

Commuter Connections TDM Evaluation FY 2021 – FY 2023 Interim Results

**Presentation to
Commuter Connections
Subcommittee
July 18, 2023
LDA Consulting
with
CUTR, ESTC, WBA Research**





Analysis Methodology

Commuter Connections TDM Evaluation

Comprehensive **triennial** evaluation of TDM Program Elements to document TDM program results, guide program decision-making, and communicate program value to funders and other stakeholders

Evaluation activities

- Track participation in TDM elements
- Track marketing/outreach activities
- Conduct surveys/data collection
- Conduct triennial analysis

Triennial analysis applies methodology outlined in the Evaluation Framework:

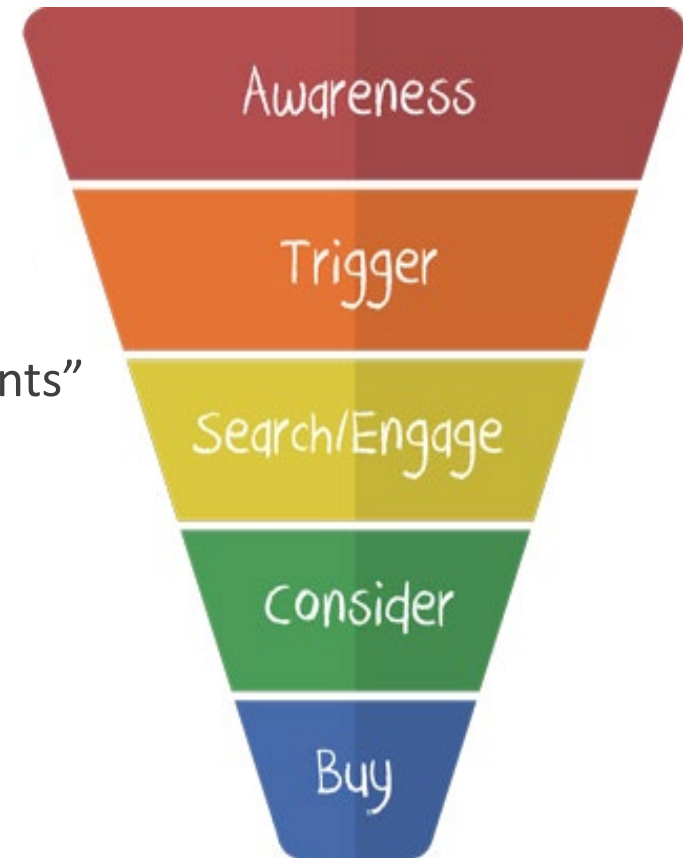
- Estimate impacts of each program element
- Correct for overlap between elements
- Estimate societal benefit cost savings
- Prepare triennial **Impact Report**

2021-2023 TDM Elements:

- Telework
- Guaranteed Ride Home
- Employer Outreach
- Mass Marketing
- Commuter Operations Center; IR Software Upgrades

