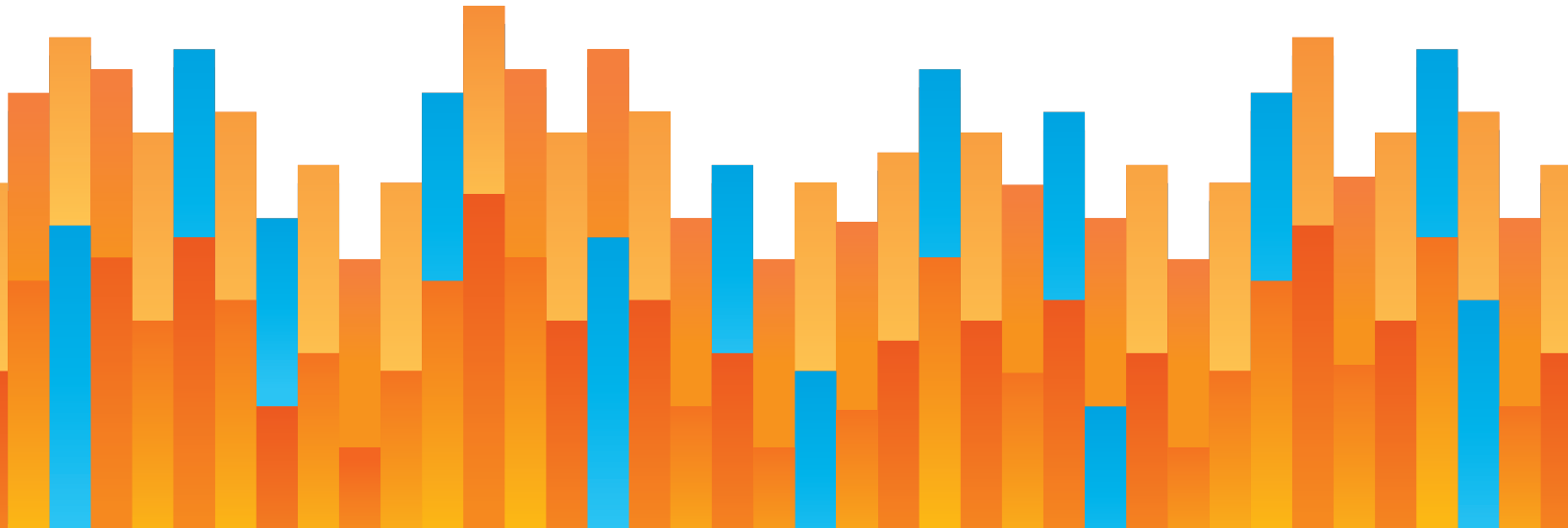
reason
FOUNDATION

FREQUENTLY ASKED QUESTIONS: MANAGED LANES

by Baruch Feigenbaum and Austill Stuart
January 2019



Reason Foundation's mission is to advance a free society by developing, applying and promoting libertarian principles, including individual liberty, free markets and the rule of law. We use journalism and public policy research to influence the frameworks and actions of policymakers, journalists and opinion leaders.

Reason Foundation's nonpartisan public policy research promotes choice, competition and a dynamic market economy as the foundation for human dignity and progress. Reason produces rigorous, peer-reviewed research and directly engages the policy process, seeking strategies that emphasize cooperation, flexibility, local knowledge and results. Through practical and innovative approaches to complex problems, Reason seeks to change the way people think about issues, and promote policies that allow and encourage individuals and voluntary institutions to flourish.

Reason Foundation is a tax-exempt research and education organization as defined under IRS code 501(c)(3). Reason Foundation is supported by voluntary contributions from individuals, foundations and corporations. The views are those of the author, not necessarily those of Reason Foundation or its trustees.

