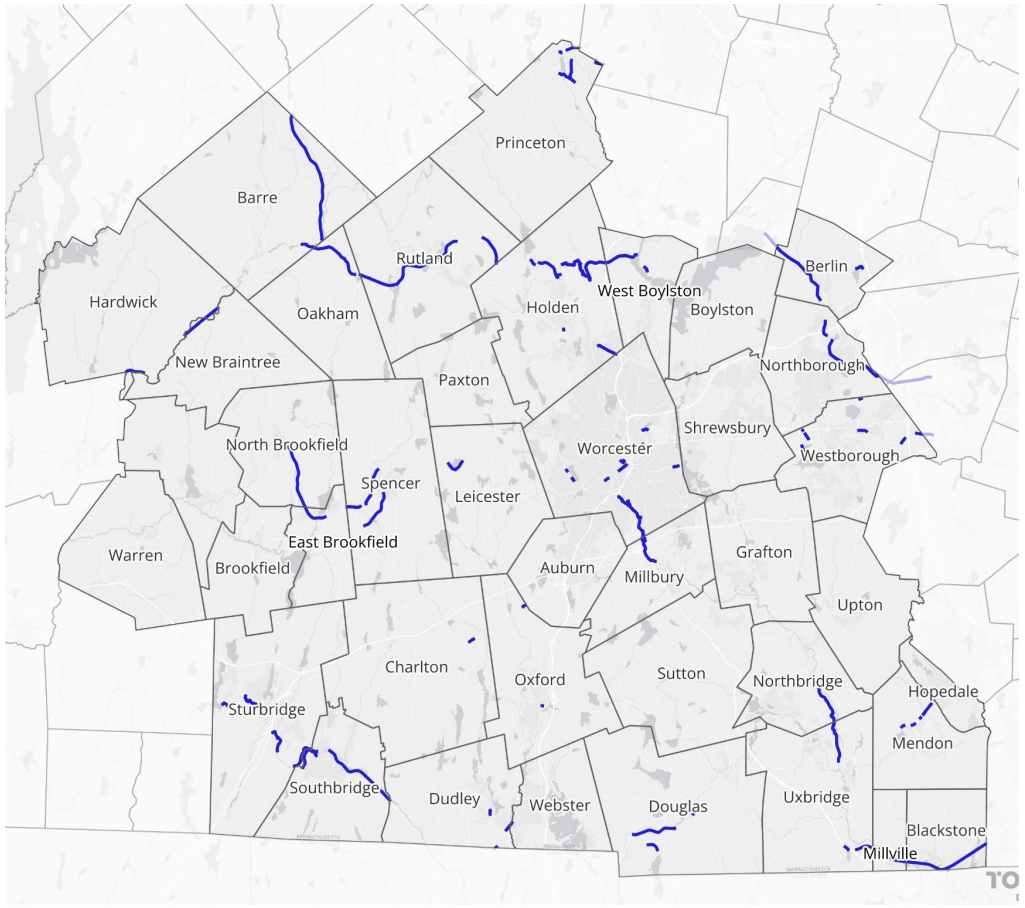


North Brookfield Rail Trail



Blackstone River bicycleway

Protected Bicycle Facilities and Shared Use Paths



TDI Development: Pedestrian/bicycle base network

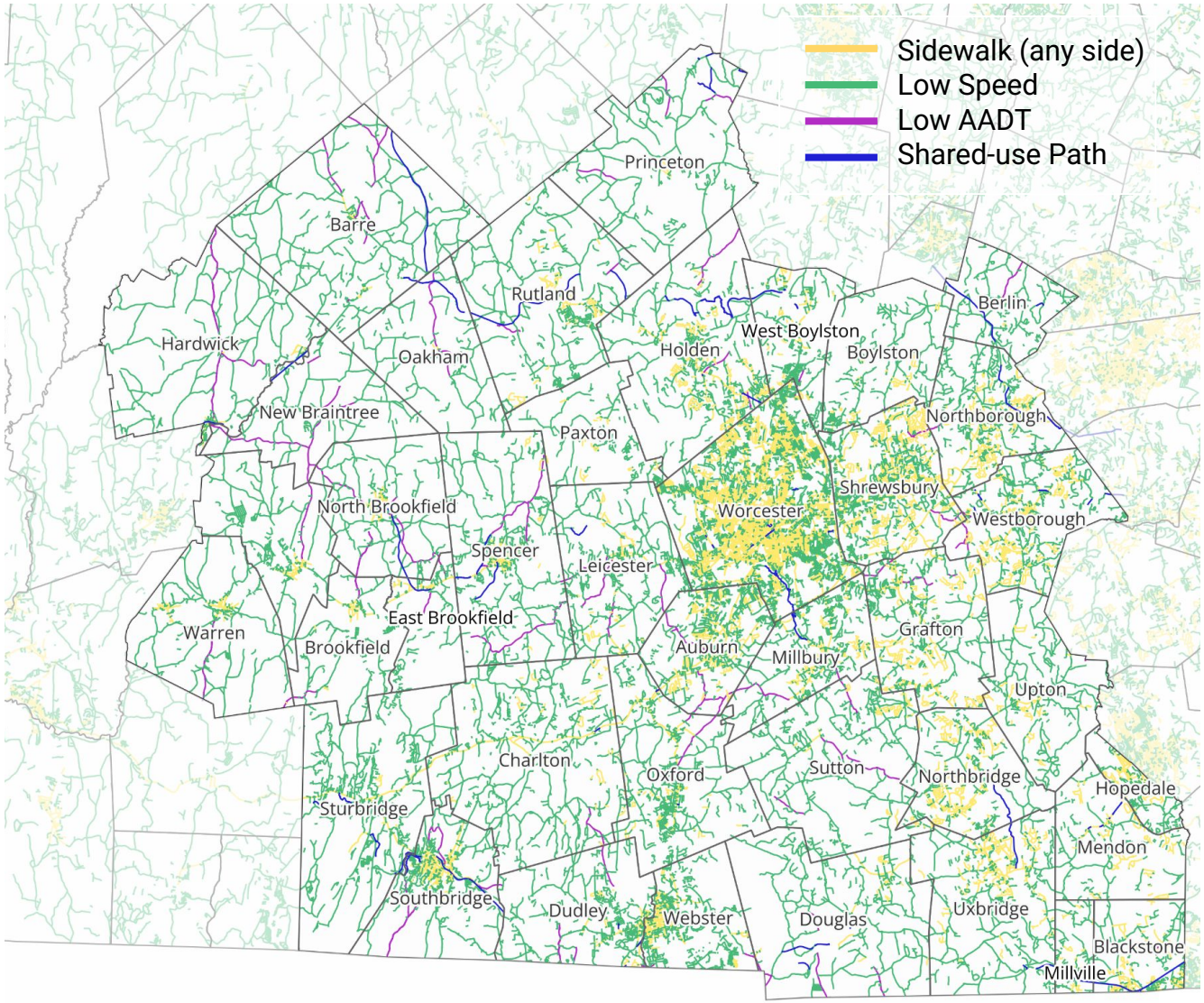
Source: Toole Design

To the right is the resulting pedestrian and bicycle base network. The base network are all road types that might be feasible for someone to walk or bike on. They include lower stress roads with limited traffic or posted speeds, roads with sidewalks, and shared use paths.

Notably, most roads are included as part of this network as we only removed limited access highways, and high speed or volume roads with no sidewalks.

Again, this is not to be misinterpreted as the network along which all walking and biking is comfortable.

Pedestrian and Bike Network



TDI Development: Mapping the network to parcels

Source: MassDOT RIF; MassGIS Parcels; Toole Design

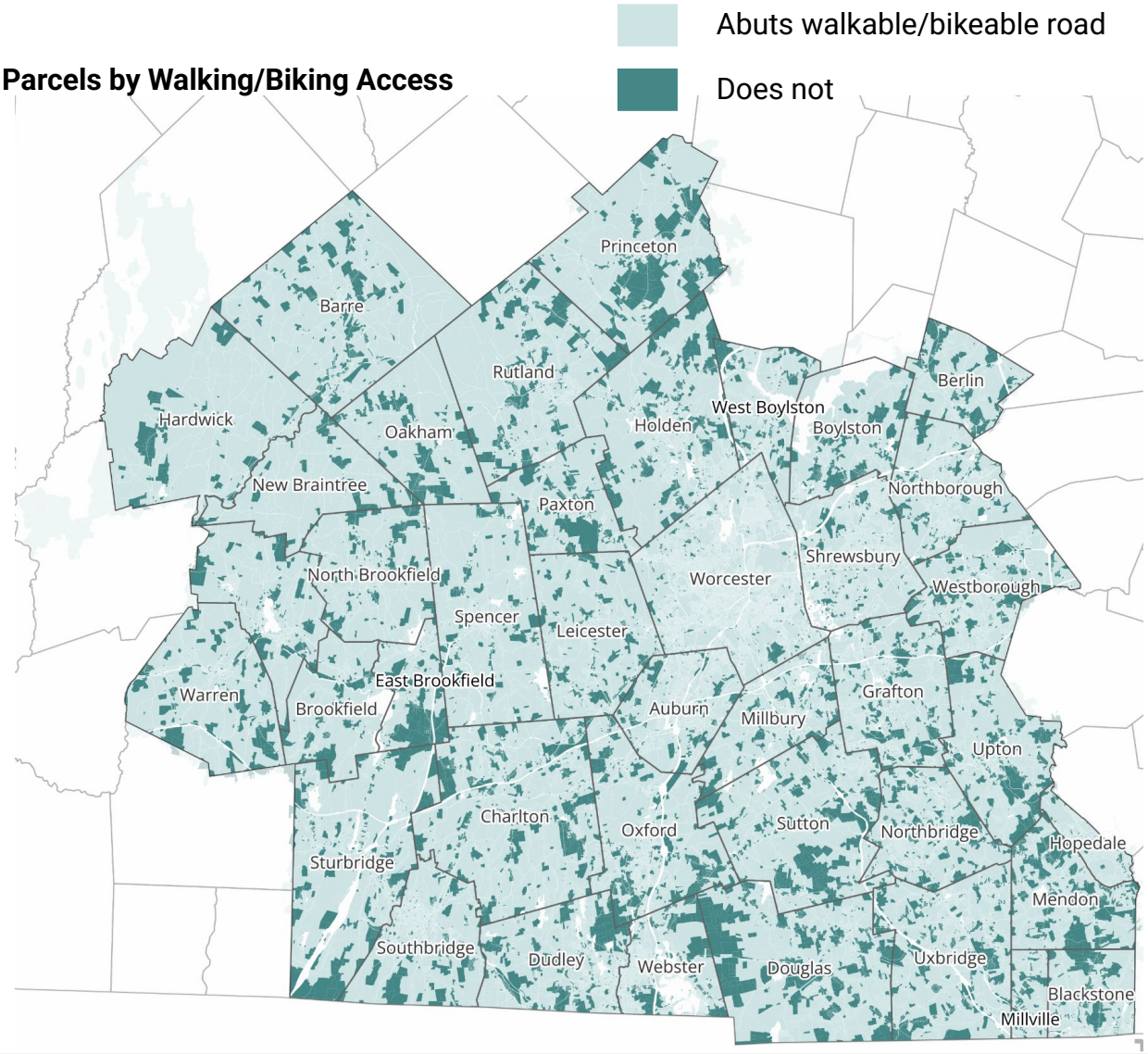
Transportation networks are often visualized in terms of lines and nodes, which can obfuscate the experiences of individual households. Here we associate our linear and nodal from the base network with parcels, providing a clearer picture of where that network can be accessed by households.

The majority of parcels in the region abutt a road on the base pedestrian and bike network:

- 83% of parcels
- ~75% by area

This shows that we consider the vast majority of parcels as having some sort of baseline pedestrian and bike accessibility.

Parcels by Walking/Biking Access





Importantly, not every parcel needs or benefits from access to the bike/ped network, particularly those containing farms, conservation areas, or other low intensity land uses that aren't intended to be broadly accessible. However, housing development, especially diverse/dense housing, offers the greatest transportation benefits in those places that are highly accessible.

TDI Development: Adding Intersection Density

Source: Toole Design

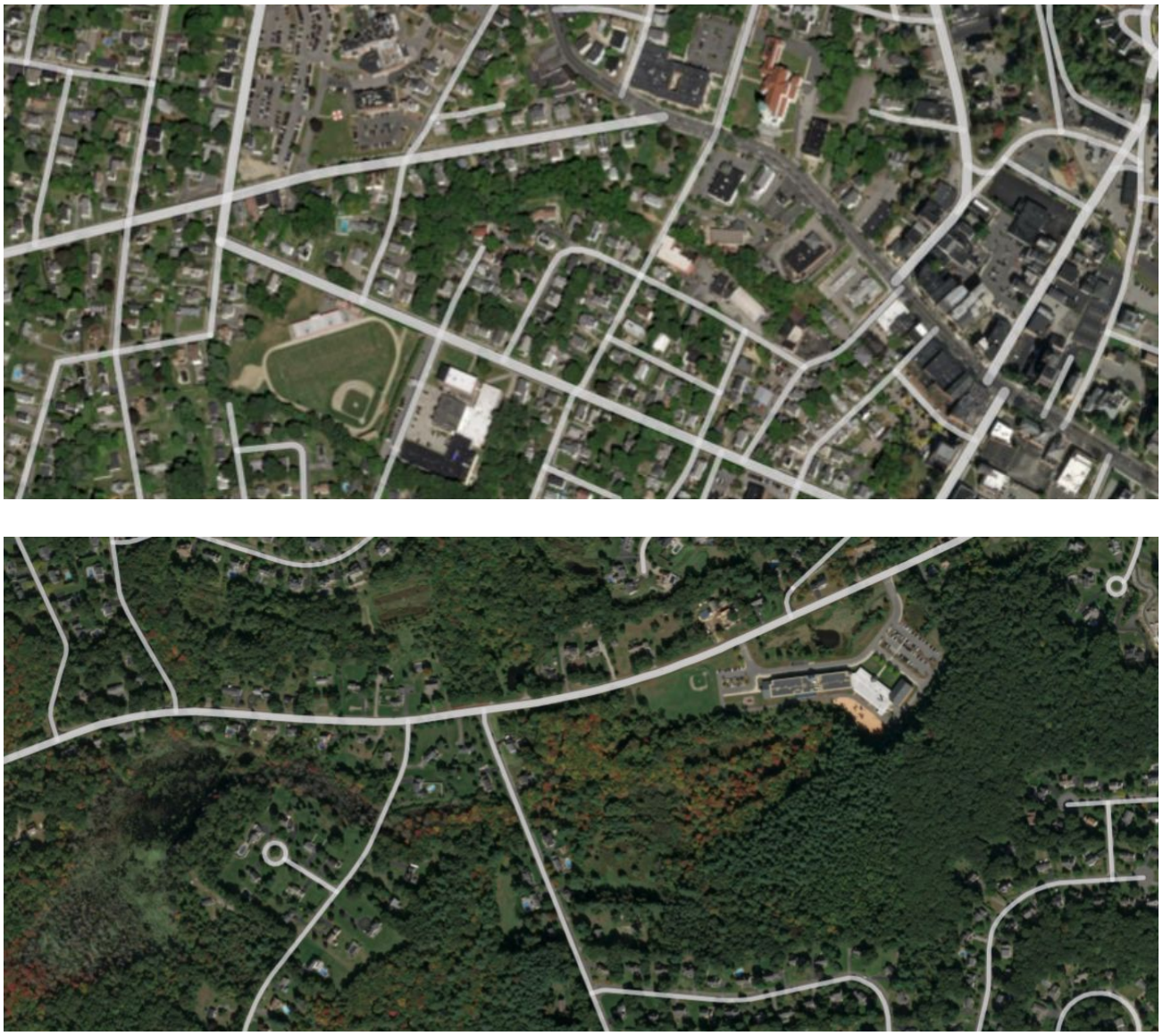
This TDI aims to identify places with high walking and biking potential for daily household trips. Our base network, outlined on page 78, identifies possible roads where people could walk and bike. The next step is to differentiate the accessibility of local walking and biking using intersection density.

Though an imperfect measure, intersection density is a common metric for walk/bike accessibility because it is a good proxy for route directness. An area that is gridded or has many intersections, gives pedestrians and cyclists more path choices, often reducing the distance between origin and destination.

Places with low intersection density are often built to the scale of the automobile, where destinations line a single road and are relatively far apart.

Places with higher intersection density often represent a more cohesive urban node, with well-connected streets and smaller block sizes. These traits are associated with greater walkability.

An example of a place with low intersection density would be a state arterial road with limited cross roads; high intersection density would be a village center, which sometimes exhibit a grid network of roads.



Downtown Southbridge (top) has relatively high intersection density, compared to a section of Millbury St in Grafton (bottom) with relatively low intersection density.

TDI Development: Mapping Intersection Density to Parcels

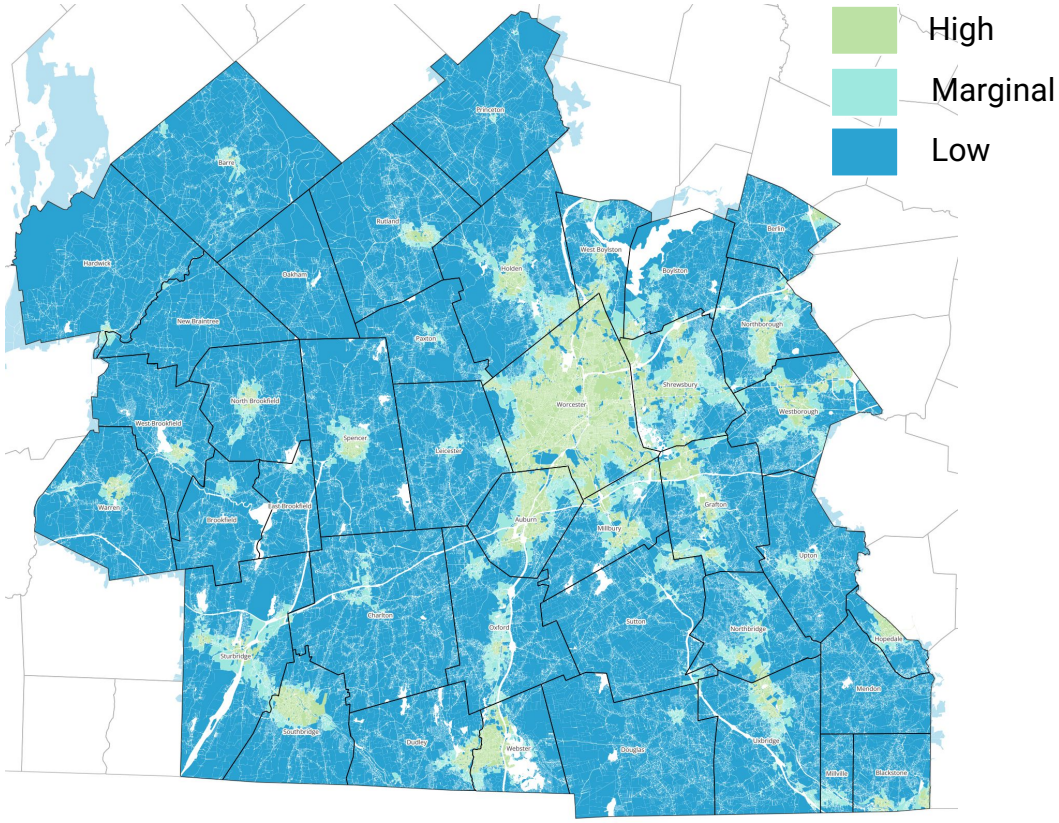
Source: Toole Design

Each parcel in the pedestrian and bicycle network was assigned a intersection density level (Low to High). Parcels not on the pedestrian and bicycle network were excluded from scoring entirely, as the absence of even basic conditions for walking makes further differentiation by intersection density less meaningful. This composite measure is termed "walkability" throughout this section, and refers specifically to the level of intersection density on the pedestrian and bicycle network. It is not a broad assessment of walking/biking comfort or safety.

By this measure, walkability varies sharply across subregions, reflecting the significant differences in land use pattern and street network character. The Central subregion stands out clearly from the rest of the region: 93.6% of its parcels are located in an area with moderate or high intersection density (walkable), and 92.1% of those score as highly walkable. This is a reflection of Worcester's comparatively dense, connected street network.

The Northeast and Southwest subregions show moderate walkability, with roughly half of parcels scoring as walkable and over a quarter as highly walkable. The Southeast and North subregions are similar to each other, with around 31–33% of parcels scoring as walkable, while the West is the least walkable subregion at 24.4%. In all subregions except the Central, non-walkable parcels dominate, reaching over 75% in the West, underscoring how much of the region's land area is currently built around automobile access rather than pedestrian connectivity.

Intersection Density on the Pedestrian/Bicycle Network



% of Parcels	Southeast	North	West	Central	Northeast	Southwest
Walkable	31.2%	32.8%	24.4%	**93.6%**	**54.7%**	44.6%
Highly walkable	*44.1%*	*40.5%*	*44.1%*	*92.1%*	*51.7%*	*58.8%*
Semi-walkable	*55.9%*	*59.5%*	*55.9%*	*7.9%*	*48.3%*	*41.2%*
Not walkable	**68.8%**	**67.2%**	**75.6%**	6.4%	45.3%	**55.4%**

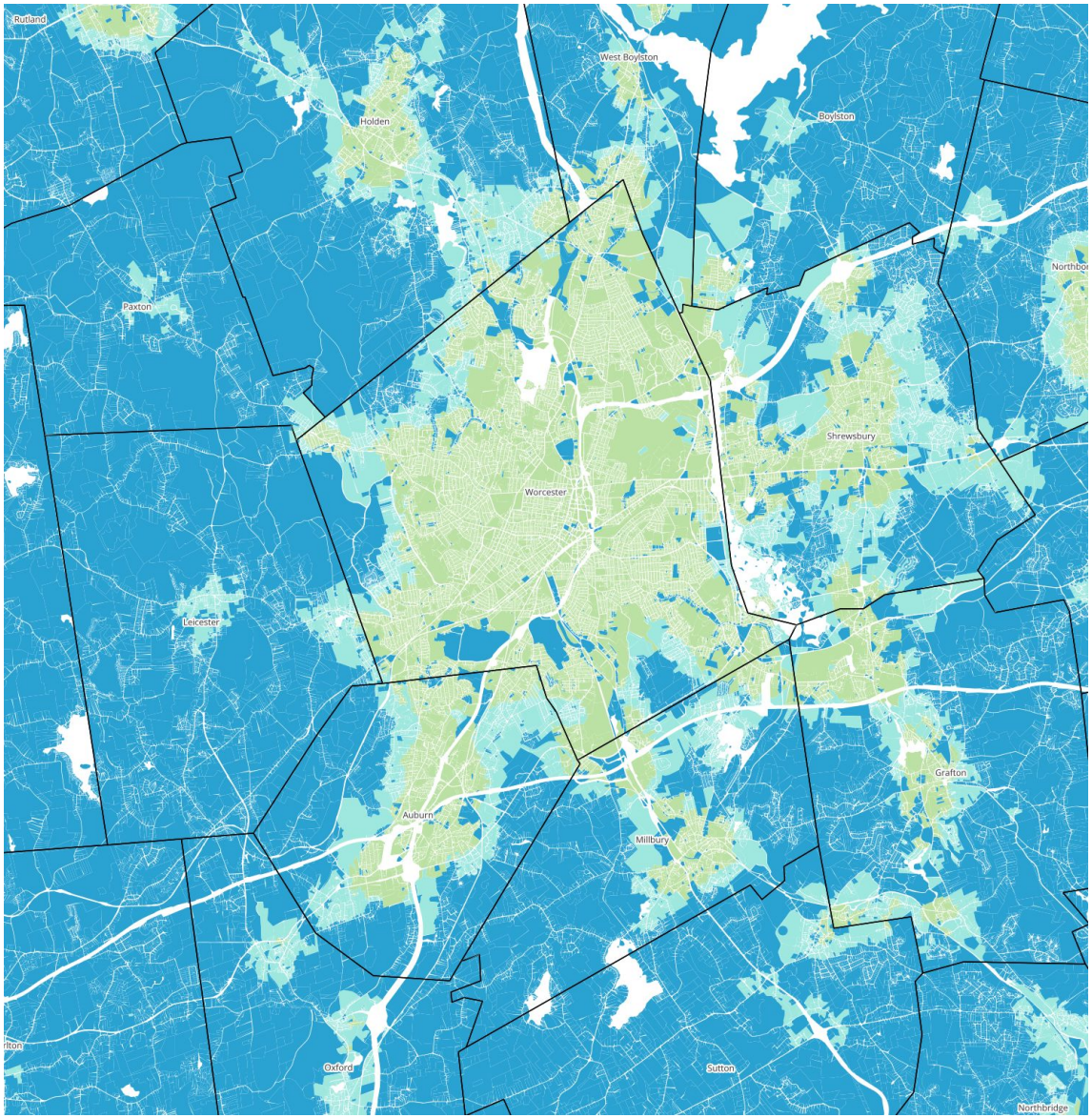
TDI Development: Intersection Density Cont.

Source: 2019-2022 MassDOT RIF; Toole Design

Walkability across the region is highly uneven, concentrated in the Central subregion and dropping off sharply elsewhere. Outside of Worcester, most of the region lacks the intersection density needed to support convenient pedestrian access for daily trips, with non-walkable parcels making up the majority of land area in every other subregion.

That said, the region is not uniformly car-dependent at the local scale. Many communities retain historic centers, village cores, and town commons where street networks were originally laid out for pedestrian-scale activity, and where intersection density has been preserved over time. These areas appear as nodes of higher walkability scattered throughout the region. They represent both a reminder of what pre-automobile development patterns looked like and, in many cases, the most promising locations for housing investment that could take meaningful advantage of existing transportation conditions.

Intersection Density (Worcester Detail)



TDI Development: Transit Overview

Source: WRTA GTFS Data; Toole Design

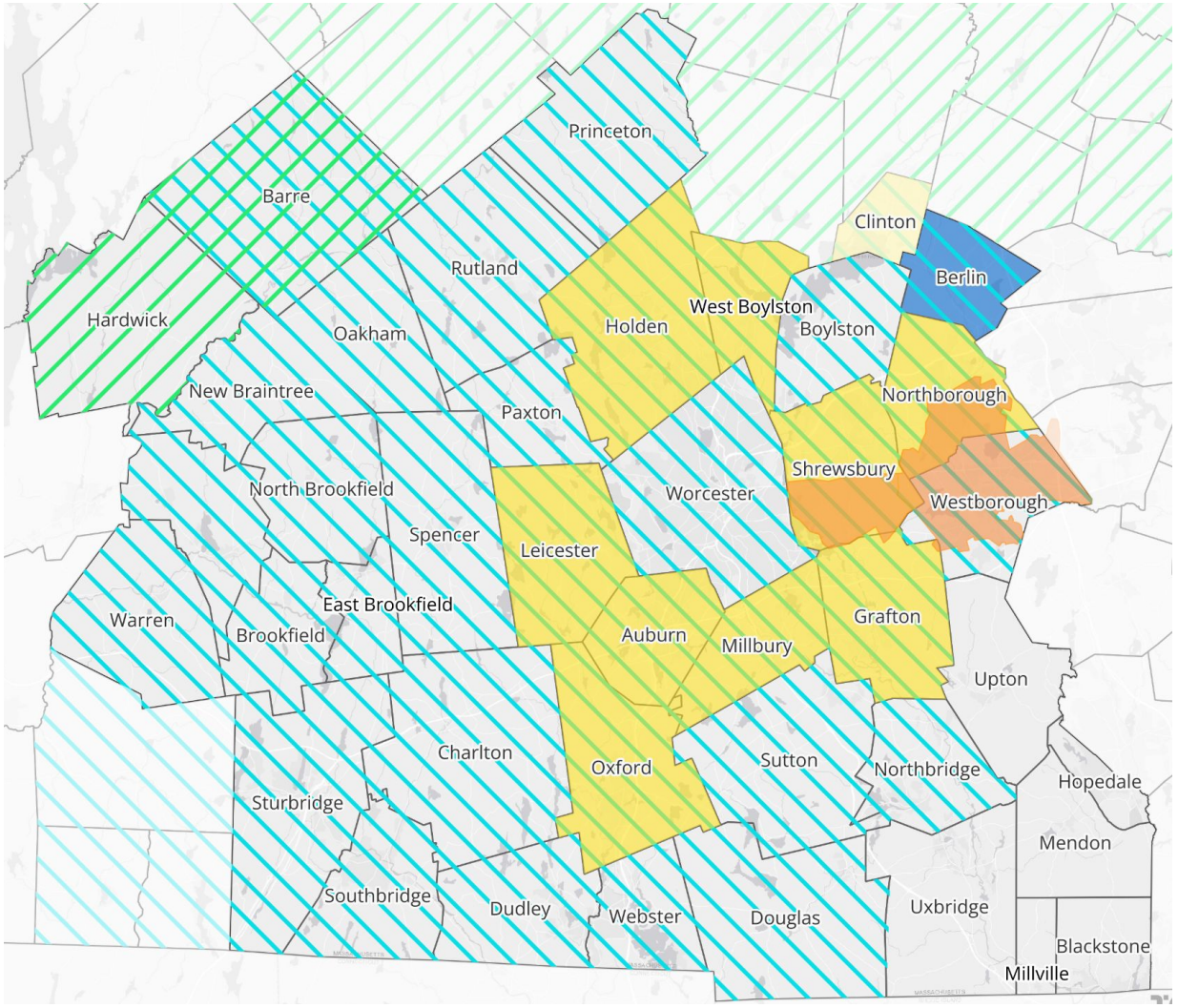
Transit access is the third component of the system analysis and TDI development. Where transit service is available and frequent enough to serve as a practical alternative to driving, it meaningfully expands the range of households that can reduce or avoid car ownership, making it a key factor in identifying where housing diversity delivers the greatest transportation benefit.

Local transit service in the CMRPC region is primarily provided by the Worcester Regional Transit Agency (WRTA), offering bus, paratransit service, and partnerships with both local non-profit ElderBus, and with Via's demand-response service, called Via-WRTA.

The Montachusett Regional Transit Authority (MRTA) covers Barre and Hardwick, and the MetroWest Regional Transit Authority (MWRTA) operates an additional microtransit service in Berlin. Commuter rail service between Worcester and Boston provides an additional regional connection; while not included in the local transit network assessment, these stops are addressed in the study's recommendations as high-value transportation assets.

Here, the goal is not to identify where transit riders are most likely today, but to evaluate where transit service is positioned as a genuinely competitive alternative to driving.

