

# The Vermont Underserved Community Index: Technical Documentation

## Introduction

### Background

The State of Vermont has received approximately \$1.05 billion in State Fiscal Recovery Funds (SFRF) through the American Rescue Plan Act (ARPA) to respond to and recover from the COVID-19 public health crisis. As the State began awarding funds, it sought to devise an intentional approach to distributing SFRF. It developed the Vermont Underserved Community Index (“the Index”) after determining that equitably distributing SFRF required a reliable, data-based method for identifying underserved communities and regions.

In the context of this index, “underserved communities” refers to geographic communities “that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.” The Index adopts this definition from the [Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government](#), which the U.S. Treasury cites in its guidance on the equitable distribution of SFRF.

To identify underserved communities and regions, the Index measures each community and region’s need for investment and capacity to pursue external support. It then compares these measurements across all the communities and regions in the state. The State intends to leverage these results to ensure an equitable distribution of funds that will help achieve its objective of using this historic investment for transformative impact across the state.

### Development

Unlike national indices, this index was designed to capture communities and regions with a high need for external support within the Vermont context. Using local insights, the Index combines twelve indicators to measure a community’s need for investment and its capacity to pursue that investment. The State can then compare communities’ relative need and capacity to help determine which communities may need additional support. Although the tool uniquely serves Vermont, it draws upon established indices developed by public sector agencies, academic institutions, and private research firms. Specifically, the Index incorporates indicators from the [Social Vulnerability Index](#) (developed by the Center for Disease Control and adapted by the Vermont Department of Public Health), the [Rural Capacity Index](#) (developed by Bridgewater Economics), Vermont’s Strategic Plan, and other Vermont-specific sources.

## Methodology

### Model

The Index's twelve indicators form two subindices, capacity and need. The capacity subindex uses four indicators that measure a community's population and resources, and the need subindex uses eight indicators that measure socioeconomic status and the populations of historically marginalized groups. Each community receives a separate score for capacity and need, which are averaged to calculate the final Index score. The Index ranks these scores to determine how underserved a community or region is relative to others in the state.

The Index results are available at the community level, through county subdivisions, or at the regional level, through labor market areas (LMAs). County subdivisions are administratively determined geographic units used by the U.S. Census that most frequently describe towns.<sup>1</sup> LMAs are economically integrated areas, comprised of county subdivisions, where residents generally find employment.<sup>2</sup> The Index calculates LMA scores using a weighted sum of county subdivision scores. Each LMA score is ranked and assigned a final score using the same method as county subdivisions.

### Scoring Method

The Index assigns each county subdivision and LMA a score between 0 and 100. A score of 0 represents the highest capacity and least need. A score of 100 represents the lowest capacity and highest need. The Index calculates these scores through the following steps:

- The raw values for each indicator are rescaled from 0 to 100. Continuous indicators are rescaled using min-max normalization, while ordinal and binary indicators are rescaled according to existing indices and qualitative insights.<sup>3</sup>
- The four capacity indicators are averaged to calculate the capacity subindex score, and the eight need indicators are averaged to calculate the need subindex score.
- The subindices are averaged to produce a final Index score for each county subdivision.
- *For LMAs*, the final index score is calculated using a weighted sum of scores for county subdivisions within the LMA. This process calculates a weight for each county subdivision by dividing its population by the total population of the LMA. The calculation then multiplies each county subdivision's score by this weight and sums these products for a final score.
- The Index scores are then ranked so all LMAs and county subdivisions receive a percentile ranking. The Index classifies communities ranked in the top 25% as "underserved" and tiers these communities in 5% increments.

### Limitations

Using national data sets, like the American Community Survey, limits the quality of the data informing this index, particularly when assessed at the granular county subdivision level. These data quality issues required the omission of certain variables that would have otherwise been included.

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<sup>1</sup> Vermont has 255 county subdivisions, 95% of which are classified as towns.

<sup>2</sup> U.S. Bureau of Labor Statistics, <https://www.bls.gov/lau/laufaq.htm#Q06>, February 2022.

<sup>3</sup> More information on the scale for each indicator is included in the *Indicators* section of this document.

