Watson Health®

2021 Community Need Index

Methodology and Source Notes

Overview

In 2004, Dignity Health and IBM Watson Health™ jointly developed a Community Need Index ("CNI") to assist in the process of gathering vital socio-economic factors in the community.

Based on demographic and economic statistics, the CNI provides a score for every populated ZIP code in the United States on a scale of 1.0 to 5.0. A score of 1.0 indicates a ZIP code with the least need, while a score of 5.0 represents a ZIP code with the most need compared to the US national average (score of 3.0).

The CNI is strongly linked to variations in community healthcare needs and is a good indicator of a community's demand for a range of healthcare services. Not-for-profit and community-based hospitals, for whom community need is central to the mission of service, are often challenged to prioritize and effectively distribute hospital resources. The CNI can be used to help them identify specific initiatives best designed to address the health disparities of a given community.

Additionally, the CNI can be shared with community partners and used to justify grants or resource allocations for community initiatives. The increased transparency of hospital operations, with quality report cards and financial disclosures, has highlighted the need for community benefit efforts to become strategic and targeted. While local community needs assessments will always play a central role in this process, they are often voluminous and difficult to communicate. The CNI should be used as part of a larger community need assessment to pinpoint specific areas that have greater need than others.

Methodology

The CNI score is an average of five different barrier scores that measure various socio-economic indicators of each community using the 2021 source data. The barrier scores are listed below along with the individual 2021 statistics analyzed for each barrier. These barriers, and the statistics that comprise them, were carefully chosen and tested individually by both Dignity Health and IBM Watson Health™:

1. **Income Barrier**
    - Percentage of households below poverty line, with head of household age 65 or more
    - Percentage of families with children under 18 below poverty line
    - Percentage of single female-headed families with children under 18 below poverty line
2. **Cultural Barrier**
    - Percentage of population that is minority (including Hispanic ethnicity)
    - Percentage of population over age 5 that speaks English poorly or not at all
3. **Education Barrier**
    - Percentage of population over 25 without a high school diploma

4. **Insurance Barrier**
    - Percentage of population in the labor force, aged 16 or more, without employment
    - Percentage of population without health insurance
5. **Housing Barrier**
    - Percentage of households renting their home

Every populated ZIP code in the United States is assigned a barrier score of 1, 2, 3, 4, or 5 depending upon the ZIP code national rank (quintile). A score of 1 represents the lowest rank nationally for the statistics listed, while a score of 5 indicates the highest rank nationally. For all barriers, ZIP codes with scores of 1 or 2 have a smaller percentage of the population facing the barrier than the national average, while ZIP codes with a score of 4 or 5 have a higher percentage. ZIP codes with a score of 3 have a similar percentage of the population as the national average.

For the two barriers with only one statistic each (education and housing), IBM Watson Health™ used only the single statistic listed to calculate the barrier score. For the three barriers with more than one component statistic (income, cultural and insurance), IBM Watson Health™ first analyzed the variation and contribution of each statistic for its barrier, and then weighted each component statistic appropriately when calculating the barrier score.

After each ZIP code is assigned its barrier scores (from 1 to 5), the five barrier scores are averaged together to yield the CNI score. Each of the five barrier scores receives equal weight (20% each) in the composite CNI score. A score of 1.0 indicates a ZIP code with the least need, while a score of 5.0 represents a ZIP code with the most need.

Data Sources

- 2021 Demographic Data, © 2021 The Claritas Company
- 2021 Poverty Data, © 2021 The Claritas Company
- 2021 Insurance Coverage Estimates, IBM Watson Health™

Applications and Caveats

- CNI scores are not calculated for non-populated ZIP codes. These ZIP codes include such areas as national parks, public spaces, post office boxes, airports, and large unoccupied buildings.
- IBM Watson Health uses a weighted average technique based on 2021 population numbers to calculate the CNI score for a given community: First, the CNI value for each ZIP code is multiplied by the 2021 population for the same ZIP code. Second, the "CNI X 2021 population" products for the community ZIP codes are summed. Finally, the summed value is divided by the 2021 community population. The result yields a weighted CNI average for all ZIP codes combined.
- CNI scores for ZIP codes with small populations (fewer than 100 people) may be less accurate. This is because the sample of respondents to the 2010 census is too small to provide accurate statistics for such ZIP codes. This issue is mitigated by either eliminating such ZIP codes from your analysis completely, or by making sure that low population ZIP codes are combined with other surrounding high population ZIP codes using the weighted average technique described above.