Congestion Pricing
The Latest Weapon the U.S. War on Traffic Congestion

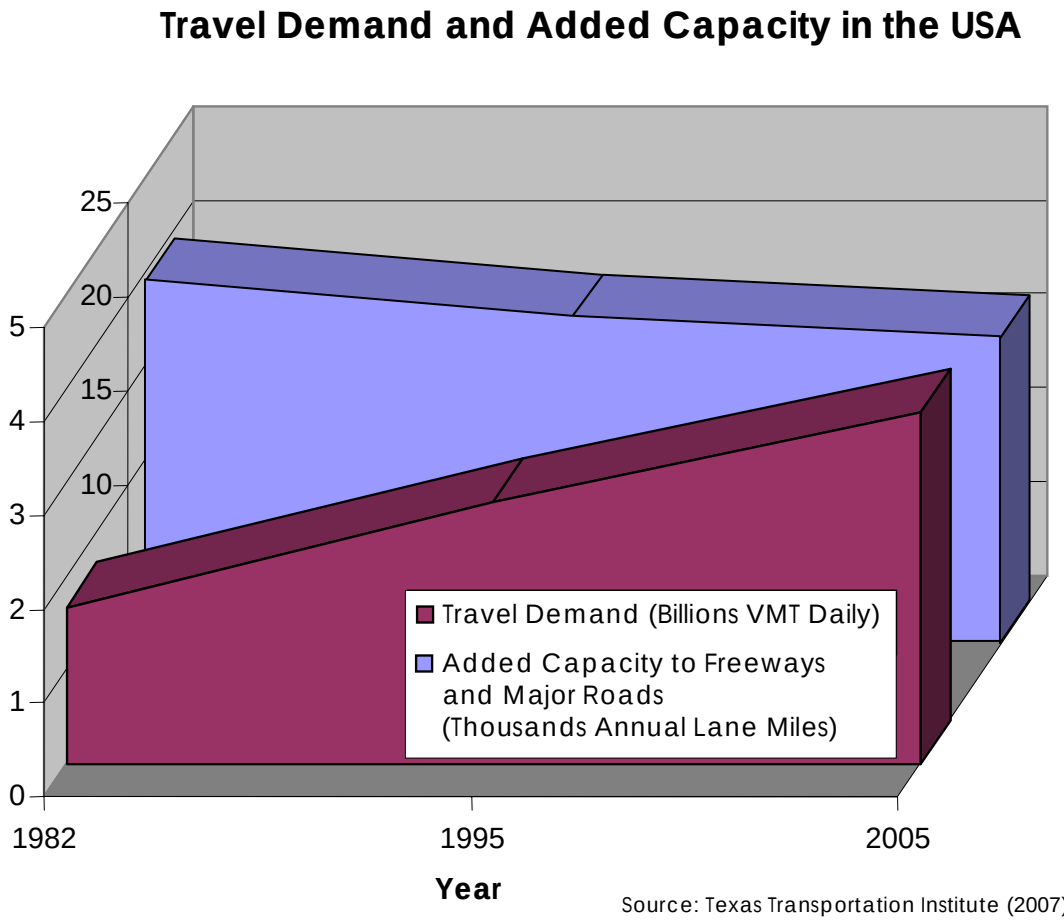
Darren Henderson, AICP

Today's Discussion

- How bad is congestion?
- What has been done about it?
- What else can be done?

How Bad is Congestion?

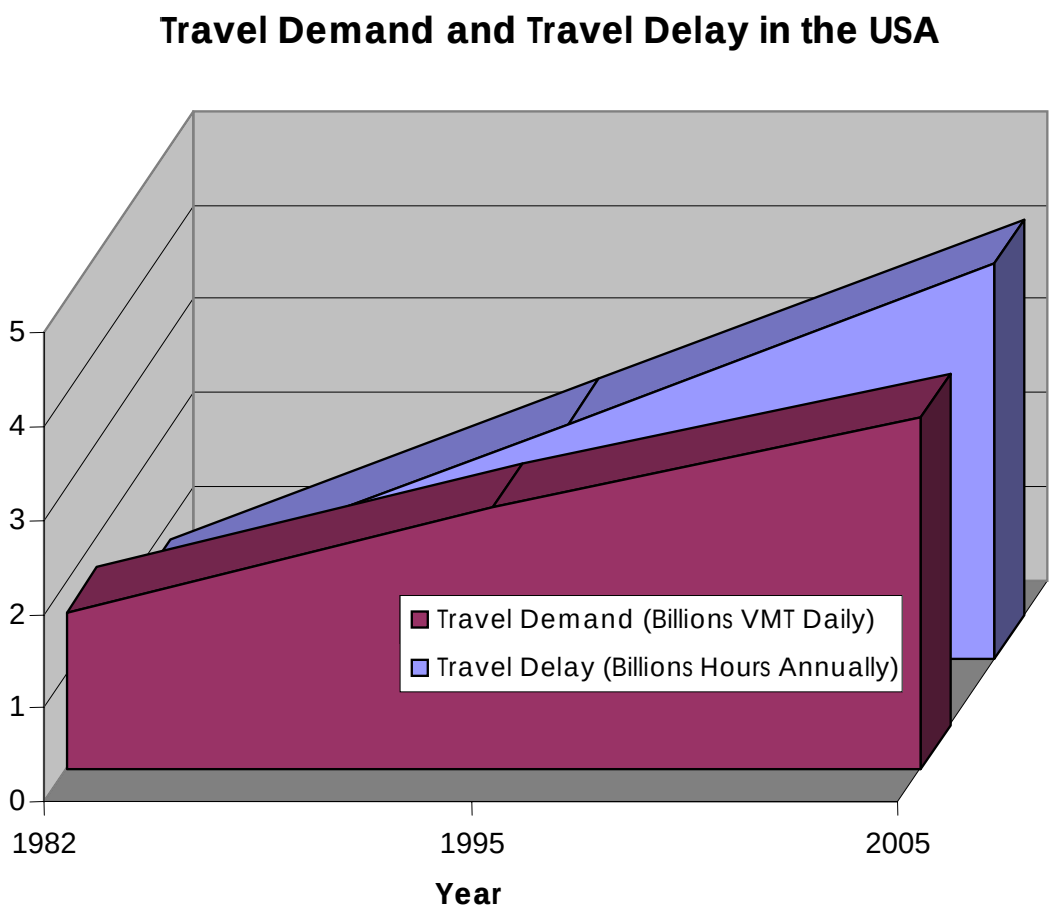
- U.S. travel demand continues to grow rapidly
  - Population growth, suburban development and economic prosperity are factors
- Only 41% of needed capacity has been added



Source: Texas Transportation Institute (2007)

