Removing Travel Lanes
Are we Crazy?!?

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crazy/'krāzē/

“Reducing vehicular capacity on an arterial street.”
Five Basic Principles

1. Capacity/Demand
2. Level of Service
3. Induced/Latent Demand
4. Disappearing Traffic
5. ROW Redistribution
**Capacity/Demand**

\[
\text{DEMAND} > \text{CAPACITY} = \text{DELAY}
\]
Capacity / Demand

\[ v_t = \left( \frac{1}{m} \right) \sum_{i=1}^{m} v_i \]

\[ K(L, t_1) = \frac{n}{L} = \frac{1}{\bar{s}(t_1)} \]
## Level of Service

### Levels of Service for Multi-Lane Highways

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Flow Conditions</th>
<th>Operating Speed (mph)</th>
<th>Technical Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td></td>
<td>60</td>
<td>Highest level of service. Traffic flows freely with little or no restrictions on maneuverability. (No delays)</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td></td>
<td>60</td>
<td>Traffic flows freely, but drivers have slightly less freedom to maneuver. (No delays)</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td></td>
<td>60</td>
<td>Density becomes noticeable with ability to maneuver limited by other vehicles. (Minimal delays)</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td></td>
<td>57</td>
<td>Speed and ability to maneuver is severely restricted by increasing density of vehicles. (Minimal delays)</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td></td>
<td>55</td>
<td>Unstable traffic flow. Speeds vary greatly and are unpredictable. (Minimal delays)</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td></td>
<td>&lt;55</td>
<td>Traffic flow is unstable, with brief periods of movement followed by forced stops. (Significant delays)</td>
</tr>
</tbody>
</table>

Level of Service
Induced/Latent Demand

After supply increases, more of a good is consumed.

IF YOU BUILD IT, THEY WILL COME.
Induced/Latent Demand

As supply increases, Price decreases and thus the Quantity Consumed increases.
Induced/Latent Demand

As supply vehicular system capacity increases, price delay to motorists decreases and thus Quantity Consumed the number of motorists increases.

(Note: The magnitude of the increase in the quantity consumed depends on the elasticity of demand.)
Induced/Latent Demand
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Induced/Latent Demand
Induced/Latent Demand
Induced/Latent Demand
Induced/Latent Demand
Disappearing Traffic

Interestingly, the INVERSE is also true.

As supply DEcreases, Price INcreases and thus the Quantity Consumed DEcreases.
Disappearing Traffic

As supply vehicular system capacity decreases, price delay to motorists increases and thus quantity consumed the number of motorists decreases.
Disappearing Traffic
Disappearing Traffic
Disappearing Traffic
Disappearing Traffic
Disappearing Traffic
Disappearing Traffic
Disappearing Traffic

IF YOU REDUCE IT, SOME WILL LEAVE.

BUT WHERE WILL THE GO?...
Broadway Road
They said:

“Widen the sidewalks and add bicycle lanes…but don’t acquire any new right-of-way.”
They said:

“Widen the sidewalks and add bicycle lanes…but don’t acquire any new right-of-way.”

ARE YOU CRAZY?
Somebody said:

“JUST GET RID OF ONE OF THE THROUGH LANES.”
Somebody said:

“JUST GET RID OF ONE OF THE THROUGH LANES.”

ARE YOU CRAZY?
Broadway Road

Convert it into a “two-lane comfort cruise”?
Broadway Road

So, we decided to test it.

- Collected BEFORE & AFTER data:
  - Maximum Queue Length
  - AM and PM Peak Hours
  - EB at Mill and at Rural
  - Volume (25 locations)
  - Surrounding Arterial Streets
  - Neighborhood Streets
Broadway Road

What did we find out?

• Restriction had no significant effect on the Maximum Queue Length during the AM peak hour.
• Restriction resulted in a minimal increase in Maximum Queue Length during the PM peak hour.
What did we find out?

• Restriction had no significant effect on traffic volumes on surrounding arterial streets (+/- 5%).
• Restriction had no significant effect on neighborhood streets (+/- 10%).
• Traffic volumes on Broadway Road dropped 4-11%.
Right-of-Way Redistribution

When you have limited right-of-way, limited funding, and a goal of improving multi-modalism, you have no choice but to redistribute the right-of-way.
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