Continuum of Performance Measurement

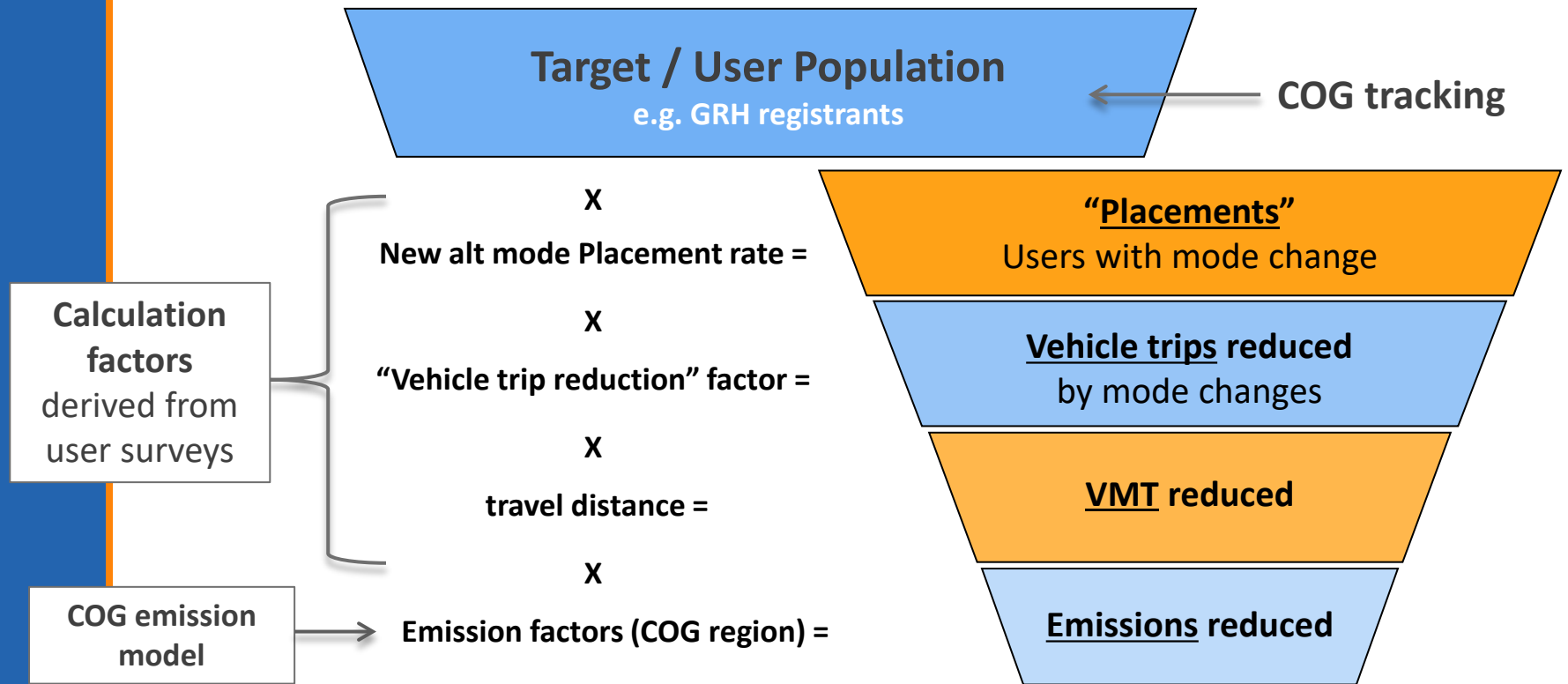
- **Awareness** – modes/programs
- **Attitudes** – willing to try modes
- **Participation** – CC services used
- **Satisfaction** – with services
- **Utilization** – travel change “placements”
- **Influences** – motivations for change
- **Impacts** of behavior change
 - Alternative mode placements
 - Vehicle trips reduced
 - VMT reduced
 - Emissions reduced
 - Energy saving
 - Delay reduction
 - Societal cost savings (\$ benefits)



Impact Calculation Approach

Calculation approach uses a series of “multiplier” factors, applied to user population for each TDM program element.

Same approach for all elements, with factors unique to each element.





Overall TDM Program Impacts

<u>Indicator</u>	<u>Goal</u>	<u>Impact</u>	<u>Net</u>	<u>% VS Goal</u>
Trips reduced	147,015	123,648	(23,367)	- 16%
VMT reduced	2,721,949	2,240,986	(480,963)	- 18%
NOx reduced	1.1847 T	0.4725 T	(0.7122) T	- 60%
VOC reduced	0.6581 T	0.3875 T	(0.2706) T	- 41%

Impacts fell short of goals for vehicle trips (-16%) and VMT (-18%)

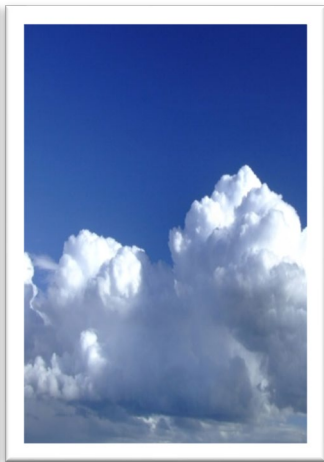
Without doubt, the commute disruption from the coronavirus pandemic was a significant factor in the shortfalls, due to reduced participation in most programs

Shortfall in emission goals due in part to reduced emission factors for 2023 (cleaner cars) and shift to MOVES emission model since goals were assigned

* Impacts represent only 30 months; Goals represent full 36-month evaluation period.

TERM Societal Benefits

- The TDM analysis is primarily undertaken to report program performance against regional air quality conformity goals
- Programs also are likely to offer societal benefits – e.g., congestion mitigation, climate change mitigation, improved health/safety
- 2023 TDM analysis estimated regional cost savings for selected societal benefits:
 - Air pollution/emissions reduction (NO_x, VOC)
 - Global climate change mitigation (reduced CO₂)
 - Reduction in congestion (reduced hours of peak period delay)
 - Reduction in fuel consumption (gasoline cost saving)
 - Improved health/safety (crashes avoided per 1M VMT)
 - Noise pollution reduction (reduced motor vehicle noise)



Societal Benefit Cost Savings = \$536,800 per Day

Generated by TDM Program Elements/COC VT/VMT Impacts

Societal Benefit	<u>Benefit Unit</u>	<u>Base Units</u>	<u>Cost per Unit</u>	<u>Daily Cost Saving</u>
– Air pollution	Tons pollutants	Varies	Varies	\$814
– Climate change	Tons CO2	863.7 T	\$36	\$31,093
– Noise pollution	VMT reduced	2.241 M VMT	\$0.0223	\$49,974
– Congestion	Hr. delay reduced	2,968 hours	\$30.43	\$90,316
– Fuel saving	Gallons fuel saved	96,630 gal	\$3.40	\$328,479
– Health/safety*	Crashes avoided	2.266 crashes	\$15,952	\$36,148
All benefits				\$536,824

