

Models and Data

For congestion pricing scenario analysis



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Authority**

Congestion Pricing Policy Advisory
Committee Information Session #3

April 15, 2020

Agenda

- 1. Logistics**
- 2. Introductions**
- 3. Data & Modeling**
- 4. PAC Discussion**
- 5. Public Comment**



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Logistics

Meeting facilitation (Colin)

Managing Zoom process (Paige)

Tech questions (Paige & Abe)

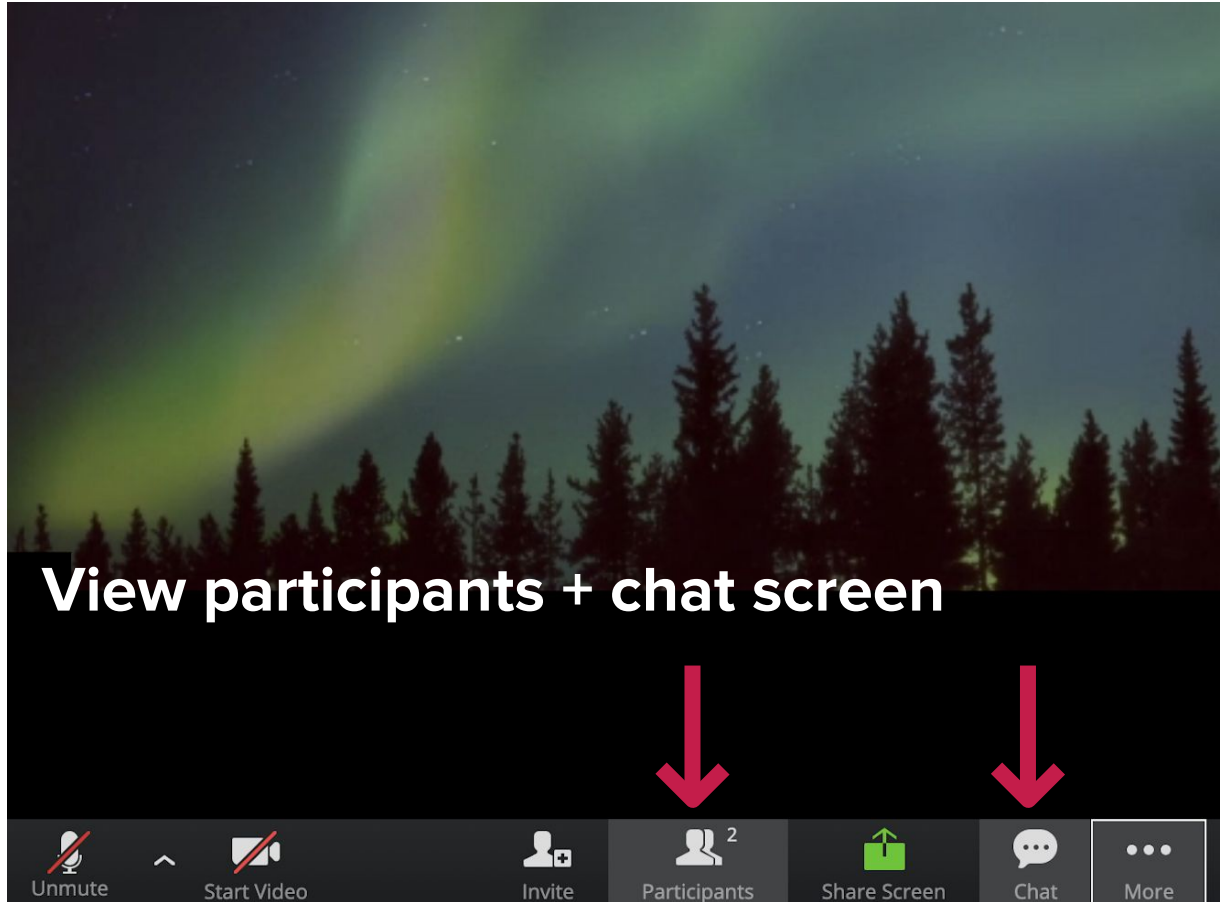


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Using Zoom



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View participants + chat screen

The image shows a Zoom meeting interface with a background of the aurora borealis. The bottom toolbar contains several icons: Unmute (muted), Start Video (video off), Invite, Participants (with a '2' indicating two participants), Share Screen, Chat, and More. Two red arrows point down to the 'Participants' and 'Chat' icons, indicating where to click to view the participants and chat screen.

