

*AHRQ Quality Indicators™*



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**2018 POPULATION FILE FOR USE WITH AHRQ QUALITY  
INDICATORS™  
Version 2018**

**Prepared for:**

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## 1.0 Overview

The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators (QIs)<sup>TM</sup> include 25 area-level indicators (Table 1). These indicators are intended to measure health care quality across the population in a geographic area rather than for a single facility or provider. With a few exceptions, as noted in Table 1, the denominators for area-level indicators are the population of the area being examined, subset by age or (for some indicators) sex. The denominators for these indicators must be constructed from an outside source rather than being drawn from a subset of discharges in the user’s input file.

The objective of this document is to describe how the population data estimates are derived from Census data for use with the SAS<sup>®</sup> QI Software Version SAS QI v2018 ICD-10-CM/PCS (non-risk adjusted) and Microsoft Windows<sup>®</sup> QI Software Version WinQI v2018 ICD-10-CM/PCS (non-risk adjusted). Population figures through 2017 for use with SAS QI v2018 are provided in the file 1995-2017\_Population\_Files\_V2018.txt, which is available as a separate download on the AHRQ QI website. Population data are built into the installation package for WinQI v2018.

**Table 1. AHRQ QI Area-Level Indicators**

PQI 01 Diabetes Short-Term Complications Admission Rate	PDI 14 Asthma Admission Rate
PQI 02 Perforated Appendix Admission Rate*	PDI 15 Diabetes Short-Term Complications Admission Rate
PQI 03 Diabetes Long-Term Complications Admission Rate	PDI 16 Gastroenteritis Admission Rate
PQI 05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	PDI 17 Perforated Appendix Admission Rate*
PQI 07 Hypertension Admission Rate	PDI 18 Urinary Tract Infection Admission Rate
PQI 08 Heart Failure Admission Rate	PDI 90 Pediatric Quality Overall Composite
PQI 09 Low Birth Weight Rate*	PDI 91 Pediatric Quality Acute Composite
PQI 10 Dehydration Admission Rate	PDI 92 Pediatric Quality Chronic Composite
PQI 11 Bacterial Pneumonia Admission Rate	
PQI 12 Urinary Tract Infection Admission Rate	
PQI 14 Uncontrolled Diabetes Admission Rate	
PQI 15 Asthma in Younger Adults Admission Rate	
PQI 16 Lower-Extremity Amputation among Patients with Diabetes Rate	
PQI 90 Prevention Quality Overall Composite	
PQI 91 Prevention Quality Acute Composite	
PQI 92 Prevention Quality Chronic Composite	
PQI 93 Prevention Quality Diabetes Composite (Numerator)	

\*These indicators use discharge data from the input data file to estimate the denominator rather than demographic data from the population file.

## 2.0 Data and Methodology

Every year, the Census Bureau releases postcensal population estimates<sup>1</sup> (as of July 1 of each year) that are generated with the assistance of the Federal State Cooperative Program for Population Estimates (FSCPE) using residence, total births, total deaths, and net migration. With each new issue of July 1 estimates from the Census Bureau, the Census Bureau makes revisions to all years back to the last decennial census. Each decade, after a decennial census, the Census Bureau produces a set of intercensal estimates that provide annual population estimates that are adjusted to smooth the transition from one decennial census to the next. These estimates are used to derive the AHRQ QI Population File to be used with the AHRQ QI software.

### 2.1 Census Data Files

AHRQ received intercensal and postcensal estimates of county-level population by single-year age group, sex, race, and Hispanic origin covering the years 2000 through 2017 from the Census Bureau (<http://www.census.gov/popest/>). Single year estimates are only available by special request. Public files with 5 year age groups are available from the Census website. Table 2 presents detailed information and sources for the specific files acquired and used to generate the 1995-2017\_Population\_Files\_V2018.txt file for use within the AHRQ QI software.

**Table 2. Census Dataset Descriptions and Sources**

Data Name	Years	Base Decennial Year	Type	Source
County Population by Characteristics: 2010-2017 Vintage; featuring single age, sex, race, and Hispanic origin.	2010–2017	2010	Postcensal	Obtained by special request to the Census Bureau.
County Population by Characteristics: 2000-2009 Intercensal; featuring single age, sex, race, and Hispanic origin.	2000–2009	2000	Intercensal	Obtained by special request request to Census.
County Population by Demographic Characteristics: 1990-1999 Intercensal; featuring 5 year age, sex, race, and Hispanic origin.	1990-1999	1990	Intecensal	<a href="https://census.gov/data/datasets/time-series/demo/popest/intercensal-1990-2000-state-and-county-characteristics.html">https://census.gov/data/datasets/time-series/demo/popest/intercensal-1990-2000-state-and-county-characteristics.html</a>

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<sup>1</sup> “Estimates are for the past, while projections are based on assumptions about future demographic trends. Estimates generally use existing data collected from various sources, while projections must assume what demographic trends will be in the future.” U.S. Census. Population Projections. [https://www.census.gov/glossary/#term\\_Populationprojections](https://www.census.gov/glossary/#term_Populationprojections). Accessed June22, 2017.