* Health/safety - Benefit unit is crashes avoided per 1M VMT;
Benefit cost per unit is a weighted average of crash occurrence by severity



Telework Assistance

Telework Assistance (MD and VA)

Regional TW was dramatically higher in 2023 than in 2020 but the TW program element calculated only credit for TW related to COG/Commuter Connections' actions



- Direct assistance to MD commuters
 - 6.3% cited CC/COG as TW info source = 58,284 telecommuters
- Assistance to MD employers
 - 2.4% increase in telecommuting at assisted sites = 677 new TW
- VTR factor for MD TW was 0.43 daily VT reduced; based on the 2019 TW frequency (1.33 d/wk) rather than the 2022 frequency of 3.44 d/wk
- MD CC/COG-influenced TW eliminated 24,681 daily vehicle trips and 489,911 VMT reduced

Note: TW!VA assistance to VA employers – the Interim Report presents results from 2020 as a placeholder. The results will be updated for 2023 in the final report when data are provided.

Maryland Telework Assistance Impacts

<u>Indicator</u>	<u>Goal</u>	<u>Impact</u>	<u>Net</u>	<u>% VS Goal</u>
Number of TWs	31,854	58,961	27,107	+ 85%
Trips reduced	11,830	24,681	12,851	+ 109%
VMT reduced	241,209	489,911	248,702	+ 103%
NOx reduced	0.1220 T	0.1072 T	(0.0148) T	- 12%
VOC reduced	0.0720 T	0.0898 T	0.0178 T	+ 25%

Met participation, vehicle trip, and VMT. Also met VOC goal.

- TW use exploded in 2020, as a result of the pandemic – 2.1 M teleworkers in early 2022 vs 1.1 M in 2020. And TW frequency more than doubled.
- While most of the TW growth was due to the pandemic, CC/COG continued to be source of information for telecommuters.
- CC impacts represent 2.8% of regional TW vehicle trips reduced; the percentage was lower than in 2020 (5%), but the number of teleworkers assisted was much higher than in 2020.

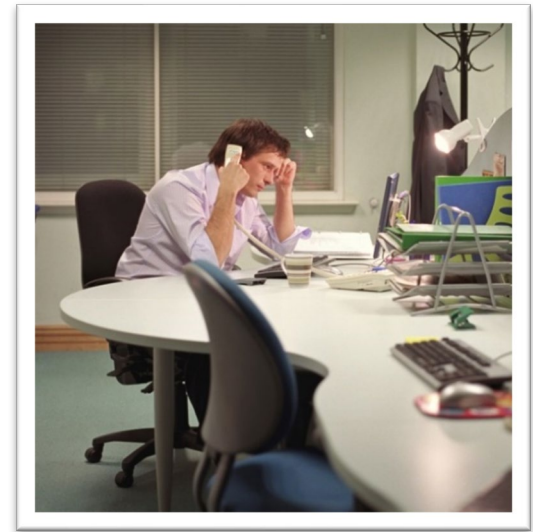


Guaranteed Ride Home



GRH Program Element

- 2,905 GRH registrants in Dec 2022 (1,740 new); Dramatic drop from 2020 (12,155 registrants)
- 13,966 Pre-FY 2021 past registrants added to analysis for “retention” credit
- 42% of FY 2021-23 registrants started new alt mode (1,222)
- 15% of Pre-FY 2021 registrants were still using new alt mode (2,053)
- Some alt mode users shifted from another alt mode
 - FY 2021-23 users reduced 0.93 daily vehicle trips; Pre-FY 2021 users reduced 0.40 daily vehicle trips
- GRH results were discounted:
 - Counted only VMT within the NAA – registrants who live outside the NAA received only partial credit
 - Assigned 6% of credit to Mass Marketing (% of new applicants influenced by ads to register)



GRH Impacts

<u>Indicator</u>	<u>Goal</u>	<u>Impact</u>	<u>Net</u>	<u>% VS Goal</u>
Registrants	18,496	2,905	(15,591)	- 84%
Trips reduced	6,296	1,891	(4,405)	- 70%
VMT reduced	177,568	48,818	(128,750)	- 73%
NOx reduced	0.0890 T	0.0083 T	(0.0807) T	- 91%
VOC reduced	0.0480 T	0.0051 T	(0.0429) T	- 89%

GRH did not meet goals due to much reduced participation related largely to the pandemic – 2022 GRH survey found that 41% of past participants cited telework as the reason they did not renew

Some overlap between GRH and Mass Marketing

- CC paused much of the GRH ads in 2020/2021
- But 26% of **new** GRH applicants were influenced by ads to apply for GRH
- So 6% of total GRH impact was assigned to Mass Marketing, reducing GRH credit



