**MTI Research Snaps:** 

#### Congestion-Clearing Payments to Passengers By: Paul Minett (PI) John S Niles Richard Lee Brittany Bogue

Presented by Paul Minett

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#MTIResearchSnaps









#### **Congestion-Clearing Payments to Passengers**

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## + Published Report

https://transweb.sjsu.edu/sites/default/files/1817-Minett-Congestion-Clearing-Payments.pdf

#### Or

https://transweb.sjsu.edu/sites/default/files/1817-RB-Minett-Congestion-Clearing-Payments.pdf

Field work completed pre-Covid-19



# Congestion-Clearing Payments to Passengers

Instead of building infrastructure or pricing congestion:

- "Might authorities be able to manage the volume of peak traffic by paying monetary incentives to reduce congestion?
- Would enough people travel as passengers in carpools, vanpools or buses, to eliminate congestion?
- "If so, at what cost, and with what benefits?
- "Would the benefits exceed the costs?"



## The Incentive Concept

- Reward all people who are traveling as passengers when they cross the bottleneck line
- It does not matter what mode they used previously
- To get more people to travel as passengers, increase the reward
- Put in place as an ongoing solution to manage congestion
- Critical is passenger verification app



## **Rewarding Passenger Travel**

## Frequent Flyer Program For Ground Transportation

Earn miles for all of your commute and travel. Redeem miles for exclusive rewards.









## Incentive Solution Evaluation Methodology



## Case study route in California









# Survey Questions (1 of 2)

- Place of residence, travel in congestion or not, mode of travel, departure time, impact of congestion on you?
- If congestion went away, would any of those change? i.e. start to travel, change departure time, change mode?
- Waiting for congestion to go away, would you help by traveling as a passenger some of the time?
  - Are you the sort of person who would travel as a passenger?
  - If no, would you do it for money?



# Survey Questions (2 of 2)

- If yes, how much money, <u>if it was easy to do</u>, to travel as a passenger
  - On a bus?
  - In a vanpool?
  - In a carpool?
  - In a shared Uber-style of service?
- If not a passenger person even for money, are you the sort of person who would provide a ride?
- If no, would the answer be different if you were paid by the passenger?
  - If yes, how much money to give a passenger a ride?



## If Congestion Went Away





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## Survey Response: Willingness to Share the Ride





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## Reward Sought for Being a Passenger





#### Rewards sought for providing rides Drivers Taking Passengers for \$, morning only







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## 20-year demand growth

Passengers per 15-Minute Period at End of Each Year

Note 0 Passengers Means 100% SOV Demand in Period.

Note Assumption is that All Passengers are Incentivised,

Those Traveling Before 8 am Receive Going-Early Bonus

											Ye	ear									
From	То	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

# Need to limit SOV travel at peak of peak (eventually)

- Options
  - Charge a price for SOV travel at peak
  - Physically constrain SOV travel at peak
  - Provide an HOV bypass so all HOV have preference over SOVs at peak



## **Benefit Cost Analysis**

#### Modelled

- the change in the traffic as congestion is reduced
- the further change to the traffic as intra-peak demand shift occurs, or the cost of preventing it
- population and economic growth for 20-years
- Model
  - benefits for 20 years and discount to present
  - costs for 20 years and discount to present
- Calculate Net Present Value and Benefit Cost Ratio

Congestion-Clearing Pa	iymen	nts	to Pass	sengers	21
20-Year Benefits and Co					
Millions of 2019 Dollar	s, Discou	unt l	Rate: 3%		
Benefit/Cost Description		В	enefits	Costs	
Incentive Multiplier Impact		\$	176.3		
Improved Employment Opportunity Impact	t	\$	126.6		
Reduced Inconvenience Cost		\$	111.9	181,00	00 metric tone
Reduced Vehicle Operating Costs and Emis	ssions	\$	95.9	avaidad	emissions
<b>Reduced Congestion Costs Beyond Corrido</b>	or	\$	63.1	\$2,762	co-benefit of
Reduced Vehicle Delay		\$	35.5		ber lonne,
Reduced Crash Costs		\$	22.6		
Reduced Destination Parking Costs		\$	7.9		
Passenger Incentives				\$ 70.8	
Parking at Bottleneck				\$ 30.9	
Go early incentives				\$ 29.5	
Marketing and Administration				\$ 9.9	
Total		\$	639.8	\$ 141.1	
Benefit Cost Ratio			4.5	1	
Value Created paulminett@tripco	onvergence.co.	\$	498.7		

## **Questions and Extensions**

- Where will the money come from?
- Integration with variable congestion pricing
- Solution solves equity issues that congestion pricing usually raise
- Land-use 'development charges': Present Value of future impact on incentives
- Over 20-years reduces CO<sub>2</sub> emissions by 181,000 tonnes. As a carbon emissions reduction approach it would produce co-benefits of \$2,762 per tonne of carbon reduced.



## Next steps

- Looking for locations to further test methodology
- Looking for funding for pilot project

Thank you for joining us for:

#### **Congestion-Clearing Payments to Passengers**

View the full report at: <u>https://transweb.sjsu.edu/sites/default/files/1817-Minett-</u> <u>Congestion-Clearing-Payments.pdf</u>



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Have a suggestion for a webinar topic you'd like to see featured? Email irma.garcia@sjsu.edu



