



U.S. Department  
of Transportation

**Federal Highway  
Administration**



# **Expected Impacts of City-Level Parking Cash-Out and Transit Benefit Ordinances**

October 30, 2017

# What is Parking Cash Out?



- Employers that subsidize parking offer commuters the option to take a benefit of equivalent monetary value instead of the parking subsidy
- The benefit could pay for public transit or another tax-free commute alternative and the employee would pocket the rest as taxable cash (or pocket all of it if carpooling, bicycling, or walking to work)

# Objectives

- **Analyze and evaluate the impact** that city-level parking cash-out ordinances could have **on vehicle travel**, as well as congestion, emissions and other driving-related externalities
- **Provide a resource to inform** city governments considering development of **local parking cash-out ordinances**

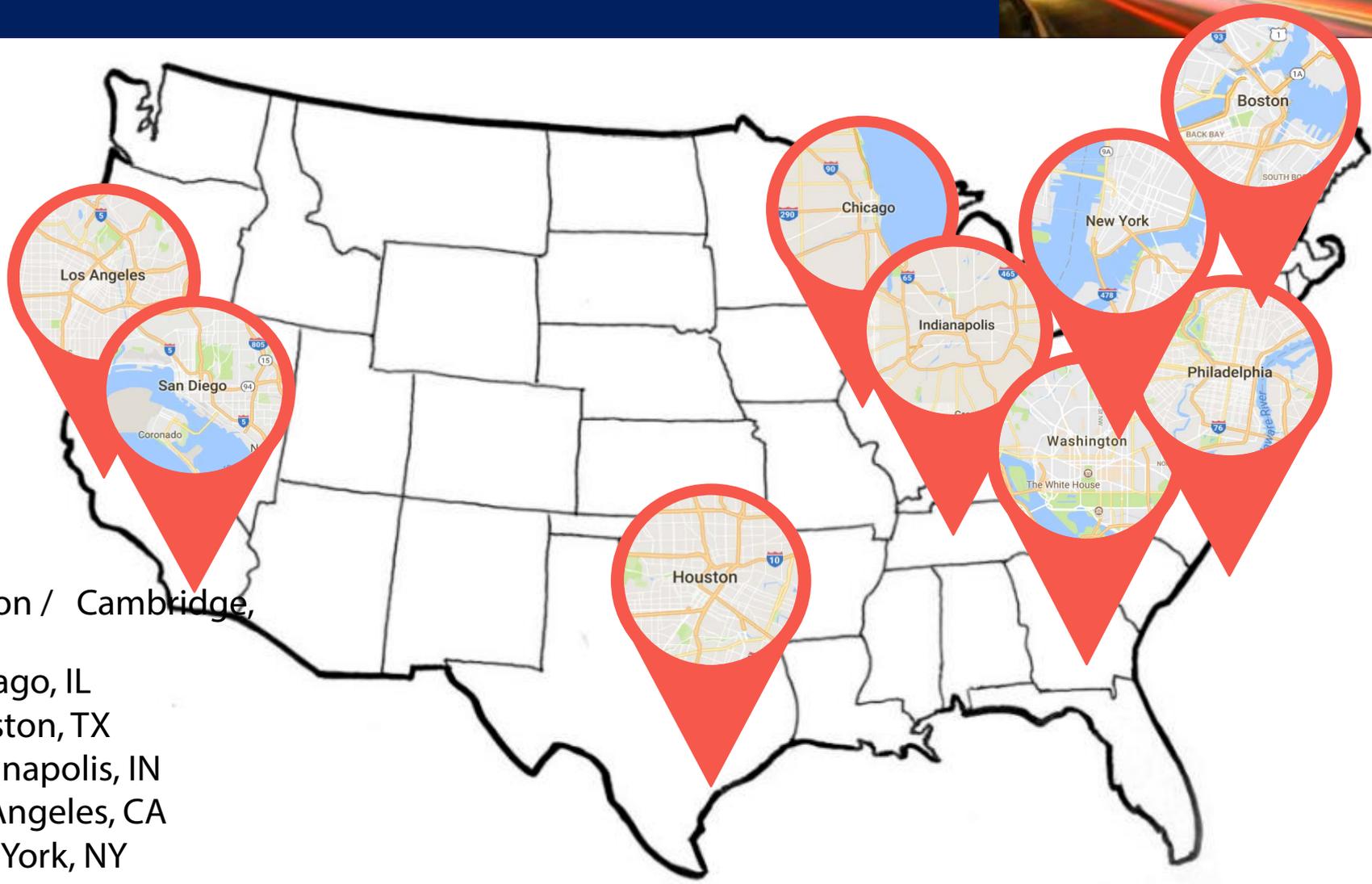


# Examples of Parking Cash Out



- Ordinances
  - California State Law
  - Rhode Island State Law
  - Washington, D.C. (proposed)
- Employer-Provided
  - Seattle Children's Hospital
  - City of Austin, TX
  - Intuit
  - Google

