Health Equity Indicators for Cardiovascular Disease Toolkit

National Center for Chronic Disease Prevention and Health Promotion
Division for Heart Disease and Stroke Prevention

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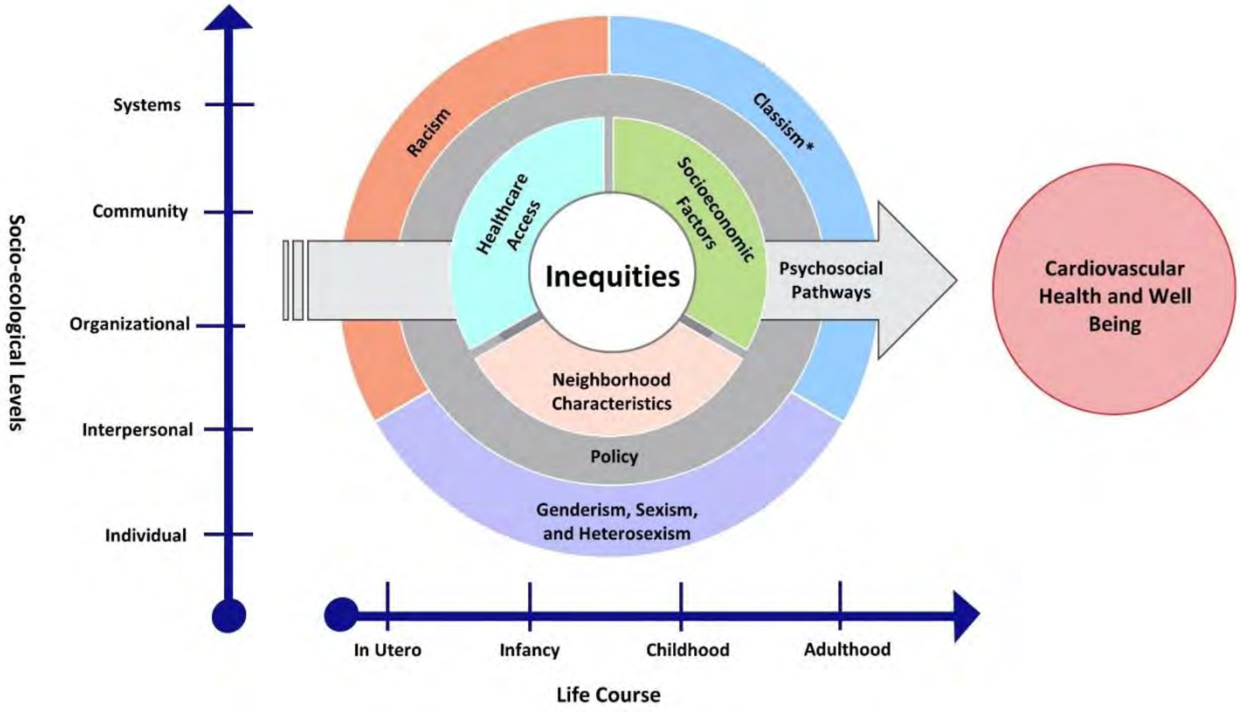
Health Equity Indicators Toolkit: Applying an Equity Approach to Cardiovascular Health

Cardiovascular disease (CVD) remains the leading cause of death in the United States. Despite advances in clinical care and treatment, stark inequities in cardiovascular risk factors and outcomes persist by race and ethnicity, socioeconomic status, geography, and other factors. Extensive research has shown that social, economic, and environmental factors shape health outcomes even more than what happens inside clinic walls. Therefore, measurement and evaluation approaches need to consider these factors, especially the systems and structures that influence them.

This toolkit presents health equity indicators (HEIs) across eight focus areas, or health equity themes, which influence inequities in cardiovascular disease prevention, care, and management as outlined in the *HEI Conceptual Framework for CVD*. The *Framework* is based on the Social-Ecological Model and provides a model for understanding health inequities in CVD by graphically representing how HEIs are interconnected and occur through structural and socioenvironmental drivers, across socio-ecological levels, and throughout the lifespan. An indicator profile is available for each focus area (except for classism[A]) to describe the relevance of the indicators and provide specific measures that health departments or health care organizations may use to support their health equity efforts.



A. Although classism is an important determinant of CVD inequities, indicators of classism are similar to those specified for other focus areas (e.g., racism, socioeconomic factors, neighborhood characteristics, policy). Therefore, there is not a separate indicator profile for classism.

Learn More About the HEI Conceptual Framework for CVD

Inequities are greatly shaped by the consequences of historical and current societal norms, policies, and practices that systematically reduce access to resources for groups that have been marginalized. The framework recognizes systemic inequities (e.g., **racism, genderism/sexism/heterosexism, classism**) that have produced **policies** that created or worsened **socioeconomic** deprivation, segregation of **neighborhoods** and schools, and unjust disparities in the quality of and **access to health care**. The discrimination, inequities, and barriers brought by these factors can create toxic stressors (acute and chronic) that affect **psychosocial** well-being across the course of an individual’s life.

Each of these factors affects and is affected by *interpersonal* relationships and social networks; the organizations that provide services or information to individuals; the built environments and *communitie*s in which individuals live, work, and play; and the broader systems or enabling environments that govern societal norms and policies. These domains, in and of themselves and in combination with other domains, shape and constrain the ability to engage in healthy behaviors and raise the risks of cardiovascular disease and mortality.

About the Health Equity Indicators for Cardiovascular Disease Toolkit

What Is the Toolkit?

The Health Equity Indicators for Cardiovascular Disease (HEI for CVD) toolkit includes a wide range of health equity indicators (HEIs) that can serve as a resource and inspire health care and public health professionals to incorporate health equity–relevant metrics and processes into strategic planning, site selection, and evaluation.

Health equity is the state in which everyone has a fair and just opportunity to attain their highest level of health.[A] HEIs represent measurable constructs that have been shown to be important for understanding the causes of inequities in cardiovascular disease (CVD) and can be used to measure health inequities.

The toolkit includes the following components:

- **Indicator Profiles** provide definitions and measurement guidance for each HEI.
- **Case Examples** and **Field Notes** are short summaries that describe an organization's experience with gathering data for specific indicators and lessons learned.
- **Resources** are other CDC and external resources that support health equity measurement and evaluation and advance health equity work.
- The **Glossary of Terms** provides definitions for frequently used terms and concepts in the HEI for CVD Toolkit.

Who Is the Toolkit For?

The toolkit provides local health jurisdictions, city governments, health care organizations, and other agencies with information about equity promoting activities and associated measures to improve cardiovascular health in disproportionately affected communities.

What Is the Intended Use of the Toolkit?

Indicators profiled in this toolkit can be used to understand inequities at institutional and structural levels and measure efforts to reduce inequities in CVD and mortality rates within specific populations. These indicators can serve as a resource for health care and public health professionals who seek to incorporate equity-relevant metrics, measurement considerations, and inclusive community engagement processes into their work. However, they are not a comprehensive set of all measures that matter for cardiovascular equity.

A. Centers for Disease Control and Prevention. Advancing Health Equity in Chronic Disease Prevention and Management. Updated December 8, 2022. Accessed January 3, 2023. https://www.cdc.gov/chronicdisease/healthequity/index.htm

Public health and health care professionals can use this toolkit to:

- Identify gaps between what is currently measured and what can be measured.
- Consider new data collection methods for identifying root causes and key drivers of inequities.
- Consider upstream and structural factors that influence lifestyles and behaviors, environments and communities, and access to early detection and treatment of CVD.
- Identify possible indicators and measures that can bolster current evaluation efforts.
- Use resources and case examples to guide heath equity measurement and evaluation.

How to Navigate the Toolkit

To learn more about the **focus areas** that are correlated with poor cardiovascular health, click on the specific focus area page (e.g., Policy) under **the Health Equity Indicator Profiles** tab. Each focus area page provides a definition of the focus area and lists indicators and measures for the focus area.

Selecting an **indicator** (e.g., Spending Per Capita) from the focus area page brings users to the **indicator profile** page, which defines the indicator, presents evidence on the importance of the indicator related to health and CVD and lists measures for operationalizing the indicator. To learn how to assess indicators, users should click on the measures (e.g., Per Capita Spending on Health Care) from the indicator profile page. Clicking on a **measure** (e.g., Per Capita Spending on Health Care) from the indicator profile page provides users with data sources, measurement guidance, and relevant case examples (if applicable).

In addition to finding case examples from the indicator profile and measure pages, users can click directly on the Case Examples and Field Notes page and find an inventory of all case examples. For additional resources on how to support health equity work, visit the Resources page. Users should refer to the Glossary of Terms page to find definitions for commonly used terms in the HEI for CVD Toolkit.

How was the Toolkit Developed?

Literature Scan

An initial literature scan was conducted in 2017 to identify the primary topics and themes most relevant for addressing equity within the context of prevention and management of CVD. The literature review was updated in 2021 and identified eight focus areas that are correlated with poor CVD health outcomes for groups that have been historically marginalized.

Findings from the literature review informed the development of the initial conceptual framework, which then provided the structure for the development of the HEIs. For each focus area, CDC developed indicators as a way to operationalize the health equity themes and measure health inequities.

Pilot Studies

CDC conducted a pilot test of a subset of HEIs to assess the feasibility of gathering and analyzing data on these indicators within health care settings. Seven health care organizations participated in the HEI Pilot Study from January to April 2022. Findings from the pilot were used to update and clarify the guidance provided within the HEI Profiles and develop case examples that illustrate the real-world application (data collection, analysis, and use) of HEIs to inform health equity efforts within health care organizations.

CDC also conducted a yearlong pilot at the Grady Health Camp Creek Comprehensive Care Center. The purpose of this pilot test was to understand patient lived experiences with CVD through the collection of equity-focused indicators derived from quantitative and qualitative data. CDC collaborated with Melvin Echols, MD, and Sameia Udoji to recruit and interview patients. A unique component of this pilot was that the purpose was to capture the patient's perspective. Findings from this pilot will assist in identifying common causes and key drivers of inequities, gain a deep understanding of patients living with CVD in an outpatient setting, and inform and strengthen ongoing quality improvement at outpatient centers. It also examines the process of collecting data on these selected indicators, including the barriers and facilitators to help inform their use.

Subject Matter Expert Consultations

CDC engaged with various external subject matter experts (SMEs) to inform the development of the HEI Conceptual Framework and Toolkit. SMEs included researchers and practitioners.

The researcher SMEs were academic experts in health equity and CVD who provided input on the conceptual framework, conceptualized the indicators, identified existing measures and data sources for operationalizing the HEIs, and outlined measurement considerations for the indicator profiles. They also actively informed the development, implementation, and analysis of the pilot study.

The practitioner SMEs were experts in applying evidence in their clinical and public health work, who provided practical considerations for measurement guidance in the indicator profiles and shared lessons learned via case examples and field notes.

Acknowledgements

The HEI for CVD Toolkit is a collaborative effort among the Centers for Disease Control and Prevention (CDC) Division for Heart Disease and Stroke Prevention (DHDSP) Evaluation and Program Effectiveness Team (EPET), Prevention Institute, and Deloitte Consulting.

The project began with a literature review conducted by EPET in 2017. From 2020 to 2021, EPET collaborated with Prevention Institute and a panel of SMEs to conceptualize the health equity indicators, draft a conceptual framework, and draft indicator profiles for the HEIs based on EPET's literature scan. The HEIs, indicator profiles, and conceptual framework were further refined and expanded by Deloitte Consulting and two independent SMEs contracted by Deloitte Consulting from 2021 to 2022.

CDC engaged various SMEs and health care organizations through small workgroups and one-on-one sessions to inform toolkit development. SMEs provided technical insight, methodological considerations, and measurement guidance.

Additionally, seven health care organizations participated in a pilot test of a subset of indicators from January 2022 to March 2022. CDC also conducted a patient informed pilot test with Grady Health Camp Creek Comprehensive Care Center from August 2021 to August 2022. Lessons learned from the pilots are captured in the case examples, which document organization's experience with HEI data collection.

CDC thanks all partners, SMEs, and pilot sites for their contributions to the development of this toolkit.

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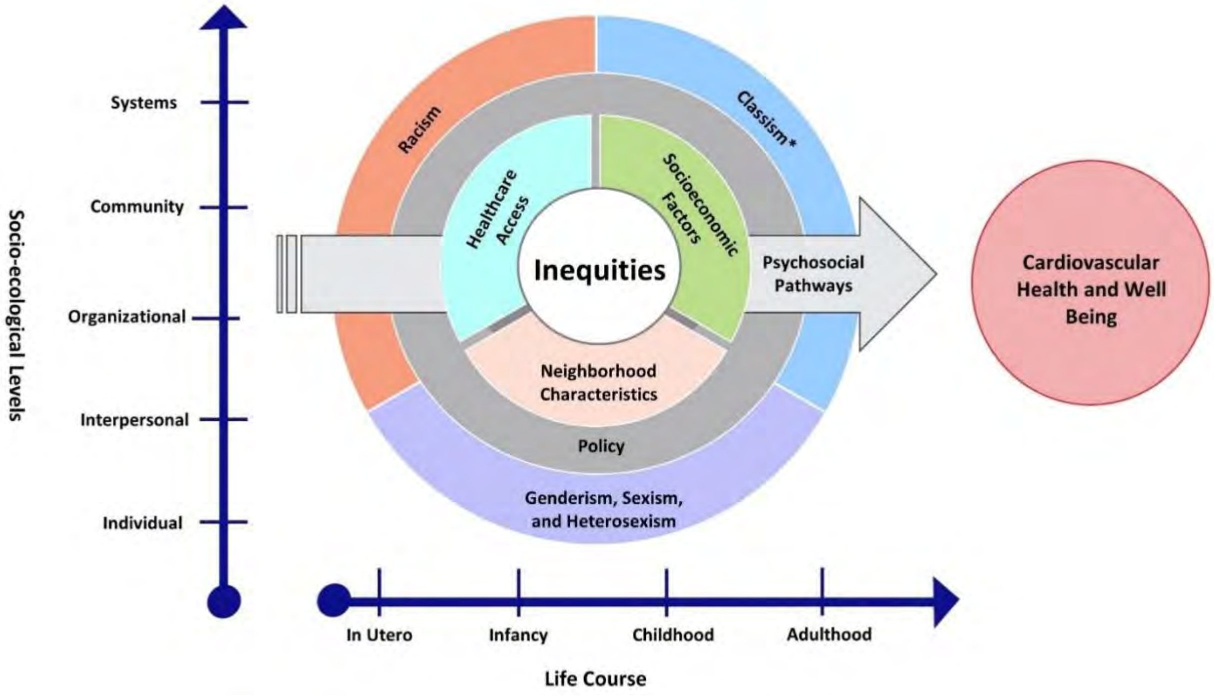
Los Angeles County Department of Public Health
ProMedica Toledo Hospital
Northwell Health
Trinity Health
Ventura County Community Health Improvement Collaborative
Grady Health Camp Creek Comprehensive Care Center

Health Equity Indicators Profile

Health equity indicators (HEIs) represent constructs that have been shown to be important for understanding the causes of inequities in cardiovascular disease (CVD). In this toolkit, HEIs are categorized into eight focus areas, or health equity themes, as depicted in the ***HEI Conceptual Framework for Cardiovascular Disease:***



An ***indicator profile*** is available for each focus area (except for classism) to describe the relevance of the indicators and provide specific measures that health departments or health care organizations may use to support health equity efforts. Although classism is an important determinant of CVD inequities, indicators of classism are similar to those specified for other focus areas (e.g., racism, socioeconomic factors, neighborhood characteristics, policy). Therefore, there is not a separate indicator profile for classism.

Each indicator profile begins with a short summary of the evidence on the relevance of the indicator for CVD prevention, management, care, and/or equity. Depending on the indicator and available data, one or more specific measures are listed to help quantify or qualify different attributes of the indicator. The profile specifies a data source(s) that provides data for each measure and guidance for accessing the data source(s). The indicator profiles provide guidance on existing data sources for secondary data collection and survey instruments for primary data collection. The majority of data sources are publicly available, easy to access, and free to users unless otherwise specified. Each indicator profile includes links to data sources, except in a few cases when the entire questionnaire from a survey instrument is provided. An entire questionnaire is provided in lieu of a link when the survey instrument is not publicly available. Where applicable, additional considerations for calculating data for the measures, or suggestions for potential use for the measures are provided. Each profile concludes with a list of select references for further information.

Although the list of indicators provided for each focus area is not exhaustive of all constructs relevant to addressing equity in cardiovascular health, it reflects concepts relevant for health care and public health professionals seeking to incorporate equity measurement in their work. Similarly, the list of measures and data sources noted within the indicator profiles is not comprehensive but rather provides a starting point and ideas for ways toolkit users can gather data on various factors that affect inequities in CVD and/or excessive mortality within specific populations.

Health departments or health care organizations may have access to their own data sources that are equally or more relevant. Where opportunities exist, primary data collection through surveys, patient intake forms, or other means may also yield more specific and targeted data to address health inequities within a specific setting.

Health Equity Indicator Profiles | Genderism, Sexism, Heterosexism

Genderism, or bias resulting from a gender binary view, is a system of beliefs that perpetuates negative evaluations of gender nonconformity.[1] Sexism, defined as prejudice or discrimination based on one's sex, stems from an ideology that one sex is superior to the other.[2] Heterosexism is an ideological system that denies, denigrates, and stigmatizes any non-heterosexual form of behavior, identity, relationship, or community.[3] Within health care systems, conscious or unconscious biases based on gender or sexual orientation, gender stereotypes, and sexism affect patient care. For example, various studies show that despite education efforts, health providers are more likely to screen, diagnose, and treat White men for cardiovascular disease (CVD) compared with women of all races and ethnicities. This gender bias in the prevention and management of CVD results in underdiagnosis, delayed care, ineffective care, and poorer outcomes among women.[4,5,6] Health care systems can achieve equitable outcomes by incorporating a more diverse and inclusive understanding of health in patient care and interventions.

Indicators

This document provides guidance for measuring ***three indicators related to genderism, sexism, and heterosexism*** that influence social-environmental factors shown to increase the risk for developing CVD or result in differential access to and receipt of health care. The three indicators are measured at different levels of analysis, including individual, census tract, city, county, metropolitan area, and state levels.

Gender Discrimination

Gender is the economic, social, political, and cultural attributes and opportunities associated with being a woman, a man, or a person of another gender identity. Gender-based discrimination is conscious or unconscious biases and actions based on gender stereotypes. Visit the Gender Discrimination indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Gender Discrimination

Gender Income Gap

The gender income gap is the difference between the median wages or salaries of men and women. Visit the Gender Income Gap indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Median Household Income by Gender

LGBTQIA+ Discrimination

Lesbian, gay, bisexual, transgender, queer, intersex, asexual, and other sexual orientation and gender identity populations (LGBTQIA+) are more likely to experience discrimination, or unfair treatment, due to their sexual orientation. Visit the LGBTQIA+ Discrimination indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: LGBTQIA+ Discrimination

Genderism, Sexism, Heterosexism References

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Indicator Profile | Gender Discrimination

Gender is the economic, social, political, and cultural attributes and opportunities associated with being a woman, a man, or a person of another gender identity. Gender-based discrimination is conscious or unconscious biases and actions based on gender stereotypes.

Why Is This Indicator Relevant?

Gender is the economic, social, political, and cultural attributes and opportunities associated with being a woman, a man, or a person of another gender identity.[1] Gender-based discrimination (i.e., conscious or unconscious biases and actions based on gender stereotypes) may be a cause of gender differences in health outcomes.[2] Many women experience gender discrimination in the workplace, health care, higher education, housing, and the legal system, which has negative effects on economic opportunities, social well-being, and physical and mental health.[3,4] Emerging research suggests that the experience of discrimination, both institutional (e.g., health care) or interpersonal (e.g., microaggressions), may increase the body's stress response over time, and that discrimination is linked to a range of poor health-related behaviors, mental health outcomes, and physical health problems, including high blood pressure, heart disease, and self-reported health status.[3,5,6,7,8] The role of gender as a social determinant of health has been increasingly recognized within CVD research.[9] As a result of more sex- and gender-specific CVD research, there has been a nearly 30% decline in the number of women dying from CVD in the United States.[10] Despite this progress, continued research is needed to address persisting sex/gender inequities in CVD, particularly gender discrimination. Unconscious bias or lack of knowledge of gender differences in symptom presentation may affect the diagnosis, referral, and care of women for CVD. Gender discrimination and sexual harassment are considered chronic and persistent stressors that worsen cardiovascular health.[11] Pathophysiologic mechanisms linking gender discrimination and CVD include changes in systolic blood pressure, cortisol secretions, pulse rate, and heart rate variability.[11]

Measures

The following measure assesses gender discrimination. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Gender Discrimination

Measure 1: Gender Discrimination

Definition

Receipt of unfair treatment based on the social interpretation of one's gender

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey measures are available to measure gender discrimination:

- The Everyday Discrimination Scale (EDS)
  - The EDS is a general measure of unfair treatment. Possible attributions for unfair treatment include race, gender, and sexual orientation, among other reasons. The full and short versions of the original scale can be found in the Williams et al. paper[12] or at the link provided below. The short version of the EDS was developed for the Chicago Community Health Study.[13] We recommend adding a response option of "About once a month" to capture experiences ranging between "A few times a month" and "A few times a year." The modified short version below includes these response options and specifically asks about unfair treatment due to gender.

- Link: https://scholar.harvard.edu/davidrwilliams/node/32397

In your day-to-day life, how often have any of the following things happened to you because of your gender?

	7 Almost every day	6 At least once a week	5 A few times a month	4 About once a month	3 A few times a year	2 Less than once a year	1 Never
You are treated with less courtesy or respect than other people							
You receive poorer service than other people at restaurants or stores							
People act as if they think you are not smart							
People act as if they are afraid of you							
You are threatened or harassed							

- Experiences of Discrimination Measure (EOD)
  - The EOD measure has been used to study the stress of experiencing discrimination and how the experience of discrimination may contribute to trauma. This measure was originally developed to assess the frequency of how often a person has experienced discrimination because of their race/ethnicity.[14] The original measure uses a two-step approach: Participants reporting having experienced discrimination on a particular item (with responses choices of no or yes) were then asked how often this occurred (response choices of once, two or three times, and four or more times). The modified version below combines these response options and adapts the measure for gender discrimination.

Have you ever experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your gender?

	1 No	2 Yes, once	3 Yes, two or three times	4 Yes, four or more times
At school?				
Getting hired or getting a job?				
At work?				
Getting housing?				
Getting medical care?				
Getting service at a store or restaurant?				
Getting credit, bank loans, or a mortgage?				
On the street or in a public setting?				
From the police or in the courts?				

- Schedule of Sexist Events (SSE)
  - SSE is a measure of lifetime and recent (past-year) sexist discrimination. The measure assesses the frequency with which a woman has experienced sexist events of various styles in a diversity of settings. SSE is a 20-item self-report measure that has been validated for measuring sexist degradation, sexism in distant relationships, sexism in close relationships, and sexism in the workplace.[15]

Please think carefully about your life as you answer the questions below. For each question, read the question and answer it twice: answer once for what your ENTIRE LIFE (from when you were a child to now), and then once for what the PAST YEAR has been like. Choose the number that best describes events in YOUR ENTIRE LIFE and in the PAST YEAR, using these rules:

Questions 1-19:

1 = If the event NEVER happened to you
2 = If the event happened ONCE IN A WHILE (less than 10% of the time)
3 = If the event happened SOMETIMES (10-25% of the time)
4 = If the event happened ALOT (26-49% of the time)
5 = If the event happened MOST OF THE TIME (50-70% of the time)
6 = If the event happened ALMOST ALL OF THE TIME (more than 70% of the time)

Question 20:

1= Same as now
2= Little different
3= Different in many ways
4= Different in a lot of ways
5= Different in most ways
6= Totally different Schedule of Sexist Events (SSE)

	How many times in your entire life?	How many times in the past years?
1. How many times have you been treated unfairly by teachers or professors because you are a woman?		
2. How many times have you been treated unfairly by your employer, boss, or supervisors because you are a woman?		
3. How many times have you been treated unfairly by your co-workers, fellow students or colleagues because you are a woman?		
4. How many times have you been treated unfairly by people in service jobs (by store clerks, waiters, bartenders, waitresses, bank tellers, mechanics, and others) because you are a woman?		
5. How many times have you been treated unfairly by strangers because you are a woman?		
6. How many times have you been treated unfairly by people in helping jobs (by doctors, nurses, psychiatrists, case workers, dentists, school counselors, therapists, pediatricians, school principals, gynecologists, and others) because you are a woman?		
7. How many times have you been treated unfairly by neighbors because you are a woman?		
8. How many times have you been treated unfairly by your boyfriend, husband, or other important man in your life because you are a woman?		

	How many times in your entire life?	How many times in the past years?
9. How many times were you denied a raise, a promotion, tenure, a good assignment, a job, or other such thing at work that you deserved because you are a woman?		
10. How many times have you been treated unfairly by your family because you are a woman?		
11. How many times have people made inappropriate or unwanted sexual advances to you because you are a woman?		
12. How many times have people failed to show you the respect you deserve because you are a woman?		
13. How many times have you wanted to tell someone off for being sexist?		
14. How many times have you been really angry about something sexist that was done to you?		
15. How many times were you forced to take drastic steps (such as filing a grievance, filing a lawsuit, quitting your job, moving away, and other actions) to deal with some sexist thing that was done to you?		
16. How many times have you been called a sexist name like bitch, cunt, chick, or other names?		
17. How many times have you gotten into an argument or a fight about something sexist that was said or done to you or done to somebody else?		
18. How many times have you been made fun of, picked on, pushed, shoved, hit, or threatened with harm because you are a woman?		
19. How many times have you heard people making sexist jokes or degrading sexual jokes?		
20. How different would your life have been now if you HAD NOT BEEN treated in a sexist and unfair way?		

Additional Measurement Considerations

The EDS has become the subject of further study, because some researchers claim the scale should be coded or weighted to account for various groups having different cultural conceptions and reactions to discrimination or to more accurately reflect the impact of chronic discrimination.[12] Michaels et al. investigate a novel, chronicity-based coding and a more conventional, frequency-based coding and describe how different scoring methods affect exposure classification and assessment of the relationship between EDS and hypertension among African American women.[16]

Gender Discrimination References

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Indicator Profile | Gender Income Gap

The gender income gap is the difference between the median wages or salaries of men and women.

Why Is This Indicator Relevant?

The movement for equal pay dates back to the 1860s. Although the Equal Pay Act was signed into law in 1963, the gender income gap, or the difference between the median wages or salaries of men and women, still persists.[1] In 2020, among full-time and part-time workers in the United States, women earned 84% of what men earned.[1] Factors driving the gap include human capital or productivity factors such as education, skills, and workforce experience (e.g., unequal access to education); occupational segregation (e.g., overrepresentation of men in the finance sector); gender-specific temporal flexibility constraints, which can affect promotions and remuneration (e.g., caregiving responsibilities among women may limit work); gender discrimination in hiring, promotion, task assignment, and/or compensation (e.g., exclusion from hiring due to gender); and undervaluing the work of women due to conscious or unconscious gender biases (e.g., women receiving less compensation than men despite the same level of productivity and the same quality of results).[2,3]

Compared with men, women are more likely to be in low-paid, nonunionized sectors of the economy, to have interrupted careers, or to work part-time, which contributes to the gender income gap and may affect access to health care.[4,A] In the United States, health care is predominantly accessed through employer-sponsored health insurance plans, which are typically limited to full-time and high-wage workers. The gender income gap has been linked to gender-based disparities in depression and anxiety disorders.[5] Moreover, aggregated measures of income equality demonstrate a relationship with health outcomes such as mortality, self-rated health, and risk of coronary heart diseases and with the strongest effects observed between county or state levels of income inequality and individual health.[6,7]

Several studies suggest that substantial disparities in CVD prevalence exist between the highest-income group and the remainder of the population.[8,9] County-level measures of median income and income inequality are also associated with county-level CVD mortality rates and individual-level risk.[10,11] Income may affect CVD risk through several pathways, including via its impact on environmental, occupational, and neighborhood exposures affecting psychosocial, metabolic, and behavioral risk factors for CVD.[6,9,12,13] The stress or anxiety related to income inequality may result in heightened blood pressures or could contribute to the adoption of unhealthy coping behaviors (e.g., smoking, unhealthy eating, alcohol consumption), which can affect cardiovascular and other chronic diseases.[7,15,16,17] Additionally, income inequality is linked to poor access to care, and the working poor are less likely to utilize preventive services for CVD.[18]

A. This does not hold true when data are examined by race/ethnicity. Patterns in employment type, unemployment, and earnings vary by race/ethnicity. Compared with White women, a higher proportion of Black/African American men are considered working poor. Black/African American men have the highest unemployment rates and the lowest earnings out of all race/gender groups. For more information, refer to the Racial Income Gap indicator in the Racism Indicator Profile.

Measures

The following measure assesses gender income gap. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Median Household Income by Gender

Measure 1: Median Household Income by Gender

Definition

Ratio of median household income by gender

Data Availability

Individual, census tract, county, metropolitan area, national

Subgroups

Gender

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Summary Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS are "period" estimates that represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users can create median income estimates by various characteristics (e.g., gender, race/ethnicity, age) by downloading the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. In order to understand the gender income gap, users can search "Income" at the link below and create a ratio of median income by gender by dividing the median income of one gender by another gender (i.e., the median income of women/median income of men). Data on the median income in the past 12 months are available for 2010–2020, in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- Current Population Survey (CPS)
  - The CPS, sponsored jointly by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (BLS), is the primary source of labor force statistics for the population of the United States. The CPS measures hourly and weekly earnings of wage and salary workers. The data provided are before taxes and other deductions and include overtime pay, commissions, or tips received. Earnings data are available by demographic characteristics such as age, sex, and race/ethnicity. Users can access this measure under "Earning" and download data in multiple formats, including PDF and Excel. Data are available for 1979–2022.
  - Link: https://www.bls.gov/cps/earnings.htm

Example Survey Instrument

The following survey questions are available for assessing gender income gap:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks questions about the funds a person receives from various sources to create statistics about income, assistance, earnings, and poverty status. To view the ACS survey questions on income and sex, visit the U.S. Census Bureau's websites below. In order to understand the gender income gap, users have to calculate total income in past 12 months for respondents by gender and calculate the ratio of income by gender by dividing the income of one gender by another gender (e.g., the total income of women/total income of men).
  - Links:
    - https://www.census.gov/acs/www/about/why-we-ask-each-question/income/
    - https://www.census.gov/acs/www/about/why-we-ask-each-question/sex/

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Indicator Profile | LGBTQIA+ Discrimination

Lesbian, gay, bisexual, transgender, queer, intersex, asexual, and other sexual orientation and gender identity populations (LGBTQIA+) are more likely to experience discrimination, or unfair treatment, due to their sexual orientation.

Why Is This Indicator Relevant?

Lesbian, gay, bisexual, transgender, queer, intersex, asexual, and other sexual orientation and gender identity populations (LGBTQIA+) are more likely to experience discrimination.[1] LGBTQIA+ people have experienced a long history of discrimination across multiple domains, including in health care, employment, housing, policing, the judicial system, and other social institutions. LGBTQIA+ discrimination also includes criminalization of sexual orientations, designation as mental illness, hate crimes and harassment, as well as exclusion from workplaces, schools, services, and public spaces.

An extensive body of research shows that exposure to LGBTQIA+ discrimination harms mental and physical health and may result in depression, anxiety, suicidality, post-traumatic stress disorder (PTSD), substance use, psychological distress, elevated stress hormone levels, CVD, and poor self-reported health.[2,3] The Institute of Medicine (IOM) issued a landmark report in 2011 that identified several risk factors for poor health outcomes among LGBTQIA+, including inadequate training of health care providers, discrimination, harassment, poverty, and less or lack of health insurance coverage.[4] Recognizing the health inequities among this population, the National Institutes of Health (NIH) established the Sexual & Gender Minority Research Office in 2015 and designated LGBTQIA+ people as a health disparity population in 2016.[5] Additionally, the U.S. Department of Health and Human Services (HHS) Healthy People initiative added improving the safety, health, and well-being of lesbian, gay, bisexual, and transgender (LGBT) individuals as a new objective for Healthy People 2020.[6]

Evidence suggests that LGBTQIA+ adults experience inequities across several cardiovascular risk indicators compared with their cisgender and heterosexual counterparts. These inequities are driven by disproportionately greater exposure to psychosocial stressors across the life span.[1] A systematic review of CVD in sexual minorities found that sexual minorities are at elevated risk for CVD due to increased tobacco use, alcohol consumption, illicit drug use, poor mental health, and elevated body mass index.[3]

Measures

The following measure assesses LGBTQIA+ discrimination. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: LGBTQIA+ Discrimination

Measure 1: LGBTQIA+ Discrimination

Definition

Unfair treatment due to sexual orientation and/or gender identity

Data Availability

Individual, census tract, county, metropolitan area, national

Data Source(s)

Example Survey Instrument

The following survey measures are available to measure LGBTQIA+ discrimination:

- The Everyday Discrimination Scale (EDS)
  - The EDS is a general measure of unfair treatment. Possible attributions for unfair treatment include race, gender, and sexual orientation, among other reasons. The full and short versions of the original scale can be found in the Williams et al. paper.[7] The short version of the EDS was developed for the Chicago Community Health Study.[8] We recommend adding a response option of "About once a month" to capture experiences ranging between "A few times a month" and "A few times a year." The modified short version below includes these response options and specifically asks about unfair treatment due to sexual orientation and gender identity.
  - Link: https://scholar.harvard.edu/davidrwilliams/node/32397

In your day-to-day life, how often have any of the following things happened to you because of your sexual orientation and/or gender identity?

	7 Almost every day	6 At least once a week	5 A few times a month	4 About once a month	3 A few times a year	2 Less than once a year	1 Never
You are treated with less courtesy or respect than other people							
You receive poorer service than other people at restaurants or stores							
People act as if they think you are not smart							
People act as if they are afraid of you							
You are threatened or harassed							

- Experiences of Discrimination Measure (EOD)
  - The EOD measure has been used to study the stress of experiencing discrimination and how the experience of discrimination may contribute to trauma. This measure was originally developed to assess the frequency of how often a person has experienced discrimination because of their race/ethnicity.[9] The original measure uses a two-step approach: Participants reporting having experienced discrimination on a particular item (with responses choices of no or yes) were then asked how often this occurred (response choices of once, two or three times, and four or more times). The modified version below combines these response options and adapts the measure for LGBTQIA+ discrimination.

Have you ever experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your sexual orientation and/or gender identity?

	1 No	2 Yes, once	3 Yes, two or three times	4 Yes, four or more times
At school?				
Getting hired or getting a job?				
At work?				
Getting housing?				
Getting medical care?				
Getting service at a store or restaurant?				
Getting credit, bank loans, or a mortgage?				
On the street or in a public setting?				
From the police or in the courts?				

Daily Heterosexist Experiences Questionnaire (DHEQ)

- DHEQ is a 50-item self-report measure designed to assess day-to-day minority stress experienced by diverse LGBTQIA+ populations.[10] DHEQ captures nine dimensions of the unique aspects of minority stress including harassment and discrimination, gender expression, parenting, victimization, family of origin, vicarious trauma, isolation, and HIV/AIDS. The instrument and scoring details are available from the Research on Intersectional Sexual and Gender Identity Experiences (RISE LAB) at Palo Alto University.
  - Link: https://www.paloaltou.edu/sites/default/files/The%20Daily%20Heterosexist%20Experiences%20Questionnaire%20%28DHEQ%29.pdf

Additional Measurement Considerations

The EDS has become the subject of further study, because some researchers claim the scale should be coded or weighted to account for various groups having different cultural conceptions and reactions to discrimination, or to more accurately reflect the impact of chronic discrimination.[7] Michaels et al. investigate a novel, chronicity-based coding and a more conventional, frequency-based coding and describe how different scoring methods affect exposure classification and assessment of the relationship between EDS and hypertension among African American women.[11]

LGBTQIA+ Discrimination References

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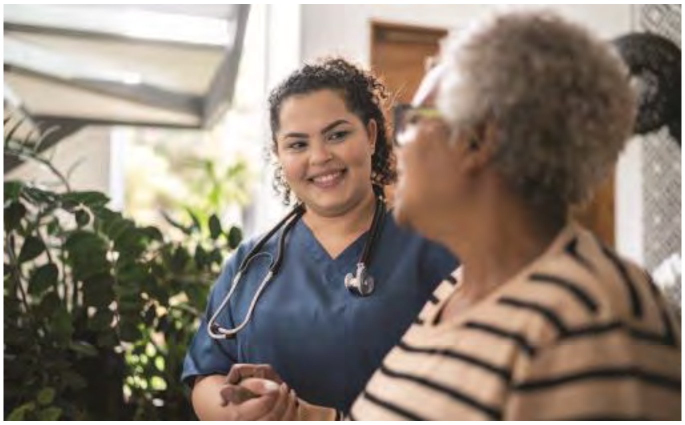
Health Equity Indicator Profiles | Health Care Access



Access to health care—both preventive care and treatment—is crucial for cardiovascular health. Research shows that by improving health care access, population-level cardiovascular disease (CVD) risk may be reduced. For example, having health insurance is associated with earlier CVD detection and reduced risk of major cardiac events.[1] However, access to and use of health care services varies across population subgroups. Black/African American persons, Hispanic/Latino persons, American Indian/Alaska Native persons, people with lower incomes, and people who live in under-resourced neighborhoods are less likely to have access to quality health care.

Several factors influence health care access. In some communities, there is a shortage of primary care physicians, nurses, community health workers (CHWs), pharmacists, paramedics, and/or physical/occupational therapists; in others, health care clinics, pharmacies, and hospitals are inaccessible due to their location. Health care affordability also affects one's ability to access health care. Although the Affordable Care Act expanded insurance coverage to millions of Americans who have heart disease or risk factors for heart disease, nearly one-quarter of low-income Americans with CVD or cardiovascular risk factors remain uninsured. Similarly, approximately 13% of Black/African American adults, and 29% of Hispanic/Latino adults with CVD or CVD risk factors are uninsured.[2] Even where health care is accessible, widespread differences in the quality of care provided can lead to differential health outcomes. Moreover, factors such as health literacy—which is notably lower within non-White communities, older adults, and individuals with less education—affects patients' ability to make recommended healthy lifestyle changes and adhere to prescribed medication.[3]

Indicators

This document provides guidance for measuring ***five indicators related to health care access*** that influence inequities in access to and use of health care services, leading to differential risks for developing CVD or complications from CVD. The five health care access indicators are measured at different levels of analysis, including block group, census tract, ZIP code, county, congressional district, metro division, metro area, and state.

Health Care Affordability

Health care affordability refers to the cost of health care services, health insurance premiums, deductibles, co-pays or co-insurance, and patients' ability to pay for these. Visit the Health Care Affordability indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Avoided Care Due to Cost
- Measure 2: High Medical Cost Burden
- Measure 3: Insurance Status and Coverage

Health Care Availability

Health care availability is typically defined as the geographic proximity of providers and facilities in relation to an individual and reflects the capacity of medical service markets to adequately meet the needs of the local population. Visit the Health Care Availability indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Nurse Practitioner Ratio
- Measure 2: Number of Safety-Net Providers
- Measure 3: Primary Care Physician Ratio
- Measure 4: Pharmacy Ratio
- Measure 5: Pharmacist Ratio

Medically Underserved Areas

Medically Underserved Areas/Populations (MUA/Ps) are physician shortage designations. MUA/Ps are designated by the Health Resources and Services Administration as having too few primary care providers, high infant mortality, high poverty, or a high older adult population. Visit the Medically Underserved Areas indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Medically Underserved Areas

Health Care Effectiveness and Quality

Patients with access to a regular primary care physician receive more effective and higher quality health care. Visit the Health Care Effectiveness and Quality indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Dedicated Health Care Provider
- Measure 2: Preventable Hospitalizations

Health Literacy

Health literacy is the degree to which individuals can find, understand, and use information and services to inform health-related decisions and actions for themselves and others. Visit the Health Literacy indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Adult Health Literacy

Health Care Access References

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Indicator Profile | Health Care Affordability

Health care affordability refers to the cost of health care services, health insurance premiums, deductibles, co-pays or co-insurance, and patients' ability to pay for these.

Why Is This Indicator Relevant?

Health care affordability refers to the cost of health care services, health insurance premiums, deductibles, co-pays or co-insurance, and patients' ability to pay for these.[1] According to the 2018 National Center for Health Statistics National Health Interview Study, 14.2% of individuals in the U.S. lived in families that experienced problems paying medical bills in the past 12 months[2] and more than 45% of adults between the ages of 18 to 64 with CVD reported financial hardship due to medical bills.[3]

Health insurance coverage (public or private) may increase patients' ability to afford health care costs; however, even among those with health insurance, many people with CVD experience financial hardship due to the high costs of insurance deductible, copay, and coinsurance.[3]

The American Heart Association (AHA) reports that an estimated 7.3 million Americans with CVD are uninsured.[4] In 2018, among people younger than 65, those who were uninsured were more likely than those who had Medicaid or private coverage to be in families experiencing problems paying medical bills.[2] People who are uninsured also face challenges accessing preventive care, which is critical for early identification of cardiovascular risk factors.[5,6]

Similarly, lack of insurance is associated with inadequate and untimely medical treatment access, resulting in greater risk of poor cardiovascular health outcomes.[4,5] Concerns with health care affordability result in patients avoiding or delaying seeking care. In a study of adults ages 50–64 years, 13.2% of respondents reported they did not get medical care in the past year; 11.9% avoided filling a prescription due to cost.[7]

Measures

The following measures assess health care affordability. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Avoided Care Due to Cost
- Measure 2: High Medical Cost Burden
- Measure 3: Insurance Status and Coverage

Measure 1: Avoided Care Due to Cost

Definition

Portion of adults who report needing to see a doctor but could not because of cost

- Note: The literature uses "delayed care" and "avoided care" interchangeably

Data Availability

State

Subgroups

Age, gender, race/ethnicity, education level, income, marital status, renter or owner status, urban/nonurban

Data Source(s)

Existing Data Source(s)

- America's Health Rankings (AHR)
  - The United Health Foundation's AHR evaluates a comprehensive set of health, environmental, and socioeconomic data. The AHR website provides state-level analyses of CDC Behavioral Risk Factor Surveillance System (BRFSS) data on the percentage of adults who reported a time in the past 12 months when they needed to see a doctor but could not because of cost. Users can access this measure under Clinical Care > Access to Care – Annual > Avoided Care due to Cost. National and state-level estimates are provided by age, educational attainment, gender, income, and race/ethnicity for the most recent data. Current editions (2015–2021) can be explored online or downloaded in various formats including Excel, CSV, and ZIP. Past editions (1990–2014) are also available for download.
  - Link: https://www.americashealthrankings.org/explore/annual/measure/costburden/state/ALL
- Kaiser Family Foundation
  - The Kaiser Family Foundation website provides state-level data on the proportion of adults who report not seeing a doctor in the past 12 months due to cost of care. Data for this measure are available annually for 2013–2020 and are sourced from the BRFSS. Data are available by race/ethnicity; however, some states do not have sufficient data for certain racial/ethnic groups. Data can be downloaded as a CSV file.
  - Link: https://www.kff.org/other/state-indicator/percent-of-adults-reporting-not-seeing-a-doctor-in-the-past-12-months-because-of-cost-by-raceethnicity/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Example Survey Instrument

The following survey is available for assessing avoided care due to cost:

- Healthcare Access & Utilization Survey
  - The Healthcare Access & Utilization Survey was developed for the National Institutes of Health's *All of Us* Research Program, which is a national effort to build one of the most diverse health databases. This survey asks questions about a participant's access to and use of health care and includes several questions related to health care costs. Questions on avoidance of care due to cost are provided below. The entire instrument is available from NIH's *All of Us* Research Program.
  - Link: https://www.researchallofus.org/wp-content/themes/research-hub-wordpress-theme/media/2019/02/Health_Care_Access.pdf

There are many reasons people delay getting medical care. Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS?

	Yes	No	Don't Know
Couldn't afford the copay.			
Your deductible was too high/or could not afford the deductible.			
You had to pay out of pocket for some or all of the procedure.			

DURING THE PAST 12 MONTHS, was there any time when you needed any of the following, but didn't get it because you couldn't afford it?

	Yes	No	Don't Know
Prescription medicines			
Mental health care or counseling			
Emergency care			
Dental care (including checkups)			
Eyeglasses			
To see a regular doctor or general health provider (in primary care, general practice, internal medicine, family medicine)			
To see a specialist			
Follow-up care			

DURING THE PAST 12 MONTHS, were any of the following true for you?

	Yes	No	Don't Know
You skipped medication doses to save money			
You took less medicine to save money			
You delayed filling a prescription to save money			
You asked your doctor for a lower cost medication to save money			
You bought prescription drugs from another country to save money			
You used alternative therapies to save money			

	Very worried	Somewhat at worried	Not at all worried	Don't Know
If you get sick or have an accident, how worried are you that you will be able to pay your medical bills?				

Measure 2: High Medical Cost Burden

Definition

Individuals in families where out-of-pocket spending on health care, including premiums, accounted for more than 10% of annual income.

Data Availability

City, county, core-based statistical area (CBSA), state, census division, region

Subgroups

Age, gender, income, race/ethnicity, education, health insurance coverage type

Data Source(s)

Existing Data Source(s)

- U.S. Census Bureau Current Population Survey (CPS) Annual Social and Economic Supplement (ASES)
  - The CPS-ASEC files provide household-level data on family medical out-of-pocket expenditures and total family income. Annual data for 1998–2021 are available by age, gender, race/ethnicity, education attainment, insurance coverage type, and income level. The household survey data contain geographic identifiers and can be analyzed by city, county, CBSA, state, census division, and region. Because of the small sample size for each year, users typically combine 3 years of data (e.g., 2019–2021) to produce reliable estimates for population subgroups (e.g., by race/ethnicity). Using the CPS-ASES individual-level files requires some expertise in working with survey data and statistical analysis.
  - Link: https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.2021.html
- State Health Compare
  - A State Health Access Data Assistance Center (SHADAC) project at the University of Minnesota, the State Health Compare website provides state-level estimates of the percentage of people with high medical cost burden, defined as the proportion of individuals in families where out-of-pocket spending on health care accounts for more than 10 percent of annual income. Annual data are available for 2017–2020 and can be analyzed by race/ethnicity, income, and employer coverage. Users can view data in map and tabular form and can download results, including margins of error, as a CSV file.
  - Link: http://statehealthcompare.shadac.org/map/222/percent-of-people-with-a-high-medical-cost-burden-by-total-2017-to-2020#a/27/254

Measure 3: Insurance Status and Coverage

Definition

Portion of relevant population who are uninsured or underinsured

Data Availability

Block group, census tract, ZIP code, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Age, race/ethnicity, income, employment, education, federal poverty level

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses Census Bureau's Small Area Health Insurance Estimates (SAHIE) program data to provide county-level estimates of the percentage of the population younger than 65 without health insurance. Demographic data on race/ethnicity, age, gender, and rural/urban are collected and categorized by using the U.S. Census Bureau definitions. Users can access this measure under Ranked Measures > Clinical Care > Access to Care > Uninsured. Data are downloadable as an Excel workbook; depending on the state, years of data availability will vary.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/clinical-care/access-to-care/uninsured
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of the population younger than 65 who have health insurance. Health Insurance Coverage indicator data are available for all 50 states and Washington, D.C., via the web interface. In addition, data for 2018–2020 are available by race/ethnicity for all states and Washington, D.C. Data files are downloadable as Excel workbooks from the Resources section of the website.
  - Link: https://www.hopeinitiative.org/indicator/health-insurance-coverage
- National Healthcare Quality and Disparities Report (NHQDR)
  - The NHQDR presents trends for measures related to access to care, affordable care, care coordination, effective treatment, healthy living, patient safety, and person-centered care. The report presents, in chart form, the latest available findings on quality of and access to health care, as well as disparities related to race/ethnicity, income, and other social determinants of health. The report is produced annually, since 2003, with reports available for download for 2010–2021. The NHQDR’s Data Query is an interactive tool for accessing national and state benchmarks. Users can view individual state-specific benchmark results by selecting the state, subject area (e.g., health insurance), and topic (e.g., uninsured). In some cases, data are limited based on availability of specific measures by state. Other measures related to insurance status and coverage include, but are not limited to, proportion of individuals under age 65 with or without health insurance and reported coverage by any type of public or private health insurance.
  - Link: https://nhqrnet.ahrq.gov/inhqrdr/data/submit

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap's data on health insurance coverage is based on the U.S. Census Bureau's Decennial Census and American Community Survey (ACS). County-level data are available on the proportion of people who are uninsured (or insured) by race/ethnicity, age group, income level, and employment status using the single-layer maps. However, suppression of results due to insufficient data are an issue for some counties and smaller geographic levels for numerically smaller racial/ethnic groups. Users can access this measure under Health > Costs and Insurance > Health Insurance Coverage. Data are available for the years 2011–2015 and 2016–2020 and are available at the census tract, ZIP code, county subdivision, county, congressional district, metro division, metro area, and state levels. Users wanting to download the data for further analyses need to pay for a standard subscription.
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey questions are available for assessing insurance status:

- American Community Survey (ACS)
  - U.S. Census Bureau's ACS asks questions about health insurance coverage to create statistics about the percentage of people covered by health insurance and the sources of health insurance. To view the ACS survey questions on health insurance coverage, visit the U.S. Census Bureau's website below. Users can use the question on current health insurance or health coverage plans.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/health/

Health Care Affordability References

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Indicator Profile | Health Care Availability

Health care availability is typically defined as the geographic proximity of providers and facilities in relation to an individual and reflects the capacity of medical service markets to adequately meet the needs of the local population.

Why Is This Indicator Relevant?

Health care availability is typically defined as the geographic proximity of providers and facilities in relation to an individual and reflects the capacity of medical service markets to adequately meet the needs of the local population.[1,2] Limited availability of health care resources, including the number of primary care physicians, nurse practitioners, and pharmacists per capita, presents a barrier that may reduce access to health services and increase the risk of poor health outcomes.[3]

In the United States, nearly 84,000,000 people live in Primary Care Health Professional Shortage Areas.[4] Primary care serves as the usual and ongoing source of care that is associated with enhanced access to other health care services, including preventive services such as blood pressure screenings; better health outcomes; and a decrease in hospitalization and emergency department visits. Primary care can also help counteract the negative effect of poor economic conditions on health.[5]

Safety net providers focus on providing care to uninsured, poor, Medicaid, or other vulnerable patients. Safety net providers typically rely on Medicaid, Medicare, or charitable funding and typically offer essential health services and enabling or "wraparound" services (e.g., language interpretation, transportation, childcare, nutrition and social support services) specifically targeted to the needs of the vulnerable populations.[6,7] The availability of safety net providers is linked to improved access of care among uninsured persons.[8] One critical component of the health care safety net are Federally Qualified Health Centers (FQHCs). FQHC service availability is positively associated with access to care for the uninsured and having a usual source of care for those with Medicaid.[9] Having access to care and a usual source of care may facilitate CVD screening and increase opportunities for patients to receive preventive care and information about CVD risk behaviors from a health care provider.[10]

Measures

The following measures assess health care availability. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Nurse Practitioner Ratio
- Measure 2: Number of Safety-Net Providers
- Measure 3: Primary Care Physician Ratio
- Measure 4: Pharmacy Ratio
- Measure 5: Pharmacist Ratio

Measure 1: Nurse Practitioner Ratio

Definition

The nurse practitioner ratio can be defined as the number of advanced practice registered nurses (APRNs) per 1,000 population or the number of APRNs per 100,000 people. An APRN is a registered nurse with education beyond the basic nursing education and certified by a nationally recognized professional organization in a nursing specialty or meeting other criteria established by a board of nursing. APRN includes advanced practice midwives, certified registered nurse anesthetists, clinical nurse specialists, and nurse practitioners.

