

CHAPTER 3:

RESPONDING TO ENVIRONMENTAL JUSTICE (EJ) AND TITLE VI CONCERNS

The TIP is the agreed-upon list of priority projects for the region that can impact every resident of the Delaware Valley. As the region's MPO, DVRPC is mandated to ensure non-discrimination in all its programs and projects as a part of Title VI of the Civil Rights Act of 1964, including the TIP, as well as respond to federal guidance on environmental justice (EJ) under the 1994 President's Executive Order on Environmental Justice (#12898). At the release of this TIP document, there is no published guidance for MPOs related to Executive Order 14008: Tackling the Climate Crisis at Home and Abroad and Justice40, which aims to deliver 40 percent of the overall benefits of federal investments in climate and clean energy, including sustainable transportation, to disadvantaged communities. DVRPC is prepared to incorporate this executive order into the TIP process once implementation guidance is formalized.

In addition to federal guidance, there is guidance from PennDOT for the state of Pennsylvania that DVRPC also follows, referred to as the "South Central Pennsylvania Environmental Justice Unified Process and Methodology Guide." See Appendix G: for DVRPC's Title VI Policy Statement.

The programming process that DVRPC facilitates during TIP updates is dynamic and complex, and must realistically address federal and state requirements, and diverse needs, in addition to Title VI and EJ considerations. Some of the considerations that influence how the region's resources are allocated in the TIP to address the needs throughout the region include:

- balancing funds across various areas, such as consistency with DVRPC's Long-Range Plan vision, goals, and objectives;
- resource distribution to different geographic areas;
- different geographic needs;
- technical needs;
- political realities;
- competing transportation modes (transit, bicycle, pedestrian, freight, road);
- capital expansion;
- asset preservation;
- varying degrees of agency capacity levels to implement/sponsor a project;
- eligibility requirements of various funding sources (e.g. HSIP versus CMAQ)
- number of project candidates that meet funding eligibility requirements
- level of funding sources that the region expects; and
- performance-based planning and programming measures.

What Are EJ and Title VI?

EJ and Title VI are required components in the metropolitan planning process due to legislative and executive actions: the President's Executive Order 12898 from 1994, Title VI of the Civil Rights Act of 1964, and the USDOT Order on EJ in Minority Populations and Low-Income Populations 5610.2(a).

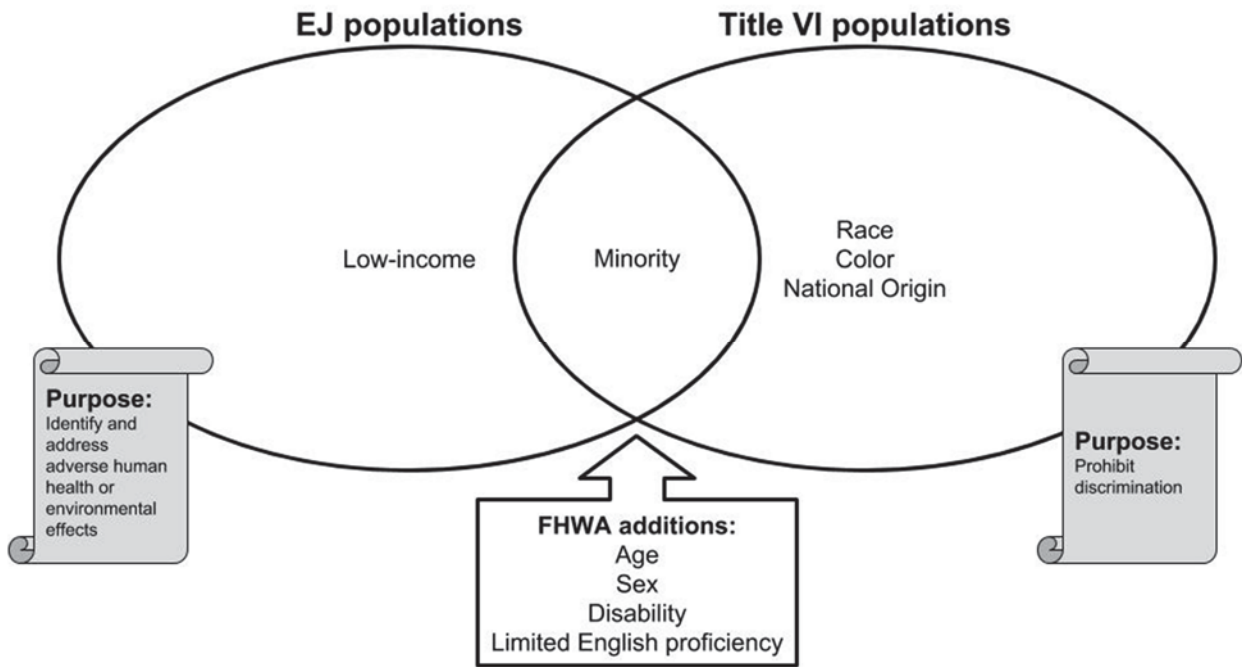
The 1994 President's Executive Order 12898 on Environmental Justice ensures that each agency receiving federal financial assistance will make EJ its mission "by identifying and addressing, as

appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." The principle of EJ in transportation ensures that projects, such as highway expansion, do not have a disproportionately negative impact on communities that have historically been isolated from and disregarded in the planning process.

Title VI of the Civil Rights Act of 1964, which served as the foundation for the EJ Executive Order, is a non-discrimination statute that states "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Additional guidance from the FTA and the FHWA encourage transportation agencies to follow non-discrimination guidelines based on sex, age, and disability.

In the transportation realm, the USDOT Order on Environmental Justice in Minority Populations and Low-Income Populations 5610.2(a) requires that transportation agencies fully consider EJ principles throughout planning and decision-making processes in the development of programs, policies, and activities. See Figure 4: for the overlap in populations and intent of Title VI and EJ. All transportation agencies must strive to offer the opportunity for people to be meaningfully involved in the development of transportation plans; all persons shall experience an equitable distribution of benefits and costs from transportation projects, programs, and policies; a person or population group should not be denied the benefits of the TIP; and agencies should avoid, minimize, or mitigate disproportionate burdens (high and adverse impacts) resulting from a program or project, especially for minority and low-income populations.

Figure 4: Populations and Purpose of EJ and Title VI



Source: DVRPC, 2022

Identifying Populations

DVRPC is committed to complying with the federal guidance on Title VI and EJ and the state guidance in the Environmental Justice Unified Process and Methodology Guide. DVRPC's Office of Capital Programs and Office of Communications and Engagement have been designated to address technical and public involvement activities, respectively, as they relate to Title VI and EJ for the TIP. To meet the requirements of the federal and state guidance, DVRPC has and will continue to conduct the following activities:

- Enhance its analytical capabilities to ensure that the Long-Range Plan and the TIP comply with Title VI;
- Identify residential, employment, and transportation patterns of low-income and minority populations, so their needs can be identified and addressed, and the benefits and burdens of transportation can be fairly distributed;
- Evaluate and, where necessary, improve the public outreach process to eliminate barriers and engage minority and low-income populations in regional decision-making.

DVRPC's technical work involves the evaluation of Title VI and EJ issues through quantitative and qualitative analyses and mapping. In 2001, DVRPC developed a technical assessment to identify populations of concern that may be directly and disparately impacted by the Commission's plans, programs, and planning processes. This assessment, now called Indicators of Potential Disadvantage (IPD), was significantly revised in 2010 and 2018. The IPD analysis is utilized in a variety of DVRPC plans and programs, including the TIP, and is available online at www.dvrpc.org/webmaps/IPD. For more information about DVRPC's Title VI Compliance Program and Public Involvement opportunities, please visit www.dvrpc.org/GetInvolved/TitleVI and www.dvrpc.org/GetInvolved/PublicParticipation.

