



NORTH CAROLINA

Department of Transportation



Making Transportation Work for Everyone

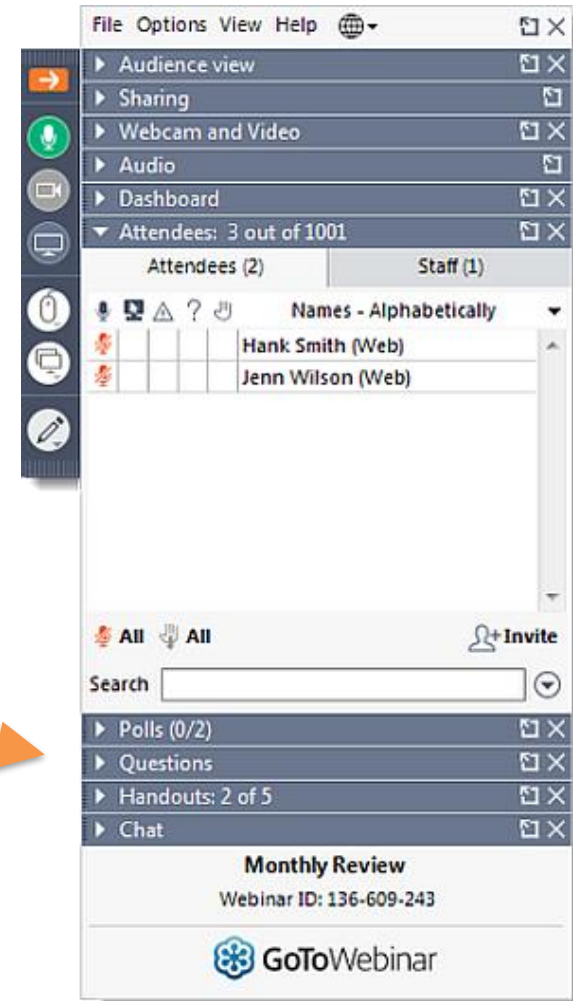
New tools to describe transportation barriers

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Training Logistics

- The session is being recorded and will be posted to the IMD Connect page ([link here](#) and in the chat).
- Submit questions through the Q&A box to in your GoToWebinar console.
- Please fill out the Feedback Form following today's session ([link here](#) and in the chat).



Agenda

- Training objectives
- EJ and TDI background
- Tool descriptions
- StoryMap exploration
- Example use cases
- Other NCDOT information
- Q&A and close



Queen Street - Kinston, NC

Training Objectives

- Expand familiarity with TDI and EJ concepts and related terms.
- Share online links to new equity tools.
- Discuss potential applications and limitations of the tools.
- Overview related state and federal resources.



Example of worn path along roadway – Fayetteville, NC

Key Definitions and Purposes

- **Environmental Justice (EJ):** The fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies.
- **Historical and Legal Framework**
 - The concept of Environmental Justice is rooted in decades of community action and arose from the justice movement.
 - Environmental Justice was codified in Title VI of the Civil Rights Act and later Executive Order 12898.
- **Achieving Equity**
 - For NCDOT, EJ focuses on identifying and addressing potentially disproportionately high and adverse human health or environmental effects from transportation policies, programs, and projects on minority and low-income populations.
 - The EJ Index describes concentrations of race, ethnic minority status, and poverty level.

Key Definitions and Purposes

Transportation Disadvantage (TD): Concept that identifies, describes, and calculates relative barriers that *may* limit access to transportation.

