

# The Vermont Community Index: Technical Documentation

## Introduction

The Vermont Community Index (VCI) is a composite index that estimates the relative capacity and need of communities across Vermont through thirteen metrics measuring community demographics, socioeconomic status, and administrative capacity. The Vermont Agency of Administration developed the VCI in late 2022 as a standardized, data-based method for identifying communities that may need additional support to access funding opportunities through State Fiscal Recovery Funds (SFRF).

Although the VCI uniquely serves Vermont, it draws upon established indices developed by public sector agencies, academic institutions, and private research firms. Specifically, the VCI incorporates indicators from the [ATSDR/CDC Social Vulnerability Index](#), the [Rural Capacity Index](#), [Vermont's Strategic Plan](#), and other Vermont-specific sources identified through subject matter experts.

*The Vermont Community Index: Technical Documentation* describes the methodology and indicators used to construct the VCI. It also describes the limitations of the VCI, including data quality issues and omitted communities. Those seeking to update, recreate, or learn more about the VCI should reference the materials in this document.

## Methodology

### Model

The VCI uses thirteen indicators to form two subindices: capacity and need. The capacity subindex includes five metrics that measure a community's population and administrative resources, and the need subindex contains eight metrics that measure socioeconomic status and demographics. The final VCI score is the mean of both subindex scores. Finally, the VCI scores are converted to percentile rankings to determine which communities show the greatest need additional support according to the indicators included.

The VCI results are available at the community level, through county subdivisions, and at the regional level, through labor market areas (LMAs). A county subdivision is a geographic unit used by the U.S. Census that most frequently describes towns.<sup>1</sup> LMAs are economically integrated areas comprised of county subdivisions where residents generally find employment.<sup>2</sup> The VCI calculates the LMA scores using a weighted sum of county subdivision scores.

### Scoring Methodology

County subdivisions receive a score between 1 and 100 for each indicator. A score of 1 represents the highest capacity or least need relative to other county subdivisions, whereas a score of 100 represents the lowest relative capacity or most relative need. The VCI uses the following methodology to combine the indicator scores and approximate the relative capacity and need for county subdivisions and LMAs.

#### *County Subdivisions and LMAs*

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

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

1. Rescale the raw values for each indicator from 1 to 100 using the following methods depending on the type of indicator.<sup>3</sup>
  - 1a. Continuous indicators:** Rescale the raw values using a variation of the min-max normalization formula.
    - If *larger* raw values translate to higher index scores, use:  $\frac{x-x_{min}}{x_{max}-x_{min}} \times 99 + 1$
    - If *smaller* raw values translate to higher index scores, use:  $100 - \frac{x-x_{min}}{x_{max}-x_{min}} \times 99$
  - 1b. Bucketed indicators:** Bucket the values according to qualitative insights and subject matter expertise, and score buckets at equivalent intervals. For example, an indicator with 10 buckets would be scored in 11-point intervals (1, 12, 23, 34, etc.).
  - 1c. Binary indicators:** Rescale the raw values as a binary, where 1 signifies the presence of a positive condition (like having a town administrator), and 100 signifies the absence of it.
2. Assign Town Administrator a weight (*w*) of .25 and all other indicators (*i*) a weight of 1.
3. Use a weighted sum (i.e.,  $w_1 \times i_1 + w_2 \times i_2 + \dots + w_8 \times i_8$ ) to calculate the Need subindex score and the five capacity indicators to calculate the Capacity subindex score for each county subdivision.
4. Average the subindices to produce a final score for each county subdivision.

#### County Subdivisions

5. Use percentile ranking to rank the VCI scores across county subdivisions.<sup>4</sup>

#### LMAs (Starts after Step 4)

5. Sum the populations of all county subdivisions within an LMA to calculate the total population of the LMA.<sup>5</sup>
6. Calculate weights for county subdivisions by dividing the population of each county subdivision by the total population of the LMA.
7. Multiply each county subdivision's VCI score (*s*) by this weight and sum the products (i.e.,  $w_1 \times s_1 + w_2 \times s_2 + \dots + w_8 \times s_8$ ). This weighted sum is the final LMA score.
8. Use percentile ranking to rank all the LMA VCI scores.