IPD Methodology

The TIP selection process and program evaluation use DVRPC's IPD methodology to analyze projects that can be mapped. There are nine population groups that are currently analyzed via the IPD, all of which have been identified as communities of concern under Title VI and/or EJ:

- Ethnic Minority;
- Female;
- Foreign Born;
- Limited English Proficiency;
- Low-Income;
- Older Adults;
- Persons with Disabilities;
- Racial Minority; and
- Youth.

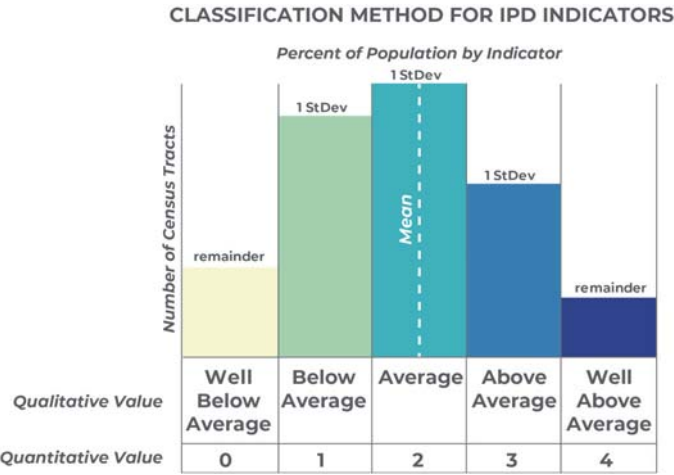
The IPD methodology evaluates each census tract in the region for the concentration of each of the nine IPD population groups listed above using American Communities Survey (ACS) data. This methodology is used in the Draft FY2023 TIP to understand the distribution of projects and how they may benefit or burden communities of concern, particularly focusing on the low-income, racial minority, and ethnic minority populations.

In the IPD methodology, the data for each of the indicators in the IPD analysis is split into five categories, which are determined by using the regional average to create standard deviations for each indicator. A score is correlated with each of the five categories to create a system for comparing the concentrations

of populations within TIP project areas. As Figure 5:below illustrates, a census tract’s “cumulative score” (an IPD score ranging from 0 to 36) is determined by each of the indicator’s individual scores:

- Well below average (score of 0);
- Below average (score of 1);
- Average (score of 2);
- Above average (score of 3); and
- Well above average (score of 4).

Figure 5: IPD Scoring Methodology



Source: DVRPC, 2022

For the purpose of the TIP, these summary scores are then again organized into five categories from “well below average” to “well above average,” to allow for regional comparisons and evaluation. SeeIndicators of Potential Disadvantage on page 104 for more information on IPD scores and categories:

- Well below average (scores from 0 to 6);
- Below average (scores from 7 to 12);
- Average (score from 13 to 18);
- Above average (scores from 19 to 24); and
- Well above average (scores from 25 to 36).

Demographic Analysis by Low Income, Racial Minority, and Ethnic Minority

Table 9: provides an overview of demographic data from the U.S. Census for the five-county Pennsylvania region of Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties. This includes information on minority and low-income populations, as well as other potentially disadvantaged populations such as people with disabilities and carless households. A comprehensive table including other minority populations available via US Census data is included in Appendix F:.

While White, Non-Hispanic persons represent over 60 percent of the region’s population, several minority groups, including Black or African American, Non-Hispanic (22 percent); Asian alone, Non-Hispanic (7 percent) and Hispanic (9 percent) comprise significant portions of the regional population. Several other

ethnic minority groups have small populations in the region, each representing less than one percent of the regional population. For the full list of population data, see Table F1 in Appendix F:.

Nearly 28 percent of Black or African American, Non-Hispanic people in the region have household incomes below the poverty line, as is the case with nearly 25 percent of Hispanic households. For details on poverty rates for other racial groups, see Table F2 in Appendix F:.

Maps depicting concentrations of low income and minority populations are included in Appendix F: as Figures F1 (Concentrations of Low Income Populations), F2 (Concentrations of Racial Minority Populations), and F3 (Concentrations of Ethnic Minority Populations).

Assessing Conditions and Needs

As detailed in Chapter 4, the IIJA/BIL requires state DOTs and MPOs to use Performance-Based Planning and Programming (PBPP) in transportation decision making. This includes establishing baseline performance metrics for the transportation network, setting data-driven targets, selecting projects to help meet those targets, and tracking progress. The goal of PBPP is to ensure targeted investment of transportation funds by increasing accountability and transparency and providing for better investment decisions that focus on outcomes related to goals including safety, infrastructure preservation, congestion reduction, and system reliability.

Early in the process of developing the Draft FY2023 TIP, DVRPC shared county-level maps displaying bridge and pavement asset condition and safety data alongside demographic information including low-income and minority populations with the PA TIP Subcommittee, in order to facilitate a conversation among stakeholders about how to maintain and improve the region's transportation network equitably, avoiding disproportionate impacts or levels of investment. Regional versions of the asset condition maps with demographic data are provided in Appendix F:.

In addition to the maps provided to the Subcommittee, an analysis of bridge and pavement conditions in communities of concern was conducted in order to identify any disproportionate impacts.

Bridge Conditions in Communities of Concern

Analysis of bridge conditions found that poor condition bridges are not disproportionately located in communities with average, above average, or well above average concentrations of either low-income or minority populations. However, there does appear to be a slightly higher percentage of bridge deck area in poor condition located in communities with above average and well above average concentrations of minority populations. This may be due to the large size of many bridge structures located in the City of Philadelphia. The Draft FY2023 TIP for PA includes over 35 new bridge projects, including several large bridges in the City of Philadelphia.

See Tables F3 and F4 in Appendix F: for more details. Maps of bridge conditions with demographic information are also included in Appendix F: as Figures F4, F5, and F6.

Table 9: Population Estimates in the DVRPC PA Region (2015-2019)

Population for 5 DVRPC PA Counties	Population Estimate	Regional Percentage
Total	4,113,818	100%
White, Non-Hispanic	2,485,458	60%
Minority	1,628,360	40%
Black or African American, Non-Hispanic	891,255	22%
Asian, Non-Hispanic	266,340	7%
Two or more races, Non-Hispanic	86,640	2%
Hispanic	367,541	9%
Low Income Population	1,105,811	27
Other Communities of Concern		
Limited English Proficiency (LEP)	147,413	4%
Persons with a Disability	521,593	13%
Female Head of Household with Child	232,150	6%
Elderly (65 years or older)	620,403	15%
Carless Households	152,626	4%

Source: American Community Survey, U.S. Census Bureau, 2015-2019

*Note that several other smaller minority populations are listed in Table F1 of Appendix F:

**DVRPC's IPD analysis defines Low-Income Populations as 200% of the poverty level or below.

Pavement Conditions in Communities of Concern

Analysis of pavement conditions found that there is no significant difference in the distribution of pavement in excellent condition among communities with varying levels of low-income or minority populations. However, the amount of pavement in poor condition is overrepresented in communities with above average and well above average concentrations of minority populations, and average, above average, or well above average concentrations of low-income populations. There are currently less than 200 miles of pavement in excellent condition in the entire five-county southeastern Pennsylvania region, while there are nearly 800 miles in good condition, close to 900 miles in fair condition, and approximately 700 miles of pavement in poor condition. This is consistent with PennDOT's Lowest Life-Cycle Cost approach, described in Chapter 2.