# Nine Cities Analyzed



- Boston / Cambridge, MA
- Chicago, IL
- Houston, TX
- Indianapolis, IN
- Los Angeles, CA
- New York, NY
- Philadelphia, PA
- San Diego, CA
- Washington, DC

# Six Scenarios Analyzed



	<i>Affected by Requirement</i>	
	Employers offering free parking	Employers NOT offering free parking
Scenario 1: Monthly Parking Cash Out	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Scenario 2: Monthly Employer-paid Transit/ Vanpool Benefit	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Scenario 3: Monthly Parking Cash Out + Incentive for Daily Cash Out	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Scenario 4: Monthly Parking Cash Out + Pre-Tax Transit Option for Employees without Subsidized Parking	<input checked="" type="checkbox"/> Cash-out	<input checked="" type="checkbox"/> Offer pre-tax transit benefit
Scenario 5: Incentive to Eliminate Subsidized Parking + Provide Employer-paid Transit/Vanpool Benefit	<input checked="" type="checkbox"/> Eliminate parking benefit, add transit benefit	<input checked="" type="checkbox"/> Add transit benefit
Scenario 6: Peak Parking Surtax	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# Six Scenarios Analyzed



## **Only for Employers that Offer Subsidized Parking:**

**Scenario 1: Monthly Parking Cash Out:** Requires employers to offer employees the option to cash out their parking on a monthly basis. The cash-out value is equal to the monthly parking rate but no less than the average cost of riding transit.

**Scenario 2: Monthly Employer-paid Transit/Vanpool Benefit:** Requires employers to offer employees for whom they are subsidizing parking tax-exempt transit and vanpool benefits up to the maximum allowed by law for each commuter, but not in excess of the value of the parking benefit.

**Scenario 3: Monthly Parking Cash Out + Incentive for Daily Cash Out:** Requires employers to offer monthly cash out and provides tax credits to encourage employers to offer daily cash out instead of monthly cash out.

# Six Scenarios Analyzed



## All Employers:

**Scenario 4: Monthly Parking Cash Out + Pre-Tax Transit Option for Employees without Subsidized Parking:** Requires employers that offer subsidized parking to also offer parking cash out; requires all other employers to make a pre-tax transit option available to all employees.

**Scenario 5: Incentive to Eliminate Subsidized Parking + Provide Employer-paid Transit/Vanpool Benefit:** An ordinance that uses a tax credit to encourage employers to cease subsidizing parking and begin offering employer-paid transit/vanpool benefits, OR for employers that do not subsidize parking to begin offering transit/vanpool benefits.

**Scenario 6: Peak Parking Surtax:** Requires parking providers charge a surtax on parking fees during a peak period. The fee is assumed to be \$3 per entrance or exit (up to \$6 total) during morning or evening peak-period hours.



# Key Inputs and Outputs

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## Key Inputs

- Employee population
  - Number of employees with access to subsidized parking
- Employee commute characteristics
  - Mode shares for those with free parking (as available)
- Travel cost factors
  - Driving costs
  - Parking costs
  - Transit costs
- Driver responses (travel elasticities)

## Key Adjustments

- For California cities where some employers are already offering cash out because of the statewide law, employees working for such employers are excluded from the analysis of the cash-out scenarios
- For scenarios entailing employer-paid transit/vanpool benefits or a transit/vanpool pre-tax option, the proportion of employees already offered such benefits were excluded from the analysis
- Benefit values adjusted based upon taxation rules

## Key Outputs

- Reduction in vehicle-miles traveled (VMT)
- Reduction in driving-related externalities
  - Congestion
  - Emissions
- Reduction in parking infrastructure costs