Transit Services in the CMRPC Region



This is looks beyond ridership propensity toward whether service frequency and coverage are sufficient to replace a car trip for a typical resident. The goal is not to suggest that every parcel in the region have access to high-frequency transit, but to identify where existing service is strong enough to support housing development that meaningfully expands residents' transportation choices.

Service Areas

- WRTA
- MRTA
- Via-WRTA
- WRTA paratransit
- MWRTA microtransit

TDI Development: Bus access and frequency

Source: WRTA GTFS Data; Toole Design

Bus stop and route data were processed to capture route-level details, individual trip frequencies, and stop timing across the network. The analysis evaluated three key measures: the share of stops meeting a morning peak frequency threshold (eight or more trips between 7 and 9 AM), the share of stops located along the pedestrian and bicycle network, and the share of parcels within walking distance of a stop or route. The 7–9 AM window reflects typical household commute patterns rather than current WRTA ridership peaks, consistent with the TDI's focus on transit as a structural alternative to driving rather than a measure of existing use.

Bus service frequency is classified into three tiers:

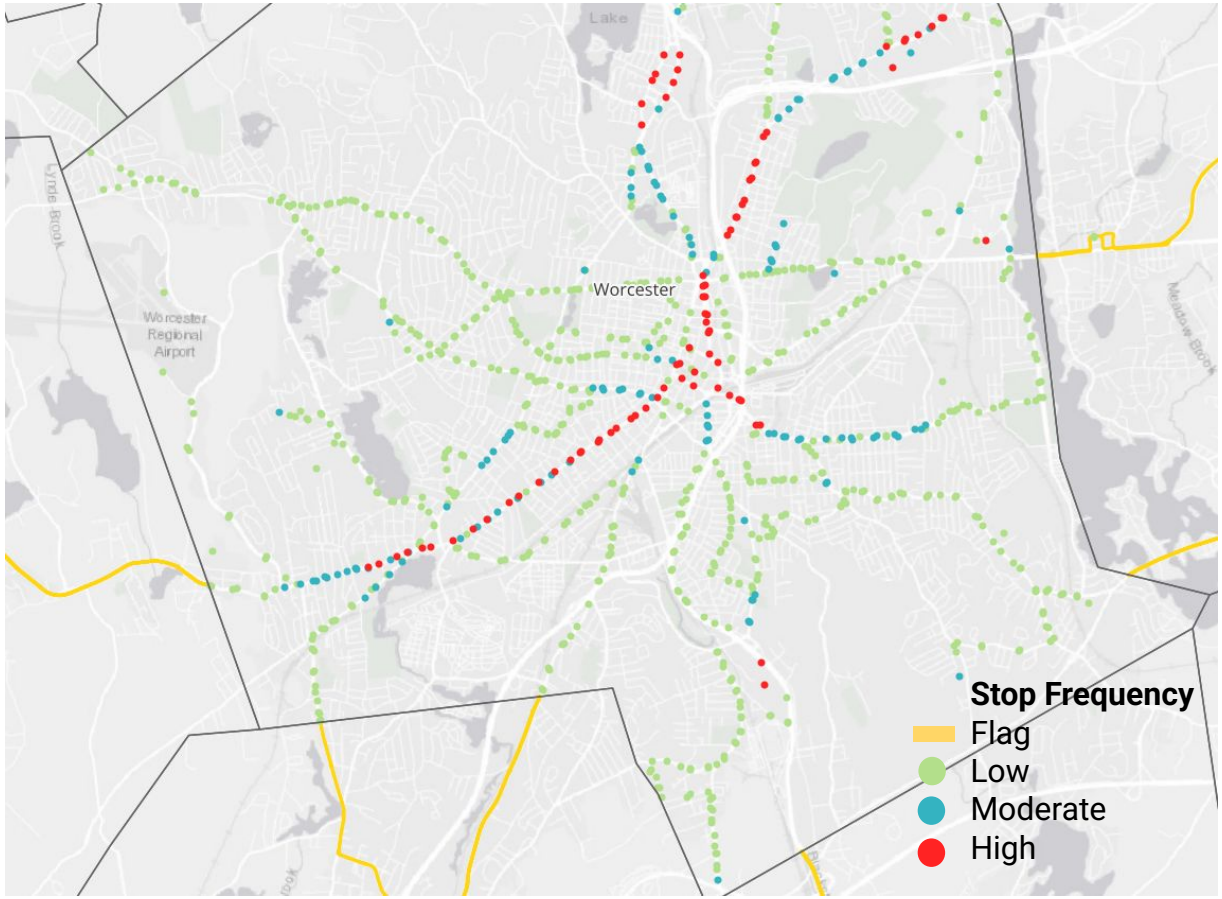
- **High frequency** (every 15 mins or less)
- **Moderate frequency** (every 15 to 30 mins)
- **Low frequency** (over 30 mins)

Flag stop routes (only outside of Worcester), where riders can request a stop at any point along the route rather than at fixed locations, are treated as a separate category.

By these classifications, 8% of all stops are high frequency. Only 7% of stops are located on roads not in the pedestrian and bicycle network (pg 78). These stops may be difficult to reach on foot outside of the immediate stop area. This shows that the current WRTA system is well aligned with areas that have pedestrian and bike access.

However, regionwide, just 12% of all parcels are within walking distance of any bus stop, representing 1.7% of the region's total land area.

Bus stops by Relative Frequency



This study does not directly examine the quality and safety of bus stop access, including the presence of crosswalks, sidewalks, or other pedestrian connectivity and safety measures, considering instead the overall diversity of transportation options. WRTA's most recent inventory found that 90% of stops had continuous sidewalk.

Access to high-frequency stops is considerably more limited, with only 1.2% of parcels within walking distance of a high-frequency stop, representing 0.2% of land area. **Importantly, because the purpose of this analysis is to develop a metric that informs housing suitability, it is focused on parcels. It does not describe the current population or percent of the population within walking distance of bus stops, which would be substantially higher.**

TDI Development: Bus access and frequency cont.

Source: Toole Design

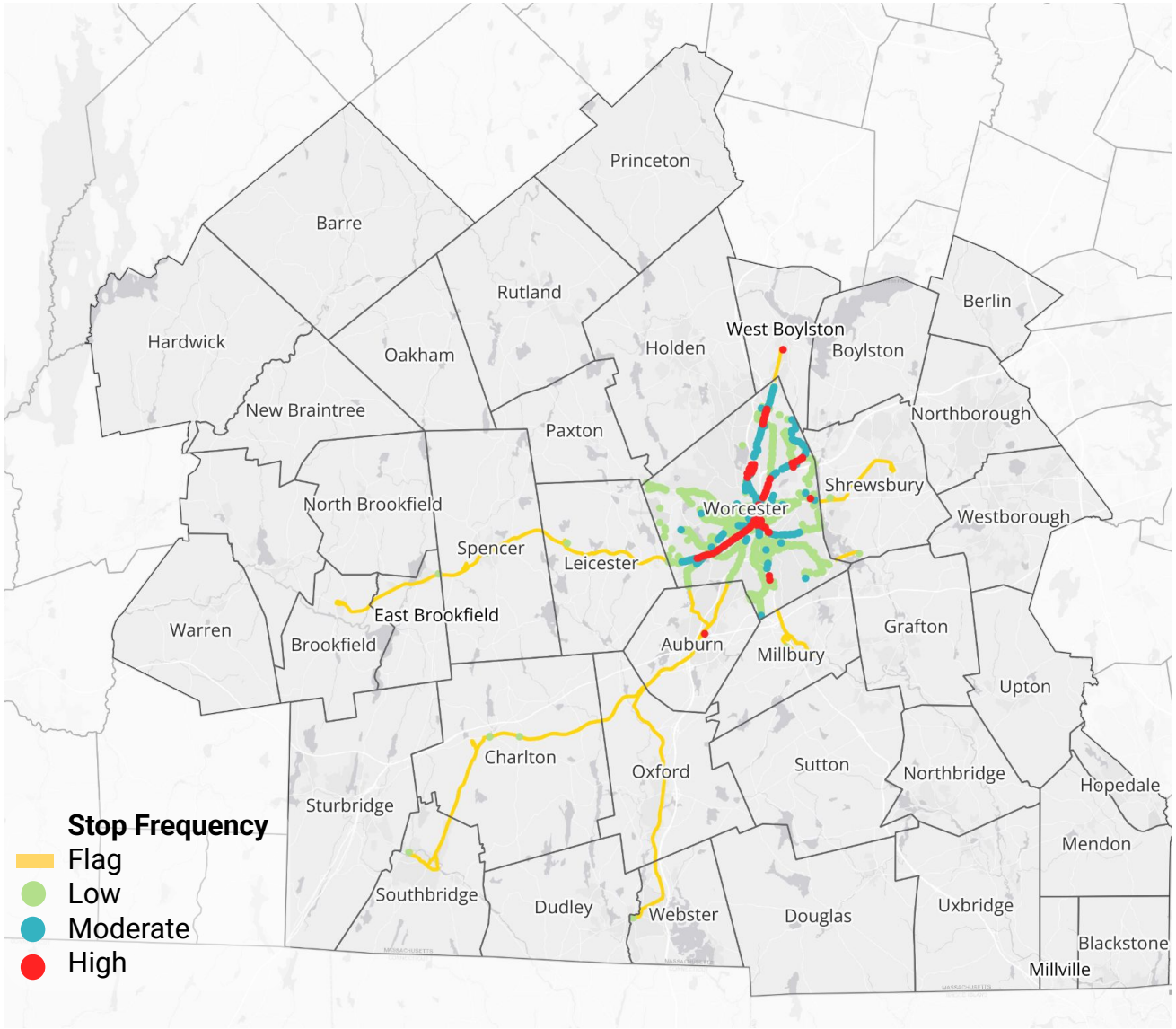
Local bus service in the CMRPC region is centered on Worcester, with frequent service in the core but limited local fixed stop bus routes in outlying towns. It generally follows a hub-and-spoke model with most routes converging on Worcester.

Outlying neighborhoods in the City of Worcester have lower frequency routes, while the less dense Towns to the northwest, have no direct service.

Some outlying towns (e.g., Southbridge, Spencer, Webster) have service into Worcester along flag routes, but limited local transit options outside of the commute corridor.

Important note: Notably, Via-WRTA, Elder-bus services, and WRTA's shuttle routes are not included as inputs in the Transportation Diversity Index. This is because they are less structurally integrated into a defined network that can be associated and compared across parcels. Though each of these services offers compelling options for residents beyond single occupancy vehicles, they are included as context layers in the online mapping dashboard instead of part of the TDI.

Transit Frequency



Aside: Access to Grocery Stores by Bus

Source: Toole Design; MassDOT GIS

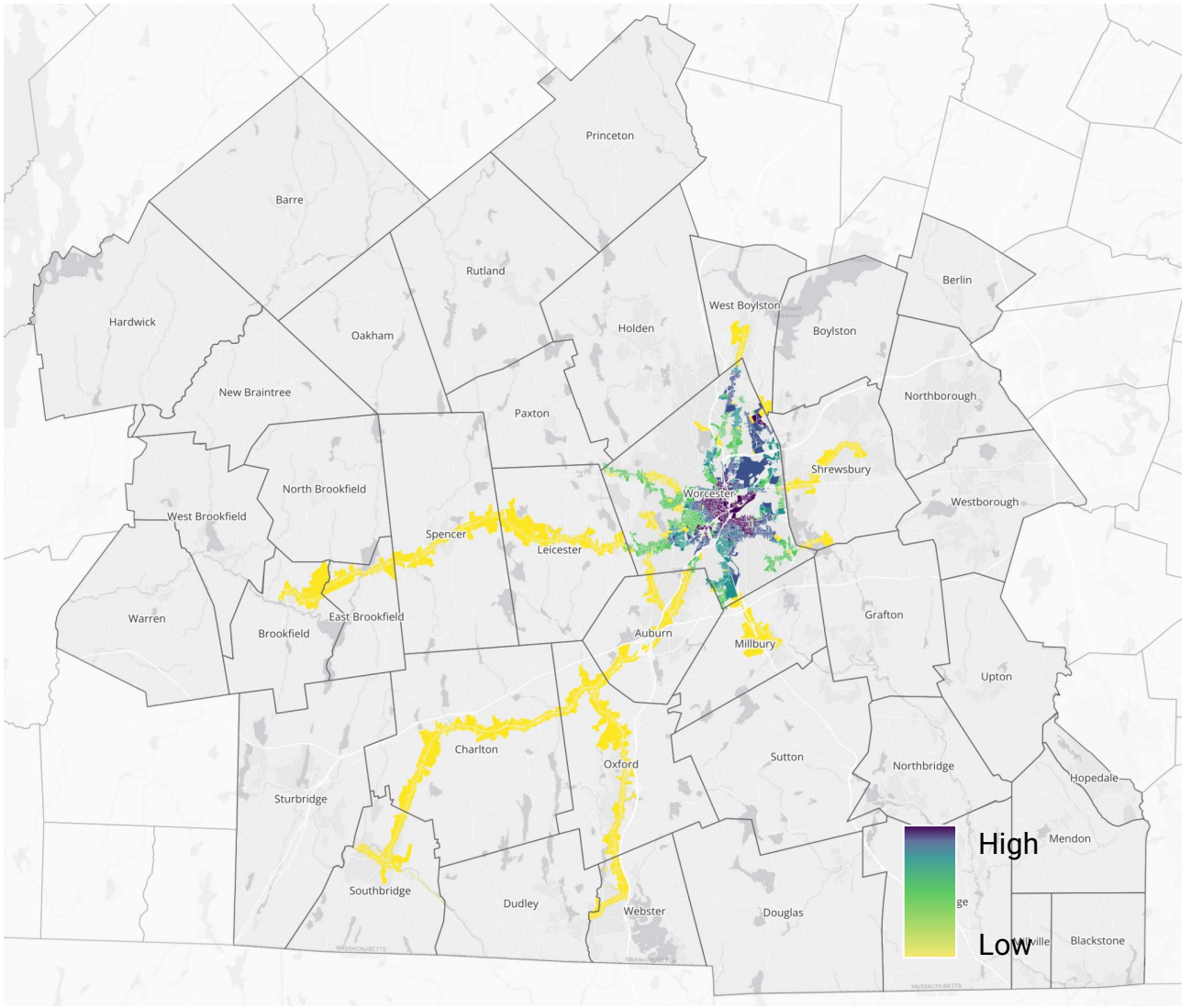
Commute trips are a critical lens for evaluating transit potential, but they represent only one slice of how and why households actually move through their days. Here we evaluate another travel case, grocery stores.

Grocery shopping is one of the highest-friction non-commute trip types. Unlike a work commute, which tends to follow a consistent route and schedule, grocery trips can involve variable timing, multiple potential destinations, and the physical challenge of carrying bags — factors that make transit a less competitive option even where service exists. A high density of SNAP-accepting grocers is also likely to indicate concentrations of other essential services, making grocery access a reasonable proxy for broader service accessibility.

WRTA puts significant effort into routing service toward destinations that matter to riders, and high propensity ridership areas, and that shows in the network's coverage of key destinations. But even well-designed routing doesn't always translate into a competitive alternative for a typical household making a grocery run. Here we see that grocery store access is possible anywhere along the WRTA system, however, much greater levels of accessibility are present in the City of Worcester than outlying communities.

This demonstrates one of the core challenges and opportunities of transit and land use as connected systems.

Grocery stores accessible by bus within 30 minute travel time



Transit can both support and benefit from compact, mixed use development. The routes that demonstrate lower grocery accessibility on the map above are also areas with spread-out and single-use development patterns. With such development patterns, transit is too costly to operate at high frequencies and disparate land uses too spread out to allow a transit route to reach them all efficiently.

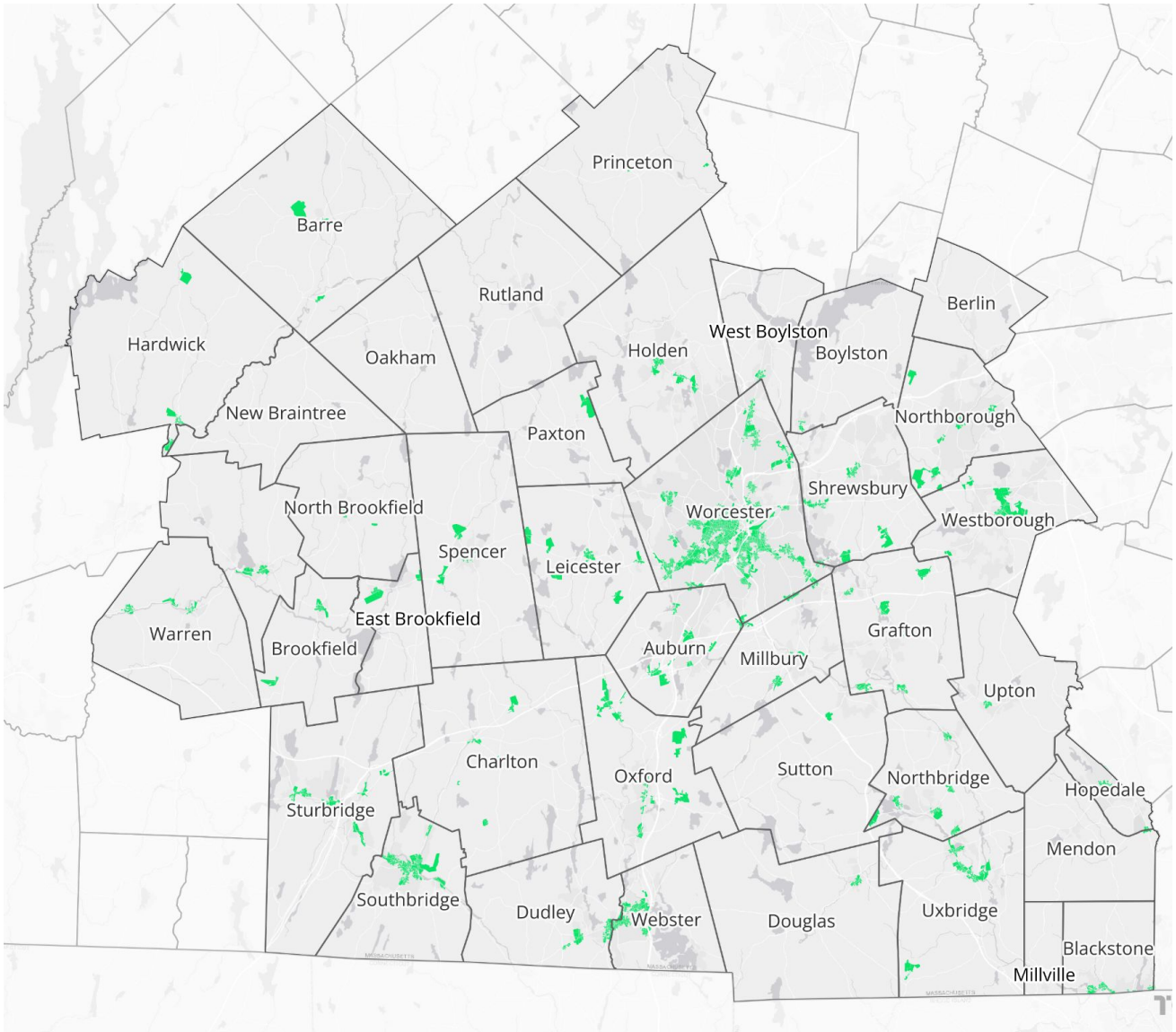
TDI Development: Pedestrian Access to Grocery Stores

Source: MassDOT RIF; MassGIS Parcels; Toole Design

Walking/rolling has the potential to replace short vehicle trips entirely, but only where daily destinations are close enough to reach on foot or by mobility device. To evaluate this, we examined access to SNAP-accepting grocery stores as a proxy for whether a parcel is within walking distance of at least a minimum level of essential services. Most parcels in the region sit on roads included in the pedestrian and bicycle network, but proximity to the network does not mean destinations are within reach. Only 8.2% of parcels are within walking distance of a SNAP grocery store, representing just 1.5% of the region's land area.

Where grocery access by foot does exist, it carries meaningful weight in the TDI. Parcels within walking distance of a SNAP grocer are considered minimally transportation diverse even in the absence of high intersection density or transit access, reflecting the judgment that access to a basic necessity on foot meaningfully changes a household's transportation options. Describing these parcels as fully vehicle-dependent would not be accurate. More general measures of activity density and amenity access were incorporated separately through the suitability analysis.

Parcels with Pedestrian Access to a Grocery Store



Note: Access to a grocery store is not the sole trip type that determines whether a household will need access to a vehicle. School runs, medical appointments and more, all play a role in transportation choices. However, outside of commute trips, it is by far the most common trip purpose and also the shortest on average (2022 NHTS).

TDI Development: Pedestrian Access to Bus Network

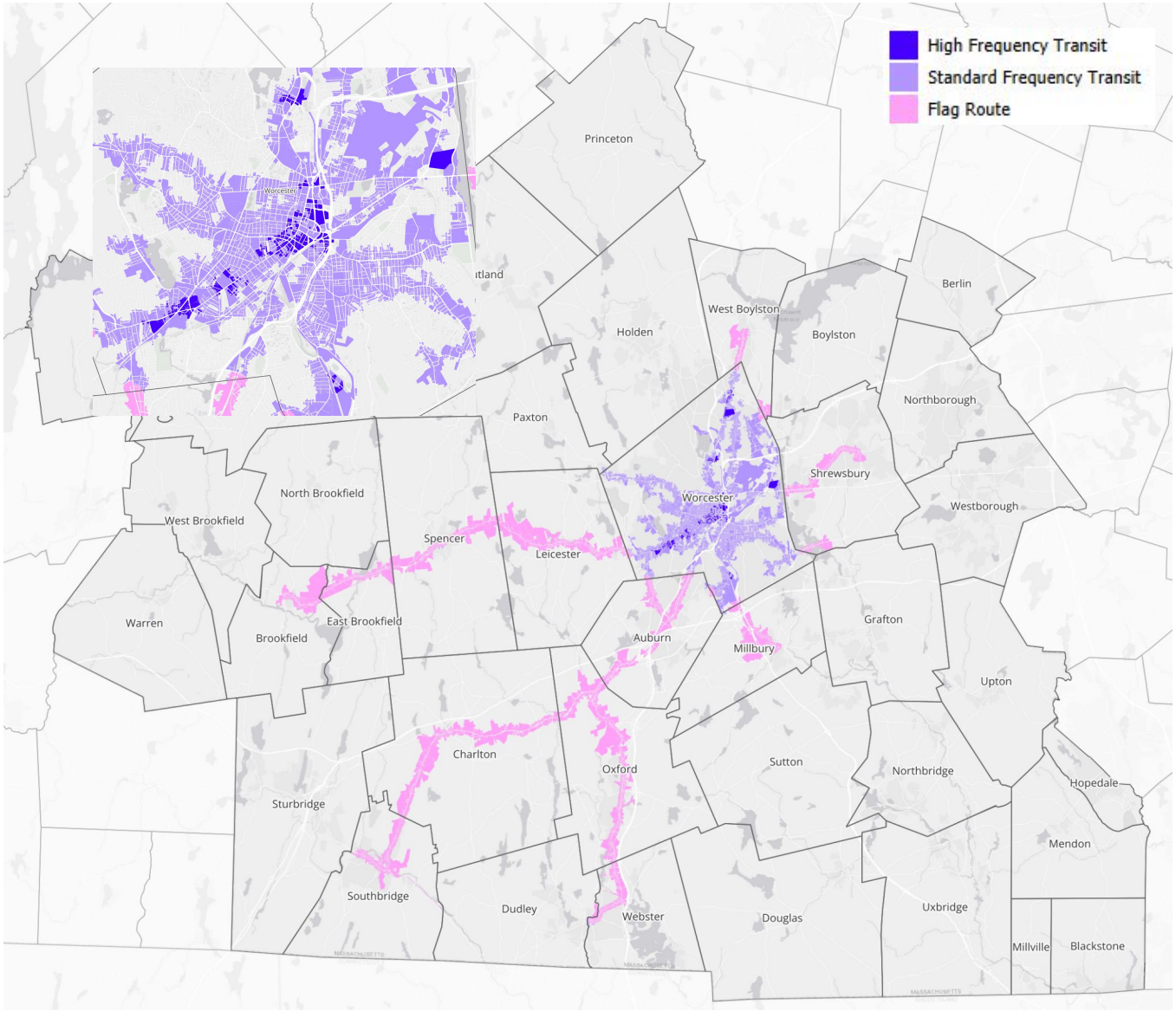
Source: MassDOT RIF; MassGIS Parcels; Toole Design

The final piece of the TDI is identifying all parcels that are on the pedestrian and bike base network and within walking/rolling distance of a WRTA route. This is then further differentiated by the frequency of transit service and access to destinations using that service.

Most of the WRTA network falls along roads that are included in our pedestrian and bike network (pg 78). For those that are not on the network, if the parcels are along a flag route, they are captured as having pedestrian access as the bus can be flagged at any point along the route. All other parcels are treated as having no pedestrian access to transit.

For parcels with less than high frequency (< 15 mins), non-flag stop service, these parcels are differentiated by access to jobs and grocery stores, rather than by marginal differences in frequency. Thus, as seen on page 91, some parcels with lower frequency bus service vary across minimally, marginally and fully diverse, according to how the bus connects those parcels to jobs and grocery stores.

Parcels accessible by bus frequency



TDI Development: Bringing it all Together

Source: Toole Design

The Transportation Diversity Index (TDI) is a parcel-level metric that synthesizes the pedestrian, bicycle, and transit components described on pages 74 to 88 into a single classification of transportation modal availability. For each parcel in the region, the TDI asks two foundational questions: can you walk or bike anywhere from here, and can you walk or bike to transit? The answers to those questions, combined, determine where a parcel falls along a spectrum from vehicle-locked to transportation diverse. Additional detail is provided in the methodology section (pg 168) and in the accompanying TDI memo.

Vehicle dependency is the norm across much of the CMRPC region, even in areas with transit access, but it carries real consequences for household budgets, for the environment, and for residents who cannot drive. The TDI is designed to make those modal options visible at the parcel level, and to support housing production conversations that include the co-benefits of directing density toward places where transportation diversity already exists or can be meaningfully improved. This classification is applied to parcel-level data across the region. Because parcel size varies considerably, parcel counts and land area both offer useful insights.

TDI Example: This road in Charlton has low transportation diversity, with low transit access and low walking/biking potential.



This result does not imply that we should increase transit access to very rural areas, but informs planning staff that housing production in this area would result in higher household vehicle use and spending unless comparable investment in improving transportation diversity.

Not every parcel in the region should have high frequency transit access, particularly places where there is not much demand. However, transportation modal availability should be considered during preliminary the planning and design of new developments.

TDI Definitions

Source: Toole Design, For more on methodology, see pg 157, 158 and accompanying memo

The TDI is composed of four categories.

- **Transportation Diverse:** Parcels with any meaningful capacity for walking, biking, or transit use. This broad category encompasses three tiers:
    - **High transportation diversity:** Parcels with access to multiple high-quality transportation modes — for example, high intersection density combined with proximity to a high-frequency bus stop or strong job access by transit.
    - **Marginal transportation diversity**: Parcels with access to multiple transportation modes of middling quality — for example, a walkable street network at the edge of town, or transit access at lower frequency.
    - **Minimal transportation diversity:** Parcels with some transportation options but of limited practical utility on their own — for example, walking access to a grocery store or location along a flag transit route, but otherwise low intersection density and no fixed transit access.
- **Vehicle-locked:** Parcel that cannot be accessed easily without a vehicle, where residents are highly vehicle dependent.



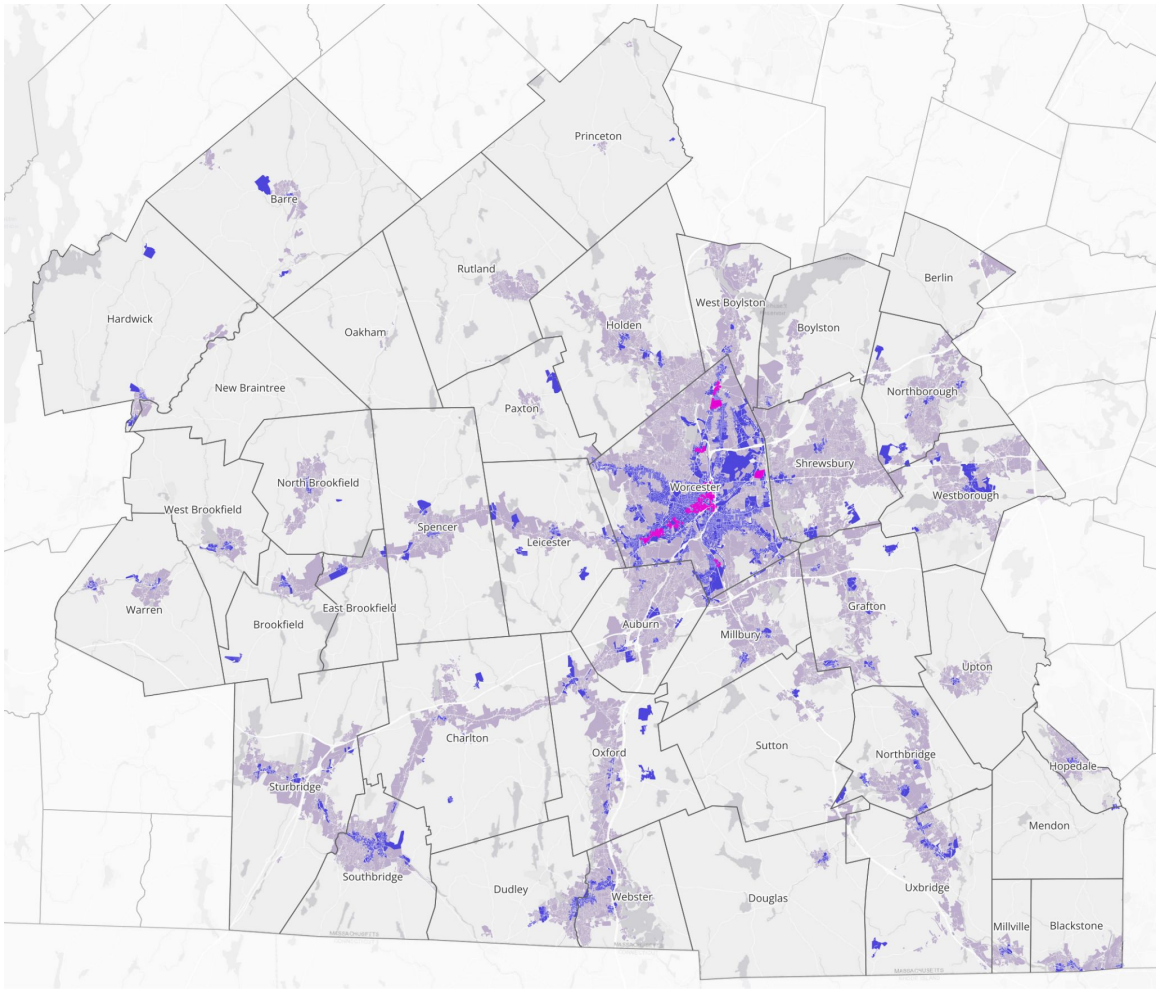
High Transportation Diversity - Main Street, Worcester
Image source: Google Streetview



Vehicle-Locked - West Street, Paxton
Image source: Google Streetview

Transportation Diversity in CMRPC Region

Source: Toole Design



Regionwide, transportation diversity follows a consistent pattern, concentrating in denser areas shaped by older development patterns and falling off sharply in the areas surrounding them.