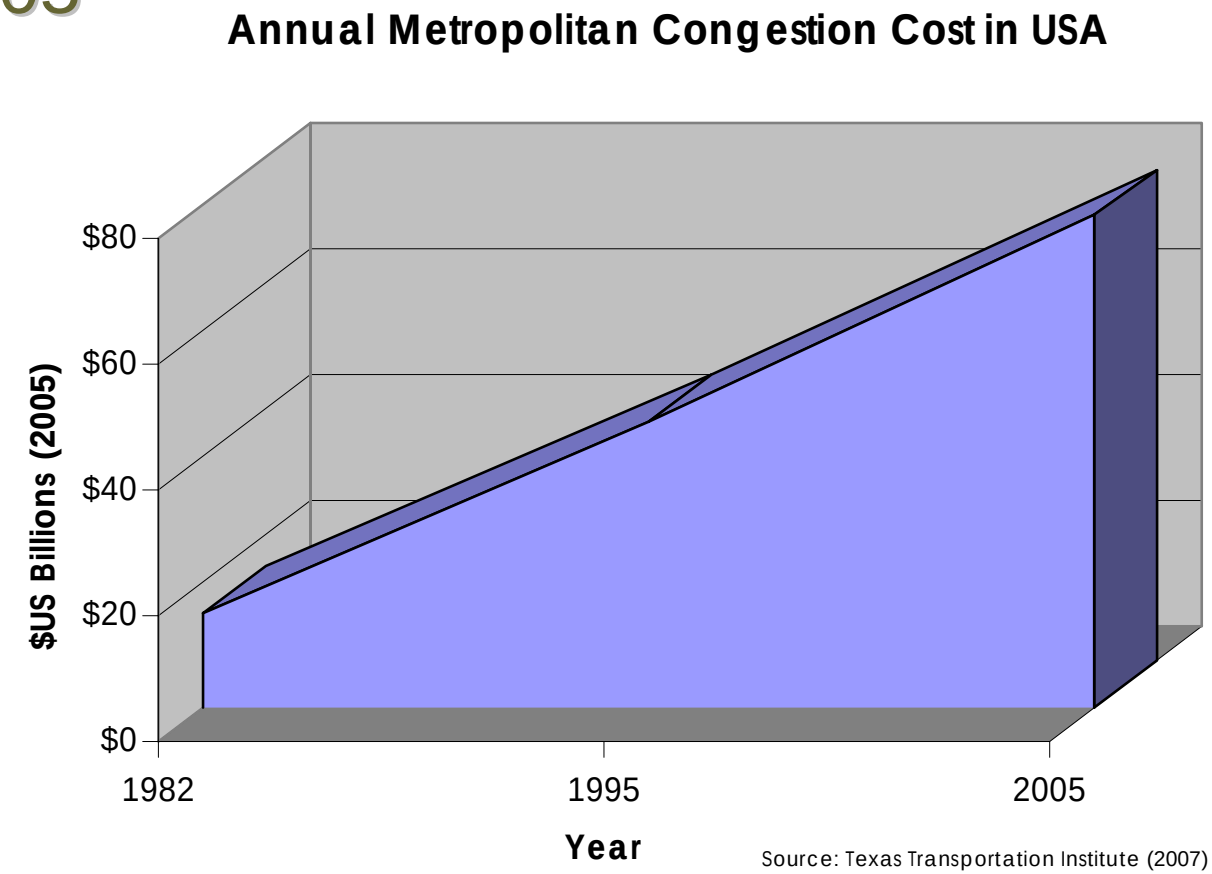
How Bad is Congestion?

- Congestion caused 4.2 billion hours of delay in the U.S.A. in 2005
  - About 38 hours per traveler annually
  - Delay has increased 425% since 1982



How Bad is Congestion?

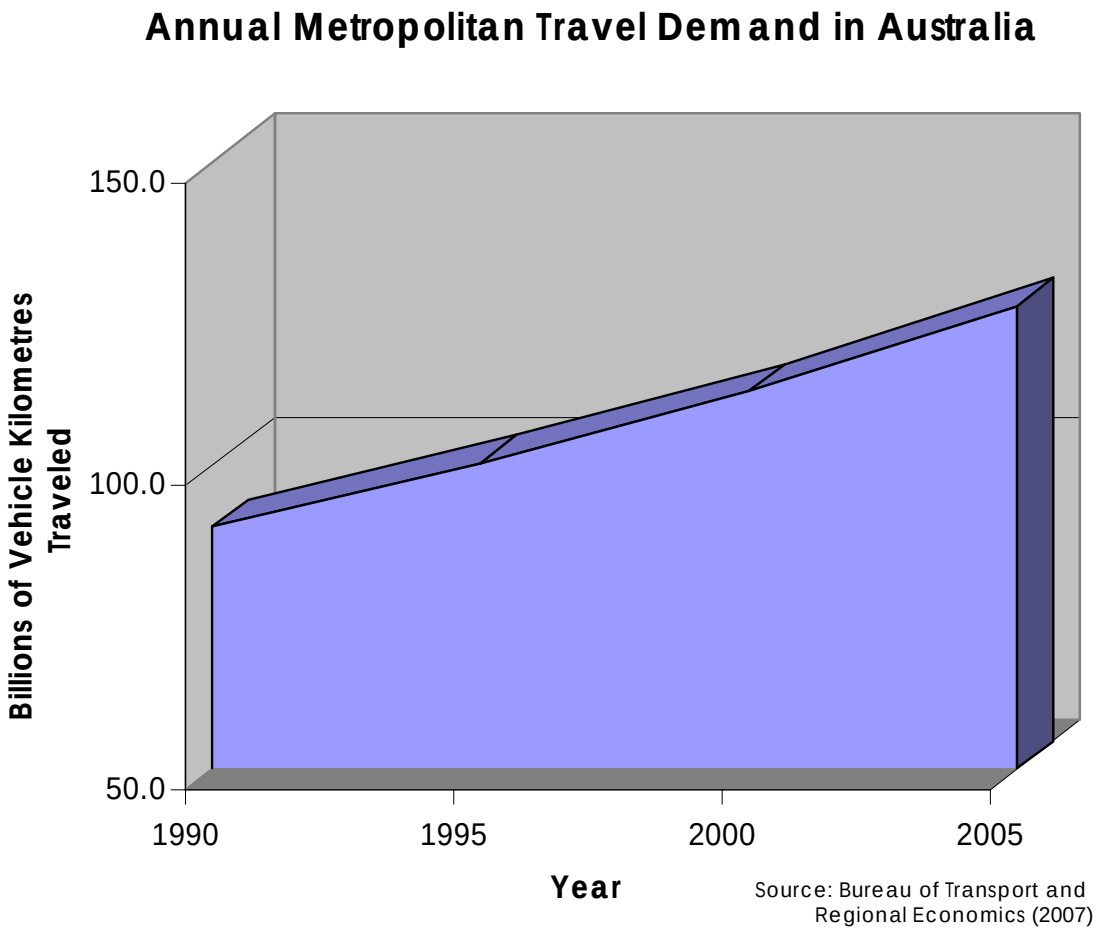
- Congestion cost the U.S. economy over $78 billion in 2005
  - About $710 per traveler
- 2.9 billion gallons of fuel were wasted



Source: Texas Transportation Institute (2007)

How Bad is Congestion?

