

Examples of Equity Analysis Tools for Transportation Planning

By

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Available Tools and Resources for Equity Analysis

[USDOT's Equitable Transportation Community \(ETC\) Explorer](#)

[FHWA's Planning and Equity Tool](#)

[FHWA's Screening Tool for Equity Analysis of Projects \(STEAP\)](#)

[FHWA's final summary report for "Environmental Justice and Equity Screening Tools Peer Network, 2021"](#)

[FHWA's final summary report for 2022 workshop on "Elevating Equity through Spatial Analysis and Visualization"](#)

[Transportation equity topic page on FHWA/FTA TPCB site](#)

[EPA's Environmental Justice Screening and Mapping Tool, EJScreen](#)

[White House Council of Environmental Quality's Climate and Economic Justice Screening Tool \(CEJST\)](#)

[CDC's Social Vulnerability Index](#)

What is Equity in Transportation?

- Equity in transportation seeks fairness in mobility and accessibility to meet the needs of all community members. A central goal of transportation is to facilitate social and economic opportunities by providing equitable levels of access to affordable and reliable transportation options based on the needs of the populations being served, particularly populations that are traditionally underserved.

Under [Executive Order 13985 Advancing Racial Equity and Support for Underserved Communities](#) (2021)



Justice40 Initiative

The Justice40 initiative, created by the Biden-Harris Administration through [Executive Order 14008 Tackling the Climate Crises at Home and Abroad](#), is a key component in USDOT's efforts to confront and address decades of underinvestment.

When decision makers at all levels have the tools to understand how a community is experiencing disadvantage and can identify projects that create benefits that will reverse or mitigate those causes, the result is a higher quality of life and economic prosperity in communities across the country.

[Justice40 Fact Sheetupdated.pdf \(transportation.gov\)](#)

USDOT's Equitable Transportation Community (ETC) Explorer Tool

- The [US DOT Equitable Transportation Community \(ETC\) Explorer](#) is an interactive web application that uses 2020 census tracts and data, to explore the cumulative burden communities experience, as a result of underinvestment in transportation, in the following five components: Transportation Insecurity, Climate and Disaster Risk Burden, Environmental Burden, Health Vulnerability, and Social Vulnerability.
- It is designed to complement CEQ's [Climate & Economic Justice Screening Tool](#) by providing users deeper insight into the Transportation disadvantage component of CEJST, and the ETC Explorer's Transportation Insecurity component, which will help ensure the benefits of DOT's investments are addressing the transportation related causes of disadvantage.
- Applicants to USDOT's Justice40 covered program NOFOs should use CEJST as the primary tool to identify disadvantaged communities, as USDOT's ETC Explorer is not a binary tool indicating whether a census tract is considered disadvantaged; it is a dynamic tool that allows every community in the country to understand how it is experiencing burden that transportation investments can mitigate or reverse.

[ETC Explorer - State Results | USDOT Equitable Transportation Community \(ETC\) Explorer \(arcgis.com\)](#)

[Explore the map - Climate & Economic Justice Screening Tool \(geoplatform.gov\)](#)

U.S. DOT Equity Action Plan (January 2022)

The U.S. Department of Transportation (USDOT or Department) is committed to pursuing a comprehensive approach to advancing equity for all. In response to ***Executive Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government***

This Equity Action Plan highlights key actions that USDOT will undertake to expand access and opportunity to all communities while focusing on underserved, overburdened, and disadvantaged communities

[U.S. DOT Equity Action Plan - January 2022 \(transportation.gov\)](https://www.transportation.gov/equity-action-plan)


U.S. DOT Equity Action Plan (January 2022)

- The actions described here fall under four focus areas – wealth creation, power of community, interventions, and expanding access. Actions include providing technical assistance to small disadvantaged businesses, reinvigorating USDOT’s programmatic enforcement of Title VI of the Civil Rights Act, launching a national technical assistance center, and developing a national transportation cost burden measure. These actions were developed through an intensive effort, combining knowledge, experience, viewpoints, and data from the public, experts, and USDOT staff.
 - Wealth Creation
 - Power of Community
 - Interventions
 - Expanding Access
- Led by the Equity Leadership Team, a group of 30+ senior leaders from across the Department and supported by a task force with over 160 civil servants, USDOT has already taken important steps to address historic inequities in the transportation system, but more needs to be done. The actions outlined in this plan represent the next steps of USDOT’s efforts to advance equity and fulfill the mission of USDOT

- [U.S. DOT Equity Action Plan - January 2022](#)
[\(transportation.gov\)](#)


U.S. DOT Equity Action Plan (January 2022)

HIGHLIGHTED EQUITY ACTIONS




WEALTH CREATION

By providing technical assistance to small disadvantaged businesses, USDOT will help increase their understanding of how to navigate the USDOT contracting process, gain awareness of upcoming contract opportunities, and enhance their core competencies and skills—enabling them to more effectively compete for USDOT contracting opportunities and build wealth.




