

Two-Tier Pricing for Urban Tollways

Robert W. Poole, Jr.

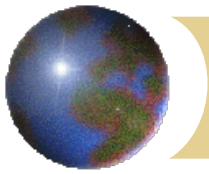
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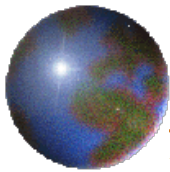


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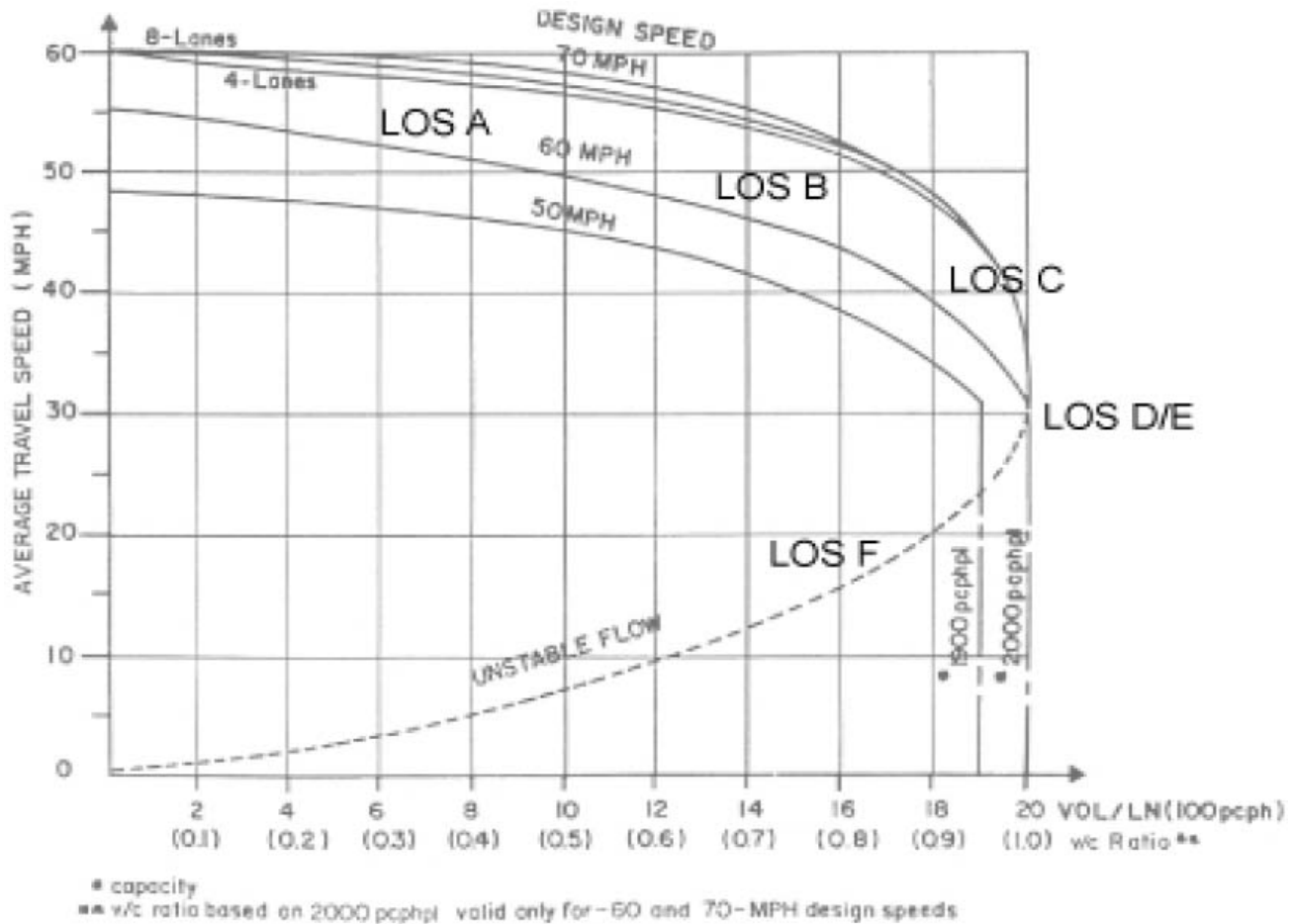


Congestion pricing for urban toll roads?

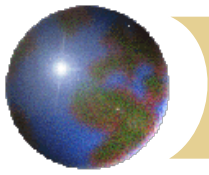
- ❖ Some urban toll roads are seriously congested (e.g., Dolphin in Miami)
- ❖ Good evidence that congestion pricing reduces congestion:
 - ❖ 15 years of HOT lanes experience
 - ❖ A transportation success and political success
- ❖ Avoid concern over pricing something that was “free” (as with freeways)



How congestion pricing works



Source: Adapted by Reason Foundation from *Highway Capacity Manual 1985, Chapter 13, "Freeway Concepts: Basic Freeway Segments," pp. 13-8 through 13-11.*



The trade-off: add lanes or just use pricing?

The case for lane additions:

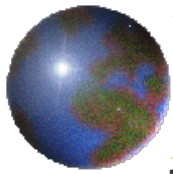
- ✚ Demand much greater than existing capacity during peaks;
- ✚ Toll roads can generate funds for new lanes, far more than freeways can;
- ✚ Creative approaches can add capacity, even where ROW is limited.



