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Sustainable Transportation Implications of On-Demand Ride Services

Permalink
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Publication Date
2018-09-01

Sustainable Transportation Implications of On-Demand Ride Services

A Research Report from the National Center for Sustainable Transportation

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National Center for Sustainable Transportation

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Acknowledgments

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Sustainable Transportation Implications of On-Demand Ride Services

A National Center for Sustainable Transportation Research Report

September 2018

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Sustainable Transportation Implications of On-Demand Ride Services

EXECUTIVE SUMMARY

The motivations for this study stem from an uncertainty about whether on-demand ridehailing services such as Uber, Lyft and others, will exacerbate existing transportation issues, or help alleviate them. To that end, the goals of the project are to learn about the perspectives of stakeholders from a variety of sectors, on their reactions to policies and other actions that might enable on-demand services to help alleviate existing transportation issues including congestion, emissions and inequality of access and mobility.

This study aims to address three questions:

1. How well do stakeholders in different sectors and regions, agree about the potential outcomes related to on-demand ridehailing and sustainable transportation goals?
2. What are stakeholder perspectives on the policies and strategies that might facilitate emerging on-demand transportation services to most effectively enhance sustainability and mobility outcomes?
3. What decision making venues and approaches are supported by different stakeholders in the process, and how can these approaches be pursued in order to realize policy goals related to sustainability of on-demand ridehailing? I.e. what venues, and at what level can most effective policies be introduced to facilitate sustainability improvements in transportation by embracing on-demand ridehailing services.

To answer these questions, a series of interviews were completed with stakeholders from California MPOs and RTPAs, from state agencies, the ridehailing industry, and local planning agencies or transportation divisions of cities. A full description of the sampling methods is described below.

Interviewees ranged from MPO directors of large metropolitan areas, to city planners in small or rural areas, to directors of state agencies. Interviewees also included private sector staff in the ridehailing industry. This report outlines their sentiments towards the role of on-demand ridehailing in sustainable transportation, and the potential for these services to alleviate long standing challenges in transportation, including congestion, emissions and equality of access.

The interviewees were split first and foremost, in terms of how much they are thinking about these issues. There seemed to be two poles as far as the level of involvement on this topic, with some interviewees spending very little time thinking about it; either reporting that Uber and Lyft have not been in their area for long, or do not provide a substantial level of mobility, or pose no challenges. In the middle ground were agencies that were thinking about this topic, and keeping tabs on what is happening, but doing little themselves. These interviewees seemed to be taking a wait and see approach; they have a keen interest in what is happening, and hope

to do something at some point in the future; once others have identified some best practices, or at least effective models. Lastly, there were some interviewees who are not only thinking about these topics, but also doing a lot to address these topics either within their local jurisdiction; though some of these participants were also at agencies or organizations with a broader geographic scope.

When asked about specific policies that might address the possible negative environmental impacts of on-demand ridehailing, or might help alleviate the long-standing transportation challenges, most interviewees balked at the idea of a tax. There was a more open attitude towards policies such as the use of public spaces or right of way, including identifying strategic partners such as bars and night-clubs that might offer special pick and drop off for late night passengers/ridehailing to prevent driving under the influence. Along these same lines, one interviewee discussed the potential for special pickup and drop-off areas at tourist locations in their area to allow passengers to avoid congested parking areas – when travelling in multi-passenger or pooled trips.

The third area of policy making that came up in interviews was connecting to transit, or addressing the potential impacts of ridehailing on public transit. A small number of interviewees reported activity along these lines in their region, and some expressed an interest in this. Those who were interested were waiting to see how existing projects fared before implementing something of their own. Others cautioned that transit agencies must be flexible and willing to learn about future mobility. Still at least one interviewee expressed concern for union labor and the loss of transit jobs if future mobility is extensively incorporated into transit.

The final research question in this study is related to perspectives on the best levels of government and venues for addressing the role of future mobility in sustainable transportation. Though interviewees did not all discuss the same elements of this question, there was a general sense of agreement that much of this should be left to local governments, as they are the ones who address these issues currently. However, there was also a sentiment the state could mandate certain targets related to passengers per trip or other metrics, and that the way these metrics were met would still be determined at the local level. Further, several interviewees stressed the need for state and or federal leadership related to how to address the links between automated vehicle technology, and ridehailing, as well as to be a convener of lessons learned in these areas, and to help identify and disseminate best practices.

Overall, there were many different perspectives in terms of what people are thinking about, and how actively engaged in this topic they are. None the less, there was some agreement on the types of actions that might be preferable and the agencies that might carry them out. This report provides more detail on the specific interview questions, as well as noteworthy sentiments, and analysis of the interview transcriptions with respect to the three main research questions addressed in this study.

Introduction

The purpose of the research presented here is to assess the need and support for potential local and statewide actions that might improve sustainability and mobility outcomes related to on-demand ridehailing services. This study analyzes stakeholder preferences for policy-making within different venues, and involving different interests.