Pavement conditions in the region are addressed in two ways. The Draft FY2023 TIP includes over 30 Roadway Rehabilitation projects, including four programmed on the statewide Interstate Management Program. These tend to be larger, more complex projects that include improvements beyond the scope of simply addressing pavement conditions. PennDOT District 6 also has a five-year resurfacing plan to address pavement, which is updated periodically. This five-year resurfacing plan is funded with state maintenance dollars that do not appear in the TIP. The segments on the five-year plan are currently selected based primarily on asset management system data and analysis. Going forward, a more nuanced approach may be required to balance federal performance targets for pavement preservation

with ensuring that pavement condition is addressed equitably throughout the region. DVRPC will work with PennDOT District 6 to evaluate new methods to update this process. It is also important to note that several large packages of resurfacing projects programmed on the Draft FY2023 TIP in the City of Philadelphia will address pavement conditions, including many roadways in disadvantaged communities.

See Tables F5 and F6 in Appendix F: for more details. Maps of pavement condition with demographic information are also included in Appendix F: as Figures F7, F8, and F9.

Safety - Crashes and Communities of Concern

To understand crashes in communities of concern under Title VI and EJ, DVRPC uses mapping developed in the Commission's Crashes and Communities of Concern report (DVRPC Product #18022). This report is a study of the regional inequities in crash incidence, using a correlation analysis to determine which federally protected classes ("communities of concern") are at the greatest risk of severe vehicle crashes in the Greater Philadelphia region. Its main finding is that census tracts with above average concentrations of low-income, racial minority, ethnic minority, and disabled populations correlate with census tracts that have above average crash rates in the region. See Figures F10, F11, and F12 for maps depicting high concentrations of communities of concern and high rates of crashes.

Crash data is complex and multifaceted. PennDOT crash data from 2015 to 2019 were analyzed with census data and the results were distributed by PennDOT to Planning Partners ahead of the FY2023 TIP update. (See tables F7, F8, F9, and F10 in Appendix F:.) This data includes total crashes, fatal and suspected serious injuries, and separate analyses of crashes involving users of nonmotorized modes, including bicyclists and pedestrians. Analysis of this data did not show disproportionate trends in terms of total crashes. However, the data does indicate an overrepresentation of bicycle and pedestrian crashes in communities with above average and well above average concentrations of both low-income, and to a slightly lesser extent, minority populations. The trend is particularly alarming for pedestrian crashes in communities with well above average concentrations of low-income populations (see Table F9 in Appendix F:).

As noted in Chapter 4 Performance-Based Planning and Programming, there are multiple approaches for funding transportation projects which will improve safety. One core approach is developing projects that are funded with Highway Safety Improvement Program (HSIP) funds. PennDOT funds a Statewide HSIP Set-Aside Program. The DVRPC region, working with PennDOT District 6, also funds a program of Regional HSIP projects. Many of the projects in this pipeline will address pedestrian and bicycle crashes in communities with high concentrations of low-income and minority populations.

In Figure 6:, the crashes and communities of concern analysis is combined with concentrations of low-income communities and Draft FY2023 TIP projects programmed with Statewide and Regional HSIP funds. Similar maps with concentrations of racial and ethnic minority populations can be found in Appendix F: as Figures F13, F14, and F15.

Connections 2050 includes a Regional Vision Zero 2050 goal. In January of 2022, the DVRPC Board voted to adopt regional safety targets to meet that goal. Per federal regulations, if an MPO adopts regional safety targets, the adopted targets must cover the entire MPO region. The adopted regional safety targets represent fatal and suspected serious injury data for the combined nine-county bi-state DVRPC region. In taking this action, DVRPC's member governments and agencies agreed to plan and program projects that contribute toward meeting or exceeding the regional safety targets. This commitment can be seen in the new candidate projects selected for the Draft FY2023 TIP. Out of 11 total non-bridge projects, nearly half

focus explicitly on safety improvements. These include three roundabouts, one trail, and one complete streets project. All of the candidates added to the TIP scored well in the safety criteria of the TIP-LRP Project Benefit Evaluation Criteria analysis. All of these projects were funded with sources other than HSIP.

Access to Transit

To understand access to transit, DVRPC uses mapping developed in the Equity Through Access (ETA) project, which is used in the region's Coordinated Human Services Transportation Plan (CHSTP). See www.dvrpc.org/eta/ for more details. The ETA transit accessibility map layer shows a composite measure of regional public transit accessibility, considering how many areas a person could access in a 45-minute transit trip, the general number of essential services accessible in a 45-minute transit trip, frequency of service, and walkability of the block group to transit stations/stops.

Using accessibility data at the block group level, the four characteristics were combined and ranked 1 through 10. Higher values were assigned to areas that are less accessible by transit and lower values were assigned to areas that are more accessible by transit. Figure 7: shows this transit accessibility in the region.

Equity Analysis of the TIP

DVRPC evaluated the Draft FY2023 TIP for Pennsylvania in two ways in order to understand if investments could potentially impact protected population groups and/or communities of concern:

- program evaluation by mapping TIP projects; and
- program evaluation of the allocation of investments.

DVRPC evaluated each candidate project proposed for the Draft FY2023 TIP during the project evaluation process and designated an IPD score (see Project Selection and Evaluation Process on page x in Chapter 2 for more details). As a result of additional funding from the IIJA, the region was able to add over 35 new bridge and 11 non-bridge candidate projects. Each project was analyzed with the TIP-LRP Project Benefit Evaluation Criteria tool, which includes an equity measure. After a draft program was agreed upon by the PA TIP Subcommittee, the entire program of investments that can be mapped ("mappable") was evaluated by census tract by using the IPD analysis. This is called Program Evaluation. Not all TIP projects can be mapped ("Unmappable") due to the scale and nature of the improvement (e.g., MPMS #17928, Air Quality Partnership). Table F11 in Appendix F lists all 79 TIP projects in the Highway and Transit Programs that were not mappable and/or lacked statistically significant residential census data.

DVRPC's Program Evaluation of the TIP covered two aspects: the number of mappable projects (see the TIP Equity Analysis: Project Locations section below) and the amount of proposed investment (see the TIP Equity Analysis: Economic Investment section below). Although a handful of projects were left out of the analysis due to the inability to be represented geographically, FTA and FHWA considers utilizing geographic information systems (GIS) in equity analyses as a best practice for identifying potential impact to communities of concern. A 50-foot buffer was applied to the mapped features (points and lines) in order to capture potentially impacted census tracts.

