Safe intersections by design for all street users
The case of cities in Mexico

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Velo-city 2018 Rio de Janeiro
June 12th, 2018
Céntrico

We are a team of specialists working on planning, design, implementation and evaluation of sustainable urban mobility projects.

We believe in the potential of cities as a central element to improve the quality of life of people, and in urban mobility as a powerful instrument to generate better urban environments that are more competitive, sustainable and socially equitable.
Street efficiency and safety

- Is efficiency about speed? Is it about the flow of vehicles? Or the number of street users?

- How to balance vehicle efficiency (cars and bicycles) and safety of all street users?

- How to design intersections in cities with a high number of pedestrians to be compatible with efficient infrastructure for vehicles?
Road safety in Mexico

In 2015, a total of **16,000** people died in crashes, most of them in urban areas (Conapra, 2015)

Pedestrians represent **48%** of these deaths

**52% of people walk to school**, 24% use public transport (Intercensal Survey, 2015)

-> Unsafe environments, low quality infrastructure, weak law enforcement
**Speed: the main risk factor**

<table>
<thead>
<tr>
<th>Speed</th>
<th>Distance required to stop</th>
<th>Likelihood to survive</th>
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<tbody>
<tr>
<td>30 km/h</td>
<td>13 meters</td>
<td>95%</td>
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<tr>
<td>40-55 km/h</td>
<td>26 meters</td>
<td>60%</td>
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<tr>
<td>&gt; 55 km/h</td>
<td>45 meters</td>
<td>20%</td>
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Intersections

Node where two or more streets converge, in which **directional movements** of pedestrian or vehicular traffic are performed.

The redesign of intersections can guarantee **vehicle speed** reduction, improve **readability** of the street and **reduce the exposure** of pedestrians and cyclists.
Evaluation methodology

Urban streets in operation, both primary and secondary.

7 key elements that measure the effect of the quality and safety of intersections for pedestrians and vehicles.

Infrastructure and operation
Level of service of the intersection

<table>
<thead>
<tr>
<th>Evaluation criteria</th>
<th>Indicators</th>
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<tbody>
<tr>
<td></td>
<td>Vehicular</td>
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<tr>
<td>1. Adequate speed</td>
<td></td>
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<td>2. Legibility</td>
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<td>3. Short waiting times</td>
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<td>4. Direct trajectories</td>
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<td>5. Surface continuity</td>
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<td>6. Priority</td>
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<td>7. Visibility</td>
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CONAPRA, Guía de intervenciones de seguridad vial de bajo costo y alto impacto para ciudades mexicanas (por publicarse)
Tactical urbanism, Torreón Coah.
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Street design, Morelia, Mich.
Street design, Morelia, Mich.
Implementation, Mexico City
Partnership for Healthy Cities

Safe school environments

Elaboration of the Guidelines for the design of safe school environments for Mexico City:
- Safety audit around schools
- Tactical urbanism
- Workshops with government agencies
City designed for children: Road safety route Culiacan

“Botnar Child Road Safety Challenge” by Fondation Botnar and Global Road Safety Partnership