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Congestion Pricing for Climate, Capacity, or Communities?

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# Congestion Pricing for Climate, Capacity, or Communities?

Austin Stanion, MURP (2019)

## Issue

Congestion pricing charges drivers a toll for using particular road segments during periods of the day with heavy traffic. The price of the toll usually depends on the road's level of congestion, or the time of day. The goal of congestion pricing is to reduce vehicle congestion in several ways by incentivizing carpooling, shifting driving to less congested times of day, and encouraging other modes of transportation, such as public transit.

Congestion pricing can also reduce vehicle emissions from congested roads. However, existing studies often lack a complete understanding of the impacts of congestion pricing on the environment, air quality, and community health. There is also limited research on how implementations of congestion pricing might promote environmental justice for communities who are most affected by freeway emissions.

Given the legacy of environmental injustice in Los Angeles, and the potential of congestion pricing to reduce emissions in communities most affected by pollution, this research seeks to answer the question: What are the potential environmental justice impacts of congestion pricing on the I-710 corridor?

## Research Findings

Modeling existing conditions of traffic and emissions on the I-710 freeway reveals a number of insights about travel behavior on the corridor. The model used in this research found that while trucks make up only 9.3 percent of trips on the corridor, they produce 33.8 percent of carbon dioxide emissions, and 84.1 percent of particulate matter emissions. Automobiles are responsible for 62.6 percent of carbon dioxide emissions and 13.1 percent of particulate matter emissions on the corridor.

Based on modeling a hypothetical scenario of congestion pricing (with a controlled minimum speed of 40 mph), the study found that congestion pricing could decrease carbon dioxide emissions from the I-710 corridor by 3,247 tons per day, and reduce peak-hour particulate matter emissions in congestion hotspots by 42 percent, affecting communities such as Maywood, Bell, Commerce, Bell Gardens, and Long Beach.

This research suggests that if policymakers want to minimize carbon dioxide and particulate matter emissions on the I-710 corridor through congestion pricing, they should create a system that encourages average speeds of 40 mph. Policymakers should also be cautioned that if congestion pricing brings

## KEY TAKEAWAYS

- Congestion pricing could have significant environmental benefits if emissions reduction is included as a goal in the design of congestion pricing projects.
- Heavy duty trucks produce the majority of particulate matter pollution, which is most harmful to communities. Congestion pricing projects should take this into account.
- Congestion pricing policies should take an "equity first" approach by minimizing emissions, prioritizing transit, and subsidizing travel for low-income drivers.

minimum speeds on the I-710 up to 50 mph or 60 mph, the corridor will likely produce more emissions than it would at a CMS of 40 mph.

## Approach

To measure how these policies might impact air pollution and community health, the researcher built an emissions model using traffic data from the I-710 freeway. The researcher modeled carbon dioxide, a major contributor to global climate change, and Particulate Matter (PM 2.5), a component of vehicle exhaust responsible for increased rates of asthma, heart disease, and premature death in highway-adjacent communities.

## Conclusions

- **Recognize Policy Conflicts.** Automobiles produce the majority of carbon dioxide emissions on the I-710, while trucks produce the majority of particulate matter emissions. Planners should find solutions which reduce emissions from all vehicle types.
- **Prioritize Community Health.** The health and environmental equity benefits from congestion pricing could be significant, but only if community health impacts are a project priority, rather than an afterthought. Transportation planners should take an “equity first” approach to congestion pricing.
- **Consider Changes in Behavior.** Any form of congestion pricing will likely impact travel behavior and vehicle

miles traveled (VMT). Some traffic may “spill-over” onto unpriced streets. Planners should avoid projects that simply redistribute VMT and emissions to other areas and corridors.

- **Plan Priced Lanes for Transit.** Priced lanes should be prioritized as transit lanes which private vehicles can use for a fee. Implementation of congestion pricing should coincide with an expansion of regional bus rapid transit networks, such as the Metro Silver Line.
- **Use Revenues for Equity Goals.** Revenues from congestion pricing should be used to increase public transit availability, promote electrification of diesel trucks, and subsidize low-income drivers who would be most negatively impacted by priced lanes.

Figure: The I-710 is a congested freight corridor



Source: LACMTA I-710 EIR

## For More Information

Stanion, A. (2019). *Congestion pricing for climate, capacity, or communities?* (Masters capstone, UCLA). Retrieved from <https://escholarship.org/uc/item/5dc9h3qw>

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