20 Minutes

Panos D. Prevedouros, PhD
SO... ARE THESE POSSIBLE?

• Aiea to downtown in 20 minutes!
• Hawaii Kai to Makiki in 20 minutes!
• Kapolei to Iwilei in 20 minutes!
• UH-Manoa to Kailua in 20 minutes!
• Waikele or Waipio to downtown in 20 minutes in a bus!

Y E S ! With Traffic Congestion Solutions.
Smart transportation investment builds on existing travel behavior: Express bus, van- & car-pools → HOT lanes

FIGURE 3-34  Drive Alone Shares by State, 2000

Note: States appear in alphabetical order.
Policy Goal...

<table>
<thead>
<tr>
<th>Mode</th>
<th>Rail</th>
<th>HOT</th>
<th>BRT</th>
<th>TeleC</th>
<th>BikeW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit</td>
<td>6.6</td>
<td>7.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Alone</td>
<td>63.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carpool</td>
<td>21.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>9.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

50%
Wonkblog

**Why cars remain so appealing even in cities with decent public transit**

This is what such a map looks like in Washington, D.C., if, say, you’re beginning your trip from Capitol Hill, inside the green block:

From this location, 0.3% of the city can be reached fastest by walking, 3.4% by bicycling, 1.5% by taking public transit, and 95.4% by driving.

This work is part of the You Are Here project + The Social Computing Group + MIT Media Lab

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From San Francisco:

From this location, 0.6% of the city can be reached fastest by walking, 8.6% by bicycling, 2.8% by taking public transit, and 89.1% by driving.

This work is part of the You Are Here project + The Social Computing Group + MIT Media Lab
New Strategic Plan
Saving Lives, Saving Time, Saving Money

WHAT IS BROKEN

140 LIVES LOST
Each Year

65 MINUTES
Avg. AM Commute

INFRASTRUCTURE
GAP GROWING

HOW TO FIX IT

Key
PROJECTS

Comprehensive
PROGRAMS

Integrated
POLICIES

Sustainable
REVENUES

Operational
EFFICIENCY

RESULTS

SAVING LIVES

SAVING TIME

SAVING MONEY
Saving Lives
Fatalities by Percentage, Hawaii vs. Nation (2006 Statistics)

- Hawaii highest nationwide
- Hawaii 3rd nationwide
- Hawaii 4th nationwide
- Hawaii 7th nationwide

[Bar chart showing fatalities by percentage for Alcohol, Motorcyclist, Pedestrian, and Bicyclist categories, with Hawaii and Nationwide comparisons]
### Saving Time

**Average Daily Commute between Kapolei and Downtown Honolulu**

<table>
<thead>
<tr>
<th>TODAY</th>
<th>BUSINESS AS USUAL</th>
<th>$4 B PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 MINUTES</td>
<td>170 MINUTES</td>
<td>140 MINUTES</td>
</tr>
</tbody>
</table>
Saving Time

Key Strategies to Reduce Traffic Congestion

- **Operational Improvements**
  - Intelligent Transportation System (ITS)
  - PM Contraflow Lane
  - Mass Transit & Rideshare

- **Incident Management**
  - Freeway Service Patrol (FSP)

- **Remove Bottlenecks**
  - Middle Street Merge
  - Waiawa Interchange

- **Improve Reliability of Commerce**
### Saving Money

**Annual Cost of Congestion**

<table>
<thead>
<tr>
<th>Amount of Daily Delay (Minutes)</th>
<th>Cost of Delay Per Person</th>
<th>Cost of Delay Per Commercial Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$60.83</td>
<td>$321.25</td>
</tr>
<tr>
<td>2</td>
<td>$121.67</td>
<td>$642.50</td>
</tr>
<tr>
<td>3</td>
<td>$182.50</td>
<td>$963.75</td>
</tr>
<tr>
<td>4</td>
<td>$243.33</td>
<td>$1,285.00</td>
</tr>
<tr>
<td>5</td>
<td>$304.17</td>
<td>$1,606.25</td>
</tr>
<tr>
<td>10</td>
<td>$608.33</td>
<td>$3,212.50</td>
</tr>
<tr>
<td>15</td>
<td>$912.50</td>
<td>$4,818.75</td>
</tr>
<tr>
<td>20</td>
<td>$1,216.67</td>
<td>$6,425.00</td>
</tr>
</tbody>
</table>
The State DOT plan was ready to go with good Legislative support... then the 2008-9 Great Recession come up and the plan was frozen until the second year of the Abercrombie adm.