Data Availability

City, county, state

Subgroups

Income, race/ethnicity

Data Source(s)

Existing Data Source(s)

- Area Health Resources Files (AHRF)
  - The AHRF contains county- and state-level data on demographics, rural/urban categorization, health professional and facility supply, utilization, expenditures, and the local environment. State and county FIPS (Federal Information Processing Standard) codes are provided, allowing the data to be merged with external datasets. Data for the "Nurse Workforce Survey Data" are available for download for 1977-2018 through various formats (e.g., ASCII, SAS, SPSS, STATA). Users can use an interactive dashboard and filter "Health Profession" by "Nurse," as well as filter by "Health Profession Subgroup" for the years 2018–2019, 2019–2020, and 2020–2021. Data on the dashboard can be analyzed by poverty status and race/ethnicity. The estimates by subgroup represents the number of APRNs per 100,000 subgroup population. For example, the APRN availability by poverty is defined as the number of APRN per 100,000 persons living in poverty.
  - Link: https://data.hrsa.gov/topics/health-workforce/ahrf
- National Provider Identifier (NPI)
  - The NPI is a Health Insurance Portability and Accountability Act (HIPAA) Administrative Simplification Standard. The NPI is a unique identification number for covered health care providers. Covered health care providers and all health plans and health care clearinghouses must use the NPI in the administrative and financial transactions adopted under HIPAA. The NPI is a 10-position, intelligence-free numeric identifier (i.e., a 10-digit number). This means the numbers do not carry other information about health care providers, such as the state in which they live or their medical specialty. The NPI must be used in lieu of legacy provider identifiers in the HIPAA standards transactions. Users can search the registry by city, county, or state level to view the number and type of health care providers in the given area, including FQHCs. The type of health care provider is provided in the Primary Taxonomy column of the search results. Data are available for download via CSV format.
  - Link: https://npiregistry.cms.hhs.gov/

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed by using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses Health Resources and Services Administration (HRSA) data to provide the rate of advanced practice nurse practitioners per 1,000 people. Users can access this measure under Health > Access to Medical Care > Health Professionals > Advanced Practice Nurses > Nurse Practitioners. Data is available for the years 2010–2016.
  - Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

- This indicator may require skills in pulling secondary data, setting up a database, and conducting descriptive statistical analysis and reporting.
- To measure the magnitude of disparities in health care availability, users should calculate metrics for specific subgroups. This facilitates setting tailored targets, measuring baseline disparities, and tracking trends by population groups that matter for advancing health equity. Demographic categories to consider for data disaggregation are race/ethnicity as defined by the Office of Management and Budget (OMB), gender, socioeconomic status, sexual orientation, immigration status, ability status, and geography.
- One method to consider for setting equity targets is the HOPE Initiative’s approach. This method consists of averaging the proportion of the top five geographic units within a jurisdiction for the highest-performing socioeconomic groups. This method helps set targets based on actual population performance using socioeconomic status, which is strongly associated with health outcomes. One limitation to this approach is the assumption that the highest-performing groups are in favorable health. More details on this methodological approach are provided in the Benchmark Development section.
  - Link: https://hopeinitiative.s3.amazonaws.com/uploads/5f74bfbfdbdb27001e41986b-HOPE%20Methods_Technical%20Documentation_FINAL.pdf

Measure 2: Number of Safety Net Providers or Critical Access Hospitals

Definition

Safety net providers are “those providers that organize and deliver a significant level of health care and other related services to uninsured, Medicaid, and other vulnerable patients.”[7] Safety net providers include some hospitals (e.g., public, children’s, teaching, and community hospitals serving low-income individuals), community health centers, Federally Qualified Health Centers (FQHCs),[A] migrant health centers, health services programs for the homeless or public housing residents, school-based clinics, and some home health agencies.[6]

Data Availability

County, state

Data Source(s)

Existing Data Source(s)

- Area Health Resources Files (AHRF)
  - The AHRF contains county- and state-level data on demographics, rural/urban categorization, health professional and facility supply, utilization, expenditures, and the local environment. State and county FIPS (Federal Information Processing Standard) codes are provided, allowing the data to be merged with external datasets. The AHRF contains information on the number of FQHCs within a county linked to states. Users can consolidate these data with county-level population data, also provided in the AHRF, to calculate the number of FQHCs by population. Users can search reports on health care facilities and providers for the following: the Centers for Medicare & Medicaid Services Health Center Facilities Report, Federally Qualified Health Centers and Look-Alikes, Hill-Burton Facilities Obligated to Provide Free or Reduced-Cost Health Care, and the Ryan White HIV/AIDS Recipients and Sub-Recipients Report. Data have been maintained annually starting with the 1970s; however, data availability varies by measure. Data are available for download as CSV or other formats.
  - Link: https://data.hrsa.gov/data/reports/datagrid?gridName=FQHCs
- Health Center Program Uniform Data System (UDS) Data Overview
  - HRSA Health Center Program awardees and look-alikes are required by the HRSA Health Center program to report on patient characteristics, services provided, clinical processes and health outcomes, patients' use of services, staffing, costs, and revenues through the UDS. The UDS Data Overview tool allows users to access patient characteristic and performance data for FQHCs and look-alikes by state and by program type (i.e., program awardee or look-alike). Users can find data tables by selecting the program type ("Select Health Center Program Type") and state ("Select State/Territory"). Data are available for the most recent 5 years and can be downloaded in Excel format via a ZIP file.
  - Link: https://data.hrsa.gov/tools/data-reporting/program-data
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses HRSA data to provide the number of Federally Qualified Health Centers (FQHCs). Users can access this data under Health > Access to Medical Care > Facilities > Federally Qualified Health Centers. Users can access the number of FQHCs for 2005–2017 at the county and state levels. Users can also view a map layer that indicates the location of every FQHC and look-alike in the United States under Health > Facility Locations > Community Health Centers and Look-Alikes. Each FQHC location includes data on patient demographics, patient insurance and income, and patient health conditions
  - Link: https://www.policymap.com/newmaps#/

- Flex Monitoring Team (FMT) Critical Access Hospital Locations List
  - The FMT is a consortium of researchers from the Universities of Minnesota, North Carolina at Chapel Hill, and Southern Maine that examines data and conducts research on Critical Access Hospitals (CAHs)[B] to assess quality, financial, and community measures at the national, state, and hospital level. FMT maintains a national listing of CAHs by name, city, ZIP code, state using data from the Centers for Medicare & Medicaid Services (CMS). The Critical Access Hospital Locations List is updated regularly and includes historical data from 2004.
  - Link: https://www.flexmonitoring.org/critical-access-hospital-locations-list
- American Hospital Association Annual Survey Database
  - The American Hospital Association conducts an annual survey of hospitals which collects data on facility location, facility characteristics, services, utilization, staffing, finances, insurance, and alternative payment models from more than 6,200 hospitals and 400 health care systems. The American Hospital Association survey is often used to identify safety net hospitals in a geographic area of interest. Users can define geographic area using the facility location data (e.g., city, state) and hospital safety net status can be determined by facility characteristics (e.g., teaching status, nonprofit status, public ownership), Medicaid caseload (e.g., percentage of inpatient discharges that are Medicaid), revenue by payer (e.g., receipt of Medicaid disproportionate share hospital payments), and uncompensated care (e.g., bad debt, charity care). The survey instrument and survey data are available annually from the American Hospital Association's website; however, users must request access and pay for access.
  - Links: https://www.ahadata.com/https://www.ahadata.com/system/files/media/file/2022/05/2020-AHA-Annual.pdf
- Hospital Provider Cost Report
  - Medicare-certified hospitals are required to submit an annual cost report to the Medicare program. CMS maintains cost report data through the Healthcare Cost Report Information System (HCRIS). The Hospital Provider Cost Report includes hospital-level data on facility location, facility characteristics, utilization data, cost and charges, and financial statement data. Cost report data are often used to identify safety net hospitals in a geographic area of interest. Users can define geographic area using the facility location data (e.g., street address, ZIP code, city, state, core-based statistical area [CBSA]) and hospital safety net status can be determined based on facility characteristics (e.g., teaching status, nonprofit status, public ownership), Medicaid caseload (e.g., percentage of inpatient discharges that are Medicaid), Medicaid disproportionate share hospital payment (DSH) status (i.e., DSH index[C]), and uncompensated care (e.g., proportions of uninsured patients, self-pay patients, or charity care). HCRIS is updated annually. User guidance and datasets are available for years 2011–2019 and can be downloaded as a CSV file.
  - Link: https://data.cms.gov/provider-compliance/cost-report

Additional Measurement Considerations

- This indicator may require skills in pulling secondary data, setting up a database, and conducting descriptive statistical analysis and reporting.
- To measure the magnitude of disparities in health care availability, users should calculate metrics for specific subgroups. This facilitates setting tailored targets, measuring baseline disparities, and tracking trends by population groups that matter for advancing health equity. Demographic categories to consider for data disaggregation are race/ethnicity as defined by the Office of Management and Budget (OMB), gender, socioeconomic status, sexual orientation, immigration status, ability status, and geography.
- One method to consider for setting equity targets is the HOPE Initiative's approach. This method consists of averaging the proportion of the top five geographic units within a jurisdiction for the highest-performing socioeconomic groups. This method helps set targets based on actual population performance using socioeconomic status, which is strongly associated with health outcomes. One limitation to this approach is the assumption that the highest-performing groups are in favorable health. More details on this methodological approach are provided in the Benchmark Development section.
  - Link: https://hopeinitiative.s3.amazonaws.com/uploads/5f74bfbfdbdb27001e41986b-HOPE%20Methods_Technical%20Documentation_FINAL.pdf
- As a piloted indicator in DHDSP's Health Equity Indicator Pilot, sites found that county-level data were most useful to provide multiple data points for analysis. A large sample size and a broader set of counties are needed to enhance the utility of this indicator.
- Identifying the number of safety net hospitals can be difficult due to the absence of a standard definition.[7,11,12,13] Safety net hospitals are generally recognized as hospitals that provide essential care to patients regardless of ability to pay, insurance status, or immigration status. These hospitals usually serve a substantial share of uninsured, Medicaid, and other vulnerable patients.[7,11] Common ways to identify safety net providers include payer mix (e.g., Medicaid, uninsured, private insurance), hospital characteristics (e.g., teaching status, public ownership, nonprofit status), patient case mix (e.g., socioeconomic status, health status), Medicaid disproportionate share hospital payment (DSH) status, Medicaid caseload (e.g., percentage of inpatient discharges that are Medicaid), and/or the level of uncompensated care.[11,12]
- Health care availability metrics should be interpreted alongside health care needs. It is important to consider the level of need in a community, because some areas with high rates of disease may have high health care availability due to high need for health services.

A. An FQHC is a community health center that qualifies for enhanced reimbursement, beyond standard Medicare and Medicaid, from the HRSA Health Center Program, due to its focus on health disparities and work to empower people who live in areas that are medically underserved with high-quality patient care.

B. CAHs are located in rural areas more than 35 miles from another hospital (or more than 15 miles in areas with mountainous terrain or that have only secondary roads available, or they have been certified as a "necessary provider" by their state prior to January 1, 2006), provide 24-hour emergency services, have a maximum of 25 inpatient beds, and maintain an annual average length of stay of 96 hours or less for their acute care patients.

C. The DSH index is a function of a hospital's total inpatient days from patients on Supplemental Security Income (SSI) with Medicare and the total inpatient days from non-Medicare patients on Medicaid.

Measure 3: Primary Care Physician Ratio

Definition

The primary care physician ratio can be defined as the number of primary care physicians per 1,000 population, the number of primary care physicians per 100,000 population, or the number of residents per primary care physician.

Data Availability

County, state

Subgroups

Income, race/ethnicity

Data Source(s)

Existing Data Source(s)

- Area Health Resources Files (AHRF)
  - The AHRF contains county- and state-level data on demographics, rural/urban categorization, health professional and facility supply, utilization, expenditures, and the local environment. State and county FIPS (Federal Information Processing Standard) codes are provided, allowing the data to be merged with external datasets. Users wanting to analyze primary care physician availability can download AHRF directly from the HRSA website. Data have been maintained annually since the 1970s; however, data availability varies by measure. Data are available for download via CSV file or other formats. Users can use an interactive dashboard and filter the health profession by "M.D." and the health profession subgroup by "Primary Care" for 2018–2019, 2019–2020, and 2020–2021. Dashboard data can be analyzed by poverty status and race/ethnicity. The estimates by subgroup represents the number of primary care physicians per 100,000 subgroup population. For example, the availability of primary care physicians by the number of Black/African American persons is defined as the number of primary care physicians per 100,000 Black/African American residents.
  - Link: https://data.hrsa.gov/topics/health-workforce/ahrf
- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses Area Health Resource File data to provide county-level estimates of the ratio of population to primary care physicians. Users can access this measure under Ranked Measures > Health Factors > Clinical Care > Access to Care > Primary Care Physicians. Data are downloadable as an Excel workbook; depending on the state, years of data availability will vary.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/clinical-care/access-to-care/primary-care-physicians

- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of people living in counties with a population-to-primary care physician ratio of less than 2,000:1 through its Access to Primary Care indicator. Data are available by race/ethnicity for all 50 states and Washington, D.C., via the web interface. In addition, data on all states are available by race/ethnicity, and socioeconomic status for 2018–2020 via a downloadable Excel workbook from the Resources section of the website.
  - Link: https://www.hopeinitiative.org/indicator/access-to-primary-care
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses HRSA data to provide the number of primary care physicians per 1,000 people at the state and county levels for all states. Users can access this measure under Health > Access to Medical Care > Health Professionals > Doctors. Data for this measure is available for 2010–2016.
  - Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

- This indicator may require skills in pulling secondary data, setting up a database, and conducting descriptive statistical analysis and reporting.
- To measure the magnitude of disparities in health care availability, users should calculate metrics for specific subgroups. This facilitates setting tailored targets, measuring baseline disparities, and tracking trends by population groups that matter for advancing health equity. Demographic categories to consider for data disaggregation are race/ethnicity as defined by the Office of Management and Budget (OMB), gender, socioeconomic status, sexual orientation, immigration status, ability status, and geography.
- One method to consider for setting equity targets is the HOPE Initiative’s approach. This method consists of averaging the proportion of the top five geographic units within a jurisdiction for the highest-performing socioeconomic groups. This method helps set targets based on actual population performance using socioeconomic status, which is strongly associated with health outcomes. One limitation to this approach is the assumption that the highest-performing groups are in favorable health. More details on this methodological approach are provided in the Benchmark Development section.
  - Link: https://hopeinitiative.s3.amazonaws.com/uploads/5f74bfbfdbdb27001e41986b-HOPE%20Methods_Technical%20Documentation_FINAL.pdf
- As a piloted indicator in DHDSP’s Health Equity Indicator Pilot, sites found that county-level data were most useful to provide multiple data points for analysis. A large sample size and a broader set of counties are needed to enhance the utility of this indicator.
- Health care availability metrics should be interpreted alongside health care needs. It is important to consider the level of need in a community, because some areas with high rates of disease may have high health care availability due to high need for health services.

Measure 4: Pharmacy Ratio

Definition

The pharmacy ratio is the number of pharmacies per 100,000 population

Data Availability

County, metro area

Data Source(s)

Existing Data Source(s)

- PolicyMap
    - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses County Business Patterns data to provide the number of pharmacies per 100,000 people at the county and metro levels. Users can access this measure under Health > Access to Medical Care > Pharmacies. Data are available for the years 2003–2019.
    - Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

- This indicator may require skills in pulling secondary data, setting up a database, and conducting descriptive statistical analysis and reporting.
- To measure the magnitude of disparities in health care availability, users should calculate metrics for specific subgroups. This facilitates setting tailored targets, measuring baseline disparities, and tracking trends by population groups that matter for advancing health equity. Demographic categories to consider for data disaggregation are race/ethnicity as defined by the Office of Management and Budget (OMB), gender, socioeconomic status, sexual orientation, immigration status, ability status, and geography.
- One method to consider for setting equity targets is the HOPE Initiative's approach. This method consists of averaging the proportion of the top five geographic units within a jurisdiction for the highest-performing socioeconomic groups. This method helps set targets based on actual population performance using socioeconomic status, which is strongly associated with health outcomes. One limitation to this approach is the assumption that the highest-performing groups are in favorable health. More details on this methodological approach are provided in the Benchmark Development section.
    - Link: https://hopeinitiative.s3.amazonaws.com/uploads/5f74bfbfdbdb27001e41986b-HOPE%20Methods_Technical%20Documentation_FINAL.pdf
- As a piloted indicator in DHDSP's Health Equity Indicator Pilot, sites found that county-level data were most useful to provide multiple data points for analysis. A large sample size and a broader set of counties are needed to enhance the utility of this indicator.

- Health care availability metrics should be interpreted alongside health care needs. It is important to consider the level of need in a community, because some areas with high rates of disease may have high health care availability due to high need for health services.

Measure 5: Pharmacist Ratio

Definition

The pharmacist ratio is the number of pharmacists per 100,000 population

Data Availability

State

Data Source(s)

Existing Data Source(s)

- Area Health Resources Files (AHRF)
  - The AHRF contains county- and state-level data on demographics, rural/urban categorization, health professional and facility supply, utilization, expenditures, and the local environment. State and county FIPS (Federal Information Processing Standard) codes are provided, allowing the data to be merged with external datasets. Users wanting to analyze pharmacist availability at the state-level can download AHRF directly from the HRSA website. Data are available for download via CSV file or other formats. Users can use an interactive dashboard and filter the “Health Profession” by “Pharmacist” for 2018-2019, 2019-2020, and 2020-2021.
  - Link: https://data.hrsa.gov/topics/health-workforce/ahrf

Additional Measurement Considerations

- This indicator may require skills in pulling secondary data, setting up a database, and conducting descriptive statistical analysis and reporting.
- To measure the magnitude of disparities in health care availability, users should calculate metrics for specific subgroups. This facilitates setting tailored targets, measuring baseline disparities, and tracking trends by population groups that matter for advancing health equity. Demographic categories to consider for data disaggregation are race/ethnicity as defined by the Office of Management and Budget (OMB), gender, socioeconomic status, sexual orientation, immigration status, ability status, and geography.
- One method to consider for setting equity targets is the HOPE Initiative’s approach. This method consists of averaging the proportion of the top five geographic units within a jurisdiction for the highest-performing socioeconomic groups. This method helps set targets based on actual population performance using socioeconomic status, which is strongly associated with health outcomes. One limitation to this approach is the assumption that the highest-performing groups are in favorable health. More details on this methodological approach are provided in the Benchmark Development section.
  - Link: https://hopeinitiative.s3.amazonaws.com/uploads/5f74bfbfdbdb27001e41986b-HOPE%20Methods_Technical%20Documentation_FINAL.pdf

- As a piloted indicator in DHDSP's Health Equity Indicator Pilot, sites found that county-level data were most useful to provide multiple data points for analysis. A large sample size and a broader set of counties are needed to enhance the utility of this indicator.
- Health care availability metrics should be interpreted alongside health care needs. It is important to consider the level of need in a community, because some areas with high rates of disease may have high health care availability due to high need for health services.

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Indicator Profile | Medically Underserved Areas (MUAs)

Medically Underserved Areas/Populations (MUA/Ps) are physician shortage designations. MUA/Ps are designated by the Health Resources and Services Administration as having too few primary care providers, high infant mortality, high poverty, or a high older adult population.

Why Is This Indicator Relevant?

Medically Underserved Areas/Populations (MUA/Ps) are physician shortage designations that are sister programs to the Health Professional Shortage Area (HPSA), which provide similar benefits to communities in need.[1] MUA/Ps are designated by HRSA as having too few primary care providers, high infant mortality, high poverty, or a high older adult population.[2] Individuals living in medically underserved areas often face economic, cultural, or linguistic barriers to health services and preventive care,[3] which is associated with earlier identification of cardiovascular risk factors,[4,5] and inadequate and untimely access to medical treatment, resulting in greater risk of poor cardiovascular health outcomes.[4,6]

If a population group does not meet the criteria for an MUA/P, but exceptional conditions exist as barriers to health services, they can be designated with a recommendation from the state's governor. A list of Governor-Designated Secretary-Certified Shortage Areas for MUA/Ps for each state is available on the HRSA site.[7]

Measures

The following measure assesses MUA/Ps. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Medically Underserved Areas

Measure 1: Medically Underserved Areas (MUA)

Definition

MUAs are areas where a specific population group is underserved, including groups with economic, cultural, or linguistic barriers to primary medical care.

Data Availability

Census tract

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses HRSA data to provide a census tract-level map of Medically Underserved Areas. The current census tract-level map reflects 2022 MUAs. Users can access this measure under Health > Access to Medical Care > Medically Underserved Areas.
  - Link: https://www.policymap.com/newmaps#/

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Indicator Profile | Health Care Effectiveness and Quality

Patients with access to a regular primary care physician receive more effective and higher quality health care.

Why Is This Indicator Relevant?

Whether an individual has a primary care physician influences key aspects of the quality of care that individual receives (care coordination, person-centered care). According to an article in the *Annals of Internal Medicine,* data obtained from patients over the past 15 years show that most Americans have a primary care physician. Although having a primary care provider does not guarantee quality of care, it does support achieving improved health outcomes.[1,2]

The 2021 National Healthcare Quality and Disparities Report found that Black/African American, Hispanic/Latino, and American Indian/Alaska Native communities experience significant disparities in all domains of health care quality compared with White persons.[3] People of color tend to receive lower-quality health care than White persons, even when insurance status, income, age, and severity of conditions are comparable. For example, Black/African American and Hispanic/Latino patients are less likely to be given appropriate cardiac medications, diagnostic tests, and treatments.[4] Lack of health insurance, poor routine health care access, low socioeconomic status, and language barriers contribute to racial/ethnic disparities in screening and treatment.[5,6] Statin prescribing and statin use for atherosclerotic cardiovascular disease (ASCVD) prevention varies by race. A study that analyzed data from 2013-2020 National Health and Nutrition Examination Survey found that and was much lower in Black/African American (20%) and Hispanic/Latino participants (15.4%) than White participants (27.9%).[6]

Patients with access to a regular primary care physician receive more effective and higher-quality health care. They also report lower overall health care costs, improved health outcomes, fewer hospitalizations, less duplication in treatment, and lower prevalence of health care disparities.[7] A study in a California hospital asked patients about their access to care, chronic medical conditions, and propensity to seek health care. The study found that communities with perceived poor access to medical care had higher prevalence of hospitalizations for chronic disease and noted that "improving access to care is more likely than patients' propensity to seek health care or eliminating variation in physician practice style to reduce hospitalizations for chronic conditions."[8]

Measures

The following measure assess health care effectiveness and quality. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Dedicated Health Care Provider
- Measure 2: Preventable Hospitalizations

Measure 1: Dedicated Health Care Provider

Definition

Percentage of adults who report having a personal doctor or health care provider

Data Availability

State

Subgroups

Age, educational attainment, gender, income, race/ethnicity, urban/nonurban

Data Source(s)

Existing Data Source(s)

- America's Health Rankings (AHR)
  - The United Health Foundation's AHR evaluates a comprehensive set of health, environmental, and socioeconomic data. The AHR website provides state-level analyses of CDC Behavioral Risk Factor Surveillance System (BRFSS) data on the percentage of adults who reported having a personal doctor or health care provider. Users can access this measure under Dedicated Health Care Provider. National and state-level estimates are provided by age, educational attainment, gender, income, and race/ethnicity for the most recent data. Current editions (2015–2021) can be explored online or downloaded in various formats, including Excel, CSV, and ZIP. Past editions (1990–2014) are also available for download.
  - Link: https://www.americashealthrankings.org/explore/annual/measure/dedicated_health_care_provider/state/ALL
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of adults age 25 years and older who report having someone they consider their personal health care provider, using 3-year merged BRFSS data. Three years of data were used for these analyses to ensure reliable estimates. Data are available by race/ethnicity for all 50 states and Washington, D.C., via the web interface. In addition, data on all states are available by race/ethnicity, educational attainment, and income relative to the federal poverty line for 2018–2020 via a downloadable Excel workbook from the Resources section of the website.
  - Link: https://www.hopeinitiative.org/indicator/dedicated-health-care-provider
- Kaiser Family Foundation
  - The Kaiser Family Foundation website provides state-level data by race/ethnicity on the proportion of adults who report not having a personal doctor or health care provider. Data for this measure are available annually for 2013–2020. Data are downloadable as a CSV file.
  - Link: https://www.kff.org/other/state-indicator/percent-of-adults-reporting-not-having-a-personal-doctor-by-raceethnicity/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

- National Healthcare Quality and Disparities Report (NHQDR)
  - The NHQDR presents trends for measures related to access to care, affordable care, care coordination, effective treatment, healthy living, patient safety, and person-centered care. The report presents, in chart form, the latest available findings on quality of and access to health care, as well as disparities related to race/ethnicity, income, and other social determinants of health. The report has been produced annually since 2003, with reports available for download for 2010–2021. Users can view individual state-specific benchmark achievement on the percentage of people with specific ongoing care sources by selecting the state, subject area (e.g., access to care), and topic (e.g., structural access). In some cases, data are limited based on availability of specific measures by state.
  - Link: https://nhqrnet.ahrq.gov/inhqrdr/data/query

Measure 2: Preventable Hospitalizations

Definition

Preventable hospitalizations are hospital admissions for conditions that might not have required hospitalization had they been managed successfully by primary care providers in outpatient settings. Because many cases of inpatient hospitalizations are more costly than outpatient or primary care and can be prevented by quality primary care, preventable hospitalizations are measures of health care quality and efficiency.

Data Availability

County, state

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmap (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses the Centers for Medicare & Medicaid Services (CMS) Office of Minority Health (OMH) Mapping Medicare Disparities (MMD) Tool to provide county-level estimates of hospital stay rates for ambulatory-sensitive conditions per 1,000 Medicare enrollees. Data are available by age, gender, and race/ethnicity. Users can access this measure under Ranked Measures > Clinical Care > Quality of Care > Preventable Hospital Stays. Data are downloadable as an Excel workbook; depending on the state, years of data availability will vary.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/clinical-care/quality-of-care/preventable-hospital-stays
- Mapping Medicare Disparities Tool
  - The CMS OMH developed the MMD Tool. The Agency for Healthcare Research and Quality developed the Prevention Quality Indicators (PQIs) measure within the MMD Tool. The PQIs estimate the rate of preventable hospitalizations. There are 14 PQIs, 11 of which are condition-

specific (e.g., heart failure, hypertension, diabetes) and three of which are composite measures (i.e., overall, acute conditions, and chronic conditions). Case rates per 100,000 population for all 14 PQIs are available via the tool's Population View; users can disaggregate by age, gender, race/ethnicity, and dual eligibility. Case rates are suppressed for small populations, which are most relevant at the county level. Data are downloadable in CSV format and are available for single-year (2012–2020) or multiple-year ranges (e.g., 2012–2018, 2012–2019, 2012–2020).

- Link: https://data.cms.gov/mapping-medicare-disparities

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Indicator Profile | Health Literacy

Health literacy is the degree to which individuals can find, understand, and use information and services to inform health-related decisions and actions for themselves and others.

Why Is This Indicator Relevant?

Personal health literacy is the degree to which individuals can find, understand, and use information and services to inform health-related decisions and actions for themselves and others.[1]

The 2003 National Assessment of Adult Literacy survey determined that 36% of U.S. adults had basic or below-basic health literacy. Limited health literacy is more prevalent among non-White racial/ethnic groups, older adults, and individuals with less education.[2]

Adults experiencing low health literacy have less knowledge about their medical conditions and are less likely to use preventive health services. People with low health literacy also experience greater difficulties in performing disease self-management, are more likely to seek care in emergency departments and be admitted to the hospital, and experience higher mortality.[3]

Health literacy affects individuals' ability to prevent and manage CVD, including understanding guideline-based blood pressure recommendations and recognizing the signs and symptoms of stroke.[4]

Measures

The following measure assesses health literacy. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Adult Health Literacy

Measure 1: Adult Health Literacy

Definition

The ability to use literacy skills to read and understand health-related information

Data Availability

Individual

Data Source(s)

Example Survey Instruments

The following surveys are available to measure adult health literacy:

- The Health Literacy Questionnaire (HLQ)
  - The HLQ is a widely used scale for measuring health literacy; it has been tested and validated in more than 12 countries.[5,6] The HLQ covers nine conceptually distinct areas of health literacy to assess the needs and challenges of a wide range of people and organizations. Users must request access to the HLQ.
  - Link: https://healthliteracy.bu.edu/hlq
- Test of Functional Health Literacy in Adults (TOFHLA)
  - The TOFHLA measures both reading comprehension and numeracy. It is designed to assess adult literacy in the health care setting.[7] It was developed using actual hospital-related materials, such as prescription bottle labels and appointment slips. Both long and short versions are available. The short version of the TOFHLA (S-TOFHLA) reduced the long form from 17 numeracy items and three prose passages to four numeracy items and two prose passages and reduced the survey administration time from 22 minutes to 12.[4,8] Users can request access to the S-TOFHLA.
  - Link: https://healthliteracy.bu.edu/s-tofhla
- Newest Vital Sign (NVS)
  - The NVS is a valid and reliable screening tool designed to assess a patient's health literacy skills quickly and simply within 3 minutes.[9] The survey instrument is an ice cream nutrition label that is accompanied by six questions. Users can access NVS survey in English or Spanish and scoring instructions from the Pfizer website.
  - Link: https://www.pfizer.com/products/medicine-safety/health-literacy/nvs-toolkit

Health Literacy References

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Health Equity Indicator Profiles | Neighborhood Characteristics

Neighborhood characteristics affect cardiovascular disease (CVD) outcomes. Depending on where an individual lives, their health may be adversely affected by features of the socioeconomic (e.g., income), service (e.g., access to public transit), physical (e.g., presence of parks), and social (e.g., safety) environment of neighborhoods. Indicators of neighborhood characteristics are social determinants of health and are highly correlated. For example, neighborhoods with high levels of poverty have a higher concentration of fast-food outlets and liquor stores, poor access to safe places to play and exercise, lack of employment opportunities, and limited availability of quality housing.[1]

Indicators

This document provides guidance for measuring ***15 indicators related to neighborhood characteristics*** that are associated with certain CVD risk and protective factors, leading to differential risks for developing CVD. The 15 neighborhood characteristics indicators are measured at different levels of analysis, including the census block group, census tract, city, county, metropolitan area, and state levels.

Air and Water Quality

Air pollution is a heterogenous and complex mix of compounds in the air at levels that pose a health risk. Safe drinking water is essential for hydration, cooking, and sanitation and is a source of minerals that are essential for human health and development. Visit the Air and Water Quality indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Air Particulate Matter
- Measure 2: Community Water Fluoridation
- Measure 3: Proximity to Traffic
- Measure 4: Traffic Volume

Civic Participation

Civic participation, synonymous with civic engagement, refers to working to make a difference in the civic life of one's community with the help of one's knowledge, skills, values, and motivation. Visit the Civic Participation indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Social Associations
- Measure 2: Volunteerism
- Measure 3: Voter Registration
- Measure 4: Voter Turnout

Community Food Environment

Community food environment, or physical access to food at the neighborhood level, is often recognized as a potential point of intervention for public health. Access to healthy food is commonly determined by a community's average income level and proportion of the population living close to a supermarket, supercenter, or large grocery store. Visit the Community Food Environment indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Food Deserts
- Measure 2: Food Swamps
- Measure 3: Food Environment Index
- Measure 4: Perceived Access to Healthy Food

Community Safety

Actual and perceived violence in neighborhoods is a barrier to healthy behaviors, such as walking and bicycling, using parks and recreational spaces, and accessing healthy food retailers. Visit the Community Safety indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Homicide Rates
- Measure 2: Perceived Neighborhood Safety
- Measure 3: Robbery Rates
- Measure 4: Sexual Assault Rates

Green Space

Research shows that access to green space, defined as all vegetated land (e.g., lawns, forest, gardens), is associated with well-being and promotes physical activity and mental health in a community or neighborhood. Visit the Green Space indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Green Space

Housing

Housing is defined as physical dwellings intended to be used for living, sleeping, cooking, and eating and is a key pathway through which health inequities arise and persist over time. Housing issues span multiple dimensions, including affordability (cost burden), quality, residential stability (stability of household occupancy), neighborhood safety, and opportunity. Visit the Housing indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Housing Cost Burden
- Measure 2: Housing Problems (Severe)
- Measure 3: Household Turnover
- Measure 4: Vacancy

Incarceration

Incarceration, or confinement in jail or prison, can have lasting impacts on mental well-being and is a severe stressor for people who are or have been incarcerated, their families, and their communities. Visit the Incarceration indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Felony Disenfranchisement
- Measure 2: Jail Incarceration
- Measure 3: Juveniles in Corrections
- Measure 4: Prison Incarceration
- Measure 5: Racial Disparities in Incarceration

Liquor Store Density

Restricting the density of liquor stores, or the number of places where alcohol can be sold or consumed either per area or per population, can curb excessive alcohol consumption and prevent alcohol-related morbidity and mortality. Visit the Liquor Store Density indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Alcohol Outlets per 100,000 People

Physical Activity Environment

Physical activity environment refers to aspects of the built environment, such as the availability of pedestrian-friendly infrastructure (e.g., sidewalks, streetlights), walking and biking paths, and proximity to parks and open space that positively affect the frequency and intensity of participation in physical activity. Visit the Physical Activity Environment indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Access to Opportunities for Physical Activity
- Measure 2: Park Access
- Measure 3: Walkability

Poverty

Poverty is often defined as the lack of resources necessary to meet basic human needs. Visit the Poverty indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Concentrated Persistent Poverty
- Measure 2: Poverty Rate

Public Assistance

Public assistance refers to assistance programs that provide either cash assistance or in-kind benefits to individuals and families from any governmental entity. Visit the Public Assistance indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Earned Income Tax Credit
- Measure 2: Food Stamps/ Supplemental Nutrition Assistance Program
- Measure 3: Medicaid
- Measure 4: Public Assistance Income
- Measure 5: Supplemental Security Income

Social Cohesion

Social cohesion refers to the extent of connectedness and the sense of solidarity among members of a community. Visit the Social Cohesion indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Neighborhood Social Cohesion

Social Environment

Neighborhood social environment refers to the physical, material, social, and socioeconomic conditions in a given community. Visit the Social Environment indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Social Vulnerability Index

Transit and Transportation

Transportation refers to street design and connectivity, pedestrian infrastructure, bicycle infrastructure, and public transit infrastructure and access. Visit the Transit and Transportation indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Average Travel Time to Work
- Measure 2: Car Access
- Measure 3: Mode of Transportation to Work
- Measure 4: Transit Service Density

Rurality

Rurality refers to areas with low population density or areas with a geographically diffuse population. Visit the Rurality indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Frontier and Remote Area Codes
- Measure 2: Rural-Urban Continuum Codes
- Measure 3: Urban Influence Codes

Neighborhood Characteristics References

1. Center on Social Health Disparities, Build Healthy Places Network, and Robert Wood Johnson Foundation. How Do Neighborhood Conditions Shape Health? Updated April 11, 2019. Accessed June 3, 2022. https://www.buildhealthyplaces.org/content/uploads/2015/09/How-Do-Neighborhood-Conditions-Shape-Health.pdf

Indicator Profile | Air and Water Quality

Air pollution is a heterogenous and complex mix of compounds in the air at levels that pose a health risk. Safe drinking water is essential for hydration, cooking, and sanitation and is a source of minerals that are essential for human health and development.

Why Is This Indicator Relevant?

Air pollution is a heterogenous and complex mix of compounds in the air at levels that pose a health risk.[1,2] The most commonly monitored air pollutants are particulate matter (PM), ozone, and nitrogen dioxide (NO_2). In the United States, air pollution disproportionately affects lower–socioeconomic status communities and people of color, since these communities are more likely to be located next to highways and high-volume roadways due to land use and planning policies and practices that differentially disadvantages communities based on race or class.[3,4] Living in areas with high traffic volume increases exposure to harmful air pollutants due to vehicle emissions. Hispanic/Latino communities are more likely to have higher mortality due to exposure to air pollution.[5]

Exposure to fine particulate matter also contributes to higher cardiovascular disease risk.[1,2,6,7] The American Heart Association states that the likely pathways include an activation of oxidative stress/inflammation and autonomic imbalance and the transfer of particulate matter into systemic circulation, which, in turn, leads to subclinical cardiovascular disease (e.g., atherosclerosis progression) and thrombotic and non-thrombotic acute cardiovascular events (e.g., stroke).[1,2]

Safe drinking water is essential for hydration, cooking, and sanitation and is a source of minerals that are essential for human health and development. Community water fluoridation, a practice that involves adjusting the amount of mineral fluoride in public water supply to a level recommended for preventing tooth decay, is recognized by CDC as one of the 10 major public health achievements of the 20th century.[8] Fluoride impedes the demineralization and enhances remineralization of enamel, which confers protection against oral diseases, a risk factor for CVD.[9] Poor oral health and periodontal diseases are hypothesized to increase CVD risk through bacteremia (bacteria enters bloodstream and travels to the heart), immune activation, and inflammation.[10,11]

Measures

The following measures assess air and water quality. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Air Particulate Matter
- Measure 2: Community Water Fluoridation
- Measure 3: Proximity to Traffic
- Measure 4: Traffic Volume

Measure 1: Air Particulate Matter

Definition

Average daily concentration of fine particulate matter in micrograms per cubic meter (PM2.5).[12]

Data Availability

County, state, national

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and to support leaders in growing community power to improve health equity. CHR&R uses data from CDC's National Environmental Public Health Tracking Network (NEPHTN) to provide county-level estimates of the average daily concentration of fine particulate matter in micrograms per cubic meter. Users can view the estimates for the county, for the state, and for top U.S. performers, which are the top 10% of highest-performing (i.e., low average daily concentrations of $PM_{2.5}$) counties in the country for the given measure. Users can access this measure under Ranked Measures > Health Factors > Physical Environment > Environmental Quality > Air Pollution—Particulate Matter. Data can be downloaded as an Excel workbook; years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/physical-environment/air-water-quality/air-pollution-particulate-matter
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides 2012 county-level data from CDC's Wide-ranging ONline Data for Epidemiologic Research (WONDER) to estimate differences in exposure to fine particulate matter by racial/ethnic groups at the national and state levels. At the state level, this measure is calculated as the proportion of the state's population who live in counties with average daily fine particulate matter below 12 micrograms per cubic meter (the National Ambient Air Quality Standard). This measure was not updated for the online version of the HOPE website but is available via a PDF report, *The Hope Initiative Data Chartbook,* July 2018.
  - Link: https://hopeinitiative.s3.amazonaws.com/uploads/5f32b005c827b0001e6e4e99-HOPE Data Chartbook.pdf
- National Environmental Public Health Tracking Network (NEPHTN)
  - The NEPHTN, also referred to as the Tracking Network, provides data and information on environments and hazards, health effects, and population health. The Tracking Network brings together data from national, state, and city sources to provide county-level estimates of the annual average concentration of fine particulate matter in micrograms per cubic meter. Data are gathered from health departments in 25 states and one city through CDC funding to build and implement local tracking programs and data networks. Users can view the estimates for the

county under Air Quality > Historical Air Quality > $PM_{2.5}$: Annual Average Concentration. Data for this measure are available for download as a CSV file for the years 1999–2020.

  - Link: https://ephtracking.cdc.gov/DataExplorer/

Additional Measurement Considerations

- Measuring the density of fine particulate matter in the air is one of the more well-established indicators of air pollution; however, it is a highly variable metric that can be difficult to compare over time. Data sources and methods for this measure have varied over time and rely on complex modeling techniques prohibiting making inferences for geographic units smaller than county level. Each state has Air Pollution Control Districts supported by the Environmental Protection Agency (EPA), which may be able to provide further guidance on local air quality measurement considerations.
- The Air Pollution indicator in the Neighborhood Characteristics Indicator Profile addresses outdoor air pollution. The measures provided in this document assess outdoor air pollution through measurements of air particulate matter, traffic volume, and traffic proximity and do not include measurements of indoor air pollution. You may also consider conducting assessments of indoor air pollution (e.g., secondhand smoke, lead, mold).

Measure 2: Community Water Fluoridation

Definition

Drinking water with sufficient level of fluoride for preventing tooth decay

Data Availability

Water district, state

Data Source(s)

Existing Data Source(s)

- CDC Fluoridation Statistics
  - The CDC Fluoridation Statistics webpage tracks the fluoridation status of US community water systems and provides detailed biennial reports at the state and national level. Users can view the number and percentage of the population served by community water systems and receiving fluoridated water. Data are available every 2 years for 2000–2018.
  - Link: https://www.cdc.gov/fluoridation/statistics/reference_stats.htm
- CDC My Water's Fluoride
  - The CDC My Water's Fluoride webpage allows users to learn about the fluoride level in their drinking water. Users can search for their municipal water district to learn whether or not their community drinking water is fluoridated. Users can also download state-level Fluoridation Reports, which list all community drinking water systems, name of county served, size of population served, fluoridation status, and level of fluoride concentration for each state. The Fluoridation Reports can be downloaded as an Excel workbook, and data are available only for the current year.
  - Link: https://nccd.cdc.gov/DOH_MWF/Default/Default.aspx

Measure 3: Proximity to Traffic

Definition

Proportion of people who live within 200 meters (approximately 650 feet) of a high-traffic roadway that carries more than 125,000 vehicles per day

Data Availability

Metropolitan statistical areas, state

Data Source(s)

Existing Data Source(s)

- Transportation and Health Tool (THT)
  - The THT was developed by the U.S. Department of Transportation (DoT) and CDC to provide practitioners with data to examine the health impacts of transportation systems. The THT estimates the percentage of people who live within 200 meters of a high-traffic roadway that carries more than 125,000 vehicles per day for all 50 states and 382 metropolitan statistical areas (MSAs). Data are available for 2011 and can be downloaded as an Excel workbook.
  - Link: https://www.transportation.gov/transportation-health-tool/indicators

Additional Measurement Considerations

The Air Pollution indicator in the Neighborhood Characteristics Indicator Profile addresses outdoor air pollution. The measures provided in this document assess outdoor air pollution through measurements of air particulate matter, traffic volume, and traffic proximity and do not include measurements of indoor air pollution. You may also consider conducting assessments of indoor air pollution (e.g., secondhand smoke, lead, mold).

Measure 4: Traffic Volume

Definition

Average traffic volume per meter of major roadways in the county

Data Availability

Block group, county, state

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses the Environmental Justice Screening and Mapping Tool (EJScreen) data to provide county-level estimates of average traffic volume per meter of major roadways. Users can access this measure under Additional Measures > Physical Environment > Housing

  and Transit > Traffic Volume. Data are downloadable as an Excel workbook, and years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/physical-environment/housing-transit/traffic-volume
- EJScreen Traffic Proximity and Volume Index
  - EJScreen is an environmental justice mapping and screening tool from the U.S. Environmental Protection Agency (EPA), which provides a Traffic Proximity and Volume Index that combines information on traffic volume, proportion of the population that are non-White and non-Hispanic, and proportion of the population that are low income at the census block level. Traffic volume is defined as the count of vehicles at major roads within 500 meters, divided by distance in meters. Data are available in downloadable form as a geodatabase or CSV file for 2015–2021. Use of raw data files may require advanced GIS and statistical experience.
  - Link: https://www.epa.gov/ejscreen/download-ejscreen-data

Additional Measurement Considerations

The Air Pollution indicator in the Neighborhood Characteristics Indicator Profile addresses outdoor air pollution. The measures provided in this document assess outdoor air pollution through measurements of air particulate matter, traffic volume, and traffic proximity and do not include measurements of indoor air pollution. You may also consider conducting assessments of indoor air pollution (e.g., secondhand smoke, lead, mold).

Air and Water Quality References

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Indicator Profile | Civic Participation

Civic participation, synonymous with civic engagement, refers to working to make a difference in the civic life of one's community with the help of one's knowledge, skills, values, and motivation.

Why Is This Indicator Relevant?

Civic participation, synonymous with civic engagement, refers to working to make a difference in the civic life of one's community with the help of one's knowledge, skills, values, and motivation.[1] Civic participation includes a wide range of activities, such as participating in social groups, volunteering, and voting.[2] In addition to contributing to improvements in the community through volunteerism and activism, civic participation plays an important role in advancing health and well-being, including cardiovascular health, by reducing social isolation, strengthening social networks, and increasing social cohesion and connectedness.[3]

Engagement in civic groups can make people more aware of opportunities to be physically active in their community thereby facilitating physical activity.[2] Such civic engagement also builds social capital, defined as "features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit."[4] Similarly, through improved social and psychological health, volunteering can also yield physical health benefits, including reduced risk factors for chronic disease.[4,5] Research has found that volunteering was associated with lower odds of lipid dysregulation, lower odds of central adiposity, lower blood pressure, and lower risk of hypertension.[3,5] Studies on aggregated measures of civic participation report that community-level civic participation and social capital (e.g., census block level) are associated with reduced recurrence of acute coronary syndrome.[6]

Civic participation improves social support and social cohesion and connectedness, which influences CVD outcomes through both physiological and psychological stress response as well as health behaviors. In contrast, poor social cohesion and connectedness is associated with poor mental health outcomes, activated hypothalamic–pituitary–adrenal (HPA) axis, and increased inflammatory marker levels, heart rate, blood pressure, and cortisol.[3] Likewise, lack of social support is linked to unhealthy coping responses to stress, such as smoking, excessive alcohol consumption, and low physical activity levels.[3]

Measures

The following measures assess civic participation. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Social Associations
- Measure 2: Volunteerism
- Measure 3: Voter Registration
- Measure 4: Voter Turnout

Measure 1: Social Associations

Definition

Number of membership organizations per 10,000 population

Data Availability

County

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses County Business Patterns data to provide the number of membership associations per 10,000 residents at the county-level. County Business Patterns provides data on the total number of establishments, number of establishments by nine employment-size classes by detailed industry, mid-March employment, and first quarter and annual payroll for all counties in the United States and the District of Columbia. Users can view the estimates at the county and state levels. Users can access this measure under Ranked Measures > Health Factors > Social & Economic Factors > Family and Social Support > Social Associations. Data are downloadable as an Excel workbook, and years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/social-and-economic-factors/family-social-support/social-associations

Measure 2: Volunteerism

Definition

Percentage of adults who reported volunteering in the past 12 months

Data Availability

City, state, national

Data Source(s)

Existing Data Source(s)

- America's Health Rankings (AHR)
  - The United Health Foundation's AHR evaluates a comprehensive set of health, environmental, and socioeconomic data. The AHR website provides state-level analyses of U.S. Census Bureau, Current Population Survey, and Volunteering and Civic Life Supplement data on the percentage of population ages 16 and older who reported volunteering in the past 12 months. Users can access this measure under Social and Economic Factors > Social Support and Engagement >

    Volunteerism. Current editions (2015–2021) can be explored online or downloaded in various formats including Excel, CSV, and ZIP. Past editions (1990–2014) are also available for download.
  - Link: https://www.americashealthrankings.org/explore/annual/measure/volunteerism_a/state/ALL
- Volunteering in America
  - Volunteering in America is a volunteer data report compiled by AmeriCorps. Data include volunteer rates, rankings, and trends by state and by major metropolitan areas. Information on volunteer demographics is available at the national level. Data on states, cities, rankings, and demographics are available in a PDF document. The most recent report available is for 2019.
  - Link: https://americorps.gov/newsroom/news/via

Additional Measurement Considerations

Volunteerism data are collected via a supplemental survey conducted by the U.S. Census Bureau every 2 years. The smaller number of responses to this survey may require pooling data over multiple years to reach adequate statistical power. Margins of error are provided with estimates. Smaller areas have larger margins of error due to smaller sample size.

Measure 3: Voter Registration

Definition

Percentage of U.S. citizens ages 18 and older who report being registered to vote

Data Availability

Individual, state

Subgroups

Age, gender, race/ethnicity

Data Source(s)

Existing Data Source(s)

- Current Population Survey (CPS) Voting and Registration Supplement
  - The U.S. Census Bureau has collected data on the characteristics of American voters for every national election biannually since 1964. Users can learn how many citizens of voting age are registered by age, sex, and race/ethnicity. Data are available by state and can be downloaded as an Excel workbook. A margin of error is noted with the estimates provided.
  - Link: https://www.census.gov/topics/public-sector/voting/data/tables.2018.List_1863097513.html
- National Bureau of Economic Research (NBER)
  - The NBER hosts a collection of public use economic and demographic data including voting and registration data from the CPS Supplements. CPS Supplement Voting and Registration data are available for 1994–2018 and are downloadable in DAT form. The NBER also provides files for reading these DAT files into SAS and Stata (https://data.nber.org/data/cps_progs.html). The individual-level data enable users to disaggregate results by householder race/ethnicity, age,

income, educational attainment, and more but require expertise in statistical analysis and survey weighting.
  - Link: https://www.nber.org/research/data/current-population-survey-cps-supplements-voting-and-registration
- State-Specific Secretary of State Websites
  - Most states have websites that provide county-level voter registration data. From each state's Secretary of State website, users can access data on voter turnout, election day turnout, and voter registration. Data availability by year and subgroup varies by state. Due to the nature of the data, these figures are generally not available by race/ethnicity or other demographic category. However, they do provide insight into civic engagement disparities by county.
- Kaiser Family Foundation
  - The Kaiser Family Foundation website provides state-level data by race/ethnicity of the proportion of the age-eligible voting population who were registered to vote in the 2014–2020 elections. Data can be downloaded as a CSV file. The Kaiser Family Foundation uses data from the U.S. Census Bureau's Current Population Survey.
  - Link: https://www.kff.org/other/state-indicator/voting-and-voter-registration-as-a-share-of-the-voter-population-by-raceethnicity/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Example Survey Instrument

The following survey question is available for assessing voter registration:

- Current Population Survey (CPS) Voting and Registration Supplement
  - The U.S. Census Bureau regularly collects data on voter registration using the CPS Voting and Registration Supplement. To view the CPS Voting and Registration Supplement survey question on voter registration, visit the U.S. Census Bureau's website below and search for "Voter, reported registration."
  - Link: https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html#voting

Measure 4: Voter Turnout

Definition

Percentage of U.S. citizens ages 18 and older who voted in the last midterm (or presidential) election

Data Availability

Individual, state

Subgroups

Age, gender, race/ethnicity

Data Source(s)

Existing Data Source(s)

- America's Health Rankings (AHR)
  - The AHR website provides individual state-level and national data on the proportion of U.S. citizens ages 18 and older who report voting in the last presidential and midterm elections. Estimates are provided by age, gender, and race/ethnicity for the most recent data. Data for 2015–2021 can be explored online or downloaded in CSV format. Data for 1990–2014 are only available for download (CSV format). This measure can be found under Social and Economic Factors > Social Support and Engagement > Voter Participation. AHR uses data from the U.S. Census Bureau's Current Population Survey (CPS) Voting and Registration Supplement.
  - Link: https://www.americashealthrankings.org/
- Current Population Survey Voting and Registration Supplement
  - The U.S. Census Bureau has collected data on the characteristics of American voters for every national election biannually since 1964 in its November Voting and Registration Supplement. State-level data by race/ethnicity, age, and gender are available in Excel format from the U.S. Census Bureau website.
  - Link: https://www.census.gov/topics/public-sector/voting/data/tables.html
- State-Specific Secretary of State Websites
  - Most states have websites that provide county-level voting turnout totals. Users can access data on voter turnout, Election Day turnout, and voter registration per each state's Secretary of State websites. Data availability by year and subgroup varies by state. Due to the nature of the data, these figures are generally not available by race/ethnicity or other demographic data. However, they do provide insights into civic engagement disparities by county.
- Kaiser Family Foundation
  - The Kaiser Family Foundation website provides state-level data by race/ethnicity of the proportion of the age-eligible voting population that was registered to vote in the 2014–2020 elections. Data can be downloaded as a CSV file. The Kaiser Family Foundation uses data from the U.S. Census Bureau's CPS.
  - Link: https://www.kff.org/other/state-indicator/voting-and-voter-registration-as-a-share-of-the-voter-population-by-raceethnicity/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D
- National Bureau of Economic Research (NBER)
  - NBER hosts a collection of public use economic and demographic data including voting and registration data from the Current Population Survey (CPS) Supplements. CPS Supplement Voting and Registration data are available for 1994–2018 and are downloadable in DAT form. NBER also provides files for reading these DAT files into SAS and Stata (https://data.nber.org/data/cps_progs.html). The individual-level data enable users to disaggregate results by householder race/ethnicity, age, income, educational attainment, and more but require expertise in statistical analysis and survey weighting.

  - Link: https://www.nber.org/research/data/current-population-survey-cps-supplements-voting-and-registration
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV). PolicyMap uses United States Elections Project data to provide the estimated percentage of turnout among voting eligible population at the state level. Users can access this measure under Demographics > Elections > Voter Turnout. Data are available for election years between 2000 and 2020.
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey question is available for assessing voter turnout:

- Current Population Survey (CPS) Voting and Registration Supplement
  - The U.S. Census Bureau regularly collects data on voting participation using the CPS Voting and Registration Supplement. To view the CPS Voting and Registration Supplement survey question on voter participation, visit the U.S. Census Bureau's website below and search for "Voter, reported participation."
  - Link: https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html#voting

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Indicator Profile | Community Food Environment

Community food environment, or physical access to food at the neighborhood level, is often recognized as a potential point of intervention for public health.

Why Is This Indicator Relevant?

