CONGESTION MANAGEMENT PROGRAM DECEMBER 2023

Executive Summary

Introduction

Every two years, the San Francisco County Transportation Authority (SFCTA) prepares the San Francisco Congestion Management Program (CMP). This program is conducted in accordance with state law to monitor congestion and adopt plans for mitigating traffic congestion that falls below certain thresholds.

The CMP combines the traffic Level of Service (LOS) and multimodal performance elements required under state CMP legislation, reflecting the legislation's requirement that LOS be included as one of several multimodal performance measures, and that automobile-focused metrics such as LOS result in a limited view of transportation issues, which can result in inefficient, modally biased, and often counterproductive solutions.[1] This approach is also consistent with San Francisco's urban, multimodal environment. Vehicular traffic congestion remains an important metric of transportation performance in San Francisco, but the City and County's Transit First policy and emphasis on accessibility place higher priority on the performance of alternative modes including transit, bicycling, and walking than on private vehicle speeds.

State CMP legislation aims to increase the productivity of existing transportation infrastructure and encourage more efficient use of scarce new dollars for transportation investments, in order to effectively manage congestion, improve air quality, and facilitate sustainable development. The purpose of the 2023 San Francisco Congestion Management Program is to:

- Define San Francisco's performance measures for congestion management;
- Report congestion monitoring data for San Francisco to the public and the Metropolitan Transportation Commission (MTC);
- Describe San Francisco's congestion management strategies and efforts; and
- Outline the congestion management work program for the two upcoming fiscal years.

As people returned to pre-COVID pandemic activity levels, traffic congestion has worsened and multimodal volumes have increased in San Francisco between 2021 and 2023, though they have not fully returned to pre-COVID pandemic (2019) levels, suggesting that some travel behavior changes induced by the COVID pandemic have persisted beyond the first 3 years of the COVID pandemic. Notably, congestion has

1 In order to reduce vehicle delay and improve LOS, without considering strategies that encourage shifts to other modes, the increased roadway capacity is the implied solution, which, in turn, has been shown to lead to more driving (induced demand).

worsened more significantly on freeways than on surface arterials since 2021. Transit ridership is still significantly lower than pre-COVID pandemic levels, with Muni, BART, and Caltrain at 61%, 38%, and 29% of 2019 (pre-COVID pandemic) ridership respectively. Muni service has recovered in 2023 to serve more than 95% of San Francisco residents within a 5-minute walk of their residence. However, with Muni's post-COVID pandemic service network changes to increase reliability and to reduce wait times and crowding under its severe transit operator shortage, the share of the population within a 5-min walk of at least one transit route with a 5-min headway continued to decline, to 27% for the AM peak and 20% for the PM peak.

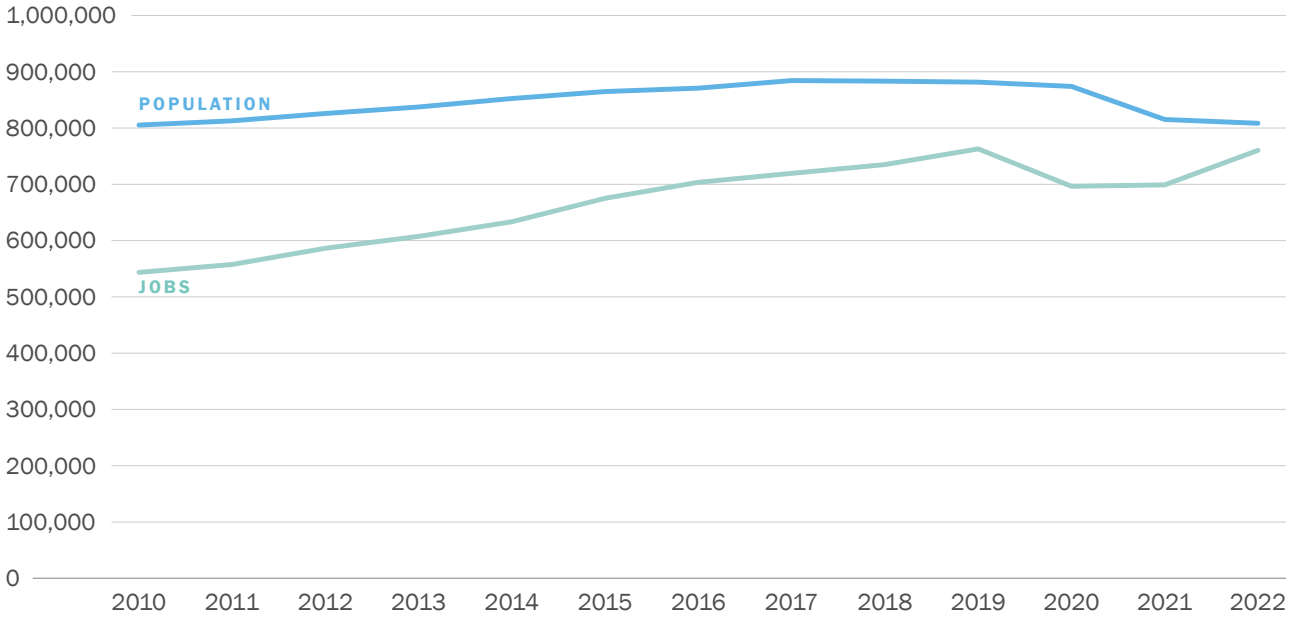
The CMP multimodal counts collection effort suggests that the ongoing vehicular traffic decrease observed from 2015 to 2019 is continuing in 2023. The data also suggests that AM peak travel, which is primarily for work and school purposes, may no longer be as strongly peaked as before the COVID pandemic, possibly because fewer people are traveling to work with the rise of remote work, or the AM peak has shifted outside our data collection period of 7:00 – 9:00 a.m. In contrast, people travel for a wider diversity of activities during the PM peak (4:30 – 6:30 p.m.), resulting in a stronger recovery in multimodal volumes in the PM peak.

Encouragingly, the number of injury collisions in San Francisco has remained stable at its lowest levels in a decade, even as traffic volumes have trended back up with the increase in travel activity. However, the number of fatal traffic collisions, which dropped during the early months of the COVID pandemic, has almost returned to 2019 (pre-COVID pandemic) levels, even though traffic volumes have not returned to 2019 (pre-COVID pandemic) levels.

State of San Francisco's Transportation System

While San Francisco continues to be an employment and population hub in the Bay Area, significant changes have occurred in both San Francisco population and employment since the COVID pandemic. According to the US Census' American Community Survey, San Francisco's population declined from a peak in 2017 of about 880,000 to 815,000 in 2021 and has stabilized at around 810,000 in 2022. Employment in San Francisco peaked right before the COVID pandemic in 2019 at 763,000, and dropped for the first time in over a decade due to the COVID pandemic between 2019 and 2020. Since then employment numbers have increased rapidly back to just below 2019 numbers at 760,000 by 2022. However, while employment has increased, the COVID pandemic produced profound changes in commuting patterns that affect the transportation system performance metrics reported in this document. In 2019, only 7% of employed San Francisco residents reported regularly working from home, but during the peak of the COVID pandemic in 2021, this share increased to 46%, before declining in 2022 to 33% of employed residents working from home.[1] According to the San Francisco Office of Economic Analysis, San Francisco office vacancy exceeds 30% (as of 2023 Q3), well above pre-COVID pandemic levels.[2]

Figure 0-1. San Francisco Population and Jobs, 2010 – 2022



Source:
Population: US Census Decennial Census and American Community Survey (ACS);
Jobs: California Employment Development Department Current Employment Statistics
Download chart data (CSV)

1 ACS 1-Year Supplemental Estimates, Table K200801

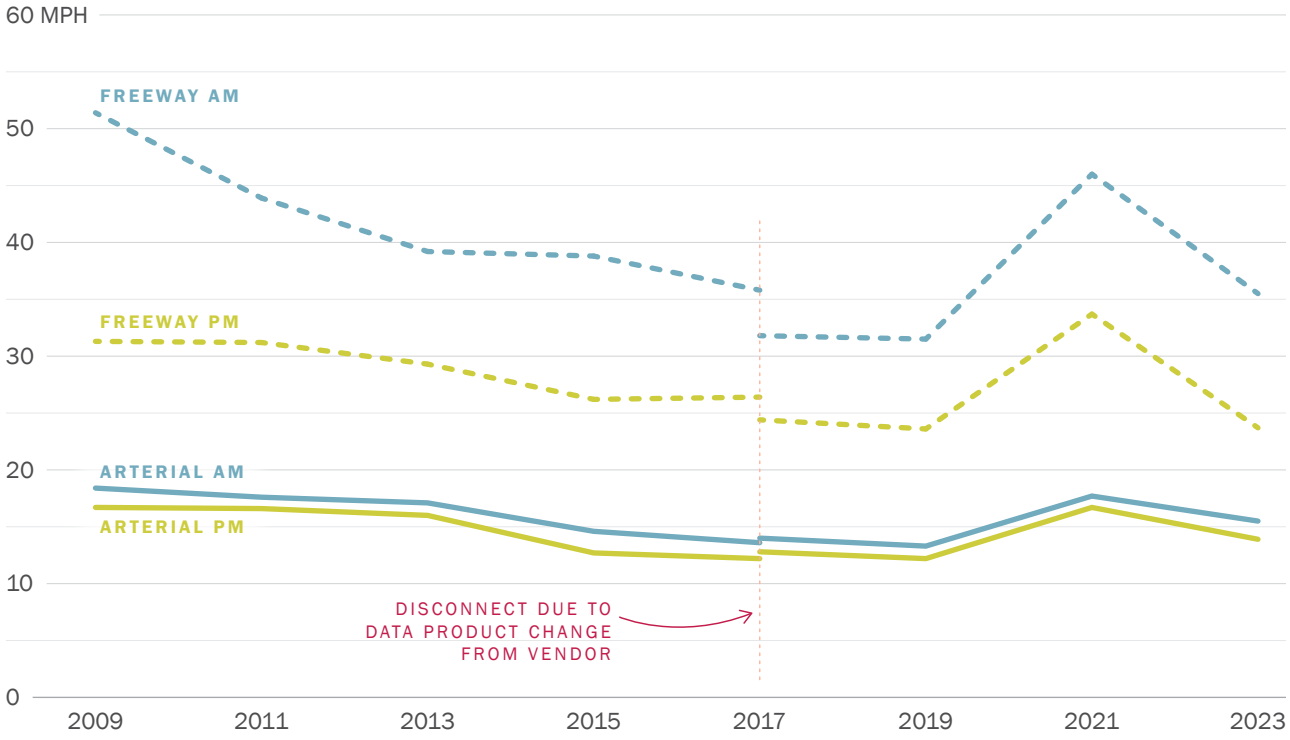
2 https://sf.gov/sites/default/files/2023-10/Status%20of%20the%20San%20Francisco%20Economy%20August-Septermber%202023.final__0.pdf