Worcester is the only municipality in the region with high transportation diversity, where it is concentrated in the urban core and along key transit corridors. Most other municipalities have some transportation diversity, but at lower levels. For example, older town and village centers retain the structural characteristics of pre-automobile development — gridded street networks, higher intersection density, and a mix of uses in close proximity — that make non-car travel more practical. These characteristics mean the bar for meaningful improvement is lower: increases to housing density and diversity in these areas would result in greater transportation benefits than the same changes in areas with lower transportation diversity.

Areas just outside of village and town centers tend to fall into the minimal transportation diversity category. These areas are on the edges of denser nodes, with some ability to support reduced car dependence but limited by lower connectivity and destination access.

The vast majority of parcels in the region are vehicle-locked, meaning residents face a high likelihood of needing a car for virtually all daily travel. This is the baseline condition across most of the region's land area, and the context against which transportation diversity is most meaningful.

% of Parcels by Subregion	Southeast	North	West	Central	Northeast	Southwest
High Transportation Diversity	0%	0%	0%	1%	0%	0%
Marginal Transportation Diversity	4%	1%	5%	46%	3%	7%
Minimal Transportation Diversity	29%	33%	23%	48%	54%	41%
Vehicle Locked	67%	66%	72%	5%	43%	52%

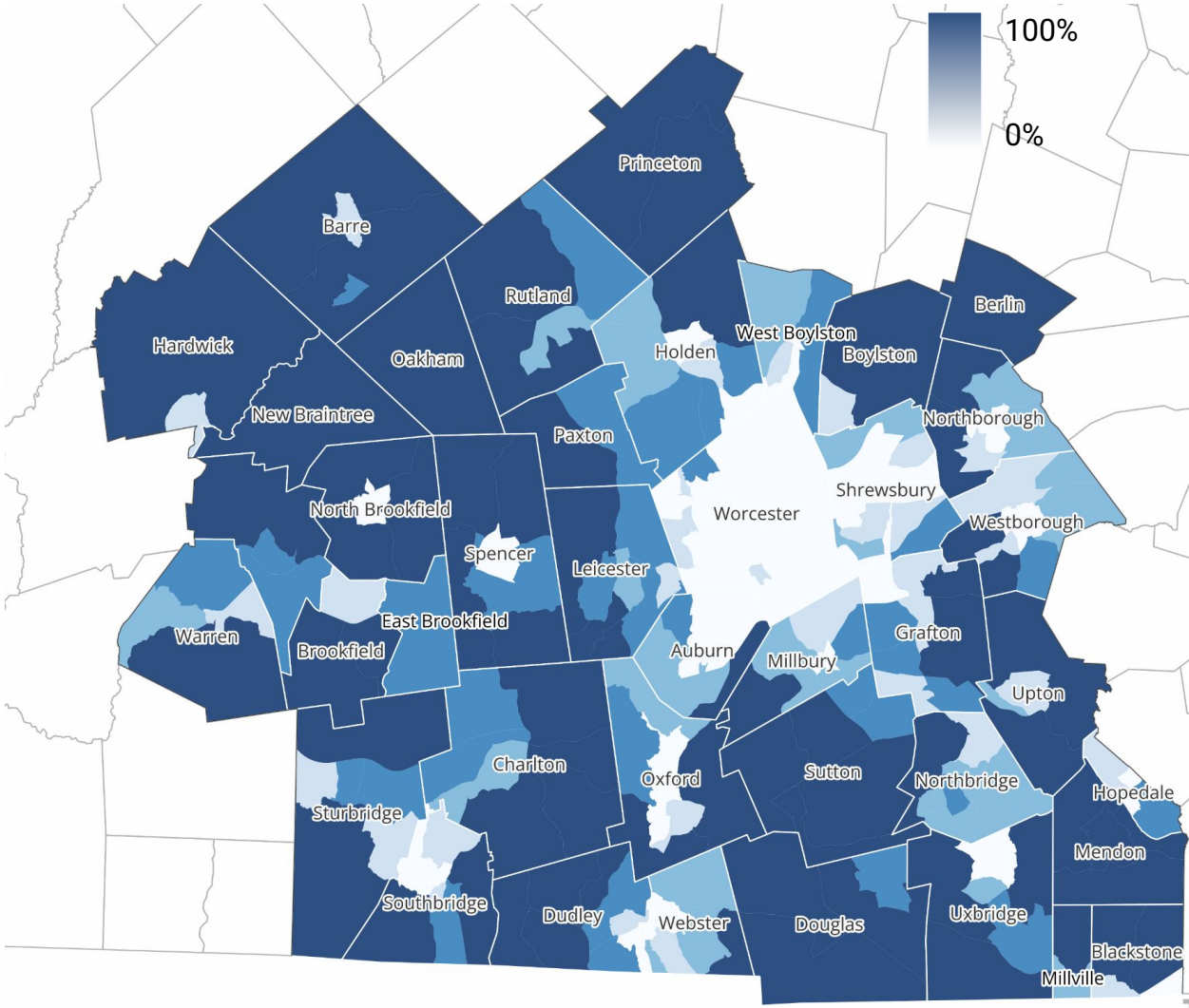
Where do you need a car to live?

Having the ability to easily avoid vehicle use is a critical component of affordability. Households who must use a vehicle to meet their mobility needs have a higher floor of mandatory monthly spending than those who are able to opt out.

The map to the right shows the proportion of each block group in the region that is vehicle locked. The darkest blue areas are those where vehicle ownership or access is required to access services, jobs, and amenities. These are also the areas where multiple avenues of intervention would be needed to see robust transportation benefits.

For example, research generally shows that higher density housing results in fewer vehicle trips per household and per person than lower density housing. However, these benefits diminish as isolation of the development increases. In other words, a multi-family development in a town center or urban core is likely to continue supporting transit and enables people to live in close proximity to destinations. The same development in an isolated areas is likely to push the corresponding residents into vehicle ownership unless additional interventions, such as new mixed use nodal development is pursued.

Proportion of Block Group with minimal or no transportation diversity



Housing & Transportation Trade-off

Source: Toole Design

For a household, location affordability is the product of housing and transportation costs. A lower-cost home in a car-dependent location often comes with transportation costs that offset the savings, while housing in a transportation-diverse area gives households the ability to reduce vehicle ownership and adjust their spending over time.

This is why where housing goes matters in addition to how much gets built. Directing new housing toward transportation-diverse areas maximizes the benefit of that investment for households and for the regional transportation system. **The TDI gives local planners a tool for understanding how different development sites compare on this dimension.**

Not all housing will be concentrated in already-transportation diverse areas. Areas that lack transportation diversity today can be planned with an eye toward reducing car dependency over time, through development patterns that build the urban form needed to support future transit investment and bring destinations closer to residents. This is closely related to transit-oriented development. While traditionally an urban concept, extending the idea of context-sensitive compact and mixed-use development to suburban and rural contexts offers a development model that makes future car-free/light living more viable across a wider range of communities.



TNC & Transit Screening Analysis

Source: MassDOT OPMI, Toole Design

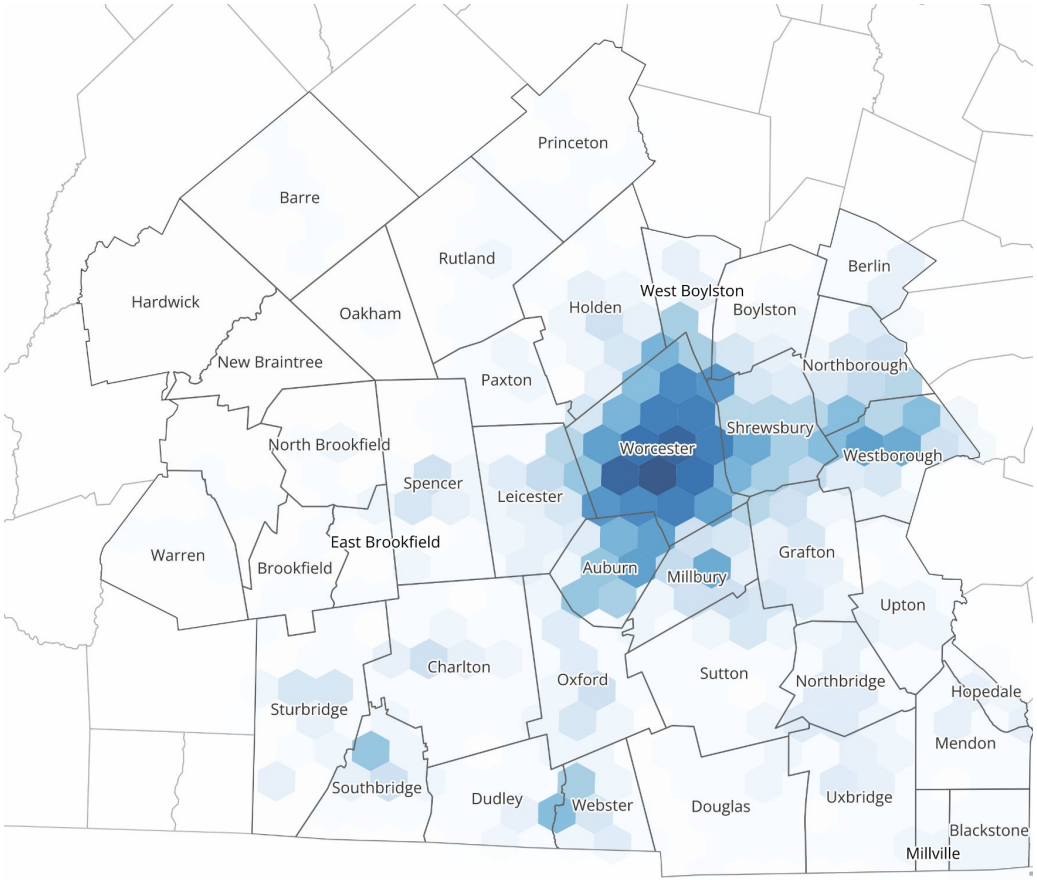
Ridehailing services, commonly referred to as transportation network companies or TNCs, have become a meaningful component of the transportation landscape across Massachusetts. Services like Uber and Lyft, alongside demand-response partnerships like Via-WRTA, provide on-demand mobility that complements the broader transportation network in a variety of ways depending on the needs and circumstances of individual riders.

TNC trip data is a relatively new resource in Massachusetts. Geographically aggregated to protect individual privacy, it offers a window into travel demand patterns that traditional data sources do not capture. For this study, TNC data was obtained upon request from MassDOT. While TNC users are not necessarily likely transit riders from a traditional propensity standpoint, the geographic distribution of TNC activity provides useful context for understanding where and how people are moving around the region outside of their personal vehicles.

This data is not incorporated into the TDI, but is used here as a supplemental proof of concept analysis tool. The analysis assigns each hexagonal grid cell one point for each of the following thresholds it meets:

- Poverty,
- Intersection density,
- TNC trips per capita,
- TNC trips in vehicle locked areas,
- Zero vehicle households, and
- Existing transit.

TNC Pickups per capita



TNC use is highly concentrated in Worcester, where most of the region's population and jobs are located.

The resulting composite score provides a starting point for identifying areas where the interactions between land use, transportation diversity, and travel demand may warrant closer attention in future planning efforts.

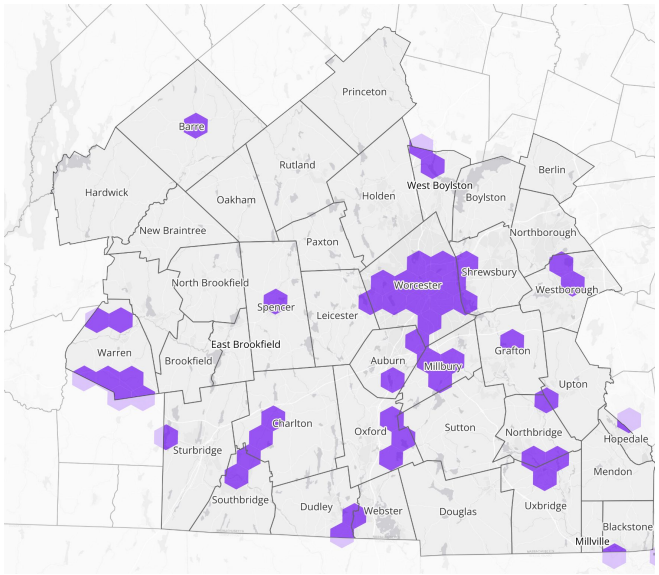
TNC/Transit Screening Analysis: Related Variables

Source: MassDOT OPMI; Toole Design

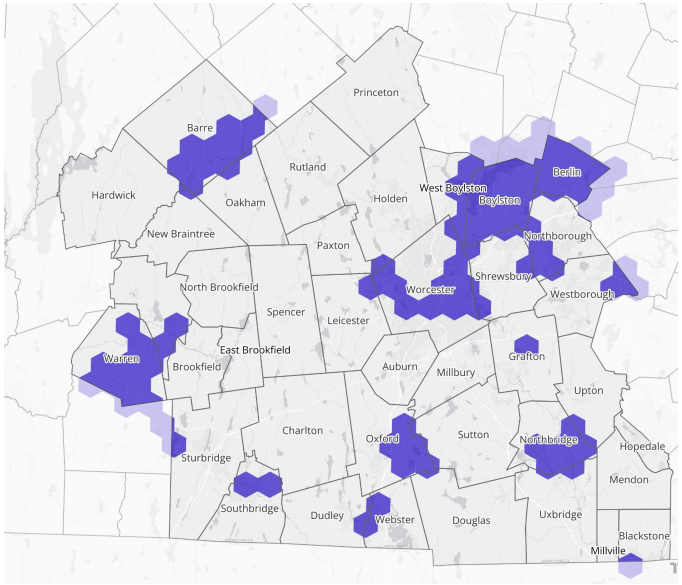
The screening analysis introduced on page 94 layers TNC activity with characteristics that point to transit propensity and opportunity. Zero vehicle households and poverty are typical propensity indicators, areas where residents are more likely to depend on transit (among several other demographic variables). Intersection density is not a standard propensity measure, but captures a structural, built environment factor. Walkable, well-connected street networks, tends to support transit accessibility when it exists.

Combined with the TNC activity maps on the following page, these characteristics help identify areas that combine underlying propensity with an environment favorable to transit, and where we're also seeing high TNC usage. What that overlap means is not fully clear from this data alone. It could reflect convenience, or it could reflect chained trips, where a TNC covers the last leg to a destination not on a bus line. Both are plausible, and this analysis can't distinguish between them.

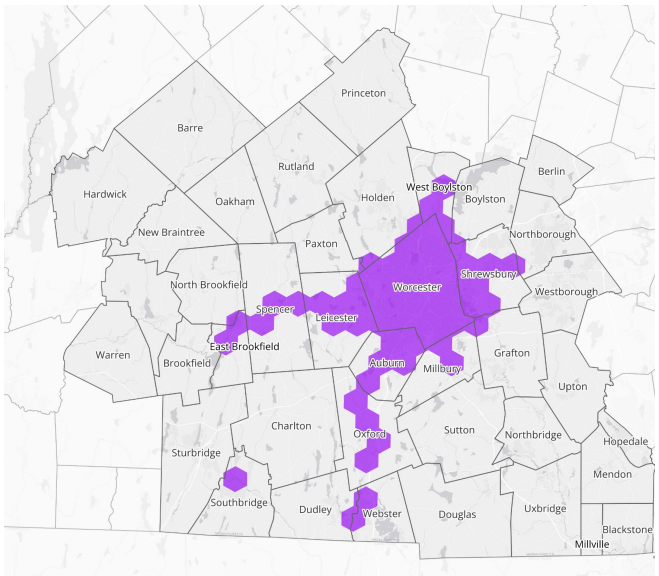
While detailed transit improvement recommendations were not part of this effort, these areas of opportunity are worth studying further. For a full propensity/demographic market evaluation, see the WRTA's Comprehensive Regional Transit Plan.



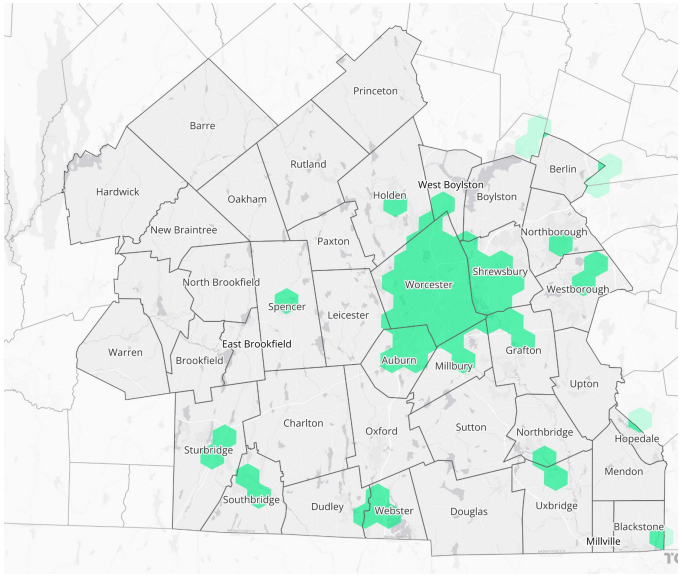
These hexes have a high proportion of zero vehicle households (Top 5%).



These hexes have a high proportion of households in poverty (Top 10%).



These hexes have existing transit access.

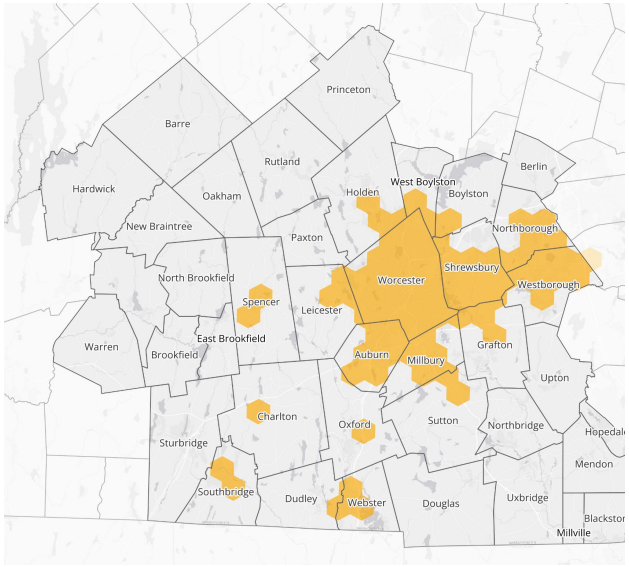


These hexes have a highest intersection density (Top 10%).

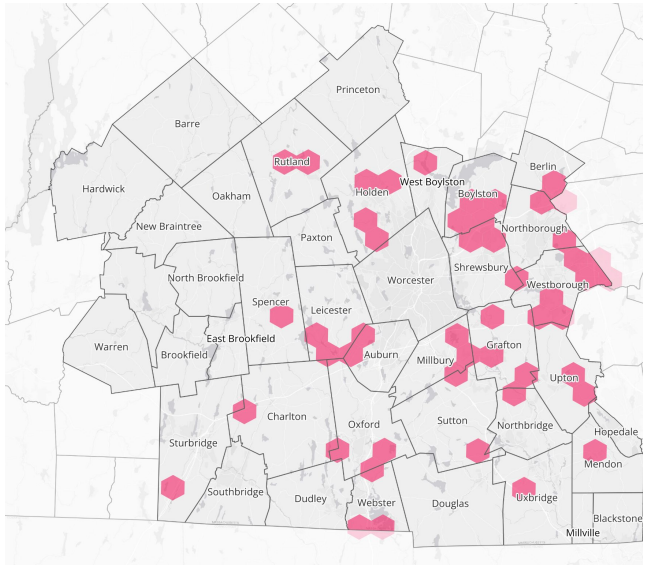
TNC/Transit Screening Analysis: TNC Activity Variables

Source: MassDOT OPMI; Toole Design

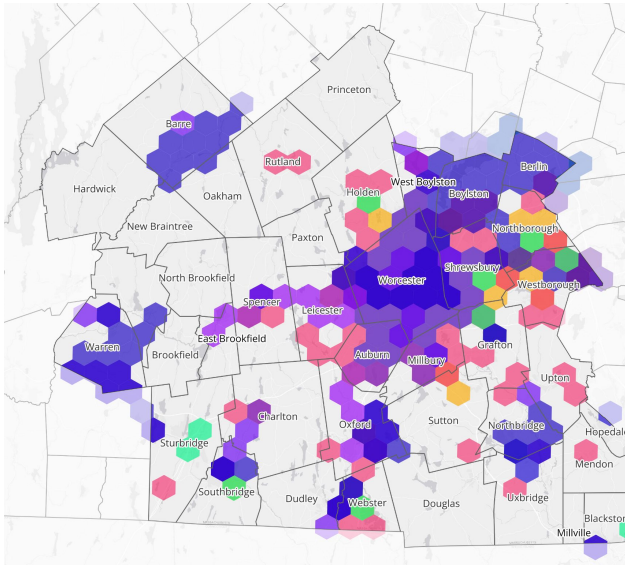
TNC use per capita rates are highest in the urban core of Worcester and surrounding communities. However, vehicle locked areas, particularly to the East of Worcester, also show relatively high TNC usage. Where this usage aligns with propensity indicators and connectivity, it may offer insights into areas that could be examined further for transit opportunities. Again, alone this is not a clear indication of where transit is likely needed or likely to succeed.



These hexes represent high TNC activity per capita (Top 15%).



These hexes represent high TNC activity in vehicle locked areas (Top 25%).



This map shows the combination of the various factors shown the individual hex maps right and on the previous page.

- **High Poverty Rates**
- **High Zero Vehicle Households**
- **High Transit Use**
- **High Intersection Density**
- **High Number of Vehicle Locked Parcels**
- **High TNC Use Per Capita**

TNC/Transit Screening Analysis: Results

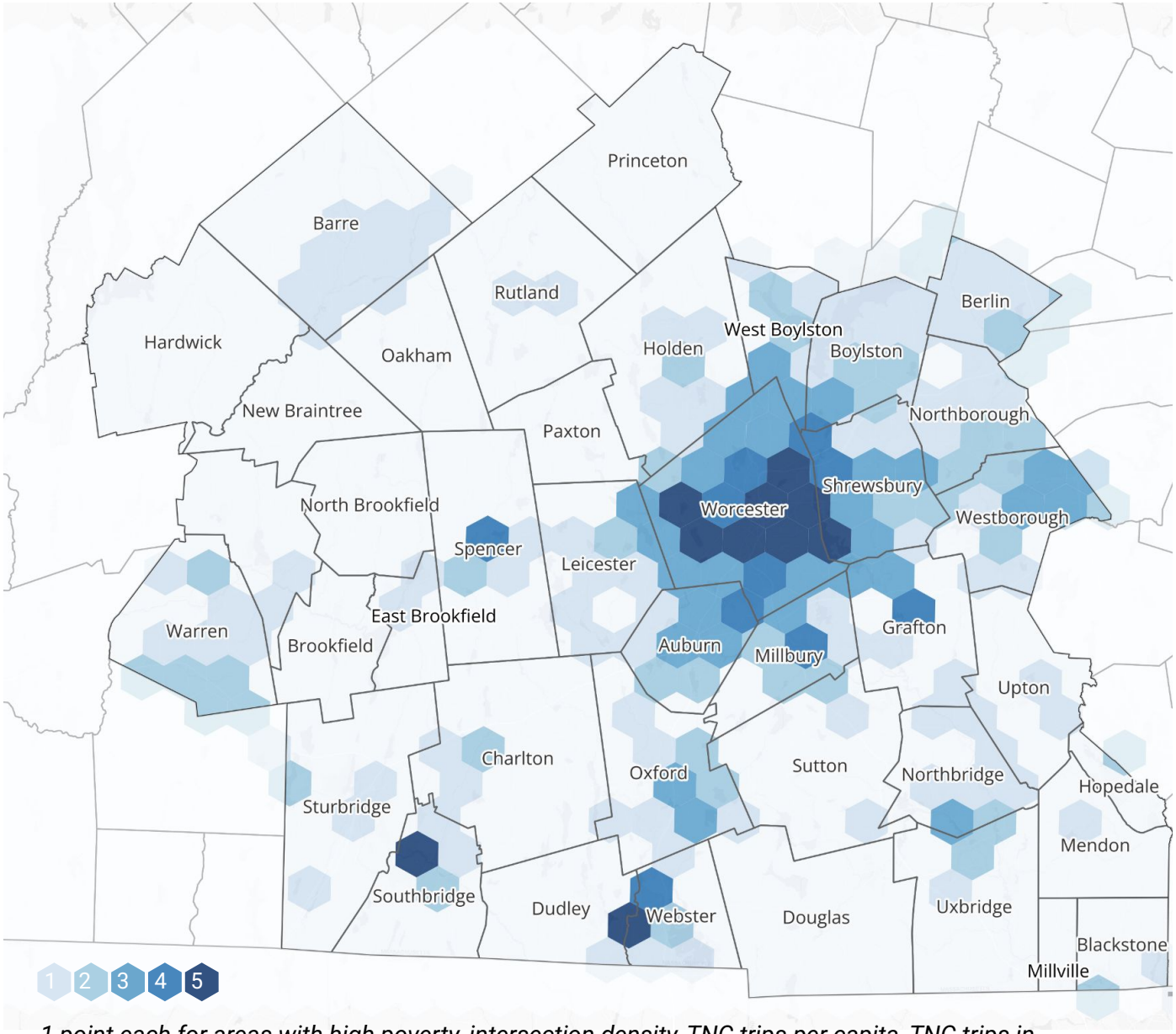
Source: MassDOT OPMI, Toole Design

Screening analysis score density is centered around Worcester, in some part a reflection of population and job density.

Some outlying regions have pockets of higher scores, typically in hex cells that cover portions of centralized downtowns, or areas with high levels of employment, such as those in Westborough, Webster, and Southbridge.

High traffic routes and locations with high scores might be candidates for new fixed route transit lines to work alongside TNCs, in particular “transit ready” town centers with high intersection density but limited local transit service. These areas may be also be good candidates for assessing micro-mobility or alternate transportation modes.

Like WRTA’s transit score, current WRTA coverage lines up very well with the high scoring locations. Recreating this analysis over time may offer insights into emerging coverage gaps.



1 point each for areas with high poverty, intersection density, TNC trips per capita, TNC trips in vehicle locked areas, and zero vehicle households.

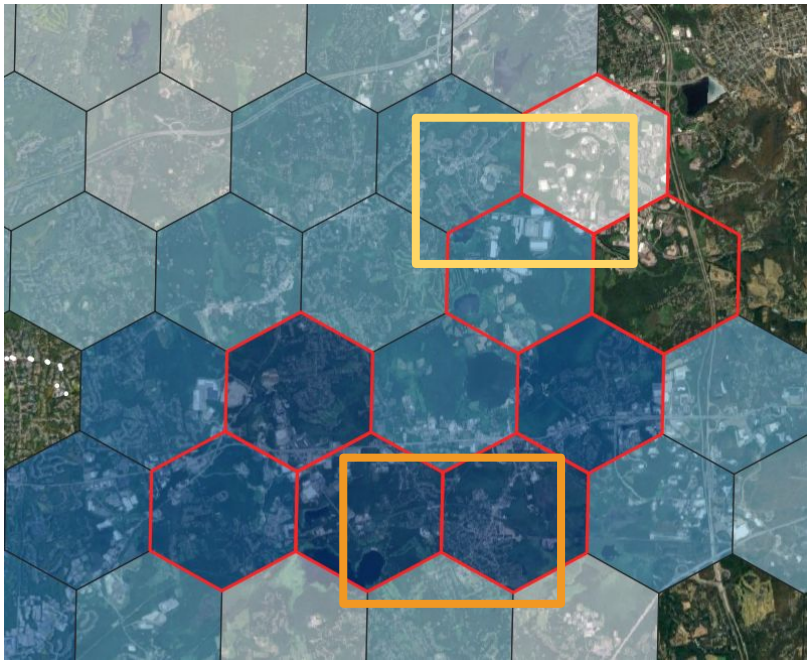
Other Ridesharing Highlights

Source: MassDOT OPMI; Toole Design

Areas with high ridesharing activity have compelling transportation-land use stories.

Northborough has some emerging developments that abut new apartments, shops, bars, and restaurants, and low density housing. The high TNC activity likely reflects Via-WRTA service, which will continue at least through 2027.

Westborough has a lot of ridesharing activity in its compact downtown area and a somewhat isolated MBTA stop served by Via-WRTA.







Vulnerable populations distribution

Source: Toole Design

Poverty and carless households are concentrated in the Central subregion, with Southeast and Southwest also showing elevated levels compared to North and West. For example, while 34% of the population resides in the Central subregion, it is home to 54% of the population without a high school diploma, 55% of the population below 200% of the federal poverty level, and 61% of carless households.

Walkable parcels are most prevalent in the Central region (39%), while Southeast has the highest share of non-walkable parcels (31%).

Central is the only subregion with high transportation diversity (100%) and contains most of the marginal transportation diversity (73%), suggesting more mobility options compared to other areas.

