

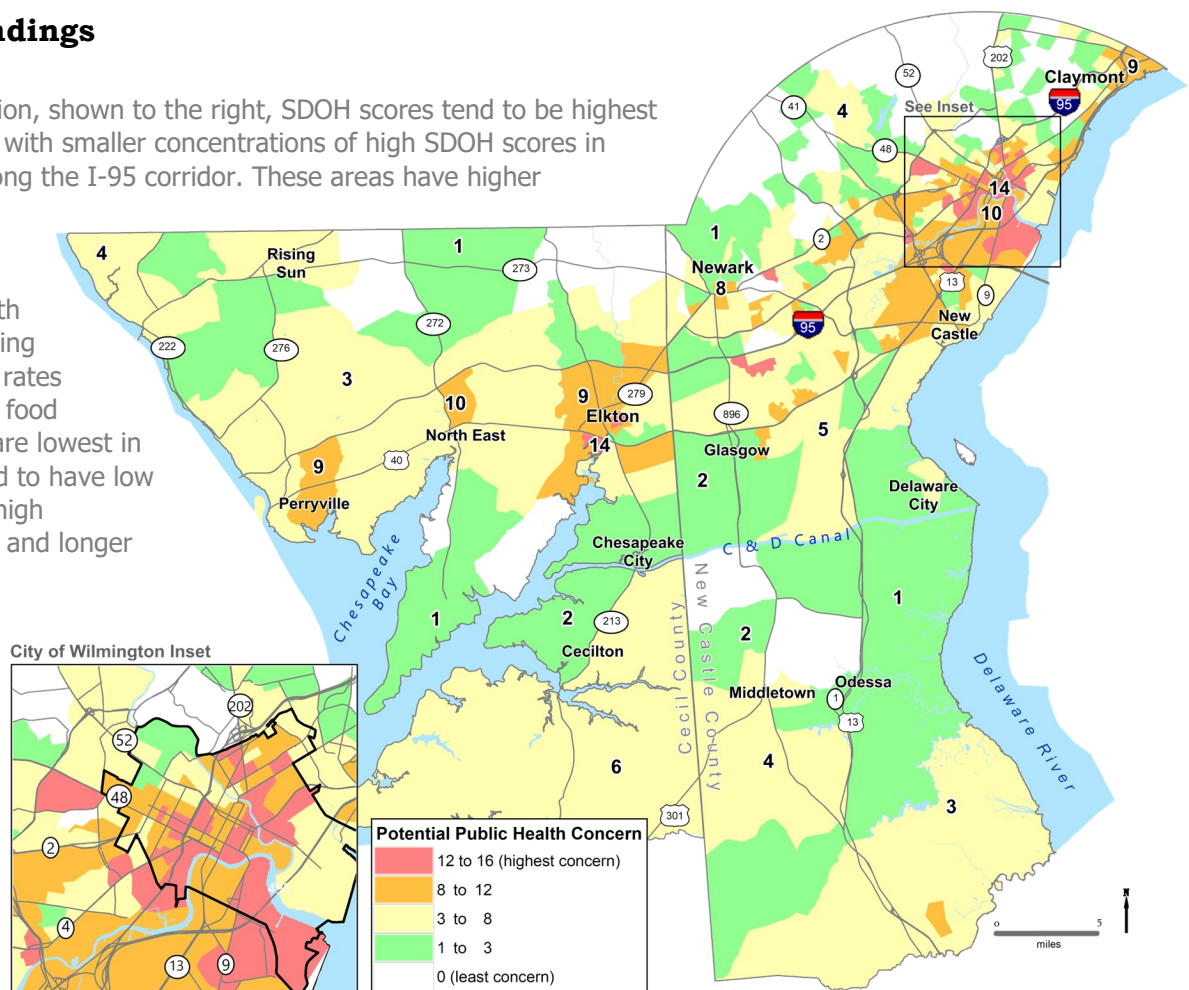
Social Determinants of Health

Overview of Project

Social determinants of health (SDOH) are conditions in which people are born and live that impact public health. These conditions have been defined using a variety of quantitative and qualitative factors by the World Health Organization as well as many non-profit organizations and government agencies. This data report presents a methodology for scoring public health concerns from neighborhood conditions at the block group level using a series of eight factors measurable with nationally available data. These factors encompass multiple categories of health stressors, including income, education, employment, racial/ethnic minority segregation, homeownership, and food access. Each block group within the study area receives a score for each factor, and the sum of those scores is its total SDOH score. A higher SDOH score represents a greater public health concern. This methodology utilizes data from the U.S. Census Bureau and the U.S. Department of Agriculture and can be applied to any study area in the United States.

Summary of Findings

In the WILMAPCO region, shown to the right, SDOH scores tend to be highest in central Wilmington, with smaller concentrations of high SDOH scores in towns and suburbs along the I-95 corridor. These areas have higher concentrations of renters, households in poverty, and single parent households, with some towns experiencing higher unemployment rates and areas with limited food access. SDOH scores are lowest in rural areas, which tend to have low minority populations, high homeownership rates, and longer householder tenure.



