The Impacts of Autonomous Vehicles on City Budgets

A Fiscal and Policy Analysis for Silicon Valley

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Disclaimer

This study has been prepared for the Silicon Valley Leadership Group, San Jose, California. The student author conducted this study in partial fulfillment of the requirements for the degree of Master of Public Policy at Mills College and in compliance with the requirements of the Committee for the Protection of Human Subjects. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Mills College Public Policy Program, the sponsoring Client organization, or any other organization or agency.

Executive Summary

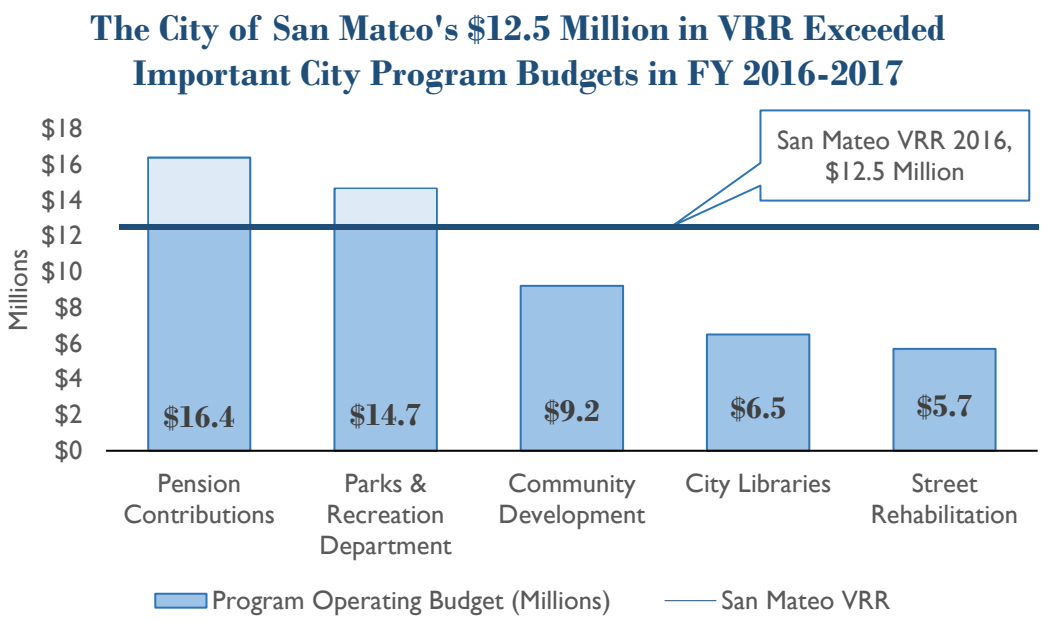
Toward an AV Future

Within the next few years, Autonomous Vehicles (AVs) will become a reality on our roads. This new class of vehicle will be capable of understanding and reacting to traffic conditions in real-time and, as their underlying technologies progress, they will be able to do so with fewer limitations and restrictions.

Analysts predict that there could be as many as 1.3 million AVs on American streets by 2030, and that the number could balloon to 83 million by 2050 (Lavasani, Jin & Du, 2016). In keeping with broader trends in attitudes toward transportation and ownership, it is most likely that transportation network companies (TNCs) like Lyft and Uber will take the lead in providing access to AVs, reducing personal ownership (Clements & Kockelman, 2017).

City Revenues Could be Negatively Impacted

How will the changes the Autonomous Vehicles bring to the way we drive affect cities ability to generate revenue and provide services? Revenues derived from vehicle ownership and operation—such as sales taxes, gas taxes, parking fees, and traffic fines—play a small-but-significant role in our cities. AVs, however, will likely reduce individual, local purchases of automobiles (Schoettle & Sivak, 2015), utilize electric rather than fossil-fuel-powered engines (Fagnant & Kockelman, 2015), rarely need to park (Zhang, W., Guhathakurta, Fang, & Zhang, G., 2015), and obey the rules of the road by design (Walker-Smith & Tarver, 2018).

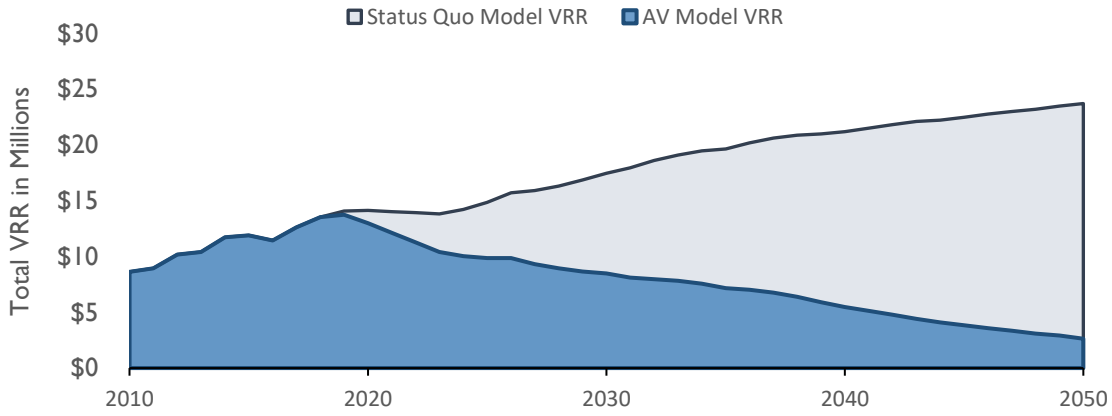


In FY2016-2017, these Vehicle-Related Revenues (VRR) for the City of San Mateo represented about 6% of its overall $120 million in revenues. While the $12.5 million San Mateo raised in VRR may seem small, when placed in the context of other city programs, the risk becomes clearer.

