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<https://escholarship.org/uc/item/72j1z9dk>

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Publication Date

2023-10-12

DOI

10.17610/T6B89B

3 PM Is the New 5 PM Post-Pandemic Travel Patterns in Southern California Are Shifting

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October 2023

Issue

In the spring of 2020, daily travel collapsed as public health measures during the COVID-19 pandemic kept most people at home. Streets were suddenly and eerily empty in cities around the world. Since then, rates of driving, biking, and walking have largely rebounded, roughly returning to pre-pandemic levels. However, public transit use, particularly in the U.S., has been slow to recover and remains mostly well below pre-pandemic levels.

The effects of pandemic-influenced changes in activity and travel are not always intuitive. Working from home may reduce the number of commute trips (especially on public transit), but may induce longer commutes when they do occur. Working from home may also free up time for running errands and chauffeuring children. Similarly, online shopping may reduce trips to the store, but it also generates more commercial delivery trips.

While previous research has examined pandemic-induced changes in how much and by which modes people travel, *when* travel occurs has garnered far less attention. Yet the many longer-term changes in personal and commercial activities coming out of the pandemic — such as remote work, online shopping, and video streaming — likely influence the timing of travel. Changes in travel timing also deserve further study because travel peaking — by time of day and day of week — strongly influences traffic congestion, vehicle emissions, and public transit demand.

Approach

To examine late-pandemic shifts in trip timing, we analyzed smartphone location data to track the location and timing of vehicle trips on streets and highways in Greater Los Angeles.

Specifically, we compared the average number of trip origins for each hour of the day in all 10,783 census block groups in Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties in October 2019 and October 2021. We then estimated a series of statistical models to examine the factors associated with both the levels of and changes in the timing of afternoon peak-period trip-making. Following our initial analysis, we focused in particular on shifts in early (12 p.m.–3:59 p.m.) and late (4 p.m.–7:59 p.m.) afternoon trip-making between fall 2019 and fall 2021.

Our primary data come from StreetLight, a location analytics company that provides travel datasets collected from mobile phones, GPS receivers, and other network-enabled devices. We augmented these data with information from the U.S. Census, Longitudinal Employer-Household Dynamics Origin and Destination Employment Statistics (LODES), and the U.S. Department of Education.

Key Research Findings

Vehicle travel in both the morning and evening travel peaks in Greater Los Angeles diminished in October 2021 compared with October 2019, while the afternoon traffic peak shifted notably earlier: from 5 p.m.–5:59 p.m. to 3 p.m.–3:59 p.m. (Figure 1).

We found that employment area demographics and school area characteristics were strongly associated with certain trip-making patterns:

- The number of K-12 students in an area was by far the strongest predictor of early-afternoon peak-period trips in fall 2019 and fall 2021. Workers may trickle out of workplaces in the afternoon or elect to leave late, but schools tend to

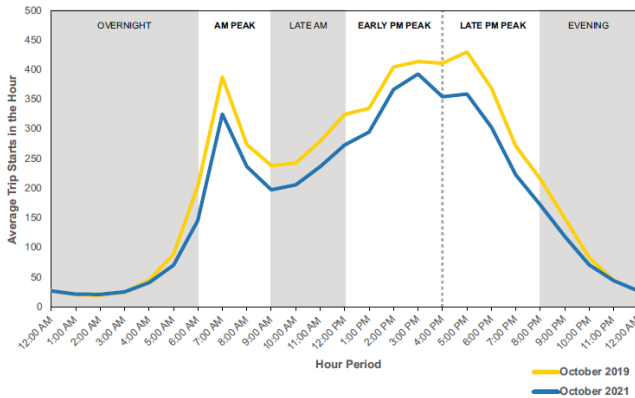


Figure 1. Average census block group trip starts per hour in October 2021 (blue) had largely recovered to pre-pandemic October 2019 (gold) levels and in a similar pattern, except for the evening peak, which shifted from 5 PM in 2019 to 3 PM in 2021.

dismiss students all at once. Because Southern Californians rely heavily on personal automobiles to transport children to and from school, the effects on peak-period travel are likely substantial.

- The share of jobs that can be done remotely was strongly associated with earlier PM peak-period trip-making in both 2019 and 2021 and majorly contributed to the shift in earlier PM travel.
- The share of low-wage jobs also strongly contributed to the shift toward earlier PM travel — even though it was moderately associated with later PM travel in both 2019 and 2021.
- Similarly, higher percentages of Latino/a and Asian workers were associated with modest shifts to early afternoon trip-making *between* 2019 and 2021, despite their association with later PM trip-making in both 2019 and 2021. The percentage of Black workers was also associated with earlier peak trip-making.
- Suburbs, home to many stay-at-home workers, saw more early PM peak trip-making late in the pandemic than urban areas. In fall 2019, both urban and rural areas saw relatively earlier PM trip-making compared to suburban areas. But by October 2021, urban areas saw more late-afternoon travel relative to suburban neighborhoods.

Research presented in this policy brief was made possible through funding received by the University of California Institute of Transportation Studies (UC ITS) from the State of California through the Resilient and Innovative Mobility Initiative, a one-time General Fund allocation included in the 2021 State Budget Act. The UC ITS is a network of faculty, research and administrative staff, and students dedicated to advancing the state of the art in transportation engineering, planning, and policy for the people of California. Established by the Legislature in 1947, the UC ITS has branches at UC Berkeley, UC Davis, UC Irvine, and UCLA.

Project ID UC-ITS-RIMI-4L | DOI: 10.17610/T6B89B

Conclusions

Daily vehicle travel declined modestly late in the pandemic across most of the day, relative to pre-pandemic levels; however, travel patterns during the afternoon and early evening weekdays changed throughout Greater Los Angeles. Trip-making in the afternoon peak period shifted from the late afternoon to the early afternoon. The location of peak-period travel changed as well and is today influenced heavily by the location of schools.

These shifts in peak travel have policy implications large and small. Time-specific efforts to manage traffic, such as peak-hour commuter transit services, added peak-direction lanes, signal timing, and rush hour parking restrictions may need to be adapted to the new temporal and spatial patterns of peak-period traffic.

Public transit has traditionally competed most effectively with automobiles when shuttling large numbers of peak-period travelers into and out of major activity centers, like downtowns and universities; both have been affected significantly by the rise of remote work. If such travel remains depressed in the years ahead, transit policymakers and planners will need to recalibrate the locations and timing of transit service to better serve shifts in the locations and timing of travel.

More Information

This brief is based on an academic publication under review. For a pre-publication preview, contact corresponding author Brian D. Taylor at btaylor@ucla.edu.

We thank the Southern California Association of Governments (SCAG) for providing the data for this analysis. We also thank Philip Law (SCAG), Eric Sundquist (Caltrans), Roberta Loscalzo and Hunter Irvin (StreetLight), and Andy Lin (UCLA OARC) for their guidance on this research.