STEERING AWAY FROM THE CLIFF: How a Transit Doomsday Scenario Will Harm Californians and the Climate

Appendix

How did we analyze the data?

734,966,119 fewer rides over five years

In 2022, the Metropolitan Transportation Commission (MTC) asked transit agencies to create short-range transit plans (SRTPs). Agencies were asked to project how a lack of new funding would affect their service and ridership over five years. MTC defined three possible scenarios for the agencies to explore::

1. Robust Recovery: There is adequate funding to return overall revenue to 100% of pre-pandemic levels, with escalation. This would not assume proportionate recovery across all revenue sources.
2. Revenue Recovery, with Fewer Riders: Federal relief funds are eventually exhausted, although other funds recover to pre-pandemic levels. However, farebox revenue remains stagnant (20-50% below pre-pandemic levels, depending on current status) for the next five years.
3. Some Progress: Federal relief funds are eventually exhausted and total revenue available to the agency is 15% below pre-pandemic levels for the next five years

Today, ridership is currently hovering at about 54% of pre-pandemic, while “other funds” such as sales tax revenues have returned. We calculated the total ridership projected over five years from scenario one minus scenario two for each agency and found the service cuts would result in 735 million fewer rides.

Each transit boarding is counted as a ride, and does not include transfers as that data is unavailable.

$~5B total in annual car-ownership costs over 5 years
$994,437,360 per year

Pre-pandemic, 6% of trips were taken on transit (according to MTC’s Bay Area Transportation Study 2018/2019). In the SRTPs, projected ridership for scenario two is ~68% of 2019 ridership. Therefore, if no new funding is identified to support transit operations, we can project 68.13% of 2019 transit riders will be impacted by a loss of mobility.

7760000*(0.06*0.6813435) = 317,233

However, we know that every transit trip won't result in a new car trip. A 2021 report published by the National Academies of Sciences, Engineering, Medicine and the Transportation Research Board analyzed public transportation's role as a climate solution. One of the key benefits of public transportation is it enables riders to avoid emissions that would have otherwise occurred if they had driven. The researchers found that if not on transit, an estimated 32.9% of passengers would have shifted to ride hail, driving alone, taxi, or carpool (which is divided by 2.5 passengers per carpool). So, we apply a modeshift factor of 0.329.

317,233*0.329 = 104,370 people who will likely need to shift to car travel

Car prices are inflated right now due to supply chain issues, high demand, and more. But buying a car is just the beginning of the new expenses, which must also account for insurance, repairs, fees, gas, etc. To calculate annual car ownership costs we used AAA's formula which can be found here (the cost of the vehicle here is annualized as a "loan repayment"). We subtracted $1,200 from the annual car costs to account for a transit pass that riders might have been paying for prior to the transit service reductions.

104,370*9,528 = $994,437,360

$2,766,848,700 total up-front cost of cars purchased

Starting with the same 104,370 people who will likely need to shift to car travel (explained above), the up-front cost of buying a car could be catastrophic for household budgets. NPR reported in March 2023 the average cost of a used car is $26,510**.** Note: for the purpose of computing the $994M per year estimate above, we did not incorporate this $2.7 billion up-front cost. Instead, the $994M per year is based on the AAA annual car ownership cost estimate, which assumes people take out loans. We know that not all people are eligible for loans, however, so this estimate shows the potential impact of needing to pay for cars up front.

104,370*26,510 = $2,766,848,700

56,500 metric tons of CO2 emissions over five years

The SRTPs also included revenue vehicle miles for each transit agency. The total revenue vehicle miles of scenario one minus scenario two is 425 million less miles of transit running on the streets. Because we know all trips won't convert to car trips, we again apply the modeshift factor.

425,136,619*0.329 =139,869,947.65

These two data points allow us to calculate an additional 139,869,947.65 miles of car trips likely caused by reduced transit service. According to the Federal Highway Administration, 54% of trips are 4 miles or less, which leads us to believe that this is at least 35 million new car trips.

According to the EPA, cars emit 404 grams of CO2 per mile. There are 1,000,000 grams in one metric ton. The additional road mileage results in 56,507 metric tons of carbon dioxide. Then, you can use the EPA's nifty calculator to make a comparison of the impact on the environment.

((425,136,619*0.329)*404)/1,000,000= 56,507

Finally, we assumed that all cars are gas-powered. Although the market is slowly transitioning to electric vehicles, currently only 25% of used EVs available sell for under $25,000. Furthermore, only 18% of new cars are electric and no standard sized electric vehicle is under $25,000.

80% of transit-dependent trips are taken by passengers that earn $75,000 or less

Passenger data collected by MTC counts passenger boardings based on income, it is not distinguished by individual person. The data analyzed included passengers with 0-car households, defined as transit dependent.