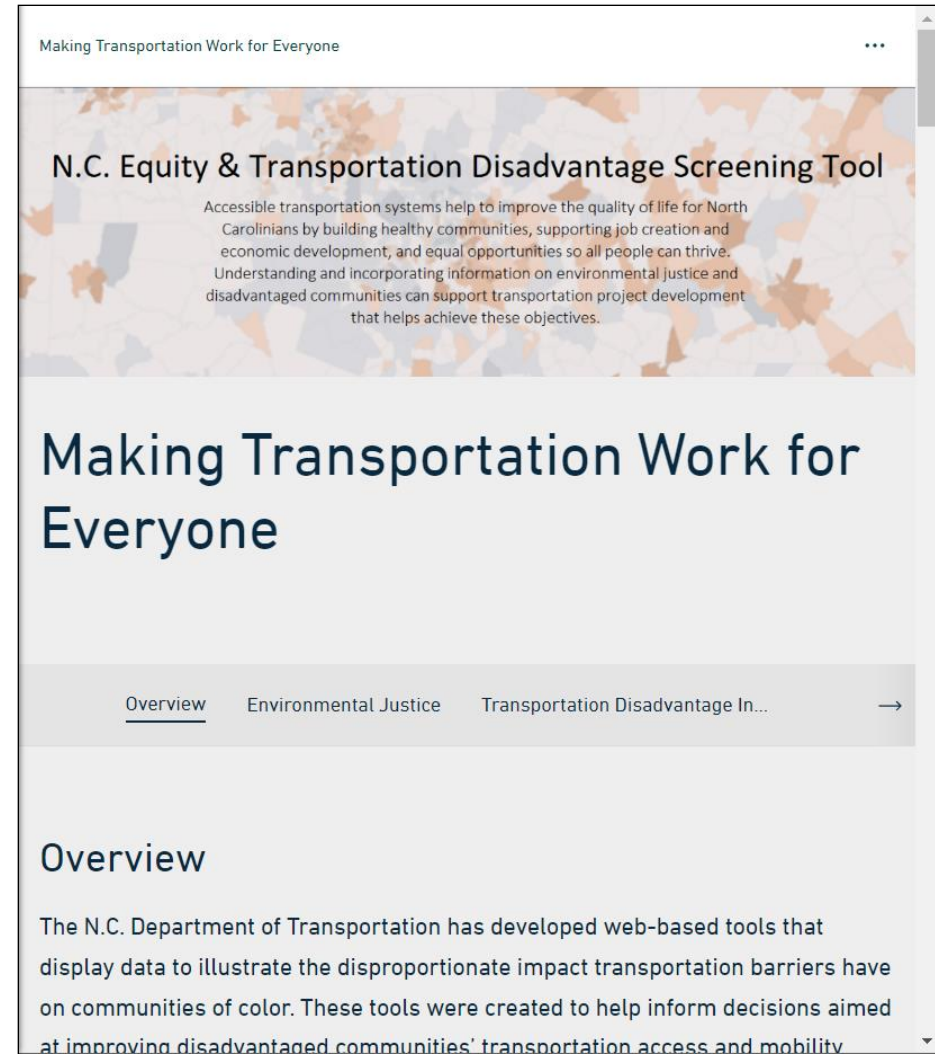
- For NCDOT, understanding TD can help it achieve its mission to connect people, products and places, and improve policies, programs, and project development.
- The TD Index (TDI) describes concentrations of zero-vehicle ownership, poverty level, youth aged 15 and under, seniors aged 65 and older, mobility impairments, and Black, Indigenous, and Persons of Color (BIPOC).
- These concepts and their supporting information and tools are constantly evolving based on data availability, analysis techniques, regulations, and improved understanding of cumulative impacts.
- Observations should be validated with impacted communities.

Key Concepts

- **Equity** – The consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities.
- **Disproportionate impact** – Situations where there exists significantly higher and more adverse health and environmental effects on minority populations, low-income populations, or indigenous peoples.
- **Potential disadvantage** – Presence of factors that may increase barriers to transportation (derived from data and does not describe one's lived experiences).
- **Relative concentration** – The portion or share of the variable of interest in a specific location, such as a block group or county.

