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Mobility Data Sharing: Challenges and Policy Recommendations

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Mobility Data Sharing: Challenges and Policy Recommendations

Massive amounts of trans-portation data are generated every day. These data can support transportation planning, policy, and research—especially when it comes to emerging mobility options such as scootersharing, bike-sharing, and ridehailing.
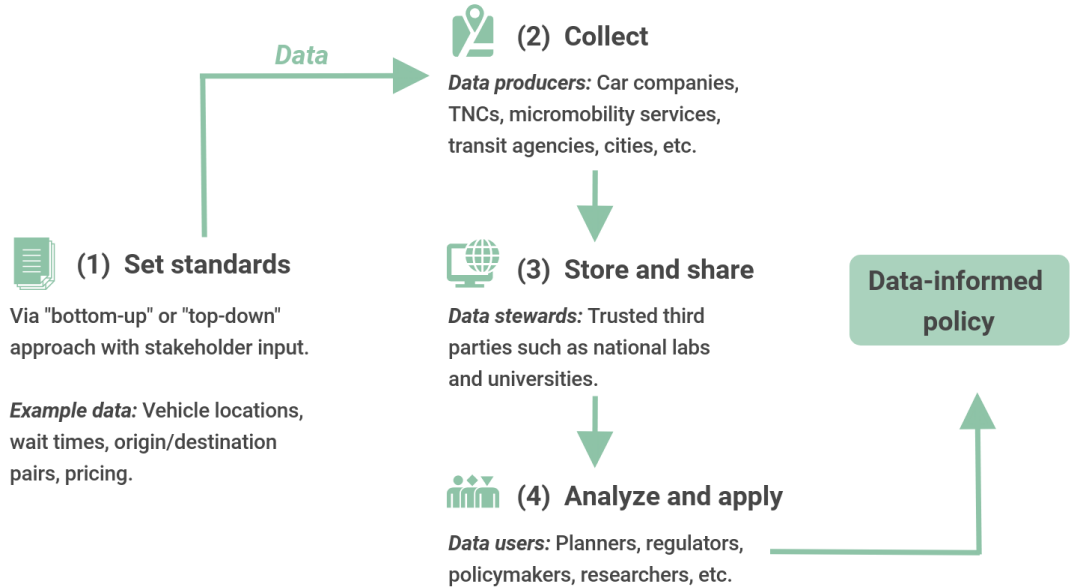
However, there are not yet well-established mechanisms for sharing mobility data. New policy frameworks are needed to streamline and expand mobility data sharing while respecting privacy and proprietary concerns. Frameworks that achieve these goals must consider how best to (1) standardize, (2) share, (3) securely store, and (4) analyze and apply mobility data. This brief summarizes insights from the UC Davis issue paper "Mobility Data Sharing: Challenges and Policy Recommendations", which addresses each of the above components.

A framework for effective mobility data sharing.

Data

(1) Set standards
Via "bottom-up" or "top-down" approach with stakeholder input.

Example data: Vehicle locations, wait times, origin/destination pairs, pricing.

(2) Collect
Data producers: Car companies, TNCs, micromobility services, transit agencies, cities, etc.

(3) Store and share
Data stewards: Trusted third parties such as national labs and universities.

(4) Analyze and apply
Data users: Planners, regulators, policymakers, researchers, etc.

Data-informed policy

Data-Sharing Challenges

There are five key challenges to mobility data sharing:

(1) Cost of data collection and storage. High costs mean that public data-collection efforts are often limited in number and scope, leading to short-sighted transportation and land-use planning.

(2) Lack of data standardization. Inconsistent requirements make data sharing time-consuming and cumbersome for the private sector. Inconsistent data formatting makes it difficult for public agencies to aggregate data from multiple sources for planning and regulatory purposes.

(3) Difficulty of anonymizing mobility data. Fine-grained mobility data—such as data containing coordinates of trip origin and destination—is often personally identifiable, raising privacy concerns. Aggregating data can address this issue, but tension exists between achieving aggregation sufficient to protect privacy and preserving enough specificity for data to remain useful.