TABLE OF CONTENTS

INTRODUCTION 1

WHERE ARE MANAGED LANES BEING USED, AND WHY ARE THEY BECOMING MORE PREVALENT? 1

HOW DO MANAGED LANES WORK? ARE THERE DIFFERENT APPROACHES DOTS CAN USE TO CONTROL TRAFFIC CONGESTION VIA MANAGED LANES? 3

HOW ARE TOLLS FROM ETLS AND HOT LANES COLLECTED? 3

WHAT ARE THE PERFORMANCE STANDARDS FOR MANAGED LANES? WHAT HAPPENS IF MANAGED LANES FAIL TO MEET THE PERFORMANCE STANDARDS? 3

WHAT ARE THE DIFFERENCES BETWEEN HIGH OCCUPANCY VEHICLE LANES, HIGH OCCUPANCY TOLL LANES, AND EXPRESS TOLL LANES? 4

DON'T PRICED MANAGED LANES COST MORE TO BUILD AND OPERATE THAN OTHER TYPES OF HIGHWAY LANES? 5

AREN'T MANAGED LANE TOLLS ANOTHER TAX ON ROADS THAT ARE ALREADY PAID FOR WITH OTHER TAXES? 5

WILL TOLLS EVER BE ELIMINATED FROM PRICED MANAGED LANES? 5

WHAT ARE THE BENEFITS OF MANAGED LANES TO MOTORISTS? CARPOOLERS? EMERGENCY VEHICLES? TAXPAYERS? 6

HOW DO MANAGED LANES IMPROVE TRANSIT? 6

HOW DO PRICED MANAGED LANES DIFFER FROM CONVENTIONAL TOLL ROADS? 7

ARE METRO AREAS BUILDING MANAGED LANE NETWORKS? ARE THERE DIRECT CONNECTORS BETWEEN INDIVIDUAL MANAGED LANES? 7

CONCLUSION 8

ENDNOTES 8

ABOUT THE AUTHORS 9

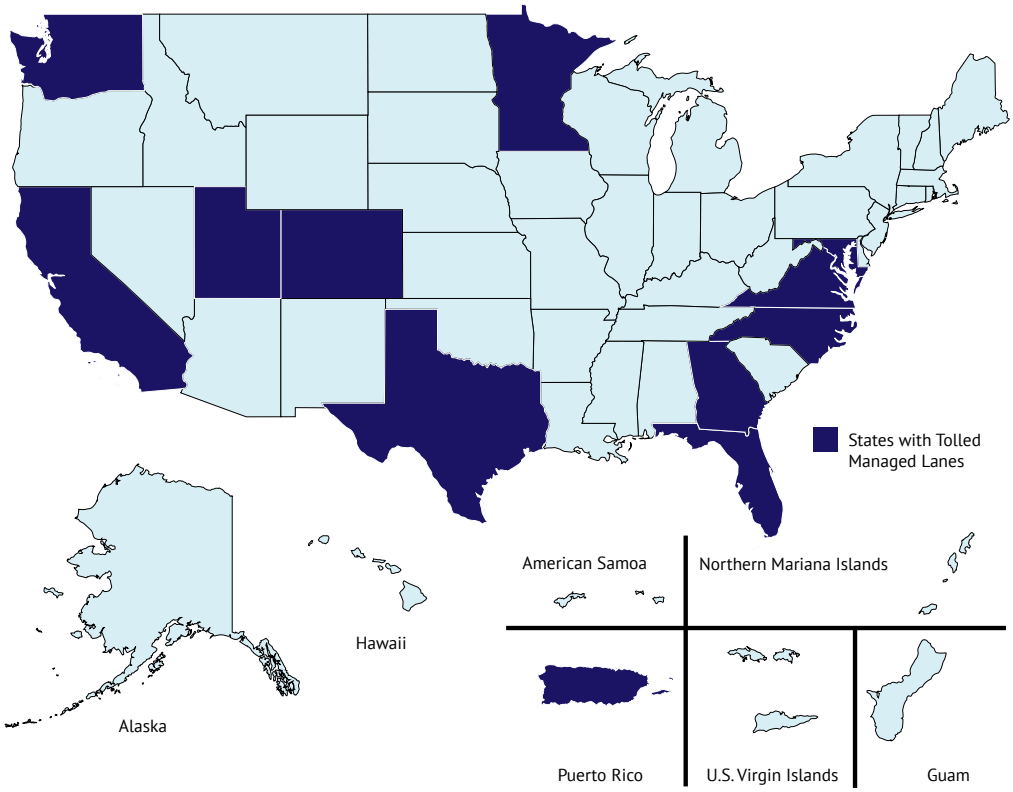
INTRODUCTION

Limited-access freeways in most metro areas suffer from significant congestion, which affects both drivers and transit bus riders. Congestion wastes people's time and increases fuel use and emissions. It can also lead to increased risk of traffic accidents, as well as longer response times for emergency personnel.

