Unmet Need Score (UNS) User Guide

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

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U.S. Department of Health and Human Services Health Resources and Services Administration

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1   Background

This user guide describes the Service Area Needs Assessment Methodology (SANAM). The [Health Center Program](#) uses this methodology to generate an area's Unmet Need Score (UNS) for primary and preventive health care services.

The SANAM and UNS support our mission to provide high-quality primary health care services to the nation's underserved populations. Key features include:

- Scores at the ZIP Code level[1] and any combination of ZIP Codes for proposed service areas in grant applications for new health care delivery sites

- A standard, transparent, verifiable, and automated approach

- Reduced data collection and reporting burden on applicants, making it easier to apply

- Reliance on public data to create a comprehensive profile of the social, economic, and health status of a proposed service area

You can use this user guide to answer the following questions:

1. What measures are in the UNS? ([Section 2](#))
    a. How important is each measure?
    b. What do the measure values mean?
2. How do we calculate the UNS? ([Appendix A](#))
3. How did we create the SANAM and UNS? ([Appendix B](#))
4. How do we calculate the UNS for the U.S. Territories and Freely Associated States? ([Appendix C](#))

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[1] In this document, ZIP Code refers to a ZIP Code Tabulation Area (ZCTA), which is a construct of the U.S. Census Bureau to represent the U.S. Postal Service ZIP Code service area.

2   What Measures are in the UNS?

The UNS quantifies the unmet need for primary and preventive care. It is a weighted sum of standardized measure values. Need is measured by considering a population's access to primary and preventive care services, barriers to accessing these services, and how healthy a population is. We selected measures and weights to best capture this need.

The UNS measures are grouped into four classes. The total weight assigned to each class is in the bottom center of each box. The four classes are:

- **Core Measures** (45% weight): These measures are most relevant to the Health Center Program's mission. They are important indicators of access outcomes and barriers.

- **Access Measures** (24% weight): These measures capture additional access concerns that influence health status. They are primarily indicators of access outcomes and barriers. This class excludes indicators of access that are also socioeconomic indicators.

- **Socioeconomic Status** (15% weight): These measures capture social and economic factors. They indicate access barriers and are proxy measures of health status.

- **Health Status** (16% weight): These measures capture health behaviors and health outcomes that reflect the burden of morbidity and mortality at a population level.

Appendix B includes more details on the framework we use to define unmet need and select the UNS measures.

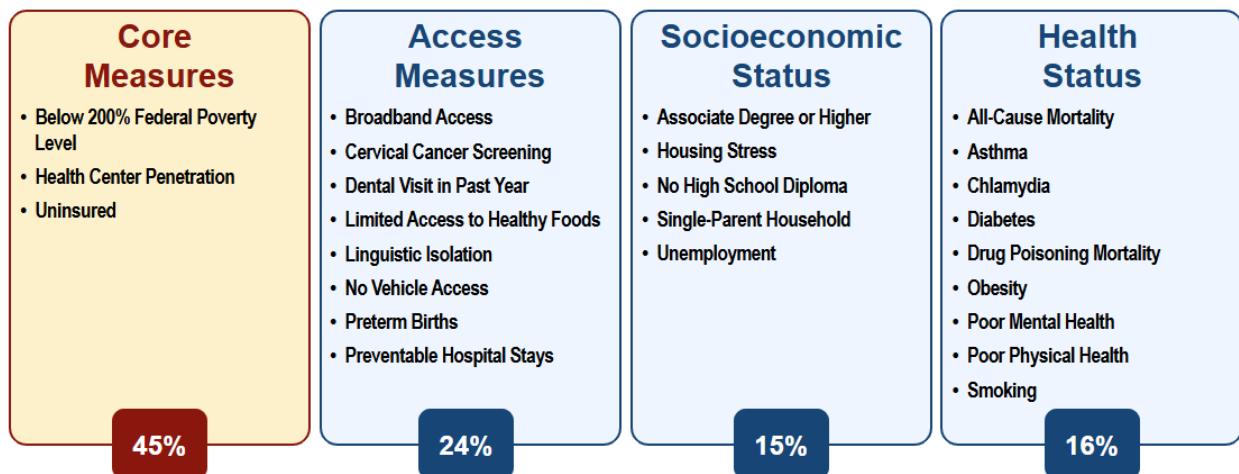| Core Measures	Access Measures	Socioeconomic Status	Health Status
• Below 200% Federal Poverty Level	• Broadband Access	• Associate Degree or Higher	• All-Cause Mortality
• Health Center Penetration	• Cervical Cancer Screening	• Housing Stress	• Asthma
• Uninsured	• Dental Visit in Past Year	• No High School Diploma	• Chlamydia
	• Limited Access to Healthy Foods	• Single-Parent Household	• Diabetes
	• Linguistic Isolation	• Unemployment	• Drug Poisoning Mortality
	• No Vehicle Access		• Obesity
	• Preterm Births		• Poor Mental Health
	• Preventable Hospital Stays		• Poor Physical Health
			• Smoking
45%	**24%**	**15%**	**16%**

Figure 1. UNS Measure Diagram

2.1 What are the measure weights?

Each of the UNS measures has a weight which represents how important that measure is for estimating unmet need. The measure weights are percentages that sum to 100.[2] Table 1 shows the weights for each UNS measure.

Table 1. UNS Measures and Weights

Measure	Weight
Core Measures	*Total: 45%*
Health Center Penetration	25.00%
Below 200% Federal Poverty Level (FPL)	10.00%
Uninsured	10.00%
Access Measures	*Total: 24%*
Broadband Access	3.00%
Cervical Cancer Screening	3.00%
Dental Visit in Past Year	3.00%
Limited Access to Healthy Foods	3.00%
Linguistic Isolation	3.00%
No Vehicle Access	3.00%
Preterm Births	3.00%
Preventable Hospital Stays	3.00%
Socioeconomic Status	*Total: 15%*
Associate Degree or Higher	3.00%
Housing Stress	3.00%
No High School Diploma	3.00%
Single-Parent Household	3.00%
Unemployment	3.00%
Health Status	*Total: 16%*
All-Cause Mortality	2.00%
Drug Poisoning Mortality	2.00%
Chlamydia	2.00%
Obesity	2.00%

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[2] Throughout this document, measure weights are rounded to two decimal points. Total weights always sum to 100.