Using Zoom

Mute/Unmute your microphone
(*6 on phone)



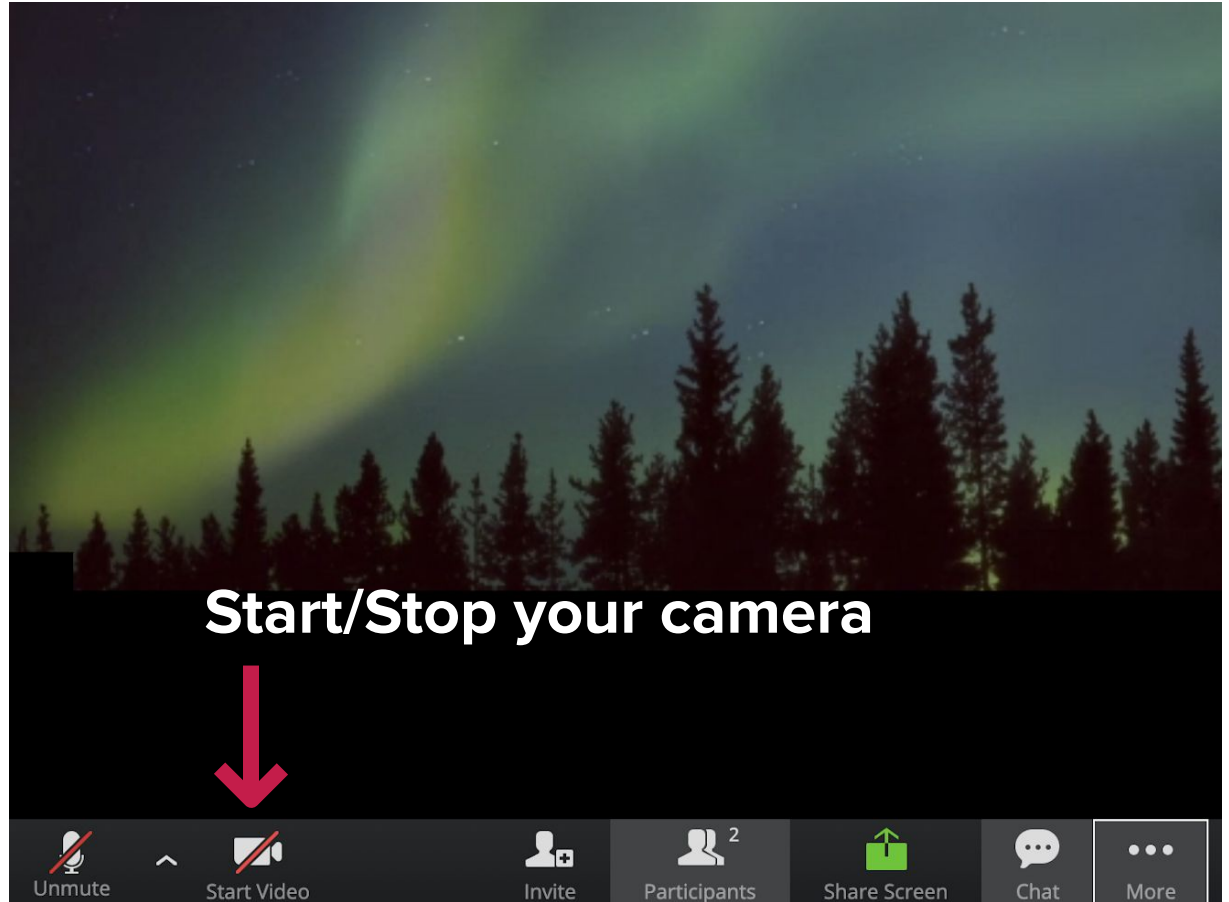
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Using Zoom



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A screenshot of a Zoom meeting interface. The background is a video of the aurora borealis over a forest. The Zoom control bar is at the bottom, with a red arrow pointing to the 'Start Video' button. The control bar includes buttons for Unmute, Start Video, Invite, Participants (2), Share Screen, Chat, and More.

