

Summary

Map of Overburdened Areas in Bernalillo County: How the Version 1.0 Map Was Made

On January 16, 2024, the Albuquerque-Bernalillo County Air Quality Control Board passed the “Health, Environment and Equity Impacts” regulation.¹ The regulation requires, among other things, that the City of Albuquerque Environmental Health Department (EHD) develop a map that displays overburdened areas in Bernalillo County. The regulation defines overburdened areas as “twenty percent of census block groups in Bernalillo County that experience the highest cumulative environmental and public health stressors,” considering environmental factors, health indicators, and social determinants of health indicators.

In response to these requirements, on January 1, 2025, EHD posted to its website Version 1.0 of a map of overburdened areas in Bernalillo County.² EHD has already sought and considered public input on this mapping project. In the future, EHD must update this map every 5 years.

This brief report documents how EHD generated its Version 1.0 map. The report lists the indicators that NMAC 20.11.72 mandated; and it identifies the data sources that were selected for each indicator. It also describes how EHD evaluated the available data to determine which census block groups countywide should be considered overburdened areas. The Version 1.0 map is presented at the end of this report.

Indicators Considered for Overburdened Areas

The “Health, Environment and Equity Impacts” regulation lists several indicators that EHD was required to utilize when developing the map of overburdened areas. These indicators are classified into three categories: environmental factors, health indicators, and social determinants of health indicators. Table 1 lists the 15 specific indicators that the regulation mandated EHD to use within these three categories. With one exception, that list includes every indicator listed in the regulation.

As the one exception, the regulation indicated that EHD shall consider pediatric asthma prevalence when identifying overburdened census block groups. EHD first attempted to obtain the pediatric asthma data from the New Mexico Indicator Based Information System (NM-IBIS). While NM-IBIS tracks pediatric asthma prevalence, the data are only available at the county level—and not at the census tract or census block group level. EHD also attempted to obtain these data from the Centers for Disease Control and Prevention (CDC) data sources that were used for the other health indicators, but those CDC data are based on surveys of adults. EHD ultimately decided the available data are not at a spatial resolution needed to be useful for the analysis of overburdened areas; that is why the pediatric asthma prevalence indicator was not included in this analysis. EHD will revisit this decision in the future if reliable data sources become available that report pediatric asthma prevalence for individual census tracts or census block groups in Bernalillo County.

¹ See: <https://www.cabq.gov/environmentalhealth/documents/20-11-72-health-environment-and-equity-impacts-rulle-heei-english.pdf>.

² See: <https://www.cabq.gov/environmentalhealth/public-health/overburdened-areas-map-version-0.1>.

EHD also sought input from the public about which indicators should be considered when identifying overburdened areas. Between August and November 2024, EHD held ten public consultation sessions—four virtual and six in-person—to gather input from residents, community groups, and other interested parties. EHD continues to review the input that was gathered during these sessions, which could lead to changes incorporated into the next version of the map that EHD will issue on July 1, 2025.

Data Sources Used to Evaluate Indicators

EHD next sought to identify data sources to evaluate the 15 indicators to be considered for the Version 1.0 map. EHD required that the data sources be issued by environmental or public health authorities; that the data sources be peer-reviewed or have been vetted by subject matter experts; and that the data sources be publicly available. EHD also considered specific data sources referenced in the “Health, Environment and Equity Impacts” regulation and identified during public consultation sessions.

The fourth column in Table 1 lists the two data sources that EHD ultimately used when preparing the Version 1.0 map:

- **The U.S. Environmental Protection Agency (EPA) Environmental Justice Screening and Mapping Tool (EJScreen).**³ EJScreen provides nationally consistent data on environmental and socioeconomic indicators. EHD used EJScreen as the data source for all five environmental indicators, one health indicator (life expectancy), and all four social determinants of health indicators. All EJScreen data accessed for the overburdened area analysis are available at the census block group level.
- **The CDC PLACES resource.**⁴ Like EJScreen, PLACES provides nationally consistent data, except the focus is on health-related indicators. A primary source of data is the American Community Survey, which asks people to identify their diagnosed medical conditions and to provide other health-related information. EHD used PLACES data for five health indicators, all of which have data available at the census tract level.

Data Processing Steps

In early 2024, EHD downloaded indicator data from the EJScreen and PLACES resources. To ensure that the Version 1.0 map is based on the most current information, EHD repeated these data downloads in December 2024. Data were processed as follows:

- For each indicator, a data point was assigned to each of the 468 census block groups in Bernalillo County. For the PLACES data that were only available at the census tract level, EHD assigned the census tract value to all census block groups within the tract.
- The data points were then translated into percentiles. This resulted in the census block group with the lowest value for a given indicator being assigned a 0.0% percentile and the census block group with the highest value being assigned a 100.0% percentile. At this stage of the evaluation, all indicators ranged on the same scale (i.e., from 0.0 to 100.0%), which helped ensure that no indicator was artificially weighted more or less heavily than others.

