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Are Accessibility Evaluation Tools Ready for Prime Time?



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Issue

In the United States, local governments typically evaluate the transportation impacts of new development based on the expected effects of the development on nearby traffic flows. These flows are most often measured in terms of “level-of-service,” or LOS, from “A” (free flow) to “F” (forced flow). If a traffic impact analysis (TIA) finds that the LOS on streets and intersections near the proposed development will degrade below a certain threshold, the project developer may be required to undertake mitigation efforts, including funding nearby transportation system improvements to lessen the projected traffic delays occasioned by the new development and/or reduce the scale of the proposal — or they may risk the project not being approved at all. LOS mitigation frequently ignores travel via modes — such as walking, biking, scooters, or public transit — other than motor vehicles. This emphasis on nearby traffic effects and motor vehicle mobility can discourage development in already built-up areas and, in doing so, ignore both the project’s regional effects on travel and traffic and the economic, social, and environmental benefits that arise from agglomerations of activities.

In response, a growing number of researchers and practitioners have argued that an accessibility-focused approach would be a more conceptually complete and practical way to assess the transportation effects of new developments. Accessibility analyses consider the ease by which various destinations can be accessed by foot, bike, and public transit, as well as by car, and how proposed new developments might change this. As

the number of accessibility adherents in planning research and practice has grown, there has been significant progress in the development of access evaluation measures and tools. For this research, we (1) developed a conceptual framework for accessibility analysis (Figure 1), (2) used this framework to assess the promise and pitfalls of 54 measures and tools developed to evaluate access, and (3) conducted interviews with five practitioners around the U.S. to learn about early efforts to incorporate access measurement into planning practice.

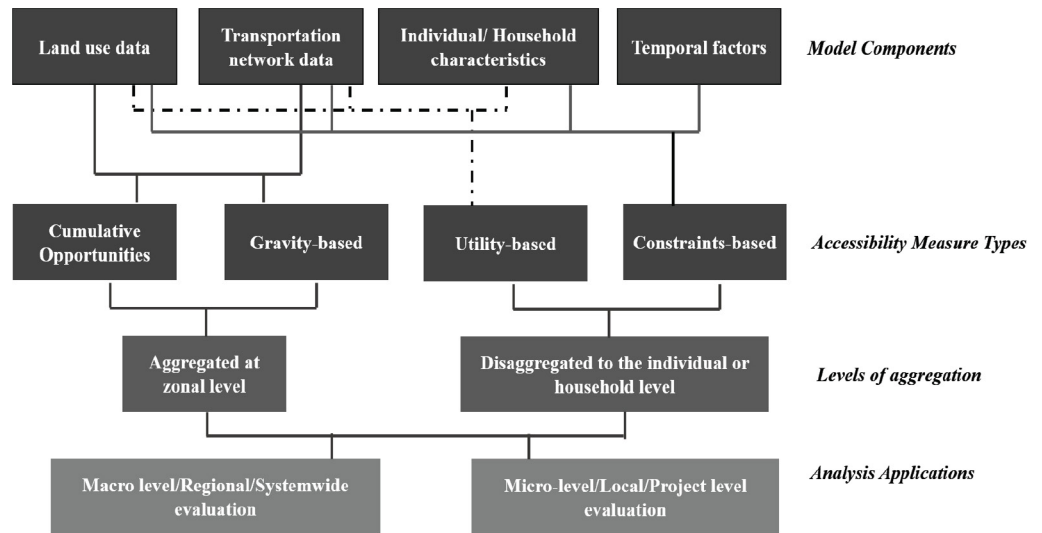
Study Approach

We developed a conceptual framework based on the accessibility literature and used it to review 54 different access measures in light of their theoretical basis, data requirements, basic units of analysis, travel modes and trip purposes accounted for, and potential application to planning practice. We also interviewed planning practitioners with the states of California, Hawai’i, and Virginia, in the San Francisco Bay Area, and operating nationally who are among the first to test and deploy these measures in planning practice. We limited our evaluation to accessibility measures that consider the movement of people only, and did not consider the movement of goods.

Research Findings and Conclusions

- Accessibility is a compelling concept, but a challenging one to fully operationalize. In addition to transportation system and land use characteristics, theories of access posit that many other factors are important as well — such as destination and travel options, traveler preferences

Figure 1. Measures of accessibility, associated components, aggregation level, and analysis applications



and attributes, safety, convenience, comfort, aesthetics, transportation system reliability and disruptions, and traveler perceptions of destination opportunities. While these factors have all proven important to travelers, many are difficult to reliably measure.

- No single tool developed to date takes into account most of the factors thought to affect accessibility, and indeed the many facets of the concept may mean that none ever will. However, heartening progress has been made in developing access measures and access-focused frameworks that account for multiple access dimensions, which are gradually being deployed in practice.
- Most current access evaluation measures focus on places (as opposed to households, firms, or travelers) and take into account only the transportation and land-use components of access, and are unable to account for how access varies among different population groups. More work is needed to develop individual and household access measures, which can then be aggregated up for place-based analyses to better depict and account for the equity-related factors that affect access.
- Access measures that consider individual- or household-level accessibility, known variously as utility- and constraints-based measures, are more theoretically robust than place-based measures, but they tend to be harder to interpret and communicate to non-experts. As a result, place-based tools have to date been favored by both planning scholars and practitioners.
- Most of the access measures developed to date are designed for regional scale planning and scenario evaluation, while specialized tools for local development impact assessment at the project level remain both place-based and comparatively rare.
- While access measures are often presented as alternatives to mobility-focused evaluations, many to date account only for motor vehicle travel and relatively few evaluate multimodal travel.
- The current pace of accessibility analysis tool development for practice may increase as more jurisdictions incorporate accessibility and associated performance measures into their plans and policy documents. State and regional leadership on accessibility research and tool development and state mandates on measuring and tracking access at the regional and local levels could both improve and accelerate the deployment of access measures in practice.
- Continuous feedback from stakeholders and qualitative supplements to accessibility analyses will likely be needed to improve the interpretability of the most technically sophisticated access measures, which can be complex and difficult to explain to non-experts.
- Future work should also focus on developing accessibility tools that can account for multiple means of travel (walking, biking, shared mobility, etc.) as well as substitutes for travel (such as telecommunications).



More Information:

Siddiq, F., & Taylor, B.D. (2021). Tools of the Trade? Assessing the Progress of Accessibility Measures for Planning Practice. *Journal of the American Planning Association*. <https://doi.org/10.1080/01944363.2021.1899036>.

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