Federal regulation requires that the TIP covers a minimum of four federal fiscal years of programming (FY23–FY26 for this TIP), but the DVRPC Draft FY2023 TIP for Pennsylvania demonstrates a longer planning and programming horizon in order to provide better information about expected resources and projects that will advance over time. The Draft FY2023 TIP for Pennsylvania details the four required federal fiscal years (FY23–FY26), as well as an additional eight years, for a total of 12 years of project

Figure 6: Pennsylvania Highway Safety Improvement Program (HSIP) and Concentrations of Low Income Populations

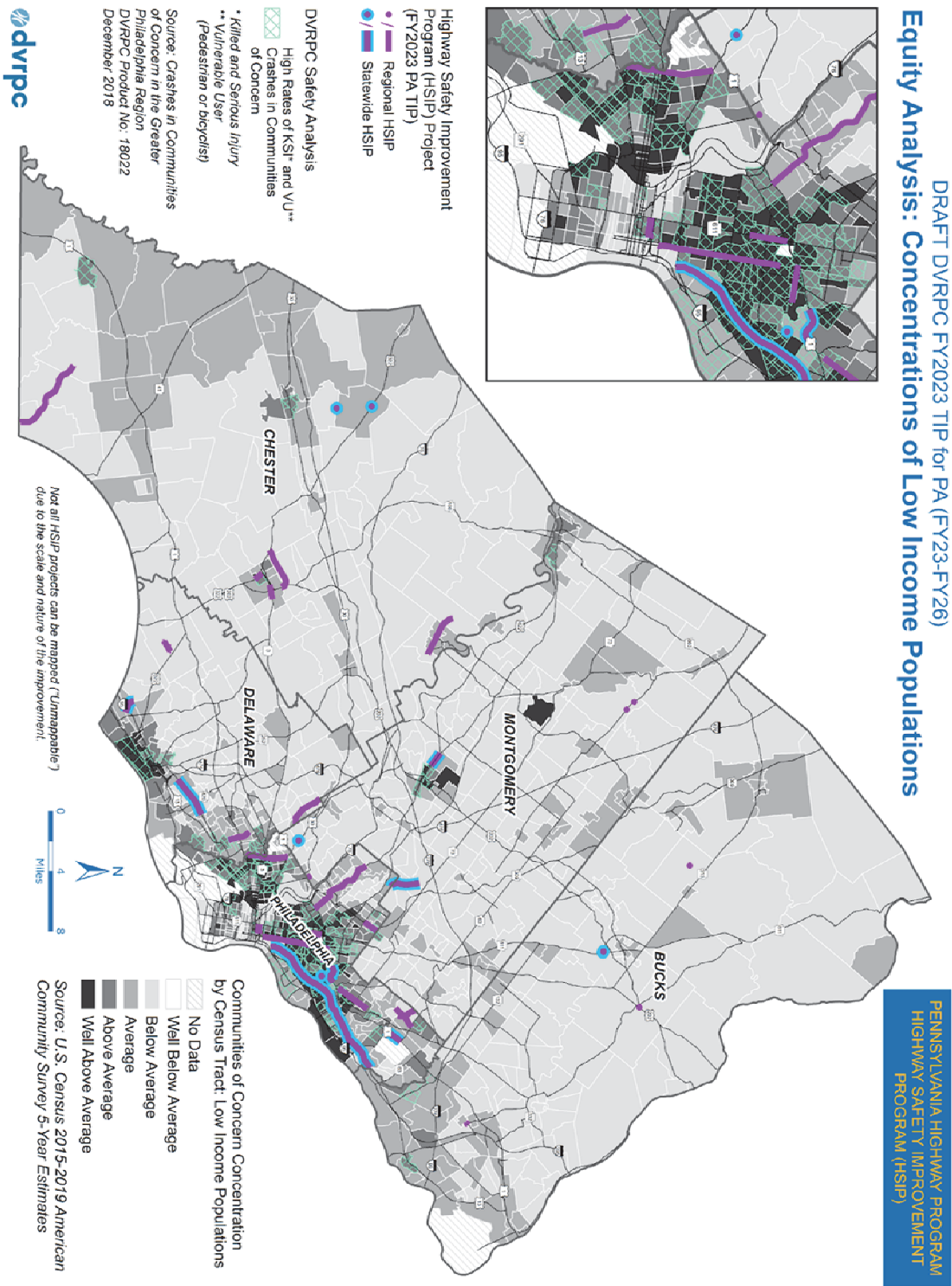
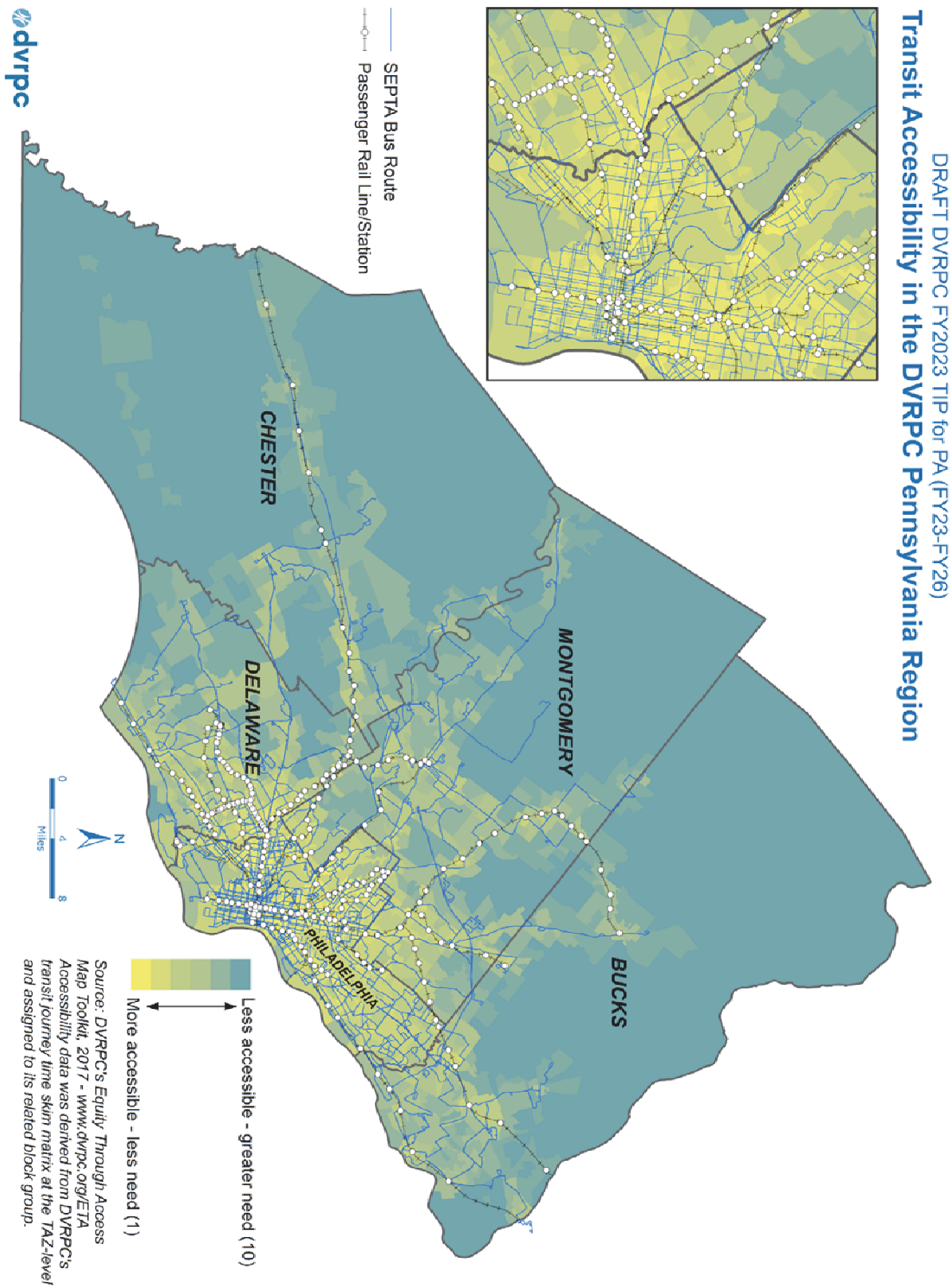


Figure 7: Transit Accessibility in the DVRPC Pennsylvania Region



programming from FY23–FY34. DVRPC analyzed mappable transportation projects in the Highway and Transit Programs for the next 12 years (FY23–FY34) with DVRPC’s IPD analysis (see the TIP Equity Analysis: Project Locations section below).

