POINT OF VIEW: COUNTERPOINT

High-Occupancy Vehicle Lanes—A Valuable Tool in the Traffic Management Toolbox

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High-occupancy vehicle (HOV) lanes are common in U.S. urban areas. The theory behind the lanes is simple: require a minimum number of occupants in each vehicle using the lane, and the lane's efficiency will increase in terms of the number of people it carries.

In the years since the first HOV lane, however, transportation professionals have come to realize that achieving the goal is not simple. Several HOV lane "failures" have brought the concept into question, with opponents calling for the removal of all HOV lanes. It may be unrealistic to claim that an HOV lane will increase the person-carrying capacity of any roadway, but it is unreasonable to discount the concept because a few installations have underperformed.

Performance and Perception

Most people would agree that an HOV lane is a success if it carries more people than the average carried on the adjacent multiuse lanes. Under this criterion, an HOV lane with an occupancy requirement of two or more persons per vehicle would have to carry at least half as many vehicles as the adjacent lane. With an occupancy requirement of three or more, only one-third as many vehicles would be needed to carry the same number of people.

Therefore if a multiuse lane carried 1,500 vehicles per hour, an HOV lane with an occupancy requirement of three or more would need only 500 vehicles per hour to carry as many people. Although technically a success, the lane more than likely would be considered a failure because it would appear underutilized.

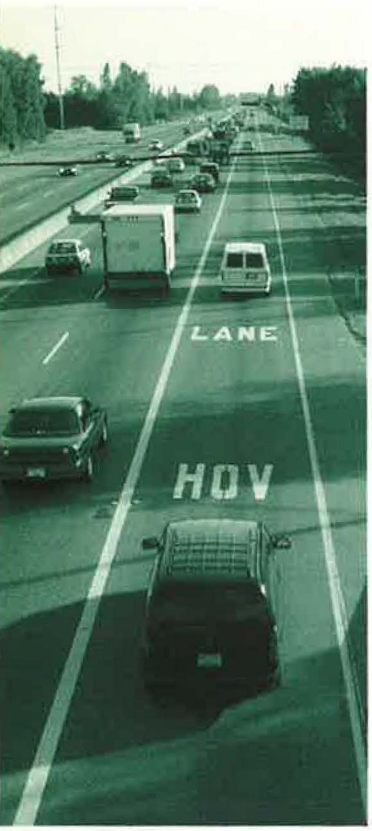
This public perception is heightened when the adjacent multiuse lane is congested. Drivers sitting in the stop-and-go congestion of a multiuse lane and watching the large headways in the HOV lane are tempted to think that overall capacity could improve

by allowing access to all vehicles. Yet what attracts users to HOV lanes is the lack of congestion and the corresponding reduction in travel time and increase in travel time reliability.

An HOV lane carrying volumes similar to those on the adjacent multiuse lane and undergoing similar levels of congestion would offer little advantage. By design, HOV lanes carry fewer vehicles per hour than their multiuse lane counterparts. The ideal operating capacity of an HOV lane therefore is less than the physical capacity of the lane, reflecting the goal of maintaining a higher level of service. The challenge is to maintain free-flow conditions while avoiding the perception of an empty lane.

Carpool Diversion

One argument maintains that HOV lanes do not encourage the formation of new carpools but draw carpoolers from the multiuse lanes. Although corridors undoubtedly have functioning carpools before an HOV facility opens (it would be foolish to open an HOV lane in a corridor without carpools), the travel time savings and reliability provided by the HOV lane attract additional users. Several studies have demonstrated this.



◆ A survey in Texas found that 35 to 66 percent of carpoolers drove alone before the HOV lane, and data from California SR 55 revealed that 56 percent of HOV users previously drove alone.

◆ A Texas Department of Transportation document noted that carpooling has declined 30 percent nationwide in the past 20 years, but has increased 100 percent or more on Texas freeway corridors with mature HOV lanes.

◆ California reported a 52 percent increase in the number of carpools in the morning peak period on freeways with HOV lanes from 1992 to 1998.

◆ In Virginia, ridesharing and the demand for park-and-ride lots along the HOV corridor testify to the existence and continuing formation of carpools. Several park-and-ride lots, providing 450 new spaces, have opened recently along the I-95 corridor and are full daily.

Virginia's Success Story

The I-95 and I-395 corridor in Northern Virginia is an excellent example of a successful HOV implementation. The corridor is approximately 28 miles long and serves as a commuter route from the Virginia suburbs to the Pentagon in Arlington, Virginia, and to downtown Washington, D.C. A reversible HOV lane with an occupancy requirement of three or more serves the peak direction in both the morning and the evening peak periods.

The most recent monitoring results show that HOV volumes increased by an average of 1,000 vehicles inside the Capital Beltway (I-495) and by almost 1,300 vehicles outside the Beltway compared with the volumes recorded in 1998. Data also show that during the peak hour of the restricted period, the two HOV lanes carry more people than the four multiuse lanes.

Since 1998, the number of people in HOVs increased 18 percent inside the Beltway and 47.5 percent outside the Beltway. In addition, vehicles in HOV lanes are traveling at higher speeds (61 vs. 29 mph) with a substantially faster travel time (27 vs. 58 minutes).

The occupancy requirements for three or more persons per vehicle have led to creative carpooling. Casual carpooling plays a significant role in ridesharing. Lines form at several well-known locations every morning as people looking for rides ("slugs") are picked up by automobile drivers looking for passengers ("bodysnatchers") to meet the HOV requirements. These informal carpools, along with the many formal vanpools and transit buses, make up a large share of the HOV lanes' volume.

Although some areas are reducing occupancy requirements, regular users of the I-95 and I-395 HOV lanes argue that without the requirement for three or more persons, the HOV lanes would experience unacceptable congestion and the slug lines would diminish.

The I-95 and I-395 HOV lanes are successful primarily because of support elements including well located and accessible park-and-ride lots, ridematching services, aggressive outreach programs to gain employer support, a guaranteed ride home program, and access and egress convenient to residential areas and workplaces. Such support elements should be part of all HOV efforts.

Political Pressure

Political pressure has been the biggest obstacle to HOV lanes in recent years. Public perception that HOV lanes are underutilized has led to organized citizen opposition that political leaders cannot ignore. The data necessary to refute claims against HOV effectiveness often are not collected or, when available, are not widely distributed.

Even successful HOV facilities have fallen victim to political pressure because of proximity to an unsuccessful facility. In New Jersey, HOV lanes on I-287 were underutilized, creating a public outcry so severe that HOV lanes on the adjacent I-80, despite use in the acceptable range, also were opened to all traffic.

Dreams and Tools

The American dream is to travel on roadways free of congestion and in the comfort of a single-occupant vehicle (SOV)—but in most of the nation's urban areas, the two parts of the dream cannot coexist. It is only natural for a driver to look at a lane of HOV traffic moving smoothly at high speeds and want to be in it. However, without occupancy restrictions, that lane would not be freeflowing.

There always will be people who cannot or will not abandon the SOV way of life, and there always will be facilities to serve them. HOV lanes encourage carpooling by those who can, offering the reward of reduced travel times and increased travel time reliability.

The legitimacy of HOV policies is a subject of national debate, and more data on the performance of facilities would be beneficial. HOV lanes may not solve current congestion problems overnight, but the bottom line is that HOV lanes are an important tool in increasing the person-carrying efficiency of our roadways.

A hammer may not help much to cut down a tree; but when a nail needs to be driven, it is good to have a hammer in the toolbox. Similarly, HOV lanes may not be the appropriate tool for every highway congestion situation, but HOV lanes are a valuable tool in the traffic management toolbox.