

# Positive Truck Signage Study: Executive Summary

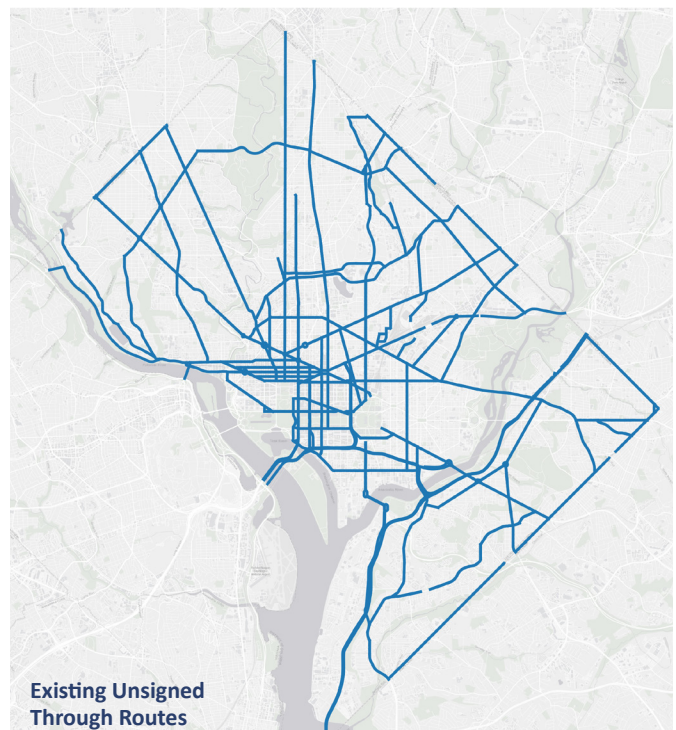
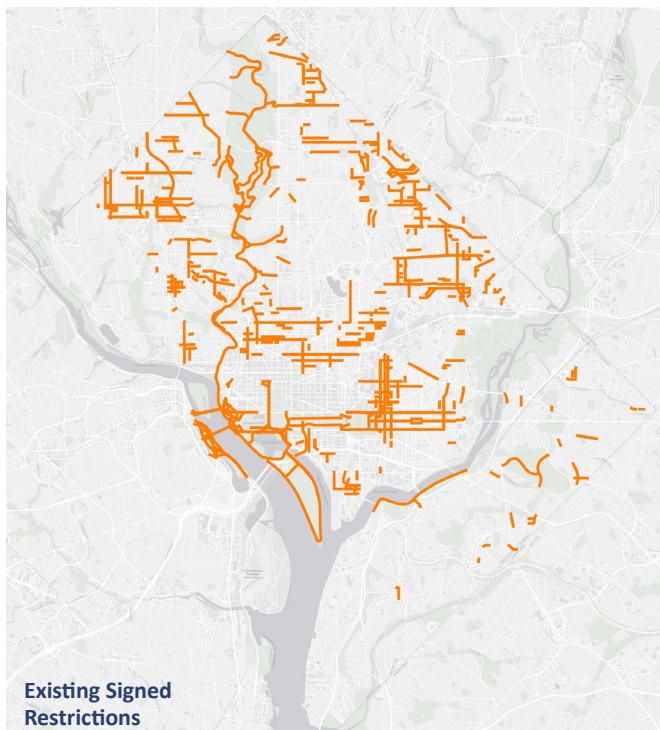
The District Department of Transportation (DDOT) recognizes that trucks are critical to the District of Columbia's businesses, institutions, and economy. DDOT initiated this Positive Truck Route Signage Study to assess the feasibility, benefits, and costs of implementing positive truck route signage, with the goal of balancing quality of life for residents with the need to make deliveries. Positive signage is a strategy that clearly identifies preferred routes where trucks should travel. This differs from the District's current approach of a negative signage strategy, which only signs routes where trucks are prohibited unless they are making a local delivery. This study evaluates the District's existing truck and motorcoach (bus)\* network, considers peer cities with positive truck route networks, and builds on previous studies including the District's 2016 Freight Signage Plan, 2020 Freight Plan Addendum, and 2021 moveDC Plan Update.