ROADWAY MONITORING RESULTS

Roadway Speeds

In general, roadway speeds are lower during the PM peak than in the AM peak. Average travel speeds on the CMP network have decreased since 2021, but are still higher than the pre-COVID pandemic average speeds in 2019 for all measured time periods and road types. In comparison to 2021, average arterial travel speeds decreased 12% in the AM peak and 16% in the PM peak, and the average travel speed on freeways decreased 23% in the AM peak and 29% in the PM peak. In comparison to 2019, 2023 average arterial travel speeds are 17% higher in the AM peak and 14% higher in the PM peak, and 2023 average travel speeds on freeways are 13% higher in the AM peak and 0.4% higher in the PM peak.

Figure 0-2. CMP Network Average Travel Speed, 2009 – 2023



Note: data collected April – May each year
Download chart data (CSV)

ROADWAY LEVEL OF SERVICE (LOS)

The CMP legislation defines roadway performance primarily by using the LOS traffic engineering concept to evaluate the operating conditions on a roadway. LOS describes operating conditions on a scale of A to F, with "A" describing free flow, and "F" describing bumper-to-bumper conditions.

Figure 0-3, Figure 0-4, and Figure 0-5 show PM peak LOS in 2019, 2021 and 2023. In general, for the PM peak, congestion has increased across San Francisco since 2021, but there is still less congestion than 2019. The AM peak shows similar trends. An interactive version of this map that allows users to view historical trends for the City overall, as well as for all the individual CMP segments, can be found at congestion.sfcta.org.

ROADWAY TRAVEL TIME RELIABILITY

While the average travel speeds and LOS provide useful insights into congestion, they do not capture a critical aspect of peoples' perception of congestion, which is the reliability of travel times. For example, a traveler is likely to perceive the congestion on a roadway where the travel is always 15 minutes differently that they perceive the congestion on a roadway where half the time the travel time is 5 minutes and the other half the time the travel time is 25 minutes. The unreliability of the travel time on this second roadway is onerous because it forces travelers to change their schedule so as to ensure that they aren't late to their destinations.

The Buffer Time Index (BTI) is a measure of the unreliability of travel time, and is calculated as the percent of average additional travel time that the travelers need to budget so that they have a 95% chance of arriving on time. In other words, it is the extra time needed if one does not want to be late more than once a month, and a lower value of BTI indicates higher reliability. For example, a BTI of

Figure 0-3. 2019 PM Peak Roadway Level-of-Service

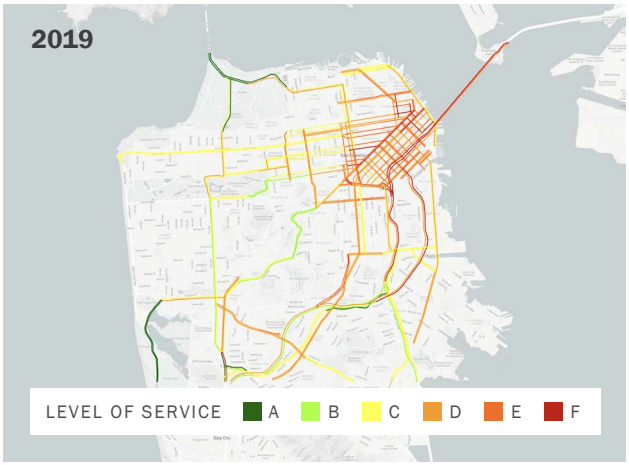


Figure 0-4. 2021 PM Peak Roadway Level-of-Service

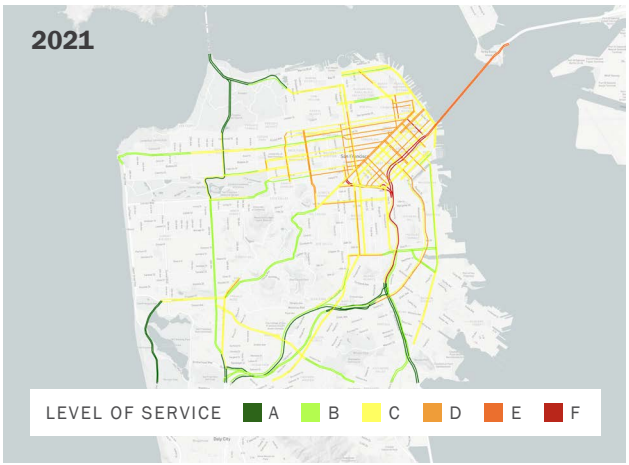
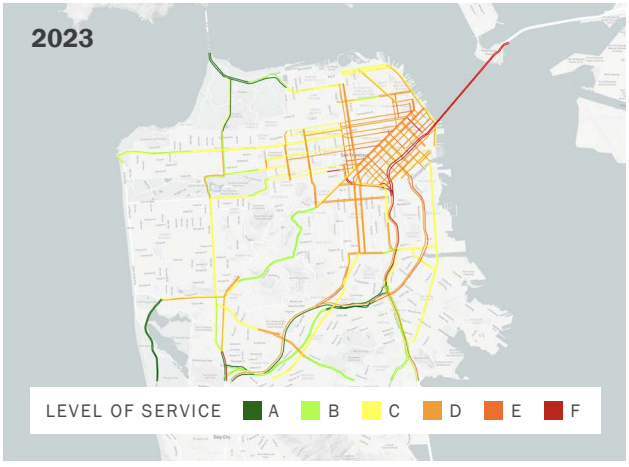


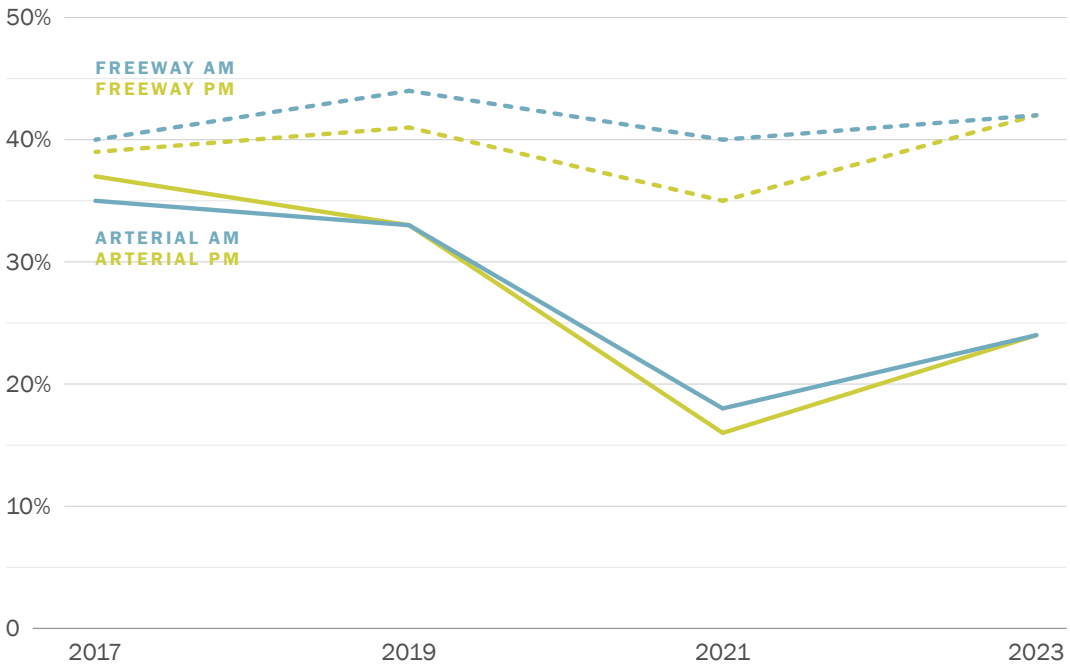
Figure 0-5. 2023 PM Peak Roadway Level-of-Service



20% for a 10 minute trip requires a traveler to budget an extra 2 minutes to not be late more than once a month.