Community food environment, or physical access to food at the neighborhood level, is often recognized as a potential point of intervention for public health.[1] Access to healthy food is commonly determined by a community's average income level and proportion of the population living close to a supermarket, supercenter, or large grocery store. Other factors affecting food access include affordability and quality of food.[2,3] People with lower incomes, people of color, and people who live in rural communities are more likely to live in neighborhoods with poor food access, which contributes to health inequities. Such communities disproportionately experience poor access to healthy and affordable foods due to historical neighborhood disinvestments resulting from structural racism and classism, including discriminatory practices such as redlining and segregation.

Lack of access to healthy foods is associated with risk of developing CVD.[1,4,5,6] Poor food access is linked to lower consumption of healthier foods, such as fruits and vegetables, and higher consumption of unhealthy foods high in refined sugar and saturated fats, as well as higher BMI and obesity.[5,7,8,9] The influence of food access on dietary intake and dietary quality is associated with biologic and psychological mechanisms of cardiovascular health, such as inflammation, stress response, and immune response.[10]

Measures

The following measures assess community food environment. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Food Deserts
- Measure 2: Food Swamps
- Measure 3: Food Environment Index
- Measure 4: Perceived Access to Health Food

Measure 1: Food Deserts

Definition

Census tracts that are low-income and have limited access to food. Limited food access is defined as having no supermarket within 0.5 miles or 1 mile (urban areas) or 10 or 20-miles (rural areas). Low-income is defined as a poverty rate of 20% or greater, a median family income less than or equal to 80% of the statewide median family income, or a median family income less than or equal to 80% of the metropolitan area's median family income.

Data Availability

Census tract, county, state

Subgroups

Age, race/ethnicity

Data Source(s)

Existing Data Source(s)

- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of households by race/ethnicity and socioeconomic status that do not live in food deserts (as defined by the 1-mile urban and 10-mile rural demarcations). Data are available for 50 states and Washington, D.C., via the web interface for the years 2018–2020. Users can access this data by navigating to the "Food Security" indicator. Data are available via a downloadable Excel workbook from the Resources section of the website.
  - Link: https://www.hopeinitiative.org/indicator/food-security
- Food Access Research Atlas
  - The U.S. Department of Agriculture's (USDA) Economic Research Service (ERS) developed the Food Access Research Atlas (FARA), which presents an overview of food access indicators for low-income and other census tracts using different measures of supermarket accessibility. The current dataset is available for 2019, and archived versions include 2010 and 2015 data. Users can download FARA data as an Excel workbook. In addition, the workbook contains data on the number of residents in each census tract by age and race/ethnicity.
  - Link: https://www.ers.usda.gov/data-products/food-access-research-atlas/

Measure 2: Food Swamps (Retail Food Environment Index)

Definition

Ratio of the number of retail sources of unhealthy food (fast food restaurants and convenience stores) to the number of retail sources of healthy food (grocery stores and supermarkets).[9] The ratio indicates the density of unhealthy food access. For example, a ratio of 5 indicates there are five times more unhealthy food retailers than healthy food retailers in a given area.

Data Availability

County

Data Source(s)

Existing Data Source(s)

- Food Environment Atlas
  - The U.S. Department of Agriculture (USDA) Economic Research Service (ERS) developed the Food Environment Atlas to assemble statistics on food environment factors (determinants of food choices and diet quality such as store/restaurant proximity and food prices) and to provide a spatial overview of a community's ability to access healthy food and its success in doing so. The Food Environment Atlas provides the number of grocery stores, fast food restaurants, and convenience stores at the county level. To measure the presence of food swamps, users can sum the total number of fast food restaurants and convenience stores and divide it by the

    number of grocery stores and supermarkets. Data are available from and can be downloaded as Excel or CSV files.
    - Link: https://www.ers.usda.gov/data-products/food-environment-atlas/data-access-and-documentation-downloads/

Additional Measurement Considerations

The definition of unhealthy food retailers for the food swamps measure is limited to fast food restaurants and convenience stores. The measure does not include other unhealthy food, such as food carts and street vendors. Likewise, the definition of healthy food retailers is limited to grocery stores and supermarkets and does not include other healthy food retailers, such as farmer's markets.

Measure 3: Food Environment Index

Definition

Index of factors that contribute to a healthy food environment, from 0 (worst) to 10 (best)

Data Availability

County

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
    - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses food environment and food insecurity data from the U.S. Department of Agriculture (USDA) Food Environment Atlas and Feeding America's Map the Meal Gap to provide county-level estimates of the Food Environment Index. The CHR&R measure of the food environment accounts for both proximity to healthy foods and income. It defines access to healthy foods by considering the distance that an individual lives from a grocery store or supermarket, locations for health food purchases in most communities, and the inability to access healthy food because of cost barriers. It incorporates two indicators of the food environment that are weighted equally: limited access to healthy foods, which estimates the portion of the population that is low-income and does not live close to a grocery store (low-income is defined as family income equal to or below 200% of the federal poverty line, and proximity to a grocery store uses the 10- and 1-mile demarcations explained above); and food insecurity, defined as the portion of the population that did not have access to a reliable source of food during the past year. The latter measure uses data from the CPS-FSS, the Bureau of Labor Statistics, and the American Community Survey and a two-stage fixed effects model to estimate food insecurity. Users can view the estimates for the county, state, and top U.S. performers, which are the top 10% of highest-performing counties in the country for the given measure. Users can access the Food Environment Index under Additional Measures > Health Behaviors > Diet and Exercise > Food Environment Index. Data can be downloaded as an Excel file(XLSX), and years of data availability vary by state.

  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/health-behaviors/diet-exercise/food-environment-index

Measure 4: Perceived Access to Healthy Food

Definition

An individual's appraisal of the availability of healthy foods in their neighborhood

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is recommended to measure perceived access to healthy food:

- Access to Healthy Food Scale
  - This scale assesses an individual's perception of the availability of healthy food within one mile (or 20 minute walk) of their home. The three item self-report measure was developed for the Multi-Ethnic Study of Atherosclerosis (MESA) Neighborhood Study, which was designed to investigate the impact of neighborhood physical and social environments on CVD risk.[10]
  - For each statement, please indicate whether you agree by choosing the best option. In answering these questions, please think of your neighborhood as the area within about a 20-minute walk (or about a mile) from your home.

	Strongly agree	Agree	Neutral (neither agree nor disagree)	Disagree	Strongly disagree
The fresh fruits and vegetables in my neighborhood are of high quality.					
A large selection of fresh fruits and vegetables is available in my neighborhood					
A large selection of low-fat products is available in my neighborhood.					

Community Food Environment References

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Indicator Profile | Community Safety

Actual and perceived violence in neighborhoods is a barrier to healthy behaviors, such as walking and bicycling, using parks and recreational spaces, and accessing healthy food retailers.

Why Is This Indicator Relevant?

Actual and perceived violence in neighborhoods is a barrier to healthy behaviors, such as walking and bicycling, using parks and recreational spaces, and accessing healthy food retailers. Structural determinants, including racism and sexism, result in differential patterns in exposure to violence.[1,2]

The risk of experiencing violence varies significantly by race/ethnicity. In 2020, among those 15–24 years of age, homicide was the leading cause of death for Black/African American persons, the second leading cause of death for Hispanic/Latino persons, the third leading cause of death for American Indians/Alaskan Native persons and White persons, and the fourth leading cause of death among Asian and Pacific Islander persons.[3]

Some studies have found that perceived crime, violence, and disorder are associated with incident coronary heart disease and stroke.[4,5] These findings may be explained by the relationship between perceived neighborhood crime, personal safety, anxiety, and physical activity.[6,7] Neighborhood violence may result in a chronic heightened state of physiological vigilance, greater levels of stress, and decrease in physical activity. These factors mediate the relationship between neighborhood violence and cardiovascular disease.[2]

Measures

The following measures assess community safety. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Homicide Rates
- Measure 2: Perceived Neighborhood Safety
- Measure 3: Robbery Rates
- Measure 4: Sexual Assault Rates

Measure 1: Homicide Rates

Definition

Number of homicides per 100,000 population

Data Availability

City, county (metropolitan vs. nonmetropolitan), state

Subgroups

Race/ethnicity, income, education

Data Source(s)

Existing Data Source(s)

- Federal Bureau of Investigation (FBI) Crime Data Explorer
  - The FBI publishes an annual *Crime in the United States* report that includes a downloadable report in PDF format. Supporting data are provided through downloadable Excel files. Data estimates on the total number of crimes by category and population are available at the county (categorized as metropolitan and nonmetropolitan), state, and city levels. Users can examine types of crime by race/ethnicity and other sociodemographic characteristics by pulling in subgroup population estimates from an external data source (e.g., the American Community Survey). Data are available for 1996–2019. To access the data, click on the "access a compressed file with the spreadsheets and PDFs…" link on the right of the screen. Next, click on the CIUS2019datatables ZIP file link to download. The provided link is for 2019 data. To access previous years, navigate to "Crime in the U.S." and the very top left of the page and select the year.
  - Link: https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the number and proportion of individuals by race/ethnicity and socioeconomic characteristics who live in counties with low homicide rates. In the latest data edition, counties with fewer than 6.02 murders per 100,000 residents (the 80th percentile) were deemed to have low rates of homicide. Data are available for 50 states and Washington, D.C., via the web interface. In addition, data on all states are available for the years 2018–2020 via a downloadable Excel workbook from the Resources section of the website. This measure can be accessed under the "Community & Safety Factors" domain and the "Low Homicide" indicator.
  - Link: https://www.hopeinitiative.org/indicator/low-homicide
- CDC Web-based Injury Statistics Query and Reporting System (WISQARS)
  - CDC's WISQARS is an interactive, online database that provides fatal and nonfatal injury, violent death, and cost-of-injury data. The Fatal Injury Reports on WISQARS provide estimates on the number of homicide deaths per 100,000 people at state, regional, and national levels for 1981–2020. Data are also available by age, race/ethnicity, and gender. To obtain homicide data from WISQARS, navigate to the provided link and select "Homicide" under the "Intent or manner of injury" drop-down menu. Results can be downloaded as a CSV file.
  - Link: https://wisqars.cdc.gov/fatal-reports

Additional Measurement Considerations

- Many of the provided measures for the Community Safety indicator are derived from administrative data, which are objective reports of crime; they do not measure subjective perceptions of safety or coping mechanisms reported by residents. Aggregate survey data on perceptions of safety and violence, for example, are not widely available. To understand perceived safety, users will have to collect primary data using the Neighborhood Safety Scale from the Multi-Ethnic Study of Atherosclerosis (MESA).

- The crime rate indicator data are provided by the FBI's Uniform Crime Reporting Program; however, participation by local law enforcement agencies is voluntary, and not all agencies participate for any given measurement period. In addition, the crime rate indicators may not capture other factors that contribute to perceptions of safety, such as strong social cohesion, a robust neighborhood watch, and dense community networks.

Measure 2: Perceived Neighborhood Safety

Definition

An individual's appraisal of the safety of their neighborhood

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following surveys are available to measure perceived safety:

- Neighborhood Safety Scale
  - This scale assesses an individual's perception of safety within 1 mile (or a 20-minute walk) of their home. The three item self-report measure was developed for the Multi-Ethnic Study of Atherosclerosis (MESA) Neighborhood Study, which was designed to investigate the impact of neighborhood physical and social environments on CVD risk.[8]

For each statement, please indicate whether you agree by choosing the best option. In answering these questions, please think of your neighborhood as the area within about a 20 minute walk (or about a mile) from your home.

	Strongly agree	Agree	Neutral (neither agree nor disagree)	Disagree	Strongly disagree
I feel safe walking in my neighborhood day or night.					
Violence is not a problem in my neighborhood.					
My neighborhood is safe from crime.					

- Perceptions of Neighborhood Conditions
  - This survey measures perceptions of neighborhood disorder using three scales: crime and safety, physical disorder, and social disorder.[9] Respondents are asked to rate how worried they are about crime and safety and to what extent physical and social disorder are a problem in their neighborhoods, using a 10-point Likert scale. For each scale, a score is estimated as the sum of the items in the scale.

How worried are you about the following things in your neighborhood?

Crime and Safety	1 (Rarely/Not worried) to 10 (Frequently/ Very worried)
Drug dealers or users hanging around	
Having property stolen	
Walking alone during the day	
Letting children go outside during the day	
Letting children go outside during the night	
Being robbed	
Being murdered	

How often these things are a problem or are found in your neighborhood?

Physical Disorder	1 (Rarely) to 10 (Frequently)
Litter or trash on the sidewalks or streets	
Graffiti on buildings and walls	
Abandoned cars	
Vacant, abandoned, or boarded up buildings	
Houses and yards not kept up	

How often these things are a problem or are found in your neighborhood?

Social Disorder	1 (Rarely) to 10 (Frequently)
Drunks hanging around	
Unemployed adults hanging around	
Abandoned cars	
Young adults hanging around	
Gang activity	

- City Stress Inventory (CSI)
  - The CSI assesses neighborhood stress factors associated with cities, including perceived neighborhood disorder and exposure to violence.[10] The CSI is an 18-item self-report measure using a four-point Likert scale, ranging from “never” to “often,” with higher scores indicating greater neighborhood stress. This measure has been found to demonstrate reliability and validity in urban populations and among adolescents and young adults.

Life in a city can be stressful. We want to know about stress you have experienced in your neighborhood during the PAST YEAR. By “neighborhood,” we mean the streets, houses, or buildings close to your home. By “home,” we mean the house or apartment where you stay at night or on weekends.

For each event listed, please indicate if this event, or something like it, happened in the neighborhood(s) where you lived during the PAST YEAR. Indicate if the event happened, and how often, by circling the answer to the right of each event on the list.

1. Drug dealers near my home	Never	Once	A few times	Often
2. Strangers drunk near my home	Never	Once	A few times	Often
3. Adults arguing loudly on street	Never	Once	A few times	Often
4. Neighbors complained about crime	Never	Once	A few times	Often
5. Someone arrested or in jail	Never	Once	A few times	Often
6. "Shooting gallery" near my home	Never	Once	A few times	Often
7. People complained about police	Never	Once	A few times	Often
8. Gang fight near my home	Never	Once	A few times	Often
9. Number of neighbors with food stamps	None	Some	About half	Most
10. Cars speeding on my street	Never	Once	A few times	Often
11. Number of vacant houses	None	Some	About half	Most
12. Family member attacked	Never	Once	A few times	Often
13. Family member stabbed or shot	Never	Once	A few times	Often
14. Friend stabbed or shot	Never	Once	A few times	Often
15. Family member questioned	Never	Once	A few times	Often
16. Friend robbed or mugged	Never	Once	A few times	Often
17. Family member threatened	Never	Once	A few times	Often
18. Family member robbed or mugged	Never	Once	A few times	Often

Additional Measurement Considerations

- Many of the provided measures for the Community Safety indicator are derived from administrative data, which are objective reports of crime; they do not measure subjective perceptions of safety or coping mechanisms reported by residents. Aggregate survey data on perceptions of safety and violence, for example, are not widely available. To understand perceived safety, users will have to collect primary data using the Neighborhood Safety Scale from the Multi-Ethnic Study of Atherosclerosis (MESA).
- The crime rate indicator data are provided by the FBI's Uniform Crime Reporting Program; however, participation by local law enforcement agencies is voluntary, and not all agencies participate for any given measurement period. In addition, the crime rate indicators may not capture other factors that contribute to perceptions of safety, such as strong social cohesion, a robust neighborhood watch, and dense community networks.

Measure 3: Robbery Rates

Definition

Number of reported cases of robbery per 100,000 population

Data Availability

City, county (metropolitan vs. nonmetropolitan), state

Subgroups

Race/ethnicity, income, education

Data Source(s)

Existing Data Source(s)

- Federal Bureau of Investigation (FBI) Crime Data Explorer
  - The FBI publishes an annual *Crime in the United States* report that includes a downloadable report in PDF format. Supporting data are provided via downloadable Excel files. Data estimates on the total number of crimes by category and population are available at the county (categorized as metropolitan and nonmetropolitan), state, and city levels. Users wanting to examine types of crime by race/ethnicity and other sociodemographic characteristics must pull in subgroup population estimates from an external data source (e.g., the American Community Survey). Data are available for 1996–2019. To access the data, click on the "access a compressed file with the spreadsheets and PDFs…" link on the right of the screen. Next, click on the CIUS2019datatables ZIP file link to download. The provided link is for 2019 data. To access past years, navigate to "Crime in the U.S." and the very top left of the page and select the year.
  - Link: https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the number and proportion of individuals by race/ethnicity and socioeconomic characteristics who live in counties with fewer than 51.07 reported cases of robbery per 100,000 people annually. Data are available for 50 states and Washington, D.C., via the web interface. In addition, data on all states for the years 2018– 2020 are available via a downloadable Excel workbook from the Resources section of the website. This measure can be accessed under the "Community & Safety Factors" domain and the "Low Robbery" indicator.
  - Link: https://www.hopeinitiative.org/indicator/low-robbery

Additional Measurement Considerations

- Many of the provided measures for the Community Safety indicator are derived from administrative data, which are objective reports of crime; they do not measure subjective perceptions of safety or coping mechanisms reported by residents. Aggregate survey data on perceptions of safety and violence, for example, are not widely available. To understand perceived safety, users will have to collect primary data using the Neighborhood Safety Scale from the Multi-Ethnic Study of Atherosclerosis (MESA).

- The crime rate indicator data are provided by the FBI's Uniform Crime Reporting Program; however, participation by local law enforcement agencies is voluntary, and not all agencies participate for any given measurement period. In addition, the crime rate indicators may not capture other factors that contribute to perceptions of safety, such as strong social cohesion, a robust neighborhood watch, and dense community networks.

Measure 4: Sexual Assault Rates

Definition

Number of reported cases of rape per 100,000 population

Data Availability

City, county (metropolitan vs. nonmetropolitan), state

Subgroups

Race/ethnicity, income, education

Data Source(s)

Existing Data Source(s)

- Federal Bureau of Investigation (FBI) Crime Data Explorer
    - The FBI publishes an annual Crime in the United States report that includes a downloadable report in PDF format. Supporting data are provided via downloadable Excel files. Data estimates on the total number of crimes by category and population are available at the county (categorized as metropolitan and non-metropolitan), state, and city levels. Users wanting to examine types of crime by race/ethnicity and other sociodemographic characteristics must pull in subgroup population estimates from an external data source (e.g., the American Community Survey). Data are available for 1996–2019. To access the data, click on the "access a compressed file with the spreadsheets and PDFs…" link on the right of the screen. Next, click on the CIUS2019datatables ZIP file link to download. The provided link is for 2019 data. To access past years, navigate to "Crime in the U.S." and the very top left of the page and select the year.
    - Link: https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019
- Health Opportunity and Equity (HOPE) Initiative
    - The HOPE Initiative website provides state-level data on the number and proportion of individuals by race/ethnicity and income who live in counties with fewer than 56.26 reported cases of rape per 100,000 people annually. Data are available for individual states via the web interface. In addition, data on all states are available for the years 2018–2020 via a downloadable Excel workbook from the Resources section of the website. This measure can be accessed under the "Community & Safety Factors" domain and "Low Sexual Assault" indicator.
    - Link: https://www.hopeinitiative.org/indicator/low-sexual-assault

Additional Measurement Considerations

- Many of the provided measures for the Community Safety indicator are derived from administrative data, which are objective reports of crime; they do not measure subjective perceptions of safety or coping mechanisms reported by residents. Aggregate survey data on perceptions of safety and violence, for example, are not widely available. To understand perceived safety, users will have to collect primary data using the Neighborhood Safety Scale from the Multi-Ethnic Study of Atherosclerosis (MESA).

- The crime rate indicator data are provided by the FBI's Uniform Crime Reporting Program; however, participation by local law enforcement agencies is voluntary, and not all agencies participate for any given measurement period. In addition, the crime rate indicators may not capture other factors that contribute to perceptions of safety, such as strong social cohesion, a robust neighborhood watch, and dense community networks.

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Indicator Profile | Green Space

Research shows that access to green space, defined as all vegetated land (e.g., lawns, forest, gardens), is associated with well-being and promotes physical activity and mental health in a community or neighborhood.

Why Is This Indicator Relevant?

Research shows that access to green space, defined by all vegetated land, such as lawns, forest, and gardens, is associated with well-being and promotes physical activity and mental health in a community or neighborhood.[1] Access to green space is also linked to lower CVD risk; higher levels of neighborhood greenness are associated with a lower incidence of type 2 diabetes, acute myocardial infarction, ischemic heart disease, and heart failure.[2] Researchers recommend a minimum of 9 m2 of green space per individual and an urban green space (UGS) value of 50 m2 per capita.[3] However, many neighborhoods do not meet this minimum level of green space, and there are disparities in green space distribution in the United States.[5] Specifically, Black/African American persons are more likely to live in areas characterized by less green space than White persons are, in part because of lower income and less access to affordable housing.[4]

Measures

The following measure assesses green space. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Green Space

Measure 1: Green Space

Definition

The degree of green space, considering the city's population size. Green space can be defined as the percentage of total land covered by vegetation or green space, including trees, lawns and gardens, crop land, and forested wetlands.

Data Availability

City

Subgroups

Age, race/ethnicity

Data Source(s)

Existing Data Source(s)

- Geotab
  - Using OpenStreetMap data, Geotab generated maps of 15 major American cities, including buildings, roads, and urban green spaces such as parks. Users can access the estimated total square footage of green space, roads, and buildings per person or total square miles of green space, roads, and buildings in the city. Road widths were calculated by using OpenStreetMap data and are supplemented with city infrastructure manuals and aerial imagery. These maps were then used to measure total area and divided by population size by using the latest U.S. Census estimates for the per-person figures. City boundaries are from the U.S. Census TIGER/Line and other map shapes are from OpenStreetMap contributors. Data have been updated with the latest U.S. Census estimates. Data are available only for 15 major cities.
  - Link: https://www.geotab.com/urban-footprint/
- EnviroAtlas Interactive Map
  - The U.S. Environmental Protection Agency (EPA) EnviroAtlas website provides an interactive map with data on the ecosystem and biodiversity, pollution sources and impacts, people and built spaces, and boundaries. Users can access data on the percentage of total land within each census block group that is covered by vegetation or green space by selecting the "Percent green space" data layer. The map is layered by time and demographic factors. EnviroAtlas also allows users to import data into the application from a personal device, a website, or other service platform. Data are available only for census blocks from 30 cities.
  - Link: https://www.epa.gov/enviroatlas/enviroatlas-interactive-map

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Indicator Profile | Housing

Housing is defined as physical dwellings intended to be used for living, sleeping, cooking, and eating and is a key pathway through which health inequities arise and persist over time.

Why Is This Indicator Relevant?

Housing is defined as physical dwellings that intended to be used for living, sleeping, cooking, and eating[1,2] and is a key pathway through which health inequities arise and persist over time.[3] Housing issues span multiple dimensions, including affordability (cost burden), quality, and residential stability (stability of household occupancy), neighborhood safety, and opportunity.[3] Social and structural forces such as gentrification and displacement, redlining and residential segregation, and economic recession have disproportionately constrained access to affordable, livable, and stable housing for low-income people and people of color.

Cost-burdened households, or households with high housing costs relative to income, are less likely to have a usual source of health care and are more likely to delay medical care.[2] Poor physical housing quality such as structural deterioration; presence of mold, pests, and lead; insufficient heating/cooling; and poor indoor air quality are correlated with psychological distress, asthma, nervous system disruption, and respiratory infections.[2,3,4,5] Likewise, residential instability, or high turnover in households, is associated with poorer self-rated health, health care access, and mental health outcomes.[3]

Housing affordability, quality, and stability can be linked to CVD risk and related mortality due to downstream consequences from psychological distress and competing stressors (i.e., spending on housing vs. medical care) associated with housing insecurity (i.e., high housing costs, poor housing quality, housing instability[6]) as well as secondhand smoke exposure (common in low-income and public housing) and cardiotoxic air pollutants from poor-quality homes. Among the elderly, insufficient cooling and extreme housing temperatures have been linked to cardiovascular events.[2]

Measures

The following measures assess housing. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Housing Cost Burden
- Measure 2: Housing Problems (Severe)
- Measure 3: Household Turnover
- Measure 4: Vacancy

Measure 1: Housing Cost Burden

Definition

Proportion of households for which selected monthly costs are 30% or more of household income. Housing cost burden can be calculated for owners and renters, separately or together. Owner housing costs include all mortgage principal payments, interest payments, real estate taxes, property insurance, homeowner fees, condo or co-op fees, and utilities (not including telephone or cable television). Gross rent is the contract rent plus the estimated average monthly cost of utilities (electricity, gas, water, and sewer) and fuels (e.g., oil, coal, kerosene, wood) if utilities and fuel are the responsibility of the renter. A related measure, Severe Housing Cost Burden, sets the monthly cost threshold at 50% or greater.

Data Availability

Block group, census tract, ZIP code, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Age, race/ethnicity, gender, disability status, income, educational attainment

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users can create estimates by various characteristics (e.g., income, gender, race/ethnicity, age) by downloading the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Selected Monthly Ownership Costs as a Percentage of Household Income" or "Gross Rent as a Percentage of Household Income" at the link below to access data on this measure. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses data from the Comprehensive Housing Affordability Strategy (CHAS) to provide county-level estimates of the percentage of households that spend 50% or more of their household income on housing. Users can access this measure under Additional Measures > Physical Environment > Housing and Transit > Severe Housing Cost Burden. Data for this measure are available for download as an Excel workbook. Users can view the estimates at the county and state levels. Data can be downloaded as an Excel workbook, and years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/physical-environment/housing-transit/severe-housing-problems
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of households (renters and owners combined) that spend less than 30% of monthly income on housing costs. Data are available for individual states by race/ethnicity via the web interface. In addition, data for all

states by race/ethnicity and educational attainment are available via a downloadable Excel workbook from the Resources section of the website. This measure can be accessed under the "Social & Economic Factors" domain and "Affordable Housing" indicator.
  - Link: https://www.hopeinitiative.org/indicator/affordable-housing-

Additional Measurement Considerations

More indicators related to Housing can be found in the Socioeconomic Factors Indicator Profile (Housing Insecurity indicator).

Measure 2: Housing Problems (Severe)

Definition

Housing problems are defined as poor-quality housing, overcrowding, or high housing costs. Severe housing problems are measured by the percentage of occupied housing units with at least one of the following problems: lack of complete kitchen facilities, lack of plumbing facilities, overcrowding, and severely cost-burdened occupants. Overcrowding is defined variously as having more than 1 or 1.5 people per room. Severe cost burden is defined as monthly housing costs exceeding 50% of monthly household income.

Data Availability

Place, minor civil division (MCD), county, state

Subgroups

Age, disability status, educational attainment, gender, income, race/ethnicity

Data Source(s)

Existing Data Source(s)

- America's Health Rankings (AHR)
  - The United Health Foundation's AHR evaluates a comprehensive set of health, environmental, and socioeconomic data. The AHR website provides state-level data on the proportion of households experiencing severe housing problems, defined as housing units with at least one of the following problems: lack of complete kitchen facilities, lack of plumbing facilities, overcrowding (more than one person per room), and severely cost-burdened occupants (50% threshold for monthly housing costs as a proportion of income). Estimates are provided by race/ethnicity. User can access this measure under the Physical Environment > Housing and Transit—Annual > Severe Housing Problems. Current editions (2015–2021) can be explored online or downloaded in various formats including Excel, CSV, and ZIP. Past editions (1990–2014) are also available for download.
  - Link: https://www.americashealthrankings.org/explore/annual/measure/severe_housing_problems/state/ALL
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on household quality, defined as households with complete kitchens, functioning plumbing, and those that are not overcrowded

nor severely cost-burdened (monthly housing costs exceeding 50% of monthly income). Data are available for 50 states and Washington, D.C., by race/ethnicity via the web interface. In addition, data on all states by race/ethnicity as well as by educational attainment are available for the years 2018–2020 via a downloadable Excel workbook from the Resources section of the website. This measure can be accessed under the "Physical Environment" domain and "Housing Quality" indicator.
  - Link: https://www.hopeinitiative.org/indicator/affordable-housing-
- U.S. Department of Housing and Urban Development (HUD), Comprehensive Housing Affordability Strategy (CHAS)
  - The HUD-CHAS website provides query and data download tools that users can use to view data on a variety of housing-related indicators commonly used by HUD to demonstrate the extent of housing problems and needs experienced by populations across the United States, with a focus on low-income households. The query tool displays data for a variety of housing-related indicators at an individual place, MCD, county, or state level and is useful for users interested in creating estimates disaggregated by household income for a particular locale. The data tool allows users to download complete data files (CSV format) for a specified 5-year period and geographic summary level. Downloaded files include data at the specified geography for the entire United States. Downloaded files include tables by race/ethnicity, income level, household size, disability status; they also include margins of error for all estimates. Users can access the number of households with at least one of four severe housing problems, defined as incomplete kitchen facilities, incomplete plumbing facilities, more than 1.5 people per room, or cost burden greater than 50%. For the query tool, users can choose years going back to 2000; however, the 2000 and 2005–2007 estimates should not be compared to estimates generated using 2006–2017 data. For this reason, the data download tool includes only 2006–2017 data.
  - Link: https://www.huduser.gov/portal/datasets/cp.html#2006-2017_data

Additional Measurement Considerations

More indicators related to Housing can be found in the Socioeconomic Factors Indicator Profile (Housing Insecurity indicator).

Measure 3: Housing Turnover

Definition

The estimated percentage of households whose occupants changed within a certain time period

Data Availability

Census tract

Subgroups

Gender, race/ethnicity, age, educational attainment, income

Data Source(s)

Existing Data Source(s)

- Integrated Public Use Microdata Series (IPUMS) National Historical Geographic Information System (NHSIG)
  - The IPUMS NHGIS provides free online access to summary statistics and GIS files for U.S. censuses and other nationwide surveys from 1790 through the present. It is one of several IPUMS data integration projects housed by the Minnesota Population Center. Users can access the Data Finder and "How to Use the Data Finder" instructions. Users can download data on total population in occupied housing units by tenure (own vs. rent) and by year the householder moved into unit. Users can filter data by decennial years (1790–2020), non-decennial years (1867–2019), as well as by 5-year changes, 3-year changes, and school years (2009–2010, 2010–2011, and 2011–2012). Data can be downloaded the census tract level but are not available for subgroups.
  - Link: https://data2.nhgis.org/main

Additional Measurement Considerations

More indicators related to Housing can be found in the Socioeconomic Factors Indicator Profile (Housing Insecurity indicator).

Measure 4: Vacancy Status

Definition

Percentage of housing units that were vacant

Data Availability

Place, minor civil division (MCD), block group, census tract, ZIP code, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, age, gender, disability status, education attainment

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users can create estimates by various characteristics (e.g., income, gender, race/ethnicity, age) by downloading the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Occupancy Status" at the link below to access data on this measure. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV). PolicyMap uses U.S. Census Bureau data to provide the estimated percentage of housing units that were vacant. Users can access this measure under Housing > Vacancy and drill down further within this measure. Measures using Census data are available for 2006–2010, 2011–2015, and 2016–2020.
  - Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

More indicators related to Housing can be found in the Socioeconomic Factors Indicator Profile (Housing Insecurity indicator).

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Indicator Profile | Incarceration

Incarceration, or confinement in jail or prison, can have lasting impacts on mental well-being and is a severe stressor for people who are or have been incarcerated, their families, and their communities.

Why Is This Indicator Relevant?

Incarceration, or confinement in jail or prison, can have lasting impacts on mental well-being and is a severe stressor for people who are or have been incarcerated, their families, and their communities due to exposure to dehumanization, deprivation, degradation, and danger during incarceration.[1,2] Neighborhoods with high incarceration rates experience disruptions in family structures, social bonds, and employment networks. Restrictive hiring practices and policies that continue to punish formerly incarcerated individuals can also constrain employment opportunities, limiting one's ability to access health-supporting resources such as a livable wage, adequate housing, health care, and healthy food. The United States has the highest incarceration rate in the world. Racism within the criminal justice system affects policing and sentencing and leads to the disproportionate imprisonment of Black/African American and Latino persons.[3] Compared with White men, Black/African American men are 6 times more likely to be incarcerated, and Hispanic/Latino men are 2.5 times more likely. For Black men in their 30s, about 1 in every 12 is in prison or jail on any given day.[4]

CVD is a leading cause of death among people who are currently incarcerated or people with a recent history of incarceration; they have a higher risk of dying or being hospitalized due to CVD in comparison to the general population.[3] Furthermore, incarceration not only affects the incarcerated individuals, but also impacts their communities.[2,5] Having a family member imprisoned influences CVD risk through three pathways: lowered socioeconomic status and family functioning, reduced social support, and higher levels of chronic stress.[5]

Measures

The following measures assess incarceration. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Felony Disenfranchisement
- Measure 2: Jail Incarceration
- Measure 3: Juveniles in Corrections
- Measure 4: Prison Incarceration
- Measure 5: Racial Disparities in Incarceration

Measure 1: Felony Disenfranchisement

Definition

Number of people barred from voting due to a felony conviction

Data Availability

State

Data Source(s)

Existing Data Source(s)

- The Sentencing Project
  - The Sentencing Project provides state-level data on the total number of residents barred from voting due to a felony conviction in absolute numbers as well as per 100,000 residents. It also provides data on the total number of Black/African American persons who are barred from voting. Felony disenfranchisement data are not available for other racial/ethnic groups. The measure for felony disenfranchisement is currently available for 2020.
  - Link: https://www.sentencingproject.org/the-facts/#map?dataset-option=FDR

Additional Measurement Considerations

- Incarceration statistics are available for both jails and prisons. Jails are used to hold people awaiting trial or hold people convicted of minor crimes, whereas prisons are used to hold people convicted of serious crimes with a sentence of 1 or more years in prison. As such, people are more likely to be jailed in or near their place of residence, but if convicted, their place of incarceration may not align with place of residence.
- A note on comparing jail data (from the Vera website): "Cross-state comparisons of jail incarceration data should be made with caution because each state's use of jail to hold sentenced people varies. Pretrial jail incarceration and jail admissions data are not affected in the same way by differences in sentencing practices and may be used for cross state comparisons. Please note, however, that cross-county comparisons of pretrial and admission data should be done with caution if one county holds a large number of individuals for other authorities, such as other county jails, U.S. Immigrations and Customs Enforcement, or the U.S. Marshals Service."

Measure 2: Jail Incarceration

Definition

Number of people incarcerated in jails per 100,000 residents ages 15–64

Data Availability

County, state

Subgroups

Race/ethnicity, gender

Data Source(s)

Existing Data Source(s)

- Vera Institute of Justice Incarceration Trends
  - The Vera Institute of Justice website provides county- and state-level data on the number of jail admissions per 100,000 residents, jail population per 100,000 residents, and number of pretrial detentions per 100,000 residents. Data are available by race/ethnicity as well as gender. Data can be viewed on an interactive map and also downloaded in CSV and Excel formats. The site also includes fact sheets for all 50 states. Data are available for 1970–2020; however, this may

  vary by metric and state. The primary source for historical incarceration data presented in this website is the U.S. Department of Justice Bureau of Justice Statistics (BJS).
  - Link: https://trends.vera.org/

Additional Measurement Considerations

- Incarceration statistics are available for both jails and prisons. Jails are used to hold people awaiting trial or hold people convicted of minor crimes, whereas prisons are used to hold people convicted of serious crimes with a sentence of 1 or more years in prison. As such, people are more likely to be jailed in or near their place of residence, but if convicted, their place of incarceration may not align with place of residence.
- A note on comparing jail data (from the Vera website): "Cross-state comparisons of jail incarceration data should be made with caution because each state's use of jail to hold sentenced people varies. Pretrial jail incarceration and jail admissions data are not affected in the same way by differences in sentencing practices and may be used for cross state comparisons. Please note, however, that cross-county comparisons of pretrial and admission data should be done with caution if one county holds a large number of individuals for other authorities, such as other county jails, U.S. Immigrations and Customs Enforcement, or the U.S. Marshals Service."

Measure 3: Juveniles in Corrections

Definition

Number of juveniles (age under 21) in residential placement per 100,000 people

Data Availability

State, national

Subgroups

Race/ethnicity, gender

Data Source(s)

Existing Data Source(s)

- Easy Access to the Census of Juveniles in Residential Placement (EZACJRP)
  - The EZACJRP provides data on the characteristics of juveniles in residential placement facilities at the state and national level. Count data on juvenile populations can be accessed via the Easy Access to Juvenile Populations Tool. Data are available for 1997, 1999, 2001, 2003, 2006, 2007, and 2010–2019, and the source of data is the Census of Juveniles in Residential Placement. Users can access this data under "State Comparisons" and stratify the number of juveniles in corrections by gender and race/ethnicity.
  - Link: https://www.ojjdp.gov/ojstatbb/ezacjrp/
- Office of Juvenile Justice and Delinquency Prevention (OJJDP) Statistical Briefing Book (SBB)
  - The OJJDP SBB enables users to access online information through OJJDP's website to learn more about youth victimization and youth involved in juvenile justice systems. The OJJDP SBB provides data analysis tools, data snapshots, and publications related to juveniles in corrections. Selecting "Data Analysis Tools" in the right-hand box brings users to the EZACJRP website for

statistics on characteristics of juveniles in residential placement facilities at the state and national level. Selecting “Data Snapshot” on the left-hand navigation bar brings users to an inventory of one-page visual overviews of current statistics and analyses about youth in the juvenile justice system. To find related publications on justice-involved youth, users can navigate to “Related Publications” at the bottom of the page.

  - Link: https://www.ojjdp.gov/ojstatbb/corrections/index.html

Additional Measurement Considerations

Incarceration statistics are available for both jails and prisons. Jails are used to hold people awaiting trial or people convicted of minor crimes, whereas prisons are used to hold people convicted of serious crimes with a sentence of 1 or more years in prison. As such, people are more likely to be jailed in or near their place of residence, but if convicted, their place of incarceration may not align with their place of residence.

Measure 4: Prison Incarceration

Definition

Number of people who are incarcerated or detained in prisons per 100,000 residents ages 15–64

Data Availability

County, state

Subgroups

Race/ethnicity, gender

Data Source(s)

Existing Data Source(s)

- Vera Institute of Justice Incarceration Trends
  - The Vera Institute of Justice website provides county- and state-level data on the prison population per 100,000 residents. Data are available by race/ethnicity and gender. Data can be viewed on an interactive map and also downloaded in CSV and Excel formats. The site also includes fact sheets for all 50 states. Data are available for 1970–2020; however, this may vary by metric and state. The primary source for historical incarceration data presented in this website is the U.S. Department of Justice BJS.
  - Link: https://trends.vera.org

Additional Measurement Considerations

- Incarceration statistics are available for both jails and prisons. Jails are used to hold people awaiting trial or hold people convicted of minor crimes, whereas prisons are used to hold people convicted of serious crimes with a sentence of 1 or more years in prison. As such, people are more likely to be jailed in or near their place of residence, but if convicted, their place of incarceration may not align with place of residence.
- A note on comparing jail data (from the Vera website): “Cross-state comparisons of jail incarceration data should be made with caution because each state’s use of jail to hold sentenced people varies. Pretrial jail incarceration and jail admissions data are not affected in the same way

by differences in sentencing practices and may be used for cross state comparisons. Please note, however, that cross-county comparisons of pretrial and admission data should be done with caution if one county holds a large number of individuals for other authorities, such as other county jails, U.S. Immigrations and Customs Enforcement, or the U.S. Marshals Service."

Measure 5: Racial Disparities in Incarceration

Definition

Racial disparities in incarceration can be operationalized using the ratio of imprisonment prevalence by race/ethnicity (e.g., the number of imprisoned Black/African American persons divided by the total Black/African American population compared to the number of imprisoned White persons divided by the total White population).

Data Availability

State

Subgroups

Race/ethnicity, gender

Data Source(s)

Existing Data Source(s)

- The Sentencing Project
  - The Sentencing Project provides state-level data on imprisonment by race/ethnicity and racial/ethnic disparities in imprisonment. Imprisonment data includes incarceration in jails and prisons. Imprisonment by race/ethnicity is defined as the number of imprisoned people for a given race/ethnicity per 100,000 residents in the total population. Racial/ethnic disparities in imprisonment are measured by the ratio of Black/African American imprisonment prevalence to the White imprisonment prevalence. The Sentencing Project also provides the ratio of Hispanic/Latino imprisonment prevalence to White imprisonment prevalence but does not provide ratios by other racial/ethnic groups. The measures for imprisonment by race/ethnicity and racial/ethnic disparity in imprisonment are currently available for 2019.
  - Link: https://www.sentencingproject.org/the-facts/#map?dataset-option=FDR

Additional Measurement Considerations

Incarceration statistics are available for both jails and prisons. Jails are used to hold people awaiting trial or hold people convicted of minor crimes, whereas prisons are used to hold people convicted of serious crimes with a sentence of 1 or more years in prison. As such, people are more likely to be jailed in or near their place of residence, but if convicted, their place of incarceration may not align with place of residence.

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Indicator Profile | Liquor Store Density

Restricting the density of liquor stores, or the number of places where alcohol can be sold or consumed either per area or per population, can curb excessive alcohol consumption and prevent alcohol-related morbidity and mortality.

Why Is This Indicator Relevant?

Studies show that heavy drinking, defined as more than 14 drinks per week for men or more than 7 drinks per week for women, leads to higher risk for CVD, compromises overall health, and affects the health and well-being of others around individuals who drink heavily.[1,2] Restricting the density of liquor stores, or the number of places where alcohol can be sold or consumed either per area or per population, can curb excessive alcohol consumption and prevent alcohol-related morbidity and mortality.[3] Higher liquor store density is associated with increased alcohol consumption, multiple chronic disease pathways, neighborhood-level social effects, and increased rates of motor vehicle crashes, pedestrian injuries, and violence.[4,5,6,7] Liquor store density is higher in low-income communities and communities of color leading to disproportionate alcohol-related outcomes in these communities. People who live in neighborhoods with higher liquor store densities also experience lower life expectancies and higher rates of violence.[8]

Measures

The following measure assesses liquor store density. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Alcohol Outlets per 100,000 People

Measure 1: Alcohol Outlets per 100,000 People

Definition

Number of beer, wine, and liquor stores per 100,000 people within a county

Data Availability

Metropolitan statistical area (MSA), county, state

Subgroups

Race/ethnicity, household income

Data Source(s)

Existing Data Source(s)

- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of people living in counties in the 80th percentile of liquor store density, defined in the current release as 1.77 liquor stores or fewer per 10,000 people (note the denominator varies from the common calculation). Data are available by race/ethnicity for 50 states and Washington, D.C., via the web interface for the years 2018–2020. Users can access this data by navigating to the "Physical

  - Environment” domain and “Low Liquor Store Density” indicator. In addition, data on all states are available by race/ethnicity and household income via a downloadable Excel workbook from the Resources section of the website. Data sources for HOPE indicators are from various sources, and for this particular indicator the data source is the U.S. Census Bureau County Business Patterns.
  - Link: https://www.hopeinitiative.org/indicator/low-liquor-store-density
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). Users can view the number of beer, wine, and liquor stores per 100,000 people at the state, county, and MSA levels for the entire United States using the single-layer maps available to basic subscribers. Users wanting to overlay the map with state or county-level demographic information and/or download the data for further analyses need to pay for a Standard subscription. Users can access this measure under Health > Food Access > Rate of beer, wine, and liquor stores per 1000,000 people. The measure uses data from the U.S. Census Bureau County Business Patterns and data are available for 2013–2019.
  - Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

- Data on liquor store density are generally available via websites focused on the health of counties, sub-state regions, or states (e.g., www.kansashealthmatters.org, www.healthyntexas.org, www.healthymendocino.org). Two sites consolidate this information for every state: the HOPE Initiative and PolicyMap.
- Liquor store density is an indicator that may be more useful when examined in combination with other related indicators such as food insecurity and neighborhood crime and safety. Some research suggests that the density of liquor stores matters more when they are greater than the density of health supporting outlets such as grocery stores and recreation facilities.5
- Liquor store density is an environmental measure that is calculated at a specific geographical unit of analysis, such as a census tract or ZIP code; however, purchasing behaviors are not necessarily confined to those living in those areas. Consumers in nearby areas may cross these boundaries to purchase alcohol.
- For more information on liquor store density and measurement considerations, visit https://www.cdc.gov/alcohol/pdfs/CDC-Guide-for-Measuring-Alcohol-Outlet-Density.pdf.

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Indicator Profile | Physical Activity Environment

Physical activity environment refers to aspects of the built environment, such as the availability of pedestrian-friendly infrastructure (e.g., sidewalks, streetlights), walking and biking paths, and proximity to parks and open space that positively affect the frequency and intensity of participation in physical activity.

Why Is This Indicator Relevant?

Physical activity refers to any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level.[1] Research has consistently shown that lack of physical activity is associated with a spectrum of chronic conditions, including CVD, diabetes, obesity, osteoporosis, and psychological disorders.[1,2] Physical activity is effective at all stages of chronic disease management, from prevention, treatment, and through rehabilitation.[1,2] Yet more than a quarter of Americans do not meet the recommended guideline of at least 150 minutes of moderate-intensity physical activity (e.g., brisk walking) a week or 75 minutes of vigorous-intensity physical (e.g., running) activity a week.[1] It is well-established that key aspects of the built environment, such as the availability of pedestrian-friendly infrastructure (e.g., sidewalks, street lights), walking and biking paths, proximity to parks and open space, and social engagement for physical activity at these facilities, positively affect the frequency and intensity of participation in physical activity.[3,4,5] Researchers, program planners, and policy makers recognize the built environment as a point of intervention to increase physical activity, and the American Heart Association (AHA) has identified environmental interventions as an economical community-wide approach to CVD prevention.[6,7]

Measures

The following measures assess physical activity environment. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Access to Opportunities for Physical Activity
- Measure 2: Park Access
- Measure 3: Walkability

Measure 1: Access to Opportunities for Physical Activity

Definition

Percentage of population with adequate access to locations for physical activity

Data Availability

County, state

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)

  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R defines Access to Exercise Opportunities as the percentage of individuals in a county who live reasonably close to a location for physical activity. Locations for physical activity are defined as parks or recreational facilities. Individuals are considered to have access to exercise opportunities if they reside in a census block that is within half a mile of a park, an urban census block that is within 1 mile of a recreational facility, or a rural census block that is within 3 miles of a recreational facility. CHR&R uses data from ArcGIS Business Analyst, DeLorme World Basemap, the YMCA, Esri, and U.S. Census TIGER/Line Files to develop this measure. Users can access this measure under Ranked Measures > Health Factors > Health Behaviors > Diet and Exercise > Access to Exercise Opportunities. Data are downloadable as an Excel workbook, and years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/health-behaviors/diet-exercise/access-to-exercise-opportunities

Additional Measurement Considerations

This indicator has several methodological limitations. The Physical Activity Environment measures listed here use methods that have changed over time, which prevents comparisons over time. In addition, the walkability, physical activity opportunity, and park access measures consider distance calculations but not perceptions of walkability and opportunity. Residents in a particular neighborhood, for example, might be physically close to amenities but may not perceive it as safe for walking or exercise. The reverse could also be true. Some areas may be ranked lower on walkability or physical activity opportunity, but activity is taking place. To understand perceived walkability, users will have to collect primary data using the Walkability Scale from the Multi-Ethnic Study of Atherosclerosis (MESA).

- Measure 2: Park Access

Measure 2: Park Access

Definition

Portion of a city’s population that lives within a 10-minute walk to a park

Data Availability

City

Subgroups

Income, race/ethnicity, age group

Data Source(s)

Existing Data Source(s)

- Trust for Public Land (TPL) ParkServe® Website

  - The TPL ParkServe® website allows users to search for individual communities and provides output about the proportion of total residents who are within a 10-minute walk to a park. Data are available by race/ethnicity (American Indian/Alaska Native persons, Asian persons, Black/African American persons, Hispanic/Latino persons, Pacific Islander persons, White persons, and those who identify with more than one race), income (high, medium, and low) and age group (0–19, 20–64, and 65+). All population statistics are based on 2021 block group estimates provided by Esri. The TPL also provides downloadable national datasets. Users need to have geospatial mapping/GIS expertise to use the park access datasets. Data are available for 14,000 cities, towns, and communities across the United States
  - Links: https://www.tpl.org/parkserve/about
  - https://www.tpl.org/parkserve/downloads

Additional Measurement Considerations

This indicator has several methodological limitations. The Physical Activity Environment measures listed here use methods that have changed over time, which prevents comparisons over time. In addition, the walkability, physical activity opportunity, and park access measures consider distance calculations but not perceptions of walkability and opportunity. Residents in a particular neighborhood, for example, might be physically close to amenities but may not perceive it as safe for walking or exercise. The reverse could also be true. Some areas may be ranked lower on walkability or physical activity opportunity, but activity is taking place. To understand perceived walkability, users will have to collect primary data using the Walkability Scale from the Multi-Ethnic Study of Atherosclerosis (MESA).

Measure 3: Walkability

Definition

The extent to which a neighborhood is walkable

Data Availability

City

Subgroups

Block group, individual

Data Source(s)

Existing Data Source(s)

- The National Walkability Index
  - This index measures the extent to which a block group is walkable relative to other census block groups across the United States. The National Walkability Index ranks census block groups according to their relative walkability based on street intersection density, proximity to transit stops, and diversity of land use (e.g., housing, office, retail, service). This index was developed by the EPA and uses data from the 2010 Census TIGER/Line shapefiles, 2010 Census Summary File 1, Census Longitudinal Employer–Household Dynamics (LEHD) 2010, InfoUSA 2011, NAVTEQ NAVSTREETS 2011, General Transit Feed Specification (GTFS) data for 228 transit agencies, and

Center for Transit-Oriented Development TOD Database 2012. Downloadable data are available in two formats (Shapefile and Esri geodatabase), both of which require some geographic information system (GIS) mapping skills and software to use. An interactive map viewer that displays the walkability of a particular location or region is also available. This index replaces the Walkability Score, which was started in 2007 and was purchased by real estate company Redfin in 2014.
    - Link: https://www.epa.gov/smartgrowth/smart-location-mapping#walkability

Example Survey Instrument

The following survey is recommended to measure perceived walkability:

- Walkability Scale
    - This scale assesses an individual's perception of neighborhood walkability within 1 mile (or a 20-minute walk) of their home. The 10-item self-report measure was developed for the Multi-Ethnic Study of Atherosclerosis (MESA) Neighborhood Study, which was designed to investigate the impact of neighborhood physical and social environments on CVD risk.[1]

For each statement, please indicate whether you agree by choosing the best option. In answering these questions, please think of your neighborhood as the area within about a 20-minute walk (or about a mile) from your home.

	Strongly agree	Agree	Neutral (neither agree nor disagree)	Disagree	Strongly disagree
My neighborhood offers many opportunities to be physically active.					
Local sports clubs and other facilities in my neighborhood offer many opportunities to get exercise.					
It is pleasant to walk in my neighborhood.					
The trees in my neighborhood provide enough shade.					
In my neighborhood it is easy to walk places.					
I often see other people walking in my neighborhood.					
I often see other people exercising (for example, jogging, bicycling, playing sports) in my neighborhood.					
My neighborhood has heavy traffic.					
There are busy roads to cross when out for walks in my neighborhood.					

Additional Measurement Considerations

This indicator has several methodological limitations. The Physical Activity Environment measures listed here use methods that have changed over time, which prevents comparisons over time. In addition, the walkability, physical activity opportunity, and park access measures consider distance calculations but not perceptions of walkability and opportunity. Residents in a particular neighborhood, for example, might be physically close to amenities but may not perceive it as safe for walking or exercise. The reverse could also be true. Some areas may be ranked lower on walkability or physical activity opportunity, but activity is taking place. To understand perceived walkability, users will have to collect primary data using the Walkability Scale from the MESA study.

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Indicator Profile | Poverty

Poverty is often defined as the lack of resources necessary to meet basic human needs.

Why is This Indicator Relevant?

Poverty is often defined as the lack of resources necessary to meet basic human needs.[1] However, poverty is not only a measure of economic status and material deprivation but is also an indicator of social power and capability to navigate and fully participate in society.[2] Poverty has been linked to several adverse health outcomes such as CVD, diabetes, kidney disease, infectious disease, maternal and infant mortality, and many others. In terms of CVD outcomes, the effect of poverty is observed not only at the individual level but also at the community level. Several studies have reported that county-level poverty rate is a strong predictor of heart failure, coronary heart disease, and CVD mortality.[3,4,5]

Concentrated poverty is a measure that captures unfavorable neighborhood conditions and identifies neighborhoods with a significantly high proportion of residents living below the federal poverty level (annual income thresholds set by the federal government to determine financial eligibility criteria).[6,7] Specifically, it is defined as an area with an official poverty rate above 40% and where at least 30% of residents are poor.[7] Concentrated poverty is associated with negative outcomes for all residents, whether or not they themselves are poor. Neighborhoods with high levels of poverty are associated with high crime; poor access to school, health care, and social services; and lack of economic resources, all of which limit opportunities and mobility for residents in the entire region.[7,8] In the U.S., it is estimated that four out of five people living in areas of concentrated poverty are either Black/African American or Hispanic/Latino.[7] Although Black/African American persons represent only 12% of the U.S. population, nearly 40% of Black/African American persons live in areas of concentrated poverty. [7] Likewise, 40% of Hispanic/Latino persons live in concentrated poverty despite representing only 16% of the U.S. population.