POWER OF COMMUNITY

Reinvigorating USDOT's programmatic enforcement of Title VI of the Civil Rights Act, including re-emphasizing agency review of the potential discriminatory impact of grantees' proposed activities before awarding federal funds—as opposed to waiting until a project is delivered to enforce civil rights protections—will prevent disparate impacts on protected classes and empower communities in transportation decision-making.



INTERVENTIONS

By launching a national technical assistance center, USDOT will provide direct, hands-on technical support with local impact—providing targeted assistance in areas of planning, project development, grant applications, and project delivery to ensure that transportation investments and benefits support underserved and overburdened communities.



EXPANDING ACCESS

By developing a national transportation cost burden measure, USDOT will have a critical tool to address barriers to accessing affordable transportation options that have consequences on economic mobility—and help bring measurable transportation benefits to disadvantaged communities per Justice40.

EQUITY ACTION PLAN

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[U.S. DOT Equity Action Plan - January 2022 \(transportation.gov\)](https://www.transportation.gov/equity-action-plan)

FHWA Planning and Equity Tool

- The Planning and Equity Tool enables transportation agency users to view their transportation improvement program (TIP) projects with available national, equity-related data sets. The tool is primarily targeted towards users from transportation agencies with little to no GIS (geographic information systems) capabilities or resources.
- With the tool users can currently view:
- Boundaries for
 - States
 - Counties
 - Metropolitan Planning Organization (MPOs)
 - Census Urbanized Areas
- American Community Survey (ACS) datasets from the Census Bureau. By default, the following are loaded
 - ACS Race and Hispanic Origin
 - ACS Poverty Status
 - Additional ACS datasets may be added by clicking on the Add Data tool.
- USDOT Transportation Disadvantaged Communities. USDOT developed a definition for disadvantaged communities (DACs) to be used in connection with certain criteria under USDOT Justice40-covered grant programs. More information about the DAC definition is available on the [USDOT Justice40 Initiative website](#).

FHWA Planning and Equity Tool

USDOT Transportation Disadvantaged Communities (April 2022)