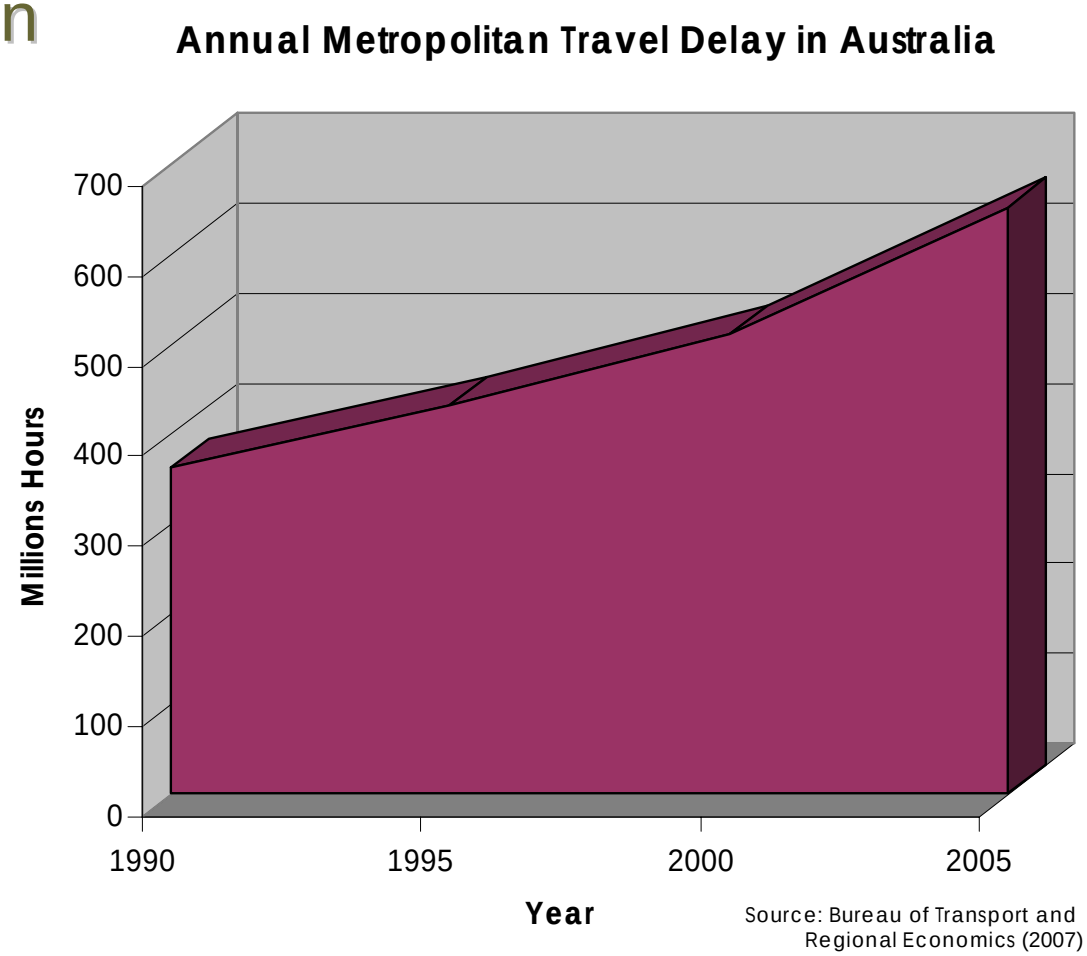
- In Australia, travel demand is also growing rapidly
  - Travel demand in Australian cities grew 26% from 1995 to 2005
  - U.S. travel demand grew 34% for same period



Source: Bureau of Transport and Regional Economics (2007)

How Bad is Congestion?

- Congestion caused over 650 million hours of delay in Australian cities in 2005
  - Cost the Australian economy almost $AUD 9.4 billion in 2005
  - Congestion costs Australia about the same per capita as the U.S.A.



Source: Bureau of Transport and Regional Economics (2007)

How Bad is Congestion?

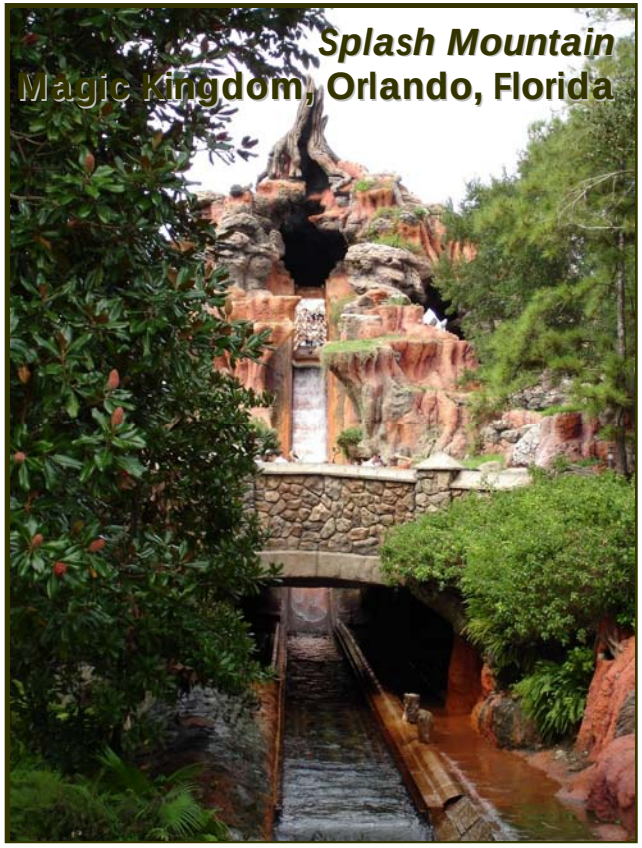
- Congestion is not necessarily a bad thing
  - Indicator of a vibrant economy
- People will wait for something they want
  - Congestion is too much demand for a good thing

Guests wait to ride *Finding Nemo Submarines*
Disneyland, Anaheim, California

How Bad is Congestion?

- Riders at theme parks will accept an hour of delay to take a 3 minute ride
  - The wait time (delay) can be 10 to 20 times the ride (travel) time

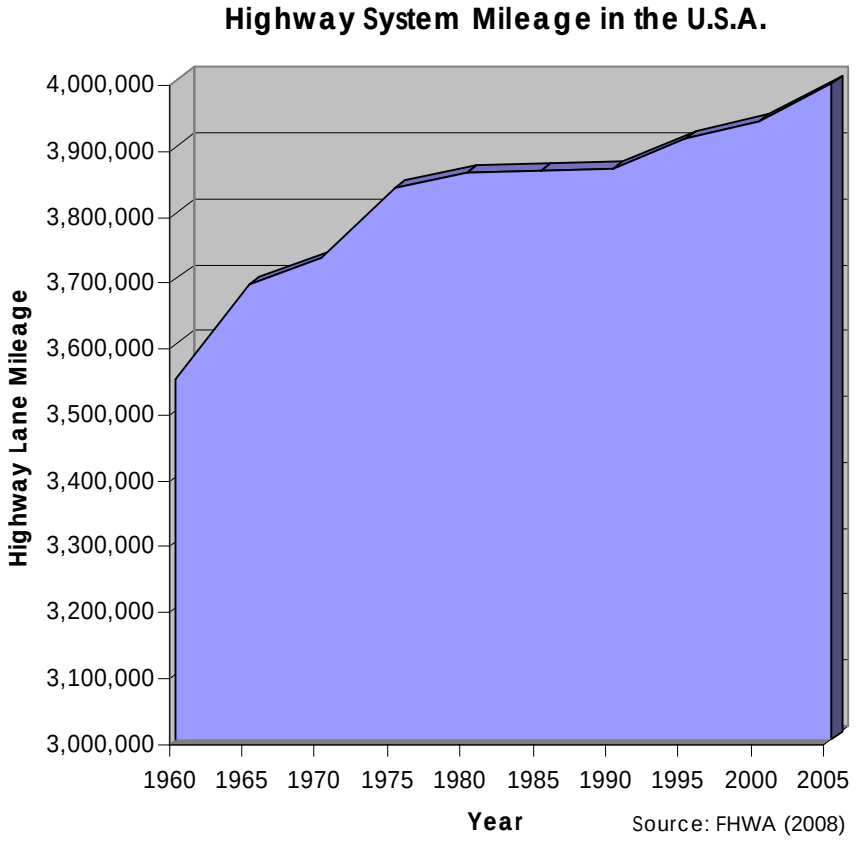
Guests wait for *Splash Mountain*
Magic Kingdom, Orlando, Florida



Splash Mountain
Magic Kingdom, Orlando, Florida

What has been done about it?