Measures

The following measures assess poverty. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Concentrated Persistent Poverty
- Measure 2: Poverty Rate

Measure 1: Concentrated Persistent Poverty

Definition

Areas where the overall poverty level is 30% or more[9] and has had 20% or more of its population living in poverty over the past 30 years[10]

Data Availability

Census tract, county

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to measures developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). The tract-level persistent poverty data layer on PolicyMap uses poverty data from the 1990 and 2000 censuses and the 2010–2014 American Community Survey, as provided by Brown University's Longitudinal Tract Database (LTDB). In determining persistent poverty tracts, PolicyMap applied the same definition that the Community Development Financial Institutions (CDFI) Fund uses in determining persistent poverty county status, which is to assume a persistent poverty tract to be any tract that has had 20% or more of its population living in poverty over the past 30 years. Users can access this measure under Income & Spending > Poverty > Persistent Poverty and can drill down further within this measure. Measures using Census data are available for 2000, 2006–2010, 2011–2015, and 2016–2020.
  - Link: https://www.policymap.com/newmaps#/

Measure 2: Poverty Rate

Definition

Proportion of families (people/households) living with incomes below the federal poverty level.

Data Availability

Public Use Microdata Area (PUMA), block group, census tract, ZIP code, school district, city, county, congressional district, state legislative district, American Indian/Alaska Native Area/Hawaiian homeland, tribal census tracts, region, division, state

Subgroups

Race/ethnicity, age, gender, educational attainment, employment status, nativity, ancestry

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) Public Use Microdata Sample (PUMS)
  - The U.S. Census Bureau's ACS PUMS files enable users to create custom estimates and tables that are not available through ACS pre-tabulated data products. ACS PUMS provides 1- and 5-year estimates on poverty rates by race/ethnicity, gender, household income, age, and educational attainment. Users can navigate to "Income-to-poverty ratio" for this measure. Data users can access the ACS PUMS files through the U.S. Census Bureau's "Accessing PUMS Data" website. Data are available for PUMA, state, region, and divisions levels for 2005–2020.
  - Link: https://www.census.gov/programs-surveys/acs/microdata.html

- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users who want to create estimates by other characteristics (e.g., income, gender, age) or other geographic levels can download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Data on poverty status in the past 12 months can be viewed by gender, race/ethnicity, age, educational attainment, and employment status and at block, census tract, ZIP code, voting district, county, congressional district, and state levels. Users can search "Poverty Status" at the link below to access this measure. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP and can be viewed online for 2010–2020.
  - Link: https://data.census.gov/cedsci
- Kaiser Family Foundation State-Level Poverty Estimates by Race
  - The Kaiser Family Foundation website provides state-level poverty estimates for the total population and by racial/ethnic group. The Kaiser Family Foundation uses data from the ACS 1-year files, which have larger margins of error and poverty estimates for some smaller groups are suppressed. Data are available for 2008–2019 and can be downloaded as an Excel workbook.
  - Link: https://www.kff.org/other/state-indicator/poverty-rate-by-raceethnicity/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D
- National Equity Atlas
  - The National Equity Atlas is a graphical interface that compares poverty rates for medium and large cities, counties, regions, and states. Poverty data can be stratified by race/ethnicity, gender, nativity, and ancestry. Users can access this measure by navigating to Economic Vitality (Indicator Group) > Poverty (Indicator). The National Equity Atlas uses data sources from the U.S. Census Bureau, 2007 and 2012 Survey of Business Owners, 2017 and 2018 Annual Business Survey, 2017 Non-Employer Statistics by Demographics series, and 2009, 2014, 2017, and 2018 ACS 5-year summary files. Data are available for 1980, 1990, 2000, 2010, and 2019 and can be downloaded as an Excel workbook.
  - Link: https://nationalequityatlas.org/indicators/poverty#/
- Small Area Income and Poverty Estimates Program (SAIPE)
  - The SAIPE from the U.S. Census provides representative single-year estimates of poverty at the county and school district levels. School district estimates are available for 1995, 1997, and each year from 1999 onward. County estimates are available for 1989, 1993, and each year from 1995 onward. SAIPE data are not disaggregated by race/ethnicity, education, or other subpopulations. Users can assess the extent to which certain subpopulations are disproportionately affected by poverty by using map overlay techniques.
  - Link: https://www.census.gov/programs-surveys/saipe/data/datasets.html

Additional Measurement Considerations

- This measure requires downloading data and navigating large spreadsheets. Users also have to decide when to suppress or disregard results due to large margins of error.

- ACS PUMS data provides information for a PUMA, which is a community-level area with no fewer than 100,000 people. This geographical level has statistical purposes but may not have practical application for health care organizations. Users can use a PUMA-to-county crosswalk from the Missouri Census Data Center to generate pseudo-county-based statistics from PUMA estimates. PUMS also provides data for state, region, and division levels, but these geographical levels are very large and do not provide a granular level of information.
    - Link: https://mcdc.missouri.edu/geography/PUMAs.html

Poverty References

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Indicator Profile | Public Assistance

Public assistance refers to assistance programs that provide either cash assistance or in-kind benefits to individuals and families from any governmental entity.

Why Is This Indicator Relevant?

Public assistance refers to assistance programs that provide either cash assistance or in-kind benefits to individuals and families from any governmental entity.[1] The U.S. government currently provides economic support to those in greatest need through social assistance programs and social insurance programs. Social assistance programs, such as Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), and Medicaid are means-tested, which limit eligibility to individuals and families whose incomes and or assets meet a pre-determined threshold (means test).[2] Social insurance programs provide benefits to individuals who have paid into the program or whose employers have paid into the program and include Social Security, Medicare, unemployment insurance, workers' compensation, and disability insurance.[3]

Although public assistance is an important policy tool to intervene against socioeconomic disadvantage, receipt of public assistance is a proxy for social disadvantage, food insecurity, housing insecurity, low socioeconomic status, and poor health status, all of which are risk factors for CVD.[1,4,5] For example, SNAP recipients are likely experiencing food insecurity, which negatively affects CVD risk due to food insecurity's association with poorer diet quality, unhealthy coping strategies, and psychological distress.[6,7]

Measures

The following measures assess public assistance. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Earned Income Tax Credit
- Measure 2: Food Stamps/ Supplemental Nutrition Assistance Program
- Measure 3: Medicaid
- Measure 4: Public Assistance Income
- Measure 5: Supplemental Security Income

Measure 1: Earned Income Tax Credit

Definition

Percentage of income tax returns with earned income credit (EITC). EITC is a refundable federal income tax credit for low-income working individuals and families.

Data Availability

ZIP code, county, state

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to measures developed by using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses data from the Internal Revenue Service to provide estimates on the percentage of income tax returns with EITC at the ZIP code, county, and state levels. Users can access this measure under Income & Spending > Federal Tax Returns > Earned-Income Tax Credit. Data are available for each tax year between 2009 and 2019.
  - Link: https://www.policymap.com/newmaps#/

Measure 2: Food Stamps/Supplemental Nutrition Assistance Program (SNAP)

Definition

Percentage of households receiving SNAP benefits in the past 12 months

Data Availability

Individual, block group, census tract, ZIP code, county, metropolitan statistical area, Public Use Microdata Area (PUMA), state, region, division

Subgroups

Race/ethnicity, household income, gender, age, educational attainment

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) Public Use Microdata Sample (PUMS)
  - The U.S. Census Bureau's ACS PUMS files enable users to create custom estimates and tables that are not available through ACS pre-tabulated data products. ACS PUMS provides estimates on yearly food stamps recipiency by race/ethnicity, gender, household income, age, and educational attainment. Data users can access the ACS PUMS files through the U.S. Census Bureau's "Accessing PUMS Data" website. Data are available for PUMA, state, region, and division levels for 2005–2020.
  - Link: https://www.census.gov/programs-surveys/acs/microdata/access.html
- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users can search "food stamps/Supplemental Nutritional Assistance Program (SNAP)" at the link below to access data on this measure. User can create estimates by various characteristics (e.g., race/ethnicity, gender, age, income, nativity, language spoken at home) by downloading the

  ACS 5-yaer files from the U.S. Census Bureau's main data platform at the link below. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/

Example Survey Instrument

The following survey question is available for assessing receipt of food stamps/SNAP:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks questions about a household's receipt of food stamps/SNAP to create statistics about participation in food assistance programs. To view the ACS survey question on receipt of benefits from the Food Stamp Program/SNAP, visit the U.S. Census Bureau's website below.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/food-stamps/

Additional Measurement Considerations

- ACS PUMS data provides information for a PUMA, which is a community-level area with no fewer than 100,000 people. This geographical level has statistical purposes but may not have practical application for health care organizations. Users can use a PUMA-to-county crosswalk from the Missouri Census Data Center to generate pseudo-county-based statistics from PUMA estimates. PUMS also provides data for state, region, and division levels, but these geographical levels are very large and do not provide granular level of information.
- Link: https://mcdc.missouri.edu/geography/PUMAs.html

Measure 3: Medicaid

Definition

Percentage of the population with Medicaid as their health insurance coverage. Medicaid, or medical assistance, is public health insurance for people with low incomes or a disability.

Data Availability

Census tract, ZIP code, city, county, county subdivision, metro division, metro area, state

Subgroups

Age, gender

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to measures developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tool, and data downloads (CSV format). PolicyMap uses data from the U.S. Census Bureau to provide estimates on the percentage of the population insured through Medicaid. Users can access this measure under Health > Cost and Insurance > Health

  Insurance Coverage > By Type > Medicaid. Five-year estimates are available for 2011–2015 and 2016–2020.
  - Link: https://www.policymap.com/newmaps#/
- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. User can create estimates by gender and age by downloading the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Medicaid/Means-tested Public Coverage" at the link below to access data on this measure. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/

Measure 4: Public Assistance Income

Definition

Percentage of households receiving public assistance income (Temporary Assistance to Needing Families, general assistance) in the past 12 months

Data Availability

Individual, block group, census tract, ZIP code, county, metropolitan statistical area, Public Use Microdata Area (PUMA), state, region, division

Subgroups

Race/ethnicity, household income, gender, age, educational attainment

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) Public Use Microdata Sample (PUMS)
  - The U.S. Census Bureau's ACS PUMS files enable users to create custom estimates and tables that are not available through ACS pre-tabulated data products. ACS PUMS provides 1- and 5-year estimates on the receipt of public assistance in the past 12 months by race/ethnicity, gender, household income, age, and educational attainment. Data users can access the ACS PUMS files through the U.S. Census Bureau's "Accessing PUMS Data" website. Data are available for PUMA, state, region, and division levels for 2005–2020.
  - Link: https://www.census.gov/programs-surveys/acs/microdata/access.html
- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users can search "public assistance income or food stamps/SNAP" at the link below to access data on this measure. User can create estimates by various characteristics (e.g., race/ethnicity, gender, age, income, nativity, language spoken at home) by downloading the ACS 5-year files from the U.S.

  Census Bureau’s main data platform at the link below. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/

Example Survey Instrument

The following survey questions are available for assessing receipt of public assistance:

- American Community Survey (ACS)
  - The U.S. Census Bureau’s ACS asks questions about the funds a person receives from various sources to create statistics about income, assistance, earnings, and poverty status. To view the ACS survey questions on income from public assistance programs, visit the U.S. Census Bureau’s website below. Users can use the ACS income question on public assistance or welfare payments.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/income/

Additional Measurement Considerations

- ACS PUMS data provides information for a PUMA, which is a community-level area with no fewer than 100,000 people. This geographical level has statistical purposes but may not have practical application for health care organizations. Users can use a PUMA-to-county crosswalk from the Missouri Census Data Center to generate pseudo-county-based statistics from PUMA estimates. PUMS also provides data for state, region, and division levels, but these geographical levels are very large and do not provide granular level of information.
- Link: https://mcdc.missouri.edu/geography/PUMAs.html

Measure 5: Supplemental Security Income (SSI)

Definition

Percentage of a population with SSI. SSI is a federal cash assistance program funded by general tax revenues that provides monthly benefits to low-income aged, blind, and disabled people

Data Availability

Individual, block group, census tract, ZIP code, county, metropolitan statistical area (MSA), state

Subgroups

Age groups, eligibility category

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to measures developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tool, and data downloads (CSV format). PolicyMap uses data from the Social Security Administration to provide estimates on the percentage of the population

  who received SSI. Users can access this measure under Demographics > People with Disabilities > SSI Recipients. Data are available for 2003–2018.
  - Link: https://www.policymap.com/newmaps#/
- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users can search "Supplemental Security Income" at the link below to access ACS 5-year data on this measure from the U.S. Census Bureau's main data platform. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- Social Security Administration
  - The Social Security Administration provides the number of recipients by eligibility category; age; receipt of Old Age, Survivors, and Disability Insurance (OASDI) benefits; and amount of payments at state and county levels. Data are available for 1998–2020 in various formats, including Excel and PDF.
  - Link: https://www.ssa.gov/policy/docs/statcomps/ssi_sc/

Example Survey Instrument

The following survey question is available for assessing receipt of SSI:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks questions about the funds a person receives from various sources to create statistics about income, assistance, earnings, and poverty status. To view the ACS survey questions on income from public assistance programs, visit the U.S. Census Bureau's website below. Users can use the ACS income question on SSI.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/income/

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Indicator Profile | Social Cohesion

Social cohesion refers to the extent of connectedness and the sense of solidarity among members of a community.

Why Is This Indicator Relevant?

Social cohesion refers to the extent of connectedness and the sense of solidarity among members of a community.[1] Social cohesion, or higher level of social support and strengthened social connectedness, positively influence health outcomes by reducing stress, improving mental health, encouraging healthier behaviors (i.e., taking medication, participating in physical activity, and eating healthy), increasing social engagement, and expanding access to resources.[1,2]

Living in areas with higher levels of social cohesion protects cardiovascular health through behavioral and psychosocial pathways such as promoting positive health behaviors, improving coping abilities, and enhancing mental health.[3] Increased neighborhood-level social cohesion is associated with lower risk of myocardial infarction, stroke, and incident coronary heart disease, improved medication adherence, and increased odds of meeting physical activity guidelines.[3–5] Residence in a neighborhood (defined by census-tracts) with high levels of social cohesion is associated with lower prevalence of hypertension and higher overall CVD health.[6,7]

Measures

The following measure assesses social cohesion. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Neighborhood Social Cohesion

Measure 1: Neighborhood Social Cohesion

Definition

How society is connected through shared values, beliefs, and behaviors

Data Availability

Individual, census tract, county, state, national

Subgroups

Gender, income, race/ethnicity, age group, neighborhood tenure, education

Data Source(s)

Existing Data Source(s)

- National Center for Health Statistics (NCHS)
  - The National Health Interview Survey (NHIS) has monitored the health of the nation since 1957. NHIS data on a broad range of health topics are collected through personal household interviews. Survey results have been instrumental in providing data to track health status, health

care access, and progress toward achieving national health objectives. Current data files (2019–2022), as well as prior data files (1963–1996 and 1997–2018), are available online.
  - Link: https://www.cdc.gov/nchs/nhis/index.htm

Example Survey Instrument

The following surveys are recommended to measure social cohesion:

- Neighborhood Social Cohesion Scale
  - This scale assesses an individual's perception on the degree of connectedness between and among neighbors and their willingness to intervene for the common good within 1 mile (or a 20-minute walk) of their home. The five-item self-report measure was developed for the Multi-Ethnic Study of Atherosclerosis (MESA), which was designed to investigate the impact of neighborhood physical and social environments on CVD risk.[8]

Things about people's neighborhoods may be important to their health. Now we would like to ask you some questions about what it is like to live in your neighborhood. By neighborhood we mean the area around where you live and around your house. It may include places you shop, religious or public institutions, or a local business district. It is the general area around your house where you might perform routine tasks, such as shopping, going to the park, or visiting with neighbors. Please take the time to answer carefully, but do not spend too much time on any one question. Remember that there are no right or wrong answers.

For each of the following statements, please tell whether you agree by choosing the best option.

	Strongly agree	Agree	Neutral (neither agree nor disagree)	Disagree	Strongly disagree
This is a close-knit neighborhood.					
People around here are willing to help their neighbors.					
People in this neighborhood generally don't get along with each other.					
People in this neighborhood can be trusted.					
People in this neighborhood do not share the same values.					

- Neighborhood Cohesion Instrument
  - The Neighborhood Cohesion Instrument is an 18-item self-report measure of psychological sense of community, attraction-to-neighborhood, and social interaction within a neighborhood.[9] Respondents are asked to what extent they agree with statements about their neighborhood, ranging from strongly agree to strongly disagree on a five-point Likert scale. The final score is calculated as the average of all items. The instrument and scoring details are available from the Evidence-based Measures of Empowerment for Research on Gender Equality (EMERGE) at the University of California San Diego.

  - Link: https://emerge.ucsd.edu/r_2s5psht8g6m3fwg/

Additional Measurement Considerations

- ACS PUMS data provides information for a PUMA, which is a community-level area with no fewer than 100,000 people. This geographical level has statistical purposes but may not have practical application for health care organizations. Users can use a PUMA-to-county crosswalk from the Missouri Census Data Center to generate pseudo-county-based statistics from PUMA estimates. PUMS also provides data for state, region, and division levels, but these geographical levels are very large and do not provide granular level of information.
  - Link: https://mcdc.missouri.edu/geography/PUMAs.html

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Indicator Profile | Social Environment

Neighborhood social environment refers to the physical, material, social, and socioeconomic conditions in a given community.

Why Is This Indicator Relevant?

Neighborhood social environment refers to the physical, material, social, and socioeconomic conditions in a given community.[1] Deprived or disadvantaged neighborhoods are usually characterized by high concentrations of poverty, high rates of unemployment, and limited material resources and services such as poorer access to quality housing, health care, healthy food, community resources, and recreational facilities.[2] Crime and disorder are more likely to arise in disadvantaged neighborhoods, which may induce stress, weaken social cohesion, and have a detrimental effect on mental health and coping.[3] Living in a stressful neighborhood environment contributes physiologic, neurologic, and psychological dysfunction that adversely impacts cardiovascular health.[4,5] Specifically, studies have observed with elevated blood pressure, higher incident hypertension, and increased cardiovascular disease mortality among residents in deprived neighborhoods.[2,6]

Neighborhood disadvantage is considered a key determinant of racial inequities in health. Black/African American persons are disproportionately exposed to neighborhood disadvantage due to structural discrimination such as residential segregation and redlining.[3,5] One study found that among Black/African American adults, residence in disadvantaged neighborhood was associated with greater cumulative biological risk, a measure of eight biomarkers across cardiovascular, metabolic, inflammatory, and neuroendocrine physiological systems.[3] Another study found that among Black/African American women, one standard deviation increase in neighborhood disadvantage was associated with a 25% increased risk of CVD.[5] A third study found that Black/African American women living in the top 10% of most socially vulnerable neighborhoods, as measured by the Social Vulnerability Index (SVI), were three times more likely to have hypertension when compared to those living in less vulnerable neighborhoods.[7]

Measures

The following measure assesses social environment. The measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Social Vulnerability Index

Measure 1: Social Vulnerability Index

Definition

Extent to which a community is resilient to external stressors

Data Availability

Census tract, county

Subgroups

Gender, income, race/ethnicity, age group, neighborhood tenure, education

Data Source(s)

Existing Data Source(s)

- Social Vulnerability Index (SVI)
  - CDC's SVI uses U.S. Census data on 15 social factors from across four themes: socioeconomic status, household composition and disability, minority status and language fluency, and housing type and transportation. Scores are computed for each individual theme and as an overall score of neighborhood vulnerability at the county and census tract levels. Scores range from 0 to 1, with higher values indicating greater vulnerability. Data are available for 2000, 2010, 2014, 2016, and 2018 and can be downloaded via a CSV or Shapefile export.
  - Link: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html/

Additional Measurement Considerations

SVI was initially intended to identify the most vulnerable areas during public health emergencies and natural disasters, but it has also been used for public health research as a relative measurement of neighborhood vulnerability, resources, and disadvantage.[7]

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Indicator Profile | Transit and Transportation

Transportation refers to street design and connectivity, pedestrian infrastructure, bicycle infrastructure, and public transit infrastructure and access.

Why is This Indicator Relevant?

Transportation refers to street design and connectivity, pedestrian infrastructure, bicycle infrastructure, and public transit infrastructure and access.[1] Transportation policy affects health through multiple pathways, including active transportation (e.g., walking, biking, rolling in a wheelchair), safety, clean air, and connectivity.[2] Increased public transit and improved pedestrian and bicycle infrastructure create opportunities for people to exercise for recreation and commuting, reduce incidence of motor vehicle crashes, and improve air quality and accessibility of services, resources, and recreation, thereby creating a more connected community. Low-income neighborhoods and communities of color are often burdened by inadequate transportation and more likely to be located next to highways and major roadways. In addition, residents of these neighborhoods are less likely to own a car. These factors are due to structural racism and classism, including historical discriminatory practices (e.g., redlining) and current land use and planning policies, practices, and directives that differentially disadvantages communities based on race (i.e., environmental racism). Inequities in access to transportation often result in longer commutes, higher transportation costs, and increased exposure to air pollutants.[3,4]

Transportation affects the ability to access health-promoting resources, such as health care, jobs, parks, schools, and grocery stores, which can affect the risk of cardiovascular disease. Access to safe public transportation and safe environments also encourages walking and/or biking to destinations. Individuals who use public transit add up to 30 minutes of physical activity to their day.[5,6] The Community Preventive Services Task Force and the American Heart Association recognize transportation policy as health policy and recommend improving transportation systems as an upstream approach to improve cardiovascular health.[3,4] This recommendation is based on a systematic review which found sufficient evidence on the relationship between transportation, physical activity, and cardiovascular health.[1,7]

Measures

The following measures assess transit and transportation. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Average Travel Time to Work
- Measure 2: Car Access
- Measure 3: Mode of Transportation to Work
- Measure 4: Transit Service Density

Measure 1: Average Travel Time to Work

Definition

Estimated average travel time to work in minutes

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, region, state

Subgroups

Race/ethnicity, household income, gender, nativity, ancestry

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Travel Time to Work" at the link below to access data on this measure. Users can also stratify estimates by gender. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- National Equity Atlas
  - The National Equity Atlas is a graphical interface that compares average travel time to work for medium and large cities, regions, and states. Commute time data can be stratified by race/ethnicity, gender, nativity, ancestry, and income level. Users can access this measure by navigating to Connectedness (Indicator Group) > Commute Times (Indicator). The National Equity Atlas uses data from IPUMS USA. Data are available for 1990, 2000, 2010, and 2019 and can be downloaded as an Excel workbook.
  - Link: https://nationalequityatlas.org/indicators/Commute_time#/
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators of demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses data from the U.S. Census to provide estimates on the average travel time to work in minutes. Users can access this measure under Quality of Life > Transportation > Travel Time to Work and drill down further within this measure. Measures using Census data are available for 2000, 2006–2010, 2011–2015, and 2016–2020. PolicyMap also has Transit Stop Density, Distance to Nearest Stop, and Distance to Public Transit indicators that are available to Premium (paid) subscribers.

  - Link: https://www.policymap.com/newmaps#/

Measure 2: Car Access

Definition

Car access is measured at the household level and is defined as the average number of vehicles available to each household or the estimated percentage of housing units for which no vehicles are available

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, gender, nativity, ancestry

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Vehicles Available" at the link below to access data on the number of vehicles available to the household. Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- National Equity Atlas
  - The National Equity Atlas is a graphical interface that compares the percentage of households without a vehicle for medium and large cities, counties, regions, and states. Car access data can be stratified by race/ethnicity, gender, nativity, and ancestry. Users can access this measure by navigating to Connectedness (Indicator Group) > Car Access (Indicator). The National Equity Atlas uses data from IPUMS USA. Data are available for 1990, 2000, 2010, and 2019 and can be downloaded as an Excel workbook.
  - Link: https://nationalequityatlas.org/indicators/Car_access#/
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools and data downloads (CSV format). PolicyMap uses U.S. Census data to provide estimates on the average number of vehicles per household and the percentage of housing units for which no vehicles are available. Users can access this measure

under Quality of Life > Transportation > Vehicles per Household and can drill down further within this measure. Measures using Census data are available for 2000, 2006–2010, 2011–2015, and 2016–2020. PolicyMap also has Transit Stop Density, Distance to Nearest Stop, and Distance to Public Transit indicators that are available to Premium (paid) subscribers.

  - Link: https://www.policymap.com/newmaps#/

Measure 3: Mode of Transportation to Work

Definition

Estimated percentage of workers who drive/use public transit/bicycle/walk/stay home to work.

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, gender, age, income, nativity, language spoken at home

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Means of Transportation to Work" at the link below to access data on this measure. The Census tracks several modes of transportation: driving alone (car, truck, or van), carpooling (car, truck, or van), public transportation, taxicab, motorcycle, bicycle, walking, and working from home. User can create estimates by various characteristics (e.g., race/ethnicity, gender, age, income, nativity, language spoken at home). Data are available for 2009–2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscriptions provide access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses U.S. Census data to provide estimates on the percentage of workers who use a specific mode of transportation. PolicyMap tracks six modes of transportation, including vehicle, public transit, bicycle, walk, work from home, and other. Users can access this measure under Quality of Life > Transportation > Mode of Transportation to Work and can drill down further within this

  - measure. Measures using Census data are available for 2000, 2006–2010, 2011–2015, and 2016–2020.
  - Link: https://www.policymap.com/newmaps#/
- Transportation and Health Tool (THT)
  - The THT was developed by the U.S. Department of Transportation and CDC to provide easy access to data that practitioners can use to examine the health impacts of transportation systems. The tool provides data on a set of transportation and public health indicators for each U.S. state and metropolitan area that describe how the transportation environment affects safety, active transportation, air quality, and connectivity to destinations. THT uses data from the 2009 National Household Travel Survey to provide state-level estimates on the person's miles traveled by mode. THT tracks two modes of transportation: private vehicle use and walking. The data are provided based on 1-, 3-, and 5-year estimates and are available for download as an Excel workbook.
  - Link: https://www.transportation.gov/transportation-health-tool

Additional Measurement Considerations

The Mode of Transportation to Work and Transit Service Density measures assess access and use of public transit, which is a protective factor for CVD, since use of public transit is associated with increased physical activity. However, reliance on public transport can also increase commute times and transportation costs.

Measure 4: Transit Service Density

Definition

Aggregate frequency of transit service per hour per square mile during evening peak period

Data Availability

Block group

Data Source(s)

Existing Data Source(s)

- Environmental Protection Agency (EPA) Smart Location Database
  - The EPA Smart Location Database provides data on aggregate transit service frequency (afternoon peak period), transit service density (afternoon peak period), and distance to nearest transit stop for census block groups. Data on transit services are available via an interactive map viewer (ArcGIS log-in required) and also as downloadable GIS mapping files. Data are only available in areas served by transit agencies that share their transit data in GTFS format. Users will need to have the appropriate software and mapping expertise to use this resource. The EPA released the first Smart Location Database in 2011, version 2.0 in July 2013, and version 3.0 in 2021.
  - Link: https://www.epa.gov/smartgrowth/smart-location-mapping
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations.

A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping and data downloads (CSV format). Users can view the aggregate frequency of transit service per hour (and per mile) within 0.25 miles for block groups using the single-layer maps available to basic subscribers. PolicyMap uses data from the EPA Smart Location Database and data are limited to areas served by transit agencies that share their transit data in a specific format. Users can access this measure under Quality of Life > Transportation > Public Transit > Frequency of Transit Services. Data are available for 2021. PolicyMap also has Transit Stop Density, Distance to Nearest Stop, and Distance to Public Transit indicators that are available to Premium (paid) subscribers.

- Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

The Mode of Transportation to Work and Transit Service Density measures assess access and use of public transit, which is a protective factor for CVD, since use of public transit is associated with increased physical activity. However, reliance on public transport can also increase commute times and transportation costs.

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Indicator Profile | Rurality

Rurality refers to areas with low population density or areas with a geographically diffuse population.

Why Is This Indicator Relevant?

Rurality is a term used to describe areas with low population density or areas with a geographically diffuse population.[1,2] Residence in a rural area presents many challenges, such as limited employment and education opportunities, long travel distances, lack of public transit, and poorer access to health care, healthy foods, and social services.[2,3] Compared to urban residents, rural residents are older, less educated, and have lower incomes.[2,3] All of these sociodemographic and environmental characteristics are linked to poorer health outcomes and are contributing factors to rural health disparities. According to CDC, rural residents are more likely than urban residents to have higher premature mortality rates from the five leading causes of death: heart disease, cancer, unintentional injury, chronic lower respiratory disease, and stroke.[3]

Although rural areas are less diverse than the nation as a whole, rural areas have been diversifying over the past decade, and nearly 25% of rural residents are people of color.[4] It is hypothesized that living in rural areas exacerbates exposure to unequal social conditions already experienced by people of color (e.g., fewer collective resources, higher poverty, lower health care supply) leading to racial/ethnic health disparities among rural residents.[5] Premature death rates are significantly higher in rural counties with majority Black/African American or American Indian/Alaskan Native residents than in rural communities that are predominantly White.[6] Compared with rural White residents, rural people of color are less likely to see a physician due to costs and more likely to have poorer self-reported health status and obesity.[7]

There is a significant gap in CVD outcomes along rural-urban lines: People living in rural areas have higher prevalence of heart disease and higher mortality rates for stroke and CVD.[2] Determinants of the rural–urban gap include socioeconomic, behavioral, psychosocial, and access factors. Substance use, smoking, and physical inactivity are more prevalent in rural populations than in urban ones, leading to higher rates of obesity, high cholesterol, and high blood pressure among rural residents. Rural populations are more likely to suffer from depression, a CVD risk factor, and have limited access to mental health services to prevent and treat depression related disorders.[2] People living in rural areas are less likely to have insurance and live farther away from health services, which can result in fewer preventive visits and delays in treatment. [2] Rural areas also face critical shortages in health services, such as health care workers, hospitals, and emergency facilities. It is estimated that 20% of the U.S. population resides in a rural area, yet only 9% of physicians practice in rural areas.[8] It has also been suggested that physicians and care facilities in rural areas may lack experience with certain CVD conditions and may not provide specialized care for treating CVD.[2]

Measures

The following measures assess rurality. Each measure links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: [Frontier and Remote Area Codes]
- Measure 2: [Rural-Urban Continuum Codes]
- Measure 3: [Urban Influence Codes]

Measure 1: Frontier and Remote Area (FAR) Codes

Definition

Territory characterized by some combination of low population size and high geographic remoteness, defined in relation to the time it takes to travel by car to the edges of nearby urban areas

Data Availability

ZIP code

Data Source(s)

Existing Data Source(s)

- U.S. Department of Agriculture, Economic Research Service (ERS)
  - ERS produces and maintains a number of data sets that are used by policymakers and researchers to identify and describe rural and urban areas. Measures of rurality such as the Frontier and Remote Area (FAR) codes classify ZIP codes based on criteria such as population size, adjacency to a metropolitan area, and commuting flows. These codes have been used to determine program eligibility criteria for various federal programs. ERS has resources to help determine rural status, describe the socioeconomic conditions in an area, and support analysis with other relevant data. FAR code data files for 2000–2010 can be downloaded as an Excel workbook.
  - Link: https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes.aspx

Measure 2: Rural–Urban Continuum Codes

Definition

Distinguishes metropolitan counties by the population size of their metro area and nonmetropolitan counties by degree of urbanization and proximity to a metro area

Data Availability

County

Data Source(s)

Existing Data Source(s)

- U.S. Department of Agriculture, Economic Research Service (ERS)
  - ERS produces and maintains a number of data sets that are used by policymakers and researchers to identify and describe rural and urban areas. Measures of rurality such as the Rural-Urban Continuum Codes classify census tracts based on criteria such as measures of population density, urbanization, and proximity to a metro area. These codes have been used to determine program eligibility criteria for various federal programs. ERS has resources to help determine rural status, describe the socioeconomic conditions in an area, and support analysis

with other relevant data. Rural-Urban Continuum Codes are available for 1974, 1983, 1993, 2003, and 2013; however, the 2013 codes cannot be compared to codes prior to 2000. The codes will be updated in 2023. Data can be downloaded as an Excel workbook.
  - Link: https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/

Measure 3: Urban Influence Codes

Definition

Distinguishes metropolitan counties by the population size of their metro area and nonmetropolitan counties by the size of the largest city or town and proximity to metro and micropolitan areas

Data Availability

County

Data Source(s)

Existing Data Source(s):

- U.S. Department of Agriculture, Economic Research Service (ERS)
  - ERS produces and maintains a number of data sets that are used by policymakers and researchers to identify and describe rural and urban areas. Measures of rurality such as the Urban Influence Codes classify counties based on criteria such as population size of the metro area and proximity to a metro area. These codes have been used to determine program eligibility criteria for various federal programs. ERS has resources to help determine rural status, describe the socioeconomic conditions in an area, and support analysis with other relevant data. The 2003 and 2013 Urban Influence Codes can be downloaded as an Excel workbook. The codes will be updated in 2023.
  - Link: https://www.ers.usda.gov/data-products/urban-influence-codes.aspx

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Health Equity Indicator Profiles | Policy

Policy is a law, regulation, procedure, administrative action, incentive, or decision implemented by governments and other institutions. Institutional policies (e.g., local government policies, health care settings, employers) can significantly shape many social determinants of health associated with prevention and management of chronic diseases, including cardiovascular disease (CVD). For example, local government policies that incentivize primary care physicians to practice where there is a shortage of health care providers can improve health care access. Employers that pay family-supporting wages can reduce financial stress, housing instability, and other CVD risk factors. Policies and practices can also inadvertently perpetuate structural racism and other forms of discrimination that then affect health.

Indicators

This toolkit provides guidance for measuring ***five indicators related to policy*** that influence inequities across various social and environmental factors, leading to differential risks for developing CVD or differential access to and receipt of health care. The five policy indicators are measured at different levels of analysis, including organization, city, county, and state.

Living Wage Policy

Living wage polices are mandates for employers to pay their employees a wage at or above the state or federal minimum wage. Visit the Living Wage Policy indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: City and County Minimum Wage
- Measure 2: State Minimum Wage

Spending Per Capita (Health Care, Education, and Parks and Green Space)

Per capita spending indicates how much economic production value is attributed to each citizen. Visit the Spending Per Capita indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Per Capita Expenditure on Health Care by State Government
- Measure 2: Health Care Expenditures per Capita by State of Residence
- Measure 3: Public Expenditure Spending by Pupil
- Measure 4: State and Local Government Parks and Recreation Spending Per Capita

Sick Leave Policies

Sick leave policies protect employees against loss of income for temporary absences due to illness or disability. Visit the Sick Leave Policies indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: State and Local Paid Sick Leave Laws

Smoke-Free Policies

Smoke-free policies prohibit smoking in designated public areas and indoor spaces. Visit the Smoke-Free Policies indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: State and Local Comprehensive Smoke-Free Law Status

Social Determinants of Health (SDOH) Measures in Electronic Health Records (EHRs)

SDOH are the conditions where people live, learn, work, and play that affect a wide range of health and quality-of-life risks and outcomes. In health care settings, EHRs are an opportunity to collect data on SDOH to improve patient care and address the social needs of patients. Visit the SDOH Measures in EHRs indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Patient SDOH
- Measure 2: Degree of SDOH Categories in EHRs

Indicator Profile | Living Wage Policy

Living wage polices are mandates for employers to pay their employees a wage at or above the state or federal minimum wage.

Why Is This Indicator Relevant?

A robust body of literature has established a strong link between income and health and well-being.[1] The American Heart Association notes the link between lower wage and the likelihood of increased cardiovascular risk factors.[2] Given this evidence, the American Public Health Association recommends all governance levels enact living wage legislation.[3] Living wage policies are mandates for employers to pay their employees a wage at or above the state or federal minimum wage.[4] Increasing wages through living wage policies may affect health outcomes by increasing access to medical care, housing, and food and by improving mental health through greater job satisfaction and increased leisure time.[5,6] Living wage laws are associated with decreased rates of hypertension, along with better birth outcomes and lower rates of poverty, suicide mortality, and sexually transmitted infections.[6,7,8,9] This is consistent with emerging evidence that minimum wage policies may similarly affect racial health inequities as well.[10]

Measures

The following measures assess living wage policy. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: City and County Minimum Wage
- Measure 2: State Minimum Wage

Measure 1: City and County Minimum Wage (where local minimum wage ordinance exists)

Definition

A database of minimum wages set by local ordinance. In most cases, local ordinances create minimum wages higher than the state minimum wage.

Data Availability

City, county

Data Source(s)

Existing Data Source(s)

- Minimum Wage Inventory
  - To help inform policymakers and other stakeholders, the UC Berkeley Labor Center maintains an up-to-date inventory of these laws, with details on wage levels, scheduled increases, and other law details, as well as links to the ordinances. Users can download an Excel workbook with details of local wage ordinances for the United States or view details for an individual city or county. Data are available only for 55 cities and counties.

  - Link: https://laborcenter.berkeley.edu/inventory-of-us-city-and-county-minimum-wage-ordinances/

Measure 2: State Minimum Wage

Definition

Dollar amount of the minimum wage in a state as of January 1, 2021. The federal minimum wage is $7.25 per hour. States without a minimum wage or with minimum wages lower than $7.25 per hour are superseded by the federal minimum wage.

Data Availability

State

Data Source(s)

Existing Data Source(s)

- State Minimum Wage Laws
  - Users can download a table of current minimum wages by state or select an individual state to see details on its current minimum wage policies. Historical data are also available and are shown for changes by state for 1968–1981, 1988–1998, 2000–2006, 2007–2013, 2014–2019, and 2020–2021. The source for this data is the U.S. Department of Labor.
  - Link: https://www.dol.gov/agencies/whd/minimum-wage/state
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). Users can view a state’s minimum wage by hovering over the state within the Open Map view (this feature is free). This measure is also accessible by navigating to Incomes & Spending > Income > Minimum Wage. Data on state minimum wage are from the U.S. Department of Labor and are accurate as of January 1, 2022. Users wanting to download the data for further analyses need to pay for a standard subscription.
  - Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

Users can examine wage ordinances and their influence on health outcomes by analyzing the effect of such policies within patient populations. For example, an ongoing study is exploring how incremental increases to a minimum wage of $15 per hour affect health behaviors and obesity-related outcomes. These outcomes are then compared with a population with no change in their wage policies.[7]

Living Wage Policy References

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Indicator Profile | Spending Per Capita

Per capita spending indicates how much economic production value is attributed to each citizen. Government spending on goods and services, such as health, education, and green space, can strongly affect health.

Why is This Indicator Relevant?

The United States spends almost twice as much on medical care as other high-income nations do.[1] In 2020 alone, the United States spent $11,946 per capita on health consumption expenditures, $4,000 more per capita than other nations did.[2] However, the United States lags behind other nations on many health outcome indicators and faces inequities in health spending distribution.[3] Investments in prevention programs focusing on risk factors for cardiovascular disease (CVD) and other chronic diseases can reduce overall health costs.[4]

Higher educational attainment is linked to better health and longevity.[5] The United States spends less on education per capita than other high-income countries do. Specifically, the United States spends an average of $12,624 per student, short of meeting the United Nations Educational, Scientific and Cultural Organization's benchmark of 15% of public expenditure on education.[6] Increased government spending to expand educational opportunity access may reduce CVD risk factors.[7]

Research shows that green space access is associated with well-being.[8] A minimum of 9 m^2 of green space per individual, with an ideal urban green space (UGS) value of 50 m^2 per capita, is recommended.[9] There is also a known negative relationship between lacking green space access and being at increased CVD risk, providing further support for government spending to increase residents' proximity to parks and other outdoor recreational opportunities.[10,11,12] However, there are disparities in green space distribution in the United States, indicating the need to ensure equitable funding to improve access.[13]

Measures

The following measures assess spending per capita. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Per Capita Expenditure on Health Care by State Government
- Measure 2: Health Care Expenditures per Capita by State of Residence
- Measure 3: Public Expenditure Spending by Pupil
- Measure 4: State and Local Government Parks and Recreation Spending Per Capita

Measure 1: Per Capita Expenditure on Health Care by State Government

Definition

Per capita expenditures on health and hospitals by state government

Data Availability

State

Data Source(s)

Existing Data Source(s)

- Urban-Brookings Tax Policy Center
  - The Tax Policy Center website contains data on per capita state spending by budget category (e.g., health and hospitals) that is updated annually. Users can download a workbook containing annual data for 2004–2019. The Tax Policy Center uses data from the U.S. Census Bureau's Annual Survey of State and Local Government Finances.
  - Link: https://www.taxpolicycenter.org/statistics/state-and-local-general-expenditures-capita
- Urban Institute State and Local Finance Data Tool: Exploring the Census of Governments
  - The State and Local Finance Data Tool on the Urban Institute's website allows users to search data revenue and expenditure data for/by various government levels for individual (or multiple) states across multiple years (1977–2019). The data are from the U.S. Census Bureau's Census of Governments and Annual Survey of State and Local Government Finances; additional data are from the U.S. Bureau of Economic Analysis and the U.S. Bureau of Labor Statistics. Users can select the analysis unit they wish to see. To access data on this measure, users can click Get Started > State > state of interest > Health and Hospital Direct Expenditures categories (E052) > year of interest > Per Capita.
  - Link: https://state-local-finance-data.taxpolicycenter.org/pages.cfm#

Measure 2: Health Care Expenditures per Capita by State of Residence

Definition

Per capita spending on health care from all payers (Medicare, Medicaid, and private health insurance)

Data Availability

State

Data Source(s)

Existing Data Source(s)

- Health Expenditures by State of Residence, 1991–2014
  - Health accounts by state of residence present aggregate and per capita estimates of health care spending by type of establishment delivering care (e.g., hospitals, physicians and clinics, nursing homes) and for medical products (prescription drugs, over-the-counter medicines and sundries, and durable medical products such as eyeglasses and hearing aids) purchased in retail outlets. Source of aggregate funding and per enrollee estimates by state are also provided for Medicare, Medicaid, and private health insurance. Users can download either the health expenditures by state of residence summary tables or detailed data from the Centers for Medicare & Medicaid Services (CMS) website. The website also provides useful guidance on analyzing the data.
  - Link: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsStateHealthAccountsResidence

- Kaiser Family Foundation
  - The Kaiser Family Foundation website provides annual data for 1991–2014 on total per capita spending on health care by state. The CMS Office of the Actuary produces health expenditures by state of residence and health expenditures by state of provider every 5 years. The State Health Expenditure Accounts are a subcomponent of the National Health Expenditure Accounts (NHEA), the official government estimates of health spending in the United States. Users can search this measure by navigating to Health Costs & Budgets > Health Care Expenditures by State >Health Care Expenditures per Capita by State of Residence.
  - Link: https://www.kff.org/statedata/

Measure 3: Public Education Spending by Pupil

Definition

The amount of money public schools spent (on teacher and administrator salaries, supplies, building maintenance, field trips, etc.) per pupil for elementary and secondary public education

Data Availability

State

Data Source(s)

Existing Data Source(s)

- National Center for Education Statistics (NCES)
  - NCES is the primary federal entity for collecting and analyzing data related to education in the United States. The NCES *Digest of Education Statistics* is an annual report that contains a set of tables covering education data from prekindergarten through graduate school, including total expenditures per pupil by state. Users can access data for this measure by clicking the link below, selecting the year of interest in the drop-down menu at the top of the website, and then navigating to Chapter 2: Elementary and Secondary Education > 236 Expenditures > Total and current expenditures per pupil in fall enrollment in public elementary and secondary schools, by function and state or jurisdiction. Data can be downloaded as an Excel workbook and is available for 1995–2019.
  - Link: https://nces.ed.gov/programs/digest/2016menu_tables.asp

Measure 4: State and Local Government Parks and Recreation Spending Per Capita

Definition

Per capita direct expenditures by state and local government on parks and recreation (state and local parks)

Data Availability

Local, state

Data Source(s)

Existing Data Source(s)

- Urban Institute State and Local Finance Data Tool: Exploring the Census of Governments
  - The Urban Institute's State and Local Finance Tool allows users to search data revenue and expenditure data by various government levels for individual (or multiple) states across multiple years (1977–2019), including parks and recreation. Data come largely from the U.S. Census Bureau's Census of Governments and Annual Survey of State and Local Government Finances; additional data are from the U.S. Bureau of Economic Analysis and the U.S. Bureau of Labor Statistics. To access data on this measure, users can click Get Started > State > state of interest > Parks & Rec Direct Expenditures series (E084) > year of interest > Per Capita.
  - Link: https://state-local-finance-data.taxpolicycenter.org/pages.cfm#

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Indicator Profile | Sick Leave Policies

Sick leave policies protect employees against loss of income for temporary absences due to illness or disability.

Why Is This Indicator Relevant?

There is a link between paid sick leave (the ability to receive pay while absent from work due to illness, injury, or disability) and mortality risk among working adults in the United States.[1] Currently, state- and/or local-level sick leave policies that require some form of sick leave benefits are in place in 21 states.[2] Workers in states without paid sick leave policies are less likely to access health care and more likely to either attend work while sick or lose income due to missed work.[3] In March 2020, 78% of private industry workers and civilian workers reported having access to sick leave benefits, compared with 91% of government workers.[4] Individuals with fewer sick leave benefits have higher potential for death from heart disease.[5]

Measures

The following measure assesses sick leave policies. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: State and Local Paid Sick Leave Laws

Measure 1: State and Local Paid Sick Leave Laws

Definition

State and local government laws requiring employers to provide paid sick leave to qualified individuals

Data Availability

City, state

Data Source(s)

Existing Data Source(s)

- National Conference of State Legislatures (NCSL)
  - The NCSL provides details on state-level paid sick leave laws. Currently, 13 states and Washington, D.C., have enacted such laws. Data were gathered from individual state websites, and users can navigate to these sources from the NSCL site. The page was last updated on July 21, 2020.
  - Link: https://www.ncsl.org/research/labor-and-employment/paid-sick-leave.aspx
- Workplace Fairness Website
  - The Workplace Fairness website contains a compilation of areas (city and states) with statutes representing minimum paid sick leave requirements.
  - Link: https://www.workplacefairness.org/paid-sick-leave

Example Survey Instrument

The following survey measure is available to assess sick leave policies:

- American Time Use Survey (ATUS) Leave Module
  - The U.S. Bureau of Labor Statistics (BLS) ATUS measures the amount of time people spend doing various activities, such as paid work, childcare, volunteering, and socializing. The ATUS Leave Module questionnaire asks respondents about access to paid and unpaid leave from their jobs and ability to adjust work schedules and locations. The module covers six areas: access to paid leave, access to unpaid leave, leave taken in the past week, schedule adjustments, nonuse of leave, and health. The entire questionnaire is available on the U.S. Bureau of Labor Statistics website. To access questions for this measure, search for "access to paid leave."
  - Link: https://www.bls.gov/tus/questionnaires/lvmquestionnaire.pdf

Additional Measurement Considerations

- Because laws about employee qualifications for sick leave coverage vary (and are subject to change), there are no data available on the proportion of workers by state or other locale who are covered by sick leave policies. However, interested parties can do the analysis for individual areas by estimating the proportion of workers who meet the stated requirements using employee characteristics data from BLS, the American Community Survey, or other sources. BLS completes an annual National Compensation Survey that provides annual national estimates of the proportion of workers covered by paid sick leave policies in 2020 (78% in March 2020).
- See https://www.ncsl.org/research/labor-and-employment/paid-sick-leave.aspx for more details. Additional analysis of sick leave laws can include coding laws for applicable coverage and resulting inequities6 and conducting regression analysis to estimate the effects of sick leave access on health outcomes, specifically for populations of interest to users.[7]

Sick Leave Policies References

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Indicator Profile | Smoke-Free Policies

Smoke-free policies prohibit smoking in designated public areas and indoor spaces.

Why Is This Indicator Relevant?

Cigarette smoking causes 480,000 deaths per year; 41,000 of those deaths are from secondhand exposure. Smoke-free policies prohibit smoking in designated public areas and indoor spaces. These policies establish smoke-free standards through state and local ordinances.[1] Currently, about 61% of the total United States population is covered by smoke-free indoor air policies in public spaces.[2] These policies help reduce both smokers' consumption and nonsmokers' exposure to secondhand smoke.

Smoking is a major cause of CVD, leading to approximately one of every four deaths from CVD.[3] Secondhand smoke exposure also causes heart disease in nonsmokers. More than 33,000 nonsmokers die every year in the United States from coronary heart disease caused by secondhand smoke exposure. Secondhand smoke exposure can also increase heart attack and stroke risk in nonsmokers.[3]

Studies show that most cigarette smokers start smoking before the age of 26.[4] Smoking policies across learning institutions are important for promoting and enforcing smoke-free environments. Since 2017, at least 2,082 U.S. colleges and universities instituted smoke free policies.[5]

Measures

The following measure assesses smoke-free policies. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: State and Local Comprehensive Smoke-Free Law Status

Measure 1: State and Local Comprehensive Smoke-Free Law Status

Definition

State and local government laws related to smoking in public places (organized by worksites, restaurants, and bars) and on campuses (i.e., public schools K–12, private schools K–12, public colleges, and private colleges)

Data Availability

City, state

Data Source(s)

Existing Data Source(s)

- State Tobacco Activities Tracking and Evaluation (STATE) System
  - CDC's Office on Smoking and Health developed the STATE system as an interactive application that presents current and historical state-level data on tobacco use and prevention. Users can download state highlights and detailed custom reports related to a variety of smoke-free indoor and campus legislation (including indoor air laws and e-cigarette access), as well as explore interactive maps and factsheets on key data points. Data availability varies based on variables of interest, with some measures available as recently as 2022. CDC collects data from a variety of

data sources, including the Behavioral Risk Factor Surveillance System (BRFSS), the Substance Abuse and Mental Health Services Administration (SAMHSA), and the Youth Risk Behavior Surveillance System (YRBSS).

- Link: https://www.cdc.gov/statesystem/smokefreerules.html

Smoke-Free Policies References

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Indicator Profile | Social Determinants of Health (SDOH) Measures in EHRs (Electronic Health Records)

SDOH are the conditions where people live, learn, work, and play that affect a wide range of health and quality-of-life risks and outcomes. In health care settings, EHRs are an opportunity to collect data on SDOH to improve patient care and address the social needs of patients.

Why Is This Indicator Relevant?

SDOH are the conditions where people live, learn, work, and play that affect a wide range of health and quality-of-life risks and outcomes.[1] Measuring SDOH is crucial in identifying patients who are at risk for poor health outcomes and in identifying areas where prevention or intervention efforts should be allocated at various levels (e.g., health system, community, and individual levels).

In health care settings, providers use EHRs to document patient care and clinical data.[2] However, qualitative information about patients' lifestyles is usually documented in unstructured clinical notes. Although SDOH information is often collected, the lack of standardized data elements, assessment tools, measurable inputs, and data collection practices in clinical notes greatly limits the utility of this information.[3]

Digitization of clinical records helps integrate SDOH into EHRs, enhancing standardization of SDOH data collection and facilitating patient-level assessment for specific health outcomes risk.[4] The American Heart Association promotes SDOH assessment as a component of routine care for individuals with heart disease and advises using patient EHRs to collect SDOH data.[5] Overall, the inclusion of CVD risk factors in EHRs is a useful tool in population health surveillance.[6] The Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE) is an example of a tool that facilitates the standardized collection and entry of SDOH data into EHRs.[7]

Measures

The following measures assess smoke-free policies. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Patient SDOH
- Measure 2: Degree of SDOH Categories in EHRs

Measure 1: Patient SDOH

Definition

Patient-level information on unmet social needs and social determinants of health. Data collected from patient SDOH screening can be entered into EHRs and can be used to improve patient care

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following screening tools assess patient social needs and can be used for standardized collection and entry of patient SDOH data into EHRs:

- Health-Related Social Needs Screening Tool
  - The Health-Related Social Needs Screening Tool was originally developed for the Centers for Medicare & Medicaid Services (CMS) Accountable Health Communities (AHC) models. This screening tool includes 10 questions about five core domains: housing instability, food insecurity, transportation problems, utility help needs, and interpersonal safety. It also includes supplemental questions on financial strain, employment, family and community support, education, physical activity, substance use, mental health, and disabilities. The entire survey is available on the CMS website.
  - Link: https://innovation.cms.gov/files/worksheets/ahcm-screeningtool.pdf
- Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE)
  - PRAPARE is a national standardized patient risk assessment protocol designed to equip health care providers and their community partners to assess individuals' SDOH. The assessment protocol has 18 core questions and four optional questions across four domains: personal characteristics, family and home, money and resources, and social and emotional health. The survey has been translated into 25 languages and is available on the PRAPARE website.
  - Link: https://prapare.org/the-prapare-screening-tool/

Additional Measurement Considerations

- For guidance on what measures are considered SDOH and more information on the SDOH key areas, please refer to CDC's Healthy People 2030 Social Determinants of Health website.
- SDOH data can inform risk assessments for chronic disease, including CVD. SDOH data within EHRs can also be used for predictive analyses to forecast health care utilization and health outcomes.[4]
- Health care providers can capture data on patient social needs using the ICD-10-CM "Z codes" (categories Z55–Z65), which identify nonmedical factors that may influence a patient's health status. ICD-10 Z codes collect SDOH information such as education and literacy level, employment and housing status, psychosocial issues, social environment circumstances (e.g., social exclusion, discrimination), access to adequate food or water, and occupational exposure to risk factors such as dust, radiation, or toxic agents.

