

Peer County Methodology Used by the Community Health Status Indicators 2015 Web Application¹

CHSI 2015

The Community Health Status Indicators web application (CHSI) produces health profiles for each county in the United States. Since its first release in 2000, CHSI has provided peer county groupings that allow explicit comparisons among counties nationwide to assess how they perform on health indicators relative to their peers. The Centers for Disease Control and Prevention (CDC) re-launched the CHSI web application in 2015 with an updated set of indicators, and a new population health framework that was adapted from the framework used by County Health Rankings & Roadmaps.² Updated peer groupings were needed to reflect the new framework and more recent data describing county characteristics.

Peer County Methodology

K-means cluster analysis was selected to determine the peer counties for CHSI 2015 because it is a well-regarded method for grouping entities based on measures of similarity. Statistics Canada has used this method since 2002 to establish Canadian health region peer groups.^{3,4} All variables enter into the cluster model in the same way.

Peer groups were defined using 19 county-level variables. These variables include demographics and social and economic determinants of health. Direct measures of health were not included (so that a dependent health outcome variable would not drive the peer grouping). County-level data were extracted for all 3,143 counties from the Census 2012 QuickFacts File and the American Community Survey (ACS) 2007-2011 five-year estimates tables. Three new variables were created from ACS variables (identified with *).

Population size	Percent foreign born	Median household income
Population growth	Percent high school graduates	Receipt of government financial assistance*
Population density	Single parent households*	Gini Index of Income Inequality
Population mobility	Median home value	Overall poverty
Percent children	Housing stress*	Elderly poverty
Percent elderly	Percent owner-occupied housing units	Unemployment
Sex ratio		

All 3,143 counties were stratified by 2006 National Center for Health Statistics urban-rural codes, and six separate cluster analyses were run. Eighty-nine peer county groupings were created, with an average of 35 counties and at least three states per group.

If a county falls within the most favorable 25th percentile compared to its peers, the indicator is green on the CHSI website, for “better performance.” If it falls into the least favorable 25th percentile, the indicator is “red.” If it falls in the middle, it is “yellow.” This peer county methodology enables counties to benchmark themselves against counties across the U.S. that are similar to them with respect to social and economic determinants of health.

¹ Summary developed from Bohm MK, Boothe VL, Chen Z. Community Health Status Indicators 2015 Project: Updated Peer Counties. Manuscript being submitted for publication.

² Kindig DA, Asada, Y, Booske B. A Population Health Framework for Setting National and State Health Goals. JAMA. 2008;299(17):2081-2083.

³ McNabb LL. Health Region Peer Groups. Statistics Canada, Health Statistics Division. 2002.

⁴ Cluster analysis sorts observations according to their similarity on designated variables. K-means clustering is a non-hierarchical technique that computes the centroids (i.e., the average of all observations in a cluster) of a predefined number of clusters and uses a two-step process to iteratively reassign observations into the cluster with the nearest centroid.