Even after filtering variables by data quality, some anomalous data points have high standard errors. When a data point has a standard error exceeding 30%, the data point receives a flag. The more flags a county subdivision has, the more caution agencies should use when considering the results.

Some county subdivisions in Vermont are too small to produce reliable summary metrics. Due to high standard errors, county subdivisions with fewer than 50 residents have been omitted from the Index. Table 1 lists the nine excluded places.

Table 1: County Subdivisions excluded from Index

Town	County	Population
Avery's gore	Essex	0
Warner's grant	Essex	0
Lewis town	Essex	2
Warren's gore	Essex	2
Somerset town	Windham	6
Glastenbury town	Bennington	9
Ferdinand town	Essex	16
Averill town	Essex	21
Buels gore	Chittenden	29

### Validity Assessment

The need subindex has been validated against the [PLACES](#) dataset produced by the CDC's National Center for Chronic Disease Prevention and Health Promotion. This dataset was selected due to the connection between social vulnerability and health outcomes. Communities with high social vulnerability, as measured by the *Social Vulnerability Index* and the need subindex, are shown to experience worse health outcomes, including higher per capita deaths due to COVID-19. The capacity subindex and the final Index score have not been validated. Validating these portions of the index will be explored further in future iterations of the Index.

### Indicators

The Index includes the following indicators to measure a community or region's capacity and need. When combined, these measures indicated a community or region's level of disenfranchisement relative to other places in Vermont.

#### Capacity

Capacity describes a community's position to seek and apply for funding based on local government staffing, size, and community resources. Assessing capacity supports Vermont's goals for equitable recovery by helping the state target technical assistance to communities that may not otherwise have the resources to apply for support. To measure community capacity, the Index adapts indicators from the *Rural Capacity Index* to better suit the Vermont context.

## Town Manager or Administrator

**Indicator** Presence of at least one municipal manager or administrator based on a list of Vermont town managers and administrators. County subdivisions on the list receive a score of 0. Each county subdivision not on the list receives a 100.

**Source** Vermont League of Cities and Towns (2022).

**Rationale** Communities without formal managers or administrators tend to rely on volunteers, regional development corporations and planning commissions, and nonprofit organizations to pursue external funding. Although these resources are available, they often serve multiple communities at once. Therefore, communities with a paid administrator or manager may have more capacity to pursue funding opportunities. This indicator adjusts a similar metric, whether a place has a head of planning or zoning, from the *Rural Capacity Index* to reflect the roles of administrators in Vermont.

## College or University Presence

**Indicator** County subdivisions with no college or university within 15 miles driving distance receive a score of 100. County subdivisions with a college or university within 15 miles receive a score from 50-99, and county subdivisions with a college or university receive a score from 0-49. Score ranges vary by student enrollment headcount over a 12-month period. Communities with larger student headcounts receive lower scores.

**Source** National Center for Education Statistics (2020-2021), [Integrated Postsecondary Education Data System](#). Community College of Vermont academic center enrollment dataset (2021-2022).

**Rationale** An international study on the impact of universities found that they also create positive spillover effects for regions by contributing to human capital and innovation, with “the strongest effects on those that are geographically closest.”<sup>4</sup> Following this evidence, it is assumed that the positive impacts of universities are felt most strongly in the towns closest to the university and dissipate with increased distance from the university and its resources. It is also assumed that the size of the university also determines the impact felt by neighboring towns. Discussions with subject matter experts suggested that, in Vermont, these benefits extend approximately 15 miles beyond the university.

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<sup>4</sup> Valero, Anna & Van Reenen, John, <https://www.sciencedirect.com/science/article/pii/S0272775718300414>, 2019.