## Existing Conditions And Gap Analysis

The District of Columbia currently employs an advisory designated truck and bus route network, which encourages but does not require heavy vehicles to travel along designated routes. The District also restricts trucks and buses on residential streets, which are enforced by the Metropolitan Police Department (MPD) when there is associated signage in place. Existing signs have a wide variety of messages, designs, colors, and symbols; signs restricting trucks over 1 ¼ ton capacity are the most common.

DDOT last updated its public-facing truck route map in 2020. This map provides information about designated routes and where trucks are prohibited; there are some discrepancies with on-the-ground signage and mapped restrictions. DDOT also has a trip planner tool for drivers to map their routes per oversized and overweight parameters.



\*Positive signage would apply to trucks and motorcoaches. Metrobus and similar transit buses are not considered as part of this study.

To understand the current performance of the District’s truck and bus route network, the study used a Truck Connectivity Index, where values were assigned to each roadway to indicate its appropriateness for accommodating truck traffic based on roadway characteristics, roadway volumes, and adjacent land uses. Quantifying the impacts of truck travel in the District and assessing how these impacts are likely to change in a transition from truck restrictions to positive truck routing led to the following key takeaways:



Trucks carry more than 90 percent of goods by weight (and 72 percent of goods by value) into, through, and out of the District.



A positively signed network with a mandatory enforcement framework would reduce the burden on residents to request neighborhood truck restrictions. Only 3.6 percent of DDOT truck restrictions are currently located in low-income neighborhoods, while these neighborhoods account for 15.3 percent of all roads. In contrast, 70 percent of DDOT truck restriction signage is located in neighborhoods with over \$100,000 of median household income.



Truck traffic is inequitably distributed within the District, but the biggest driver of inequity is the DC-295 / I-295 corridor, which is outside the scope of this study. While 16 percent of roadway mileage is located adjacent to low-income neighborhoods, approximately 29 percent of truck VMT accumulates on these roads.



A positively signed network could help channel truck VMT along Principal Arterials and Minor Arterials, which would benefit communities with median household incomes of \$50,000 to \$100,000. Currently, 29 percent of roadway mileage is located adjacent to these households, but approximately 35 percent of truck VMT accumulates on these roads.