Background

This methodology was developed as part of the implementation of the Route 9 Corridor Master Plan, which proposed a series of transportation and land use recommendations for the Route 9 corridor in New Castle County, Delaware between the City of Wilmington and the City of New Castle. After the Plan was endorsed in May 2017, a Monitoring Committee was formed to empower the local community to guide the implementation of the plan. The Monitoring Committee is open to the public and includes representatives from WILMAPCO, DelDOT, New Castle County, area civic organizations, medical institutions, residents, and other stakeholders.

The Monitoring Committee determined that it would be necessary to rank and prioritize the twenty transportation projects recommended in the Plan. A subcommittee was formed to develop a transportation project prioritization process. This process would help guide DelDOT to rank, design, or construct projects in order of priority. Working closely with Nemours Health researchers and the local community, the subcommittee developed a series of twelve factors, such as walking and biking circulation, transportation safety, and crime prevention, that would be used to score each transportation project. For each project, the sum of its scores for each factor would determine its rank. This prioritization process underwent public outreach scrutiny and is now part of an approved process being actively followed by DelDOT.

As part of that prioritization process, one scoring factor was developed to determine the potential public health impact of a project based on its geographic location. This factor was called social determinants of health (SDOH). Similar to the overall prioritization process, SDOH scored Census block groups in the study area using a series of measurable factors for which scientific literature has shown has a negative impact on public health. For Route 9, SDOH was applied to score projects in areas of greater health concern more highly.

SDOH is a concept used by many governmental and non-governmental organizations, with varying social factors determined to impact the health of individuals. The World Health Organization defines SDOH as the conditions in which people are grown, live, work, and age and the fundamental drivers of these conditions.

This methodology uses publicly available data from the American Community Survey and the U.S. Department of Agriculture. As such, it can be extended beyond the limits of the Route 9 area and is applicable to any location in the United States. SDOH can be a valuable tool for planners and public health professionals to see a bird's eye view of which areas may be more negatively impacted by public health than others.

Photo: Residents and members of the Monitoring Committee discuss the proposed transportation project prioritization process at the Route 9 Corridor Master Plan Public Workshop in June 2018.



Methodology

The social determinants of health (SDOH) methodology utilizes eight quantitative factors that were determined to be indicators of public health. All necessary data is available at the block group level from the American Community Survey, except for food desert status, which is determined by the U.S. Department of Agriculture. These factors are described below.



Poverty rate – The percentage of households below the poverty line. A higher percentage indicates a larger negative impact on public health.



High school graduation rate – The percentage of individuals 25 years or older with a high school diploma or GED. A lower percentage indicates a larger negative impact on public health.



Minority segregation* – The inverse of the percentage of the population that identifies as non-Hispanic White. A higher percentage indicates a larger negative impact on public health.



Employment rate - The percentage of the civilian work force that is employed. A lower percentage indicates a larger negative impact on public health.



Homeownership rate - The percentage of housing units that are owner-occupied. A lower percentage indicates a larger negative impact on public health.



Householder tenure - The median year in which householders moved in to owner-occupied households. A more recent median year indicates a larger negative impact on public health.



Single parent households – The percentage of family households (households with at least one child) with no more than one parent. A higher percentage indicates a larger negative impact on public health.



USDA food desert status - Block groups that are located within a food desert indicate a larger negative impact on public health. This methodology uses the U.S. Department of Agriculture definition of a food desert, which are low-income Census tracts where a significant share of the population is greater than one mile from the nearest supermarket.

Each block group receives a score for each factor. For all factors except for food desert status, the score is relative to the study area. Block groups in the top 20% for each factor receive 2 points; block groups in the top 50% (but not in the top 20%) receive 1 point. Block groups within food deserts receive 2 points. A block group's SDOH score is the sum total of its score for each of the eight factors. A higher SDOH score indicates greater potential public health concern.

As an example, the following page shows the SDOH scoring breakdown for the 10 block groups in the Route 9 Corridor Master Plan study area.

*State-level data have shown Blacks and Hispanics to be at elevated risk of poor health outcomes. There are many root causes of these observed racial/ethnic health disparities. These include: structural racism, residential segregation, limited healthy and affordable food access, heightened crime exposure, limited preventative care access, limited walking and bicycling activity, and more.