With decreased traffic congestion during the COVID pandemic in 2021, reliability improved between 2019 and 2021. However, in 2023 reliability worsened as traffic congestion increased between 2021 and 2023 as people began to return to pre-COVID pandemic activity levels. Between 2021 and 2023, the freeway BTI in the AM peak worsened from 40% to 42% and the freeway BTI in the PM peak worsened from 35% to 42% – its highest level since 2017. In contrast, there is a longer term trend of general improvement in arterial reliability as reflected in decreases in arterial BTI between 2017 and 2023 (Figure 0-6).

Figure 0-6. CMP Network Average Travel Time Reliability, as Shown by Buffer Time Index (BTI), 2017 – 2023

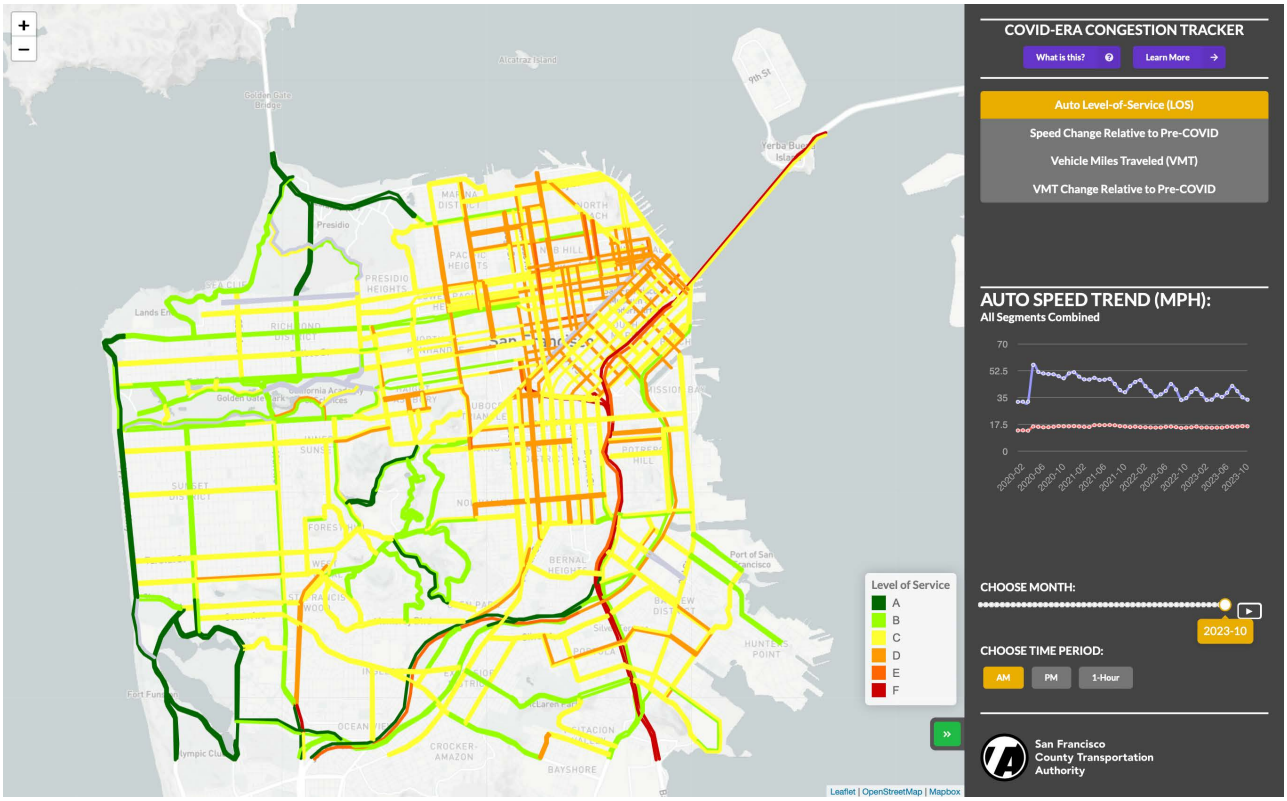


Note: data collected April – May each year
Download chart data (CSV)

COVID-ERA CONGESTION TRACKER

Due to rapid and uncertain changes in traffic conditions during and after the COVID pandemic, the Transportation Authority maintains a tool for short-term monitoring called the "COVID-Era Congestion Tracker" (covid-congestion.sfcta.org), shown in Figure 0-7. This tool reports many of the same roadway performance metrics as reported the CMP congestion visualization, but with a much greater frequency (monthly instead of biennially) and over a shorter time frame (from March 2020 through the present instead of from Spring 1991 through Spring 2021), for a larger set of roadway segments, and at an hourly level as well as for the AM and PM peak periods.

Figure 0-7. COVID-Era Congestion Tracker

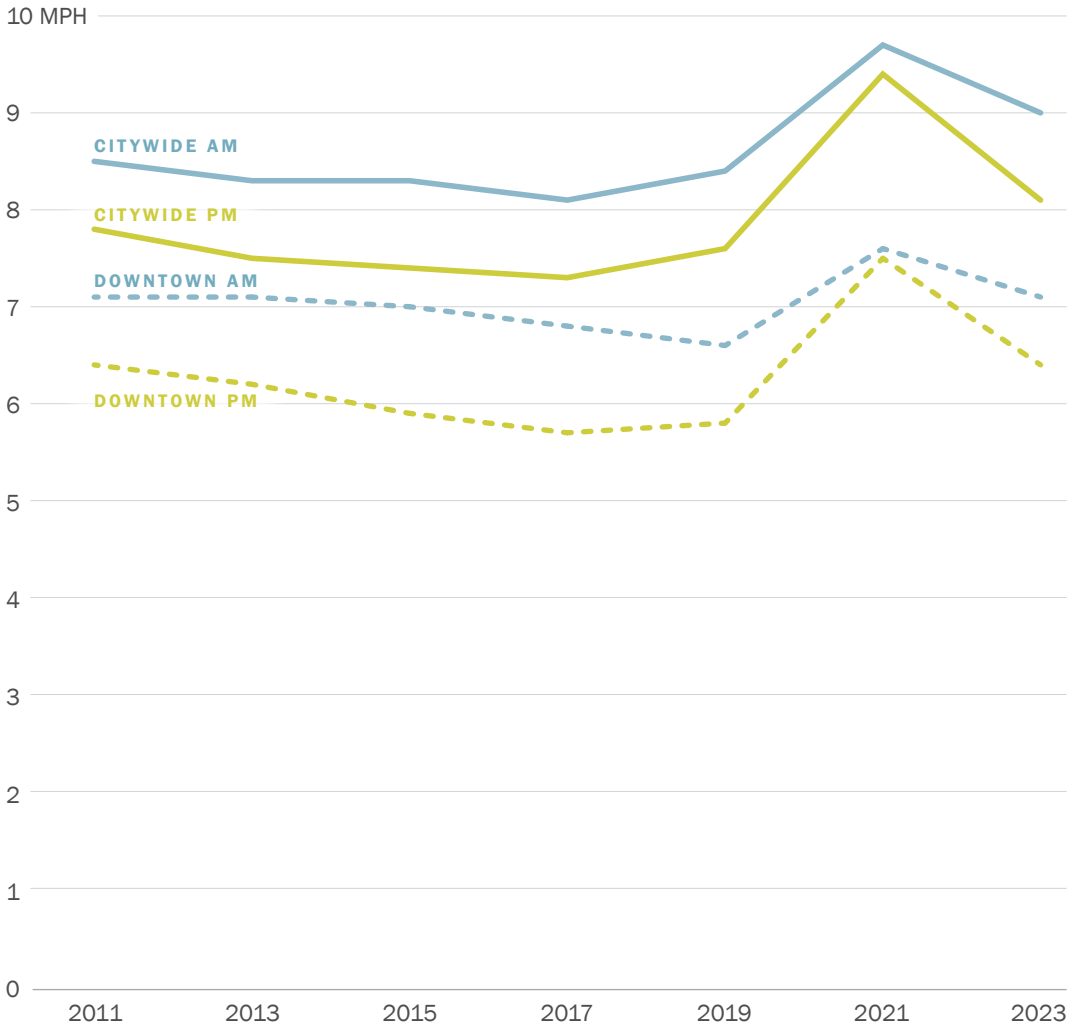


Transit Monitoring Results

TRANSIT SPEEDS

In addition to monitoring roadway speeds, the Transportation Authority also tracks surface transit (Muni bus) speeds. Similar to automobile roadway speeds, average transit travel speeds on the CMP network have decreased since 2021 as people began to return to pre-COVID pandemic activity levels, but are still higher than the pre-COVID pandemic average speeds in 2019 for both the AM and PM peak periods. However, the increase in transit speeds between 2019 and 2023 is less than the increase in roadway speeds. In 2023, AM peak transit speeds were 7% lower than in 2021, but still remained 7% higher than they were in 2019 (pre-COVID pandemic); PM peak transit speeds were 13% lower than in 2021, but still remained 7% higher than they were in 2019 (pre-COVID pandemic).

