

Everyone, Outta the Pool

By Bob Poole

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Carpooling is a flop. Despite the expenditure of billions of tax dollars to add carpool lanes to congested freeways over the past two decades, carpooling declined from 13.4% of work trips in 1990 to 11.2% in 2000, according to the U.S. Census Bureau. Carpooling's "market share" declined in 36 of the largest 40 metro areas -- including highly congested Los Angeles and San Francisco. So what should America do now?



Some transit advocates argue that carpool lanes were originally intended for use solely by buses, and should be converted to exclusive busways. Some highway advocates argue with equal passion for converting carpool lanes to general purpose lanes. And the Federal Highway Administration keeps trying to persuade metro areas to convert under-performing high-occupancy vehicle (HOV) lanes to high-occupancy toll (HOT) lanes, as San Diego did in the late 1990s with good success.

What's been missing from these debates is hard numbers about bang for the buck. That gap has recently been filled by a UCLA Ph.D. dissertation by Eugene Kim, "HOT Lanes: A Comparative Evaluation of Costs, Benefits, and Performance." Kim used a standard travel-demand model to estimate the travel times that would come about by converting an existing HOV lane on a congested freeway to either (a) a general-purpose lane, (b) a HOT lane, or (c) a Toll lane. He also estimated long-term (20-year) costs and benefits of each alternative, as well as environmental impacts.

The results were striking. In almost all cases, HOT or Toll lanes provide more benefits (fiscal, consumer welfare, and environmental) than any other expressway investments. Kim's work shows that there is only a very limited set of conditions under which HOV lanes are the best option. In most cases, society would be better off if the lanes were converted to one of the alternatives.

What's HOT, What's Not

Converting to general-purpose lanes is most defensible when HOV (carpool) use is less than 7% of all trips in the corridor, and there are fewer than 700 vehicles/hour in the HOV lane. But in almost all cases, converting to a Toll lane produces *greater* benefits. That's because a market-based toll will be increased over time, as traffic increases and freeway congestion worsens. Hence, unlike the HOV lane, the Toll lane will keep on flowing smoothly, without congestion. And as a huge side-benefit, Toll lanes will therefore generate substantial

revenues for the highway system.

Kim spends a lot of time looking at whether to convert only to HOT (carpools still go for free) or go all the way to Toll (all users pay). At first blush, you might guess that conversion to Toll would produce less delay-reduction than conversion to HOT, because fewer people will continue to carpool if those vehicles have to pay. But the modeling shows that conversion to Toll produces large delay-reduction benefits "regardless of whether the conversion . . . results in a significant increase or decrease in the initial proportion of HOVs." That's because, over time, only market pricing can keep the lane flowing freely.

Poor Not Disadvantaged

These results clearly support the idea that many of today's HOV lanes are candidates for conversion to Toll. As Kim points out, even if carpoolers have to pay, they will still have incentives to ride-share, for two reasons. First, splitting the toll among several people makes it more affordable. Second, a market-priced Toll lane provides "insurance" against travel-time uncertainty in the event that a carpool participant unexpectedly cancels. In other words, if your passenger can't make it today, you still get to use the uncongested premium-service lane. That effect has been documented on San Diego's I-15 HOT lanes.

Transit advocates won't be satisfied with those arguments, since they would rather see HOV lanes converted to busways. But here's where a smart political compromise could cut through the ongoing highways vs. transit controversy. Let express buses use the Toll lanes at no charge.

One 60-passenger express bus takes up no more room than three cars, but carries as many people as 20 three-person carpools. By running express buses on uncongested Toll lanes, transit agencies would make their services significantly more competitive with driving alone in the congested regular freeway lanes -- and a lot cheaper for bus commuters than paying to drive in the Toll lanes. But the express buses would take up very little of the lane's capacity, leaving plenty of room for paying customers.

An Air Freshener, Too

Environmental advocates may also be skeptical, but Kim addressed their concerns as well. He compared the environmental impacts of his four alternatives using a standard emissions model used by California air-quality agencies. He concluded that the HOV case "produces a greater output of reactive organic gases, nitrogen oxides, and carbon monoxide than converting to either general-purpose or Toll lanes."

Why? "A Toll lane produces the largest emissions reductions because it eliminates some vehicle trips (like an HOV lane) while reducing congested

conditions more effectively than a general purpose lane." This is especially the case when the analysis extends over a 20-year period, as Kim's does. In this regard, it's important to recall that in California, one of the strongest proponents of HOT lanes and Toll lanes has been Environmental Defense.

Where To Begin

HOT lanes and Toll lanes are on the agenda in a number of America's most congested urban areas. Last month, Fluor Daniel, a division of Fluor Enterprises Inc., proposed adding HOT lanes to a section of the highly congested Capitol Beltway near Washington, D.C. Similar proposals are in the planning stages in Dallas, Denver, Houston, Miami, Phoenix, and Seattle, San Diego's experiment with converting the HOV lanes on a section of I-15 has been so popular that a project is under way to lengthen the project from 12 miles to 20 miles, and increase it from two to four lanes.

Next year's reauthorization of the entire federal surface transportation program offers an opportunity for the feds to play a larger role in helping metro areas address their congestion problems via this approach.

The idea would be to use toll revenues and public-private partnerships to build out current HOV lanes into a seamless network of HOT or Toll lanes, with metro transit agencies making it a priority to use them for expanded express-bus service.

This would be a win-win approach. Transit agencies get new high-speed guideways for Bus Rapid Transit, without having to pay the huge capital costs of exclusive busways or light rail lines. All drivers (not just the few who can carpool) would get a premium-service alternative on the whole freeway system, to use on those occasions when time really is money. And transportation agencies would get a new source of revenue to help them add much-needed capacity in precisely those areas where building more is so expensive that it's been seen as almost impossible.

The only question is whether Congress and the Bush Administration will have the vision to think outside the box in this manner.

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