Measure	Weight
Smoking	2.00%
Asthma	1.50%
Diabetes	1.50%
Poor Mental Health	1.50%
Poor Physical Health	1.50%

2.2   What do the measure values mean?

Table 2 provides information to help you understand each measure. The columns in the table are as follows:

- **Definition**: the meaning of each measure.
- **Type**: format in which the measure value is expressed. The measure types are:
  - *Proportion*: a part or a share of a whole
  - *Percent*: a part or share of a whole, where the whole is expressed as 100
  - *Ratio*: comparison of two amounts measured in the same units
  - *Rate*: number of events per population
- **Range**: the set of values for the measure. Measure values do not always use the entire range.
- **Need interpretation**: which values (smaller or larger) indicate higher need.

You can interpret the measure value for a ZIP Code by considering the columns in Table 2 below.

The following examples show how to interpret selected measures.

- **Uninsured**: Uninsured is defined as the proportion of the population without health insurance. Possible values for this proportion are between 0 and 1, where the larger the value, the higher the need.
- **Asthma**: Asthma is defined as the percent of adults 18 years and older who have been told they currently have asthma. Possible values for this percent are between 0 and 100, where the larger the value, the higher the need.
- **Health Center Penetration**: Health Center Penetration is defined as the ratio of the population served by a health center to the population below 200% of the FPL. Possible values for this ratio are between 0 and 1, where the smaller the value, the higher the need.
- **Chlamydia**: Chlamydia is defined as the rate of newly diagnosed chlamydia cases per 100,000 population. Possible values for this rate are between 0 and 100,000 where the larger the value, the higher the need.

[Table 2](#) includes only measures used for the fifty states, the District of Columbia, and Puerto Rico. Additional measures are used for other U.S. Territories and the Freely Associated States. These are described in [Table C-4.](#) We use the most recent available data for the UNS measures. A supplement to this guide, [Data Sources Used in the Unmet Need Score (UNS)](#), gives descriptions of the data sources used.

Table 2. UNS Measure Definitions and Interpretations

Measure	Definition	Type	Range	Need Interpretation
Core Measures				
Health Center Penetration	Ratio of the population served by a health center to the population below 200% of the FPL[3]	Ratio	0 to 1	The smaller the value, the higher the need
Below 200% FPL	Proportion of the population below 200% of the FPL[4]	Proportion	0 to 1	The larger the value, the higher the need
Uninsured	Proportion of the population without health insurance[5]	Proportion	0 to 1	The larger the value, the higher the need
Access Measures				
Broadband Access	Proportion of households that have a broadband subscription	Proportion	0 to 1	The smaller the value, the higher the need
Cervical Cancer Screening	Percentage of women 21 to 64 years old who have had recommended cervical cancer screenings[6]	Percent (%)	0 to 100	The smaller the value, the higher the need
Dental Visit in Past Year	Percentage of adults 18 years and older who visited a dentist or dental clinic in the past year	Percent (%)	0 to 100	The smaller the value, the higher the need
Limited Access to Healthy Foods	Proportion of population below 200% of the FPL who do not live close to a grocery store[7]	Proportion	0 to 1	The larger the value, the higher the need

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[3] Health Center Penetration is capped to a maximum value of one.

[4] All income data used for measures in this table exclude populations in institutions, group homes, and other group living situations.

[5] Uninsured is reported for the civilian non-institutionalized population.

[6] Cervical cancer screenings include Pap smear and human papillomavirus test

[7] Rural areas are not considered close if they are more than 10 miles. Non-rural areas are not considered close if they are more than one mile.

Measure	Definition	Type	Range	Need Interpretation
Linguistic Isolation	Percentage of the population five years and older who speak English less than "very well"	Percent (%)	0 to 100	The larger the value, the higher the need
No Vehicle Access	Proportion of households with no vehicles available for personal use[8]	Proportion	0 to 1	The larger the value, the higher the need
Preterm Births	Proportion of live births before 37 weeks gestation	Proportion	0 to 1	The larger the value, the higher the need
Preventable Hospital Stays	Rate of hospitalizations for ambulatory care-sensitive conditions per 100,000 Medicare Enrollees (age- and sex-adjusted)	Rate	0 to 100,000	The larger the value, the higher the need
Socioeconomic Status				
Associate Degree or Higher	Proportion of adults 25 years and older whose highest level of education attained is an Associate-level degree or higher	Proportion	0 to 1	The smaller the value, the higher the need
Housing Stress	Proportion of households with one or more housing unit problems[9]	Proportion	0 to 1	The larger the value, the higher the need
No High School Diploma	Proportion of adults 18 years and older without a high school diploma or equivalent	Proportion	0 to 1	The larger the value, the higher the need
Single-Parent Household	Proportion of children under 18 years who are living in a single-parent family or subfamily[10]	Proportion	0 to 1	The larger the value, the higher the need
Unemployment	Percentage of civilian labor force 16 years and older who are unemployed	Percent (%)	0 to 100	The larger the value, the higher the need
Health Status				

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[8] Vehicles include passenger cars, vans, and pickup or panel trucks of one-ton capacity or less kept at home. This includes vehicles rented/leased for one month or more, company vehicles, and government vehicles used for non-business purposes.

[9] Housing unit problems include the following: (1) housing expense—monthly housing costs, including utilities, exceed 30% of income; (2) crowding—more household members than rooms; (3) incomplete plumbing—home lacks necessary bathroom facilities; and (4) incomplete kitchen—home lacks essential kitchen facilities.

[10] Data exclude institutions, group homes, and other group living situations.

Measure	Definition	Type	Range	Need Interpretation
All-Cause Mortality	Rate of deaths from all causes per 100,000 population (age-adjusted)	Rate	0 to 100,000	The larger the value, the higher the need
Asthma	Percentage of adults 18 years and older who have been told they currently have asthma	Percent (%)	0 to 100	The larger the value, the higher the need
Chlamydia	Rate of newly diagnosed chlamydia cases per 100,000 population	Rate	0 to 100,000	The larger the value, the higher the need
Diabetes	Percentage of adults 18 years and older who report having been diagnosed with diabetes	Percent (%)	0 to 100	The larger the value, the higher the need
Drug Poisoning Mortality	Estimated rate of drug poisoning deaths per 100,000 population	Rate	0 to 100,000	The larger the value, the higher the need
Obesity	Percentage of adults 18 years and older with body mass index ≥ 30 kg/m^2, based upon self-reported height and weight	Percent (%)	0 to 100	The larger the value, the higher the need
Poor Mental Health	Percentage of adults 18 years and older who report that their mental health was not good for 14 or more days during the past 30 days	Percent (%)	0 to 100	The larger the value, the higher the need
Poor Physical Health	Percentage of adults 18 years and older who report that their physical health was not good for 14 or more days during the past 30 days	Percent (%)	0 to 100	The larger the value, the higher the need
Smoking	Percentage of adults 18 years and older who are current smokers	Percent (%)	0 to 100	The larger the value, the higher the need

2.3   What are percentile ranks?

The percentile rank for a ZIP Code measure value gives you additional information to interpret the value. A measure value's percentile rank tells you the percentage of all other ZIP Code values that indicate less need. A percentile rank of 40 means that a ZIP Code has higher need than 40% of other ZIP Codes on a particular measure. It also means that the ZIP Code has lower need than 60% of ZIP Codes. A percentile rank ranges from 0 to 100 and larger values always indicate higher need. Appendix A provides more information on the percentile rank.

