

Executive Committee

Ashley Stolzmann, Chair
Kevin Flynn, Vice Chair
Steve Conklin, Secretary
Wynne Shaw, Treasurer
John Diak, Immediate Past Chair
Douglas W. Rex, Executive Director

AGENDA

REGIONAL TRANSPORTATION COMMITTEE

Tuesday, October 19, 2021

8:30 a.m.

VIDEO/WEB CONFERENCE

Denver, CO

1. Call to Order
2. Public Comment
3. September 16, 2021 RTC Meeting Summary
(Attachment A)

ACTION ITEMS

4. 2022-2025 TIP Policy Amendments
(Attachment B) Josh Schwenk, Assistant Planner
5. Draft Regional Complete Streets Toolkit
(Attachment C) Jacob Riger, Manager, Long Range Transportation Planning
6. Transportation Advisory Committee Freight Special Interest Seat
(Attachment D) Jacob Riger, Manager, Long Range Transportation Planning

INFORMATIONAL BRIEFINGS

7. 2020 Annual Congestion Report
(Attachment E) Robert Spotts, Program Manager, Mobility Analytics

ADMINISTRATIVE ITEMS

8. Member Comment/Other Matters
9. Next Meeting – November 16, 2021
10. Adjournment

Attendees can request additional aids or services, such as interpretation or assistive listening devices, by calling 303-480-6701 or emailing ckennedy@drcog.org. Please notify DRCOG at least 48 hours in advance so we can coordinate your request.

ATTACH A

ATTACHMENT A

**MEETING SUMMARY
REGIONAL TRANSPORTATION COMMITTEE
Tuesday, September 14, 2021**
Note: Meeting held virtually via GoToMeeting

MEMBERS PRESENT:

Karen Stuart	Colorado Department of Transportation
Paul Jesaitis (Alternate)	Colorado Department of Transportation
Eula Adams (Alternate)	Colorado Department of Transportation
Ron Papsdorf (Alternate)	Denver Regional Council of Governments
John Peck	Denver Regional Council of Governments
Doug Rex	Denver Regional Council of Governments
Wynne Shaw	Denver Regional Council of Governments
Kevin Flynn (Vice Chair)	Denver Regional Council of Governments
Mike Silverstein	Regional Air Quality Council
Shelley Cook	Regional Transportation District
Kate Williams	Regional Transportation District
Vince Buzek	Regional Transportation District
Bill Van Meter (Alternate)	Regional Transportation District

Others Present:

Jim Dale (Alternate)	Denver Regional Council of Governments
Deborah Mulvey (Alternate)	Denver Regional Council of Governments

Public: Lauren Pulver, Allison Cutting, Nathan Batchelder

DRCOG Staff: Todd Cottrell, Steve Cook, Emily Lindsey, Alvan-Bidal Sanchez, Cam Kennedy, Sang Gu Lee, Jacob Riger, Josh Schwenk, Melissa Balding, Robert Spotts, Brad Calvert

Call to Order

Vice Chair Kevin Flynn called the meeting to order at 8:37 a.m.

Public Comment

There was no public comment.

Summary of August 17, 2021 Meeting

The summary was accepted.

ACTION ITEMS

FY 2022-2025 Transportation Improvement Program (TIP) Amendments

Josh Schwenk, Assistant Planner, informed the committee that DRCOG's transportation planning process allows for Board-approved amendments to the current Transportation Improvement Program (TIP) on an as-needed basis. Typically, these amendments involve the addition or deletion of projects, or adjustments to existing projects and do not impact funding for other projects in the TIP.

Mr. Schwenk described the proposed TIP amendments. The six proposed amendments to the *FY 2022-2025 Transportation Improvement Program* have been found to conform with the State Implementation Plan for Air Quality.

Karen Stuart MOVED to recommend the Board of Directors adopt the attached amendments to the *2022-2025 Transportation Improvement Program* (TIP). The motion was seconded and passed unanimously.

FY 2022-2025 Transportation Improvement Program (TIP) Supplemental Wait List Call for Projects

Josh Schwenk, Assistant Planner, explained to the committee that following the COVID-19 funding decisions in spring 2021, several of the wait lists were significantly depleted. To prepare for the potential of additional funding before the next 2024-2027 TIP is adopted, a supplemental wait list call for projects was held to add projects to the depleted wait lists. No additional funds were available as part of this call, it was only to add projects to the wait lists.

The supplemental wait list call for projects opened on April 26, with applications due to DRCOG staff by June 21. Eight eligible projects totaling \$13,460,000 were submitted. A funding target (based on an estimated one-year funding allocation) was set at \$28,800,000 (split across the Regional Share and three subregions). The totals of all submittals within the regional share and each subregion were within the applicable target limit.

After DRCOG staff evaluated and scored the submittals, a Supplemental Wait List Call Project Review Panel met on July 19 to review the scores and recommend a list of projects to be added to the wait lists. The panel consisted of one technical staff representative from each of the eight subregions, as well as representatives from CDOT and RTD. During their meeting, the panel recommended adding all eight projects to the wait lists, in score order.

Shelley Cook MOVED to recommend the DRCOG Board of Directors add the supplemental projects to the FY 2022-2025 Transportation Improvement Program wait lists in ranked order. The motion was seconded and passed unanimously.

Project Funding Recommendation for the FY 2022-2023 Community Mobility Planning and Implementation (CMPI) TIP Set-Aside

Brad Calvert, Director, Regional Planning & Development, discussed that the 2020-2023 TIP Policy established \$4.8 million in federal funds for the CMPI Set-Aside over the four-year period. The purpose of the CMPI set-aside is to support small area planning and small infrastructure projects that contribute to the implementation of key Metro Vision and Metro Vision Regional Transportation Plan outcomes. For the second two-year period (FY 2022-2023) the CMPI Set-Aside reserved:

- \$1 million for small area planning and/or transportation studies; and
- \$1.4 million for small infrastructure projects.

In addition to these available funds, \$292,000 small-infrastructure funds and \$235,000 planning funds from the previous call were rolled into this cycle bringing the total available for small infrastructure projects to \$1,692,000 and \$1,235,000 for planning projects.

In April 2021, DRCOG issued a call for letters of intent and full applications were due June 30, 2021. A total of 20 applications (14 planning, 6 small infrastructure) were submitted for consideration (Attachment 1). The total federal funding request for all projects was \$3,879,023 (59.6% planning, 40.4% small infrastructure).

A project review panel comprised of staff from DRCOG's Regional Planning and Development and Transportation Planning and Operations divisions, in consultation with CDOT staff (Division of Transportation Development, Regions 1 and 4), individually and collectively evaluated project submittals. The review panel met in July 2021 to review, discuss, and establish final recommendations.

Wynne Shaw MOVED to recommend to the DRCOG Board of Directors the studies and projects recommended by staff to be funded in the FY 2022-2023 cycle of the CMPI Set-Aside and shift the remaining small-infrastructure funding to fully fund the Thornton Transit Study. The motion was seconded and passed unanimously.

Nondiscrimination Plans Update

Alvan-Bidal Sanchez, Transportation Planner, discussed that the Denver Regional Council of Governments is a recipient of federal financial assistance. All agencies that receive federal funds are required to comply with various nondiscrimination laws and regulations, including Title VI of the Civil Rights Act of 1964 which forbids discrimination against anyone because of race, color or national origin.

Further, DRCOG adheres to other federal nondiscrimination statutes that afford legal protections, including the Americans with Disabilities Act of 1990, which prohibits discrimination against people with disabilities in all areas of public life. DRCOG is also committed to engaging and involving all residents of the Denver region, including those with limited English proficiency, in its activities.

Every three years, DRCOG prepares the Title VI Implementation Plan, Limited English Proficiency Plan and Americans with Disabilities Act Program Access Plan to document the ongoing Title VI-related activities pursued by DRCOG over the previous period. The drafts of the three nondiscrimination plans were the subject of a public review and comment period from July 1, 2021 through July 31, 2021.

Wynne Shaw MOVED to recommend the Board of Directors adopt the Title VI Implementation Plan and the associated Limited English Proficiency Plan and Americans with Disabilities Act Program Access Plan. The motion was seconded and passed unanimously.

INFORMATIONAL BRIEFING

There were no informational briefings in this meeting.

ADMINISTRATIVE ITEMS

Member Comment/Other Matters

DRCOG Executive Director Doug Rex invited RTC members to attend tomorrow's Board Meeting since one of the topics will be the ongoing conversation regarding the GHG Emissions Reduction Rule that is currently proceeding through CDOT. Staff will be recommending options to improve the rule, and all are encouraged to attend.

Next Meeting – October 19, 2021

Adjournment

The meeting adjourned at 9:05 a.m.

ATTACH B

ATTACHMENT B

To: Chair and Members of the Regional Transportation Committee

From: Josh Schwenk, Assistant Planner, Transportation Planning & Operations
jschwenk@drcog.org

Meeting Date	Agenda Category	Agenda Item #
October 19, 2021	Action	4

SUBJECT

FY 2022-2025 Transportation Improvement Program (TIP) Amendments.

PROPOSED ACTION/RECOMMENDATIONS

DRCOG staff recommends approval of the proposed amendments because they comply with the current TIP amendment procedures, as contained within the Board-adopted [2020-2023 TIP Policy](#).

ACTION BY OTHERS

[October 6, 2021](#) TAC recommended approval

SUMMARY

DRCOG's transportation planning process allows for Board-approved amendments to the current Transportation Improvement Program (TIP) on an as-needed basis. Typically, these amendments involve the addition or deletion of projects, or adjustments to existing projects and do not impact funding for other projects in the TIP.

The TIP projects to be amended are shown below and listed in Attachment 1. The proposed amendments to the [FY 2022-2025 Transportation Improvement Program](#) have been found to conform with the State Implementation Plan for Air Quality.

TIP Amendments

- **2008-076 Region 1 FASTER Pool**
Increase funding, add four new pool projects, adjust cost on five pool projects, and remove four pool projects.
- **2012-116 Region 4 2013 Flood-Related Projects Pool**
Increase funding.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

Move to recommend to the Board the attached amendments to the 2022-2025 *Transportation Improvement Program (TIP)*.

ATTACHMENT

1. Proposed TIP amendments

ADDITIONAL INFORMATION

If you need additional information, please contact Josh Schwenk, Assistant Planner, Transportation Planning and Operations Division at jschwenk@drcog.org.

ATTACHMENT 1

Policy Amendments – October 2021

2022-2025 Transportation Improvement Program

2008-076: Increase FY 22 FASTER funding by \$8,984,000 to reflect new SB-260 funds and project rollovers. Add four new pool projects, adjust five existing pool projects, and remove four pool projects

Existing

Title: Region 1 FASTER Pool

TIP-ID: 2008-076

STIP-ID: SR17002

Open to Public:

Project Type: Safety

Sponsor: CDOT Region 1

Project Scope

Pool contains safety-related improvements and upgrades based on the new FASTER-Safety funding program (Colorado Senate Bill 108) in CDOT Region 1.



Affected County(ies)
Adams
Arapahoe
Broomfield
Denver
Douglas
Jefferson

Performance Measures
<input type="checkbox"/> Bridge Condition
<input checked="" type="checkbox"/> Congestion
<input checked="" type="checkbox"/> Freight Reliability
<input checked="" type="checkbox"/> Pavement Condition
<input checked="" type="checkbox"/> Safety
<input type="checkbox"/> Transit Assets
<input type="checkbox"/> Transit Safety
<input checked="" type="checkbox"/> Travel Time Reliability

All pool project funding depicts federal and/or state funding only.

Facility Name	Start-At and End-At	Cost (1,000s)	Facility Name (Cont)	Start-At and End-At	Cost (1,000s)	Facility Name (Cont)	Start-At and End-At	Cost (1,000s)
SH-95 Intersection Improvements	64th Ave	\$851	Aurora Signals 2019	SH30 @ Jewell and Yale	\$500	Kings Valley Underpass		\$3,720
SH-121/72nd Ave	Right turn accel lanes	\$961	Lakewood Safety Package 2020	I-70 @ Colfax, Colfax @ Quail, SH8 @ Garrison, and SH121@ 1st Ave	\$4,960	SH-119 Shoulder Widening		\$11,600
SH-177 Sidewalks	Mineral Ave to Orchard Rd	\$521	I-70 and Kipling	Traffic signal replacement and access consolidation	\$2,000	Federal and 67th Signal Upgrade		\$500
Founders Pkwy Intersection Reconstruct	Crowfoot Valley Rd	\$1,602	6" Lane Lines Pavement Marking (2019-2021)	I-25, I-70, I-225, I-76, I-270	\$9,100	I-76 Lighting Project		\$4,200
Wadsworth TOD left turn protection	Girton, Eastman and Yale	\$200	US-285/SH-30 Resurfacing	Dahila to Parker	\$1,200	SH-88 & Exposition Ave Signal Upgrade		\$630
FASTER Safety Design		\$4,000	Broadway Signal Replacement	at 62nd and 70th	\$1,000	US-85 Recon: New Signal @ Daniels Park		\$500
SH-2 Traffic Signal Upgrades		\$440	SH-93 Signal Package		\$2,500	SH-7 & Colorado Intersection Improvements		\$1,030
Wadsworth	Right Turn Lane Extensions	\$1,621	I-70 @ Sheridan and Harlan Safety		\$3,700	SH-74 & Bear Creek Rd Intersection		\$500
I-70 between MP 252 & 255	Median Barrier	\$2,000	SH-75 Intersection Improvements	Bowles and Mineral	\$1,000	SH-74 Lighting and Shoulders		\$3,500

ATTACHMENT 1

Policy Amendments – October 2021

2022-2025 Transportation Improvement Program

SH 121 @ Deer Creek Canyon, C-470 @ Kipling, SH-95 @ WB I-76 Ramp Mod, SH-88 @ US 285, SH-93 @ Washington St, SH-177 @ Otero, SH-121 @ Chatfield	Traffic Signal Replacements	\$2,500	C-470 and Ken Caryl	Intersection Improvements	\$5,000	SH-30 and Yale Intersection Improvements		\$612
SH-95 @ 1st Ave, 32nd Ave, 38th Ave, 46th Ave, Wellington Ave	Traffic Signal Replacements	\$2,000	SH-40 and SH-121	CDOT Traffic Signal Improvements	\$1,720	US-40 Pedestrian Lighting		\$400
US-85 @ Dartmouth	Hampden to Florida SUR	\$2,500	Denver West Runaway Truck Ramp		\$8,000	SH-121 & 87th Signal Upgrade		\$500
Roundabouts at C-470 @ Ken Caryl and I-70 @ Harlan	Roundabouts - design	\$500	SH-30 and Tower Rd	ROW Phase	\$201	US-85 Expansion: Happy Canyon		\$500
VMS for I-25 south of Denver	VMS Installation	\$500	I-70 VSL Concept of Operations and Implementation		\$530	SH-224 (70th) & SH-53 Signal Replacement		\$1,000
Long mast arm signal design (3 locations)	88 @ Revere, 121 @ Ken Caryl, 121 @ C-470 (2)	\$2,000	Dartmouth Mini Roundabouts	Logan, Downing, Clarkston	\$1,200	SH-53 & 62nd Ave Signal Replacement		\$500
Aurora Signal Package	I-70 at Tower	\$600	I-70 Mountain Express Lane VSL		\$1,980	I-25 South Gap Wildlife Crossing		\$7,500
SH224 @ Dahlia St.	Traffic Signal Replacement	\$450	US-6	SH-119 to SH-58/SH-93	\$10,000	Federal Blvd & 88th Signal Realignment		\$1,500
Ramp Metering	I-76	\$1,500	SH-74 VMS Sign Installation		\$101	I-70 EB VSL & Queue Warning		\$9,300
US-285/SH-30	Resurfacing	\$1,400	SH-7 Widening	I-25 to Sheridan	\$500	Parker Rd (SH-83) Parkglen Way to Pine Ln		\$500
North Signal Replacement Package	SH-128 @ Eldorado, SH-287 @ Midway, 6th, and SH-121 @ Ralston	\$1,000	SH-224 & Washington St Intersection		\$700	Dry Creek Rd @ I-25: SB On-Ramp & Metering		\$300
SH391 (Kipling) @ 13th Ave and 13th Place	Intersection Improvements	\$900	SH-7 & Holly Intersection Reconstruction		\$2,800	Belleview & Prince St Median & Signal Improvements		\$2,900
I-70 EB Aux Lanes	Ward Rd to Kipling	\$2,300	SH-121 & Brook Dr. Intersection Improvements		\$500	I-70 EB @ E Colfax Vertical & Horizontal Curve Realignment		\$5,000
South Federal Blvd	safety improvements	\$300	SH-74 & Evergreen Parkway VMS		\$660	C-470 & Quincy Ave Terminal Roundabouts		\$6,000
SH2 and SH95 Traffic Signals	SH2@Arizona, Kentucky, Bayaud, 1st. SH95@14th, 16th, 44th, 38th, 1st	\$1,500	SH-88 Safety Improvements	Federal Blvd to Prince	\$2,400	Ken Caryl Roundabouts		\$2,630
SB I-225 Parker Rd Ramp	safety project	\$2,000	Peoria St Intersection Improvements		\$1,770			
I-25 SB Bottleneck	restripe from I-76 to I-70	\$1,200	I-76: York to Dahlia (SH-224 WB On-Ramp)		\$4,000			

Amounts in \$1,000s	Prior Funding	FY22	FY23	FY24	FY25	Future Funding	Total Funding
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Federal		\$0	\$0	\$0	\$0		
State (Faster-S)		\$29,120	\$26,990	\$29,000	\$30,000		
Local		\$1,000	\$0	\$0	\$0		
Total		\$116,469	\$30,120	\$26,990	\$29,000	\$30,000	\$0 \$232,579

Highlighted projects to be removed

ATTACHMENT 1

Policy Amendments – October 2021

2022-2025 Transportation Improvement Program

Revised

All pool project funding depicts federal and/or state funding only.