Pre FY 2021 “Retained” placements accounted for 42% of trips/VMT reduced



Employer Outreach



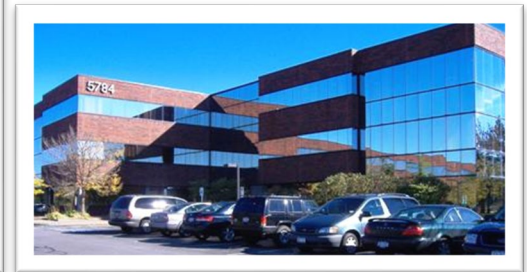
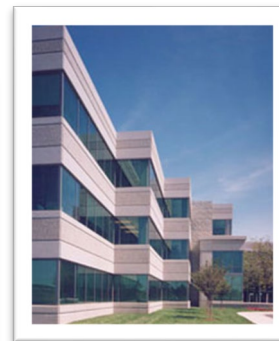
Employer Outreach



- Three impact components
 - Overall program
 - New / expanded programs
 - Bike services
- Impacts calculated for:
 - Employers who “continued” in EO from June 2020
 - Employers with new / expanded programs since June 2020
- Expanded program category was further divided in 2023 into expanded non-TW services and expanded only TW – this was to adjust the calculation so the large TW increases due to the pandemic were not credited entirely to EO
 - Only 10% of impacts for Expanded TW was assigned to EO; 90% was attributed to “the pandemic”
- Employers deleted since June 2020 were removed from the calculation
- EO is evaluated using EPA’s COMMUTER Model v2.0 to estimate VT and VMT reductions from packages of TDM strategies in various settings of transit accessibility.

Employer Participation – 1,204 New/Expanded Employers

<u>Employer Group</u>	<u>Employers</u>	<u>Employees</u>
Counted in impacts		
■ Continued (no change)	1,068	292,678
■ Expanded non-TW services	55	21,575
■ Expanded only TW services	393	119,646
■ New in 2023 analysis	<u>756</u>	<u>113,552</u>
2023 Total in impact	2,272	547,451
<i>2020 total in impact</i>	<i>1,964</i>	<i>630,369</i>
Not counted in impacts		
■ Deleted since June 2020*	478	75,576



* Reflects CC effort to clean EO database, out of business, moved, and dropped out

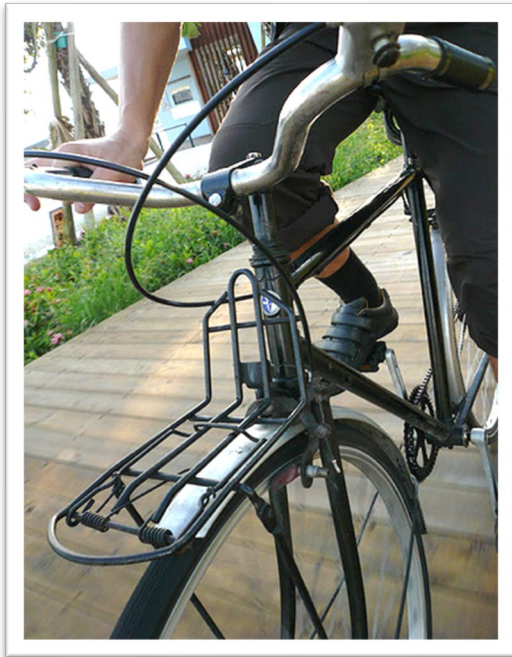
EO – Employers by Jurisdiction*

<u>Jurisdiction</u>	<u>Total Employers</u>	<u>Employees</u>	<u>New/Expand</u>
- Alexandria	166	24,141	78
- Arlington	324	50,361	137
- DC	410	106,715	99
- Fairfax	655	215,248	515
- Frederick	32	12,056	22
- Loudoun	31	18,401	20
- Montgomery	493	79,684	211
- Prince George's	46	15,020	28
- Prince William	44	10,974	32
- Tri-Co Council	71	14,851	62

*Totals are official counts for impact calculations – totals will not match self-reported quarterly conformity statement

EO – Analysis of Vehicle Trip Reduction

- Percentage vehicle trip reduction by program type
 - Overall EO program 8.2% reduction
 - Continued (base) 8.9% reduction
 - Expanded (additional) 1.8% reduction
 - New 4.0% reduction



- EO – Bicycle
 - 762 employers offered bike services
 - 385,089 employees at bike worksites
 - 0.1% vehicle trip reduction from bike
 - Bike trips average 4.5 miles one-way

EO Impacts – Overall

<u>Indicator</u>	<u>Goal</u>	<u>Impact</u>	<u>Net</u>	<u>% VS Goal</u>
Employers	2,031	2,272	241	+ 12%
Trips reduced	90,776	73,927	(16,849)	- 19%
VMT reduced	1,533,161	1,327,678	(205,483)	- 13%
NOx reduced	0.6170 T	0.2736 T	(0.3434) T	- 56%
VOC reduced	0.3850 T	0.2186 T	(0.1664) T	- 43%

