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The Effect of Bus Lane Management Techniques on Operator Experience, Safety, and On-Time Performance

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The Effect of Bus Lane Management Techniques on Operator Experience, Safety, and On-Time Performance



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Issue

In Los Angeles County, buses carry 70% of LA Metro customers. Traffic congestion greatly affects the efficiency and reliability of Metro's bus system, which has resulted in a 12.5% drop in average speeds over the last 25 years. As a solution, transit agencies have begun implementing mixed-use bus lanes, or curbside bus lanes that operate in the same right of way as general traffic, and give buses the opportunity to bypass traffic, which can improve service reliability and travel speeds. In LA County, there are 27 miles of mixed-use bus lanes; however, these lanes are largely passively enforced through roadway striping and signage. As a result, most of the lanes in LA County have high vehicle intrusion rates.

A particularly notorious location for vehicle intrusion is a mixed-use bus lane on Wilshire Boulevard, which was fully installed in 2015 and is not actively enforced by police or parking officials. A preliminary study of Wilshire Boulevard found that lane intrusions occur at a rate of one every four minutes during the bus lane operating hours. By comparison, LA Metro, in partnership with the LA Department of Transportation, piloted a bus lane in 2019 in Downtown Los Angeles on Flower Street that received dedicated police enforcement. The pilot was largely successful due to this enforcement; it sets a possible model for how bus lanes in Los Angeles could be managed in order to maximize potential time savings, increase operational efficiency, and reduce vehicle-to-vehicle

conflicts. This project set out to compare these two bus lanes and suggest future steps LA Metro can take to ensure effective bus-lane enforcement.

Research Findings

Enforcement is tied to positive outcomes for the bus lane. A larger percentage of operators on Flower Street, which receives dedicated enforcement, stated that they agree or strongly agree that the bus lane increases travel time when compared to the Wilshire Boulevard bus lane operators (74% vs. 63%) and bus reliability (82% vs. 58%).

There are similar types of intrusions into bus lanes regardless of enforcement. The greatest amount of bus delay is due primarily to parked private cars, followed by ride-hail vehicles or taxis idling in the lane, and by private vehicles illegally driving in the lane (Figure 1).

These vehicle intrusions caused more delays in unenforced bus lanes. Eighty-four percent of surveyed Wilshire Boulevard bus lane operators stated that vehicle intrusions were always causing delays, compared to 53% of bus operators along Flower Street.

Improved roadway safety is likely tied to enforcement. Operators along both Wilshire Boulevard and Flower Street largely perceived that bus-lane violations reduced roadway safety. More Wilshire Boulevard bus operators felt that conflicts in the bus lane increased their likelihood of collision (68% vs. 52%). Traffic-related collisions, primarily

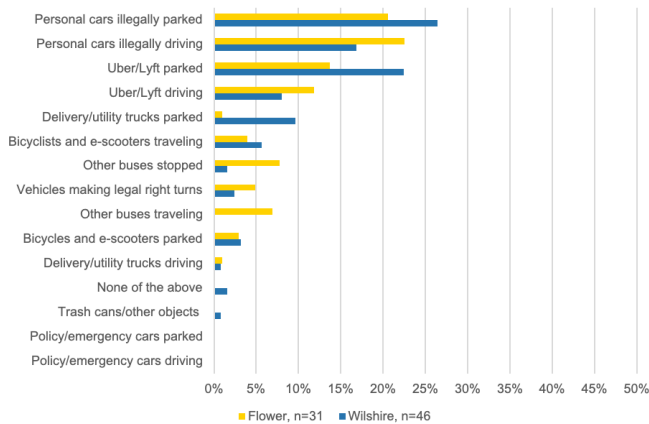


Figure 1: Operators’ ranking of violations affecting their ability to use the lane

from vehicles turning right into the bus, have declined since the installation of the Wilshire Boulevard bus lane; however, results are inconclusive on Flower Street.

On-time performance did not significantly improve on Flower Street or Wilshire Boulevard. On-time performance is a measure of adherence to bus service scheduled timetables. However, since many factors can influence on-time performance, this is not the ideal measurement of bus lane performance. More research is needed into different metrics, such as travel times and headway variance, to better gauge how different management strategies affect service reliability.

Study Approach

The researcher analyzed two Los Angeles bus lanes — on Flower Street and Wilshire Boulevard — that have received vastly different enforcement practices. A comparative case study of the effect of enforcement on bus-lane operations was conducted. The researcher examined the following question: how do different management strategies for bus-only lanes, entailing design solutions, passive enforcement and active enforcement affect the safety, security and on-time performance of LA Metro bus operations?



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The researcher relied on four main data sources from LA Metro to conduct these case studies:

- Internal reports on bus-lane enforcement costs and practices.
- Surveys administered jointly by the researcher with LA Metro to 77 bus operators.
- In-service on-time performance data.
- Incident reporting of roadway collisions of Metro buses.

Conclusions

The findings show that bus lanes improve bus safety and performance, and are even more effective when agencies implement robust management practices. LA Metro should develop a comprehensive bus-lane management strategy that includes a suite of solutions that can be deployed either systemwide or in specific violation hotspots. The researcher identified four key recommendations for LA Metro to take into consideration for its existing and future bus-lane network.

Short-term strategies:

- LA Metro should explore different design configurations for current and future mixed-use bus lanes, as well as additional passive enforcement techniques. This could reduce the violation rates of bus lanes, but should be seen as a part of a comprehensive strategy with active enforcement.
- The agency could partner with other city partners to deploy parking enforcement blitzes in congested sections of existing bus lanes that are violation hotspots.

Longer-term strategies:

- LA Metro should pursue enabling legislation to allow for automated enforcement, and build a bus-lane management system around this strategy.
- Future bus-lane planning should budget for ongoing lane management as a part of the lifecycle cost of the lane. This will require strong interjurisdictional coordination and alignment around shared goals.