Measure 2: Degree of SDOH Categories in EHRs

Definition

The number and type of SDOH measures in screener questions (or otherwise) in the EHRs of clinics, community health organizations, and other health systems

Data Availability

Health care organization (e.g., health systems, clinics, Federally Qualified Health Centers [FQHCs], other health care settings)

Data Source(s)

Recommended Data Collection

Currently, there are no publicly available data sources capturing the breadth or scope of SDOH data availability within EHRs. However, users may follow the steps below to collect data for this indicator:

1. Identify health systems within your site's catchment area that utilize EHRs to track patient health data.
2. Engage health systems and request access to their EHR template. For cases in which there are multiple EHRs, choose the EHR with the broadest patient reach.
3. Determine the number of SDOH measures present in the EHRs, categorizing them into the five main SDOH areas:
    a. Economic Stability
    b. Education
    c. Social and Community Context
    d. Health and Health Care
    e. Neighborhood and Built Environment
4. For each measure, calculate the percentage of missing data within SDOH.
5. Create a summary of the number of SDOH indicators with more than 30% missing data.
6. Sites may also assess the use of a validated SDOH screening tool within EHRs (yes/no response).
7. Aggregate and analyze the results of missing data, category representation, and validated screening tool use based on your site's capabilities and interests.

Additional Measurement Considerations

- For guidance on what measures are considered SDOH and more information on the SDOH key areas, please refer to CDC's Healthy People 2030 Social Determinants of Health website.
- SDOH data can inform risk assessments for chronic disease, including CVD. SDOH data within EHRs can also be used for predictive analyses to forecast health care utilization and health outcomes.[4]
- Health care providers can capture data on patient social needs using the ICD-10-CM "Z codes" (categories Z55–Z65), which identify nonmedical factors that may influence a patient's health status. ICD-10 Z codes collect SDOH information such as education and literacy level, employment and housing status, psychosocial issues, social environment circumstances (e.g., social exclusion, discrimination), access to adequate food or water, and occupational exposure to risk factors such as dust, radiation, or toxic agents.

SDOH in EHRs References

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Health Equity Indicator Profiles | Psychosocial Pathways

Psychosocial pathways are the ways in which social, cultural, and environmental factors influence an individual's mind and behavior.[1,2] This concept focuses on the intersection and interaction of individual-level factors such as mental well-being and stress, with social factors such as social networks and support systems. Psychosocial factors, such as occupational stress, social support or isolation, sleep quality, and mental health, are shaped by racial, economic, and other societal structures. For example, unemployment and loss of income may lead to increased stress and feelings of worthlessness, which then affect health through lifestyle or behavioral changes (e.g., less healthy eating, increased drinking or smoking) or through neurological changes. Psychosocial pathways refer to both the indirect influence of psychosocial factors on health through behavior modifications and the direct impact on health via psychoneuroendocrine changes.[3]

Indicators

This document provides guidance for measuring ***seven indicators related to psychosocial pathways*** that influence risk for developing or the ability to manage cardiovascular disease (CVD). The seven psychosocial pathway indicators are measured at different levels of analysis, including individual, census tract, county, and state.

Access to Mental Health Care

Mental health care access is the extent to which mental health care is available in a geographic area. Visit the Access to Mental Health Care indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Mental Health Care Provider Ratio

Adverse Childhood Experiences

Adverse childhood experiences (ACEs) are traumatic events and severe or chronic stress that occur during childhood (ages 0–17), including abuse (physical, emotional, and sexual), neglect (emotional and physical), and household dysfunction (parental mental health illnesses, household substance abuse, violence between parents or caregivers, incarcerated family member, and parental separation or divorce). Visit the Adverse Childhood Experiences indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Adverse Childhood Experiences

Mental Health Disorders

Mental health refers to emotional, psychological, and social well-being; mental health disorders refer to conditions affecting cognition, emotion, and behavior (e.g., schizophrenia, depression, autism). Visit the Mental Health Disorders indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Number of Poor Mental Health Days
- Measure 2: Presence of Anxiety Disorder
- Measure 3: Prevalence of Depression Diagnoses
- Measure 4: Prevalence of Suicide
- Measure 5: Psychological Distress

Sleep Health

Sleep health is commonly recognized as comprising several measurable dimensions, including sleep duration (total amount of sleep per 24-hour day), sleep continuity or efficiency (ease of falling asleep and returning to sleep), timing (placement of sleep within the 24-hour day), alertness/sleepiness (ability to maintain attentive wakefulness), and satisfaction/quality (subjective assessment of "good" or "poor" sleep). Visit the Sleep Health indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Insufficient Sleep

Social Support

Social support refers to the benefits provided through relationships with family members, friends, spouses, colleagues, and acquaintances (e.g., emotional, instrumental, and informational support). Visit the Social Support indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Social Support

Stigma

Social stigmatization is the experience of being discredited or rejected due to a characteristic or attribute that is considered undesirable and can lead to prejudice, stereotyping, and/or discrimination. Visit the Stigma indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Stigma Consciousness

Stress

Stress is the physiological or psychological response to internal or external stressors. Perceived stress, or how an individual experiences stress, may include stressors experienced throughout the life course, including during childhood, adolescence, and adulthood. Visit the Stress indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Perceived Stress Scale
- Measure 2: Coping

Psychosocial Pathways References

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Indicator Profile | Access to Mental Health Care

Mental health care access is the extent to which mental health care is available in a geographic area.

Why Is This Indicator Relevant?

Health care access is a public health issue, because many Americans lack the physical or financial resources to receive the health care services they need. Mental health care access is challenging due to the scarcity of mental health services and the social stigma associated with mental health.[1] One indicator of mental health care access is the extent to which mental health care is available in a geographic area.

In the United States, more than half of Americans are diagnosed with a mental illness or disorder during their lifetime, yet nearly 30% of the population live in a county designated as a Mental Health Professional Shortage Area (MHPSA).[2,3] MHPSAs are areas where the ratio of mental health providers (e.g., psychiatrists, clinical social workers, therapists) to residents is 1 to 30,000 or less.[4] A National Violent Death Reporting System study between 2005 and 2010 (*n* = 57,877 suicides) compared adult decedents who received any or no mental health treatment within 2 months before death. Results suggest that having access to mental health services improves diagnosis and may prevent deaths by suicide.[5] Low availability of mental health services at the county level is also linked to negative health outcomes. Mental health shortage areas have higher county-level suicide rates, and individuals with serious mental illnesses living in shortage areas are more likely to be admitted to the hospital.[6,7]

Mental disorders play a role in multiple aspects of the pathogenesis of CVD and other chronic noncommunicable diseases. They independently confer an adverse prognosis for CVD mortality and death from all causes and directly impair quality of life.[8]

Measures

The following measure assesses access to mental health care. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Mental Health Care Provider Ratio

Measure 1: Mental Health Care Provider Ratio

Definition

The population size compared with the number of mental health providers. It represents the number of individuals one physician serves in a county, if the population were equally distributed across physicians. The value on the right side of the ratio is always 1 or 0. A 1 indicates that there is at least one mental health provider in the county; 0 indicates that there are no registered mental health providers in the county.

Data Availability

County, state

Subgroups

Gender

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses the Centers for Medicare & Medicaid Services (CMS) National Provider Identification (NPI) data to provide county-level estimates of the ratio of a population to mental health providers. The ratio represents the number of individuals served by one mental health provider in a county, if the population were equally distributed across providers. Users can access this measure under Ranked Measures > Health Factors > Clinical Care > Mental Health Provider. Data are downloadable as an Excel workbook, and years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/clinical-care/access-to-care/mental-health-providers

Additional Measurement Considerations

This measure does not consider availability of telehealth psychological services. Mental health care availability metrics should be interpreted alongside mental health care needs. It is important to consider the level of need in a community as some unhealthy areas may have high health care availability due to high need for health services.

Access to Mental Health Care References

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Indicator Profile | Adverse Childhood Experiences (ACEs)

Adverse childhood experiences (ACEs) are traumatic events and severe or chronic stress that occur during childhood (ages 0–17), including abuse (physical, emotional, and sexual), neglect (emotional and physical), and household dysfunction (parental mental health illnesses, household substance abuse, violence between parents or caregivers, incarcerated family member, and parental separation or divorce).

Why Is This Indicator Relevant?

Research over the past decade has pointed to the cumulative and long-lasting impact of childhood experiences and early life factors on adult health status. ACEs refer to traumatic events and severe or chronic stress occurring during childhood (ages 0–17), including abuse (physical, emotional, and sexual), neglect (emotional and physical), and household dysfunction (parental mental health illnesses, household substance abuse, violence between parents or caregivers, incarcerated family member, and parental separation or divorce).[1] Exposure to stressful and traumatic events during childhood disrupts normal psychosocial development and may lead to the development of mental health disorders and negative coping strategies such as smoking, overeating, and physical inactivity, all of which are risk factors for CVD.[2,3] Moreover, prolonged stress in childhood alters biological functioning in stress regulatory pathways, leading to negative stress responsivity in adulthood.[2]

Low social economic status, early life stress, and ACEs are linked to the development of poor health behaviors, hypertension, and increased risk for ischemic heart disease and CVD.[2,3,4,5] A seminal CDC-Kaiser Permanente study on ACEs found a strong dose–response relationship between childhood exposure to abuse, neglect, and dysfunction and multiple risk factors for several of the leading causes of death, including alcoholism, smoking, drug abuse, severe obesity, and physical inactivity.[5] The study also found a graded relationship between ACEs and conditions such as ischemic heart disease, cancer, chronic lung disease, and liver disease.[5]

The life course perspective has been increasingly incorporated into cardiovascular health strategies. In a scientific advisory, the American Heart Association stated that "cardiovascular health is being lost from childhood through young adulthood" and declared that "we must improve the distribution of cardiovascular health levels across the population by preserving cardiovascular health from childhood and by treating health risk behaviors to help more individuals improve their cardiovascular health into older ages."[6]

Measures

The following measure assesses ACEs. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Adverse Childhood Experiences

Measure 1: Adverse Childhood Experiences (ACEs)

Definition

Potentially traumatic events that occur in childhood (before age 18) and include abuse, neglect, as well as parental mental illness, substance use, divorce, incarceration, and domestic violence

Data Availability

Individual, state

Data Source(s)

Existing Data Source(s)

- Behavioral Risk Factor Surveillance System (BRFSS)
    - CDC's BRFSS is a state-level, multistage-cluster sampling telephone survey of U.S. residents that collects data on self-reported demographics, health behaviors, and preventive health practices. The ACE module is an optional module (states elect to add optional modules to the state questionnaire) that assesses child abuse, neglect, and household challenges. The ACE questionnaire was adapted from the original CDC-Kaiser Permanente ACE study.[5] The ACE module was added in 2009, and years of data availability will vary by state. Questionnaires and data are available for download.
    - Links:
        - https://www.cdc.gov/brfss/annual_data/annual_data.htm
        - https://www.cdc.gov/violenceprevention/aces/ace-brfss.html

Example Survey Instrument

The following survey instrument is available to measure ACEs:

- Family Health History Questionnaire
    - The Family Health History Questionnaire was used to collect information on child abuse and neglect, household challenges, and other sociobehavioral factors in the original CDC-Kaiser Permanente ACE Study. The landmark ACE study was conducted at Kaiser Permanente from 1995 to 1997 across 17,000 health maintenance organizations. The study questionnaire assesses childhood experiences in two dimensions (abuse/neglect and household stressors) and captures 10 categories of ACE: emotional, physical, and sexual abuse; physical and emotional neglect; parental separation or divorce; and household substance abuse, mental illness, domestic violence, and criminal activity. The full questionnaire has more than 64 questions and is available through CDC's Violence Prevention website. Search for "Study Questionnaire" at the link below.
    - Link: https://www.cdc.gov/violenceprevention/aces/about.html

- ACE Questionnaire for Adults
  - The ACE Questionnaire for Adults is a screening tool designed to help primary care clinicians assess risk for toxic stress and guide effective responses to ACE. The screening tool captures 10 different categories of ACE by asking respondents 10 yes or no questions. The screener was adapted from the original CDC-Kaiser Permanente ACE study[5] by the Office of the California Surgeon General and Department of Health Care Services in consultation with the California Surgeon General's Clinical Advisory Subcommittee. The full questionnaire is available in 17 languages through the ACEs Aware website.
  - Link: https://www.acesaware.org/learn-about-screening/screening-tools/screening-tools-additional-languages/

Adverse Childhood Experiences References

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Indicator Profile | Mental Health Disorders

Mental health refers to emotional, psychological, and social well-being; mental health disorders refer to conditions affecting cognition, emotion, and behavior (e.g., schizophrenia, depression, autism).

Why Is This Indicator Relevant?

Mental health refers to emotional, psychological, and social well-being; mental health disorders refers to conditions affecting cognition, emotion, and behavior (e.g., schizophrenia, depression, autism).[1]

Certain racial/ethnic groups, women, and individuals who identify as lesbian, gay, bisexual, transgender, queer, intersex, asexual, or other sexual orientations (LGBTQIA+) are disproportionately affected by mental health issues due to greater exposure to several risk factors, including lack of access to mental health care services, discrimination, poverty, and unemployment. Although the prevalence of clinical depression is lower among Black/African American persons (24.6%) and Hispanic/Latino persons (19.6%) than among White persons (34.7%), depression is more likely to be persistent and debilitating in these groups.[2,3] Furthermore, these differences are partially due to Black/African American and Hispanic/Latino American persons being less likely to seek clinical help, and providers being less likely to identify and diagnose culturally different presentations of mental health disorders. Therefore, it is speculated that clinical prevalence of depression is underestimated for these groups and the true depression prevalence is higher for Black/African American and Hispanic/Latino persons than for White persons.[3] Moreover, people who identify as multiracial are most likely to report mental illness within the past year compared with other racial/ethnic groups. American Indians/Alaskan Native persons report higher prevalence of post-traumatic stress disorder (PTSD) and substance use disorders than any other group.[4] LGBTQIA+ youth are four times more likely to attempt suicide than their heterosexual/cisgender counterparts.[5]

Mental health and cardiovascular health have a well-established relationship. Specifically, studies show that depression, anxiety, and PTSD are associated with negative CVD outcomes.[6] Patients with CVD are three times more likely to be depressed than those without CVD. The American Heart Association recommends that depression be recognized as a major risk factor for heart disease and heart disease mortality. Despite this, many patients are rarely assessed for mental health problems, and mental health disorders are often undiagnosed.[7]

Measures

The following measures assess mental health disorders. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Number of Poor Mental Health Days
- Measure 2: Presence of Anxiety Disorder
- Measure 3: Prevalence of Depression Diagnoses
- Measure 4: Prevalence of Suicide
- Measure 5: Psychological Distress

Measure 1: Number of Poor Mental Health Days

Definition

The average number of mentally unhealthy days self-reported in the past 30 days, in response to the question, “Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?”

Data Availability

State, county

Subgroups

Age, education, gender, income, race

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses Behavioral Risk Factor Surveillance System (BRFSS) data to provide county-level estimates of the average number of mentally unhealthy days reported in the last 30 days (age-adjusted). Data may be disaggregated by age, gender, race/ethnicity, education, and income. Users can access this measure under Health Outcomes > Quality of Life > Poor Mental Health Days. Data are downloadable as an Excel workbook, and years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-outcomes/quality-of-life/poor-mental-health-days

Measure 2: Prevalence of Anxiety Disorder

Definition

Percentage of individuals in each area diagnosed with anxiety. People with anxiety disorders respond to situations and things with fear and dread and may experience physical signs of anxiety, such as a pounding heart and sweating. Anxiety disorders involve more than temporary fear or stress and interfere with the ability to function.[8]

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey instrument is available to measure presence of anxiety:

- NIH Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety Instruments
  - PROMIS is an NIH-funded initiative to develop and validate patient-reported outcomes for clinical research and practice. PROMIS Anxiety instruments measure emotional distress caused by hyperarousal, fear, stress, and related somatic symptoms within a 7-day time frame and using a 5-point rating scale that ranges from 1 ("Never") to 5 ("Always"). The PROMIS Anxiety instruments for the general adult population include a full item bank of 29 questions (PROMIS Item Bank v1.0–Anxiety) and short forms of 4, 6, 7, and 8 questions (PROMIS Short Form v1.0 – Anxiety 4a, 6a, 7a, and 8a, respectively). To access the questionnaires and scoring guidance, users can use the first link below and enter the following search terms: "Age = Adult, Category = Mental Health, Domain = Anxiety/Fear, Language = English, Measure System = PROMIS." The second link provides details on score interpretation.
  - Links:
    - https://www.healthmeasures.net/search-view-measures
    - https://www.healthmeasures.net/score-and-interpret/interpret-scores/promis/promis-score-cut-points

Measure 3: Prevalence of Depression Diagnoses

Definition

Percentage of individuals in each area diagnosed with depression

Data Availability

County, state, individual

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to measures developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tool, and data downloads (CSV format). PolicyMap uses the CMS data to present the percentage of Medicare fee-for-service beneficiaries who are diagnosed with depression. Users who want to view the depression diagnoses prevalence for the general population can overlay the map with state or county-level demographic information and/or download the data. Users can access this measure under Health > Health Conditions > Chronic Conditions > Depression (which falls under Medicare Population). Data for this measure are available for 2007–2018.
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey instrument is available to measure presence of depression:

- NIH Patient-Reported Outcomes Measurement Information System (PROMIS) Depression Instruments
  - The PROMIS is an NIH-funded initiative to develop and validate patient reported outcomes for clinical research and practice. PROMIS Depression instruments measure negative affect, mood, self-image, and social interaction within a 7-day time frame and using a rating scale that ranges from 1 (“Never”) to 5 (“Always”). The PROMIS Depression instruments for the general adult population include a full item bank of 29 questions (PROMIS Item Bank v1.0–Depression) and short forms of 4, 6, and 8 questions long (PROMIS Short Form v1.0–Depression 4a, 6a, 8a, and 8b, respectively). To access the questionnaires and scoring guidance, users can use the first link below and enter the following search terms: “Age = Adult, Category = Mental Health, Domain = Depression/Sadness, Language = English, Measure System = PROMIS.” The second link provides details on score interpretation.
  - Links:
    - https://www.healthmeasures.net/search-view-measures
    - https://www.healthmeasures.net/score-and-interpret/interpret-scores/promis/promis-score-cut-points

Measure 4: Prevalence of Suicide

Definition

Percentage of individuals whose primary cause of mortality is self-harm

Data Availability

County, state, region, division

Subgroups

Age, gender, race/ethnicity, rurality/urbanization

Data Source(s)

Existing Data Source(s)

- CDC Web-based Injury Statistics Query and Reporting System (WISQARS)
  - CDC’s WISQARS is an interactive, online database that provides fatal and nonfatal injury, violent death, and cost of injury data. The Fatal Injury Reports on WISQARS provide estimates on the number of suicide deaths per 100,000 people at state, regional, and national levels from 1981 to 2020. Data are also available by age, race/ethnicity, and gender. To obtain suicide data from WISQARS, navigate to the provided link and select “Suicide” under Intent or manner of injury drop-down menu.
  - Link: https://wisqars.cdc.gov/fatal-reports

- CDC Wonder's Underlying Cause of Death Database (WONDER)
  - CDC's WONDER manages nearly 20 collections of public-use data for U.S. births, deaths, cancer diagnoses, environmental exposures, and vaccinations, among other topics. Users can create tables, maps, and charts; export data; and obtain descriptive statistics such as frequency counts. Specifically, the Underlying Cause of Death database contains mortality and population counts for all U.S. counties. For this measure, users can access data on intentional self-harm by first reading and agreeing to the data use restrictions and then submitting a request form that groups results by 15 Leading Causes of Death, or Cause of Death for a more detailed breakdown, for a given geographical level (county, state, region, or division) and/or level of urbanization (non-core, micropolitan, small metro, medium metro, large central metro, or large fringe metro). Data are based on death certificates for U.S. residents. Data can be disaggregated by age, race/ethnicity, and gender. Data are available for 1999–2020.
  - Link: https://wonder.cdc.gov/ucd-icd10.html

Measure 5: Psychological Distress

Definition

A set of painful mental and physical symptoms that may be part of normal fluctuations of mood or may indicate the beginning of serious mental illness.[9] Serious psychological distress includes mental health problems severe enough to cause moderate to serious impairment in social, occupational, or school functioning and to require treatment.

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is available for assessing psychological distress and serious mental illness:

- Kessler Psychological Distress Scale
  - Two Kessler Psychological Distress Scales, K10 and K6, were developed for the National Health Interview Survey (NHIS).[10] Both scales are measures of psychological distress used to screen for serious mental illness based on questions about level of nervousness, agitation, psychological fatigue, and depression in the past 30 days. K10 and K6 assess the frequency of nonspecific psychological distress and how it affects functional impairment, using a five-point Likert scale. K10 is a 10-item self-reported measure and K6 is the short-form scale with six questions. For K10, the scores for the 10 items are added up, yielding a minimum possible score of 10 (no distress) and a maximum possible score of 50 (severe distress). For K6, the six items are added up to yield a final score between 0 and 24; a score of 13 or above is considered to indicate a serious mental illness.[3,11] The measure and scoring are available through the Harvard Medical School's National Comorbidity Survey website.
  - Link: https://www.hcp.med.harvard.edu/ncs/k6_scales.php

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Indicator Profile | Sleep Health

Sleep health is commonly recognized as comprising several measurable dimensions, including sleep duration (total amount of sleep per 24-hour day), sleep continuity or efficiency (ease of falling asleep and returning to sleep), timing (placement of sleep within the 24-hour day), alertness/sleepiness (ability to maintain attentive wakefulness), and satisfaction/quality (subjective assessment of "good" or "poor" sleep).

Why Is This Indicator Relevant?

Sleep health is commonly recognized as comprising several measurable dimensions, including sleep duration (total amount of sleep per 24-hour day), sleep continuity or efficiency (ease of falling asleep and returning to sleep), timing (placement of sleep within the 24-hour day), alertness/sleepiness (ability to maintain attentive wakefulness), and satisfaction/quality (subjective assessment of "good" or "poor" sleep).[1] These dimensions are associated with physical, mental, and neurobehavioral well-being. Moreover, sleep is an important modulator of cardiovascular health; sleep deprivation is linked to hypertension, congestive heart failure, and stroke.[1,2]

Historically, sleep duration in the United States has declined steadily from the 1960s onward, plateauing in the early 21st century to an average of 6 hours, which is below CDC's and National Sleep Foundation's minimum recommendation of at least 7 hours per day. Certain racial/ethnic groups, including Black/African American persons, multiracial persons, Native Hawaiian persons, Pacific Islander persons, American Indians/Alaska Native persons, and immigrant groups have worse sleep outcomes, averaging less sleep and lower quality of sleep than their White person counterparts.[3,4] For instance, the CDC Behavioral Risk Factor Surveillance System (BRFSS) found that 46.3% of Native Hawaiian and Pacific Islander persons, 45.8% of Black/African American persons, 44.3% of multiracial persons, and 40.4% of American Indians/Alaska Native persons reported getting less than 7 hours of sleep per day, compared with 33.4% of White persons.[4] Other studies found significantly less slow-wave sleep and more self-reported daytime fatigue among Black/African American persons compared to White persons.[5,6] Hypothesized contributors to racial/ethnic sleep inequities include competing demands (e.g., occupational and financial considerations), environmental exposures (e.g., air pollution), and psychosocial stressors (e.g., perceived discrimination and acculturation).[8,9]

Current sleep research studies have an increased focus on investigating the relationship between sleep and other disparities certain groups experience. Many researchers consider sleep health indicators, including sleep duration, sleep-disordered breathing, and insomnia, as prominent contributing factors to CVD outcome disparities.[9] Increasing awareness of sleep-mediated causes of disease risk, funding for research into underlying sleep disparity causes, and public education on the importance of sleep health, may lead to cardiovascular and overall health improvements.

Measures

The following measure assesses sleep health. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Insufficient Sleep

Measure 1: Insufficient Sleep

Definition

Percentage of adults who self-report sleeping less than 7 hours per night on average

Data Availability

Individual, county, census tract

Subgroups

Age, gender, race, education, income

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R uses Behavioral Risk Factor Surveillance System (BRFSS) data to provide county-level estimates of the percentage of adults who report fewer than 7 hours of sleep on average, adjusted by age to account for counties with different age distributions. Data may be disaggregated by age group, gender, race, education, and income. Users can access this measure under Additional Measures > Health Behaviors > Insufficient Sleep. Data are downloadable as an Excel workbook and years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/health-behaviors/insufficient-sleep
- PLACES: Local Data for Better Health
  - PLACES is the expansion of the original 500 Cities Project, covering the entire United States—50 states and the District of Columbia—at county, place, census tract, and ZIP Code Tabulation Area (ZCTA) levels. The CDC Division of Population Health's Epidemiology and Surveillance Branch provides the estimates. Users can access data on insufficient sleep using the "Health Risk Behaviors > Sleeping less than 7 hours among adults aged 18 years or older" measure. The model-based estimates specific to this measure used BRFSS data. Data since 2016 are published through a public, interactive website that allows users to view, explore, and download data by county, place, census tract, and ZCTA. Because the small area model cannot detect effects due to local interventions, users are cautioned against using these estimates for program or policy evaluations.
  - Link: https://chronicdata.cdc.gov/browse?q=PLACES%202021

Example Survey Instrument

The following survey instrument is available to measure sleep health:

- Pittsburgh Sleep Quality Index (PSQI)
  - The PSQI is a self-rated questionnaire that identifies "good" and "poor" sleepers by assessing the sleep quality and the sleep disturbance presence over 1 month.[10] The PSQI comprises 19 survey items that capture seven components of sleep quality, including subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, sleep medication use, and daytime dysfunction. The instrument and scoring details are available from the University of Pittsburgh's Center for Sleep and Circadian Science.
  - Link: https://www.sleep.pitt.edu/instruments/

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Indicator Profile | Social Support

Social support refers to the benefits provided through relationships with family members, friends, spouses, colleagues, and acquaintances (e.g., emotional, instrumental, and informational support).

Why Is This Indicator Relevant?

Social support refers to the benefits provided through relationships with family members, friends, spouses, colleagues, and acquaintances (e.g., emotional, instrumental, and informational support). Social support and social integration are predictive of mortality for a number of conditions, including CVD.[1,2,3,4,5] Lack of social support and poor social integration are linked to increased inflammation, which is a risk factor for CVD.[4,5] Social support also buffers the negative effects of discrimination on health outcomes. Specifically, social support mitigates the adverse health consequences of discrimination. Researchers posit that emotionally supportive environments allow people to better cope with unfair treatment.[6] For instance, a study in California showed that Hispanic/Latino immigrants who reported discriminatory experiences and low social support were more likely to report poor health than those who reported discriminatory experiences and high levels of social support.[7] Another study found that peer support interventions that community health workers delivered, including barbershop and beauty parlor interventions, were associated with decreases in CVD risk factors.[8] Other studies, however, found no association between social support and CVD outcomes overall, or detected effects in only one gender after adjusting for age and other characteristics.[5,9,10,11] Therefore, further research is warranted to elucidate the effect of social support on CVD risk and whether it may serve as a buffer for the negative health consequences of discrimination.

Measures

The following measure assesses social support. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Social Support

Measure 1: Social Support

Definition

Degree of structural and functional support. Structural support refers to social connectedness, such as social network size and/or density. Functional support refers to how interpersonal relationships may serve different functions, such as emotional, instrumental, or instructional support.

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey instruments are available to measure social support:

- NIH Patient-Reported Outcomes Measurement Information System (PROMIS) Battery of Short Form Social Support Measures
  - PROMIS is an NIH-funded initiative to develop and validate patient-reported outcomes for clinical research and practice; it includes a battery of tests that vary in length (four, six, and eight questions) and measure emotional social support (PROMIS Short Form V2.0–Emotional Support 4a, 6a, 8a), informational social support (PROMIS Short Form V2.0–Informational Support 4a, 6a, and 8a), instrumental social support (PROMIS Short Form V2.0–Instrumental Support 4a, 6a, and 8a), and social isolation (PROMIS Short Form V2.0–Social Isolation 4a, 6a, and 8a). They can be used with the general population and with individuals living with chronic conditions. A complete list of PROMIS social support measures and scoring guidance, as well as computer adaptive test versions of these measures are searchable within Northwestern University's Health Measure database. Users can use the link below and enter the following search terms: "Category = Social Health, Domain = Relationships/Social Support, Type= Fixed Length Short Form, Language = English, System = PROMIS."
  - Links:
    - https://www.healthmeasures.net/search-view-measures
    - https://www.healthmeasures.net/score-and-interpret/interpret-scores/promis/promis-score-cut-points
- Lubben Social Network Scale (LSNS)
  - The LSNS is a self-report measure of social engagement, including family and friends, and correlates with mortality, all cause hospitalization, health behaviors, depressive symptoms, and overall physical health. The scale has two versions: the short, 6-item scale (LSNS-6) and the 12-item scale (LSNS-R). The short version has been validated among European and multiethnic populations in the United States.[12,13] The total score is calculated by summing the response scores to all items. For the LSNS-6, the score ranges from 0 to 30, with a higher score indicating more social engagement. Before using this scale, researchers are asked to fill out this permission form. The LSNS-6 is available at the Boston College School of Social Work website.
  - Link: https://www.bc.edu/content/dam/bc1/schools/sw/lubben/LSNS6.pdf
- Social Network Index (SNI)
  - The Berkman-Syme SNI is a self-reported 12-item measure of social isolation and integration based on an individual's number of social ties and focused on four types of social connections: marriage or partnership, frequency of contact with friends and family, frequency of religious participation, and group membership.[1] There are a couple of different approaches to scoring. The first approach scores the survey as a total of 0 to 12 points with three groupings: limited social network (SNI 0–3), medium social network (SNI 4–5), diverse social network (SNI ≥6).[4] The second approach scores the survey as a total of 0 to 4 points with four groupings: socially isolated (SNI 0–1), moderately isolated (SNI 2), moderately integrated (SNI 3), and socially integrated (SNI 4).[5,10,11] The full scale is available through Carnegie Mellon University's Common Cold Project website.

- Link: https://www.cmu.edu/common-cold-project/measures-by-study/psychological-and-social-constructs/social-relationships-loneliness-measures/social_network_index_rev.pdf

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Indicator Profile | Stigma

Social stigmatization is the experience of being discredited or rejected due to a characteristic or attribute that is considered undesirable and can lead to prejudice, stereotyping, and/or discrimination.

Why Is This Indicator Relevant?

Social stigmatization is the experience of being discredited or rejected due to a characteristic or attribute that is considered undesirable and can lead to prejudice, stereotyping, and/or discrimination.[1] Stigma-consciousness refers to the extent to which a person anticipates discrimination or prejudice.[2] Chronic exposure to stigma and chronic self-consciousness of stigmatized status may affect CVD risk by negatively affecting physiological response to stress and increasing the risk of physiological dysregulation.[1,3]

The experience of stigma and the anticipatory vigilance of stigma-consciousness are social stressors that may result in heightened acute or chronic stress. Acute stress can cause increased heart rate, blood pressure, and secretion of stress hormones.[4] Chronic stress can cause constantly elevated heart rate and blood pressure and vasoconstriction, which may lead to higher likelihood of developing myocardial ischemia, atherosclerosis, and thrombosis.[4] Several attributes of stigma, including race, weight, gender, and sexual orientation, are associated with negative cardiovascular risk factors and health outcomes.[1] One study found that weight-related stigma and perceived discrimination was associated with a twofold risk of high allostatic load.[5] Another study found that racial discrimination and stigma-consciousness was associated with higher blood pressure and hypertension in Black/African American and Hispanic/Latino men.[6]

Measures

The following measure assesses stigma. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Stigma-Consciousness

Measure 1: Stigma-Consciousness

Definition

A person's stereotyped status and the life experiences it pervades

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is available to measure stigma-consciousness:

- Stigma-Consciousness Questionnaire (SCQ)

- Stigma-consciousness has been studied in more than 200 previous projects, primarily using and adapting a self-reported measure Pinel developed in 1999, the SCQ.[2] In the original work to develop and validate the SCQ, Pinel began with a version designed to measure stigma-consciousness among women and adapted it to assess stigma-consciousness related to homosexuality[7] and race.[8,9] The measure includes 10 items that ask respondents to indicate their level of agreement with statements about how much they expect to be stereotyped. The total score is calculated by summing the scores across each item. Higher scores indicate greater stigma-consciousness. Seven of the 10 items are reverse-scored, as detailed in the Pinel article.[2]
- The full questionnaire and scoring are available at the Evidence-based Measures of Empowerment for Research on Gender Equality (EMERGE) website from the University of California, San Diego. Users of the survey will need to adapt questions for stigma related to race and stigma related to sexual orientation. The statements can be adapted by changing key phrases. For example, Pinel adapted an item that originally read, "When interacting with men, I feel like they interpret all my behaviors in terms of the fact that I am a woman," to, "When interacting with heterosexuals who know of my sexual preference, I feel like they interpret all my behaviors in terms of the fact that I am a homosexual."[2]
- Link: https://emerge.ucsd.edu/r_29mnhps8cjbcghp/

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Indicator Profile | Stress

Stress is the physiological or psychological response to internal or external stressors. Perceived stress, or how an individual experiences stress, may include stressors experienced throughout the life course, including during childhood, adolescence, and adulthood.

Why Is This Indicator Relevant?

Stress is the physiological or psychological response to internal or external stressors.[1] Perceived stress, or how an individual experiences stress, may include stressors experienced throughout the life course, including during childhood, adolescence, and adulthood.[2,3,4] Although experiencing stress can be normal and some stress can be a motivating factor, chronic stress, or stress that remains constant and persists over an extended period, can be debilitating and overwhelming, affecting an individual's physical and psychological well-being. Chronic stress can cause a variety of problems, including anxiety, insomnia, muscle pain, high blood pressure, and a weakened immune system.[5] Furthermore, research shows stress contributes to "the development of major illnesses, such as heart disease, depression, and obesity."[5] Many of the indicators covered elsewhere in these profiles, such as racial/ethnic discrimination, sexism, genderism, heterosexism, unemployment, and poverty, are contributing factors to both acute and chronic stress, which have well-established connections to CVD.[7,8,9,10]

Stress management, and accompanying coping resources, offer a range of strategies to help individuals better handle stress and adversity. Coping, which is defined as cognitive and behavioral efforts made in order to manage internal or external stimuli, include task-oriented (problem solving and taking direct action to address a stressor), emotion-oriented (regulating distressing emotions), and avoidance-oriented (engaging in other activities and distancing oneself from stressor) strategies.[11] By managing stress and utilizing coping resources, individuals can lead a more balanced and healthier life.[12] External stress management and coping resources include general wellness programs, psychiatrists, counselors, therapists, and social workers. Community resources include connections to local businesses, community organizations, and various social networks, as well as neighborhood greenspaces and opportunities for physical activity.[11,12,13]

Stress is a strong predictor of CVD risk: Epidemiologic data show that chronic stress predicts coronary heart disease (CHD) occurrence.[14] Positive and adaptive coping can be used as a behavioral intervention across the prevention, treatment, and rehabilitation stages of CVD. Studies show that coping strategies can reduce CVD risk, as well as manage stress and improve outcomes among CVD patients.[15,16]

Measures

The following measures assess stress. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Perceived Stress Scale
- Measure 2: Coping

Measure 1: Perceived Stress Scale

Definition

A measure of an individual's appraisal of situations in their life as stressful

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is available to measure perceived stress:

- Perceived Stress Scale (PSS)
  - The PSS is a widely used self-report instrument for measuring how often situations are appraised as stressful.[17,18] The PPS assesses the degree to which life in the past month was unpredictable, uncontrollable, and overloaded. Several PSS versions exist. The original version included 14 items; it was later shortened to 10 questions (PSS-10) and to 4 questions (PSS-4). Scores are obtained by summing across all survey items, where the higher the aggregate score, the more perceived stress. For the PSS-10, items 4, 5, 7, and 8 are reverse coded. For the PSS-4, items 2 and 3 require reverse coding. The PSS-10 and PSS-4 are available at the University of Wisconsin–Madison's Addition Research Center website.
  - Link: https://arc.psych.wisc.edu/self-report/perceived-stress-scale-pss/

Measure 2: Coping

Definition

Using strategies to reduce unpleasant emotions associated with stressors

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is available to measure perceived coping:

- Brief Coping Orientation to Problems Experienced (COPE) Inventory
  - The Brief COPE is a 28-item multidimensional measure of strategies used for coping or regulating cognitions in response to stressors. This abbreviated inventory (based on the complete 60-item COPE Inventory) comprises items that assess how frequently a person uses different coping strategies (e.g., "I've been turning to work or other activities to take my mind off things," "I've been making fun of the situation," "I've been criticizing myself") rated on a scale from 1 ("I haven't been doing this at all") to 4 ("I've been doing this a lot") There are 14 two-item subscales within the Brief COPE, each analyzed separately: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-

blame. The measures and scoring guidelines are available through Columbia University's Medical Center's Science of Behavior Change website.

- Link: https://scienceofbehaviorchange.org/measures/brief-cope/#:~:text=The%20Brief%20COPE%20is%20a%2028-item%20multidimensional%20measure,coping%20or%20regulating%20cognitions%20in%20response%20to%20stressors

Additional Measurement Considerations

For additional measures related to coping, refer to the Access to Mental Health Care and Social Support indicators within this profile, as well as the Social Cohesion in the Neighborhood Characteristics Indicator Profile.

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Health Equity Indicator Profiles | Racism

Race is a social construct that divides people into categories based on nationality, ethnicity, phenotype, or other markers of social differences.[1] Racism, defined as an organized social system that devalues and disempowers racial groups regarded as inferior; reduces access to resources and opportunities such as employment, housing, education, and health care; and increases exposure to risk factors.[1,2] Research has consistently shown that racism drives racial/ethnic inequities in cardiovascular disease (CVD).[3,4] According to the American Heart Association (AHA), people of color—including people who are Black/African American, Hispanic/Latino, American Indian/Alaska Native, and Asian—experience varying degrees of social disadvantage that puts these groups at increased risk of CVD and contributes to inequities in CVD outcomes.[5]

Indicators

This document provides guidance for measuring ***six indicators related to racism*** that influence inequities across various social and environmental factors, leading to differential risks for developing CVD or differential access to and receipt of health care. The six racism indicators are measured at different levels of analysis, including individual, census tract, city, county, metropolitan area, and state.

Immigration Status

Immigration status, which refers to the way in which a person resides in the United States or has the authority to reside in the United States, has been linked to health inequities. Visit the Immigration Status indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Immigration Status

Race-Consciousness

Race-consciousness reflects awareness and consciousness of stereotypes associated with one's own race/ethnicity, which may also result in heightened stress associated with the anticipation of experiencing racial bias, prejudice, or discrimination. Visit the Race-Consciousness indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Racism-Related Vigilance
- Measure 2: Reactions to Race

Racial Income Gap

The racial income gap refers to the differences in median income between racial and ethnic groups. Visit the Racial Income Gap indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Index of Concentration at the Extremes
- Measure 2: Median Household Income by Race

Racial Residential Segregation

Racial residential segregation refers to the physical separation of races in residential settings and serves as a proxy for structural racism due to the systematic disinvestment of neighborhoods among historically marginalized groups that occurs along with segregation. Visit the Racial Residential Segregation indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Dissimilarity Index
- Measure 2: Index of Concentration at the Extremes
- Measure 3: Perceived Neighborhood Racial Diversity
- Measure 4: Theil Index

Racial/Ethnic Discrimination and Trauma

Racial/ethnic discrimination is defined as any distinction, exclusion, restriction, or preference based on race, descent, or national or ethnic origin with the purpose or effect of nullifying or impairing the recognition, enjoyment, or exercise, on an equal footing, of human rights and fundamental freedoms in the political, economic, social, cultural, or any other field of public life. Visit the Racial/Ethnic Discrimination and Trauma indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Racial/Ethnic Discrimination
- Measure 2: Racism-Related Stress

Redlining

The contemporary definition of redlining refers to the systematic denial of services to residents of certain neighborhoods or communities associated with a certain racial/ethnic group. Visit the Redlining indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Homeowners’ Loan Corporation Risk Maps
- Measure 2: High-Cost Loans
- Measure 3: Mortgage Denials

Racism References

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Indicator Profile | Immigration Status

Immigration status, which refers to the way in which a person resides in the United States or has the authority to reside in the United States, has been linked to health inequities.

Why Is This Indicator Relevant?

Immigration status, which refers to the way in which a person resides in the United States or has the authority to reside in the United States, has been linked to health inequities.[1] Although immigration status does not equate to race, non-White immigrants are susceptible to racial profiling, discrimination, and anti-immigrant sentiment, which in turn contributes to psychological stress and increases the risk of negative health outcomes.[2] Immigrant families, especially those who lack documentation, often lack health care resources such as insurance or a primary care physician; this may be related to attempts to avoid negative interactions with federal agencies.[3] Immigrants often struggle with discrimination, language barriers, low income, and other socioeconomic challenges.

Studies suggest that foreign-born adults who reside in the United States have lower prevalence of CVD risk factors, lower incidence of stroke and coronary heart disease, and lower CVD mortality rates than those born in the United States.[4,5] However, evidence also suggests that the protective effect of foreign birthplace on cardiovascular health decreases with increasing length of residency in the United States.[4,6,7]

Acculturation, or the adoption of behavioral and social norms, is associated with poorer health behaviors and social isolation due to erosion of cultural and familial ties. Undocumented individuals face challenges in accessing care due to exclusion from public insurance programs and employer-based insurance, challenges that may affect CVD prevention, treatment, and management.[3] Immigrants are also prone to higher levels of acculturative stress and chronic stress, which are risk factors for CVD.[6,8]

South Asians (people from Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka) comprise one-quarter of the world's population and are one of the fastest-growing ethnic groups in the United States. Compared with other racial/ethnic groups in the United States, South Asians have a higher atherosclerotic cardiovascular disease (ASCVD) risk and higher proportional mortality rate from ischemic heart disease.[8] The risk, treatment, and outcomes of ASCVD among South Asians also vary by country of residence. Despite sharing the same genetic risk factors as South Asians living in their native countries, South Asians in the United States have different CVD outcomes, likely due to acculturation's impact on health behaviors and to variations in socioeconomic status, education, health attitudes, and health insurance.[8]

Although studies have shown that recent Hispanic/Latino immigrants have better CVD outcomes than U.S.-born Hispanic/Latino adults, increasing duration of residency is associated with worsening CVD risk factors among Hispanic/Latino immigrants due to increased exposure to poorer diets, sedentary lifestyle, and increased stress and substance use.[6,7] Hispanic/Latino noncitizens face systemic barriers to accessing care, including difficulty in obtaining essential medications such as statins (lipid-lowering agents) that are critical for CVD prevention. A study examining the relationship between noncitizen concentration at the neighborhood level and statin nonadherence found that individuals living in neighborhoods with high noncitizen concentrations were more nonadherent to statins than those in Hispanic/Latino neighborhoods with fewer noncitizens.[9]

Measures

The following measure assesses immigration status. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Immigration Status

Measure 1: Immigration Status

Definition

The state of a person's citizenship in a country

Data Availability

Census tract, ZIP code, city, county, congressional district, metropolitan division, metropolitan area, core-based statistical area (CBSA), state

Subgroups

Age, sex, marital status, occupation, country of origin

Data Source(s)

Existing Data Source(s)

- Office of Homeland Security Yearbook of Immigration Statistics
  - The Office of Immigration Statistics at the U.S. Department of Homeland Security publishes the annual *Yearbook of Immigration Statistics*, a collection of tables that provide data on foreign nationals who, during a fiscal year, were granted lawful permanent residence (i.e., were admitted as immigrants or became legal permanent residents), were admitted into the United States on a temporary basis (e.g., tourists, students, workers), applied for asylum or refugee status, or were naturalized. Immigration information is available at the CBSA and state levels and can be stratified by age, sex, marital status, and occupation. Download available data for 2000–2020.
  - Link: https://www.dhs.gov/immigration-statistics/yearbook
- Migration Policy Institute
  - The Migration Policy Institute uses data from the U.S. Census Bureau's pooled 2015–2019 American Community Surveys (ACSs) to create a map of the geographical distribution of immigrants in the United States at the county, metropolitan areas, and state levels by country of origin. Data can also be downloaded in a Tableau, PowerPoint, or PDF file. Additionally, the Migration Policy Institute creates State Immigration Data Profiles, which use data from the U.S. Census Bureau. The State Immigration Data Profiles compile the number and percent of foreign residents and U.S.-born residents for each state for 1990, 2000, and 2019. These data can also be stratified by demographics (race/ethnicity, age, marital status), country of origin, and naturalization status.

- Links:
  - https://www.migrationpolicy.org/programs/data-hub/maps-foreign-born-united-states
  - https://www.migrationpolicy.org/programs/data-hub/state-immigration-data-profiles

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap provides estimates on the percentage of all people who were foreign born using data from the U.S. Census Bureau. Users can view the data by census tracts, ZIP codes, cities, counties, congressional districts, metropolitan divisions, and metropolitan areas using single-layer maps. Users can access this measure under Demographics > Foreign Born Population, Immigration > Foreign Born All. Data are available for 2000, 2006–2010, 2011–2015, and 2016–2020.
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey questions are available for assessing immigration status:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks questions about a person's place of birth, citizenship, and year of entry into the United States to create data about citizens, noncitizens, and the foreign-born population. To view ACS questions on place of birth, citizenship, and year of entry, please visit the U.S. Census Bureau's website below.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/citizenship/

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Indicator Profile | Race-Consciousness

Race-consciousness reflects awareness and consciousness of stereotypes associated with one's own race/ethnicity, which may also result in heightened stress associated with the anticipation of experiencing racial bias, prejudice, or discrimination.

Why Is This Indicator Relevant?

Race-consciousness reflects awareness and consciousness of stereotypes associated with one's race/ethnicity, which may also result in heightened stress associated with the anticipation of experiencing racial bias, prejudice, or discrimination. Studies suggest that experiencing discrimination may be associated with greater race consciousness and that the anticipatory vigilance of race-consciousness has been linked to negative health outcomes such as lower self-reported overall health, poorer self-reported medication adherence, less sleep, and hypertension.[1,2]

Several studies document that Black/African American patients report more race-consciousness than White patients. Among Black/African American persons, race-consciousness was associated with higher diastolic blood pressure and hypertension.[2,3]

Measures

The following measures assess race-consciousness. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Racism-Related Vigilance
- Measure 2: Reactions to Race

Measure 1: Racism-Related Vigilance

Definition

The extent to which an individual anticipates or prepares for experiences of unfair treatment and/or discrimination

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is available to measure racism-related vigilance:

- Heightened Vigilance Scale
  - The Heightened Vigilance Scale measures efforts to protect oneself from general discrimination and minimize exposure.[4] This scale was originally developed as a six-item self-report measure for the 1995 Detroit Area Study and was shortened as a four-item scale for the Chicago Community Adult Health Study. Both versions are available for download at the link and require slight modification to the opening question ("In your day-to-day life, how often do you…") in order to measure racism-related vigilance. The abbreviated scale is provided below and has

been modified to measure efforts to protect oneself from racism-related discrimination (added, "...because of your race/ethnicity.").

- Link: https://scholar.harvard.edu/files/davidrwilliams/files/discrimination_resource_july_2020.pdf

In your day-to-day life, how often do you do the following things because of your race/ethnicity:

You try to prepare for possible insults from other people before leaving home	1. Almost every day 2. At least once a week 3. A few times a month 4. A few times a year 5. Less than once a year 6. Never
Feel that you always have to be very careful about your appearance (to get good service or avoid being harassed)	1. Almost every day 2. At least once a week 3. A few times a month 4. A few times a year 5. Less than once a year 6. Never
Carefully watch what you say and how you say it	1. Almost every day 2. At least once a week 3. A few times a month 4. A few times a year 5. Less than once a year 6. Never
Try to avoid certain social situations and places	1. Almost every day 2. At least once a week 3. A few times a month 4. A few times a year 5. Less than once a year 6. Never

Measure 2: Reactions to Race

Definition

An individual’s experience and response to differential treatment based on race/ethnicity

Data Availability

Individual, state

Data Source(s)

Existing Data Source(s)

- Behavioral Risk Factor Surveillance System (BRFSS)
    - CDC’s BRFSS is a state-level, multistage-cluster sampling telephone survey of U.S. residents that collects data on self-reported demographics, health behaviors, and preventive health practices. The Reactions to Race module is an optional module (states elect to add optional modules to the state questionnaire) that assesses race consciousness, perceptions of differential treatment by race/ethnicity in health care and work settings, and experiences of emotional and physical symptoms resulting from race-based treatment. The Reactions to Race module was added in 2002, and years of data availability vary by state. Questionnaires and data are downloadable.
    - Link: https://www.cdc.gov/brfss/annual_data/annual_data.htm

Example Survey Instrument

The following survey is available to measure reactions to race:

- Reactions to Race on CDC’s BRFSS
    - The Reactions to Race module is a six-item measure from the CDC BRFSS used to assess an individual’s experience and response to differential treatment based on race. The questions involve asking how often the individual thinks about their race. To view survey items from the Reactions to Race module, visit the BRFSS link below and search for “Reactions to Race.”
    - Link: https://www.cdc.gov/brfss/questionnaires/pdf-ques/2004brfss.pdf

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Race-Consciousness References

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Indicator Profile | Racial Income Gap

The racial income gap refers to the differences in median income between racial and ethnic groups.

Why Is This Indicator Relevant?