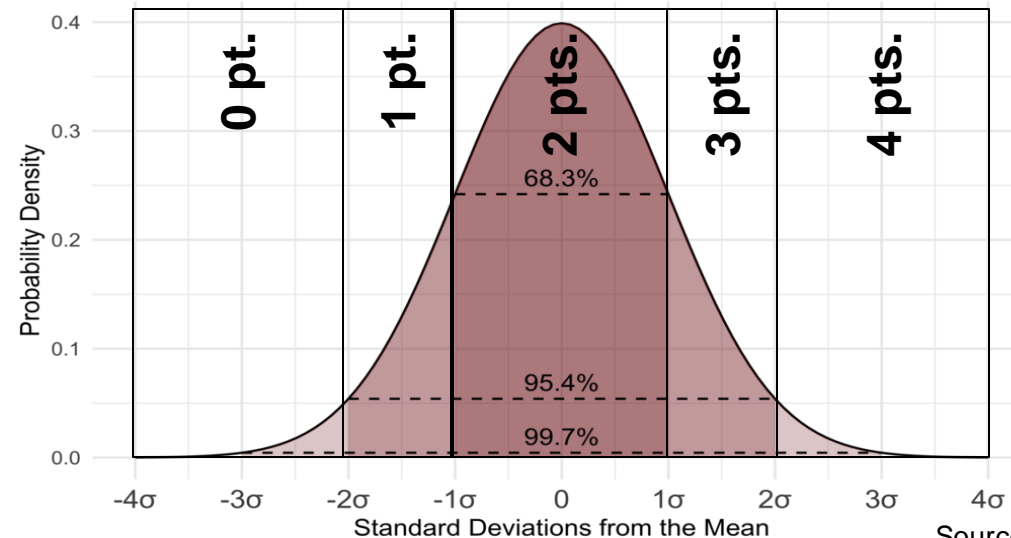
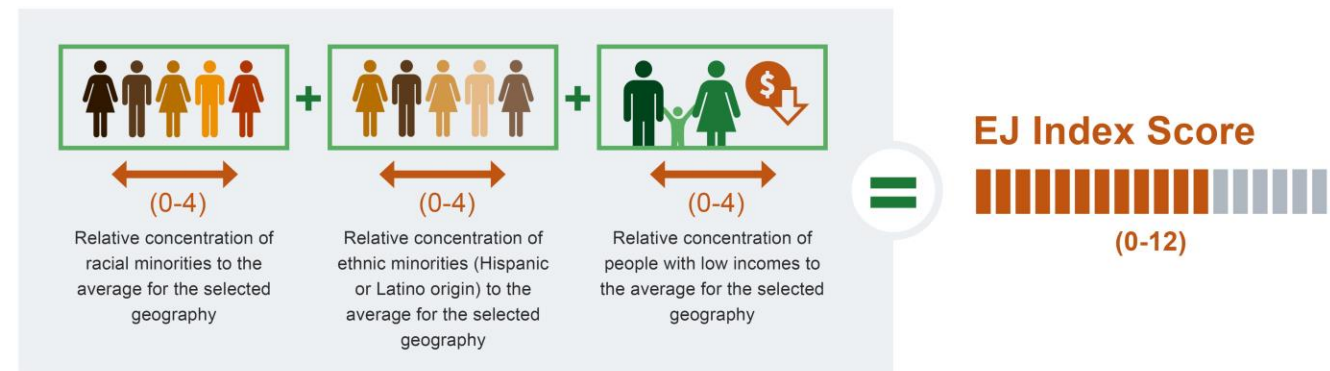
Exploring the EJ and TDI Tools

- Index descriptions
- StoryMap Overview and navigation ([link here](#))
- EJ statewide map
- TDI dashboard
- Documentation source



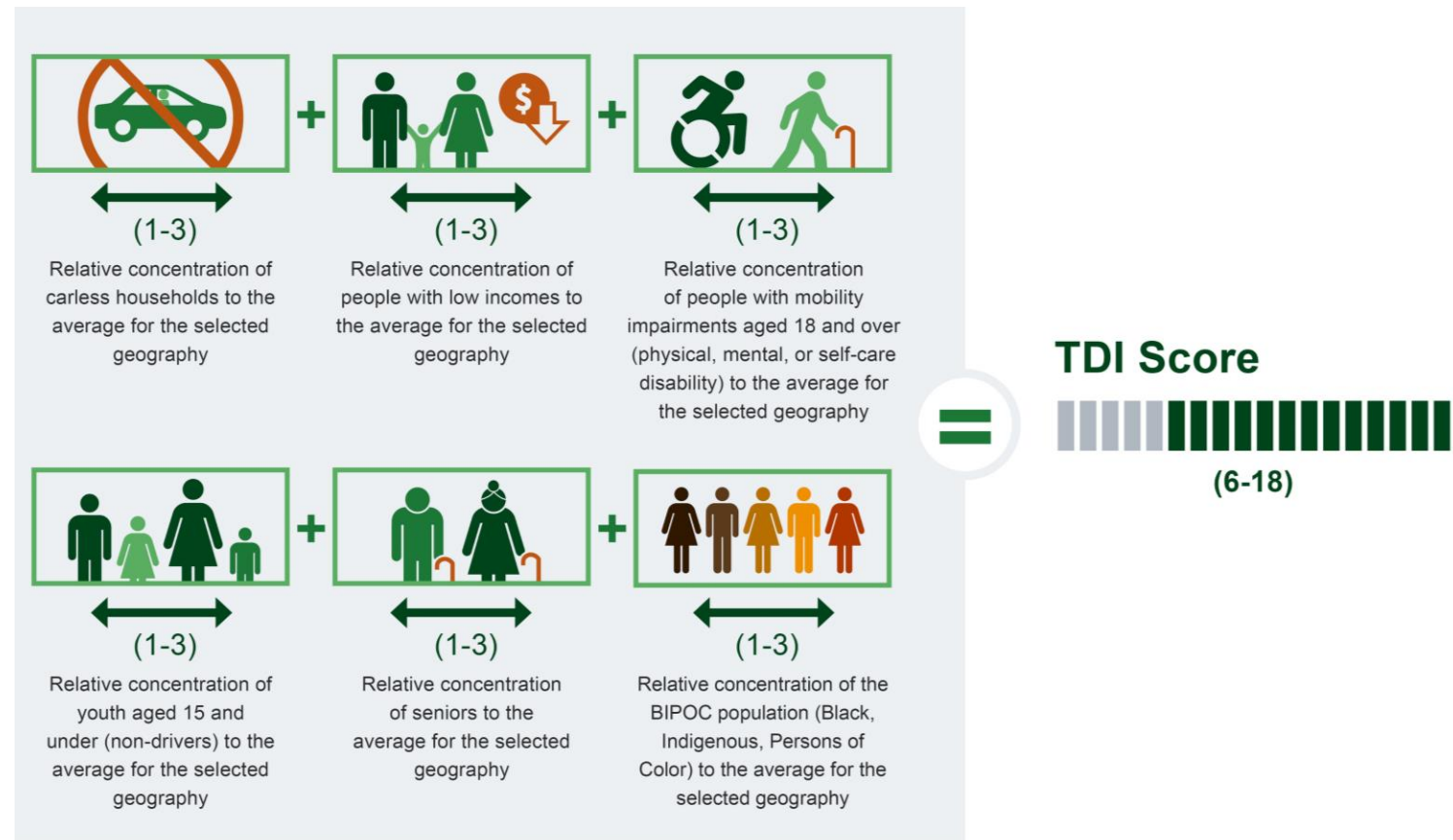
EJ Index: Data, Methodology, Applications, and Limitations

