Metro TripMaster for Transit Model

Presented by Paul Burke of Metro for the SCAG Modeling Task Force
If you can’t explain it simply, you don’t understand it well enough.

*Albert Einstein*
Lots of people want to ride with you in the limo, but who will ride the bus with you when the limo breaks down?

_Oprah Winfrey_ (kind of)
I learned long ago, never to wrestle with a pig. You get dirty, and besides, the pig likes it.

George Bernard Shaw
Objective
Objective

Let someone else code network
Metro TripMaster for Transit Model

Introduction

TripMaster?
Metro TripMaster for Transit Model

Introduction

TripMaster ~ Google Transit Feed Specification
Metro TripMaster for Transit Model

Introduction

GTFS?
Metro TripMaster for Transit Model

Introduction

GTFS → Google Maps

Get *Transit* Directions

developer.metro.net
Metro TripMaster for Transit Model

Google Maps Transit
Metro TripMaster for Transit Model

Introduction

TripMaster → Metro Trip Planner

323.GO.METRO
**Metro TripMaster for Transit Model**

**Metro Trip Planner Web Page**

![Metro Trip Planner](image)

**Trip Details**
You are traveling on **Tuesday** and **Arriving at 3:09PM**, Fare class: **Regular**. Max walk: 1/3 Mile. Mode: ANY.

**Tip:** Click on a location to view on the map.

**Starting at UNION STATION**
Find Nearby... | Pass/TAP Outlets | Park & Ride Lots

- **Ride METRO RAIL RED LINE** (NORTH HOLLYWOOD STATION) heading west
- **From:** UNION STATION 02:59PM
- **To:** 7TH STREET/METRO CENTER STATION 03:04PM
- **Pay $1.50, Monthly Pass: $75.00, EZ Pass accepted, TAP card required to board**

**Ending at 818 W 7TH ST**
Find Nearby... | Pass/TAP Outlets | Park & Ride Lots

<table>
<thead>
<tr>
<th>Headsign</th>
<th>Day</th>
<th>Leaving</th>
<th>Arriving</th>
<th>Trip Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
<td>tue</td>
<td>04:30AM</td>
<td>04:35AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
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<td>04:48AM</td>
<td>04:53AM</td>
<td>5 mins</td>
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<td>NORTH HOLLYWOOD STATION</td>
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<td>05:08AM</td>
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<tr>
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<td>05:16AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
<td>tue</td>
<td>05:24AM</td>
<td>05:29AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
<td>tue</td>
<td>05:30AM</td>
<td>05:35AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
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<td>05:47AM</td>
<td>05:52AM</td>
<td>5 mins</td>
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<tr>
<td>NORTH HOLLYWOOD STATION</td>
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<td>05:57AM</td>
<td>06:02AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
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<td>06:07AM</td>
<td>06:12AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
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<td>06:17AM</td>
<td>06:22AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
<td>tue</td>
<td>06:25AM</td>
<td>06:30AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
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<td>06:35AM</td>
<td>06:40AM</td>
<td>5 mins</td>
</tr>
<tr>
<td>NORTH HOLLYWOOD STATION</td>
<td>tue</td>
<td>06:45AM</td>
<td>06:50AM</td>
<td>5 mins</td>
</tr>
</tbody>
</table>
Metro TripMaster for Transit Model
TripMaster Database

Pros & Cons ?
Metro TripMaster for Transit Model

TripMaster Database

Pros

• Someone else updates
• Always fresh
• 5 Counties, 24-7 Coverage
• Matches TBM Streets
• Support….M.E.
Cons

• No Paths between stops
• No School trips
• No Station attributes
• No Fares
• No Imperial, Kern Counties
• No SCAG Highway Network
TripMaster Database

Tables?
Metro TripMaster for Transit Model

TripMaster Tables

times  ∥  trips  ∥  lines  ∥  carrier

  ∥

  signs  ∥  stops
Metro TripMaster for Transit Model

TripMaster Tables Expanded

- Headways
- Patterns
- times
- trips
- lines
- carrier
- signs
- stops
- Unique XY
## TripMaster Table Sizes

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>times</td>
<td>311,320</td>
</tr>
<tr>
<td>trips</td>
<td>41,166</td>
</tr>
<tr>
<td>signs</td>
<td>1,738</td>
</tr>
<tr>
<td>stops</td>
<td>111,017</td>
</tr>
<tr>
<td>carrier</td>
<td>77</td>
</tr>
<tr>
<td>XY</td>
<td>27,382</td>
</tr>
</tbody>
</table>
Metro GTFS Table Sizes

- stop times: 2,253,972
- stops: 15,125
- trips: 39,630
- routes: 150
- agency: 1
Metro TripMaster for Transit Model