The past policy landscape related to on-demand ridehailing services, such as Uber and Lyft, has focused on four inter-related areas. 1. Establishing market guidelines, taking into account incumbent services, or other industries impacted by new services. 2. Ensuring fair labor practices for those who provide the service as drivers or chauffeurs. 3. Protecting consumers and drivers, through insurance requirements and background checks. 4. Providing service equitably both in terms of geographic area, as well as for individual passenger needs.

There has also been a dialogue related to the uncertainty about whether on-demand ridehailing services will exacerbate existing transportation issues, including congestion, emissions and inequality of access/mobility; or help alleviate them. On-demand ridehailing services present an opportunity for policy makers, and other stakeholders to focus on new ways to achieve a more sustainable and accessible transportation system. To that end, this study gathered perspectives from stakeholders across a number of sectors, on the types of actions that might enable on-demand services to help alleviate existing transportation issues. These actions might include incentivizing trips with two or more passengers; facilitating intermodal connections with public transit or active modes, and improving access in areas that are underserved. The political feasibility, and support for various policy avenues is largely unexplored. The perspectives of the stakeholders who will be most affected by these policy decisions, and the extent to which policy intervention is needed, as well as an evaluation of policy mechanisms that will best facilitate these outcomes is not yet well understood. This study focuses on three inter-related questions aimed at gaining a better understanding of these perspectives:

1. How well do stakeholders in various roles agree about the potential goals and outcomes related to on-demand ridehailing and sustainable transportation goals?
2. What policies and strategies will facilitate emerging on-demand transportation services to most effectively enhance sustainability and mobility outcomes?
3. What decision making venues and approaches are supported by different stakeholders in the process, and how can these approaches be pursued in order to realize policy goals related to sustainability of on-demand ridehailing? I.e. what venues, and at what level can most effective policies be introduced to facilitate sustainability improvements in transportation by embracing on-demand ridehailing services.

Collecting the perspectives of stakeholders from a variety of sectors helps to evaluate the need for and feasibility of policies related to on-demand ridehailing and sustainable transportation. There is not likely a one-size fits all solution to the way these services fit into existing transportation eco-systems, and indeed the results of this study indicate that policy makers must take into account the varied systems and contexts throughout the state; and likely

throughout the US. Further, there is an existing dialogue on these topics among transportation professionals, public interest groups, academics and policy makers. In this study, we take a systematic approach to documenting this dialogue and identifying meaningful messages and policy guidance that is not possible without a rigorous scientific approach.

Background

There are several mechanisms through which emerging services have the potential to benefit sustainability and mobility outcomes, including:

- Increase vehicle occupancy
- Improve multi-modal complementarity and connections
- Introduce new mobility options to poorly served areas
- Intensify the use of efficient vehicles
- Reduction in household vehicle ownership levels (long term)

In this study we focus on the first item; increasing vehicle occupancy, though we also address topics of integrating on-demand ridehailing with sustainable transportation more broadly…

Potential Impacts of On-Demand Ridehailing

Positive impacts of on-demand ridehailing on sustainability are expected to occur through reductions in VMT, congestion and related emissions. The potential for these outcomes to be fostered by on-demand ridehailing services, would occur when the use of on-demand services permits individuals to use a suite of transportation modes including transit and other public transportation, walking and biking. While individual travel patterns are typically fairly stable over time, the introduction of these services changes the landscape of travel options and may enable some individuals to adopt transit; for example, by providing first and last mile service that is less expensive and easier to access than traditional taxis. These new services could also enable would-be drive alone commuters to use transit for one direction of the commute trip, knowing that if any changes in plans, or need for flexibility arise throughout the day, a reliable, convenient and flexible option is available; a "guaranteed ride home".

There is some evidence that on-demand ridehailing and other emerging transportation services facilitate positive sustainability outcomes. Existing literature suggests carsharing participants own fewer vehicles than others (Martin et al. 2010), and that those who use ride-sourcing services may have lower VMT (Rayle et al. 2014), less dependency on automobile travel, and in some cases reduced levels of vehicle ownership (Dutzik et. al 2013). Those who use on-demand ridehailing services also tend to use transit (American Public Transportation Association 2016), although there is also evidence that on-demand ridehailing users might have otherwise used transit (Metropolitan Area Planning Council 2018), or that using these services in some cases decreases the use of transit (Clewlow and Mishra 2017).

This work suggests that on-demand ridehailing services, along with carshare can affect shifts towards more sustainable transportation patterns, including reduced household vehicle holdings, and individual VMT. However, on-demand ridehailing services also have the potential to increase auto travel, VMT and possible congestion if there is a tendency to replace transit trips with on-demand ridehailing. In order to achieve the best sustainable transportation outcomes with on-demand ridehailing, policy intervention is likely necessary.