Example: Route 9 Corridor Master Plan Study Area

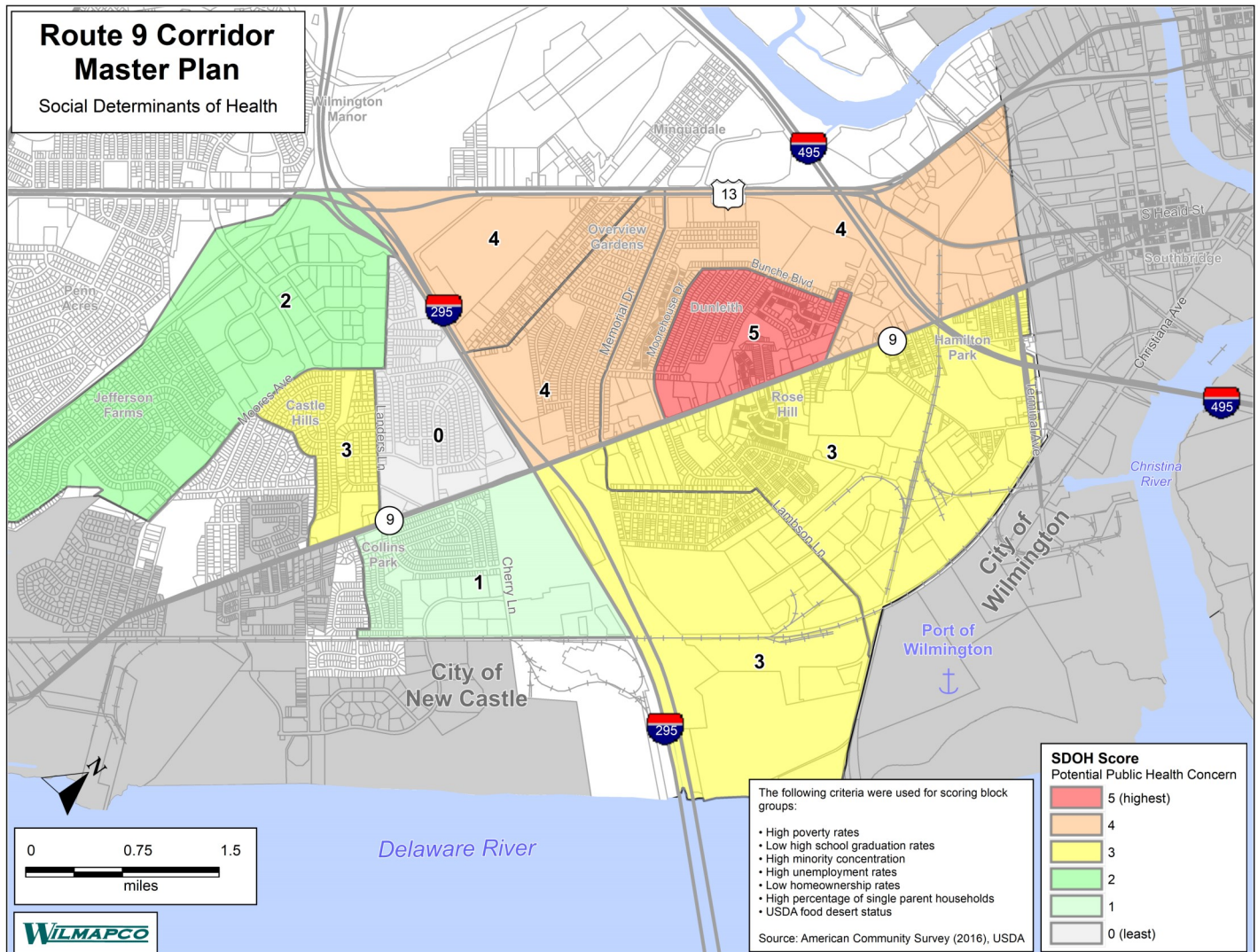
Block Group	Neighborhood(s)	Census Data							Social Determinants of Health (SDOH) Score									SDOH Score
		%HHs < Poverty	% HS Grad	% Minority	Employment	Home-ownership	Median Year Moved In	% Single Parent	Income	High School	Food Desert	Minority	Employment	Home-ownership	Median Year Moved In	% Single Parent	Total	
1	Dunleith, Oakmont	31.8%	75.3%	97.2%	89.4%	48.2%	2005	23.6%	2	1	2	2	1	2	2	1	13	5
2	Oakmont, Hazel dell	16.1%	91.1%	98.4%	94.9%	51.6%	2003	36.6%	0	0	2	2	0	2	1	2	9	4
3	Minquadale	16.5%	76.7%	50.8%	84.3%	80.2%	2006	28.5%	0	1	2	0	2	0	2	2	9	4
4	Overview Gardens, Garfield Park	14.0%	74.4%	90.1%	92.0%	71.5%	1999	24.1%	0	2	2	2	0	1	0	1	8	4
5	Mayview Manor, Holloway Terrace	29.8%	73.7%	51.8%	89.3%	81.7%	2003	21.8%	1	2	2	0	1	0	1	0	7	3
6	Rose Hill, Simonds Gardens, Hamilton Park, Eden Park	15.6%	79.1%	85.9%	90.3%	61.5%	2002	19.3%	0	1	2	2	0	1	0	0	6	3
7	Castle Hills	36.2%	81.2%	47.3%	80.6%	80.6%	1996	26.6%	2	0	0	0	2	0	0	1	5	2
8	Jefferson Farms, Swanwyck Gardens, Landers Park	17.8%	87.0%	58.7%	93.5%	80.7%	2002	18.5%	1	0	2	0	0	0	0	0	3	2
9	Collins Park	9.8%	85.6%	60.5%	90.6%	83.1%	2003	9.6%	0	0	0	1	0	0	1	0	2	1
10	Swanwyck Estates	1.9%	92.2%	28.8%	91.1%	81.3%	2004	10.5%	0	0	0	0	0	0	1	0	1	0

This chart shows detailed data for the 10 block groups in the Route 9 corridor. For each block group, the chart shows approximately which neighborhoods it covers, the raw Census data for each factor, the resulting score for each Census data factor as well as food desert status, and the sum total score. This score was then normalized to a 5-point scale for use in the Route 9 transportation project prioritization process. The corresponding map is shown on the following page.