Appendix A   How to Calculate the UNS

We calculate a UNS in two main parts:

1. Calculate the UNS for each ZIP Code.
2. Combine multiple ZIP Code UNS values to create a Service Area UNS.

We provide tools to do these steps. You do not need to manually calculate a Service Area UNS.

A.1   ZIP Code UNS (Part 1)

The UNS for a ZIP Code[11] is the sum of standardized weighted measure values. Table A-1 provides an example calculation for a hypothetical ZIP Code. The steps are described below.

1. **Convert all data to the ZIP Code level**
   Not all measure data are reported at the ZIP Code level. Some data are reported at the state, county, or census tract level instead. We first convert these data to ZIP Code values:

   - Census tract to ZIP Code:
     We average together all values for census tracts (and parts of census tracts) that fall in the ZIP Code. Census tracts that have larger populations in the ZIP Code contribute more to the average through population weighting.

   - County/state to ZIP Code, unstratified:
     If a ZIP Code fully falls inside a county/state, then it gets the same measure value as the county/state. If a ZIP Code falls into multiple counties/states, then we average together the measure values from the counties/states. Counties/states that have larger populations in the ZIP Code contribute more to the average through population weighting.

   - County/state to ZIP Code, stratified: Sometimes, a data source may report measure values by income groups within the county/state. In these cases, we use income information at the ZIP Code level to create estimates from the county/state data. We use the ZIP Code demographic data to weight the county/state stratified data. If a county/state is missing too much demographic information, then we may use the county's or state's overall value, as described above.

   At the end of this step, except in cases where there are missing data,[12] each ZIP Code has a ***Measure Value*** for each of the UNS measures.[13]

2. **Standardize the measure values**
   Measures differ in type, range, and need interpretation as shown in Table 2:

   - Type: Measures are expressed as different types, such as proportions, percents, ratios, or rates.

   - Range: Measure values have different ranges, such as 0 to 1, 0 to 100, -1 to 1, or 0 to 100,000.

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[11] Again, note that ZIP Code refers to ZCTA.

[12] See Appendix A.3 for more information on how missing data are handled.

[13] ZCTA definitions change over time. Major changes are associated with the decennial census. When those changes occur, data are also extrapolated to a common year of ZCTAs. ZCTAs are standardized to the newest definitions by a population-based extrapolation, if possible; otherwise, an area-based extrapolation is used.

- Need interpretation: Some measures indicate higher need with larger numbers, while other measures indicate higher need with smaller numbers.

The UNS calculation standardizes measures to the same type, range, and need interpretation through ***Percentile Ranks***. A percentile rank shows how a ZIP Code's measure value compares to the values of all other ZIP Codes. To calculate the percentile rank for a ZIP Code's measure value we first rank all ZIP Code measure values from least to greatest need.[14] The percentile rank for a ZIP Code measure value is the percentage of the other ZIP Codes that indicate less need for that measure. For example, a percentile rank of 40 for a ZIP Code indicates that 40% of all other ZIP Codes have less need according to the measure values.

To calculate each measure's percentile rank, we use the following formula:

Percentile Rank = (Measure Rank / Number of Available Values) × 100

The first row from Table A-1 provides an example percentile rank calculation for Health Center Penetration. We show the calculation here:

> Measure Value: 0.389
>
> Measure Rank: 9,431
>
> Number of Available Values: 33,138
>
> Percentile Rank = (9,431 / 33,138) × 100 = **28.46**

At the end of this step, all measure values are converted to percentile ranks that have a standardized range and need interpretation:

1. Type: Percentile rank
2. Range: Between 0 and 100
3. Need interpretation: Larger values indicate higher need

3. Weight the percentile ranks

The UNS calculation treats some measures as more important than others. It captures importance through measure weights. Table 1 presents the measure weights.

The three most important measures are:

- Health Center Penetration (measure weight of 25%)
- Below 200% Federal Poverty Level (measure weight of 10%)
- Uninsured (measure weight of 10%)

In this step, we multiply the percentile ranks by the measure weights to create a ***Weighted Measure.*** We use the following formula:

Weighted Measure = Percentile Rank × Measure Weight

The first row in Table A-1 presents the weighted measure calculation for Health Center Penetration. We show the calculation here:

> Percentile Rank: 28.46

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[14] In the case of ties, the average rank of tied values is used.

Measure Weight: 25%

Weighted Measure = 28.46 × 25% = **7.12**

At the end of this step, we have calculated weighted measures for each measure in a ZIP Code.

4. **Sum the weighted measures**

To arrive at a single value for a ZIP Code, we combine the weighted measures. This is done by summing all of the weighted measures together. Note that since all the percentiles indicate higher need for larger values, this sum also indicates higher need for larger values.

Table A-1 presents the ***Weighted Measure Sum*** in the last row of the last column. For this hypothetical ZIP Code, the sum is 36.1.

At the end of this step, we have calculated the weighted measure sum for a ZIP Code.