- Data sourced from American Community Survey Block Group level (2016-2020 pending).
- Three indicators to generate a Block Group score based on variance (standard deviations) from the geographic mean.
- **Higher score = higher relative concentrations of EJ populations.**
- **Score relative to geographic scales:** MPO/RPO, County, Division, and Statewide.
- May serve as a tool for **preliminary analysis** of disproportionate impact.
- **DOES NOT replace** Title VI requirements, NCDOT processes, and roles for further investigations and community engagement.
- Other tools: [EPA EJ Screen](#), [FHWA STEAP](#), [Justice40 Transportation Disadvantaged Census Tracts](#), [NCDOT NEPA process](#).



TDI: Data, Methodology, Applications, and Limitations

- Data sourced from American Community Survey Block Group level (2016-2020 pending).
- Six indicators to generate a Block Group score based on variance from the geographic mean (similar to EJ Index).*
- **Higher score = greater relative level of potential transportation disadvantage.**
- **Score relative to different geographic scales:** MPO/RPO, County, Division, and Statewide.
- Flexible applications in policy, programming, communication, planning, and others.
- Other Tools: [EPA Walkability Index](#), [CDC SVI](#), TPD demographic analysis/[CIA](#).



Accessing the Data

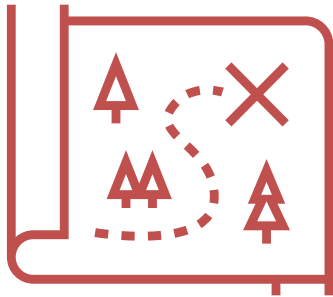
- The EJ and TDI layers may be downloaded from GO!NC
 - EJ: [Environmental Justice Data - Overview \(arcgis.com\)](#)
 - TDI: [Transportation Disadvantage Index Data - Overview \(arcgis.com\)](#)
- The data are polygon shapefiles



Poll Question: What is your primary source to assess transportation barriers during project planning and development?

- Environmental Protection Agency (i.e. EJ Screen, Smart Location, etc.)
- Federal Highway Administration (i.e. STEAP Tool)
- US Census products (i.e. ACS, decennial Census)
- NCDOT
- NC Public Health Department
- Local investigations and engagement
- Other sources (proprietary data, etc.)