This chart is ordered by SDOH score, with the highest score at the top. Block group 1, containing parts of the Dunleith and Oakmont neighborhoods, showed the highest potential negative public health impact. It was in the top 20% of block groups in the study area for poverty rate, minority population, renter rate, and median year in which householders moved in. This block group was in the top 50% for low high school graduation rate, unemployment rate, and percent of single-parent households. It is also located in a food desert.

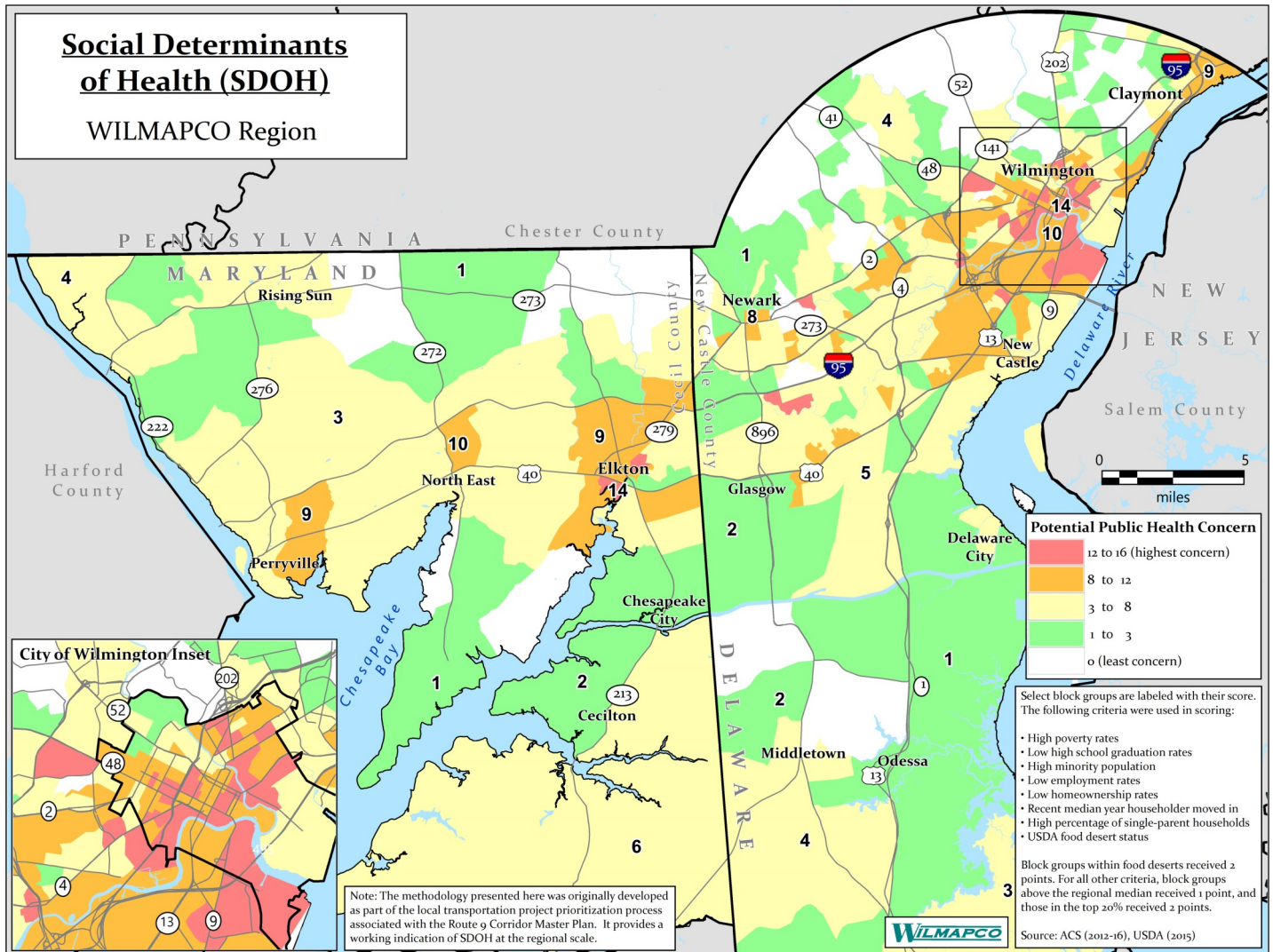
Block groups 9 and 10, containing the Collins Park and Swanwyck Estates neighborhoods, showed the least potential negative health impact. Compared to the rest of the study area, these block groups have relatively high income levels, employment, graduation rates, and homeownership. They are less diverse than other block groups in the area, and they are not in a food desert.

