## Lancaster County MPO <br> 2023-2026 Transportation Improvement Program (TIP) Environmental Justice Benefits and Burdens Analysis

## Introduction

Environmental Justice (EJ) refers to the implementation of Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which directs procedures to be put in place to identify and address any disproportionately high and adverse human health or environmental effects on minority and low-income population groups. The fundamental principles of EJ can be defined as:

- To avoid, minimize, or mitigate disproportionately high and adverse human health or
environmental effects, including social and economic effects, on minority and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the
transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority
and low-income populations.
Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national origin. More importantly for this analysis, Executive Order (EO) 12898 requires Federal agencies to achieve environmental justice by identifying and addressing disproportionately high and adverse human health or environmental effects, including the interrelated social and economic effects of their programs, policies, and activities, on minority populations and low-income populations in the United States. This requirement applies to the Lancaster County MPO as a recipient of federal funding, and recognizes the importance given to addressing the needs of low-income and minority populations as outlined in the Metropolitan Transportation Planning regulations (23 CFR 450).

Based on the Office of Management and Budget (OMB) Policy Directive 15, Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, issued in 1997, five minimum categories were established to address data on race. They are:

Black -- a person having origins in any of the black racial groups of Africa.
Hispanic -- a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
Asian -- a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent.

American Indian and Alaskan Native -- a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition.

Native Hawaiian or Other Pacific Islander -- a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

In addition, low-income persons are defined as follows:
Low-Income -- a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

EO 12898, and the Department of Transportation (DOT) and Federal Highway Administration (FHWA) Orders on Environmental Justice address persons belonging to any of these groups, and these groups as they apply to Lancaster County are the basis for this analysis.

## Core Elements Process

In the development of 2023-2026 Transportation Improvement Program, the Lancaster County MPO conducted an Environmental Justice Benefits and Burdens analysis using the Core Elements Methodology that has been recommended by FHWA and the Federal Transit Administration (FTA):

1. Identify environmental justice populations.
2. Assess conditions and identify needs.
3. Evaluate burdens and benefits.
4. Identify and address disproportionate and adverse impacts and inform future
planning efforts.

## Core Elements Process Steps



The identification of these populations is essential to establishing effective strategies for engaging them in the transportation planning process. When meaningful opportunities for interaction are established, the transportation planning process can effectively draw upon the perspectives of communities to identify existing transportation needs, localized deficiencies, and the demand for transportation services. Mapping of these
populations not only provides a baseline for assessing impacts of the transportation improvement program, but also aids in the development of an effective public involvement program.

Fundamentally, the principles of Environmental Justice are aimed at preventing the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations. The establishment of transportation funding as a performance measure is consistent with this principle by supporting the evaluation of funding priorities considered for connects2040, including the four-year TIP. Mapping and analyzing transportation funding can assist in making the prioritization process more open, transparent, and accountable to the public. In developing this funding performance measure, the core issue is whether the types of projects and the total project investment are equitably distributed throughout Lancaster County.

## Identifying Minority and Low-Income Populations

A statistical analysis of Lancaster County was performed to determine population averages, minority population, and low-income population. If necessary, project alternatives will be developed to prevent disproportionately high or adverse effects on any identified minority or low-income populations.

Minority population is defined as any readily identifiable group of Black, Hispanic, Asian American, American Indian and Alaskan Native, and Native Hawaiian or Other Pacific Islander who live in geographic proximity and who would be similarly affected by any proposed FHWA program, policy, or activity. Based on 2019 American Community Survey (ACS) Data, the average minority population rate in Lancaster County is 18.02 percent as shown in Table 1.

The low-income population is defined as any readily identifiable group of persons at or below the Department of Health and Human Services poverty guidelines who live in a geographic proximity who would be similarly affected by a proposed FHWA program, policy, or activity. The average low-income rate based on the status of all ages in the 2019 ACS Data for Lancaster County is 10.15 percent as shown in Table 2.