Facility Name	Start-At and End-At	Cost (1,000s)	Facility Name (Cont)	Start-At and End-At	Cost (1,000s)	Facility Name (Cont)	Start-At and End-At	Cost (1,000s)
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SH-121/72nd Ave	Right turn accel lanes	\$961	Lakewood Safety Package 2020	I-70 @ Colfax, Colfax @ Quail, and SH121@ 1st Ave	\$2,060	I-76 Lighting Project		\$4,200
SH-177 Sidewalks	Mineral Ave to Orchard Rd	\$521	I-70 and Kipling	Traffic signal replacement and access consolidation	\$2,000	SH-88 & Exposition Ave Signal Upgrade		\$630
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Wadsworth TOD left turn protection	Girton, Eastman and Yale	\$200	US-285/SH-30 Resurfacing	Dahila to Parker	\$1,200	SH-7 & Colorado Intersection Improvements		\$1,030
FASTER Safety Design		\$4,000	Broadway Signal Replacement	at 62nd and 70th	\$1,000	SH-74 & Bear Creek Rd Intersection		\$500
SH-2 Traffic Signal Upgrades		\$440	SH-93 Signal Package		\$2,500	SH-30 and Yale Intersection Improvements		\$612
Wadsworth	Right Turn Lane Extensions	\$1,621	I-70 at Harlan		\$3,100	US-40 Pedestrian Lighting		\$400
I-70 between MP 252 & 255	Median Barrier	\$2,000	SH-75 Intersection Improvements	Bowles and Mineral	\$1,000	SH-121 Signal Upgrades for Three Intersections		\$2,200
SH 121 @ Deer Creek Canyon, C-470 @ Kipling, SH-95 @ WB I-76 Ramp Mod, SH-88 @ US 285, SH-93 @ Washington St, SH-177 @ Otero, SH-121 @ Chatfield	Traffic Signal Replacements	\$2,500	C-470 and Ken Caryl	Intersection Improvements	\$5,000	US-85 Expansion: Happy Canyon		\$500
SH-95 @ 1st Ave, 32nd Ave, 38th Ave, 46th Ave, Wellington Ave	Traffic Signal Replacements	\$2,000	SH-40 and SH-121	CDOT Traffic Signal Improvements	\$1,720	SH-224 (70th) & SH-53 Signal Replacement		\$1,000
US-85 @ Dartmouth	Hampden to Florida SUR	\$2,500	Denver West Runaway Truck Ramp		\$8,000	SH-53 & 62nd Ave Signal Replacement		\$500
Roundabouts at C-470 @ Ken Caryl and I-70 @ Harlan	Roundabouts - design	\$500	I-70 VSL Concept of Operations and Implementation		\$530	I-25 South Gap Wildlife Crossing		\$7,500
VMS for I-25 south of Denver	VMS Installation	\$500	Dartmouth Mini Roundabouts	Logan, Downing, Clarkston	\$1,200	Federal Blvd & 88th Signal Realign		\$1,500
Long mast arm signal design (3 locations)	88 @ Revere, 121 @ Ken Caryl, 121 @ C-470 (2)	\$2,000	I-70 Mountain Express Lane VSL		\$1,980	I-70 EB VSL & Queue Warming		\$9,300
Aurora Signal Package	I-70 at Tower	\$600	US-6	SH-119 to SH-58/SH-93	\$10,000	Dry Creek Rd @ I-25: SB On-Ramp & Metering		\$300
SH224 @ Dahlia St.	Traffic Signal Replacement	\$450	SH-74 VMS Sign Installation		\$101	Bellevue & Prince St Median & Signal Improvements		\$2,400
Ramp Metering	I-76	\$1,500	SH-7 Widening	I-25 to Sheridan	\$500	I-70 EB @ E Colfax Vertical & Horizontal Curve Realignment		\$5,000
US-285/SH-30	Resurfacing	\$1,400	SH-224 & Washington St Intersection		\$700	C-470 & Quincy Ave Terminal Roundabouts		\$6,000
North Signal Replacement Package	SH-128 @ Eldorado, SH-287 @ Midway, 6th, and SH-121 @ Ralston	\$1,000	SH-7 & Holly Intersection Reconstruction		\$2,800	Ken Caryl Roundabouts		\$3,700
SH391 (Kipling) @ 13th Ave and 13th Place	Intersection Improvements	\$900	SH-121 & Brook Dr. Intersection Improvements		\$500	60th and Vasquez Intersection Reconstruction		\$5,000
I-70 EB Aux Lanes	Ward Rd to Kipling	\$2,300	SH-74 & Evergreen Parkway VMS		\$660	SH-83 Turn Lanes at Rafter Rd. & E. Park Dr.		\$2,700
South Federal Blvd	safety improvements	\$300	Peoria St Intersection Improvements		\$1,770	US40A Resurfacing	MP 252-258.3	\$960
SH2 and SH95 Traffic Signals	SH2@Arizona, Kentucky, Bayaud, 1st. SH95@14th, 16th, 44th, 38th, 1st	\$1,500	I-76: York to Dahlia (SH-224 WB On-Ramp)		\$4,000	I-76 Center Barrier Gaps & Mash Upgrades to Outside Barrier		\$815
SB I-225 Parker Rd Ramp	safety project	\$2,000	Kings Valley Underpass		\$3,720			
I-25 SB Bottleneck	restripe from I-76 to I-70	\$1,200	SH-119 Shoulder Widening		\$11,600			
Amounts in \$1,000s	Prior Funding	FY22	FY23	FY24	FY25	Future Funding	Total Funding	
Federal		\$0	\$0	\$0	\$0			
State (Faster-S)		\$38,104	\$26,990	\$29,000	\$30,000			
Local		\$1,000	\$0	\$0	\$0			
Total		\$116,469	\$39,104	\$26,990	\$29,000	\$30,000	\$0	\$241,563

ATTACHMENT 1

Policy Amendments – October 2021

2022-2025 Transportation Improvement Program

2012-116: Add \$6,000,000 in FY 22 emergency funding for additional repairs on SH-7**Existing**Title: **Region 4 2013 Flood-Related Projects Pool**Project Type: **Roadway Reconstruction**TIP-ID: **2012-116**

STIP-ID:

Open to Public:

Sponsor: **CDOT Region 4****Project Scope**

Pool contains flood-related repair projects from the fall of 2013 flood event.



Affected County(ies)
Boulder
Weld

Performance Measures
<input checked="" type="checkbox"/> Bridge Condition
<input type="checkbox"/> Congestion
<input type="checkbox"/> Freight Reliability
<input checked="" type="checkbox"/> Pavement Condition
<input checked="" type="checkbox"/> Safety
<input type="checkbox"/> Transit Assets
<input type="checkbox"/> Transit Safety
<input type="checkbox"/> Travel Time Reliability

All pool project funding depicts federal and/or state funding only.

Facility Name	Start-At and End-At		Cost (1,000s)	Facility Name (Cont)	Start-At and End-At		Cost (1,000s)	Facility Name (Cont)	Start-At and End-At	Cost (1,000s)
ER US36	MP21			PR SH 119A	Boulder Canyon					
PR SH7 Flood Repair	MP 19-33			PR SH 72B Resurfacing						
Amounts in \$1,000s	Prior Funding	FY22	FY23	FY24	FY25	Future Funding	Total Funding			
Federal (EMR)		\$52,000	\$0	\$0	\$0					
State		\$0	\$0	\$0	\$0					
Local		\$0	\$0	\$0	\$0					
Total	\$220,335	\$52,000	\$0	\$0	\$0	\$0	\$272,335			

Revised

Amounts in \$1,000s	Prior Funding	FY22	FY23	FY24	FY25	Future Funding	Total Funding
Federal (EMR)		\$58,000	\$0	\$0	\$0		
State		\$0	\$0	\$0	\$0		
Local		\$0	\$0	\$0	\$0		
Total	\$220,335	\$58,000	\$0	\$0	\$0	\$0	\$278,335

ATTACH C

ATTACHMENT C

To: Chair and Members of the Regional Transportation Committee

From: Jacob Riger, Manager, Long Range Transportation Planning
303-480-6751 or jriger@drcog.org

Meeting Date	Agenda Category	Agenda Item #
October 19, 2021	Action	5

SUBJECT

Draft Regional Complete Streets Toolkit.

PROPOSED ACTION/RECOMMENDATIONS

Staff recommends approval of the draft Regional Complete Streets Toolkit.

ACTION BY OTHERS

[October 6, 2021](#) TAC recommended approval

SUMMARY

Complete Streets are safe, context sensitive, inclusive, equitable, and flexible. They provide pedestrians, bicyclists, transit riders and other multimodal travelers the same access to safe comfortable streets as motorists.

DRCOG has been developing a Regional Complete Streets Toolkit (Attachment 1) for the Denver region in collaboration with a Steering Committee, local governments, the public, and other stakeholders. The Toolkit provides guidance for local governments and project sponsors to plan, design, and implement Complete Streets. It provides strategies and gives support to decision makers, planners, and designers to ensure that multimodal elements are appropriately and effectively incorporated into transportation projects. The Toolkit also:

- Supports connectivity and the development of a safe and comfortable transportation network for all modes and all users.
- Promotes the use of the latest design criteria and guidelines for multimodal facilities.
- Establishes a vision for how local governments could adopt and apply a complete streets policy.
- Creates awareness and provide guidance on a variety of street design measures available to local jurisdictions in planning and engineering safe and comfortable streets for all users of the regional transportation system.

The Complete Streets Toolkit is integrated with the 2050 Regional Transportation Plan (2050 RTP) and the 2024-2027 Transportation Improvement Program (2024-2027 TIP). The Toolkit's street typologies are incorporated in Chapter 2 of the 2050 RTP to work in tandem with the Regional Roadway System. And the Toolkit is intended to assist project sponsors in developing multimodal projects for the 2024-2027 TIP that help implement the 2050 RTP's project and program investment priorities and the Metro Vision Plan's outcomes and objectives.

DRCOG staff has developed the agency's first ever "story map" to help explain, illustrate, and apply the street typologies. The story map is located here: [Regional Complete Streets Story Map](#).

The draft Toolkit was reviewed by the project's Steering Committee in late July. It was also the topic of a 30-day public comment review period from mid-August to mid-September. Attachment 2 provides documentation of the comments received and DRCOG staff responses to the comments, including revisions to the document based on comments received.

DRCOG staff will provide an overview of the draft Complete Streets Toolkit.

PREVIOUS DISCUSSIONS/ACTIONS

RTC – [August 17, 2021](#)

PROPOSED MOTION

Move to recommend the Board adopt the draft Regional Complete Streets Toolkit.

ATTACHMENTS

1. [Draft Complete Streets Toolkit](#)
2. Public comment review period documentation
3. Staff presentation

ADDITIONAL INFORMATION

If you need additional information, please contact Jacob Riger, Manager, Long Range Transportation Planning, at 303-480-6751 or jriger@drcog.org

Date	Page	Comment	Name	Type	Response
9-Sep	Overall	<p>I'm writing to share my thoughts and feedback on the draft DRCOG Regional Complete Streets Toolkit.</p> <p>Overall, I am really happy with the draft Toolkit and how it will set the standard for changes to streets in communities across the Denver region! I'm particularly excited that the Toolkit prioritizes the different modes of transportation based on each of the unique street types, while accounting for land use and surrounding environment; prioritizes active transportation; encourages vertical traffic calming, like speed bumps, to facilitate slow speeds; and supports planning with all ages and abilities in mind.</p> <p>While I'm excited about a lot in the Toolkit, there is still room for improvement. I was disappointed to see no mention of equity throughout the entire document. I encourage you to look to Denver's Complete Streets Design Guidelines as a model for including equitable street design in this type of guide and hope the Toolkit will be amended to reflect equity as a priority.</p>	Fran Aguirre	Email	<p>The toolkit has been revised to include a new section on page 8 to reflect equity as a priority; "Elevate equity: Equity in transportation means ensuring that historically marginalized people can meaningfully influence how transportation systems are planned, designed, maintained, and operated. Complete Streets elevate equity in transportation by being places for all people." Thank you for taking the time to review and provide feedback.</p>
10-Sep	Overall	<p>Hello and happy Friday, this message is in regards to DRCOG Regional Complete Streets Toolkit draft.</p> <p>Overall, I am pleased with the draft Toolkit and how it will set the standard for changes to streets in communities across the Denver region.</p> <p>I'm particularly excited that the Toolkit prioritizes the different modes of transportation based on each of the unique street types, while accounting for land use and surrounding environment; prioritizes active transportation; encourages vertical traffic calming, like speed bumps, to facilitate slow speeds; and supports planning with all ages and abilities in mind.</p> <p>While I'm excited about a lot in the Toolkit, there is still room for improvement. I was disappointed to see no mention of equity throughout the entire document. There is a lot of growth ahead of us and I believe we need to prioritize equity in our plans for the shared streets of this landscape. Denver's Complete Streets Design Guidelines serves as a great model for including equitable street design in this type of guide and hope the Toolkit will be amended to reflect equity as a priority.</p>	Thomas Bell	Email	<p>The toolkit has been revised to include a new section on page 8 to reflect equity as a priority; "Elevate equity: Equity in transportation means ensuring that historically marginalized people can meaningfully influence how transportation systems are planned, designed, maintained, and operated. Complete Streets elevate equity in transportation by being places for all people." Thank you for taking the time to review and provide feedback.</p>

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12-Sep	Overall	<p>I'm writing to share my thoughts and feedback on the draft DRCOG Regional Complete Streets Toolkit.</p> <p>Overall, I am really happy with the draft Toolkit and how it will set the standard for changes to streets in communities across the Denver region!</p> <p>I'm particularly excited that the Toolkit prioritizes the different modes of transportation based on each of the unique street types, while accounting for land use and surrounding environment; prioritizes active transportation; encourages vertical traffic calming, like speed bumps, to facilitate slow speeds; and supports planning with all ages and abilities in mind.</p> <p>While I'm excited about a lot in the Toolkit, there is still room for improvement. I was disappointed to see no mention of equity throughout the entire document. I encourage you to look to Denver's Complete Streets Design Guidelines as a model for including equitable street design in this type of guide and hope the Toolkit will be amended to reflect equity as a priority.</p>	Beverly Jahn	Email	<p>The toolkit has been revised to include a new section on page 8 to reflect equity as a priority; "Elevate equity: Equity in transportation means ensuring that historically marginalized people can meaningfully influence how transportation systems are planned, designed, maintained, and operated. Complete Streets elevate equity in transportation by being places for all people." Thank you for taking the time to review and provide feedback.</p>
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9-Sep	Overall	<p>I'm writing to share my thoughts and feedback on the draft DRCOG Regional Complete Streets Toolkit.</p> <p>Overall, I am really happy with the draft Toolkit and how it will set the standard for changes to streets in communities across the Denver region!</p> <p>I'm particularly excited that the Toolkit prioritizes the different modes of transportation based on each of the unique street types, while accounting for land use and surrounding environment; prioritizes active transportation; encourages vertical traffic calming, like speed bumps, to facilitate slow speeds; and supports planning with all ages and abilities in mind.</p> <p>While I'm excited about a lot in the Toolkit, there is still room for improvement. I was disappointed to see no mention of equity throughout the entire document. I wonder if you can help educate the public to ride bicycles and electric scooters in bike lanes. They do not belong on the sidewalk attacking pedestrians. Please please educate & keep on educating the proper use of our transportation paths: streets, bicycle lanes and electric scooters.</p>	Steven Meyer	Email	The toolkit has been revised to include a new section on page 8 to reflect equity as a priority; "Elevate equity: Equity in transportation means ensuring that historically marginalized people can meaningfully influence how transportation systems are planned, designed, maintained, and operated. Complete Streets elevate equity in transportation by being places for all people." Thank you for taking the time to review and provide feedback.
2-Sep	Overall	<p>Overall a good document. I have the following suggested minor edits.</p> <ul style="list-style-type: none"> - Page 6 – I believe the name of the document is Metro Vision not 2050 Metro Vision Plan - Page 12 – The name is 2050 Metro Vision Regional Transportation Plan not Metro Vision Regional Transportation Plan - Page 12 Recommend that RTP be defined. 	Kent Moorman, City of Thornton	Email	These changes have been made to the toolkit.
9-Sep	Overall	<p>I'm writing to share my thoughts and feedback on the draft DRCOG Regional Complete Streets Toolkit.</p> <p>Overall, I am really happy with the draft Toolkit and how it will set the standard for changes to streets in communities across the Denver region!</p> <p>I'm particularly excited that the Toolkit prioritizes the different modes of transportation based on each of the unique street types, while accounting for land use and surrounding environment; prioritizes active transportation; encourages vertical traffic calming, like speed bumps, to facilitate slow speeds; and supports planning with all ages and abilities in mind.</p> <p>While I'm excited about a lot in the Toolkit, there is still room for improvement. I was disappointed to see no mention of equity throughout the entire document. I encourage you to look to Denver's Complete Streets Design Guidelines as a model for including equitable street design in this type of guide and hope the Toolkit will be amended to reflect equity as a priority.</p>	Molly North	Email	The toolkit has been revised to include a new section on page 8 to reflect equity as a priority; "Elevate equity: Equity in transportation means ensuring that historically marginalized people can meaningfully influence how transportation systems are planned, designed, maintained, and operated. Complete Streets elevate equity in transportation by being places for all people." Thank you for taking the time to review and provide feedback.