Existing Policies and Programs

Throughout California, local governments, MPOs and cities acknowledge the potential for on-demand services to enhance mobility and sustainability outcomes. General plans, local ordinances, sustainable community strategies and climate action plans mention these services among the actions that will improve sustainability and mobility outcomes. For example, the San Diego Regional Plan (City of SANDAG 2015 p. 70) states, "There's no reason why our regional transportation system can't leverage the power that mobile applications, or apps, and other smart phone features give us – and they will." In the City of Oakland, the Climate Action Plan includes **Action TLU-18**, to "Encourage and assist employers and transportation funding agencies to offer support for alternative transportation strategies that can help reduce the need to drive. These strategies may include… ridehailing and car share programs…" (City of Oakland 2012 p. 60). Despite the apparent interest, with limited information about the impacts of these services it is difficult for policy makers at any level to know what actions to take, if any. Indeed, many of the plans noted above lack a clear means for incorporating on-demand ridehailing into the achievement of sustainable transportation and planning goals.

In addition to local interest in leveraging on-demand services for sustainable transportation goals, the on-demand transportation services industry is very creative and innovative in and of its own right. Some industry practices may be good resources in the development of sustainable transportation policies for on-demand ridehailing. For example, the two largest companies, Uber and Lyft, both offer services described as ridesplitting; a single driver picks up separate passengers on the same trip. Another innovative practice has emerged in the form of partnerships between public transportation agencies and ridehailing services. Through a variety of programs, a number of public transportation agencies have offered subsidies for ridehailing trips to and from transit stops, as part of the transit service, or as a augmentation of transit service in areas with lower densities where it is costly to run fixed route services. Ridesplitting and partnerships with transit agencies without considering connections to existing policies and regulatory goals, policy interventions will likely enable greater enhancement of sustainability and mobility improvements with on-demand services. While these practices are likely to have benefits in terms of sustainable transportation, it is not clear that business models will continue to align with the public interest, and whether these models are sustainable economically. So, there is likely a need for policy action to achieve the best outcomes in this area.

Further, integrating on-demand services into the strategies for meeting existing regulatory goals, such as those of SB 375 has the potential to improve sustainability and mobility outcomes beyond the levels at which the industry may achieve on their own. Existing regulations such as the ZEV mandate and the CAFE standards may also provide opportunities for on-demand ridehailing to operate with better efficiency and improve sustainability. Perhaps on-demand ridehailing can reduce total VMT, decrease the number of vehicles on the road, and improve the efficiency of drivers' time, all without substantially impacting the convenience of the service. Though ridesplitting may not have been introduced with sustainable transportation goals in mind, it has the potential to be part of the means for improving the sustainability

impacts of on-demand ridehailing, even more so, if incorporated into local transportation planning and policy. Additional examples of avenues for sustainable transportation policy related to on-demand ridehailing include partnerships between transit providers and on-demand ridehailing services to augment or supplement existing public transportation service.

Policy Development and Implementation

The third area of the literature that this project is related to is the pathways for the development and implementation of policies on this topic. If policies or programs were to be implemented to draw on on-demand ridehailing to address existing transportation challenges, are there certain policies or programs that would be more appropriate at different scales of government? For example, if a tax were introduced, what level of government would be best suited to implement something like that? How about for other policy approaches?

There are a number of potential policy processes which can involve decision makers and other stakeholders to different extents. Possible processes include co-regulation, which involves bringing stakeholders and policy makers to the table, and aims to address the needs of both groups in the policy making process (Cannon and Chung 2015). However, there are potential drawbacks of this approach, such as agency 'capture', and the possibility of weakened standards (Cannon and Chung 2015).

Despite these documented changes in travel behavior and relevant industry innovations, it is not clear the extent to which these services will achieve sustainability and mobility outcomes on their own. There are a number of actions that may improve mobility and sustainability outcomes in transportation with on-demand ridehailing services, but the best policies to facilitate these mechanisms are not known. Nor do we know what types of policies are logistically and politically feasible for local government and other stakeholders. This study begins to answer these questions, by identifying the key factors that are relevant to the stakeholder groups affecting, and impacted by policies aimed at aimed at improving sustainability and mobility impacts with on-demand transportation services.

Methodology and Data

This study centers on the collection of interview data from stakeholders across a variety of sectors, within California, working on or engaged in transportation, environmental resource protection or ridehailing industry. Interviews were completed during February and March of 2018, and included participants from MPOs, RTPAs, State agencies, local planning and community development departments, local transportation planners, as well as NGOs and the ridehailing industry. This section outlines the data collection methods, and the interview content; email invitations to participate in the study, and the original interview script are included as appendices.

Interview Data Collection

The goals of the interviews are to collect information about stakeholder perspectives on the potential for on-demand ride services to improve sustainability outcomes in transportation and to determine what policy mechanisms, at what scale of government, and within what venues such policies should be pursued. The interviews also collect information about the policy processes expected to be most successful, and the current dialogue related to this issue; who is talking to whom, what about, and where is more communication needed?

Sampling Frame

Stakeholders recruited for participation in the study include representatives from California State agencies related to transportation and/or the environment such as the Public Utilities Commission, and the Air Resources Board. Next, the interviewees include representatives from Metropolitan Planning Organizations (MPOs), Regional Transportation Planning Agencies (RTPAs), and city-level community development and/or transportation planners, from throughout California. Additional stakeholders included the on-demand ridehailing industry, and community and non-profit organizations involved in equity or sustainability related to transportation.