Table 1: Profile of Minority Populations, 2019

| Demographic Indicator | Lancaster County, Pennsylvania |  |
| :---: | :---: | :---: |
|  | County Population | County Percentage |
| Total | 540,999 |  |
| White, Non-Hispanic | 443,533 | 81.98\% |
| Minority | 97,466 | 18.02\% |
| Black or African American, Non-Hispanic | 18,900 | 3.50\% |
| American Indian and Alaska Native, Non-Hispanic | 476 | 0.10\% |
| Asian alone, Non-Hispanic | 11,796 | 2.20\% |
| Native Hawaiian and Other Pacific Islander, Non-Hispanic | 89 | 0.00\% |
| Some other race, Non-Hispanic | 476 | 0.10\% |
| Two or more races, Non-Hispanic | 9,014 | 1.70\% |
| Hispanic | 56,715 | 10.50\% |

Source: 2015-2019 ACS

Table 2: Profile of Low-Income Populations, 2019

| Demographic Indicator | Lancaster County, Pennsylvania <br> County Percentage |  |
| :--- | ---: | ---: |
| Total | 528,680 |  |
| Low-Income Households |  |  |
| Low-Income Population | 18,911 | $9.38 \%$ |
| Source: $2015-2019$ ACS | 53,659 | $10.15 \%$ |

Please refer to Appendix A for an explanation of differences between total county population for minority and low-income populations.
The maps on the following pages depict the locations of environmental justice populations and households in Lancaster County. Figure 1 shows the concentrations of minority populations by census block groups based on 2015-2019 ACS data. Figure 2 shows the concentrations of households below the county average for low-income by census block groups, also based on 2015-2019 ACS data. Figure 3 shows concentrations of minority populations by the density of those populations throughout the county. Figure 4 shows concentrations of low-income populations by the density of those populations throughout the county.

Figure 1: Concentrations of Minority Populations by Census Block Groups


Figure 2: Concentrations of Low Income Populations by Census Block Groups


Figure 3: Lancaster County Minority Populations


Figure 4: Lancaster County Low Income Populations
$\qquad$ Lancaster county
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## Existing Conditions Prior to 2023-2026 TIP

In order to analyze benefits and adverse effects of transportation system changes, the MPO examined existing conditions of transportation assets throughout the county and safety performance relative to the minority and low-income populations. The use of the tables below will allow the MPO to track performance relative to the number of poor condition bridges, mileage of poor condition pavement, and number of nonmotorized crashes in the county, and identify performance disparities between minority and low-income populations and populations that are not minority or low-income.

Please refer to Appendix A for an explanation of differences between total poor condition bridge counts, poor pavement mileage, and bicyclistand pedestrian-related crash counts for minority population intervals and low-income population intervals.

Table 3: Population Totals by Minority Population Intervals

|  | Minority Population Intervals (Relative to Lancaster County Average of 18.02\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POPULATION | Less than Half |  | Greater than to <br> Twice as High | Twice as High to 4 Times as High | 4 Times Greater |  |
| Total Population | 246,830 | 118,795 | 97,339 | 58,481 | 19,554 | 540,999 |
| Total Population (in \%) | 46\% | 22\% | 18\% | 11\% | 4\% | 100\% |
| Minority Population | 9,464 | 15,910 | 24,439 | 31,402 | 16,251 | 97,466 |
| Minority Population (in \%) | 10\% | 16\% | 25\% | 32\% | 17\% | 100\% |

Source: 2015-2019 ACS

Lancaster County currently has 22 bridges in poor condition located within high minority block groups, which consists of $13 \%$ of total bridges in poor condition across the county. These block groups are accounted for in the third, fourth, and fifth columns in the table below under the headings "Greater than to Twice as High," "Twice as High to 4 Times as High," and " 4 Times Greater," respectively. This demonstrates that there is not a disproportionate number of poor bridges in high minority block groups within the county.

Table 4: Distribution of Total Bridges and Poor Condition Bridges by Minority Population Intervals


After the implementation of the 2023-2026 TIP program, Lancaster County will have 21 bridges in poor condition located within high minority block groups, which consists of $14 \%$ of total bridges in poor condition across the county. This demonstrates that there will not be a disproportionate number of poor bridges in high minority block groups in the county.

