Background:
In the summer of 2006, the San Francisco Municipal Transportation Agency (SFMTA) installed Automatic Passenger Counter (APC) devices on approximately 10 percent of its bus fleet, exponentially expanding the Agency’s transit ridership and trip data collection capabilities. This new technology collected data on buses between October 2006 and June 2007 for the near-term purpose of the Transit Effectiveness Project’s (TEP) service evaluation. Muni’s ridecheck staff manually surveyed Muni Metro Light Rail Vehicles (LRVs) during the same period to obtain comparable data on those modes.

Muni’s schedule department worked closely with division dispatchers to deploy APC equipped buses to sample all trips at least once, with most trips being sampled several times (the average number of samples per scheduled trip was five). To avoid unusual peaks in ridership, an effort was made to sample trips only when the previous trip was filled, though this was not always feasible. Data from multiple samples for the same trip was averaged.

Methodology for Data Collection and Cleansing:
The APCs track every person who gets on or off the bus (including the operator), which may lead to some irregularities in the data, such as higher than expected activity at terminals due to operators entering and exiting the vehicle. There may be cases where buses have a load at the beginning or end of a line. This is generally due to passengers riding through the terminal (e.g., if the end of a line is a loop, some passengers ride “around the horn” to reach their stop). Another cause for loads at the beginning and end of a route is the manner in which data is cleansed. If the APC equipment does not track an equal number of boardings and alightings throughout a trip, the data is systematically adjusted based on the existing patterns to equalize the boardings and alightings.

Data Formats:
The data is presented in three formats:

- Passenger Activity Map (with pie-chart of ons/off at each stop)
- Passenger Activity Report (a numerical, text-only table)
- Passenger Activity Graph (line graph of loading with bars for each stop)

The data behind each format is identical; the only difference is in the way the data is presented.
Time Periods:
For the purposes of the TEP, the time periods are defined as below. Note that some reports do not include all time periods. If a total is provided, it is the total for ALL service, including any time periods that may not be displayed separately.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Hours Included in Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Day/Total</td>
<td>All service provided</td>
</tr>
<tr>
<td>AM Peak</td>
<td>6 AM - 9 AM</td>
</tr>
<tr>
<td>Midday</td>
<td>9 AM - 2 PM</td>
</tr>
<tr>
<td>School</td>
<td>2 PM - 4 PM</td>
</tr>
<tr>
<td>PM Peak</td>
<td>4 PM – 7 PM</td>
</tr>
<tr>
<td>Evening</td>
<td>7 PM – 10 PM</td>
</tr>
<tr>
<td>Owl</td>
<td>1 AM – 5 AM</td>
</tr>
<tr>
<td>Extra</td>
<td>10 PM – 6 AM (with Owl)</td>
</tr>
</tbody>
</table>

1. Passenger Activity Map:
This format displays passenger activity along a route in the form of a map. The activity at every stop is included through a pie-chart that changes in size to indicate the amount of passengers that get on or off at every stop. Passenger boardings are indicated in green/dark gray, and alightings are shown in yellow/light gray. The scale of the pie-charts is consistent across all routes and does not change.
How to access layers for different time periods:
When opened, the Passenger Activity Map will default to show data on total daily ridership. However, you can access data for each time period by clicking on a layer in the file. Please note that you must have Adobe® Reader 6.0 or later to use this feature. To see the data for individual time periods, click on the layers tab to see the full list of available layers.

Click on Layers tab or icon to see the list of available layers. (This depends on which version of Reader you have.)

Once you click on the Layers icon, you will also need to click on the + sign to display all the layers.
When the full list of layers is available, you can click on the “eye” icon next to the layer’s name to turn it on and off. Layers for each direction are listed separately. To see a different time period, you must first turn on/off the appropriate layers for both directions.

For example: In order to see the passenger activity on the 9-San Bruno during the AM peak, you must first turn off all the other time of day layers for both the Northbound and Southbound directions.

Click on the “eye” icons to turn off all the time of day layers except for the time of day that you want to see. Please note that you must individually turn off the layers for each direction.
2. Passenger Activity Report and Graph

The Passenger Activity Report and Graph presents stop-by-stop on and off activity, as well as the total load at each stop. There is a table and graph for each direction of service.