How AVs will Change Revenues in the Future

Based on VRR data provided by the City of San Mateo, I created a model of its potential municipal revenues through 2050 under both status quo and widespread AV diffusion scenarios. Historically, the city's VRRs have grown with population. However, the traits of AVs not only decouple the need for cars, fuel, and parking from population growth, they also actively reduce overall demand. What's more, these effects are likely to become more pronounced as AVs become capable of operating under more varied conditions (Lavasani, Jin, & Du, 2016).

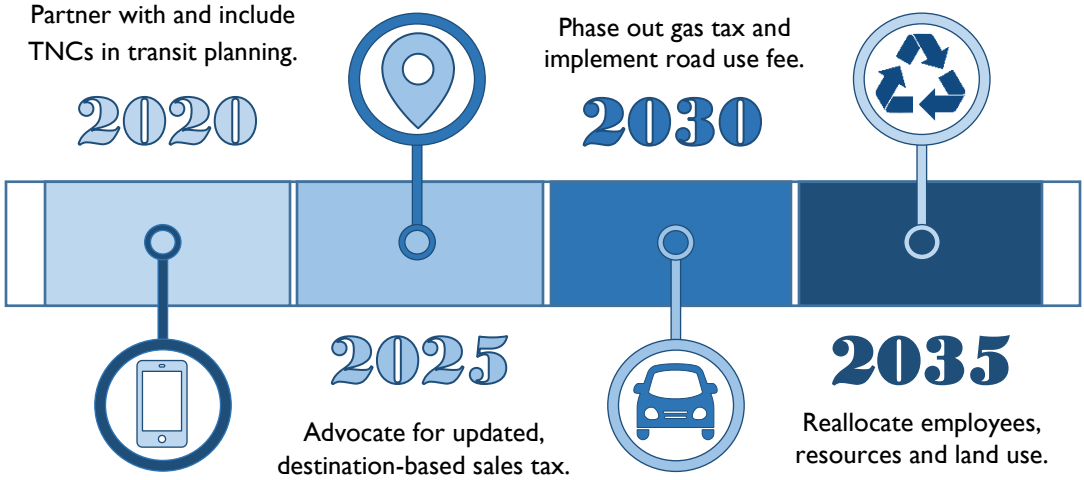
2020 is the Turning Point for VRR
By 2050, Shortfall Could be Over $20 Million



For the City of San Mateo, shortfalls between budgeted and actual revenues may begin to arise as early as 2020, with the introduction of the first AVs. As technology advances over the following decades, and in the absence of effective policy interventions, that gap may grow as large as $20 million (in 2018 dollars) by the middle of the century.

Smart, Timely Policies

Cities Must Take Proactive Steps Starting Now to Embrace AVs and Avoid Their Negative Financial Impacts



With this potential revenue decrease only a few years away, cities must immediately consider strategies for taking advantage of the positive effects of AVs, while minimizing their negative impacts on revenue, equity and infrastructure.

Over the next two years, and through the mid-2020's, cities should work to build relationships with TNCs. Cities must include TNCs in long-term local and regional transit planning, as well as provide incentives for private partners and riders to operate and use AVs in conjunction with public transit systems. As AV technologies mature, cities and TNCs may find further opportunities for cooperation, such as data handling, transit routing, or repurposing of parking infrastructure.

The following decade, from the mid-2020's through the mid-2030's should be dedicated to modernizing California's sales and gas tax systems. In both cases, there will be limits to what cities can accomplish unilaterally, as these taxes are primarily regulated at the state level (California State Board of Equalization, 2017). Cities should therefore organize to advocate for tax change with the state legislature, and educate their constituencies on the importance of reform.

Sales tax reform should be aimed at moving from point-of-sale taxation to destination-based taxation, to ensure that cities reap the benefits of AVs that are housed and operated within their jurisdictions. The gas tax, by contrast, should be repealed entirely, and replaced with a Vehicle Miles Traveled (VMT) or "road-use" tax that properly distributes the cost of infrastructure across all drivers and riders (Thornberg et al., 2017). Such a system could be modeled on findings from California's recent pilot program (California State Transportation Agency, 2017).

Finally, as changes to vehicle use solidify in the 2030's, cities will need to think about how to reduce, reuse, and reallocate resources dedicated to cars and drivers. Potential strategies include repurposing of parking structures, reduction or elimination of parking zoning requirements and reclamation of existing space, and reassignment of parking and traffic enforcement officers to other areas of public safety and law enforcement.