#### Limitations

The VCI uses data from numerous sources, including the American Community Survey (ACS). Indicators that use ACS data tend to have higher margins of error, which increase at granular geographic levels, like county subdivisions. Achieving reliable results at the county subdivision level required excluding meaningful indicators with high margins of error. A few examples of indicators excluded are the proportion of housing cost-burdened renters and the population of people who speak English less than "well."

Despite excluding indicators due to data quality issues, some less populous county subdivisions still include data points with high standard errors. When a data point has a relative standard error exceeding

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<sup>3</sup> For more instructions on how to scale each indicator, see the *Indicators* section of this document.

<sup>4</sup> This can be done in Excel using the PERCENTRANK.EXC function.

<sup>5</sup> Do not include the nine county subdivisions listed in Table 1 when calculating the population of LMAs.

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, the VCI county subdivision scores do not include county subdivisions with fewer than 50 residents. LMAs include these omitted county subdivisions with weights of 0, so they do not contribute to the calculation of LMA scores. Table 1 lists the nine omissions.

Table 1: County Subdivisions omitted from Index

County Subdivision	County	LMA	Population
Avery's Gore	Essex	Derby VT LMA	0
Warner's Grant	Essex	Derby VT LMA	0
Lewis Town	Essex	Derby VT LMA	2
Warren's Gore	Essex	Derby VT LMA	2
Somerset Town	Windham	Brattleboro VT-NH LMA	6
Glastenbury Town	Bennington	Bennington VT Micro NECTA	9
Ferdinand Town	Essex	Derby VT LMA	16
Averill Town	Essex	Colebrook NH-VT LMA	21
Buels Gore	Chittenden	Isolated towns	29

### Validity Assessment

The Need subindex was validated using the [PLACES](#) dataset produced by the CDC, the CDC Foundation, and the Robert Wood Johnson Foundation. The PLACES dataset provides health outcomes data for small areas across the United States. Validation testing showed that high scores on the VCI's Need subindex correlated with worse health outcomes reported in the PLACES data. This finding aligns with elements of the *Social Vulnerability Index*, which showed that people living in areas of higher social vulnerability experience worse health outcomes, including higher per capita deaths due to COVID-19.

The Capacity subindex and the final VCI score have not been validated against third-party datasets. Validating these may be explored further in future VCI iterations.

### Indicators

The VCI includes the following metrics to estimate a community or region's capacity and need. Starred (\*) indicators are inverted, meaning lower values translate to higher index scores.

#### Capacity

The Capacity subindex describes a community's ability to seek and apply for funding based on local government staffing, size, and community resources. Assessing administrative 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. The VCI uses the metrics described below to estimate capacity.

## Equalized Municipal Grand List Value\*

**Indicator** Total value of taxable property in each county subdivision

**Source** Vermont Department of Taxes, 2022.

**Scoring** The VCI buckets the grand list values into the following seven groups based on the distribution of values and subject matter expertise.

Grand List Value <sup>6</sup>	VCI Score
≤\$100 mil.	100
(\$100 mil. – \$150 mil.]	84
(\$150 mil. – \$200 mil.]	67
(\$200 mil. – \$300 mil.]	51
(\$300 mil. – \$400 mil.]	34
(\$400 mil. – \$700 mil.]	18
≥\$700,000,000	1

The VCI scores the buckets in equal intervals of 16.5 with the final scores rounded to the nearest whole number.<sup>7</sup> For example, county subdivisions with a grand list value of ≤\$100,000,000 receive a score of 100, and those between \$100,000,000 and \$150,000,000 receive a score of 84 (100 minus 16.5 equals 83.5, which rounds to 84).

**Weight** 1

**Rationale** Equalized municipal grand list values are the fair market values of the properties in the municipality, equalized across the state using a listed-value-to-sale-price ratio.<sup>8</sup> The municipal grand list values contribute to property taxes, which are a significant source of municipal revenue. According to the Tax Foundation, property taxes generated 72 percent of local tax collections in 2016.<sup>9</sup> As such, the equalized grand list value is an indicator of a municipality's financial capacity to pay for public services and other objectives without external support.<sup>10</sup>

**Other Indices** The Chicago Metropolitan Agency for Planning (CMAP) uses a similar metric, property base growth, as an indicator of municipal capacity in its Municipal Capacity Strategy Paper.<sup>11</sup>

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<sup>6</sup> (“ or ”) indicates that the number is not included in the range and “[ or ]” indicates that it is.