Status of the two major projects I analyzed for HDOT: Middle Street was expanded and the PM Zipper Lane was stalled. No plans to improve the H-1/H-2 merge.
### Real Solutions 2011 ...hoping rail will die

**IMMEDIATE**
(1 to 4 years)

1. Pearl Harbor Ferry
2. Underpasses
3. Nimitz Viaduct (~20% of HOT Lanes)
4. Traffic Signal Optimization
5. In-town BRT
6. Middle St. merge fix **done**

**LONGER TERM**
(5 to 12 years)

1. 10 mi. HOT Lanes
2. Alexander to Pali tunnel
3. Complete Plan for ORL Light Rail
4. Pearl Harbor ferry
5. Cut-and-cover tunnel thru airport
# Ten Real Solutions (2014 update)

## Immediate

**1. Pearl Harbor ferry**

**2. Nimitz Viaduct** (~20% of HOT Lanes)

**3. Underpasses**

**4. Traffic signal optimiz.**

**5. Aloha Stadium express**

**6. College express**

## Longer Term

**1. Added (new) and contraflow lanes**

**2. Alexander to Pali tunnel**

**3. Pearl Harbor tunnel**

**4. Express connector: Lagoon Drive to Nimitz Viaduct**

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**Sample Solutions ...**
2001 computer simulation representation of widened Middle Street merge and EB H-1 Freeway.

It was constructed and opened to traffic in June 2014.
(2) Pearl Harbor Ferry
Waiting to get on the Pearl Harbor Ferry

- 5.5 miles, 6 min.
- ½ to 1 mile tunnel
(3) Pearl Harbor Tunnel Route

Monitor-Merrimac Memorial Bridge-Tunnel (I-664), looking north, Newport News, VA

<table>
<thead>
<tr>
<th>Mode of Transportation</th>
<th>Time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car on H-1, Nimitz</td>
<td>65.0</td>
</tr>
<tr>
<td>Car on Ferry, Lagoon Dr., Nimitz</td>
<td>36.6</td>
</tr>
<tr>
<td>Car on H-1, Nimitz</td>
<td>62.9</td>
</tr>
<tr>
<td>Car through tunnel, Lagoon Dr., Nimitz Viaduct</td>
<td>10.6</td>
</tr>
<tr>
<td>Car on H-1, Nimitz</td>
<td>40.3</td>
</tr>
</tbody>
</table>
The Port of Miami Tunnel is a major construction project in Miami, FL with a final cost of under $1.1 billion. The project includes a 3/4 mile (1.1 km) long split portal automotive traffic tunnel.

The project was temporarily cancelled in late 2008 due to the financial crisis but was resumed in 2009, with construction commencing in May, 2010, and the tunnel opened in May 2014.

A private consortium called Miami Access Tunnel LLC, now MAT Concessionaire LLC, is in charge of designing, building, operating and financing the project.

- Length: 0.75 miles (1.21 km)
- Number of lanes: 2 in each direction
- Highest elevation: Sea level
- Lowest elevation: −120 ft.
- Width: 43 ft. per tunnel
(4) Underpasses
Pali and Vineyard ➔ underpass
(5) Nimitz Viaduct: 3 lanes, 1 Lane off @ Waikamilo
What ugly double-decker?

Birmingham, AL

4 lanes + 4 shoulders!
A 5 second reduction in the average stopped time results in:

- 7,000,000 gallons of fuel reduction per year
- equal to removal of 14,000 cars from traffic
- Much quicker trips
(7) College Express
Minneapolis-Saint Paul, MN: BOSS Miles = ~290
Honolulu: Aloha Stadium Express BOSS Miles = ~10

Aloha Stadium Loop: 16 miles, 10 stops, 30-36 min.
Aloha Stadium Express

- From Aloha Stadium parking
- To Moanalua Fwy
- Exits at King St, onto a dedicated lane on King St
- Turns on Maunakea St
- Turns on Hotel St
- Return via Alakea St and Vineyard Blvd
- Onto H-1, Moanalua Fwy
- To Aloha Stadium
(9) Added and Contraflow Lanes
AM Peak Plan

Potential capacity gain of \( \sim 55\% \)
Potential capacity gain of ~60%
New Paris A86 tunnel under Versailles (2 meter limit)

Also considered for Los Angeles
Secret Scenario 2: Medium Express Tunnel

Two lanes per direction, ~2 miles

Access at Bingham St., Alexander St., Pali Hwy., Vineyard Blvd., University Ave.

Note: tunnel, transition and surface link
Traffic Congestion Management: Lessons from Pro-active Washington State

Steady increase in teleworking and vanpooling

Percent of workers vanpooling and teleworking; 1993-2009

Data source: WSDOT Public Transportation Division.
♦ Staggered Hours  ♦ Flextime Work Schedules
♦ Driverless Cars  ♦ Electric Cars Charged by Lanes
♦ LNG Fleets: FedEx, UPS, Tour, TheBus, Trash PU

(12) The Future is Now