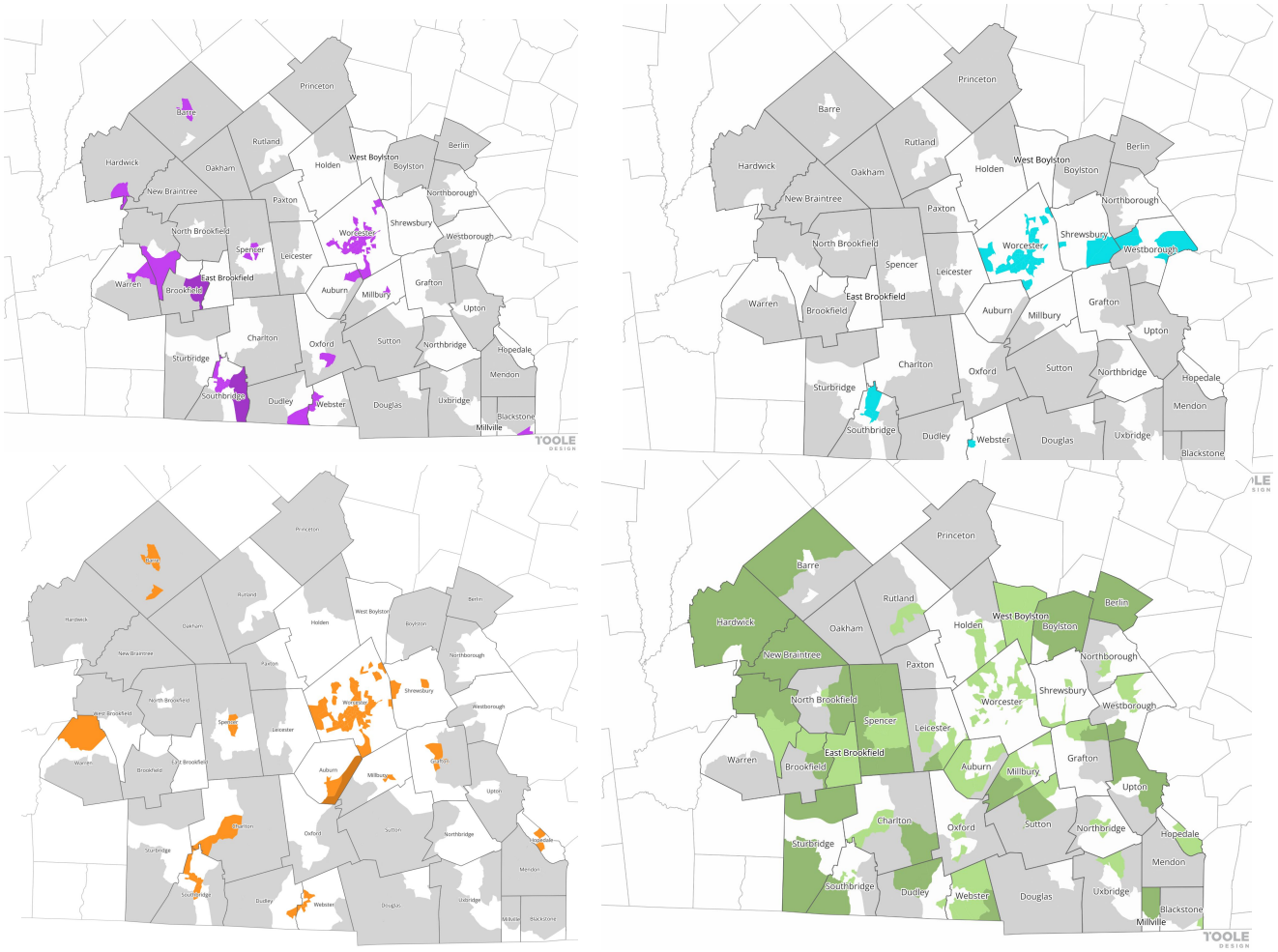
Older adults (65+) are proportionally distributed across all subregions, indicating that the entire region is likely to encounter similar mobility challenges for their older residents in the coming years.

Each of these rows sum to 100%, the highest column is noted in red, the second in blue

	Southeast	North	West	Central	Northeast	Southwest	
Workers	**20%**	9%	8%	**33%**	14%	16%	Related to people
Population	**19%**	9%	8%	**34%**	14%	17%	
Households	**19%**	8%	8%	**34%**	14%	17%	
Children <18	**20%**	9%	7%	**32%**	15%	17%	
Adults 65 and older	**20%**	10%	11%	**28%**	14%	18%	
No High School Diploma/GED	11%	5%	7%	**54%**	6%	**17%**	
Below 200% Poverty	10%	4%	7%	**55%**	7%	**17%**	
No Car HH	9%	3%	5%	**61%**	6%	**16%**	
Jobs	12%	5%	4%	**42%**	**20%**	17%	
Parcels	**22%**	12%	12%	**21%**	13%	20%	Related to parcels
Vehicle Locked	**31%**	16%	17%	2%	12%	**22%**	
Marginal Transportation Diversity	7%	1%	4%	**73%**	3%	**11%**	
High Transportation Diversity	0%	0%	0%	**100%**	0%	0%	
Walkable Parcels	14%	8%	6%	**39%**	15%	**18%**	
Highly Walkable Parcels	*9%*	*5%*	*4%*	***55%***	*11%*	***16%***	
Semi Walkable Parcels	***24%***	*14%*	*10%*	*9%*	*21%*	***22%***	
Non-Walkable Parcels	**31%**	16%	18%	2%	11%	**22%**	

Vulnerable populations distribution

Source: Toole Design



Areas that meet MassDOT's Regional Environmental Justice (REJ+) thresholds, where the proportion of certain vulnerable populations are higher than expected are here overlaid by places that are vehicle locked.

Areas with high proportions of low income, no vehicle, and non white households more often coincide with places with higher transportation diversity, while places with larger proportions of older adults are more frequently vehicle locked.

- Older
- Low Income
- Non-White
- Zero Car Households

- Low transportation diversity

	Under 18	Over 64	No Vehicle	Low Income	Non White
Vehicle Locked Areas	17.8%	33.9%	2.7%	2.8%	1.6%
Regional Proportion	17.6%	30.0%	10.7%	9.6%	8.0%
Difference	+0.2%	+3.9%	-8.0%	-6.8%	-6.8%



Housing and transportation connection

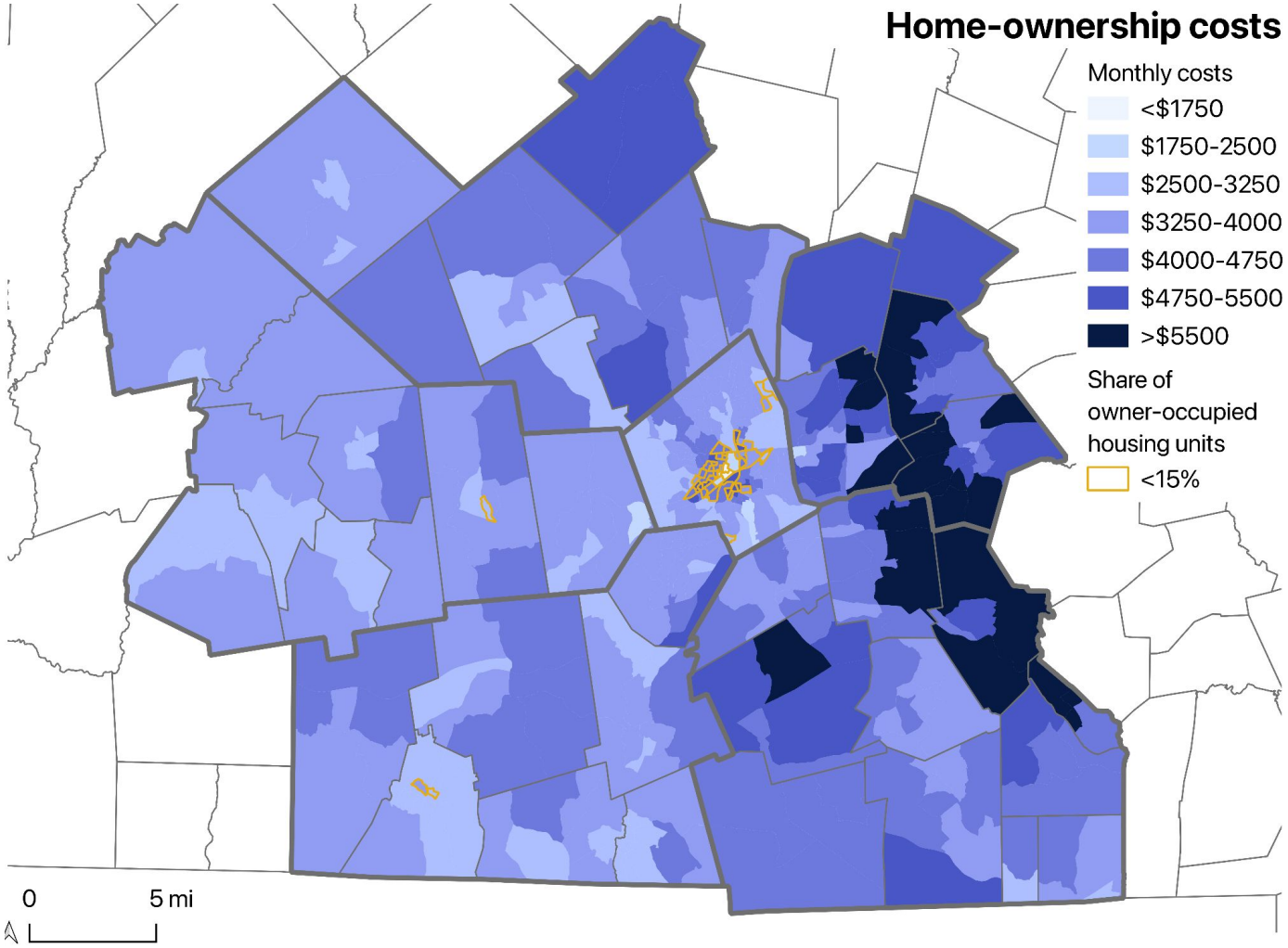
Housing cost estimate: Homeownership

Source: CommunityScale

The housing cost estimate for owner-occupied units represents a monthly shelter cost for prospective homebuyers based on current sales prices and the prevailing mortgage rate plus local property taxes, insurance rates, and monthly utilities costs aggregated by census block groups.

In general, homeownership costs are highest in the region's eastern communities and lower elsewhere.

Subregion	Households	Monthly cost
Central	79,089	$3,486
North	20,603	$4,000
Northeast	37,435	$4,957
Southeast	36,445	$4,142
Southwest	39,723	$3,362
West	18,869	$3,111



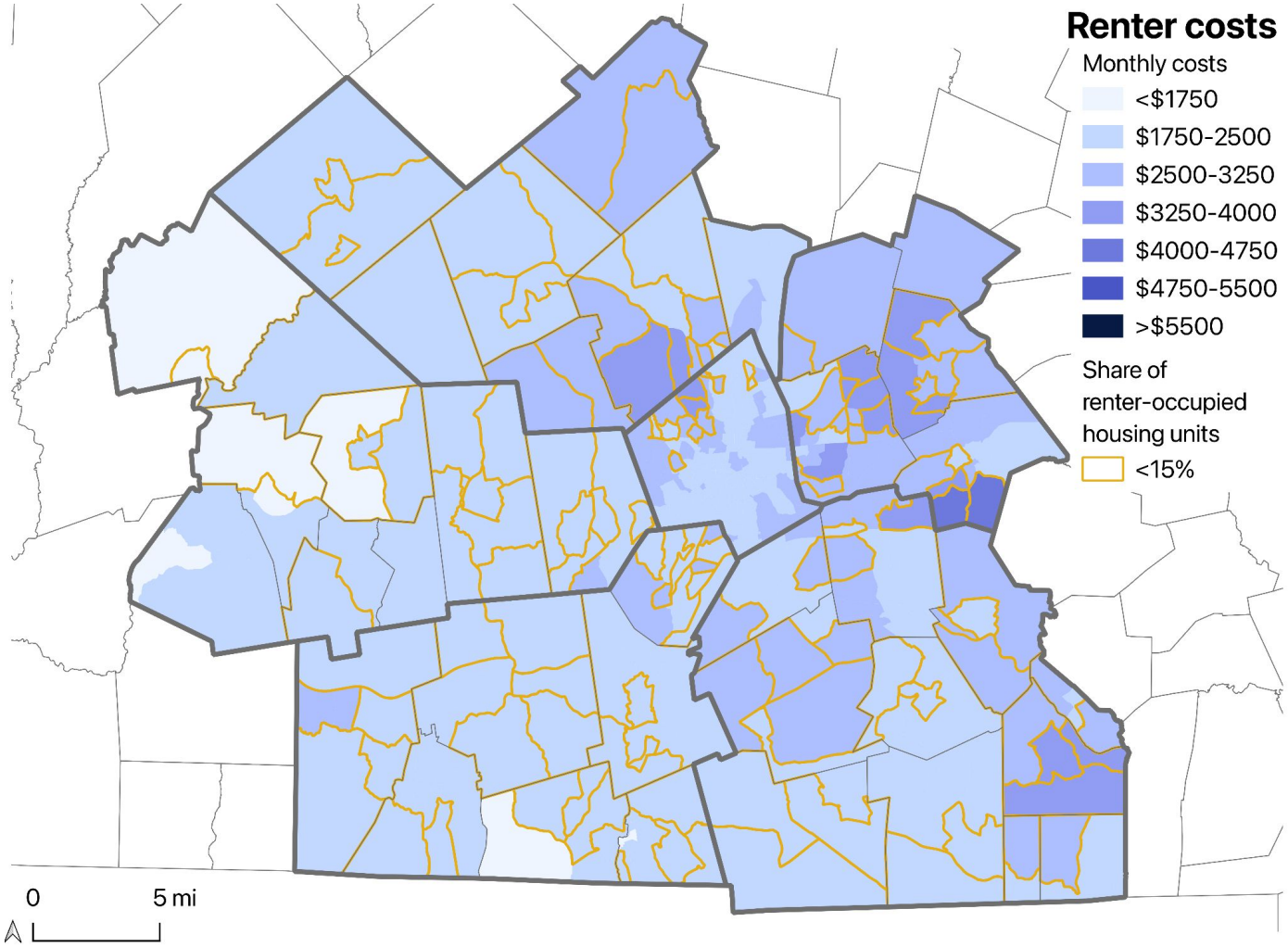
Housing cost estimate: Rentership

Source: CommunityScale

The housing cost estimate for renters represents a monthly shelter cost (rent plus utilities) within a block group based on the last 5 years of rental listings from RentCast and Tables B25132 and B25133 from 2019-2023 5-year ACS.

Rental housing is relatively affordable across the region, especially compared to the high cost of homeownership. However, most communities in the region outside of the central subregion offer few rental options. Therefore, though rental units are less expensive than homeownership, they are not widely available as a viable option.

Subregion	Households	rental units %share	Monthly cost
Central	79,089	53%	$2,387
North	20,603	15%	$2,462
Northeast	37,435	27%	$2,964
Southeast	36,445	21%	$2,390
Southwest	39,723	29%	$2,090
West	18,869	23%	$1,989



Transportation Cost vs. Vehicle Cost

Transportation Costs are difficult to measure, influenced by household size, number of workers, income, lifestyle + personal preferences, etc.

A household with no car might spend as little as $1000 a year on taxis, bicycle maintenance, and public transit, while a similar household with a vehicle might spend $10,000 on loan payments, insurance, maintenance, fuel, etc.

The nuance of household spending patterns are overshadowed by much larger vehicle costs. For example, increases in transit fares are often a negligible change to household costs when compared to a new vehicle purchase.

The most important component of identifying transportation affordability is identifying if a household has a car or not. Local transit, bicycles, walking, e-scooters, all are comparatively unlikely to contribute meaningfully to transportation cost burden.

As such, the cost estimate measure developed for this study is not an estimate of exhaustive transportation costs. It is simply the estimated cost of vehicle ownership based on the likely number of vehicles and vehicle miles traveled.

Though this analysis presents a **reasonable estimate of the typical cost** associated with vehicle ownership in an area, many people throughout the region will, in reality, spend more or less than the estimate.



Vehicle Cost Measurement

To estimate the cost of vehicle ownership in a given area, ownership and operation costs per mile from the Bureau of Transportation Statistics are used alongside local measures of average travel and vehicles owned.

Bureau of Transportation Statistics
Vehicle spending per mile $0.82

- Ownership cost = $0.57
- Operation costs = $0.25

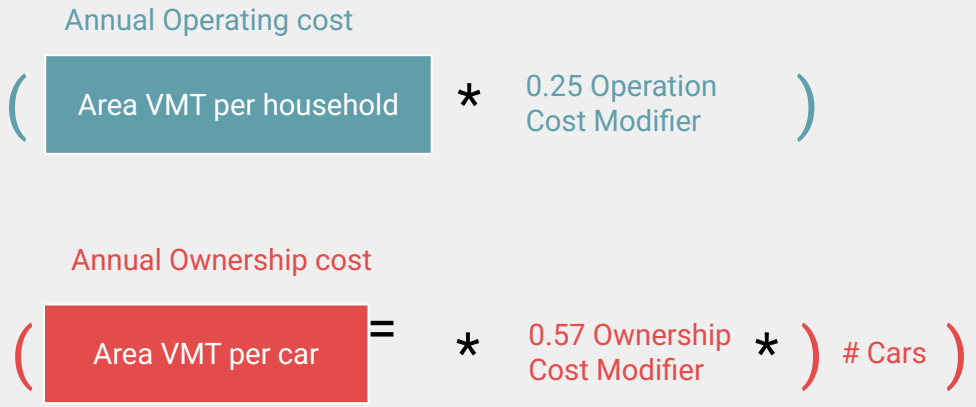
MA Vehicle Census
CMRPC Region VMT
Avg VMT/HH = ~20k
Avg VMT/car = ~12k

For example, regionwide, an average of 1.65 vehicles per household driving 20k vehicle miles over a year, at $0.82 per mile, results in an average cost per HH: of $16.6k. As shown below, the cost is significantly influenced by the number of vehicles a household has.

Regional Vehicle Cost Scenarios:
1 car scenario = ~$12.1k
2 car scenario = ~$19.1k
3 car scenario = ~$26.1k

Vehicle cost formula

*(VMT per hh * .25) + ((VMT per car * .57) * # cars) = Total Annual Household Vehicle Owenrship Cost*



Total Annual Household Vehicle Cost

Ownership cost includes elements that scale with the number of cars owned, like car and lease payments, insurance, and licensing fees.

Operation costs include the elements like fuel and maintenance that are typically spread across the total number of household vehicle miles travelled.

U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Economic Trends*, available at https://data.bts.gov/stories/s/28tb-cpjy.

Transportation Diversity Savings Estimates

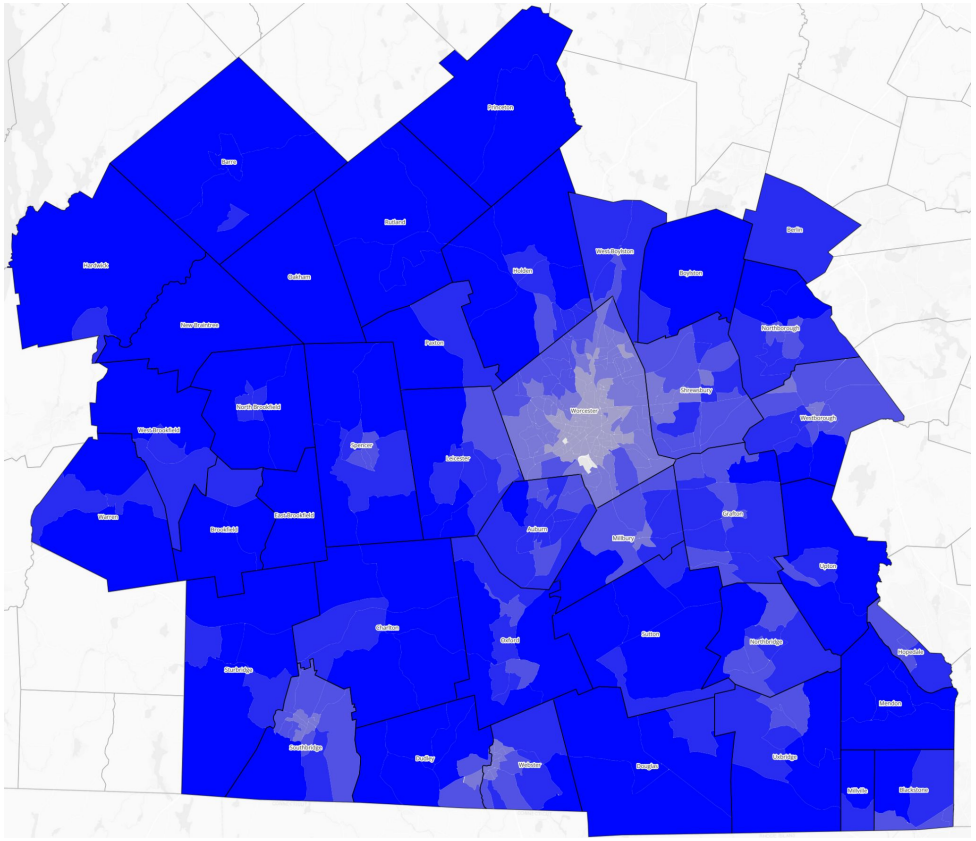
Data on car ownership is only available at the Block Group Level. Car ownership by workers in a household is available at Tract Level, which is challenging to draw insight from as a tract can span multiple contexts within a community, or in some cases in the CMRPC region, comprises an entire town.

There is a clear relationship between car ownership and transit diversity, especially when adjusting for income.

A regression using the percent of low income households and percent of parcels with good transportation diversity (walking and riding the bus in addition to driving a car) explained 50% of the variation in the percent of no-vehicle households across block groups (R^2). The regression gave a coefficient of 0.19, indicating that **for every 5 households with access to diverse transportation options 1 of these households will not own a car.**

This is not intended as a statistically significant prediction of future effect, but only a simple quantification of the general relationship between transportation diversity and car ownership. Future analyses could look at not just zero vehicle households, but also low-vehicle households, which the ACS does not make available at the block group level.

To account for these cost savings in the vehicle cost estimate, VMT is reduced for locations where bus service is relatively good.

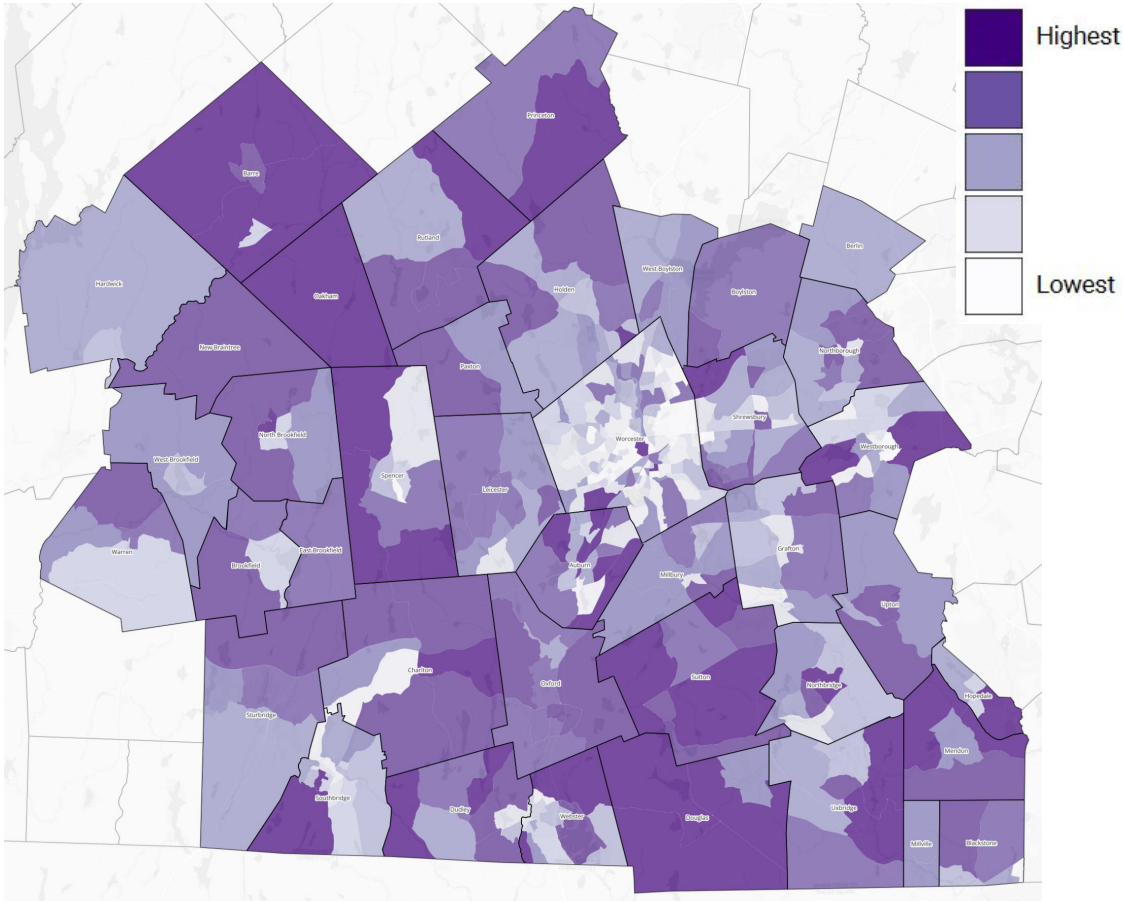


Total Cost Estimates

The measure of vehicle spending in this study is a reflection of the number of cars owned and how much they are used, generalized to the block group level.

Vehicle ownership costs are highly variable, impacted by intangible factors, such as a need for a larger vehicle to accommodate a hobby, or by insurance costs influenced by previous tickets or accidents.

This measure approximates a generalized cost of ownership based on available data on vehicle ownership and travel patterns. Any given household may experience higher or lower actual car ownership costs. This estimate is best viewed in comparison across areas rather than the likely experience of a given resident of household.



	Southeast	West	North	Northeast	Central	Southwest
Simple VMT Cost	$9,700	$10,000	$9,800	$9,700	$10,900	$10,400
Vehicle adjusted VMT Cost	**$19,500**	**$18,500**	**$20,900**	**$17,500**	**$12,100**	**$18,900**
VMT Cost (1 Car)	$12,700	$12,600	$13,200	$12,100	$11,300	$13,000
VMT Cost (2 Cars)	$19,500	$19,500	$20,100	$18,900	$18,800	$20,300
VMT Cost (3 Cars)	$26,300	$26,400	$26,900	$25,600	$26,400	$27,500
Total VMT per HH	20,187	21,044	21,182	18,567	13,447	19,551
Cars per HH	2.01	1.86	2.13	1.81	1.13	1.83
Cars per Pop +18	0.98	0.94	0.97	0.88	0.54	0.92

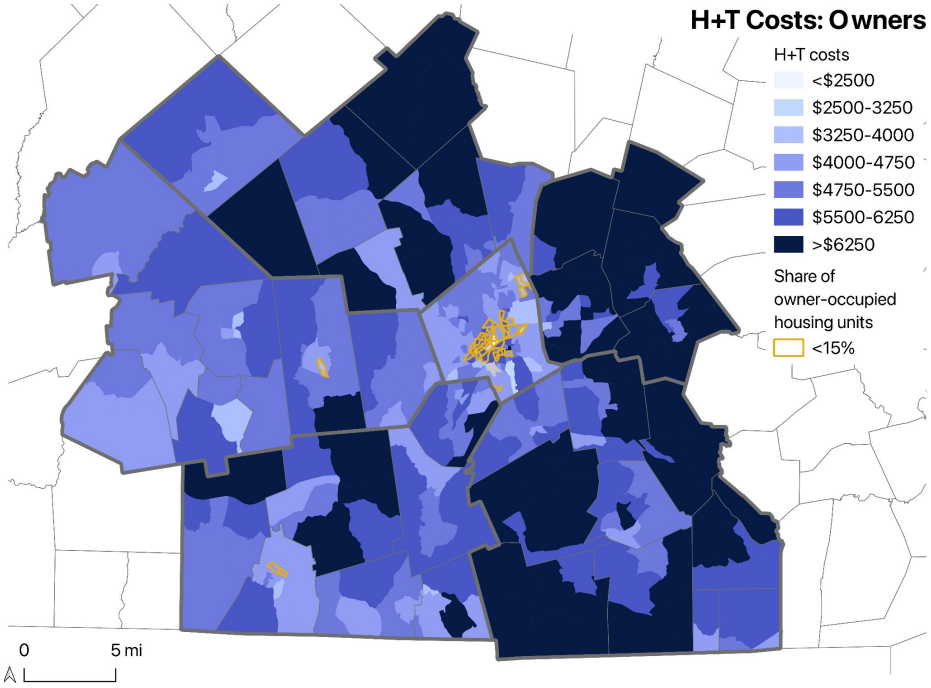
All VMT and cost estimates are annual.
Cost estimates have been rounded.

Housing and transportation cost

Bringing together the modeled housing and rental costs with vehicle ownership costs at the block group level provides an estimate of combined housing and transportation costs. There is a clear spatial relationship primarily driven by differences in homeownership and rental costs throughout the region, with higher cost areas to the East of Worcester. Though ownership and rental costs in Worcester look similar to those to the West, lower transportation costs result in lower overall H&T costs than comparable housing cost communities. This pattern demonstrates the extent to which a diversity of transportation options can offset high housing costs and lower mandatory household expenditures.

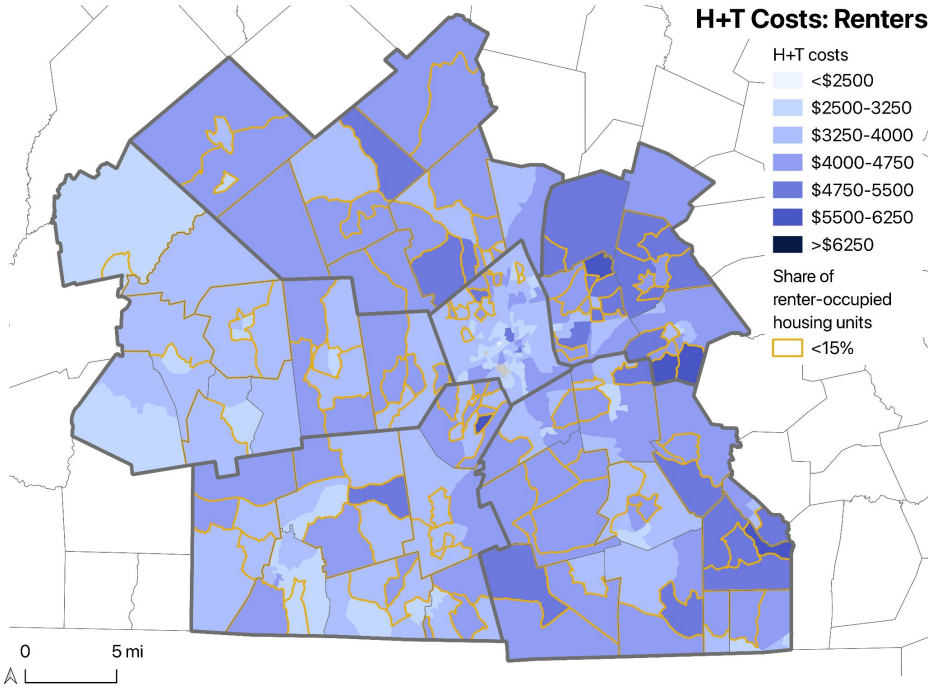
Estimated H+T costs for prospective homeowners:

- High sales prices throughout the region drive the overall pattern of H+T costs



Estimated H+T costs for prospective renters:

- Lower transportation costs preserve Worcester and town centers as most affordable areas for renters





Strategies toolkit details

Strategies toolkit

Translating the study's analysis and engagement into opportunities for action, the strategies toolkit compiles policy and investment strategies that can help address housing and transportation challenges and opportunities uncovered through this process. The strategies in this section are primarily oriented toward public entities like towns, cities and regional planning agencies, but many of the approaches are transferable to other stakeholders and local and regional housing and transportation partners.