<sup>7</sup> The VCI is calculated through:  $(100 - 1)/7$  where 100 is the maximum index score, 1 is the minimum index score, and 7 is the number of groups.

<sup>8</sup> Vermont Department of Taxes. “Introduction to Vermont’s Equalization Study.” January 2023, p. 3  
<https://tax.vermont.gov/sites/tax/files/documents/GB-1243.pdf>

<sup>9</sup> Tax Foundation, <https://taxfoundation.org/property-taxes-per-capita-2019/>

<sup>10</sup> Vermont Department of Taxes. “Introduction to Vermont’s Equalization Study.” January 2023, p. 10  
<https://tax.vermont.gov/sites/tax/files/documents/GB-1243.pdf>

<sup>11</sup> Measured as the “change in Equalized Assessed Value between 2007 and 2015,” Chicago Metropolitan Agency for Planning, “Municipal Capacity,” [https://www.cmap.illinois.gov/documents/10180/794571/Municipal+Capacity+Strategy+Paper\\_November+2017.pdf/923744b1-951a-ce16-609e-724c9e260fb7](https://www.cmap.illinois.gov/documents/10180/794571/Municipal+Capacity+Strategy+Paper_November+2017.pdf/923744b1-951a-ce16-609e-724c9e260fb7), p. 7.

## Municipal Budget Per Capita\*

**Indicator** Per capita municipal budget per capita as of March 2020

**Source** Vermont Agency of Administration, 2021.

**Scoring** The VCI first calculates the total municipal budget per capita and then scores budgets through the following steps:

1. Calculate the per capita municipal budget by dividing the total municipal budget for each county subdivision by its population.
2. Score the per capita municipal budgets using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with the largest per capita budgets receive a score of 1, and the county subdivisions with the smallest receive a score of 100.

**Weight** 1

**Rationale** Like equalized municipal grand list value, municipal budget per capita indicates a municipality's financial capacity to spend on public services and other objectives. The VCI uses budget per capita to control for difference in population size.

**Other Indices** CMAP uses a similar metric, Per Capita Municipal Revenue, as an indicator of municipal capacity in its Municipal Capacity Strategy Paper.<sup>12</sup>

## 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](#).

**Scoring** The VCI first calculates the percent change in population and then scores county subdivisions based on their relative gain or loss through the following steps:

1. Calculate the percent change in population by subtracting the 2000 population for each county subdivision from the 2020 population and then dividing the difference by the 2020 population.
2. Score the percent change in population using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with more population *gain* receive scores closer to 1, and those with more population *loss* receive scores closer to 100.

**Weight** 1

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<sup>12</sup>Chicago Metropolitan Agency for Planning, "Municipal Capacity," [https://www.cmap.illinois.gov/documents/10180/794571/Municipal+Capacity+Strategy+Paper\\_November+2017.pdf/923744b1-951a-ce16-609e-724c9e260fb7](https://www.cmap.illinois.gov/documents/10180/794571/Municipal+Capacity+Strategy+Paper_November+2017.pdf/923744b1-951a-ce16-609e-724c9e260fb7), p. 8.

**Rationale** Population growth is considered a key factor in long-term economic growth, and population decline is commonly associated with contracting economies.<sup>13</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>14</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 does the tax base. Loss of tax base puts pressure on government budgets, limiting their capacity to fund and implement essential services that benefit their constituents and help attract new businesses and workers.<sup>15</sup>

**Population Size\***

**Indicator** Total county subdivision population

**Source** U.S. Census Bureau (2020), Decennial Census: [Population and Race Data](#).<sup>16</sup>

**Scoring** The VCI buckets population size into the following seven groups based on the distribution of populations and subject matter expertise.

Grand List Value <sup>17</sup>	VCI Score
≤500	100
(500. – 1,000]	84
(1,000 – 1,500]	67
(1,500 – 2,000]	51
(2,000 – 2,500]	34
(2,500 – 5,000]	18
≥5,000	1

The VCI scores the buckets in equal intervals of 16.5, with the final scores rounded to the nearest whole number. For example, county subdivisions with populations of 500 or less receive a score of 100, and those between 501 and 1,000 receive a score of 84 (100 minus 16.5 equals 83.5, which rounds to 84).