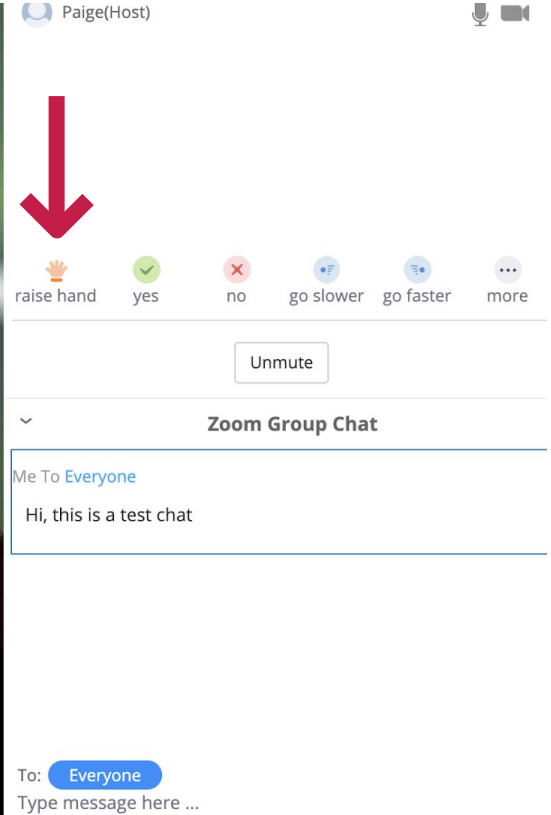
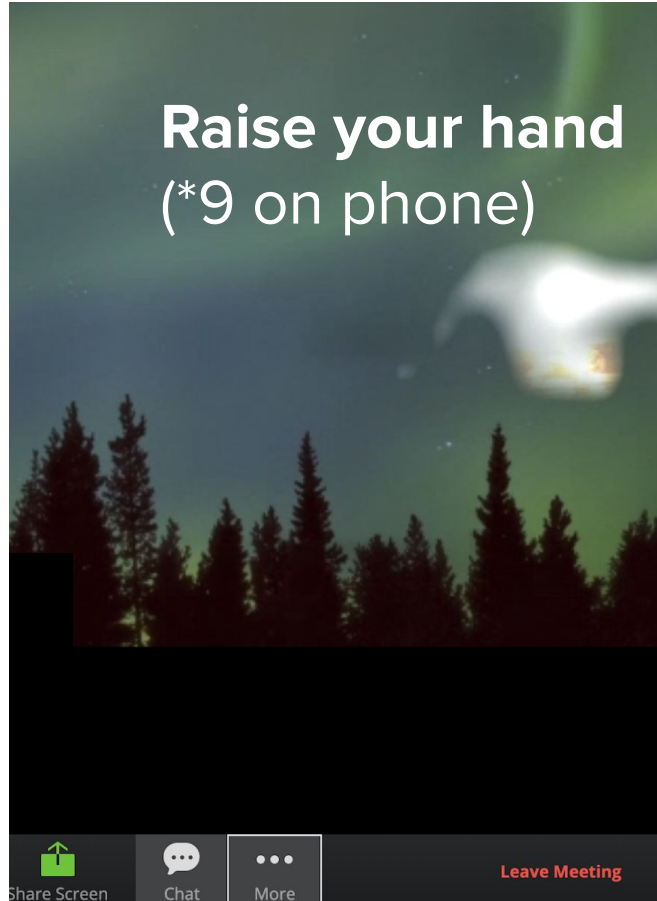
Start/Stop your camera

