Providing Bus Priority Using Adaptive Pre-signals
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Research Question
How to dynamically implement different levels of bus priority at intersections while minimizing the negative effects on general traffic using: i) a dedicated bus lane, ii) a pre-signal, or iii) mixed lanes.

Methodology
Use a microscopic simulation model built in VISSIM to determine performance metrics for three bus-priority strategies under different levels of demand. Three bus-priority strategies are compared:
(1) A dedicated bus lane;
(2) Fully mixed lanes; and
(3) A pre-signal.

Selection criteria for each demand level:
1. No excessive upstream queue
2. Minimize average person delay

Simulation Calibration and Validation
Data collection with video cameras in existing pre-signal at Zurich, Switzerland

Results
Comparison of dynamic pre-signals to a static dedicated bus lane or mixed lanes:

The dynamic pre-signal strategy:

<table>
<thead>
<tr>
<th>Demand Level</th>
<th>Bus Lane</th>
<th>Pre-Signal Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>V/C &lt; 0.8</td>
<td>Closed to Cars</td>
<td>On</td>
</tr>
<tr>
<td>V/C &gt; 0.8</td>
<td>Open to Cars</td>
<td>Off</td>
</tr>
</tbody>
</table>