**Weight** 1

<sup>13</sup> National Foundation for American Policy, <https://nfap.com/studies/immigrations-contribution-to-population-growth-and-economic-vitality/>, p.1, February 2021.

<sup>14</sup> Agency of Digital Services, Vermont Center for Geographic Information, <https://vcgi.vermont.gov/data-release/2020-census-data>, August 12, 2021.

<sup>15</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,2020](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>16</sup> Census Places were translated to County Subdivisions using this tool: <https://mcdc.missouri.edu/applications/geocorr2022.html>.

<sup>17</sup> “( )” indicate that the number is not included in the range and “[ ]” indicates that it is.

**Rationale** The White House identifies people living in rural areas as an underserved group because they have been denied equitable treatment and a full opportunity to participate in all aspects of economic, social, and civic life.<sup>18</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>19</sup> This national trend aligns with the trend in Vermont, where a community's population size can approximate its capacity.

Per conversations with subject matter experts at the Vermont League of Cities and Towns (VLCT), 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 nearly aligns with the 2,500-person cutoff the USDA Economic Research Service (ERS) uses to define rural communities.<sup>20</sup> The VCI approach to scoring population size incorporates the ERS and VLCT population cutoffs and supplements them with additional insights from subject matter experts.

**Other Indices** The VCI adapts this metric from the *Rural Capacity Index*, which uses county-level data to determine rurality for county subdivisions.

### Town Manager or Administrator

**Indicator** Presence of at least one municipal manager or administrator

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

**Scoring** This binary indicator is from a list of Vermont town managers and administrators maintained by the Vermont League of Cities and Towns. The list only includes county subdivisions with a town manager or administrator. Therefore, county subdivisions on the list receive a score of 1. County subdivisions not on the list receive a score of 100.

**Weight** .25

**Rationale** Communities without formal managers or administrators often 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 than communities without one.

**Other Indices** The VCI adapts this indicator based on a similar metric in the *Rural Capacity Index*, which measures whether a place has a head of planning or zoning. The VCI adapted this to town administrators to reflect their role in pursuing funding opportunities.

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<sup>18</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>19</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>20</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.)

## Need

The Need subindex includes demographic and socioeconomic factors associated with underserved communities, such as a community's population of historically marginalized groups and indicators of economic distress and decline. These factors intend to identify areas with a greater need for external investment to promote equity across the state, particularly after COVID-19 disproportionately impacted communities with histories of marginalization.

### 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).

**Scoring** The VCI scores the percent change in grand list value using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with more grand list value *growth* receive scores closer to 1, and those with grand list value *loss* receive scores closer to 100.

**Weight** 1

**Rationale** Analyzing changes to an area's grand list value over time can help explain how that area's economy has developed or declined. Grand list value growth often connects to increased investments in real property that often accompany more business activity and economic vitality. In contrast, a decline in grand list value can also signify economic decline and lead to increased tax rates and stifled economic development.

**Other Indices** CMAP uses a similar metric, property base growth, as an indicator of municipal capacity in its Municipal Capacity Strategy Paper.<sup>21</sup>

### High School Graduate\*

**Indicator** Proportion of individuals 25 years or older with at least a high school diploma

**Source** U.S. Census Bureau (2020), American Community Survey: [Educational Attainment](#)

**Scoring** The VCI first determines the proportion of people 25 years or older with at least a high school diploma and then scores county subdivisions based on their relative proportions through the following steps:

1. Calculate the proportion of people aged 25 or older with at least a high school diploma by subtracting the counts of people with educational attainments of "less than 9<sup>th</sup> grade" and "9<sup>th</sup> to 12<sup>th</sup>, no diploma" from the total population 25 years and over, then divide the difference by the total population 25 years and over.

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<sup>21</sup> Measured as the "change in Equalized Assessed Value between 2007 and 2015," Chicago Metropolitan Agency for Planning, "Municipal Capacity," [https://www.cmap.illinois.gov/documents/10180/794571/Municipal+Capacity+Strategy+Paper\\_November+2017.pdf/923744b1-951a-ce16-609e-724c9e260fb7](https://www.cmap.illinois.gov/documents/10180/794571/Municipal+Capacity+Strategy+Paper_November+2017.pdf/923744b1-951a-ce16-609e-724c9e260fb7), p. 7.