The sampling frame consisted of the following agencies/organizations within California, or the California office, for those that are national organizations:

- City planning or community development departments
- Regional Transportation Planning Agencies and Metropolitan Planning Organizations
- Environmental or Transportation Focused Non-profits and NGOs in California; identified through the list of Climate Plan partners, and the UC Davis Three Revolutions Database
- State agencies with a natural resource, environmental or transportation focus; selected from a complete list of California state agencies
- Companies for which TNC permits have been issued by the California Public Utilities Commission

Other stakeholders considered for participation include county planning departments, transit agencies/authorities and air quality management districts. These were not included in the original round of interviews, in order to keep the scope of the project manageable, and to not overlap too much with other research efforts; including Susan Pike's work on ridehailing partnerships with public transportation providers. Future directions for this project should include these other stakeholders, and may also include the expansion of the sampling frame to similar stakeholder groups throughout the US, or in other select locations.

Sampling Strategy

The target for data collection is to conduct 100 stakeholder interviews. The population of stakeholders varies by type so some types will be oversampled, while others will be randomly sampled assuming response rates of 25-50%. For each of the target groups identified above, the following table shows the full sample size (where possible), and the target number of interviews to complete within that group, the assumed response rate and the number of invitations that will be sent to that group in order to reach the target.

Table 1. Planned Interview Invitations by Target Group

Target Group	Total Population	Sample Goal	Expected Response Rate	Invitations (Planned)
City Planning Agencies – 26 Randomly Selected Cities	Approx. 430	10	50%	26
City Planning Agencies – 26 largest cities in California	26	10	50%	26
Regional Transportation Planning Agencies and Metropolitan Planning Organizations, including County Transportation Commissions	44	20-25	50%	44
State Agencies	12	10	--	12
Ridehailing Service Providers	11*	10	--	10
Interest Groups and Non-profits	25	10	25%	25
Total		95		100-150

*There were 11 companies with TNC permits in CA at the time of project initiation.

The director or other leader from each of the agencies and organizations was invited to participate in an interview, by email. In some cases, initial contact was made with administrative support to gather the correct contact information. The recruitment emails also asked for the initial contact to forward the invitation to another colleague, if there is someone more appropriate. In some cases, more than one participant from an agency was interviewed.

The final sample of individuals participating in interviews was 42; from 39 different agencies or organizations throughout California. The distribution of interviewees according to stakeholder

type is shown below. The actual number of invites differed somewhat from the planned number of invites for some stakeholder types. For the cities, the smallest cities have limited information available on their websites, and through emails and phone calls, no one was reached, to obtain the correct contact information for the best person to complete the interview, so ultimately no invite was ever sent. This was also true for a few of the relevant state agencies.

The number of actual invites for NGOs and Interest groups was much larger than that planned. Initially the sampling frame for the NGOS included all of those that were members or otherwise affiliated with Climate Plan, but the list was expanded to include all of the NGOs and Interest Groups who were on the UC Davis ITS Three Revolutions mailing list. The response rate for NGOs is somewhat lower than the other groups; this is attributed to the absence of an interview invite reminder for this group. Due to the timeline of the project, reminders were not sent to this group, and that is likely why there is a lower response rate.

Table 2. Interview Participants by Stakeholder Type

Stakeholder Type	Invitations (Actual)	Interviews	Response Rate
City Community Development, Transportation, or Traffic Planners	39	11	31%
Regional Transportation Planning Agencies and Metropolitan Planning Organizations, including County Transportation Commissions	44	17	36%
State Agencies	9	5	55%
Ridehailing Service Providers	3	1	33%
Interest Groups and Non-profits	42	8	19%
Total	**137**	**42***	**31%**

* A total of 42 interviewees participated, from 37 organizations and agencies

Interview Content

The interviews included three sections with a total of 12-13 questions in the script. Additional questions and clarification were provided as needed, as well as some information about the professional experience of the individual completing the interview, and their agency. A general description of the content of each question is included below (the full interview script is attached as an appendix). Interviews were conducted over the phone, and took 30-60 minutes to complete. The script was used as a guiding document, though additional questions, or alternative question wording was used on many occasions; reflecting the personal nature of interviews as a conversation between two people.

The interview script was modified over the course of the study, to better outline the relevance of the project to participants, and to improve question clarity. Notably, the interview focus was shifted from improving the use of ridesplitting with services like UberPOOL or Lyft Line, to

addressing sustainable transportation needs through the use of ridehailing services more generally. These changes were made largely because a few of the initial interviews were with stakeholders in rural areas, where the presence of these services is limited. In some of these areas, planners are not thinking about how to get more passengers per ride, but are more focused on determining what the impacts of ridehailing services might be, and the extent to which addressing those impacts with programs or policies is possible, or even necessary.

Before beginning each interview, information was shared about the project motivations, and the topics that would be covered in the interview. In addition, every participant was informed that participation is voluntary, and that they may choose not to answer any questions. Further, participants were informed that the use of their responses will remain anonymous; none of the information they provided will be connected to them individually, nor to their agency or organization.