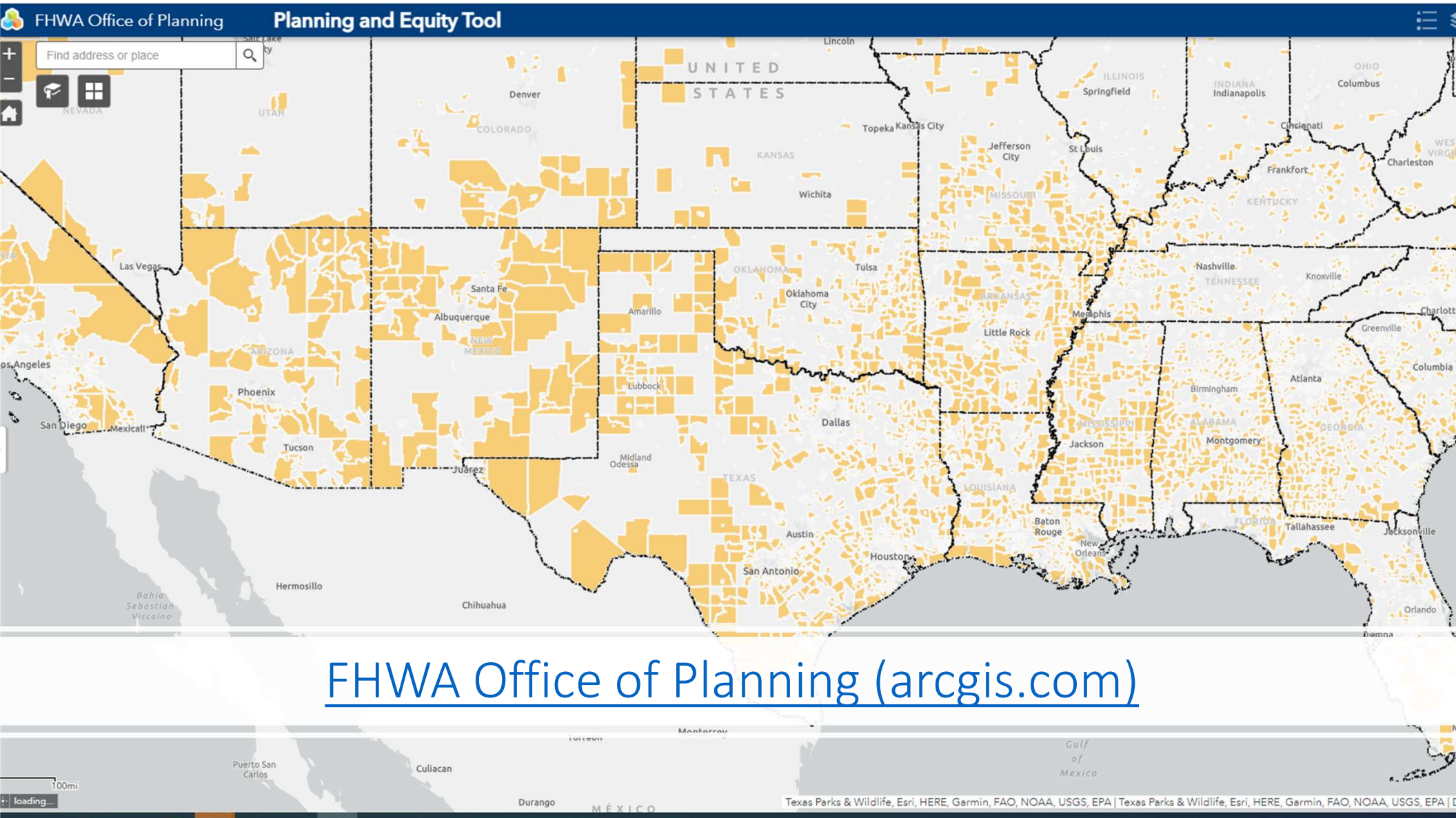
Description

Within the Planning & Equity Tool, the Justice40 dashboard to display six disadvantage theme indicators (Transportation, Health, Economy, Equity, Resilience, and Environmental), an overall disadvantage indicator, and underlying data used to create the indicators. Underlying data that went into each theme was compiled at the census tract level from various sources, normalized, and averaged to generate overall indicators for each of the themes. The Justice40 Dashboard is located here <https://experience.arcgis.com/experience/43be156528364d48b5a436936aa3f474>.

What is a Transportation Disadvantaged Community (DAC)?

USDOT looks at the following six categories to determine whether the individuals in an area or more specifically Census Tract can be considered disadvantaged.

- Transportation Access disadvantage
 - Communities and places that spend more, and take longer, to get where they need to go. (CDC Social Vulnerability Index, Census America Community Survey, EPA Smart Location Map, HUD Location Affordability Index)
 - Areas that
 - Have higher percentage of total population with a drive time to work of 30 minutes or longer
 - Have higher percentage of total population with no vehicle
 - Are not supportive to walking based on economic and built-environment characteristics
 - Have higher transportation costs as a percentage of income.
- [USDOT Transportation Disadvantaged Communities April 2022 - Overview \(arcgis.com\)](#)



[FHWA Office of Planning \(arcgis.com\)](https://arcgis.com)

FHWA Planning and Equity Tool

USDOT Transportation Disadvantaged Communities (April 2022)

- Health disadvantage
 - Communities that have adverse health outcomes, disability, and environmental exposures. (CDC Social Vulnerability Index)
 - Areas that
 - Have a higher percentage of population of people over the age of 64
 - Have a higher percentage of population without health insurance
 - Have a higher percentage of non-institutionalized population with any disability
- Environmental disadvantage
 - Communities with disproportionately high levels of certain air pollutants and high potential presence of lead-based paint in housing units. (EPA EJ Screen)
 - Areas that
 - Have a higher percentage of housing units built before 1960 (lead paint indicator)
 - Higher levels of diesel particulate matter in the air
 - Higher risk for air toxics cancer
 - Closer to areas with high vehicular traffic congestion
 - Higher PM2.5 levels in the air
 - Higher Ozone levels in the air