2. Score the county subdivisions using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with higher proportions of people with at least a high school diploma receive scores closer to 1, and those with smaller proportions receive scores nearer 100.

**Weight** 1

**Rationale** Nationally, differences in educational attainment closely map to community prosperity, with a disproportionate number of people with less than a high school diploma living in distressed communities.<sup>22</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>23</sup>

**Other Indices** 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.

#### Households with Broadband\*

**Indicator** Proportion of households with broadband of any type

**Source** U.S. Census Bureau (2020), American Community Survey: [Presence and Types of Internet Subscriptions in Household](#).

**Scoring** The VCI first calculates the proportion of households with broadband subscriptions of any type and then scores county subdivisions based on their relative proportions through the following steps:

1. Calculate the proportion by dividing the households with broadband of any type by the total households in the county subdivision.
2. Score the county subdivisions using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with larger proportions of households with broadband receive scores closer to 1, and those with smaller proportions receive scores nearer 100.

**Weight** 1

**Rationale** In the final rule for State and Local Fiscal Recovery Funds, Treasury states “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>24</sup> With the COVID-19 pandemic, access to affordable broadband has become an equity issue, impacting economic security, educational attainment, and health outcomes.

<sup>22</sup> Economic Innovation Group, <https://eig.org/wp-content/uploads/2020/10/EIG-2020-DCI-Report.pdf>, October 2020 (p. 36).

<sup>23</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.

<sup>24</sup> Department of the Treasury, SLFRF Final Rule, <https://home.treasury.gov/system/files/136/SLFRF-Final-Rule.pdf>, January 27, 2022 (p. 4410).

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 31% of households have access to symmetrical 100/100 Mbps broadband internet speeds recommended by Treasury.<sup>25</sup>

### Housing Cost-Burdened Homeowners

**Indicator** Proportion of homeowners that spend more than 30% of their income on housing-related expenses

**Source** U.S. Census Bureau (2019), American Community Survey: [Selected Housing Characteristics](#). Accessed through [Vermont Housing Finance Agency](#).

**Scoring** The VCI calculates the proportion of homeowners that spend more than 30% of their income on housing-related expenses, then scores county subdivisions based on their relative proportions using the following steps:

1. Calculate the percentage by summing the percentage of homeowners that spend 30-49% of their income on housing costs and the percentage of households that spend over 50%.
2. Score the county subdivisions using the min-max normalization formula  $\frac{x-x_{min}}{x_{max}-x_{min}} \times 99 + 1$  so the county subdivisions with higher percentages of housing cost-burdened homeowners receive scores closer to 100, and those with smaller proportions receive scores nearer 1.

**Weight** 1

**Rationale** The housing cost-burden metric assesses income relative to housing costs, which allows it to account for geographic variation in living costs in a way that raw income metrics do not. 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>26</sup> Areas with higher rates of housing cost-burdened homeowners likely need additional support through public investment in services like affordable housing.

*Note: The VCI omits housing cost-burdened renters due to high standard error at the county subdivision level.*

### Income Per Capita Change\*

**Indicator** Change in per capita income from 2010 to 2020

**Source** U.S. Census Bureau (2020), American Community Survey: [Per Capita Income in the Past 12 Months \(In 2010 Inflation-Adjusted Dollars\)](#).

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<sup>25</sup> State of Vermont Department of Public Service, "Broadband High-Speed Internet Availability in Vermont." <https://publicservice.vermont.gov/telecommunications-and-connectivity/broadband-high-speed-internet-availability-vermont>

<sup>26</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).

**Scoring** The VCI calculates the average per capita income change, then scores county subdivisions based on their relative changes using the following steps:

1. Calculate the average change by subtracting the per capita income in 2010 from the per capita income in 2020.
2. Score the county subdivisions using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with larger changes in per capita income receive scores closer to 1, and those with lower average changes receive scores nearer 100.