Table 5: Distribution of Poor Condition Bridges and Total Bridge Deck Area by Minority Population Intervals

## BRIDGE

Poor Condition Bridge Count
Percentage
Total Bridge Deck Area (sq. ft.)
Percentage
Source: PennDO

Minority Population Intervals (Relative to Lancaster County Average of 18.02\%)

|  |  | Greater than to | Twice as High to |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Less than Half | Half to Equal | Twice as High | 4 Times as High | 4 Times Greater |  |
| 89 | 39 | 18 | 2 | 1 | 149 |
| $60 \%$ | $26 \%$ | $12 \%$ | $1 \%$ | $1 \%$ | $100 \%$ |
| $3,130,741.32$ | $1,493,844.84$ | $1,314,915.84$ | $282,684.01$ | $139,498.30$ | $6,361,684.31$ |
| $49 \%$ | $23 \%$ | $21 \%$ | $4 \%$ | $2 \%$ | $100 \%$ |

The pavement condition chart below indicates $65 \%$ of poor pavement mileage in Lancaster County occurs in high minority block groups. This demonstrates that a disproportionately high percentage of poor pavement mileage is present in block groups with higher concentrations of minority interval populations. This is particularly true in the interval where the minority population is greater than to twice as high as the average county minority population rate of $18.02 \%$.

Table 6: Distribution of Total Pavement Mileage and Poor Pavement Mileage by Minority Population Intervals

| PAVEMENT | Minority Population Intervals (Relative to Lancaster County Average of 18.02\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Greater than to Twice as High | Twice as High to 4 |  |  |
|  | Less than Half | Half to Equal |  | Times as High | 4 Times Greater |  |
| Federal Aid Segment Mileage | 284.34 | 160.72 | 127.1 | 42.5 | 9.81 | 624.46 |
| Percentage | 46\% | 26\% | 20\% | 7\% | 2\% | 100\% |
| Poor Pavement Mileage | 5.53 | 5.36 | 9.95 | 7.64 | 2.89 | 31.37 |
| Percentage | 18\% | 17\% | 32\% | 24\% | 9\% | 100\% |

Source: PennDOT

After the implementation of the 2023-2026 TIP program, $64 \%$ of poor pavement mileage in Lancaster County will be located in high minority block groups. This demonstrates that a disproportionately high percentage of poor pavement mileage will be present in block groups with higher concentrations of minority interval populations. This will be the case in particular in the interval where the minority population is greater than to twice as high as the average county minority population rate of $18.02 \%$.

Table 7: Distribution of Total Pavement Mileage and Poor Pavement Mileage by Minority Population Intervals

| PAVEMENT | Minority Population Intervals (Relative to Lancaster County Average of 18.02\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Greater than to | Twice as High to 4 |  |  |
|  | Less than Half | Half to Equal | Twice as High | Times as High | 4 Times Greater |  |
| Federal Aid Segment Mileage | 236.95 | 128.48 | 113.64 | 27.91 | 7.52 | 514.5 |
| Percentage | 46\% | 25\% | 22\% | 5\% | 1\% | 100\% |
| Poor Pavement Mileage | 5.53 | 5.36 | 9.79 | 6.98 | 1.99 | 29.65 |
| Percentage | 19\% | 18\% | 33\% | 24\% | 7\% | 100\% |

$27 \%$ of bicyclist-related crashes in the county occur in high minority block groups, demonstrating that there is not a disproportionately high percentage of this type of crash in high minority block groups within the county. It should be noted that all crash data in the three tables below specifically refers to fatal crashes or crashes with suspected serious injuries (SSI). This includes bicyclist-related crashes, pedestrian-related crashes, and combined bicyclist- and pedestrian-related crashes.

Table 8: Distribution of Bicyclist-Related Crashes by Minority Population Intervals

| B/CYCIF | Minority Population Intervals (Relative to Lancaster County Average of 18.02\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $S A F E T Y$ | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater |  |
| Total Crashes (Fatalities and SSI) | 795 | 339 | 301 | 150 | 41 | 1,626 |
| Percentage | 49\% | 21\% | 19\% | 9\% | 3\% | 100\% |
| Bicyclist-Related Crash Count | 23 | 9 | 6 | 5 | 1 | 44 |
| Percentage | 52\% | 20\% | 14\% | 11\% | 2\% | 100\% |

Source: PennDOT Statewide Crash Data, 2015-2019
$46 \%$ of pedestrian-related crashes in the county occur in high minority block groups, demonstrating that there is not a disproportionately high percentage of this type of crash in high minority block groups within the county. The distribution of these crashes is shown in the table below.