1. Organization

    A. In your own words what is the function or mission of your org/agency?

    B. Who does your org/agency serve, and who do you interact with?

    C. What, if any, activities related to environmental quality and/or sustainability is your agency involved in?

    D. (*Skip this question for transportation specific orgs – should be covered adequately by question 1.*) What, if any, activities related to transportation is your agency involved in?

2. Ride-Splitting Policies

    A. First, have you been discussing, or hearing about on-demand ride services in the context of sustainable transportation? If so, what are some of the major themes that have been a part of those conversations?

    B. Is your org/agency involved in any work related to on-demand ride services and sustainable transportation or mobility? If so, what?

    C. Do you think there are any ideal policies or programs to enable on-demand ridehailing to alleviate issues in transportation such as congestion and/or emissions?

    D. Some (other) proposed or existing policies include like taxing all trips, with a potential exception for multi-passenger or pooled trips, subsidizing trips that connect to other modes of transportation, or allowing the use of public facilities like taxi stands and bus stops for passenger loading/unloading for multi-passenger (or other specific) trips. What are your reactions to these kinds of policy avenues?

    E. What do you see as the primary hurdles for policies to enable on-demand transportation services to help increase multi-passenger trips, or other aspects of on-demand ride services that we discussed??

3. Policy Process

    A. First, who do you talk with about these topics; the impacts of on-demand ride services on sustainable transportation and mobility outcomes?

    B. Are there other individuals, organizations or agencies with whom you would like to be in a dialogue with, related to these topics? If so, who, and what aspects of these topics?

    C. If policies or programs were to be implemented to draw on on-demand ridehailing to address existing transportation challenges, are there certain policies or programs that would be more appropriate at different scales of government? For example, if a tax were introduced, what level of government would be best suited to implement something like that? How about for other policy approaches?

Interview Data/Summaries

Following the interviews, student employees completed interview transcriptions. A few interview audio recordings were not audible for the entire interview, so in some cases there is missing data. Notes were taken during all interviews so these are cross-checked to fill in gaps and to decipher the audio files where possible. In addition, the very first interview was not recorded. In the remainder of this section, summaries of the responses are presented, according to stakeholder type. For this report, the interview questions of related to the primary research focus are included; sections 2, 3, and 4 of the interviews.

2. Ride-Splitting Policies

    A. First, have you been discussing, or hearing about on-demand ride services in the context of sustainable transportation? If so, what are some of the major themes that have been a part of those conversations?

For the most part, interviewees are aware of on-demand ride services, though the level of knowledge differs; and some of the more rural counties that participated in interviews were not as aware or knowledgeable. The level of knowledge seems to coincide with the extent of impact experienced by the interview participants. Those who are more impacted, or within whose jurisdiction there is more of a presence were more knowledgeable, perhaps out of necessity.

For cities, it largely depends on the size of the city. Some smaller cities just recently got on-demand ridesharing services, do not have it at all, or have a limited amount of drivers, while large cities are more aware and thinking about ridesplitting. Counties are fairly split, either having a lot of information, or very little, without much in the middle ground. For MPOs: While most are aware, the services are relatively new to many areas and have a minor presence, thus limiting the amount of information.

The degree of involvement in conversations varied among interviewees. Some cities are involved in these conversations, whereas few of the county level planning agencies interviewed reported that they are involved in conversations about on-demand ride services. State

agencies are either directly involved in the work, when it is relevant to them or are highly engaged in learning about the services, and discussing the potential impacts, including impacts related to the introduction of autonomous vehicles. Of course, the industry is involved in these conversations, and in particular, deciding on the right path to reward passengers who choose to use ridesplitting, or pooled options. The information available to, and identified by NGOs and MPOs largely involves looking at other programs, and to some extent implementing things in their areas. While one NGO is more involved in various conversations related to policy actions, urban planning, and infrastructure investment others are more focused on pilot studies. For MPOs the focus is on program/pilot partnership ideas like: replacing bus lines with Uber/Lyft, and incorporating these services with microtransit and dial-a-ride.

B. Is your org/agency involved in any work related to on-demand ride services and sustainable transportation or mobility? If so, what?

The majority of cities are not directly involved in developing policies related to ridesharing or ridesplitting. However, some are involved in conversations and investigating potential policies, partnerships, and programs. A number of ideas for programs came from cities including: pick up and drop off hubs, mandated ridership criteria, senior transportation programs using Uber/Lyft, connectivity with Lightrail, pilots, financial incentives. Cities are likely to be trying to address issues such as first/last mile connectivity, shared mobility in general, and accessibility and development issues, such as parking. While some cities are beginning to engage in pilot programs, for the most part the activities of cities are limited.

Though the state agencies that participated in interviews are fairly engaged with the topics surrounding the impacts of on-demand ride services, their involvement in policy development or other programs is still in early stages; presumably because there is still limited information available about the impacts of these services, and state agencies do not want to make policy decisions without better information about these things. Further, one key state agency, the PUC, did not participate in an interview, though they have been the key state agency involved in passing policy related to the management of these services. As the interviewee from one agency put it, they are in a stage of diagnosis and prognosis not yet in prescription.