- Traditionally, the U.S. has addressed travel demand by building new infrastructure
  - The Interstate Highway System has been the most extensive transportation program in history



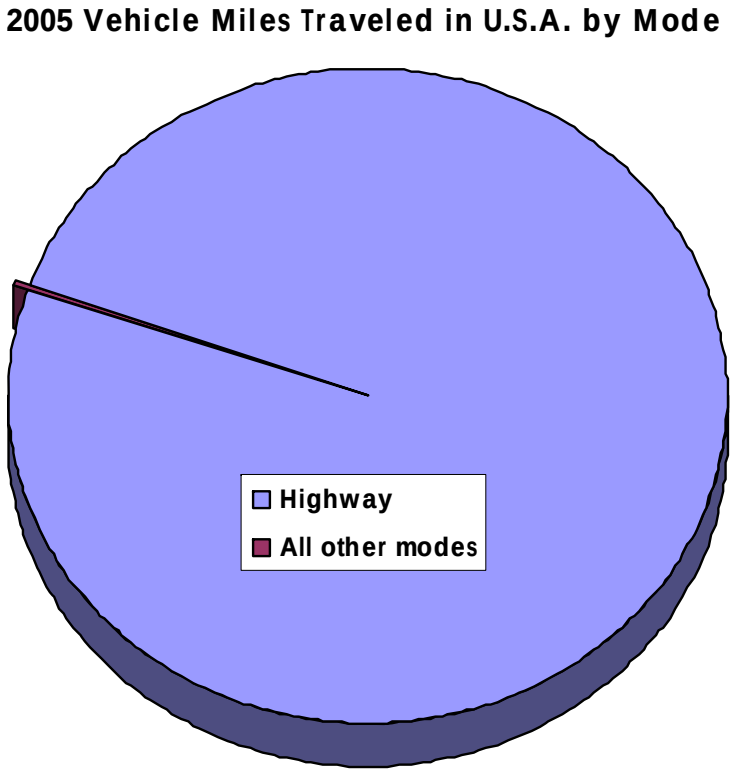
What has been done about it?

- The unprecedented expansion of U.S. highways has accelerated travel demand
  - Development patterns, transportation technologies and the national economy have evolved to capitalize on highway infrastructure
  - Has created a highway based society

Suburban development near Las Vegas, Nevada

What has been done about it?

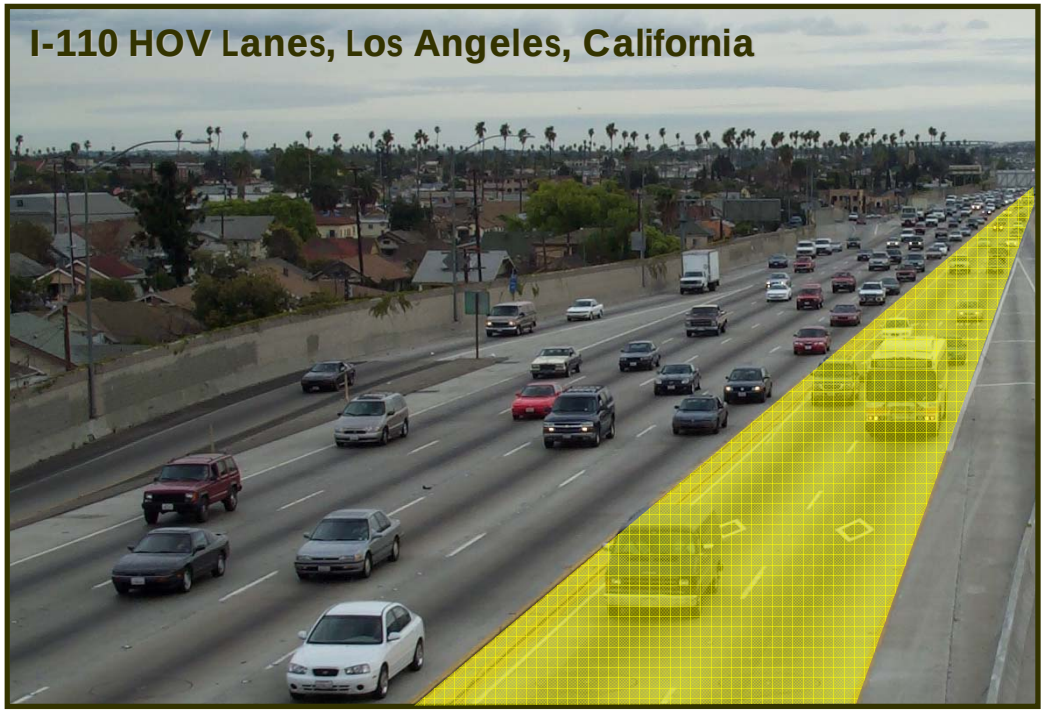
- Alternative modes have been promoted to reduce demand for highways
  - Despite massive investments and growing demand, mode share for alternative modes remains extremely low



Source: FHWA (2008)

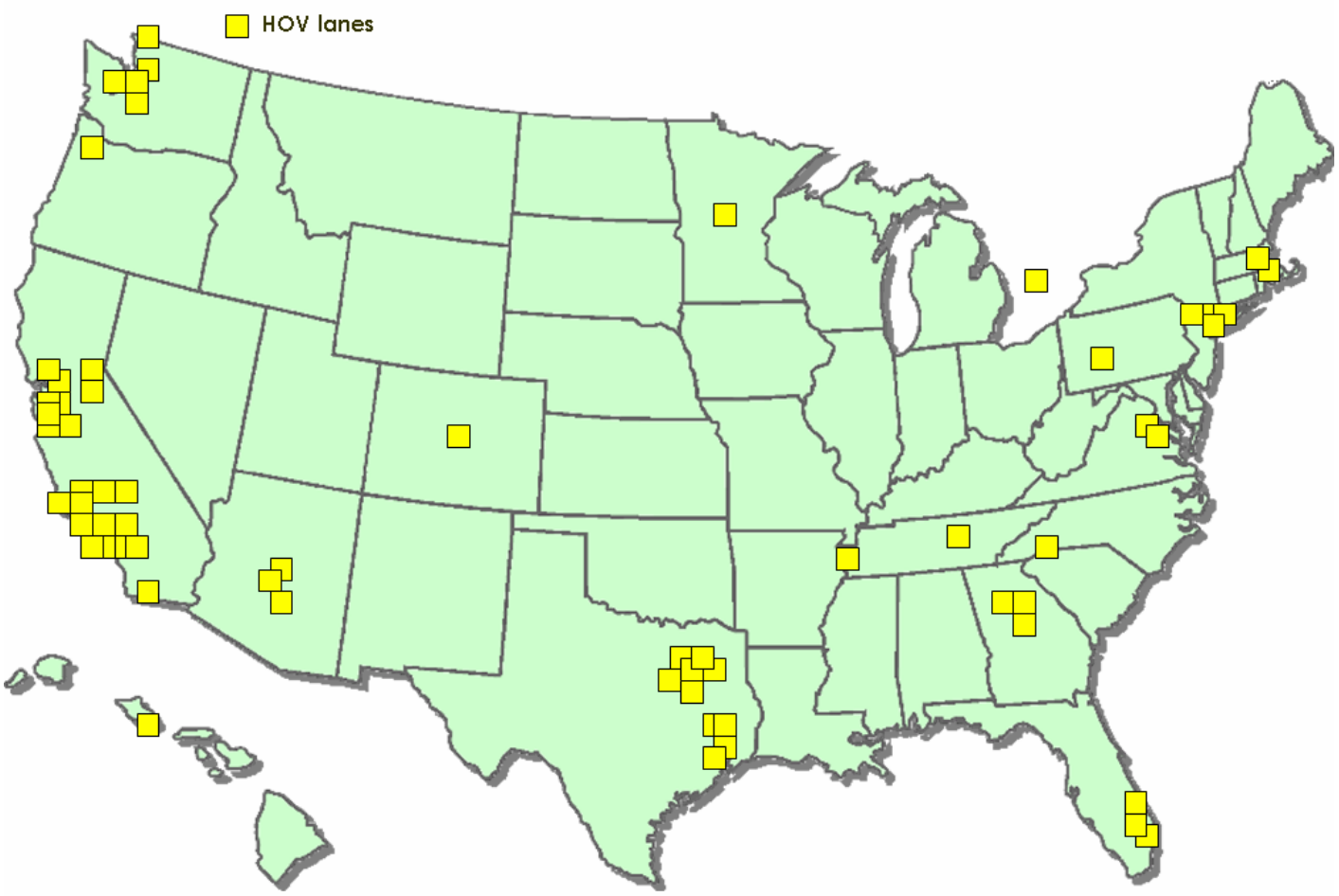
What has been done about it?