Unmute Start Video Invite Participants² Share Screen Chat More

Using Zoom



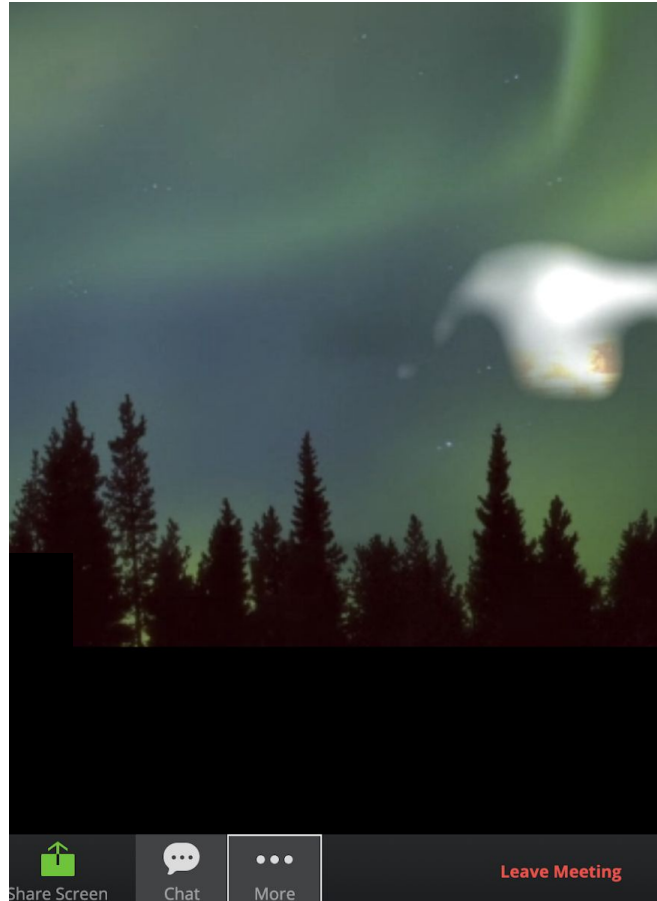
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Paige(Host)



raise hand yes no go slower go faster more

Unmute



Zoom Group Chat

Me To Everyone

Hi, this is a test chat



To: Everyone

Type message here ...

Share Screen

Chat

More

Leave Meeting

Using Zoom

PAC members

- Update your name and organization in Zoom
- “Raise hand” to speak (*9 on phone, *6 to mute/unmute)

Members of the Public

- Submit questions via chat
- Public comment period at end of meeting



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Using Zoom

Having trouble?

- Tell us in the chat
(if you can)
- Text 415-930-3132



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Introductions

Transportation Authority
Staff

PAC Members



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Models and Data



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Overview

What are models?

Why do we use them?

What models are we using?

**How do they work and
what data do they use?**

**How are we using them
in this study?**



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Why models?

Models are representations of real world processes

They are used to estimate what happens in response to policies and changing conditions

Models are developed and validated using real-world data



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Why models for Congestion Pricing?

SF-CHAMP is a model that simulates typical daily travel behavior for the Bay Area

SF-CHAMP models congestion pricing:

- Configurations, prices, time of day variability, discounts and exemptions, transit investments

SF-CHAMP produces many of the Congestion Pricing Evaluation metrics

- Vehicle trips, person trips, delay, transit crowding, access to jobs, mode split
- Vehicle miles traveled (vmt), used in estimating emissions and crashes



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What is included?

Daily travel of Bay Area Residents

Non-resident models

- Interregional travelers – workers and other travelers entering or leaving the Bay Area
- Visitors (tourism) – travel from people staying in hotels
- Light-duty commercial – local deliveries and services (i.e. plumbing)
- Freight and trucks – heavy duty goods movement



Percent of Travel by Source



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PERCENT OF TRIPS IN NORTHEAST SF

PERCENT OF ALL TRIPS

**Bay Area Resident
Travel**

63%

81%

Interregional Travel

1%

3%

Visitors

9%

1%

Commercial

25%

14%

Trucks

2%

1%

What goes into the model?