Date	Page	Comment	Name	Type	Response
10-Sep	Overall	<p>Glad to see that the Toolkit prioritizes the different modes of transportation based on each of the unique street types, while accounting for land use and surrounding environment; prioritizes active transportation; encourages vertical traffic calming, like speed bumps, to facilitate slow speeds; and supports planning with all ages and abilities in mind.</p> <p>While I'm excited about a lot in the Toolkit, there is still room for improvement. I was disappointed to see no mention of equity throughout the entire document. Please prioritize equitable street design in this type of guide.</p>	Lee Patton	Email	The toolkit has been revised to include a new section on page 8 to reflect equity as a priority; "Elevate equity: Equity in transportation means ensuring that historically marginalized people can meaningfully influence how transportation systems are planned, designed, maintained, and operated. Complete Streets elevate equity in transportation by being places for all people." Thank you for taking the time to review and provide feedback.
11-Sep	Overall	<p>I'm writing to share my thoughts and feedback on the draft DRCOG Regional Complete Streets Toolkit.</p> <p>Overall, I am really happy with the draft Toolkit and how it will set the standard for changes to streets in communities across the Denver region! I'm particularly excited that the Toolkit prioritizes the different modes of transportation based on each of the unique street types, while accounting for land use and surrounding environment; prioritizes active transportation; encourages vertical traffic calming, like speed bumps, to facilitate slow speeds; and supports planning with all ages and abilities in mind.</p> <p>While I'm excited about a lot in the Toolkit, there is still room for improvement. I was disappointed to see no mention of equity throughout the entire document. I encourage you to look to Denver's Complete Streets Design Guidelines as a model for including equitable street design in this type of guide and hope the Toolkit will be amended to reflect equity as a priority.</p>	Amanda Roberts	Email	The toolkit has been revised to include a new section on page 8 to reflect equity as a priority; "Elevate equity: Equity in transportation means ensuring that historically marginalized people can meaningfully influence how transportation systems are planned, designed, maintained, and operated. Complete Streets elevate equity in transportation by being places for all people." Thank you for taking the time to review and provide feedback.
26-Aug	6	Yeah Safe Routes! But now we also need "Virtual" Safe Routes, and there is talk of schools using tech to de-centralize classrooms, reducing strain on existing buildings and maximize other community resources.	Robin Kerns	Google drive	Thank you for taking the time to review and provide feedback.
10-Sep	6	This should be changed to 'require or encourage...' The Denver area needs to catch up to other cities (Boulder, Seattle, Cambridge, Portland, etc.) that have instituted 20MPH speed limits for minor streets. If we truly want to reduce traffic deaths in our area, this is a non-negotiable. For more, see: https://nacto.org/wp-content/uploads/2020/07/NACTO_CityLimits_Spreads.pdf	Brad Shy	Google drive	Updated text to read "Communities that have implemented Complete Streets have found success in street designs that require or encourage slower motor vehicle speeds, include safe and intuitive crossings and provide connected and continuous sidewalks and bicycle facilities along useful routes connecting students' homes to schools"
17-Sep	8	Thank you for recognizing and publishing this. So important.	Dave Hawkins	Google drive	Thank you for taking the time to review and provide feedback.
17-Sep	8	Agreed!	Dave Hawkins	Google drive	Thank you.
9-Sep	10	Can you set active hyperlinks for both these documents into the PDF	Patrick Santana	Google drive	Links have been added to updated document.
9-Sep	11	Can you set active hyperlinks for both these documents into the PDF	Patrick Santana	Google drive	Links have been added to updated document.
9-Sep	17	Please add to this list: "rolling with assistive devices," -- or find another way to EXPLICITLY include wheelchairs, power chairs, Rollators and other disabled users of our streets.	Patrick Santana	Google drive	Updated text to include edit

Date	Page	Comment	Name	Type	Response
9-Sep	17	Remove parentheses. Make headline "Walking and Rolling." There's nothing secondary about "rolling" and we should be comfortable about making rolling explicit and equal to walking.	Patrick Santana	Google drive	Updated text to include edit
9-Sep	17	suggest stating "walking or rolling" (ie, the use of mobility aids like...)	Patrick Santana	Google drive	Updated text to include edit
26-Aug	19	With air quality such that it is, and the potential need for radical design to meet carbon goals, where is the CO2 in Field to gauge these options?	Robin Kerns	Google drive	The toolkit is intended to provide high-level design guidance, project-level analysis of CO2 emissions should done during the environmental phase of the project. The modal priority graphic also prioritizes travel modes that help reduce emissions.
9-Sep	38	I wouldn't want to be biking on the left side bike lane in this set up. Would prefer Complete Streets guidelines to specify Jersey Barriers or other physical protection of bikelanes on Mountain Roads.	Patrick Santana	Google drive	In this example of a constrained mountain road the adjacent off-street multi-use path is designed for all ages and abilities, while the on-street bike lanes provide an additional option for highly confident bicyclists
9-Sep	38	Agree with above.	David Halterman	Google drive	In this example of a constrained mountain road the adjacent off-street multi-use path is designed for all ages and abilities, while the on-street bike lanes provide an additional option for highly confident bicyclists
9-Sep	48	Lighting, *especially pedestrian scale lighting,* should be Dark Skies Compliant (see IDA's Model Lighting Laws and Policy: https://www.darksky.org/our-work/lighting/public-policy/model-lighting-laws-policy/), at minimum. Complete Streets should do more than ask planners to "consider" Dark Skies Compliance -- it should be part and parcel of reducing negative impacts from street design. Even if those impacts are on migratory birds and light pollution. There is no reason, zero, that lighting should ever be upward-directed. It's a waste of energy and a pollutant. Strengthen the language here.	Patrick Santana	Google drive	Updated to read: Designers should use light fixtures that are compliant with the Illuminating Engineering Society and International Dark Sky Association Model Lighting Ordinance. This model ordinance provides detailed guidance about how to provide effective lighting in a community without producing adverse impacts on the local ecosystem. Additionally, the ordinance provides tables with Backlight, Uplight, and Glare (BUG) maximum allowable ratings for light fixtures to achieve compliance.
9-Sep	53	Is there mention of min. corner radius at corners in this document? The corners in this illustration, for example, are very 'soft' -- allowing northbound drivers to make right turns into the bike lane without slowing down. If not already mentioned in CS document, I would include some guidance on sharpening corners and not allowing "slip lanes."	Patrick Santana	Google drive	The section has been renamed to "Corner Radii" and text added about truck aprons, encroachment, hardened centerlines, and protected corners/turn wedges.
9-Sep	62	San Francisco striping guidelines for Continental crosswalk call for stripes to extend to the *full edge* of the corner radius in BOTH directions. Why is this best practice? Because people gather at the full arc of a corner and step off from there. Crosswalk striping should cover the widest span since we consider walking/rolling users to be the HIGHEST priority in all street designs. This wider striping improves the visibility of bodies in the crossing -- and signals to right-turning drivers that (when they "half turn" the corner and stop for crossing people) they shouldn't be doing that -- the nose of their vehicle is improperly encroaching on walk/roller space.	Patrick Santana	Google drive	Updated text to read: Crosswalks should be striped a minimum of 10 feet wide and at least as wide as the sidewalk. In locations with a high volume of pedestrians, crosswalks may be striped wider than 10 feet.
10-Sep	62	Agreed, failure to make the crosswalks confluent with the sidewalks in this manner is dangerous, especially for wheelchairs.	Brad Shy	Google drive	Updated text to read: Crosswalks should be striped a minimum of 10 feet wide and at least as wide as the sidewalk. In locations with a high volume of pedestrians, crosswalks may be striped wider than 10 feet.

Date	Page	Comment	Name	Type	Response
9-Sep	63	This might be a good place to mention minimizing corner radii to sharpest possible angle. And to not allow slip lanes.	Patrick Santana	Google drive	Updated text to include edit.
9-Sep	67	If there's anywhere in a Complete Street design that should call for mandatory sidewalk extensions (ie, bulb-outs), it is in this example where the corner turns abut a row of parking. Suggest this illustration be modified to show best practice here in this kind of lane configuration. The refuge island is decent --but a truly complete street design here would SHORTEN the overall crossing distance and time by having sidewalk extensions here.	Patrick Santana	Google drive	Graphic has been updated to include curb extensions/bulbouts.
9-Sep	69	Agree with Dave H here. The wider radius encourages faster turns, despite calling it a "protected corner" in the text. A truly protected corner would have sidewalk extensions on both corner facings. Where hardscaping is not possible/feasible, then solid paint "bulb out" on the ground, coupled with flex post bollards around the arch of the painted zone will serve as 'protection' and slow down drivers/prevent short cut turns into the "effective corner radius" shown in this illustration.	Patrick Santana	Google drive	The section has been renamed to "Corner Radii" and text added about truck aprons, encroachment, hardened centerlines, and protected corners/turn wedges.
9-Sep	69	I don't think this is true. Wider radii typically result in higher speeds. I think ideally for safety, we would maintain the same tight radius but push it out further into the intersection to encourage slower speeds while turning. https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/09.htm	Dave Hawkins	Google drive	The section has been renamed to "Corner Radii" and text added about truck aprons, encroachment, hardened centerlines, and protected corners/turn wedges.
9-Sep	69	Seems like the outside circle in the drawing should be more square-like.	Amy Kenreich	Google drive	The section has been renamed to "Corner Radii" and text added about truck aprons, encroachment, hardened centerlines, and protected corners/turn wedges.
9-Sep	69	I seriously don't think any corner should have a 25' radius. I can't imagine Dutch road designers who follow Systemic Safety principles (https://www.youtube.com/watch?v=5aNtsWvNYKE) would allow corners that wide anywhere except at roundabouts.	Patrick Santana	Google drive	The section has been renamed to "Corner Radii" and text added about truck aprons, encroachment, hardened centerlines, and protected corners/turn wedges.
10-Sep	69	This language seems awfully deferential to the truck drivers. I've seen school buses negotiate chicanes that are very sharp -- it's about speed and angle of approach. We encourage sloppy turning by truck drivers when we make wide corners. Truck drivers making too-fast turns on Folsom St in SF have resulted in many bike rider deaths (ex: https://sf.streetsblog.org/2013/08/14/woman-on-bike-killed-by-truck-driver-on-folsom-charges-off-the-table/). The solution is to use sharp corners, bulb outs, bollards, and narrow lanes to slow drivers (incl. vans and trucks) at all intersections -- because it is in this exact interface that many, if not most, traffic violence occurs. Being deferent to the needs of truck drivers in this paragraph is not a Vision Zero approach.	Patrick Santana	Google drive	The section has been renamed to "Corner Radii" and text added about truck aprons, encroachment, hardened centerlines, and protected corners/turn wedges.
10-Sep	69	Agreed. This strategy (actual "corners" and/or bulb outs) is best solution to support Vision Zero.	Brad Shy	Google drive	The section has been renamed to "Corner Radii" and text added about truck aprons, encroachment, hardened centerlines, and protected corners/turn wedges.

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9-Sep	71	Would be nice to see the suggestion that driveway cuts be kept to an absolutely minimum functional width on all Complete Street corridors. There is no reason for extra width in driveway design --other than driver comfort. And the wider the space where vehicle and walking/rolling users interface, the larger the danger zone for those users. Minimization of driveway width should be a CS component.	Patrick Santana	Google drive	Updated text to read: Design driveways to be the minimum width possible to accommodate the most common design vehicles expected to use the driveway on a daily basis.
26-Aug	73	All neighborhoods deserve Placemaking, but the scale does vary. Please allow more creative ROW signage/art at community spots like schools, libraries, etc.	Robin Kerns	Google drive	While local streets aren't included in the regional street typology, local governments' complete streets guidance and policies are a critical element in creating a regional network of complete streets.
9-Sep	75	I question whether this paragraph should be included in a Complete Streets guide. It's calling for expensive "assessments" of demand (which is fungible). The declaration that "All stakeholders including business owners and citizens..." be part of decision-making is unrelated to Complete Streets design. Part of the reason we need CS guides is because average people (esp. business owners) disagree in principle with much of what a Complete Street is -- especially regarding parking. I see no reason at all for this document to describe the community process around parking. Worldwide, we are seeing municipalities doing the OPPOSITE: Oslo, Amsterdam, Paris, etc, are simply removing parking -- without stakeholder dialog. It's a top down decision because stakeholders like business owners inherently block safe street designs when they involve removal of parking. And CS designs always reconfigure parking, even when they don't remove spaces. So I would strike most of this paragraph and focus solely on how Parking is designed in a CS environment.	Patrick Santana	Google drive	Updated text to read: Street redesigns that improve walking, rolling, biking, and transit often include shifting parking, reviewing parking restrictions, and/or removing on-street parking lanes. This requires considering trade-offs in the allocation of street space and rethinking how the street functions to serve all users best. Street width dedicated to on-street parking is highly valuable space that may be better utilized for increased person-throughput capacity, for people walking, rolling, biking, or taking transit.
16-Aug	75	Also curious if there would be any guidance for using parking as additional (permanent) seating for restaurants or various other retail uses.	Dave Hawkins	Google drive	Parklets are included in the Placemaking section so no change was made.
16-Aug	75	Would there be any guidance as to what the cost/rate of storing private property on the street should be?	Dave Hawkins	Google drive	Since this is a design toolkit that does not cover policy no change was made.
9-Sep	76	There are ADA-compliant tree grate designs, though trees should not be placed in the "Sidewalk Zone" anyway, obviating the conflict here. Trees (and grates) should be in the Accessory/Furniture Zone. Period.	Patrick Santana	Google drive	Updated text to read: "Tree grates should not encroach into the minimum 5 foot wide accessible pedestrian route."
9-Sep	82	If only engineers did this kind of compliance without needing "Ensuring" that they're following it. :(Patrick Santana	Google drive	Thank you for taking the time to review and provide feedback.
26-Aug	83	Fire Districts are effectively exempt, yet often are impacting development and budgets beyond reasonable accommodation as it invites personal discretion. So this chart is not complete as a major driver of "practice" is missing.	Robin Kerns	Google drive	Local municipalities should work with their fire departments to incorporate Complete Streets design principles into projects and discussions
9-Sep	87	How about number of pedestrians crossing, rather than # of signals?	Amy Kenreich	Google drive	This is only a sample list of ideas to get people thinking about potential performance measures so no change was made.

Date	Page	Comment	Name	Type	Response
9-Sep	87	I feel that this one is a can of worms... In Denver, the fire department frequently pushes back against safer infrastructure because of their EXTRA LARGE trucks they drive to (mostly) car crashes. Examples include protected bike lanes, roundabouts, pinch points and curb extensions.	Amy Kenreich	Google drive	Local municipalities should work with their fire departments to incorporate Complete Streets design principles into projects and discussions
9-Sep	87	If this is one of the performance measures, I would like to see stronger language around school zones. I am a crossing guard for DPS and I have complained so many times to Denver about my intersection with little response. There is not enough time for small children and mobility challenged people to get across during the walk signal. (the intersection ramps are out of date -- there are only 4 -- and misaligned to make things worse.) Denver has a not very pedestrian friendly formula for figuring the # of seconds pedestrians get to cross and it is not equitable because many intersections still use an older formula. If there is any way you can include language in this document that includes signal timing near schools, I would love it. Also, Denver has a policy about school zones that requires the street to have the school located on it for it to be considered a school zone. The intersection I work at is located a stone's throw away from our school, but is not the street that the school's address sits on. I would like for cities to consider the major routes pedestrians and bicyclists could take to school and apply school zone treatments and exceptions to those routes.	Amy Kenreich	Google drive	Added text to Crosswalks section on Page 62 to read "Design of crosswalks should be the highest priority in school zones to ensure students and caregivers can walk to and from school safely. Special attention should be paid to the signal timing and traffic calming associated with crosswalks in school zones as younger students are more vulnerable than adults and deserve low-stress walking infrastructure."
9-Sep	88	could you include scooters and other people-powered devices?	Amy Kenreich	Google drive	Added text "bicycle and micromobility"
9-Sep	90	If even half the suggestions in this wonderful document were followed on future Denver streets, it would be a positive, amazing transformation. Great work. Love the illustrations.	Patrick Santana	Google drive	Thank you for taking the time to review and provide feedback.
26-Aug	90	Really great document in format and content! Well done!	Robin Kerns	Google drive	Thank you for taking the time to review and provide feedback.
14-Sep	7	DRCOG chose not to delete nor reword this paragraph in their 9/15/21 draft. Strikethrough: Motor vehicles and infrastructure constructed to support them (roadways and parking) contribute to significant energy consumption, waste and air pollution.	Douglas County	Email	This sentence is true. The transportation sector is the largest source of greenhouse gas emissions in the state, and one goal of the Toolkit is to increase opportunities for multimodal travel, recognizing the unique context of communities, street types, and specific streets.
14-Sep	15	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - primarily	Douglas County	Email	Changed text to read "primarily"
14-Sep	17	taking transit, moving freight, or driving,	Douglas County	Email	Edit included in current draft
14-Sep	17	make order consistent with the rest of the document	Douglas County	Email	Updated all instances to read "walking, rolling with assistive devices, bicycling, taking transit, moving freight, or driving".
14-Sep	17	DRCOG changed 'goods' to 'freight' but did not reorder as requested in their 9/15/21 draft	Douglas County	Email	Updated all instances to read "walking, rolling with assistive devices, bicycling, taking transit, moving freight, or driving".
14-Sep	17	DRCOG did not address this comment in their 9/15/21 draft. Clarify that these are not recreational scooters.	Douglas County	Email	Edit included in current draft

Date	Page	Comment	Name	Type	Response
14-Sep	19	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft	Douglas County	Email	See responses below
14-Sep	19	For all street typologies, please consider rearranging this modal priority graphic from high to low rather than keeping the modes in order.	Douglas County	Email	For visual and design consistency between the Toolkit and the story map, the modal priority graphics have not been changed
14-Sep	19	This transit box should be colored green or the word high should be changed to low. Also this orange color does not appear to be the same shade as the orange on the automobile box below.	Douglas County	Email	Current color and wording is consistent across the document
14-Sep	19	Suggest referring to the illustration and calling this note out as item 'D' here on page 19 rather than including it on all street typology pages.	Douglas County	Email	The project team kept the disclaimer on all the drawings in case pages or screenshots are shared out of order/context in the future.
14-Sep	19	For each of the street typologies, consider adding a foot note of the likely range of traffic volume to be accommodated, typical number of travel lanes and whether exclusive right and left turn lanes are present, and the desired vehicle speeds.	Douglas County	Email	Since the cross-section and plan view are intended to only be an illustration of an abstract street no changes have been made.
14-Sep	20	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Downtown Commercial Streets are generally arterials (and some collectors) located in..." - arterials (and some collectors)	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	20	Suggest adding a suburban commercial street typology. Generally collector roadways located in a traditional business park with large building setbacks, off street parking, adjacent to or near TOD. Eclectic mix of office, commercial, and residential land uses.	Douglas County	Email	Regional connector streets already include many of the characteristics provided: "include buildings with large setbacks and off-street parking and facilitate long-distance trips for transit and driving." Changes to the street typology will be considered as part of the next amendment cycle for the 2050 Regional Transportation Plan in 2022.
14-Sep	22	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Downtown Mixed Use Streets are generally collectors and minor arterials located in..." - collectors and minor arterials	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	22	Text indicates high levels of parking but the illustration does not show any parking.	Douglas County	Email	This graphic is intended to be illustrative of the intersection in particular. Parking would be included further from the intersection shadowing the space taken by the bus boarding islands in the graphic.
14-Sep	23	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: Should this be 'High' to support the 'high levels of parking turnover'?	Douglas County	Email	Kept medium as a balance between the low modal priority of driving and high parking turnover.