Table A-1. Example Calculations for a Hypothetical ZIP Code UNS

Measure	Measure Value (from Data Source)	Measure Rank	Number of Available Values	Percentile Rank	Measure Weight (%)	Weighted Measure
Health Center Penetration	0.389	9,431	33,138	28.46	25	7.12
Below 200% Federal Poverty Level	0.219	8,965	32,565	27.53	10	2.75
Uninsured	0.073	16,966	33,138	51.20	10	5.12
Associate Degree or Higher	0.523	4,631	32,736	14.15	3	0.42
Housing Stress	0.294	21,765	32,772	66.41	3	1.99
Linguistic Isolation	9.2	28,668	32,773	87.47	3	2.62
Limited Access to Healthy Foods	0.127	25,266	32,681	77.31	3	2.32
Dental Visit in Past Year	70.9	6,225	32,535	19.13	3	0.57
No High School Diploma	7.04	10,261	32,773	31.31	3	0.94
Cervical Cancer Screening	88.4	1,661	32,398	5.13	3	0.15
Preterm Births	0.097	19,873	32,632	60.90	3	1.83

Measure	Measure Value (from Data Source)	Measure Rank	Number of Available Values	Percentile Rank	Measure Weight (%)	Weighted Measure
Preventable Hospital Stays	2,926.20	3,966	32,889	12.06	3	0.36
Single-Parent Household	0.123	9,073	31,490	28.81	3	0.86
Unemployment	3	10,435	32,551	32.06	3	0.96
No Vehicle Access	0.04	16,077	32,518	49.44	3	1.48
Broadband Access	0.836	11,162	32,518	34.33	3	1.03
Drug Poisoning Mortality	34.3	29,375	32,762	89.66	2	1.79
All-Cause Mortality	702.32	12,819	32,973	38.88	2	0.78
Obesity	26.3	3,496	32,566	10.74	2	0.21
Chlamydia	437.1	20,106	32,936	61.05	2	1.22
Smoking	15.9	7,018	32,566	21.55	2	0.43
Asthma	8.9	6,165	32,535	18.95	1.5	0.28
Diabetes	8.8	5,312	32,566	16.31	1.5	0.24
Poor Mental Health	12.2	7,737	32,535	23.78	1.5	0.36
Poor Physical Health	11	5,607	32,535	17.23	1.5	0.26
Sum	**NA**	**NA**	**NA**	**NA**	**100**	**36.1**

5. **Rescale the weighted measure sum**

   Very few ZIP Codes have weighted measure sums close to zero or 100. In fact, most ZIP Codes have values near the middle, which makes them more difficult to compare.

   To fix this, the weighted measure sums are rescaled so that the largest have a value of 100 and the smallest have a value of 0. Rescaling the weighted measure sum creates the ***ZIP Code UNS***. We use the following formula:

   ZIP Code UNS[15] =
   (Weighted Measure Sum – smallest weighted measure sum) /
   (largest weighted measure sum – smallest weighted measure sum) × 100

   The formula stretches the weighted measure sums to use the entire range from zero to 100. It preserves the ordering of the weighted sums. For example, suppose that ZIP Code A has a larger weighted sum than ZIP Code B which indicates ZIP Code A is higher need than ZIP Code B. After rescaling, the UNS for ZIP Code A is still larger than the UNS for ZIP Code B.

   We first need to calculate weighted measure sums for all ZIP Codes to calculate the smallest and largest weighted sums for this step. For example, if the smallest weighted sum is 18.4 and the largest weighted sum is 82.6, the rescaling calculation for the hypothetical ZIP Code is as follows:

   > Weighted sum for hypothetical ZIP Code: 36.1
   >
   > Smallest weighted sum (of all ZIP Codes): 18.4
   >
   > Largest weighted sum (of all ZIP Codes): 82.6
   >
   > ZIP Code UNS = (36.1 – 18.4) / (82.6 – 18.4) × 100 = **27.6**

   At the end of this step, we have calculated the ZIP Code UNS.

A.2   Service Area UNS (Part 2)

Health centers can propose service areas with multiple ZIP Codes. A Service Area UNS describes the unmet need for the entire service area.

Table A-2 shows example calculations for a hypothetical service area UNS with multiple ZIP Codes. The steps are described below.

1. **Weight the ZIP Code UNS**

   Service areas may contain some ZIP Codes with many people and some ZIP Codes with few people. ZIP Codes with larger populations contribute more to the Service Area UNS through population weighting.[16] To weight each ZIP Code UNS and calculate the ***Population-Weighted UNS***, we use the following formula:

   Population-Weighted UNS =
   ZIP Code UNS ×
   (ZIP Code Population Size / Service Area Population Size)

---

[15] We use the 0.5th percentile of the ZIP Code weighted sums for the smallest weighted measure sum and the 99.5th percentile for the largest.

[16] The population values used in population weighting generally exclude those living in group quarters, such as prisons, military bases, and university dormitories.

The first row in Table A-2 provides an example of this calculation for ZIP Code 1. We show the calculation here:

ZIP Code 1 UNS: 27.6

ZIP Code 1 Population Size: 10,000

Service Area Population Size: 50,000

Population-Weighted UNS = 27.6 × (10,000/50,000) = **5.5**

At the end of this step, we have calculated the population-weighted UNS for each ZIP Code in the service area.

2. **Sum the weighted ZIP Code UNS values**
We need to combine the population-weighted UNS values for the ZIP Codes in the service area. The final step is to sum these values to get the *Service Area UNS*.

The last column of Table A-2 provides examples of the population-weighted UNS for three ZIP Codes in a service area. We add these population-weighted UNS values together. For this service area, the sum is 35.9.

At the end of this step, the resulting value is a service area UNS with a value between zero and 100. Like the ZIP Code UNS, larger values indicate higher need.

Table A-2. Example Calculation of a UNS for a Hypothetical Service Area with Three ZIP Codes

ZIP Code	ZIP Code UNS	Population Size	Population Weight (%)	Population-Weighted UNS
ZIP Code 1	27.6	10,000	20	5.5
ZIP Code 2	44.2	20,000	40	17.7
ZIP Code 3	31.7	20,000	40	12.7
Sum	**NA**	**50,000**	**100**	**35.9**

A.3   Additional Notes on the UNS Methodology

Health Center Penetration: We treat ZIP Codes with health center patient counts meeting or exceeding the population below 200% of the FPL as having a Health Center Penetration of one, indicating the lowest level of need. This includes ZIP Codes in which the entire population is above 200% of the FPL.

Missing Data: Some ZIP Codes have missing data for certain measures. For these ZIP Codes, we increase the weights for the available measures proportionally so that they sum to 100%. For example, if one measure is missing (e.g., Poor Physical Health which has a weight of 1.5%), we spread the weight for the missing measure (e.g., 1.5%) across the available measures proportionally. This means that measures with larger weights (e.g., Health Center Penetration) add more of the missing measure's weight and measures with smaller weights (e.g., Asthma) add less.