When the Civil Rights Act of 1964 was passed, it became illegal for employers to discriminate based on race.[1] Although the Civil Rights Act eliminated many legally sanctioned (de jure) forms of discrimination, many persist, including in hiring and promotion practices. Such experiences contribute to racial/ethnic inequities in income, particularly the racial income gap (RIGap), which is the difference in median income between racial and ethnic groups.[2]

The United States has seen a rise in racial income inequality in recent decades, with wealth inequality following a similar trend.[1] For instance, in 2019, the median income for Black/African American households was roughly 60% of the median income for White households. Furthermore, the median White family had eight times the wealth of the median Black/African American family and five times the wealth of the median Hispanic/Latino family.[3] Another study found that Black/African American persons earned about 38% less than White persons did.[2] Research suggests that factors such as educational inequality, unemployment differences, and government policies contribute to the RIGap.[2] Furthermore, racial income inequality has had adverse societal and health consequences, including racial disparities in health care and homeownership, as well as increases in violent crime and suicide.[2] One study observed that higher levels of RIGap at the ZIP-code level were associated with high levels of perceived discrimination, behavioral avoidance, and anxiety.[2] Other studies reported that aggregated measures of income equality demonstrated a relationship with health outcomes such as mortality, self-rated health, and risk of coronary heart disease, with the strongest effects observed between county and state levels of income inequality and individual health.[4,5]

Several studies suggest that substantial disparities in CVD prevalence exist between the highest-resourced groups and the remainder of the population.[4,6,7] County-level measures of median income and income inequality are also associated with county- and individual-level CVD mortality rates.[8,9] Racial income inequality may affect CVD risk through several pathways, including environmental, occupational, and neighborhood exposures affecting psychosocial, metabolic, and behavioral risk factors for CVD.[4,10,11,12] The chronic stress due to social dysfunction in unequal communities may result in heightened blood pressure (BP), leading to the adoption of unhealthy coping behaviors (e.g., smoking, unhealthy eating, alcohol consumption), which can affect cardiovascular and other chronic diseases.[5,13,14,15] Additionally, income inequality is associated with increased crime.[16,17] Perceived lack of safety from increased crime may lead to reduced outdoor physical activity, leading to increased body mass index, increased BP, and other risk factors for CVD.[11] Moreover, income disparities are linked to poor access to care, and people in lower-income groups are less likely to utilize preventive services for CVD.[18]

Measures

The following measures assess racial income gap. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Index of Concentration at the Extremes
- Measure 2: Median Household Income by Race

Measure 1: Index of Concentration at the Extremes (ICE)

Definition

A measure of economic and/or social (race/ethnic) spatial polarization that can be used from the very local level (e.g., census tract) up to the neighborhood or city/town level.[9] The ICE quantifies the extent to which people in a specified area are concentrated in the top versus bottom extremes of a specified social distribution using the following formula:

$$\text{ICEi} = (\text{Ai} - \text{Pi})/\text{Ti}$$

where Ai is the number of people in the most privileged extreme, Pi is the number in the most deprived extreme, and Ti is the total population in geographic area i. ICEi ranges from −1 to 1; a value of −1 means that 100% of the population is concentrated in the most deprived group, and a value of 1 means that 100% of the population is concentrated in the most privileged group.[9]

- ICE allows for the selection of two groups for comparison and can be used as three separate measures of economic and racial privilege[9]:
  - ICE for income (economic segregation or income gap)
  - ICE for race/ethnicity (racial segregation)
  - ICE for race/ethnicity + income (racialized economic segregation or racial income gap)

Data Availability

Census tract, county, metropolitan area, state

Subgroups

Race/ethnicity

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Summary Files
  - A dataset for the ICE has not yet been developed and made publicly available. Interested parties would need to download the underlying data and develop the index themselves, using the methods described in Additional Measurement Considerations. Full methodology on the ICE is available from Krieger et al.[19,20,21] Users can download income statistics from the U.S. Census Bureau's ACS 5-year files and create a ratio between racial/ethnic groups. Income data are available annually for 2010–2020. ACS 5-year files can be downloaded from the U.S. Census Bureau's main data platform at the link below.
  - Link: https://data.census.gov/cedsci/

Additional Measurement Considerations

- Calculating the ICE can be a complex task for nonacademic practitioners. Pre-calculated ICE data are not publicly available.
- In addition, although this index may consider both racial and economic inequality jointly whereas other measures do not, it is still an aggregate measure, and interpreting the results is not straightforward. For example, results close to 0 may indicate either that almost no one in the geography has high or low income or that a relatively equal number of residents belong to the two extremes.
- Finally, like most existing measures, the ICE allows for the incorporation of only two groups and does not provide insights about other potentially disadvantaged groups.

The following steps provide guidance on ICE calculations. This sample calculation compares wealthy White people with impoverished Black/African American persons.

1. Download income data by race/ethnicity from the U.S. Census Bureau's ACS 5-year files

Household Income In Dollars

Table Name: P052

Variables:

P052001: Total

Household Income In Dollars (Black Alone Householder)*

Table Name: P151B

Variables:

P151B001: Total

P151B002: Less than $10,000

P151B003: $10,000 to $14,999

P151B004: $15,000 to $19,999

P151B005: $20,000 to $24,999

Household Income In Dollars (White Alone, Not Hispanic Or Latino Householder)*

Table Name: P151I

Variables:

P151I001: Total

P151I013: $75,000 to $99,999

P151I014: $100,000 to $124,999

P151I015: $125,000 to $149,999

P151I016: $150,000 to $199,999

P151I017: $200,000 or more

2. Outline the definition of "privileged" and "deprived" group

Income: $100K vs. $25K, or $75K vs. $25K

Race: non-Hispanic White vs. non-Hispanic Black

Income and race: non-Hispanic White household making $100K vs. non-Hispanic Black household making $25K

3. Calculate ICE measure using the following formula

Conceptual formula	Data formula
[(White non-Hispanic over US$75 k) - (Black alone under US$25 k)] / Total Population Household Income	[(SF3_P151I013+SF3_P151I014+SF3_P151I015+SF3_P151I016+SF3_P151I017)-(SF3_P151B002+SF3_P151B003+SF3_P151B004+SF3_P151B005)] / SF3_P052001

***Note:** Variable names are based on the 2000 Census. Variable names are different by year.

Measure 2: Median Household Income by Race

Definition

The ratio of median household income by race

Data Availability

Census tract, county, metropolitan area, state

Subgroups

Race/ethnicity

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Summary Files
  - The American Community Survey (ACS) from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles. Users can search “Median Household Income” at the link below to access data on this measure. Data on median income in the past 12 months are available annually for 2010–2020. Users can access median income estimates by various characteristics (e.g., gender, race/ethnicity, age) by downloading the U.S. Census Bureau’s ACS 5-year files from the U.S. Census Bureau’s main data platform at the link below. In order to understand the racial income gap, users can create a ratio of median income by race by dividing the median income of one race by the median income of another race (e.g., the median income of White households divided by the median income of Black/African American households).
  - Link: https://data.census.gov/cedsci/
- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R provide county-level estimates on median household income and includes estimates by race/ethnicity. CHR&R uses data from the U.S. Census Bureau’s Small Area Income and Poverty Estimates (SAIPE). Users can access this measure under Additional Measures > Social & Economic Factors > Median Household Income. Data for this measure are

  available for download as an Excel workbook, and years of data availability vary by state. In order to understand the racial income gap, users can create a ratio of median income by race by dividing the median income of one race by the median income of another race (e.g., the median income of White households divided by the median income of Black/African American households).
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/social-and-economic-factors/income/median-household-income
- PolicyMap
  - PolicyMap is a data warehouse of more than 50 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). Users can view five categories/ranges of median household income by race/ethnicity. Users can access this measure under Incomes & Spending > Income > Household > Median Household Income > By Race or Ethnicity. PolicyMap uses U.S. Census Bureau data for this measure. Data are available for 2000, 2006–2010, 2011–2015, and 2016–2020. In order to understand the racial income gap, users can create a ratio of median income by race by dividing the median income of one race by the median income of another race (e.g., the median income of White households divided by the median income of Black/African American households).
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey questions are available for assessing racial income gap:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks questions about the funds a person receives from various sources to create statistics about income, assistance, earnings, and poverty status. In order to understand the racial income gap, users have to calculate total income in past 12 months for respondents by race and calculate the ratio of income by race by dividing the income of one race by another race (e.g., the total income of White households divided by the total income of American Indian/Alaska Native households). To view ACS questions on income and race, please visit the U.S. Census Bureau's website below.
  - Links:
    - https://www.census.gov/acs/www/about/why-we-ask-each-question/income/
    - https://www.census.gov/acs/www/about/why-we-ask-each-question/race/
    - https://www.census.gov/acs/www/about/why-we-ask-each-question/ethnicity/

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Indicator Profile | Racial Residential Segregation

Racial residential segregation refers to the physical separation of races in residential settings and serves as a proxy for structural racism due to the systematic disinvestment of neighborhoods among historically marginalized groups that occurs along with segregation.

Why Is This Indicator Relevant?

Racial residential segregation refers to the physical separation of races in residential settings and serves as a proxy for structural racism due to the systematic disinvestment of neighborhoods among historically marginalized groups that occurs along with segregation.[1,2] Racial residential segregation and its systematic disinvestments have negative economic, educational, employment, and environmental consequences that lead to systematic discrimination in housing and lending and ultimately affect downstream health outcomes. On average, individuals from historically marginalized groups—particularly Black/African American persons, Hispanic/Latino persons, and American Indian/Alaska Native persons, are more likely to have lower high school graduation rates, to have individual and household incomes below the federal poverty level (annual income thresholds set by the federal government to determine financial eligibility criteria[3]), and to lack insurance and regular access to quality primary care due to structural racism resulting from residential segregation.[2]

Research suggests that concentrated poverty, poor housing environments, and inequitable access to health care and education are key pathways through which racial residential segregation affects cardiovascular outcomes and that the socioeconomic factors associated with segregation can explain more of the disparities in CVD mortality than traditional cardiovascular risk factors can.[2] Using data from the Multi-Ethnic Study of Atherosclerosis, Kershaw et al. found that Black/African American people living in neighborhoods (defined by census tracts) segregated from other racial/ethnic groups are at greater risk for CVD than Black/African American persons living in more racially/ethnically integrated neighborhoods. Kershaw et al. found the reverse relationship for White persons—that is, White persons living in less integrated neighborhoods had better cardiovascular outcomes.[4] However, this effect disappeared after adjusting for neighborhood poverty.[4] No effects were observed for Hispanic/Latino Americans. In a later review of the literature, Kershaw and Albrecht reported that this pattern held among most studies examining the effects of neighborhood (census-tract) and metropolitan-level segregation on CVD risk, especially among Black/African American individuals.[5]

Measures

The following measures assess racial residential segregation. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Dissimilarity Index
- Measure 2: Index of Concentration at the Extremes
- Measure 3: Perceived Neighborhood Racial Diversity
- Measure 4: Theil Index

Measure 1: Dissimilarity Index

Definition

A demographic measure of evenness that examines how two population groups are distributed across component geographic areas (e.g., census tracts) that make up a larger area (e.g., a county). The index of dissimilarity with higher values indicates greater segregation between two groups, ranging from 0 (complete integration) to 100 (complete segregation). If an area's dissimilarity index of Black/African American to White persons is 65, then 65% of Black/African American persons would need to move to another area to make White and Black/African American persons evenly distributed across all areas.

Data Availability

City, county, metropolitan area, state

Data Source(s)

Existing Data Source(s)

- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community power to improve health equity. CHR&R provides county-level indices of dissimilarity where higher values indicate greater residential segregation between Black/African American and majority-White county residents. CHR&R use data from the U.S. Census Bureau's ACS 5-year files. Demographic data on race/ethnicity, age, gender, and rural/urban are collected and categorized using the U.S. Census Bureau definitions. Users can access this measure under Additional Measures > Social & Economic Factors > Residential Segregation - Black/White American or Residential Segregation - non-White/White. Data are available for download as an Excel workbook, and years of data availability vary by state.
  - Link:
    - https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/social-and-economic-factors/family-social-support/residential-segregation-blackwhite

- Russell Sage Foundation American Communities Project
  - The Russell Sage Foundation American Communities Project's Diversity and Disparities website calculates dissimilarity indices for a variety of racial/ethnic groupings (i.e., non-Hispanic White persons, non-Hispanic Black/African American persons, Hispanic/Latino persons, Asian persons, and American Indian/Alaska Native persons) at the city, metropolitan area, and metropolitan division levels. The Diversity and Disparities website calculates dissimilarity indices using data from U.S. Census Bureau's Decennial Census. Data are available for 1980, 1990, 2000, and 2010; users can download them from the link below.
  - Link: https://s4.ad.brown.edu/projects/diversity/segregation2010/Default.aspx

Additional Measurement Considerations

The Racial Residential Segregation indicator addresses only a few dimensions of segregation. The measures provided for this indicator assess only racial evenness and racial concentration in communities. However, studying other dimensions of residential segregation, including isolation, exposure, clustering, centralization, and hyper-segregation, is crucial.

Measure 2: Index of Concentration at the Extremes (ICE)

Definition

A measure of economic and/or social (race/ethnic) spatial polarization that can be used from the very local level (e.g., census tract) up to the neighborhood or city/town level.[6] The ICE quantifies the extent to which people in a specified area are concentrated in the top versus bottom extremes of a specified social distribution using the following formula:

$$ICEi = (Ai - Pi)/Ti$$

where Ai is the number of people in the most privileged extreme, Pi is the number in the most deprived extreme, and Ti is the total population in geographic area i. ICEi ranges from −1 to 1; a value of −1 means that 100% of the population is concentrated in the most deprived group, and a value of 1 means that 100% of the population is concentrated in the most privileged group.[6]

- ICE allows for the selection of two groups for comparison and can be used as three separate measures of economic and racial privilege[6]:
  - ICE for income (economic segregation or income gap)
  - ICE for race/ethnicity (racial segregation)
  - ICE for race/ethnicity + income (racialized economic segregation or racial income gap)

Data Availability

Census tract, county, metropolitan area, state

Subgroups

Race/ethnicity

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Summary Files
  - A dataset for the ICE has not yet been developed and made publicly available. Interested parties would need to download the underlying data and develop the index themselves using the methods described in Additional Measurement Considerations. Full methodology on the ICE is available from Krieger et al.[6,7,8] Users can download population count data from the U.S. Census Bureau's ACS 5-year files and create a ratio between racial/ethnic groups. To access data on this measure, users can search for "Hispanic or Latino origin by race" or by the variable name "B03002" in the link below. Data on Hispanic or Latino origin by race are available annually from 2010 to 2020. ACS 5-year files can be downloaded from the U.S. Census Bureau's main data platform at the link below.
  - Link: https://data.census.gov/cedsci/

Additional Measurement Considerations

- The Racial Residential Segregation indicator in the Racism Indicator Profile addresses only a few dimensions of segregation. The measures provided in this document assess only racial evenness and racial concentration in communities. However, studying other dimensions of residential segregation, including isolation, exposure, clustering, centralization, and hyper-segregation, is crucial.
- Calculating the ICE can be a complex task for nonacademic practitioners. Pre-calculated ICE data are not publicly available. In addition, although this index may consider both racial and economic inequality jointly whereas other measures do not, it is still an aggregate measure, and interpreting the results is not straightforward. For example, results close to 0 may indicate either that almost no one in the geography has high or low income or that a relatively equal number of residents belong to the two extremes.
- Finally, like most existing measures, the ICE allows for the incorporation of only two groups and does not provide insights about other potentially disadvantaged groups.

The following steps provide guidance on ICE calculations. This calculation example compares White persons with Black/African American persons.

1. Download income data by race/ethnicity from the U.S. Census Bureau's ACS 5-year files
   - Hispanic or Latino Origin by Race
     - Table Name: B03002

2. Outline the definitions of "privileged" and "deprived" groups
   - High racial privilege: non-Hispanic White
   - Low racial privilege: non-Hispanic Black

3. Calculate the ICE measure using the following formula
   - The ICE for race/ethnicity is calculated as the number of people with high racial privilege subtracted by the number of people with low racial privilege in a given area, divided by the total population in the given area.[8]
   - ((No. of people self-identified as "White non-Hispanic") – (No. of people self-identified as "Black non-Hispanic")) / No. of total population with race/ethnicity data

Measure 3: Perceived Neighborhood Racial Diversity

Definition

An individual's appraisal of racial diversity in their neighborhood

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey question is available for assessing perceived racial diversity:

- National Survey of American Life (NSAL) Self-Administered Questionnaire (SAQ)
  - The NSAL was a comprehensive study of mental health among African Americans and was designed to investigate intra- and inter-group racial and ethnic differences in mental disorders, psychological distress, informal and formal service use, stressors, risk and resilient factors, and coping resources.[1] The study was conducted by the Program for Research on Black Americans (PRBA) within the Institute for Social Research at the University of Michigan. The NSAL self-administered questionnaire asks several questions about group and personal identity (racial awareness and identity), racial relations (e.g., interracial contact), political attitudes, and job and financial stressors, including one question about racial composition of neighborhoods. The full questionnaire is available at the University of Michigan Institute for Social Research's website. To view the question on racial composition of neighborhoods, users can select the "Variables" tab and search for variable "G31" or download the entire survey from the "Data and Documentation" tab and search for question "G31."
  - Link: https://www.icpsr.umich.edu/web/ICPSR/studies/27121/summary

Additional Measurement Considerations

The Racial Residential Segregation indicator addresses only a few dimensions of segregation. The measures provided for this indicator assess only racial evenness and racial concentration in communities. However, studying other dimensions of residential segregation, including isolation, exposure, clustering, centralization, and hyper-segregation, is crucial.

Measure 4: Theil Index

Definition

An index ranging from 0 to 1 that displays information about racial segregation. Index values below .20 suggest less segregation, and index values above .40 suggest more segregation. The Theil index is a measure of how evenly members of racial/ethnic groups (i.e., White, Black/African American, American Indian/Alaska Native, Asian, Native Hawaiian, Pacific Islander, and other people) are distributed within a region, calculated by comparing the diversity of all subregions (census blocks) to the region as a whole. By design, the Theil index weights subregions used in the calculations according to their population size.

Data Availability

Block group, census tract, county, metropolitan area

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data

sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap calculates the Theil index using data from U.S. Census Bureau's Decennial Census. Users can view the Theil Index for census block groups, census tracts, counties, and metropolitan areas using single-layer maps. Users can access this measure under Demographics > Race, Ethnicity, Diversity > Segregation > Theil Index. Theil index data are only available for 2010.

- Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

The Racial Residential Segregation indicator addresses only a few dimensions of segregation. The measures provided for this indicator assess only racial evenness and racial concentration in communities. However, studying other dimensions of residential segregation, including isolation, exposure, clustering, centralization, and hyper-segregation, is crucial.

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Indicator Profile | Racial/Ethnic Discrimination and Trauma

Racial/ethnic discrimination is defined as any distinction, exclusion, restriction, or preference based on race, descent, or national or ethnic origin with the purpose or effect of nullifying or impairing the recognition, enjoyment, or exercise, on an equal footing, of human rights and fundamental freedoms in the political, economic, social, cultural, or any other field of public life.

Why Is This Indicator Relevant?

Racial/ethnic discrimination is defined as any distinction, exclusion, restriction, or preference based on race, descent, or national or ethnic origin that has the purpose or effect of nullifying or impairing the recognition, enjoyment, or exercise, on an equal footing, of human rights and fundamental freedoms in the political, economic, social, cultural, or any other field of public life.[1] The anticipation and experience of racial/ethnic discrimination have been linked to negative health behaviors and outcomes such as increased substance use and abuse, elevated stress, less sleep, and increased depressive symptoms.[2,3,4]

Relating to cardiovascular risk factors and outcomes, past research has found robust and consistent associations between reports of discrimination and ambulatory blood pressure (BP).[5] For example, exposure to racial/ethnic discrimination across the life course is associated with elevated BP in Black/African American persons and Hispanic/Latino adults.[6] One probable pathway is that racial discrimination can lead to both acute and chronic stress responses within multiple physiological systems. Specifically, exposure to discrimination results in increases in heart rate and BP that, with repeated exposure over time, can result in increased risk for hypertension and coronary artery calcification.[7] However, findings in this area of research have been inconsistent; other studies find no association between racial/ethnic discrimination and CVD outcomes.

Racial trauma, or race-based traumatic stress, refers to the mental and emotional injury caused by encounters with racial bias and ethnic discrimination, racism, and hate crimes.[8] Trauma is distinct from experiences of discrimination in that it captures events that are extreme, overwhelming, and horrific in impact.[9] Victims of trauma can experience both short- and long-term adverse physiological effects, because the brain has been shown to react to and sometimes retain the resulting emotions and trauma.[10] For instance, racial trauma has been shown to affect individuals' health behaviors and psychosocial factors, such as the amount of stress and sleep health, which directly affect neurobiological mediators, such as the cardiovascular system, hypothalamic–pituitary–adrenocortical axis, brain systems, and the immune system. These neurobiological mediators ultimately lead to an increased risk for CVD.[8]

Measures

The following measures assess racial/ethnic discrimination and trauma. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Racial/Ethnic Discrimination
- Measure 2: Racism-Related Stress

Measure 1: Racial/Ethnic Discrimination

Definition

Unfair, negative, and/or differential treatment on the basis of race/ethnicity

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following surveys are available to measure racial/ethnic discrimination:

- The Everyday Discrimination Scale (EDS)
  - The EDS is a general measure of unfair treatment. Possible attributions for unfair treatment include race, gender, and sexual orientation. The full and short versions of the original scale were published by Williams et al.[11] The short version of the EDS was developed for the Chicago Community Health Study.[12] We recommend adding a response option of “About once a month” to capture experiences ranging between “A few times a month” and “A few times a year.” The modified short version below includes these response options and specifically asks about unfair treatment due to race/ethnicity.

In your day-to-day life, how often have any of the following things happened to you because of your race/ethnicity?

	7 Almost every day	6 At least once a week	5 A few times a month	4 About once a month	3 A few times a year	2 Less than once a year	1 Never
You are treated with less courtesy or respect than other people							
You receive poorer service than other people at restaurants or stores							
People act as if they think you are not smart							
People act as if they are afraid of you							
You are threatened or harassed							

- Experiences of Discrimination Measure (EOD)
  - The EOD measure has been used to study the stress of experiencing discrimination and how the experience of discrimination may contribute to trauma. The race version of the EOD Scale assesses how often a person has experienced discrimination because of their race/ethnicity.[13] The original measure uses a two-step approach: Participants reporting having experienced

discrimination on a particular item (with responses choices of no or yes) were then asked how often this occurred (once, two or three times, and four or more times). The modified version below combines these response options.

Have you ever experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your race/ethnicity, or color?

	1 No	2 Yes, once	3 Yes, two or three times	4 Yes, four or more times
At school?				
Getting hired or getting a job?				
At work?				
Getting housing?				
Getting medical care?				
Getting service at a store or restaurant?				
Getting credit, bank loans, or a mortgage?				
On the street or in a public setting?				
From the police or in the courts?				

Additional Measurement Considerations

The EDS has become the subject of further study, because some researchers claim the scale should be coded, or weighted, to account for various groups having different cultural conceptions and reactions to discrimination or to more accurately reflect the impact of chronic discrimination.[11] Michaels et al. investigate a novel, chronicity-based coding and a more conventional, frequency-based coding and describe how different scoring methods affect exposure classification.[14]

Measure 2: Racism-Related Stress

Definition

Experiences of direct racism (e.g., racial micro-stressors, harassment, discrimination) or vicarious racism (e.g., witnessing or hearing about the experiences of racism of others in one’s racial/ethnic group).

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is available to measure aspects of racial trauma:

- Race-Related Events Scale (RES)
  - This scale captures exposure to stressful and potentially traumatizing experiences of racism. The full scale, which can be found in a Waelde et al. paper, is a 22-item checklist that has been validated for measuring direct and vicarious experience of trauma.[15] The total RES score is the number of race-related events that were endorsed.[15]

Please circle "YES" if this has ever happened to you because of your race or ethnicity or "NO" if it has not.

1. Treated rudely or coldly because of my race or ethnicity	Yes	No
2. Ignored because of my race or ethnicity	Yes	No
3. Treated unfairly by teacher or boss because of my race or ethnicity	Yes	No
4. Insulted or called an insulting name because of my race or ethnicity	Yes	No
5. Told to leave a place and not come back because of my race or ethnicity	Yes	No
6. Followed by someone because of my race or ethnicity	Yes	No
7. Harassed by police or security guards because of my race or ethnicity	Yes	No
8. Verbal conflict with someone because of my race or ethnicity	Yes	No
9. Physical fight with someone because of my race or ethnicity	Yes	No
10. Someone hurt my family member because of his/her race or ethnicity	Yes	No
11. Someone threw something at me because of my race or ethnicity	Yes	No
12. Someone pushed or shoved me because of my race or ethnicity	Yes	No
13. Someone stole something from me because of my race or ethnicity	Yes	No
14. Someone chased me because of my race or ethnicity	Yes	No
15. Someone beat me or hurt me because of my race or ethnicity	Yes	No
16. Threatened with a knife, gun or other weapon because of my race or ethnicity	Yes	No
17. Someone threatened to kill me because of my race or ethnicity	Yes	No
18. Heard about someone (who is the same race or ethnicity as me) getting injured or killed because of their race or ethnicity	Yes	No
19. Saw someone (who is the same race or ethnicity as me) get treated in a racist or prejudiced way	Yes	No
20. Saw someone (who is the same race or ethnicity as me) almost get seriously injured or killed because of their race or ethnicity	Yes	No
21. Saw someone (who is the same race or ethnicity as me) seriously injured because of their race or ethnicity	Yes	No
22. Saw someone (who is the same race or ethnicity as me) get killed because of their race or ethnicity	Yes	No

Additional Measurement Considerations

These questionnaires can be adapted to measure specific experiences during specific developmental periods during the life course, such as childhood, adolescence, and adulthood.[16]

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Indicator Profile | Redlining

The contemporary definition of redlining refers to the systematic denial of services to residents of certain neighborhoods or communities associated with a certain racial/ethnic group.

Why Is This Indicator Relevant?

Historical redlining was the practice of systematically designating areas with higher numbers of Black/African American persons, immigrants, and working-class residents as "hazardous."[1] This practice was enacted by the Federal Housing Administration in the 1930s and led to institutionalized discriminatory lending practices that denied mortgages in diverse and working-class neighborhoods.[1] Ultimately, historical redlining resulted in disinvestment, poverty concentration, White flight, and further racial residential segregation. Since its inception, the definition of redlining has evolved to encapsulate discriminatory housing practices more broadly. The contemporary definition of redlining refers to the systematic denial of services to residents of certain neighborhoods or communities associated with a certain racial/ethnic group.[2]

Although the historical practice of redlining was abolished in 1968, communities in historically redlined areas are still socioeconomically disadvantaged and more likely to have a higher concentration of Blacks/African American residents. Historical redlining has also had a measurable impact on health outcomes. Residence in historically redlined areas is associated with worse physical and mental health, as well as higher prevalence of adverse outcomes after inpatient hospitalization, post-operative mortality, pre-term births, gunshot-related injuries, asthma, heat-related illness (i.e., urban heat island effect), and chronic conditions.[3]

According to ecosocial theory, which describes how multiple levels of influence impact the distribution of disease in populations, redlining may drive disparities in CVD risk and outcomes.[4,5,6] Social, environmental, economic, and biologic factors interact to affect physiological, metabolic, and cardiovascular systems.[7] Indeed, a recent study finds that Black/African American adults residing in historically redlined areas are more likely to have lower cardiovascular health scores across seven CVD risk factors.[7]

Measures

The following measures assess redlining. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Homeowners' Loan Corporation Risk Maps
- Measure 2: High-Cost Loans
- Measure 3: Mortgage Denials

Measure 1: Home Owners' Loan Corporation (HOLC) Risk Maps (1935–1940) [Historical Discriminatory Housing Practices]

Definition

A collection of digital maps showing areas in urban centers that were redlined, developed by the HOLC from 1935 to 1940, covering approximately 250 cities. The maps include color-coded areas based on grades assigned to them by HOLC officers. Grades were assigned based on input from mortgage lenders, developers, and real estate appraisers and were used as a measure of creditworthiness and risk on neighborhood and metropolitan levels. Area grades range from A to D, with A denoting "Excellent," B denoting "Still Desirable," C denoting "Definitely Declining," and D denoting "Hazardous." The digital maps are publicly available to help the public understand the effects of federal housing policy and local implementation in their own communities.

Data Availability

Neighborhood

Subgroups

Race/ethnicity, household type, age, educational attainment

Data Source(s)

Existing Data Source(s)

- Mapping Inequality Website
  - The Mapping Inequality: Redlining in New Deal America project is a collaboration among the University of Richmond, the University of Maryland, Virginia Tech, and Johns Hopkins University. The Mapping Inequality website organizes HOLC files by state and city. Maps can be downloaded as scanned PDFs, georectified images, and shapefiles. Users can also download scanned images of the original written descriptions of risk areas within a city.
  - Link: https://dsl.richmond.edu/panorama/redlining/#loc=3/45.4/-114.79&text=intro
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). The PolicyMap dataset contains HOLC data (1935–1940) for 148 urban regions in 28 states. Users can access this measure under Lending > Historic Lending Boundaries > Home Owner's Loan Corporation Risk Maps (1935–1940).
  - Link: https://www.policymap.com/newmaps#/

Additional Measurement Considerations

The following steps provide guidance for calculating redlining using HOLC maps. For additional details, please review Mujahid et al.'s article.[7]

1. Upload data into ArcGIS
   - Download redlining map shapefiles for cities of interest here: https://dsl.richmond.edu/panorama/redlining/
   - Merge if downloading multiple cities
   - Download the census-tract boundary shapefile
   - Load all HOLC shapefiles and census-tract boundaries into ArcGIS and ensure that the coordinate systems of both types of shapefiles match

Note: The remaining steps require the purchase of an ArcGIS Pro license.

2. Calculate the overlap between census tract and HOLC areas
   - Launch the Intersect tool from Toolboxes > System Toolboxes > Analysis Tools > Statistics toolset > Tabulate Intersection (Analysis)
   - Follow this guide to calculate the overlapping land area: https://pro.arcgis.com/en/pro-app/latest/tool-reference/analysis/tabulate-intersection.htm
   - Input:
     - Zone features: HOLC maps
     - Class features: Census tracts
3. Calculate the HOLC scores of census tracts
   - Export the table from ArcGIS to do calculations in R (can also be done in ArcGIS if you code in Python)
   - Group by census tract IDs, then calculate a weighted HOLC score based on the percentage of the census tract that is in a specific HOLC score (e.g., A = 1, B = 2, C = 3, D = 4)
   - Recommended to also keep a variable to keep track of how many distinct HOLC areas are covering each census tract if needed for sensitivity analysis (i.e., how many tracts were covered by more than one HOLC area)

4. Results

The locator will output a table with unique census-tract identifiers and a weighted HOLC score for each tract.

Measure 2: High-Cost Loans [Contemporary Discriminatory Housing Practices]

Definition

The percentage of owner-occupied one- to four-unit home mortgages with a reported rate spread (i.e., where the annual percentage rate [APR] is more than 1.5 percentage points higher than the average prime offer rate). This category was previously referred to as "subprime" loans.

Data Availability

Unknown (access require subscription)

Subgroups

Race/ethnicity

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). The PolicyMap dataset contains high-cost mortgage loan data from the Federal Financial Institutions Examination Council (FFIEC) for 2002–2009 Q3 and 2010 or later. However, these data are available only to paid subscribers.
  - Link: https://www.policymap.com/newmaps#/

Measure 3: Mortgage Denials [Contemporary Discriminatory Housing Practices]

Definition

The percentage of owner-occupied one- to four-unit home mortgage loans that were denied

Data Availability

Unknown (access require subscription)

Subgroups

Race/ethnicity

Data Source(s)

Existing Data Source(s)

- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). The PolicyMap dataset contains mortgage denial data from the Federal Financial Institutions Examination Council (FFIEC); however, these data are available only to paid subscribers.
  - Link: https://www.policymap.com/newmaps#/

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Health Equity Indicator Profiles | Socioeconomic Factors

Socioeconomic status refers to the absolute or relative levels of economic resources, power, and prestige closely associated with wealth of an individual, community, or country.[1] Socioeconomic status is a multidimensional construct comprising multiple factors, such as income, education, employment status, and other factors.[2] Low socioeconomic status is associated with higher risk of developing and dying from cardiovascular disease (CVD).[2,3,4,5] Specifically, the American Heart Association notes that income level, educational attainment, and employment status at the individual and neighborhood level are consistently associated with CVD in high-income countries.[5] Socioeconomic factors can affect health status directly at the individual level and can also influence broader household, neighborhood, or community-level characteristics, which can then affect health. Socioeconomic factors affect one's ability to engage in health activities, afford medical care and housing, and manage stress. For example, employment provides income, which enables access to housing, education, childcare, food, medical care, and other needs. At the community level, lower-income neighborhoods are less likely to have access to high quality health care. Socioeconomic factors can also interact with or confound relationships between other variables and health. For example, the combined effects of socioeconomic status and race/ethnicity or sex can influence health differently across different groups.

Indicators

This document provides guidance for measuring ***five indicators related to socioeconomic factors*** that are associated with differential risks of developing CVD. The five socioeconomic indicators are measured at different levels of analysis, including city, county, and state.

Education

Education plays an important role in health through its influence on multiple socioeconomic factors, such as employment, income, and other economic opportunities. Visit the Education indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Educational Attainment
- Measure 2: Out-of-School Suspensions
- Measure 3: Expulsions

Employment Status

Employment status (whether an individual is working to earn wages) is consistently identified as an indicator of socioeconomic status strongly associated with health outcomes. Visit the Employment Status indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Employment Status
- Measure 2: Percent Working Alternative Shifts
- Measure 3: Percent Working Regular Evening or Nighttime Shifts

Income

Individuals with lower incomes lack economic resources, resulting in social disadvantage, poor education, poor working conditions, housing insecurity, and residence in unsafe neighborhoods. Visit the Income indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Financial Strain
- Measure 2: Index of Concentration at the Extremes
- Measure 3: Median Household Income
- Measure 4: Median Family Income
- Measure 5: Livable Income
- Measure 6: Living Wage/Poverty
- Measure 7: Per Capita Income

Food Insecurity

Food insecurity is defined as the disruption of food intake or eating patterns due to insufficient financial resources and other resources. Visit the Food Insecurity indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measure, which links to its own page with measurement guidance and data sources. Click on the measure to learn more:

- Measure 1: Food Insecurity

Housing Insecurity

Housing insecurity is commonly defined as high housing cost relative to income but also has been used as an umbrella term to describe multiple housing issues, such as poor housing quality, unstable occupancy, overcrowding, and unsafe neighborhoods. Visit the Housing Insecurity indicator profile to learn more about the indicator and how to measure it. This indicator can be assessed by the following measures. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Home Ownership
- Measure 2: Housing Instability

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Indicator Profile | Education

Education plays an important role in health through its influence on multiple socioeconomic factors, such as employment, income, and other economic opportunities.

Why Is This Indicator Relevant?

Education is strongly associated with life expectancy and morbidity.[1] Research has shown that by the age of 25, a college graduate is expected to live a decade longer than a high school dropout.[2] Many studies, including a meta-analysis of hypertension research, have observed that lower levels of education are associated with a greater risk of CVD than higher levels of education are.[3,4,5] For instance, one study showed that for men who completed graduate school, the likelihood of developing heart disease was 42%, compared with 59% for men who completed grade school only (the difference was statistically significant).[6] Among women, the likelihood of developing heart disease was 28% for those who completed graduate studies, compared with 50% for women completing grade school only.[6] Similarly, low educational attainment is an independent predictor of adverse outcomes for patients with coronary artery disease.[7] Moreover, persistent racial disparities in educational attainment contribute to racial differences in heart disease mortality.[8]

Education plays an important role in health through its influence on multiple socioeconomic factors, such as employment, income, and other economic opportunities. Individuals with lower levels of educational attainment are more likely to lack sociopolitical power and economic resources, leading to in adverse occupational, residential, and recreational conditions associated with negative health consequences. These adverse conditions lead to differential exposures to stressors (e.g., unemployment, crime, violence) and fewer resources (e.g., recreation, physical activities) to cope with the accumulation of stressors that contribute to a greater risk of hypertension.[1,8]

School policies and exclusionary discipline practices, such as suspensions and expulsions, are applied unfairly by educators and have been shown to have a disproportionately negative impact on Black/African American children's academic achievement.[9] Exclusionary school discipline practices hinder educational attainment and exacerbate socioeconomic and health inequities. In addition to hindering academic achievement, expulsions and suspensions are correlated with substance use and worse mental health and social connectivity, which are risk factors for adverse health behaviors among adolescents, such as early sexual initiation; alcohol, tobacco, and drug use; violent behaviors; and gang involvement.[10,11] These adverse health behaviors in turn increase the risk of adverse health outcomes, including CVD.

Measures

The following measures assess education. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Educational Attainment
- Measure 2: Out-of-School Suspensions
- Measure 3: Expulsions

Measure 1: Educational Attainment

Definition

Proportion of the population age 25 and older who have less than a high school diploma, equivalent (i.e., GED), or some college

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, household income, gender, age

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Educational Attainment" at the link below to access data on this measure. Users can create educational attainment estimates by various characteristics (e.g., income, gender, race/ethnicity, age) by downloading the ACS 5-Year Files. Data are available from 2009 to 2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- America's Health Rankings (AHR)
  - The United Health Foundation's AHR evaluates a comprehensive set of health, environmental and socioeconomic data. The AHR website provides state-level analyses of U.S. Census Bureau ACS data on the percentage of population age 25 and older without a high school diploma. Users can access this measure under Social and Economic Factors > Economic Resources – Annual > Education – Less Than High School. Current editions (2015–2021) can be explored online or downloaded in various formats, including Excel, CSV, and ZIP. Past editions (1990–2014) are also available for download.
  - Link: https://www.americashealthrankings.org/explore/annual/measure/education_LT_HS/state/ALL
- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community empowerment to improve health equity. CHR&R uses data from the ACS to provide county-level estimates of the percentage of adults age 25 and over with a high school diploma or equivalent. Data can be stratified by age and race/ethnicity and can be accessed for many communities at the census tract or census block level. Users can access this measure under Ranked Measures > Health

  - Factors > Social & Economic Factors > High School Completion. Data can be downloaded as an Excel workbook; years of data availability vary by state.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/social-and-economic-factors/education/high-school-completion
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of adults age 25 and older who have attained at least some college education after graduating from high school. Data on the Post-Secondary Education indicator are available for 50 states via the web interface. Data are available from 2018 to 2020 and can be analyzed by race/ethnicity. Data files can be downloaded to Excel from the Resources section of the website. This measure can be found under the "Social & Economic Factors" domain and "Post-Secondary Education" indicator.
  - Link: https://www.hopeinitiative.org/indicator/post-secondary-education
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses educational attainment data from the U.S. Census. Education data can be stratified by race/ethnicity. However, much of the data are unavailable at the county level and below. Users can access data on this measure under Education > Educational Attainment. Data years are dependent on the measures under Education Attainment (e.g., less than ninth grade, some high school, high school diploma).
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey questions are available for assessing educational attainment:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks questions about the highest level of education a person has completed to create statistics about education. To view ACS survey questions on educational attainment, visit the U.S. Census Bureau's website below.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/education/

Measure 2: Out-of-School Suspensions

Definition

Percentage of public-school students with or without disabilities receiving one or more out-of-school suspensions during the school year

Data Availability

School, school district, state

Subgroups

Race/ethnicity, gender, disability status, English language learners

Data Source(s)

Existing Data Source(s)

- Civil Rights Data Collection (CRDC)
  - The Civil Rights Data Collection (CRDC) is a biennial (i.e., every other school year) survey of public schools that has been required by Office of Civil Rights (OCR) since 1968. The CRDC collects data on leading civil rights indicators related to access and barriers to educational opportunity from preschool through 12th grade. Users can access this measure by selecting measures related to "out-of-school suspensions," which are disaggregated by race, sex, disability status, and English language learner status via the data analysis tools provided on the site. "Comparison Graphs and Data" allow users to select up to 12 schools, districts, or states; "Detailed Graphs and Data" allow users to select up to two schools, districts, or states; and "Outcome Rate Calculator" allows users manually select up to 250 schools or districts to view suspension data. CSV files containing the entire CRDC data set for the user's year of choice can be downloaded in a ZIP file for years between 2009 and 2018.
  - Link: https://ocrdata.ed.gov/dataanalysistools

Measure 3: Expulsions

Definition

Percentage of public school students with or without disabilities receiving expulsions with or without educational services

Data Availability

School, school district, state

Subgroups

Race/ethnicity, gender, disability status, English language learners

Data Source(s)

Existing Data Source(s)

- Civil Rights Data Collection (CRDC)
  - The Civil Rights Data Collection (CRDC) is a biennial (i.e., every other school year) survey of public schools required by the Office of Civil Rights (OCR) since 1968. Users can access this measure by selecting "Expulsions (with and without educational services combined)," with data disaggregated by race, sex, disability status, and English language learner status, via the data analysis tools provided on the site. "Comparison Graphs and Data" allow users to select up to 12 schools, districts, or states; "Detailed Graphs and Data" users to select up to two schools, districts, or states; and "Outcome Rate Calculator" allows users to manually select up to 250 schools or districts to view school expulsion data. CSV files containing the entire CRDC data set for the user's year of choice can be downloaded in a ZIP file for years between 2009 and 2018.
  - Link: https://ocrdata.ed.gov/dataanalysistools

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Indicator Profile | Employment Status

Employment status (whether an individual is working to earn wages) is consistently identified as an indicator of socioeconomic status strongly associated with health outcomes.

Why Is This Indicator Relevant?

Employment status (whether an individual is working to earn wages) is consistently identified as an indicator of socioeconomic status strongly associated with health outcomes.[1] Employment status affects health through both physical and psychosocial pathways. Employees may be exposed to hazardous physical, chemical, or biological agents from the occupational setting. Unstable employment can lead to loss of compensation and employee benefits (e.g., health insurance), creating psychosocial stress. In the United States, health care is accessed through predominantly employer-sponsored health insurance plans.[2] Loss of employment results in loss of health care insurance coverage. The short-term unemployed tend to experience the greatest barriers to health care access, as they may not be able to take advantage of public benefits.[3] Even in cases where individuals may qualify for public insurance assistance through the Consolidated Omnibus Budget Reconciliation Act (COBRA) or other public programs, the copayments and deductibles are often too costly for those with reduced or no steady income. The long-term unemployed and those not able to work may be eligible for Medicaid. Those who are self-employed also experience barriers to health care, as individual insurance plans are often not as comprehensive as employer-sponsored plans.[3] Barriers to health care access due to loss of employer-sponsored health coverage are associated with reduced health care utilization and unfavorable health outcomes, including CVD.[4,5]

Beyond the impact of employment status on access to health insurance, employment type may directly affect the risk for heart disease. In a recent meta-analysis, shift work, including rotational and night shift work, was associated with a 26% increased risk of coronary heart disease (CHD) morbidity and an approximately 20% increased risk of CHD and CVD mortality.[6] Increased risk develops after 5 years of shift work and increases 7.1% for every 5 additional years of shift work. The association seems to be strongest for rotating shift schedules (i.e., people work a mix of irregular day and night hours) rather than fixed day- or night-only shifts. Causal factors include disruptions to circadian rhythms and poor health behaviors associated with shift work.[7]

Measures

The following measures assess employment status. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Employment Status
- Measure 2: Percent Working Alternative Shifts
- Measure 3: Percent Working Regular Evening or Nighttime Shifts

Measure 1: Employment Status

Definition

Proportion of the population age 16 and older in the United States labor force that is employed or unemployed and seeking work

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, household income, gender, age, educational attainment

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The American Community Survey (ACS) from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users who want to create unemployment estimates by other characteristics (e.g., income, gender, age) or other geographic levels can download the ACS 5-year files. Data on the employment status of people age 16 and over are derived from multiple questions in the ACS. Users can search "Employment Status" at the link below to access this measure. Data are available from 2009 to 2020 in various formats, including Excel, CSV, and ZIP and can be viewed online for 2010 to 2020.
  - Link: https://data.census.gov/cedsci/
- America's Health Rankings (AHR)
  - Produced by the United Health Foundation, AHR evaluates a comprehensive set of health, environmental, and socioeconomic data. The AHR website provides state-level data from the U.S. Census Bureau's ACS on the percentage of civilian population ages 16–64 who are unemployed. Estimates are provided by age, gender, and race/ethnicity for the most recent data. Users can access this measure under the Social and Economic Factors > Economic Resources – Annual > Economic Hardship Index > Unemployment. Current editions (2015–2021) can be explored online or downloaded in various formats, including Excel, CSV, and ZIP. Past editions (1990–2014) are also available for download.
  - Link: https://www.americashealthrankings.org/explore/annual/measure/unemployment/state/ALL
- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community empowerment to improve health equity. CHR&R uses the Local Area Unemployment Statistics (LAUS) program of the U.S. Bureau of Labor Statistics to provide county-level estimates of the percentage of

population age 16 and older unemployed but seeking work. Users can access this measure under Ranked Measures > Health Factors > Social & Economic Factors > Unemployment. Data are downloadable as an Excel workbook; years of data availability vary by state.

  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/social-and-economic-factors/employment/unemployment
- Health Equity and Opportunity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on employment. Data are available by race/ethnicity for individual states via the web interface. In addition, data on all states are available by race/ethnicity and educational attainment via a downloadable Excel workbook from the Resources section of the website. Data are available for 50 states and Washington, D.C., via the web interface. In addition, data on all states are available for the years 2018–2020 via a downloadable Excel workbook from the Resources section of the website. This measure can be accessed under the "Social & Economic Factors" domain and the "Employment" indicator.
  - Link: https://www.hopeinitiative.org/indicator/employment
- National Equity Atlas
  - The National Equity Atlas provides the unemployment data for the working-age population (2–-64). The National Equity Atlas calculates the unemployment rate by race/ethnicity, education, gender, nativity, and ancestry for each year and geography. The unemployment rate is the number of people who are out of work divided by the number who are in the labor force, defined as working or actively seeking employment (over the previous 4 weeks). Data are available for 1990–2019, and data for 2010-2019 represent 5-year averages (e.g., 2015–2019). Users can access this measure from the "Economic Vitality" indicator group and the "Unemployment" indicator and can download data as an Excel workbook.
  - Link: https://nationalequityatlas.org/indicators/Unemployment#/
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses unemployment data from the U.S. Bureau of Labor Statistics (BLS). Users can access this measure under Economy > Employment and Unemployment and can drill down further within this measure. Data for this measure are available from 2000 to 2022.
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey questions are available for assessing employment status:

- *American Community Survey (ACS)*
  - The U.S. Census Bureau's ACS asks about whether a person worked last week and, if the answer is no, why they were not working, whether they plan to return to work, and when they last worked. To view ACS survey questions on employment status, visit the U.S. Census Bureau's website.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/employment/

Measure 2: Percent Working Alternative Shifts

Definition

Full-time wage and salary workers working a non-regular daytime schedule (including evening, night, rotating, irregular, and split shifts)

Data Availability

National

Subgroups

Gender, race/ethnicity, age, educational attainment, earnings

Data Source(s)

Existing Data Source(s)

- U.S. Bureau of Labor Statistics
  - The U.S. Bureau of Labor Statistics provides national estimates of the total number and percentage of individuals working a non-daytime schedule by shift. Data are available by age, gender, race/ethnicity, educational attainment, occupation type, and earnings. The latest data release is for 2017–2018; however, data for 1997, 2001, and 2004 can be accessed in the Archives under "Workers on Flexible and Shift Schedules."
  - Links:
    - Latest data: https://www.bls.gov/news.release/flex2.t07.htm
    - Archived data: https://www.bls.gov/bls/news-release/home.htm#FLEX

Example Survey Instrument

The following survey measure is available to assess shift work:

- American Time Use Survey (ATUS) Leave and Job Flexibilities Module
  - The U.S. Bureau of Labor Statistics (BLS) ATUS measures the amount of time people spend doing various activities, such as paid work, childcare, volunteering, and socializing. The 2017–2018 ATUS Leave and Job Flexibilities Module questionnaire asks respondents about access to paid and unpaid leave from their jobs, job flexibility, and work schedules. The module covers five areas: access to paid leave, access to unpaid leave, leave taken in last week, job flexibility and work schedules, and non-use of leave. The entire questionnaire is available on the BLS website. To access questions for this measure, search for “job flexibility and work schedules.”
  - Link: https://www.bls.gov/tus/questionnaires/lvmquestionnaire1718.pdf

Additional Measurement Considerations

Data for the percent working alternative shifts are available only at the national level. National estimates can be used as a starting point to understand shift work trends but may not provide meaningful insights for health care organizations that want to learn about their specific patient population.

Measure 3: Percent Working Regular Evening or Nighttime Shifts

Definition

Any person working an 8-hour or more shift past midnight

Data Availability

Public Use Microdata Areas (PUMAs), state, region, division

Subgroups

Gender, race/ethnicity, age, educational attainment, income

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) Public Use Microdata Sample (PUMS)
  - The ACS PUMS files are a set of untabulated records about individual people or housing units. The U.S. Census Bureau’s ACS PUMS files enable users to create custom estimates and tables that are not available through ACS pre-tabulated data products. The ACS asks a question about time of arrival to work. The question is usually analyzed with another survey item asking about the time the respondent departs for work, to calculate commute time; however, it can also be used alone to identify the proportion of the population working regular evening or nighttime shifts. Unfortunately, there are no questions about schedule regularity in the ACS. ACS PUMS provides 1-year and 5-year estimates on time of arrival at work by race/ethnicity, gender, household income, age, and educational attainment. Users can navigate to “Time of arrival at work – hour and minute” for this measure. Data users can access the ACS PUMS files through the U.S. Census Bureau’s “Accessing PUMS Data” website. Data are available for PUMA, state, region, and division levels for 2005–2020.

  - Link: https://www.census.gov/programs-surveys/acs/microdata/access.html

Additional Measurement Considerations

- The percent working regular evening or nighttime shifts measure uses ACS PUMS data. ACS PUMS data provide information for a Public Use Microdata Area (PUMA), which is a community-level area with no less than 100,000 people. This geographical level has statistical utility but may not have practical application for health care organizations. Users can use a PUMA-to-County crosswalk from the Missouri Census Data Center to generate pseudo county-based statistics from PUMA estimates. PUMS also provides data for state, region, and division levels, but these geographical levels are very large and do not provide granular information.
- Link: https://mcdc.missouri.edu/geography/PUMAs.html

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Indicator Profile | Income

Individuals with lower incomes lack economic resources, resulting in social disadvantage, poor education, poor working conditions, housing insecurity, and residence in unsafe neighborhoods.

Why Is This Indicator Relevant?

The relationship between income and health is well established. Households with incomes below the federal poverty level (annual income thresholds set by the federal government to determine financial eligibility criteria[1]) have high levels of illness and premature mortality.[2,3,4] Individuals with lower incomes lack economic resources, resulting in social disadvantage, poor education, poor working conditions, housing insecurity, and residence in unsafe neighborhoods. These negative environmental and psychosocial factors affect behavioral and physiological pathways that have proximal effects on health, including increased morbidity and mortality.[5] The United States has experienced a rise in income inequality, with widening racial gaps in wealth.[6,7] For every dollar of wealth that White households have, Asian, Hispanic/Latino, and Black/African American households have 83 cents, 7 cents, and 6 cents, respectively.[6] It is estimated that in the United States, the gap in life expectancy between the top 1% of wage earners and the bottom 1% is 14.6 years for men and 10.1 years for women.[8] Moreover, over the past few decades life expectancy has increased among the wealthiest 20%, while the remaining 80% have not experienced any gains in life expectancy.[9]

A growing body of evidence points to income-based disparities in CVD.[7,10,11,12] One study found that the richest 20% of study participants had healthier levels of biomarkers for cardiovascular disease, including body mass index, systolic blood pressure, and high-density lipoproteins relative to the poorest 80% of participants.[7] Individuals with lower incomes are more likely to experience adverse psychosocial factors that can induce a physiological stress response, resulting in higher circulating levels of catecholamines, higher cortisol levels, and increased blood pressure, which are all risk factors for CVD.[10,13,14]

Measures

The following measures assess income. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Financial Strain
- Measure 2: Index of Concentration at the Extremes
- Measure 3: Median Household Income
- Measure 4: Median Family Income
- Measure 5: Livable Income
- Measure 6: Living Wage/Poverty
- Measure 7: Per Capita Income

Measure 1: Financial Strain

Definition

An individual’s appraisal of ability to meet current financial needs

Data Availability

Individual

Data Source(s)

Example Survey Instrument

The following survey is recommended to measure perceived financial strain:

- Financial Strain Index
  - The Financial Strain Index was developed for Welfare, Children, and Families: A Three-City Study, which assessed the well-being of low-income children and families in the post–welfare reform era and explored how families responded to welfare reform in terms of employment, schooling, and income.[15] The Financial Strain Index is a 15-item self-reported measure that assesses the level of difficulty in meeting financial obligations and the availability of financial resources. The full survey from Welfare, Children, and Families: A Three-City Study is available at the University of Michigan Institute for Social Research’s website. To view the questionnaire and coding instructions, users can navigate to the “Data and Documentation” tab, download the “DS15 Main Interview Data, Wave 1” file, then search for “FINANCIAL STRAIN INDEX.”
  - Link: https://www.icpsr.umich.edu/web/DSDR/studies/4701//summary

Measure 2: Index of Concentration at the Extremes (ICE)

Definition

The ICE is a measure of economic and/or social (race/ethnic) spatial polarization that can be used at the very local level (e.g., census tract) up to the neighborhood or city/town level.[16] It quantifies the extent to which people in a specified area are concentrated in the top versus bottom extremes of a specified social distribution, using the following formula:

$$ICEi = (Ai – Pi)/Ti$$

where Ai is the number of people in the most privileged extreme, Pi is the number in the most deprived extreme, and Ti is the total population in geographic area i. ICEi ranges from –1 to 1; a value of –1 means that 100% of the population is concentrated in the most deprived group, and a value of 1 means that 100% of the population is concentrated in the most privileged group.[16]

- ICE allows for the selection of two groups for comparison and can be used as three separate measures of economic and racial privilege[16]:
  - ICE for income (economic segregation or income gap)
  - ICE for race/ethnicity (racial segregation)
  - ICE for race/ethnicity + income (racialized economic segregation or racial income gap)

Data Availability

Census tract, county, metropolitan area, state

Subgroups

Race/ethnicity, household type, age, educational attainment

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - A dataset for the ICE has not yet been developed and made publicly available. Interested parties would need to download the underlying data and develop the index themselves, using the methods described in Additional Measurement Considerations. Full methodology on the ICE is available from Krieger et al.[16,17,18] Users can download income data from the U.S. Census Bureau's ACS 5-year files and create a ratio between the 80th and 20th percentiles. To access data on this measure, users can search for "Household Income" or by the variable name "B19001" in the link below. Data on household income are available annually from 2010 to 2020. ACS 5-year files can be downloaded from the U.S. Census Bureau's main data platform at the link below.
  - Link: https://data.census.gov/cedsci/

Additional Measurement Considerations

- Calculating the ICE can be a complex task for nonacademic practitioners. Pre-calculated ICE data are not publicly available.
- In addition, although this index may consider both racial and economic inequality jointly whereas other measures do not, it is still an aggregate measure, and interpreting the results is not straightforward. For example, results close to 0 may indicate either that almost no one in the geography has high or low income or that a relatively equal number of residents belong to the two extremes.
- Finally, like most existing measures, the ICE allows for the incorporation of only two groups and does not provide insights about other potentially disadvantaged groups.

