Determining an Unmet Need Score (UNS)

Description of the Service Area Needs Assessment Methodology (SANAM) and Resulting UNS

Amy Harbaugh
Public Health Analyst, Office of Policy and Program Development
Denise Levis
Health Communication Specialist, Office of Strategic Business
Bureau of Primary Health Care (BPHC)
Health Resources and Services Administration (HRSA)

Key Points

• Provide information about the purpose of the Unmet Need Score (UNS) and how it is being used by HRSA
• Describe the measures and measure groups used in calculating the UNS
• Discuss the steps to calculate the UNS for ZIP Codes and service areas
Presentation Outline

• Background
• Overview of Measures and Data Sources
• Use in the New Access Point Funding Opportunity
• Calculating the Unmet Need Score (UNS)
• Modifications to data used in the UNS calculation for the U.S. Territories and the Freely Associated States where data is limited
Terminology

- **UNS** – Unmet Need Score
  - *Score* representing unmet need for primary and preventive health care services in a ZIP Code (converted to ZCTAs) or Service Area

- **SANAM** – Service Area Needs Assessment Methodology
  - SANAM is the *methodology* used to generate the UNS
The Unmet Need Score (UNS) Overview

<table>
<thead>
<tr>
<th>Description</th>
<th>Calculation</th>
<th>Use</th>
<th>Benefit</th>
</tr>
</thead>
</table>
| SANAM generates an UNS which quantifies unmet need in geographically defined service areas | • Based on key measures of health determinants and health status relevant to the Health Center Program  
• Calculated for individual ZIP Codes which are aggregated to score larger service areas | • Used to evaluate need in New Access Point (NAP) funding applications  
• Complements the narrative that applicants use to describe unmet need in service area | • Automated to reduce applicant burden  
• Transparent methodology using data from reputable public sources |
Selection of Methodology

• Multiple prototype methodologies for generating an UNS were developed
• The prototypes were evaluated and presented to Health Center Program stakeholders
• The selected prototype
  ▪ Contains a comprehensive set of measures that align with Health Center Program statute and population health research
  ▪ Selected based on evaluation and feedback from stakeholders
Overview of Measures Used to Calculate the UNS

### HEALTH DETERMINANTS

<table>
<thead>
<tr>
<th>NON-ACCESS MEASURES</th>
<th>ACCESS OUTCOME MEASURES</th>
<th>ACCESS BARRIER MEASURES</th>
<th>PROXY MEASURES</th>
<th>DIRECT MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violent Crime 2.5</td>
<td>Health Center Penetration 25.0</td>
<td>Below 200% Federal Poverty Level 10.88</td>
<td>All-Cause Mortality 2.0</td>
<td></td>
</tr>
<tr>
<td>No Dentist in Past Year 3.25</td>
<td>Associate Degree or Higher 3.25</td>
<td>Unintentional Injury Mortality 2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pap Smear Screening 3.25</td>
<td>Housing Stress 3.25</td>
<td>Asthma 1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preterm Birth 3.25</td>
<td>No High School Diploma 3.25</td>
<td>Diabetes 1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prev. Hospital Stays 3.25</td>
<td>Single Parent Household 3.25</td>
<td>Poor Mental Health 1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unemployment 3.25</td>
<td>Poor or Fair Health 1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uninsured 10.88</td>
<td>Chlamydia 1.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Linguistic Isolation 3.75</td>
<td>Physical Inactivity 1.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicle Access 3.75</td>
<td>Smoking 1.67</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See UNS Resource Guide available on the [NAP Technical Assistance website](https://www.nap.gov) for more information
Non-Access Measures

- All measures under Health Determinants focus on access, except for Violent Crime
- High crime rates negatively influence physical and mental wellbeing
- Other reputable needs assessment instruments use the Violent Crime measure
Access Outcome Measures