- [USDOT Transportation Disadvantaged Communities April 2022 - Overview \(arcgis.com\)](#)

FHWA Planning and Equity Tool

USDOT Transportation Disadvantaged Communities (April 2022)

- Economic disadvantage
 - Areas and populations with high poverty, low wealth, lack of local jobs, low homeownership, low educational attainment, and high inequality. (CDC Social Vulnerability Index, Census America Community Survey, FEMA Resilience Analysis & Planning Tool)
 - Areas that have
 - Higher percentage of people ages 25 and older with an education that is short of a high school diploma
 - Higher percentage of renters
 - Higher unemployment
 - Higher income inequality
 - Higher percentage of population at or below area median income
 - Higher percentage of people living below the Federal Poverty Level (HHS definition?)
 - Higher Housing Costs as a percentage of income for a typical household in the local region
- Resilience disadvantage
 - Communities vulnerable to hazards caused by climate change. (FEMA National Risk Index)
 - Areas that higher expected annual loss of life, building value, and agricultural value from 18 climate or natural hazards. These hazards include
 - Avalanche
 - Coastal Flooding
 - Cold Wave
 - Drought
 - Earthquake
 - Hail
 - Heat Wave
 - Hurricane
 - Ice Storm
 - Landslide
 - Lightning
 - Riverine Flooding
 - Strong Wind
 - Tornado
 - Tsunami
 - Volcanic Activity
 - Wildfire
 - Winter Weather
- Equity disadvantage
 - Communities with a high percentile of persons (age 5+) who speak English "less than well" or are considered in linguistic isolation. (CDC Social Vulnerability Index)

For more information on how this data layer was developed, please visit the USDOT Justice40 Initiative web page at <https://www.transportation.gov/equity-Justice40>.

- [USDOT Transportation Disadvantaged Communities April 2022 - Overview \(arcgis.com\)](https://www.transportation.gov/equity-Justice40)

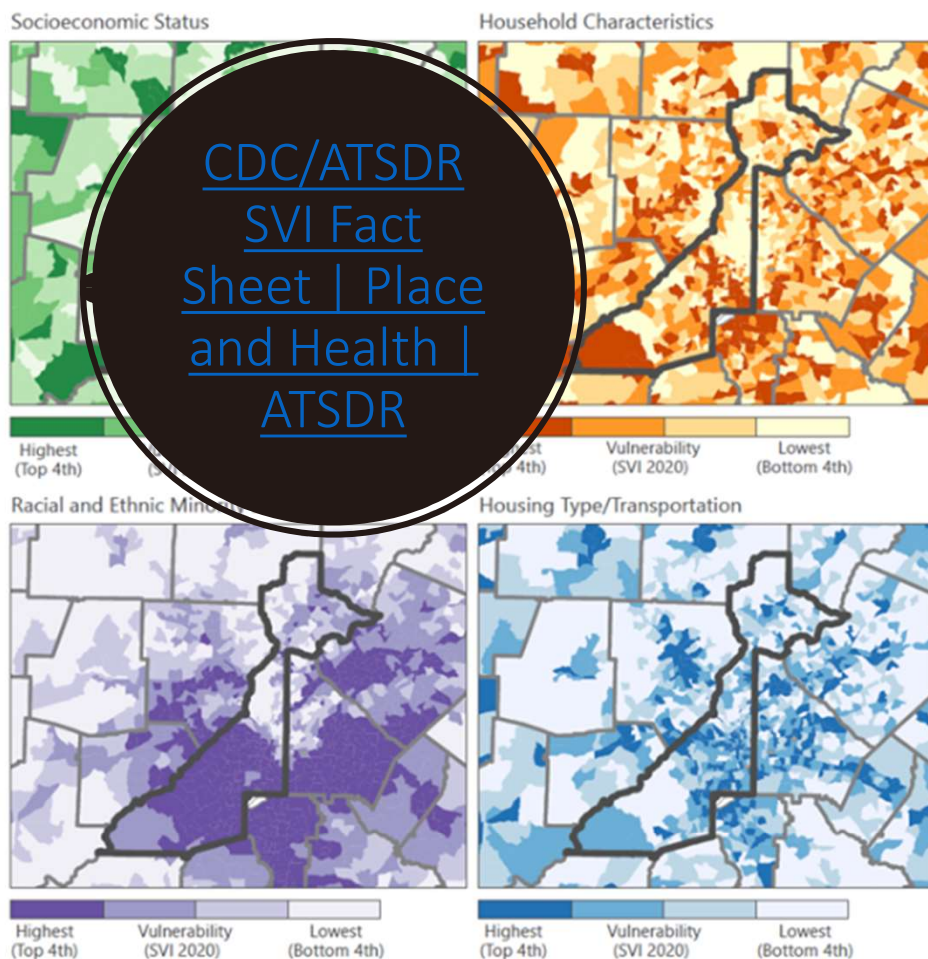
The CDC/ATSDR Social Vulnerability Index (CDC/ATSDR SVI) uses 16 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters.