The following steps provide guidance on ICE calculations.

1. Download income data from the U.S. Census Bureau's ACS Five-Year files
   - Household Income In Dollars
   - Table Name: B19001
2. Outline the definition of "privileged" and "deprived" group
   - High income: $100K
   - Low income: $25K
3. Calculate the ICE measure using the following formula
   - The ICE for income is calculated as the number of people in high-income households minus the number of people in low-income households in a given area, divided by the total population in the given area.[18] Cut-points for high and low income are 80th vs. 20th percentile.
   - (No. of people in households with income over $100K) – (No. of people in households with income under $25K) / No. of total population with household income data

  - (No. of people in households with income over $100K) – (No. of people in households with income under $25K) / No. of total population with household income data.

Measure 3: Median Household Income

Definition

The median income of households (combined gross income of all household members, defined as a group of people who are 15 years and older living together) in a specified geographic area (household members do not need to be related)

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, gender, age, educational attainment

Data Source(s)

Existing Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The American Community Survey (ACS) from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Median Household Income" at the link below to access data on this measure. Users can create household income estimates by various characteristics (e.g., gender, race/ethnicity, age) by downloading the ACS 5-year files. Data are available from 2005 to 2020 in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- County Health Rankings & Roadmaps (CHR&R)
  - CHR&R is a program of the University of Wisconsin Population Health Institute. The CHR&R program provides data, evidence, guidance, and examples to build awareness of the multiple factors that influence health and support leaders in growing community empowerment to improve health equity. CHR&R uses data from the U.S. Census Bureau's Small Area Income and Poverty Estimates (SAIPE) program to provide county-level estimates of median household income. Users can access this measure under Additional Measures > Social & Economic Factors > Median Household Income. Data for this measure is available for download as an Excel workbook; depending on the state, years of data availability vary.
  - Link: https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/social-and-economic-factors/income/median-household-income

- PolicyMap
  - PolicyMap is a data warehouse of more than 50 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). Users can view five categories/ranges of median household income. In addition, there is an option to view the median family income for single female-headed families with children. Users can access this measure under Incomes & Spending > Income > Household > Median Household Income and drill down further within this measure to look at "All Household," "By Race or Ethnicity," or "By Housing Tenure." PolicyMap uses U.S. Census Bureau data for this measure. Data are available for 2000, 2006–2010, 2011–2015, and 2016–2020.
  - Link: https://www.policymap.com/newmaps#/
- Small Area Income and Poverty Estimates (SAIPE) Program
  - The U.S. Census Bureau's SAIPE program provides annual estimates of income and poverty statistics for all school districts, counties, and states. The main objective of this program is to provide estimates of income and poverty for the administration of federal programs and the allocation of federal funds to local jurisdictions. State and local programs also use the income and poverty estimates for distributing funds and managing programs. Data are available for 1989, 1993, and 1995–2020. Beginning with the SAIPE program's estimates for 2005, ACS data are used in the estimation procedure; prior years used data from the Annual Social and Economic Supplements of the Current Population Survey.
  - Link: https://www.census.gov/programs-surveys/saipe/data/api.html

Example Survey Instrument

The following survey questions are available for assessing median household income:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks about the funds a person receives from various sources to create statistics about income, assistance, earnings, and poverty status. ACS questions on income are provided at the link below. To calculate household income, the incomes of all related family members who live together are added up, meaning the questionnaire must be completed for all household members. For more information on income survey questions, please visit the U.S. Census Bureau's website.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/income/

Measure 4: Median Family Income

Definition

The median income of families (defined as the combined gross income of people in a household who are related by birth, marriage, or adoption) in a specified geographic area

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, household income, gender, age, educational attainment

Data Source(s)

Existing Data Source(s)

- Decennial Survey of Population and Housing
  - The U.S. Census Bureau's Decennial Survey of Population and Housing is an ongoing survey that is collected every 10 years. Users can search "Median Family Income" to access data on this measure and can create household income estimates by various characteristics (e.g., gender, race/ethnicity, age) by downloading the files. Data from 2000, 2010, and 2020 are available in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- American Community Survey (ACS) 5-Year Files
  - The ACS from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Median Family Income" at the link below to access data on this measure and can create family income estimates by various characteristics (e.g., gender, race/ethnicity, age) by downloading the ACS 5-year files. Data from 2005–2020 are available in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). Users can view five categories/ranges of median family income. In addition, there is an option to view the median family income for single female-headed families with children. Users can access this measure under Incomes & Spending > Income > Family > Median Family Income and drill down further within this measure. Measures using Census data are available for 2000, 2006–2010, 2011–2015, and 2016–2020.
  - Link: https://www.policymap.com/newmaps#/

Measure 5: Livable Income

Definition

Percentage of adults whose household income is higher than 250% of the federal poverty level

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Race/ethnicity, gender, age, educational attainment

Data Source(s)

- American Community Survey (ACS) 5-Year Files
  - The American Community Survey (ACS) from the U.S. Census Bureau is an ongoing survey that provides data annually. The 5-year estimates from the ACS represent data collected over a period of time. Users can access tools such as Detail Tables, Subject Tables, Data Profiles, and Comparison Profiles and download the ACS 5-year files from the U.S. Census Bureau's main data platform at the link below. Users can search "Poverty" at the link below to access data on this measure and can create poverty estimates by various characteristics (e.g., gender, race/ethnicity, age) by downloading the ACS 5-year files. Data from 2009–2020 are available in various formats, including Excel, CSV, and ZIP.
  - Link: https://data.census.gov/cedsci/
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data on the proportion of adults living in households with income greater than 250% federal poverty level. Data are available by race/ethnicity for 50 states via the web interface for the years 2018–2020. In addition, data on all states are available by race/ethnicity and educational attainment via a downloadable Excel workbook from the Resources section of the website. Users can access this data by navigating to the "Social and Economic Factors" domain and "Livable Income" indicator.
  - Link: https://www.hopeinitiative.org/indicator/livable-income

Measure 6: Living Wage/Poverty ($15+/Hour)

Definition

Proportion of workers earning at least $15 per hour

Data Availability

City, region, state

Subgroups

Race/ethnicity, gender, nativity

Data Source(s)

Existing Data Source(s)

- National Equity Atlas
  - The National Equity Atlas provides data on the percentage of full-time wage and salaried workers, ages 25–64, earning at least $15 per hour (in 2019 dollars) at the state, regional, and city levels and by race/ethnicity, gender, and nativity. Data for 1980–2000 are based on surveys conducted in those years but reflect income from the preceding year, while data for 2010 and 2019 represent 5-year averages (e.g., 2015–2019). Users can access “Wages: $15/hr.” under the “Economic Vitality” indicator. Data are available for download via Excel workbook.
  - Link: https://nationalequityatlas.org/indicators/Wages_15-hr#/

Measure 7: Per Capita Income

Definition

Estimated per capita income (individual level).

Data Availability

Block group, census tract, ZIP code, city, county subdivision, county, congressional district, metro **division, metro area, state**

Subgroups

Race/ethnicity, household income, gender, age, educational attainment

Data Source(s)

Data Source(s)

- America’s Health Rankings (AHR)
  - AHR provides state-level analyses of U.S. Census Bureau ACS data on per capita income in the past 12 months, in inflation-adjusted dollars to data year. Users can create estimates by various characteristics (e.g., household income, gender, education attainment, race/ethnicity, age) by downloading the ACS 5-year files and completing the analyses directly. Users can access this measure under Social and Economic Factors > Economic Resources – Annual > Economic Hardship Index > Per Capita Income. Data for 1990–2021 are available in various formats, including Excel, CSV, and ZIP.
  - Link: https://www.americashealthrankings.org/explore/annual/measure/PerCapIncome/state/ALL
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping and data downloads (CSV format). PolicyMap uses U.S. Census data to provide estimates on per capita income. Users can access this measure under Incomes & Spending > Income > Per Capita and can drill down further within this measure. Measures using Census data are available for 2000, 2006–2010, 2011–2015, and 2016–2020.

- Link: https://www.policymap.com/newmaps#/

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Indicator Profile | Food Insecurity

Food insecurity is defined as the disruption of food intake or eating patterns due to insufficient financial resources and other resources.

Why Is This Indicator Relevant?

Food insecurity, defined as the disruption of food intake or eating patterns due to insufficient financial resources and other resources,[1] is closely related to income and unemployment and is widely recognized as a risk factor for chronic diseases, such as hypertension, coronary heart disease (CHD), hepatitis, stroke, cancer, asthma, diabetes, arthritis, chronic obstructive pulmonary disease (COPD), and kidney disease.[2,3] In 2020, it was estimated that 10.5% of U.S. households experienced food insecurity, and the prevalence of food insecurity was notably higher for single-parent households and Black/African American and Hispanic/Latino households.[4]

Food insecurity negatively affects health and increases the risk for CVD through three pathways: unhealthy nutrition; monetary trade-offs; and psychological distress.[2] First, food insecurity is associated with poorer diet quality, which may lead to metabolic dysregulation, fat accumulation, or insulin resistance.[5,6,7] Second, relieving and mitigating food insecurity often involves monetary trade-offs between purchasing food or medication that may severely limit people's ability to manage chronic conditions properly.[8,9] Third, food insecurity is strongly associated with psychological distress, lower self-efficacy, and depressive symptoms, triggering physiological stress responses (e.g., elevated cortisol levels) and unhealthy coping behaviors (e.g., excessive drinking, smoking, drug use).[7,10,11]

Measures

The following measure assesses food insecurity. The measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Food Insecurity

Measure 1: Food Insecurity

Definition

Household-level lack of consistent access to food

Data Availability

Individual, city, county, core-based statistical area (CBSA), consolidated statistical area (CSA), state

Data Source(s)

Existing Data Source(s)

- Current Population Survey, Food Security Supplement (CPS-FSS)
  - The CPS-FSS is conducted annually in December and provides data on food access and adequacy, food spending, and sources of food assistance. Data are available from 1995 to 2022. Household-level data from 2010 onward are available for download from the Census.gov FTP site as an Excel file; .dat files are available on compact disc for years before 2010. The National Bureau of Economic

  Research provides files for reading these .dat files into SAS and Stata (https://data.nber.org/data/cps_progs.html).

  Results can be disaggregated by householder race/ethnicity, age, income, educational attainment and by geographic location (CBSA, CSA, city, and county). Using this data requires expertise in statistical analysis and survey weighting.

  - Link: https://www.census.gov/data/datasets/time-series/demo/cps/cps-supp_cps-repwgt/cps-food-security.html#cpssupps
- U.S. Department of Agriculture (USDA) Reports on Household Food Security in the United States
  - The USDA publishes annual downloadable reports that provide data on the proportion of households that are food-insecure by state (3-year averages), as well as changes in the proportion of households that were food insecure over time. Reports are available annually starting in 1999. To download reports, navigate to the provided link, select "Reports" on the right-hand side, click "See all," and then search for "Household Food Security in the United States."
  - Link: https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/

Example Survey Instrument

The following surveys are available to measure food insecurity:

- U.S. Household Food Security Survey Module and Adult Food Insecurity Survey Module
  - Both the Household Food Security Survey Module and the Adult Food Insecurity Survey Module provide primary data collection on food insecurity. The Household Food Security Survey Module is an 18-item survey, and the Adult Food Insecurity Survey Module is a 10-item survey. Both surveys use a three-stage survey design with screener; survey respondents are screened at three stages to determine whether they should proceed with the survey. Screening keeps respondent burden to the minimum needed to obtain reliable data. Most households in a general population survey are asked only three questions (five if there are children in the household). The survey and detailed scoring instructions are downloadable in PDF or Word format. Although the Adult Food Insecurity Survey is "less redundant, improves comparability of food security statistics between households with and without children and among households with children in different age ranges, and avoids asking questions about children's food security, which can be sensitive in some survey contexts," it does not provide specific information on food security of children.[12]
  - Link: https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/survey-tools/#household
- Six-Item Short Form of the Food Security Survey Module
  - For users who cannot implement the 18-item or 10-item surveys, the short-form 5-item scale provides a reasonably reliable substitute. It uses a subset of the standard 18-item survey. The survey and detailed scoring instructions are downloadable in PDF or Word format.
  - Link: https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/survey-tools/#household

Note: USDA also offers surveys in Spanish and Chinese at the link above.

- Household Food Insecurity Access Scale (HFIAS)

- HFIAS was developed by USAID's Food and Nutrition Technical Assistance Project to assess household food insecurity. HFIAS takes approximately 15 minutes to administer and asks respondents several questions about food intake, anxieties or concerns about household food supply, and food quality. There are nine occurrence questions that ask whether a specific condition or experience of food insecurity ever occurred in the past 30 days. Each occurrence question is followed by a frequency-of-occurrence question asking how often the reported condition or experience occurred. If the condition or experience of food insecurity did not occur in the past 30 days, the frequency-of-occurrence question is skipped. The survey and detailed guidance are provided in the link below.
- Link: https://www.fantaproject.org/sites/default/files/resources/HFIAS_ENG_v3_Aug07.pdf

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Indicator Profile | Housing Insecurity

Housing insecurity is commonly defined as high housing cost relative to income but also has been used as an umbrella term to describe multiple housing issues, such as poor housing quality, unstable occupancy, overcrowding, and unsafe neighborhoods.

Why Is This Indicator Relevant?

Housing insecurity is commonly defined as high housing cost relative to income, but it also has been used as an umbrella term to describe multiple housing issues, such as poor housing quality, unstable occupancy, overcrowding, and unsafe neighborhoods.[1,2,3,4] Housing-insecure adults are more likely to delay medical care and utilize emergency care, have poorer health care access, experience adverse mental health outcomes, and have higher prevalence of substance use than individuals with stable housing do.[1,2,5]

Eviction and foreclosure are associated with exposure to violence, depression, anxiety, increased alcohol use, psychological distress, and suicide.[1,2,5] Housing insecurity can be linked to CVD risk and related mortality due to downstream consequences of psychological distress and competing stressors (i.e., spending on housing rather than medical care). Increased exposure to secondhand smoke is common in low-income and public housing. Secondhand smoke interferes with the normal functioning of the heart, blood, and vascular systems; damages the lining of blood vessels; and causes blood platelets to become stickier, which increases the risk of heart attacks, strokes, and development of coronary heart disease.[6] Cardiotoxic air pollutants from poor-quality homes are also associated with increased risk for CVD.[1]

Homeownership offers stable housing and is a protective factor for mental health. Homeowners report higher self-esteem and happiness than renters and people experiencing housing insecurity, results that could reduce stress, a common risk factor for cardiovascular health.[7] Homeownership is also associated with better psychosocial health, such as reduced burden of depression.[8]

Measures

The following measures assess housing insecurity. Each measure links to its own page with measurement guidance and data sources. Click on each measure to learn more:

- Measure 1: Home Ownership
- Measure 2: Housing Instability

Measure 1: Home Ownership

Definition

Proportion of households living in a home that they own

Data Availability

Block group, census tract, ZIP code, county subdivision, county, congressional district, metro division, metro area, state

Subgroups

Educational attainment, race/ethnicity, age

Data Source(s)

Existing Data Source(s)

- American Housing Survey (AHS)
  - The AHS is sponsored by the U.S. Department of Housing and Urban Development (HUD) and conducted by the U.S. Census Bureau. It is the most comprehensive national housing survey in the United States. Users can access the AHS Table Creator to view data and download data as a CSV or Excel file. Data are available by metro area, state, and nationally. The years that data are available depend on state and measure.
  - Link: https://www.census.gov/programs-surveys/ahs/about/ahstc_tool.html
- Health Opportunity and Equity (HOPE) Initiative
  - The HOPE Initiative website provides state-level data from 2018 on the proportion of households living in homes that they own, broken out by race/ethnicity. In addition, data on all states by householder race/ethnicity and educational attainment are available as a downloadable Excel workbook from the Resources section of the website. This measure can be found under the "Physical Environment" domain and "Home Ownership" indicator.
  - Link: https://www.hopeinitiative.org/indicator/home-ownership
- PolicyMap
  - PolicyMap is a data warehouse of more than 50,000 indicators on demographics, income and spending, housing, lending, quality of life, economy, education, health, and federal regulations. A free (basic) subscription provides access to indicators developed using publicly available data sources via a single-layer mapping tool. A paid (standard) subscription provides access to multilayer mapping, analysis tools, and data downloads (CSV format). PolicyMap uses U.S. Census data to provide estimates on the percent of all households that own a home. Users can view the proportion of households that own their homes at all geographic levels noted above. Race/ethnicity and age subgroupings can be viewed using the single-layer maps available to basic subscribers. However, insufficient data becomes an issue at the county and smaller geographic levels. Users can access data on this measure under Housing > Homeowners and Renters and can drill down further within this measure by race, age, mortgage status, and crowdedness. Data are from the U.S. Census, and the years of data availability vary by measure and state.
  - Link: https://www.policymap.com/newmaps#/

Example Survey Instrument

The following survey questions are available for assessing home ownership:

- American Community Survey (ACS)
  - The U.S. Census Bureau's ACS asks questions about whether a home is owned or rented to create statistics about home ownership and renters. To view the ACS survey questions on home ownership, visit the U.S. Census Bureau's website below.
  - Link: https://www.census.gov/acs/www/about/why-we-ask-each-question/ownership/

Additional Measurement Considerations

- As a piloted indicator in the Health Equity Indicator Pilot, sites found that adding housing insecurity questions into their social determinant of health (SDOH) screening tools and electronic health record (EHR workflows created actionable opportunities to facilitate referrals to community resources.
- For more measures related to housing, please see the Housing indicator in the Neighborhood Characteristics Indicator Profile.

Measure 2: Housing Instability

Definition

Housing issues such as periods of homelessness; paying more than 50% of income on housing costs; difficulty paying rent, mortgage, or utility bills; and difficulty finding safe, adequate, and affordable housing.

Data Availability

City, town, minor civil division, county, state

Subgroups

Educational attainment, race/ethnicity, income level, age, disability status

Data Source(s)

Existing Data Source(s)

- U.S. Department of Housing and Urban Development, Comprehensive Housing Affordability Strategy (HUD-CHAS)
  - The HUD-CHAS website provides query and data download tools that allow users to view data on a variety of housing-related indicators. These indicators focus on low-income households and are commonly used by HUD to demonstrate the extent of housing problems and needs experienced by populations across the United States. The query tool displays data for various housing-related indicators at a place (city/town), minor civil division, county, or state level and is useful for users interested in creating estimates disaggregated by household income for a particular locale. The data tool allows users to download complete data files (CSV format) for a specified 5-year period and geographic level. Downloaded files include data at HUD-specified geographic areas for the entire United States. Downloaded files include tables by race/ethnicity, income level, household size, presence of a household member with a disability, and various other subgroup options; they also provide margins of error for all estimates. For the query tool, users can choose data years going back to 2000; however, due to coding errors in the older data, the 2000 and 2005–2007 estimates should not be compared to estimates using 2006–2017 data. For this reason, the data download tool includes only 2006–2017 data.
  - Link: https://www.huduser.gov/portal/datasets/cp.html#2006-2017_data

Example Survey Instrument

The following survey is available to measure housing insecurity:

- Housing Stability Index

- This 10-item survey was developed for the Safe Housing and Rent Assistance Evaluation (SHARE) study, which analyzed housing instability as a predictor of poor health. The Housing Instability Index is a count of 10 possible risk factors for housing instability in the past 6 months.[1] Eight items are dichotomous (yes/no responses). Question 10 should be recoded so that 0 represents a response of "likely" and 1 represents a response of "unlikely," and Question 4 should be reverse-coded so that a response of "no" is counted as a risk factor. Scoring guidance is available from Rollins et al.[9]

1. In the past 6 months, have you had to live somewhere that you did not want to live?	Yes	No
2. In the past 6 months, have you had difficulty (or were unable to) paying for your housing?	Yes	No
3. Have you had trouble getting housing in the past 6 months?	Yes	No
4. Do you expect that you will be able to stay in your current housing for the next 6 months?	Yes	No
5. In the past 6 months, have you had to borrow money or ask friends/ family or others for money to pay your rent/mortgage payment?	Yes	No
6. In the past 6 months, have you moved more than twice?	Yes	No
7. Have you had trouble with a landlord in the past 6 months?	Yes	No
8. In the past 6 months, has your landlord threatened to evict you?	Yes	No
9. In the past 6 months, have you been served an eviction notice?	Yes	No
10. How likely is it that you will be able to pay for your housing (e.g., rent/mortgage) this month?	Yes	No

Home Insecurity References

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Case Examples and Field Notes

The following examples are short summaries that describe an organization's experience with gathering data for specific indicators, including data sources used, analysis conducted, use of the indicator data, and lessons learned in the data collection process. This toolkit has two types of examples: **Case Examples From the HEI Pilot Study** and **Field Notes From Other Sites.**

Case Examples From the HEI Pilot Study

These case examples were developed from the Health Equity Indicators (HEI) Pilot Study. Seven health care organizations participated in the HEI Pilot Study from January 2022 to April 2022 to pilot-test a subset of HEIs in order to assess the feasibility of gathering and analyzing data on these indicators within health care settings. The pilot case examples document participating sites' experiences with data collection and lessons learned from piloting the HEIs.

Genderism, Sexism, Heterosexism—Gender Income Gap

Health Access—Health Care Availability

Racism—Redlining

Neighborhood Characteristics—Poverty

Policy—Social Determinants of Health (SDOH) Measures in Electronic Health Records

Psychosocial Pathways—Access to Mental Health Care

Socioeconomic Factors—Housing Insecurity

Genderism, Sexism, Heterosexism—Gender Income Gap

Site: Dignity Health St. Joseph's Hospital and Medical Center

Focus Area: Genderism, Sexism, Heterosexism

Measure: Median Household Income by Gender

About this document: This document presents an example of how one health care site, Dignity Health St. Joseph's Hospital and Medical Center in Phoenix, Arizona, used data on the health equity indicator *gender income gap*. The gender income gap is defined as the difference between the median earnings of men and women relative to the median earnings of men.[1] This serves as a proxy indicator for genderism/sexism. Compared with men, women are more likely to be in low-paid, nonunionized sectors of the economy, have interrupted careers, or work part-time, all of which contribute to the gender income gap and can affect access to health care.[2,3] Health care is predominantly accessed through employer-sponsored health insurance plans, which are typically limited to full-time and high-wage workers. County-level measures of median income and income inequality are also associated with county-level CVD mortality rates and individual-level risk.[4,5] The stress or anxiety related to income inequality may result in heightened blood pressures or could contribute to the adoption of unhealthy coping behaviors (e.g., smoking, unhealthy eating, alcohol consumption), which can affect CVD and other chronic diseases.[6,7,8] Dignity Health St. Joseph's Hospital and Medical Center used the median household income by gender measure to access the gender income gap. The median household income by gender measure is defined as the ratio of median household income by gender. For more information on the median household income by gender measure, please see the gender income gap indicator in the Genderism, Sexism, and Heterosexism Indicator Profile.

The description of Dignity Health St. Joseph's Hospital and Medical Center's data analysis methods, data sources, challenges, and facilitators summarized below reflects insights gathered during the Health Equity Indicators for CVD Pilot Study conducted between January and April of 2022.

Background. Serving the approximately 4.3 million residents of Maricopa County, Dignity Health St. Joseph's Hospital and Medical Center is part of CommonSpirit Health®, which is one of the nation's largest nonprofit health care systems, with more than 1,000 care sites and 140 hospitals in 21 states. Dignity Health St. Joseph's Hospital and Medical Center collaborated with the Office of Informatics & Epidemiology within the Maricopa County Department of Public Health (MCDPH) to develop a plan for addressing community health needs, which includes a focus on health equity. Dignity Health St. Joseph's Hospital and Medical Center's Heart and Vascular Institute and the Community Benefit and Health Equity Department participated in the CDC pilot reviewing select health equity indicators, including the gender income gap indicator. The pilot supported Dignity Health's core mission of advancing social justice and improving health for all, especially for the most vulnerable. Some of the hospital's current health equity efforts also include improving interoperability and analytic capabilities for data systems that contain health equity measures, standardizing health equity data collection processes, visualizing health equity data, and ultimately, using data to inform decisions to address health inequities.

Data Collection and Analysis Methods. As part of the pilot reviewing select health equity indicators, Dignity Health St. Joseph's Hospital and Medical Center tested the gender income gap indicator using the median household income measure from the American Community Survey (ACS). In collaboration with MCDPH, the Dignity Health St. Joseph's Hospital and Medical Center team extracted median household income data from the 2019 ACS for Maricopa County. Using income data for men and for women, the team calculated the ratio of women's income to men's income. One of the analysis findings indicates that women earn 77.6% of men's earnings across all industries in Maricopa County. The Dignity Health St. Joseph's Hospital and Medical Center team plans to collect and analyze data at additional geographic levels by leveraging the Dignity Health Community Needs Index (CNI) to identify high-need ZIP codes.

Overview of Dignity Health St. Joseph’s data collection methods		
Indicator: Gender Income Gap Measure: Median Household Income by Gender		
Data Collection Method	**Data Source**	**Data Availability**
Secondary data analysis	American Community Survey (ACS)	County-level
Application/Use		
Calculation of ratio of women’s earnings to men’s earnings.		

Facilitators. Strong support from Dignity Health St. Joseph’s Hospital and Medical Center patient care and executive leadership teams at the local, division, and national levels greatly facilitated data collection and analysis for the pilot. Overall, teams at Dignity Health St. Joseph’s Heart and Vascular Institute and the hospital’s Community Benefit and Health Equity Department found that the pilot accelerated efforts to refine the process in which health equity indicator data are captured and measured for broader health equity work. Given the availability of dedicated staff and community resources, Dignity Health St. Joseph’s Hospital and Medical Center reported that they have the necessary capabilities to continue working with MCDPH’s Office of Informatics & Epidemiology to address health equity efforts.

Challenges and Limitations. The team reported no barriers to data collection.

Future Plans. The ACS data set allows for additional analyses to provide further insights on gender income gap and health impact. Potential future analyses include comparing income ratios across the different counties Dignity Health serves in Arizona and comparing income ratios by rural/urban areas. Dignity Health St. Joseph’s Hospital and Medical Center can use the analysis insights in relation to health outcomes to guide future health equity interventions.

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Health Access—Health Care Availability

Site: Trinity Health

Focus Area: Health Care Access

Measure: Primary Care Physician Ratio

About this document. This document presents an example of how one health care site, Trinity Health used data on the health equity indicator *health care availability*. Health care availability is typically defined as the geographic proximity of providers and facilities in relation to an individual and reflects the capacity of medical service markets to adequately meet the needs of the local population.[1,2] Limited availability of health care resources, including the number of primary care physicians, nurse practitioners, and pharmacists per capita, presents a barrier that may reduce access to health services and increase the risk of poor health outcomes.[3] Having access to care and a usual source of care may facilitate CVD screenings and increase opportunities for patients to receive preventive care and information about CVD risk behaviors from a health care provider.[4] Trinity Health used the primary care physician ratio to measure health care availability. The primary care physician ratio is defined as the ratio of the population to the number of primary care providers.[5] For more information on the primary care physician ratio measure, please see the Health Care Access indicator in the Health Care Availability Indicator Profile.

The description of Trinity Health's data analysis methods, data sources, challenges, and facilitators summarized below reflects insights gathered during the Health Equity Indicators for CVD Pilot Study, conducted between January and April of 2022.

Background. Trinity Health is a Catholic-based primary care health system with treatment centers (referred to as ministries) across the country. Trinity Health agreed to work with CDC to pilot this health equity indicator to determine applicability to its broader health equity efforts. To support this pilot, the health system collaborated with one of their ministries, Saint Joseph Mercy Ann Arbor (SJMAA), and the Michigan Data Analytics (MDA) team. The SJMAA serves the Ypsilanti and Ann Arbor areas. In 2021, the U.S. Census Bureau reports estimated the Ypsilanti population to be 20,113, with 26.8% identified as Black/African American. The city of Ann Arbor was reported to have a population estimate of 121,536, with 7% identified as Black/African American.

Data Collection and Analysis Methods. As part of the pilot of select health equity indicators, Trinity Health tested the collection of data on health care availability using two data sources: the American

Medical Association (AMA) Physician Master Files via the Health Resources & Services Administration's (HRSA) Area Health Resources Files and the Centers for Medicare and Medicaid Services (CMS) National Provider Identifier (NPI) file. The AMA Physician Master File is a data set of all physicians in the United States and contains county-level estimates of the number of physicians in the county and the number of individuals served per physician. The CMS NPI file contains unique identification numbers for covered health care providers. With the NPI file, users can search the registry by county, city, or state to view the number and type of health care providers in a chosen area.

Overview of Trinity Health's data collection methods		
Indicator: Health Care Availability Measure: Primary Care Physician Ratio		
Data type	**Data Source**	**Data Availability**
Secondary	AMA Physician Master Files	County-level
Secondary	CMS National Provider Identifier file	County-level
Primary	Electronic medical records	Patient-level
Application/Use		
Analysis of relationship between readmission levels for congestive heart failure and health care availability, by patient ZIP code		

In addition, Trinity Health recruited patients from their inpatient hospital and outpatient congestive heart failure (CHF) clinic for primary data collection and obtained patient ZIP codes from electronic medical records. Using secondary data files and primary data on patient ZIP codes, the MDA team generated primary care physician and nurse practitioner ratios by matching patients' ZIP codes to the corresponding county. They then used the data as an explanatory covariate in SJMAA'S CHF readmission analysis to inform their strategy for readmitting patients with CHF, based on health care availability within the counties they serve.

Facilitators. Trinity Health's leadership team supported this work. The MDA team partnership and availability of a biostatistician facilitated the synthesis and analysis of data from the different data sources. In addition, the team had institutional review board approvals to gather ZIP code data.

Challenges and Limitations. The team recruited only 40 patients for ZIP code data. Due to this small sample size of patients, there were not enough data points from different counties to allow county-level analysis of health care availability.

Future Plans. Although the data sources were accessible and data collection for this indicator was feasible, a large sample size and a broader set of counties is required for maximum utility, enabling meaningful connections to CVD outcomes. To mitigate the challenge of limited county representation when using a county-level measure, Trinity Health plans to broaden their sample size by expanding recruitment efforts for collecting ZIP code data to include patients who receive home care. This will allow continued exploration of how to use this indicator in ongoing CHF patient studies. Additionally, the chief quality officer and MDA team developed a dashboard that tracks various health outcomes by race. Trinity Health plans to explore the dashboard data in the next few months.

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Racism—Redlining

Site: Los Angeles County Department of Public Health

Focus Area: Racism

Measure: HOLC Risk Maps

About this document. This document presents an example of how one health department, the Los Angeles County Department of Public Health (LACDPH), used data on the health equity indicator *redlining*. Redlining is the systematic denial of services to residents of certain neighborhoods or communities based on race or ethnicity.[1] Residence in historically redlined areas is associated with worse physical and mental health as well as higher adverse outcomes after inpatient hospitalization, postoperative mortality, and prevalence of preterm births, gunshot-related injuries, asthma, heat-related illness (i.e., urban heat island effect), and other chronic conditions.[2] LACDPH used Home Owners' Loan Corporation (HOLC) risk maps to measure redlining. The HOLC risk maps are a collection of digital maps showing areas in urban centers that were redlined and can be used to understand the effects of historical discriminatory federal housing policy on local communities. For more information on the HOLC risk maps measure, please see the redlining indicator in the Racism Indicator Profile.

The description of LACDPH's data analysis methods, data sources, challenges, and facilitators, as summarized below, reflects insights gathered during the Health Equity Indicators for Cardiovascular Disease (CVD) Pilot Study conducted between January and April of 2022.

Background. LACDPH serves more than 10 million residents, of which 48.4% are Hispanic/Latino, 28.3% are White, 14.4% are Asian American, and 8.5% are Black/African American. LACDPH is committed to developing and implementing policies and programs that support the department's and the county government's priority to advance health equity. For example, LACDPH's Center for Health Equity assists other programs within the department to address many of these disparities. As part of the effort to advance this goal, LACDPH agreed to work with CDC to pilot selected health equity indicators it was not previously collecting to determine applicability to the department's overall work in this area of public health practice.

Data Collection and Analysis Methods. As part of the pilot, LACDPH tested the collection and use of redlining data using HOLC maps. This data source is publicly available through the University of Richmond's Digital Scholarship Lab and provides geocoded redlining data from the 1930s through the 1940s. Following the recommended steps provided in the Racism Health Equity Indicator Profile, the LACDPH team uploaded HOLC shapefiles into ArcGIS and conducted a spatial analysis to visualize patterns of redlining across Los Angeles County. The team created two color coded maps (Figure 1 and Figure 2) displaying the 2014 chronic disease prevalence and the 2014 HOLC risk scores for each census tract. The 2014 chronic disease prevalence data was derived from the CDC 500 Cities Project, which uses small area estimation methods to obtain chronic disease measures at the city-/census-tract level for the 500 largest cities in the United States.

Overview of LACDPH's data collection methods		
Indicator: Redlining Measure: HOLC Risk Maps		
Data Collection Method	**Data Source**	**Data Availability**
Secondary data analysis	Home Owners' Loan Corporation (HOLC) maps	Census tract
Application/Use		
Spatial analysis of redlining data overlaid with chronic disease prevalence data at the census tract level.		

Findings. Findings from the analysis suggest a lasting effect of redlining on chronic disease prevalence in Los Angeles County. The LACDPH team, however, noted that the present analysis does not adequately account for the various confounding factors contributing to health inequities. Additional analyses are needed to better understand the confounding factors and to draw inferences.

Facilitators. Given LACDPH's ongoing focus on health equity work, there was strong senior leadership support to explore new indicators of health disparities and social determinants of health. This support, combined with the availability of CDC support, allowed staff to dedicate time to this analysis. Staff members' expertise in ArcGIS enabled the team to efficiently use the shapefiles to identify redlined areas and develop visual depictions of redlining patterns.

Challenges and Limitations. While the HOLC map shapefiles are accessible and free to download using ArcGIS, access and use of additional data elements and mapping features (e.g., HOLC score, import of census tract boundaries) requires an ArcGIS Pro license. LACDPH was able to create choropleth maps using ArcGIS despite this barrier. Another limitation of the HOLC maps is that they are available only for a limited number of cities and therefore cannot be used to map patterns across all geographies, especially rural areas.

Future Plans. LACDPH noted that redlining as an indicator is helpful for understanding the historical context that shapes current patterns of differential access to resources across neighborhoods. The team plans to share findings from the analysis of redlining and chronic disease rates with key partners, including local health agencies, to support the geographic prioritization of health and social services interventions as part of their ongoing efforts to reduce health inequities.

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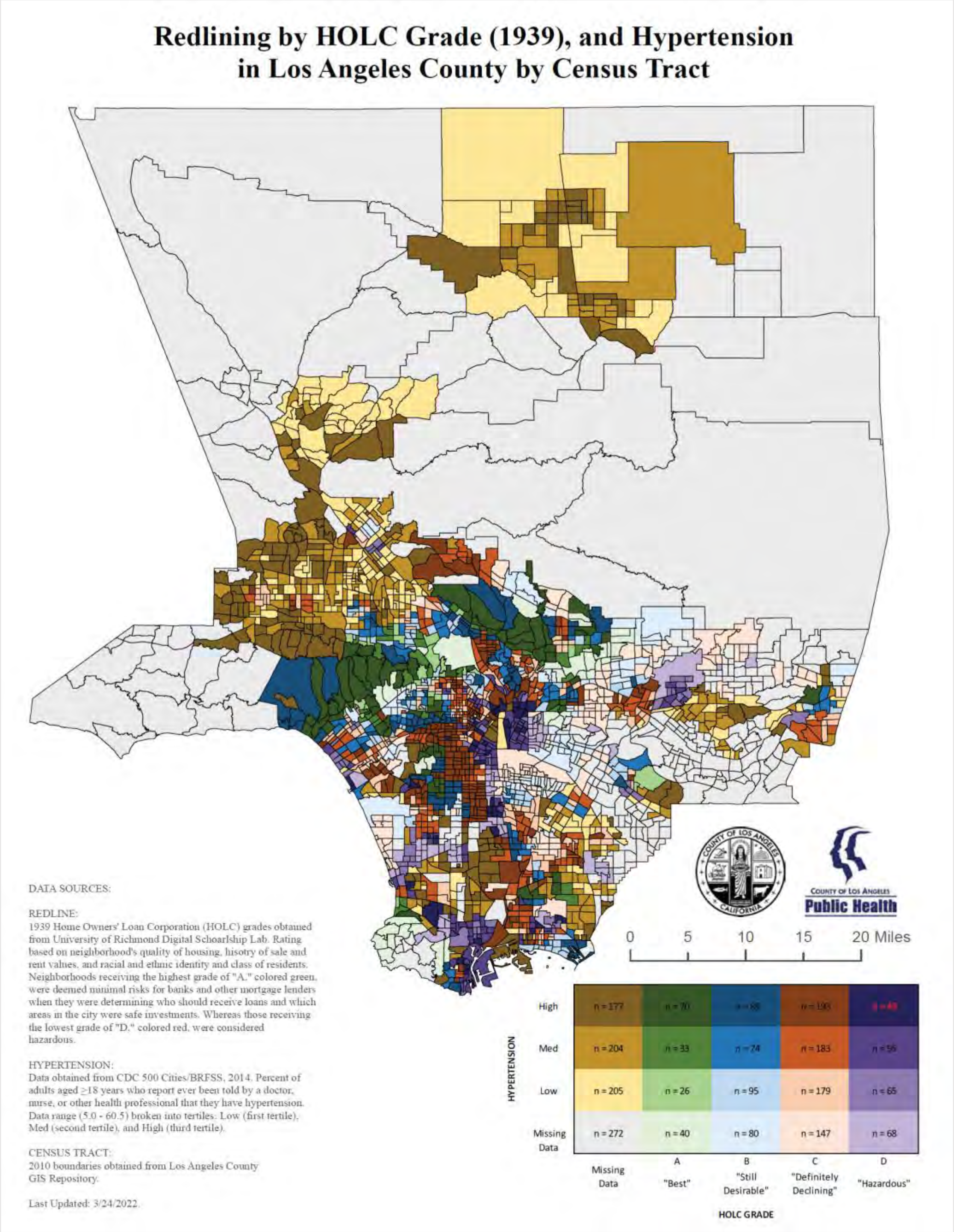
Figure 1. Map of HOLC risk scores by chronic disease prevalence



Redlining by HOLC Grade (1939), and Hypertension in Los Angeles County by Census Tract

DATA SOURCES:

REDLINE:
1939 Home Owners' Loan Corporation (HOLC) grades obtained from University of Richmond Digital Schoarlship Lab. Rating based on neighborhood's quality of housing, hisotry of sale and rent values, and racial and ethnic identity and class of residents. Neighborhoods receiving the highest grade of "A," colored green, were deemed minimal risks for banks and other mortgage lenders when they were determining who should receive loans and which areas in the city were safe investments. Whereas those receiving the lowest grade of "D," colored red, were considered hazardous.

HYPERTENSION:
Data obtained from CDC 500 Cities/BRFSS, 2014. Percent of adults aged ≥18 years who report ever been told by a doctor, nurse, or other health professional that they have hypertension. Data range (5.0 - 60.5) broken into tertiles: Low (first tertile), Med (second tertile), and High (third tertile).

CENSUS TRACT:
2010 boundaries obtained from Los Angeles County GIS Repository.

Last Updated: 3/24/2022.

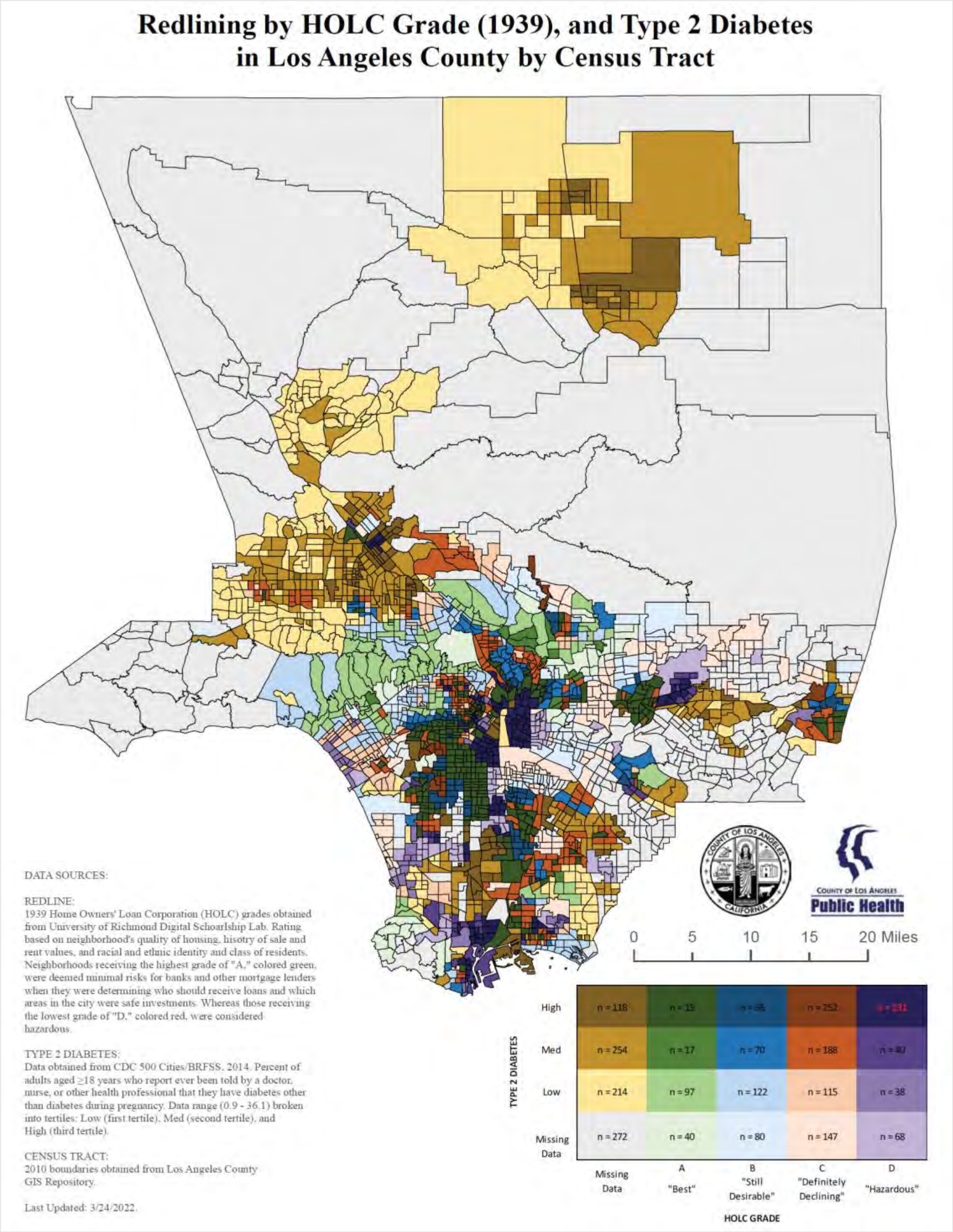


Figure 2. Map of HOLC risk scores by diabetes prevalence

Redlining by HOLC Grade (1939), and Type 2 Diabetes in Los Angeles County by Census Tract

DATA SOURCES:

REDLINE:
1939 Home Owners' Loan Corporation (HOLC) grades obtained from University of Richmond Digital Schoarlship Lab. Rating based on neighborhood's quality of housing, hisotry of sale and rent values, and racial and ethnic identity and class of residents. Neighborhoods receiving the highest grade of "A," colored green, were deemed minimal risks for banks and other mortgage lenders when they were determining who should receive loans and which areas in the city were safe investments. Whereas those receiving the lowest grade of "D," colored red, were considered hazardous.

TYPE 2 DIABETES:
Data obtained from CDC 500 Cities/BRFSS, 2014. Percent of adults aged ≥18 years who report ever been told by a doctor, nurse, or other health professional that they have diabetes other than diabetes during pregnancy. Data range (0.9 - 36.1) broken into tertiles: Low (first tertile), Med (second tertile), and High (third tertile).

CENSUS TRACT:
2010 boundaries obtained from Los Angeles County GIS Repository.

Last Updated: 3/24/2022.

TYPE 2 DIABETES	Missing Data	A "Best"	B "Still Desirable"	C "Definitely Declining"	D "Hazardous"
High	n = 118	n = 15	n = 66	n = 252	n = 131
Med	n = 254	n = 17	n = 70	n = 188	n = 40
Low	n = 214	n = 97	n = 122	n = 115	n = 38
Missing Data	n = 272	n = 40	n = 80	n = 147	n = 68

HOLC GRADE

Neighborhood Characteristics—Poverty

Site: Atrium Health

Focus Area: Neighborhood Characteristics

Measure: Poverty Rate

About this document: This document presents an example of how one health care site, Atrium Health, used data on the health equity indicator, *poverty*. Poverty is most commonly defined as the lack of resources necessary to meet basic human needs.[1] Poverty has been linked to several adverse health outcomes, such as infectious disease, maternal and infant mortality, diabetes, kidney disease, CVD, and many others. The effect of poverty is observed not only at the individual level but also at the community level. Several studies have reported that the county-level poverty rate is a strong predictor of heart failure, coronary heart disease, and CVD mortality.[2,3,4] Atrium Health used poverty rates to measure poverty. Poverty rate is defined as the proportion of families (people/households) living with incomes below the federal poverty level. For more information on the poverty rate measure, please see the poverty indicator in the Neighborhood Characteristics Indicator Profile.

The description of Atrium Health's data analysis methods, data sources, challenges, and facilitators summarized below reflects insights gathered during the Health Equity Indicators for CVD Pilot Study conducted between January and April of 2022.

Background. Atrium Health is a hospital network spanning the Carolinas, Alabama, and Georgia and comprising 40 hospitals and more than 70,000 employees. Atrium Health partners with more than 50 community organizations to support a community health worker program, mobile primary health care units, and other programs specifically tailored to the populations of focus, including those with food insecurities and lack of access to primary care. One initiative is the COVID-19 Isolation Motel (IM), a program Atrium Health operated in collaboration with the Mecklenburg County Public Health Department in North Carolina for patients with COVID-19 or those exposed to SARS-CoV-2, the virus that causes COVID-19, who could not isolate or quarantine. The program aimed to address social needs, including housing and medical care access. Atrium Health agreed to work with CDC to pilot some health equity indicators to support its work in addressing the social service needs of its population of focus.

Data Collection and Analysis Method. As part of the pilot of select health equity indicators, Atrium Health tested the poverty indicator to study poverty rates among patients within their COVID-19 Isolation Motel (IM). The team used the Brown Longitudinal Tract Database (LTDB), sourced from the American Community Survey (ACS), to analyze the poverty measure. Specifically, Atrium Health identified census tracts where 20% or more of the population is living in poverty.

Overview of Atrium Health's data collection methods		
Indicator: Poverty Measure: Poverty Rate		
Data Collection Method	**Data Source**	**Data Availability**
Secondary data collection	American Community Survey (ACS)	Census-tract
Application/Use		
Assessment of neighborhood poverty levels in a sub-population of COVID-19 patients.		

To assess health inequities among COVID-19 patients and support their ongoing analysis of IM patient data, Atrium Health extracted LTDB data across multiple time periods at the census-tract level. Using patient addresses captured through the patient intake process, the team geocoded addresses to census tracts and linked the patient data with the LTDB data.

Analysis results indicate that of the 184 IM patients who were not experiencing homelessness, 84 (45%) lived in census tracts with poverty rates above 20% between 2015 and 2019 and 117 (64%) resided in census tracts with poverty rates above the 20% threshold between 2008 and 2012. About one-fifth (21%) of IM patients lived in census tracts that consistently reported poverty across multiple ACS and the decennial census (2000 decennial census, 2008–2012 ACS, 2015–2019 ACS).

Atrium Health plans to use data visualizations in various partner meetings to report these findings to demonstrate the social determinants of health factors that affect the patient population the IM serves. Given the link between COVID-19 and CVD following diagnosis,[5] this analysis has potential for broader application to assessing the relationships between poverty and CVD.

Facilitators. Atrium Health noted that leadership buy-in and financial support were crucial to ensure that they had the staff to analyze data. Specifically, Atrium Health had a dedicated Impact Evaluation and Grants Management team lead data analysis, under the leadership of the Division of Community & Social Impact. The team's expertise in health equity research, data analytics, and health informatics was a major facilitator for linking data across different data sets and completing the analysis within the desired time frame. The team can apply this experience to develop evaluation and data collection protocols for Atrium Health's other health equity programs.

Challenges and Limitations. The COVID-19 pandemic affected data quality and accuracy, specifically lag time for updating public data. However, the team did not encounter any other major barriers to using secondary data from the ACS for this analysis.

Future Plans. Atrium Health expressed interest in taking advantage of its business intelligence tools and databases of patient health care utilization, demographics, and health outcomes for future health equity analysis work. The team also noted their plans to leverage geographic indicators to support the strategic deployment of place-based resources into communities with the greatest needs and where those resources will have the most significant impact. Geographic indicators can also be used to enhance clinical and community-based program evaluation by providing information on environmental exposures to social and health risk factors and helping to measure the impact of programming on the population of focus.

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Policy—Social Determinants of Health (SDOH) Measures in Electronic Health Records

Site: ProMedica Toledo Hospital

Focus Area: Policy

Measure: Patient Social Determinants of Health

About this document: This document presents an example of how one health care site, ProMedica Toledo Hospital (ProMedica), collected data on the health equity indicator, *social determinants of health (SDOH) measures in electronic health records (EHRs)*. SDOH are conditions where people live, learn, work, and play that affect a wide range of health and quality-of-life risks and outcomes.[1] Measuring SDOH is crucial in identifying patients who are at risk for poor health outcomes and in identifying areas where prevention or intervention efforts should be allocated. The American Heart Association promotes SDOH assessment as a component of routine care for individuals with heart disease and advises data availability within patient EHRs.[2] Overall, the inclusion of cardiovascular disease (CVD) risk factors in EHRs is a useful tool in population health surveillance.[3] ProMedica Toledo Hospital used the patient SDOH measure to assess SDOH measures in EHRs. Patient SDOH are defined as patient-level information on unmet social needs. Data collected from patient SDOH screening can be entered into EHRs and used to improve patient care. For more information on the patient SDOH measure, please see the SDOH measures in EHRs indicator in the Policy Indicator Profile.

The description of ProMedica's data analysis methods, data sources, challenges, and facilitators summarized below reflects insights gathered during the Health Equity Indicators for CVD Pilot Study conducted between January and April of 2022.

Background. ProMedica Toledo Hospital is a 794-bed hospital in Toledo, Ohio, that serves approximately 122,000 patients, of whom 87% are White, 7% are Black/African American, and 2% are

Hispanic/Latino. The hospital houses a trauma unit and an acute care center and employs specialty physicians and primary care physicians. ProMedica offers inpatient and outpatient health care services. To meet its mission of improving patient health and well-being, ProMedica uses an SDOH screening tool as part of its inpatient and outpatient patient assessment workflow.

Data Collection and Analysis Methods. ProMedica has an established method for collecting SDOH data and did not pilot-test this indicator. However, ProMedica shared information about their SDOH data collection and analysis process as part of the pilot.

Overview of ProMedica's data collection methods		
Indicator: SDOH Measures in EHRs Measure: Patient SDOH		
Data Collection Method	**Data Source**	**Data Availability**
Primary data collection	EHRs	Patient-level
Application/Use		
Exploratory analysis of the relationship among various SDOH, race and ethnicity, and CVD interventions and outcomes utilizing an existing SDOH screening tool.		