Vehicle Type:

The dominant vehicle type is listed. The dominant vehicle could be replaced by a different vehicle type either periodically or systematically.

Stop Information:

Each stop is listed by intersection. The first street named is the street on which the bus travels. The second street listed is the nearest cross street. The location of a stop can be determined by the letter codes after each stop. The codes provide three pieces of information in the format AA/BB/CC.

- **AA**: the corner at which the stop is located, using ordinal directions
  - N = North
  - S = South
  - E = East
  - W = West
  - NE = northeast
  - NW = northwest
  - SE = southeast
  - SW = southwest

- **BB**: the location of the stop relative to the intersection
  - NS = nearside (before the intersection)
  - FS = farside (after the intersection)
  - MB = mid-block (in the middle of the block between intersections)
  - MI = mid-intersection

- **CC**: the type of bus stop
  - BZ = bus zone
  - SI = stop island
  - FL / PS = Flag stop or Pole stop

For example: **California St & Laurel St NE-NS/BZ** = On California Street, there is a stop on the northeast corner of the intersection with Laurel Street. This stop is a nearside bus zone.
Order of Stops, Dips and Fluctuations in Ridership:

All stops are listed, including short lines or service branches. This sometimes results in a non-linear order of stops.

For example: While a route may service all stops A, B, C, D, E, F, G, a short line that first serves stops A through D and then turns around at terminal X, will be listed as: A, B, C, D, X, E, F, G.

```
 A  B  C  D  E  F  G
    X
```

For example: A route has a branch at the end of the line. All buses go to stops L, M, N, O, and P, then half the buses go one way to stop at Q, R, and S, while the other half go to T, U, and V. This means that some buses go to stops L, M, N, O, P, Q, R, and S, while others go to L, M, N, O, P, T, U, and V. The stops and loads will be listed as L, M, N, O, P, Q, R, S, T, U, V.

```
 L  M  N  O  P  Q  R  S
    T  U  V
```

Branches and short lines are often the cause of apparent dips or unusual fluctuations in ridership.

Trip Length:

The Passenger Activity Report provides the average trip length, which is calculated using the number of passengers on board at each stop and the distance between stops. The origin and destination of each passenger’s trip is not known.

How to Read the Passenger Activity Graph:

The Passenger Activity Graph displays two pieces of information:

- Bars to represent the ons (in black) and offs (in gray) at each stop.
- A line to show the number of passengers that pass through each stop (loads).
The the scale for the ons and offs is on the left side of the graph. The scale for the loading is on the right. Unlike the Passenger Activity Maps, the scale on the Passenger Activity Graphs changes for each route.

### Average Passenger Trip Length

- **California St**: 1.6
- **Sacramento St**: 1.8
- **Howard St**: 1.5
- **Main St**: 1.5
- **Bryant St**: 1.5
- **Octavia St**: 1.5
- **California St**: 1.8
- **Sacramento St**: 2.1

### Some trips may start or end with passengers on board. See “Methodology” for an explanation of

- **California St**: 3
- **Sacramento St**: 147
- **Howard St**: 147
- **Main St**: 130
- **Bryant St**: 23
- **Octavia St**: 23
- **California St**: 23
- **Sacramento St**: 17

### The average trip length is calculated, not based on the trip length of each

- **California St**: 1.6
- **Sacramento St**: 1.8
- **Howard St**: 1.5
- **Main St**: 1.5
- **Bryant St**: 1.5
- **Octavia St**: 1.5
- **California St**: 1.5
- **Sacramento St**: 1.8

### Updated 11/08/07
Dips in ridership appear at short line terminals. Ridership does not actually dip.

The bars are the number of passengers that get on (shown in black) or off (shown in gray) at each stop.

Line indicates the total number of passengers that ride through stops.

Left Axis is the scale for the on-off activity at each stop

Right Axis is the scale for the line showing total load

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Transit Effectiveness Project Ridership Data - User’s Manual

Page 8 of 8