Table 9: Distribution of Pedestrian-Related Crashes by Minority Population Intervals

| PEDESTR/AN | Mino | ulation Interv | lative to Lanc | County Average | 02\%) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $S A F E T Y$ | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater | Total |
| Total Crashes (Fatalities and SSI) | 795 | 339 | 301 | 150 | 41 | 1,626 |
| Percentage | 49\% | 21\% | 19\% | 9\% | 3\% | 100\% |
| Pedestrian-Related Crash Count | 64 | 31 | 39 | 29 | 14 | 177 |
| Percentage | 36\% | 18\% | 22\% | 16\% | 8\% | 100\% |

Source: PennDOT Statewide Crash Data, 2015-2019
$42 \%$ of bicyclist- and pedestrian-related crashes in the county occur in high minority block groups, demonstrating that there is not a disproportionately high percentage of this type of crash in high minority block groups within the county. The distribution of these crashes is shown in the table below.

Table 10: Distribution of Bicyclist- and Pedestrian-Related Crashes by Minority Population Intervals

| B/KE/D | Minority Population Intervals (Relative to Lancaster County Average of 18.02\%) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $S A F E T Y$ | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater | Total |
| Total Crashes (Fatalities and SSI) | 795 | 339 | 301 | 150 | 41 | 1,626 |
| Percentage | 49\% | 21\% | 19\% | 9\% | 3\% | 100\% |
| Bike-Pedestrian Crash Count | 87 | 40 | 45 | 34 | 15 | 221 |
| Percentage | 39\% | 18\% | 20\% | 15\% | 7\% | 100\% |

Safety projects do not have an after implementation of the 2023-2026 TIP program, since there are too many variables associated with projected safety benefits of projects.

Figure 5: 2023-2026 TIP Project Locations and Concentrations of Minority Populations by Census Block Groups
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Table 11: Population Totals by Low-Income Population Intervals

| POPULATION | Low-Income Population Intervals (Relative to Lancaster County Average of 10.15\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater |  |
| Total Population | 207,856 | 127,217 | 122,912 | 62,768 | 7,927 | 528,680 |
| Total Population (in \%) | 39\% | 24\% | 23\% | 12\% | 2\% | 100\% |
| Low-Income Population | 5,091 | 9,095 | 17,427 | 18,011 | 4,035 | 53,659 |
| Low-Income Population (in \%) | 9\% | 17\% | 32\% | 34\% | 8\% | 100\% |

Source: 2015-2019 ACS

Lancaster County currently has 56 bridges in poor condition located within low-income block groups, which consists of $31 \%$ of total bridges in poor condition across the county. These block groups are accounted for in the third, fourth, and fifth columns in the table below under the headings "Greater than to Twice as High," "Twice as High to 4 Times as High," and " 4 Times Greater," respectively. This demonstrates that there is not an imbalanced number of poor bridges within block groups with a higher concentration of low-income populations in the county.

Table 12: Distribution of Total Bridges and Poor Condition Bridges by Low-Income Population Intervals

| BR/DGE | Low-Income Population Intervals (Relative to Lancaster County Average of 10.15\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater |  |
| Total Bridge Count | 1,200 | 490 | 393 | 92 | 25 | 2,200 |
| Percentage | 55\% | 22\% | 18\% | 4\% | 1\% | 100\% |
| Poor Condition Bridge Count | 72 | 56 | 40 | 16 | 0 | 184 |
| Percentage | 39\% | 30\% | 22\% | 9\% | 0\% | 100\% |
| Total Bridge Deck Area (sq. ft.) | 3,155,031.72 | 1,506,003.94 | 1,315,996.84 | 282,684.01 | 139,498.30 | 6,399,214.80 |
| Percentage | 49\% | 24\% | 21\% | 4\% | 2\% | 100\% |

After the implementation of the 2023-2026 TIP program, Lancaster County will have 44 bridges in poor condition located within low-income block groups, which consists of $28 \%$ of total bridges in poor condition across the county. This demonstrates that there will not be an imbalanced number of poor bridges within block groups with a higher concentration of low-income populations in the county.

