

AASHTO GIS-T Symposium 2023
FHWA Equity and Justice40 in Action Workshop
Proceedings Report



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Introduction and Background

The Federal Highway Administration (FHWA) hosted a four-hour workshop on Equity and Justice40 in Action at the American Association of State Highway and Transportation Officials (AASHTO) 2023 Geospatial Information Systems for Transportation (GIS-T) Symposium. The purpose of the workshop was to explore applications of GIS tools and analysis for advancing equity and the [Justice40 Initiative](#). Forty participants learned about current practices from the presenters and engaged in discussion to share information about how they analyze and incorporate equity into their transportation decision-making processes, and what the U.S. Department of Transportation (USDOT) and AASHTO can do to better support their efforts.

The [AASHTO GIS-T Symposium](#) is an annual event that brings together the public and private sectors to share best practices, connect and share information with colleagues in the field, and learn about new technological developments and applications for GIS in transportation. AASHTO hosted its 2023 symposium on April 11-14th, 2023, in Oklahoma City, Oklahoma. Speakers from USDOT, FHWA, State DOTs, regional planning and transportation commissions, private firms, and universities demonstrated GIS tools and presented on GIS applications for



Image credit: [AASHTO](#)

planning, data monitoring and analysis, and asset management. Of the 465 total attendees at the 2023 GIS-T Symposium, 1 worked for a tribal organization, 17 worked for a local or region organization, 147 worked in the private industry, 144 worked at the state level, and 23 worked for the Federal government. Across all organizations, 35 percent of attendees identified as GIS specialists – either as analysts, developers, or managers.

Key Findings

Participants had the opportunity to engage in discussions with presenters and their peers during the workshop. The following summarizes the main themes from the discussions:

Defining and operationalizing equity continues to evolve. Participants identified several challenges around defining and operationalizing equity, whether due to lack of funding, lack of data, or working with specific characteristics or demographics. Planners and analysts need new tools and approaches to consider and manage equity issues more holistically, integrating equity, safety, and environmental considerations. When asked about different ways equity issues may present in communities, one participant noted that the amount of litter and debris on a roadway can be indicative of potential equity issues because lower-income neighborhoods often have more debris than other areas. Debris can pose a safety risk to users of various transportation modes. Others cited a study in Chicago which observed that roads with high-crash rates tend to be concentrated in low-income communities, which has led to increased police presence in these high-crash areas. This could lead to vulnerable communities having disproportionate contact with law enforcement, posing an equity issue. Participants also mentioned that equity issues can be difficult to grapple with in rural settings due to limited funding.



Image Credit: Velyjha Southern, FHWA

Transportation equity assessments have varied applications and methodologies.

Participants cited several different contexts in which they used transportation equity assessments, including developing a project prioritization tool for Long Range Transportation Plans (LRTPs); building a matrix for future projects that reflects cost of living increases as part of their Transportation Improvement Program (TIP); and helping local governments prepare for Federal grant applications.

Panel discussion leaders also asked participants about what factors are included in equity assessments. Participant organizations use a number of data sources and factors to support their assessments. Multiple participants cited the Social

Vulnerability Index (SVI) from the Centers for Disease Control and Prevention (CDC), which aggregates 16 demographic characteristics for every Census tract in the U.S., as a data source. Others use the American Community Survey (ACS) data to make comparisons at the local level, such as using data from counties or multiples counties for comparison rather than using regional or statewide level data, for a more localized analysis. Some use ACS and Census data for income and race analyses at more granular geographies. At least one participant used equity indicators according to the Screening Tool for Equity Analysis of Projects (STEAP Tool) and SVI, along with data on Supplemental Nutrition Assistance Program (SNAP) utilization, food deserts, and areas with high volumes of particulate matter to identify vulnerable communities. The Environmental Justice Screening and Mapping Tool (EJScreen) is another tool used in equity assessments. As there are different contexts in which transportation equity assessments are used depending on the location and needs of the communities, providing more guidance and support around how to tailor data, tools, and factors to specific contexts could be helpful.

Communities need technical assistance. Participants mentioned that communities need more technical assistance, particularly with grant writing, to be more competitive in applying for Federal funding opportunities. In addition, Justice40 requires extensive community engagement efforts, and practitioners can benefit from more support around this topic. Some mentioned the need for increased public outreach efforts to provide more education around infrastructure projects to increase awareness and avoid backlash. Some agencies/organizations discussed the challenges of engaging less racially diverse rural communities on equity topics.

Further innovation in equity methods is needed. Participants discussed the need to think beyond traditional methods to develop innovative models and analyses that consider equity. For example, due to urban sprawl, some participants found that analyzing equity issues at a regional level rather than the city level was more beneficial and informative. Participants brought up the difficulty in translating results from an equity analysis to capital infrastructure projects. For example, transit improvements are often identified as a need to improve transportation access to disadvantaged communities, but transit improvements are very costly which make them difficult to implement. Practitioners can benefit from more support regarding innovative funding mechanisms or exploration of more cost-effective alternatives.

