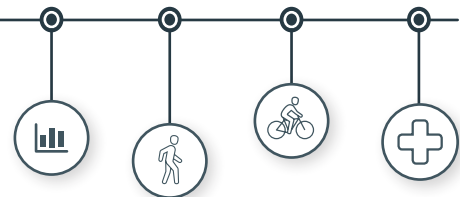**CASE STUDY: GREENSBORO, NC**

Healthy competition: Using data and modeling tools to win funding for active transportation projects

THE BOTTOM LINE

To make walking and biking safer, more equitable and more convenient in Greensboro, North Carolina, the Greensboro Metropolitan Planning Organization (MPO) used a two-pronged approach to maximize regional and state funding allocated to walking and biking projects in the area. First, the MPO developed a rigorous evaluation and data-driven selection process to analyze and select the best possible bicycle and pedestrian projects to receive MPO-directed Transportation Alternatives Program (TAP) funding. And second, to give the MPO an advantage in competing for other state funds — including the portion of TAP funds controlled by the state — the MPO replicated the North Carolina Department of Transportation's (NCDOT) competitive bicycle and pedestrian project selection methodology to identify the most competitive regional projects to submit for consideration for limited state funding.

THE CONTEXT

As evidenced through public surveys, voter-approved bond initiatives, and consistent public feedback, there is strong public demand for improvements in walking infrastructure. This spurred the Greensboro City Council to direct the City's Department of Transportation to draft and implement a walkability policy in 2003. The city's goals in that policy included constructing sidewalks and other pedestrian facilities that would improve safety and access to necessary services and destinations by:

1. Providing pedestrian facility improvements and education; and

2. Strengthening and enforcing local development ordinances to guide sidewalks constructed with new development, redevelopment, or subdivision projects.

These two strategies are helping improve pedestrian safety and access and increase the connectivity of the city's sidewalks. Spurred by the city's ongoing effort to improve pedestrian safety and access and to increase the connectivity of the city's sidewalks, the MPO sought to more effectively spend the dollars they control and win other competitive funding for projects that could help accomplish those same goals throughout the region.

Greensboro DOT

New sidewalks are scheduled for construction in FY 2017 along Guilford College Road.

⊙ WHAT THEY DID

To maximize the total investment in biking and walking infrastructure overall, the MPO did two things: First, they sought to increase the competitiveness of its applications for North Carolina Department of Transportation's (NCDOT) competitively awarded Transportation Alternatives Program (TAP) funding. Second, the MPO sought a rigorous and data-driven methodology to select the best projects for the TAP funds that it directly controlled, including those that would provide the greatest health benefits.

The 2012 federal transportation law, Moving Ahead for Progress in the 21st Century (MAP-21), consolidated former grant programs used for walking and biking into TAP, a single new program.

NCDOT allocates half of TAP funding to projects in any part of the state, while the other half is allocated directly to the state's metro and rural areas. MAP-21 also requires that both MPOs and states create competitive grant programs to award TAP funds.

Since 2013, NCDOT has developed and used a prioritization methodology to rank and identify projects to include in the State Transportation Improvement Program (STIP), a list of transportation projects that will receive state and federal funding, including TAP dollars.

Greensboro DOT

Workers construct a sidewalk on Willow Road.

HOW THEY DID IT

For the MPO-directed TAP funds, the Greensboro MPO conceptualized a model designed to select quality bicycle and pedestrian projects that best met the region's goals, as described in greater detail below.

The MPO then developed geographic information system (GIS) models to automate the evaluation process, adjusting the model parameters to consistently produce intuitive and reasonable patterns of prioritization among the candidate projects. Unlike the challenges that usually accompany the manual evaluation of projects (like limited staff time), these automated GIS models allowed the MPO to evaluate a wide set of candidate projects to select quality bicycle and pedestrian projects for both its share and the state's share of competitive TAP funding.

The formula devised by the MPO enabled staff to evaluate projects according to land use connectivity, transportation system connectivity, safety and mobility, and project readiness and viability. These factors reflected the Greensboro region's most important transportation goals. (See sidebar)

> Projects rose to the top in this evaluation process if they helped meet the region's goals (listed to the right), while also meeting the federal requirements of the TAP program.

In order to identify which potential local projects could be expected to score the highest under NCDOT's evaluation, the MPO replicated NCDOT's prioritization criteria for state-directed TAP and similar funds in the MPO's automated GIS model. This gave local

GREENSBORO'S KEY REGIONAL TRANSPORTATION GOALS

- Supporting the **economic vitality** of the metropolitan area; the larger Piedmont Triad region consisting of the cities of Greensboro, Winston-Salem, and High Point; and the state;

- Improving **accessibility and mobility** for people and freight;

- Increasing the **safety and security** of the transportation system for all users;

- Enhancing the **quality of life** of the metropolitan area;

- **Protecting** and enhancing the natural and human **environment**;

- Enhancing the **integration and connectivity** of the transportation system across and between modes, for people and freight;

- Expanding opportunities for **travel choices** including public transportation, walking, and bicycling;

- Promoting **efficient transportation system management** and operations; and

- Emphasizing the **preservation and maintenance** of the existing transportation system.[1]

projects the best chance to win state dollars and maximize funding for regional projects to make biking and walking safer and more convenient for more people — with a focus on underserved people in the region.

In this case, the City of Greensboro's walkability policy and subsequent commitment to providing connections for those on foot helped make active transportation a priority for the MPO. Using the City of Greensboro's walkability policy as a compelling example, the MPO strengthened its own Bicycle, Pedestrian, Trails, and Greenways Master Plan (BiPed Plan) and extended a bicycle and pedestrian focus throughout the MPO's work. The 2015 BiPed Plan update was accompanied by a Complete Streets policy that codified the commitment of the MPO and its member agencies to improving conditions for bicycling and walking in the area.

On the technical side, the MPO utilized ArcGIS and Model Builder to develop automated GIS routines that allowed for less resource-intensive evaluation of projects, making it easier to evaluate large numbers of potential projects and select the strongest possible projects.

KEY PARTNERS

The Greensboro City Council provided the initial leadership that directed more attention to the need for improved walkability in the city. The City Council adopted the city's walkability policy, which the MPO credits with helping guide the larger regional discussions on pedestrian infrastructure.

The Greensboro Department of Transportation led the implementation of this policy, which included building more sidewalks throughout the city. Through advocacy and input into policies and plans, groups including Action Greensboro, the Greensboro Bicycle and Pedestrian Advisory Committee, and the Greensboro Department of Health elevated the conversation about the need for bicycle and pedestrian infrastructure and the significant benefits it would bring to the community. The Greensboro MPO built upon this work by building a model that analyzed, scored, and ranked proposed active transportation projects to prioritize the highest quality projects for funding.

Partners included:

- Greensboro City Council
- Greensboro Department of Transportation
- Action Greensboro
- Greensboro Bicycle and Pedestrian Advisory Committee
- Greensboro Department of Public Health

BARRIERS ALONG THE WAY

Barriers to implementing the MPO's model included both understanding the GIS tools required to successfully build functional automation models and developing prioritization factors that effectively reflected real-world bicycle and pedestrian needs. Fortunately, the Greensboro MPO had staff with the technical skills for GIS models and did not need to identify a third party to develop the automation models. Although MPO staff spent several years determining how to effectively develop prioritization factors and had the technical skills needed to do so, it nevertheless took a few iterations to develop an effective transportation model.

RESULTS AND BENEFITS

The MPO's primary efforts have been successful in two ways. The methodology has proven effective in identifying the most needed and practical regional projects to receive the MPO-directed TAP funds. Second, the MPO's use of automated GIS models to simulate the state's prioritization process for NCDOT-directed TAP funds has allowed the MPO to put its most competitive projects forward in the state's competition. Limiting the entries to just the projects most likely to win funding is crucial because NCDOT limits the number of projects each MPO and regional planning organization (RPO) can submit for consideration.

"We have created some great decision-support tools for the Greensboro MPO using GIS automation. These tools have made a tangible difference in how we select projects. They've allowed us to apply the conceptual logic of a more traditional manual needs assessment into a GIS routine that can be systematically and efficiently applied.

The gains in efficiency save a lot of staff time, and the systematic nature of the findings supports the credibility of the analysis. Plus, they can be quite a satisfying challenge to work with: we can have fun and learn things at the same time using them."