Unscored ZIP Codes: We do not score all ZIP Codes, including ZIP Codes with 0 population. These include ZIP Codes whose population consists only of those living in group quarters, such as prisons, military bases, and university dormitories. These ZIP Codes have critical measures missing, including Below 200% FPL and Health Center Penetration, so we cannot score them.

Appendix B   Service Area Needs Assessment Methodology

The measures and measure weights used in the Unmet Need Score (UNS) will likely shift over time due to changes in the public health research evidence base and data availability. However, the UNS remains rooted in the Service Area Needs Assessment Methodology (SANAM) and its processes. These include a conceptual framework to guide measure and measure weight selection, as well as tests to validate the UNS.

B.1   SANAM Objectives

We established four formal objectives to guide the development of a conceptual framework and a set of measures appropriate for the Health Center Program. We consulted many sources to inform these objectives. This included conducting a thorough review of the Health Center Program statute and requirements. We also reviewed the objectives of quantitative needs assessments by organizations with similar programmatic goals and scope, and guidance from authoritative organizations across the U.S. Department of Health and Human Services (HHS) and the National Academy of Medicine (formerly the Institute of Medicine [IOM]). We conducted discussions with program staff and leadership about the Health Center Program scope, goals, and priorities, and how the UNS would be used to inform decision making. We solicited feedback from Health Center Program stakeholders to refine the current version. The four objectives are as follows:

1. The UNS should support resource allocation decisions that increase access to primary and preventive health care services among medically underserved populations.

2. The SANAM should prioritize measures that capture the need indicators most relevant to medically underserved populations, and that are most actionable to the Health Center Program.

3. The SANAM should use rigorous methods that reflect advancements in science and availability of new and wide-ranging geographic and population data.

4. The development process and measures used to calculate the UNS should be open and transparent to relevant parties.

B.2   Definition of Need and Conceptual Framework

We developed a definition for need based on the four objectives above, current literature, and the Health Center Program statute.

As outlined in the bullets below, access plays a central role in the SANAM and is separated into dimensions:

- Increasing access to underserved populations is an important goal for the UNS.

- Access is determined by the geographic, financial, educational, and linguistic characteristics of patients and providers. These characteristics converge to facilitate or impede receipt of needed and timely quality care.

- As noted extensively in the research literature as well as in technical reports by authoritative bodies across HHS, IOM, and the National Quality Forum (NQF),

separating the concept of access into dimensions makes it possible to map measures to a definition of access.

- We used the definition of access posited by Levesque et al. 2013 for the SANAM. This definition integrates and builds upon highly regarded research on access, and is defined by the following dimensions:
  - **Availability/Accommodation**: ability to reach health care
  - **Affordability**: ability to pay for health care
  - **Approachability**: ability to identify health care services that address needs
  - **Acceptability**: ability to seek health care services based on social factors
  - **Appropriateness**: ability to receive timely quality health care (also termed "access outcome" or "realized access")

This conceptual framework identifies measure groups that are most important to estimating service area need while considering the Health Center Program statute and mandate.

- **Access measure category:** Captures health status, including the social and physical environments. Increasing access to care for underserved populations is an important goal of the Health Center Program. Measures in this category help indicate service areas where people experience more difficulty accessing primary and preventive health care by accounting for factors that directly or indirectly impede access to care. There are three measure groups within this category:
  - **Access outcome measure group:** Captures retrospective information about health care utilization and the timeliness and quality of care received.
  - **Access barrier measure group:** Captures information about characteristics of health-seeking populations that have been demonstrated to impede timely access to care.
  - **Non-access measure group:** Captures information about factors that impact health outside the pathway of access to health care.
- **Health status measure category:** Includes measures that indicate health status by representing current morbidity and mortality rates. These measures also capture health behaviors that influence the burden of morbidity and mortality. This category considers the top causes of mortality and health care cost burden as well as their top risk factors.
  - Within this category, there are both **direct measures** and indirect **proxy measures** for health status. Informed by the social-ecological model of health, the framework considers measures of socioeconomic status that indicate possible barriers to health care access, while also serving as proxy measures of community health status.
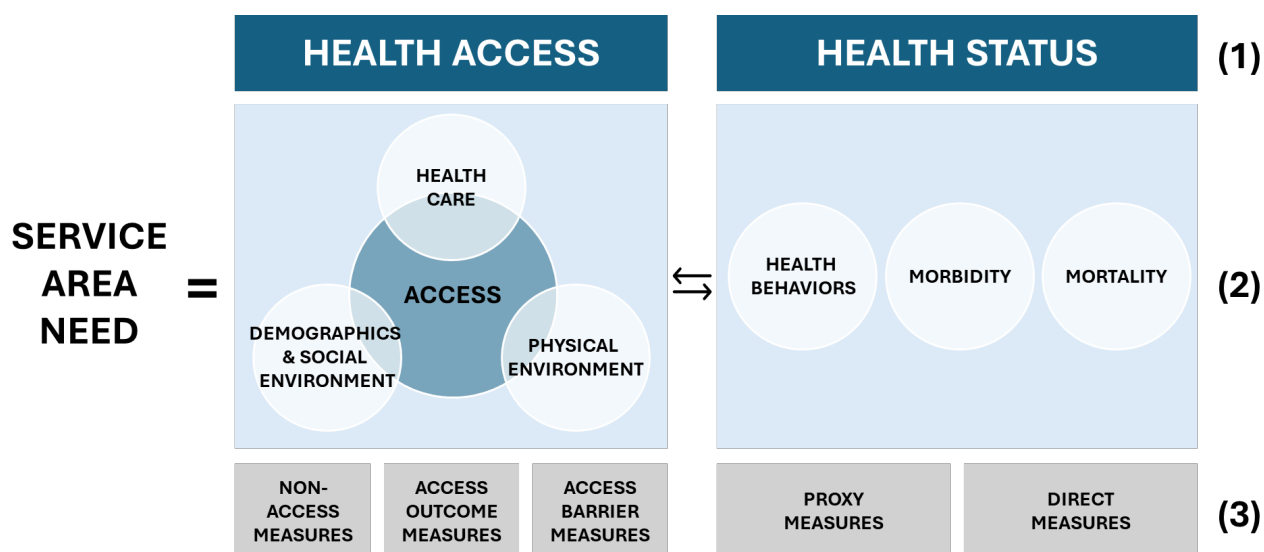
Figure B-1 presents the conceptual framework.

