

README Health Indicators 1214

Contract Number: HSH250201200022C

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Option year two deliverable 4 – *Task 1.7 Update health status, birth outcome, mortality/morbidity/life expectancy data at appropriate geographic levels if not completed in Option Year1*

This deliverable of health indicators includes one dictionary and one data file at the PCSA v3.1 layer.

1. 2008-2012 Health Indicator Estimates Data Dictionary 1214.pdf
2. PCSA v3.1 layer attributes: p_healthindicator_120514.dbf (N=7,144)

Notes:

We estimated three health indicators (low birth weight rate, infant mortality rate and standardized mortality ratios) at the PCSA level using CDC 5-year (2008-2012) combined county-level unsuppressed natality and mortality data.

Following the CDC suppression rule for reporting information at any sub-national geographic areas, we replaced the value of a count or rate as -99999 if it was derived from counts less than 10.

To use PCSA-level low birth weight and infant mortality rates for the MUA and HPSA designation purpose with the Shortage Designation Management System (SDMS), we also included SDMS-acceptable low birth weight and infant mortality rates, as well as the infant health index. Please refer to the data dictionary *2008-2012 Health Indicator Estimates Data Dictionary 1214.pdf* for detailed attributes.

Methods:

I) Low Birth Weight and Infant Mortality rates:

Calculated from cumulative years 2008-2012 county-level unsuppressed natality and mortality files. Excluded “non-resident” deliveries, where birth mother’s resident state was not within 50 states + D.C.

A). Total live births

1. Identified all live births at county level (denominator), overall and by black/nonblack race
2. Enumerated all women of childbearing age (15-44 years) at county level

3. Calculated county fertility rate multiplier = All live births/ All women of childbearing age

B). Low birth weight (LBW)

Steps in creating county level rates overall and race specific (black/non-black):

1. Identified all births at county level less than or equal to 2500 grams (numerator), overall and by black/nonblack race
2. Calculated county LBW rate = LBW births/All live births (overall and by black/nonblack race)

Note: for counties lacking birth age women by race (this occurs only for black women in the data) in the population estimates, no race stratification was used in determining fertility rate and low birth weight rate for that county or its constituent census tracts.

County to Census Tract (CT) to PCSA methodology

4. Calculated all women of childbearing age by race at CT level using 2010 Census data.
5. Linked each CT to its associated county
 - a. Applied race-specific county-level fertility rate multiplier to the CT level childbearing age population to estimate race-specific number of live births at CT level, and summed these for the estimate of total live birth count
 - b. Applied race-specific county-level low birth weight rate to CT-level births estimated in previous step (a.) to derive estimated race-specific LBW birth count at CT level, and summed these for the estimate of total LBW births
6. Built from CT to PCSA level
 - a. Based on CT-PCSA crosswalk, summed CT level estimates of total LBW births and total births to the PCSA level to calculate PCSA level LBW rate.
7. 95% confidence intervals at the PCSA level were calculated from standard errors using a binomial distribution

C). Infant mortality

Steps in creating county level infant mortality rates overall and race specific (black/non-black):

1. Identified all deaths in infants < 365 days of age by race from the mortality files (numerator)
2. Calculated county infant mortality rate = infant deaths/All live births (overall and by black/nonblack race)

County to Census Tract (CT) to PCSA methodology

3. Linked each CT to its associated county
 - a. Applied race-specific county-level infant mortality rate to CT-level births estimated in previous step (B.5.a.) to derive estimated race-specific CT level infant mortality count, and summed these for estimate of total infant mortality count.
4. Built from CT to PCSA level
 - a. Based on CT-PCSA crosswalk, summed CT level estimates of total infant deaths to the PCSA level, then divided by the total birth at the PCSA from B.6.a. to calculate PCSA level infant mortality rate.
5. 95% confidence intervals at PCSA and county levels were calculated from standard errors using a binomial distribution

II). Indirectly adjusted mortality rate (standardized mortality ratio: SMR)

Calculated from cumulative years 2008-2012 county-level unsuppressed mortality files. Deaths assigned to county of residence, as listed in national mortality files. Excluded those whose listed residence was outside the 50 states and D.C.

Calculating PCSA level SMR

1. Determined age-race-gender strata-specific deaths at the county level.
 - a. Age groups: 0-9, 10-19, 20-29, 30-44, 45-54, 55-64, 65-74, 75+
 - b. Race categories: black, non-black
 - c. Gender: male, female
2. Determined population counts using same age-race-gender strata at the county level.

Note: for counties with no population within one or more age-gender-race strata, age-gender strata were used.
3. Using data from steps 1 & 2, calculated stratum-specific death rates at county level.
4. Used 2010 Census to produce age-race-gender strata counts at the CT level
5. Applied county level stratum-specific death rates to the CT-level population groups to determine the estimate of total “observed” deaths at CT level
6. Summed CT-level total “observed” death estimates to PCSA level to derive PCSA-level estimate of total “observed” deaths
7. Summed CT level population age groups to PCSA level

8. Calculated age specific “expected” deaths at the PCSA level
 - a. Calculated national mortality rate from 2008-2012 by age group.
 - b. Applied this standard age-specific death rate to the PCSA level population age-groups.
 - c. Summed age-group specific expected deaths to derive PCSA total expected deaths

9. Calculate PCSA-level SMR = (“observed” death count estimate / expected death count) x 100

III). SDMS low birth weight and infant mortality rates

For any PCSAs with less than 4,000 estimated live births, we replaced both rates of low birth weight (LBW) and infant mortality (IMR) based on the following SDMS regulation:

1. Summed the resident civilian population for all CT components falling in a PCSA (denominator).
2. Summed the results of multiplying the rates of each county by the total CT resident civilian population for the components in the respective PCSAs (numerator)
3. Divided the numerator by the denominator to calculate the replaced rates.
4. Variables PSMDS_LBWF and PSMDS_IMRF are indicators for the replacement, respectively.

SMDS flag value	Number of PCSAs	
	PSMDS_LBWF	PSMDS_IMRF
0: no replacement	1,331	1,331
1: replaced	5,812	5,611
2: suppressed by CDC rule	1	202

IV) SMDS Infant Health Index

The 5-point score system is defined as following:

IMR: SDMS-acceptable Infant deaths per 1,000 live births

LBW: Low birth weight per 100 live births

Infant Health Index	Point	# PCSAs
IMR >=20 or LBW >=13	5	139
20 > IMR >=18 or 13 > LBW >=11	4	363
18 > IMR >=15 or 11 > LBW >=10	3	359
15 > IMR >=12 or 10 > LBW >=9	2	692
12 > IMR >=10 or 9 > LBW >=7	1	3,411
IMR < 10 or LBW < 7	0	2,180