### 2.1.1 The Impact of County Changes

AHRQ does not make adjustments for geographic changes between intercensal and postcensal files. The creation of new counties after the last Census or the deletion of counties since the last Census will result in county FIPS codes, and the associated age, sex and race stratification, listing a population of zero for the years they do not exist. Users should review the list of Substantial Changes to Counties and County Equivalent Entities: 1970-Present from the US Census website to see if boundary changes will impact area rate calculation.

(<https://www.census.gov/geo/reference/county-changes.html>)

Three counties are on the 2000-2009 intercensal tables that are not on the post 2010 census tables. They are:

- 02270 Wade Hampton Census Area, Alaska
- 46113 Shannon County, South Dakota
- 51515 Bedford (independent) City, Virginia

Two counties are on the postcensal tables that are not on the 2000-2009 intercensal tables. They are:

- 02158 Kusilvak Census Area, Alaska
- 46113 Oglala County, South Dakota

Four counties are on the 1990-1999 intercensal tables that are not on the 2000-2009 intercensal or 2010-2017 postcensal tables.. They are:

- 02201 – Prince of Wales Outer Ketchikan Census Area, AK
- 02232 – Skagway Hoonah Angoon Census Area, AK
- 02280 – Wrangell Petersburg Census Area, AK
- 51560 – Clifton Forge City, VA

In the 2000 Census, the populations from these four counties are distributed to other surrounding counties. This means that although the 1995-2017\_Population\_Files\_V2018.txt file contains estimates for these four defunct counties for the years 1995–1999, the 1995-2017\_Population\_Files\_V2018.txt file estimates for the years 2000–2017 are listed as “0” because they are based on 2010 Census county boundaries.

### 2.1.2 Modifications to Census Estimates for Use in the Population File

Adjustments for AHRQ Race categories:

AHRQ modifies the race category on the census files to include a race classification for Hispanic. The US Census treats race and Hispanic origin as two separate and distinct concepts in accordance with guidelines from the Office of Management and Budget (OMB). (see the following link for additional information : <https://www.census.gov/topics/population/hispanic-origin/about/comparing-race-and-hispanic-origin.html>). The combination of race and Hispanic origin indicator are used to create an Hispanic race classification. Table 3 depicts how the race categories were defined from the census race and Hispanic origin groupings fields. This set of

race categorizations captures the entire U.S. population.

**Table 3. Race Category Aggregations Based on Census Reporting Categories**

Race Category	Description
1	White Alone =1 and Hispanic Origin = 0
2	Black Alone= 1 and Hispanic Origin = 0
3	Hispanic Origin = 1
4	Either Asian Alone OR Native Hawaiian, and Other Pacific Islander Alone = 1 AND Hispanic Origin = 0
5	NonAmerican Indian, and Alaska Native Alone = 1 AND Hispanic Origin = 0
6	Two or More Races = 1 and Hispanic Origin = 0

**Creating Pediatric and Adult Age Groups based on single year estimates.**

The population file includes age band categories to match the population of interest. The area-level indicators in the Pediatric Quality Indicator (PDI) module focus on the population aged 17 years and under and the other indicator modules use the population aged 18 years and older. For population data from 2000 to 2017, the age group categories are constructed using the census estimates for single year county sex, race stratifications. The single year stratification is not available to the public. To capture the separation between the pediatric and adult populations, age groups are created for 15 through 17 and 18 through 24-year age spans. The other age groups combine 5 single year age stratifications, or all 85 years and older.

For population data from 1995 to 1999, the percentage of the population who are between 18 and 19 years old in the 15 and 19 age group are calculated using State-level estimates of population by sex, race, and single year of age. The percentage is applied to the county 15 through 19-year age group and subtracted, to form the 15 through 17-year age group, and added it to the 20 through 24-year age group to form the 18 through 24-year age group.

**2.1.3 Census Data File Mapping to AHRQ QI Population File**

The 1995-2017\_Population\_Files\_V2018.txt file population estimates for 1995 through 1999 are based on intercensal estimates by demographic characteristics (Table 2). Because these data are adjusted to the 2000 Census, the Census Bureau no longer updates them with more recent postcensal estimates and the estimates are unchanged from version release to version release of the AHRQ QI software.