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss.

- [Pennsylvania Department of Environmental Protection – East Palestine Train Derailment Information](#) 

If you are experiencing symptoms or have concerns, please contact your healthcare provider or call the dedicated Poison Line at 877-603-0170.

CDC/ATSDR SVI Themes



Maps show the range of vulnerability in Fulton County, Georgia for the four themes

The CDC/ATSDR SVI Databases and Maps Can be Used to:

- Estimate the amount of needed **supplies** like food, water, medicine, and bedding.
- Help decide how many **emergency personnel** are required to assist people.
- Identify areas in need of **emergency shelters**.
- Plan the best way to **evacuate** people, accounting for those who have special needs, such as people without vehicles, the elderly, or people who do not understand English well.

Screening Tool for Equity Analysis of Projects (STEAP)

Assessing Environmental Justice Impacts using STEAP



U.S. Department
of Transportation

Federal Highway
Administration

Why STEAP

STEAP enables transportation professionals to support project prescreening, enables effective use of federal resources, assesses impacts on Environmental Justice (EJ) populations, and helps in the development of meaningful public engagement plans. By using this simple web interactive tool, transportation planners, engineers, and civil rights officials can select or draw in roads and assess environmental justice impacts by analyzing Census data to selected areas of impacts.

The tool is an extension of FHWA's HEPGIS web application that permits rapid screening of potential project locations anywhere in the United States to support Title VI, environment justice, and other socioeconomic data analyses. The tool is hosted on the HEPGIS public website and is available 24/7.

STEAP Benefits include:



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STEAP Benefits include:

- Assessing if project disproportionately affects vulnerable populations
- Influencing project scoping and alternatives development
- Allowing for alternative analysis of different road locations
- Allowing staff from FHWA field offices, MPOs and State DOTs to perform project Title VI & EJ analysis without the need for GIS specialists



STEAP Overview

STEAP supports the implementation of Executive Order 14008, which calls for the creation of a geospatial Climate and Economic Justice Screening Tool that provides interactive maps highlighting disadvantaged communities. The tool is used as a project pre-screening tool and it does not replace project NEPA studies.

The tool is designed to have a simple user interface allowing users to specify project locations by selecting existing highway segments or drawing lines of proposed roadways on the map. Buffer analysis will be performed, and Title VI and EJ variables will then be calculated for the surrounding areas by the specified distance from the project. The buffer analysis boundaries and summary of the Title VI and EJ populations will be presented in an easy-to-read buffer analysis report available for viewing and downloading.

STEAP Version 2.0 Enhancements:

- Enhanced the Buffer Analysis Reports - Adds three new columns with corresponding City, County and State statistics, which helps evaluate if project disproportionately affects disadvantaged populations
- Added new Decennial 2020 Census Report - Helps investigate Title VI complaints using more accurate data from smaller geographic analysis units and full population counts
- Updated ACS data from 2015-2019 to 2016-2020
- Improved User Interfaces
 - Allows users to zoom to project locations by City/Town names
 - Allows downloading buffer analysis reports in spreadsheets

Socioeconomic Analysis

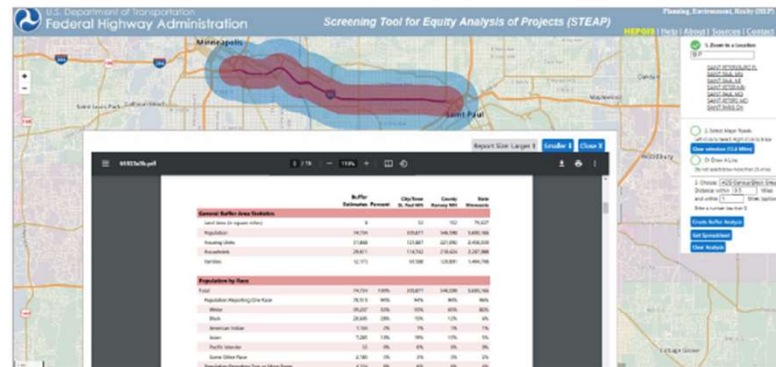
STEAP provides estimates of the socioeconomic characteristics of the resident population surrounding a project location. The core data used to calculate the demographics is the American Community Survey 2016-2020 Five Year data, and the 2020 Decennial Census PL94-171 Redistricting data.