The majority of the counties that participated in interviews are not involved in any programs or activities related to on-demand ride services, even if these services are present in their areas. One is involved in a program with Scoop, and there is a transportation assistance program in one county that is like on-demand services.

NGO involvement is limited, for the NGOs that participated; though of course there are examples, such as the Shared Use Mobility Center that are highly involved in activities and programs related to on-demand ride services. One NGO is involved in research and producing a paper related to these services and their impacts. Other activities of NGOs include engagement in conversations through convening researchers, policy makers and interested groups, participation in conferences and development of or learning about research in this area.

For the most part, MPOs are not explicitly involved in programs with on-demand ride services, though they may be involved in or supporting other programs, or true rideshare programs with partners such as Scoop, Waze, Rideamigos, or mictotransit providers. MPOs are trying to address the limits of a one size fits all solution and therefore are engaged in activities such as feasibility studies, looking at incentives and benefits, and coordinating vanpooling. Others are thinking about potentially using on-demand ride services to serve the elderly, replace fixed routes with vouchers, or develop a program for employee transportation (transportation demand management).

Existing policies among the interviewees are limited; a few examples from MPOs include: subsidizing a limited number of rides per year, and encouraging alternative commuter options and ride matching services.

    C.   Do you think there are any ideal policies or programs to enable on-demand ridehailing to alleviate issues in transportation such as congestion and/or emissions?

Ideas for policies included a dial-a-ride contract with Uber/Lyft, carrots versus sticks; "show benefits of doing things a different way and have them make the choice themselves", and finding ways to ensure equitable access to services. Ideas proposed by the state agencies interviewed included things like quasi-pricing like HOV lane access, rightsizing vehicles, regulating vehicles, venues as partners for ridesplitting partnerships. A fairly common sentiment among interviewees was that if road pricing were to be implemented, it should be for all; it is ineffective to apply policies just to a portion of users. Other ideas that were supported by interviewees from county transportation planning agencies included: financial incentives for pooled services, preferential parking, and employee programs to change behavior. Those from NGOs supported policy ideas that would connect different types of transportation, and transit oriented development, while MPO interviewees' ideas included incentivizing microtransit/multi-passenger TNCs and increasing investment in technology.

    D.   Some (other) proposed or existing policies include like taxing all trips, with a potential exception for multi-passenger or pooled trips, subsidizing trips that connect to other modes of transportation, or allowing the use of public facilities like taxi stands and bus stops for passenger loading/unloading for multi-passenger (or other specific) trips. What are your reactions to these kinds of policy avenues?

For the most part interviewees agreed that a tax limited to on-demand ride services penalizes this group specifically, but does nothing to reduce the number of single occupant vehicles on the road otherwise. Other comments on a tax included that it would be regressive; i.e. these services are already potentially limited in the access afforded by lower income individuals, so this would further create problems like that. Some counties pointed out that a tax on a service that already has limited availability would not be productive. Enforcement of a tax was also mentioned as a potential problem.

When discussing a potential program that would make public facilities available for pick up and drop off when pooled services were used, most interviewees spoke favorably. More rural counties felt no need for this kind of program, since curb space is not a current problem, nor in high demand as it is in dense urban areas. One NGO expressed caution related to this type of policy, likely because of concern related to the use of public facilities largely for the benefit of private interests. Other concerns included the ability to enforce such programs, since they would require some mechanism to see all pickups and drop offs, and in areas where there is already high demand for curb space and a limited number of bus stops, there may not be room for such programs, even with the goal of reducing the demand for curb space.

E. What do you see as the primary hurdles for policies to enable on-demand ride services to help increase multi-passenger trips, or other aspects of on-demand ride services that we discussed?

Hurdles discussed by city interviewees included choosing between incentives versus disincentives, a lack of resources and staff in smaller cities and the ability to change city code, cynicism (of consumers and citizens), convenience, and difficulty changing travelers' behaviors. Similar hurdles were identified by interviewees from state agencies, including: individual decisions and behavior, convenience and consumer behavior. One county interviewee mentioned that it is a "second-wave adopters" practical reality as well as the cost, and lack of staff. Others focus on the lack of funding; no transportation sales tax, and regulatory abilities. NGO interviewees identified hurdles including implementation, consistency, and government capacity, as well as political will, and addressing equity. Lastly, in response to this question, MPOs mentioned societal change, and experiences that it is hard to be in communication with TNC's. Two also mention funding and operation limitations (staff size), and point out how the current one size fits all transportation investment doesn't work for everyone.

3. Policy Process

A. First, who do you talk with about these topics; the impacts of on-demand ride services on sustainable transportation and mobility outcomes?

While some cities are not talking to anyone about these issues, others are speaking to developers, transit authorities, and engaged in internal conversations about the impacts of on-demand ridehailing. Notably, the state agencies included in the study discussed having a lot of discussions, due to high levels of connection, and their power to convene groups representing a variety of interests. Some county level interviewees mentioned speaking with local associations of governments, or regional transportation agencies, while one county stakeholder responded that they are talking to nobody. NGOs perhaps have more breadth in who they are speaking with, as they are involved in conversations with policymakers, academia, agency staff, and industry. And MPOS also have a highly varied group: some with transit operators, some with community stakeholders, councils of governments; each region is doing something different, and for some it's not even applicable because the service is very limited there.