Potential Applications



Existing network review



Community communication



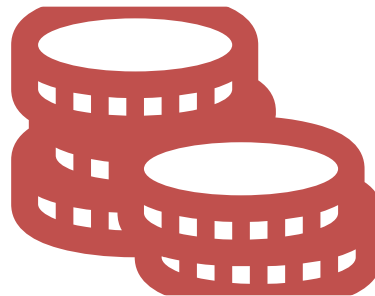
Project ranking or prioritization



Program evaluation



Improving policies to address transportation barriers



Infrastructure grant application



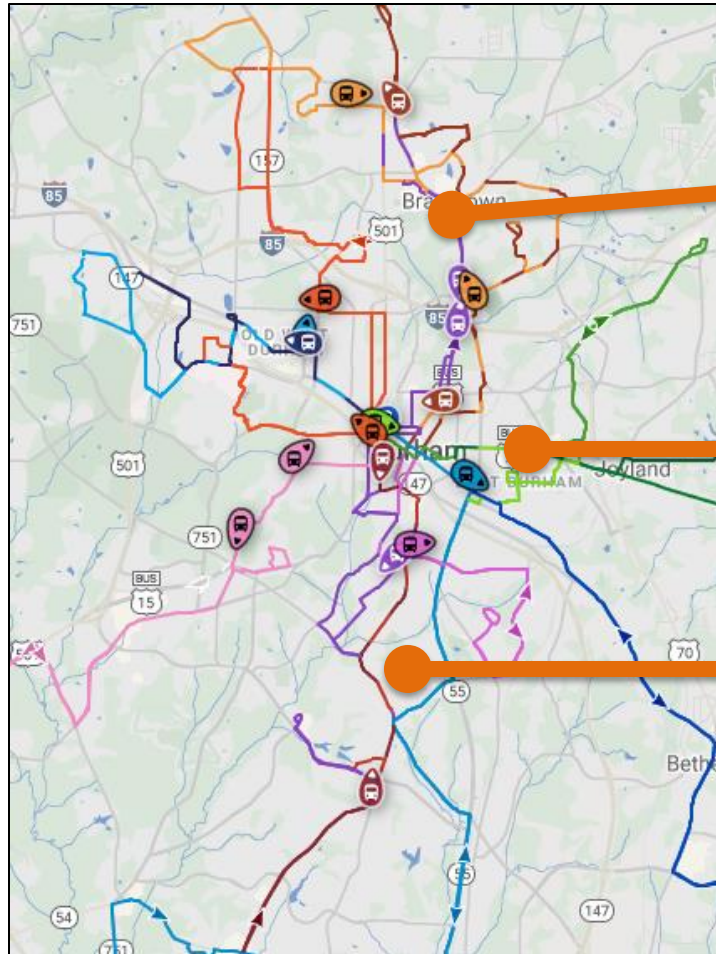
Plan development



And many others

Example Use Case: Existing Network/Service Comparison

Current GoDurham Service



Durham County TDI



Potential Evaluations Using TDI

- Share of routes and stops
- Headways and service hours
- Ridership activity and ramp deployments
- Provision of stop amenities and connecting infrastructure
- Fare type (student, seniors, others)
- Areas for expanded service

Example Use Case: Community Communication

The EJ and TDI tools could be reviewed prior to community outreach to help inform and frame successful engagement events and activities.

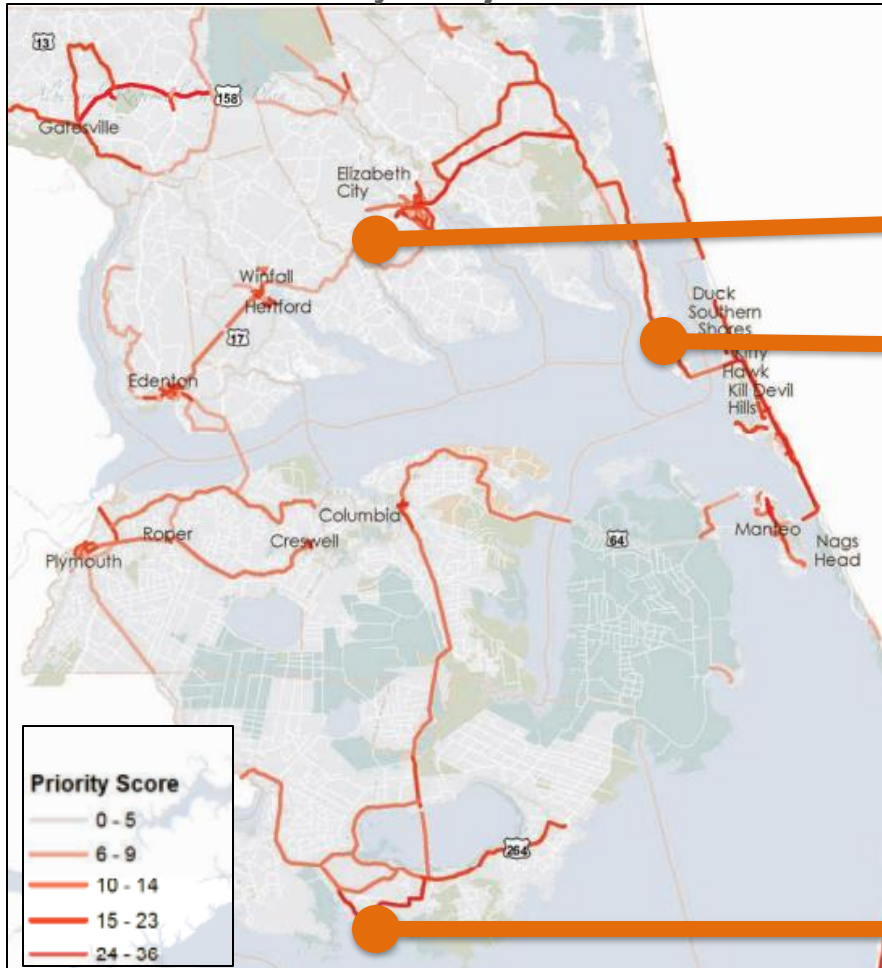
Potential insights could include:

