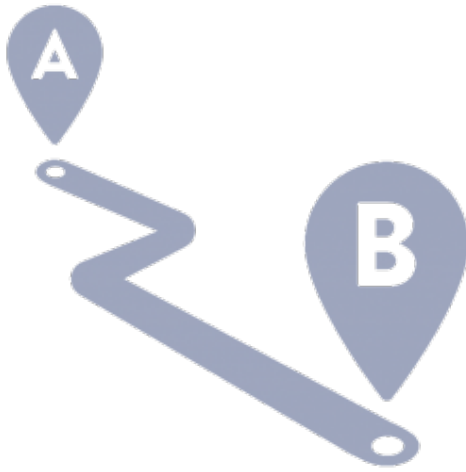


## 6 | Travel Time Results for Origin – Destination Pairs



The purpose of the OD travel time surveys is to compare the performance of various transportation modes between major employment centers and residential areas in Alameda County. These surveys help understand the journey-to-work travel times in the county. Surveys for some of these ten routes began as early as 1996. Section 2.2.3 | provides details of the survey methodology; as described, OD travel times were gathered with a limited number of surveys (two to four surveyed runs per mode per OD pair). In the OD travel time results of this monitoring year and past years, which have occurrences of high year-on-year variability, the reader should keep in mind the small sample size of this study.

New for the 2016 Monitoring Report, online transit surveys were also conducted. Simultaneously with the in-field transit travel survey, staff at a desktop computer observed the real-time departure and arrival times of transit vehicles using real time transit information through the 511 Bay Area website (511.org), and estimated walking times using Google Maps. Using this method, it was possible to compute the door-to-door travel time by transit. This method was introduced as a pilot study for demonstration purposes for this cycle. Full countywide multimodal monitoring using Big Data will be explored in future cycles.

In 2016, all the OD routes were reviewed and updated as reported in Appendix C. All transit schedules were reviewed in order to obtain the quickest travel time between the specified origin-destinations, using the 511 Bay Area website. As a result, new transit options were chosen for the following pairs:

- Between Emeryville and Berkeley (OD 2),
- Between Hayward and Livermore (OD 3) an express bus 12X was used instead of 12, and
- The transit route between Fremont and San Jose (OD 6), the VTA 330 bus stop location was updated to reflect changes in the bus line since 2014.

On average, travel times on transit routes were approximately twice as long as auto routes between the same origin-destinations. In 2016, transit travel times have increased from the previous monitoring cycle on seven of the nine routes; this trend differs from the 2014 monitoring cycle where largely decreases from the previous monitoring cycle were observed. Two of the nine routes: Hayward-Livermore (OD 3) and Alameda-Oakland (OD 10) show improved transit travel times from 2014 to 2016. The auto travel times generally increased compared to previous monitoring cycles, while the HOV travel time between Fremont and San Jose (OD 7) slightly decreased (-2 minutes). Overall, this indicates that transit performance may be getting worse on selected routes at the same time as the road network is becoming more congested, although, as mentioned above, a

greater sample size would be needed to confirm this finding. Figure 6-1 shows a graph of the OD results for 2014 and 2016. Appendix E presents detailed results for all years.

The routes from Hayward to Newark (OD 1), Oakland to San Leandro (OD 4), Fremont to San Jose (OD 6&7), Oakland to Pleasanton (OD 8), Fremont to Alameda (OD 9), and Alameda to Oakland (OD 10) showed similar travel times to previous monitoring efforts, across all modes, with a general trend of increased travel times.

The route from Emeryville to Berkeley (OD 2) showed a good performance by auto, but very poor performance by transit and bicycle. The transit route, despite having the best scheduled travel time of all possible transit routes, took an average of 102 minutes. The field surveyor experienced long waits for the H bus to arrive. This bus route is a Transbay commuter line and has a scheduled service interval of approximately every 20 minutes during the afternoon peak period. It may have been delayed in traffic on the Bay Bridge or on eastbound I-80, where the route passes through three congested segments on both the HOV and general purpose lanes in the afternoon peak period.

Also for the same O-D pair, Emeryville to Berkeley (OD 2), the bicycle times were longer, averaging at over 57 minutes, nearly double the Google Maps suggested bicycle travel time of 33 minutes. Earlier survey years from 1998 to 2008 show bike travel times around 30-35 minutes, but recent travel times are longer, with 47 minutes in 2010, and 48 minutes in 2014. The data collection field staff mentioned that the final portion of the bicycle route required climbing a difficult hill, with a vertical rise of over 250 feet. The change in travel time performance compared to past years may reflect variation in cyclist ability. In future study years, increasing the sample size (and using multiple cyclists) would improve the estimate.

The route from Hayward to Livermore (OD 3) showed an increase in auto travel times reflective of the greater afternoon peak period congestion found in this study. The transit travel time decreased compared to 2014, likely because of improved connections. In the 2014 survey, the transit travel time was influenced by a missed bus connection caused by a slightly late running BART segment, resulting in a long wait for the Wheels route 12 bus which operated once every 30 minutes. In the 2016 transit survey, Wheels route 12 was supplemented by Wheels route 12x route which provided greater service frequency. Consequently, the connection and overall travel time decreased from 2014 to 2016.

The route from Fremont to Pleasanton (OD 5), which required numerous transfers (walk, bus to BART, BART to BART, BART to bus, and walk), performed especially poorly in 2016, with long waits on many of the transfers, despite this route having the best scheduled travel time. On the first run, the bus at the start of the route was a few minutes early and

the transit survey staff missed the bus, and had to wait one hour until the next bus.