Increasingly, departments of transportation (DOTs) and metropolitan planning organizations (MPOs) are turning to managed lanes (MLs) to offer a less-congested alternative to the general purpose lanes. Managed lanes are a set of lanes in which access is controlled to meet a transportation policy goal. Vehicle restrictions, capacity requirements and pricing are three ways to manage access. Managed lanes encompass bus-only lanes, truck lanes, HOV lanes, HOT lanes, and express toll lanes. By preventing some lanes from getting overloaded with vehicles, managed lanes offer motorists a more reliable commute option that can also improve public safety in terms of making less-congested routes available for emergency personnel, while also reducing gasoline consumption and emissions. Additionally, toll revenue can cover many of the costs associated with operating and maintaining the lanes.

WHERE ARE MANAGED LANES BEING USED, AND WHY ARE THEY BECOMING MORE PREVALENT?

FIGURE 1: TOLLED MANAGED LANES IN THE U.S.



Managed lanes are used on freeways—mostly in cities and suburbs—that experience regular peak-period congestion. The biggest advantage of managed lanes is that they offer the alternative of a non-congested corridor by keeping the MLs uncongested via variable pricing. Since managed lanes provide an effective option for avoiding congestion for carpoolers and, in some cases, public transit, their usage is growing in medium-sized and larger metro areas nationwide.

TABLE 1: TOLLED MANAGED LANES IN THE U.S.

ROAD NAME	ROAD NAME
California	**Minnesota**
• I-10 El Monte Busway	• I-35E HOT Lanes)
• I-15 Express Lanes	• I-35W HOT Lanes
• I-110 Harbor Transitway	• I-394 / US 12 HOT Lanes
• I-680 Express Lanes	**North Carolina**
• I-880 / SR 237 Express Lanes	• I-77 Express Lanes
• SR 91 Express Lanes	**Puerto Rico**
Colorado	• PR-22 Express Lanes
• I-25 Express Lanes	**Texas**
• I-25 North Express Lanes	• I-10 Katy Tollway
• I-70 Mountain Express Lane	• I-635 TexPress Lanes
• US 36 Express Lanes	• I-820 North Tarrant Express
Florida	**Utah**
• 95 Express	• I-15 Express Lanes
• I-75 Miami Express	**Virginia**
• I-595 Express Lanes	• I-66 (Inside the Beltway)
• Lee Roy Selman Express Lanes	• I-95 Express Lanes
Georgia	• I-395 Express Lanes
• I-85 Express Lanes	• I-495 Express Lanes
• I-75 South Metro Express Lanes	**Washington**
• I-75 NW Corridor	• I-405 Express Toll Lanes
• I-575 NW Corridor	• SR 167 HOT Lanes
Maryland	• SR 520 Bridge
• I-95 Express Lanes	

HOW DO MANAGED LANES WORK? ARE THERE DIFFERENT APPROACHES DOTS CAN USE TO CONTROL TRAFFIC CONGESTION VIA MANAGED LANES?

Variable tolls are the key to reducing congestion via managed lanes. These tolls are usually charged at a rate that varies with changing traffic demand, a concept known as "dynamic pricing." DOTs may choose to charge all vehicles or exempt certain ones from tolls based on vehicle occupancy, fuel source or vehicle type.

Corridors that have peak period congestion in one direction only may have reversible managed lanes; these lanes operate in the direction with heavier traffic in the morning rush and in the opposite direction during the evening rush. Corridors with peak period congestion in both directions typically have managed lanes operating in both directions at the same time.

HOW ARE TOLLS FROM ETLS AND HOT LANES COLLECTED?

Both ETLs and HOT lanes charge motorists electronically. The key device is a windshield-mounted transponder, which is read by antennas mounted on overhead gantries as the vehicle passes underneath at highway speeds. In most systems, motorists set up pre-paid accounts, from which the charges are deducted. In other cases, the tolling system can generate a bill that is sent to the vehicle owner, identified via the license-plate number. These all-electronic tolling systems use video cameras for license-plate imaging, in most cases to verify that the customer has an account. In addition, license-plate imaging can identify a vehicle that lacks a transponder and either bill the owner or treat the vehicle as a violator.