Note that EJ and Title VI are also considered early and continuously in the project delivery process before a project can be authorized for construction. Local agencies and project sponsors are additionally required to evaluate projects under the National Environmental Policy Act (NEPA) process to address potential environmental impacts of a transportation project. A transportation project (or program as a whole) can benefit communities, such as by improving existing or adding new transportation infrastructure. Transportation infrastructure, for instance, can support economic growth and reduce poverty within a community by providing residents and businesses safer and faster access to essential goods and services and by reducing transportation costs (e.g., travel time, vehicle operating and parking costs). In return, additional job creation, tax revenues, new businesses or business expansion, higher property values, and better air quality can result. Yet the same project (or program) can result in unintended burdens or negative externalities for the same and/or other communities. For example, improved vehicle access and reduced cost per vehicle mile may make it more difficult for pedestrians to travel and access goods and services, reduce property values, or lower business revenue by exposing them to more competition (e.g., easier for customers to access other businesses that they could not before).

Benefits and Burdens

While transportation infrastructure investments form the backbone of a healthy and prosperous region, their impacts may involve changes to traveler costs, accessibility, community cohesion, air quality, noise, visual quality, etc., that can affect one community more than another and at different times of the project process (before, during, and after construction).

Returning to the transportation context of EJ and Title VI of the Civil Rights Act of 1964, all people should be treated fairly and offered the opportunity to be meaningfully involved in transportation projects, programs, and policies; no one person or group should be denied the benefits of the TIP based on one’s race, color, or national origin; and MPOs should avoid, minimize, or mitigate disproportionate burdens resulting from a program (or project), especially for minority and low-income populations.

It is important to recognize at the outset that it is challenging to evaluate the potential impacts of transportation projects before they have been designed, as is the case with many of the projects programmed on the Draft FY 2023 TIP for Pennsylvania. There are many complex factors to consider beyond the location of the project and the presence of certain populations that determine the relative impacts of each individual project. Conducting the analysis that follows is still an emerging area of transportation planning. DVRPC and its partners will continue to advance the state of the practice with each update of the TIP.

Planning Process

Involving members of disadvantaged communities in the planning process early and often is an important part of preventing disproportionate burdens from transportation projects. DVRPC invites members of the public to participate in specific projects and on standing committees, such as the Public Participation Task Force (PPTF) and the Healthy Communities Task Force. DVRPC’s PPTF provides ongoing access to the regional planning and decision-making process, serves as a conduit for DVRPC information to organizations and communities, and assists with implementing public outreach strategies. The PPTF

includes members selected through an application process designed to maintain a regionally inclusive task force with diverse interests and backgrounds, including low-income and minority populations.

More broadly, members of the public are encouraged to engage with local municipalities, county planners, DVRPC, and PennDOT in the early stages of problem identification and project development. The PennDOT Connects process, described below, offers opportunities for engagement at several points during the project development process.

Project Selection - TIP-LRP Project Benefit Evaluation

As described in Appendix D, the goal of the TIP-LRP Project Benefit Evaluation Criteria is to provide a data-informed support tool to guide transportation project investment decisions. The Benefit Evaluation Criteria includes an Equity Criterion, weighted at 12 percent of the total score, which evaluates Equity as it is broadly defined in the Long-Range Plan. This analysis relies on DVRPC's IPD methodology, which includes low-income and minority populations, as well as other communities of concern. Projects score based on the IPD analysis for each census tract the project touches, including a population multiplier for each census tract. In addition, any project that increases vehicle speeds above 30 miles per hour or increases traffic volumes in census tracts with above-average or well-above-average IPD scores will be given a score of 0 points for the Equity Criterion.

The Benefit Criteria also includes consideration of areas with high concentrations of low income, minority, and other communities of concern as part of the Safety Criterion. Safety is the highest weighted criterion in the Benefit Evaluation analysis at 29 percent of the total score. Projects that implement safety strategies with proven benefits in locations identified by DVRPC's Crashes and Communities of Concern in the Greater Philadelphia region analysis ([Publication #18022](#)) are awarded additional points.

As a result of additional funding from the IIJA, the region was able to add over 35 new bridge and 11 non-bridge candidate projects. Each project was analyzed with the TIP-LRP Project Benefit Evaluation Criteria tool and the scores were used to select candidates for funding from a larger pool of county and regional priorities. There was sufficient funding to advance all of the bridge candidates submitted for the Draft FY2023 TIP. Many of these projects will improve asset conditions in communities of concern, including several large structures in the City of Philadelphia. Nearly half of the new non-bridge projects directly benefit communities of concern. All are categorized as the types of projects that have low potential for adverse impacts or are inherently beneficial to communities of concern. Maps of new candidate projects with demographic information are included in Appendix F: as Figures F22, F23, and F24.

PennDOT Connects

Highway funded candidate projects are also screened via PennDOT's local outreach initiative, *PennDOT Connects*, which considers community support, potential historic preservation, cultural resource, bicycle and pedestrian, transit, or environmental resource impacts, among other topics that can be identified prior to developing project scopes and estimates. DVRPC staff evaluates every project that comes through the PennDOT Connects process using the IPD mapping tool, in order to identify concentrations of low-income, minority, or other disadvantaged populations. Information about specific populations is provided to PennDOT Project Managers, along with contact information for local groups representing these populations, when such information is known.

Role of NEPA

PennDOT evaluates potential adverse effects on low-income and minority populations as part of the NEPA process. Recognizing that certain types of actions are unlikely to generate disproportionately high

and adverse effects on these populations, PennDOT, in consultation with the FHWA, Pennsylvania Division Office, has developed a list of projects exempt from detailed project level EJ/Title VI analysis. For more information, see [PennDOT Publication #746](#).

For non-exempt projects, information on disadvantaged populations that was gathered during the planning process, including PennDOT Connects outreach, is evaluated, and additional information about populations in the project area is gathered if necessary. This includes going beyond the immediate project location to assess impacts from detour routes or impacts to transit services, as applicable. DVRPC helps provide data and guidance to this process via PennDOT Connects and as requested at the project level. PennDOT supplements demographic data with field evaluations that consider a variety of factors, including access to essential goods and services. This analysis identifies and discusses both direct impacts and indirect/cumulative effects that would result from a given project, then determines if there are disproportionately high and adverse effects on communities of concern. If it is determined that there are disproportionate impacts which cannot be offset by project benefits, where feasible, strategies to minimize those effects are incorporated into the project.

Through its Title VI Compliance Program, DVRPC will continue to explore the benefits and burdens associated with transportation projects, particularly those that can be identified during the programming phase, in an effort to avoid, minimize, or mitigate disproportionate burdens. DVRPC's analysis of benefits and burdens considers all projects, including those that are typically categorized as exempt, in order to provide a comprehensive, high-level evaluation of the potential impacts of the projects on the TIP.

Economic Investment

The IPD methodology is used to understand the distribution of economic investments and the demographics of those locations that would benefit. Not all investments are universally beneficial, such as expanding a highway in a low-income neighborhood with low car ownership rates, but these more refined considerations of benefit and burden are analyzed in the NEPA process, as detailed above. DVRPC prioritizes evaluating the distribution of projects in order to meet the requirements of Title VI to show nondiscrimination and the guidance of environmental justice to understand the benefits and burdens.