• Measures capture information about outcomes involving access to primary and preventive health care services
• Together with access barrier measures, these measures capture multiple dimensions of access
• Higher weight for Health Center Penetration measure reflects importance of estimating unmet need for health center services
  ▪ Approximates extent to which population in an area is utilizing health center services
Access Barrier Measures / Proxy Measures of Health Status

- Social determinants of health that capture information on impediments to timely access to care
- Six out of nine measures assess socioeconomic status (SES) and serve as proxy measures of health status
  - SES is a well-established driver of health outcomes and health disparities
- Below 200% Federal Poverty Level and Uninsured have higher weights
  - Reflects population that could benefit from sliding scale payment for health services
Direct Measures of Health Status

- **Direct measures of mortality**
  - Approximate burden of excess and preventable mortality
  - Unintentional injury mortality includes opioid and other drug overdoses

- **Direct measures of morbidity**
  - Top drivers of morbidity, mortality, and health care cost burden
  - Indicative of presence of health harming physical and social conditions

- **Direct measures of health behaviors**
  - Top behaviors that lead to high burdens of preventable mortality and morbidity, and increased health care cost for underserved communities
Data Sources for Measures in the UNS

<table>
<thead>
<tr>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Community Survey</td>
</tr>
<tr>
<td>Dartmouth Atlas of Health Care</td>
</tr>
<tr>
<td>National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention</td>
</tr>
<tr>
<td>Behavioral Risk Factor and Surveillance Survey</td>
</tr>
<tr>
<td>National Vital Statistics System</td>
</tr>
<tr>
<td>County Health Rankings</td>
</tr>
<tr>
<td>Housing and Urban Development</td>
</tr>
<tr>
<td>Uniform Data System (UDS) Mapper</td>
</tr>
</tbody>
</table>

Data reported at the state, county, or census-tract level are extrapolated to ZIP Codes (see UNS Resource Guide available on the NAP Technical Assistance website for details)
Using the UNS for the NAP Funding Opportunity

- Applicants define the proposed service area by listing the service area ZIP Codes in Form 5B of the NAP application.
- UNS is calculated automatically based on the proposed service area ZIP Codes.
- Workbook available on the NAP Technical Assistance website for applicants to view the UNS and its components.
ZIP Code Tabulation Areas

• ZIP Codes defining the proposed service area in Form 5B are translated to ZIP Code Tabulation Areas (ZCTAs) to calculate the UNS
  ▪ The ZCTA is a construction of the U.S. Census Bureau to represent U.S. Postal Service ZIP Code service areas
  ▪ Each ZCTA is associated with one or more ZIP Codes
  ▪ Applicant ZIP Codes are mapped to ZCTAs using a crosswalk available at UDS Mapper: https://www.udsmapper.org/zcta-crosswalk.cfm
UNS Calculation Overview

• The UNS is calculated for each ZCTA by standardizing and weighting measure values then computing a weighted sum.

• The service area UNS is calculated by aggregating scores for each ZCTA in the service area using a population-based weighted average.
Standardize ZCTA Measure Values Using Percentile Ranks

Example percentile rank calculation for the Uninsured measure:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure Value (from Data Source)</th>
<th>Measure Rank</th>
<th>Number of Available Values</th>
<th>Percentile Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninsured</td>
<td>0.059</td>
<td>6,899</td>
<td>32,600</td>
<td>21.16</td>
</tr>
</tbody>
</table>

Divide measure rank by number of available values and multiply by 100 to calculate Percentile Rank (i.e. \( \frac{6,899}{32,600} \times 100 = 21.16 \))

Rank all available Uninsured values from lowest to highest need. The Uninsured value of 0.059 places this ZCTA at the rank of 6,899 out of the 32,600 ZCTAs with available values.
Computing Weighted Measures

Example weighted measure calculation for the Uninsured measure:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure Value (from Data Source)</th>
<th>Measure Rank</th>
<th>Number of Available Values</th>
<th>Percentile Rank</th>
<th>Measure Weight (%)</th>
<th>Weighted Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninsured</td>
<td>0.059</td>
<td>6,899</td>
<td>32,600</td>
<td>21.16</td>
<td>10.875</td>
<td>2.30</td>
</tr>
</tbody>
</table>