Participants identified post-analysis actions as an important part of equity analysis. Evaluating performance and sharing the results with the community and stakeholders can support transparency and provide more ownership to the community and stakeholders. Additionally, post-analysis evaluations can help to inform and refine future equity analysis. During the discussion sessions, several participants mentioned their current methods of incorporating different sources and levels of data. Practitioners can benefit from more guidance around post-analysis actions, including more informational resources on how to integrate different types and levels of data to suit specific needs.



Image Credit: Velyjha Southern, FHWA

Workshop Overview

Basharat Siddiqi, the FHWA Oklahoma Division Administrator, provided opening remarks, giving an overview of the Justice40 Initiative and the intent of the workshop to facilitate the application of GIS tools for advancing equity efforts as well as to spur future collaboration among peers. Carl Selby, Program Support & Technical Services Team Leader for the FHWA Oklahoma Division Office, served as the moderator for the workshop. The workshop agenda can be found in Attachment 1 of this report. The sections below briefly summarize the presentations from the workshop.

Presentation 1: Screening Tool for Equity Analysis of Projects

Supin Yoder (Travel Demand Forecasting Specialist, FHWA) presented and demonstrated the [Screening Tool for Equity Analysis of Projects Tool](#). The purpose of the STEAP Tool is to provide a simple, accessible, and easy to use tool for equity analysis which can support project pre-screening, assessing impacts on disadvantaged populations, and development of meaningful public engagement plans. The STEAP Tool is an extension of FHWA's [HEPGIS](#), an existing web application. The STEAP Tool allows users to zoom to their location of interest and select segments of highways or draw lines for analysis. The tool creates buffers of two distances (0.5 mile and 1.5 mile) around the selected segment/line, then generates a report on the demographic information of the selected project area, as well as information from the city, county, and State for comparison. The generated reports can help users assess if the project will disproportionately impact vulnerable populations as part of the pre-screening process. The tool can also be used to support grant applications.

Presentation 2: Vision Zero and Equity

Jay Aber (Traffic Engineer, WSP) and Joshua Boehm (Urban Planner and Data Scientist, WSP) gave a presentation on Vision Zero from a data and equity perspective. Jay provided an overview of Vision Zero, which is a strategy to eliminate traffic deaths and serious injuries on roads while promoting safe, health, and equitable mobility for all. The USDOT formally recognized the need to address issues around Vision Zero by developing the [National Roadway Safety Strategy \(NRSS\)](#) and implementing [Safe System Approach](#) to aim for zero deaths. USDOT recognizes [equity](#) as a key component of roadway safety. Joshua described the process of analyzing safety and equity, which begins by calculating risk and determining the safest and riskiest roadway types. Joshua then presented case studies of their work highlighting equity and safety:

- *San Francisco Bay Area Metropolitan Transportation Commission: WSP developed a tool for the [Bay Area Vision Zero](#) efforts that allow users to draw a radius around a location of interest, which then generates detailed information such as collision statistics, population demographics, street networks and roads, and resources to support Vision Zero in the specified area.*

- *City of Kansas City, MO*: WSP conducted an analysis of high-risk crash factors, which determined that 89 percent of high risk roads were located in historically disadvantaged tracts to inform Kansas City's [Vision Zero Action Plan](#).
- *City of Omaha, NE*: WSP conducted a detailed analysis of crash data in support of [Omaha's Vision Zero](#) efforts by comparing crash rates between disadvantaged and non-disadvantaged areas. Results showed higher concentrations of crashes in disadvantaged areas and among minority populations as well as higher percentage of high-risk infrastructure in disadvantaged areas.

Presentation 3: Transportation Equity Assessments

Sunil Dhuri (Senior Director of Transportation, ICF) presented on the application of GIS analysis for transportation equity assessments in Long Range Transportation Plans (LRTPs) and Congestion Management Plans (CMPs). Sunil discussed the importance of conducting transportation equity assessments to ensure that everyone using the transportation system has equitable access to safe transportation systems and economic opportunities, as well as limited exposure to negative externalities. Sunil presented case studies on the application of transportation equity assessments:

St. Louis region, [East-West Gateway Council of Governments \(EWG\)](#): ICF conducted a transportation equity assessment as part of the EWG LRTP update. The assessment consisted of three components: historical analysis, existing conditions analysis, and analysis of spending within the Transportation Improvement Program (TIP). The assessment analyzed numerous variables with an equity focus by comparing the variables among different demographic groups. The findings from the assessment will be used to better understand and improve transportation investments and decision-making, and to address the needs of disadvantaged, underserved, and/or overburdened communities. Findings from the assessment showed that:

- The racial disparity for no-vehicle households between Black (19.1 percent) and white households (4.7 percent) in the St. Louis region was the highest among peer groups that were used for comparison.
- Comparing the demographics of the recipients and non-recipients of TIP funding, non-recipients generally had smaller populations and almost twice the proportion of Black and Hispanic residents. However, the assessment could not determine whether non-recipients had not received funding because they did not apply or because their application was rejected. This demonstrates the need for better tracking of successful and rejected TIP applications.