Table 10: illustrates the 319 total mappable projects that were analyzed, with funding totaling \$8,949,176,000 over the 12 years of the Draft FY2023 TIP for Pennsylvania. These projects are analyzed in two ways: by IPD score correlated with the mappable project and by the three IPD indicators that are prioritized in the South Central Pennsylvania Environmental Justice Unified Process and Methodology Guide: low-income, racial minority, and ethnic minority. For the section using the IPD score, project costs are organized by the IPD score and all project costs in each IPD range are totaled. These totals are then compared to the total investment for the Draft FY2023 TIP in order to understand distribution of economic investment by concentration of IPD populations. As seen in the table, the largest amount of investment (49%) is located in communities with an above average IPD score and overall more investments are going to communities with higher concentrations of historically and currently underserved populations. For the sections that compare economic distribution by low-income, racial minority, and ethnic minority, project costs are organized by concentrations of each population and all project costs in each population are totals. These totals are then compared to the total investment for the Draft FY2023 TIP in order to understand the distribution of economic investment by that particular population group. As seen in the table, there is a higher amount of investment in above average to well above average low-income communities. This follows along with the TIP and Long-Range Plan's principle of equity, meaning distribution of benefit based on need rather than equality among all groups. There is a higher amount of investment in well below average to average racial minority and ethnic minority

communities, although this level of investment is roughly proportional to the overall populations of those communities, compared to the entire region. In addition, several large projects located in communities with well below average to average concentrations of minority populations will have broad benefits for other communities due to their importance to the transportation network. These numbers are also impacted by the fact that some of SEPTA's large programs are unmappable, including the SEPTA Bus Purchase Program (MPMS #90512) which represents nearly a billion dollars of investment from FY23 to FY34 and will have many direct benefits for communities of concern. Nevertheless, DVRPC will continue to work with regional stakeholders to ensure investments consider historically and currently underserved populations, including analysis of all new candidate projects with the TIP-LRP Project Benefit Evaluation Criteria.

Table 10: Economic Investment in Communities of Concern (Mapped Projects FY23 – FY34)

Population	Cost (\$ in thousands)	Percent of Investment
All IPDs (Score)		
Well Below Average (1-7)	0	0%
Below Average (8-14)	750,374	8%
Average (15-21)	3,295,535	37%
Above Average (22-28)	4,412,140	49%
Well Above Average (29-36)	491,127	6%
Low-Income Only (Percentage of Census Tract)		
Well Below to Average (0.0 – 36.4%)	3,280,561	37%
Above to Well Above (36.5 - 100.0%)	5,668,615	63%
Racial Minority Only (Percentage of Census Tract)		
Well Below to Average (0.0 – 48.7%)	6,202,224	69%
Above to Well Above (48.8 - 100.0%)	2,746,952	31%
Ethnic Minority Only (Percentage of Census Tract)		
Well Below to Average (0.0 – 16.2%)	6,248,656	70%
Above to Well Above (16.3 - 100.0%)	2,700,520	30%
Total Cost of Mapped Projects (FY23 – FY34) (\$000)	\$8,949,176	100%

Source: DVRPC, 2022

DVRPC is not able to assign IPD scores and/or population percentages to projects that are unmappable or that are located in census tracts that lack statistically significant residential census data, so those projects were excluded from the analysis.

Statewide Interstate Management Program

The Interstate Management Program (IMP) is part of the Pennsylvania STIP. It was created to proactively address the maintenance and reconstruction of the state's aging Interstate infrastructure. Funds are allocated to specific projects selected by PennDOT at the statewide level. For the TIP Equity Analysis,

DVRPC analyzed 40 IMP projects in the region, totaling more than \$2.8 billion over FY23–FY34. Those highway projects, including projects to repair and improve I-95 in the City of Philadelphia, I-76 in Montgomery County, I-476 in Delaware County, and the I-95/322 interchange in Delaware County, are listed in a separate IMP section of the TIP document.

It is important to acknowledge that the development of the federally funded interstate highway system has been shaped in part by the legacy of racist and discriminatory practices. Some interstate highways divided communities when constructed and have since had many negative impacts on low-income and minority communities, including air quality, noise, and visual quality. At the same time, these facilities have come to provide critical access to destinations, ports and airports, and major employment centers. Maintaining a state of good repair on the interstate system in terms of bridge and pavement condition is an essential component of federal performance management goals, as is improving the reliability of the interstate system, including for freight movements. (See Chapter 4 for more information.) As decisions are made about redesigning and rebuilding these structures, planners and community groups are exploring ideas for creative, green and sustainable ground-level enhancements for those living and working in the neighborhoods along these corridors, where feasible. The I-95 projects in the City of Philadelphia include many such improvements. See page 447 for more information about the Interstate Management Program in the DVRPC Region.

There are three new IMP projects in the Draft FY2023 TIP. One is a sinkhole repair project in Montgomery County, which does not directly impact communities with above average concentrations of low-income or minority populations. The second is a bridge rehabilitation project in the City of Philadelphia, which does intersect with census tracts that have above average concentrations of low-income populations. This project type has a lower potential for adverse impacts. The third is the new I-95 Bridge Rehabilitation: Island Avenue to Philadelphia Navy Yard project. Although this project does not intersect with census tracts that include above average or well above average concentrations of low-income or minority populations, the public-private partnership to finance the rehabilitation work could impact low-income residents through proposed new tolls. The design process for this project has included, and will continue to include extensive outreach and modeling to minimize, mitigate, or avoid these impacts, as part of the Planning and Environmental Linkages process.

Categorization of Projects

Categorizing projects by their potential burdens or benefits enhances the transparency of a spatial investment analysis and project selection. Knowing a project's impact type clarifies the implications of that project being located near an EJ or non-EJ population. See Table 11: for the categorization of projects.

The majority of the projects in the Draft FY2023 TIP fall under the lower potential for impact and low potential for impact categories. There are no projects in the Draft FY2023 TIP that fall under the projects of concern category.

Half of the mappable projects on the IMP intersect with a census tract with above average or well above average concentrations of low-income and/or minority populations. However, all of the projects fall under the lower potential for impact or low potential for impact categories. There are no projects in the Draft FY2023 TIP IMP that fall under the projects of concern category.

Table 11: Potential Impact of Mapped and Unmapped PA TIP Projects by Type (FY23 – FY34)

Project Categories for EJ Analysis	Potential Impact Type	Number of Projects in PA FY2023 TIP	Percentage of Projects in Draft FY2023 TIP
<ul style="list-style-type: none"> New Right-of-Way Roadway Expansion 	Projects of concern: High potential for adverse impacts	0	0%
<ul style="list-style-type: none"> Roadway and Bridge Maintenance Roadway New Capacity Bridge Repair or Replacement Roadway Rehabilitation 	Lower potential for adverse impacts / potentially beneficial	161	45%
<ul style="list-style-type: none"> Safety Studies Intersection/ Interchange Improvements Transit Improvements Bicycle/ Pedestrian Improvements Signal/ITS Improvements Streetscape 	Low potential for adverse impact / inherently beneficial	162	45.2%
<ul style="list-style-type: none"> Other 	Unknown or little to no potential for adverse impact / inherently beneficial	35	9.8%

Total number of projects: 358 (285 mapped, 73 unmapped)

Source: DVRPC, 2022

While the NEPA process is focused on avoiding and mitigating excessive burdens and adverse effects of transportation projects, it is also important to recognize the clear benefits of many projects on the Draft FY2021 PA TIP for the communities where the projects are located.