Social Determinants of Health in the Route 9 Corridor



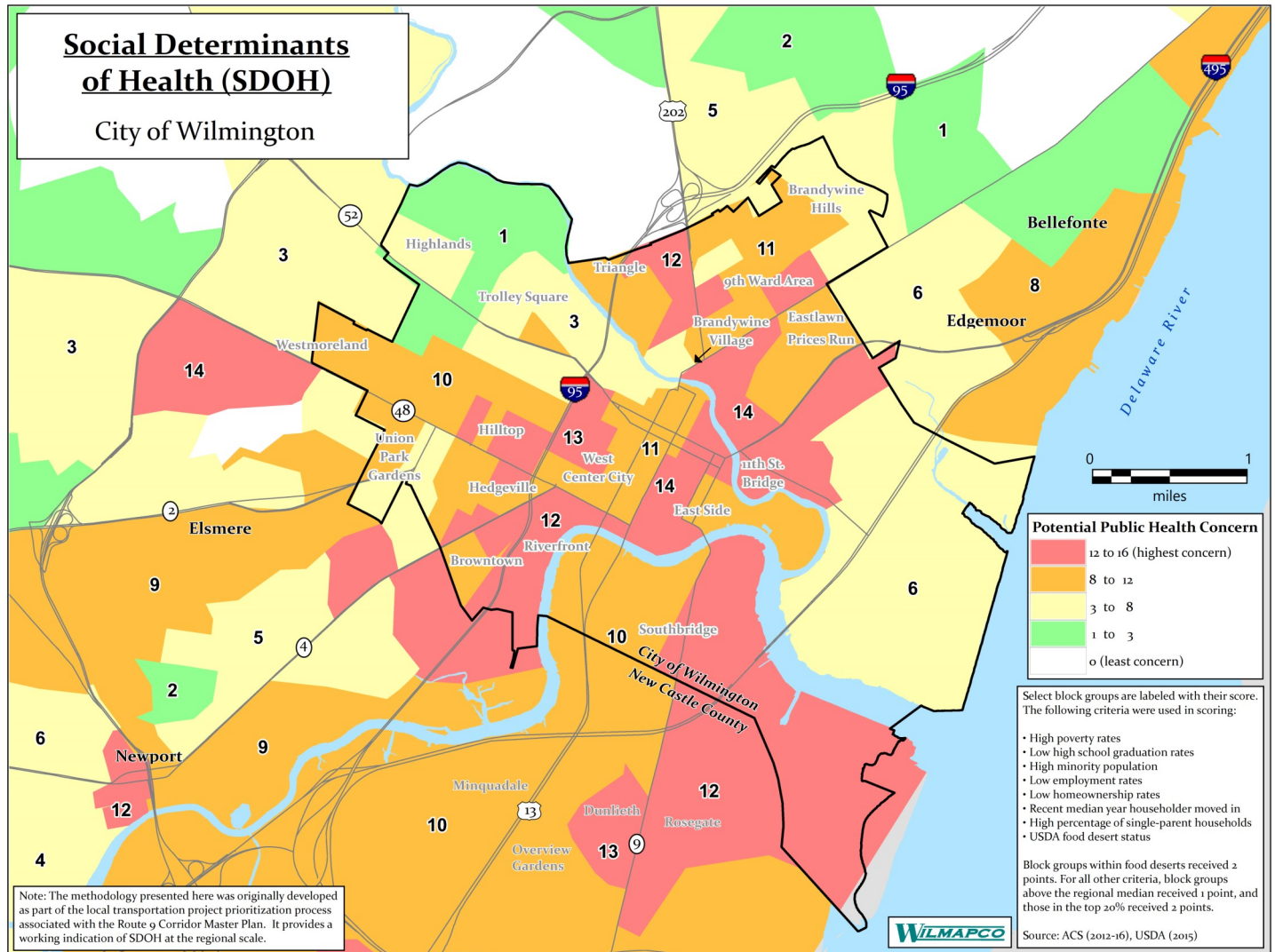
- The block group containing parts of the Dunleith and Oakmont neighborhoods had the highest negative potential public health impact in the study area. This neighborhood has a relatively high poverty rate, minority population, renter population, and adults who did not graduate high school. It is also located in a food desert.
- I-295 is a social and economic barrier in the study area. Neighborhoods north of I-295 had higher SDOH scores than neighborhoods south of I-295. As a result, transportation projects north of I-295 received a boost in their overall priority scores. The transportation projects in the Route 9 Corridor Master Plan will improve safety of walking, bicycling, and public transportation conditions, so focusing on implementing projects in the areas with the greatest public health concern will provide benefits to the communities most in need.
- The Swanwyck Estates neighborhood, located south of I-295 and west of Route 9, had the lowest SDOH score in the study area. This neighborhood has relatively high income levels, graduation rates, and homeownership. It is the least diverse neighborhood in the study area. A grocery store was recently opened in this neighborhood, and as a result it is not in a food desert.