(4) High levels of expertise needed for data analysis and visualization. Even if widespread data sharing is achieved, public agencies may lack the resources needed to extract value from large mobility datasets.

(5) Proprietary nature of mobility data. Sharing data, especially data captured in highly competitive markets, can present competitive liabilities for private mobility providers.

Policy Recommendations

(1) Foster voluntary agreement for standardized data specifications.

Standardizing data specifications is key to improving data comparability and reducing administrative burdens associated with data sharing. Voluntary standardization has a history of success in transportation. For instance, the open-access General

Transit Feed Specification was developed in 2005 by a transit provider in Oregon. It has since been adopted by more than a thousand transit operators worldwide. The Mobility Data Specification (MDS), a new data standard for scootersharing services, was recently launched in Los Angeles and is now in use in more than 50 cities. The MDS offers great promise for improving data consistency across a wide variety of mobility options. Concerns over MDS data-storage and -aggregation practices need to be addressed to ensure adequate data security.

(2) Develop clear data-sharing requirements for mobility providers.

Clear, consistent data-sharing requirements will facilitate data exchange between the public and private sectors. Setting such requirements at the state rather than the local level generally yields (i) reduced data-sharing costs, (ii) improved consistency and comparability across jurisdictions, (iii) more resources for oversight, and (iv) greater leverage for negotiating with mobility providers. California and Massachusetts have pioneered data-sharing requirements for ridehailing services that may serve as useful templates for other states seeking to implement similar policies.

State-led efforts tend to collect data at relatively infrequent time intervals and aggregated levels (e.g., data reported quarterly or annually at the county or zip-code levels). City-led efforts may be better suited to collect data at the high resolution needed for certain local planning purposes. New York City and Portland, OR are examples of cities that have established their own data-sharing requirements for ridehailing services.

(3) Establish centralized repositories to hold and provide structured access to mobility data.

Given the scale of mobility data and the costs of secure storage, the federal government is likely best positioned to establish centralized repositories for mobility data. Centralized repositories will provide stakeholders access to data from multiple regions, which is often key to identifying patterns and unlocking insights. Partnering with a trusted third party—e.g., a university or national laboratory—for repository management can help ensure that transparency laws such as the Freedom of Information Act do not result in accidental exposure of personally identifiable information contained in uploaded data.

An excellent example of a centralized transportation-data repository is the Secure Data Commons (SDC). The SDC enables data providers to voluntarily add data and specify which data users (e.g., researchers, city planners, etc.) may access it. Providers can also specify whether or not data may be exported for offline analysis. These protocols enable beneficial use of transportation data while protecting privacy and proprietary concerns. It is important to note, though, that overly restrictive security protocols may make it difficult for users to fully explore and apply available datasets.

(4) Leverage transportation-planning tools.

The easier it is for planners to incorporate transportation data into decision making, the more informed and responsive those decisions will be. Both proprietary and open-source platforms for mapping and visualizing mobility data exist today. Such tools can help address privacy concerns by incorporating moderate aggregation. Among these, SharedStreets, a nonprofit organization, stands out as a way to empower governments to combine and present mobility data comprehensively.

Conclusion

Mobility data can offer much for city, regional, and state planners. But there remain significant obstacles to collecting and sharing mobility data among public and private partners. Oversharing data raises legitimate privacy, proprietary, and logistical concerns. Undersharing data results in sub-optimal decision making. The four recommendations presented in this brief are a foundation for a reasonable "middle ground" approach. Acting on these recommendations has the potential to make data sharing simpler, cheaper, more secure, and more responsive to the priorities of private mobility providers and public stakeholders alike.

This brief summarizes the issue paper "Mobility Data Sharing: Challenges and Policy Recommendations" by Mollie D'Agostino, Paige Pellaton, and Austin Brown.