Figure 0-8. CMP Network Average Transit Speeds, 2011 – 2023



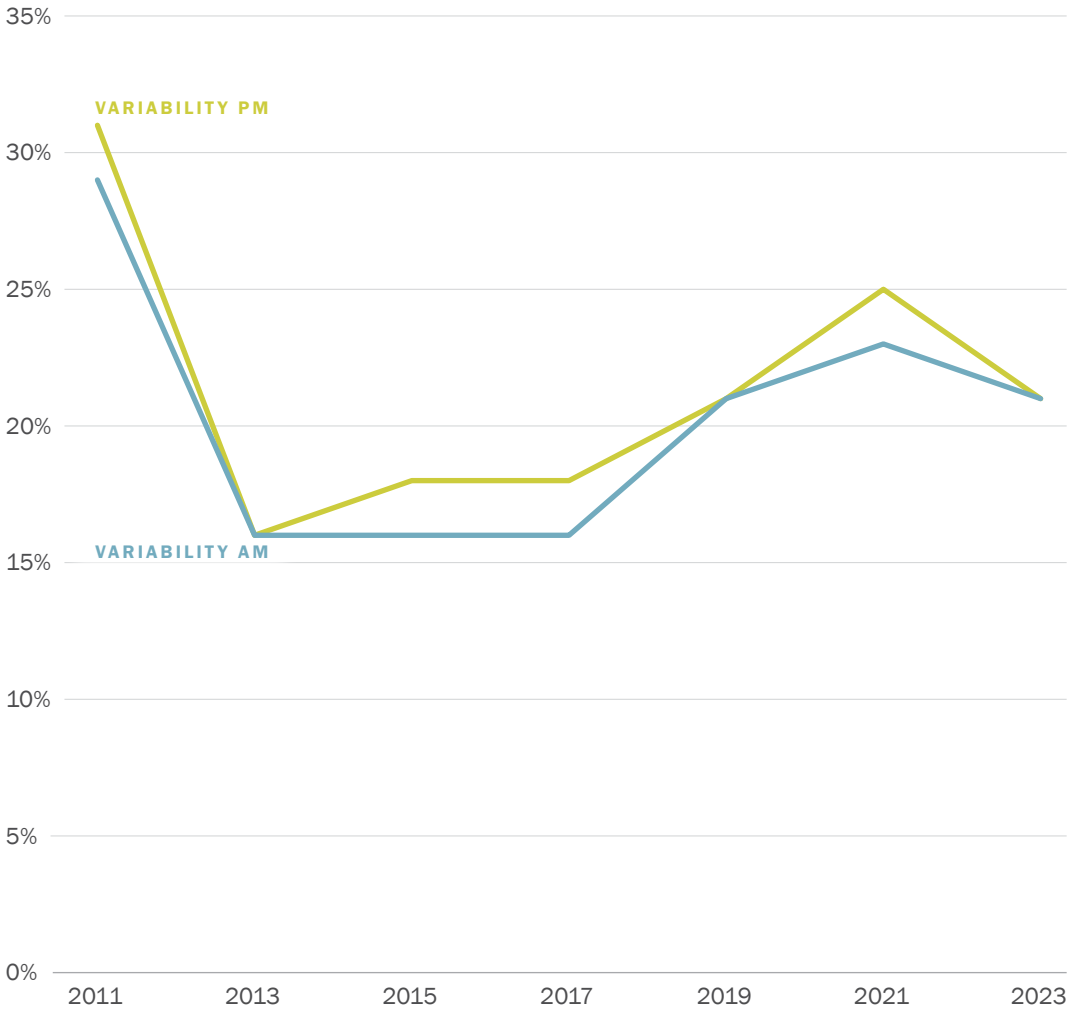
Download chart data (CSV)

Transit Travel Time Reliability

Transit (Muni bus) speed information is also used to calculate the coefficient of variation (CV) of speed as a measure of transit travel time reliability. The coefficient of variation (CV) is calculated by dividing the standard deviation of the speed by the average speed, thereby normalizing the results to compare relative variability between faster and slower segments. The CV is expressed as a percentage of the mean speed. A lower percentage indicates more reliable transit speeds.

Transit reliability improved (i.e. variability decreased) since 2021, returning back to the same levels (21%) observed in 2019 for both the AM and PM peak (Figure 0-9). With the average transit speeds in 2023 at 9.0 mph (AM peak) and 8.1 mph (PM peak), a CV of 21% means that approximately 70% of the time, a 3 mile transit trip would take between 15.8 and 24.2 minutes for the AM peak, and between 17.6 and 26.9 minutes for the PM peak.

Figure 0-9. CMP Network Transit Travel Time Variability, 2011 – 2023

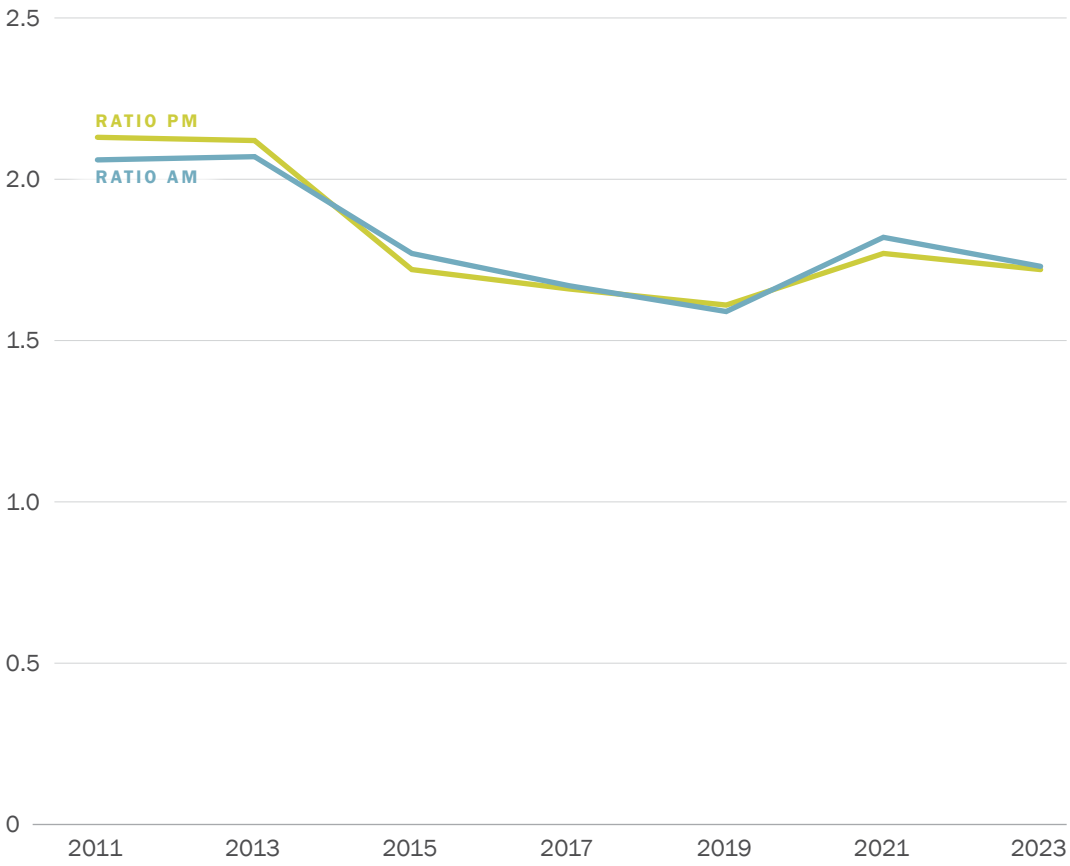


Download chart data (CSV)

Auto-Transit Speed Ratio

In order to assess the competitiveness of transit with driving, the ratio of auto to transit speeds is calculated by comparing auto to transit speeds on the portions of the CMP network for which Muni bus data is available. A ratio of 2 would indicate that, for a particular segment, auto speeds are twice as fast as transit speeds. The ratio had been improving between 2011 and 2019, worsened during the COVID pandemic in 2021, and improved again between 2021 and 2023 (though still not back to 2019 levels) (Figure 0-10). Even though both average auto and transit speeds are higher in 2023 than in 2019, transit is less competitive relative to autos in 2023 than in 2019.

Figure 0-10. Auto-Transit Speed Ratio, 2011 – 2023



Download chart data (CSV)

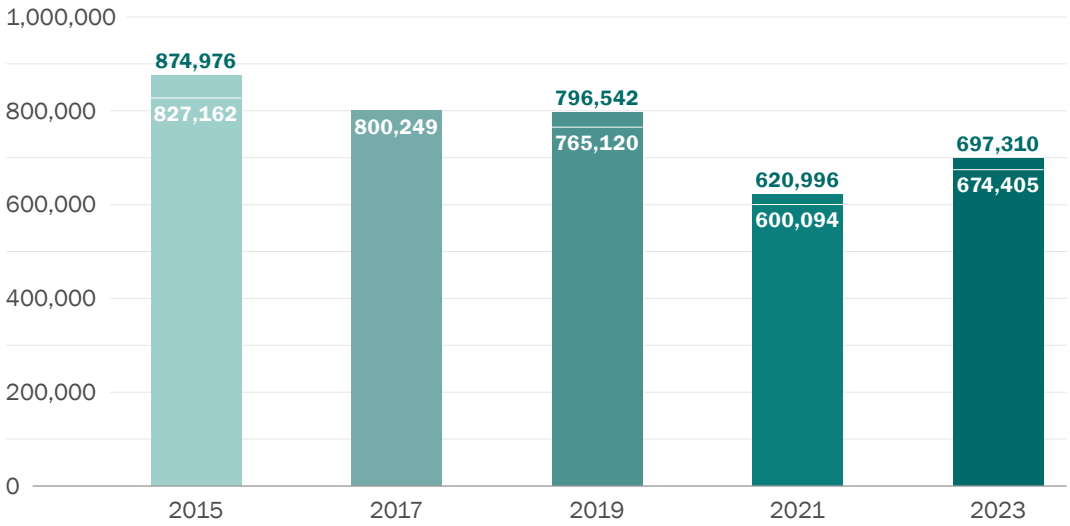
MULTIMODAL COUNTS

The City and County of San Francisco has placed a high priority on shifting travel behavior towards active transportation modes such as walking and bicycling. Multimodal counts have been collected at 29 mid-block locations (vehicle only) (Figure 0-11 and Figure 0-12) and 14 intersections (vehicle, bicycle (Figure 0-13), and pedestrian (Figure 0-14)) since 2015.