# Key Inputs: Mode Shares



Data	New York	Chicago	Philadelphia	Washington, DC
Drive-alone mode shares for employees with access to subsidized parking	76.2%	66.2%	65.6%	76.4%
Drive-alone mode shares for employees generally	24.3%	48.3%	43.4%	49.6%
Source	NY/NJ household travel survey from 2010/2011	CMAP Travel Tracker, 2007/2008	DVRPC, Household Travel Survey, 2012	MWCOG, Household Travel Survey, 2007/2008

Other cities did not have local data on mode shares for employees with subsidized parking. For Houston, San Diego, and Indianapolis, we used city-wide mode shares, which are equal to or higher than the highest rate for employees with subsidized parking among the four cities for which we do have data (76%). For Los Angeles, we used the Washington, DC drive-alone rate (76.4%); for Boston/Cambridge, we used the Philadelphia drive-alone rate (65.6%).

# Key Inputs: Employment & Parking Rates



## City Employment

	Houston	New York	Los Angeles	Chicago	San Diego	Philadelphia	Indianapolis	Washington	Boston/ Cambridge
Employee population, citywide	1,698,565	4,411,239	1,955,928	1,416,903	835,860	720,695	509,575	807,648	711,459
% employees offered fully subsidized parking*	41%	4.3%	86.8%	51.9%	86.8%	51.9%	78.9%	31.0%	51.9%
# employees with access to fully subsidized parking	696,412	187,478	1,696,768	735,373	725,109	374,041	402,055	250,371	369,247

\*Local survey data used for Houston, New York, San Diego, Philadelphia, Indianapolis, and Washington. When no local data available, used comparable city (Los Angeles used San Diego figure; Chicago and Boston/Cambridge used Philadelphia figure).

## Parking Rates

	Houston	New York	Los Angeles	Chicago	San Diego	Philadelphia	Indianapolis	Washington	Boston/ Cambridge
Monthly parking rates, CBD*	\$160	\$562	\$221	\$289	\$175	\$313	\$115	\$270	\$371
Per-day monthly rate, CBD	\$8.42	\$29.58	\$11.63	\$15.21	\$9.21	\$16.47	\$6.05	\$14.21	\$19.53
Per-day monthly rate, non-CBD (equal to daily transit trip cost)	\$7.00	\$7.21	\$6.95	\$6.00	\$3.89	\$8.58	\$3.16	\$9.53	\$5.68
Per-day monthly rate, average citywide	\$7.14	\$17.26	\$7.27	\$9.25	\$4.34	\$11.20	\$3.57	\$11.73	\$12.79

\*Monthly parking rates for CBD from Colliers (2012), with exception of Boston/Cambridge, which was estimated.



# Key Assumptions and Approaches

# Key Assumptions



- Based on current conditions, including:
  - Employment data
  - Driving patterns
  - Emissions rates
- Assumes full adoption and compliance with the ordinance under each scenario
- Assumes for tax-credit Scenarios 3 and 5, 20% of employees work for employers responding to the credit
- Assumes no transit capacity restrictions (e.g., significant shifts to transit occur in some scenarios, but these shifts are not limited by transit capacity constraints)
- Price elasticity of travel demand = -0.30

# Key Assumption – Elasticity of Travel Demand



- Review of applicable literature found a wide range of elasticities, varying from -0.08 to -0.39
  - Meta-analysis by Concas and Nayak (2012) found a U.S. estimate of -0.30
  - Farber and Weld (2013) also point to an average of -0.30 based on Eugene, OR data
  - Other studies show similar results
- Elasticity of -0.30 was used for this study

# Key Assumption – Relationship of VMT and Congestion Reduction



- Notes that only 54.9% of peak-period trips are for work, with commuter-related incentives not impacting other peak trips.
- Highlights the San Francisco Parking Supply and Utilization Study showing delay reductions 1.55 times higher than VMT reductions resulting from scenarios most similar to those analyzed by FHWA.
- To scale the 1.55 multiplier to the nine cities FHWA studied, retrieves Texas Transportation Institute Urban Mobility Report data showing annual hours of person delay per VMT as a proxy for the general level of roadway congestion.
- San Francisco's "congestion proxy" result of 2.796 compares to a range from 1.273 (San Diego) to 2.699 (NYC) in the nine cities. Assuming a 1.0 VMT-to-congestion multiplier for San Diego as the "floor," and then using the congestion proxy to linearly scale up to the 1.55 multiplier for San Francisco, the NYC multiplier is the highest among the nine cities at 1.52.