- Increasing childcare resources and child-friendly activities at public engagement events in communities with higher levels of minors.
- Prioritizing distribution of printed information materials over online methods in areas with higher levels of poverty to address potential issues of lack of internet access.
- Conducting more events at social service providers and those serving seniors in areas with higher levels of disabilities and older adults.
- Providing subsidized or free public transportation to the engagement event or as an acknowledgement of participation.

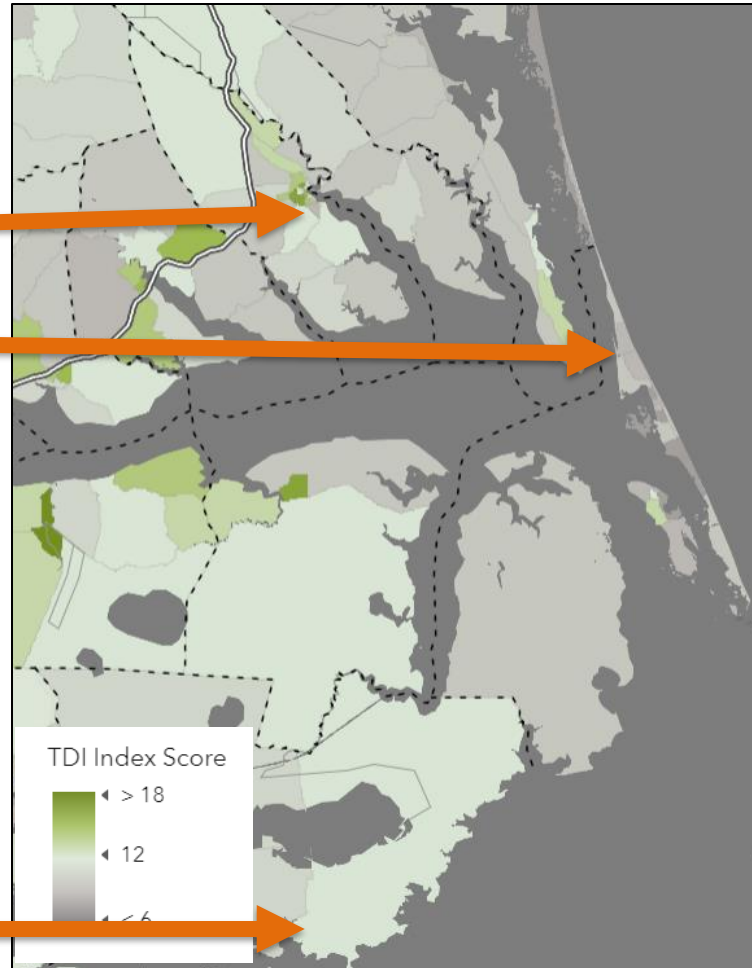


Example Use Case: Prioritizing Proposed Projects

Albemarle Regional Bicycle Plan,
Priority Projects



Albemarle RPO TDI



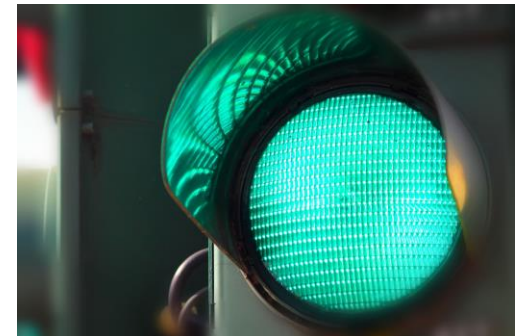
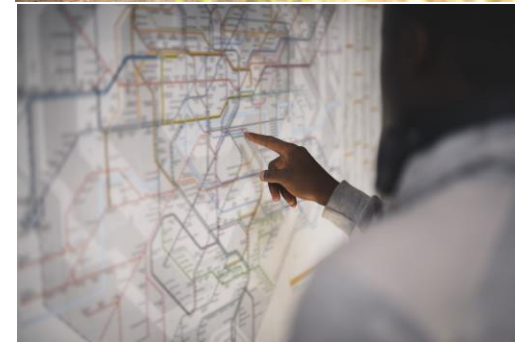
Potential Prioritization Using
TDI

- Criteria or component in prioritization or scoring
- Weight or factor of final rankings
- Role as check of facility recommendations
- NCHRP Report 803, "[Pedestrian and Bicycle Transportation Along Existing Roads—ActiveTrans Priority Tool Guidebook](#)," provides guidance in incorporating equity among other measures.