**Weight** 1

**Rationale** Per capita income, the average amount of money earned per person, can help measure the average standard of living in a community. Tracking the change in per capita income can provide insights into the economic trajectory of the community relative to others within the state. Nationally, per capita income change is frequently used to evaluate the country's economic health and identify periods of decline. The VCI uses average change rather than percent change to avoid penalizing lower-income communities, which often have higher percent changes in incomes because of the lower baseline.

#### Individuals above 150% FPL \*

**Indicator** Proportion of individuals with incomes over 150% of the federal poverty level (FPL)

**Source** U.S. Census Bureau (2020), American Community Survey: [Place of Birth by Poverty Status in the Past 12 Months in the United States](#).

**Scoring** The VCI scores county subdivisions using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with higher proportions of people earning over 150% receive scores closer to 1, and those with lower proportions score nearer 100.

**Weight** 1

**Rationale** Communities with higher proportions of the population experiencing poverty or economic hardship generally have a greater need for external investment. Many housing and economic development programs, like HUD's Low Income Housing Tax Credits and the IRS's Qualified Opportunity Fund, use poverty metrics as their eligibility criteria. Studies have also shown that people with incomes below 150% FPL were at increased risk of severe COVID-19 infection, suggesting that the pandemic had a disparate impact on people earning below 150% FPL and lower-income communities.<sup>27</sup>

**Other Indices** The VCI adopts the 150% FPL threshold from the CDC/ATSDR *Social Vulnerability Index*. The *Social Vulnerability Index* uses this threshold because it is the cutoff for some federal programs, like Medicaid.<sup>28</sup>

<sup>27</sup> Ajufo, et al., <https://www.sciencedirect.com/science/article/pii/S2666667721000118>, June 2021.

<sup>28</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.

## Labor Force Participation Rate Change\*

**Indicator** Change in labor force participation rate among the working age population (20 to 64 years) from 2010 to 2020

**Source** U.S. Census Bureau (2020), American Community Survey: [Employment Status](#).

**Scoring** The VCI calculates the change in labor force participation rate, then scores county subdivisions based on their relative changes using the following steps:

1. Calculate the change by subtracting the labor force participation rate in 2000 from the rate in 2020.
2. Score the county subdivisions using the min-max normalization formula  $100 - \frac{x - x_{min}}{x_{max} - x_{min}} \times 99$  so the county subdivisions with larger increases in labor force participation rate receive scores closer to 1, and those with larger losses receive scores nearer 100.

**Weight** 1

**Rationale** The Vermont Strategic Plan includes Workforce Participation Rate as a breakthrough indicator for assessing the state of the economy in Vermont.<sup>29</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 declined over the past ten years. Since the pandemic, the Vermont labor force participation rate has declined below the national average.<sup>30</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>31</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 unequal impact across the state.<sup>32</sup>

## Race and Ethnicity

**Indicator** Proportion of the 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](#).

**Scoring** The VCI calculates the proportion of people that are not white non-Hispanic and then scores county subdivisions based on their relative proportions.

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<sup>29</sup> State of Vermont, <https://strategicplan.vermont.gov/economy/>.

<sup>30</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](https://www.jec.senate.gov/cards/_employment-updates/Vermont%20Employment%20Report.html#:~:text=At%20a%20labor%20force%20participation,point%20from%20a%20year%20earlier).

<sup>31</sup> Vermont Department of Labor, <http://www.vtmi.info/profile2022.pdf>.

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1. Dividing the count of people who are not white non-Hispanic by the total population of the county subdivision to determine the proportion.
2. Score the proportions using the min-max normalization formula  $\frac{x-x_{min}}{x_{max}-x_{min}} \times 99 + 1$  so the county subdivisions with higher proportions of people that are not white non-Hispanic receive scores closer to 100, and county subdivisions with smaller proportions receive scores nearer 1.

**Weight** 1

**Rationale** The White House identifies people of color as an underserved group because they have historically been denied equitable treatment and a full opportunity to participate in all aspects of economic, social, and civic life.<sup>33</sup> The national trend continues in Vermont, where populations of color have disproportionately experienced homelessness and poverty.<sup>34</sup>

**Other Indices** The *Social Vulnerability Index* includes “Racial & Ethnic Minority Status” as one of its indicators of social vulnerability.

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<sup>33</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>34</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).