Operators of toll roads and tolled lanes are working toward nationwide "interoperability" of all-electronic tolling, under which a motorist will need only one transponder and have only one account, but can use tolled facilities nationwide. The largest region with this form of interoperability is the 17-state E-ZPass region in the Northeast and Midwest. Statewide interoperability exists in a growing number of states, and reciprocal agreements exist or are being developed among adjacent states that are not part of E-ZPass.

WHAT ARE THE PERFORMANCE STANDARDS FOR MANAGED LANES? WHAT HAPPENS IF MANAGED LANES FAIL TO MEET THE PERFORMANCE STANDARDS?

All managed lane projects constructed with federal funds—including non-priced high-occupancy vehicle (HOV) lanes—must meet minimum performance standards of operating at

45 miles per hour or higher 90% of the time or more during peak periods. Many HOV lanes across the country, particularly in California, fail to provide those travel speeds. Technically, the federal government could require states to pay back federal funds used for construction of failing managed lanes. As a result, many state DOTs and metropolitan planning organizations (MPOs) are converting their HOV lanes to HOT lanes.

WHAT ARE THE DIFFERENCES BETWEEN HIGH OCCUPANCY VEHICLE LANES, HIGH OCCUPANCY TOLL LANES, AND EXPRESS TOLL LANES?

HOV and high occupancy toll (HOT) lanes, as their names suggest, both permit lane usage based on the number of passengers in the vehicle. Their difference lies in the restrictions themselves. While HOT lanes exempt certain vehicles from paying tolls based on vehicle occupancy (while allowing all vehicles to travel in them), HOV lanes restrict lane usage to high-occupancy vehicles only, which typically includes a number to indicate how many vehicle passengers are needed, *including* the driver (e.g, HOV-3 means one driver and two additional passengers).

The challenge with HOV lanes is that they suffer from the Goldilocks Problem. Most HOV lanes are either "too hot" (too many vehicles using the lane, resulting in congestion) or "too cold" (too few vehicles using the lane resulting in a lot of unused pavement). Adding pricing via HOT lanes or express toll lanes solves this problem by more precisely managing demand: When lanes are underused, solo drivers get the option of paying a toll to avoid congestion. When HOV lanes are too crowded to result in reduced drive times, converting to HOT lanes can bring congestion relief if tolls apply to enough vehicles using the lanes.

Express toll lanes (ETLs) differ from HOT lanes by charging all vehicles regardless of occupancy to use the lane, generally except for buses and registered vanpools (a super carpool with seven or more occupants). ETLs have a number of advantages over HOT lanes. They collect more revenue, meaning that they can be self-supporting if the lane was converted from an existing HOV lane, or possibly self-supporting if the lane is new construction. ETLs are much easier to enforce, since police officers do not need to differentiate carpools from single occupant vehicles. All cars using the lane and not paying the toll are violators; tollroad operators send a bill in the mail to all violators. As a result, ETL systems do not need additional on-site law enforcement officers. Finally, by controlling access via variable pricing, ETLs more consistently provide congestion-free trips during peak periods without charging tolls as high as HOT lanes, where only "low-occupancy" vehicles get charged tolls.

ETLs and HOT lanes, through variable pricing, provide a more flexible and reliable means of managing traffic congestion. While HOV lanes do restrict lane usage, their reliance on occupancy alone typically proves inadequate to effectively achieve improved traffic flows.

DON'T PRICED MANAGED LANES COST MORE TO BUILD AND OPERATE THAN OTHER TYPES OF HIGHWAY LANES?

Since priced managed lanes require technology to charge users and monitor traffic flows, they cost somewhat more than regular lanes, even if the priced lane is created by converting an existing HOV lane. ETLs that involve adding lanes, of course, cost about the same as adding a regular lane in terms of construction, but also require the technology for pricing and traffic monitoring (which can partially be offset with toll revenues).

AREN'T MANAGED LANE TOLLS ANOTHER TAX ON ROADS THAT ARE ALREADY PAID FOR WITH OTHER TAXES?

Managed lanes are an option that drivers can choose to use if the value of better mobility exceeds the amount of the price charged. Generally speaking, taxes typically get paid by all of a given population, regardless of what services those taxpayers receive, while only those who choose to use the managed lane pay tolls. Moreover, there is a legal difference between tolls and taxes. Tolls are dedicated to a specific project. Any funding mechanism dedicated to a specific purpose is defined as a fee, not a tax. Variable pricing is designed to manage traffic, not provide revenue.