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14-Sep	24	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Neighborhood Main Streets are generally collectors and minor arterials located in..." - collectors and minor arterials	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	26	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Mixed Use Streets are generally collectors and arterials that support a mix of..." - are generally collectors and arterials that	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	27	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Parking compatibility is listed as 'low' but the illustration shows ample parking. Suggest 'medium'	Douglas County	Email	Updated design element compatibility to medium
14-Sep	28	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Regional Connector Streets are generally arterials that mainly support..." - are generally arterials that	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	29	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Suggest 'medium'	Douglas County	Email	Regional connector streets represent one of the greatest needs and opportunities to elevate pedestrian prioritization.
14-Sep	30	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Neighborhood Connector Streets are generally collectors and minor arterials that support..." - are - collectors and minor arterials that	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	32	The word large was added in the 9/15/2021 draft. The other comments on this page were not addressed. - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Industrial Streets are generally collectors and minor arterials which serve..." - are generally collectors and minor arterials which	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	32	clarify the 'set back'. Suggest 'large'	Douglas County	Email	Edit included in current draft

Date	Page	Comment	Name	Type	Response
14-Sep	33	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Suggest 'medium' which is consistent with 'average' compatibility of design elements on page 45.	Douglas County	Email	Not all people working and visiting industrial areas have a personal vehicle. Walking and rolling should be prioritized, especially as it relates to first and last mile connections to transit.
14-Sep	33	Suggest 'medium'	Douglas County	Email	Updated design element compatibility to medium
14-Sep	34	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Suggest adding transit vehicles and removing motor vehicles from the illustration	Douglas County	Email	Replaced text with: Some special-use streets allow any vehicle traffic, while others restrict traffic to emergency responders, transit, or deliveries only. Either type of design should still incorporate robust traffic calming to indicate to drivers they are entering a special street environment where non-motorized users have the highest priority.
14-Sep	36	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Rural Roads are generally highways and arterials located in..." - highways and arterials located in	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	36	This is the only illustration that shows exclusive turn lanes and perhaps the least like to have or need them. The sidewalks and crosswalks as depicted are unlikely to be realized in many rural settings.	Douglas County	Email	Rural roadways can often have high-speed traffic, making sidewalks, crosswalks, and turn lanes (at appropriate locations) a high priority.
14-Sep	38	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Draft street typologies previously distributed to steering committee members included the 'bridge' to the traditional roadway classifications. In this case, "Mountain Roads are generally highways, arterials, and collectors that are characterized by ..." - are generally highways, arterials, and collectors	Douglas County	Email	To reflect the unique classifications each community uses and not mix traditional classifications with street types no change has been made.
14-Sep	44	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft	Douglas County	Email	See responses below
14-Sep	44	High	Douglas County	Email	This was kept at medium.
14-Sep	44	Medium	Douglas County	Email	This was changed to medium.
14-Sep	47	With the exception of the one suggested text addition, DRCOG chose not to incorporate comments on this page in their 9/15/21 draft	Douglas County	Email	See responses below
14-Sep	47	street lights,	Douglas County	Email	Edit included in current draft
14-Sep	47	Replace "limited exceptions" with "the exception of rural and mountain roads."	Douglas County	Email	Text was kept as is so as not to exclude entire street types.
14-Sep	47	Douglas County disagrees with this statement and believes that when detached, meandering sidewalks help encourage use and add to the level of interest and comfort for users. Perhaps some discussion about attached vs. detached walks is appropriate in this section.	Douglas County	Email	Added this sentence: In some special cases in more suburban contexts or adjacent to open space areas, meandering sidewalks may be desirable to enhance visual interest.

Date	Page	Comment	Name	Type	Response
14-Sep	50	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - as well as complementary to winter street and sidewalk maintenance during the colder months.	Douglas County	Email	Added this text: Designers should also consider the effects of shade on the formation of ice dams on streets and sidewalks during the winter months and associated maintenance costs.
14-Sep	51	DRCOG chose to incorporate most of comments on this page in their 9/15/21 draft: - safest - I believe the author has these terms reversed or at the least a reconfiguration and a road diet are synonymous. Page 3 of supporting resources has a good definition as well as the FHWA website: https://safety.fhwa.dot.gov/road_diets/	Douglas County	Email	Edit included in current draft
14-Sep	51	- but 11 to 12 feet is desirable. - trucks and	Douglas County	Email	Added this sentence: Curbside travel lanes in areas with heavy freight truck traffic may also need 11' travel lanes to accommodate the full width of the trucks.
14-Sep	54	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Most Colorado Counties adopt the CDOT state highway access code. Consider combining this section with the 'traffic calming' section or changing the name to 'Redirecting Motorized Vehicles', or similar to avoid confusion.	Douglas County	Email	Renamed section to "Traffic Restrictions to Support Nonmotorized Users"
14-Sep	56	DRCOG addressed comments on this page in their 9/15/21 draft	Douglas County	Email	Thank you for taking the time to review and provide feedback.
14-Sep	56	- more - / - and rural and mountain roads - Neighborhood	Douglas County	Email	Text was kept as is.
14-Sep	57	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - conflict with	Douglas County	Email	Text was kept as is.
14-Sep	63	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - Strikethrough: Lengthen ramp and reduce slope below the maximum allowable standards where possible.	Douglas County	Email	This text is important and was kept as is.
14-Sep	64	Strikethrough: and	Douglas County	Email	Edit included in current draft
14-Sep	64	DRCOG chose not to incorporate this comment in their 9/15/21 draft. Douglas County disagrees with this statement and would prefer language that enhanced pedestrian phasing should be considered in areas of high pedestrian use not jurisdictional-wide.	Douglas County	Email	While different viewpoints are acknowledged and understood, almost all areas have the potential for increases future pedestrian activity, and the Toolkit is not intended to preclude or limit these areas.
14-Sep	64	DRCOG addressed these comments in their 9/15/21 draft	Douglas County	Email	Thank you for taking the time to review and provide feedback.
14-Sep	64	3.5	Douglas County	Email	Edit included in current draft
14-Sep	64	Current MUTCD standard is 3.5 seconds	Douglas County	Email	Edit included in current draft
14-Sep	64	protected only left turn phasing and prohibiting right turns on red	Douglas County	Email	Edit included in current draft

Date	Page	Comment	Name	Type	Response
14-Sep	64	(APS)	Douglas County	Email	DRCOG standard is to minimize the use of acronyms.
14-Sep	64	DRCOG chose not to incorporate this comment in their 9/15/21 draft. Strikethrough: Signal coordination uses a pre-timed signal timing program.	Douglas County	Email	This sentence was removed.
14-Sep	65	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - This restricted area should be based on the vehicle approach speeds (posted, design, or 85th %tile)	Douglas County	Email	No change was made. This is general guidance for raised crossings, where 20' or greater is a best practice. If a detailed traffic speed analysis is required, the location may need other traffic calming or street geometric redesign techniques first before introducing a raised crossing.
14-Sep	68	DRCOG chose not to incorporate comments on this page in their 9/15/21 draft: - , but are not appropriate for industrial streets.	Douglas County	Email	Text was kept as is, as curb extensions could be appropriate in certain locations for certain industrial streets.



Regional Complete Streets Toolkit

Regional Transportation Committee
October 19, 2021

Jacob Riger, AICP | Alvan-Bidal Sanchez, AICP | Trung Vo, AICP, PE, Toole Design Group

Regional Complete Streets Toolkit

“The Complete Streets Toolkit provides guidance for local jurisdictions to adopt the Complete Streets approach where streets are balanced for all modes of transportation, including walking, bicycling, taking transit, freight, and driving.”

The toolkit is intended to:

1. **Support the implementation** of the 2050 Metro Vision Regional Transportation Plan.
2. **Provide resources** for Complete Streets implementation.
3. Encourage **cross-jurisdictional collaboration** to plan design and build Complete Streets throughout the Denver region.

Project goals

- Support the development of a safe, connected and comfortable transportation network for all modes and all users.
- Promote the use of the latest complete streets design criteria and guidelines.
- Develop a multimodal street design typology.
- Develop a Complete Streets toolkit to create awareness and provide guidance on a variety of street design measures.
- Provide resources for project sponsors applying for funding.
- Inform DRCOG project prioritization.

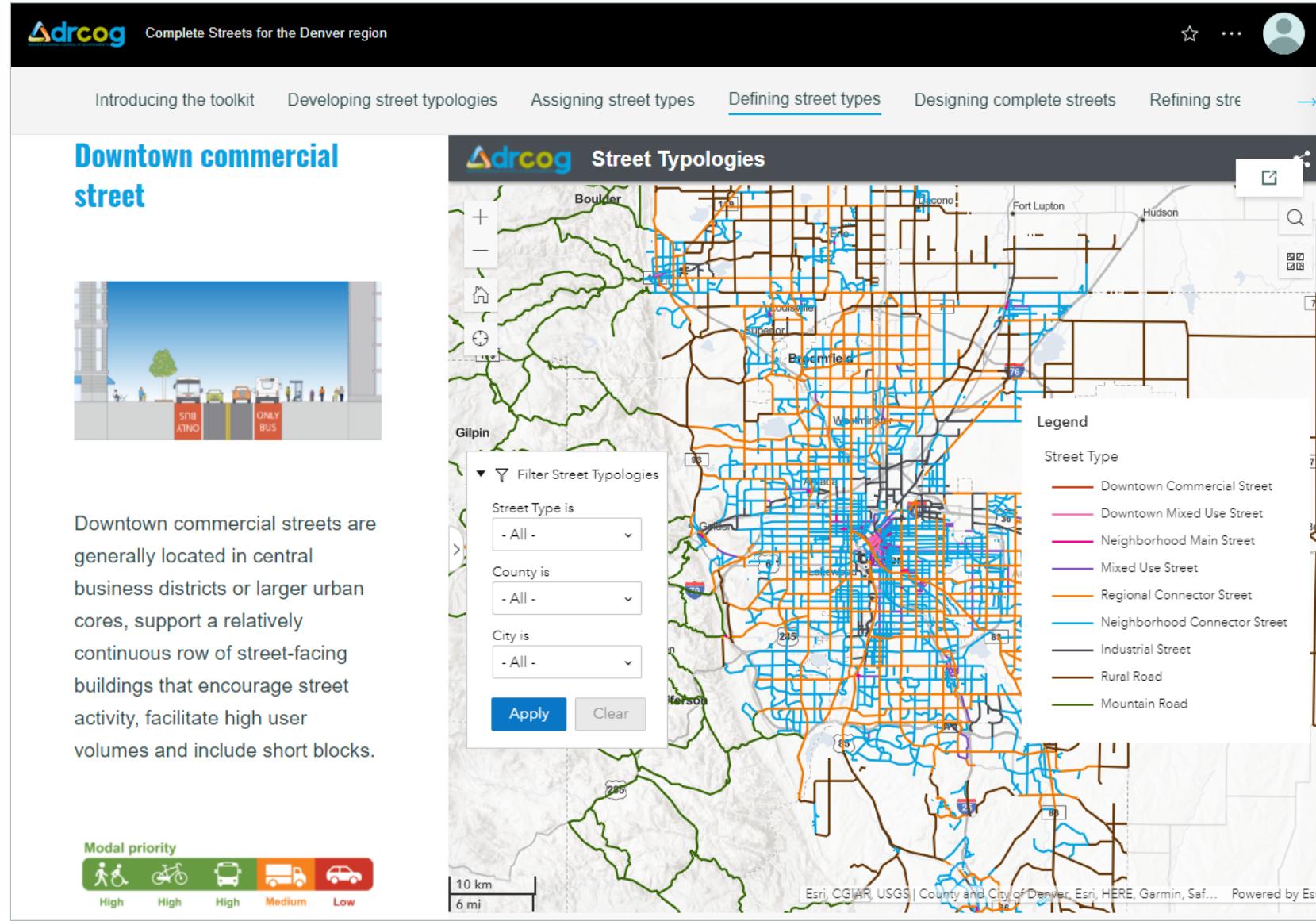


Street types in the Denver region

- 1. Downtown commercial street
- 2. Downtown mixed-use street
- 3. Neighborhood main street
- 4. Mixed use street
- 5. Regional connector street
- 6. Neighborhood connector street
- 7. Industrial street
- 8. Special-use street
- 9. Rural road
- 10. Mountain road

The regional street typology does not include limited access highways or local streets.

Regional Complete Streets Story Map



The screenshot shows a web-based map application for the Denver region. The top navigation bar includes the drcoog logo, a search bar, and user account icons. Below the header, a navigation menu lists: Introducing the toolkit, Developing street typologies, Assigning street types, Defining street types, Designing complete streets, Refining stree... A blue callout box highlights the "Downtown commercial street" section.

Downtown commercial street



Downtown commercial streets are generally located in central business districts or larger urban cores, support a relatively continuous row of street-facing buildings that encourage street activity, facilitate high user volumes and include short blocks.

Modal priority

High	High	High	Medium	Low

Street Typologies

Map legend:

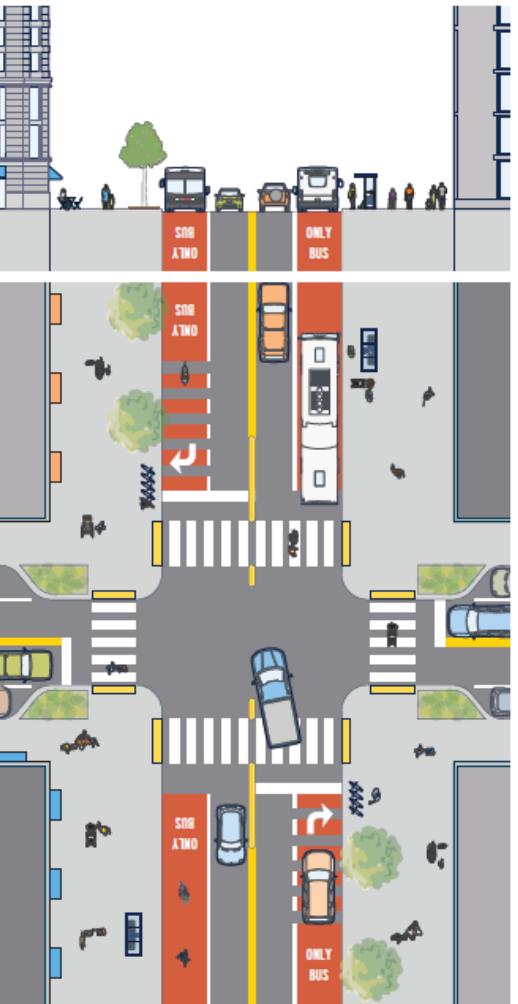
- Downtown Commercial Street
- Downtown Mixed Use Street
- Neighborhood Main Street
- Mixed Use Street
- Regional Connector Street
- Neighborhood Connector Street
- Industrial Street
- Rural Road
- Mountain Road

Map controls include zoom (+/-), location (house), and orientation (compass). A scale bar shows 10 km / 6 mi. The map displays a complex network of roads across several counties, with different colors representing the defined street typologies.

Street type design profiles

Downtown Commercial Street

Downtown Commercial Streets are generally located in central business districts or larger urban cores, support a relatively continuous row of street-facing buildings that encourage street activity, facilitate high user volumes and include short blocks.



This illustration is intended to represent one type of street. Practitioners should use the Toolkit and other resources to their judgement based on street and land use context.

Modal priority



Design element compatibility

Pedestrian elements

- H Sidewalks
- H Lighting
- H Street furniture
- H Shade

General roadway elements

- H Traffic calming
- H Access management
- L Travel lanes
- L Medians
- Pavement types

Bicycle/micromobility elements

- H Bicycle facilities
- H Bicycle/micromobility parking

Transit elements

- H Transit lanes
- H Transit stops
- H Transit signal priority
- H Mobility hubs

Intersection and crossing elements

- H Crosswalks
- H Curb ramps
- H Signalization
- H Bikeways at intersections
- H Curb extensions
- H Protected corners
- H Hardened centerlines
- L Raised crossings
- L Median refuges
- Driveways

Curbside elements

- H Loading
- H Placemaking
- H Wayfinding
- M Parking

Landscaping and irrigation elements

- H Street trees
- H Green infrastructure



Design elements

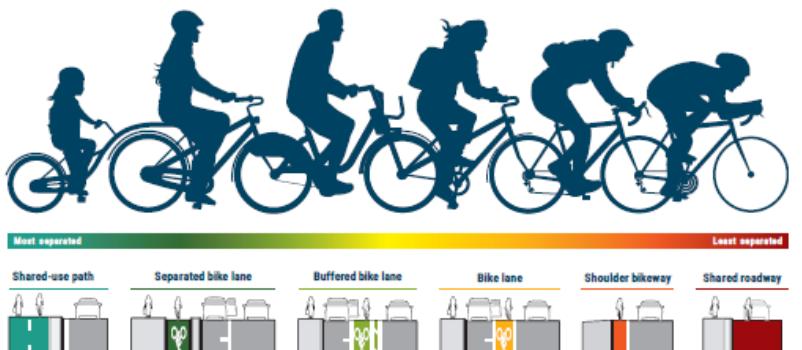
Bicycle/micromobility elements

Bikeway Types and Selection Guidance

The selection of bikeway types primarily depends on the traffic volume and operating speed characteristics of the roadway, which are often implied by their functional classification (arterial, collector, local) within various land use contexts. The land use context will likely have a big effect on the available right-of-way, the mix of roadway users, property access, traffic operating speeds, road operations, safety performance and community goals. All of these will inform street design decision-making.

For streets with higher volumes and higher speeds, consider a bikeway such as a shared-use path or a separated bike lane, that is more separated from motor vehicle traffic to increase the safety and comfort for bikeway users. Less separated bikeways, such as shared roadways and shoulder bikeways, are only acceptable on low-volume and low-speed streets and rural roads. In general, bikeways that accommodate users of all ages and abilities is crucial to creating safe and inviting bikeways.

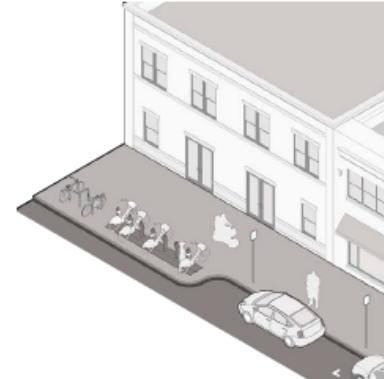
Bikeway facilities are most applicable to Downtown Commercial Streets, Downtown Mixed-Use Streets. Paved shoulders as space to ride bicycles are acceptable on Rural Roads.