Vehicle Volumes

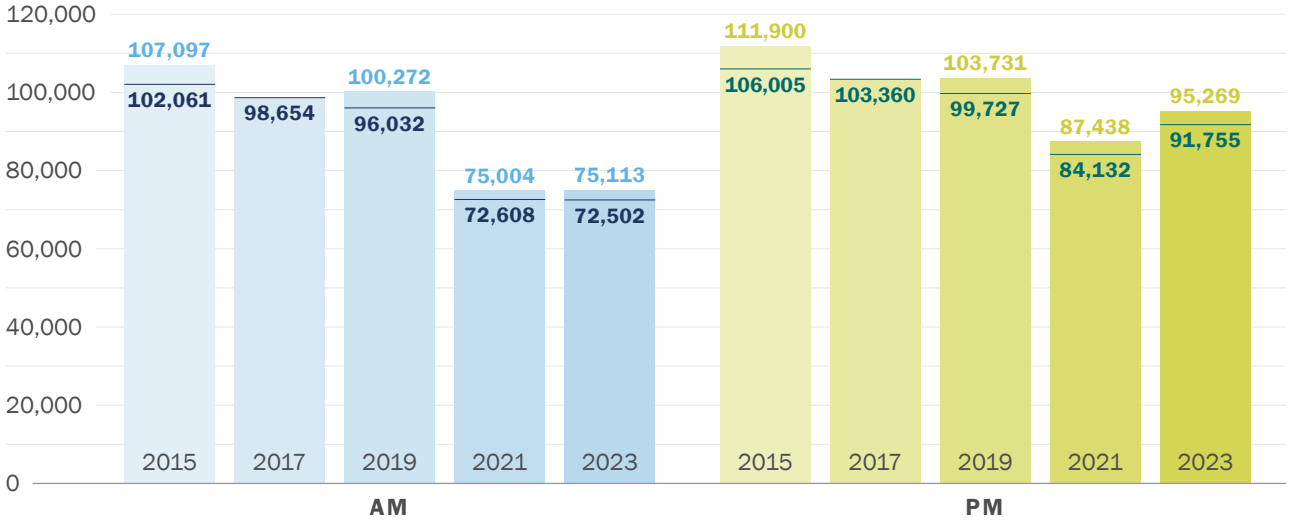
There is an increase in daily traffic from 2021 (Figure 0-11), but none of the vehicle counts (daily or AM/PM peak) show a recovery back to pre-COVID pandemic levels. The various 2023 vehicle counts stand at 75 – 92% of 2019 (pre-COVID pandemic) levels. The trendlines may suggest that the ongoing vehicular traffic decrease observed from 2015 to 2019 is continuing in 2023.

Figure 0-11. Mid-Block Weekday Average Daily Traffic (ADT), 2015 – 2023



* Data collected April – May biennially at the same locations, counts shown for the bars are summed over all 29 locations and directions, whereas the white line within each bar only shows counts summed over 28 locations and directions (excluding counts from Van Ness between California and Pine, where no data were collected in 2017).
Download chart data (CSV)

Figure 0-12. Mid-Block Weekday Average AM/PM Peak Traffic Counts, 2015 – 2023



* Data collected April – May biennially at the same locations, counts shown for the columns are summed over all 29 locations and directions, whereas the line within each column only shows counts summed over 28 locations and directions (excluding counts from Van Ness between California and Pine, where no data were collected in 2017).
Download chart data (CSV)

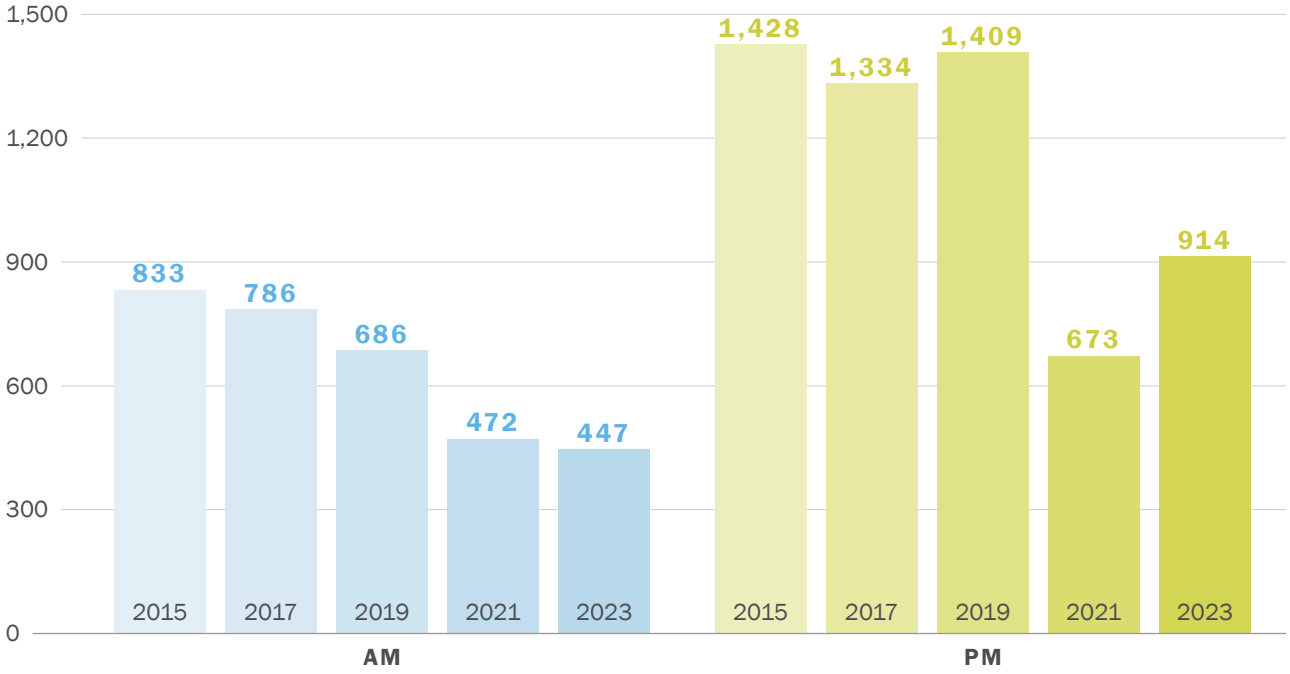
Bicycle and Pedestrian Volumes

Figure 0-13 and Figure 0-14 respectively show bicycle and pedestrian counts collected by SFCTA between 2015 and 2023. At these locations, overall bicycle volumes show a recovery to 65% (for both the AM and PM peaks) respectively of 2019 (pre-COVID pandemic) levels, whereas pedestrian volumes show a recovery to 63% and 67% for the AM and PM peak respectively of 2019 (pre-COVID pandemic) levels.

AM vs PM Peak Travel

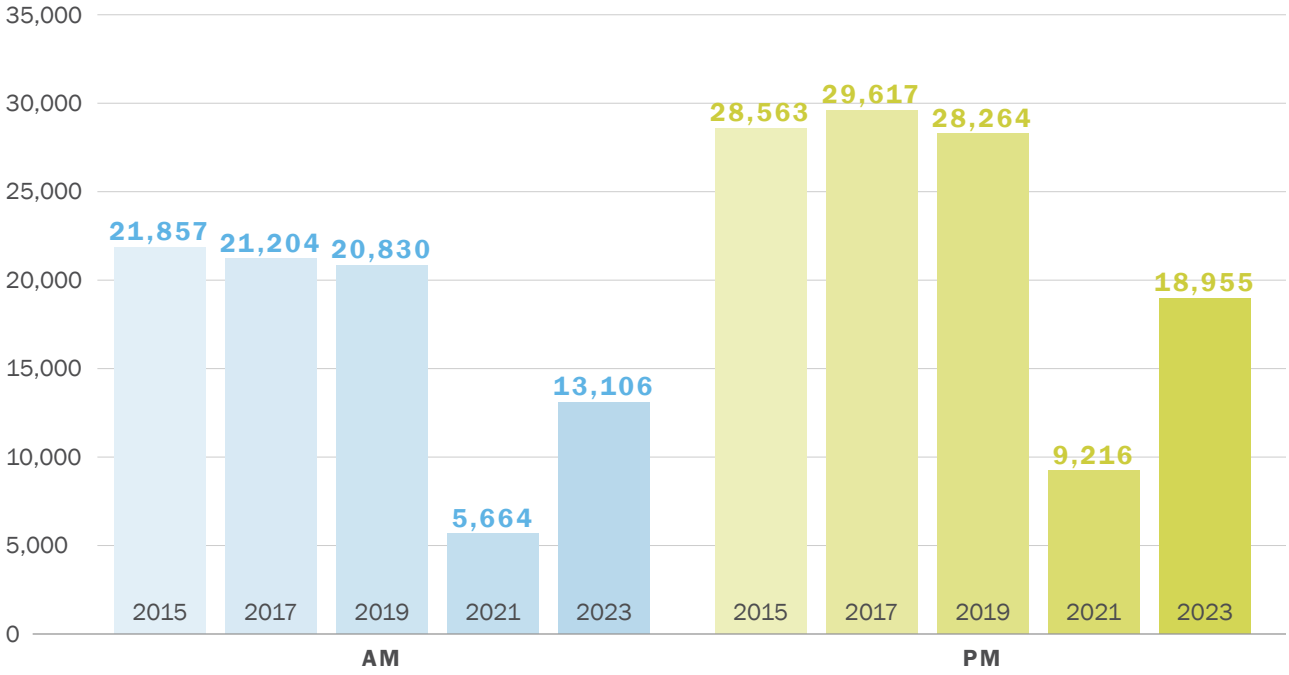
Notably, the mid-block vehicular counts and the intersection bicycle counts during the AM peak period show a flat line (for vehicles) or even a slight decrease (for bicycles) between 2021 and 2023 counts. Given the general increase in counts across the three modes between 2021 and 2023, we may hypothesize that AM peak travel, which is primarily for work and school purposes, may no longer be as strongly peaked as before the COVID pandemic, possibly because fewer people are traveling to work with the rise of remote work, or the AM peak has shifted outside our data collection period of 7:00 – 9:00 a.m. In contrast, people travel for a wider diversity of activities during the PM peak (4:30 – 6:30 p.m.), resulting in a stronger recovery in multimodal volumes in the PM peak.

