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Year 25 Final Report

An Urban Agenda for Autonomous Vehicles: Embedding Planning Principles into Technological Deployment

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Autonomous vehicles (AVs) are poised to dramatically reshape the transportation system. They are likely to have significant consequences on urban transportation issues: energy use, vehicle miles traveled, the need for neighborhood parking, the ease of accessing employment, and the incidence of pollution—in both positive and negative directions. National-level governments have typically played the primary roles in overseeing transportation policies, but such actors pay little attention to urban policy and are likely to simply reaffirm the status quo of a privately owned, car-dominated transportation system in their approach to AVs. Municipal policy, on the other hand, offers the opportunity to intervene on behalf of improved planning outcomes, yet most cities thus far lack a coherent strategy or sufficient capacity to respond to technological innovation in transportation. Our research is intended to fill this gap, offering approaches that allow cities to welcome AVs into their transportation systems while also aiding municipalities in achieving their planning goals. We conduct new survey- and model-based research to assess the potential implications of varying AV-focused planning policies, while providing new materials and conducting significant outreach to local government officials.

Final research outcome:

We developed a database of the head transportation and planning officials for all cities of more than 100,000 people in the country (there are a total of 307 such localities). We contacted each of them and asked them to complete a web survey; our response rate was roughly 25 percent. We have also conducted telephone interviews of about half an hour each with a randomly selected sample of 27 public officials who responded to our first web survey. In these follow-up interviews, we asked officials to further explain the ways in which they expected AVs to alter planning in their cities. We also asked them to provide more details about the ways in which their approaches to specific policies were changing because of the availability of AVs.

We published the first paper based on this project, Y. Freemark, A.W. Hudson and J. Zhao, "Are cities prepared for autonomous vehicles? Planning for technological change by U.S. local governments," in the *Journal of the American Planning Association*. This was published in spring 2019. In addition, we have submitted a second paper for publication, Y. Freemark, A.W. Hudson, and J. Zhao, "Policies for Autonomy: How American Cities Envision Regulating Automated Vehicles," to *Transportation Research Part A*. This paper is currently under review.

For future research, we developed a new database of the directors of the 50-largest transit agencies in the United States. We have created a draft survey intended to ask them several key questions about the relationship between their work and the rollout of AVs. In addition, we are taking advantage of this work to develop several additional research streams, including an evaluation of transit officials' interest in developing new technologies, and their "business confidence" about the state of transit today. We expect to roll out this survey in the coming months.

Based on the analysis published in our first paper, we find that 1) few local governments have commenced planning for AVs; 2) cities with larger populations and higher population growth are more likely to be prepared; and 3) while local officials are optimistic about the technology and its potential to increase safety while reducing congestion, costs, and pollution, more than a third of respondents worried about AVs increasing vehicle-miles traveled and sprawl while reducing transit ridership and local revenues. Those concerns are associated with greater willingness to implement AV regulations, but there is variation among responses depending on political ideology, per-capita government expenditures, and population density. Municipal governments' future approaches to AV preparation will likely depend on characteristics of city residents and local

resources. Planners can maximize policy advancement if they work with officials in other cities to develop best practices and articulate strategies that overlap with existing priorities, such as reducing pollution and single-occupancy commuting.

Our work has received considerable interest from the press and from municipalities themselves. Our first paper was discussed in articles in *CityLab* and several foreign news outlets, demonstrating the value of this research for the public at large.

The second paper makes several new findings about the ways in which cities are preparing for AVs. We find broad personal support among officials for regulations relating to AVs in the areas of land use, street right-of-way, and equity, such as for increasing pedestrian street space, expanding access for low-income and disabled people, and reducing sprawl. However, officials emphasized uncertainty with regards to bureaucratic or legal capacity for city intervention outside of land use, right-of-way, and equity; and only a minority expected political support for any policy. Requiring shared vehicles and banning single occupancy vehicles evinced the lowest support of any policy across all spectrums, raising concerns about ongoing efforts to encourage a transportation system with fewer single-occupancy vehicles We identify population size and local-resident political ideology to be most strongly associated with personal and political support for most policies (officials from cities with more liberal residents are much more likely to support AV-related regulations), but local population growth is the most significant characteristic in influencing capacity to undertake policies. Finally, we establish that bureaucrats believe AVs will increase the political feasibility of policy enactment for the proposed policies as compared to the feasibility of enacting them today—with the notable exception of requiring shared vehicles.