Table 13: Distribution of Poor Condition Bridges and Total Bridge Deck Area by Low-Income Population Intervals

| BRIDGE | Low-Income Population Intervals (Relative to Lancaster County Average of 10.15\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Greater than to | Twice as High to |  |  |
|  | Less than Half | Half to Equal | Twice as High | 4 Times as High | 4 Times Greater |  |
| Poor Condition Bridge Count | 65 | 47 | 34 | 10 | 0 | 156 |
| Percentage | 42\% | 30\% | 22\% | 6\% | 0\% | 100\% |
| Total Bridge Deck Area (sq. ft.) | 3,144,343.52 | 1,496,939.94 | 1,305,991.74 | 270,692.10 | 139,498.30 | 6,357,465.60 |
| Percentage | 49\% | 24\% | 21\% | 4\% | 2\% | 100\% |

The pavement condition chart below indicates $60 \%$ of poor pavement mileage in Lancaster County occurs in low-income block groups. This demonstrates that a disproportionately high percentage of poor pavement mileage is present in block groups with higher concentrations of lowincome interval populations. This is particularly true in the interval where the low-income population is twice as high to 4 times as high as the average county low-income population rate of 10.15\%.

Table 14: Distribution of Total Pavement Mileage and Poor Pavement Mileage by Low-Income Population Intervals

| PAVENENT | Low-Income Population Intervals (Relative to Lancaster County Average of 10.15\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Greater than to | Twice as High to 4 |  |  |
|  | Less than Half | Half to Equal | Twice as High | Times as High | 4 Times Greater |  |
| Federal Aid Segment Mileage | 260 | 149 | 165 | 79 | 7 | 660 |
| Percentage | 39\% | 23\% | 25\% | 12\% | 1\% | 100\% |
| Poor Pavement Mileage | 6 | 7 | 7 | 10 | 3 | 33 |
| Percentage | 18\% | 21\% | 21\% | 30\% | 9\% | 100\% |

Source: PennDOT

Source: PennDOT Statewide Crash Data, 2015-2019

Following the implementation of the 2023-2026 TIP program, $60 \%$ of poor pavement mileage in Lancaster County will be located in low-income block groups. This indicates that a disproportionately high percentage of poor pavement mileage will be present in block groups with higher concentrations of low-income interval populations. This will be the case in particular in the interval where the low-income population is twice as high to 4 times as high as the average county low-income population rate of $10.15 \%$.

Table 15: Distribution of Total Pavement Mileage and Poor Pavement Mileage by Low-Income Population Intervals

| PAVEMENT | Low-Income Population Intervals (Relative to Lancaster County Average of 10.15\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Greater than to | Twice as High to 4 |  |  |
|  | Less than Half | Half to Equal | Twice as High | Times as High | 4 Times Greater |  |
| Federal Aid Segment Mileage | 213.67 | 129.58 | 128.23 | 71.77 | 6.77 | 550.02 |
| Percentage | 39\% | 24\% | 23\% | 13\% | 1\% | 100\% |
| Poor Pavement Mileage | 6 | 6.41 | 6.41 | 9.1 | 2.78 | 30.7 |
| Percentage | 20\% | 21\% | 21\% | 30\% | 9\% | 100\% |

Source: PennDOT
$41 \%$ of bicyclist-related crashes occur in low-income block groups, which demonstrates that there is not an imbalanced number of this type of crash within block groups with a higher concentration of low-income populations in the county. It should be noted that all crash data in the three tables below specifically refers to fatal crashes or crashes with suspected serious injuries (SSI). The distribution of these crashes is shown in the table below.

Table 16: Distribution of Bicyclist-Related Crashes by Low-Income Population Intervals

| BICVCIE | Low-Inc | Population Inte | (Relative to Lan | er County Averag | 10.15\%) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $S A F E T Y$ | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater | Total |
| Total Crashes (Fatalities and SSI) | 685 | 434 | 375 | 203 | 23 | 1,720 |
| Percentage | 40\% | 25\% | 22\% | 12\% | 1\% | 100\% |
| Bicyclist-Related Crash Count | 19 | 7 | 11 | 5 | 2 | 44 |
| Percentage | 43\% | 16\% | 25\% | 11\% | 5\% | 100\% |

Source: PennDOT Statewide Crash Data, 2015-2019
$53 \%$ of pedestrian-related crashes occur in low-income block groups. This indicates that a slightly higher percentage of this type of crash occurs in block groups with higher concentrations of low-income interval populations in the county. The distribution of these crashes is shown in the table below.