Each measure is assigned a weight in the UNS. The weighted measure is the percentile rank multiplied by measure weight: 
21.16×10.875% = 2.30
Sum and Rescale Weighted Measure

Example weighted measures values:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Weighted Measure</th>
<th>Measure</th>
<th>Weighted Measure</th>
<th>Measure</th>
<th>Weighted Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Center Penetration</td>
<td>9.60</td>
<td>Pap Smear Screening</td>
<td>1.27</td>
<td>Unintentional Injury Mortality</td>
<td>0.51</td>
</tr>
<tr>
<td>Below 200% Federal Poverty Level</td>
<td>4.24</td>
<td>Preterm Births</td>
<td>0.61</td>
<td>Chlamydia</td>
<td>1.20</td>
</tr>
<tr>
<td>Uninsured</td>
<td>2.30</td>
<td>Preventable Hospital Stays</td>
<td>0.90</td>
<td>Physical Inactivity</td>
<td>0.64</td>
</tr>
<tr>
<td>Associate Degree or Higher</td>
<td>0.53</td>
<td>Single-Parent Household</td>
<td>1.96</td>
<td>Smoking</td>
<td>1.13</td>
</tr>
<tr>
<td>Housing Stress</td>
<td>1.68</td>
<td>Unemployment</td>
<td>0.76</td>
<td>Asthma</td>
<td>0.89</td>
</tr>
<tr>
<td>Linguistic Isolation</td>
<td>2.11</td>
<td>Vehicle Access</td>
<td>2.58</td>
<td>Diabetes</td>
<td>0.23</td>
</tr>
<tr>
<td>No Dentist in Past Year</td>
<td>0.93</td>
<td>Violent Crime</td>
<td>1.26</td>
<td>Poor Mental Health</td>
<td>0.07</td>
</tr>
<tr>
<td>No High School Diploma</td>
<td>0.92</td>
<td>All-Cause Mortality</td>
<td>0.79</td>
<td>Poor or Fair Health</td>
<td>0.48</td>
</tr>
</tbody>
</table>

• Once each measure is standardized and weighted, ZCTA UNS is calculated by:
  - Summing the weighted measures
  - Rescaling the sum to ensure minimum score is 0 and maximum score is 100 (see UNS Resource Guide for more information)

Example ZCTA UNS calculation:

<table>
<thead>
<tr>
<th>Sum of Weighted Measures</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCTA UNS (Rescaled)</td>
<td>30.2</td>
</tr>
</tbody>
</table>
Calculating the Service Area UNS

- The percentage of the total service area population in each ZCTA is calculated (i.e., the population-based weight).
- The population-based weighted UNS score for each ZCTA is calculated by multiplying the ZCTA UNS by the population-based weight.
- The UNS for the service area is the sum of each ZCTA’s population-based weighted UNS.
- The UNS is converted to a 20 point scale for the NAP application by dividing by 5 and rounding up.

### Example Population-based Weighted UNS Calculations

<table>
<thead>
<tr>
<th>ZCTA</th>
<th>ZCTA UNS</th>
<th>Population Size</th>
<th>Population-based Weight (%)</th>
<th>Population-based Weighted UNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCTA 1</td>
<td>75.1</td>
<td>10,000</td>
<td>20</td>
<td>15.0</td>
</tr>
<tr>
<td>ZCTA 2</td>
<td>44.2</td>
<td>20,000</td>
<td>40</td>
<td>17.7</td>
</tr>
<tr>
<td>ZCTA 3</td>
<td>61.7</td>
<td>20,000</td>
<td>40</td>
<td>24.7</td>
</tr>
</tbody>
</table>