Figure B-1. Conceptual Framework for Definition of Need

B.3 Selecting Specific Measures and Assigning Weights

We selected measures that quantify concepts defined in the SANAM conceptual framework. We applied five criteria to evaluate specific measures for inclusion in the UNS. The criteria align with NQF criteria for selecting health quality measures that were first published in 2016. The five criteria are:

1. **Importance**: The measure is evidence-based and important to making gains in overall community health. Measures must represent top causes of mortality, or reflect a high preventable burden based on financial cost, disability, or lifespan impacts.

2. **Relevance and Usability**: The measure produces information that is meaningful, understandable, and useful for decision making. There is robust evidence that actions resulting in changes to the measure influence in community health or access to health care for underserved populations. The measure is also available for defined geographical areas with a strong preference for those available at or able to be extrapolated to the ZIP Code level.

3. **Scientific Soundness**: The measure meets NQF endorsement or is used as an indicator of health or access by frameworks (e.g., County Health Rankings), public health and provider organizations, and/or public health and quality reporting programs.

4. **Feasibility**: The measure is captured without undue burden, reported frequently enough to track changes over time, and updated at least every five years.

5. **Harmonization and Parsimony**: When compared to other measures, the measure makes a unique contribution to measuring (a) population access to health care and/or (b) current or future levels of health, as determined by research and correlation analyses.

Stakeholder feedback was another key step in the UNS development process. It involved soliciting and incorporating feedback from relevant parties. To this end, we hosted webinars to introduce the selected measures using the evaluation criteria. Feedback received in these webinars led to additional measures for the UNS.

Figure B-2 displays the UNS measures organized by the measure categories and groups defined in the conceptual framework.

Three measures used in the UNS calculation are core measures that are particularly relevant to the Health Center Program:

1. Health Center Penetration, an access outcome measure
2. Below 200% Federal Poverty Level (FPL), an access barrier measure
3. Uninsured, an access barrier measure

In addition to its general role as an access barrier measure, Below 200% FPL combines with five other measures to form a robust indicator of socioeconomic status:

1. Below 200% FPL
2. Associate Degree or Higher
3. Housing Stress
4. No High School Diploma
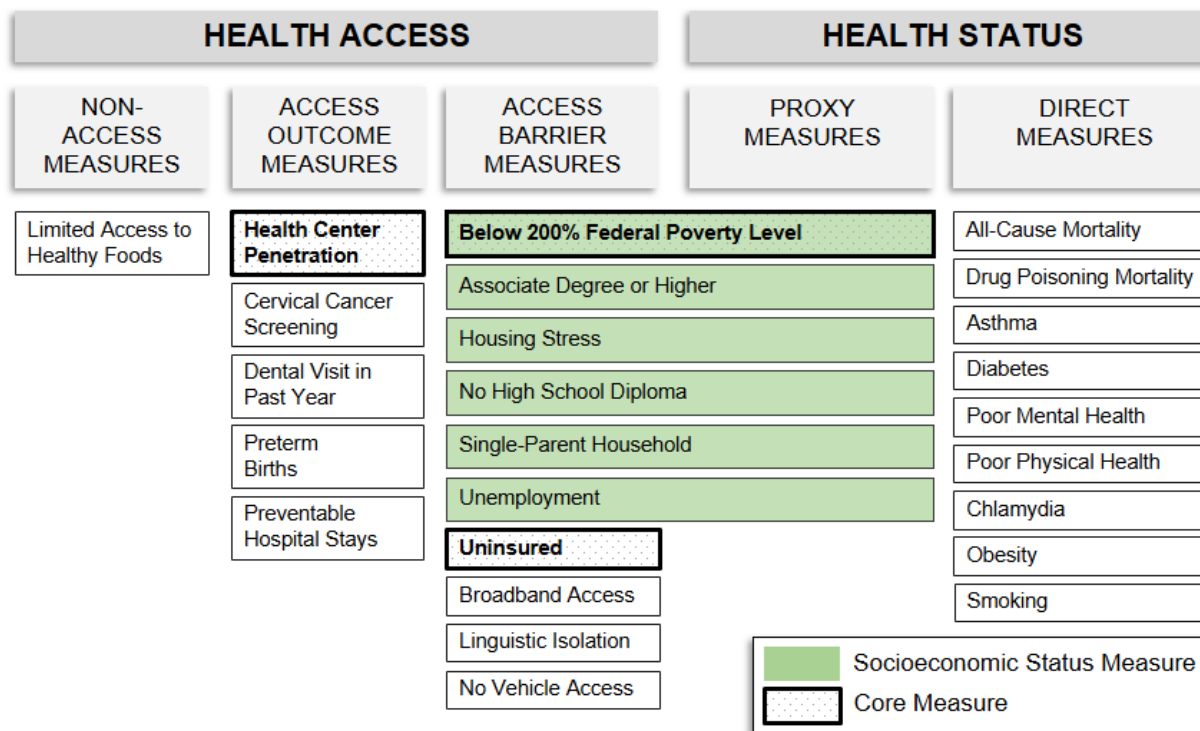5. Single Parent Household
6. Unemployment

Figure B-2. UNS Measures Organized by Conceptual Framework

We assigned weights to the individual UNS measures. The core measures individually have the most weight for three reasons:

1. They are the most directly actionable to the Health Center Program

2. They are the most relevant to the Health Center Program populations

3. They are recognized as significant indicators of underserved populations' level of access to primary and preventive health care

Collectively, most of the weight is allocated to health access, including the socioeconomic status measures that assess access—the main priority of the Health Center Program.

Table B-1 provides the rationale for each measure based on the criteria and definitions above. For measures involving access to care, we specify which of the five access dimensions (availability/accommodation, affordability, approachability, acceptability, and appropriateness) are addressed by the measure.

Table B-11. UNS Measure Rationales

Measure	Weight	Rationale
Core Measures	*Total: 45%*	
Health Center Penetration	25.00%	• Captures multiple dimensions of access and has been used in previous New Access Point (NAP) opportunities to award priority points. • Provides insight into the unmet need for health services among underserved populations in a ZIP Code. • Most specific access measure to the Health Center Program in that it approximates the degree to which the potential Health Center Program patient populations have already accessed care at existing health center sites. • Most actionable measure for the Health Center Program in that funding and site approval decisions can directly affect the measure's numerator—the population served at a health center. • Therefore, this measure carries the most weight.
Below 200% FPL	10.00%	• Captures the affordability dimension of access. • Contributes to a robust assessment of socioeconomic status, one of the main drivers of community health differences. • Approximates the proportion of the potential population of Health Center Program patients in a ZIP Code. • Most common driver of access, quality of care, and health status among populations served by the Health Center Program. • Identifies the proportion of a population in an area that could benefit from health centers' sliding fee discount program. • Therefore, the measure has a higher weight.
Uninsured	10.00%	• Captures the affordability dimension of access. Health insurance absorbs some of the costs associated with seeking health care. • Identifies the proportion of a population in an area that could benefit from health centers' sliding fee discount program. • Therefore, this measure has higher weight.

