Mobility Data Strategies for Cities

Clayton Lane
International Mobility Specialist & Business Development
GoMetro

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Award-winning mobility technology and planning solutions

- Planners & technology specialists
- Experienced innovators in mobility data generation in emerging markets

Implements innovative mobility solutions to transform public transport

- Experienced operators & implementers
- Leading professions with transformative projects in 120 cities in 63 countries
Our Team

Unique Blend:
Transport Planners
Software Engineers
Strategists
Data Principles
What do we want from data?

- Empower cities & citizens
- Understand human experience and mobility performance
- Inform better mobility plans & investments
- Help people feel connected, healthy, and dignified while traveling
- Do no harm

Photo credit: Shreya Gadepalli, ITDP India
Nagpur

The data we often have today
Our Data Principles

Generate Data! ← First Principle!!
Government is responsible to ensure this public good is available for public use. Data requires investment.

Open data
We subscribe to Open Data principles.

Privacy
Collect only data that are needed. Receive specific permission. Secure and depersonalize data wherever possible. Adhere to global data standards (GDPR).

Free Access
We will not charge a government client a fee to access public movement data via an API.

Non-Exclusive Support Services
The client may replace us with other service providers – all while maintaining continued data access.

Standard Formats
We use standard formats (GTFS) to facilitate easy transfer & use by others.
International Case Studies
1. Mitchells Plain Paratransit Reform

2. Guadalajara Mobility Plan

3. Latin America Urban Mobility Observatory

International Data Case Studies
Mitchells Plain Paratransit Reform

Technology & Institutions
- Consolidate 4 associations
- Improve service quality
- Improve business performance

Key to success: build trust!
Detailed Revenue Data
Service Optimization
On January 7, 2019, the four associations began operating scheduled fixed-route service!
Result: Business Performance Improved

**Assets**
50% fewer vehicles

**Labor**
No job losses, better shifts

**Fuel & CO2**
50% less fuel
Results: Passenger Satisfaction Rose

94% of passengers reported that the new service is better.
Mitchells Plain Paratransit Reform

**Potential**
- Shared depots
- Collective e-vehicle financing
- Compete for City contracts

**Key to success: build trust!**
- Data + Institutions
1. Cape Town Paratransit Reform

2. Guadalajara Mobility Plan

3. Latin America Urban Mobility Observatory
Guadalajara Sustainable Mobility Plan

- Inform sustainable mobility plan -- cycle, walk, light rail, BRT, bus, and car.
- Use technology to economically generate mobility data (last updated 2007)
Guadalajara Sustainable Mobility Plan

How we generate data

**Phase 1: Supply**
- Public Transport Mapping

**Phase 2: Travelers**
- GoMetro Mobility App
- Web Survey
- APIs (Tomtom, Google)
GoMetro Mobility App

Experience
• 7 South African cities
• 1 million downloads
• ~250,000 current users
• Since 2015
• Uses any GTFS

Guadalajara Modes
• Will integrate BRT, bus (formal, informal, concession), bike sharing, bicycle
Observe movement of the phone

Guadalajara Sustainable Mobility Plan

- Measure
  - Mode share
  - Travel times
  - Congestion
  - VKT and emissions
  - Transfers

- Gain Insights
  - All modes
  - Millions of data points
  - Longitudinal data
Web Surveys
Online + Accessible via App
Active Engagement

Demographics
- Normalize to census
- Cross-tabs by gender, income, age
- Reach non-transit users

Perceptions & Experience
- Mode Share
- Affordability
- Reliability
- Comfort
- Transfers
- VKT and emissions
- Safety
- Sexual harassment
**Stratified Sampling**

Geography & demographics matter

### Set Targets

<table>
<thead>
<tr>
<th>pop</th>
<th>n</th>
<th>80% conf. +/- 20%</th>
</tr>
</thead>
<tbody>
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<td>female</td>
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<tr>
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<td>10,000</td>
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</tr>
<tr>
<td>younger</td>
<td>20,000</td>
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</table>
Insights

Example: Cycling Pathways

Example: Cycling Origin-Destination Table

<table>
<thead>
<tr>
<th>O/D</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>63</td>
<td>1325</td>
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</table>
Guadalajara Sustainable Mobility Plan

- Inform sustainable mobility plan -- cycle, walk, light rail, BRT, bus, and car.
- Use technology to economically generate mobility data (last updated 2007)
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Latin America Urban Mobility Observatory

Objectives:
- Measure mobility performance in 29 cities.
- Publish a web platform to benchmark mobility performance.
- Innovate & learn
Enable cities & citizens to benchmark and visualize performance.

### Universal Access

<table>
<thead>
<tr>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode Share</td>
</tr>
<tr>
<td>Public Transit Coverage</td>
</tr>
<tr>
<td>Affordability Index</td>
</tr>
<tr>
<td>Accessibility</td>
</tr>
</tbody>
</table>

### Efficiency & Quality

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>PT Quality</th>
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</thead>
<tbody>
<tr>
<td>Travel Time</td>
<td>Reliability</td>
</tr>
<tr>
<td>Congestion Index</td>
<td>Comfort</td>
</tr>
<tr>
<td>Vehicle Occupancy</td>
<td>Transfers</td>
</tr>
<tr>
<td>Farebox Recovery</td>
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</tbody>
</table>

### Green Mobility

<table>
<thead>
<tr>
<th>Emissions &amp; Resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance Travelled (VKT)</td>
</tr>
<tr>
<td>CO2 Emissions</td>
</tr>
<tr>
<td>% Clean vehicles</td>
</tr>
<tr>
<td>Fuel quality</td>
</tr>
</tbody>
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### Safety

<table>
<thead>
<tr>
<th>Road Safety</th>
<th>Security</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality Rate</td>
<td>Crime Rate</td>
<td>Sexual Aggression Rate</td>
</tr>
<tr>
<td>Vehicle Age</td>
<td>Safety Perception in Public Transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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</tbody>
</table>
Enable cities & citizens to benchmark mobility performance.

<table>
<thead>
<tr>
<th>Rank</th>
<th>World Rank</th>
<th>City</th>
<th>Country</th>
<th>Congestion Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>Bogota</td>
<td>Colombia</td>
<td>63%</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Lima</td>
<td>Peru</td>
<td>58%</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Recife</td>
<td>Brazil</td>
<td>49%</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>Sao Paulo</td>
<td>Brazil</td>
<td>42%</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>Rio de Janeiro</td>
<td>Brazil</td>
<td>42%</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>Santiago</td>
<td>Chile</td>
<td></td>
</tr>
<tr>
<td>7</td>
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<td>Salvador</td>
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<tr>
<td>8</td>
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<td>Buenos Aires</td>
<td>Argentina</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>11</td>
<td>Fortaleza</td>
<td>Brazil</td>
<td></td>
</tr>
</tbody>
</table>
International Data Case Studies

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Lessons from International Case Studies

When data is a public good, we...

- Generate it!… responsibly
- Build trust through data
- Innovate with it
- Boldly advance sustainable mobility

Photo credit: Shreya Gadepalli, ITDP India
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