Travel diaries

- Recruitment designed to target hard-to-reach populations
- Available by paper, phone, and online
- Incentives to participate

TNC data

- Detailed TNC trip data with origin, destination, time of day

Traffic volumes

Transit ridership



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What goes into the model?

Scenario inputs

- **Land use** (homes and jobs)
- **Networks** (streets, transit, bike lanes, bridge tolls)
- **Households and people** (with demographic attributes)

Scenario outputs

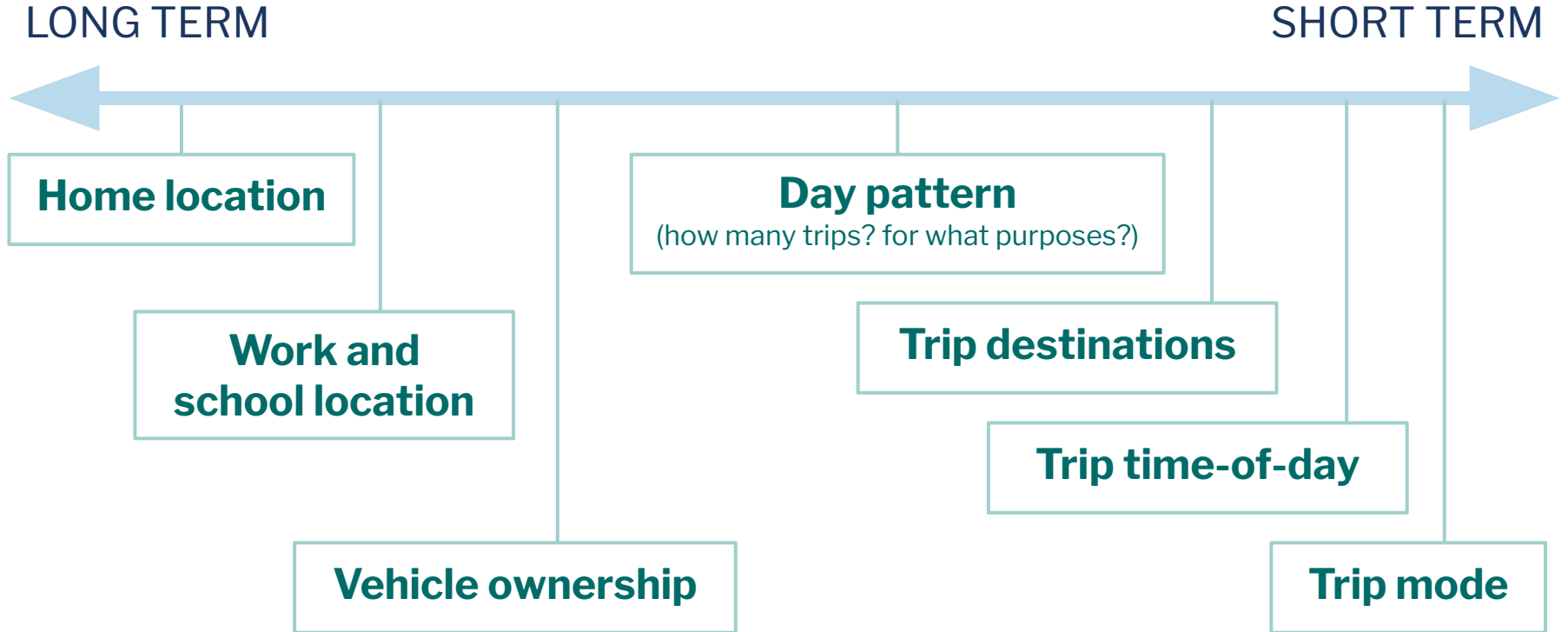
- **Travel records** (trips by origin, destination, mode, purpose, time of day)
- **Road and transit network conditions** (vehicle volumes, transit ridership, vehicle delay, transit delay, transit crowding)



How does the model represent choices?