## Population Density

**Indicator** County subdivision population. County subdivisions with fewer than 2,500 people receive a score of 100. Those with populations between 2,500 and 9,999 receive a 50. All other county subdivisions receive a score of 0.<sup>5</sup>

**Source** U.S. Census Bureau (2020), Decennial Census: [Population and Race Data](#).

**Rationale** Treasury identifies communities living in rural areas as underserved.<sup>6</sup> National trends suggest that rural areas may be underserved because they have less capacity than urban communities to apply for grants and loans.<sup>7</sup> This national trend aligns with the Vermont context, where a community's population can be a proxy for its capacity. Per conversations with subject matter experts at the Vermont League of Cities and Towns, communities with fewer than 2,000 residents (71% of county subdivisions) are less likely to have paid staff, like town managers or administrators, to pursue funding opportunities. This indicator builds off these insights by categorizing communities based on definitions from the USDA Economic Research Service (ERS), which uses a cutoff of 2,500 to define rural communities, and a range of 2,500-9,999 to define micropolitan communities.<sup>8</sup> This indicator adapts this metric from the *Rural Capacity Index*, which uses county-level data to determine rurality for county subdivisions.

## Population Change

**Indicator** Change in population from 2000 to 2020 as a fraction of the 2020 population.

**Source** National Historical Geographic Information System (2021), [U.S. Census Data](#).

**Rationale** Population growth is considered a key factor in long-term economic growth, and population decline is commonly associated with contracting economies.<sup>9</sup> In Vermont, smaller cities and towns have experienced declining populations. Barre City and Rutland City, which have each lost 8.6% of their population since 2000, exemplify this trend.<sup>10</sup>

The relationship between population growth and economic growth is magnified at the local level, where small changes in a community's population size can drastically impact the local economy. When the population of a community decreases, so do the economic opportunities. This decline can further drive away prospective residents. Additionally, shrinking business opportunities and economic activity in rural areas lead to a diminishing

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<sup>5</sup> Census Places were translated to County Subdivisions using the tool found here: <https://mcdc.missouri.edu/applications/geocorr2022.html>.

<sup>6</sup> The White House, <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>, January 20, 2021.

<sup>7</sup> Haggerty, Mark et al., <https://www.americanprogress.org/article/build-back-rural-new-investments-in-rural-capacity-people-and-innovation/>, November 23, 2021.

<sup>8</sup> This metric uses the Census Places cutoff of 2,500 people, listed here: [https://www.ers.usda.gov/webdocs/DataFiles/53180/25600\\_VT.pdf?v=0#:~:text=Rural%20locations%20are%20those%20outside,Three%20rural%20definitions](https://www.ers.usda.gov/webdocs/DataFiles/53180/25600_VT.pdf?v=0#:~:text=Rural%20locations%20are%20those%20outside,Three%20rural%20definitions).

<sup>9</sup> National Foundation for American Policy, <https://nfap.com/studies/immigrations-contribution-to-population-growth-and-economic-vitality/>, p.1, February 2021.

<sup>10</sup> Agency of Digital Services, Vermont Center for Geographic Information, <https://vcgi.vermont.gov/data-release/2020-census-data>, August 12, 2021.

tax base, which puts pressure on government budgets to fund essential services that benefit their constituents and help attract new businesses and workers.<sup>11</sup>

## Need

Need describes the demographic and socioeconomic factors that reflect a community's level of distress, decline, and population of historically marginalized groups. These factors intend to measure the positive impact of external investment and resources in a given area, particularly after COVID-19 disproportionately impacted communities with histories of marginalization.

## Race and Ethnicity

- Indicator** Percentage of population that is a race or ethnicity other than white non-Hispanic.
- Source** U.S. Census Bureau (2020), Decennial Census: [Hispanic or Latino, and Not Hispanic or Latino by Race](#).
- Rationale** Treasury identifies people of color as an underserved community.<sup>12</sup> The *Social Vulnerability Index* includes this metric as one of its indicators because of the historic social and economic marginalization experienced by certain racial and ethnic groups in the United States. The national trend continues in Vermont, where populations of color have disproportionately experienced homelessness and poverty.<sup>13</sup>