Met participation goal; 756 new employers more than offset deleted (478)

But EO did not meet VT or VMT goals

- Deleted employers typically had more robust TDM services than did new employers
- To be conservative, only 10% of new TW was counted in impacts
- Impacts for non-TW strategies were applied to a smaller base of employee commute days, because TW days were excluded





Mass Marketing

Mass Marketing

Seven MM components

- Direct Influence – Commuter changed mode after hearing ad; no other CC contact
- “Referred” Influence – Heard ad, then contacted CC:
 - Share of GRH impact assigned to MM
 - Share of COC (rideshare app) assigned to MM
- ‘Pool Rewards carpool/vanpool incentive
- incenTrip mobile application
- Bike to Work Day
- Car Free Day



‘POOL REWARDS
it pays to rideshare

MORE LOOT FOR YOUR COMMUTE!
Getting cash for your clean trips is as easy as 1-2-3

- 1 Download the **FREE** incenTrip app
- 2 Log your clean commute
- 3 Redeem points for cash – up to \$600/yr!

800.745.RIDE | CommuterConnections.org
Some restrictions apply

A hand holding a smartphone. The screen shows the incenTrip app interface, which includes a green background, a white car icon, and the text 'incenTrip' and 'Dynamic Incentives For Dynamic Travelers'. The phone is held in a way that the hand is visible on the right side.

Mass Marketing Results

■ Direct Influence

- 6% of commuters recalled CC commute messages (vs 14% in 2020)
- 15% shifted to alt mode after ad (vs 12% in 2020) and 50% who shifted said ad influenced change
- = 0.44% of regional commuters direct influence by MM
- On base of 2.055 M commuters = **8,973 placements**

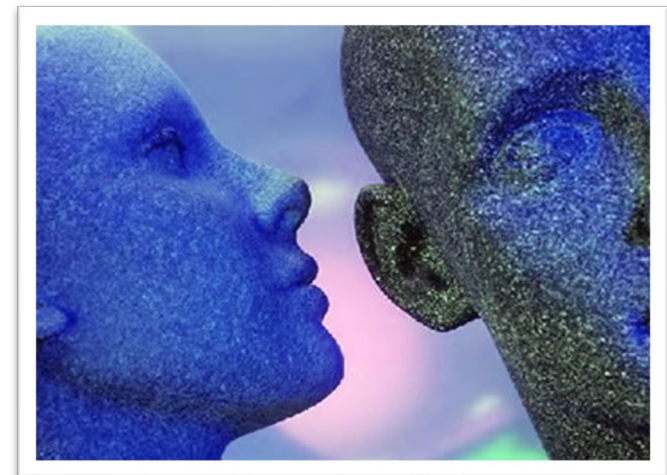
■ “Referred” Influence – MM ads generated:

- 2% of new COC rideshare apps = **480 placements**
- 6% of new GRH apps = **73 placements**

■ incenTrip

- 3,587 active registrants
- 45% not counted in GRH = 1,614
- 81% used incenTrip for commute = 1,307
- 60% alt mode change = **782 placements**

■ ‘Pool Rewards (TBD)



BTW Day – 2020, 2021, 2022

- 21,642 total riders across two events – 14,265 “unique” riders
- Participation was reduced from 2020 analysis count of 25,504 unique riders – no 2020 event and 2021 and 2022 events were lower than pre-pandemic
- Increased bike days after BTWD
 - 86% biked to work before
 - 6.5% new riders in summer or fall
 - 15.3% increased riding in summer or fall
- New / increased riding added:
 - 1.5 bike dy/wk in summer
 - 1.4 bike dy/wk in fall/winter
 - Total new bike trips – 1,436 per day
- 44% DA to work on non-bike days
- Ave 7.8 miles one-way bike commute distance



Car Free Day – 2020, 2021, 2022



- 10,881 total pledges in three events
 - Pledges reduced from 18,731 in 2020 analysis
 - Estimate 6,927 “unique” participants for 2023 analysis
- Calculated impacts for event day and continued alt mode use after CFD
- Event-day participation – minor impact:
 - 17% used new alt mode for work trip on CFD
 - 62% of switchers shifted from DA/CP/VP for that trip
 - CFD placements VTR factor of 1.21 and average distance of 12.8 mi
 - Event day impact was discounted VT and VMT to convert to estimated daily counts of 3 vehicle trips and 38 VMT
- Continued participation after CFD – more significant impact:
 - 9% of participants increased alt mode use after CFD vs before
 - VTR factor was 0.72; same travel distance of 12.8 miles
 - Daily impacts = 436 vehicle trips and 5,581 VMT reduced