Tampa's Express Toll Lanes

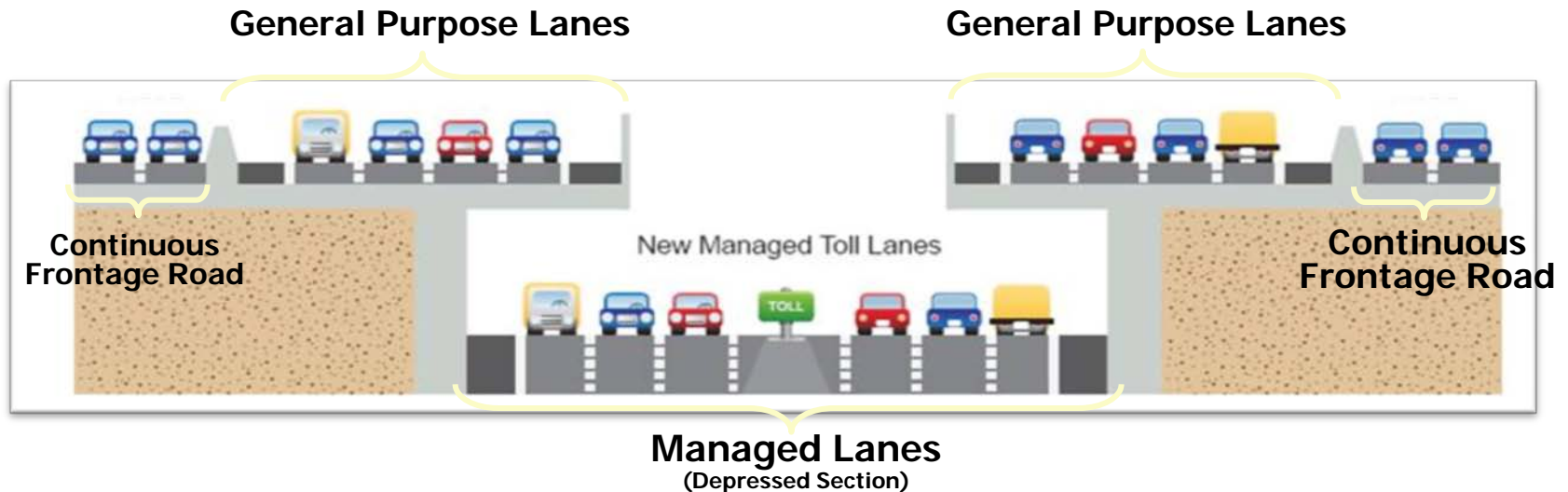
- ❑ Reversible, cashless toll lanes
- ❑ Elevated: 6 lanes on 6 feet
- ❑ Uncongested guideway for Bus Rapid Transit, also



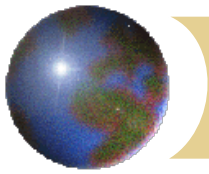


LBJ Express Project

I-635 Sub-Surface Managed Lanes (Cross-Section View)



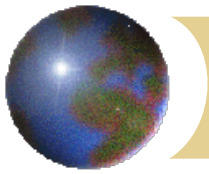
- Improvements to I-35E and I-635; two of the busiest roadways in Texas
 - 8 reconstructed general purpose lanes (no toll)
 - 4 - 6 new managed lanes (toll)
 - 2 - 3 continuous frontage lanes for better access (no toll)



Drawbacks of a “pricing-only” approach

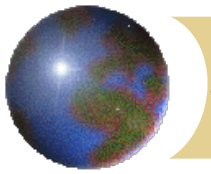
Congestion pricing produces losers as well as winners:

1. The Tolloed: pay because gains are worth more than the toll
2. The Tolloed-Off: they divert to arterials, since gains are not worth the price
3. The Un-Tolloed: those already on arterials are made worse by added traffic



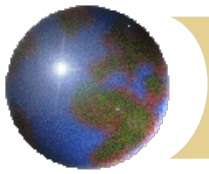
What if losers outnumber winners?

- ⊕ High peak congestion requires much higher “market-clearing” toll.
- ⊕ If the new revenues are not used to expand capacity, customers are faced with “monopoly pricing.”
- ⊕ In most urbanized areas, expanded transit is not a viable option for most drivers.



The problems with “one price fits all”

- ✦ There is not a single value of time.
- ✦ Studies show great “heterogeneity” in both value of time (VOT) and value of reliability (VOR)
- ✦ The single-price approach does not maximize social welfare:
 - ▣ Some pay far less than $VOT + VOR$
 - ▣ Many pay too much—or divert

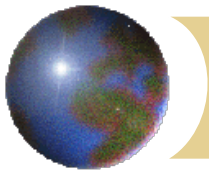


Small, Winston, & Yan on VOT and VOR in SR 91 corridor (2000 \$)

VOT (\$/hr)	Median	Range*
Express lanes	\$26	\$12 to \$40
GP lanes	\$19	\$ 8 to \$29

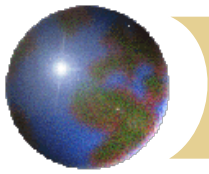
VOR (\$/hr)	Median	Range*
Express lanes	\$24	\$10 to \$48
GP lanes	\$19	\$ 6 to \$34

*5th percentile to 95th percentile



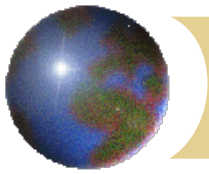
Small, et al. modeling results

- ❖ Two-tier pricing produces greater social welfare than free lanes + HOT lanes.
- ❖ Best results with high price for premium toll lanes; low price for regular toll lanes.
- ❖ Both prices would be variable, but with different LOS targets



Conclusions

- ✦ There's a good case for two-tier pricing on congested urban tollways.
- ✦ Equity: it's unfair to charge regular users the high cost of adding lanes.
- ✦ Where possible, 2 premium lanes each way.
- ✦ Conversion of one regular lane + construction of one new lane may be feasible on a toll road.



Questions?

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