# Scenario 1: Monthly Parking Cash Out



Two approaches used:

1. Calculated using the Trip Reduction Impacts for Mobility Management Strategies (TRIMMS) model, accounting for change in price of parking (representing cash-out value as the “opportunity cost” of parking)
2. Calculated based on % change in cost of trip and -0.30 price elasticity of travel (typically yielded larger impacts than TRIMMS)

Averaged the results of both methods

Results shown separately for affected employees and citywide commuting:

	Houston	New York	Los Angeles	Chicago	San Diego	Philadelphia	Indianapolis	Washington	Boston/ Cambridge
% change VMT, of employees offered fully subsidized parking	-9.4%	-29.8%	-16.5%	-20.3%	-10.5%	-22.4%	-7.9%	-18.5%	-26.6%
% change commute VMT, citywide	-3.8%	-2.9%	-14.7%	-14.7%	-8.6%	-14.7%	-6.3%	-8.7%	-19.7%

# Scenario 2: Monthly Employer-paid Transit/Vanpool Benefit



Calculated using Scenario 1 approach but with lower transit/vanpool benefit values:

- Then assumes that only employees who shifted to transit/vanpools would take the benefit
- Finally, assumes 25% who shifted to other modes would take the employer-paid transit/vanpool benefit

Overall, yields less impact than Scenario 1



# Scenarios 3 and 4: Monthly Parking Cash Out + Other Options



## **Scenario 3: Monthly Cash Out + Incentive for Daily Cash Out**

- Assumed 20% of employees work for employers offering subsidized parking and taking the incentive to offer daily instead of monthly cash out
- A Minneapolis pilot tested a strategy similar to daily cash out, yielding a 16% reduction in solo driving from monthly employee-paid parking

## **Scenario 4: Monthly Cash Out + Pre-Tax Transit Option**

- On top of results of Scenario 1, added effects of a pre-tax transit option for employees without access to subsidized parking
- Used elasticity of transit ridership with respect to transit price of -0.15 to calculate increase in transit riders and reduction in drivers

## Scenario 5: Incentive to Eliminate Subsidized Parking + Provide Employer-paid Transit/Vanpool Benefit



- Among employers that offered subsidized parking:
  - Assumed 20% of employees work for employers that take the incentive and stop subsidizing parking, plus offer a paid transit/vanpool benefit
  - Used similar approach to Scenario 1, with midpoint between TRIMMS analysis and elasticity calculation
- Among employers that did not offer subsidized parking:
  - Assumed 20% of employees work for employers that take the incentive and add a transit/vanpool benefit
- Summed results

# Scenario 6: Peak-Parking Surtax



## Scenario assumptions:

- Applies a \$3 fee to vehicles entering/leaving parking facilities during peak hours (up to \$6/day total)
- Applies the fee universally (even those with previously free parking must pay the surtax)

## Approach:

- Used Puget Sound Regional Council (PSRC) Traffic Choices Study elasticity of tolled miles with respect to generalized travel costs of -0.689. (This study involved per-mile fees that varied by time-of-day.)
- Calculated \$6 fee on top of baseline average driving costs, and applied elasticity to estimate reduction in peak-period travel
  - Yields very large reductions in peak trips (15-45% reduction)
- Used data from PSRC study to estimate that  $\frac{1}{4}$  of peak period vehicle trip reductions were due to shifts to other modes (overall trips reduced), while  $\frac{3}{4}$  shifted to non-peak periods