ProMedica collects primary data on SDOH using a screening tool administered to adult patients who agree to participate at ProMedica's cardiac care clinic. The screening tool is part of patients' existing pre-appointment registration process. Patients complete the screener via ProMedica's EHR portal up to a week before their appointment, via the online patient portal or the tablet in the hospital waiting room. The housing and food screening is mandatory for inpatient admissions to the hospital. The screening is voluntary for outpatient visits. The ProMedica team reported an 85% to 90% completion rate among those who participate in the screening. Clinic staff also collect SDOH data during intake, as part of the medical history and physical examination.

The screening tool comprises 32 questions and gathers patient data across 14 domains, including housing, transportation access, behavioral health, financial strain, and education level. After the screening, the EHR assigns a patient risk score that informs the interventions and resources to be provided to the patient. ProMedica conducts an annual community-level health needs assessment by analyzing clinical data by race, ethnicity, and other SDOH to identify any unfavorable differences in treatment, diagnosis, and health outcomes across different population subgroups. Patient ZIP codes are also used to identify geographic patterns in SDOH and clinical data. The findings from this analysis accelerated the development of ProMedica's health equity plan and facilitated engagement with key partners, including their organizational leadership, to address identified inequities.

Facilitators. Awareness and involvement of ProMedica's EHR reporting team and leadership buy-in and support were the two significant facilitators for data collection. The team's engagement provided foresight into potential data collection issues.

Challenges and Limitations. Because ProMedica uses an existing SDOH screening tool already embedded in their EHR and patient workflows, they did not report any major barriers specific to collecting SDOH data. However, there are barriers to capturing inpatient SDOH needs. Inpatients are not able to benefit from completing the SDOH screening in the privacy of their own home, yet may be reluctant to answer SDOH questions posed by the hospital staff. Furthermore, ProMedica raised concerns about adding measures to their screening tools, noting risk of staff and patient survey fatigue, lower response rates, and lower data quality.

Future Plans. ProMedica noted that collecting data on SDOH measures within the EHR supports and enhances their ongoing health equity efforts. Given that many of their patients indicate social needs, the team plans to continue their data collection efforts to understand and address SDOH, including building SDOH dashboards and other data visualization tools. Additionally, they plan to leverage the data collected in the outpatient settings to inform community strategies and broader population-level programs.

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Psychosocial Pathways—Access to Mental Health Care

Site: Dignity Health St. Joseph’s Hospital and Medical Center

Focus Area: Psychosocial Pathways

Measure: Mental Health Care Provider Ratio

About this document: This document presents an example of how one health care site, Dignity Health St. Joseph’s Hospital and Medical Center in Phoenix, Arizona, used data on the health equity indicator *access to mental health care*. Access to mental health care is the extent to which mental health care is available in a geographic area. Low mental health care service availability at the county level is linked to higher county-level suicide rates, and individuals with serious mental illnesses living in areas with poor access to mental health care services are more likely to be admitted to the hospital.[1,2] Mental health disorders play a role in multiple aspects of the pathogenesis of cardiovascular disease (CVD) and other chronic diseases and may affect the success of prevention, detection, evaluation, and treatment of CVD.[3] Dignity Health St. Joseph’s Hospital and Medical Center used the mental health care provider ratio to measure mental health care access. The *mental health care provider ratio* is defined as the population size compared with the number of mental health providers.[4] For more information on the mental health care provider ratio measure, please see the access to mental health care indicator in the Psychosocial Pathways Indicator Profile.

The description of Dignity Health St. Joseph's Hospital and Medical Center's data analysis methods, data sources, challenges, and facilitators summarized below reflects insights gathered during the Health Equity Indicators for CVD Pilot Study conducted between January and April of 2022.

Background. Serving the approximately 4.3 million residents of Maricopa County, Dignity Health St. Joseph's Hospital and Medical Center is part of CommonSpirit Health®, which is one of the nation's largest nonprofit health care systems, with more than 1,000 care sites and 140 hospitals in 21 states. Dignity Health St. Joseph's Hospital and Medical Center's Heart and Vascular Institute and Community Benefit and Health Equity Department participated in the CDC pilot reviewing select health equity indicators, including the access to mental health care indicator. The pilot supported Dignity Health's core mission of advancing social justice and improving health for all, especially for the most vulnerable. Some of the hospital's current health equity efforts also include improving interoperability and analytic capabilities for data systems that contain health equity measures, the standardization of health equity data collection processes, health equity data visualization, and ultimately using data to inform decisions that address health inequities.

Data Collection and Analysis Methods. As part of the pilot reviewing select health equity indicators, Dignity Health St. Joseph's Hospital and Medical Center piloted the access to mental health care indicator using the mental health care provider ratio measure from the County Health Rankings & Roadmaps (CHR&R) website. The CHR&R is based on a conceptual population health model that includes both health outcomes (length and quality of life) and variables for different determinants of health across four areas: health behaviors, clinical care, social and economic factors, and physical environment. Dignity Health St. Joseph's Hospital and Medical Center worked with the Maricopa County Department of Public Health on collecting and analyzing data from the CHR&R. Specifically, the team looked at the mental health care provider ratio data element in this data set and conducted a comparative analysis of provider ratios at the county and state levels. One finding from the analysis was that Maricopa County has a mental health care provider ratio (700:1) similar to that of the state overall (710:1). Although the team did not link their comparative analysis of the mental health care provider ratio at county and state levels to their patient population at Dignity Health St. Joseph's Hospital and Medical Center, they noted that hospital staff regularly connect patients with mental health disorders to the necessary available county resources. Additionally, the team from Dignity Health St. Joseph's Hospital and Medical Center mentioned that they plan to share these findings with their hospital's executive leadership team to inform data-driven decisions that support health equity and monitor and track results. Given the link between CVD and mental health disorders,[5] this analysis has the potential for broader application in assessing the relationships between access to mental health care and CVD outcomes.

Overview of Dignity Health St. Joseph's data collection methods		
Indicator: Access to Mental Health Care Measure: Mental Healthcare Provider Ratio		
Data Collection Method	**Data Source**	**Data Availability**
Secondary data collection	County Health Rankings & Roadmaps (CHR)	County- and state-level
Application/Use		
Comparative analysis of mental healthcare provider ratio at county and state levels.		

Facilitators. Strong support from Dignity Health St. Joseph's Hospital and Medical Center patient care and executive leadership teams at the local, division, and national levels greatly facilitated the pilot's data collection and analysis.

Challenges and Limitations. The team did not encounter any challenges in using the CHR&R website to obtain data regarding access to mental health care but noted that since Dignity Health is a large organization, it can be difficult to change data collection practices at the local facility level.

Future Plans. In partnership with the Maricopa County Department of Public Health's Office of Informatics & Epidemiology, Dignity Health St. Joseph's Hospital and Medical Center is developing an implementation strategy to address the community health equity needs identified in the Community Health Needs Assessment (CHNA). This process includes using available data sources and findings from this pilot to support the development of targeted programs and services that address identified health and social inequities, standardizing data collection processes across local facilities, and building a data infrastructure that promotes health equity and measurement of sustainable program and service impact.

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Socioeconomic Factors—Housing Insecurity

Site: Northwell Health

Focus Area: Socioeconomic Factors

Measure: Housing Instability

About this document: This document presents an example of how one healthcare site, Northwell Health, collected data on the health equity indicator, *housing insecurity*. Housing insecurity encompasses several dimensions of housing problems people may experience, including affordability, safety, quality, instability, and loss of housing.[1] Housing-insecure adults are more likely to delay medical care and utilize emergency care, have poorer healthcare access, experience adverse mental health outcomes, and have higher prevalence of substance use, compared to individuals with stable housing.[2,3,4] Housing insecurity can be linked to cardiovascular risk and mortality due to downstream consequences of psychological distress and competing stressors (i.e., spending on housing rather than medical care).[2] Northwell Health used the housing instability measure to assess housing insecurity. Housing stability refers to housing issues such as periods of homelessness; paying more than 50% of income on housing costs; difficulty paying rent, mortgage, or utility bills; and difficulty finding safe, adequate, and affordable housing. For more information on the Housing Instability measure, please see the Housing Insecurity indicator in the Socioeconomic Factors Indicator Profile.

The description of Northwell Health's data analysis methods, data sources, challenges, and facilitators summarized below reflects insights gathered during the Health Equity Indicators for Cardiovascular Disease (CVD) Pilot Study conducted between January and April of 2022.

Background. Northwell Health is New York state's largest health care provider, with an annual patient population of more than 2 million across 22 hospitals and 830 outpatient facilities. Northwell employs more than 16,600 affiliated physicians, of which 4,200 are members of Northwell's multi-specialty physicians' group. Northwell's service area extends across the downstate New York region, composed of more than six counties, including Queens County, which has a population of more than 2.2 million and is the most linguistically diverse county in the country. In 2019, the racial/ethnic composition of patients in Northwell's acute care settings was 55.3% White and 44.6% non-White (15.3% Black/ African American, 12.7% Hispanic/Latino, 7.3% Asian, and 9.2% other race/ethnicities). Northwell engages with multiple councils and work groups, including community-based and faith-based organizations, academic institutions, schools, and state and local health departments, to achieve its mission of "improving health and quality of life" and advancing health equity.

Data Collection Method. Given Northwell's existing social determinants of health (SDOH) data collection infrastructure pertaining to housing insecurity, the health system opted out of this particular aspect of the pilot to test housing insecurity data collection as specified in the Socioeconomic Factors Health Equity Indicator Profile. However, they shared information about their data collection and analysis processes for this indicator as part of the pilot of select health equity measures.

Overview of Northwell Health’s data collection methods

Indicator: Housing Insecurity
Measure: Housing Instability

Data Collection Method	Data Source	Data Availability
Primary data collection	Patient intake forms	Patient-level

Application/Use

Plan to analyze the relationship between housing insecurity and access to cardiovascular care in the foreseeable future.

Although responses are voluntary, Northwell collects survey data on SDOH from patients using a screening tool administered to patients that varies depending on their care setting within the health system. Please see Appendix A for housing-related questions from the SDOH screening tool. Completed data from the screening process are then entered into the relevant electronic medical records of the respective sites within the health system. Northwell has reported that out of all screenings in the inpatient setting that were identified as having social needs, 15.3% indicated housing insecurity concerns.

Northwell has a robust data set of health equity metrics, including SDOH data, within its data systems, reflecting data from inpatients, emergency department patients, and ambulatory patients spanning the last 15 years. The SDOH data from its screening tool are collected from three ambulatory patient sites, 13 hospitals, and one emergency department, within its health home, and among its clinical initiatives that are part of its value-based contracting. Northwell reported that at this time, the SDOH screening process is unique to the setting in which the screener is implemented. For example, in inpatient settings, nurses complete the SDOH screener with patients as part of their initial nursing assessment. Patients identified as having social needs during the initial nursing assessment are directed to an on-site social worker for further review and are connected to the necessary social and community services to address their health-related social needs. In Northwell’s outpatient settings, paper screeners are completed during patients’ annual visits. Data are then entered into the REDCap database and reviewed to inform the ongoing improvement of its services provided in outpatient settings. Northwell’s emergency departments implement a more targeted approach of screening patients at higher risk of medical complications, including uninsured patients, underinsured patients, and patients with a select set of chronic diseases and comorbidities. These patients are assigned a care coordinator who conducts the SDOH screening, which helps Northwell better adapt social and community resources to meet patients’ needs. Northwell Health is currently in the process of revising and standardizing SDOH screening protocols and plans to analyze data across all care settings to better understand the relationship between housing insecurity and access to cardiovascular care. With specificity to health disparities in CVD, Northwell’s Department of Cardiology is currently in the process of formalizing their governance and road map on the best ways to address cardiovascular health disparities associated with adverse health-related social needs.

Facilitators. Northwell's organizational focus and prioritization of health equity provide the foundation to support the systematic collection and analysis of SDOH data, including data on housing insecurity, and integration of this effort into the clinical workflow. Leadership buy-in and support from clinicians and subject matter experts have further facilitated this process.

Challenges and Limitations. Northwell has implemented an SDOH screening tool adapted to its various care settings across the health system. However, Northwell has acknowledged that there are challenges to collecting housing insecurity and SDOH data, a situation also seen in national trends. One of the main challenges has been the ongoing constraints on available time and resources. Northwell also acknowledged the stigma of housing insecurity as a challenge to successful data collection. To mitigate this challenge, Northwell is focused on building trust with its patients to ensure these questions are voluntary and will in no way affect the delivery of care, by building partnerships within the community through ongoing efforts to educate and raise awareness of the links between health and housing and why such questions are being asked. Similarly, provider comfort with the topic was initially a known challenge, which is continually addressed through ongoing training.

Future Plans. As part of their ongoing efforts to address health inequity, Northwell plans to use the data from their SDOH program, including the housing insecurity indicator, to inform enhancements to the SDOH screening tool, staff training, patient resources, community health needs assessments, and community service plans. Northwell Health has the foundation of established processes and infrastructure at large to link SDOH factors to health outcomes with the future intention of analyzing individual SDOH factors such as housing insecurity and linking them to specific health outcomes such as cardiovascular health. Furthermore, Northwell is continuously developing targeted community outreach initiatives across its catchment area to better address these adverse social needs.

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Appendix A: Housing-related Outpatient and Inpatient SDOH Screening Questions

For the outpatient setting:

1A. Do you worry that in the next 2 months, you/your family may not have a safe or stable place to live?

1B. Where are you living now?

2. Do you worry that the place you are living now is making you sick because of cigarette smoke exposure?
3. Do you worry that the place you are living now is making you sick because of mold or dampness or water leaks?
4. Do you worry that the place you are living now is making you sick because of rodents or bugs?
5. Do you worry that the place you are living now is making you sick because of peeling paint?
6. Do you worry that the place you are living now is making you sick because of broken appliances?
7. Do you worry that the place you are living now is making you sick because of the elevator not working?
8. Do you worry that the place you are living now is making you sick because of not having enough heat?

For the inpatient setting:

1. Do you have a safe place to live?
2. Do you worry the place you are living is making you sick?

Field Notes From Other Sites

These field notes showcase other examples of health equity measurement and evaluation at health care organizations, such as health departments. It is important to note that the examples in the field notes are not derived from the HEI Pilot Study and therefore may reflect slightly different uses or definitions of HEIs. In some cases, the HEIs presented in the field notes may not perfectly align with the measurement definition and guidance provided in the HEI Profiles.

Neighborhood Characteristics—Physical Activity Environment

Neighborhood Characteristics—Social Environment

Racism—Racial Income Gap

Socioeconomic Factors—Education

Neighborhood Characteristics—Physical Activity Environment

Health Department: Los Angeles County Department of Public Health

Focus Area: Neighborhood Characteristics

Measure: Park Access

About This Document. This document presents an example of how one health department, the Los Angeles County Department of Public Health (LACDPH), used data on the health equity indicator *physical activity environment*. Key aspects of the built environment, such as proximity to parks and open space, positively impact the frequency and intensity of participation in physical activity.[1,2,3] Research has consistently shown that lack of physical activity is associated with a spectrum of chronic conditions, including cardiovascular disease (CVD), obesity, diabetes, osteoporosis, and psychological disorders.[4] LACDPH leveraged the park access measure as a factor for informing and implementing key health interventions.[5] Park access is defined as the portion of a city's or a local jurisdiction's population living no more than a 10-minute walk to a park.[6] For more information on the park access measure, please see the Physical Activity Environment indicator in the Neighborhood Characteristics Indicator Profile.[5]

Representatives from LACDPH participated in a subject matter expert panel to provide input for the development of CDC's Health Equity Indicators for CVD Toolkit. To support this work, LACDPH shared this example of how their Chronic Disease and Injury Prevention division accessed and analyzed data—including data sources, challenges, and facilitators—on park access. Their approach and lessons learned are summarized below.

Background. LACDPH serves more than 10 million residents, of whom 48.4% are Hispanic/Latino, 28.3% are White, 14.4% are Asian American, and 8.5% are Black/African American. LACDPH is committed to developing and implementing policies and programs that support the department and the overall county government's priority to advance health equity. For example, LACDPH's Center for

Health Equity assists other programs within the department in addressing health disparities. As part of this effort, LACDPH worked with the county's Department of Parks and Recreation to implement the Parks After Dark (PAD) program, an initiative designed to serve as a place-based strategy for building resilient communities that re-envisions parks as community hubs. In addition to PAD, LACDPH is developing a Park Rx program under the oversight of the Join Us in Moving People to Play (JUMPP) Coalition.[7] Park Rx is an initiative that educates and encourages medical providers to connect patients to parks; in doing so, these providers can help patients enjoy physical activity and mental health benefits from visiting parks. A number of years ago, LACDPH also received funding from the Robert Wood Johnson Foundation to promote park access by increasing physical activity opportunities through shared use agreements. These agreements are developed and executed when government entities, or sometimes private and/or nonprofit organizations, agree to work with schools to open campus facilities or provide open space for community use.

Data Collection and Analysis Methods. LACDPH used public data from the Los Angeles County Geographic Information System (GIS) Repository to overlay data layers by Service Planning Area (SPA) boundaries and by park locations. The department also used public data from the Public Health Alliance of Southern California's Healthy Places Index (HPI) to visualize socioeconomic gaps across Los Angeles County. Collectively, these analyses generated socio-geographic information that LACDPH and its partners used to help identify locations where PAD and other public health programming could be implemented to help communities that lack access to health-promoting resources (Figure 1). The HPI is a composite score ranging from 1 to 99 that ranks the well-being of neighborhoods in terms of social conditions and health. The HPI consists of 23 indicators across eight domains: clean environment, economics, education, health care access, housing, neighborhood, social condition, and transportation. Higher HPI values indicate less healthy community conditions. LACDPH divided HPI scores into four quartiles and mapped these scores at the census-tract level.

Overview of LACDPH's data collection methods		
Indicator: Physical Activity Environment Measure: Park Access		
Data Collection Method	**Data Source**	**Data Availability**
Secondary data analysis	Los Angeles County GIS Repository data layers	Census tract
Application/Use		
Analysis of park locations and neighborhood health		

Challenges and Limitations. The COVID-19 pandemic affected the timeline and level of LACDPH programming in the community; specifically, the health crisis delayed the continuation of shared use agreements, because most schools were closed, and delayed the launch of the Park Rx program. In addition, LACDPH noted that safety presents a constant barrier to park access and programming in a number of low-income areas.

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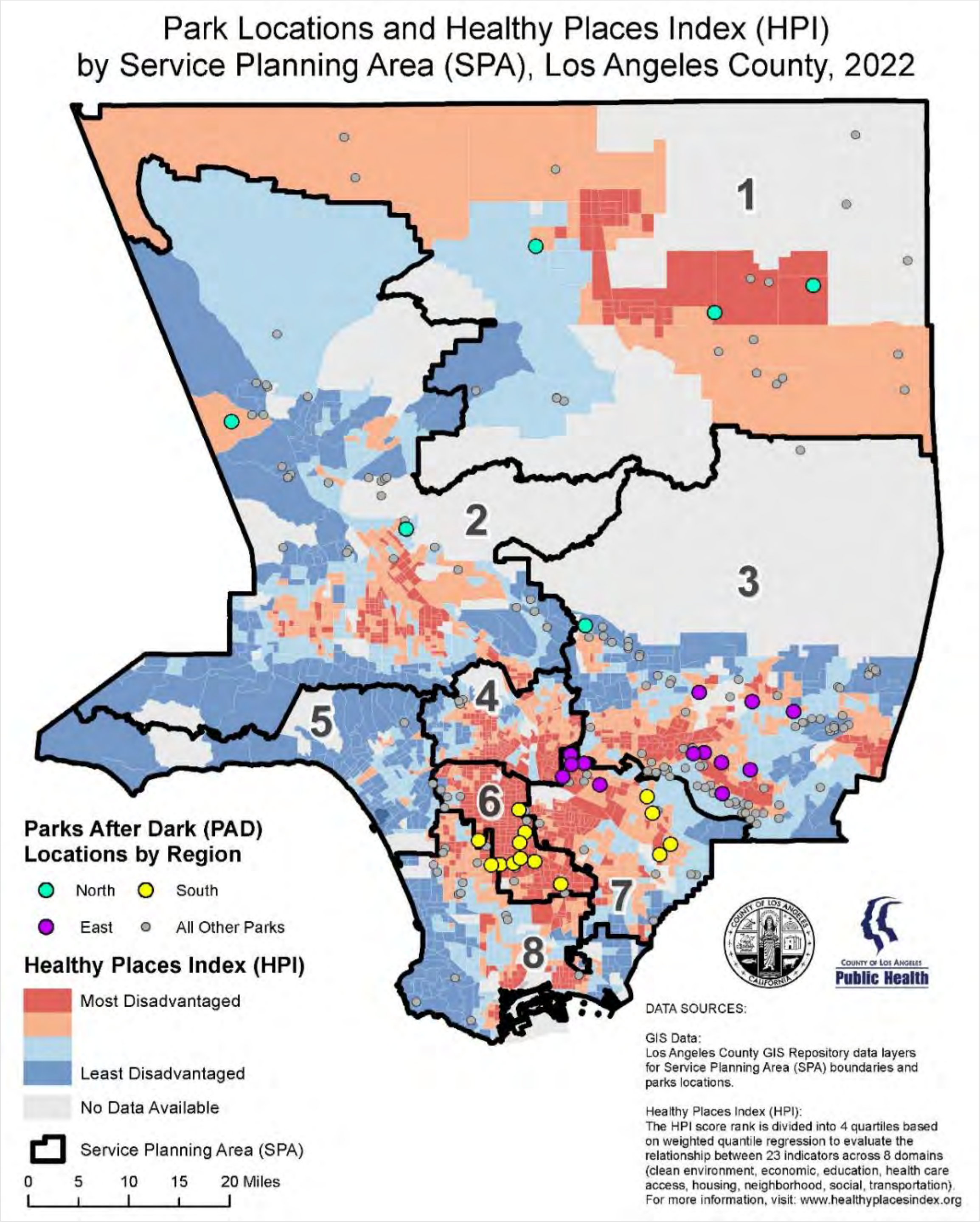
Figure 1. Map of Park Locations and HPI by SPA in Los Angeles County



DATA SOURCES:

GIS Data:
Los Angeles County GIS Repository data layers for Service Planning Area (SPA) boundaries and parks locations.

Healthy Places Index (HPI):
The HPI score rank is divided into 4 quartiles based on weighted quantile regression to evaluate the relationship between 23 indicators across 8 domains (clean environment, economic, education, health care access, housing, neighborhood, social, transportation). For more information, visit: www.healthyplacesindex.org

Neighborhood Characteristics—Social Environment

Health Department: Minnesota Department of Health (MDH)

Focus Area: Neighborhood Characteristics

Measure: Social Vulnerability Index (SVI)

About this document. This document presents an example of how one health department, the Minnesota Department of Health (MDH), used data on the health equity indicator *social environment*. Neighborhood social environment refers to the physical, material, social, and socioeconomic conditions in a given community. Disadvantaged or socially vulnerable neighborhoods are usually characterized by high concentrations of poverty, high rates of unemployment, and limited material resources and services, such as poorer access to quality housing, health care, healthy food, community resources, and recreational facilities. MDH used the Social Vulnerability Index (SVI) to assess the social environment. Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health.[1] The SVI measures the extent to which a community is resilient to external stressors by using 15 social factors from across four themes: socioeconomic status, household composition and disability, minority status and language fluency, and housing type and transportation.[2] Living in a stressful neighborhood environment contributes to physiologic, neurologic, and psychological dysfunction that adversely affects cardiovascular health.[3,4] One study on the relationship between SVI and cardiovascular risk found that Black/African American women living in the top 10% of most socially vulnerable neighborhoods were three times more likely to have hypertension than those living in less vulnerable neighborhoods.[5] For more information on the SVI measure, please see the Social Environment indicator in the Neighborhood Characteristics Indicator Profile.

Representatives from MDH participated in a subject matter expert panel to provide input for the development of CDC's Health Equity Indicators for Cardiovascular Disease (CVD) Toolkit. As part of this process, MDH shared the following example of how they accessed and analyzed data on social environment, including data sources, challenges, and facilitators. Their approach and lessons learned are summarized below.

Background. MDH is based in St. Paul, Minnesota, and serves approximately 5.7 million residents, of whom 76.3% are White, 6.9% are Black/African American, 6.1% are Hispanic/Latino, 5.2% are Asian American, and 1.0% are American Indian/Alaska Native. MDH has a number of initiatives to advance health equity, such as the Eliminating Health Disparities Initiative, which funds innovative community-led grants to address health inequities for Minnesotans of color and American Indians across eight priority health areas, including CVD and diabetes. MDH also implemented a COVID-19 vaccine strategy aimed at reducing inequities in COVID-19 illness in communities with high social vulnerability. MDH's COVID-19 response included community outreach to disseminate culturally relevant, linguistically appropriate, accurate, and timely messages related to COVID-19, including vaccines and testing. Specifically, MDH created a new Cultural, Faith, and Disabilities Branch to facilitate community engagement and reach diverse Minnesota communities, including communities of color, American Indian residents, LGBTQIA+ residents, residents with disabilities, and faith-based communities.

Data Collection and Analysis Methods. MDH accessed SVI data from CDC and the Agency for Toxic Substances and Disease Registry (ATSDR). MDH divided the overall SVI score into quartiles to identify and prioritize communities with the greatest need. The team recalculated the SVI score for ZIP codes, rather than census tracts, using a crosswalk file from the Department of Housing and Urban Development. The team further calculated COVID-19 hospitalization and death rates to identify and compare the ZIP codes with the highest social vulnerability and highest COVID-19 burden within Minnesota. The analysis also compared results by region and visualized variation in SVI across the state. Specifically, MDH stratified the SVI data by the seven-county Twin Cities metropolitan area (i.e., Minneapolis, St. Paul, and surrounding counties) and by Greater Minnesota and displayed results in choropleth maps. For various reasons, residents of the Twin Cities metro area have had historically different health outcomes from those of the residents of other regions of Minnesota (also called Greater Minnesota).

Overview of MDH's data collection methods		
Indicator: Social Environment Measure: Social Vulnerability Index		
Data Collection Method	**Data Source**	**Data Availability**
Secondary data analysis	CDC/ATSDR SVI	Census tracts
Application/Use		
Association between SVI quartiles and COVID-19 vaccine inequity at ZIP code level.		

Findings. The analysis found that Minnesotans living in the ZIP codes with the most vulnerable SVI quartiles had a greater burden of COVID-19 hospitalizations and deaths, as well as lower vaccine coverage. Residents in ZIP codes of high social vulnerability had consistently lower access to vaccines.

This analysis informed MDH's strategy for vaccine prioritization. ZIP codes with SVI quartiles corresponding to the greatest social disadvantage were prioritized for initial vaccine distribution, resulting in the allocation of 40% of vaccine doses to these high-SVI ZIP codes. Likewise, high-SVI ZIP codes were also prioritized for COVID-19 educational outreach through focused initiatives from the Cultural, Faith, and Disabilities Branch of the MDH COVID-19 response. Given the link between COVID-19 and CVD,[6] this analysis has potential for broader applications in assessing the relationship between vaccine access and CVD.

Facilitators. Community vaccination sites were vital to close the gaps in vaccination rates by reducing community barriers to accessing COVID-19 vaccines. Additionally, strong support from the governor and collaborations with other state agencies and health systems greatly facilitated the MDH COVID-19 response and health equity efforts. MDH worked with the Electronic Health Record (EHR) Consortium, a collaborative of 10 large health care systems in the state, to track equity in its vaccine campaign using the SVI. MDH also utilized expertise from other state agencies and brought in the Medicaid medical director from the Minnesota Department of Human Services to serve as the Assistant Commissioner for Vaccine Equity. Overall, the public health emergency furthered MDH's commitment to address health inequities and led to the formation of the new Health Equity Bureau, which will continue and expand health equity work across the agency.

Challenges and Limitations. While there were no challenges in accessing and downloading the SVI data, analyzing the SVI data required additional data manipulation due to the unit of analysis. SVI data are only available at the census tract and county levels; however, most health data at MDH are at the ZIP code level. Cross-walking the SVI data from census tracts to ZIP codes was methodologically challenging and time-consuming. Another limitation with the unit of analysis is that populations within ZIP codes can be highly heterogenous, which may obscure certain communities that have small populations but have high social needs. Additionally, the lack of familiarity with SVI was a barrier when communicating research results. The analysis team at MDH noted that communicating the concept and measurement of social vulnerability was challenging both internally within MDH and externally with community partners and community members.

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Racism—Racial Income Gap

Health Department: Massachusetts Department of Public Health (MDPH)

Focus Area: Racism

Measure: Index of Concentration at the Extremes

About this document. This document presents an example of how one health department, the Massachusetts Department of Public Health (MDPH), used data on the health equity indicator *racial income gap*. Racial income gap is the difference in median income between racial and ethnic groups.[1]

Racial income inequality may affect health such as cardiovascular disease (CVD) risk through several pathways, including structural and institutional drivers such as social policies, as well as through community and individual drivers, such as environmental, occupational, and neighborhood exposures affecting psychosocial, metabolic, and behavioral risk factors for CVD.[2,3,4,5] MDPH used the Index of Concentration at the Extremes (ICE) to measure racial income gap. ICE is a measure of economic and/or social (racial/ethnic) spatial polarization that can be used at a highly granular level (i.e., census tract) up to the neighborhood or city/town level.[6,7,8] For more information on the ICE measure, please see the Racial Income Gap indicator in the Racism Indicator Profile.

Representatives from MDPH participated in a subject matter expert panel to provide input for the development of CDC's Health Equity Indicators for CVD Toolkit. As part of this process, MDPH shared an example of how they accessed and analyzed data on racial income gap, including data sources, challenges, and facilitators. MDPH's approach and lessons learned are summarized below.

Background. MDPH's CVD work employs a broad health equity framework, addressing a range of health inequities and adverse social determinants of health (SDOH). This includes populations affected by institutional and structural factors, such as historic and present-day racism and poverty; populations with disabilities; and populations with sexual orientation and gender identity (SOGI)–based inequities. MDPH participates in multiple national CDC-supported CVD prevention and management programs, including the Paul Coverdell National Acute Stroke Program (Coverdell Program), Improving the Health of Americans through Prevention and Management of Diabetes and Heart Disease and Stroke cooperative agreement (1815 Cooperative Agreement), and Innovative State and Local Public Health Strategies to Prevent and Manage Diabetes, Heart Disease, and Stroke (1817 Cooperative Agreement). The Coverdell Program focuses on improving the quality of stroke care by collaborating with providers across the stroke care continuum. The DP18-1815 and DP18-1817 Cooperative Agreements are focused on supporting the use of clinical quality measures, team-based care, and clinical-community linkages to address CVD prevention and management. The DP18-1815 Cooperative Agreement applies evidence-based interventions, while the DP18-1817 Cooperative Agreement applies innovative approaches. Through these programs, MDPH works with health care organizations and community-based organizations to meet the clinical and social needs of communities that are medically underserved. MDPH is also engaged in statewide efforts to develop additional data infrastructure, disseminate materials, and conduct surveillance projects with an equity lens.

Data Collection and Analysis Methods. MDPH calculated ICE from the American Community Survey (ACS) to elucidate racial income inequality at the ZIP code level throughout Massachusetts. The MDPH team pulled household income data from the ACS, using income thresholds of $25,000 and $120,000. The team then compared populations with the greatest deprivation (non-Hispanic Black, Hispanic, and American Indian/Alaska Native with household income below $25,000 per year) and the population with the highest privilege (non-Hispanic White with household income of at least $120,000 per year). The ICE algorithm that MDPH utilized was modeled after a previous publication assessing racial income inequality in Boston, Massachusetts.[6,9]

Overview of MDPH's data collection methods		
Indicator: Racial Income Gap Measure: Index of Concentration at the Extremes (ICE)		
Data Collection Method	**Data Source**	**Data Availability**
Secondary data analysis	American Community Survey (ACS)	ZIP code
Application/Use		
Comparative analysis of median household income by race/ethnicity and by ZIP code.		

ICE served as an important foundation, from which MDPH proceeded to develop new composite measures to assess broader SDOH and a more comprehensive assessment of the intersection of multiple forms of oppression. Using principal component analysis (PCA) of ACS data, MDPH created a measure that not only integrated inputs used in the calculation of ICE but also included additional race and ethnicity, poverty, public assistance, and health insurance data. MDPH derived from the PCA a composite measure, where a large score indicates a large percentage of Hispanic and non-Hispanic Black populations who predominantly work in the entertainment, recreation, accommodation, and food service industries and who experience disproportionate levels of unemployment and poverty. This measure represents the intersection of multiple forms of oppression and inequity and has subsequently been used to inform MDPH's CVD efforts.

Findings. The identification of granular geographies in Boston served as a powerful example of how MDPH leveraged ICE and the PCA to identify communities in Massachusetts most affected by racism and other forms of oppression. A history of redlining and present-day underinvestment in communities of color in Boston shows striking contrasts between neighborhoods, even those directly adjacent to one another. MDPH's former approaches used health outcome data aggregated across Boston to prioritize intervention areas. The results of such aggregated analyses suggested that Boston ranked in the middle percentiles on various metrics, rather than highlighting neighborhoods of greatest need. Using ICE and the PCA permitted MDPH to make more robust, data-driven decisions in the selection of priority communities. These measures have also informed the implementation of CVD cooperative agreements. MDPH leveraged ICE and the PCA to identify five communities in Massachusetts to implement the DP18-1817 Cooperative Agreement and the Coverdell Program. Although the outcomes of these cooperative agreements are downstream, ICE and the PCA permitted MDPH to integrate upstream root causes in selection of the communities and design of program interventions.

In addition to helping identify priority areas for program implementation, the ICE and PCA findings have facilitated conversations with MDPH leadership and key partners to promote awareness of health equity. For example, the outbreak of COVID-19 reduced access to ambulatory care and caused a large uptake of telehealth services. MDPH leveraged ICE and the PCA, along with other data sources, to identify communities most at risk of being unable to access telehealth services to communicate with MDPH leadership. These data help to reframe conversations around structural and institutional factors that must be addressed to supplement micro-level patient care efforts and inform broader public health policy.

Facilitators. The free and publicly available input data from the ACS allowed for this data analysis. The MDPH team also had strong support from department leadership and from epidemiologists with years of experience in biostatistics and machine learning, which facilitated this analysis and the team's broader health equity work.

Challenges and Limitations. Even with leadership support, MDPH, as a state agency, faces organizational constraints that limit its ability to make policy or macro-level changes to address the identified health equity challenges. Funding limitations are also a significant barrier to their health equity work.

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Socioeconomic Factors—Education

Health Department: Kansas City, Missouri Health Department

Focus Area: Socioeconomic Factors

Measure: Out-of-School Suspension

About this document. This document presents an example of how one health department, Kansas City, Missouri (KCMO) Health Department, used data on the health equity indicator *education*. Education policies and exclusionary school discipline practices, such as suspension, hinder educational attainment and exacerbate socioeconomic and health inequities. In addition to hindering academic achievement, expulsions and suspensions are correlated with substance use and worse mental health and social connectivity, which are risk factors for adverse health behaviors, such as early sexual initiation; alcohol, tobacco, and drug use; violent behaviors; and gang involvement, among adolescents.[1,2] These adverse health behaviors in turn increase the risk of adverse health outcomes, including CVD. KCMO used the out-of-school suspension measure to assess education. Out-of-school suspension is defined as the percentage of public school students with or without disabilities receiving one or more out-of-school suspensions during the school year.[3] For more information on the out-of-school suspension measure, please see the education indicator in the Socioeconomic Factors Indicator Profile.

Representatives from KCMO Health Department participated in a subject matter expert panel to provide input for the development of CDC's Health Equity Indicators for CVD Toolkit. As part of this process, KCMO Health Department shared the following example of how they accessed and analyzed data on education, including data sources, challenges, and facilitators. Their approach and lessons learned are summarized below.

Background. The KCMO Health Department serves residents of Kansas City, Missouri, a large city spanning more than 300 square miles with a population of 508,090. The city has 16 school districts, including 10 public school districts. About 55% of the population is White, 35% is Black/African American, and 10% is Hispanic/Latino. In 2017, Kansas City was the fifth most economically and racially segregated city in the United States.[4] Historical disinvestment and structural racism are considered contributing factors to health disparities in Kansas City. In some neighborhoods, the gap in life expectancy between White and Black/African American residents is as large as 17 years[.4]

Data Collection and Analysis Methods. KCMO Health Department accessed publicly available school suspension rate data from the U.S. Department of Education's Civil Rights Data Collection. KCMO Health Department gathered school suspension rates for each Kansas City school district and analyzed the data by student race/ethnicity for the 2015-16 academic year.

Overview of KCMO’s data collection methods		
Indicator: Education Measure: Out-of-School Suspension		
Data Type	**Data Source**	**Data Availability**
Secondary	U.S. Department of Education’s Civil Rights Data Collection	School district
Application/Use		
Comparison of school suspension rates by student race/ethnicity. Analysis findings informed reforms to school disciplinary policies.		

Findings. The analysis found that young Black/African American students were five times more likely than their White peers to be removed from Kansas City classrooms for disciplinary infractions during the 2015-16 academic year. Furthermore, Black/African American students received longer suspensions and were more likely to be suspended for reasons other than illegal substances, physical violence, and weapons than their White and Hispanic/Latino classmates.

Given the link between school attendance and physical, mental, and social well-being, KCMO Health Department is working with Kansas City school districts to amend disciplinary policies to ensure that Black and Brown students are no longer being disciplined unjustly. KCMO Health Department presented their data findings to the school districts to promote disciplinary policy reform and to reduce the number of students being suspended, especially Black/African American students. Additionally, the school board champions and non-profits such as the Metro Organization for Racial and Economic Equity (More2) advocated for changes to the suspension policy. As a result, the Kansas City Public School board of education voted to revise the code of conduct to limit out-of-school suspensions for students in pre-kindergarten through fifth grade in 2021. Moreover, school discipline is included in KCMO’s 2022–2027 Community Health Improvement Plan (CHIP). One of the goals in the 2022–2027 CHIP is to increase trauma-informed and anti-racist education and practices, with the specific objective of reducing the number of suspensions by 10% each year.[4]

Facilitators. The mayor was particularly invested in improving school outcomes at the time, and the support from the mayor and the KCMO Health Commission was critical to bringing school district leaders to the table. District leaders were convened at the invitation of the Office of the Mayor and the Health Commission, rather than the Health Department. Additionally, school district leadership became more invested in discussions and taking action when it was made clear that findings would be de-identified. School-specific suspension data were not made publicly available, and only aggregate data were published. Community support and advocacy from the school board champions and More2 was also instrumental in driving school policy change.

Challenges and Limitations. Primary data collection was not possible because KCMO Health Department had not built a sufficient level of trust with school districts prior to data collection. Although there were no challenges in accessing and downloading secondary data from the U.S. Department of Education, the analysis team at KCMO Health Department would have preferred to collect data directly from schools. In terms of barriers to policy implementation, teachers reported needing more classroom support and resources, such as behavioral interventions and trainings on de-escalation, cultural awareness, trauma-informed care, and restorative justice, in order to successfully limit suspensions.

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Glossary of Terms

This glossary provides definitions for commonly used terms and concepts in the HEI for CVD Toolkit.

Term	Definition
Block Groups (BGs)	BGs are statistical divisions of census tracts, are generally defined to contain between 600 and 3,000 people, and are used to present data and control block numbering.[1]
Census Tracts	Census tracts are small, relatively permanent statistical subdivisions of a county or statistically equivalent entity that can be updated by local participants prior to each decennial census as part of the U.S. Census Bureau's Participant Statistical Areas Program (PSAP). Census tracts generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people.[1]
Classism	Classism refers to the institutional, cultural, and individual set of practices and beliefs that assign differential value to people according to their socioeconomic class, as well as an economic system that creates excessive inequality and causes basic human needs to go unmet.[2]
Congressional District	Congressional districts are the 435 areas from which people are elected to the U.S. House of Representatives.[1]
Core-Based Statistical Areas (CBSAs)	CBSAs consist of the county or counties (or equivalent entities) associated with at least one core (urbanized area or urban cluster) of at least 10,000 people, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties with the counties associated with the core.[1]
County Subdivisions	County subdivisions are the primary divisions of counties and equivalent entities. They include census county divisions, census subareas, minor civil divisions, and unorganized territories and can be classified as either legal or statistical.[1]
Genderism	Genderism, or bias resulting from a gender binary view, is a system of beliefs that perpetuates negative evaluations of gender nonconformity.[3]
Health Care Access	Health care access is defined as the "timely use of personal health services to achieve the best possible health outcomes."[4]
Health Disparities	Health disparities are preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations.[5]
Health Equity	Health equity is the state in which everyone has a fair and just opportunity to attain their highest level of health.[6]
Health Equity Indicators	Health equity indicators represent constructs that have been shown to be important for understanding the causes of inequities in cardiovascular disease.

Term	Definition
Health Inequalities	Health inequality generally refers to differences in the health of individuals or groups.[7]
Health Inequities	Health inequities are differences in health status or in the distribution of health resources between different population groups, arising from the social conditions in which people are born, grow, live, work, and age. In this sense, health inequities are systematic differences in health that could be avoided by reasonable means.[8]
Heterosexism	Heterosexism is an ideological system that denies, denigrates, and stigmatizes any non-heterosexual form of behavior, identity, relationship, or community.[9]
Metropolitan Area (MA)	The general concept of an MA is that of a core area containing a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that core.[10]
Metropolitan Division	Metropolitan divisions are smaller groupings of counties or equivalent entities defined within a metropolitan statistical area containing a single core with a population of at least 2.5 million.[1]
Metropolitan Statistical Areas (MSA)	MSAs are CBSAs associated with at least one urban area that has a population of at least 50,000.[1]
Minor Civil Divisions (MCDs)	MCDs are geographies defined by the U.S Census Bureau for primary governmental and/or administrative divisions of a county or county equivalent, typically a municipal government such as a city, town, or civil township.[1]
Neighborhood Characteristics	Neighborhood characteristics refer to features of socioeconomic (e.g., poverty), service (e.g., access to public transit), physical (e.g., presence of parks), and social (e.g., safety) environment of neighborhoods.
Places	Places are geographies defined by the U.S. Census Bureau and include both incorporated places and census-designated places. These areas may change over time as population and/or commercial activities increase or decrease, and they may be thought of as municipalities, cities, towns, villages, boroughs, town/townships, communities, neighborhoods, populated places, or areas associated with a specific name.[1]
Policy	Policy is a law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions.[11]
Public Use Microdata Areas (PUMA)	PUMAs are geographies defined by the U.S. Census for providing statistical and demographic information. PUMAs have at least 100,000 people, do not overlap, and are contained within a single state.[1]
Psychosocial Pathways	Psychosocial pathways are the ways in which social, cultural, and environmental factors influence an individual's mind and behavior.[12],[13]
Racism	Racism is defined as an organized social system that devalues and disempowers racial groups regarded as inferior, reduces access to resources and opportunities

Term	Definition
	such as employment, housing, education, and health care and increases exposure to risk factors.[14],[15]
Sexism	Sexism, defined as prejudice or discrimination based on a person's sex, stems from an ideology that one sex is superior to the other.[16]
Social Determinant of Health (SDOH)	SDOH are the conditions in the places where people live, learn, work, play, and worship that affect a wide range of health risks and outcomes.[17]
Socioeconomic Factors	Socioeconomic status refers to the absolute or relative levels of economic resources, power, and prestige closely associated with wealth of an individual, community, or country.[18] Socioeconomic status is a multidimensional construct comprising multiple factors such as income, education, employment status, and other factors.[19]

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Resources

The following resources provide additional information that supports health equity measurement and evaluation, guides health care organizations to advance their health equity work, and helps health care organizations to address health disparities.

Title	Source	Description
Addressing Health Equity in Evaluation Efforts	Centers for Disease Control and Prevention	Resource to provide guidance and case studies on incorporating health equity into evaluation efforts. This resource is a chapter in *A Practitioner's Guide for Advancing Health Equity: Community Strategies for Preventing Chronic Disease.*
A Practitioner's Guide for Advancing Health Equity: Community Strategies for Preventing Chronic Disease	Centers for Disease Control and Prevention	Guide to help incorporate health equity into organizational capacity, partnerships, community engagement, identifying health inequities, and evaluation. This resource also offers lessons on how to maximize the effects of several policy, systems, and environmental improvement strategies with a goal to reduce health inequities and advance health equity.
A Review of Instruments that Measure LGBTQ Affirmation and Discrimination Constructs in Adults	*Journal of LGBT Issues in Counseling*	Journal article to review measures of adult LGBTQ affirmation and discrimination constructs in five categories: counselor competency, attitudes toward LGBTQ, experiences of discrimination, internalized attitudes, and sexual identity. The purpose was not to conduct a systematic review but rather to provide readers with a sampling of available tools.
BIPOC Health Equity Library	Community Commons	Online library that seeks to advance equitable health outcomes for BIPOC by sharing relevant resources that represent diverse groups, communities, demographics,

Title	Source	Description
		identities, statuses, and people with lived experiences. Focused on building capacity for changemakers to advance equity in priority populations, it lets users explore 300+ newly curated resources and stories focused on BIPOC health equity.
Community-Clinical Linkages Health Equity Lens	Centers for Disease Control and Prevention	Guide to help practitioners incorporate health equity when organizing a CCL's structure and supporting its operations, called an operational structure. This guide is for professionals in the public health, community, and clinical sectors.
Compendium of Federal Datasets Addressing Health Disparities	U.S. Department of Health and Human Services Office of Minority Health	Compendium of information on health equity data related to socioeconomic factors and SDOH. This resource includes data sets and data-related resources developed, maintained, or funded by federal agencies.
Data Set Directory of Social Determinants of Health at the Local Level	Centers for Disease Control and Prevention	Directory to list data sets that include SDOH. The directory includes data sources for 12 domains of the social environment, and each domain is broken down into components and indicators.
Designing Survey Demographic Questions with Equity in Mind	EvaluATE	Presentation to teach 10 best practices for writing demographic survey questions.
Eliminating Disparities to Advance Health Equity and Improve Quality	Michigan Health & Hospital Association	Guide to assist health care organizations in addressing health disparities to achieve equitable care by providing key strategies, recommendations for action, implementation levels, and resources to support progress.
King County Equity Impact Review Tool	King County	Process and tool to identify, evaluate, and communicate the potential impact of a policy or program on equity.
Equity of Care: A Toolkit for Eliminating Health Care Disparities	American Hospital Association	"How-to" guide to help accelerate the elimination of health care disparities and ensure that leadership teams and board members reflect the communities they serve. A framework of next steps and resources to guide work.
Finding Answers: Disparities Research for Change: A Roadmap to Reduce Racial and Ethnic Disparities in Health Care	Robert Wood Johnson Foundation	Guide to assist health care organizations in integrating disparities reduction into all health care quality improvement effort and implementing equity-focused quality improvement programs.
Guiding Questions for Supporting Culturally Responsive Evaluation	MDRC	Guiding questions to apply an equity-based perspective across project phases in evaluation.

Title	Source	Description
Practices and an Equity-Based Perspective		
Health Equity Guiding Principles for Inclusive Communication	Centers for Disease Control and Prevention	Guiding principles intended to help public health professionals ensure their communication work, including communication of public health science, meets the specific needs and priorities of the populations they serve and addresses all people inclusively, accurately, and respectfully.
Health Equity Organizational Assessment	Health Quality Innovation Network	Assessment tool to understand health care organizations' level on various strategies to implement and determine next steps for improving health equity
Health Literacy Measurement: An Inventory and Descriptive Summary of 51 Instruments	*Journal of Health Communication*	Journal article to provide a descriptive review of the psychometric properties and conceptual dimensions of published health literacy measurement tools.
Improving Measures of Housing Insecurity: A Path Forward	Urban Institute	Report to discuss the benefits of developing a standard set of measures or a standard scale of housing insecurity. This resource reviews the current literature on how housing insecurity is measured in population surveys, longitudinal surveys, and longitudinal administrative data. Table 1 summarizes the available data for measuring different forms of housing insecurity.
Instruments Measuring Perceived Racism/Racial Discrimination: Review and Critique of Factor Analytic Techniques	*International Journal of Health Services*	Journal article to reviews instruments that measure perceived racism and/or discrimination. This study evaluates the exploratory factor analyses done on psychometrically sound instruments measuring perceived racism, using guidelines from experts in psychometric theory.
ICD-10-CM Coding for Social Determinants of Health	American Hospital Association	Resource to provide on guidance for using Z codes, including additional tools and resources to improve health equity.
Interactive Atlas of Heart Disease and Stroke	Centers for Disease Control and Prevention	An online mapping tool that allows users to create and customize county-level maps of heart disease and stroke by race and ethnicity, gender, age group, and more.
Local Trends in Heart Disease and Stroke Mortality Dashboard	Centers for Disease Control and Prevention	Dashboard with maps and graphs showing where heart disease and stroke death rates are increasing, decreasing, or remaining stable.
Measuring What Works to Achieve Health Equity:	Prevention Institute	Report to provide a framework for understanding how disparities in health outcomes are produced and how

Title	Source	Description
Metrics for the Determinants of Health		health equity can be measured. The report also provides a set of metrics that can reflect progress toward achieving health equity and delineates measurement guidance and resources.
PLACES: Local Data for Better Health	Centers for Disease Control and Prevention	Resource directory to list PLACES data and other public data sets that include SDOH. PLACES provides model-based, population-level analysis and community estimates of health measures at the county-, place-, census tract-, or ZIP Code Tabulation Area (ZCTA)-level.
PhenX Toolkit	National Institute of Health	Measurement toolkit to provide recommended standard data collection protocols for conducting biomedical research. This resource has a collection of high-quality standard measures on SDOH.
Practical Strategies for Culturally Competent Evaluation	Centers for Disease Control and Prevention	Resource to promote cultural competence in the evaluation of public health programs and initiatives.
Public Health Reports Volume 126, Issue 3: Data Systems and Social Determinants of Health	*Public Health Reports*	Journal issue to focus on how data can increase our understanding of SDOH. These articles describe ways to link national and state-level surveillance data with data on labor, housing, and policy.
Race Equity and Inclusion Action Guide	Anne E. Casey Foundation	Guide to provide steps to advance and embed race equity and inclusion within organizations and assess the impact of policies and other actions on racial and ethnic groups.
Racial Equity Impact Assessment	Race Forward: The Center for Racial Justice Innovation	Set of questions to systematically examine how different racial and ethnic groups will likely be affected by a proposed action or decision.
Racial Equity Data Road Map	Massachusetts Department of Public Health	Tool for eliminating structural racism. This resource is a collection of guiding questions, tools, and resources to assist programs in taking concrete steps to better identify, understand, and act to address racial inequities.
Racial Equity Toolkit: An Opportunity to Operationalize Equity	Government Alliance on Race & Equity	Toolkit to help develop strategies and actions that reduce racial inequities and improve success for all groups by integrating explicit consideration of racial equity in decisions, including policies, practices, programs, and budgets.
Racial Equity Toolkit: Implementing Greenlining's Racial Equity Framework	The Greenlining Institute	Step-by-step thinking tool designed to help policymakers consider the needs of all communities. This resource provides a framework for creating

Title	Source	Description
		equitable outcomes for all communities and strategies for reducing barriers to social and economic mobility.
REJI Organizational Race Equity Toolkit	Washington Race Equity & Justice Initiative	Toolkit designed to support organizations understand and incorporate race equity into their work. This resource includes an Organization Assessment, Organization Plan Worksheet, and Race Equity Impact Assessment.
Screening for Social Determinants of Health in Populations with Complex Needs: Implementation Considerations	Center for Health Care Strategies, Inc.	Resource to examine how organizations are assessing and addressing SDOH for populations with complex needs and reviews key considerations for organizations seeking to use SDOH data to improve patient care.
Social Needs Screening Toolkit	Health Leads	Blueprint for health systems seeking to identify and screen patients for adverse social determinants of health. This resource shares the latest research on how to screen patients for social needs.
Surveillance and Evaluation Data Resource Guide	Centers for Disease Control and Prevention	Compilation of data sources useful for heart disease and stroke prevention programs conducting policy or data surveillance and/or evaluation.
Unite Us	Unite Us	Technology platform that provides users with an end-to-end solution from identifying and predicting social care needs in communities, connecting individuals to services, and leveraging outcome data and analytics to further drive community investment.
Using Z Codes: The Social Determinants of Health (SDOH) Data Journey to Better Outcomes	Center for Medicare & Medicaid Services Health Equity Technical Assistance Program	Infographic to provide steps on how to use SDOH Z code data.