- Travel demand has outpaced the ability to build sufficient highway capacity
  - HOV lanes have been used to increase highway productivity
  - HOV lanes provide time savings as an incentive to carpool or use transit



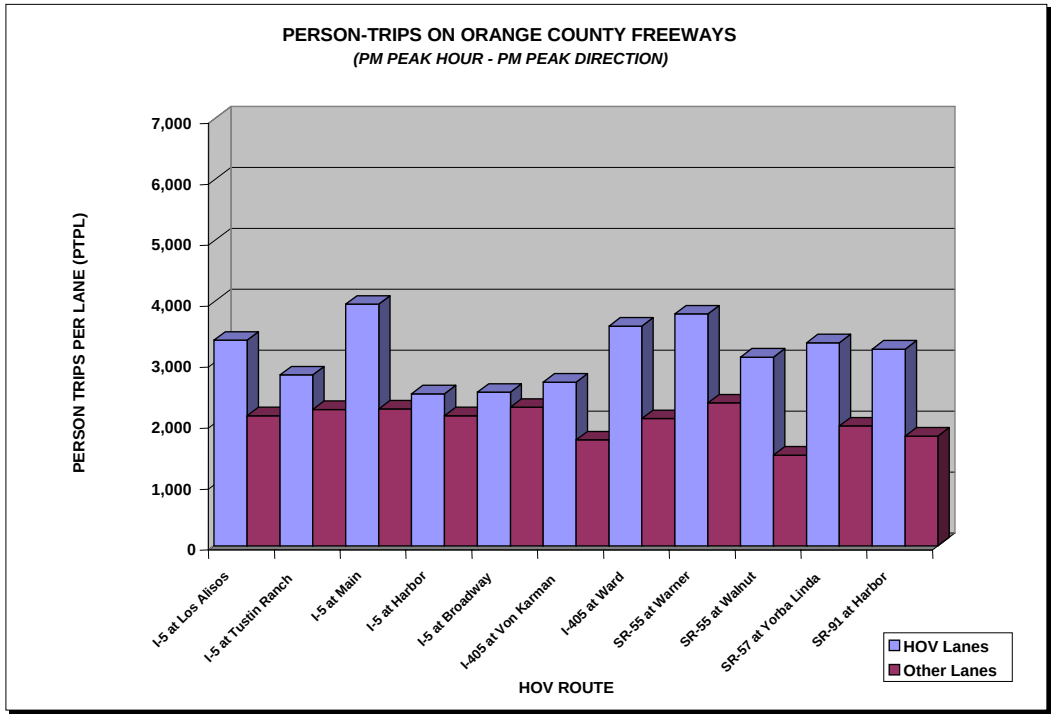
What has been done about it?

- Currently over 130 HOV facilities in North America



What has been done about it?

- HOV lanes have been effective at moving more people in fewer vehicles
  - Nearly always move more people than adjacent general-purpose lanes
  - Can move two to four times the number of people per lane



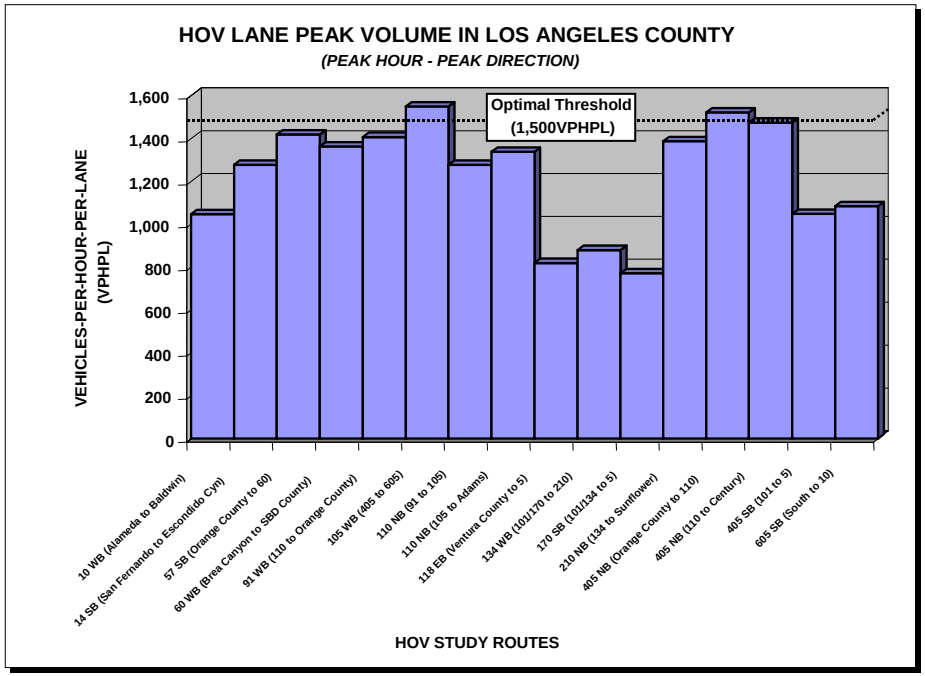
Source: Caltrans District 12 (2002)

What has been done about it?

- HOV lanes are often accused of being under-utilized
  - Uncongested traffic is essential to HOV lanes travel reliability and time savings
  - Next to a congested lane, HOV lanes can look "empty" even though they are moving more people

What has been done about it?

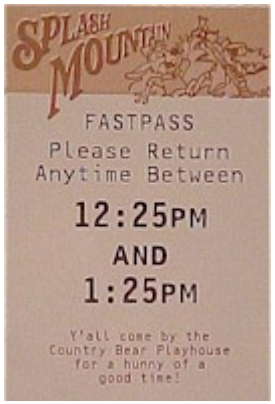
- In some areas, over-utilization is really the problem for HOV lanes
  - HOV volumes of over 1,500 vehicles per hour typically bring speeds in the lanes below 45 mph (72 km/h)
  - Additional management is needed to optimize lane performance and effectiveness



Source: PB (Los Angeles County HOV Performance Program, 2003)

What has been done about it?