Taking a closer look at some of the projects in the categories above, there are numerous projects in the “Lower” and “Low” potential for adverse impact/inherently beneficial categories that are focused on providing benefits to communities with higher than average concentrations of Low-Income, Racial Minority, and Ethnic Minority populations. These include dozens of projects to repair bridges, pavement, and transit infrastructure, as well as numerous projects to improve safety. Specific examples of inherently beneficial projects in communities with high concentrations of EJ and Title VI populations include:

- The Cramp Elementary School Traffic Safety Improvements (MPMS #111507) project will implement pedestrian and other safety improvements in the vicinity of the Cramp Elementary School in the City of Philadelphia.

Table 12: Potential Impact of PA TIP IMP Projects by Type (FY23 – FY34)

Project Categories for EJ Analysis	Potential Impact Type	Number of Projects in PA Draft FY2023 TIP	Percentage of Projects in Draft FY2023 TIP
<ul style="list-style-type: none"> • New Right-of-Way • Roadway Expansion 	Projects of concern; High potential for adverse impacts	0	0%
<ul style="list-style-type: none"> • Roadway and Bridge Maintenance • Roadway New Capacity • Bridge Repair or Replacement • Roadway Rehabilitation 	Lower potential for adverse impacts / potentially beneficial	9	22.5%
<ul style="list-style-type: none"> • Safety • Studies • Intersection/ Interchange Improvements • Transit Improvements • Bicycle/ Pedestrian Improvements • Signal/ITS Improvements • Streetscape 	Low potential for adverse impact / inherently beneficial	26	65%
<ul style="list-style-type: none"> • Other 	Unknown or little to no potential for adverse impact / inherently beneficial	5	12.5%

Total number of projects: 40 (34 mapped, 6 unmapped)

Source: DVRPC, 2022

- The North Delaware Riverfront Greenway Section 3 (MPMS #79832) and Pennypack Trail - State and Rhawn Crossing (MPMS #105849) projects will expand trail infrastructure.
- The Boulevard Pedestrian Safety and Direct Bus Improvements project (MPMS #111506) will continue to make pedestrian and other safety improvements to enhance SEPTA's Boulevard Direct Bus service on Roosevelt Boulevard.
- The I-95 Noise Abatement project (MPMS #108910) will evaluate and implement noise abatement measures along I-95 between US 322 and I-476 in the City of Chester and Chester Township, Delaware County.
- The new 5th Street Improvements project (MPMS #118035) will design and construct complete street improvements, and the Spring Garden Connector - Phase 1 project (MPMS #118034) will develop a complete street design to better and more safely accommodate all road users. Both of these projects are located in the City of Philadelphia.
- The new Dekalb Street Two-Way Reconstruction project (MPMS #118032) in Norristown, Montgomery County, will reconstruct a critical roadway and provide operational improvements.

The maps on the following pages illustrate mappable highway, transit, and interstate projects in the Draft FY2023 PA TIP along with concentrations of low-income Populations. Similar maps with concentrations of racial and ethnic minority populations can be found in Appendix F:as figures F16, F17, F18, F19, F20, and F21