Example Use Case: Program Evaluation

Review the delivery outcomes of programs intended to increase transportation access or reduce barriers:

- What are the comparative characteristics of communities receiving projects/grants and unsuccessful applicants?
- Are the right partnerships in place?
- Is the program addressing the transportation barriers within the intended community?
- Does the program look at areas with the most or greatest need?



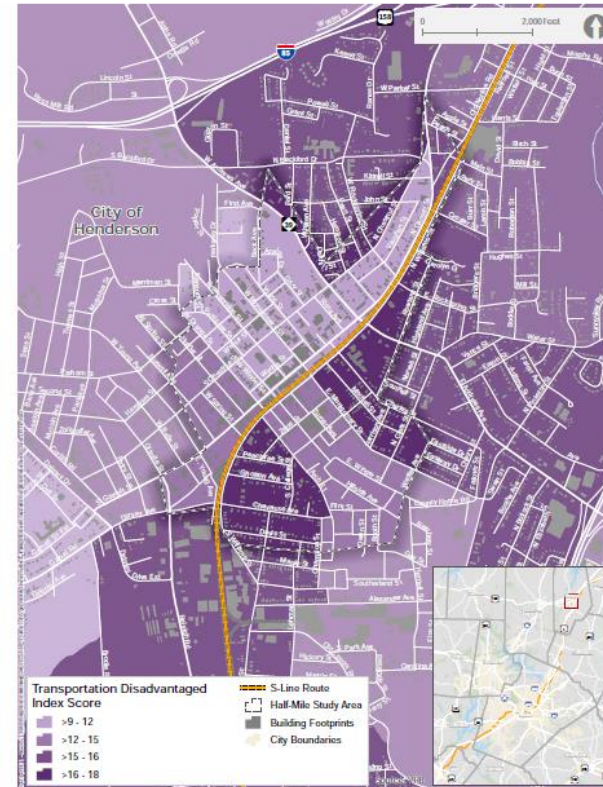
Example Use Case: Plan Development

The TDI measure is being used in a TOD planning study for the S-Line (Phase I – TOD/Station Readiness Report):

- The plan is creating a framework and vision for each station area.
- The data are inputs for the Existing Conditions reports.
- The tool is helping inform the next steps (i.e. Phase II) of the planning process, including station area concepts.

Study Area Analysis

HENDERSON—DOWNTOWN Demographic & Equity Characteristics



- The downtown Henderson study area has a higher concentration of BIPOC residents than any other S-Line study area.
- The downtown Henderson study area has a high social vulnerability rating relative to other S-Line study areas.

TRANSPORTATION DISADVANTAGE INDEX (TDI)

Statewide Average	S-Line Corridor Average	Downtown Henderson Study Area
10.35	9.78	14.61

18 = most disadvantaged / most potential transportation barriers

The Transportation Disadvantage Index (TDI) was developed by NCDOT to identify places and people in NC that face barriers to accessing transportation. (The TDI uses 6 indicators of potential transportation disadvantage measured at the block group level (census data from 2015-2019): Careless households; People with low incomes; Mobility-impaired people aged 18 years and older; Youth aged 15 and under (non-drivers); Seniors; and BIPOC population. These characteristics are weighted to reduce doubling counting and summed to produce a cumulative score ranging from 6 - 18. Higher scores convey a greater level of transportation disadvantage compared to other areas in the state.)

Example Use Case: Improving Policies to Address Barriers

Integrate or reference EJ/TDI in policies to promote consideration of impacts and addressing transportation barriers.