Figure 0-13. Intersection Single-Day Bicycle Counts, 2015 – 2023



* Data collected April – May biennially at the same locations, counts shown are summed over all locations.
Download chart data (CSV)

Figure 0-14. Intersection Pedestrian Counts, 2015 – 2021



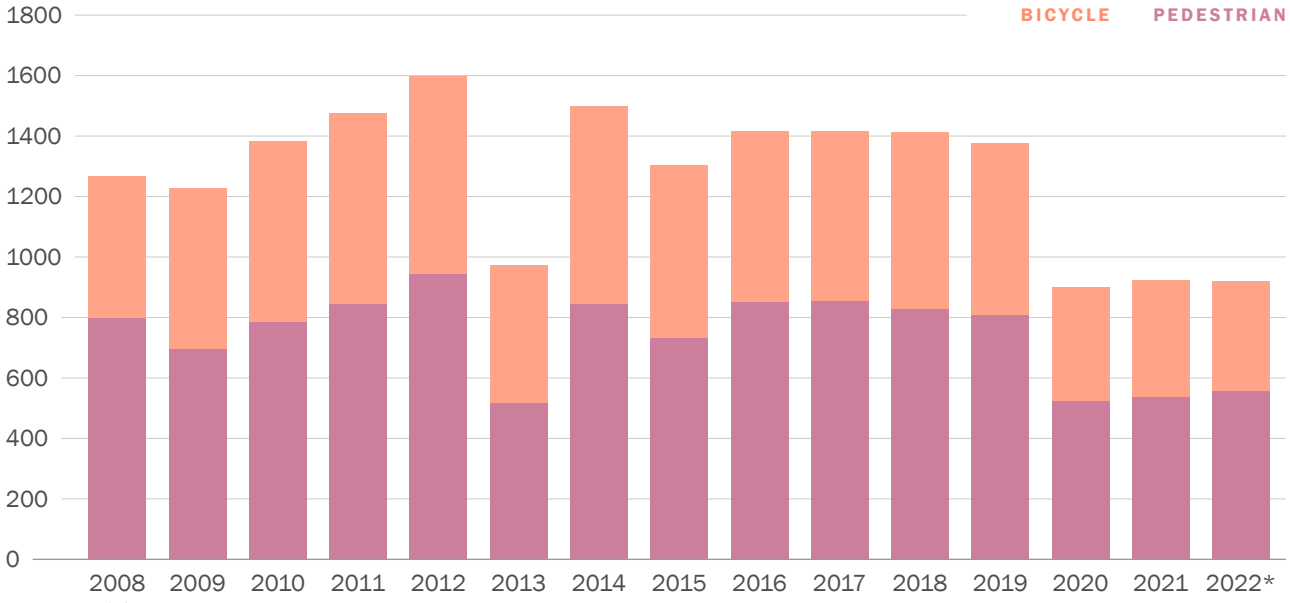
* Data collected April – May biennially at the same locations, counts shown are summed over all locations.
Download chart data (CSV)

PEDESTRIAN AND BICYCLE SAFETY

Safety for pedestrians and cyclists are key measures of transportation performance, and a critical policy priority for San Francisco. The City and County of San Francisco adopted Vision Zero as a policy in 2014, committing to build better and safer streets, educate the public on traffic safety, enforce traffic laws, and adopt policy changes that save lives. The goal is to create a culture that prioritizes traffic safety.

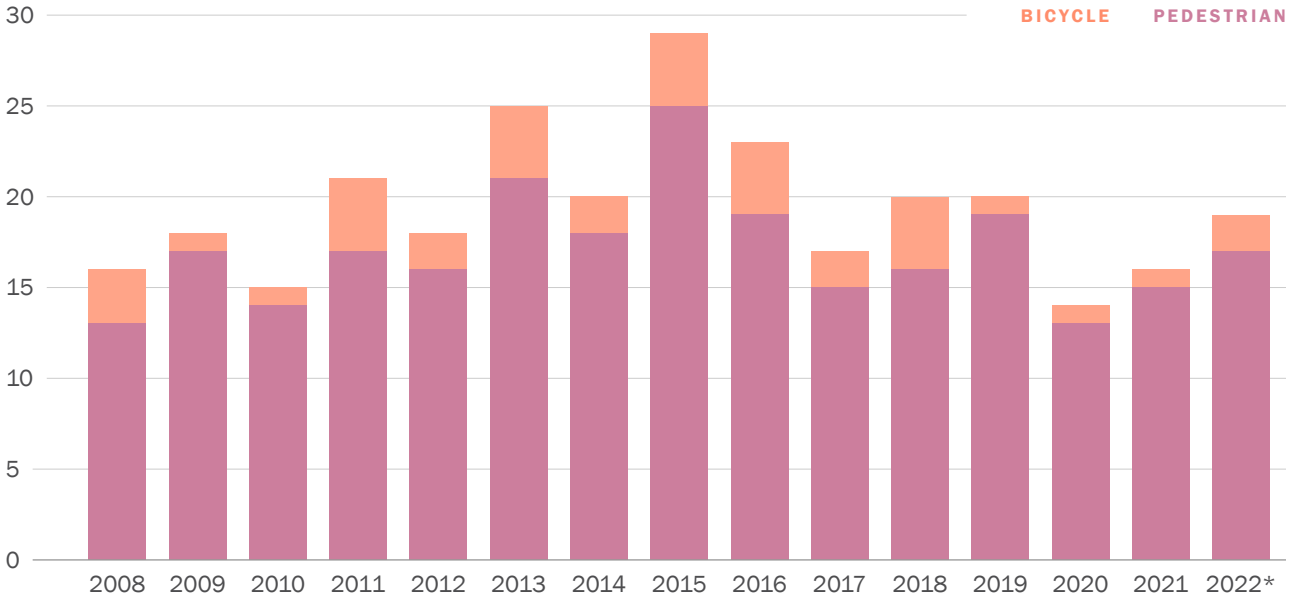
The number of injury collisions (involving pedestrians or bicyclists) dropped significantly in 2020, probably due to the substantial reduction in vehicle and non-motorized volumes in 2020 due to the COVID pandemic. This reduction in the number of injury collisions continued past 2020 to 2022, even as traffic volumes have trended back up with the increase in travel activity (Figure 0-15). A similar reduction in the number of fatal traffic collisions (involving pedestrians or bicyclists) happened in 2020. However, the number of fatal traffic collisions have increased to close to 2019 (pre-COVID pandemic) levels by 2022 (Figure 0-16).

