Can compact rail transit corridors transform the automobile city? Challenges and opportunities for more sustainable travel in Los Angeles

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The Hollywood Freeway near downtown Los Angeles (1953) (Source: Caltrans Photo Gallery)
Freeways and Urban Sprawl

• Freeways Offer Huge Mobility & Economic Benefits…
  – About 2% of road surface, but 33% of vehicle travel

Source: OCTA (I-5 between I-405 and SR-55)
Freeways and Urban Sprawl

- Freeways Have High Costs
  - Ugly, polluting, disruptive
  - Sprawling development results in long commutes and contributes to lower physical activity and obesity

Source: OCTA (I-5 between I-405 and SR-55)
Long-range vision for regional growth
  - Conformity with federal air quality standards
  - How to reach state requirements to reduce greenhouse gas emissions (GHG) from transport
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![GHG Reductions Chart]

- NOx: 96.1 TONS in 2020, 88.4 TONS in 2040, 8% reduction
- PM2.5: 13.2 TONS in 2020, 12.5 TONS in 2040, 6% reduction
- GHG reductions: 8% in 2020, 18% in 2035, 21% in 2040
• Cleaner vehicle technology remains important but will only get us so far …

Source: Los Angeles Metro Flickr (Mission Street Gold Line Crossing)

• We must integrate transportation and land use planning to achieve sustainability goals
Direct Growth to High Quality Transit Areas (HQTAs)
• Areas within ½ mile of transit stops and bus corridors
• Account for 3% of region, but will accommodate
  – 46% of household growth
  – 55% of employment growth

Source: 2016-2040 Regional Transportation Plan/Sustainable Community Strategy, Southern California Association of Governments (SCAG)
Potential Benefits of HQTAs

• Expanded alternatives to driving
  – Walking and biking
  – Integrated transit - bus, rail

En route to Ciclavia. Gold Line Station. (Source: Los Angeles Metro Flickr)
Potential Benefits of HQTAs

• Vibrant neighborhoods
  – Increase access to jobs, schools, healthcare, etc.
  – More activities, improved safety
Potential Benefits of HQTAs

- Economic benefits
  - More affordable housing
  - Increased retail sales
  - Higher business profits
  - Enhanced commercial home and real estate values

Source: Los Angeles Metro Flickr (Mariachi Plaza)
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Source: Los Angeles Metro Flickr (Gold Line)
Denser areas with greater access and transit had:

- Lower vehicle ownership and usage
- More walking and transit trips

Not all transit corridors are created equally

Households near the Red Line subway had about 11 fewer miles driven and higher transit ridership than those near the Gold Line light rail line.

Not all transit corridors are created equally

Transit oriented development (TOD) over the Red Line Hollywood/Western Station.

Planners should consider the **social and development context** of corridors in efforts to improve transit access and maximize development.

More evaluation of investments is needed

The Expo Line Evaluation Study surveyed

• “Longterm” residents before/after line

• “New” residents after service began

“Longterm” residents near Expo reduced driving

- Households near Expo drove about **10 fewer miles per day** vs. control group
- Shorter driving trips, no big jump in transit usage

“New” residents near Expo after opening

• Tended to be younger, rent, and be higher income
• Those near a station had higher transit rates, but drove 8-10 more miles/day vs. longer-term HHs

Attitudes and perceptions matter

- Women had greater environmental concerns, but were less likely than men to take transit due to safety concerns

Within walking distance (0.5 miles) vs. farther

- Higher % of duplexes, multi-family housing
- Higher % of commercial and industrial uses
Farther from stations (0.5-1.0 mile) vs. <0.5 miles

- Higher % of single family housing
- Lower % of commercial and industrial uses

Source: J.H. Kim (PI), D. Houston (Co-PI). “Beyond the half-mile walking distance buffer: The impact of transit investment on broader vicinity areas.”
Substantial variation by rail transit line

- Higher % of single family housing near Gold Line Phase 1 vs. earlier stations areas