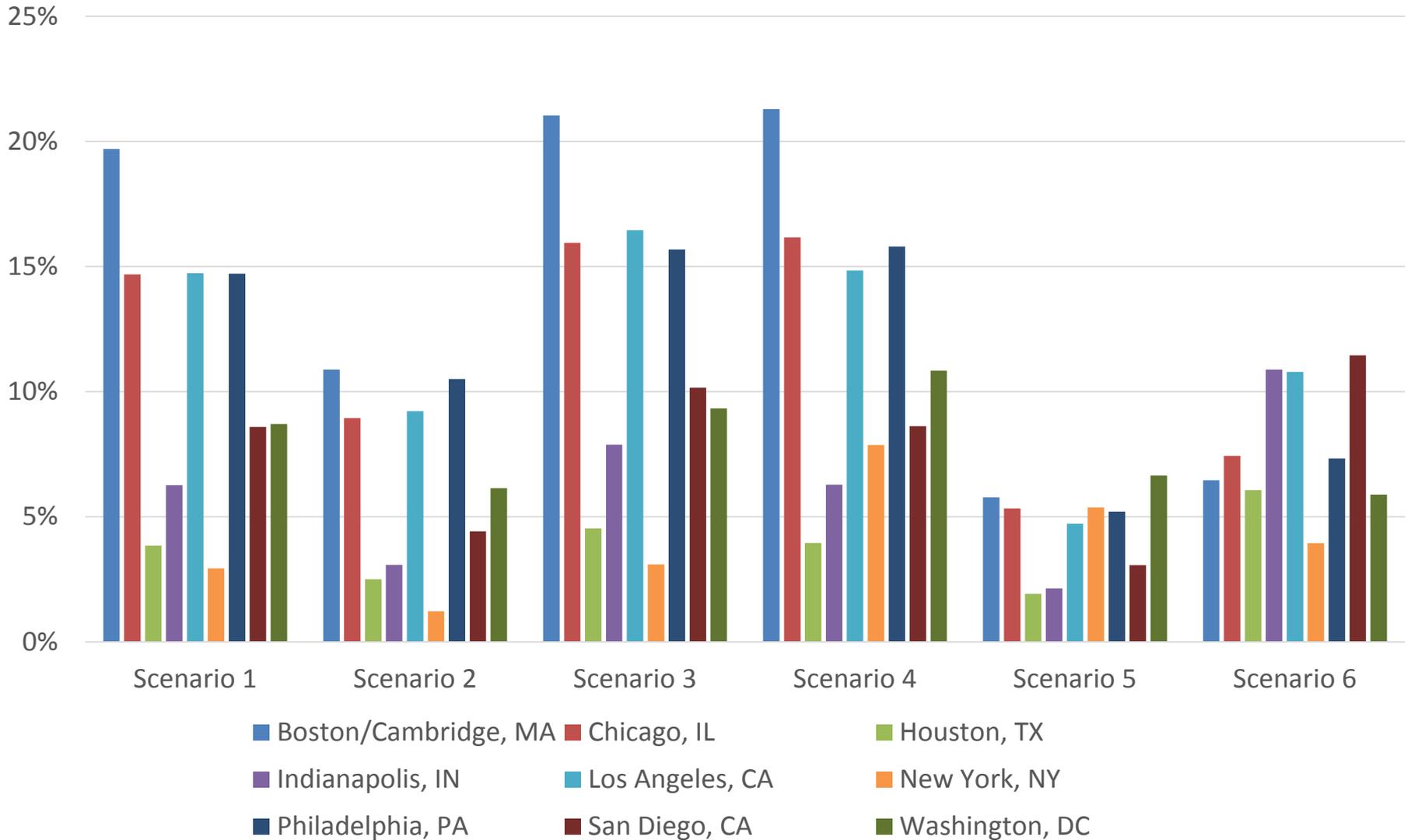


## Results and Conclusions

# VMT Reductions by Scenario



VMT Reduction as Percent of Citywide VMT



# Scenario-Specific Conclusions



- Parking cash-out requirements (Scenario 1 and Scenario 3, which adds an incentive for daily cash out) show significant potential for VMT reduction
  - Scenario 3 shows somewhat greater reductions due to assumed attractiveness of the more flexible daily option
- Employer-paid transit/vanpool requirement (Scenario 2) shows more modest (but still substantial) reductions than full monthly cash out
- Adding a requirement that employers offer a pre-tax transit option (Scenario 4) provides additional impacts, particularly in cities where relatively few employers subsidize parking
  - The proportion of employees responding is likely to be small due to employees needing to set aside transit money in advance and only being able to pocket the tax savings
  - Since, however, the policy applies in many cities to a large population of employees who do not currently receive subsidized parking, it does offer modest overall impact

# Scenario-Specific Conclusions



- An incentive to eliminate employer-paid parking benefits and add employer-paid transit/vanpool benefits (Scenario 5) yields very large impacts for employees working at firms that accept the incentive
  - Analysis assumed that only 20% of employees see such an incentive scheme (although results from 100% adoption were also calculated)

