Mapping Social Determinants of Health for Children and Families in Wake County

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The North Carolina Institute for Public Health

UNC
Gillings School of Global Public Health
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Webinar Agenda

• Webinar Housekeeping
• Overview of Assessment

• Social Determinants of Health
  – Frameworks, Indicator Selection and Index
• Story Map Demo
• Asset Map Demo
ASSESSMENT OF SOCIAL DETERMINANTS OF HEALTH IN WAKE COUNTY
Purpose of the assessment

• Graphically and contextually locate vulnerable children and their families;

• Identify trends, consistencies, gaps and disparities;

• Provide guidance on interpretation and utilization of the SDOH data and key informant interviews.
Iterative Process

SDOH Story Map creation

Asset mapping

Systems-level partner engagement and analysis

Community-level partner engagement and analysis
Lay of the land
Lay of the land*

249,114 children

Race/ethnicity of those children:

– 52% White
– 22% Black or African-American
– 15% Hispanic

*Data source: U.S. Census, American Community Survey 5-year estimates (2011-2015)

Photo courtesy of the U.S. Department of Agriculture
https://www.flickr.com/photos/usdagov/13434141274
Vulnerable families

• 33% of families living in poverty in Wake County*
• 15,000 children living in 14 neighborhoods with “high opportunity for positive change”
  • 17% headed by single mothers
  • 49% high housing costs
  • 32% low access to food and transportation

*200% FPL, families with children, 2015 ACS
SOCIAL DETERMINANTS OF HEALTH
Social Determinants of Health (SDOH)

Conditions in the environment in which people live, work, play and worship that affect a wide range of health and quality of life outcomes.

- Healthy People 2020

CDC adapted from Anderson et al, 2003; Marmoetal, 1999; and Wilkinson et al, 2003.39–41
Social Determinants of Health

*Our environments cultivate our communities and our communities nurture our health.*

When inequities are high and community assets are low, health outcomes are worst.

When inequities are low and community assets are high, health outcomes are best.

Source: CDC
# Social Determinants of Health

**Figure 2**

<table>
<thead>
<tr>
<th>Economic Stability</th>
<th>Neighborhood and Physical Environment</th>
<th>Education</th>
<th>Food</th>
<th>Community and Social Context</th>
<th>Health Care System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>Housing</td>
<td>Literacy</td>
<td>Hunger</td>
<td>Social integration</td>
<td>Health coverage</td>
</tr>
<tr>
<td>Income</td>
<td>Transportation</td>
<td>Language</td>
<td>Access to healthy options</td>
<td>Support systems</td>
<td>Provider availability</td>
</tr>
<tr>
<td>Expenses</td>
<td>Safety</td>
<td>Early childhood education</td>
<td>Social integration</td>
<td>Community engagement</td>
<td>Provider linguistic and cultural competency</td>
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<tr>
<td>Debt</td>
<td>Parks</td>
<td>Vocational training</td>
<td>Support systems</td>
<td>Discrimination</td>
<td>Quality of care</td>
</tr>
<tr>
<td>Medical bills</td>
<td>Playgrounds</td>
<td>Higher education</td>
<td>Health coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>Walkability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Health Outcomes**

Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations
Social Determinants of Health

Source: CDC
Indicator Selection Process

• Lit review
  – California Disadvantage Index
  – Health of Boston’s Children
  – Child Opportunity Index
  – School-based Health Alliance
  – AAP Child Health Mapping Project

• SME review

• Shared initial list of 40 indicators with John Rex Endowment
Data Sources

• American Community Survey 2015 (5-year)
• USDA Food Deserts 2015
• Wake Long Range Planning Department
  – Important community services (libraries, parks, pediatricians, police and fire stations etc.)
  – NC CDEE (HQ Child Care Centers)
Reliability Assessment
Reliability Assessment

• For Census data
  – Margin of error used to calculate a coefficient of variation which translates to a reliability
  – Published reliability for every SDOH indicator