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Worker Flows to San Francisco by County



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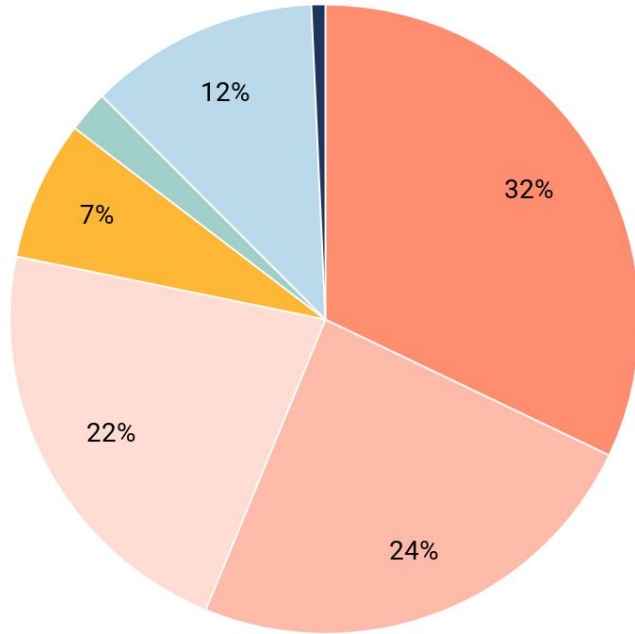
	OBSERVED	ESTIMATED
San Francisco	58%	60%
San Mateo	12%	15%
Santa Clara	2%	2%
Alameda	11%	13%
Contra Costa	9%	4%
Solano	1%	1%
Napa	<1%	<1%
Sonoma	1%	1%
Marin	5%	5%

Bay Area Mode Share

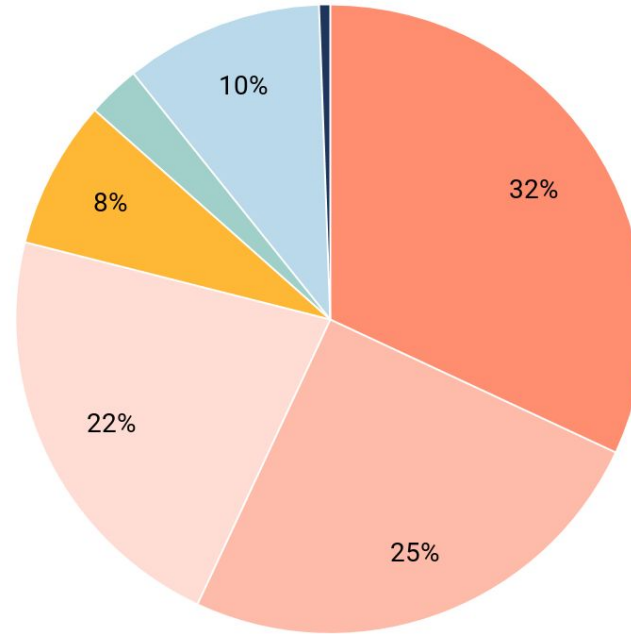


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Observed



Estimated

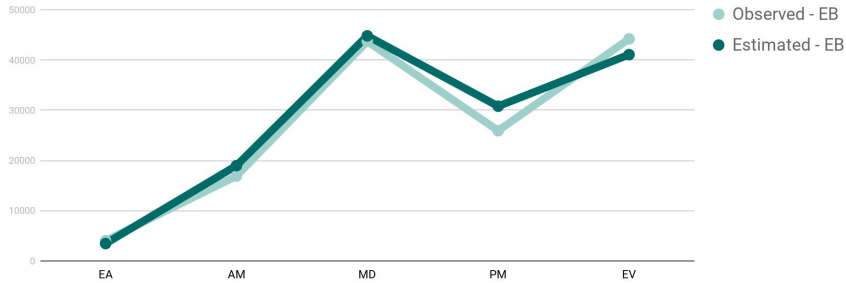


- Drive Alone
- Shared Ride 2
- Shared Ride 3+
- Transit
- Bike
- Walk
- School Bus