# Scenario-Specific Conclusions

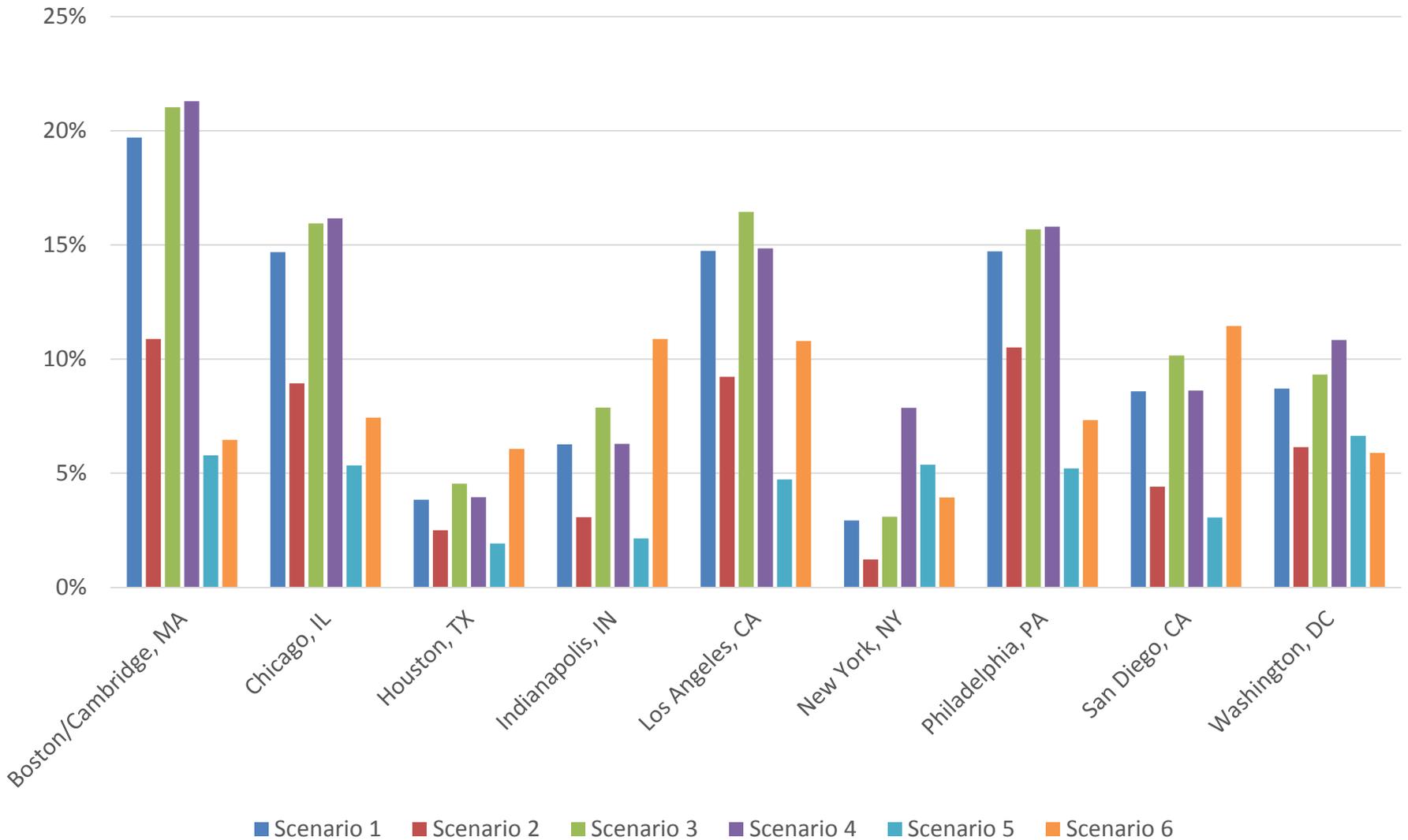
- A peak-period parking surcharge (Scenario 6) offers very large reductions in peak-period VMT, with more modest reductions in total VMT
  - Unique since it targets peak-period travel rather than all commute VMT
  - About one-quarter of employees who stop driving in the peak period shift to other modes, and three-quarters shift to off-peak periods