### Example Service Area UNS Calculation

<table>
<thead>
<tr>
<th>UNS Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Area UNS (100-point scale)</td>
<td>57.4</td>
</tr>
<tr>
<td>Converted UNS (20-point scale)</td>
<td>12</td>
</tr>
</tbody>
</table>
UNS for U.S. Territories and Freely Associated States

- Availability of data is limited for U.S. Territories and the Freely Associated States
- Based on the available data, 3 separate methodologies developed for Puerto Rico, the remaining U.S. Territories, and the Freely Associated States
- Measures selected to align with key drivers of morbidity and mortality
- For more information on the measures see the UNS Resource Guide available on the NAP Technical Assistance website
UNS Measures and Weights for Puerto Rico

**HEALTH DETERMINANTS**

- **Non-Access Measures**
  - Health Center Penetration: 28
  - Pap Smear Screening: 4

- **Access Outcome Measures**
  - Below 200% Federal Poverty Level: 14
  - Associate Degree or Higher: 4
  - Housing Stress: 4
  - No High School Diploma: 4
  - Single Parent Household: 4
  - Unemployment: 4
  - Uninsured: 11
  - Linguistic Isolation: 4
  - Vehicle Access: 4

**HEALTH STATUS**

- **Proxy Measures**
  - Poor or Fair Health: 6
  - Asthma: 3
  - Chlamydia: 3
  - Smoking: 3

**Socioeconomic Status Measure**

- **Measure Weight**
  - Poor or Fair Health: 6
  - Asthma: 3
  - Chlamydia: 3
  - Smoking: 3
## UNS for U.S. Territories excluding Puerto Rico

### HEALTH DETERMINANTS

<table>
<thead>
<tr>
<th>NON-ACCESS MEASURES</th>
<th>ACCESS OUTCOME MEASURES</th>
<th>ACCESS BARRIER MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Center Penetration</td>
<td>Below Poverty Level</td>
<td>28</td>
</tr>
<tr>
<td>DTP3 Coverage</td>
<td>No High School Diploma</td>
<td>7.5</td>
</tr>
<tr>
<td>Low Birthweight</td>
<td>Uninsured</td>
<td>7.5</td>
</tr>
</tbody>
</table>

### HEALTH STATUS

<table>
<thead>
<tr>
<th>PROXY MEASURES</th>
<th>DIRECT MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy</td>
<td>4.5</td>
</tr>
<tr>
<td>Under 5 Mortality</td>
<td>4.5</td>
</tr>
<tr>
<td>Smoking</td>
<td>6</td>
</tr>
</tbody>
</table>

- **Socioeconomic Status Measure**
- **Measure Weight**

---

**HRSA**

Health Center Program
UNS for the Freely Associated States

**HEALTH DETERMINANTS**

- **NON-ACCESS MEASURES**
  - Health Center Penetration
  - DTP3 Coverage
  - Low Birthweight

- **ACCESS OUTCOME MEASURES**
  - Below Poverty Level

**ACCESS BARRIER MEASURES**

**PROXY MEASURES**

**DIRECT MEASURES**

- Life Expectancy
- Under 5 Mortality
- Smoking

- Socioeconomic Status Measure
- Measure Weight
Key Takeaways

• The UNS quantifies unmet need for primary and preventive health services in a service area
• UNS calculation uses reputable measures and data sources
• The UNS calculation is transparent and automated for NAP applications to reduce applicant burden
• Due to data limitations, the measures used in the UNS calculations for U.S. Territories and the Freely Associated States are different
Thank You!

Amy Harbaugh
Public Health Analyst, Office of Policy and Program Development

Denise Levis
Health Communications Specialist, Office of Strategic Business Operations

Bureau of Primary Health Care (BPHC)
Health Resources and Services Administration (HRSA)

https://www.hrsa.gov/about/contact/bphc.aspx

bphc.hrsa.gov

Sign up for the Primary Health Care Digest
To learn more about our agency, visit

www.HRSA.gov

Sign up for the HRSA eNews

FOLLOW US: