Safe Routes PARTNERSHIP

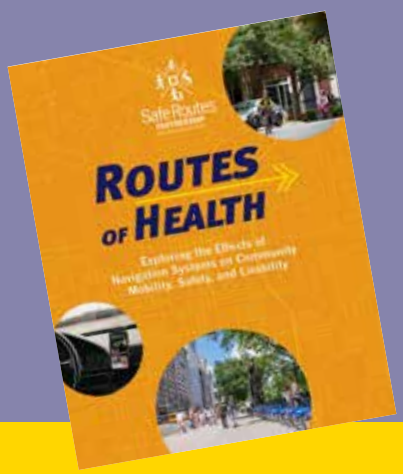
Understanding Navigation Systems and Effects on Community Mobility, Safety, and Livability

FOR LOCAL POLICYMAKERS

Introduction

The navigation and routing revolution is creating a vast, largely unnoticed shift how our streets are used. While in the past people relied on printed maps or asking someone for directions, today, many travelers simply consult apps on smartphones or in-dashboard navigation systems – even for routine journeys – seeking to avoid unexpected traffic and select the best (i.e. quickest) route. As a result, communities are seeing increased vehicle traffic in precisely the spots that planners have deliberately sited away from major roads and vehicular danger zones. With little attention or regulation, this shift in our traffic patterns and behaviors has potentially devastating consequences for our goal of creating a culture of health, threatening active transportation progress and the vitality of streets surrounding our parks, schools, senior centers, and other community hubs. This factsheet provides local policymakers with an overview of navigation systems, the challenges that stem from them, and strategies for addressing the challenges in communities.

Safe Routes Partnership worked on a project with five communities across the United States to better understand the effects that navigation systems are having on local level mobility, accessibility, and livability, and to identify promising strategies to address any negative effects. Five communities were chosen as case studies and partners in this work: Atlanta, Georgia; Bellevue, Washington; Charlotte, North Carolina; Montgomery County, Maryland; and Orlando, Florida. To read additional background information and about the work in these specific communities, visit our webpage.



A Brief Overview of Navigation Systems

Navigation systems and apps are a relatively new phenomenon. There are a number of options for finding your way around town with the press of a phone screen. Apple Maps, Google Maps, and Waze are some of the most popular navigation apps used today. Drivers are still the primary audience but pedestrians, cyclists, and transit riders use them as well. Navigation apps and systems are also used by ride-hailing services like Uber and Lyft and commercial delivery services like UPS, Amazon, and Fedex.

Navigation apps are owned and operated by private companies - Google Maps and Waze are owned by Google and Apple Maps is owned by Apple. These companies can gather real-time information about what is happening on the street including things like traffic congestion, crashes, tolls, and even speed cameras. The apps suggest the best route to the user based on proprietary algorithms that integrate this information.

How Navigation Apps Affect Local Communities

In some ways, navigation apps have made it easier to get from point A to point B. Drivers can know which routes to take to avoid traffic, thus reducing travel time. They can also listen to directions instead of trying to look at a large printed map while driving. Pedestrians and cyclists can plan walking and riding routes. Transit riders can access up-to-date bus and train schedules on apps that integrate transit data. All of this information allows users to make travel plans right from their smartphone and with fairly accurate data to inform their decisions.

However, navigation apps can also bring harmful effects that can impact community walkability, bikeability, and livability. These effects can include increased traffic volumes and traffic congestion in residential areas, distracted driving, increased car emissions, and prioritizing drivers over people walking, biking, rolling, and taking transit. For communities that are actively moving away from auto-centric transportation planning to better serve all users through a Complete Streets approach, are seeking to improve transportation safety through a Safe Systems approach, or are investing in active transportation, the goals and impacts of navigation systems run contrary to local goals and priorities.

Also, the harmful effects of navigation apps are not shared equally. Communities of color and low-income communities are more likely to experience the negative consequences of our transportation system including navigation app technology. Low-income communities are already more likely to have poorer pedestrian and bicycle infrastructure and more high-speed, high-traffic roads. With a baseline of less supportive infrastructure for walking and bicycling, increased traffic or rerouting of cars onto streets not designed to accommodate them makes it more uninviting and dangerous for people walking, bicycling, and taking transit.

Addressing Navigation App Challenges in Your Community

Challenges with navigation systems are one piece of systemic issues related to transportation and land use that affect community livability, transportation safety, accessibility, and other local priorities. While communities continue to grapple with automobile reliance, insufficient transit access, and lack of multimodal options, there are a number of promising directions to address the effects of navigation systems that are exacerbating local challenges. Additional recommendations and details are provided in the report on our webpage.

- **Support federal policy interventions**. There are growing calls for the U.S. Department of Transportation to update the federal motor vehicle regulatory framework to address emerging technologies, namely autonomous vehicles (AVs). Regulating AVs' route optimization could likely serve as a foray into advancing regulations, programs, data collection efforts focused on the routing features of smartphone apps, ride shares, and in-dashboard navigation. Support federal changes that gives the National Highway Traffic Safety Administration (NHTSA) authority to regulate and investigate safety concerns with navigation apps and give local jurisdictions guidance on how to address the effects of routing.

- **Increase public awareness by including discussion of the effects of navigation systems on community in driver's education, distracted driving campaigns, and other public awareness and education programs.** Currently, there is little to no discussion of navigation systems in

driver education programs and safety campaigns. States that have hands-free laws may touch on safe interaction with a smartphone while driving, but there are opportunities to broaden awareness of how navigation systems work, how they can be used as a tool, but also how they should not detract from good driver behavior.

- **Adjust local policies and planning to recognize navigation systems as a potential contributor to adverse traffic impacts and incorporate data analysis into planning practices.** These policy and planning efforts may include comprehensive plans, transportation master plans, plans for new development or redevelopment, area master plans, or other local transportation and land use planning. Recognizing navigation systems as an influencer of traffic patterns is especially important when planning for intensification of land uses that are already likely to generate more automobile trips. Support proactive local data analysis using the methodology in the report on our webpage to understand the real-world effects of navigation systems on the local community. Utilize data and community input to prioritize and advance pedestrian and bicycle infrastructure improvements in areas and on corridors most likely to be affected by routing.

- **Utilize transportation demand management (TDM) strategies as a complement to infrastructure improvements to encourage walking, bicycling, transit usage, and telework as alternatives to driving for commuting.** Much of the influence that navigation systems have on traffic patterns results from underlying pressure on the roadway system during peak hours that correspond to drivers commuting. Information, encouragement, and incentives provided through TDM programs help people know about and use all their transportation options to optimize all modes in the system.

- **Make navigation system providers aware of local priorities whenever possible.** This can happen by exploring partnerships with navigation system providers for data sharing. Other avenues include exploring pilot programs with navigation system providers as they make public commitments to safety and to communities. Partnerships should include mechanisms for the provider to listen to and understand local concerns and priorities.

Conclusion

Navigation apps and systems are now a part of our transportation system and will continue to be in the foreseeable future. As transportation evolves, we must be aware of how our communities are impacted and how we can proactively address the challenges. Federal, state, and local policy can all play a role in ensuring community mobility, safety, and livability is improved, not harmed.

Footnotes

[i] Black, Jennifer L., and Macinko, James. Neighborhoods and Obesity. Nutrition, Reviews. 66.1 (2008): 2–20; Safe Kids Worldwide, "Latest Trends in Child Pedestrian Safety: A Five-Year Review," October 2007, http://www.safekids.org/assets/docs/ourwork/research/pedestrian-safety-research.pdf; Active Living By Design, "Low Income Populations and Physical Activity," http://www.bms.com/documents/together_on_diabetes/2012-Summit-Atlanta/Physical-Activity-for-Low-Income-Populations-The-Health-Trust.pdf.

[ii] "What Is Tdm?" Mobility Lab, May 5, 2021. https://mobilitylab.org/about-us/what-is-tdm/