• Eliminated indicators based on poor reliability
  – Unemployment (median margin of error was 57.5% of estimate for Wake County, ~1/3 low reliability)
Reliability Assessment

• Binned indicators differently to improve reliability
  – Education > High School
  – School enrollment ages 3-18
Mapping SDOH

• 12 SDOH indicators at the neighborhood level (Census Tracts)
• Interactive web map
• Created index to summarize all indicators into a single variable
SDOH Index Creation

- Economic & Work
- Education
- Neighborhood & Physical
- Family & Household
• Family poverty

• Households receiving Food Stamps/SNAP

• Uninsured individuals
• % of families with children <18 years old, below 200% federal poverty line (FPL)

• 200% FPL chosen to better account for high cost of living in Wake

• Other indicators considered: individual poverty, child poverty, unemployment
• % of households receiving food stamps/SNAP

• SNAP eligibility determined by FPL (130-200%) and resource test

• Other indicators considered: public assistance rate (cash, SSI), children receiving SNAP, housing assistance, free-lunch
• % of individuals without public or private insurance

• Financial stability and access to preventative care

• Other indicators considered: uninsured children
Family & Household

- Crowded households
- High housing costs
- Single-parent female headed households
• More than one person/room

• An indicator of severe housing problems used by School-Based Health Alliance

• Other indicators considered, lacking complete plumbing or kitchen facilities
High Housing Costs

- Households paying more than 30% of their income on rent or a mortgage

- Frequent moves, poor health, behavioral, and academic problems

- Other indicators considered: percent renters, cost of living
• % of families with children headed by females

• More likely to be food insecure and living in poverty

• Other indicators considered: single-parent households
SDOH Index Creation

- Economic & Work
- Education
- Neighborhood & Physical
- Family & Household
• Low access to healthy food sources

• Access to community services and resources

• Income inequality (80/20 ratio)
• USDA Food Desert data defined as low income neighborhoods with low access to supermarkets and low vehicle access.

• More than ½ mile (urban areas) or more than 10 miles (rural areas) from the nearest supermarket, supercenter, or large grocery store.

• Note that reliability is not published by USDA.
Access to community services and resources

• Density measure of community services:
  • Gas stations, pediatric offices, libraries, fire and police stations, EMS stations, schools, public parks, and public transportation stations

• Number of people ‘served’ by each resource

• Wake Long Range Planning data – Places of Interest
• Ratio of income at the 80th percentile to income at the 20th percentile
  • $500,000 : $50,000 = 10
  • $100,000 : $50,000 = 2.0

• Wake = 4.3, NC = 4.8, US = 5.0

• Broad health impacts, social stress and loss of connections and sense of community

• Opportunity Index and RWJF County Health Rankings
SDOH Index Creation

- Economic & Work
- Education
- Neighborhood & Physical
- Family & Household
• Access to high quality child care facilities

• School enrollment (3-17 years old)

• Individuals with at least a high school education
Access to High Quality Child Care Facilities

- Number of high quality child care facilities (4 and 5 stars) divided by the number of children < 5
  - 311 in Wake County

- NC Division of Child Development and Early Education

- Other indicator considered: 3-4 year old enrollment
• Percentage of ALL children enrolled in school (ages 3-17)

• More variability and reliability by looking at entire range of ages

• Other indicators considered: test scores, reading and math levels
• Includes people who received a diploma or GED

• Low education closely linked with poor health outcomes

• Other indicators considered: associate’s or higher, < high school
Index

- z-scores
- Equally weighted
- A measure of how far above or below ALL indicators are from County average
- Wake-specific
STORY MAP DEMO
Follow along if you would like!

https://tinyurl.com/JREmap

• Basic navigation through the story
  – Chapter set up
  – Pan, zoom, identify
• Some interesting findings
• User Guide
Advanced Applications

ASSET MAPPING
Outline

- Navigating the layers and functions
- Uploading additional data
  - Your own data
  - Existing map and feature services on AGOL
- Facilitated Q&A
ASSET MAP DEMO
Contact

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