OD pairs 6 and 7 survey travel time from Fremont to San Jose and are the only pairs that survey travel to an employment center outside of Alameda County. 2016 results for these two OD pairs showed increases in auto and transit travel times compared to 2014, and a slight improvement in HOV travel time. As in 2014, the HOV travel time was significantly less than the single-occupant auto travel time. The transit route, which uses the ACE train and VTA bus, is able to bypass the freeway congestion on southbound I-880, and achieve a travel time that is only slightly (20%) longer than the single-occupant auto travel time.

For the two routes with transit travel time based on the online desktop survey (Hayward to Newark OD 1 and Oakland to San Leandro OD 4), a total of four desktop runs were collected and generally they showed good alignment to field survey travel time. One of the four online desktop surveys experienced a travel time different more than a few minutes compared to field survey travel time, due to a disappearing bus on the real-time position online display map. For that run, the in-field transit surveyor reported a long wait for the bus. AC Transit is planning a major bus positioning and dispatching system upgrade in the next few years, so the quality of the real-time bus position and arrival information is expected to improve in upcoming monitoring cycles.

For a better comparison of auto and transit modal performance, a large-scale, automated transit monitoring study will be a valuable input. By increasing the robustness of transit monitoring in line with that of Alameda CTC's robust roadway monitoring, the comparison between auto and transit modal performance will be more effective. More discussion on this is included in Chapter 9.

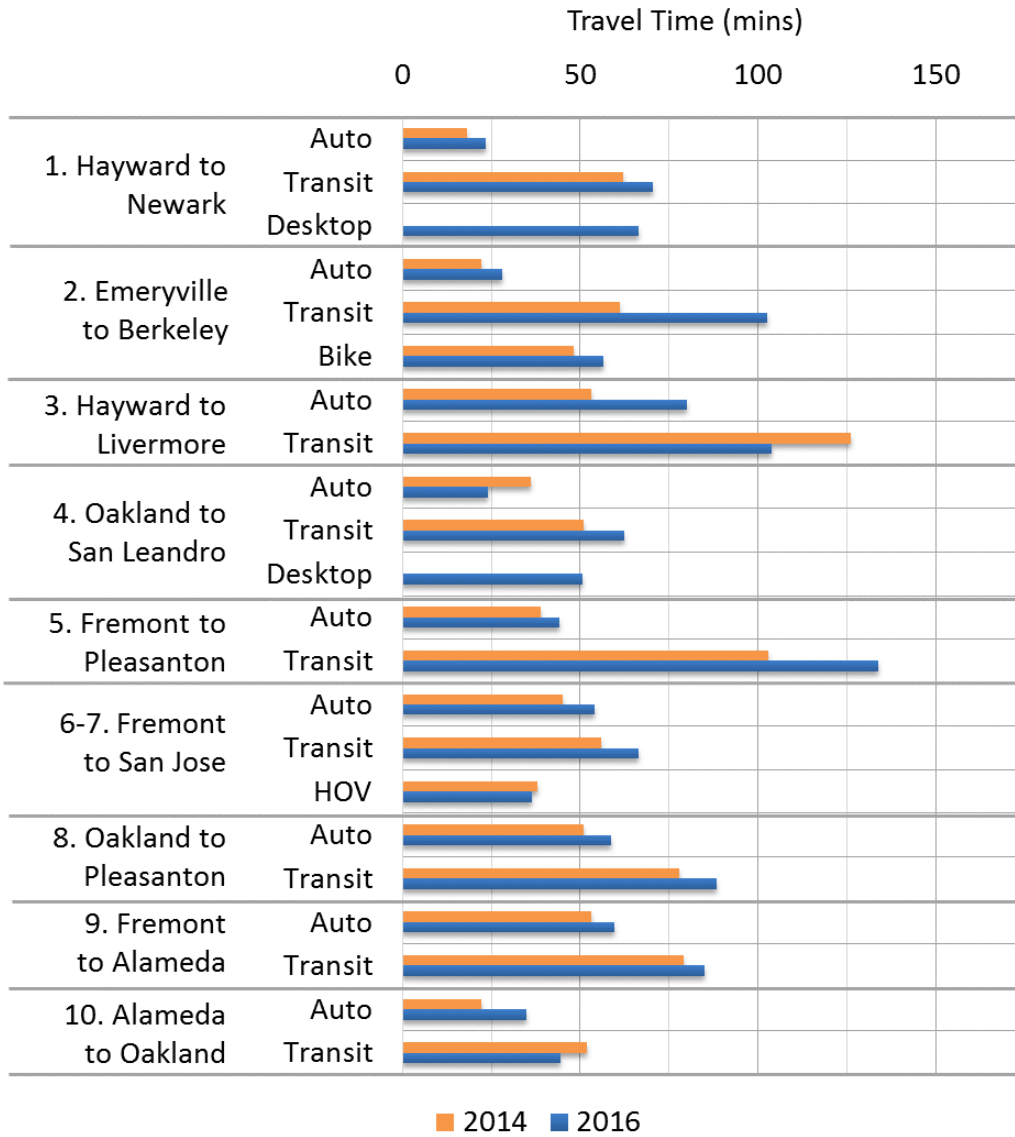


Figure 6-1: OD Survey Results