- Tyler Meyer, AICP, MPO Planning Manager and Technical Coordinating Committee Chair, Greensboro Department of Transportation

As a result, NCDOT awarded the Greensboro MPO the second highest number of projects (behind Charlotte) in the state's Transportation Alternatives and Safe Routes to Schools Programs. Impressively, the region came out ahead of other more populated metropolitan regions. For the fiscal year 2015-2025 Transportation Improvement Program (TIP), the MPO submitted 20 projects (the maximum allowed) and five were funded.

The automated GIS model proved so useful for transportation project selection, that the Greensboro MPO started using similar automated GIS-based approaches to prioritizing other infrastructure needs, including greenways in the region and sidewalks within the City of Greensboro. The MPO intends to continue to use such approaches in the future.

All of the region's approaches combine to make tangible improvements in Greensboro's quality of life — especially for the people who need it the most, since new sidewalks are being built in places where higher rates of underserved populations live. Between 2006 and 2015,

126.6 miles of sidewalk were built in the City of Greensboro: 57 miles due to development ordinance requirements and 70.3 miles due to sidewalks constructed as independent improvements or as part of city or state road projects. Overall, the sidewalk network swelled from 373 miles to 503 miles — a jump of 35 percent between 2006 and 2015.

A large number of these new sidewalks were built in places with underserved populations thanks to higher scoring allocations for projects that filled a gap in the sidewalk network and addressed the following:

- Household poverty;
- Carless households;
- Land use connections;
- Mixed land uses;
- Proximity to bus stops, greenways and trails; and
- Pedestrian crashes.

The Aycock Street and Walker Avenue intersection had the highest pedestrian crash frequency and severity in the City of Greensboro. The MPO's scoring process awarded a high number of points to a project to improve the intersection, improve the sidewalks, install a median, and enhance a crosswalk with state-of-the art technology. The project received TAP funding and will cost an estimated $850,000.

LESSONS LEARNED

The Greensboro MPO offers the following advice to other MPOs:

1 **To get quality results, choose selection criteria that have empirical data tied to your goals.**

Be sure to choose factors for selecting transportation projects that have a solid empirical foundation. Quality selection criteria are required for quality results; GIS automation is just a faster way to implement the selection criteria. For bicycle and pedestrian projects, choose criteria with known relationships to factors like safety, proclivity to walk/bicycle, social equity, and connectivity or gaps in existing infrastructure.

2 **Read before writing.**

Developing an effective conceptual model requires a good understanding of the state of the practice and the literature on the factors that are important drivers of demand, safety, and other relevant effects. The literature on this topic is well developed and should be consulted.

3 **Secure local funding to create a more efficient project pipeline, and fill it with local projects.**

In order to be as effective as possible in implementing federal- and state-funded local projects, it helps a great deal to raise local funds and have them set aside for project development. That way any available federal funding becomes a way to close funding gaps, leverage additional funding, and time projects accordingly for the effective utilization of federal funds during the window that they are available.

With a sizable amount of local funding available, additional federal funding can supplement ongoing efforts, allowing local dollars to be stretched even further, rather than serving as the primary funding source for projects. If federal money isn't available, an active program of projects can be still be implemented.

Flickr: ITRE Bicycle and Pedestrian Program

Parents use the Lake Daniel Greenway, which runs parallel to Benjamin Parkway from West Friendly Avenue to Mendenhall Street for two miles.

⊙ CONCLUSION

Backed by public demand and a supportive policy climate created by their primary local jurisdiction, the Greensboro MPO was able to maximize the amount of regional and state funding allocated to walking and biking projects in the area. The MPO instituted an approach to identify the most competitive projects that would address both local and regional goals, which included healthier transportation options for vulnerable populations.

A rigorous evaluation and data-driven selection process helped the MPO analyze and select the best possible bicycle and pedestrian projects for regionally-controlled funds. Emulating the state's competitive bicycle and pedestrian project selection methodology helped them identify the local projects that would be most competitive for state funds, resulting in a significant increase in funding to improve access to biking and walking throughout the Greensboro region — especially in neighborhoods where higher rates of underserved populations live.

WHO WE ARE

Transportation for America is an alliance of elected, business and civic leaders from communities across the country, united to ensure that states and the federal government step up to invest in smart, homegrown, locally-driven transportation solutions. These are the investments that hold the key to our future economic prosperity. **www.t4america.org**