Reducing impacts of heavy duty trucks in communities of color

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Objective

• Reduce environmental impacts of freight traffic

Partners

• USC + SELA Collaborative + UCD + CSULA Pat Brown Institute + public agencies + other community stakeholders
Study Area

- 750,000 population, 62 mi\(^2\)
- 11 cities + unincorporated areas
- Density about 12,000 pop/mi\(^2\)
- Majority Hispanic
- CalEnviroScreen high pollution and high population burden
- Traversed by several freeways, Alameda rail corridor
- Ports to the south, intermodal rail yards to the north
Freight impact analysis

Focus group

Regional analysis

Truck traffic simulation

Test 3 sets of scenarios

Local analysis

Local truck traffic analysis

Truck crash analysis

Focus group

Recommendations

This presentation
Environmental Justice

• Spatial segmentation
• Lack of political power
• Location of noxious facilities
• Air pollution
• Long term impacts

Community engagement

• Planners as advocates
• Arstein’s ladder of participation
• Participatory action research
• Community engagement for community solutions
Community Engagement

- Southeast Los Angeles Collaborative major partner
- Project advisory committee
- Focus groups to launch research
What comes to mind when you see this?

Fear
Safety
Accidents
Pedestrians at risk
Noise

Stories
• Truck jumped a curb
• Trucks on residential streets
• I don’t drive where there are lots of trucks
• Children at risk walking to school
Origin-Destination Analysis

- Freight impacts come mostly from through trips that do not begin or end in SELA
- Local freight hotspots and the high number of regional trips yield the need for mitigation recommendations

<table>
<thead>
<tr>
<th>Trip Type</th>
<th>All HDTs</th>
<th>Share Regional Trips</th>
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<tbody>
<tr>
<td>O-Ds Within SELA Trips</td>
<td>17,727</td>
<td>1.89%</td>
</tr>
<tr>
<td>SELA Origin Trips</td>
<td>36,123</td>
<td>3.85%</td>
</tr>
<tr>
<td>SELA Destination Trips</td>
<td>36,110</td>
<td>3.85%</td>
</tr>
<tr>
<td>Trips Through SELA</td>
<td>104,839</td>
<td>11.17%</td>
</tr>
<tr>
<td>All Regional Trips</td>
<td>938,381</td>
<td>100.00%</td>
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Freight volume density

<table>
<thead>
<tr>
<th></th>
<th>SELA</th>
<th>County</th>
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<tbody>
<tr>
<td>With freeways</td>
<td>40,000</td>
<td>25,500</td>
</tr>
<tr>
<td>Without freeways</td>
<td>14,000</td>
<td>9,000</td>
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Trucks/day/mi²
Crash analysis

- Heavy truck collision data 2015 – 2018
  - Source: Transportation Injury Mapping System (TIMS)
  - All reported collisions from local and gov’t agencies

- Crashes within SELA
  - 45% on freeways, 55% on local roads, mostly major arterials
  - Most frequent crash causes: unsafe speed, automobile right of way, improper turning (together account for 60% of all crashes)

<table>
<thead>
<tr>
<th></th>
<th>SELA area</th>
<th>City of Los Angeles</th>
<th>Los Angeles County</th>
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</thead>
<tbody>
<tr>
<td>Total crashes</td>
<td>743</td>
<td>2,674</td>
<td>7,935</td>
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<tr>
<td>Crashes per sq mi</td>
<td>11.4</td>
<td>5.7</td>
<td>2.0</td>
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<tr>
<td>Total fatalities</td>
<td>24</td>
<td>62</td>
<td>232</td>
</tr>
<tr>
<td>Fatalities/crash</td>
<td>3.2%</td>
<td>2.3%</td>
<td>2.9%</td>
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</table>
Hot Spot Locations Analysis – Non-Highway Crashes
Recommended Locations for Analysis

1. Santa Fe Ave & Del Amo Blvd: intersection, mixed use
2. Alameda St. corridor: mixed use corridor, mixed use/school
3. Washington from Atlantic Blvd. to Downey Rd: freight corridor and mixed use
4. Elm St. & Santa Fe Ave: intersection, residential/schools
5a. Firestone Blvd. near Russell Elementary: mixed use corridor, mixed use/schools
5b. Southern Ave. from Long Beach Blvd. to San Carlos Ave” mixed use corridor, residential/schools
Case study: Firestone Blvd and Southern Ave
Modeling: Prohibit trucks on Southern Ave

- PTV Visum (Mesoscopic/Macroscopic)
- SCAG Travel Demand Model used to collect TAZ & RSA Origin-Destination tables
- AM Peak Period from 7AM – 9:59:59AM
- Compare Firestone Boulevard and Southern Avenue, while considering intersection operations at Atlantic Avenue
- Scenario 1: No Trucks Allowed on Southern Ave
- Scenario 2: No Trucks Allowed on Southern Ave + Intersection/Capacity Improvements at Atlantic Ave
Firestone Blvd Traffic Flow Volumes [Heavy Trucks] from Long Beach Blvd to Atlantic Ave
(by Scenario; by Direction)

Total Modeled Volume (AM Peak Hours)

- Base - EB Firestone
- Base - WB Firestone
- Scenario 1 - EB Firestone
- Scenario 1 - WB Firestone
- Scenario 2 - EB Firestone
- Scenario 2 - WB Firestone

Long Beach | State | California Intersection | Otis | Atlantic
Southern Ave Traffic Flow Volumes [Heavy Trucks] from Long Beach Blvd to Atlantic Ave (by Scenario; by Direction)
Simulation helps understand localized problem and impacts of potential mitigation strategies

Route diversion most likely due to congestion on Firestone

Prohibiting trucks on Southern has little effect on Firestone

Adding intersection improvements does not improve performance

Confirms community perceptions re route diversion

Strengthens case for geofencing
Thank you
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