Table 17: Distribution of Pedestrian-Related Crashes by Low-Income Population Intervals

## PEDESTRIAN Low-Income Population Intervals (Relative to Lancaster County Average of 10.15\%)

| SAFETY | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| shes (Fatalities and SSI) | 685 | 434 | 375 | 203 | 23 | 1,720 |
| ge | 40\% | 25\% | 22\% | 12\% | 1\% | 100\% |
| an-Related Crash Count | 50 | 38 | 53 | 38 | 9 | 188 |
| ge | 27\% | 20\% | 28\% | 20\% | 5\% | 100\% |

Source: PennDOT Statewide Crash Data, 2015-2019
$52 \%$ of bicyclist- and pedestrian-related crashes occur in low-income block groups. This demonstrates that, collectively, a slightly higher percentage of this type of crash occurs in block groups with higher concentrations of low-income interval populations in the county. However, by individual population interval, the greatest number of bicycle- and pedestrian-related crashes took place in the interval where the low-income population measures less than half of the average county low-income population rate of $10.15 \%$. The distribution of these crashes is shown in the table below.

Table 18: Distribution of Bicyclist- and Pedestrian-Related Crashes by Low-Income Population Intervals

| BIKE/PED | Low-Income Population Intervals (Relative to Lancaster County Average of 10.15\%) |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SAFETY | Less than Half | Half to Equal | Greater than to Twice as High | Twice as High to 4 Times as High | 4 Times Greater |  |
| Total Crashes (Fatalities and SSI) | 685 | 434 | 375 | 203 | 23 | 1,720 |
| Percentage | 40\% | 25\% | 22\% | 12\% | 1\% | 100\% |
| Bike-Pedestrian Crash Count | 69 | 45 | 64 | 43 | 11 | 232 |
| Percentage | 30\% | 19\% | 28\% | 19\% | 5\% | 100\% |

Source: PennDOT Statewide Crash Data, 2015-2019

Safety projects do not have an after implementation of the 2023-2026 TIP program, since at this point in time there are too many variables associated with projected safety benefits of projects.

Figure 6: 2023-2026 TIP Project Locations and Concentrations of Low Income Populations by Census Block Groups


## Appendix A

Difference between total county population counts for minority and low-income population intervals:

The total population for Lancaster County appears differently for minority population intervals and low-income population intervals in this environmental justice benefits and burdens analysis. The data set for both is the U.S. Census Bureau's 2015-2019 American Community Survey 5Year Estimates, but the total County population figure for minority population intervals is derived from Table B03002: Hispanic or Latino Origin by Race and the figure for the low-income population intervals is derived from Table S1701: Poverty Status in the Past 12 Months. Table B03002 lists the total Lancaster County population as 540,999. Table S1701 lists the total population as 528,680 and indicates that this is the "population for whom poverty status is determined". Poverty status cannot be determined for people in institutional group quarters (such as prisons or nursing homes), college dormitories, military barracks, and living situations without conventional housing (and who are not in shelters).

Differences in total transportation assets and bicyclist- and pedestrian-related crash counts between high minority and low-income block groups:
The data process document titled Statewide Environmental Justice Analysis Methodology: 2023-2026 Pennsy/vania Transportation Improvement Program notes that "a map layer was created from dissolving together block groups of the same interval classification within each county and region for low-income and minority concentration. These 'interval areas' describe the contiguous areas within a county that fall within the same classification. Transportation assets and crash locations were considered in the analysis of an interval area if located within 50 meters of the boundary of the dissolved interval area. In other words, the dissolved interval areas were buffered 50 meters for the analysis. This would allow the capture of features on the border of block groups or providing access to them."

Please see Figure 7 below for a graphic representation of how the data process described above can result in differing counts for transportation assets. While the example applies to counts for total bridges and poor condition bridges, it is also applicable to pavement mileage, and bicyclistand pedestrian-related crash counts. In the example, there are ten bridges total. However, due to the buffering methodology described above, the total count is 16 for the high minority intervals and 13 for the low-income intervals. This difference is due to the geography of where block groups that fall within the same classification are located. The "strict" count does not rely on the dissolving block group methodology, and therefore there is no overlap in counts between neighboring block groups that fall within the same classification.

Figure 7: Hypothetical Bridge Counts in High Minority and Low-Income Block Groups