- Theme parks use demand management to provide waiting guests more choices
  - "FASTPASS" allows Disney guests to "get a time and avoid a line"
  - Guests can choose to wait in the standby line if they don't want to use FASTPASS



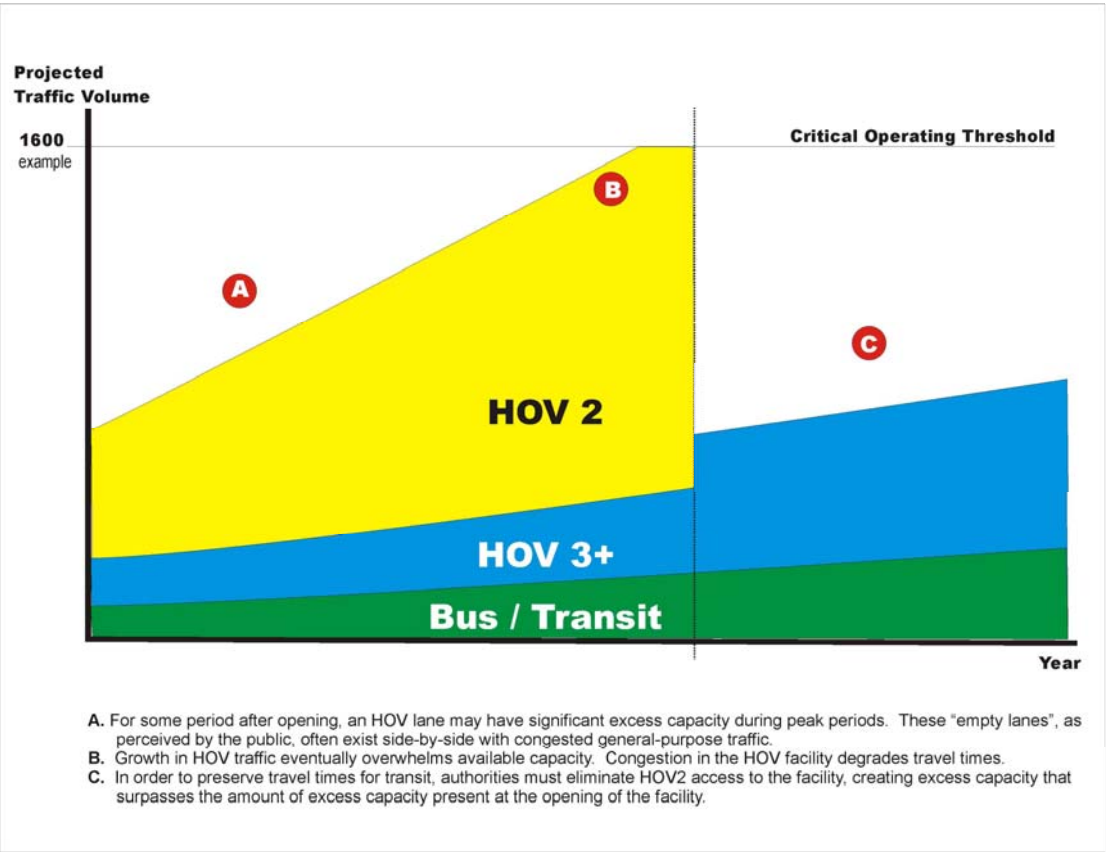
What has been done about it?

- Technology provides the opportunity for better management of HOV demand
  - Pricing can be used to "sell" additional capacity in HOV lanes
  - Variable pricing levels regulate demand and ensure speeds are maintained

I-394 HOT Lanes
Minneapolis, Minnesota

What has been done about it?

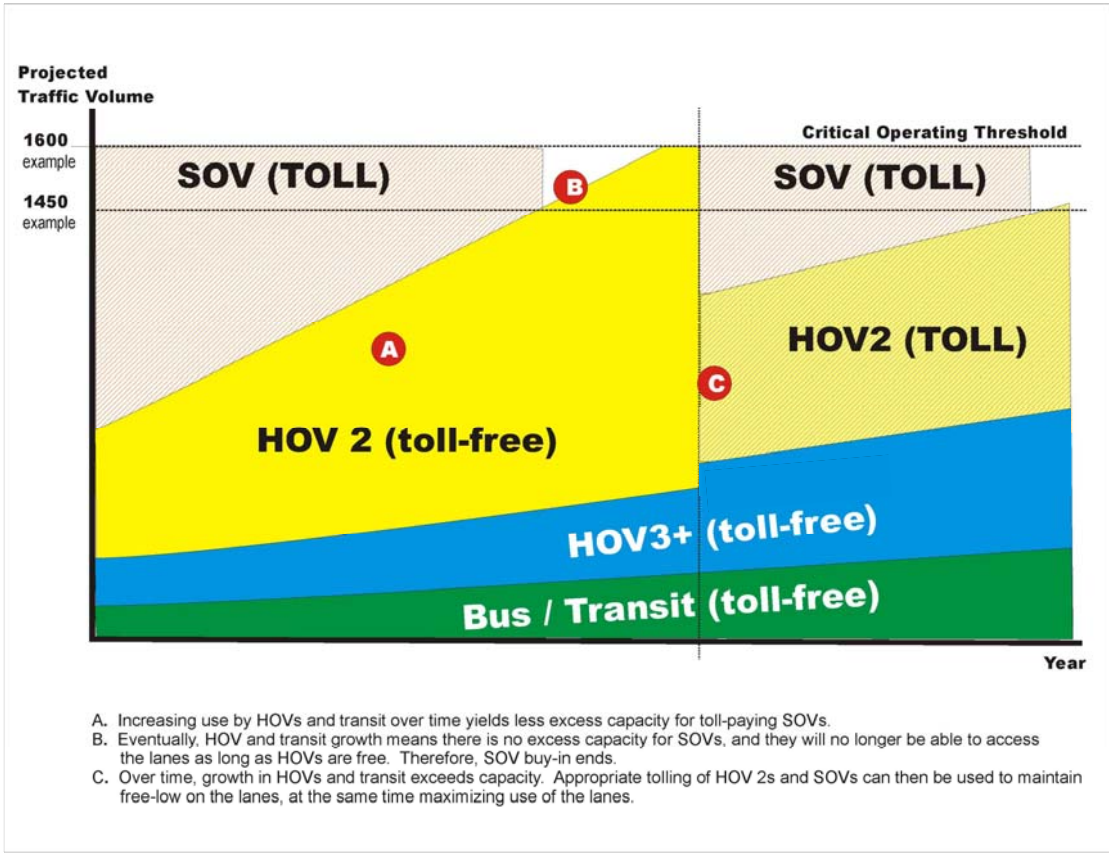
- Eligibility and access can't fully regulate demand
  - Additional management is generally necessary



A. For some period after opening, an HOV lane may have significant excess capacity during peak periods. These "empty lanes", as perceived by the public, often exist side-by-side with congested general-purpose traffic.
B. Growth in HOV traffic eventually overwhelms available capacity. Congestion in the HOV facility degrades travel times.
C. In order to preserve travel times for transit, authorities must eliminate HOV2 access to the facility, creating excess capacity that surpasses the amount of excess capacity present at the opening of the facility.

What has been done about it?