Measure	Weight	Rationale
Access Measures	*Total: 24%*	
Broadband Access	3.00%	• Captures the ability to access virtual primary and preventive care services. 3. Identified by researchers as an important driver of health.
Cervical Cancer Screening	3.00%	• Captures the appropriateness dimension of access. • Assesses population-level receipt of quality and timely preventive care. • Underserved populations have lower rates of cervical cancer screenings. • Best suited for incorporation for small geographic areas from publicly available measures commonly used to assess population-level receipt of preventive screenings.
Dental Visit in Past Year	3.00%	• Captures multiple dimensions of access (acceptability, affordability, availability, and appropriateness). • Oral health is essential to general health and well-being. • Provides a more complete and reliable assessment of a service area population's access to dental care than other publicly available dental care measures (e.g., "Population to Dentist Ratio" only partially captures the dimensions of access).
Limited Access to Healthy Foods	3.00%	• Access to healthy, nutritious foods is widely accepted as essential for good health. • Communities without a grocery store have a harder time obtaining healthy foods and are more vulnerable to poor health outcomes. • Captures an aspect of the neighborhood and built environment, which is not directly assessed by other UNS measures.
Linguistic Isolation	3.00%	• Captures the approachability and acceptability dimensions of access. • Linguistic and cultural differences impact a population's ability to access health care and participate in healthy behaviors.
No Vehicle Access	3.00%	• Captures the affordability and availability dimensions of access. • Vehicle availability may increase the accessibility of providers and other health-promoting resources. • Provides additional insight into a family's finances beyond the yearly household income information.

Measure	Weight	Rationale
Preterm Births	3.00%	• Captures the appropriateness dimension of access. • Principal contributor to low birthweight and the main underlying cause of stillbirth and infant mortality. • The consensus by authoritative bodies is to directly examine the proportion of preterm births in the population (over low birthweight and infant mortality) if data quality and availability allow.
Preventable Hospital Stays	3.00%	• Captures the appropriateness dimension of access. • Preventable hospitalization is often a consequence of the failure to receive timely and quality primary care. • Indicates the costly overuse of hospitals as a main source of care.
Socioeconomic Status	*Total: 15%*	
Associate Degree or Higher	3.00%	• Captures the approachability dimension of access. • Serves as a proxy for occupational status in needs assessment instruments in addition to measuring educational attainment. • Educational attainment and occupation are key drivers of community health care access and health status. • Contributes to a robust assessment of socioeconomic status, one of the chief drivers of community health differences.
Housing Stress	3.00%	• Captures the affordability dimension of access. • Contributes to a robust assessment of socioeconomic status by adding information about household financial well-being. • Accounts for the effect of the physical environment on community health, since poor housing conditions are a risk factor for chronic obstructive pulmonary disease and asthma—two top drivers of mortality and health care cost burden in the U.S.
No High School Diploma	3.00%	• Captures the approachability dimension of access. • Educational attainment is a principal driver of access to health care and community health status. Populations without a high school degree have worse health outcomes compared to those with higher degrees. • Contributes to a robust assessment of socioeconomic status.

Measure	Weight	Rationale
Single-Parent Household	3.00%	• Captures the affordability and availability dimensions of access. • Single-parent households tend to have fewer resources and experience social and material deprivation. These factors impact the ability to seek and afford health care as well as to participate in healthy behaviors.
Unemployment	3.00%	• Captures the affordability dimension of access and contributes to a robust assessment of socioeconomic status, one of the main drivers of community health variations. • Impacts the ability to afford health care as well as to participate in behaviors that promote health.
Health Status	*Total: 16%*	
All-Cause Mortality	2.00%	• Approximates the burden of excess and preventable mortality in the population and is highly correlated with individual rates of the top causes of mortality in the U.S. (i.e., heart disease and cancer). • Preventable mortality, especially at younger ages, is experienced at higher rates by populations served by the Health Center Program.
Drug Poisoning Mortality	2.00%	• Captures mortality due to drug overdoses and approximates the impact of substance use disorders, which is a focus of the Health Center Program.
Asthma	1.50%	• Top driver of morbidity and health care cost burden in the U.S. population and is a risk factor for other top causes of mortality (influenza and pneumonia). • Populations served by the Health Center Program face increased risk for asthma diagnosis and poor health outcomes resulting from asthma.
Diabetes	1.50%	• Top cause of mortality and a top driver of health care cost burden in the U.S. population. • Risk factor for other top causes of mortality (stroke and heart disease) and drivers of high health care cost (kidney disease). • Indicative of other preventable and costly health drivers (e.g., food insecurity, unhealthy diet, and obesity).
Poor Mental Health	1.50%	• Important measure of health-related quality of life. • Important driver of morbidity, mortality, and health care cost burden in the U.S.

Measure	Weight	Rationale
Poor Physical Health	1.50%	• Most widely used and validated single-item indicator of health status. • Independently predicts morbidity, mortality, and health care utilization across population groups.
Chlamydia	2.00%	• Most reported sexually transmitted infection (STI) in the U.S. • Higher data quality compared to other publicly available STI measures.
Obesity	2.00%	• Risk factor for leading causes of morbidity and mortality in the U.S. (heart disease, cancer, stroke, chronic lower respiratory diseases, and diabetes).
Smoking	2.00%	• Leading cause of preventable mortality in the U.S. • Risk factor for leading causes of mortality in the U.S. (heart disease, cancer, stroke, chronic lower respiratory diseases, and diabetes). • Key driver of health care cost burden in the U.S.

B.4   SANAM Testing

The final step in SANAM is testing how UNS values for specified geographic areas compare to the values obtained from other reputable needs assessment tools with similar goals.