Strategies are organized by topic and include three different levels of commitment and complexity, from policy changes to program implementation to partnership investment. The study includes this range of topics and strategy types to provide a wide range of ideas and solutions the region's municipalities and other stakeholders can draw from and apply to locally as needed.

STRATEGY TOPICS

Housing Affordability and Cost Barriers: Addressing the cost of accessing and maintaining housing, especially for first-time homebuyers and residents aging in place.

Housing Diversity and Development Regulations: Expanding the variety of housing types available, especially in response to gaps in the region's supply and demographic trends toward smaller households and an aging population.

Transit Access, Connectivity, and Quality: Increasing the quality and diversifying the character of transit service, while pairing infill and new development nodes with the highest quality existing infrastructure.

Active and Novel Transportation Solutions: Creating high quality facilities to support diverse transportation options by targeting transportation diverse areas and exploring novel technologies with new studies.

Coordinated Regional Land Use and Transportation Planning: Integrating how the region and its municipalities approach housing and transportation policy, planning, and investment.

STRATEGY TYPES

Policy changes a rule. These are passive actions with no real cost, such as updating a zoning code or redirecting existing funding streams. Policies are generally enacted at the municipal level.

Program takes an active role. These involve cost and commitment, such as funding a staff position, launching a grant program, or creating an ongoing initiative. Programs may be enacted at the municipal or regional level.

Partnerships are catalytic investments with higher cost and commitment, such as contributing public land to a development, creating a municipal housing fund, or entering joint ventures with developers.

Strategies toolkit

Topics are color-coded to help locate corresponding detailed descriptions on following pages.

Topic	Policy	Program	Partnership
Housing Affordability and Cost Barriers	Adopt property tax stabilization for income-qualified seniors. Dedicate CPA and other local discretionary funds toward housing production and rehabilitation.	Centralize knowledge regarding state and other funding opportunities as a resource for the region's municipalities and residents. Establish a regional homebuyer education and small landlord support program.	Create municipal affordable housing trust funds with dedicated revenue. Establish a regional housing land bank and/or investment fund.
Housing Diversity and Development Regulations	Update zoning to allow multifamily and missing middle housing by right, especially in areas with high housing suitability.	Share regional planning and permitting staff and supporting resources across small communities. Develop model zoning bylaws tailored to the region's different place types.	Contribute public and nonprofit land for housing development that fills gaps in the supply. Explore strategic sewer and water infrastructure extensions that unlock potential housing sites.
Transit Access, Connectivity, and Quality	Adopt transit-supportive land use policies near existing and planned high-quality transit stops. Prioritize "transit ready" building with high intersection and activity density.	Increase transit frequency, expand service, and improve route interconnectivity where feasible and in alignment with WRTA CRTP. Consider new routing such as crosstowns to increase connectivity. Further consider limited stop to enhance speed of service from outlying communities. Expand microtransit service pilots and TDM partnerships connecting employers and housing to transit hubs.	Advocate for regional transit links such as Providence-to-Worcester and E-W rail, and high speed/frequency commuter busses that connect regional urban centers. Establish mobility hubs at key regional transportation nodes and transit interfaces.
Active and Novel Transportation Solutions	Require sidewalk and bicycle connections in all new residential development approvals. Prioritize installing sidewalks, bicycle racks, and ancillary active transportation amenities in areas with high intersection and activity density.	Invest in targeted sidewalk, crossing, and bus shelter improvements at key nodes. Develop human-scale zoning and urban design model policies and encourage adoption throughout transit diverse areas.	Build protected multimodal corridors connecting housing clusters to services. Pilot municipal carshare, UTV communities, and other novel technology/policy studies, specifically targeting older or lower income adults.
Coordinated Regional Land Use and Transportation Planning	Align local master plans with regional housing and transportation suitability analysis. Formalize co-location as a transportation strategy.	Fund a regional housing and transportation coordinator position at CMRPC. Develop model bylaws that compliment housing uses with increased economic activity and innovation.	Form a regional housing compact with shared infrastructure investment commitments.

Housing Diversity and Development Regulations: Policy

Adopt property tax stabilization for income-qualified seniors.

Study finding: Seniors across the region have paid off their homes and built equity but may lack the income to keep up with rising property taxes, insurance, and utility costs, increasing the risk of displacement from communities where they have lived for decades.

Where to focus: Communities with seniors facing displacement risk due to rapidly rising housing costs.

Strategy overview: Existing elderly tax exemptions are too restrictive on income and asset requirements to reach many moderate-income seniors who are nonetheless cost-burdened. Municipalities can expand these programs to help seniors remain in their homes and communities, preserving social networks and preventing the vacancy and disinvestment that follow when long-term residents are pushed out. This strategy may not be equally effective in all communities. For example, some municipalities have little or no space in the budget to reduce or shift tax burdens within the tax base. Or, communities may need to consider fiscal tradeoffs among other budget items to create the space for this strategy.

Details and next steps:

- Perform a fiscal analysis to test impacts of different tax stabilization strategies and confirm the strategy is feasible under current conditions.
- Review and loosen income and asset thresholds for existing senior property tax exemptions, which currently exclude many moderate-income seniors
- Explore a long-term resident discount offering reduced rates for seniors who have lived in town 10+ years, funded by the broader tax base with voter approval
- Coordinate with school districts and other taxing bodies on revenue impact
- Publicize expanded exemptions to ensure eligible seniors are aware of and accessing available relief

Lead / Partners: Municipalities (lead), CMRPC (technical assistance), councils on aging, assessors' offices

Cost: Moderate (revenue impact will likely vary by municipality, existing tax base, and exemption structure; fiscal impact analysis recommended before adoption to ensure communities can absorb or offset the cost).

Housing Diversity and Development Regulations: Policy

Dedicate CPA and other local discretionary funds toward housing production and rehabilitation.

Study finding: Communities across the region lack dedicated local revenue streams for housing, leaving them dependent on competitive state and federal grants that are oversubscribed and unpredictable.

Where to focus: Housing projects that need modest public investment to achieve financial feasibility.

Strategy overview: The Community Preservation Act and other local discretionary funds provide municipalities with a tool to direct locally controlled revenue toward housing priorities. Communities that have adopted CPA can allocate a portion of their annual revenues to affordable housing creation, preservation, and rehabilitation — providing the local match that unlocks state and federal dollars and giving communities the flexibility to respond to opportunities as they arise.

Details and next steps:

- Encourage municipalities that have not yet adopted CPA to do so, with a minimum 1% surcharge dedicated in part to housing
- For communities with existing CPA funds, advocate for allocating at least 20% of annual CPA revenue to housing (above the 10% statutory minimum for each category)
- Use CPA and other discretionary funds for gap financing on affordable projects, rehabilitation grants for aging housing stock, and land acquisition for future housing development
- Pair CPA investments with state programs (MassHousing, HOME, LIHTC) to maximize leverage
- Consider funding rehabilitation where deteriorating vacant units could be returned to habitable condition rather than abandoned
- Explore additional local revenue sources such as a portion of new development fees or short-term rental registration fees

Lead / Partners: Municipalities (lead), CPA committees, CMRPC (advocacy and technical assistance)

Cost: Low to Moderate (CPA adoption requires voter approval of a property tax surcharge; ongoing allocation decisions are within existing municipal authority)

Housing Diversity and Development Regulations: Program

Centralize knowledge regarding state and other funding opportunities as a resource for the region's municipalities and residents.

Study finding: Municipalities and residents across the region are often unaware of or unable to navigate the full range of state, federal, and nonprofit housing assistance programs available to them, leaving resources on the table.

Where to focus: Municipalities and other stakeholders that are eligible for programs but have not taken advantage of opportunities yet.

Strategy overview: The landscape of housing funding is fragmented across dozens of programs at the state, federal, and nonprofit levels, including MassHousing, DHCD, EOHLC, CDBG, HOME, LIHTC, and many more. Small towns without dedicated planning staff lack the capacity to track these opportunities, understand eligibility criteria, and prepare competitive applications. A centralized regional resource can bridge this gap, ensuring that communities and residents are connected to programs that can help them.

Details and next steps:

- Develop and maintain a centralized online resource listing all available housing assistance programs with eligibility criteria tailored to CMRPC communities
- Provide regular briefings to municipal officials on upcoming funding rounds, application deadlines, and new program announcements
- Offer grant-writing support to small communities that lack staff capacity to prepare competitive applications
- Create a residents' guide to housing assistance covering down payment programs, rehabilitation loans, rental assistance, and energy efficiency programs
- Track the region's success rate in securing competitive housing funding and identify opportunities to improve

Lead / Partners: CMRPC (lead), DHCD, EOHLC, MassHousing, local housing authorities, community action agencies

Cost: Low to Moderate (primarily staff time to develop and maintain the resource; could be supported by existing CMRPC planning capacity or a modest expansion)

Housing Diversity and Development Regulations: Program

Establish a regional homebuyer education and small landlord support program.

Study finding: First-time homebuyers face an unfamiliar and expensive market, while small landlords (whose properties make up a significant share of the region's naturally occurring affordable stock) face a combination of regulations, maintenance costs, and taxes that can lead to disinvestment and abandonment.

Where to focus: All communities could benefit from this strategy.

Strategy overview: Beyond policy changes, municipalities and regional partners can proactively help residents navigate the local market and home purchasing process. Homebuyer education helps first-time buyers access the programs and financing that can make ownership possible. Small landlord support helps preserve the existing affordable rental stock by giving owners the tools and resources to maintain their properties rather than letting them deteriorate.

Details and next steps:

- Partner with local lenders and housing organizations to offer homebuyer education workshops covering down payment programs, mortgage options, budgeting for older home maintenance, and state and federal assistance
- Develop a small landlord training and support program covering maintenance standards, tenant screening, budgeting for capital improvements, regulatory compliance, and available grant or loan programs
- Explore a home rehabilitation revolving loan fund for income-qualified homeowners and small landlords, funded through CDBG or HOME, targeting energy efficiency, accessibility, and systems upgrades
- Connect property owners with rehabilitation resources before deferred maintenance becomes a liability for them
- Market programs through municipal offices, libraries, councils on aging, and community organizations to reach residents who may not seek help proactively
- Explore marketing strategies to attract more people to consider living in the region.

Lead / Partners: CMRPC (coordination), municipalities, local lenders, housing organizations, MassHousing, community action agencies

Cost: Moderate (workshop delivery, curriculum development, and potential revolving loan fund capitalization; partially offset by existing state and federal program funding)

Housing Diversity and Development Regulations: Partnership

Create municipal affordable housing trust funds with dedicated revenue.

Study finding: Communities that want to address housing affordability lack locally controlled capital to act on opportunities as they arise, from gap financing on affordable projects to down payment assistance to land acquisition.

Where to focus: All communities could benefit from this strategy.

Strategy overview: An affordable housing trust fund provides locally controlled capital to address housing needs that the market and state programs alone cannot solve. Trust funds give municipalities the flexibility to respond quickly to opportunities such as acquiring a parcel before it goes to market, providing gap financing to make a project pencil, or offering down payment assistance to income-qualified buyers, all without waiting for competitive grant cycles.

Details and next steps:

- Establish municipal affordable housing trusts with dedicated revenue sources such as CPA funds, a portion of new development fees, and/or general fund appropriations
- Apply for EOHLC technical assistance regarding how to structure and capitalize the trust
- Use trust funds for gap financing on affordable projects, down payment assistance, rehabilitation grants, and land acquisition
- Explore pooling resources across neighboring communities for projects that serve a subregional population, such as a senior housing development serving multiple small towns that individually lack the scale to attract a developer
- Structure trust investments to leverage state and federal dollars, where local match can unlock MassHousing, HOME, and LIHTC financing
- Ensure trust governance includes representation from housing advocates, seniors, and renters alongside municipal officials

Lead / Partners: Municipalities (lead), EOHLC (technical assistance), CMRPC (facilitation and support for smaller communities), housing advocates

Cost: Moderate to High (trust capitalization requires dedicated revenue; ongoing costs depend on scale of investment and the fund structure and strategy)

Housing Diversity and Development Regulations: Partnership

Establish a regional housing land bank and/or investment fund.

Study finding: Vacant, abandoned, and tax-delinquent properties are deteriorating across the region, while municipally owned land and surplus state parcels sit idle without a coordinated mechanism to acquire, prepare, and redirect them toward housing.

Where to focus: Communities with weaker market conditions where development is less feasible without financial support [reference map]; Strong mraket places with high cost burden [reference map]

Strategy overview: A regional land bank or investment fund would provide the institutional capacity to acquire, hold, and prepare land for housing development at a scale that individual municipalities cannot achieve. This is particularly relevant in a region of small towns where no single community generates enough volume of distressed or surplus property to justify its own land bank, but the collective need is substantial. A pooled investment fund could also provide gap financing for housing projects across the region, with returns recycled into future investments.

Details and next steps:

- Inventory all municipally owned land, state-owned surplus parcels, tax-foreclosed properties and other potential opportunity sites across the region
- Explore the legal and governance framework for establishing a regional land bank under Massachusetts General Laws, potentially housed with a community development corporation or municipality.
- Structure the land bank to acquire, remediate, and dispose of properties with affordability conditions attached
- Pair the land bank with a regional housing investment fund that pools municipal contributions and philanthropic capital for gap financing
- Establish clear affordability requirements, income targeting, and unit size parameters for land dispositions before selecting developers
- Partner with nonprofit developers and community development corporations that specialize in affordable housing
- Explore community land trust models that permanently restrict resale prices on land bank properties

Lead / Partners: CMRPC, municipalities, nonprofit developers, CDCs, MassHousing, EOHLC (lead/sponsor organizations to be identified in the process of developing the strategy.

Cost: High (requires capitalization for land acquisition and site preparation; governance and staffing costs; offset over time by housing production and leveraged investment)

Housing Diversity and Development Regulations: Policy

Update zoning to allow multifamily and missing middle housing by right, especially in areas with high housing suitability.

Study finding: Most municipalities in the region require special permits or have no provisions at all for housing types beyond single-family detached, making diverse housing production politically vulnerable and economically risky for developers.

Where to focus: Areas of high housing suitability, especially in communities without much housing diversity.

Strategy overview: The housing suitability analysis from this study identifies areas where infrastructure, transit access, and community services and amenities converge to support higher density development. Directing by-right zoning to these high-suitability locations ensures that denser housing is channeled to the places best equipped to support it, reducing both political friction and the infrastructure investment required to serve new development.

Details and next steps:

- Adopt by-right zoning for duplexes, triplexes, cottage courts, and small apartment buildings in areas identified as high-suitability through the study's analysis
- Convert special use permits for multifamily housing to permitted uses where sewer, water, and transportation diversity already exist
- Explore 40R smart growth overlay districts that provide state incentive payments when communities zone for dense housing near transit or town centers
- Remove minimum lot and unit size requirements that prevent construction of smaller, more affordable studios and one-bedrooms
- Permit intergenerational housing arrangements explicitly in zoning without triggering occupancy restrictions

Lead / Partners: Municipalities and planning boards (lead), CMRPC (technical assistance and suitability analysis), statewide agencies such as MHP and EOHLC

Cost: Moderate (regulatory changes that might require resources to facilitate community engagement processes and hire consultants)

Housing Diversity and Development Regulations: Program

Share regional planning and permitting staff and supporting resources across small communities.

Study finding: Many CMRPC communities lack the staff capacity to update zoning, process development applications, or pursue housing grants, creating a bottleneck that slows housing production regardless of community willingness.

Where to focus: Communities with limited staffing resources and/or those with technical needs unmet by existing staffing.

Strategy overview: A shared staffing model allows all towns to access professional planning and permitting capacity they could not individually afford. Communities that rely on consultant planners, or towns with no dedicated planning capacity at all, can participate in a regional pool that provides zoning expertise, development review, grant writing, and housing production plan implementation.

Details and next steps:

- Establish a shared planning services program where small communities can access professional planning staff
- Consider models where the shared staff is employed by CMRPC and models where the staff is employed by other entities.
- Prioritize communities that currently lack dedicated planning capacity or rely on part-time consultants
- Include permitting support to reduce approval timelines, which add carrying costs that developers pass through to buyers
- Offer targeted technical assistance for MBTA 3A compliance, 40R district adoption, and ADU bylaw updates
- Provide a template regulatory cost audit showing how design standards, impact fees, and permitting timelines affect per-unit costs, so communities can evaluate their own regulations
- Structure the program with tiered participation options so communities can access the level of support they need

Lead / Partners: CMRPC, municipalities, EOHLC/OneStop (planning grant funding)

Cost: Moderate (staffing costs shared across participating communities; partially offset by state planning grants and assessment contributions)

Housing Diversity and Development Regulations: Program

Develop model zoning bylaws tailored to the region's different place types.

Study finding: The region encompasses a wide range of community types and a one-size-fits-all approach to zoning reform does not account for the different infrastructure capacities, development markets, and community contexts across these places.

Where to focus: Municipalities with zoning ordinances that do not address diverse or emerging housing types.

Strategy overview: Model bylaws give municipalities a starting point for zoning reform that is already adapted to their context, dramatically reducing the time and cost of updating local regulations. By developing model language for different place types, such as urban neighborhoods, suburban corridors, village centers, and rural towns, CMRPC can help communities adopt proven approaches without reinventing the wheel, while ensuring that recommendations reflect what is realistic given local infrastructure and market conditions.

Details and next steps:

- Categorize the region's communities into place types based on infrastructure capacity, market conditions, transit access, and physical character
- Develop model bylaw language for each place type covering topics such as ADUs, missing middle housing, mixed-use development, parking, and lot standards
- Include model provisions for cottage courts, cluster subdivisions, and adaptive reuse of commercial properties
- Provide model language for age-restricted and intergenerational housing with consideration for keeping eventual residents' costs manageable
- Support community dialogue by providing concrete examples from comparable communities showing what different housing types look like and what zoning conditions enable them
- Offer model bylaws in a ready-to-adopt format with annotations explaining the rationale for each provision

Lead / Partners: CMRPC (lead), municipalities, planning boards, EOHLC

Cost: Low to Moderate (primarily staff and consultant time to develop model language; one-time investment with broad reuse across the region)

Housing Diversity and Development Regulations: Partnership

Contribute public and nonprofit land for housing development that fills gaps in the supply.

Study finding: Communities across the region own land and have access to surplus state parcels and other underutilized and publicly obtainable sites, but these assets are not being systematically directed toward the housing types the region most needs.

Where to focus: Areas of high housing suitability and development opportunity sites held by public or nonprofit entities.

Strategy overview: The most direct action a community can take is to put its own land into play for the housing it says it needs. Land disposition must be structured with clear affordability conditions before a developer is selected, otherwise even public land produces housing priced beyond the reach of the residents it was intended to serve. Opportunity sites could also include underutilized properties owned by churches, housing authorities, and other public or nonprofit entities.

Details and next steps:

- Inventory all municipally owned land, state-owned surplus parcels, tax-foreclosed properties and other potential opportunity sites across the region
- Contribute suitable public parcels at below-market value or no cost, conditioned on price restrictions that ensure affordability
- Structure land disposition RFPs with clear affordability requirements, income targeting, and unit size parameters before selecting a developer
- Partner with nonprofit developers and CDCs that specialize in affordable housing rather than relying solely on market-rate developers
- Explore community land trust models that permanently restrict resale prices on public land
- Co-invest in site preparation (utility connections, demolition, environmental assessment) to reduce developer costs

Lead / Partners: Municipalities (lead), nonprofit developers, CDCs, CMRPC (facilitation and RFP support), MassHousing

Cost: Moderate to High (opportunity cost of land contribution; site preparation investment; offset by affordable housing production and leveraged state and federal funding)

Housing Diversity and Development Regulations: Partnership

Explore strategic sewer and water infrastructure extensions that unlock potential housing sites.

Study finding: Sewer and water capacity are key binding constraints on housing development in much of the region. Communities that want to build housing often cannot because there is no sewer, limited water capacity, or inadequate infrastructure to serve new development.

Where to focus: Communities with limited sewer and/or water capacity, especially cases where development sites are otherwise available but cannot be built on without this service.

Strategy overview: Infrastructure is the limiting factor regardless of what the zoning allows. Joint investment in infrastructure extensions, particularly between neighboring municipalities, can unlock housing sites that neither community could serve alone.

Details and next steps:

- Identify priority housing sites where infrastructure extension would unlock development, using the suitability analysis to direct limited capital toward sites with the highest potential
- Explore intermunicipal agreements for shared sewer and water service, particularly where a neighboring community has excess capacity
- Apply for MassWorks infrastructure grants tied to housing production
- Commission capacity studies where sewer constraints are reported but may be based on perception rather than engineering reality
- Coordinate infrastructure investment with MBTA 3A overlay districts and 40R districts to ensure that infrastructure serves areas zoned for density
- Structure cost-sharing agreements that reflect the housing production benefits each community will realize

Lead / Partners: Municipalities (lead), MassWorks, CMRPC (facilitation and grant support), DEP, water and sewer districts

Cost: High (capital infrastructure investment; offset by MassWorks/HousingWorks grants, intermunicipal cost-sharing, and the development and tax revenue that new housing generates)

Transit Access, Connectivity, and Quality: Policy

Adopt transit-supportive land use policies near existing and planned high-quality transit stops.

Study finding: Where transit service does exist or is planned, surrounding land use often undermines ridership with low-density, auto-oriented development that generates insufficient demand to sustain and improve service.

Where to focus: Denser and more mixed-use areas such as Town centers and areas with existing high quality transit options, particularly commuter rail stops, or high frequency bus routes. Areas with less frequent transit service or lower density areas can also be good candidates but may benefit from additional programmatic/regulatory interventions and investment.

Strategy overview: Transit and land use are mutually reinforcing: density and a mix of uses supports ridership, and ridership justifies service expansion. Municipalities can use zoning to ensure that transit investments are supported by the surrounding built environment, concentrating housing and mixed-use development within walking distance of stops and stations to build the ridership base that justifies better service.

Details and next steps

- Adopt transit overlay districts within a half-mile of commuter rail stations, WRTA fixed-route stops, and planned demand-response service areas allowing higher density residential and mixed-use development by right
- Reduce or eliminate parking minimums beginning with transit overlay areas
- Permit transit-supportive commercial uses (groceries, pharmacies, childcare, medical offices) within walking distance of transit stops
- Coordinate with WRTA, MWRTA, Via-WRTA, and other microtransit service providers on stop locations to ensure new housing is planned around existing or planned service
- Align MBTA 3A overlay districts with actual transit access to ensure state-mandated density is located where it can be served

Lead / Partners

Municipalities (lead), WRTA, MWRTA, microtransit service providers, CMRPC (model zoning language and suitability analysis)

Cost

Low (regulatory changes with no direct public expenditure)

Transit Access, Connectivity, and Quality: Policy

Prioritize "transit ready" building in areas with high intersection and activity density.

Study finding: Even where formal transit service is limited, some areas of the region have the underlying urban structure — intersection density, pedestrian networks, mixed uses — that could support transit if development patterns reinforce rather than erode these assets.

Where to focus: Town centers with high intersection and activity density, new construction that commits to creating urban nodes and neighborhoods aligned with these design ideals.

Strategy overview: Not all communities will have fixed-route transit in the near term, but some have the bones of walkable, connected places that could support transit in the future. By directing housing and commercial development toward areas with existing intersection density and activity — village centers, downtown corridors, commercial nodes — municipalities can build the ridership base and pedestrian environment that make future transit viable, rather than spreading development into locations that will remain permanently car-dependent.

Details and next steps

- Use the study's intersection density and walkability analysis to identify areas with "transit ready" characteristics
- Direct housing growth and mixed-use development toward these areas through zoning incentives and by-right provisions
- Concentrate public investments (streetscaping, sidewalks, lighting, public facilities) in transit-ready areas to reinforce their walkability
- Formalize "transit readiness" as a criterion in local master plans and comprehensive plans when evaluating proposed development locations
- Develop guidance on intersection density, ideal block size, collocation, and overall network connecvitiy, and conditions that contribute to urban fabric aligned with transit use.
- Coordinate with WRTA and Via-WRTA to prioritize service expansion toward areas where land use patterns already support transit

Lead / Partners

Municipalities (lead), CMRPC (analysis and planning support), WRTA, microtransit service providers

Cost

Low (policy and planning changes that direct development without direct public expenditure)

Transit Access, Connectivity, and Quality: Program

Increase transit frequency and route interconnectivity.

Study finding: The highest frequency transit service in the region is concentrated in Worcester, where residents have access to many route options. Increasing headways and route interconnectivity across the system can improve local ability to meet daily travel needs without using a vehicle. However, frequency gains are best paired with density and use mix improvements, since service without enough potential riders is unlikely to shift ridership.

Where to focus: Worcester, town centers and places with high population or activity density, major commuter corridors, transit route termini. Other areas where a holistic approach to density and use mix may create a future transit node.

Strategy overview: Transit ridership is driven by coverage, frequency, reliability, and connectivity, along with socioeconomic factors such as income, age, and ability. A bus every 15 minutes is far more competitive with driving than one every hour. Likewise, places where multiple routes intersect open up many more job access options than dead-end routes. Investing in frequency and connectivity on existing routes can generate more ridership gains than expanding coverage to new areas with minimal service. The WRTA's CRTP guides where frequency and coverage investments are warranted.

Details and next steps

- As part of the CRTP, identify opportunities to prioritize route frequency increases based on current/future ridership potential and community need. This can include increased frequency by route tiers, such as moving tier 1 routes to 15 minutes, and tier 2 routes to 30 minutes
- Improve interconnectivity by redesigning or adding routes and refining timed transfers at key nodes, so riders can transfer without excessive waits.
- Work with WRTA to explore the feasibility of high speed, high frequency bus commuter routes. This would include an evaluation of new fleet and maintenance needs.
- Explore new routes within and connecting town centers outside Worcester, in coordination with WRTA or through local organizations (ex: Quaboag Connector).
- Invest in transit signal priority and bus-only lanes on congested corridors to improve reliability
- Coordinate microtransit service with fixed-route service to provide seamless first- and last-mile connections
- Look for opportunities to turn pilot programs and high-capacity microtransit service routes into permanent bus routes with fixed timetables
- Publish real-time arrival information at stops were feasible and through mobile platforms to improve rider confidence
- Work toward decreased commuter rail headways between Worcester and Boston

Lead / Partners

WRTA, microtransit service providers, municipalities and MassDOT (bus only lanes and signal priority lead), CMRPC, MBTA/MWRTA/other transit agencies.

Cost

Moderate to High (operating cost increases for higher frequency; capital investment in signal priority and bus infrastructure; may be partially offset by increased fare revenue from ridership growth)

Transit Access, Connectivity, and Quality: Program

Expand transit service pilots and TDM partnerships connecting employers and housing to transit hubs.

Study finding: Fixed-route transit is not always the most efficiently option to serve the region's dispersed development pattern, but targeted transit and employer partnerships can connect the specific origins and destinations that matter most — workers to jobs, housing to services, neighborhoods to transit hubs.

Where to focus: Major employers in the region, particularly those with employees entering Worcester's core, those with large employment bases in rural areas, and Boston-based employers who have significant commuting populations from the region.

Strategy overview: Microransit service has expanded to fill gaps in communities like Shrewsbury and Westborough, but doesn't always offer the level of frequency to make service competitive with vehicle trips. Meanwhile, major employers like St. Vincent's and UMass Memorial have employees who rely on carpooling, or have limited vehicle access. Transportation demand management (TDM) partnerships with employers can supplement public transit with shuttle services, subsidized passes, and carpooling coordination — connecting workers to jobs at a fraction of the cost of expanding fixed-route service.

Details and next steps

- Partner with major employers (eg: St. Vincent's, UMass Memorial, Saint-Gobain Abrasives, Vibram, Flexcon, Wyman-Gordon, and large institutional employers such as universities) to fund shuttle services connecting employee housing clusters to workplaces
- Establish shuttle/microtransit connections between commuter rail stations (Westborough) and nearby communities that lack direct access
- Explore employer cost-sharing models where businesses contribute to shuttle, vanpool, or microtransit operations in proportion to the employees served
- Pilot new microtransit services in areas that currently lack transit service but have growing need for alternatives to single occupancy vehicles
- Coordinate multiple transit entity schedules for timed connections (MBTA/WRTA/MWRTA) with shuttle and microtransit services

Lead / Partners

WRTA, microtransit service providers, major employers (funding partners), CMRPC (convener and TDM coordination), municipalities

Cost

Moderate to High (employer cost-sharing offsets public investment; microtransit operating costs; shuttle capital and operating expenses)

Transit Access, Connectivity, and Quality: Partnership

Explore regional transit links and high speed/frequency commuter buses.

Study finding: The CMRPC region's has limited high-quality regional transit connections to major employment centers, forcing residents into car dependency for longer-distance trips and limiting the region's economic competitiveness. Being at the nexus of multiple transit connections provides very high quality transit job access compared to single line transit.

Where to focus: Major regional cities (Springfield, Leominster/Fitchburg, Providence, Hartford) and employment hubs outside of existing Boston-oriented transit commuter system.

Strategy overview: Creating high quality transit connections to regional cities outside of Boston could strengthen local economic resilience. Projects such as Providence-Worcester commuter rail (supported by Senate Bill 2246) and East-West Rail between Worcester and Springfield, remain long-discussed possibilities that would fundamentally expand the region's labor market access. There is also an opportunity to allow the Framingham/ Worcester Line to function as a high-capacity transit service for Worcester. While these are long-term investments beyond any single municipality's control, coordinated regional advocacy can advance them — and in the meantime, high-frequency commuter bus service on key corridors could provide near-term improvement at a fraction of the rail investment cost.