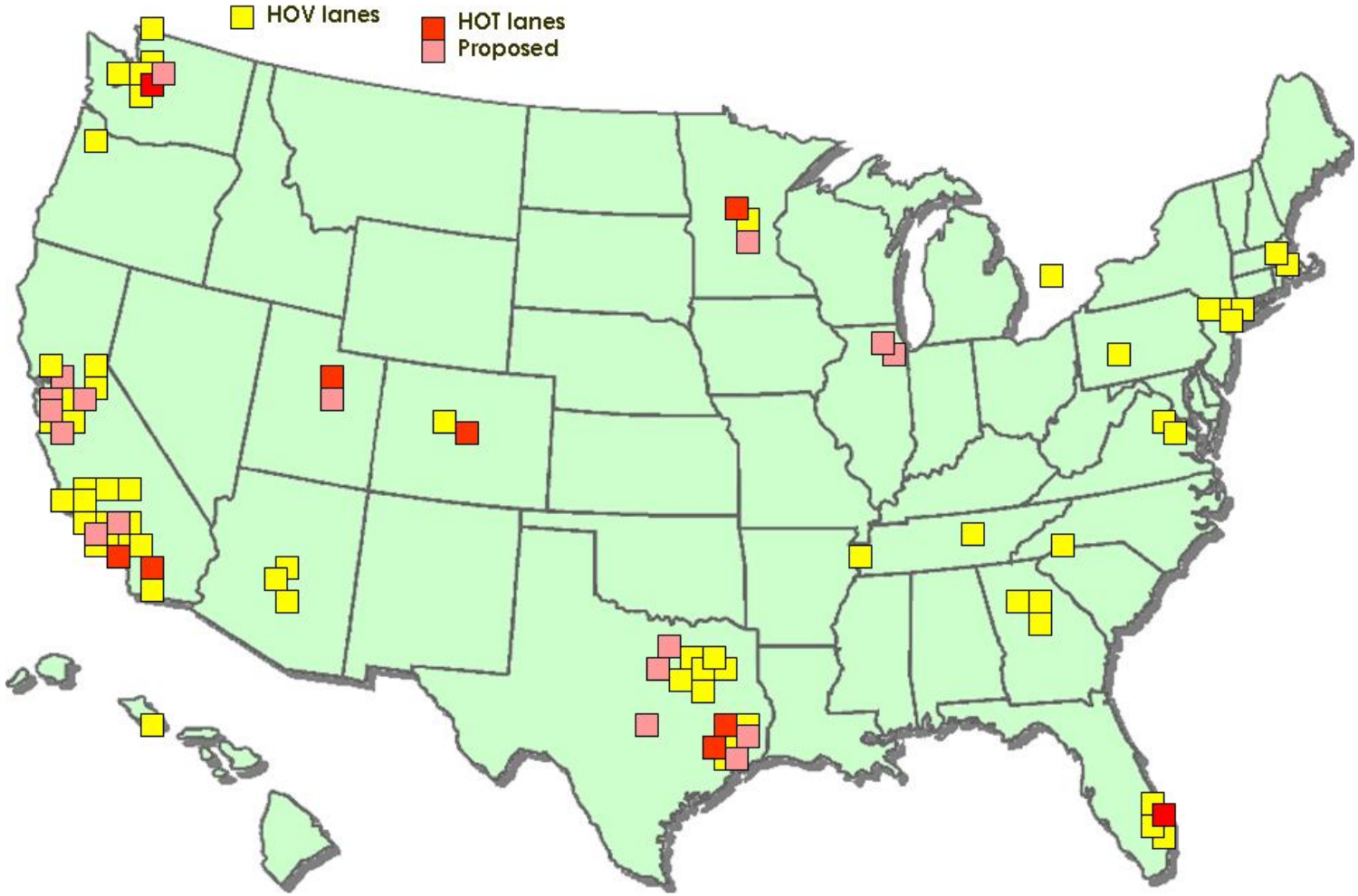
- Pricing provides a comprehensive approach
  - Better responds to changing conditions over time



A. Increasing use by HOVs and transit over time yields less excess capacity for toll-paying SOVs.
B. Eventually, HOV and transit growth means there is no excess capacity for SOVs, and they will no longer be able to access the lanes as long as HOVs are free. Therefore, SOV buy-in ends.
C. Over time, growth in HOVs and transit exceeds capacity. Appropriate tolling of HOV 2s and SOVs can then be used to maintain free-low on the lanes, at the same time maximizing use of the lanes.

What has been done about it?

- Nine projects in U.S. currently use pricing



What has been done about it?

- Almost all existing HOT projects are conversions of HOV lanes to add pricing
  - SR-91 was constructed as express toll lanes
  - Pricing most recently started on existing HOV lanes in Miami and Seattle
  - I-10 in Houston currently being reconstructed

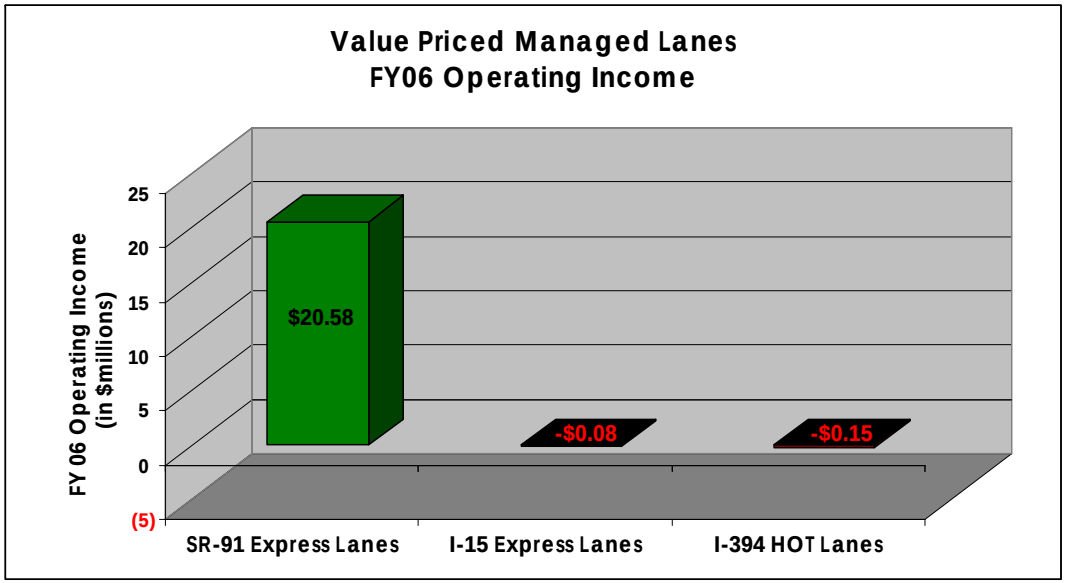
I-95 Express Lanes
Miami, Florida


IH-10 Katy Freeway
Houston, Texas

What has been done about it?

- $10.00 for 8 miles is currently the highest toll
  - Variable pricing has been effective at better regulating demand in managed lanes
  - Toll revenues generally cover operations and maintenance only

SR-91 Express Lanes, Anaheim, California



What else can be done?

- In addition to pricing, active traffic management systems are being introduced
  - Active traffic management uses technology to dynamically manage congestion in response to prevailing traffic conditions
  - Improves safety and increases throughput to maximize efficiency of the system

What else can be done?

- Active traffic management systems include dynamic speed harmonization
  - Speed limits are adjusted to better regulate traffic
  - As traffic flow increases, speeds are decreased to maintain maximum throughput
  - Speeds can be decreased in advance of congested traffic or incidents

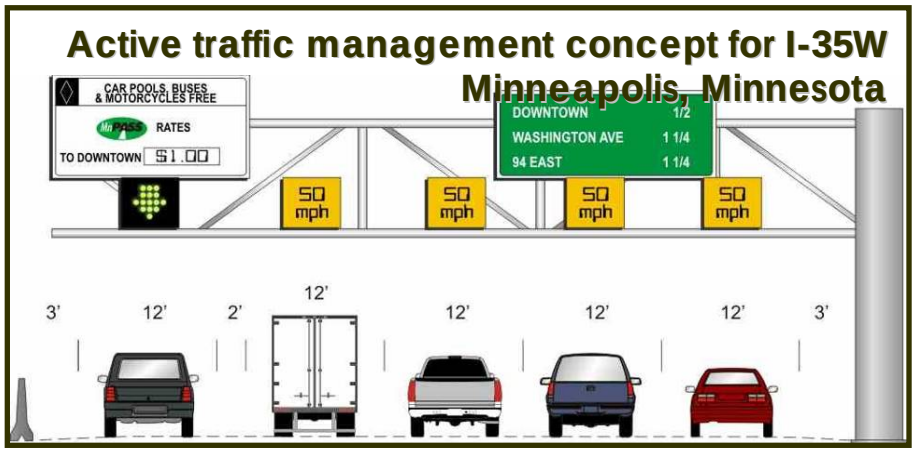
M42 Variable Mandatory Speed Limits
Birmingham, England

I-270 Variable Speed Limits
St. Louis, Missouri

What else can be done?