Bicycle/micromobility elements

Bicycle and Micromobility Parking

Parking for bicycles and micromobility devices are key end-of-trip features. Structures for people to securely lock their bicycles or shared micromobility devices can be installed on- or off-street. Parking may be located near transit stops as well as in the amenity zone, provided there is adequate width to maintain an unobstructed path of travel for people walking and using assisted mobility devices. In addition, bike parking corrals may be located in the curbside lanes of streets or in daylighting areas (areas with no visual obstructions) at street corners where there is high parking demand and little available sidewalk space. Local governments should coordinate with one another and RTD where appropriate regarding dockless micromobility parking.



Bicycle/micromobility parking that is convenient and secure is a key end-of-trip feature.

Supporting resources

- [National Association of City Transportation Officials Urban Bikeway Design Guide](#)
- [Federal Highway Administration Small Town and Rural Multimodal Networks](#)
- [Federal Highway Administration Separated Bike Lane Planning and Design Guide](#)

Planning and design guidance

Bike parking within amenity or frontage zones cannot encroach on the clear sidewalk zone when a bicycle or micromobility device is parked there. A minimum clear width of 5 feet must be preserved. Within the amenity zone, bike parking may be installed perpendicular, parallel or at an angle to the curb. Parking within the amenity zone should be sufficiently set back from the curb to ensure a bicycle of at least 6 feet in length will fit on the curb and will not be damaged by car doors or an adjacent parking lane.

On-street bike parking should be installed a minimum of 24 inches from the curb, with 36 inches being the preferred setback. On-street corrals should be delineated with a vertical element such as a post, stop, concrete barrier or flex post to prevent motor vehicle encroachment. Ensure that drainage and snow removal is considered for bicycle and micromobility parking that is both on-street and in the amenity zone sidewalks.

Sidewalk bike racks should be placed a minimum of 10 feet from all fire hydrants and should not be placed within 3 feet of a tree grate or any streetscape fixture or within 4 feet of the corner of any building.

- Pedestrian**
- General roadway**
- Bicycle and micromobility**
- Transit**
- Intersections and crossings**
- Curbside**
- Landscaping**

Steering committee & public comment period

Steering Committee involvement

- Local governments & stakeholders from across the region
- Met between December 2020-July 2021
- Reviewed draft document in July

Public comment period

- August 16th through September 15th
- Over 100+ distinct comments received (PDF markup)

Comments received & disposition

- Support for Toolkit
- Many technical comments/suggestions
- Comments matrix shows comments received, staff responses, and Toolkit revisions made



We make life better!
drcog
DENVER REGIONAL COUNCIL OF GOVERNMENTS

Provide feedback on the Complete Streets Toolkit

A draft of the Complete Streets Toolkit is now available for review.

What is the Complete Streets Toolkit?

The Complete Streets Toolkit provides guidance for local jurisdictions to adopt a Complete Streets approach to streets that considers users of all modes of transportation, including walking, bicycling, transit and driving.

The toolkit also:

- Establishes a vision for how local governments can adopt and apply Complete Streets policies.
- Provides decision-makers, planners and designers guidance for planning, designing and implementing Complete Streets.
- Offers implementation considerations for local, regional and partner organizations.

[Review the draft](#)

[Add your comments directly](#)

Share your thoughts on the Complete Streets Toolkit.



Proposed motion

*Move to recommend the Board adopt
the draft Regional Complete Streets
Toolkit.*





**THANK YOU!
QUESTIONS?**

Jacob Riger, AICP | jriger@drcog.org
Alvan-Bidal Sanchez, AICP | asanchez@drcog.org

ATTACH D

ATTACHMENT D

To: Chair and Members of the Regional Transportation Committee

From: Jacob Riger, Manager, Long Range Transportation Planning
303-480-6751 or jriger@drcog.org

Meeting Date	Agenda Category	Agenda Item #
October 19, 2021	Action	6

SUBJECT

Confirming the Freight special interest member on the Transportation Advisory Committee (TAC) nominated by Board Chair Ashley Stolzmann.

PROPOSED ACTION/RECOMMENDATIONS

Staff recommends confirming the Freight special interest member nomination made by Board Chair Ashley Stolzmann.

ACTION BY OTHERS

N/A

SUMMARY

The DRCOG Board of Directors adopted the TAC committee description, composition, and operating procedures documented in the [Transportation Planning in the Denver Region](#). The Transportation Advisory Committee (TAC) assists the Board of Directors and the Regional Transportation Committee (RTC) by reviewing the work of the transportation planning process, advising on methods of planning and implementation, and working with staff to develop policy options and, as appropriate, recommendations to the RTC.

There are seven special interest members on TAC providing subject matter expertise in issues relating to the regional transportation planning process. There is currently a vacancy for the Freight member due to a recent retirement. To fill a special interest member seat, DRCOG staff conducts a competitive application process, and a candidate is nominated by Board Chair Ashley Stolzmann and confirmed by RTC. To address this vacancy, Board Chair Stolzmann is nominating Walter Weart, a retired freight professional with more than 40 years of logistics and transportation experience, for approval by RTC at its October meeting. With this approval, the appointment would become effective with the November TAC meeting.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

Move to confirm the appointment of Walter Weart as the Freight special interest member on the Transportation Advisory Committee.

ATTACHMENT

N/A

ADDITIONAL INFORMATION

If you need additional information, please contact Jacob Riger, Manager, Long Range Transportation Planning, at 303-480-6751 or jriger@drcog.org.

ATTACH E

ATTACHMENT E

To: Chair and Members of the Regional Transportation Committee

From: Robert Spotts, Program Manager, Mobility Analytics
303-480-5626 or rspotts@drcog.org

Meeting Date	Agenda Category	Agenda Item #
October 19, 2021	Informational Briefing	7

SUBJECT

Congestion Management Process and the *2020 Annual Report on Roadway Traffic Congestion in the Denver Region*.

PROPOSED ACTION/RECOMMENDATIONS

N/A

ACTION BY OTHERS

N/A

SUMMARY

DRCOG maintains a federally-required congestion management process (CMP). One component of the process is the calculation of congestion measures for roadways in the DRCOG region. Since 2006, this data has been presented through an annual report on traffic congestion.

Staff will present a draft version of the *2020 Annual Report on Roadway Traffic Congestion in the Denver Region* to the RTC. In a deviation from the format of DRCOG's previous annual reports on congestion, this report addresses the extraordinary changes in regional travel that occurred in 2020 in response to the COVID-19 pandemic. It illustrates the relationship between vehicle travel and roadway congestion through changes observed in 2020. The report also addresses how observations from 2020 may inform future transportation planning activities and explores the potential long-term effects of the pandemic, primarily through changes to work locations and time-of-day travel patterns. The report concludes with regional travel projections for 2050 associated with the newly adopted 2050 Metro Vision Regional Transportation Plan.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

N/A

ATTACHMENT

1. Draft *2020 Annual Report on Roadway Traffic Congestion in the Denver Region*
2. Staff presentation

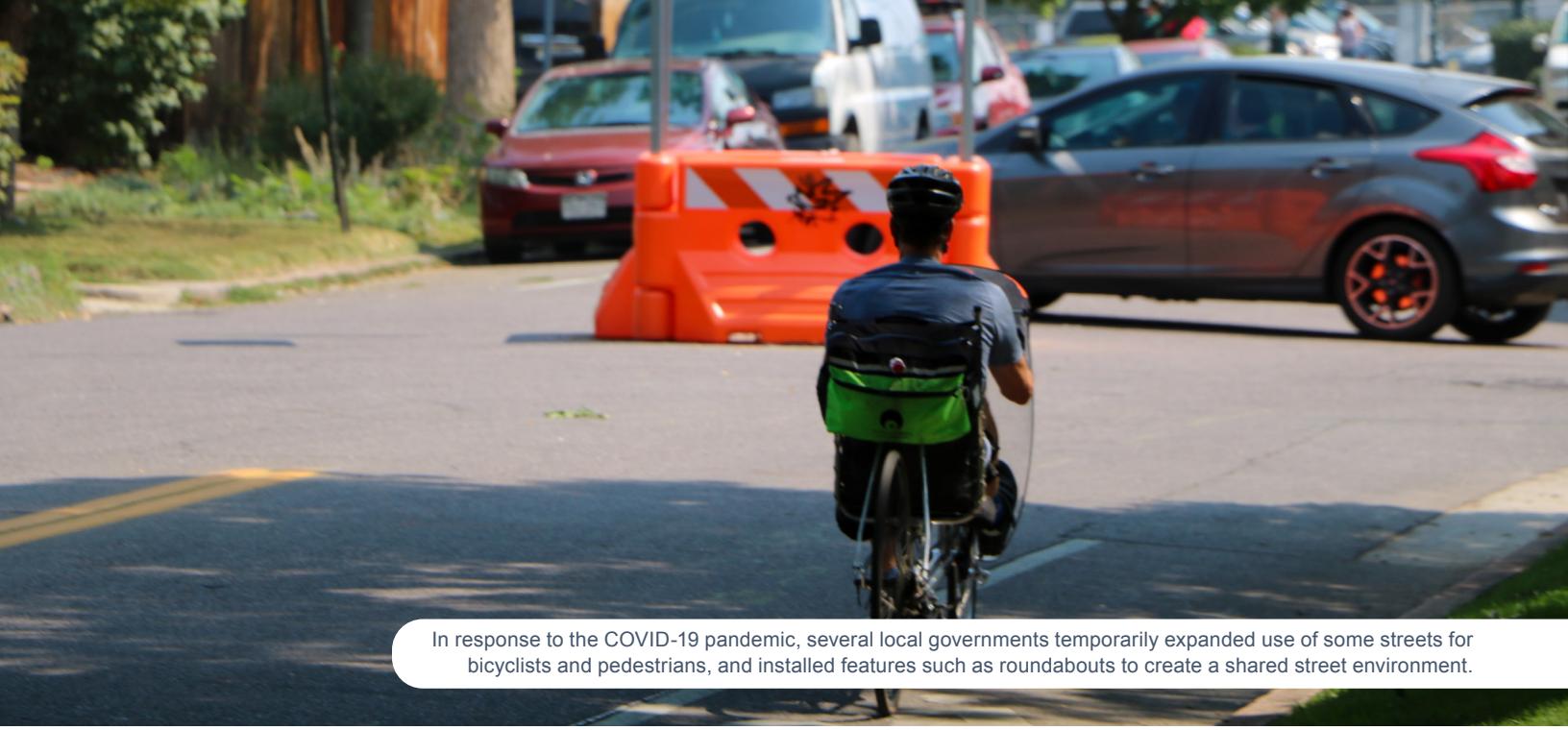
ADDITIONAL INFORMATION

If you need additional information, please contact Robert Spotts, Program Manager, at 303-480-5626 or rspotts@drcog.org.



2020 Annual Report on Roadway Traffic Congestion in the Denver Region

September 2021



In response to the COVID-19 pandemic, several local governments temporarily expanded use of some streets for bicyclists and pedestrians, and installed features such as roundabouts to create a shared street environment.

Introduction

For the past 15 years, DRCOG's *Annual Report on Roadway Traffic Congestion in the Denver Region* has provided consistent analysis and monitoring of the performance of the region's roadways. The COVID-19 pandemic, which began affecting the United States in 2020, disrupted long-standing travel patterns as government policies and personal safety measures to reduce the spread of the virus changed how people traveled and the amount of vehicle traffic on the region's roadways.

The loss of life and economic disruption of the pandemic was tremendous, coupled with uncertainty and the challenging personal decisions it caused individuals and families to make. During the pandemic, businesses, restaurants, offices and schools closed or changed how they operated, significantly decreasing demand for travel. Personal safety measures resulted in people staying home and minimizing nonessential trips.

Communities and organizations across the region have demonstrated resilience in adapting and rebuilding as a result of the pandemic. DRCOG's

staff intends to use 2020 pandemic year data and observations to enhance the understanding of travel in the region, and use what it has learned to improve travel conditions.

In a deviation from the typical format of DRCOG's previous annual reports on congestion, this report addresses the extraordinary changes in regional travel that occurred in 2020. It illustrates the relationship between vehicle travel and roadway congestion through changes observed in 2020. The report also addresses how observations from 2020 may inform future transportation planning activities and explores the potential long-term effects of the pandemic, primarily in changes to work locations and time-of-day travel patterns.

The report concludes with regional travel projections for 2050 associated with the newly adopted 2050 Metro Vision Regional Transportation Plan. The 2050 plan, along with extensive local, regional and state planning efforts, created new considerations for how DRCOG will measure and monitor traffic congestion into the future.

Traffic volume variations in 2020

Pre-pandemic predictability

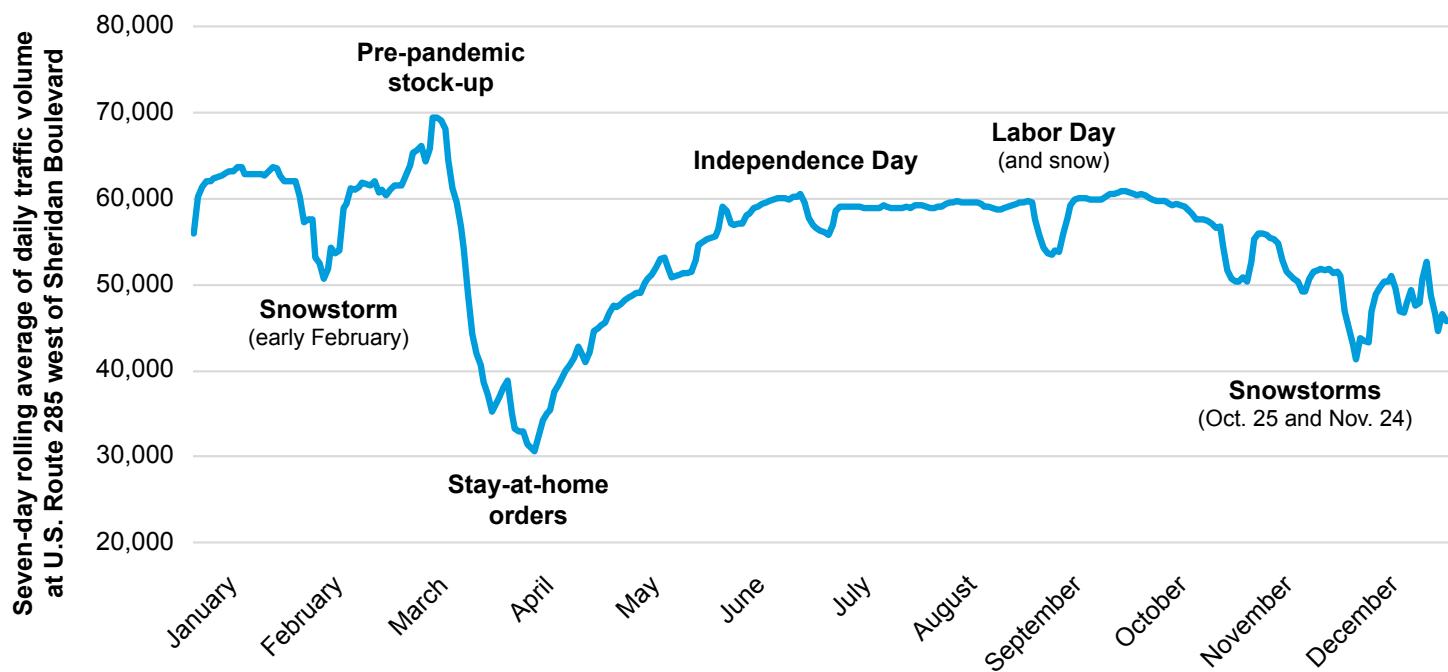
Traffic volumes and congestion in the beginning of 2020 were as expected by the region's transportation planners. January and February were comparable to the same months in 2019. But as in every year, daily variations due to snowstorms and other disruptive events caused unique daily vehicle travel results. Based on January and February alone, transportation planners expected that changes to traffic volume and congestion across the region would remain comparable to 2019 with new congestion in areas where significant growth and development had occurred during the previous year.

Pandemic disruptions

The pandemic began to influence traffic volumes and congestion in the Denver region in March 2020. Permanent traffic counters maintained by the Colorado Department of Transportation revealed an increase in volumes for a few days mid-March, likely due to individuals in the region stocking up on goods in anticipation of shortages and travel restrictions. Traffic volumes began to decline significantly in late March. The decrease in travel occurred for several reasons:

- Stay-at-home orders.
- Job loss and restricted options for leisure activities.
- An increase in teleworking.