Northern New Jersey region (made up of 13 counties), [North Jersey Transportation Planning Authority \(NJTPA\)](#): ICF conducted a transportation equity assessment to update the NJTPA CMP, with one of the main objectives being to increase understanding of mobility and accessibility needs of vulnerable populations. The assessment process entailed identifying vulnerable populations and conducting geospatial analysis to understand and identify disproportionate impacts across numerous variables. This information will be used to guide and support a more equitable transportation decision-making process. Some findings from the update include:

- There were several areas with high proportions of vulnerable populations without access to transit. Although these areas could be unsuitable for a transit network, it still signifies a potential need.
- There was a higher concentration of bicycle and pedestrian fatalities or serious injuries in areas with vulnerable populations (determined by [SVI](#) indicators). However, areas that are rated high on SVI tend to be denser, which may result in more bicycle and pedestrian trips. Further analysis can help better understand this finding, as it could be a potential need to address.

Conclusion

FHWA and AASHTO can continue to support State, regional, and local efforts to advance equity and the Justice40 Initiative and address the challenges of using data analysis and visualization to better understand and advance equity. Workshop participants expressed the desire to better serve their communities by improving their existing processes and developing innovative methods to evaluate and incorporate equity into their planning and operations. Participants also identified challenges to performing equity analysis such as the need to think beyond traditional methods and using a more holistic approach to equity analysis.

The workshop also provided a place for participants to connect with peers and to communicate with Federal partners on how their actions can best support transportation practitioners at all levels. These insights will inform FHWA's approach to developing tools, resources, and opportunities for advancing equity through application of GIS analysis. The insights will also help achieve the key performance indicator per the [US DOT Equity Action Plan](#), to increase the number of State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) officially adopting a quantitative Equity Screening component to their Statewide Transportation Improvement Program (STIP) and Transportation Improvement Program (TIP) development processes to incorporate community vision and need in project selection and design.

Additional Tools/Resources:

- [USDOT Equitable Transportation Community \(ETC\) Explorer](#)
- [US Department of Housing and Urban Development, Affirmatively Furthering Fair Housing Tool \(AFFH-T\)](#)
- [AASHTO Census Transportation Planning Products \(CTPP\)](#)
- [FHWA Infrastructure Voluntary Evaluation Sustainability Tool \(INVEST\)](#)
- [Council on Environmental Quality, Climate and Economic Justice Screening Tool \(CEJST\)](#)
- [US Census Bureau, Longitudinal Employer-Household Dynamics \(LEHD\)](#)
- [AASHTO Environmental Justice Community of Practice \(CoP\)](#)

Technical Assistance Resources:

- [USDOT Justice40 Technical Assistance Programs](#)
- [FHWA Office of Safety Technical Assistance for Data](#)
- [FHWA Resource Center](#)
- [FHWA Local Technical Assistance Program \(LTAP\)](#)

Further Questions:

- For questions related to the Screening Tool for Equity Analysis of Projects Tool (STEAP), please contact Supin Yoder (supin.yoder@dot.gov).
- For questions related to Vision Zero and Equity, please contact Jay Aber (Jay.Aber@wsp.com) or Josh Boehm (Joshua.Boehm@wsp.com).
- For questions related to transportation equity assessments for Long Range Plans and Congestion Management Plans, please contact Sunil Dhuri (sunil.dhuri@icf.com).

Attachment 1: Workshop Agenda

1:00 – 1:10 PM	Opening Remarks Welcoming Remarks and Justice40 Overview	Basharat Siddiqi , FHWA, Oklahoma Division Administrator
1:10 – 2:05 PM	Screening Tool for Equity Analysis of Projects (STEAP) Demonstration of FHWA’s recently developed Screening Tool for Equity Analysis of Projects, known as STEAP, which can be used to support project pre-screening, assess impacts on disadvantaged populations, and help in the development of meaningful public engagement plans. <i>Group Discussion to follow presentation.</i>	Supin Yoder , FHWA, Demand Forecasting & GIS Specialist
2:10 – 3:05 PM	Distribution of High-Risk Infrastructure Data Reflecting the Risk of Crashes Based on Neighborhood Presentation of a comprehensive look at Vision Zero, from a data and equity perspective. Several case studies and analytical techniques will be shared to better understand equity and safety, with a focus of Justice40 as a basis of this work. <i>Group Discussion to follow presentation.</i>	Jay Aber , WSP, Traffic Engineer Joshua Boehm , WSP, Urban Planner and Data Scientist
3:05 – 3:20 PM	BREAK	
3:25 – 4:20 PM	Transportation Equity Assessment for Long Range Transportation Plan (LRTP) and Congestion Management Plan (CMP) Application of GIS analysis for conducting transportation equity assessment as part of the East-West Gateway Council of Governments (EWG) LRTP and the CMP update for the New Jersey Transportation Planning Authority (NJTPA). <i>Group Discussion to follow presentation.</i>	Sunil Dhuri , ICF, Senior Director of Transportation
4:25 – 4:55 PM	Final Discussions Report outs and opportunity to discuss takeaways and applications for future practice.	All Attendees
4:55 – 5:00 PM	Closing Remarks	Velyjha Southern , FHWA, Transportation Specialist