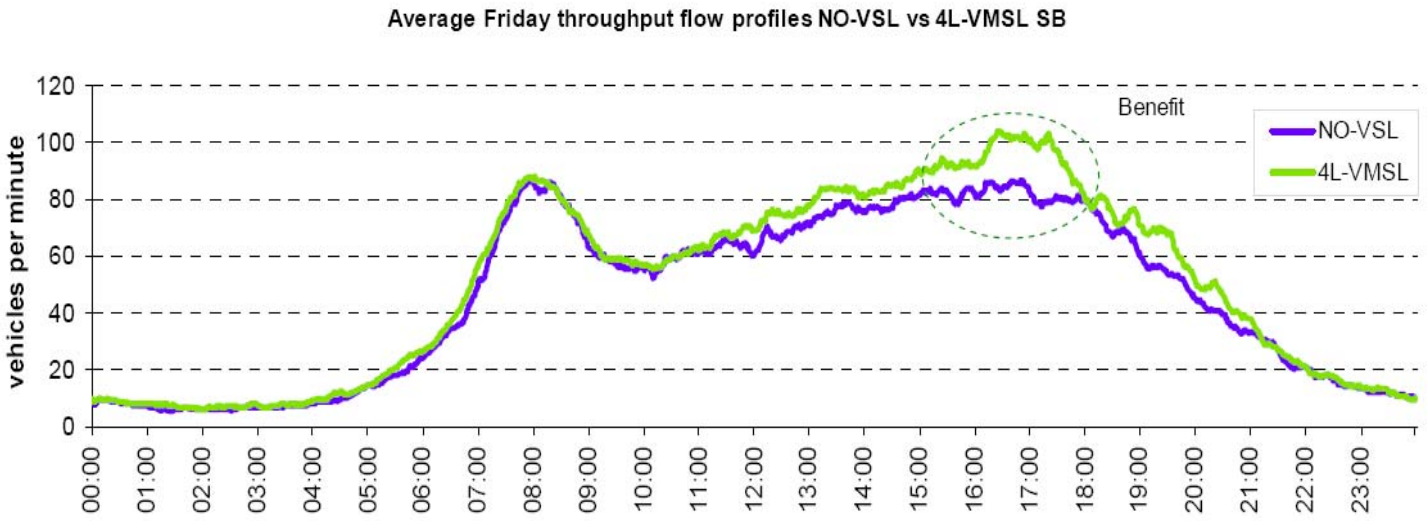
- Active traffic management systems also include variable lane control
  - Makes additional capacity available during peak traffic conditions
  - Uses overhead signage and pavement markings to indicate lane status
  - Can close lanes in advance of incidents

Sydney Harbour Bridge
Sydney, Australia



What else can be done?

- Active traffic management can substantially improve safety and trip reliability
- Results from M42 pilot indicates
  - Over 50% reduction in crashes
  - Over 25% reduction in peak period travel times
  - Over 25% improvement in trip reliability



Source: UK Highways Agency (2008)

What else can be done?

- Intelligent Parking systems can accommodate variable pricing
  - Incorporates demand based pricing for parking
  - Pricing adjusted to achieve optimal occupancy rates

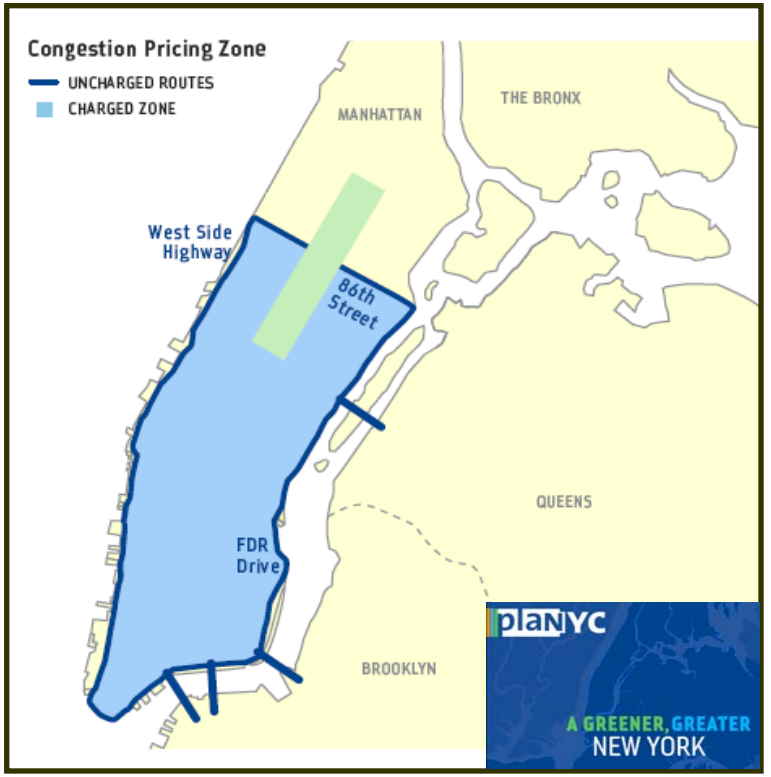
What else can be done?

- Intelligent meters are capable of two-way communications
  - Reports space use, payment and violations
  - Information used to monitor area occupancy
  - Availability can be posted for public

Commuter Parking Availability Sign
Metra 80th Ave Station, Tinley Park, Illinois

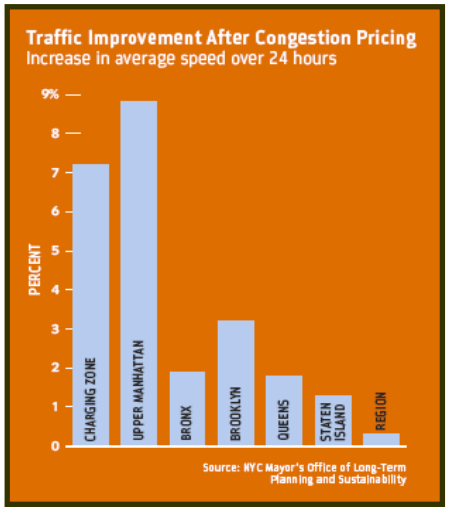
What else can be done

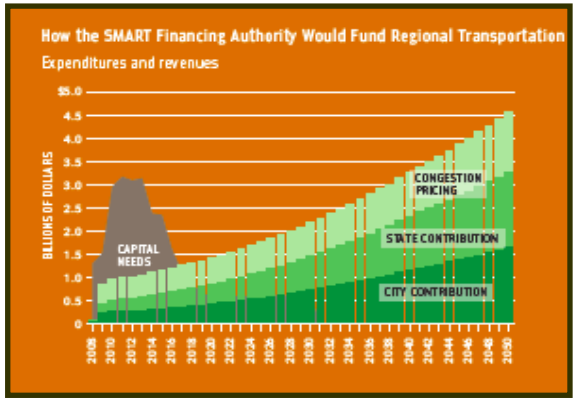
- Cordon pricing has been considered for implementation in New York City
  - PlaNYC 2030 integrated potential managed lanes, a pilot cordon pricing program, and SMART Financing Authority



What else can be done

- Cordon pricing was key to New York City addressing congestion in the CBD and generating necessary transportation revenues
  - NYC was unable to secure necessary State legislation due to failure in consensus building between City and State elected representatives





What else can be done?

- Congestion pricing is the latest weapon in the U.S. war on traffic congestion
  - Variable pricing and active traffic management maximize the efficiency of existing transportation infrastructure
  - HOT lanes, speed harmonization and lane control, variable parking pricing and cordon pricing have emerged as integral elements of congestion reduction strategies

Questions and….

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