

## 2023 Mental Health Index Methodology

Conduent’s Health Mental Health Index (formerly SocioNeeds Index®) was developed by Conduent Healthy Communities Institute (HCI). The Mental 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 Mental 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 Mental Health Index are listed in the table below (see *Component Indicators*).

Topic	Component Indicator	Source	Period of Measure
Disability	Persons with a Disability	American Community Survey, 5-Year Estimates	2017-2021
Employment	Unemployment Rate	Claritas Pop-Facts®	2023
Health Care Access	Adults who had a Routine Checkup in the Past Year	CDC PLACES	2020
Health Insurance	Adults with Health Insurance: 18+	Claritas Consumer Profiles	2022
Household	Single-Parent Households	American Community Survey, 5-Year Estimates	2017-2021
Transportation	Households without a Vehicle	Claritas Pop-Facts	2023

Outcome indicators of poor mental 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 <sup>2</sup> value	Pearson Coefficient
Poor Mental Health Days: 14+ Days	Zip code	77%	87%
I often feel like my life is slipping out of control: Agree completely	Zip code	62%	79%

The R<sup>2</sup> results of our regression analysis show that for all the outcome indicators, between 62-77% of the variation can be attributed to the Mental Health Index for the entire United States at the zip code level. The Pearson correlation coefficient output shows that the association between the index and the outcome indicators ranges from 79-87% for values when optimal weights are used. Equal weights are used across all component indicators to calculate the final index values. *Note: The results of the regression and correlation analysis are based on American Community Survey, 5-year Estimates, 2015-2019; Claritas Pop-Facts 2021; CDC PLACES, 2018; Claritas Consumer Profiles, 2021.*

## 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 Mental Health Index. Those with populations under 300 persons are excluded for purposes of data stability.