STEAP offers the ability to identify project impact on marginalized populations:

- Title VI – Race, Color and National Origin
- Environmental Justice (EJ) – Minority and low-income populations
- Limited English Proficiency (LEP)
- Disadvantaged population identified in the Executive Order 13985

STEAP Features Include:

- ✓ Easy to use graphic user interface
- ✓ Easy to specify project locations on the map
- ✓ Easy to read Project Equity Analysis Reports
- ✓ Title VI and EJ population summaries surrounding project locations
- ✓ Web application, an extension of the HEPGIS public website



STEAP Buffer analysis with detailed downloadable PDF report and spreadsheet file

Get Connected

- HEPGIS website is an interactive, web-based geographic map server that enables users to navigate, view and print geo-spatial maps using only their web browser. <https://hepgis.fhwa.dot.gov/fhwagis/>.
- STEAP Website also provides information about the tool, data sources, and a help section for users. <https://hepgis.fhwa.dot.gov/fhwagis/buffertool/>.
- To request HEPGIS and STEAP demos, or more information, contact: Supin Yoder at supin.yoder@dot.gov.

EJScreen EPA's Environmental Justice Screening and Mapping Tool (Version 2.2)

Note: Territory data (except Puerto Rico) is not available as comparable to the US. It is only comparable to the territory itself by using the 'Compare to State' functionality. Likewise, some of the indicators may not be available for territories.

[EJScreen Website](#) | [Mobile](#) | [Glossary](#) | [Help](#)