TripMaster Database

Example
## Metro TripMaster for Transit Model

### Metro Line 2/302 Schedule

### Monday through Friday

**Effective Jun 23 2013**

#### Eastbound (Approximate Times)

<table>
<thead>
<tr>
<th>Route</th>
<th>PACIFIC PALISADES</th>
<th>WESTWOOD</th>
<th>BEVERLY HILLS</th>
<th>HOLLYWOOD</th>
<th>SUNSET &amp; FAIRFAX</th>
<th>SUNSET &amp; WESTERN</th>
<th>VERMONT/SUNSET STATION</th>
<th>SUNSET &amp; ECHO PARK</th>
<th>DOWNTOWN LOS ANGELES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Sunset &amp; Capri</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>5:11A</td>
<td>5:24A</td>
<td>5:41</td>
<td>5:41</td>
<td>5:53A</td>
</tr>
<tr>
<td>2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>5:24A</td>
<td>5:41</td>
<td>6:00</td>
<td>6:07</td>
<td>6:17</td>
<td>6:34</td>
</tr>
<tr>
<td>2</td>
<td>7:00</td>
<td>7:25</td>
<td>7:30</td>
<td>7:44</td>
<td>7:57</td>
<td>8:05</td>
<td>8:12</td>
<td>8:16</td>
<td>8:39</td>
</tr>
<tr>
<td>2</td>
<td>7:00</td>
<td>7:25</td>
<td>7:30</td>
<td>7:44</td>
<td>7:57</td>
<td>8:05</td>
<td>8:12</td>
<td>8:16</td>
<td>8:39</td>
</tr>
<tr>
<td>2</td>
<td>7:00</td>
<td>7:25</td>
<td>7:30</td>
<td>7:44</td>
<td>7:57</td>
<td>8:05</td>
<td>8:12</td>
<td>8:16</td>
<td>8:39</td>
</tr>
</tbody>
</table>

**Metro**
Metro TripMaster for Transit Model

Metro Line 2 “Short Line” to UCLA
# Metro Line 2 By the Numbers…

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Route Group (Schedule)</td>
</tr>
<tr>
<td>2</td>
<td>Metro Lines (2 and 302)</td>
</tr>
<tr>
<td>8</td>
<td>TripMaster Lines (ilin)</td>
</tr>
<tr>
<td>26</td>
<td>Patterns</td>
</tr>
<tr>
<td>17</td>
<td>Patterns in AM Peak or Midday</td>
</tr>
<tr>
<td>129</td>
<td>GTFS Routes imported to TransCAD</td>
</tr>
</tbody>
</table>
Metro TripMaster for Transit Model

TripMaster Changes

2008 ? 2012
Metro TripMaster for Transit Model

Vehicle Miles Traveled 2008 v. 2012

![Bar chart showing vehicle miles traveled in 2008 and 2012 for different regions. Los Angeles has the highest VMT in 2008 and 2012, followed by Orange and Riverside. Ventura and Metrolink/Amtrak have the lowest VMT in both years.](chart.png)
## Metro TripMaster for Transit Model

### Changes 2008 to 2012

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMT</td>
<td>641,483</td>
<td>582,806</td>
<td>-9%</td>
</tr>
<tr>
<td>Patterns</td>
<td>3,190</td>
<td>2,951</td>
<td>-7%</td>
</tr>
<tr>
<td>Cancelled</td>
<td>120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New</td>
<td></td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Modify</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stops</td>
<td>154,325</td>
<td>136,243</td>
<td>-12%</td>
</tr>
<tr>
<td>Trips</td>
<td>43,946</td>
<td>39,398</td>
<td>-10%</td>
</tr>
</tbody>
</table>
Metro TripMaster for Transit Model
Requirements

TripMaster

Transit Model
TripMaster

3. Add walk links
4. Code fares

Transit Model
Metro TripMaster for Transit Model

Requirements

TripMaster

1. Calc Headways
2. Connect stops

Transit Model
Metro TripMaster for Transit Model

Requirements

TripMaster

1. Trace stops
2. Calc Headways
3. Add walk links
4. Code fares

Transit Model

TM3
Metro TripMaster for Transit Model

TransCAD App

TripMaster

to

Transit Model

in

3 Stages
Metro TripMaster for Transit Model

TM3 Stages

1. TripMaster → Thomas Brothers Maps
2. Thomas Brothers Maps → SCAG/Caliper Highway
3. SCAG/Caliper Highway → INET
Metro TripMaster for Transit Model

TM3 Data Levels

1. TripMaster
2. Thomas Brothers Maps
3. SCAG/Caliper
4. INET
TM3
Level 2
TM3 Level 3
TM3
Level 4
Metro TripMaster for Transit Model

TransCAD App TM3

Improve?
Metro TripMaster for Transit Model

TransCAD App

- Fewer routes
- Better conflation
- Export to SCAG RTP
- Maintain scenarios
Metro TripMaster for Transit Model

TM3 Improvements

Fewer Routes

• Exclude Layovers
• Merge routes (super ilin)
• Maintain super ilin
Metro TripMaster for Transit Model

TripMaster Table Sizes

- **times**: 311,320
- **trips**: 41,166
- **signs**: 1,738
- **stops**: 111,017
- **lines**: 1,813
- **carrier**: 77
- **Unique XY**: 27,382

Reduce from 1813 to 1400
Metro TripMaster for Transit Model

TM3 Improvements

Better Conflation

• Solve looping problem
• Include shape points
• Maintain physical stops?
• Add Edit Toolbox
Skip Conflation!

Build Skims Directly from TripMaster
Metro TripMaster for Transit Model

TM3 Improvements

- Expand routes to patterns
- Add RTP fields
- Transfer GeoDB?
- Add physical stops?
Metro TripMaster for Transit Model

TM3 Improvements

Maintain Scenarios

- Add future routes
- Add Route Edit Toolbox
- Code Project ID
- Maintain scenario sets
- Add Scenario Toolbox
Questions ?