Details and next steps

- Export opportunities to pilot or formalize commuter bus service between major regional cities where none currently exists (Worcester to Springfield, Providence, and Hartford). Existing model - Fitchburg-Leominster-Worcester commuter bus.
- Coordinate between MBTA, WRTA, and MWRTA to identify new route possibilities that bridge transit agency boundaries.
- Support East-West rail planning and advocate for the CMRPC region's inclusion in service plans
- Coordinate regional advocacy for Providence-Worcester passenger rail through CMRPC's legislative engagement and partnerships with Rhode Island counterparts
- Study the addition of infill stations in Eastern Worcester and an extension of the Worcester Line to serve the western side of Worcester
- Commission a feasibility study for commuter bus service on key corridors (Worcester-Providence, Worcester-Springfield) as a near-term alternative to rail
- Ensure that if commuter rail expands, fare structures are designed for affordability from the start

See next slide for additional details and next steps, leads/partners, and cost.

Transit Access, Connectivity, and Quality: Partnership

Explore regional transit links and high speed/frequency commuter buses. [cont.]

(Continued from previous slide)

Study finding: The CMRPC region has limited high-quality regional transit connections to major employment centers, forcing residents into car dependency for longer-distance trips and limiting the region's economic competitiveness. Being at the nexus of multiple transit connections provides very high quality transit job access compared to single line transit.

Additional details and next steps

- Ensure that if commuter rail expands, fare structures are designed for affordability from the start
- Coordinate with MassDOT and federal transit programs on funding opportunities for regional connections
- Build a coalition of municipalities, employers, and institutions that can speak with one voice on regional transit priorities

Lead / Partners

CMRPC (lead advocate and convener), MBTA, MassDOT, municipalities, legislative delegation, Rhode Island and Western Massachusetts planning agencies, regional transit agencies

Cost

Low, Moderate, and High depending on strategy section (advocacy and planning costs are modest; actual infrastructure investment would be high and likely involve state and federal)

Transit Access, Connectivity, and Quality: Partnership

Establish mobility hubs at key regional transportation nodes and transit interfaces.

Study finding: The region's transportation system lacks well-designed interchange points outside of Worcester where different modes — bus, microtransit, commuter rail, bicycle, car — can connect efficiently, forcing riders to navigate fragmented services with poor transfers.

Where to focus: Transit route termini, immediate high density suburbs such as Westborough, Northborough, and Auburn, commuter rail stops

Strategy overview: A mobility hub is a well-designed location where multiple transportation modes converge — bus stops, microtransit pickup, bicycle share, car share, park-and-ride, and real-time information — making it easy for travelers to transfer between modes and complete trips that no single service could handle alone. Strategic placement of mobility hubs at Westborough's commuter rail station, key WRTA transfer points, and emerging service nodes like Northborough Crossing would dramatically improve the usability of the region's fragmented transit system.

Details and next steps

- Identify priority locations for mobility hubs based on existing and planned transit convergence, ridership, and surrounding land use (Westborough commuter rail, Worcester Union Station connections, Northborough Crossing)
- Design hubs to include covered waiting areas, real-time transit information, bicycle parking and repair, car-share and ride-share pickup zones, charging infrastructure for EVs and microbility/e-bicycles, and accessibility features
- Integrate microtransit into hub operations so that microtransit serves as a feeder to fixed-route and commuter rail service
- Coordinate hub locations with transit-supportive zoning to ensure surrounding land use generates ridership
- Apply for federal and state transit innovation grants to fund hub construction
- Phase implementation starting with the highest-impact locations and expand as ridership and service justify

Lead / Partners

CMRPC (lead planning and coordination), WRTA, MassDOT, municipalities, microtransit services

Cost

High (capital construction costs for hub infrastructure; ongoing maintenance; offset by improved system efficiency and ridership growth)

Active and Novel Transportation Solutions: Policy

Require active transportation connections in all new residential development approvals.

Study finding: New residential development routinely reinforces car dependency by providing no pedestrian or bicycle connections to nearby transit, services, or employment, even when these destinations are within walking or biking distance.

Where to focus: New residential and commercial developments, new high quality low stress active transportation facilities

Strategy overview: Every new housing project is an opportunity to build the multimodal network incrementally, at no cost to the municipality. By requiring sidewalk and bike connections as a condition of approval, communities ensure that new development contributes to — rather than undermines — the pedestrian and cycling infrastructure needed to support transit, reduce car trips, and enable active transportation.

Details and next steps

- Adopt subdivision and site plan regulations requiring sidewalk connections from new residential development to the nearest transit stop, school, commercial node, or existing multimodal network
- Require bike parking and storage in multifamily developments and new commercial buildings
- Include connectivity requirements in cluster and cottage court developments to ensure alternative housing types are integrated into the pedestrian network
- Where full sidewalk construction is not feasible (rural roads, low-density areas), require paved shoulders of sufficient width for pedestrian and bicycle use
- Adopt complete streets policies that require consideration of pedestrian, bicycle, and transit access in all road reconstruction projects
- Identify and discourage development styles that negatively impact network connectivity such as cul-de-sacs and dead ends, ensuring they meet minimum connectivity standards

Lead / Partners

Municipalities and planning boards (lead), MassDOT (complete streets guidance), CMRPC (model regulations)

Cost

Low (costs borne by developers as a condition of approval; complete streets policies direct existing road spending)

Active and Novel Transportation Solutions: Policy

Prioritize installing sidewalks, bike racks, and ancillary active transportation amenities in areas with high intersection and activity density.

Study finding: The region's existing active transportation infrastructure — sidewalks, bike racks, crossings, and lighting — is concentrated in Worcester's core, leaving suburban and village centers with high pedestrian potential underserved.

Where to focus: Town centers, areas with high intersection density, and with high active transportation demand (eg: schools, job centers)

Strategy overview: Not every road in the region needs a sidewalk, but the study's intersection density and walkability analysis identifies locations where the urban structure already supports walking and biking — village centers, commercial corridors, and areas near transit stops. Directing limited public investment toward these high-potential locations maximizes the return on active transportation spending and creates the conditions for mode shift in areas where it is most feasible.

Details and next steps

- Use the study's intersection density and activity density analysis to prioritize locations for sidewalk, bike rack, and lighting installations
- Focus initial investments on connections between housing clusters and transit stops, schools, and commercial services
- Install bike racks (which are eligible for TIP microgrants) at commercial nodes, municipal buildings, and transit stops throughout high-density areas
- Improve crossing infrastructure (pedestrian signals, curb ramps, crossing islands) at key intersections in priority areas
- Apply for MassDOT Complete Streets Funding Program grants for prioritized improvements
- Coordinate with the MassDOT’s Main Street and state highway redesign projects to ensure active transportation improvements are incorporated

Lead / Partners

Municipalities (lead), MassDOT (Complete Streets funding), CMRPC (analysis and prioritization support)

Cost

Low to Moderate (capital costs for infrastructure installation; partially offset by Complete Streets grants and development impact fees)

Active and Novel Transportation Solutions: Program

Invest in targeted sidewalk, crossing, and bus shelter improvements at key nodes.

Study finding: Specific, identifiable gaps in pedestrian and transit infrastructure prevent residents from reaching services and transit that already exist — such as West Boylston's 120 housing units near Route 12 bus service with inadequate sidewalks, or Westborough's commuter rail station with no way to arrive without a car.

Where to focus: Near high traffic transit stops and corridors, in town centers, around commuter rail stops

Strategy overview: Beyond system-wide policies, there are specific locations where closing a pedestrian gap or installing a bus shelter would immediately improve access for residents who currently cannot safely or comfortably reach nearby transit and services. These targeted investments are often modest in cost but transformative in impact, converting "a bus stop exists" into "I can actually get there."

Details and next steps

- Prioritize West Boylston's Route 12 corridor, Westborough's commuter rail station access, and connections to the planned Northborough Crossing transit service
- Use the quick-build demonstration process project to implement short term safety improvements near new or existing transit stops, and mincrotransit pilots
- Install bus shelters, benches, and lighting at WRTA stops and common microtransit pickup/dropoff locations that currently lack amenities, prioritizing stops where seniors and transit-dependent residents are concentrated, as well as where demand is highest
- Improve crossings at key intersections including pedestrian signals, curb ramps, and crossing islands on high-speed roads
- Close sidewalk gaps in downtown and village center areas where existing segments do not connect
- Apply for MassDOT Complete Streets Funding Program grants for prioritized improvements
- Coordinate improvements with WRTA and micromobility providers to ensure amenity investments align with actual service and ridership patterns

Lead / Partners

Municipalities (lead), MassDOT, WRTA, CMRPC (prioritization analysis and grant support)

Cost

Moderate (capital costs for shelters, sidewalks, and crossing improvements; offset by Complete Streets grants; individual improvements are modest but aggregate investment is significant)

Active and Novel Transportation Solutions: Program

Develop human-scale zoning and urban design model policies and encourage adoption throughout transit-diverse areas.

Study finding: Many of the region's village centers and commercial corridors have the underlying street networks and building patterns to support walkable, transit-accessible environments, but current zoning permits auto-oriented development that erodes these assets.

Where to focus: Town centers and places with high intersection and/or activity density, new development nodes

Strategy overview: Human-scale design — buildings close to the sidewalk, ground-floor windows and entrances facing the street, parking behind or beside rather than in front, short blocks and pedestrian connections — creates places where walking, biking, and transit feel natural and safe. Model policies developed at the regional level can help municipalities adopt design standards that reinforce walkability without requiring each community to develop its own from scratch.

Details and next steps

- Develop model zoning provisions for human-scale development in village centers and commercial corridors, including build-to lines, transparency requirements, and parking placement standards
- Include model urban design guidelines covering building orientation, pedestrian entrances, landscaping, and lighting
- Tailor model policies to the region's different place types — downtown Worcester, suburban commercial corridors, and rural village centers require different approaches
- Provide visual examples and precedent imagery from comparable New England communities to help planning boards and residents understand the intended outcomes
- Encourage adoption of model policies in communities undertaking master plan updates or zoning revisions
- Coordinate with the shared planning staff program to support implementation in communities that lack design review capacity

Lead / Partners

CMRPC (lead), municipalities, planning boards, MassDOT (complete streets alignment)

Cost

Low to Moderate (primarily staff and consultant time to develop model policies; one-time investment with broad reuse)

Active and Novel Transportation Solutions: Partnership

Plan and build protected multimodal corridors connecting housing clusters to services.

Study finding: Trails and greenways in the region — the French River in Oxford, the Blackstone bikeway in the southeast — are designed as recreational amenities rather than transportation corridors, leaving them disconnected from housing and employment nodes.

Where to focus: Existing plans to build, extend or better connect long distance multimodal corridors, particularly those that create long distance connections or support connections between people and services.

Strategy overview: Protected multimodal corridors — separated bike lanes, shared-use paths, or trails designed for transportation — can fundamentally change how residents access jobs, services, and transit. The key distinction from recreational trails is intentional connection to origins (housing) and destinations (employment, services, transit), all-ages-and-abilities design standards, and year-round maintenance for commuting use.

Details and next steps

- Extend the French River greenway in Oxford (Phase 2 recently funded) with connections to downtown employment and housing nodes, designing it as a commuter facility
- Support the implementation of existing planned long-distance trail efforts such as Boston-Worcester Air Line Trolley (BWALT), Mass Central Rail Trail
- Advance the Blackstone bikeway as a transportation corridor connecting southeast subregion communities to employment and services
- Build protected multimodal connections between housing concentrations and commuter rail stations, particularly in Westborough
- Design corridors to all-ages-and-abilities standards (protected separation from traffic, not painted bike lanes) based on stakeholder feedback
- Integrate corridor investments with housing suitability analysis to ensure multimodal improvements serve areas where housing is planned or underway
- Coordinate with CMRPC's Regional Biking Plan to include housing-to-services connections as priority projects
- Plan a comprehensive, low stress active transportation network connecting all major population and employment hubs in the region.

Lead / Partners

CMRPC (lead planning and regional coordination), municipalities, MassDOT, DCR (trail management)

Cost

High (capital construction costs for protected corridors; right-of-way acquisition; offset by federal and state transportation grants and long-term reductions in road infrastructure demand)

Active and Novel Transportation Solutions: Partnership

Pilot municipal carshare, UTV communities, and other novel technology and policy studies, specifically targeting older or lower-income adults.

Study finding: Seniors and lower-income residents in rural and suburban communities face mobility gaps that traditional transit — even microtransit — cannot efficiently fill, leaving them isolated from medical care, grocery shopping, and social connections.

Where to focus: Communities with high interest in novel mobility solutions, particularly those with ladnuse or development patterns that are inconsistency with traditional transit success, or those with populations that might be susceptible to transportation insecurity.

Strategy overview: Not every mobility gap requires a bus. In rural and low-density suburban communities, novel solutions like municipal carshare programs, utility terrain vehicle (Utility Task Vehicle (UTV, eg: golf carts) communities (where low-speed vehicles are permitted on local roads), and emerging technologies may provide more cost-effective mobility than traditional transit. These pilots are particularly relevant for seniors who can no longer drive but live in communities where walking, biking, and transit are not realistic alternatives — addressing the isolation concern raised by Brookfield stakeholders who noted that moving to a 55+ community in the same region can mean losing access to familiar services and social networks.

Details and next steps

- Pilot a municipal carshare program in 2–3 communities, providing shared vehicles at community centers, senior housing, and municipal buildings for use by residents without personal vehicles
- Implement whichever recommendations of the Special Commission on Micromobility Final Report meet the needs of the region and otherwise further understanding in the safe use of e-assist devices such as e-bikes.
- Study use in the region and assess the potential for UTV communities in Massachusetts like Peachtree City (GA) or The Villages, (FL) as a way to lower transportation costs and expand mobility in vulnerable populations.
- Explore UTV ordinances that permit low-speed electric vehicles on local roads in village centers and residential areas, providing an affordable and accessible mobility option for seniors
- Commission a feasibility study on emerging mobility technologies (autonomous vehicles, electric bike-share, on-demand ride services) and their applicability to the region's rural and suburban context
- Partner with councils on aging and senior centers to design programs around the actual travel needs of older adults
- Structure pilots with clear evaluation metrics and defined timelines to determine which approaches merit permanent investment
- Explore state and federal innovation grants to fund pilot programs

Lead / Partners

CMRPC (lead and coordination), trail committees, municipalities, councils on aging, private mobility operators, MassDOT (innovation programs)

Cost

Moderate to High (vehicle acquisition and insurance for carshare; infrastructure modifications for UTV use; study costs; offset by innovation grants and reduced demand on more expensive transit services)

Coordinated Regional Land Use and Transportation Planning: Policy

Integrate planning efforts with regional housing and transportation suitability analysis.

Study finding: Municipal master plans are developed independently without reference to a shared regional evidence base, leading to land use decisions that may contradict neighboring communities' plans and undermine regional housing and transportation outcomes. State planning efforts also may not integrate regional planning resources without proactive encouragement.

Where to focus: Municipalities conducting master plans as well as other local and state entities conducting planning in and around the region.

Strategy overview: The housing and transportation suitability analysis from this study provides, for the first time, a shared evidence base showing where housing development is best supported by infrastructure, transit, and services across the region. Incorporating this analysis into local master plans ensures that individual community decisions contribute to regional outcomes — directing housing toward areas that can support it and avoiding development in locations that would require extensive new infrastructure investment.

Details and next steps

- Incorporate the suitability analysis into municipal master plans, comprehensive plans, and housing production plans as a shared evidence base
- Align local future land use maps with regional suitability findings, directing housing growth toward areas with infrastructure, transit, and service proximity
- Adopt "housing near transit" policies that explicitly prioritize residential density within walking distance of existing and planned service
- Coordinate master plan updates with neighboring communities to identify shared opportunities
- Use the suitability analysis to identify where development should/should not occur, providing communities with affirmative direction
- Use the suitability analysis to negotiate transportation infrastructure investment in outlying developments and to target developments in places with higher transportation diversity
- Respond to Oxford's call for a consensus audit of master plans by using the suitability analysis as a starting point for identifying where multiple communities' interests align
- Integrate the suitability analysis and related resources with statewide planning efforts such as MILAS

Lead / Partners

Municipalities (lead), CMRPC (suitability analysis and technical assistance), planning boards, state planning agencies

Cost

Low (incorporation into existing planning processes; no additional capital expenditure)

Coordinated Regional Land Use and Transportation Planning: Policy

Formalize co-location as a transportation strategy.

Study finding: Housing, employment, and services in the region are often separated by distances that require car travel, generating higher transportation costs and fewer transportation options than if these uses were located together — but zoning in most communities actively prevents co-location through single-use districts.

Where to focus: Town centers, places with high intersection and population density, new developments, distributed residential neighborhoods

Strategy overview: The most effective transportation solution is often a land use solution: locating housing near jobs, services, and transit so that trips are shorter or unnecessary. Co-location — deliberately mixing residential, commercial, and institutional uses —makes transit, biking, and walking more attractive to users, resulting in better services and more variety in transportation mode choice. Formalizing co-location as an explicit transportation strategy means that land use decisions are evaluated not just for their housing or economic development impact, but for their effect on the transportation system.

Details and next steps

- Adopt mixed-use zoning in village centers, downtown areas, and commercial corridors that allows residential, commercial, and institutional uses within the same district and building
- Evaluate development proposals and zoning amendments for their transportation impact, considering whether the proposed location would have appropriate transportation options, access to amenities and services, or will lead to downstream transportation impacts.
- Include co-location as a criterion in the suitability analysis, identifying locations where mixed-use development would most effectively reduce transportation demand
- Encourage municipalities to locate public facilities (town halls, libraries, schools, senior centers) in walkable centers rather than on isolated parcels accessible only by car
- Promote live-work and mixed-use development in areas near transportation hubs
- Incorporate transportation options into local master plans and transportation improvement programs

Lead / Partners

Municipalities (lead), CMRPC (planning support and analysis), MassDOT, regional transit agencies

Cost

Low (policy and planning changes; no direct public expenditure beyond staff time)

Coordinated Regional Land Use and Transportation Planning: Program

Explore creating a regional housing and transportation coordinator position or role at CMRPC.

Study finding: Coordination between housing and transportation planning does not happen by itself, and neither CMRPC nor any individual municipality currently has dedicated staff capacity to maintain the regional analysis, facilitate intermunicipal planning, and support implementation across communities.

Where to focus: Regional coordination and planning tasks that are otherwise unassigned.

Strategy overview: A dedicated staff position focused on connecting housing and transportation planning provides the sustained capacity needed to turn this study's analysis into ongoing action. The coordinator would maintain the suitability analysis and interactive map, provide technical assistance to municipalities, facilitate intermunicipal planning conversations, and track regional progress — functions that no single community can perform but that benefit all of them.

Details and next steps

- Define the coordinator role with responsibilities such as maintaining the suitability analysis, providing technical assistance, facilitating intermunicipal planning, and tracking regional progress
- Task the coordinator with responding to individual community requests (matching developers to sites in Princeton, helping Sutton structure its 40R district, connecting Southbridge with trust fund technical assistance) while maintaining the regional perspective
- Consider if the role can be assigned to existing staff resources. Or, if needed, fund the position through a combination of CMRPC assessments, state planning grants, and project-specific funding
- Maintain and expand the interactive map with new data layers (trails, real stops versus ghost stops, sewer/water capacity, 3A districts) as they become available
- Publish an annual regional housing and transportation scorecard tracking production, diversity, transit access, and cost metrics
- Use the coordinator position to pursue the regionwide housing plan that CMRPC has identified as a long-standing priority

Lead / Partners

CMRPC (lead), state planning grants, municipalities (assessment contributions)

Cost

Moderate (salary, benefits, and operating costs for one full-time position; partially offset by state planning grants and the value of technical assistance provided to municipalities)

Coordinated Regional Land Use and Transportation Planning: Program

Develop model bylaws that compliment housing uses with increased economic activity and innovation.

Study finding: Single-use zoning separates housing from employment and commercial activity, but emerging models like business incubators, co-working spaces, and maker spaces demonstrate that mixing small-scale employment with residential uses can strengthen both — if zoning allows it.

Where to focus: Communities and districts that do not accommodate or foster economically diverse activities in or near residential areas, especially in areas of high suitability.

Strategy overview: Business incubators and small-scale commercial uses embedded in residential areas can bring jobs, services, and activity to neighborhoods without the traffic and scale impacts of conventional commercial development. Model bylaws that allow live-work units, home-based businesses, small-scale maker spaces, and neighborhood commercial uses in residential zones can help communities diversify their economic base while adding vitality and reducing the need for residents to travel long distances for basic services and employment.

Details and next steps

- Develop model bylaw language allowing live-work units, home-based businesses with employees, and small-scale commercial uses in residential zones
- Include provisions for business incubator spaces in mixed-use buildings, allowing shared workspace and small business startups alongside housing
- Tailor model bylaws to the region's place types — downtown locations may accommodate larger incubator spaces while village centers may focus on home-based business flexibility
- Address parking, noise, and traffic concerns through performance standards rather than use prohibitions
- Connect model bylaws with economic development programs that support small business creation
- Pilot adoption in communities undertaking master plan or zoning updates

Lead / Partners

CMRPC (lead), municipalities, economic development organizations, small business development centers

Cost

Low to Moderate (primarily staff time to develop model language; municipalities may invest in incubator facilities)

Coordinated Regional Land Use and Transportation Planning: Partnership

Form a regional housing compact with shared infrastructure investment commitments.

Study finding: The region's housing and transportation challenges cross municipal boundaries, but there is no formal mechanism for communities to make shared commitments to housing production, infrastructure investment, or coordinated planning.

Where to focus: Housing and transportation challenges and opportunities that transcend municipal boundaries.

Strategy overview: A regional compact creates mutual accountability and shared investment in the infrastructure — physical and institutional — needed to solve housing and transportation challenges that no single town can address alone. By formalizing commitments among willing municipalities, the compact provides political cover for local action, pools resources for shared investments, and positions the region for competitive grant applications that favor collaborative approaches.

Details and next steps

- Convene willing municipalities into a voluntary housing and transportation compact establishing shared goals for housing production, infrastructure investment, and multimodal support
- Pool resources for shared investments benefiting multiple communities: intermunicipal sewer/water connections, shuttle services, trail corridors, and shared planning staff
- Adopt shared metrics and publish an annual scorecard comparing each participating community's progress on housing production, type diversity, transit access, and infrastructure investment
- Coordinate developer recruitment at the regional scale, presenting the CMRPC region as a unified market
- Explore shared service agreements for functions that small towns struggle to fund individually: planning staff, code enforcement, building inspection, and transit coordination
- Use the compact as a framework for joint grant applications (MassWorks, Complete Streets, MassHousing) where a regional approach strengthens the application
- Build political support and awareness: elected officials can point to regional commitments and peer participation as justification for local action

Lead / Partners

CMRPC (lead convener and institutional home), municipalities, legislative delegation, MassHousing, MassDOT

Cost

Moderate to High (depends on scope of shared investments; individual municipal contributions vary; overhead costs for compact governance and coordination; offset by shared efficiencies and strengthened grant competitiveness)



Methodology

Methodology index

Method	Summary	Data sources
Population forecast	Population forecasts track how age groups grow or shrink over time, using historical trends to project future shifts in community age composition from reliable Census survey data.	ACS 5-Year Estimates table B01001 (Sex by Age)
Household forecast	Household counts are projected from population estimates using age-based formation rates, then distributed across income levels by translating Census income brackets into HUD affordability categories.	ACS 5-Year Estimates table B01001 (Sex by Age), B19001 (Household Income), PUMS microdata; HUD Income Limits for Area Median Income thresholds; and BLS Consumer Price Index data.
Market conditions and opportunity sites	Census tracts are grouped into market condition categories based on current housing conditions and recent trends, linking each tract to tailored policy and development recommendations.	Tables B01001, B08303, B25004, B25016, B25074, B25095, 2020 & 2023 ACS 5-year estimates; Zillow ZHVI, March 2020 & March 2025; Realtor.com, 2020 & 2025; Mortgage actions, FFIEC/HMDA, 2020 & 2024; TIGER/line road network shapefiles, 2020 & 2024.
"Soft sites" analysis	Soft sites are parcels where the building's assessed value is less than half the total parcel value, flagging potentially underutilized properties where land value exceeds structural value.	Massachusetts GIS Property Tax Parcels.
Zoning classification	Zoning districts were reviewed and coded by development ease for multifamily housing, from by-right to prohibited, with additional layers identifying where current density exceeds or falls short of zoned capacity.	Zoning by-laws, maps, and shapefiles from all 40 CMRPC communities; Massachusetts GIS Property Tax Parcels
Land use classification	Standard assessor land use codes were grouped into thematic categories for regional analysis, with ambiguous condominium and multi-unit codes assigned using local knowledge and assessor descriptions.	Massachusetts GIS Property Tax Parcels.
Residential density	Residential density is mapped in dwelling units per acre using MHP parcel data, aggregated to block groups for regional-scale visualization of density patterns.	Massachusetts Housing Partnership Residensity; Massachusetts GIS Property Tax Parcels
Displacement risk	Displacement risk indices for nonwhite and senior households are calculated from Census tract-level composite scores combining home values, tenure length, cost burden trends, and household demographics.	Tables B01001, B25039, B25077, B25140, 2023 ACS 5-year estimates.
Neighborhood conditions assessment	Census tracts are scored on current housing market competitiveness and change over time, then mapped together to classify each tract's relative position across a spectrum of market conditions and improvement.	Tables B01001, B08303, B25004, B25016, B25074, B25095, 2020 & 2023 ACS 5-year estimates; Zillow ZHVI, March 2020 & March 2025; Realtor.com, 2020 & 2025; Mortgage actions, 2020 & 2024 FFIEC/HMDA; TIGER/line road network shapefiles, 2020 & 2024.

Methodology index (continued)

Method	Summary	Data sources
Rental housing cost	Typical renter costs combine median asking rents from 2020–2025 listings with estimated utility expenses, adjusted for inflation and aggregated at the block group level.	2020-2025 Property and rental data provided by RentCast.io, Tables B25132, B25133 from 2019-2023 5-year ACS
Ownership housing costs	Typical homeowner costs combine estimated mortgage payments, property taxes, insurance, and utilities based on local sales prices, a 20% down payment assumption, and current mortgage rates.	2020-2025 RentCast rental prices, 2018-2022 Property and Casualty Market Intelligence Data, Sept. 2025 primary mortgage interest rate, municipal property tax rates, Tables B25132, B25133, and B25134 from 2019-2023 5-year ACS
Transportation diversity index (TDI)	A parcel-level Transportation Diversity Index classifies each location as transportation diverse, marginally diverse, or vehicle dependent based on the quality and availability of nearby transportation options.	MassDOT Pedestrian Inventory 2024, MassDOT Road Inventory 2019 + 2023, MassDOT Bicycle Inventory 2024, USDA SNAP Retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, USDA SNAP retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, Longitudinal Employer-Household Dynamics 2024
Bicycle/pedestrian potential	Bicycle and pedestrian potential identifies roads likely to be used for walking or biking based on the presence of sidewalks, low speeds or traffic volumes, shared use paths, or protected bicycle lanes.	MassDOT Pedestrian Inventory 2024, MassDOT Road Inventory 2019 + 2023, MassDOT Bicycle Inventory 2024
Access	Intersection density, grocery store access, and transit access within a quarter-mile walk along the pedestrian network determine whether bicycle and pedestrian infrastructure translates into meaningful transportation options.	USDA SNAP retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, Bicycle/Pedestrian Network (Toole 2025)
Transit quality	Transit quality is measured at the stop level by combining service frequency with job and grocery access reachable within defined travel times along the pedestrian network.	USDA SNAP retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, Bicycle/Pedestrian Network (Toole 2025), Longitudinal Employer-Household Dynamics 2024
TNC's or ridehailing	Ridehail pickup and dropoff patterns are spatially aggregated to identify areas of potential transit demand, serving as an experimental proxy for unmet transportation needs.	MassDOT OPMI TNC dataset 2024, WRTA GTFS Feed per MassDOT Spring 2024, Toole Bicycle/Pedestrian Network 2025, American Community Survey 5-year 2024
Transportation cost	Transportation costs are estimated by combining household vehicle miles traveled for operating costs with per-vehicle miles traveled for ownership costs, scaled by number of vehicles.	Bureau of Transportation Statistics Spending per Vehicle-Mile 2024 MassDOT Vehicle Census 2024

Methodology: Population forecast

For each subregion, and the region as a whole, the population forecast advances age-sex cohorts forward in five-year steps using Cohort Change Differences (CCD). This additive approach measures how each age group changed relative to the preceding cohort five years earlier, then projects those differences forward. For example, if a community had 1,000 children aged 5–9 in 2015 and 1,100 people aged 10–14 in 2020, the cohort grew by 100, reflecting net in-migration or other gains, and that difference is carried forward into future projection steps. Fertility rates for newborn cohorts are forecast using exponential smoothing, and the five-year projections are interpolated to produce annual estimates. Forecasts are summarized by demographic groups to understand the expected shifts in population composition by age in the next 10 years.

The forecast uses ACS 5-Year Estimates rather than single-year estimates or decennial census counts because they provide reliable data for small geographies with low sampling error, though because these estimates represent rolling five-year averages, the resulting forecasts should be interpreted as reflecting smoothed demographic trends rather than precise point-in-time snapshots.

Sources: ACS 5-Year Estimates table B01001 (Sex by Age).

Methodology: Household forecast

The household forecast translates the population projection into estimated households by applying household formation rates derived from PUMS microdata. For each projected age-sex cohort, the share of the population living in each household type is estimated, then converted to household counts using population-to-household ratios. Total projected households are anchored to the most recent household count to correct for any drift between the population-based estimate and observed data.

To distribute households by income, the model "re-bins" historical ACS income data from the fixed Census income brackets (e.g., $25,000–$34,999) into HUD Area Median Income groups (e.g., 0–30% AMI, 30–50% AMI) by calculating inflation-adjusted income thresholds for each historical year and proportionally allocating household counts across the new bins based on the overlap between the original and target income ranges. Income shares across these AMI groups are then forecast forward and applied to the total household projection to estimate future demand by income levels.

Sources: ACS 5-Year Estimates table B01001 (Sex by Age), B19001 (Household Income), PUMS microdata; HUD Income Limits for Area Median Income thresholds; and BLS Consumer Price Index data.