Figure 0-15. Injury Collisions Involving Pedestrians and Bicyclists in San Francisco, 2008 – 2022



* provisional data.
Download chart data (CSV)

Figure 0-16. Fatal Collisions Involving Pedestrians and Bicyclists in San Francisco,[1] 2008 – 2022



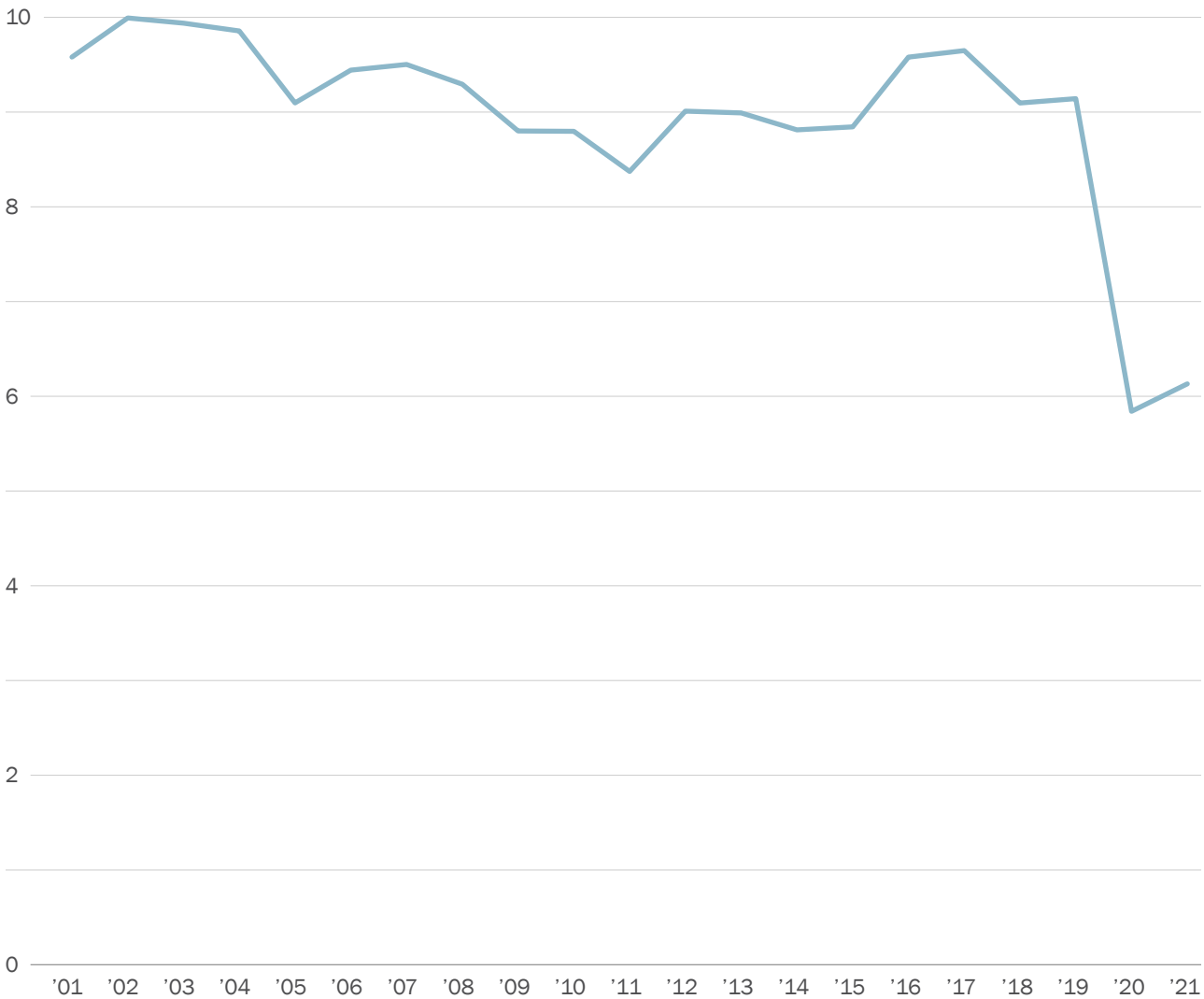
* provisional data.
Download chart data (CSV)

1 The fatal traffic collisions data in this report is sourced from the California Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol. The San Francisco Department of Public Health (SFDPH), San Francisco Police Department (SFPD), and the San Francisco Municipal Transit Agency (SFMTA) also independently reconcile traffic deaths using Office of the Medical Examiner's and SFPD data via the San Francisco Vision Zero Traffic Fatality Protocol. This can be found at: https://sfgov.org/scorecards/transportation/traffic-fatalities.

Vehicle Miles Traveled (VMT)

In 2016, the San Francisco Planning Commission adopted new guidelines for evaluating the transportation impacts of new projects. Critically, environmental impact determinations are now based on vehicle miles traveled (VMT) rather than additional automobile delay as measured by level-of-service (LOS). VMT decreased by about 33% between 2019 and 2021 due to the COVID pandemic (Figure 0-17). Note that there is a two-year lag in this estimate provided by Caltrans.

Figure 0-17. Vehicle Miles Traveled in San Francisco, 2001 – 2021

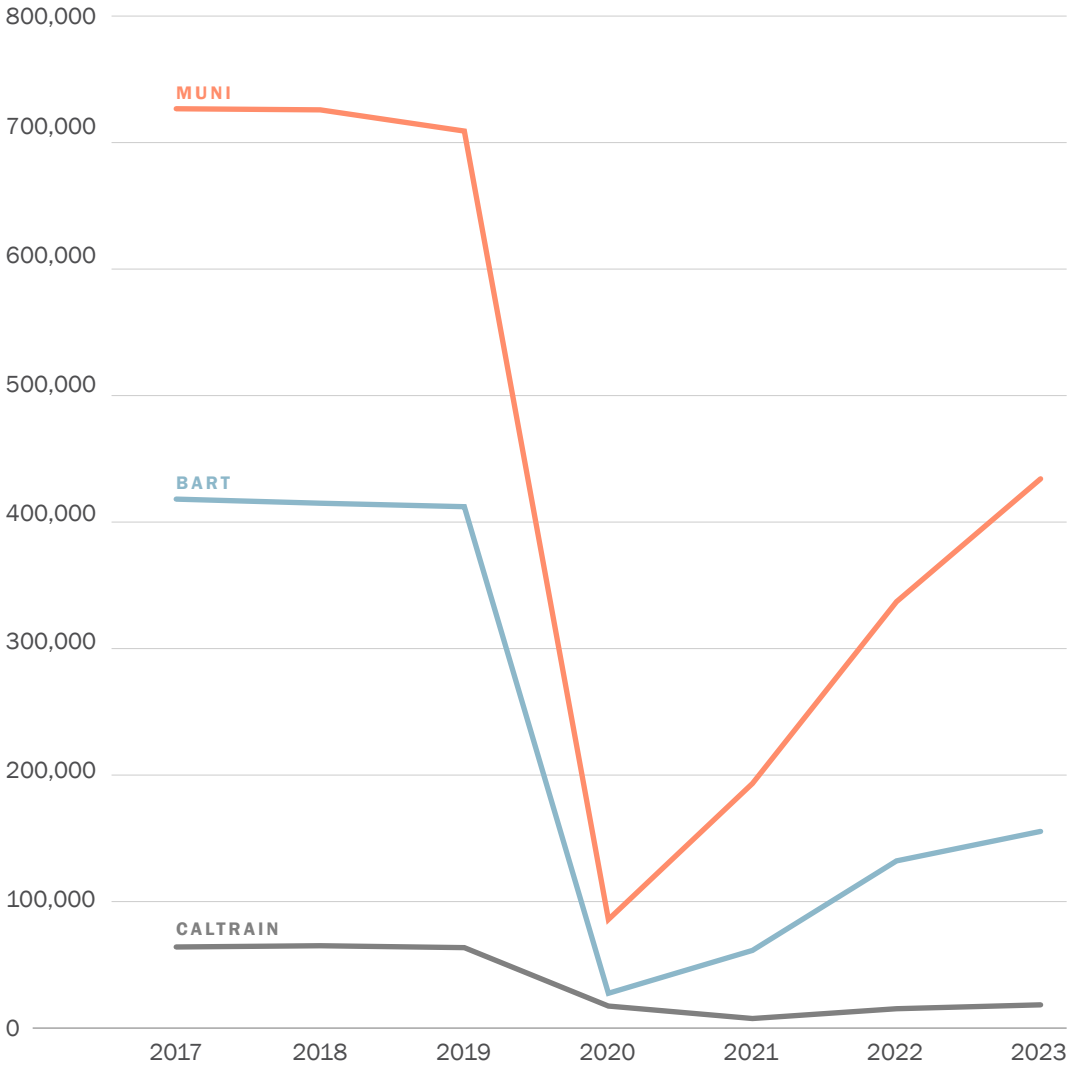


Source: Caltrans Highway Performance Monitoring System (HPMS)
Download chart data (CSV)

Transit Ridership

San Francisco's strong backbone of local and regional transit has been key to our ability to manage congestion. Muni, BART, Caltrain, and commuter bus lines help move people into, out of, and around the city efficiently. Figure 0-18 shows recent ridership trends for the three largest transit systems serving San Francisco. Ridership on all three operators declined significantly with the spread of COVID in April – May of 2020. Since then, ridership has been gradually increasing every year, but in 2023 ridership is still significantly lower than pre-COVID pandemic levels, with Muni, BART, and Caltrain at 61%, 38%, and 29% of 2019 (pre-COVID pandemic) ridership respectively.