Figure 1: 2020 traffic volume (representative sample)

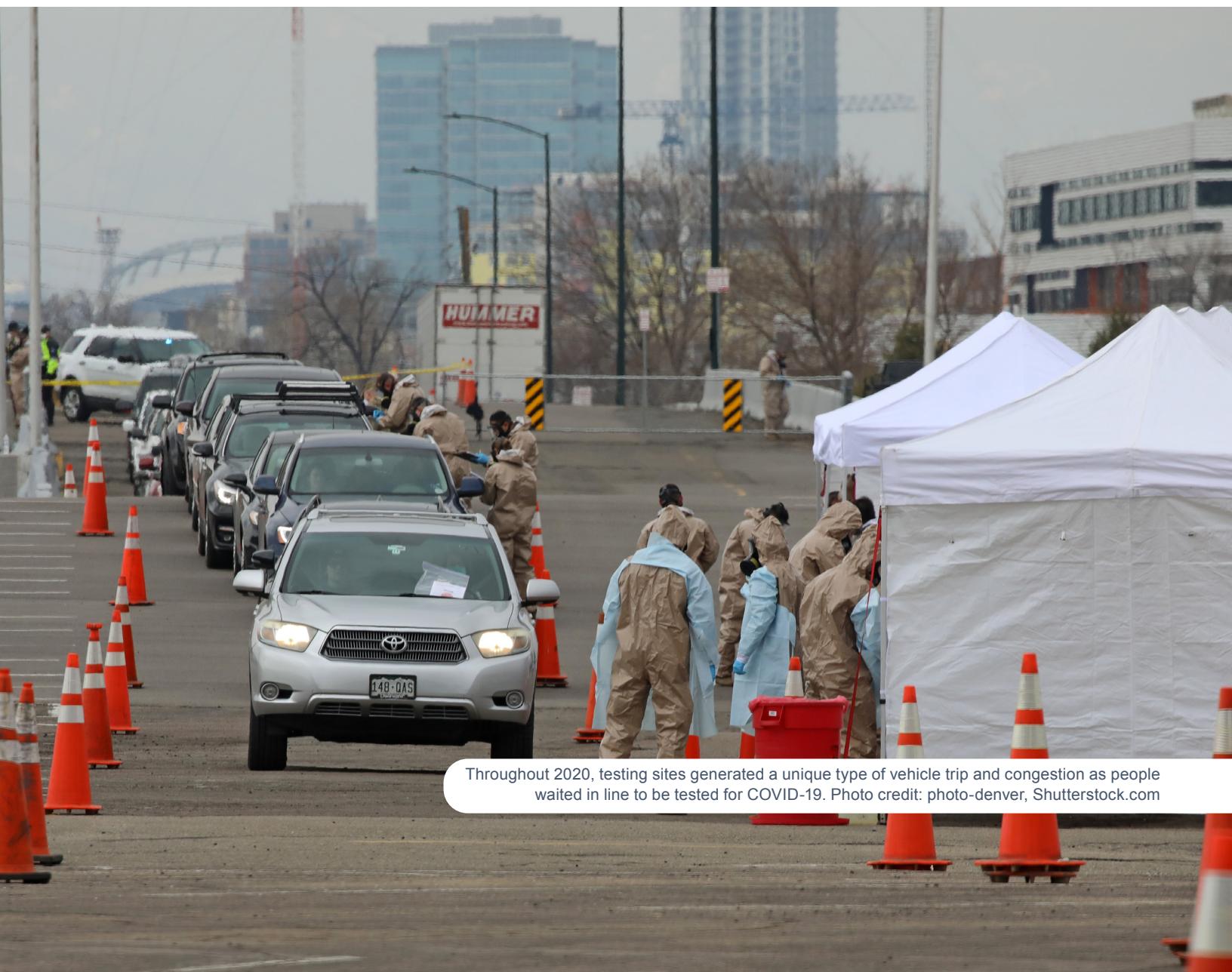


Source: Colorado Department of Transportation Automated Traffic Recorder Data

Figure 1 shows how traffic volumes changed on U.S. Route 285 west of Sheridan Boulevard, a representative roadway in the region. The volume displayed is a seven-day rolling average for all days of the week. Day-to-day averages reveal that total vehicle miles traveled on U.S. Route 285 bottomed out in April with 50-60% less vehicle miles traveled than in 2019.

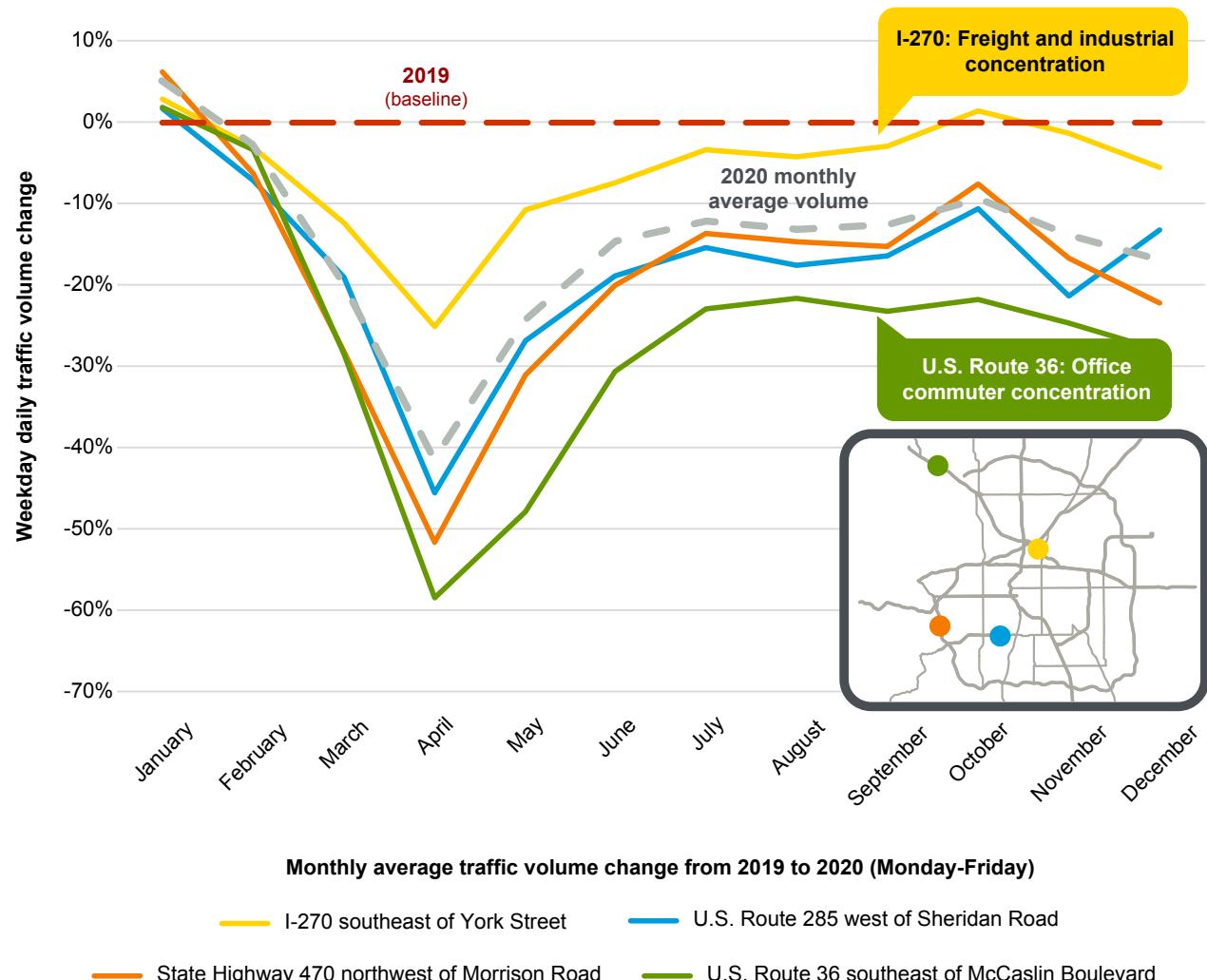
For the region as a whole, weekday traffic volumes in April 2020 were 40% less than in April 2019. Daily

traffic volumes increased through the spring. In June 2020, regional average volumes were approximately 15% less than in June 2019. By October 2020, average regional traffic volumes returned to approximately 10% less than they had been in October 2019. November and December brought more variation due to holiday travel and evolving gathering restrictions. For November and December, average weekday regional traffic volumes in 2020 were approximately 15-20% less than in 2019.



Throughout 2020, testing sites generated a unique type of vehicle trip and congestion as people waited in line to be tested for COVID-19. Photo credit: photo-denver, Shutterstock.com

Figure 2: 2019 to 2020 traffic volume changes



In 2020, regional traffic volume decreased regionwide from 2019 level, but the amount of the decrease varied widely at specific locations throughout the region. Source: Colorado Department of Transportation Automated Traffic Recorder Data

Differences by location

Despite some regionwide trends, the amount of the decrease in traffic volume varied greatly at specific locations across the region. Figure 2 shows the differences in volumes at four locations across the region, comparing Monday through Friday volumes in 2019 and 2020.

In April of 2020, monthly average traffic on U.S. Route 36 southeast of McCaslin Boulevard decreased by

almost 60%, a considerably larger decrease than other locations where CDOT has permanent vehicle-counting equipment. The relative decrease in volumes persisted throughout the year, likely due to the high share of office commuters who use U.S. Route 36 who continued to work from home throughout 2020. At I-270 southeast of York Street, a higher share of commercial activity resulted in a decrease of only 25% in April 2020. By October 2020, this location had slightly more average weekday traffic than in 2020.

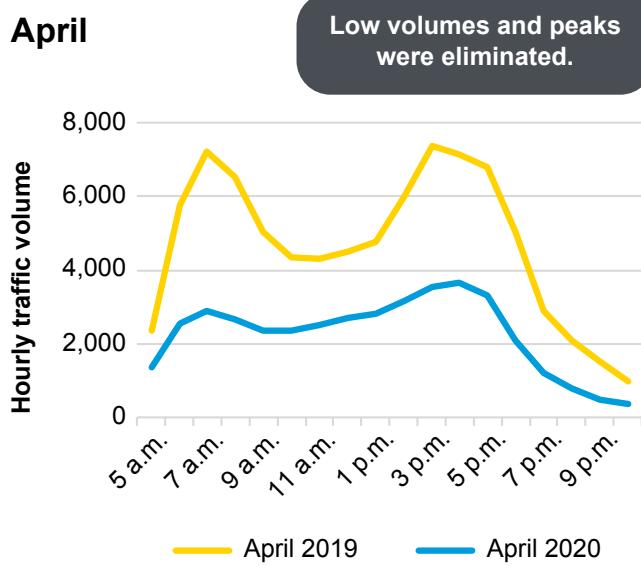
Differences by time of day

In response to the pandemic, people also changed the time of day they were traveling. Daily travel by hour and the distribution of traffic volumes throughout the day were affected by the differences in travel demand. Figure 3 shows hourly traffic volumes for C-470 northwest of State Highway 8 (Morrison Road),

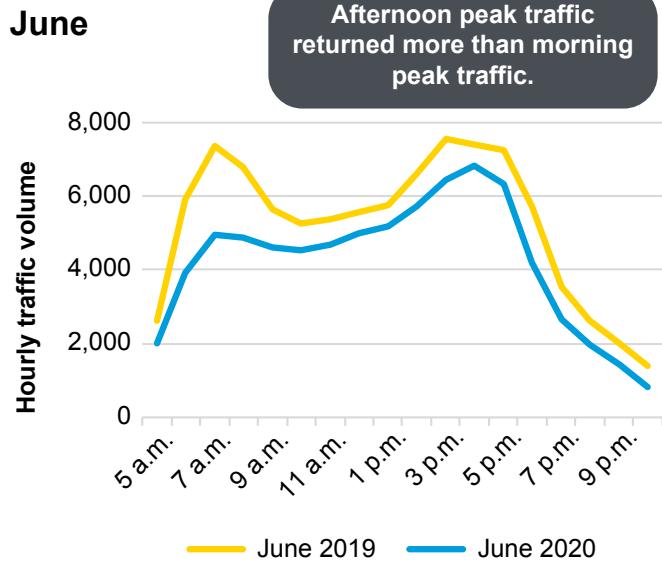
comparing 2019 and 2020 for April, June, October and December. Generally, peak hour trips decreased more than midday trips. Afternoon peak trips returned to close to normal levels, while morning peak trips have not returned to 2019 levels.

Figure 3: Hourly traffic volumes on State Highway 470 northwest of Morrison Road by month

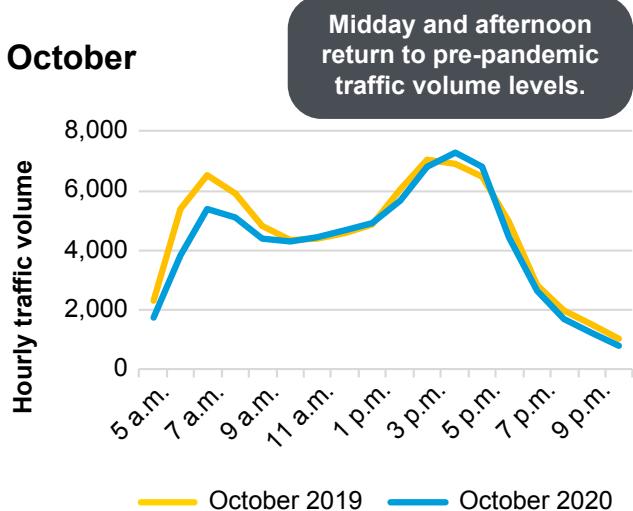
April



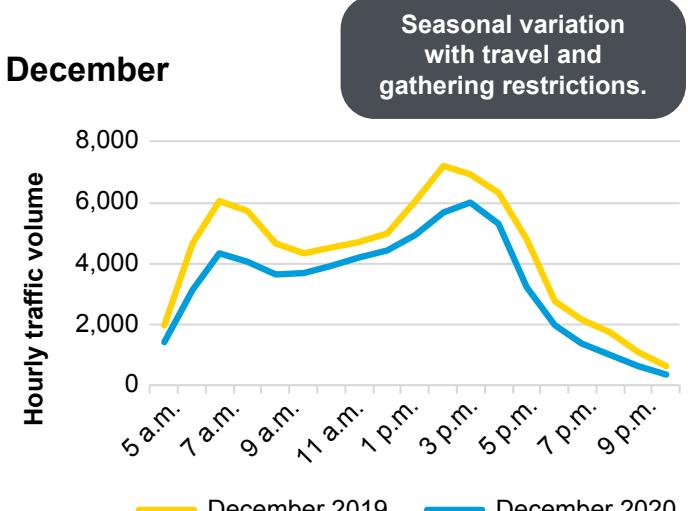
June



October



December



Source: Colorado Department of Transportation Automated Traffic Recorder Data.

Vehicle miles traveled

Every year, DRCOG staff estimates the annual change in total vehicle miles traveled on the region's roadways during an average weekday.

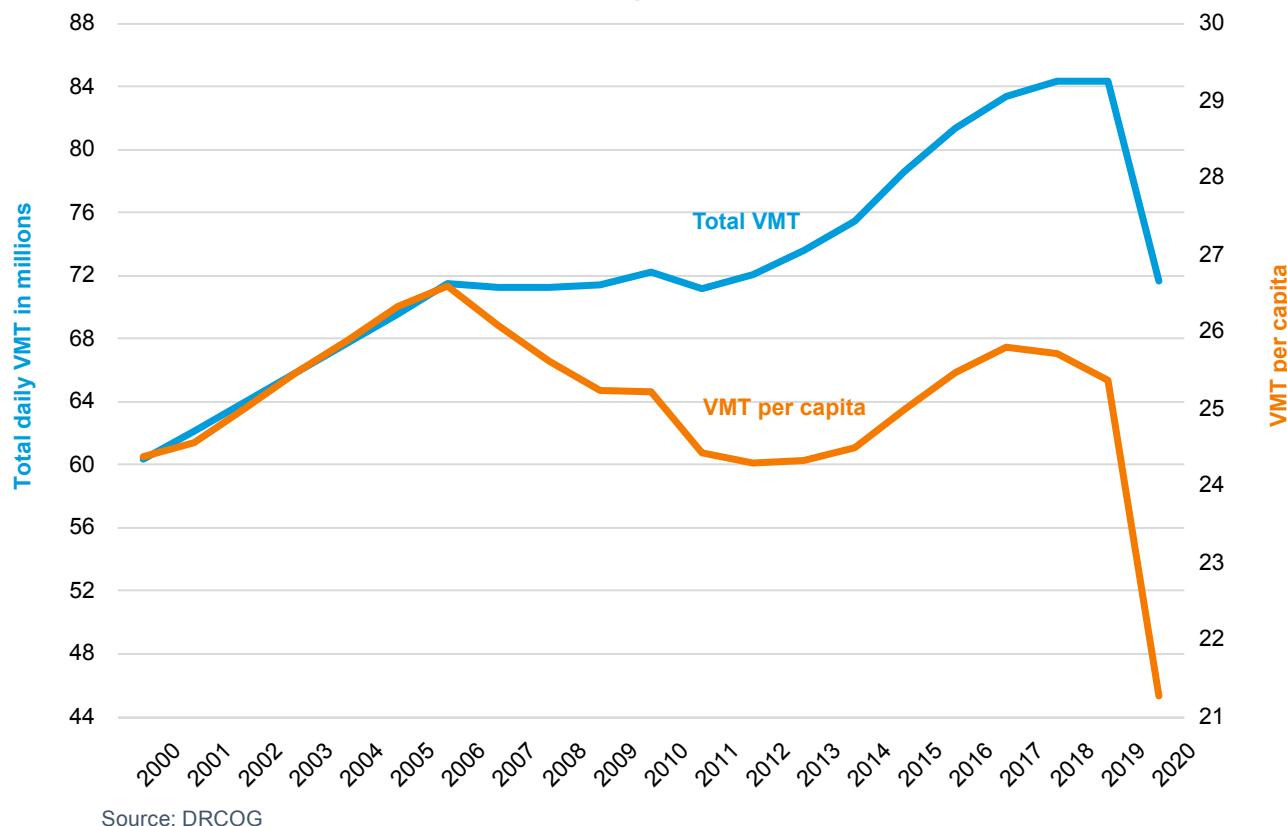
Seasonal variations and other disruptions commonly affect average daily VMT throughout the year. Even in a typical year, no two days' results are exactly alike, however, the levels of variation throughout 2020 were unprecedented. Due to the extreme variation, estimating what would be considered the annual average VMT on all the segments across the region was particularly challenging. Ultimately, DRCOG staff estimated a 15% reduction from 2019 for traffic volumes across the region.

To understand VMT in 2020, DRCOG used its typical sources: regionwide short-term counts,

CDOT permanent traffic count locations, Federal Highway Administration VMT reports, and CDOT's Highway Performance Monitoring System. This year, the availability of reliable year-to-year count data throughout the region was limited as many studies were put on hold, resulting in fewer available counts.

From 2000 to 2018, VMT in the region increased approximately 40% and then remained flat during the period before the pandemic affected the U.S. in 2020 (see Figure 4). However, during 2020, the average daily VMT declined by about 15% to levels not seen since between 2005 and 2011. The more significant VMT decrease in April and May reduced average weekday VMT in the region to below-2000 levels. In 2020, VMT per capita was significantly lower than in 2000, and likely lower than any time since the late 1980s.

Figure 4: Average daily vehicle miles traveled in the Denver region (2000-2020)



Source: DRCOG

Observations

Four key observations of travel and congestion during 2020 are explored further here. This section provides additional context beyond traffic volume data for each observation, and highlights the effects of the pandemic on travel behavior and roadway congestion.