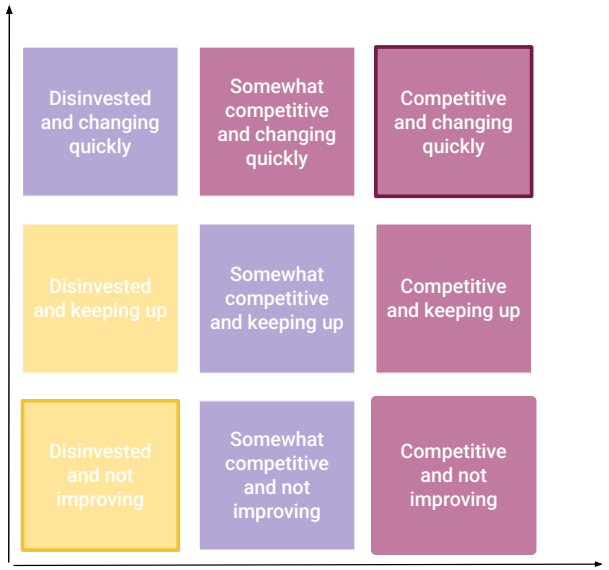
Methodology: Market condition

The market condition overlays build on the Neighborhood Conditions assessment to link appropriate policy, program, and partnership recommendations for each Census tract. Market condition was assigned based on current trends as well as change in each tract over the last five years and may also be thought of as the perceived market risk of development to a developer.

The diagram right shows the thematic market strength groupings that originated from Neighborhood Conditions classes.

The recommendations that accompany each Census tract via the market condition overlays are meant to cover a variety of scales at which policies, programs, or partnerships would be implemented. Thus, the market condition overlays are best utilized with additional overlays, particularly soft sites, location discount/premium, and vacant parcels, and with consideration to municipal goals as well as regional and state resources.

Sources: Tables B01001, B08303, B25004, B25016, B25074, B25095, 2020 & 2023 ACS 5-year estimates; Zillow ZHVI, March 2020 & March 2025; Realtor.com, 2020 & 2025; Mortgage actions, FFIEC/HMDA, 2020 & 2024; TIGER/line road network shapefiles, 2020 & 2024.



Strong market | low market risk
Middle market | some market risk
Weak market | high market risk

Methodology: Suitability

The suitability analysis identifies areas that have the infrastructure to support diverse housing types. Areas with and without existing sewer, water infrastructure, transportation diversity, and access to activity centers are classified according to the housing density and diversity they can support.

As a first step, development constraints were identified and removed from a region-wide parcel dataset. Development constraints included steep slopes (>20% grade), flood zones, wetlands and waterways, protected land and open space, and priority habitats.

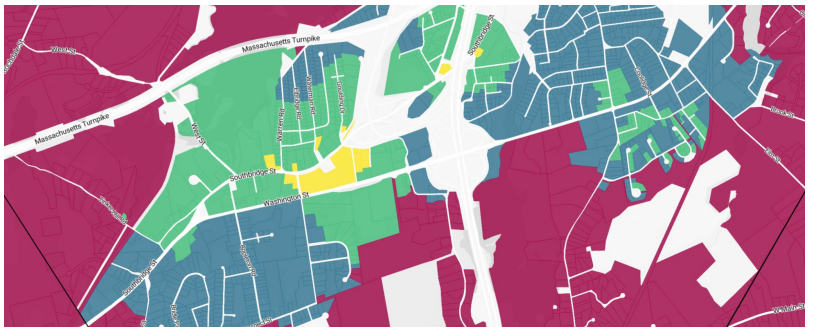
An attribute was added to the remaining parcels or portions of parcels to indicate existing sewer and water service/access. Another attribute was added to remaining parcels in accordance with their transportation diversity score (diverse, marginal, minimal, or vehicle locked).

To measure the proximity to “stuff” (or, activity centers), a half-mile hex grid was created for the entire CMRPC region. Two variables informed each hex’s “stuff” score: The number of “stuff” jobs (service sector, eds and meds) that fell within a given hex, and the number of different active land use types that fell within a given hex. Each hex was assigned a “stuff” score based on the average ranking of its job-count and land-use-count values.

An attribute was added to the buildable parcels/portions of parcels to represent the “stuff” score associated with the hex with which they overlapped the most.

Each parcel or portion of parcel in the buildable land layer was assigned a suitability class based on the values associated with the three resulting attributes: infrastructure service/access (sewer, water), transportation diversity, and “stuff”. More information on the suitability classes can be found on pages 88-89 of this report.

Sources: MassGIS parcels, individual Towns and Cities of CMRPC, MassDOT Pedestrian Inventory 2024, MassDOT Road Inventory 2019 + 2023, MassDOT Bicycle Inventory 2024, USDA SNAP Retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, USDA SNAP retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, Longitudinal Employer-Household Dynamics 2024



Home type library: Single-family with detached ADU

The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.

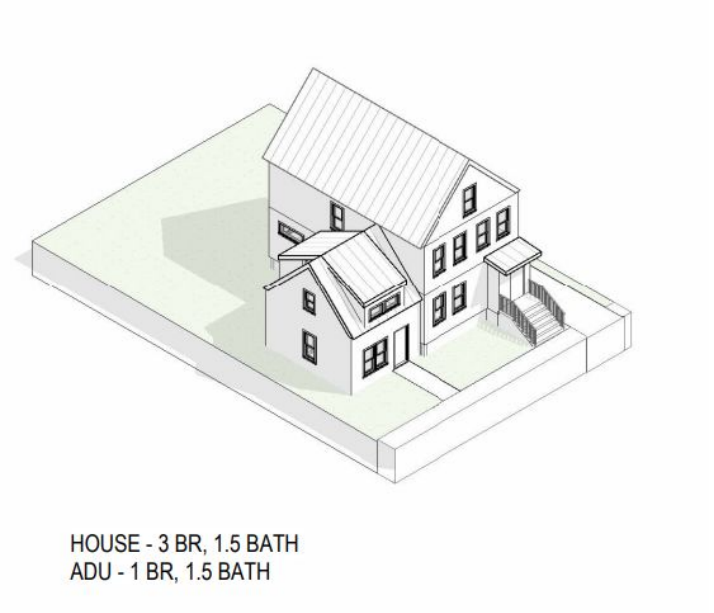
HOUSE - 4 BR, 3.5 BATH
ADU - 1 BR, 1.5 BATH

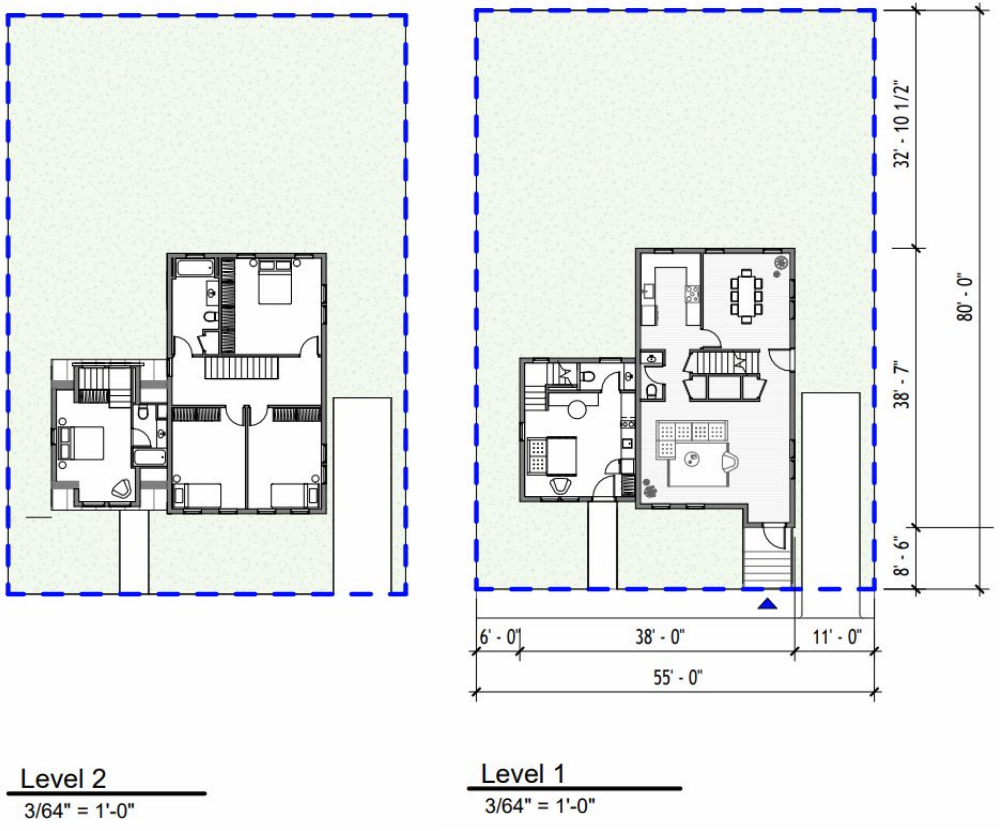




Home type library: Single-family with attached ADU

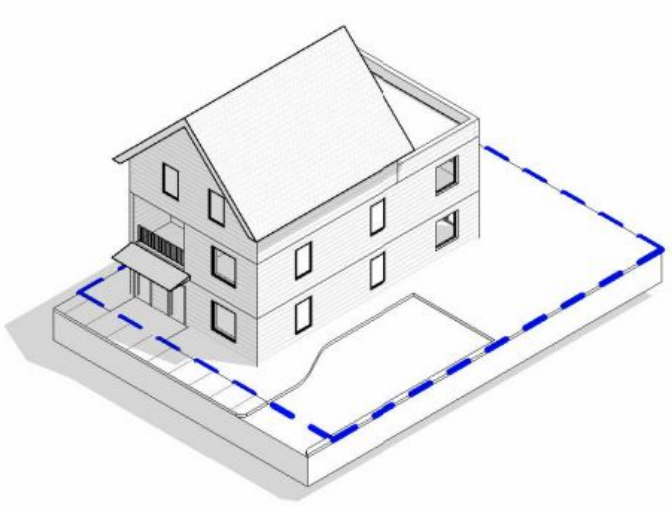
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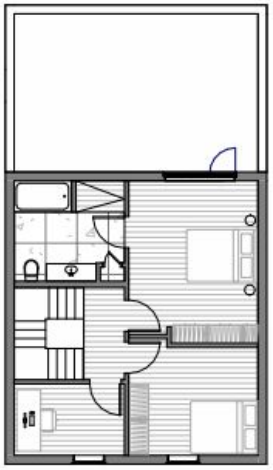


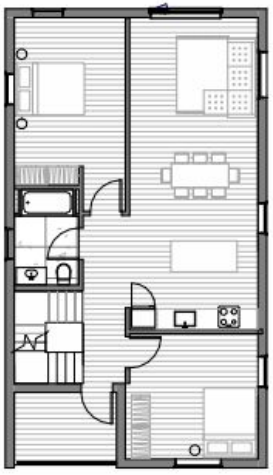


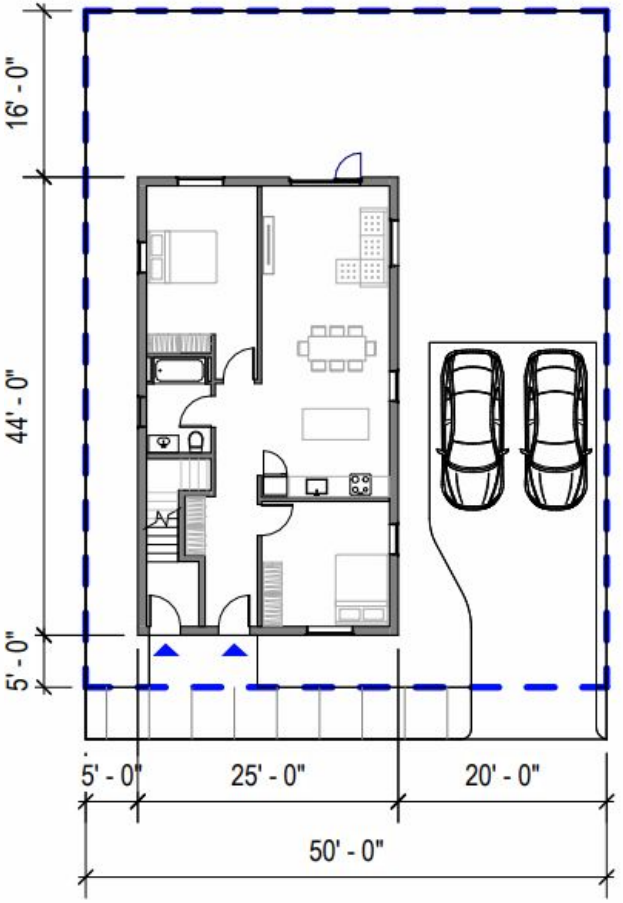
Home type library: Stacked duplex

The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.







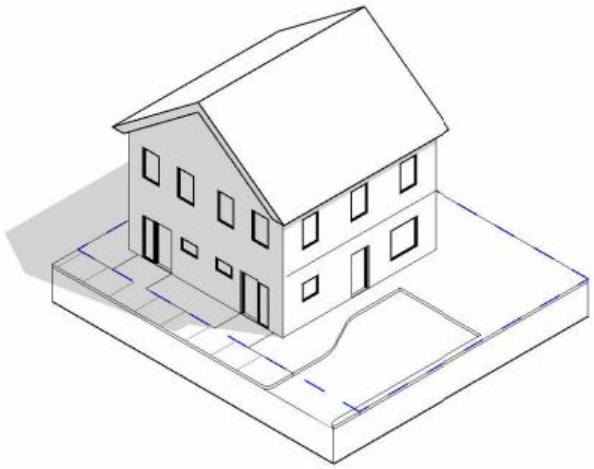


Unit Summary	
Unit	Area
UNIT 1	907 SF
UNIT 2	1425 SF

UNIT 1 - 2 BR, 1 BATH
UNIT 2 - 4 BR, 2 BATH

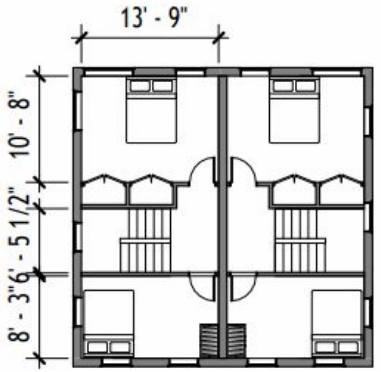
Home type library: Side-by-side duplex

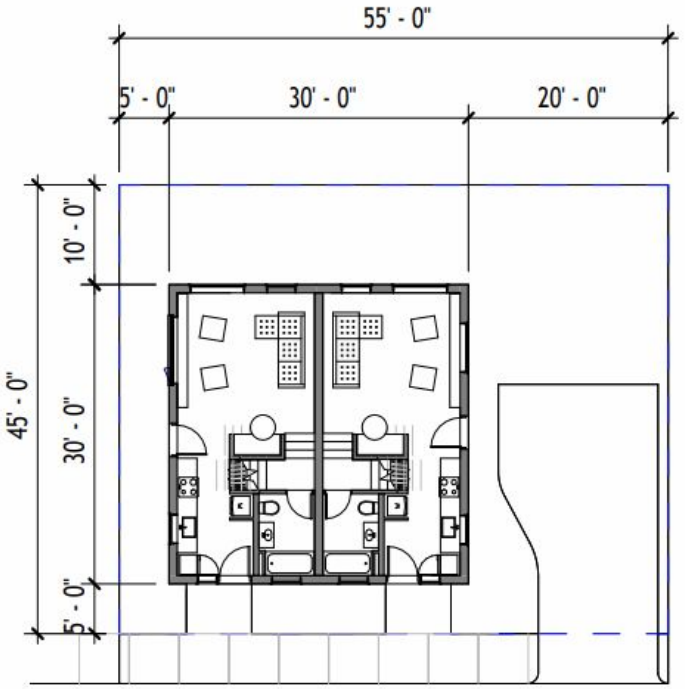
The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.



UNIT 1	779 SF
UNIT 2	779 SF

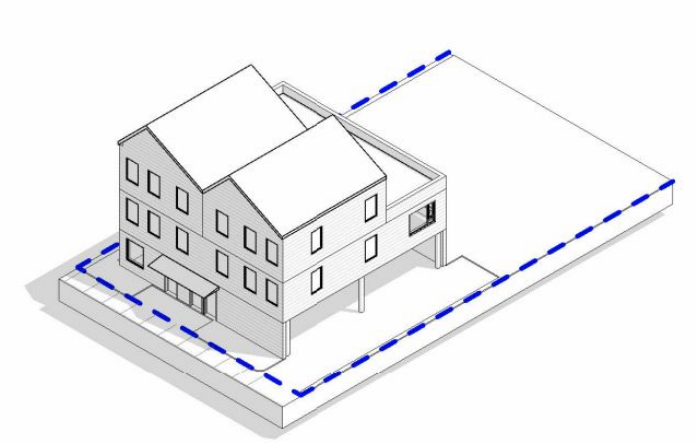
UNIT 1 & 2 - 2 BR, 1 BATH



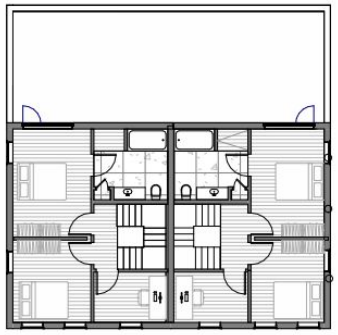


Home type library: Triplex

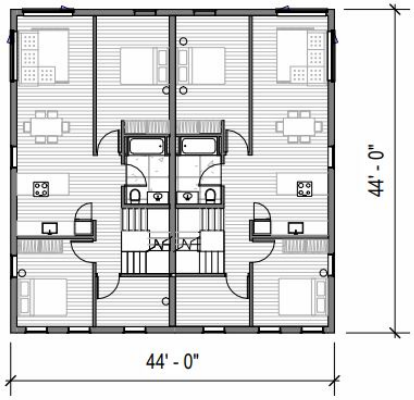
The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.



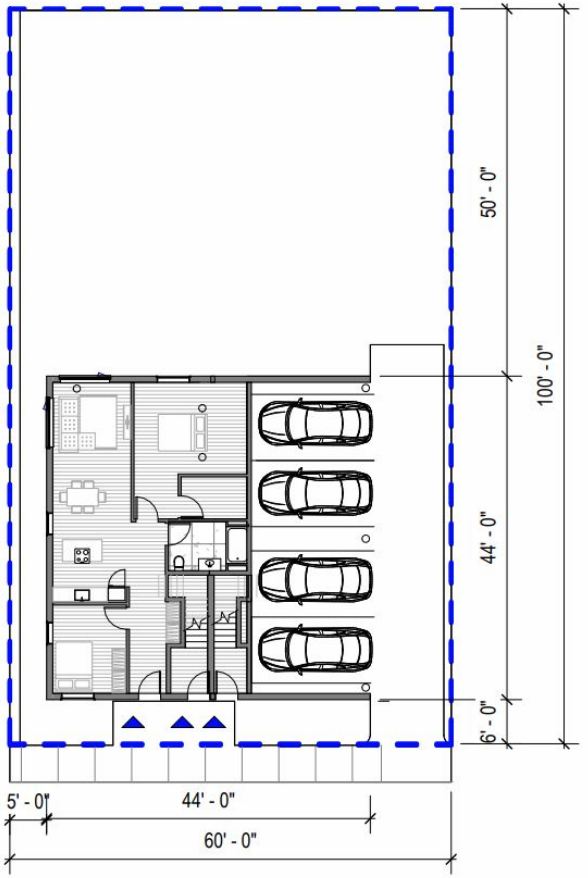
UNIT 1 - 2 BR, 1 BATH
UNIT 2 & 3 - 4 BR, 2 BATH



Level 3



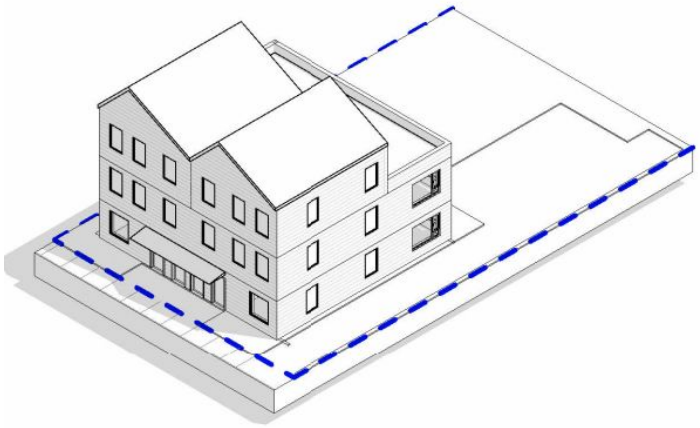
Level 2



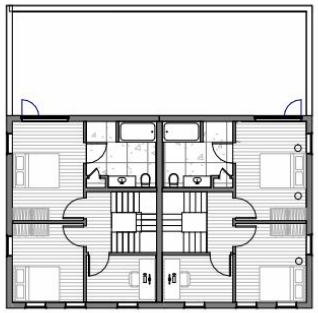
Level 1

Home type library: Quadplex

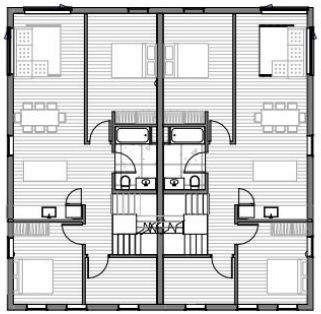
The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.



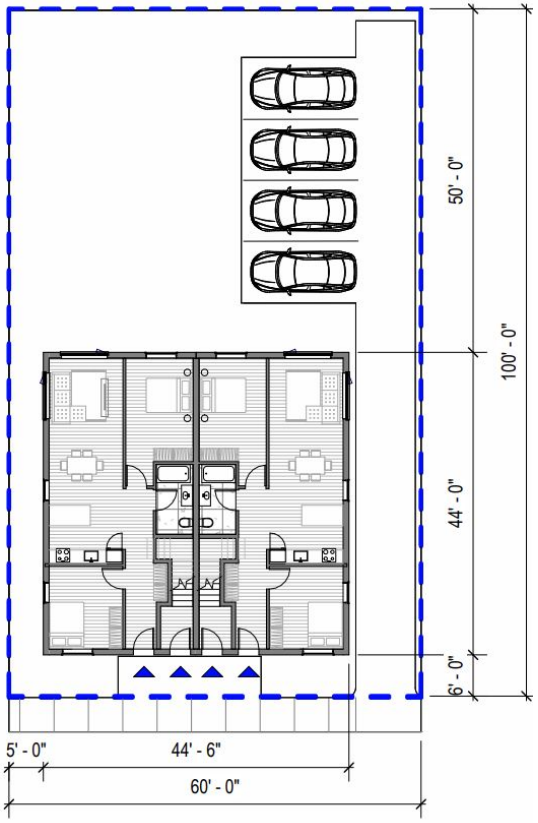
UNIT 1&2 - 2 BR, 1 BATH
UNIT 3&4 - 4 BR, 2 BATH



Level 3



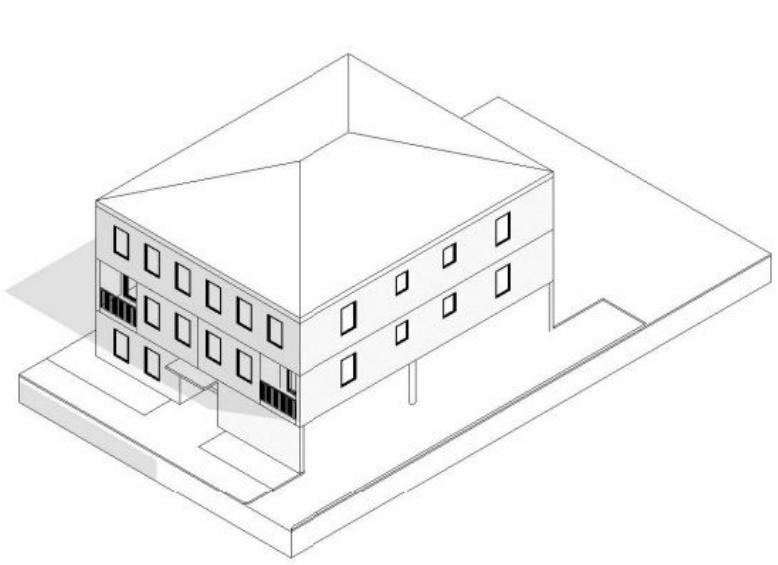
Level 2



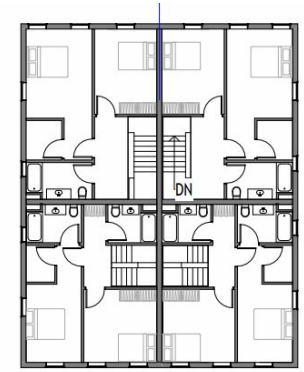
Level 1

Home type library: Five-plex

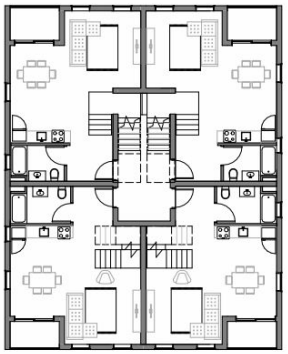
The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.



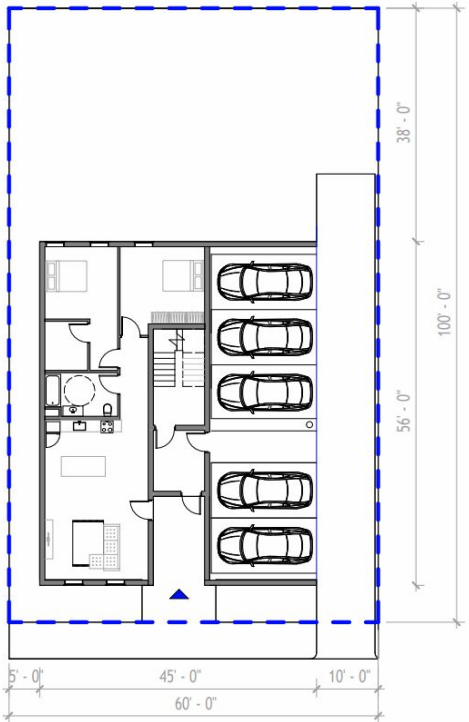
UNIT 1 - 2 BR, 1 BATH
UNIT 2-5 - 2 BR, 2-3 BATH



3 LEVEL 3
3/64" = 1'-0"



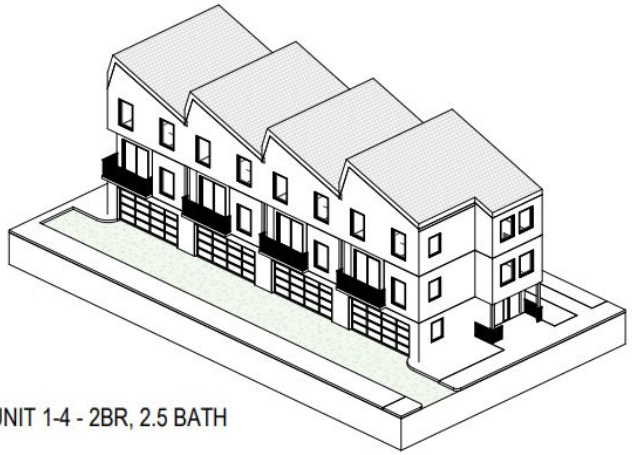
2 LEVEL 2
3/64" = 1'-0"



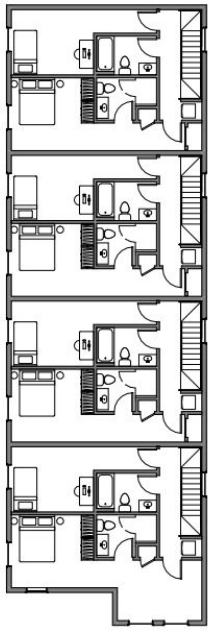
1 LEVEL 1
3/64" = 1'-0"

Home type library: Garage townhouses

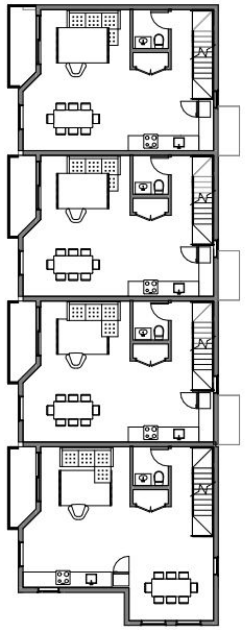
The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.



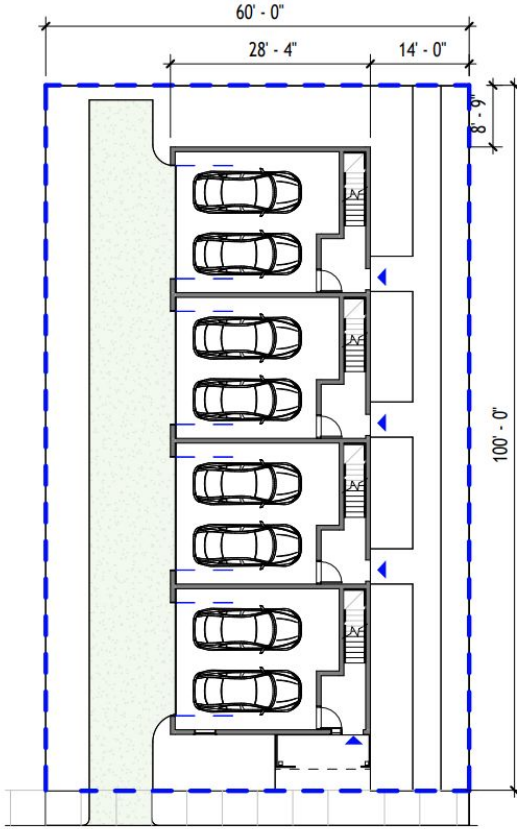
UNIT 1-4 - 2BR, 2.5 BATH



Level 3



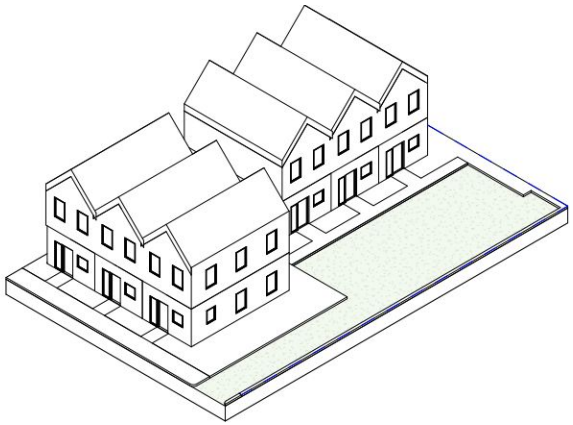
Level 2



Level 1

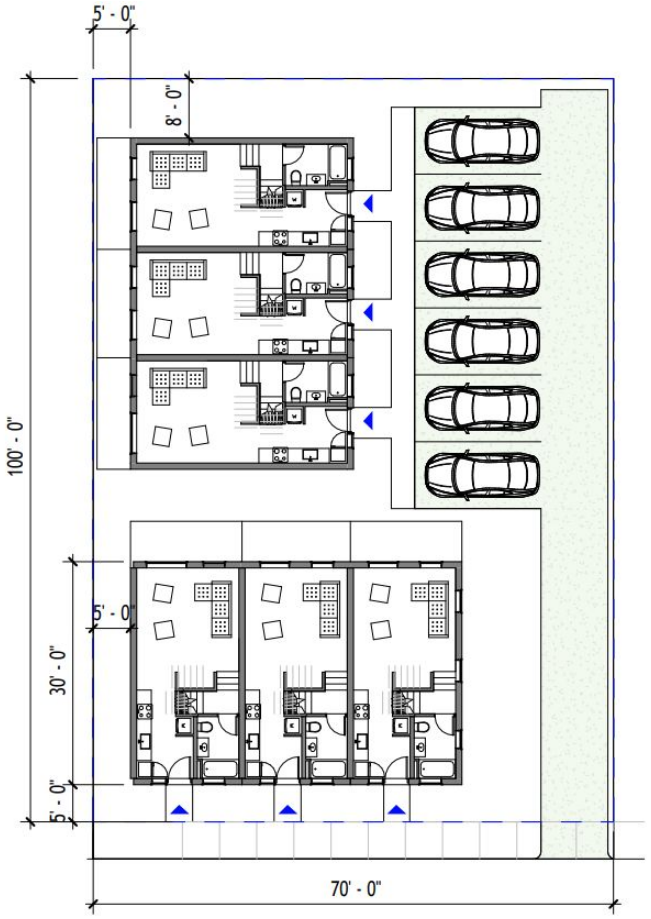
Home type library: Street-facing rowhomes

The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.



