TRAFFIC SAFETY FOR BUS PRIORITY SYSTEMS

For Safer Streets, Safer Mobility and Safer Systems
Sustainable Urban Mobility by WRI
BRTS ARE GROWING WORLDWIDE

- 400 BRTs now operate in 195 cities worldwide
WHAT IS A BRT? WHAT IS BUS-PRIORITY?

- BRT- Istanbul, Turkey
- Dedicated infrastructure for buses
- Unified transport system with high level and quality service
WHAT IS A BRT? WHAT IS BUS-PRIORITY?

- TransOeste / TransCarioca Rio de Janeiro, Brazil
- Dedicated infrastructure for buses
- Unified transport system with high level and quality service
WHAT IS A BRT? WHAT IS BUS-PRIORITY?

Typical BRT features include:

- Closed busways and stations
- Segregated lanes, turn restrictions
- High frequency, high capacity service
- Signal priority
- Off-vehicle fare collection
- Centralized control
- Level boarding
- Unified system branding
- Passenger Information Systems
- Accessibility improvements, bike lanes

Photo: EMBARQ / EMBARQ Brasil
BRT CORRIDORS SHOW REDUCED CRASH RATES

Before and after data from Guadalajara: Calzada Independencia 2007-2011

Source: Computed from statistics provided by Secretaria de Vialidad y Transporte de Jalisco 2011

EMBARQ analysis of data from Jalisco State, 2011
BRT CORRIDORS SHOW REDUCED CRASH RATES

Macrobus BRT Corridor Guadalajara: Calzada Independencia 2007-2011

Passengers per hour per direction (peak)
- 2 general traffic lanes: 3,194
- 1 lane of bus rapid transit: 5,000

Crashes per year
- 2 general traffic lanes: 726
- 1 lane of bus rapid transit: 6
## SAFETY IMPACT OF TRANSIT PRIORITY

<table>
<thead>
<tr>
<th></th>
<th>% change in accidents</th>
<th>95% confidence interval</th>
<th>Source</th>
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<tbody>
<tr>
<td><strong>Arterial BRT (Latin American countries)</strong></td>
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<tr>
<td>Fatalities</td>
<td>-47%</td>
<td>(-21%; -64%)</td>
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<tr>
<td>Injuries</td>
<td>-41%</td>
<td>(-35%; -46%)</td>
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<td><strong>Bus priority (Australia)</strong></td>
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<tr>
<td>All crashes</td>
<td>-18%</td>
<td>n/a</td>
<td>Goh et al. 2013</td>
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</tbody>
</table>
SAFETY IMPACT OF ISTANBUL METROBUS

June 2012 - May 2013 (Before) | June 2013 - May 2014 (After) | Difference in number of accidents

Accidents involving personal injury | 29 | 32 | +3

Accidents involving death | 6 | 1 | –5
Our findings:

• More transit-priority = improved safety

• 90% of crashes on transit corridors did not happen in the bus lanes.

• Transit priority features tend to improve street design that improves safety

• Transit priority makes transit safer, attractive, efficient
DESIGN FACTORS THAT IMPACT SAFETY
DESIGN FACTORS THAT IMPACT SAFETY

Left-Turn Prohibitions
-22% injury crashes
-12% vehicle crashes

Removal of one lane of mixed traffic
-35% injury crashes

Central Median
-35% injury crashes

Shorter crosswalk
-6% pedestrian crashes for each meter reduced
EXAMPLE OF A BRT CORRIDOR
A well designed BRT can reduce fatalities by up to 50%
DESIGN FACTORS THAT IMPACT SAFETY

Our findings:

1. Bus System configuration
   - location, accessibility, integration, other modes

Example: Eje 4 Sur, Mexico City
DESIGN FACTORS THAT IMPACT SAFETY

Our findings:

1. Bus System configuration
   - location, accessibility, integration, other modes

2. Street geometry
   - size and complexity of design
DESIGN FACTORS THAT IMPACT SAFETY

Our findings:

1. Bus System configuration
   - location, accessibility, integration, other modes

2. Street geometry
   - size and complexity of design

3. Block size and speed

Also Land use
CHALLENGES OF BRT IN LOCAL CONTEXT

Photo: Celal Tolga IMAMOGLU, WRI
COMMON CRASH TYPES
SANLIURFA BRT ROAD SAFETY INSPECTION
DOWNLOAD THE REPORT AT:
http://wrisehirler.org/sites/default/files/%C5%9Eanl%C4%B1urfa%20BRT%20Yol%20G%C3%BCvenli%C4%9Fi%20ve%Eri%C5%9Filebilirlik%20%C4%B0nceleme%20Raporu_0.pdf

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Otobüs Yollarında Trafik Güvenliği

Yaya ve trafik güvenliğini metrobüs, otobüs yolları ve otobüs şeritlerinin planlanması, tasarrufu ve operasyonuna entegre etmek için kilavuz

Pilot Sürüm – Yol Testi

Nicolae Duduta, Claudia Adriazola, Carsten Wass, Dario Hidalgo, Luis Antonio Linder

"Otobüs Yollarında Trafik Güvenliği" kavramını III. Toplu Taşımacı Haftası olarak 2012'de WRI sehirler.org'dan güçlendirme ve basitleştirme.
DOWNLOAD THE REPORT AT:
http://wrisehirler.org/sites/default/files/Otob%C3%BCs%20%C3%96ncelikli%20Sistemlerde%20Trafik%20G%C3%BCvenlilik.pdf
SAFETYLAB PROJECT FOR IETT

#SafetyLab
Thank you