Mass Marketing Impacts

<u>Indicator</u>	<u>Goal</u>	<u>Impact</u>	<u>Net</u>	<u>% VS Goal</u>
Commuters asstd	23,168	14,246	(8,922)	- 39%
Trips reduced	10,809	3,676	(7,133)	- 66%
VMT reduced	181,932	69,187	(112,745)	- 62%
NOx reduced	0.0850 T	0.0142 T	(0.0708) T	- 83%
VOC reduced	0.0250 T	0.0112 T	(0.0138) T	- 55%

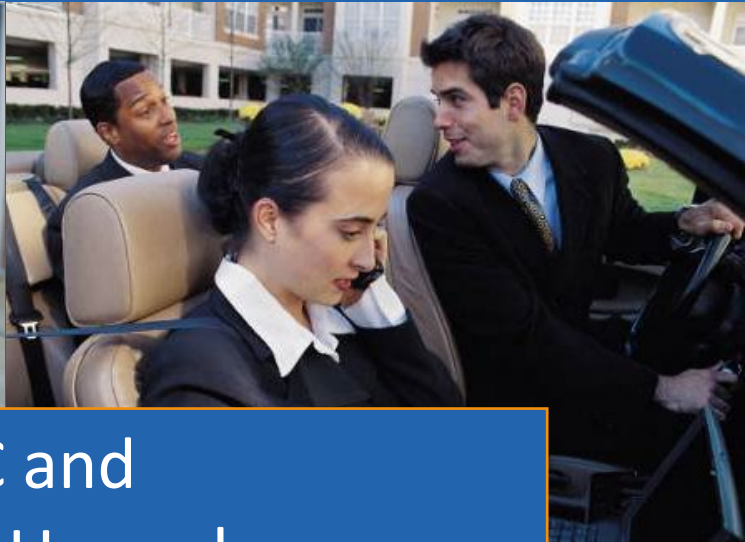
MM missed all goals

Shortfall more substantial for VT/VMT than for placements:

- Direct influence rate (6%) was less than half that of 2020 (14%) and the base of commuters was reduced by one-third to account for workers who TW full-time
- MM also received smaller impacts from COC and GRH than in 2020

Distribution of MM

- 49% of vehicle trip impact from “direct influence,”
- 5% from “referred” influence
- 46% from BTW Day, CF Day, incenTrip, ‘Pool Rewards



COC and Software Upgrades



Commuter Operations Center

- Three components: Commuter Operations Center “basic services,” “Integrated Rideshare–Software Upgrades,” and assisted telework for commuters not covered by Telework Assistance
- 42,592 commuters assisted by COC from July 2020-Dec 2022
 - 43% new/reapply, 57% follow-up
 - 56% placed into new alt modes
= 24,007 new alt mode users
- 6,456 Pre-FY 2021 past uses added to analysis for “retention” credit; 14.3% were still using new alt mode = 923 “retained” alt mode users
- Direct assistance provided to 53,303 teleworkers who live and work outside MD
 - 4.4% of non-MD telecommuters cited CC/COG as TW info source



Software Upgrades

- Ridematch software upgrades
 - 54% of COC apps recalled receiving transit, P&R, TW, or bike info from CC
 - 14% used information – called transit agency, located P&R lot, tried telework, or tried bicycling
 - **7% used info to change modes (3,022 commuters)**
 - Ave daily reductions – 0.19 vehicle trips and 23.1 OW miles
- VMT reduced discounted for apps who live outside the NAA
- Software upgrade impacts were deducted from COC base impacts to avoid double-counting



COC Impacts – Basic Services (including non-MD TW)

<u>Indicator</u>	<u>Goal</u>	<u>Impact</u>	<u>Net</u>	<u>% VS Goal</u>
Total apps	NA	NA	NA	
Trips reduced	24,425	18,378	(6,047)	- 25%
VMT reduced	512,637	282,675	(229,962)	- 45%
NOx reduced	0.2410 T	0.0644 T	(0.1766) T	- 73%
VOC reduced	0.1150 T	0.0591 T	(0.0559) T	- 49%

Did not meet goals – largely because the applicant count declined markedly due to the pandemic. But non-MD telework component was higher in 2023 than in 2020, offsetting some of the loss in applicant credit

Non-MD telework accounted for

- 82% of COC VT reduced (vs 48% in 2020)
- 73% of COC VMT reduced (vs 32% in 2020)

Impact will increase when Jan-Jun 2023 participation is added



Software Upgrades

<u>Indicator</u>	<u>Goal</u>	<u>Impact</u>	<u>Net</u>	<u>% VS Goal</u>
Total apps	NA	3,552	NA	
Trips reduced	2,379	558	(1,821)	- 77%
VMT reduced	66,442	12,890	(53,552)	- 81%
NOx reduced	0.0280 T	0.0026 T	(0.0254) T	- 91%
VOC reduced	0.0110 T	0.0018 T	(0.0092) T	- 84%

