The contribution of Urban Para-transit Mapping to Road Safety

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CITIES IN THE GLOBAL SOUTH FACE THEIR OWN SET OF CHALLENGES

- Up to 95% all public transport trips are paratransit in some African and Latin American cities;
- 1.35+ million people die in road crashes annually, 90% in the global south;
- Up to 10% of GDP Value of time lost in congestion in Beijing and Sao Paulo;
- 50-97% portion of motorized, two-wheelers in cities in Asia.
‘Paratransit’ refers to demand-driven, often unscheduled and flexible public transport services provided by small operators, in small to medium-sized motorized or non-motorized vehicles, generally under the lack of effective regulatory frameworks.
**Downside**
- Unorganized (individual or small) owner-operators
- Small, aging and polluting vehicles
- Highly competitive market with little differentiation
- Low quality of services
- Vehicle safety concerns

**Upside**
- Extensive and demand responsive coverage
- Flexible schedules, with higher frequencies during peak periods, flexible curbside pick-up and drop-offs
- Affordable
## THE CASE OF ADDIS ABABA

<table>
<thead>
<tr>
<th>Casual vehicle type</th>
<th>Pedestrian</th>
<th>Passenger of vehicle</th>
<th>Driver of vehicle</th>
<th>Cyclist</th>
<th>Motorcyclist</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile</td>
<td>513</td>
<td>88</td>
<td>50</td>
<td>3</td>
<td>19</td>
<td>570</td>
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<tr>
<td>Bajaj</td>
<td>109</td>
<td>103</td>
<td>12</td>
<td>0</td>
<td>2</td>
<td>226</td>
</tr>
<tr>
<td>Bicycles</td>
<td>33</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>38</td>
</tr>
<tr>
<td>Bus</td>
<td>72</td>
<td>26</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>102</td>
</tr>
<tr>
<td>Construction machine</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Lada</td>
<td>49</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>61</td>
</tr>
<tr>
<td>Light truck</td>
<td>239</td>
<td>58</td>
<td>23</td>
<td>1</td>
<td>5</td>
<td>337</td>
</tr>
<tr>
<td>Minibus</td>
<td>642</td>
<td>131</td>
<td>26</td>
<td>2</td>
<td>12</td>
<td>713</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>149</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>42</td>
<td>205</td>
</tr>
<tr>
<td>Truck</td>
<td>115</td>
<td>37</td>
<td>19</td>
<td>1</td>
<td>6</td>
<td>179</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1834</td>
<td>456</td>
<td>143</td>
<td>9</td>
<td>91</td>
<td>2545</td>
</tr>
</tbody>
</table>

Fig 25: Deaths and injuries by causal vehicles

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DATA-DIVIDE BETWEEN GLOBAL NORTH AND SOUTH CITIES

MobilityData.org is another repository of worldwide data with more than 400 cities....

Source: Google

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PUTTING TRANSIT ON THE MAP

Accra, Ghana

Dar es Salaam, Tanzania

Nairobi, Kenya

Cape Town, South Africa

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PUTTING TRANSIT ON THE MAP

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Work with government, private sector and civil society actors to map city transit networks and foster ecosystems and skills that enable cities to leverage data for critical transport improvements.

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PLATFORM FOR LEARNING AND SHARING

Create

Whether you are creating a map for your city’s public transport network or designing data-driven mobility solutions, Digital Transport can help connect you to the data and tools you need to get started.

https://git.digitaltransport4africa.org/learn/tools

https://digitaltransport4africa.org/

Community blog

10 Mobile Apps to Start Mapping your City’s Transit Network

By Lu Xu and Griffin Kertz, 3/29/2019 When you first start out collecting, analyzing, editing, and visualizing GTFS data, the landscape of available tools can be [...]

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DIGITAL MAPPING FOR INNOVATION, INTEGRATION AND CITY PLANNING
Sustainable Development

Goal measurement:
Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities

Transit user experience improvements:
Improving accessibility through route planning and real-time

Mobility planning:
Integration with BRT and paratransit reform

Enterprises:
A new form of integration evolving
Including land use data reveals income groups’ varying levels of access to matatu stops.

In Nairobi:

- 1.1 million low (2,165 KES/mo) and very low (1,301 KES/mo) income residents live within 0.5 km of a matatu stop.
- 876 thousand medium low (3,854 KES/mo), medium (6,153 KES/mo), and medium high (13,352 KES/mo) income residents live within 0.5 km of a matatu stop.
- 222 thousand high (22,084 KES/mo) and very high (39,890 KES/mo) income residents live within 0.5 km of a matatu stop.
In Kibera, **466 thousand opportunities** can be accessed by walking to matatus stops within 45 minutes total travel time.

**Integrating matatus with cycling and motor-cycle taxis have the potential to greatly increase accessibility.**

By connecting to matatus via cycling and motor-taxis during the first-/last-mile, we see the number of **accessed opportunities increase to 942 thousand and 1.78 million**, respectively. That said, the modal share for cycling is relatively low (only 3%). Though motorcycle-taxis, also called *boda-boda*, are faster than matatus, they are more expensive and generally cost-prohibitive to low-income users.
PUBLIC TRANSPORT AS A SAFE MODE OF TRANSPORT

Figure 1  VKT on urban roads and traffic fatality rate, US states, 2008

Figure 2  Reported traffic fatalities on Avenida Caracas (first TransMilenio BRT corridor) in Bogotá, before and after the implementation of the BRT

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**ACCESSIBILITY & SAFETY ANALYSIS**

- **Accessibility and Safety:** Using mapping to understand where public transit stops are located and targeting road safety measures to enhance accessibility to station areas.

- **Transit physical integration:** use the maps to enhance integration between routes and modes,
DIGITAL MAPPING AND MOBILITY PLANNING

...to improve minibus and ‘informal’ sector

Ubi interactive kiosks in Maputo, Mozambique provide information on transport schedules, specific locations as well as events happening in the city. 
Source: Klopp (2018); http://ubi.co.mz/en/about; SafeBoda; GoMetro

SafeBoda, motorcycle taxis in Kampala, Uganda

“I usually work late in Bukuto. If I know a SafeBoda can pick me up [from work] it makes my life easier. I [used to] end up sleeping at work for safety.”—a female SafeBoda user.

GoMetro, a mobile transit info app that provides users with bus information to improve commuting experience

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NEW FORMS OF INTEGRATION

- Safe & Accessible Paratransit
- Community regulation of paratransit services
- Shared minibus Ride

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Thank you for your attention

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