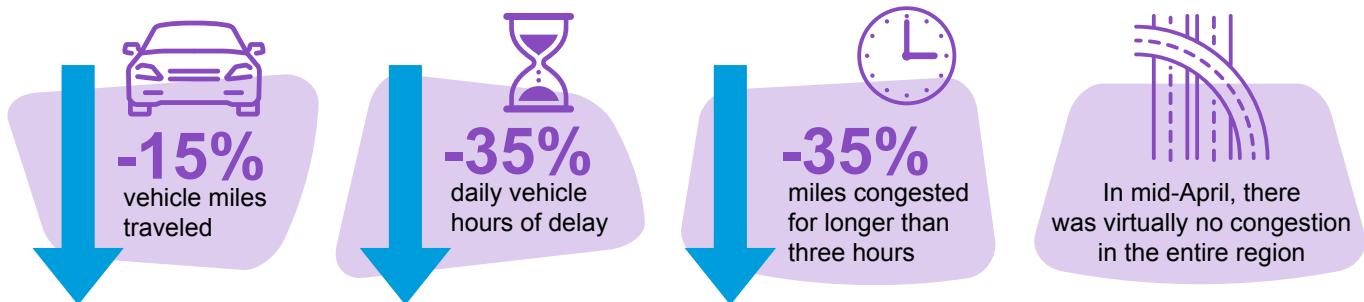
Observation 1: Congestion by the numbers

In 2020, there was significantly less traffic congestion and fewer travel delays than in years with comparable VMT because of the time-of-day of travel distribution

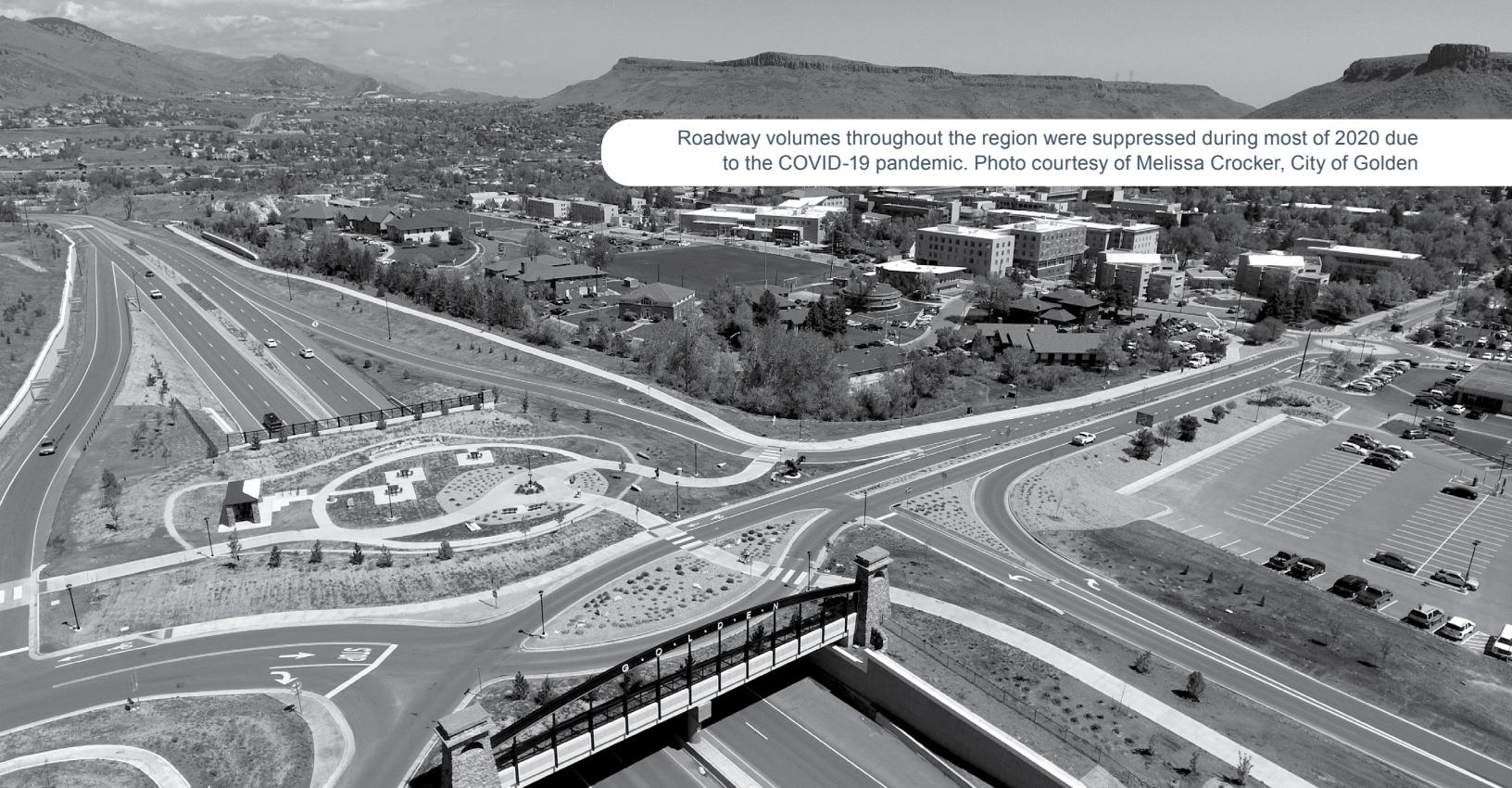
illustrated in Figure 3. DRCOG staff observed that as volumes at the traffic counters decreased, congestion delays and travel times decreased at an even higher rate. The relationship between traffic volumes and congestion is detailed later in the report.

Congestion is measured and tracked in the region in several ways. During 2020, DRCOG transportation staff observed significant changes in congestion due to the change in travel demand.

Congestion in 2020 compared with 2019



Roadway volumes throughout the region were suppressed during most of 2020 due to the COVID-19 pandemic. Photo courtesy of Melissa Crocker, City of Golden

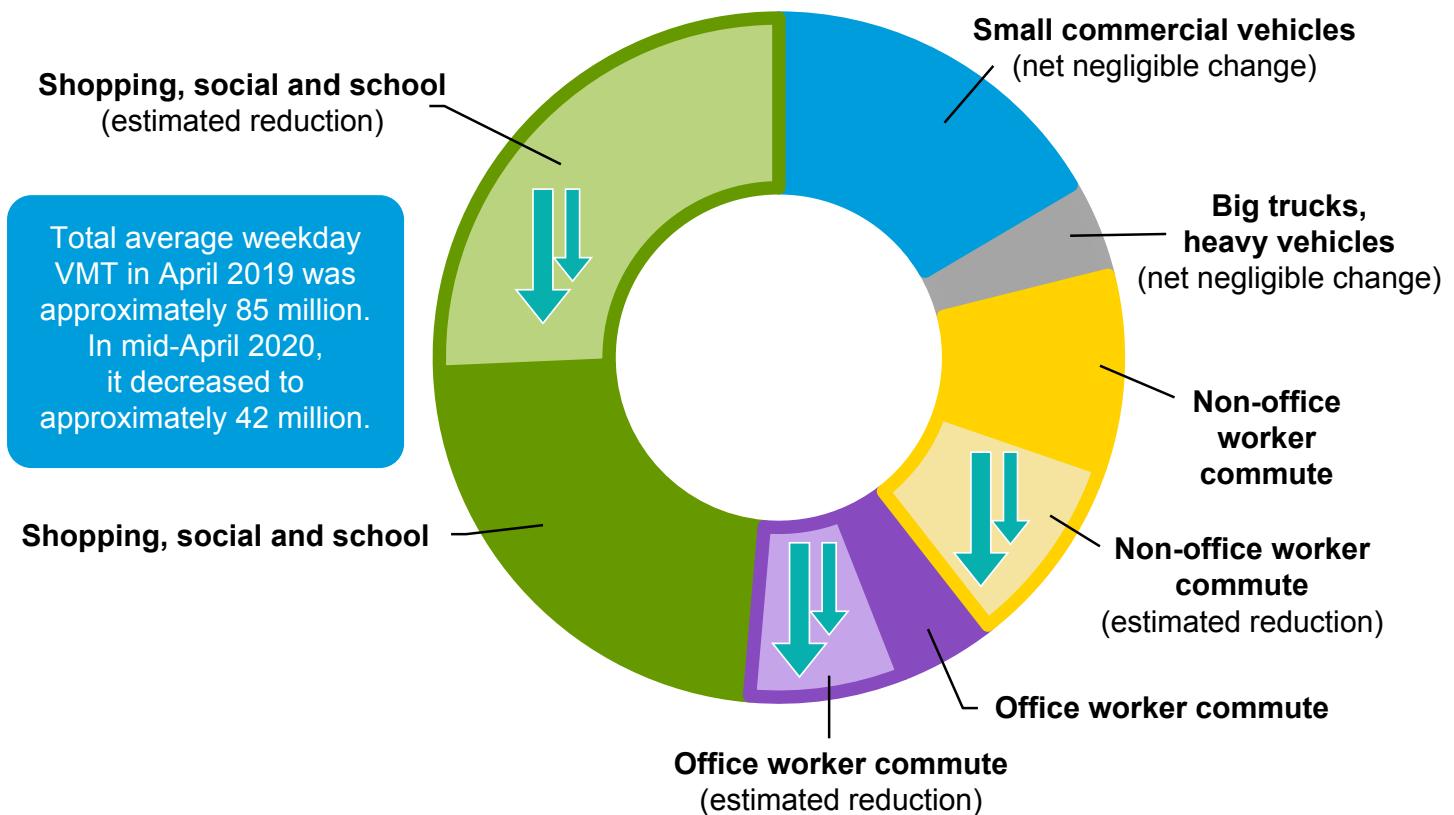


Observation 2: VMT change by trip purpose

Travel associated with certain trip purposes declined more significantly than others in 2020. Figure 5 shows the magnitude of change in VMT by the types of trips people made. April 2019 data is based on the national household travel survey and the regional travel model, while April 2020 estimates consider changes understood to have been caused by stay-at-home orders, business closures, a reduction of travelers using Denver International Airport and unemployment. Most of the reduction was due to people making fewer social, shopping and school trips. The data also reflected a major reduction of visitors to the Denver

region, with data from Denver International Airport showing a significant reduction in travel to and from the airport. Work-related VMT decreased due to people who were laid off, had work hours reduced or started teleworking more often. The ongoing increase in teleworking aligns with efforts by the staff of DRCOG's Way to Go program and its transportation demand management partners to promote telework and flexible work schedules in the region. Figure 5 indicates net negligible change in commercial vehicle trip VMT. While there was likely a decrease in commercial vehicle trips to places like restaurants and retail outlets, there was an increase in household delivery trips.

**Figure 5: Vehicle miles traveled by trip purpose:
April 2019 and April 2020**

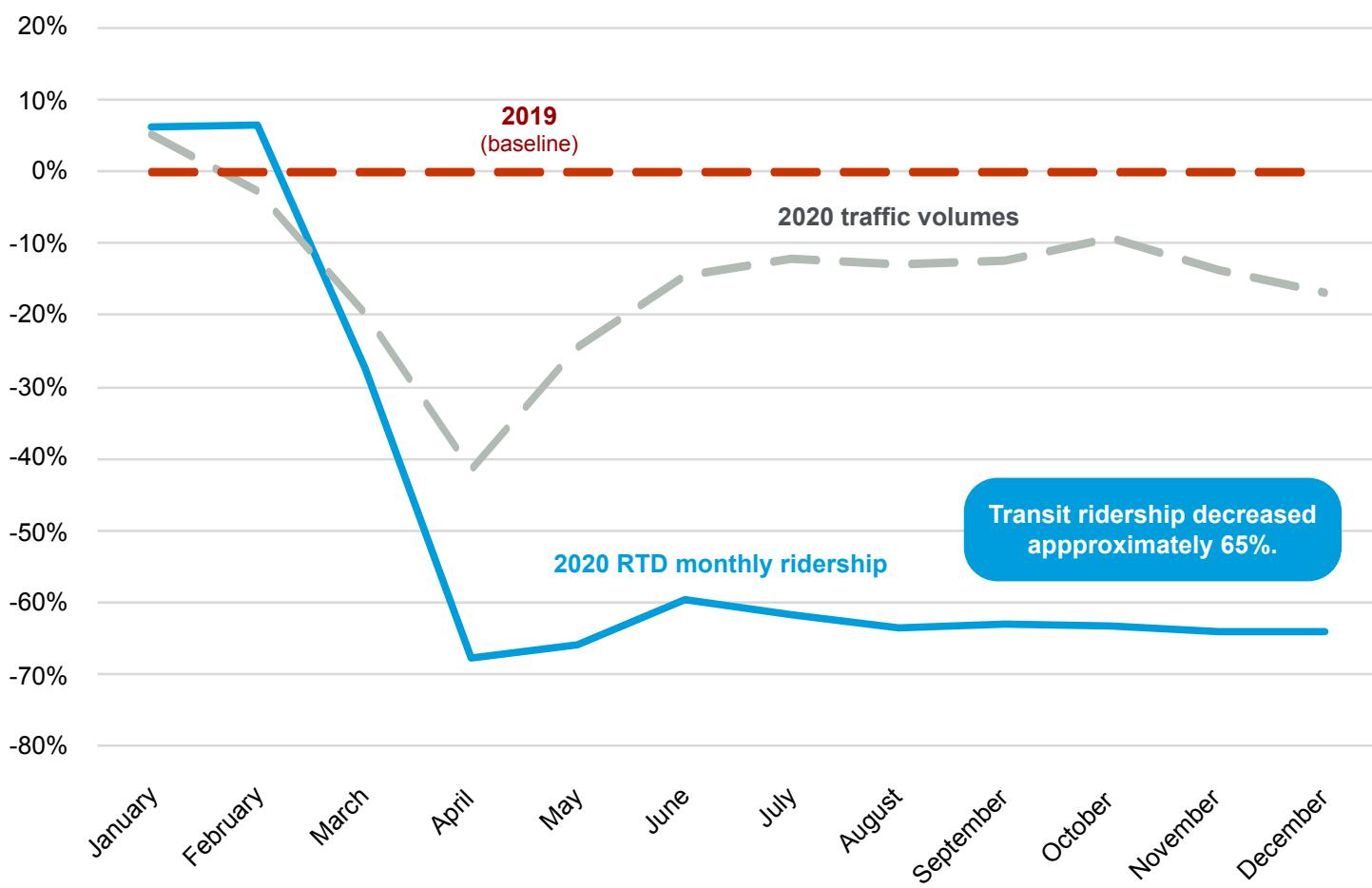


Observation 3: 2020 Regional Transportation District transit ridership

In March 2020, RTD's transit ridership decreased by nearly 70% of March 2019 ridership. While traffic volumes rebounded across the region, transit ridership did not. Figure 6 shows the sustained reduction of transit ridership throughout 2020, in contrast to the rebounding trend of vehicle volume recorded at the region's traffic count stations.

Fewer workers in office buildings, increased telework, concerns about virus transmission and reduced transit service levels have all contributed to the sustained reduction in transit ridership. Reimagine RTD, a two-year effort to identify comprehensive strategies to better connect people to the places they want and need to go, will shape efforts to regain ridership in the future as the region moves beyond the COVID-19 crisis.

Figure 6: 2019 to 2020 RTD ridership and traffic volume changes



Source: National Transit Database

Observation 4: 2020 roadway fatality data

Despite an unprecedented year-over-year reduction in state and regional VMT, roadway fatalities in the Denver region only decreased slightly in 2020 compared with the most recent five-year average. Beyond the Denver region, fatalities in the rest of Colorado noticeably increased compared with

the most recent five-year average (see Table 1). Once nonfatal crash data for 2020 is published and processed, DRCOG will thoroughly analyze the full crash dataset. If, as the data suggests, notable reductions in traffic volume do not prevent fatalities, the challenges of increasing safety on the region's roadways — strictly through design and use considerations — have become even clearer in 2020.

Table 1: Annual roadway fatalities

	2015	2016	2017	2018	2019	2015-2019 average	2020*
Denver region	238	274	264	242	270	258	250
Outside the Denver region	309	334	384	390	326	349	372
Statewide	547	608	648	632	596	606	622

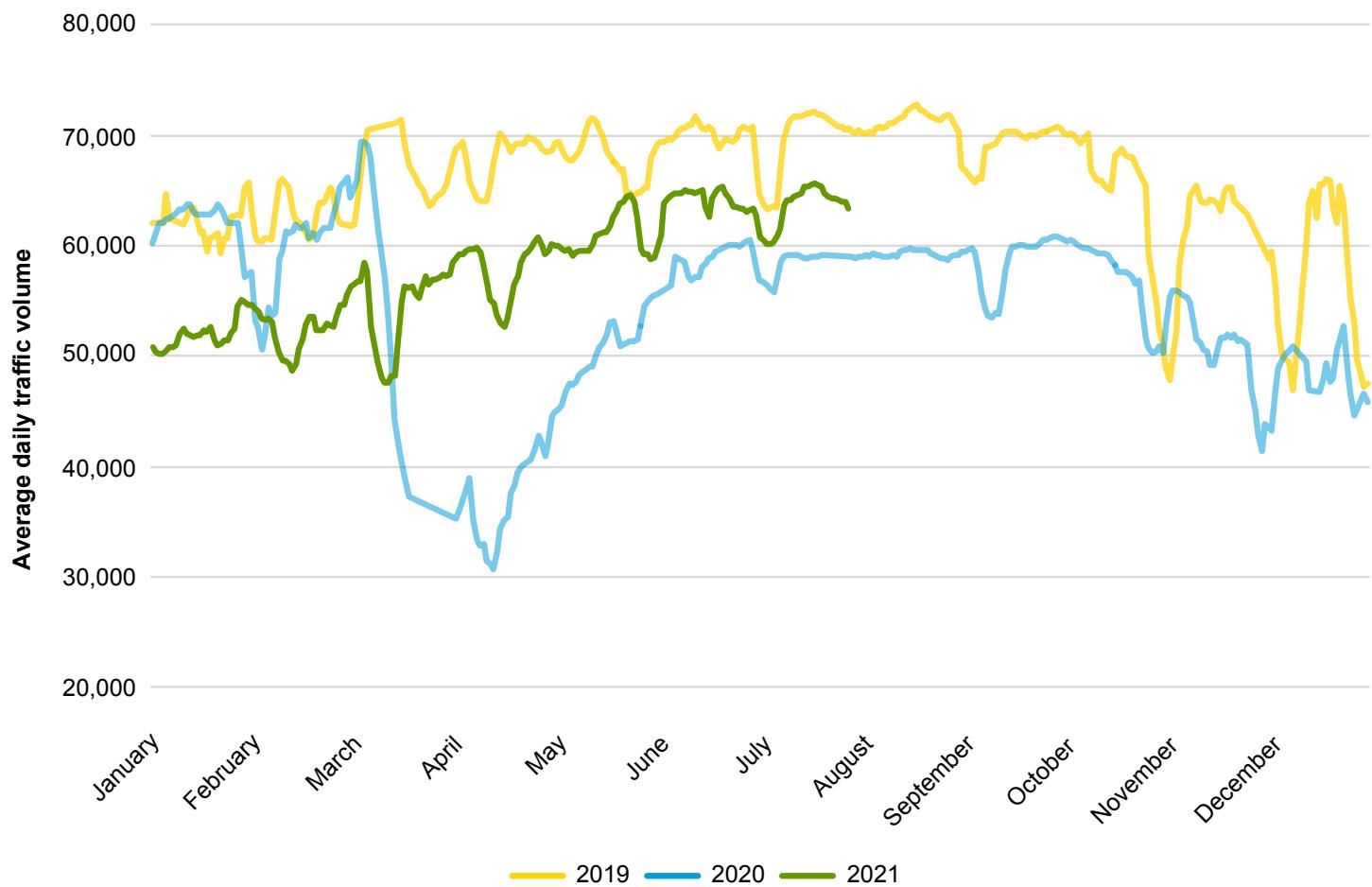
*2020 data was not official as of presstime.
Source: Colorado Department of Transportation

2021 – The pandemic story, continued

The pandemic did not end in 2020, and its effects on travel are ongoing. While DRCOG's annual congestion reports focus on a single year of travel, DRCOG's transportation staff believed it was important to consider preliminary data from 2021 given the evolving influence of the pandemic. Figure 7 shows the seven-day rolling average for 2019, 2020

and 2021 for U.S. Route 285, which DRCOG staff consider representative of the region as a whole. At presstime, traffic volumes were still below 2019 levels, but not nearly as dramatically as in 2020 due to changes caused by the immediate response to the pandemic in the region.

