2022 Community Health Index Methodology

Conduent's Community Health Index (formerly Health Equity Index) was developed by Conduent Healthy Communities Institute (HCI). The Community Health Index is available as part of Conduent's SocioNeeds Index® Suite, which provides analytics around social determinants of health to advance equitable outcomes. Each index summarizes multiple health and socioeconomic indicators into one validated composite score to help identify areas for action.

The SocioNeeds Index Suite can help:
- Justify and validate investments for prevention and early intervention
- Clearly communicate areas for shared action by healthcare, public health, social services, community organizations, business, and others
- Inform policies and interventions at the regional level

Selection and Weighting of Index Components

Conduent HCI reviewed its current library of indicators for component indicators to include in the Community Health Index. Indicators were considered if available at the county, zip code, and census tract level, and updated at least annually. Index components were then scored based on the strength of their Pearson correlation coefficient with selected health outcomes. The indicators that were selected to be included in the Community Health Index are listed in the table below (see *Component Indicators*).

Topic	Component Indicator	Source	Period of Measure
Income	Average Household Income	Claritas Pop-Facts®	2022
Poverty	Families Below Poverty	Claritas Pop-Facts	2022
Employment	Percent of Civilian Labor Force Unemployed	Claritas Pop-Facts	2022
Education	Population 25+ with a High School Degree or Higher	Claritas Pop-Facts	2022
Language	Population 5+ that Speaks Only English at Home	Claritas Pop-Facts	2022
Medicaid enrollment	Adults with Medicaid Health Insurance	Claritas Consumer Profiles	2022
Race	Percent of Non-White Population	Claritas Pop-Facts	2022

Outcome indicators of poor health were selected based on their broad applicability and geographic granularity (see *Outcome Indicators* in table below). A regression analysis was performed to measure the strength of the component indicators with each outcome indicator. Component indicators were standardized into Z-scores, in which they were transformed into a z-distribution with a mean value of zero and a standard deviation of one. The final index score was calculated as a weighted average of the

component indicator Z-scores. The optimal weighting for each component indicator was determined by examining the Pearson correlation coefficient between the aggregated z-score of component indicators and each outcome indicator. Weights were adjusted until the optimal coefficients were observed for the association between the index and the outcome indicators.

Outcome Indicator	Locale Type	R^2 value	Pearson Coefficient
Preventable Hospitalization	Zip code	67%	77%
Premature Death Rate	County	64%	71%
Adults with Medical Conditions Limiting Lifestyle	Census Tract	73%	78%
Self-Reported General Health Assessment: Poor	Census Tract	84%	82%

The R^2 results of our regression analysis show that for all of the outcome indicators, between 64-84% of the variation can be attributed to the Community Health Index for the entire United States at various geographic levels. The Pearson correlation coefficient output shows that the association between the index and the outcome indicators ranges from 71-82% for values across all location types when optimal weights are used. The weights listed in the table below are used to calculate the final index values.

Component Indicator	Weights
Average Household Income	17.1%
Families Below Poverty	19.9%
Percent of Civilian Labor Force Unemployed	16.5%
Population 25+ with a High School Degree or Higher	14.7%
Population 5+ that Speaks Only English at Home	2.9%
Adults with Medicaid Health Insurance	18.0%
Percent of Non-White Population	10.9%

Based on these weights, *Families Below Poverty* and *Adults with Medicaid Health Insurance* have the most impact on index values. *Population 5+ that Speaks Only English at Home* has the smallest impact on index values.

Presentation of Index Values Within a Community

Final index values range from 0-100, representing the percentile of each geographic location within the entire United States. Within the community or service area, the index values are grouped into five ranks, where a low rank represents a low level of need and a high rank represents a high level of need. These ranks are determined using natural breaks classification, which groups locations into clusters based on similar index values. This method minimizes the variance within a rank and maximizes the variance between ranks. All locations with a population of over 300 persons, as reported by Claritas population estimates, are included in the Community Health Index. Those with populations under 300 persons are excluded for purposes of data stability.