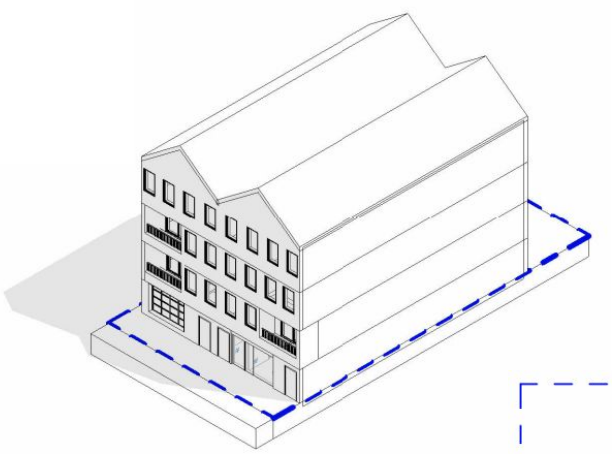
6 2-BR, 1 BATH TOWNHOUSE STYLE UNITS



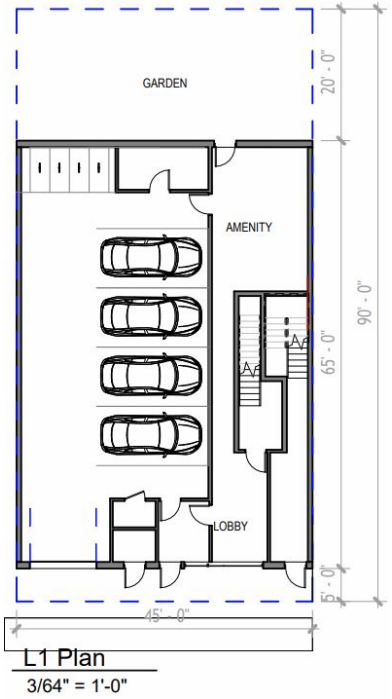


Home type library: 4-level apartment building

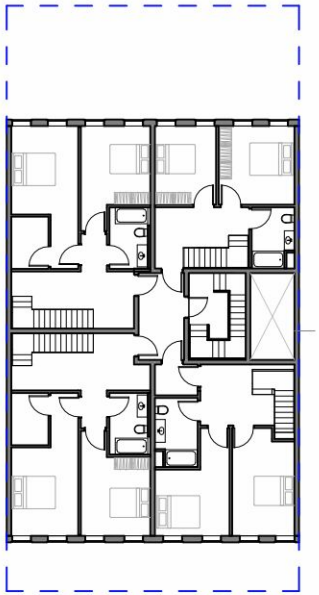
The examples in this home type library informed the possible density calculations associated with each suitability class, as featured on pages 29-38 of the primary Regional Housing and Transportation Study report. Each has an associated density informed baseline assumptions about lot and building dimensions.



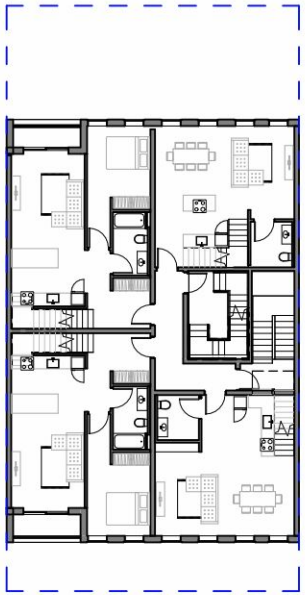
8 UNITS TOTAL
2 STUDIO
2 1-BR
2 2-BR
2 3-BR



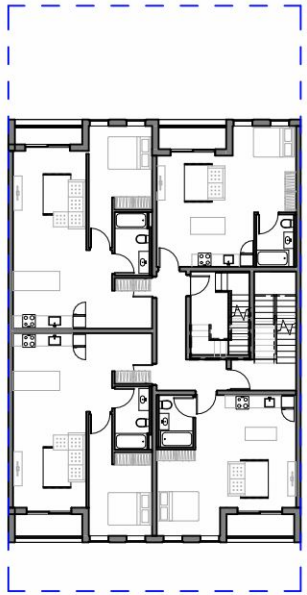
L1 Plan
3/64" = 1'-0"



L4 Plan
3/64" = 1'-0"



L3 Plan
3/64" = 1'-0"



L2 Plan
3/64" = 1'-0"

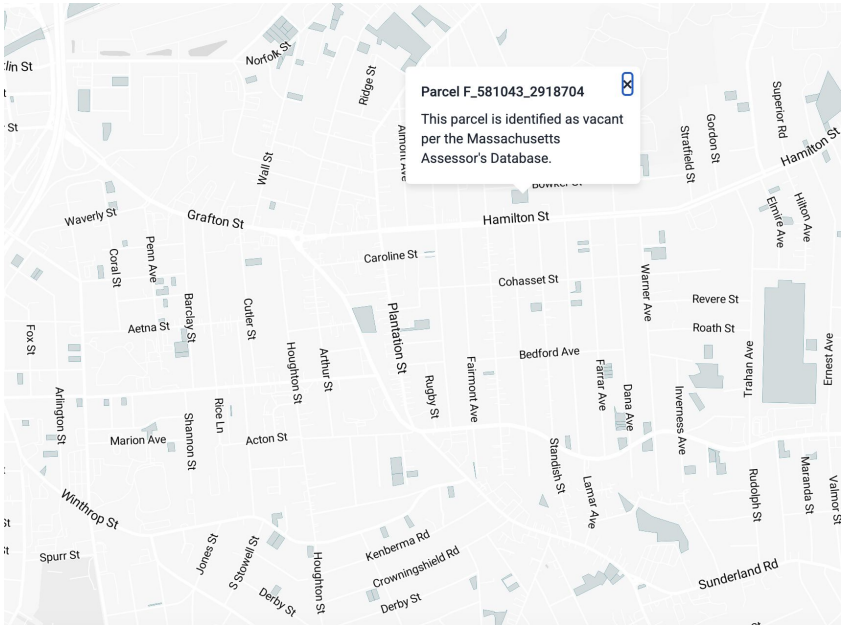
Methodology: Opportunity sites

Using Massachusetts GIS Property Tax Parcels, CommunityScale identified and aggregated all vacant parcels across residential, commercial, and industrial land uses.

Theoretically, the acquisition cost of these parcels would be lower as the parcel is vacant.

The location value index measures the location premium or discount embedded in residential sale prices by using a spatial error model to strip out property-specific characteristics like size, age, bedrooms, and type. The remaining gap between actual and predicted price reveals how much buyers pay purely for where a home sits. Results are mapped to a hex grid and normalized so that 1.0 equals the regional median, with values above 1.0 indicating a location premium and values below 1.0 indicating a location discount.

Sources: Massachusetts GIS Property Tax Parcels; RentCast Listings and Property Records for homes sold from 2020-2025.



Vacant parcels in Worcester, MA.

Methodology: “Soft sites” analysis

CommunityScale combined the MassGIS-hosted parcel data and associated assessment files for all CMPRC communities into a single shapefile. Properties within that parcel file were identified as “soft sites” if the associated building’s assessed value was equal to less than 50% of the total assessed value of the parcel, via filtering in GIS. When a property’s land value exceeds the value of its structure, it can signal underutilization.

For the purposes of this overlay, no other filtering was done; this overlay is likely most useful when paired with other layers, such as the vacant property and/or opportunity sites layers.

Sources: Massachusetts GIS Property Tax Parcels



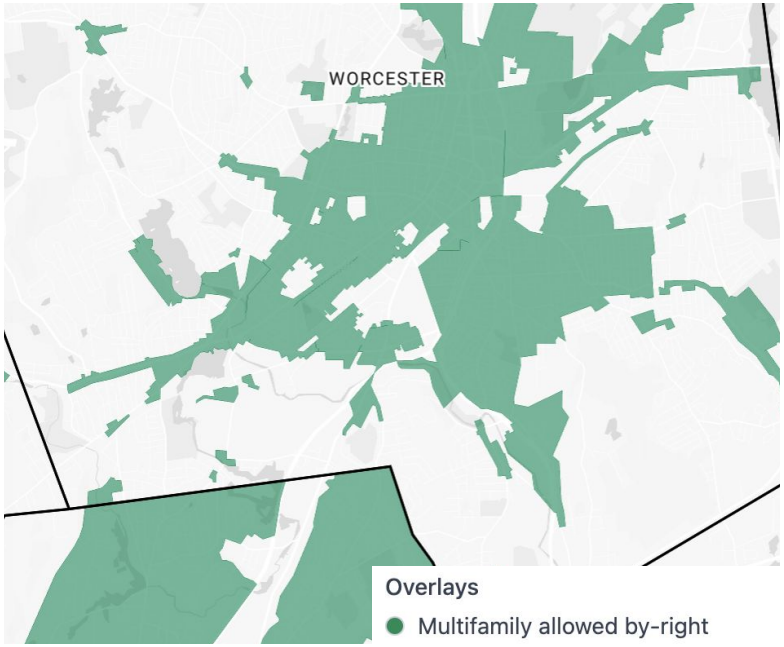
Methodology: Zoning

CommunityScale and the Central Massachusetts Regional Planning Commission collaborated to review each community's zoning code. This process identified zoning districts in which multifamily housing is allowed and additional regulatory constraints to multifamily development, if any. Each district was assigned a code to reflect the bureaucratic ease of development as code designations were drawn along multifamily being by-right, by-right with site plan review, by special permit, or not allowed.

Results were later aggregated by code across the CMRPC region for data visualization purposes. Additional information on the regulatory environment of each community may be found in the associated 'pop-up' or through the respective community's zoning documents.

The exceeds and excess capacity by zoning layers were developed by comparing the number of units per parcel from the currently allowed number of units per parcel. The resulting overlays highlights places where the underlying zoning may not be sufficient to support the current development pattern and/or areas that have not yet reached their zoned capacity.

Sources: Zoning by-laws, maps, and shapefiles from all 40 CMRPC communities; Massachusetts GIS Property Tax Parcels



Overlay of areas where multifamily development is allowed by-right in Auburn, MA, and Worcester, MA.

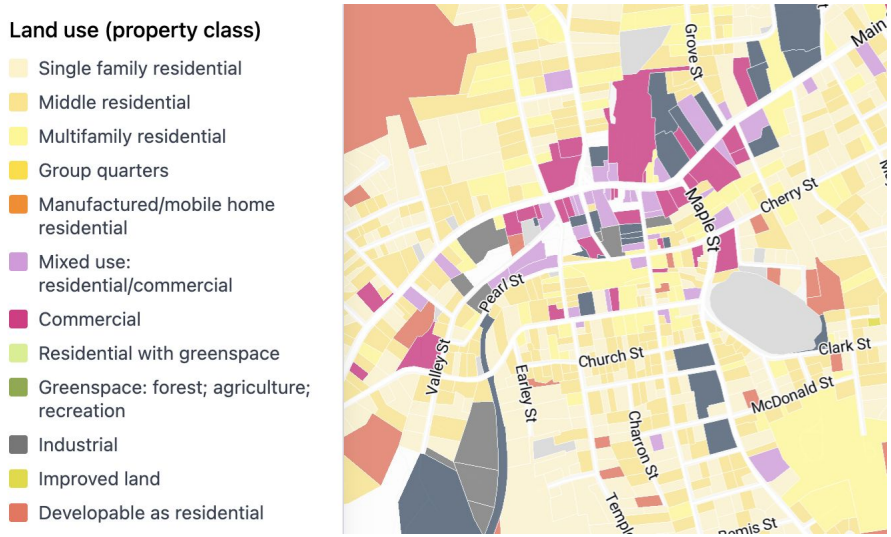
Methodology: Land use classifications

CommunityScale and the Central Massachusetts Regional Planning Commission collaborated to review Massachusetts' standard assessor land use codes and group land uses thematically for the housing and transportation analyses. The following groups were created out of the discussion:

- Single family residential - SFR - 101, 102
- Middle residential - MR - 102, 104, 105
- Multifamily residential - MFR - 111, 112, 114
- Group quarters - GQ - 121-125
- Manufactured/mobile home residential - MHR - 103
- Mixed use: residential/commercial - MU-R - 013, 031
- Commercial - COMM - 300-389
- Residential with greenspace - R-GR - 017, 018, 021, 037
- Greenspace - GR - 261-262, 270-290
- Industrial - IND - 400s
- Improved land - IMP - 106
- Developable as residential - DEV-R - 130, 131
- Undevelopable - UND - 132, 202, 211, 221, 231
- Exempt - EXE - 900s
- Unknown - UNK - codes

Parcels under the 102 and 109 codes (Condominium; Multiple Houses on one parcel) were placed into the SFR, MR, and MFR groups using local knowledge and the assessor's use description column, when available.

Sources: Massachusetts GIS Property Tax Parcels



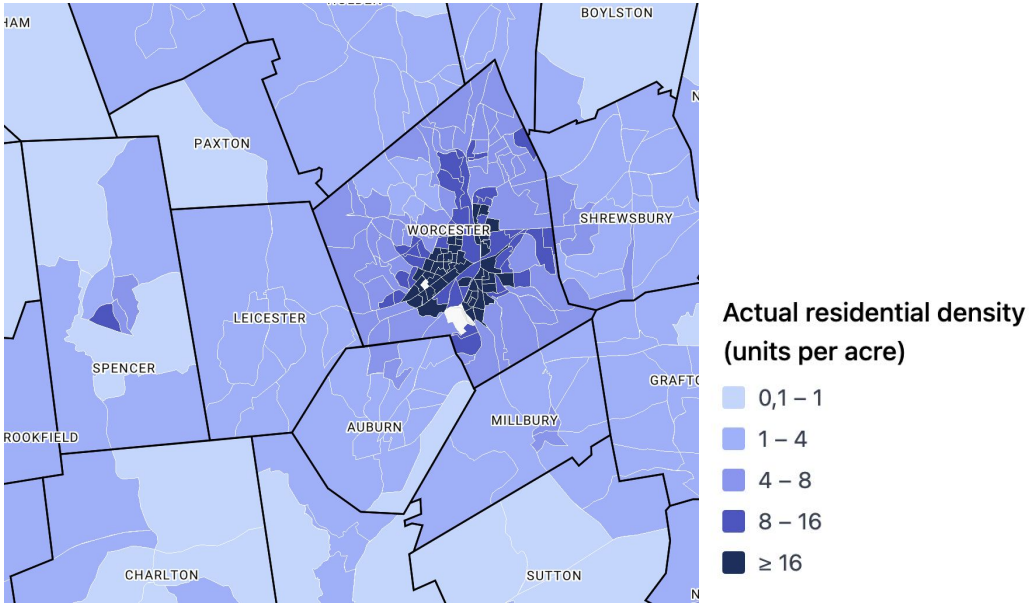
Land use groups in the legend and on the map in Spencer, MA

Methodology: Residential density

Massachusetts Housing Partnership (MHP) maintains a 'residensity' layer to map residential density by dwelling units per acre (DUA). The parcel-level version of this layer uses data from MHP to assign each parcel the DUA number associated with that parcel in July 2025.

The block group view of residential density was derived by summing the residential unit count at the block group and dividing by the block group acreage. This version of the residential density layer is used at the large extent view to best visualize high level density patterns across the CMRPC region.

Sources: Massachusetts Housing Partnership Residensity; Massachusetts GIS Property Tax Parcels



Residential density at the block group in and around Worcester, MA.

Methodology: Risk of displacement indices

Where might communities be more sensitive to market forces, such as gentrification? Rising prices and more competitive housing markets impact some populations more than others. While higher-income, more upwardly mobile households may be able to absorb increased costs, other groups are more vulnerable to negative consequences such as displacement from their home communities. Displacement risk among lower-income, older households is widespread across the region. Given the region's limited ethnic diversity, displacement risk among nonwhite households is concentrated in fewer areas but still a growing concern in these localities.

As markets and pressures are relative to the study areas in which they are measured, the risk displacement index for non-white households is derived from a composite score of normalized z-scores of (a) proportion of Black householders, (b) proportion of Hispanic/Latino householders, (c) difference in median home value from the study area's highest median home value, (d) median length of time in unit, and (e) change in cost burdened households 2020-2025. Scores are tabulated at the Census tract. Sources: Tables B25039, B25077, B25140, 2023 ACS 5-year estimates.

With respect to fixed income populations, the risk displacement index for senior households is derived from a composite score of normalized z-scores of (a) proportion of householders over age 65, (b) difference in median home value from the study area's highest median home value, (c) median length of time in unit, and (d) change in cost burdened households 2020-2025. Scores are tabulated at the Census tract.

Sources: Tables B01001, B25039, B25077, 2023 ACS 5-year estimates.

Methodology: Neighborhood conditions assessment

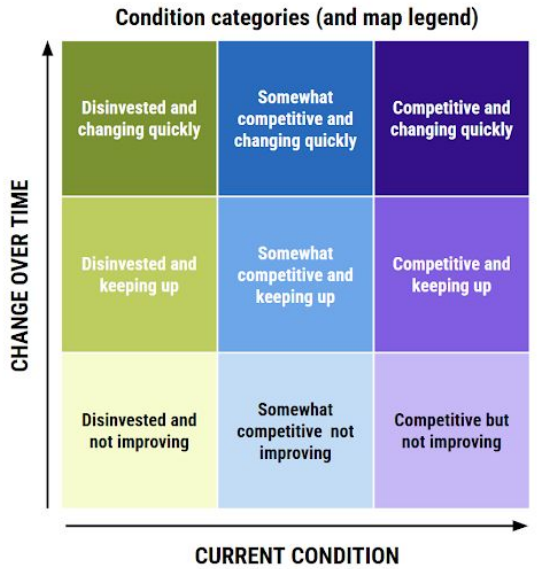
This market conditions analysis measures both the relative change in and the current conditions of market value and competitiveness across CMRPC communities from 2020-2025. Working at the Census tract geography, each tract is assigned two composite scores to inform where it falls along a bivariate spectrum of investment and improvement.

The present conditions portion of the analysis is a composite score derived from the most recent data on housing conditions, including overcrowded and substandard unit rates, as well as cost burdened rate among both homeowners and renters, mortgage denial rate, intersections per acre, vacancy rate, commute times, median days a unit is on market, and typical home price. Higher values indicate relative competitiveness in job access, quality of life, housing conditions, and value within the study area.

The change-over-time dimension of this analysis is a composite score derived from change in substandard conditions, overcrowded units, vacancy, cost burdened households, mortgage denials, intersections per acre, commute times, median days on the market, and typical home price in addition to change in population and change in active listings. Higher resulting values indicate whether or not a given Census tract has undergone significant change over the period 2020-2025.

The current conditions score and change-over-time score are then treated as 'X' and 'Y' coordinates in categorizing each Census tract within a bivariate schema of competitiveness (X) and improvement (Y) relative to the conditions and changes of all other Census tracts in the study region.

Sources: Tables B01001, B08303, B25004, B25016, B25074, B25095, 2020 & 2023 ACS 5-year estimates; Zillow ZHVI, March 2020 & March 2025; Realtor.com, 2020 & 2025; Mortgage actions, FFIEC/HMDA, 2020 & 2024; TIGER/line road network shapefiles, 2020 & 2024.



Bivariate legend for Neighborhood Conditions classifications.

Methodology: Rental housing cost

The renters' housing cost estimate captures the typical shelter cost (housing + utilities) for a household moving to a block group as prospective renters. The cost estimate includes rental and utilities costs. The monthly rental cost is the median rental price from units listed for rent between 2020-2025, inflation-adjusted to 2025 $, in the region. Listings data are aggregated at the block group level; if there are not at least 30 rental listings within a block group, we use the 30 closest listings from the block group centroid to determine the local median monthly rent. Expenditures on gas and electricity are an estimate of median monthly costs based on reported annual expenses from 2019-2023 5-year ACS data.

Sources: 2020-2025 Property and rental data provided by RentCast.io, Tables B25132, B25133 from 2019-2023 5-year ACS.

Methodology: Owner-occupied housing cost

The housing cost estimate captures the typical shelter cost (housing + utilities) for a household moving to a block group as prospective homeowners. The cost includes an estimated monthly mortgage payment, municipal property tax, insurance premium, and monthly utilities (gas, electricity, water and sewer). Listings data are aggregated at the block group level; if there are not at least 30 sales listings within a block group, we use the 30 closest listings from the block group centroid to determine the local median sales price, inflation-adjusted to 2025 $. Assuming 20% down payment and prevailing mortgage rate (6.63% as of September 2025), we estimate the monthly mortgage payment based on the home sales price. Monthly insurance payments are based on insurance rate estimates from the average insurance premiums and typical home prices by zip code. Monthly utilities costs are derived from annual expenditures on gas, electricity, water and sewer from 2019-2023 5-year ACS data.

Sources: 2020-2025 RentCast rental prices, 2018-2022 Property and Casualty Market Intelligence Data, Sept. 2025 primary mortgage interest rate, municipal property tax rates, Tables B25132, B25133, and B25134 from 2019-2023 5-year ACS.

Methodology: Transportation Diversity Index (TDI)

There are many ways to measure and model the built-environment, modal quality and availability. They are often very complicated, reflecting the very complicated systems that surround us; or limited in scope to reflect singular transportation behaviors. It was our goal to create a simple, replicable measure of the universe of transportation options available to households, at the parcel-level using publicly available data.

The Transportation Diversity Index identifies the availability of appealing or likely modal options at the parcel level. The index has three major categories:

Transportation Diverse: The parcel has access to high quality transportation options.
Marginally Diverse: The parcel has access to some transportation options, though likely of a middling or inferior quality.
Vehicle Locked: The parcel exhibits signs of vehicle dependency and can only reasonably be accessed through vehicle use.

Detailed information of the construction of the metric and its components can be found below. This is an experimental analysis meant to aid in the pairing of housing production with existing transportation resources. Future improvements will be outlined and regularly executed in a white paper titled The Transportation Diversity Index: A Measure of Vehicle Dependency published.

Sources: MassDOT Pedestrian Inventory 2024, MassDOT Road Inventory 2019 + 2023, MassDOT Bicycle Inventory 2024, USDA SNAP Retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, USDA SNAP retailers Spring 2024, WRTA GTFS Feed per MassDOT Spring 2024, Longitudinal Employer-Household Dynamics 2024,

Methodology: TDI Definitions

Vehicle Locked *(no transportation diversity)*: Not on the pedestrian and bicycle base network; Not within 0.25 miles to a SNAP grocer; Low intersection density (lowest 2 quintiles of intersection density); Not within 0.25 miles to a transit stop. A parcel must meet all of these definitions to be described as vehicle locked.

Minimal transportation diversity (some transportation diversity of low quality): Parcels along a flag transit route with no official stops or parcels with marginal intersection density but no access to transit or grocery stores.

Marginal transportation diversity (some transportation options of middling quality*)*: Within 0.25 miles of any SNAP grocer walking; Within 0.25 miles of any fixed transit stop (not include flag routes);

Transportation Diverse (high quality transportation options): High intersection density (top 3 quintiles of Census Blocks Groups); Or, high transit access or frequency (Parcel within walking distance of a high frequency bus stop or has access to the top quintile of total jobs by bus).

These calculations were applied to parcel-level data. Both parcel count and area proportions were generated by census block group. We favor the total count of parcels for proportional statistics due to the variability of parcel size. We were not able to generate population proportions accurately but this would likely be a compelling addition.

Data sources:

- All previously discussed data

This is an experimental analysis. It is not a perfect measure of vehicle dependency, merely an attempt to ask if a parcel could reasonably be accessed by means other than a vehicle. The data, methods, and assumptions all have limitations.

Methodology: Pedestrian/Bicycle Potential

Pedestrian/bicycle potential is similar to measures of walkability, though it would be more accurate to say we have *identified roads and places that someone might walk or bike on were they sufficiently motivated*.

This is not a measure of walkability. This is not a measure of safety. It is too broad a definition for roads to be considered truly walkable, as they are unlikely to be safe for users of all abilities. In many places they may be high speed, dangerous roads, or lack safe crossings. Nevertheless, they will likely be used for walking or biking by some people, particularly if the trips are sort, or if the destination is attractive (eg: Dunkin Donuts).

Streets are considered part of this network if it meets any of the following criteria:

- Sidewalks are present on either side
- Has a name + *local* federal functional classification
- The AADT is <1500 or Speed Limit is under 35 mph
- Is a fully separated shared use path
- Is a protected bicycle lane

All other road segments were not considered as part of this network.

Data sources:

- MassDOT Pedestrian Inventory 2024
- MassDOT Road Inventory 2019 + 2023
- MassDOT Bicycle Inventory 2024

Multiple versions of the MassDOT Road Inventory were used due to discrepancies in some data. Roads were considered to have sidewalks if they were identified as having sidewalks in 2019, 2023, or in the 2024 Pedestrian Inventory.

Methodology: Access

Roads with bicycle/pedestrian potential and no *access* have limited utility to transportation diversity, underscoring the importance of land use to successful multimodal systems. In exclusively residential neighborhoods with sidewalks, most people are likely walking for recreation or fitness purposes, not to get groceries or go to work.

Intersection Density:
Intersection density was calculated for each parcel. All roads except limited access highways were included. Grade separation was not considered. The thresholds for high intersection density is 102 intersections per square mile. This includes both truly high intersection densities in the core of city and town downtowns and peripheral areas where intersection densities are high in the direction of downtowns but low in the direction of rural areas.

Grocery Store Access:
All parcels within 0.25 miles walking distance from a store along the bicycle/pedestrian network were considered to have access.

SNAP grocery stores, which may include convenience stores, are used as a minimum level of access for all amenities. These stores are often collocated with other businesses, but without access to at least one place to buy food, a household is likely to experience difficulty.

Transit Access:
All parcels within 0.25 miles walking distance from a transit stop along the bicycle/pedestrian network were considered to have access to transit.

Data sources:

- USDA SNAP retailers Spring 2024
- WRTA GTFS Feed per MassDOT Spring 2024
- Bicycle/Pedestrian Network (Toole 2025)

Methodology: Transit Measures

The key components of our transit quality measure are frequency and access. The metrics were developed at the stop level.They are relational, identifying what is representative of good transit in the region, not national standards.

Frequency:
Stops with busses arriving at least every 15 minutes were considered to have high frequency.

Job Access:
Jobs in Census Block Groups within a 45-min travel time including a 0.25 walk along the bicycle/pedestrian network were associated with each stop.

Grocery Store Access:
Stores in Census Block Groups within a 30--min travel time including a 0.25 mile walk along the bicycle/pedestrian network were associated with each stop. This is a contextual layer, not used in final calculations.

Data sources:

- USDA SNAP retailers Spring 2024
- WRTA GTFS Feed per MassDOT Spring 2024
- Bicycle/Pedestrian Network (Toole 2025)
- Longitudinal Employer-Household Dynamics 2024

Methodology: TNC's or Ridehailing

Ridehailing or Transportation Network Company (TNC) trips have been summarized using temporal and spatial aggregation to ensure data are not personally identifiable.

TNC trips: total pickups and drop offs
TNC trips per capita: total pickups and drop offs / area weighted population estimate

TNC data was associated with Census data to make inferences about transit demand. TNC data is aggregated to the H3 (Uber's) Hexagonal Hierarchical Spatial Index, a standardized hexagonal grid system. Census data is aggregated to the block group level. Combining different geographies is generally not recommended and can impact accuracy of data. As we are considering hex groups in relation to one another, we do not think this significantly impacts our findings.

The TNC Transit analysis is another experimental analysis. There are similar limitations. This should be viewed as a visioning exercise that should be ground-truthed.

Areas were assessed and assigned points for the following categories for a high level assessment of potential future transit study: areas with high poverty, intersection density, tnc trips per capita, TNC trips in vehicle locked areas, and zero vehicle households.

Data sources:

- MassDOT OPMI TNC dataset 2024
- WRTA GTFS Feed per MassDOT Spring 2024
- Toole Bicycle/Pedestrian Network 2025
- American Community Survey 5-year 2024

Methodology: Vehicle Cost

Transportation costs are nebulous and highly variable. They are most significantly influenced by how many cars a household owns. Our transportation cost metric is a simple measure of the typical costs of vehicle ownership and use. Many people pay more or less to own and operate vehicles in the region.

Total VMT per household was used to estimate annual operational costs. VMT is relatively stable across households regardless of the number of vehicles.

Total VMT per car was used to estimate annual ownership costs, scaled to the number of vehicles in each scenario or the total average in each census area.

- Ownership cost = $0.57
- Operation costs = $0.25

*(VMT per hh** Operation costs*) + ((VMT per car** Ownership cost*) * # cars) = Annual Total Cost*

Data sources:

- Bureau of Transportation Statistics Spending per Vehicle-Mile 2024
- MassDOT Vehicle Census 2024

It is very difficult to accurately model transportation costs. The most commonly used data is the Center for Neighborhood Technology's Housing + Transportation Index. We opted in favor of a technique that makes fewer assumptions to streamline understanding by non-experts.

Regional Housing and Transportation Study

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