The 1995-2017\_Population\_Files\_V2018.txt file population estimates for 2000 through 2010 are based on intercensal estimates by demographic characteristics that are adjusted to the 2010 Census. The 1995-2017\_Population\_Files\_V2018.txt file population estimates for 2011–2017 are based on postcensal estimates by demographic characteristics that use the 2010 Census as the base.

Public-use files of postcensal population estimates from the Census Bureau are currently available through 2017.

## 2.2 Version History

The population file released with each version of the software is generated with the most recent data available at the time of software development. As such, this file changes from version to version (including the filename) as the Census Bureau updates and releases data. The differences between population files for AHRQ QI software release versions can be caused by changes in population estimates themselves, changes in methodology, or both. Note that data for population files included with previous releases of the AHRQ QI software are not updated with each new release. Since the most file will be retroactively adjusted based on the most current data and methodology, AHRQ recommends using the most recent file available.

## 3.0 1995-2017\_Population\_Files\_V2018.txt File Specification

The 1995-2017\_Population\_Files\_V2018.txt file is an ASCII-based text file containing 680,184 records with a fixed logical record length of 150 bytes. It is in fixed column format. Table 4 presents the file's specific fields and the code schema used for each field.

The file is structured for use with AHRQ QI programs PQI\_AREA\_OBSERVED.sas, PQI\_AREA\_RISKADJ.sas<sup>2</sup>, PDI\_AREA\_OBSERVED.sas, and PDI\_AREA\_RISKADJ.sas<sup>2</sup>, as well as the Windows QI (WinQI) software. As such, any modification to this file will affect the operation of these programs.

A given county is identified by the Federal Information Processing Standards (FIPS) code for the State in which it is located and by the county's FIPS code. For each county within the United States, the file contains 216 records: a record for each unique combination of sex, 18 age groups, and 6 race groups. Each physical record represents a sex, age group, and race group combination for that county and contains population estimates (rounded to integer values) for that combination for each year from 1995 through 2017.

The file has data for 3,149 counties or "equivalent areas," defined to constitute primary divisions of their States. Equivalent areas include the independent cities of Baltimore, Maryland; St. Louis, Missouri; Carson City, Nevada; and 39 independent cities in Virginia. Because they are independent of any contiguous county, equivalent areas are treated as separate counties with their own population records. Population figures for surrounding counties exclude these cities. Differences in the record count from previous population files are due to changes in county definitions or such independent cities. Definitions for State and county FIPS codes can be found at <https://www.census.gov/geo/reference/codes/cou.html>

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<sup>2</sup> Risk Adjustment is not include in vSAS2018 and hence xx\_AREA\_RISKADJ is not included with the software. It will be included in the future.

**Table 4. Data Fields in 1995-2017\_Population\_Files\_V2018.txt**

Field	Variable	Column Position	Format	Codes
1	State	1-2	Zero filled numeric	FIPS code
2	County	3-5	Zero filled numeric	FIPS code
3	Sex	7	Numeric	1=male, 2=female
4	Age group	9-10	Numeric	1=0-4 years 2=5-9 years 3=10-14 years 4=15-17 years 5=18-24 years 6=25-29 years 7=30-34 years 8=35-39 years 9=40-44 years 10=45-49 years 11=50-54 years 12=55-59 years 13=60-64 years 14=65-69 years 15=70-74 years 16=75-79 years 17=80-84 years 18=85+ years
5	Race	12	Numeric	1=White 2=Black 3=Hispanic 4=Asian & Pacific Islander 5=American Indian 6=Other
6	1995 population	13-19	Numeric	Integer Totals
7	1996 population	20-26	Numeric	
8	1997 population	27-33	Numeric	
9	1998 population	34-40	Numeric	
10	1999 population	41-47	Numeric	
11	2000 population	48-54	Numeric	
12	2001 population	55-61	Numeric	
13	2002 population	62-68	Numeric	
14	2003 population	69-75	Numeric	
15	2004 population	76-82	Numeric	
16	2005 population	83-89	Numeric	
17	2006 population	90-96	Numeric	
18	2007 population	97-103	Numeric	
19	2008 population	104-110	Numeric	
20	2009 population	111-117	Numeric	
21	2010 population	118-124	Numeric	
22	2011 population	125-131	Numeric	
23	2012 population	132-138	Numeric	
24	2013 population	139-145	Numeric	
25	2014 population	146-152	Numeric	
26	2015 population	153-159	Numeric	
27	2016 Population	160-165	Numeric	
26	2017 Population	166-171	Numeric	



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Abbreviation: FIPS, Federal Information Processing Standards