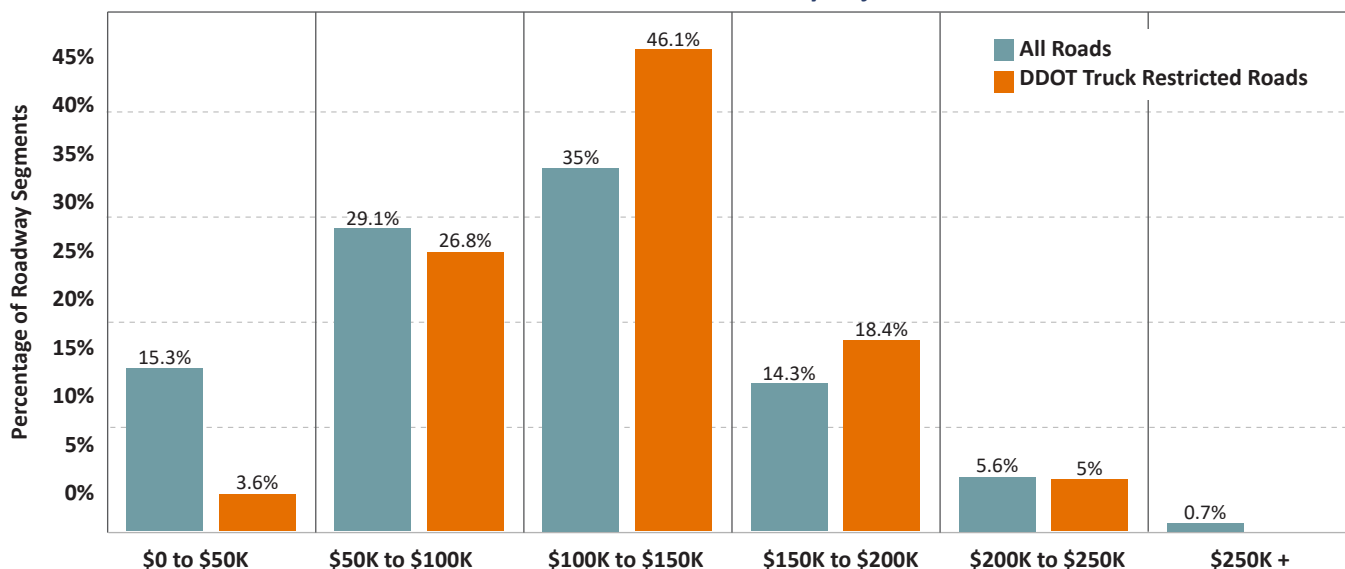


A positively signed network is likely to reduce the harm caused by emissions by up to 6.5 percent, by diverting trucks out of local neighborhoods.



The current truck and bus through network carries 85 percent of single unit truck VMT and 78 percent of combination truck VMT; a revised network could increase this to 90 percent and 88 percent, respectively.

**Distribution of Truck Restricted Roads and All Roads by Adjacent Median Household Income**




## Stakeholder Outreach

Stakeholder perspectives are essential to building a complete and accurate understanding of current conditions, concerns, and any trends in the local trucking environment. Study outreach included interviews with truck and charter bus industry stakeholders and MPD and National Parks representatives in December 2022, an Advisory Neighborhood Commission (ANC) survey in January 2023, and industry stakeholder and public meetings in July 2023.

The ANC survey had almost 200 responses; respondents cited concerns about inadequate enforcement, oversized trucks on narrow residential streets, and impacts of trucks on pedestrian and cyclist safety. Only 7 percent of respondents indicated that the District’s existing truck routes and restrictions work well, and only 8 percent indicated that existing truck signs work well.


## Benefits and Costs

A benefit-cost analysis was conducted to compare the capital, operations, and maintenance costs of a positive truck signage system with expected improvements in safety, emissions reductions, and travel times. The analysis included three signage scenarios:




**Negative Truck Route Signage**

**Baseline “No-Build”:** maintain existing negative truck route signage. Trucks are encouraged to use designated routes.



**Positive Truck Route Signage**

**Advisory Framework:** maintain existing negative truck route signage and install positive truck route signage on truck routes. Trucks are encouraged to use designated routes.

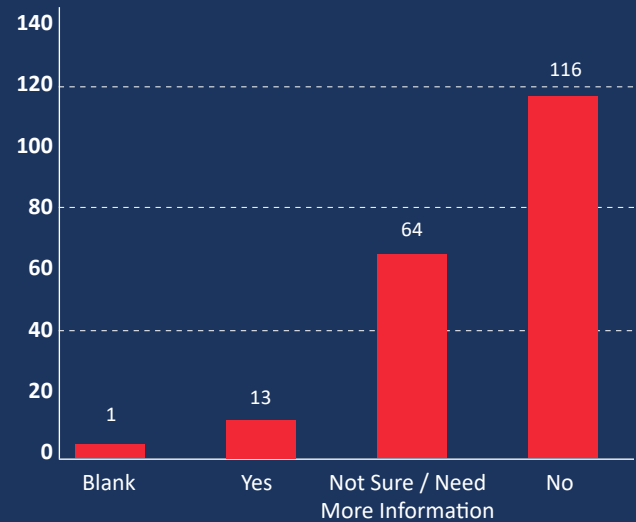


**Positive Truck Route Signage**

**Mandatory Framework:** remove all negative truck route signage and install positive truck route signage on truck routes. Trucks must use designated routes.

In the advisory scenario, current truck restriction signage would stay in place, as these restriction signs will be the only means of traffic enforcement available. In the mandatory framework, most truck restriction signage would be removed.

Survey Question: Do the District’s Truck Routes and Restrictions Work Well?