B. Are there other individuals, organizations or agencies with whom you would like to be in a dialogue with, related to these topics? If so, who, and what aspects of these topics?

Many cities want to speak more directly with transit authorities/agencies, other jurisdictions, and academia. There is some mention of industry and disenfranchised groups. Two of the state agencies interviewed mentioned wanting to engage with Caltrans and State Transportation Authority, the federal government, the disabled, youth, and seniors. The county level interviewees were interested in improving their dialogue with larger MPOS, urban areas with pilots, Caltrans, HWA, and health and human services, while NGOs might like to have more contact with emerging technology thinkers (research) and regional county stakeholder groups. The MPOs indicated they would like to be more connected to university (researchers, presumably), TNC's, other agencies, Caltrans, and transit operators.

C. If policies or programs were to be implemented to draw on on-demand ridehailing to address existing transportation challenges, are there certain policies or programs that would be more appropriate at different scales of government? For example, if a tax were introduced, what level of government would be best suited to implement something like that? How about for other policy approaches?

In general, there was a sentiment that state or at least regional guidance would be useful to address the potential impacts of on-demand ridehailing, but that many decisions about the details of how to achieve goals set at the state or regional level should be left up to local decision makers.

One city said only local level, but most said regional level would be good because issues transcend jurisdictional boundaries. A couple of cities mention the state as a good level of government due to the creation of guidelines, policy outline and the importance of every level in taxing. State level agencies said that pricing might be best at the local level, but all agreed that the state should be the main venue. One state agency referred to the federal direction related to vehicle standards and performance, as well as highway safety. Industry focused on tax authority, and therefore suggested state and federal government. One of the county interviewees said curbside actions and tariffs should be implemented at the local level, but others said that MPOs and RTAs would be well suited to implement policy. Other counties said pricing at the state level and more money and funding are available at that level, though it is disconnected. The NGOs pointed out that local level might be inefficient for enforcement and coordination, and regional governance might best to capture most trips and keep things consistent and efficient. MPO interviewees rarely mentioned the city as an appropriate level, while many mentioned regional level governing as best, and two mention the state as an appropriate venue and to have them take more of a leadership role.

<u>4. Open ended</u>

    A. Interviewees were also asked an open ended question about any other ideas or concerns. A few of the sentiments are included here.

Some of the concerns raised by cities included costs, as well as how to address autonomous vehicles. One city planner mentioned these services may encourage transit users to use these services instead (if pooled services were incentivized). Others mentioned equity concerns since this type of goal would likely have fewer benefits for lower income populations. Language and disability concerns were also mentioned, and one city referred to the idea of technology as an environmental justice issue.

Those interviewees from state agencies raised concerns about equity: not pricing people out, and achieving the benefits of transportation generally, including accessibility to all. County interviewees were concerned with lack of funding, employee behavior, and users' physical distance, presumably in rural areas. One idea from discussions with county transportation planners is to promote ridesharing at the state and federal levels, but there was a sentiment that this is not happening.

Interviewees from NGOS raised a number of concerns including: unknown future of transportation, government capacity, poor policy communication, and multi-jurisdictional challenges, and suggested pursuing better and more understandable conversations as well as focusing more on what is emerging, and not only what is happening today. MPOs lad a variety of concerns. These were very different across MPOs; one focused on how it's a beneficial service, but is not ready for policy. Transit operators still see as a threat. No reason to carpool in rural areas and little demand, as well as not profitable. Accessibility: handicap, "stranger danger" - older people less likely to use, geographic range is spread out, Determination of subsidy threshold, funding (federal), operating costs, taxi cab industry. Some ideas from MPOs included partnerships between public and private, focus on underserved and disadvantaged areas, better relationships between transit operators and on-demand ridehailing service providers, policy requiring pooled service everywhere, and replacing transit services with new ideas for smaller regions.

Analysis and Results

The three areas this study investigates are discussed here, and how well the results support the hypotheses related to stakeholder perspectives on the role of on-demand ridehailing in sustainable transportation.

1. Assess differences according to stakeholder type

How well do stakeholders in various roles agree about the potential goals and outcomes related to on-demand ridehailing and sustainable transportation goals?

Interviewees were split into three main groups in terms of their activities related to policy for sustainable transportation and ridehailing. A few spend very little time thinking about this topic; reporting that Uber and Lyft have not been in their area for long, do not provide a substantial level of mobility, or pose no challenges.

In the middle ground were stakeholders that are thinking and talking a lot about ridehailing, but taking a wait and see approach. Last, there were some interviewees who are already doing a lot to address these topics within their local jurisdiction, typically in larger metropolitan areas, or rural areas with a strong desire to improve public transportation.