Source: J.H. Kim (PI), D. Houston (Co-PI). “Beyond the half-mile walking distance buffer: The impact of transit investment on broader vicinity areas.”
Infill development varies by distance from stations

Development of vacant parcels (2001-2012)

- No conversion (remained undeveloped)  
  - Near (66%), farther (77%), county (73%)

Source: J.H. Kim (PI), D. Houston (Co-PI). “Beyond the half-mile walking distance buffer: The impact of transit investment on broader vicinity areas.”
Development of vacant parcels (2001-2012)

- Conversion to single-family residential use
  - Near (9%), farther (14%), county (20%)
- Conversion to commercial or industrial use
  - Near (20%), farther (9%), county (3%)

Source: J.H. Kim (PI), D. Houston (Co-PI). “Beyond the half-mile walking distance buffer: The impact of transit investment on broader vicinity areas.”
Development of vacant parcels (2001-2012)

- Multivariate analysis confirms impacts of transit investments are not confined to a half-mile radius

Source: J.H. Kim (PI), D. Houston (Co-PI). “Beyond the half-mile walking distance buffer: The impact of transit investment on broader vicinity areas.”
Can compact corridors promote gender equality?

**Gender differences in travel**

- Husbands—fewer trips, travel greater distances
- Wives—more trips, walk more, and travel less distance

(Source: Los Angeles Metro Flickr)

Source: D. Houston (PI). “The Impact of Urban Form and Travel Mode on Spatial Activity-Travel Patterns” and Lo, Ashley (Wan-Tzu) “Compact Development and Gender Inequality: Do More Accessible and Walkable Built Environments Promote Gender Equality in Travel and Activity Space Behaviors?” (Dissertation)
Can compact corridors promote gender equality?

Compact, livable corridors could …

• Alleviate spatial and time constraints
• Enhance mobility and access to opportunities
• Help married couples balance daily tasks and travel

Source: D. Houston (PI), “The Impact of Urban Form and Travel Mode on Spatial Activity-Travel Patterns” and Lo, Ashley (Wan-Tzu) “Compact Development and Gender Inequality: Do More Accessible and Walkable Built Environments Promote Gender Equality in Travel and Activity Space Behaviors?” (Dissertation)
Can compact corridors promote gender equality?

Couples in more accessible and walkable areas...

• Had *greater equality* in trip frequencies and travel distance after accounting for other factors
Can compact corridors promote gender equality?

Daily *activity spaces* of a 44 year old Hispanic female

Couples in more accessible and walkable areas...

- Had smaller overall activity spaces for both
- Had *greater equality* in *activity spaces* compared to couples in less accessible and less walkable areas

Source: D. Houston (PI). “The Impact of Urban Form and Travel Mode on Spatial Activity-Travel Patterns” and Lo, Ashley (Wan-Tzu) “Compact Development and Gender Inequality: Do More Accessible and Walkable Built Environments Promote Gender Equality in Travel and Activity Space Behaviors?” (Dissertation)
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Protecting communities from displacement is key

- New transit often leads to new (upscale) housing
- Rents in the surrounding areas tend to rise
- Existing residents can get priced out

Source: “Neighborhood Watching,” UCLA Magazine, April 1, 2017. Based on research from the UCLA-UCB Urban Displacement Project
Challenges and opportunities for more sustainable travel in Los Angeles

Yes, compact rail transit corridors should help transform the automobile city, but...
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• Land use and socio-demographic context matters
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- There are multiple approaches for successful near-rail development
- Land use and socio-demographic context matters
- Transforming TOD areas should build from “what works” in a community, and avoid displacement
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Yes, compact rail transit corridors should help transform the automobile city, but...

• There are multiple approaches for successful near-rail development

• Land use and socio-demographic context matters

• Transforming TOD areas should build from “what works” in a community, and avoid displacement

• We need to claim opportunities to enhance accessibility and equality
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