Social Determinants of Health in the WILMAPCO Region



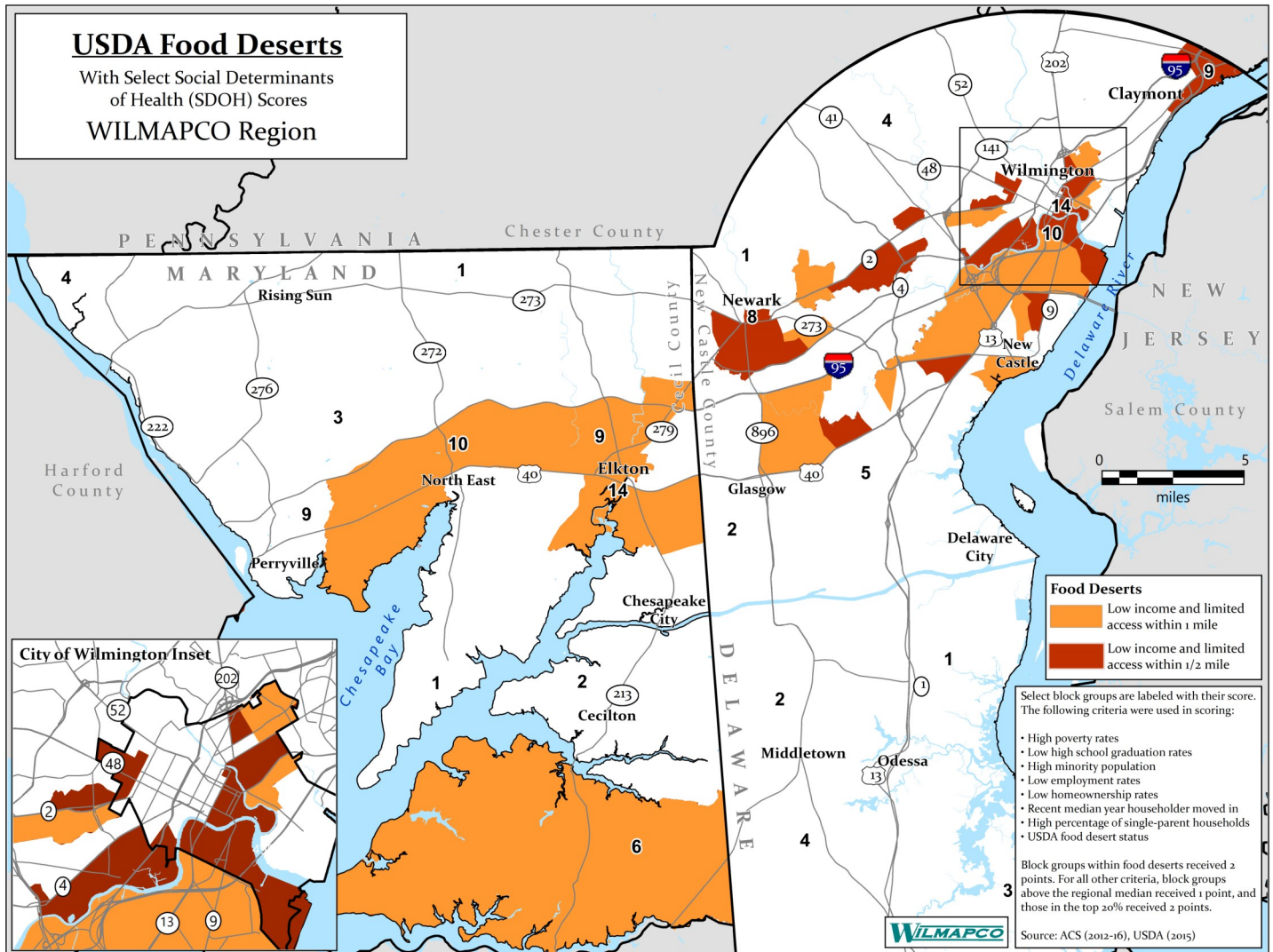
- In the WILMAPCO region, the potential public health concern from social factors tends to be highest in central Wilmington, with SDOH scores as high as 14 in the downtown core. Downtown Elkton has similar results, but with fewer block groups affected.
- SDOH scores are moderate to high in Newark, Elkton, North East, and Perryville. These towns have higher concentrations of renters, households in poverty, and single parent households. Parts of Elkton have higher unemployment rates, have shorter householder tenure, and are in a food desert, resulting in a higher score.
- SDOH scores are lowest in rural areas. These areas tend to have low minority populations, high homeownership rates, and longer householder tenure. However, some rural areas have moderate unemployment rates. There are few food deserts in rural areas, except for the block groups south of Cecilton, Maryland, which are in a food desert and received an SDOH score of 6.

