The Influence of the L.A. Metro Rail System on Population Flows

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L.A. Metro Rail system expansion:
Who are the winners? Who are the losers?

Source: Los Angeles Times, KTLA, KALW, Sierra Club
Possible rail -> gentrification -> displacement connection

1. New rail station $\rightarrow$ improved neighborhood amenity $\rightarrow$ attracts more / higher-income households

2. Increased competition for housing $\rightarrow$ increased rents (absent increase in housing supply)

3. Prior residents / low-income residents $\rightarrow$ no longer afford the rent. Several options:
   - Double-Up
   - Smaller Units
   - Pay More
   - Move
   - Homeless

GENTRIFICATION

DISPLACEMENT
Has L.A. Metro rail system influenced population flows?

1. **Displacement**: Have more low-income households moved away after stations open?

2. **Destination change**: Have households changed the pattern of where they move after rail stations open?
## Project innovations

<table>
<thead>
<tr>
<th><strong>Data</strong></th>
<th><strong>Method</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>CA state tax return data for Los Angeles County</td>
<td>What is a move?</td>
</tr>
<tr>
<td>&gt;100 million records from 1993-2013</td>
<td>- Change in filing location from one year to the next</td>
</tr>
<tr>
<td>~85-90% of CA households file taxes; and at least &gt;75% of low-income households</td>
<td>- In the data, at least 2 consecutive years</td>
</tr>
<tr>
<td>Location down to 9-digit or 5-digit zip code</td>
<td>- Move a distance of at least 0.5 miles</td>
</tr>
<tr>
<td></td>
<td>Compare patterns in rail neighborhoods to similar non-rail neighborhoods</td>
</tr>
</tbody>
</table>
~21% of LA County households move annually, reflecting high renter proportion.
New rail stations do increase move-out rates...

Rail Impact: Proportion of Overall Mobility Attributed to New Rail Station Opening

...but low-income residents less affected

Grayed-out columns indicate lack of statistically-significant results
Source: Author calculations from California Franchise Tax Board data
Other household changes affect moving more than new rail stations

Impact of Different Variables on Annual Move Rates (for all incomes)

Source: Author calculations from California Franchise Tax Board data
No displacement

• Lowest-income households (<$15,000 / year) do not increase move out rates once stations open

• Lower-middle income households (<$15,000-40,000 / year): ↑ by 4% for Gold Line, no impact for Red / Purple

• Middle and higher income households (>$40,000) see move rates increase most (↑ 11% Gold, ↑ 5% Red/Purple)

But, does move location change?
Destination change: Have households changed move destinations after rail stations open?

• Map most popular move destinations for neighborhoods with L.A. Metro rail stations
• Compare patterns before / after stations open
• Analyze move destinations by income
• Maps based on zip codes
• Case example: Gold Line – Boyle Heights / East L.A. Branch
Most households do not move very far

Move Distance for Households living near Gold Line – Boyle Heights / East L.A. Branch

<table>
<thead>
<tr>
<th>Move Distance</th>
<th>Pre-Rail Station</th>
<th>Post-Rail Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5-2 miles</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>2-5 miles</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>5-10 miles</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>10-25 miles</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>25-100 miles</td>
<td>7%</td>
<td>10%</td>
</tr>
<tr>
<td>100+ miles</td>
<td>12%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Note: Only zip codes with at least 10 moves, from 1993-2012 shown, for confidentiality reasons
Source: SCAG, LA County GIS, LA City Planning, Get, HERE, DeLorme, MapMyIndia, OpenMapData contributors and the GIS User community. Seva Rodnyansky’s calculations on California Franchise Tax Board data., Created in ArcGIS by Hue-Tam Webb Jamme.

Pre-Rail

Post-Rail

Lowest Income (<$15,000 / year)

Note: Only zip codes with at least 10 moves, from 1993-2012 shown, for confidentiality reasons.

Source: SCAG, LA County GIS, LA City Planning, Get, HERE, DeLorme, MapMyIndia, OpenMapData contributors and the GIS User community. Seva Rodnyansky’s calculations on California Franchise Tax Board data. Created in ArcGIS by Hue-Tam Webb Jamme.

Pre-Rail

Post-Rail

Lower Income ($15,000-$25,000 / year)

Note: Only zip codes with at least 10 moves, from 1993-2012 shown, for confidentiality reasons
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Lower-Middle Income ($25,000-$40,000 / year)

Note: Only zip codes with at least 10 moves, from 1993-2012 shown, for confidentiality reasons
Source: SCAG, LA County GIS, LA City Planning, Get, HERE, DeLorme, MapMyIndia, OpenMapData contributors and the GIS User community. Seva Rodnyansky’s calculations on California Franchise Tax Board data., Created in ArcGIS by Hue-Tam Webb Jamme.

Pre-Rail

Post-Rail

Middle Income ($40,000-$60,000 / year)

Note: Only zip codes with at least 10 moves, from 1993-2012 shown, for confidentiality reasons.
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Higher Income ($>60,000 / year)

Note: Only zip codes with at least 10 moves, from 1993-2012 shown, for confidentiality reasons
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Move patterns evolve somewhat after rail opens

• In the Gold Line: Boyle Heights / East LA case, move locations differ somewhat after rail stations open

• Fewer households of any income moving to San Gabriel Valley or Gateway Cities

• Retrenchment in / around East L.A., Boyle Heights, Monterey Park, Montebello

• Red, Purple, and Gold Line – Pasadena branch show fewer destination shifts
Summary & Planning Implications

- **Summary:**
  - No evidence of Displacement for low-income residents
  - Move patterns changed in Boyle Heights / East L.A.

- Research should focus on overcrowding, transience, doubling-up

- Better equity planning to make sure households are living, and not just ‘hanging on’
  - Resource allocation
  - Participatory planning
  - Local political participation
Thank you!
Questions? Comments?

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## Select rail lines: LA Metro’s Red/Purple and Gold lines

<table>
<thead>
<tr>
<th></th>
<th>Gold: Pasadena Branch</th>
<th>Gold: Boyle Heights Branch</th>
<th>Red &amp; Purple Line</th>
<th>Los Angeles County average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Train type</strong></td>
<td>Light Rail</td>
<td>Light Rail</td>
<td>Underground Subway</td>
<td></td>
</tr>
<tr>
<td><strong>Number of stations</strong></td>
<td>11</td>
<td>8</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>Population Density</strong></td>
<td>1.5-2x LA County</td>
<td>2-2.5x LA County</td>
<td>3.5x LA County</td>
<td>7,000 / square mile</td>
</tr>
<tr>
<td><strong>Renter %</strong></td>
<td>~65%</td>
<td>~76%</td>
<td>~90%</td>
<td>~52%</td>
</tr>
<tr>
<td><strong>Foreign-born %</strong></td>
<td>~10%</td>
<td>~11%</td>
<td>~18%</td>
<td>~35%</td>
</tr>
<tr>
<td><strong>Non-white %</strong></td>
<td>~74%</td>
<td>~95%</td>
<td>~69%</td>
<td>~73%</td>
</tr>
</tbody>
</table>

*Source: Los Angeles Metropolitan Transit Authority; ACS 2009-2013; citydata.com; Boarnet et al. (2015)*
Difference-in-difference framework: measure before / after rail

Before Rail Opens

After Rail Opens

9-digit zip-code
Rail station
Busy road intersection