The interviewees varied primarily in terms of what they do, and how they might approach these issues. For example, cities are concerned with these issues from perspectives that seem largely based on their size. Smaller cities are less concerned with the potential impacts of ridehailing and doing less. Large cities are experiencing more impacts, and are more actively engaged. For state agencies, it seems that there is much more involvement in dialogue with all different types of stakeholders, however there is limited policy action thus far. MPO engagement also seems to vary with the size of their region, and NGOs are more involved in advocating for the needs of specific groups.

The types of concerns also vary to some extent, with the type of stakeholder. Cities and counties are more concerned with keeping up to date about what is happening with these services and their impacts and relevant policies. Smaller jurisdictions are also concerned with ensuring that whatever might be done to address the impacts of on-demand ridehailing can be accomplished with existing capacities and funding. MPOs and state agencies are potentially more concerned with addressing equity issues.

2. Evaluate level of agreement on benefits and challenges of potential policies

What policies and strategies will facilitate emerging on-demand transportation services to most effectively enhance sustainability and mobility outcomes?

There is a high degree of agreement among all interviewees for a number of points, and although stakeholders within different types of settings might be focused on different aspects of on-demand ridehailing, the interviews taken together paint a fairly complete picture of what

factors should be taken into account, when considering the impacts of on-demand ridehailing and potential solutions for those impacts.

When asked about specific policy approaches to align ridehailing with sustainable transportation goals, most interviewees were not in favor of a ridehailing tax; something recently introduced in Chicago. Additionally, several interviewees pointed out that policies involving pricing should target all single passenger vehicles, not just those involving ridehailing. Discussions also highlighted political and equity challenges associated with pricing strategies.

On the surface there was disagreement among interviewees about the potential ways ridehailing may integrate with, complement, or impact public transit. Some smaller and more rural areas embrace the potential for ridehailing services as a cost effective means to improve public transportation, through many are waiting to see the outcomes of early pilot programs. Others cautioned that transit agencies must be flexible and be willing to learn about future mobility. And a number of interviewees expressed concern about the loss of union transit jobs if ridehailing substitutes public transit. Though different situations call for different relationships between ridehailing and public transportation, the different issues identified by interviewees represent he need for diverse ways to incorporate on-demand ridehailing into sustainable transportation.

Ridehailing is already blurring the lines with public transportation and policy addressing the relationship between new and existing services must enable transit agencies to modernize and take advantage of these services, while at the same time maintaining equity in service and employment practices.

There was also a high level of agreement among interviews that policy should address the links between automated vehicles and ridehailing as well as information sharing and transparency about future technologies in order to be forward thinking. Many interviews covered the need for state and federal leadership to address these issues, convene lessons learned and disseminate best practices.

3. Analyze the policy network and policy process preferences

What decision making venues and approaches are supported by different stakeholders in the process, and how can these approaches be pursued in order to realize policy goals related to sustainability of on-demand ridehailing? I.e. what venues, and at what level can most effective policies be introduced to facilitate sustainability improvements in transportation by embracing on-demand ridehailing services.

Early findings from this study highlight the need for a coordinated statewide effort to position ridehailing to alleviate existing transportation issues. Local governments seek state level guidance on targets and dissemination of lessons learned, but want to retain local control over the details to address ridehailing in their unique areas. This is not the first time California Policy would strike such a balance; for example, AB 32 and SB 375 set goals for greenhouse gas

emissions reductions, but decisions about how to reach these goals are largely left to local jurisdictions. This approach makes sense; there is a huge variety among California communities.

As one interviewee pointed out, we must start thinking about dense urban areas of San Francisco as a unique case for Uber and Lyft, rather than representative of the experiences of communities across California. Challenges arising in San Francisco are relevant to other areas; how to allocate right of way and curb space? How to address impacts to and integration with transit? However, there are areas of California that are quite different.

Some California counties; Trinity County and Alpine County, for example, have barely more than 1000 residents. Counties like these would embrace the increased presence of ridehailing services, as a means to expand public transportation, which often has limited coverage and hours of operation, as well as long wait times in these rural areas. Other areas of California are visited by huge numbers of tourists; with traffic patterns resulting not from commuters but from visitors to places like Lake Tahoe. Interviewees from these areas are looking for ways to alleviate challenges arising from the increase in Airbnb and Vacation Rental by Owner use; ridehailing could encourage visitors to leave their cars at their vacation rentals, and serve as a collector through neighborhood areas

Conclusions and Policy Recommendations

Overall, there were many differences in terms of what stakeholders are thinking about, and how actively they are engaged in this topic. None the less, there was some agreement on the types of actions that might be preferable and the agencies that might carry them out.

Policy making related to sustainable transportation and ridehailing is still in early stages. Pilots are testing some approaches and the policy dialogue continues. Policies and programs addressing ridehailing must be flexible enough to address the impacts occurring across the diversity of California communities, but specific enough to offer real guidance and targets.

Local governments should advocate for local control but be willing to work within state level frameworks. Regulations and planning related to the impacts of ridehailing needs to become more tangible, and must address the needs of California's diverse stakeholders and communities to the greatest extent possible.

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