Potential policies could include:

Facilities
maintenance
policy

Complete Streets
resolution or policy

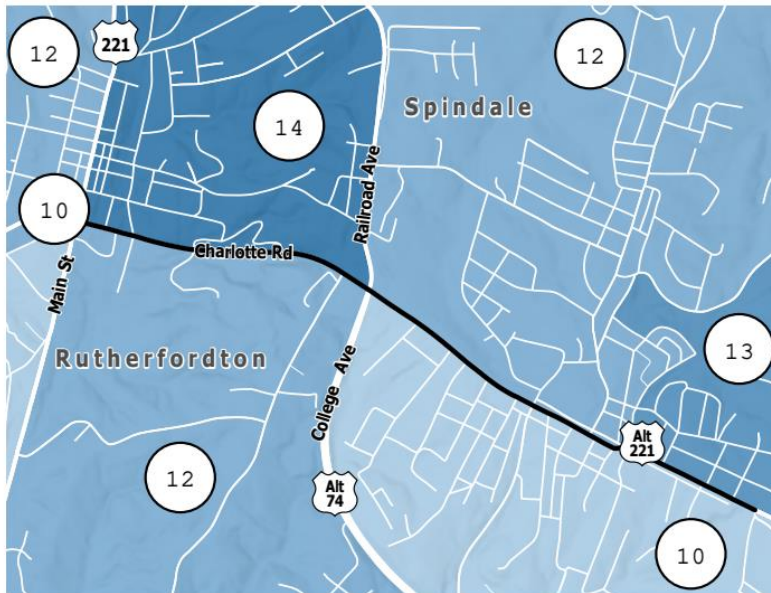
Project
development

Future land use
planning

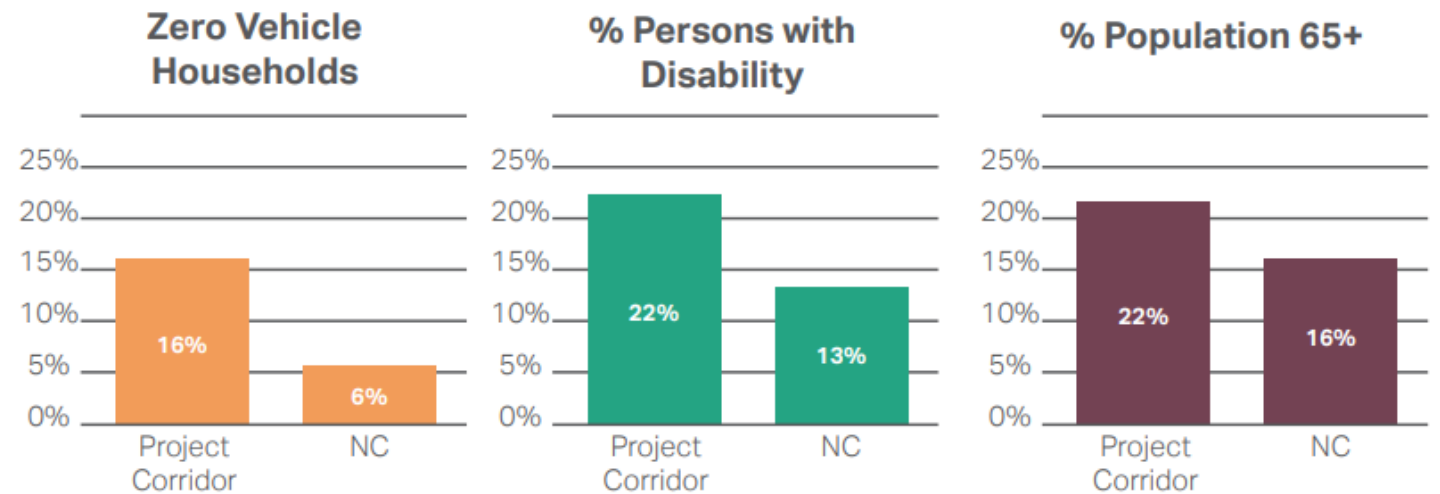
Multimodal
planning policy

Example Use Case: Infrastructure Grant Application

- Spindale/Rutherfordton RAISE Grant for Complete Streets improvements.
- The successful application featured TDI and other demographic data to describe challenges and opportunities.
- Consider using other sources like the Justice40 Disadvantaged Census Tracts.



Transportation Disadvantage Index (TDI) Score Relative to State
(maximum = 18) [Link to TDI Methodology](#)



Supporting Initiatives

- Multimodal Equity Dashboard – *IMD*
- Healthy Environments Collaborative – *IMD/NCDOT*
- Research Projects:
 - Equity Analysis for Long Range Planning – *Transportation Planning Division*
 - Including Equity in BCA – *SPOT Office*
 - Appalachian Regional Commission Accessibility Metrics – *IMD*
 - Assessing Environmental Justice and Historical Transportation Impacts – *IMD / OCR*

Q&A



Type your questions in the Questions box



Please complete feedback form in the chat or [here](#)

Thank You

Contact Bryan Lopez, IMD Regional Planning Manager, for
more information

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