☒ Compare to US ☐ Compare to State

Environmental Justice Indexes

Supplemental Indexes

Pollution and Sources

Socioeconomic Indicators

Demographic Index

Supplemental Demographic Index

People of Color

Low Income

Unemployment Rate

Limited English Speaking

Less Than High School Education

Under Age 5

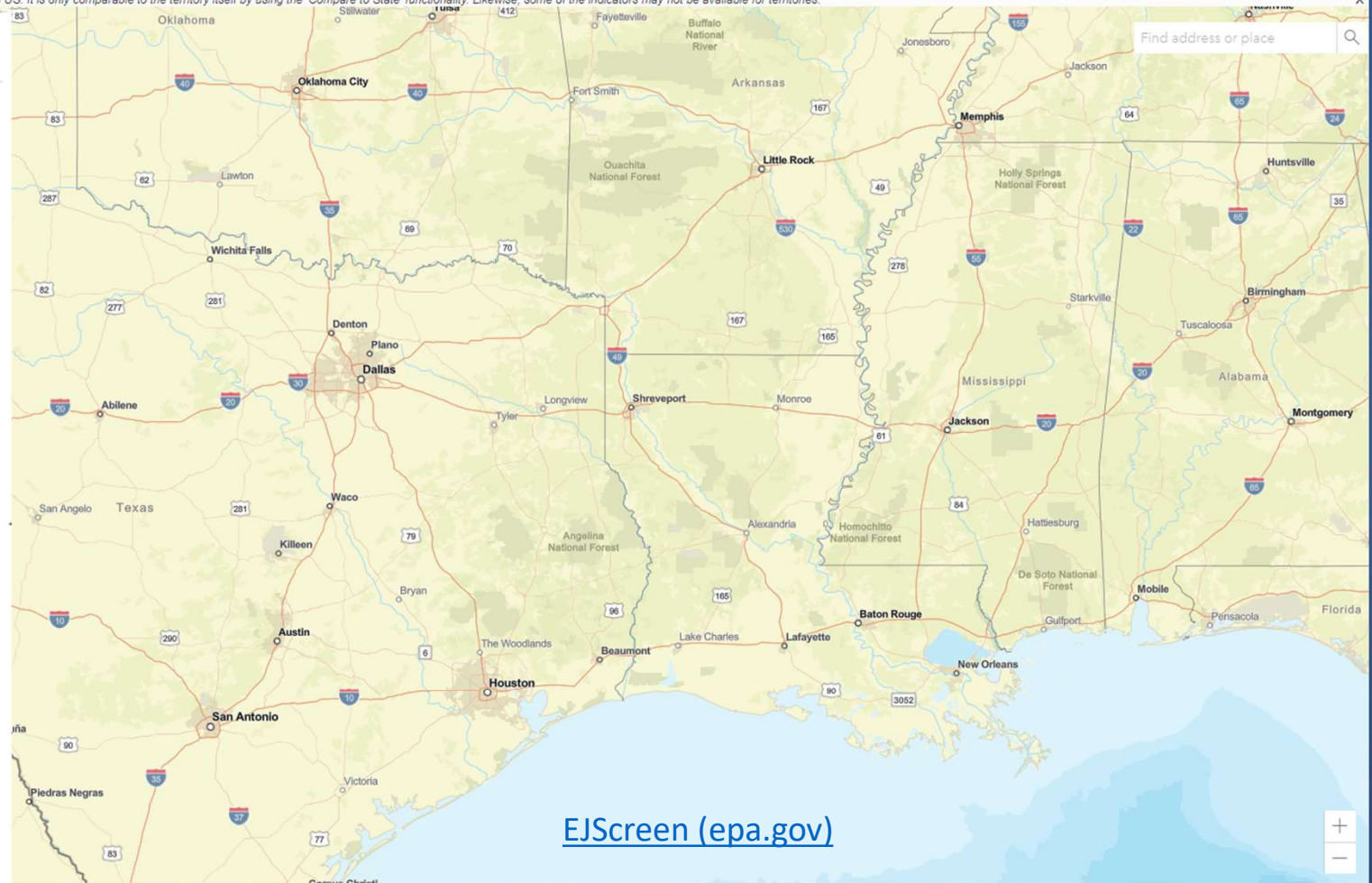
Over Age 64

Health Disparities

Climate Change Data

Critical Service Gaps

Additional Demographics



[EJScreen \(epa.gov\)](https://www.epa.gov/ejscreen)

Request for Information on Transportation Data and Assessment Methods

- On January 20, 2021, President Biden signed Executive Order (EO) 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government.” Through the implementation of this Administration priority, the Department of Transportation (USDOT or Department) will undertake a comprehensive approach to advance racial equity for all, including individuals who have been historically underserved and adversely affected by persistent poverty or income inequality.
- On May 25, 2021, USDOT [announced](#) a [Request for Information](#) (RFI) to receive input from the public on the data and assessment tools available to assess transportation equity. Equitable access to transportation is a civil right, and this RFI is one action that USDOT is taking in response to EO 13985.

[Request for Information on Transportation Data and Assessment Methods | US Department of Transportation](#)

Request for Information on Transportation Data and Assessment Methods

- The Department received over 300 comments from many individuals as well as the public and private sectors, including think tanks, not-for-profit institutions, advocacy organizations, trade organizations and academics. This [Summary of Public Comments](#) document aggregates and summarizes comments received in response to the RFI's 25 questions, highlighting common themes and tools identified by respondents. It also illustrates how comments were categorized by commenter type.
- The purpose of this document is to enable the Department and the public to understand the types of respondents and responses to the RFI and better digest the information received. The full text of all comments received are publicly available at Regulations.gov and may be accessed directly for more details on the summary information shared in the summary document.

[Request for Information on Transportation Data and Assessment Methods | US Department of Transportation](#)

Additional Case Study Resources for Equity Analysis

In addition, the FHWA Office of Planning worked with USDOT's Volpe Center on a series of equity in transportation case studies. The case studies include descriptions of and links to project prioritization processes and/or tools used in performing equity analysis. The following list of case studies can now be found on the FHWA Transportation Planning Capacity Building website:

- [Case Study: The Wilmington Area Planning Council's Transportation Justice Initiative](#) ([prioritization process criteria](#))
- [Case Study: North Jersey Transportation Planning Authority \(NJTPA\) Planning Equity Practices](#) ([equity analysis tool](#))
- [Case Study: New Orleans Regional Planning Commission's Data-Driven Approach to Transportation Equity](#)
- [Case Study: Greater Madison Metropolitan Planning Organization's Approach to Transportation Equity](#)

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