Appendix C   U.S. Territories and the Freely Associated States

The UNS discussed above applies to the 50 States and the District of Columbia. That UNS is referred to as the "States UNS" in this appendix. We also developed the following three UNS calculations for ZIP Codes using available data for:

- Puerto Rico – 20 measures

- U.S. Territories excluding Puerto Rico (i.e., American Samoa, Guam, Northern Mariana Islands, and U.S. Virgin Islands) – 11 measures

- Freely Associated States (i.e., Federated States of Micronesia, Marshall Islands, and Palau) – 10 measures

C.1   UNS for Puerto Rico

The measures and measure definitions for the Puerto Rico UNS are like the States UNS described in Section 2, except for the following:

- We used Pap Smear Screening instead of Cervical Cancer Screening which is not available for Puerto Rico. Pap Smear Screening is defined as the: "Percentage of women 21 to 65 years old who have had a Pap smear in the past three years."

- We removed these measures:
    - All-Cause Mortality
    - Drug Poisoning Mortality
    - Limited Access to Healthy Foods
    - Linguistic Isolation
    - Preterm Births

Table C-1 lists the measures and weights for the Puerto Rico UNS.

Table C-1. UNS Measures and Weights for Puerto Rico

Measure	Weight
Core Measures	*Total: 42.5%*
Health Center Penetration	20.0%
Below 200% FPL	12.0%
Uninsured	10.5%
Access Measures	*Total: 20%*
Broadband Access	4.0%
Pap Smear Screening	4.0%
Dental Visit in Past Year	4.0%
No Vehicle Access	4.0%

Measure	Weight
Preventable Hospital Stays	4.0%
Socioeconomic Status	*Total: 20%*
Associate Degree or Higher	4.0%
Housing Stress	4.0%
No High School Diploma	4.0%
Single-Parent Household	4.0%
Unemployment	4.0%
Health Status	*Total: 17.5%*
Chlamydia	2.5%
Obesity	2.5%
Smoking	2.5%
Asthma	2.5%
Diabetes	2.5%
Poor Mental Health	2.5%
Poor Physical Health	2.5%

C.2 UNS for U.S. Territories Excluding Puerto Rico and the Freely Associated States

The UNS calculation for the U.S. Territories excluding Puerto Rico and the Freely Associated States are similar. We used seven measures that align to measures in the States UNS:

- Health Center Penetration
- Below Poverty Level
- Uninsured (not included in UNS for Freely Associated States)
- Obesity
- Smoking
- Diabetes
- No High School Diploma

These UNS calculations also include four additional measures:

- Three Dose Diphtheria, Tetanus, and Pertussis (DTP3) Vaccine Coverage
- Low Birthweight
- Life Expectancy

- Under Five Mortality

Table C-2 lists the measures and weights for the U.S. Territories excluding Puerto Rico. Table C-3 lists the measure and weights for the Freely Associated States.

Table C-2. UNS Measures and Weights for the U.S. Territories Excluding Puerto Rico

Measure	Weight
Core Measures	*Total: 62.5%*
Health Center Penetration	28.0%
Below Poverty Level	20.0%
Uninsured	14.5%
Access Measures	*Total: 15%*
DTP3 Coverage	7.5%
Low Birthweight	7.5%
Socioeconomic Status	*Total: 7.5%*
No High School Diploma	7.5%
Health Status	*Total: 15%*
Obesity	3.0%
Smoking	3.0%
Diabetes	3.0%
Life Expectancy	3.0%
Under Five Mortality	3.0%

Table C-3. UNS Measures and Weights for the Freely Associated States

Measure	Weight
Core Measures	*Total: 52%*
Health Center Penetration of Total Population	28.0%
Below Poverty Level	24.0%
Access Measures	*Total: 22%*
DTP3 Coverage	11.0%
Low Birthweight	11.0%
Socioeconomic Status	*Total: 11%*
No High School Diploma	11.0%
Health Status	*Total: 15%*
Obesity	3.0%
Smoking	3.0%
Diabetes	3.0%
Life Expectancy	3.0%
Under Five Mortality	3.0%

Measure Definitions and Interpretations

Similar to Table 2, Table C-4 helps you better understand the UNS measures used for the U.S. Territories excluding Puerto Rico and the Freely Associated States. See the description in Section 2.2 for the interpretation of these tables.

Table C-4. UNS Measure Definitions and Interpretations for the U.S. Territories Excluding Puerto Rico and Freely Associated States

Measure	Definition	Type	Range	Need Interpretation
Core Measures				
Health Center Penetration	Ratio of the population served by a health center to the population below 200% of the FPL. For the Freely Associated States the population below 200% of the FPL is unknown, so we use the entire population instead.	Ratio	0 to 1	The smaller the value, the higher the need
Below Poverty Level	Proportion of the population living below the poverty level for each area	Proportion	0 to 1	The larger the value, the higher the need
Uninsured	Proportion of the population without health insurance	Proportion	0 to 1	The larger the value, the higher the need
Access Measures				
DTP3 Coverage	Percentage of children who have received the third dose of the combined immunization for Diphtheria, Tetanus, and Pertussis by the age of 12 months	Percent (%)	0 to 100	The smaller the value, the higher the need
Low Birthweight	Proportion of low birthweight deliveries (less than 2,500 grams)	Proportion	0 to 1	The larger the value, the higher the need
Socioeconomic Status				
No High School Diploma	Proportion of the population 25 or older without a high school education or equivalent	Proportion	0 to 1	The larger the value, the higher the need
Health Status				
Life Expectancy	Expected number of years of life at birth	Years	0 to 100	The smaller the value, the

Measure	Definition	Type	Range	Need Interpretation
				higher the need
Under Five Mortality	Expected rate of deaths per 1,000 live births before age five for a child born in a specified year	Rate	0 to 1,000	The larger the value, the higher the need
Smoking	Percentage of the population 15 years and older who are current smokers.	Percent (%)	0 to 100	The larger the value, the higher the need
Obesity	Percentage of adults with body mass index ≥ 30 kg/m^2	Percent (%)	0 to 100	The larger the value, the higher the need
Diabetes	Percentage of the population 20 to 79 years old who report having been diagnosed with diabetes	Percent (%)	0 to 100	The larger the value, the higher the need

Appendix D   Acronyms

ACS	American Community Survey
DTP3	Three Dose Diphtheria, Tetanus, and Pertussis Vaccine
FPL	Federal Poverty Level
HRSA	Health Resources and Services Administration
IOM	Institute of Medicine
NAP	New Access Point
NQF	National Quality Forum
SANAM	Service Area Needs Assessment Methodology
STI	Sexually Transmitted Infection
UDS	Uniform Data System
UNS	Unmet Need Score
ZCTA	ZIP Code Tabulation Area