Social Determinants of Health in the City of Wilmington



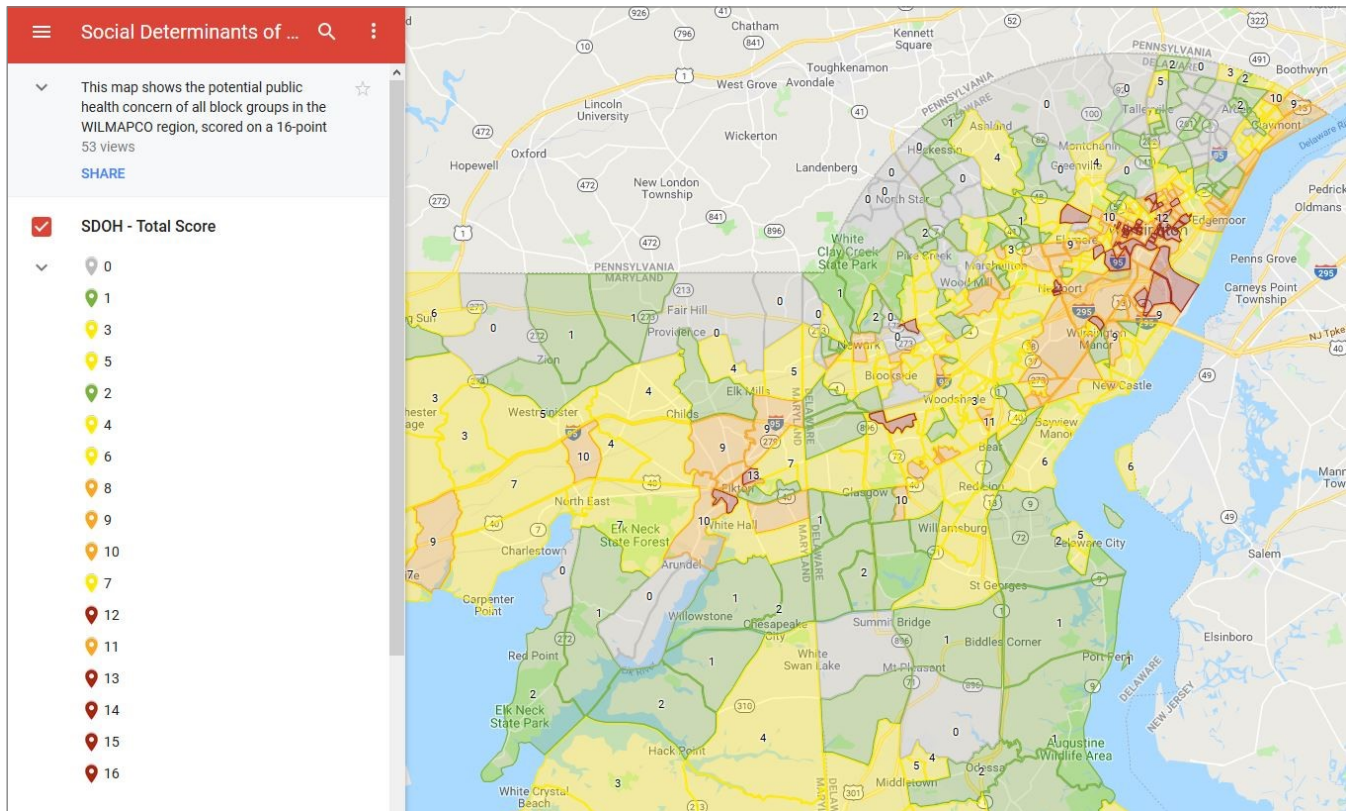
- This map shows SDOH scores in the city of Wilmington, zoomed in from the regional map on page 6. As a result, these scores are relative to the entire WILMAPCO region.
- On the whole, the City of Wilmington received moderate to high SDOH scores, ranging from 10 to 14 in downtown Wilmington and surrounding neighborhoods. These neighborhoods consistently have a high concentration of renters, minority populations, single parent households, and poverty, as well as relatively high unemployment rates. Fortunately, however, nearly the entire city has access to a grocery store within one mile.
- The Highlands and Trolley Square neighborhoods are an exception to this trend. These two neighborhoods have high graduation rates, employment rates, and homeownership. They have relatively small minority populations and few single parent households. Compared to the Highlands, Trolley Square has more renters and shorter householder tenure.
- Inner suburbs surrounding Wilmington tend to have low SDOH scores, with a few exceptions. The West Park community, just west of Westmoreland, has a score of 14 as a result of high poverty, minority populations, unemployment, single parent households, and renters.
- Neighborhoods along the Route 9 (New Castle Avenue) corridor south of the city line have SDOH scores relative to the WILMAPCO region. These neighborhoods are ranked relative to one another in the map on page 5.

Food Deserts in the WILMAPCO Region



- This map shows food deserts in the WILMAPCO region as defined by the U.S. Department of Agriculture. Also shown are select SDOH scores. See the map on page 6 for a more detailed breakdown of these scores.
- Food deserts with low income and limited access to grocery stores within 1 mile are shown in orange. Block groups within these areas were given 2 points towards their SDOH score.
- For comparison, food deserts with limited access to grocery stores within one half of a mile are shown in brown (and also include the areas shown in orange).
- Nearly all food deserts in the WILMAPCO region are located along the I-95 corridor. Much of Newark has access to a food desert within 1 mile, but not within a half mile.
- Owing to its density, most of the city of Wilmington has good access to grocery stores, but some neighborhoods are in half-mile food deserts. Food deserts in Northeast Wilmington are a chronic problem.
- The block groups south of Cecilton, Maryland, as well as areas surrounding Elkton and North East, are the only rural food deserts in the WILMAPCO region.