Did not meet goals – Recall and use of SU services was higher in 2023 than 2020 but participation was lower than anticipated due to pandemic

Impact will increase when Jan-Jun 2023 participation is added





Impact Summary and
Comparison to 2018-2020



TDM Analysis Observations

- The four program elements fell 13% short of the vehicle trip reduction goal and 9% short of the VMT reduction goal
- When COC was added, CC programs missed the VT reduction goal by 16% and missed the VMT reduction goal by 18%
- Shortfalls in individual program elements were generally related to lower than expected participation, in part due to the pandemic. About one-third of workers were teleworking in early 2022, meaning the base of “commuters” interested in commute support services was much lower than in 2020.
- Telework was much higher than in 2020 but the analysis assigned only a small share of increased TW to CC, and only when the analysis showed a direct role of CC in the TW change.
- Results reflect only 30 months of the 36-month evaluation period. The final impacts will be higher for some program elements



Impact Comparison of 2021-23 (Interim) to 2018-20*

TDM Program Elements + Commuter Operations Center Combined

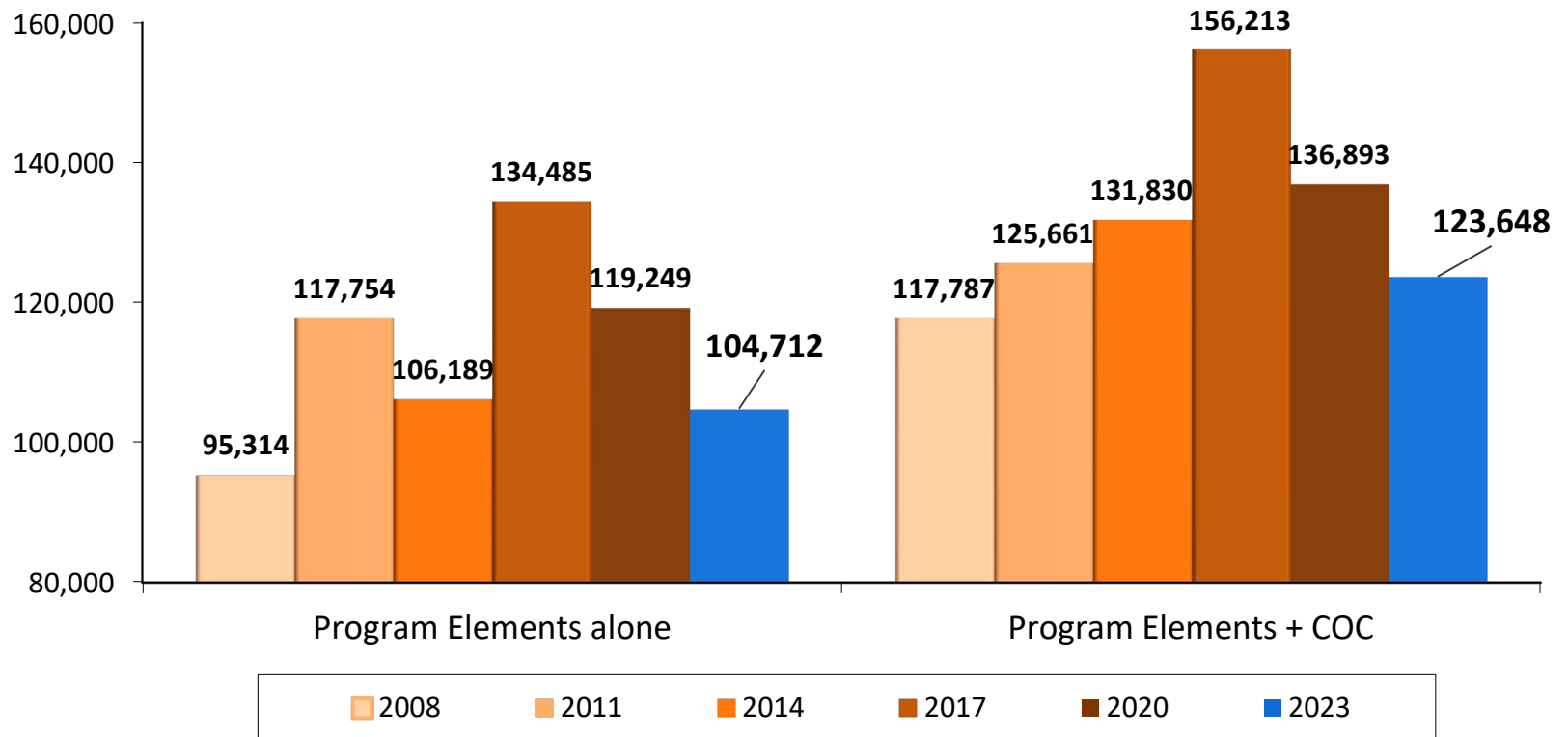
Impact Indicator	Impacts		
	Current <u>2021-23</u>	Previous <u>2018-20</u>	<u>Difference</u>
Daily Trips/VMT Reduced			
– Vehicle trips reduced (daily)	123,648	136,893	- 10%
– VMT reduced (daily)	2,240,986	2,647,551	- 15%
Daily Emissions Reduced			
– NOx (daily tons)	0.4725	0.5290	- 11%
– VOC (daily tons)	0.3875	0.3974	- 3%

* Note that 2021-23 Interim results include only 30 months; Jan-Jun 2023 will be added in the final report. 2018-20 includes full 36-month evaluation period.