The benefit-cost analysis found that, overall, both the advisory and mandatory scenarios yielded ratios below 1.0, i.e., the costs outweigh the benefits of the project. This was driven primarily by estimated truck VMT increases (and associated safety, vehicle operating costs, emissions, and pavement damage disbenefits), as drivers are expected to take slightly longer routes to adhere to positive signage.

- DDOT expends \$94,000 per year on sign replacement for the existing truck restriction signs.
- A positively signed through route system is estimated to cost an average of \$60,000 per year to maintain. Total capital costs of implementing positive truck signage are estimated to be \$1.2M, inclusive of the cost of new signs as well as the removal of most truck restriction signs.

It is important to note that the extent of positive truck route signage impacts depends on the magnitude of change to truck VMT, and a detailed travel demand modeling analysis is needed to develop exact VMT estimates. In addition, a positive truck route signage system has the potential to communicate designated truck routes more clearly to drivers and reduce ambiguity. It would move trucks from local roads on non-through networks to roads that are better equipped to handle truck traffic, and negative safety impacts could be mitigated with targeted improvements along the network.

Overall project cost is another consideration. Benefit-cost analyses are primarily meant for large capital projects spanning millions of dollars. This analysis, on the other hand, sees project capital costs of <\$1.2M in both “Build” scenarios and thus small denominators and large ratios.

### Capital Costs (2021 dollars)

Scenario	2024	2025	Total
No-Build	\$0	\$0	\$0
Advisory	\$395,000	\$395,000	\$789,000
Mandatory	\$601,000	\$601,000	\$1,202,000


### Annual Replacement Costs (2021 dollars)


Scenario	2026 to 2035	2036 to 2040	2041 to 2045
No-Build	\$94,000	\$94,000	\$94,000
Advisory	\$94,000	\$181,000	\$181,000
Mandatory	\$18,000	\$104,000	\$100,000


Capital costs for the advisory and mandatory scenarios accrue for two years. The cost of replacing a sign after its average useful life of 15 years includes removing the existing sign and purchasing and installing a new panel.


## Transition Plan and Next Steps


Transitioning to a positive signage system would involve many steps and responsible parties, including action items dealing with policy, enforcement, communications, route recommendations, sign design and installation, and ongoing maintenance.

 **Policy.** Title 18 of the District of Columbia Municipal Regulations (DCMR) provides all regulations regarding vehicles and traffic within the District. These regulations would need to be changed as part of the transition to positive truck route signage, and would involve text drafting, public notice and comment, and rule adoption.

 **Enforcement.** MPD is responsible for enforcing traffic laws, including compliance with truck route and clearance restrictions. MPD would need to be an integral partner in ensuring District staff, truck owners and operators, and community members understand how the newly created and updated rules would be enforced. Partnerships and communication will also be required with the DC Department of Motor Vehicles and the United States Park Police.

 **Communications.** A communications plan would be essential to create awareness and understanding of the positive truck signage framework within the industry and among other stakeholders and the public. This would include a pre-implementation phase, an implementation phase once regulations are in effect, an enforcement phase when signs are in place and MPD officers have been trained in enforcement protocols, and ongoing communications to reinforce awareness and compliance.

 **Route Recommendations.** The study proposed a through route network that builds on the current system, closes existing network gaps, and improves roadway connectivity for freight. The proposed network adds about 54 miles to the existing 196-mile network. Exact route extents would benefit from further study, such as a travel demand model to provide greater detail on expected changes in VMT location and volume.

 **Signage Design, Installation, and Maintenance.** Signs for the network would be installed at the intersections of two truck routes, at District borders, at freeway exits, and approximately every ½ mile along truck routes using a sign installation contract. This would include approximately 450 locations and 2,300 total signs across the District. DDOT can utilize existing inspection contracts, prepare a specialized contract, or use in-house staff to inspect sign and installation quality. Signs can be maintained under existing DDOT sign maintenance contracts.

### Proposed Positive Truck Sign Design



# Proposed Truck and Bus Through Route Network