## High School Graduate

- Indicator** Percent of individuals 25 years or older with at least a high school diploma, as a percentage of the total number of individuals 25 years or older in the county subdivision.
- Source** U.S. Census Bureau (2020), American Community Survey: [Educational Attainment](#).
- Rationale** Education level is a metric frequently used in indices, including the *Social Vulnerability Index* and the *Rural Capacity Index*, to measure socioeconomic status and, by association, community vulnerability. Nationally, differences in educational attainment closely map to community prosperity, with a disproportionate proportion of people with less than a high school diploma living in distressed communities.<sup>14</sup> As of 2020 in Vermont, 15.7% of people with a college degree lived in an at risk or distressed zip code as opposed to 20.3% of people with a high school diploma and 24.7% of people without a high school diploma.<sup>15</sup>

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<sup>11</sup> Federal Reserve Bank of Richmond, Marre, Alexander, [https://www.richmondfed.org/publications/research/econ\\_focus/2020/q1/district\\_digest#:~:text=Retaining%20and%20attracting%20new%20residents,tax%20base%20for%20public%20services](https://www.richmondfed.org/publications/research/econ_focus/2020/q1/district_digest#:~:text=Retaining%20and%20attracting%20new%20residents,tax%20base%20for%20public%20services), 2020.

<sup>12</sup> The White House, <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>, January 20, 2021.

<sup>13</sup> Vermont Housing Finance Agency, [https://outside.vermont.gov/agency/ACCD/ACCD\\_Web\\_Docs/Housing/Housing-Needs-Assessment/VT-HNA-FEB-20.pdf](https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/Housing/Housing-Needs-Assessment/VT-HNA-FEB-20.pdf), February 2020 (p. 116).

<sup>14</sup> Economic Innovation Group, <https://eig.org/wp-content/uploads/2020/10/EIG-2020-DCI-Report.pdf>, October 2020 (p. 36).

<sup>15</sup> Economic Innovation Group, <https://eig.org/distressed-communities/2022-dci-interactive-map/?path=state/VT&category=education&sub-category=no-diploma&view=county>, 2022.

## Households with Broadband

- Indicator** Households with broadband as a percentage of total households.
- Source** U.S. Census Bureau (2020), American Community Survey: [Presence and Types of Internet Subscriptions in Household](#).
- Rationale** Treasury has stated that “access to broadband has itself become essential for individuals and businesses to participate in education, commerce, work, and civic matters and to receive health care and social services.”<sup>16</sup> With the COVID-19 pandemic, access to affordable broadband has become an equity issue, impacting economic security, educational attainment, and health outcomes. This is particularly true in rural areas, where broadband access is essential in enabling residents to work and study from home, build online social networks, and access telehealth services. Despite the importance of broadband, in Vermont, only 29.2% of households have symmetrical 100/100 Mbps broadband recommended by Treasury.

## Grand List Value Change

- Indicator** Percent change in total taxable property value (grand list) from 2011 to 2021
- Source** Vermont Department of Taxes & Vermont Joint Fiscal Office (2021).
- Rationale** Grand list value is the aggregate valuation of taxable property within a given area. In Vermont, grand list values are adjusted annually to bring each municipality’s grand list to fair market value.<sup>17</sup> Analyzing changes to an area’s grand list value over time can help understand how that area’s economy has developed. Grand list value growth demonstrates that an area is developing more real property, often accompanied by more business activity. Additionally, increases to a town’s grand list value correlate with a larger amount of tax revenue (assuming rates are level). Property taxes are vital to local governments. According to the Tax Foundation, property taxes generated 72 percent of local tax collections in 2016.<sup>18</sup> Towns with larger grand list values likely have access to more funding through property taxes and can fund more public services.

## Housing Cost Burdened Homeowners

- Indicator** Households that spend more than 30% of their income on housing-related expenses as a proportion of total households.
- Source** U.S. Census Bureau (2019), American Community Survey: [Selected Housing Characteristics](#). Accessed through [Vermont Housing Finance Agency](#).
- Rationale** While income metrics are often used to measure the economic well-being of a community, housing cost burden reveals more nuance by assessing income relative to housing costs,

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<sup>16</sup> Department of the Treasury, SLFRF Final Rule, <https://home.treasury.gov/system/files/136/SLFRF-Final-Rule.pdf>, January 27, 2022 (p. 4410).

<sup>17</sup> Vermont Department of Taxes, <https://tax.vermont.gov/sites/tax/files/documents/GB-1243.pdf>, April 2022.