Vehicle Trips – 2008, 2011, 2014, 2017, 2020, 2021-23*

Program Elements Alone; Program Elements + Commuter Operations Center

Daily Vehicle Trips Reduced

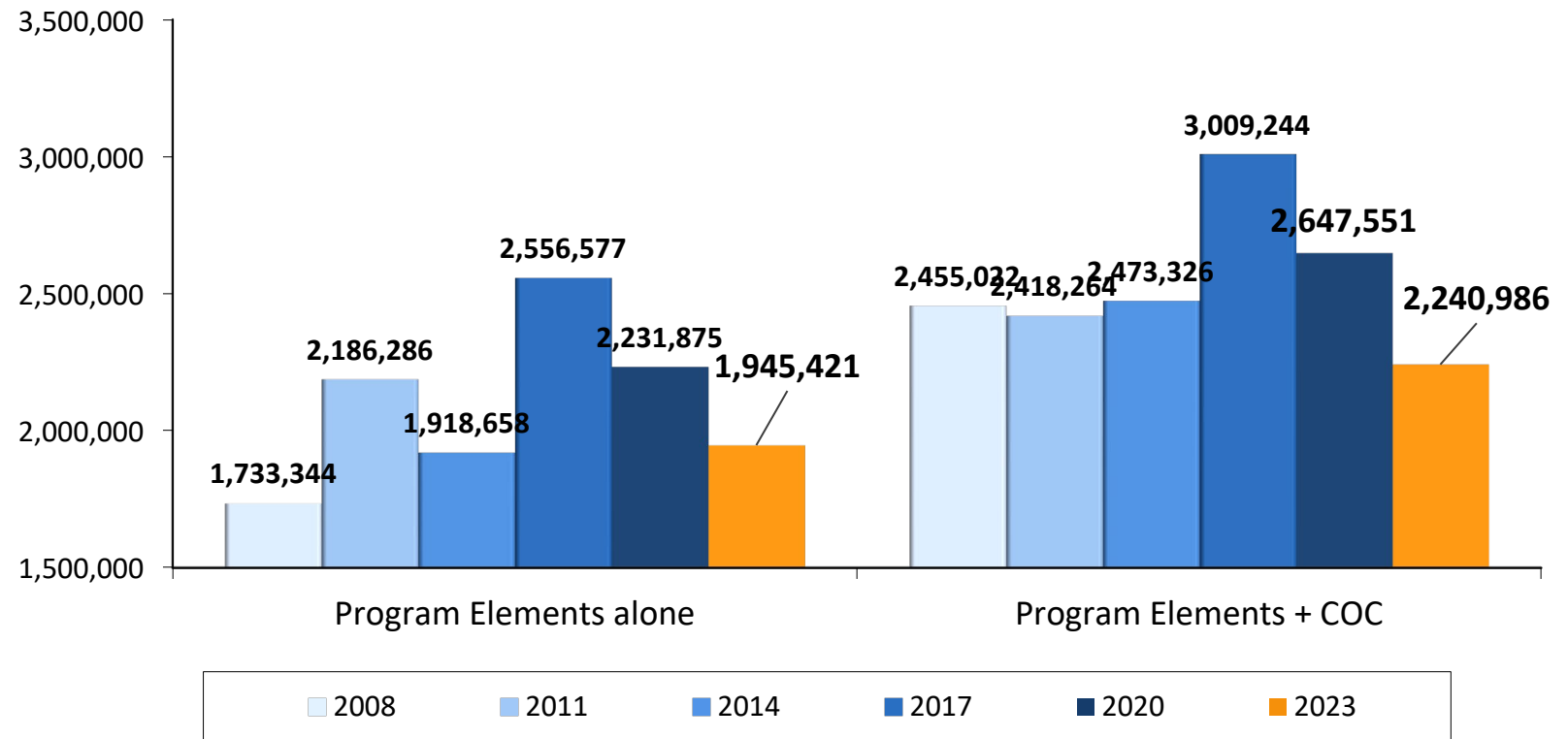


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VMT – 2008, 2011, 2014, 2017, 2020, 2021-23*

Program Elements Alone; Program Elements + Commuter Operations Center

Daily VMT Reduced



* Note that 2021-23 includes only 30 months; Jan-Jun 2023 will be added in evaluation update. All other periods include full 36-month evaluation period.



Questions?

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