Data for Health Equity: Applying Data on the Social Determinants of Health

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Social determinants of health (SDH) are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.

Source: https://health.gov/healthypeople/priority-areas/social-determinants-health
CODE and its Programs
Our mission: To maximize the value of open and shared data for the public good.
CODE’s SDH Work

Leveraging Data on the Social Determinants of Health
December 2019

Using Social Determinants of Health Data to Fight COVID-19 and Support Recovery Efforts
November 2020

Roundtable on Cross-Sectoral Collaboration on the Social Determinants of Health
April 2022

www.opendataenterprise.org/publications
CODE’s SDH Work
The Social Determinants of Health

Source: Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion
Climate change is a threat multiplier.
SDH Care Continuum

Prevention and Risk Assessment

Clinical Treatment

Social Intervention

The social determinants of health other than healthcare can account for up to 80% of outcomes.
SDH Data Ecosystem

- Population Level From...
  - HHS
  - The Census Bureau
  - Department of Labor
  - Department of Transportation
  - Department of Education
  - State and Local Governments
SDH Data Ecosystem

- Individual Level From...
  - Physicians
  - Clinical Trials
  - Health Networks
  - Schools
  - Community-based Organizations
Sample Determinants and Data Sources

- Neighborhood and Physical Environment
  - Determinant: Access to transportation
  - Data Source: Department of Transportation data on proximity to public transportation
  - Determinant: Exposure to power plant emissions
  - Data Source: Department of Energy power plant data
Sample Determinants and Data Sources

- **Education**
  - Determinant: Early childhood education
  - Data Source: Head Start early childhood education enrollment data

- **Economic Stability**
  - Determinant: Access to employment
  - Data Source: Department of Labor Unemployment Statistics
Unmet social needs negatively impact health outcomes. Addressing SDH can lead to improved health equity.

- Food insecurity - higher levels of diabetes, hypertension, and heart failure
- Housing instability - lower treatment adherence
- Transportation barriers - missed appointments, delayed care, lower medication compliance

SDH and Health Equity

- HIV/AIDS
- Diabetes
- Asthma
- Healthy behaviors
- And more...
SDH, HIV, and Health Equity

SDH linked to higher HIV rates and lower levels of care:
● Poverty
● Education
● Insurance coverage
● Housing
● And more...

SDH, HIV, and Health Equity

HIV-Related Health Disparities - Poverty

HIV Incidence

Households below federal poverty level

Source: CDC NCHHSTP AtlasPlus, California PCT (CAPTC)
SDH, HIV, and Health Equity

HIV-Related Health Disparities - Education

HIV Incidence

Population 25+ without Diploma

Source: CDC NCHHSTP AtlasPlus, CAPTC
SDH, HIV, and Health Equity

HIV-Related Health Disparities - Uninsured

HIV Incidence

Persons who are uninsured

Source: CDC NCHHSTP AtlasPlus, CAPTC
HIV-Related Health Disparities - Housing

HIV Incidence

Vacant Housing

Source: CDC NCHHSTP AtlasPlus, CAPTC
SDH, Diabetes, and Health Equity

Diabetes Prevalence by Income Level

- Data collected from 2011-2014
- Clear trend correlating diabetes with income level
- 2x relative risk difference between highest and lowest income categories

Source: [https://www.cdc.gov/nchs/hus/contents2016.htm#040](https://www.cdc.gov/nchs/hus/contents2016.htm#040), ZeOmega
Asthma Prevalence and Severity

- Clear correlation between income level and asthma (both prevalence and severity)
- African American – 2x higher prevalence than White or Asian categories

Source: [https://www.cdc.gov/nchs/hus/contents2016.htm#035](https://www.cdc.gov/nchs/hus/contents2016.htm#035), ZeOmega
Healthy Behaviors, SDH, and Health Equity

Education Level Impact on Smoking and Exercise

- Smoking steadily down over time in all categories (but higher at lower education levels)
- Exercise steadily up over time in all categories (but lower at lower income levels)

Source: [https://www.cdc.gov/nchs/hus/contents2016.htm#057](https://www.cdc.gov/nchs/hus/contents2016.htm#057), ZeOmega
Two “work-friends” share similar profiles. Both high-school grads (with some college) and both have two kids. The only material difference is where they live (~ five miles apart)... *Does that matter?*

**Profile**

<table>
<thead>
<tr>
<th>Mary Mitchell</th>
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</thead>
<tbody>
<tr>
<td>Age/Gender:</td>
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<tr>
<td>Vocation:</td>
</tr>
<tr>
<td>Annual Income:</td>
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<tr>
<td>Home Location:</td>
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<table>
<thead>
<tr>
<th>Nora Newton</th>
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</thead>
<tbody>
<tr>
<td>Age/Gender:</td>
</tr>
<tr>
<td>Vocation:</td>
</tr>
<tr>
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</tbody>
</table>

**Current Health Status**

- BMI=28 (overweight)
- Borderline HTN
- Moderately active

**Home Location**

- Mary Mitchell: Risk Area 2, Mod. Median Income
- Nora Newton: Risk Area 4, Low Median Income

Source: ZeOmega
Geography, SDH and Health Equity

Divergence of health behaviors and outcomes

Mary Mitchell
- BMI=28 (overweight)
- Borderline HTN
- Moderately active

Nora Newton
- BMI=28 (overweight)
- Borderline HTN
- Moderately active

Baseline Health Status

10-Year Health Trend

10-Year Health Status
- Weight under control
- Adherent to HTN meds
- Moderately active

- Obese
- Chronic HTN
- Pre-diabetes

Source: ZeOmega
How to Improve SDH Data and Equity?

- Support community, local, and state-based decision-makers
  - Empower and strengthen community-based organization data capacity
  - Create state-level SDH strategy toolkits
  - Develop hyper-local snapshots of communities
  - Empower communities to adapt the Healthy People 2030 framework at state and local levels more effectively
  - Create communities of practice for sub-national actors to share ideas
  - Improve community engagement around SDH data
- Iterate and evolve targets, metrics, and frameworks to be based in an equity lens
  - Improve and expand the use of the CDC’s Social Vulnerability Index (SVI)
How to Improve SDH Data and Equity?

- Define and standardize SDH data
  - Improve + align open source assessment tools
  - Adopt data standards and definitions
  - Develop a data governance body

- Create a sustainable infrastructure for SDH data
  - Establish a public clearinghouse for SDH data

- Collect additional SDH data
  - Collect more granular and disaggregated SDH data
  - Collect additional longitudinal data
  - Collect more qualitative data on patient and individual experiences
Thank you!

Contact and learn more:
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