HOT lanes that result from HOV conversion generally cover all their costs from the toll revenues generated, and if revenue exceeds those costs, it is used by the state DOT for other transportation improvements. In the case of ETLs that result from new construction, the toll revenue may not be sufficient to fully cover construction and operating and maintenance (O&M) costs. In those cases, the state DOT may provide a portion of the construction cost, and may be entitled to a portion of future excess revenues, if any.

WILL TOLLS EVER BE ELIMINATED FROM PRICED MANAGED LANES?

No: the purpose of variable tolls on managed lanes is to control the demand for lane usage, not to raise revenue. While the revenue is helpful to offset costs, the variable toll's main purpose is to manage usage of the managed lanes themselves to keep them uncongested, especially during peak periods. Removing the tolls would mean removing the demand control, resulting in the congested status quo that the managed lanes were designed to avoid in the first place.

Although converting ETLs or HOT lanes into HOV lanes might provide some management of traffic flows, it would fail to provide the needed demand management to reduce or eliminate congestion, as illustrated by the failure of numerous HOV lanes to meet federal performance standards.[1]

WHAT ARE THE BENEFITS OF MANAGED LANES TO MOTORISTS? CARPOOLERS? EMERGENCY VEHICLES? TAXPAYERS?

From a motorist standpoint, offering less-congested alternatives for road travel where none previously existed provides the driving public with a choice. Newly constructed managed lanes, in addition to benefitting those who choose to use them, help non-users by shifting traffic from the regular lanes. The reduced congestion in the regular lanes gives emergency vehicles a way of reaching emergency situations, patients and hospitals more quickly than in corridors without managed lanes, improving safety and health. HOV and HOT restrictions incentivize carpooling for commuters, which places downward pressure on traffic congestion.

Taxpayers benefit from a new revenue stream that helps pay for highway upkeep but only targets those who wish to pay for the benefits of driving in lanes with higher speeds and more-reliable travel times. Having the choice of paying for saved time or not benefits those who choose to pay, as well as those who don't, by reducing the number of vehicles in "free" lanes.

Such new revenue streams are critical as other revenue sources continue to become less reliable to fund roads. Gas taxes present an obvious example: as vehicle technology continues to improve fuel economy and alternative forms of propulsion (e.g., electric cars) become more widespread, gas taxes will become increasingly ineffective for road funding.

HOW DO MANAGED LANES IMPROVE TRANSIT?

HOT lanes and express toll lanes (ETLs) can be very useful for bus rapid transit (BRT) and express bus service, which work to improve commutes by minimizing stops and cross-traffic. Although BRT services often use lanes specifically dedicated to buses on surface streets, express toll lanes can provide the same function on freeways, allowing buses to travel quickly in an uncongested way.

Express bus services can take advantage of express toll lanes as well. Express buses are designed to operate between residential and employment centers. They typically have several stops in a residential location and several stops in the employment center, but no stops in between. They take direct routes and often originate in a "park and ride lot"—parking lots connected to transit stations that allow commuters living far from transit an

easier means to access it. At little cost to bus agencies, express buses can use ETLs to help ensure reliable trip times.

There is evidence that bus ridership grows when bus services begin to use express toll lanes. In Miami, ridership of express buses increased four-fold in the first five years following the opening of the I-95 express lanes.[2] As more express lanes open and transit systems begin utilizing the new infrastructure with express bus services, more commuters can and will choose bus transit.

HOW DO PRICED MANAGED LANES DIFFER FROM CONVENTIONAL TOLL ROADS?

Priced managed lanes charge vehicles only in those lanes, while conventional toll roads charge all vehicles. The Federal Highway Administration notes that managed lanes vary price in certain time periods to manage demand, changing rates as often as every five minutes. Most conventional toll roads charge the same rate 24 hours a day, 365 days a year regardless of congestion. Managed lanes feature all-electronic tolling using gantries and transponders to collect the tolls. Many toll roads still feature toll-booths, which are far more costly, due to toll-collection staff, cash-management problems, and periodic episodes of "cash shrinkage." Toll booths and plazas lead to lines of idling vehicles, rear-end collisions, and merging problems for motorists, as well as lost time waiting in line to pay the toll.

ARE METRO AREAS BUILDING MANAGED LANE NETWORKS? ARE THERE DIRECT CONNECTORS BETWEEN INDIVIDUAL MANAGED LANES?