Figure 0-18. Average Weekday Daily Transit Boardings by Operator, 2017 – 2023

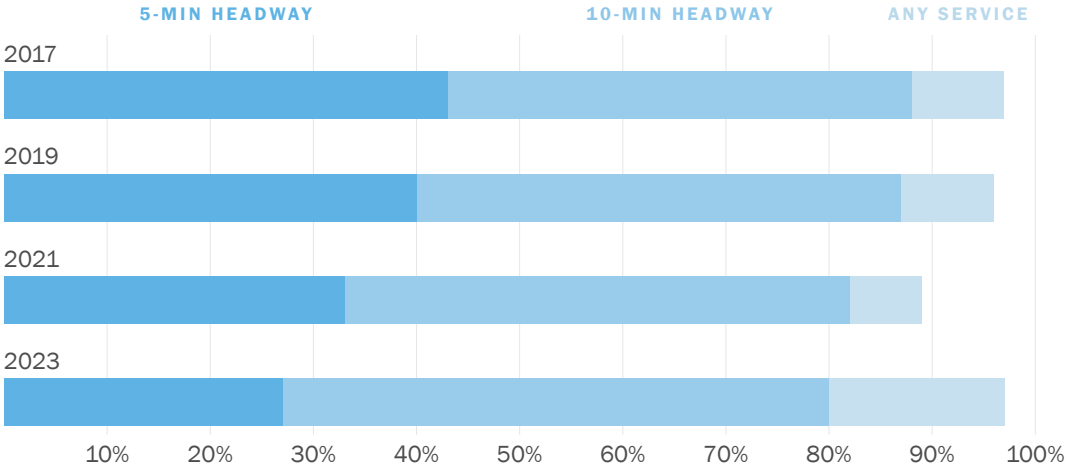


Source: SFMTA/BART/Caltrain
Note: data collected April – May each year except for Caltrain it is February
Download chart data (CSV)

Transit Coverage

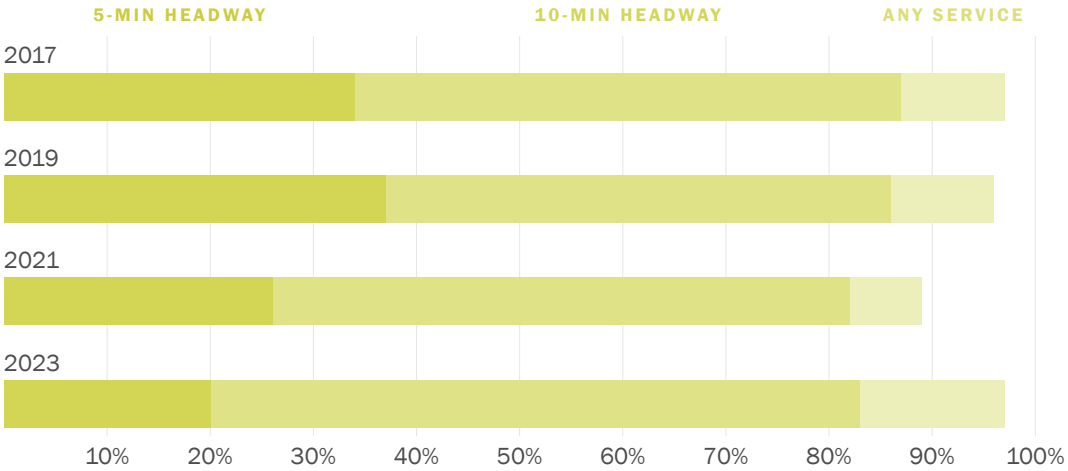
The transit coverage metric reports the percent of San Francisco's total population and total jobs that are within a 5-minute walk of Muni transit service. Since the significant cuts in Muni service in 2020 in the midst of the COVID pandemic, Muni service has been restored in 2023 so that now more than 95% of San Francisco residents live within a 5-minute walk of Muni service. However, the share of the population within a 5-min walk of a Muni route with a 5-min headway continued to decline from 33% in 2021 to 27% in 2023 for the AM peak and from 26% in 2021 to 20% in 2023 for the PM peak (Figure 0-19 and Figure 0-20). Transit coverage in terms of jobs for both the AM and PM periods show trends similar to those observed in population transit coverage.

Figure 0-19. Population Transit Coverage by Service Frequency, Weekday AM Peak, 2017 – 2023



Download chart data (CSV)

Figure 0-20. Population Transit Coverage by Service Frequency, Weekday PM Peak, 2017 – 2023



Download chart data (CSV)

What are we doing to manage congestion?

TRAVEL DEMAND MANAGEMENT (TDM)

San Francisco has a robust set of travel demand management (TDM) policy framework, strategy, and programs to systematically shift how, when, and where people travel through programs and policies. TDM will maximize the infrastructure investment priorities defined in the San Francisco Transportation Plan 2050 (SFTP2050) and can reduce congestion by shifting more trips from driving alone to walking, bicycling/rolling, transit, or carpooling. TDM can include policies, low-cost capital improvements, requirements on new development, and information/outreach programs designed to facilitate the use of sustainable transportation options. Key TDM strategies include:

- Coordinating transportation aspects of area plans, development agreements, and other requirements on new development, including:
  - Travel Demand Management (TDM) Market Research
  - Mission Bay School Access Plan
  - SF Waterfront and Regional Ferry Studies
  - D4 Shuttle Study
  - D6 Treasure Island Supplemental Transportation Study
  - Transportation Sustainability Program
- Policies and programs to manage trips in existing neighborhoods and built-up areas, including:
  - Commuter Benefits Ordinance and Emergency Ride Home Program
  - E-Bike Delivery Pilot
  - Parking Management
  - SFMTA Curb Management

Furthermore, San Francisco is encouraging efficient land use planning by supporting development at higher densities in areas that are mixed-use (closer to jobs and retail) and are well served by transit. Plan Bay Area 2050 identifies Priority Development Areas (PDAs) where densities and transit levels can more readily support transit-oriented development.

PLANNING PROJECTS

Connect SF is a multi-agency collaborative process to build an effective, safe, equitable, and sustainable transportation system for San Francisco's future. ConnectSF has defined a 50-year vision of San Francisco's future that represents our priorities, goals, and aspirations as a city within the larger Bay Area. That vision is

guiding plans for the city and its transportation system as agencies work to identify needed transit, streets, and highway improvements. ConnectSF developed a long-range vision for 2065 that serves as the underpinning of the next Plan Bay Area 2050+ and SFTP 2050. The Transportation Authority is also coordinating with numerous local, regional state and Federal agencies and with the private sector to address congestion. Key initiatives include:

- San Francisco Transportation Plan
- New Transbay Rail Crossing (Link21)
- 101/280 Express Lanes and Bus Project
- Treasure Island Mobility Management Program
- Prop L Neighborhood Transportation Program (planning and capital improvement grants)
- Emerging Mobility and School Transportation sector studies
- Downtown Today (2023/24)
- TNCs 2020

FUNDING AND DELIVERING PROJECTS

The Transportation Authority is addressing near- and long-term transportation needs for San Francisco by funding projects and programs – mainly capital infrastructure, through grant programs such as the Proposition L transportation sales tax, Proposition AA vehicle registration fee, Prop D Traffic Congestion Mitigation Tax (TNC Tax), Transportation Fund for Clean Air, and regional One Bay Area Grants (OBAG) programs, as well as coordinating with other local and regional agencies to apply for State and Federal funding to match local investments. Below are a few signature projects supported with Transportation Authority funds:

- Muni New and Renovated Vehicles
- BART New and Renovated Vehicles
- The Portal / Caltrain Downtown Extension to Salesforce Transit Center
- Peninsula Corridor Electrification Project
- BART and Muni core capacity
- Vision Zero / Safety Projects

In its role as Congestion Management Agency, as part of the OBAG framework for distribution of federal transportation funds, the Transportation Authority prepared

the Transportation Investment and Growth Strategy and, through OBAG Cycle 2, has programmed funds to the following projects:

- Better Market Street
- Embarcadero Station: New Northside Platform Elevator and Faregates
- Geary Bus Rapid Transit Phase 1
- John Yehall Chin Elementary Safe Routes to School
- Peninsula Corridor Electrification Project
- San Francisco Safe Routes to School Non-Infrastructure 2019 – 2021

The Transportation Authority is also overseeing and leading the delivery of key projects, many of which support infill transit-oriented development, including serving as co-sponsor or lead agency for the construction of:

- Yerba Buena Island Multi-Use Pathway (lead)
- I-280 Southbound Ocean Avenue Off-Ramp Realignment (lead)
- Southgate Road Realignment
- West Side Bridges Retrofit

AUTONOMOUS VEHICLES

While the CMP's focus is primarily on monitoring multimodal system performance and managing current congestion, the City must also plan for future system performance and congestion. San Francisco is a dense urban environment, and a critical challenge is how we manage our limited public right-of-way in order to maximize the movement of people and goods. While technologies such as web conferencing enabled increased levels of working from home which may help reduce peak period congestion, other emerging technologies may lead to increased congestion.

Over the past few years, the California Department of Motor Vehicles (DMV) and the California Public Utilities Commission (CPUC) have approved numerous permits for autonomous vehicles (AVs) to operate on San Francisco roadways, culminating in an August 2023 decision by the CPUC to allow two AV companies (Waymo and Cruise) to offer fared ride hailing services at all times of day across the entire City, with no limits on fleet size, not unlike the ride hailing services provided by Transportation Network Companies (TNCs) such as Uber and Lyft. Prior work by the Transportation Authority documented that ride hailing was responsible for approximately 50% of the increase in congestion between 2010 and 2016. As AVs become more widely deployed, it is reasonable to expect that AV ridehail services may similarly increase congestion in San Francisco.

The Transportation Authority, in coordination with other San Francisco agencies, have identified the need for the CPUC to move towards a performance-based incremental permitting of AVs. Such performance-based regulation, as well as the Transportation Authority's responsibility to monitor transportation system performance and the potential impact of TNCs and AVs on congestion, requires that agencies such as the CPUC and the Transportation Authority have access to useful, timely, reliable, and unredacted data. Unfortunately, at present, the data reported to the DMV and CPUC under a variety of testing, pilot, deployment, drivered and driverless permits is too incomplete, inconsistent, and redacted to provide policy-makers with the knowledge they need to make informed decisions. Without reliable data, integration of AVs into the City's transportation ecosystem in such a way that ensures safety, accessibility and equity while not degrading system performance will be an on-going challenge.