Interactive Map

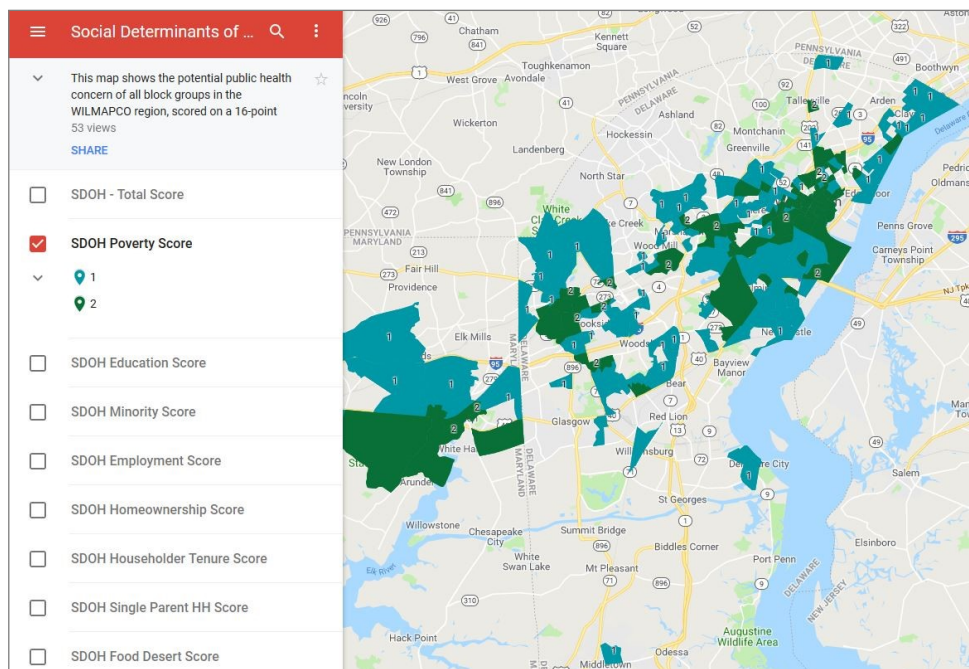


The data presented in this report can also be viewed as an interactive map. A link to the interactive map is available at <http://www.wilmapco.org/data-reports>.

By default, the interactive map shows all of the block groups in the WILMAPCO region, labeled and colored by their total SDOH score. Clicking on a single block group will display the detailed scoring breakdown and raw Census data for that block group.

The interactive map also includes layers for each of the 8 factors in the SDOH scoring methodology. Layers can be shown or hidden by checking or unchecking the boxes on the left side of the screen. This map is best viewed with one layer checked at a time.

The layers for each factor show block groups that received a non-zero score for that factor. The sample screenshot to the right shows the Poverty Score layer. Block groups that received a score of one or two for this factor are shown.



Summary of Data

The following table summarizes WILMAPCO region data for each of the factors in the SDOH scoring process. For comparison, summary data is also shown for Cecil County, New Castle County, suburban New Castle County (the county excluding Wilmington) and the city of Wilmington.

	WILMAPCO Region	Cecil County	New Castle County	Suburban NCC	City of Wilmington
Household Poverty Rate	11%	9%	11%	9%	24%
High School Graduation Rate	90%	88%	90%	91%	83%
Minority Population	37%	14%	41%	36%	73%
Employment Rate	93%	93%	92%	93%	89%
Homeownership Rate	68%	73%	68%	72%	45%
Single Parent Households	30%	25%	31%	26%	56%
Median Year Householder Moved In	2004	2003	2004	2003	2007
Block Groups in Food Deserts	15%	30%	13%	13%	12%

Overall Observations

- In the city of Wilmington, the percentage of households below the poverty line, minorities, and single parent households are each roughly double the WILMAPCO regional average. The city's poverty rate is nearly triple that of the rest of the county.
- The high school graduation rate is steady throughout the region at about 90%, except for Wilmington where it is 83%. Employment rates follow a similar trend.
- Homeownership is highest in Cecil County at 73%, and lowest in Wilmington at 45%.
- Homeowners in the city of Wilmington have slightly shorter median tenure than the regional median.
- Less than 12% of the city of Wilmington is within a one-mile food desert. However, nearly 30% of block groups in Cecil County are in a food desert, double that of the region as a whole.

Recommended Strategies

- The Social Determinants of Health methodology can be used to help identify the areas of greatest need within a defined study area or metropolitan region.
- Observing the individual data factors that contribute to an area's SDOH score can pinpoint the community's specific needs, and how those needs can be addressed through transportation and land use recommendations.
- In the WILMAPCO region, projects within the city of Wilmington and along the I-95 corridor should provide local employment opportunities, mixed-income housing, and improved access to grocery stores and other food vendors.

More Information

The data used in this report is retrieved from the U.S. Census Bureau and the U.S. Department of Agriculture. Census data comes from the American Community Survey (ACS) 5-year averages from 2012 to 2016. Census data can be downloaded for any location in the United States from <https://data.census.gov/>. This report uses the Census block group as its unit of study.

The U.S. Department of Agriculture food desert data is available from the Food Access Research Atlas at <https://www.ers.usda.gov/data-products/food-access-research-atlas/>. The Food Access Research Atlas provides an interactive map of food deserts, definitions of food deserts, and a spreadsheet that can be joined to a GIS shapefile. Food deserts are identified at the Census tract level. Census tracts are made up of block groups, allowing for easy comparison with ACS block group data.

2019 – WILMAPCO DATA REPORT

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The Wilmington Area Planning Council (WILMAPCO) is a Metropolitan Planning Organization serving New Castle County, Delaware and Cecil County, Maryland.

This data report is part of a series that summarizes key data to allow both residents and decision-makers to better understand our region.

Other data reports are available at:
www.wilmapco.org/data-reports.