Figure 8: Highway Projects and Concentrations of Low Income Populations

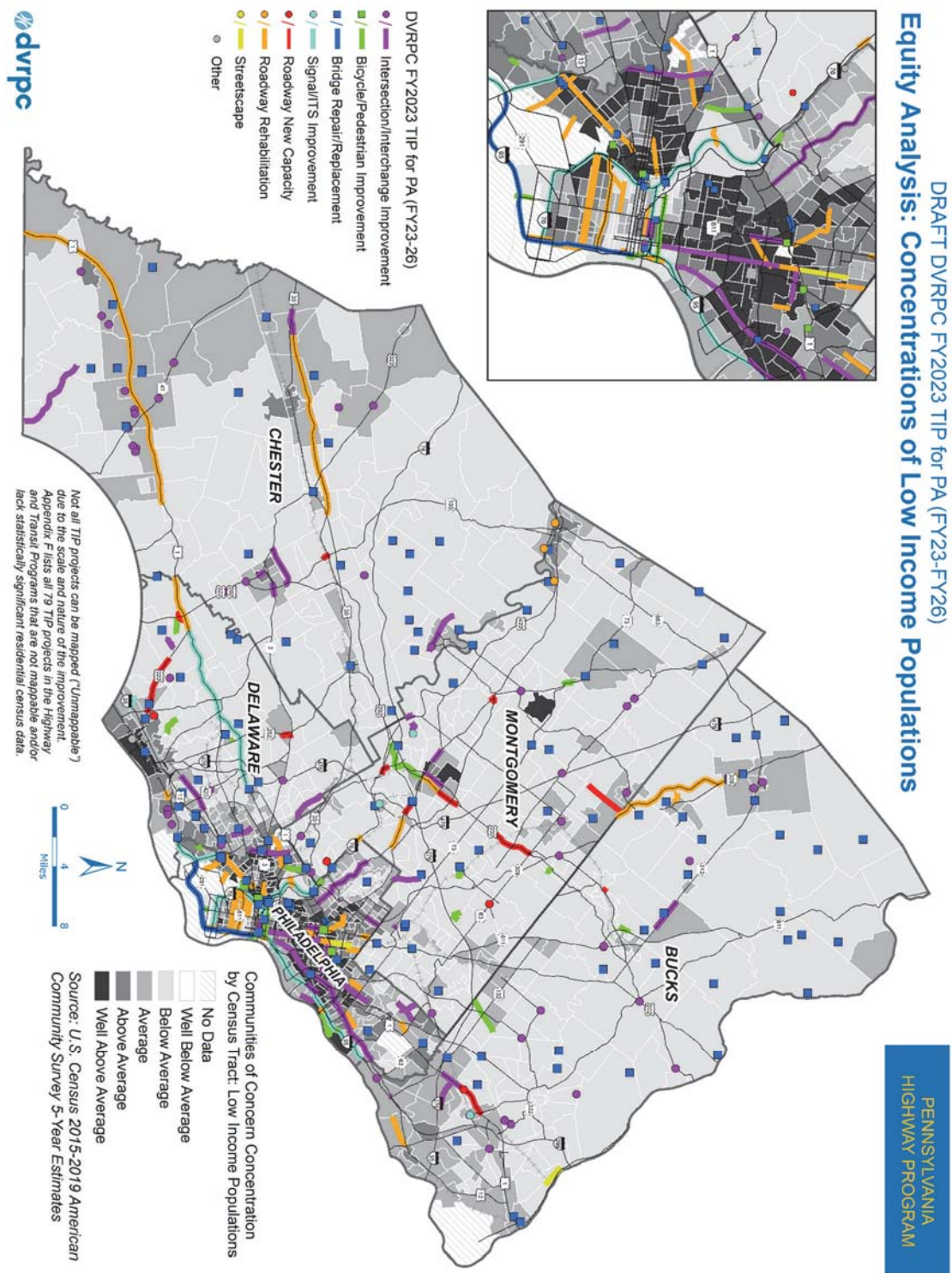


Figure 9: Transit Projects and Concentrations of Low Income Populations

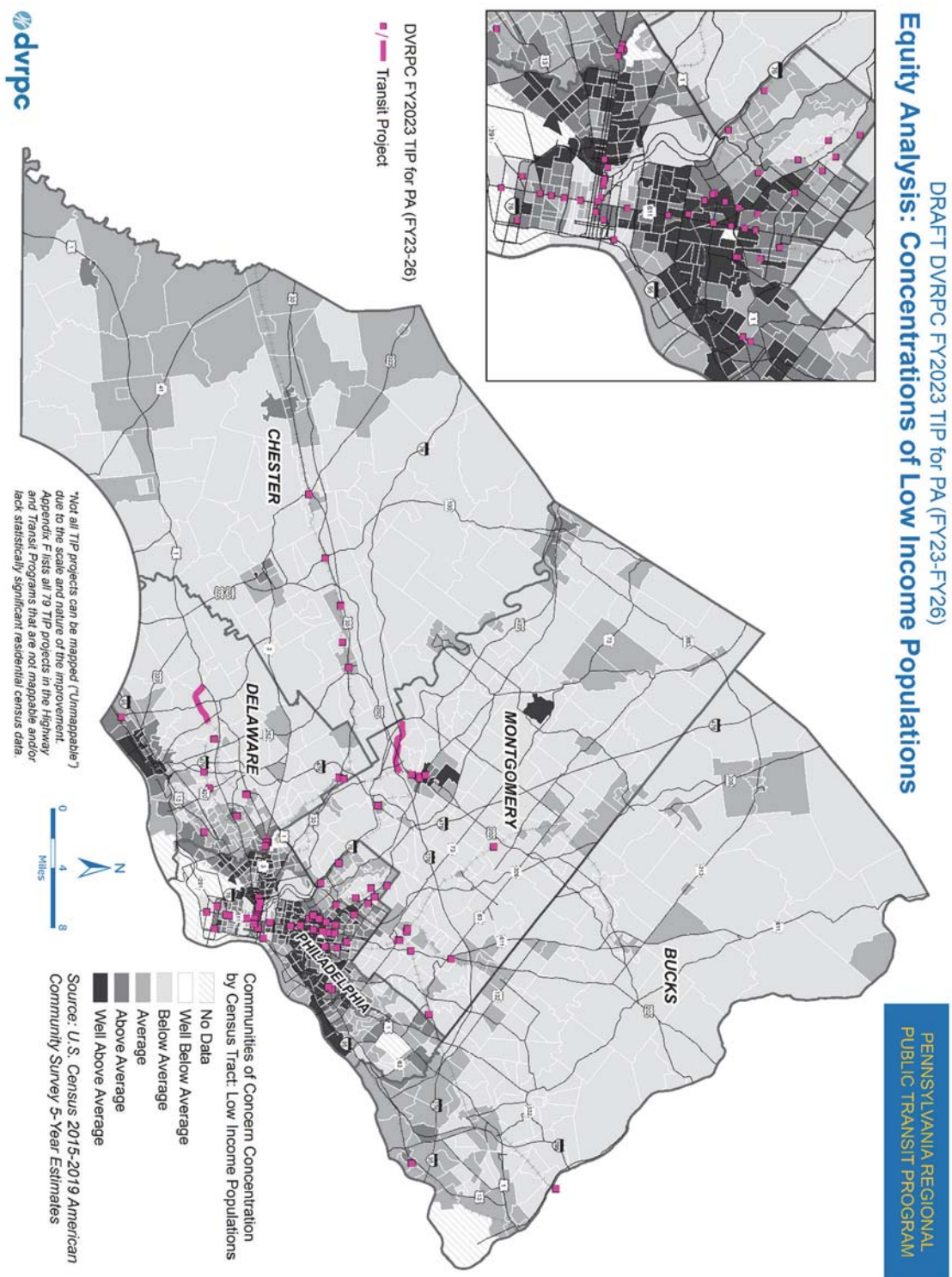
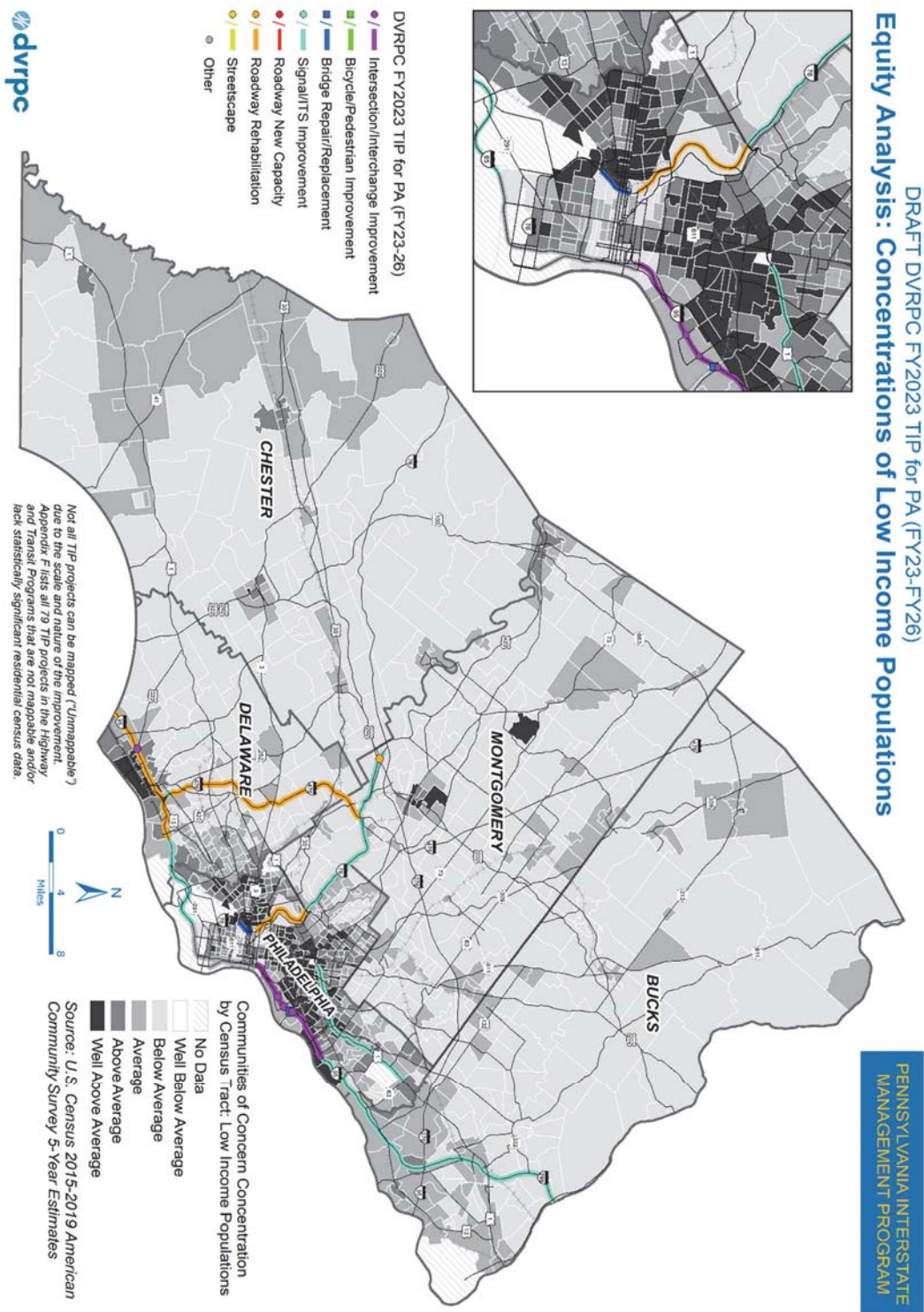


Figure 10: Pennsylvania Interstate Management Program Projects and Concentrations of Low Income Populations



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