# VMT Reductions by City



## VMT Reduction as Percent of Citywide Commute VMT



# City-Specific Conclusions



- Higher VMT reduction in some cities where:
  - high parking rates
  - lower drive-alone mode share - existing transit infrastructure is good or the option is perceived to be viable
- Lower than expected VMT reduction in some cities where:
  - high citywide drive-alone share (e.g., Houston and Indianapolis: drive-alone shares of 80 percent or higher)
  - low share of employees receiving subsidized parking (e.g., New York)

# Summary: Reduction in VMT as a Percentage of Citywide VMT



	Sc 1: Monthly Cash Out	Sc 2: Employer -paid Transit/ Vanpool	Sc 3: Monthly Cash Out + Daily Cash Out*		Sc 4: Cash Out + Pre-tax Transit	Sc 5: Eliminate Parking Benefit + Employer-paid Transit/ Vanpool*		Sc 6: Peak Parking Surtax
			20%	100%		20%	100%	
<b>Boston/Cambridge, MA</b>	20%	11%	21%	26%	21%	6%	29%	6%
<b>Chicago, IL</b>	15%	9%	16%	21%	16%	5%	27%	7%
<b>Houston, TX</b>	4%	3%	5%	7%	4%	2%	10%	6%
<b>Indianapolis, IN</b>	6%	3%	8%	14%	6%	2%	11%	11%
<b>Los Angeles, CA</b>	15%	9%	16%	23%	15%	5%	24%	11%
<b>New York, NY</b>	3%	1%	3%	4%	8%	5%	27%	4%
<b>Philadelphia, PA</b>	15%	11%	16%	20%	16%	5%	26%	7%
<b>San Diego, CA</b>	9%	4%	10%	16%	9%	3%	15%	11%
<b>Washington, DC</b>	9%	6%	9%	12%	11%	7%	33%	6%

# Summary: Reduction in Congestion (Vehicle Hours of Delay)



	Sc 1: Monthly Cash Out	Sc 2: Employer -paid Transit/ Vanpool	Sc 3: Monthly Cash Out + Daily Cash Out*		Sc 4: Cash Out + Pre-tax Transit	Sc 5: Eliminate Parking Benefit + Employer-paid Transit/ Vanpool*		Sc 6: Peak Parking Surtax
			20%	100%		20%	100%	
<b>Boston/Cambridge, MA</b>	20%	11%	21%	26%	21%	6%	29%	28%
<b>Chicago, IL</b>	15%	9%	16%	21%	16%	5%	27%	33%
<b>Houston, TX</b>	4%	3%	5%	8%	4%	2%	10%	27%
<b>Indianapolis, IN</b>	5%	3%	7%	12%	5%	2%	9%	40%
<b>Los Angeles, CA</b>	16%	10%	18%	26%	16%	5%	26%	52%
<b>New York, NY</b>	3%	1%	4%	4%	9%	6%	31%	19%
<b>Philadelphia, PA</b>	15%	11%	16%	20%	16%	5%	27%	32%
<b>San Diego, CA</b>	6%	3%	8%	12%	7%	2%	12%	37%
<b>Washington, DC</b>	9%	7%	10%	13%	11%	7%	35%	27%

# Questions & Contacts

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# Parking Cash-Out

IPI Webinar  
October 18, 2017





# California Parking Cash-Out Law

Went into effect in 1993

Applies to:

- Employers with 50 or more employees
- Located in a Non-Attainment Air Basin
- Subsidize parking that employers don't own
- Can determine the amount of the parking subsidy AND
- Can reduce the number of parking spaces leased with out penalty

Little enforcement statewide





# Santa Monica Ordinance

Local Transportation Demand Management Ordinance requires employers with 30+ employees to submit an Emission Reduction Plan (ERP) annually

Parking Cash Out (PCO) is required as an element of the ERP if the state law applies to the employer

If PCO is not included in their plan it will not be approved and the employer would be subject to fines and/or revocation of business license





# Santa Monica Implementation

Help employers subject to law with implementation

Determine the value of cash-out (can be an average of parking expenses)

Provide a template agreement for employers to use with their employees (states that the employee will not drive alone to work more than a given number of days per month)

Set aside a few parking spaces for occasional use by PCO participants





# Santa Monica Results

When it is offered it is the single most effective TDM measure for our employers

Limited applicability (as many employers have long-term leases with bundled parking)

Requiring parking to be unbundled in future developments so that there will be greater applicability

When we have the option we are requesting a daily cash-out





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