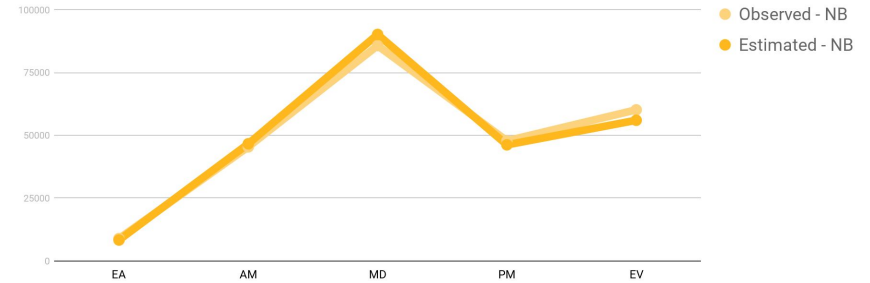
Model Validation Examples



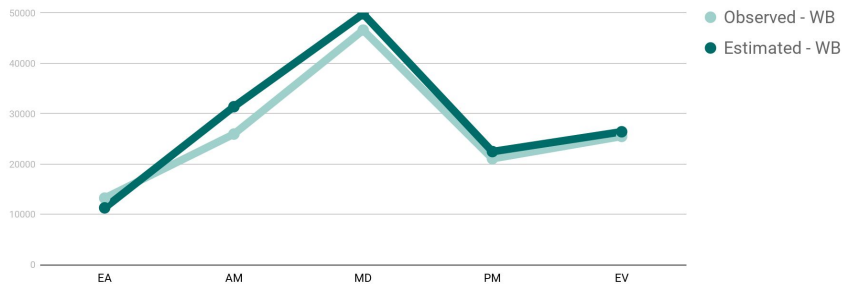
Oakland Bay Bridge - Eastbound



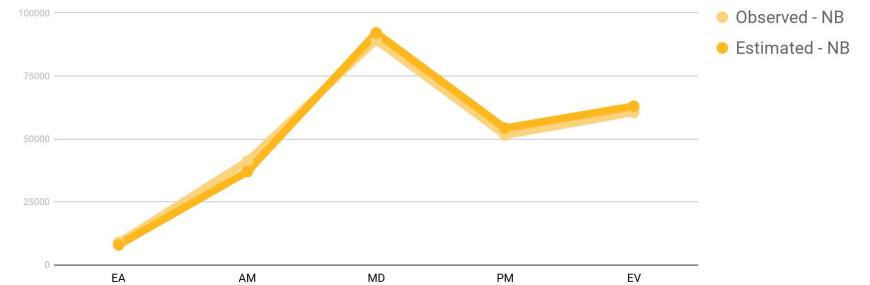
SF/SM County Line - Northbound



Oakland Bay Bridge - Westbound



SF/SM County Line - Southbound



Congestion Pricing Example

Scenario 1: 2015 Base

- Includes population, homes, jobs, road and transit networks from 2015

Scenario 2: 2010 Congestion Pricing (MAPS) Study Recommendation

- 2015 Base plus:
 - Bi-directional cordon charge for northeast San Francisco
 - \$4 Peak-period, free at other times
 - 50% discount for low-income drivers and zone residents (not modeled)



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Example Results



	AM PEAK PERIOD				DAILY CONGESTION CHARGE PAID
	VEHICLE TRIPS	PERSON TRIPS	VMT	VHD	
2015 Base	155,305	432,303	307,126	11,524	\$0
2015 MAPS	136,448	425,779	276,658	9,846	\$714,911
Total Change	-18,856	-6,524	-30,468	-1,679	\$714,911
Percent Change	-12%	-2%	-10%	-15%	--

Updated Study Timeline



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PAC Discussion

sfcta.org/downtown



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Public Comment

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