<sup>18</sup> Tax Foundation, <https://taxfoundation.org/property-taxes-per-capita-2019/>

which indicates a household's level of economic security. In Vermont, 34% of households are cost-burdened. About half of those households are severely cost-burdened, which implies fewer funds are spent on necessities and indicates a higher risk of foreclosure.<sup>19</sup>  
*Note: Renters were excluded from the index due to high standard error at the town level.*

### Change in Per Capita Income

- Indicator** Average per capita income change from 2010 to 2020.
- Source** U.S. Census Bureau (2020), American Community Survey: [Per Capita Income in the Past 12 Months \(In 2010 Inflation Adjusted Dollars\)](#).
- Rationale** Per capita income, the average amount of money earned per person, can help measure an area's average standard of living. Measuring the per capita income change can help describe an area's economic trajectory and highlight how it compares to other areas within the state. Nationally, per capita income change is frequently used to evaluate the country's economic health and identify periods of decline.

### Individuals above 150% FPL

- Indicator** Number of individuals with incomes over 150% FPL as a percentage of the total number of individuals in the county subdivision.
- Source** U.S. Census Bureau (2020), American Community Survey: [Place of Birth by Poverty Status in the Past 12 Months in the United States](#).
- Rationale** Communities with higher proportions of the population experiencing poverty or economic hardship are likely to have greater need for external investment. Housing and economic development programs, like HUD's Low Income Housing Tax Credits and the IRS's Qualified Opportunity Fund, both use poverty metrics as the basis of their eligibility criteria. The Index adopts the 150% FPL threshold from the *Social Vulnerability Index*, which is referenced by Treasury. The *Social Vulnerability Index* uses this threshold because it is the cutoff for certain federal programs, like Medicaid.<sup>20</sup> Studies have also shown that people with incomes below 150% FPL are at increased risk of severe COVID-19 infection.<sup>21</sup>

### Change in Labor Force Participation Rate

- Indicator** Change in the percentage of the population 20 to 64 years that participates in the labor force from 2000 to 2020.
- Source** U.S. Census Bureau (2020), American Community Survey: [Employment Status](#).

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<sup>19</sup> Vermont Housing Finance Agency, [https://www.vhfa.org/sites/default/files/publications/housing\\_cost\\_burden\\_in\\_vt.pdf](https://www.vhfa.org/sites/default/files/publications/housing_cost_burden_in_vt.pdf).

<sup>20</sup> CDC/ATSDR, [https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI2020Documentation\\_08.05.22.pdf](https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI2020Documentation_08.05.22.pdf), August 2022.

<sup>21</sup> Ajufo, et al., <https://www.sciencedirect.com/science/article/pii/S2666667721000118>, June 2021.

**Rationale** The Vermont Strategic Plan includes workforce participation rate as a breakthrough indicator for assessing the state's economy.<sup>22</sup> In Vermont, labor force participation rates have historically measured economic vitality better than unemployment rates. Although Vermont has historically had a high labor force participation rate, it has been declining over the past ten years. Since the pandemic, Vermont's labor force participation rate has declined below the national average.<sup>23</sup> Even as the unemployment rate has improved with the pandemic, the labor force participation rate has not, and the state's labor market has become strained by a shortage of workers.<sup>24</sup> Furthermore, the labor force decline has not occurred evenly across the state. On a county level, declines in labor force participation have ranged from 1.8% (Chittenden County) to 17.8% (Essex County), indicating inequities across the state.<sup>25</sup>

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<sup>22</sup> State of Vermont, <https://strategicplan.vermont.gov/economy/>.

<sup>23</sup> Joint Economic Committee, <https://www.jec.senate.gov/cards/employment-updates/Vermont%20Employment%20Report.html#:~:text=At%20a%20labor%20force%20participation,point%20from%20a%20year%20earlier>.

<sup>24</sup> Vermont Department of Labor, <http://www.vtmi.info/profile2022.pdf>.

<sup>25</sup> Vermont Department of Labor, <http://www.vtmi.info/profile2022.pdf>.