Many large metro areas have included managed lane networks in their long-range transportation plans, including Atlanta, Dallas/Fort Worth, Denver, Los Angeles, Miami, Minneapolis, San Francisco, Seattle, and Washington D.C. Many started with a poorly functioning regional HOV network, later converting the HOV lanes to HOT or express toll lanes and adding new segments. Some metro areas have a moratorium on new non-priced general purpose lanes. Therefore, new tolled lanes represent the only viable increase in capacity. Large regions such as Atlanta and Los Angeles have plans for 300–1,000 centerline-miles of variably priced lanes.

Some regions developing managed lanes networks are including connectors between the express lanes. These connectors are vital to providing a congestion-free trip. For example, if a motorist is using the managed lane on Freeway A but needs to transition to the managed lane on Freeway B, without a direct connection between the two, the motorist must exit the first managed lane, cross several lanes of congested traffic in order to shift to Freeway B, and then cross several more lanes of congested traffic to reach that freeway's managed

lane. Faced with that transition, the motorist is likely to stay in the general purpose lanes for the entire trip. Managed-lane-to-managed-lane connectors provide direct connections, decreasing the trip time for existing managed lane users and inducing use by new travelers. For a large metro area with a managed lane network, direct connectors are crucial.

CONCLUSION

For decades, the U.S. highway system has eased the transport of people, as well as goods. Over time, highway usage has increased dramatically, to the point where many metro areas find themselves with immense traffic congestion and limited means to improve traffic flow. By providing a largely uncongested alternative using managed lanes, governments can provide motorists with a consistent, reliable means of completing their commutes. When priced variably to reflect lane usage, governments also can help relieve some of the highway funding uncertainties that many states increasingly face. As former Virginia Secretary of Transportation Aubrey Layne stated about the Commonwealth's decision to embrace tolled managed lanes, "This is not about revenue generation. This is for traffic management…The move is long overdue, and the Express Lanes are a much better use of our assets."[3]

ENDNOTES

1 Federal Highway Administration. U.S. Department of Transportation. "Federal-Aid Highway Program Guidance on High Occupancy Vehicle (HOV) Facility Lanes." Sept. 2016. Web. https://goo.gl/sLdikP (Accessed 11/26/2018)

2 Poole, Robert W. *Express Transit Lanes for Toll Roads*. Policy Brief No. 146. Los Angeles: Reason Foundation, Sept. 2017. Print.

3 Pascale, Jordan. "FAQ: VDOT officials explain how High Occupancy Tolls lanes will work on I-64." *The Virginian-Pilot*. April 12, 2017. Web. https://goo.gl/nKcjZF (Accessed 11/26/2018)

ABOUT THE AUTHORS

Baruch Feigenbaum is assistant director of transportation policy at Reason Foundation, a non-profit think tank advancing free minds and free markets. Feigenbaum has a diverse background researching and implementing transportation issues, including revenue and finance, public-private partnerships, highways, transit, high-speed rail, ports, intelligent transportation systems, land use and local policymaking.

Feigenbaum is involved with various transportation organizations. He is a member of the Transportation Research Board Bus Transit Systems and Intelligent Transportation Systems Committees. He is vice president of programming for the Transportation and Research Forum Washington Chapter, a reviewer for the *Journal of the American Planning Association* (*JAPA*) and a contributor to *Planetizen*. He has appeared on NBC Nightly News and CNBC. His work has been featured in the *Washington Post* and *The Wall Street Journal*.

Prior to joining Reason, Feigenbaum handled transportation issues on Capitol Hill for Representative Lynn Westmoreland. He earned his master's degree in transportation from the Georgia Institute of Technology.

Austill Stuart, a policy analyst at Reason Foundation, serves as editor and co-author of Reason's *Annual Privatization Report* and its *Privatization Newsletter*. Since joining Reason, Stuart has written extensively on matters related to infrastructure, privatization, and government reform, including public-private partnerships, state and local government budgeting, outsourcing of government services, and competitive sourcing in the federal government.

Prior to joining Reason, Stuart worked with policy in a variety of settings—nonprofits, on Capitol Hill, and in fundraising—where areas of focus included small business regulation, privatization, health care, and labor. Before moving to the D.C. area in early 2009, he worked for five years in the financial services industry, mostly in wealth management.