³ See: <https://www.epa.gov/ejscreen>.

⁴ See: <https://www.cdc.gov/places>.

- EHD calculated composite percentages for the environmental factors, the health indicators, and the social determinants of health indicators. These calculations were arithmetic means of the indicator percentiles for each category. Within the three categories, no indicators were weighted more heavily than others.
- Two indexes were then assigned. The composite percentage of the environmental factors was the Pollution Burden Index; and the average of the composite percentages for health indicators and the composite percentage for social determinants of health indicators was the Vulnerable Populations Index.
- EHD then multiplied these two indexes to calculate the Overburdened Area Map Score; and these calculations were performed for all 468 census block groups. By this approach, census block groups with disproportionately high environmental and health stressors tended to have higher Overburdened Area Map Scores than census block groups with lower stressors.

Map of Overburdened Areas in Bernalillo County

The last step in the mapping effort was to identify which census block groups in Bernalillo County should be considered overburdened areas, based on the requirements set forth in the “Health, Environment and Equity Impacts” regulation. By definition in the regulation, the 20 percent of census block groups with the “highest cumulative environmental and public health stressors” are to be considered overburdened. That means 94 out of the 468 census block groups in the county will have this designation.

To create the map, EHD sorted the Overburdened Area Map Scores for the 468 census block groups in Bernalillo County; and then selected the 94 census block groups that had the highest values for display on the map. Figure 1, on the final page of this report, shows Version 1.0 of the map of overburdened areas in Bernalillo County. The map is also available on an EHD website.⁵

⁵ See: https://www.cabq.gov/environmentalhealth/documents/15_indicator_bg_1.pdf.

Table 1. Indicators and Data Sources Included in Developing the Map of Overburdened Areas

Indicator Category	Indicator Name	Indicator Description	Data Source	Spatial Resolution
Environmental factors	Ambient air concentrations of fine particulate matter (PM _{2.5})	Annual average PM _{2.5} concentration, as determined by monitoring and modeling.	EPA EJScreen, v2.3	Census block group
	Ambient air concentrations of ozone	Average of the ten highest 8-hour ozone concentrations in a year, as determined by monitoring and modeling.		
	Ambient air concentrations of diesel particulate matter	Annual average concentrations of diesel particulate matter, as determined by modeling.		
	Air emissions of air toxics	Annual emissions of air toxics reported to the Toxics Release Inventory, weighted by toxicity.		
	Traffic proximity	Amount of traffic on major roadways within 10 kilometers of a census block group centroid, divided by distance to those roadways.		
Health indicators	Asthma prevalence in adults	Percent of adults with diagnosed asthma, calculated from self-reported information in CDC's Behavioral Risk Factor Surveillance System and American Community Survey.	CDC PLACES	Census tract
	Chronic obstructive pulmonary disease (COPD) prevalence in adults	Percent of adults with diagnosed COPD, calculated from self-reported information in CDC's Behavioral Risk Factor Surveillance System and American Community Survey.		
	Cardiovascular disease prevalence in adults	Percent of adults with diagnosed coronary heart disease, calculated from self-reported information in CDC's Behavioral Risk Factor Surveillance System and American Community Survey.		
	Cancer incidence among adults	Age-adjusted incidence of cancers (other than melanoma) per 100,000 adults, calculated from self-reported information in CDC's Behavioral Risk Factor Surveillance System and American Community Survey.		
	Adults with disabilities	Percentage of adults with any disability (e.g., hearing, vision, mobility, cognition, etc.), calculated from self-reported information in CDC's Behavioral Risk Factor Surveillance System and American Community Survey.		
	Life expectancy	Average life expectancy at birth, as reported by the National Center for Health Statistics.	EPA EJScreen, v2.3	Census block group

Indicator Category	Indicator Name	Indicator Description	Data Source	Spatial Resolution
Social determinants of health indicators	Population with less than high school education	Percent of adult (age 25 and older) population who did not receive a high school diploma, based on self-reported educational status in the American Community Survey.	EPA EJScreen, v2.3	Census block group
	Low-income households	Percent of households with total household income less than or equal to twice the national poverty level, based on U.S. Census data.		
	Limited English-speaking household	Percent of households in which no household members (age 14 or older) speak English at least "very well," as self-reported in the American Community Survey.		
	People of color	Percent of individuals who report being of a race other than white alone or who list their ethnicity as Hispanic or Latino, based on U.S. Census data.		

Figure 1. Map of Overburdened Areas in Bernalillo County