Figure 7: Traffic volumes in 2019, 2020 and 2021 (rolling average at U.S. Route 285 west of Sheridan Boulevard)



Source: Colorado Department of Transportation Automated Traffic Recorder Data

Peña Boulevard traffic volume

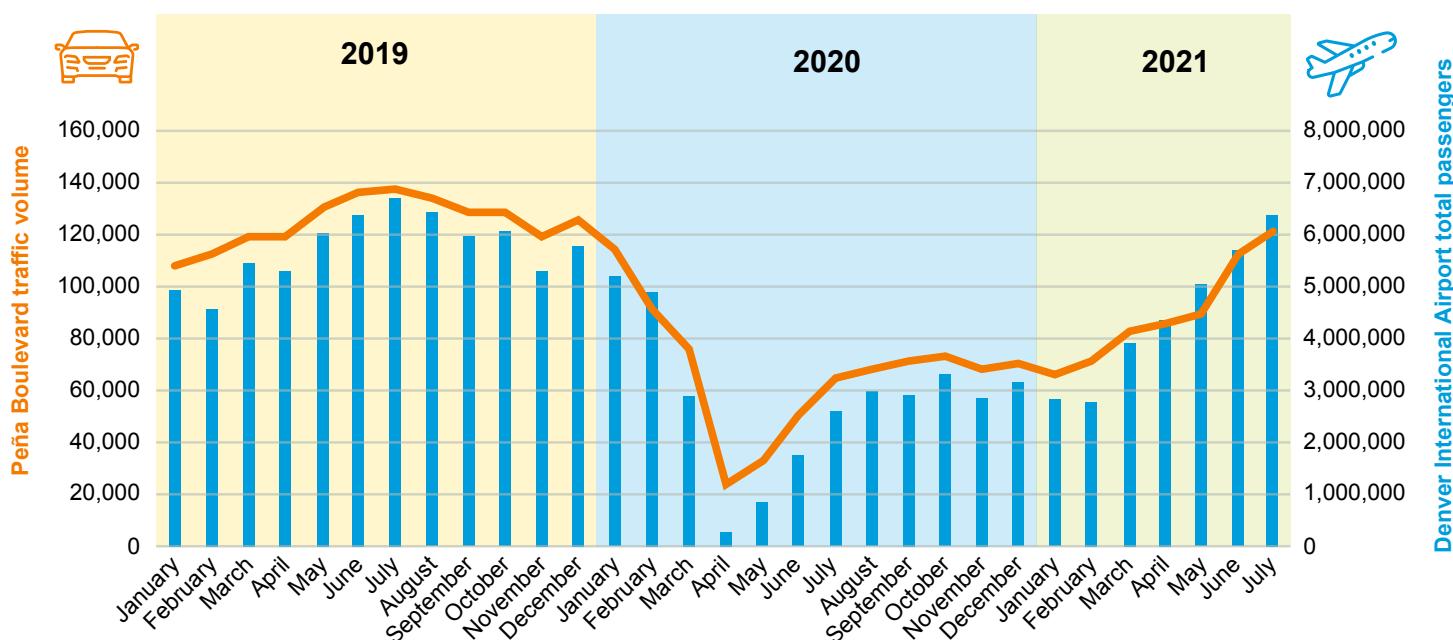
Peña Boulevard is a unique roadway within the region. While it carries freight and individual travelers, a large portion of the daily volume is related to airport travel, one of the sectors most drastically affected by the pandemic. Although many businesses across the region had reopened at full capacity by early 2021, the number of airline passengers did not return to 2019 levels, especially for business-related travel. Peña Boulevard traffic volumes decreased consistent with decreases among airline passengers.

Traffic volumes on Peña Boulevard east of E-470 were higher in January 2020 than the year before, reflecting the long-term trend of increasing airline traffic volumes at Denver International Airport. By April 2020, as a result of pandemic disruptions to

international and national travel, traffic volumes dropped to about 15% of the average volume in 2019. In December 2020, traffic volumes approached only 55% of the 2019 monthly average.

As this report was being finalized, total traffic volumes appeared to be increasing throughout the region, and airline travel had begun to recover as well. Figure 8 shows Peña Boulevard's average daily traffic volumes month-to-month for 2019, 2020 and 2021, as well as total Denver International Airport passenger averages. Figure 8 clearly depicts the relationship between air travel and traffic on Peña Boulevard. The data reveals the evolution of travel during the pandemic, with travel gradually but steadily increasing during the spring of 2021. June 2021 reflected the largest jump in travel — to nearly pre-pandemic levels.

Figure 8: Peña Boulevard traffic and Denver International Airport total passengers by month



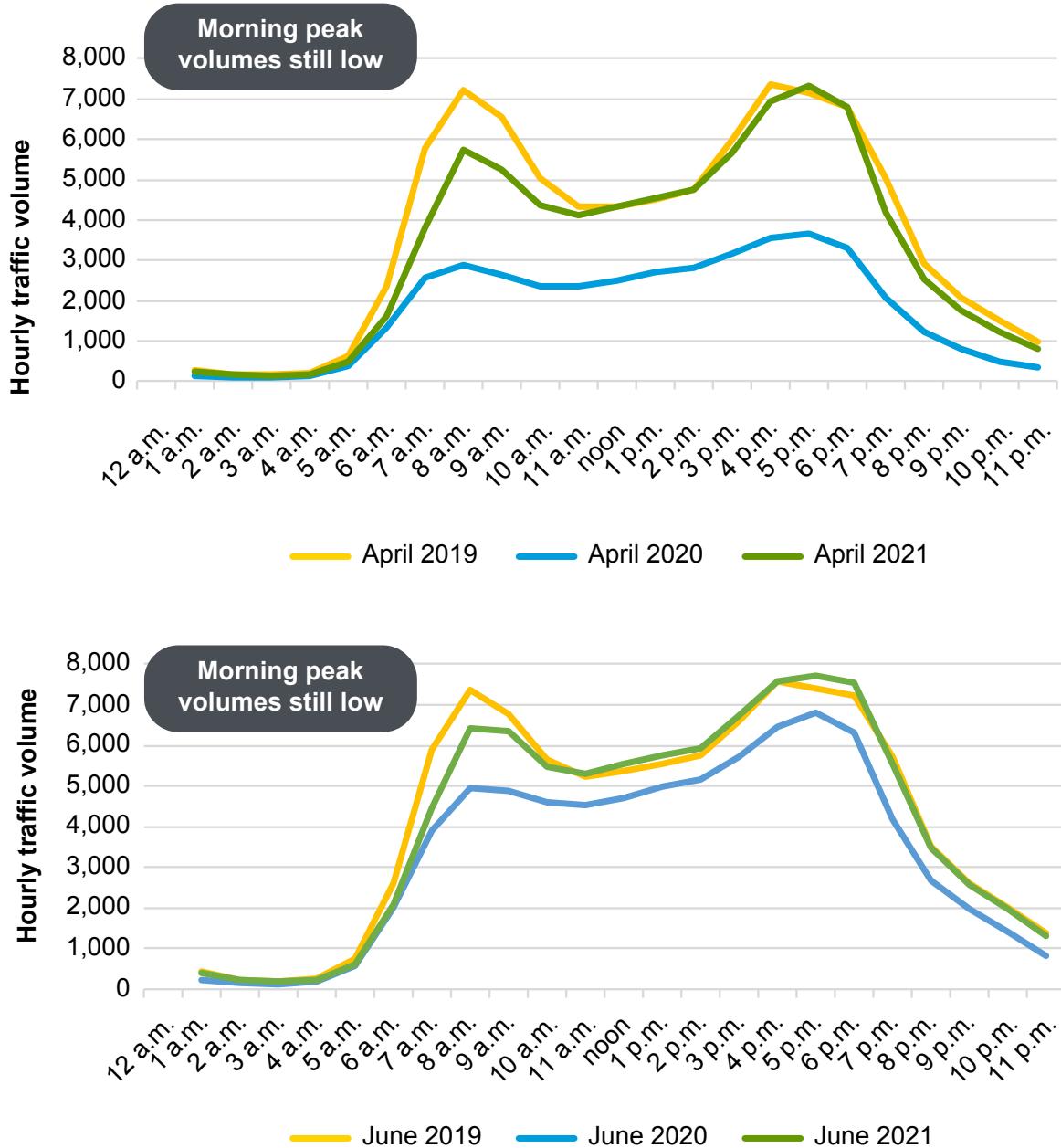
Peña Boulevard east of E-470 Traffic and Denver International Airport total passengers by month in 2019, 2020 and 2021. Source: Denver International Airport data.

Differences by time of day from 2019 to 2021

Figure 9 expands upon Figure 3 by including April 2021 and June 2021 time-of-day data. The data confirms that, as recently as June 2021, morning peak-period volumes remained below 2019 volumes.

While total traffic volumes throughout the region remain slightly lower than in 2019, the afternoon peak-period traffic has returned to 2019 levels at many locations throughout the region.

Figure 9: April and June hourly traffic volumes: State Highway 470 northwest of Morrison Road



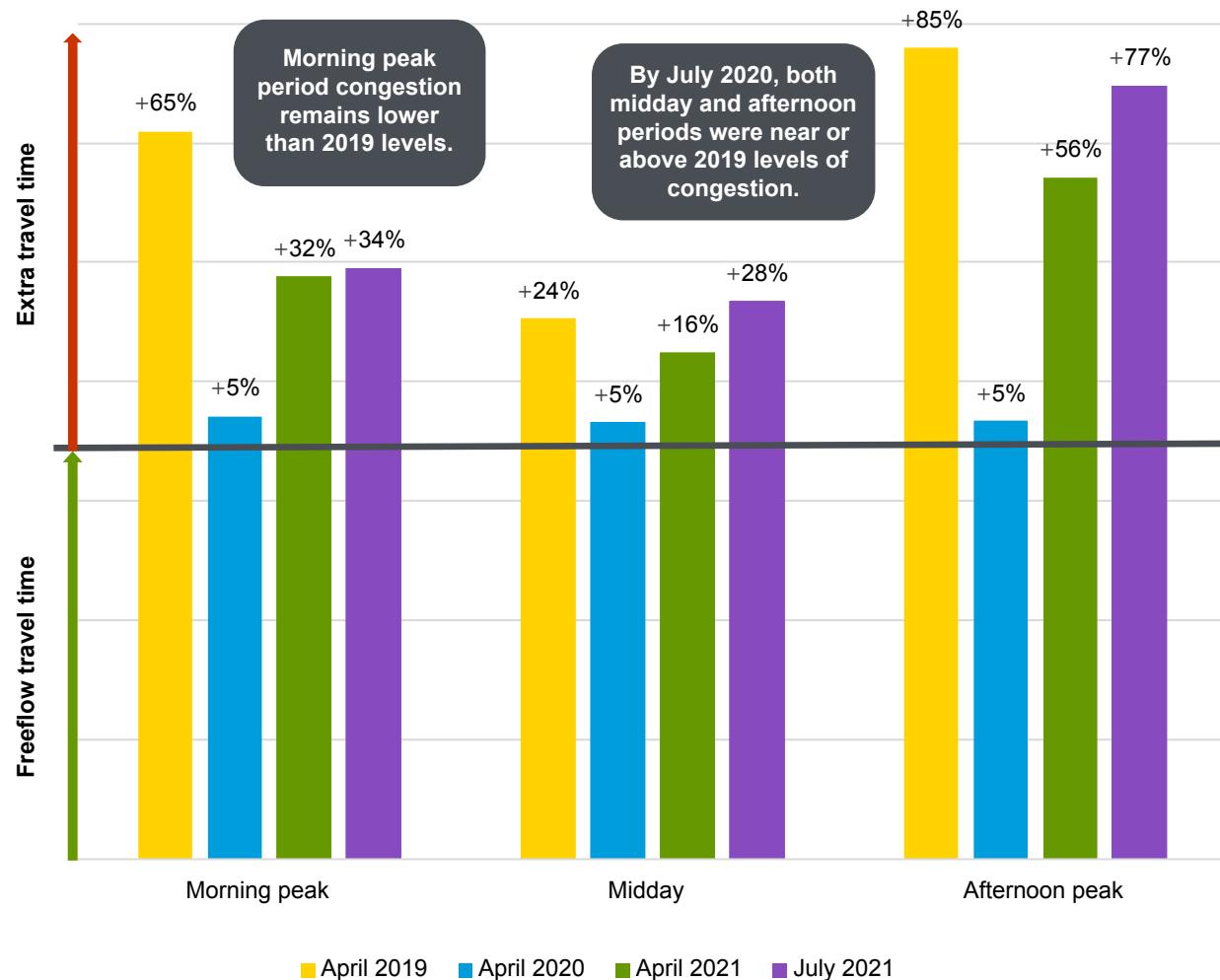
Hourly traffic volumes for April and June 2019; April and June 2020; and April and June 2021
Source: Colorado Department of Transportation automated traffic recorder data.

Extra travel time

Due to the sustained decreases in total traffic volume, INRIX data reveals the most-congested freeways across the region, as defined in DRCOG's 2019 congestion report, experience slightly less congestion and faster travel times compared with 2019 on

average in the morning and afternoon peak periods. However midday congestion and travel times in July 2021 had returned to approximately the same levels as before the pandemic. Figure 10 compares the extra travel time caused by congestion on the region's most-congested freeways during different time-of-day periods in 2019 through 2021.

Figure 10: Average weekday travel time on the Denver region's most-congested freeways



Source: INRIX data

Why congestion decreased in 2020

Technical details

As explored earlier in this report, the region experienced significant decreases in travel in 2020. The decreased travel provided an example of how minor reductions in roadway traffic volumes can lead to even greater reductions in congestion. This section is technical, but it helps explain how congestion causes traffic delays.

With the exception of unexpected occurrences like severe weather or a crashes, traffic congestion is primarily caused by:

1. The number of vehicles on a roadway (volume) compared with:
2. The operational capacity of the roadway, which incorporates:
 - a. The physical space on the roadway (lanes and shoulders).
 - b. Roadway physical factors such as on- and off-ramps, steep hills, traffic signals, and curb cuts.
 - c. The level of turbulence caused by varying vehicle movements such as weaving and braking.

Table 2: Volume-to-capacity and speed and travel time

	Example one-mile freeway Segment	Volume-to-capacity ratio	Average speed (mph)	Travel time (seconds)
	Off-peak free flow	0.3	60	60
	Peak hour congestion	1.25	20	180
	Peak hour with 15% reduction	1.06	35	103

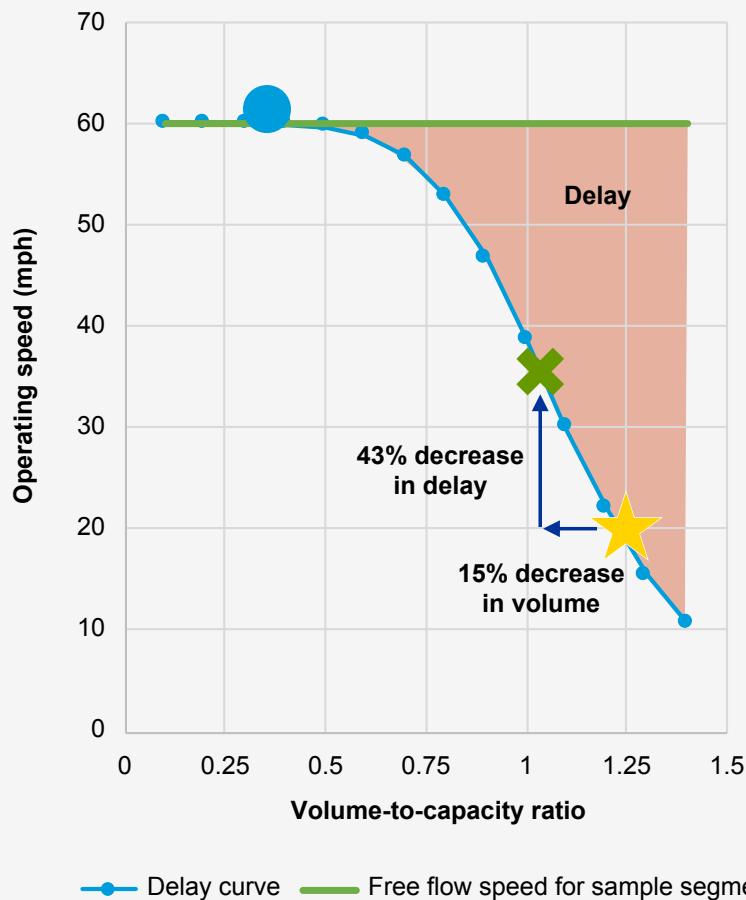
As the hourly traffic volume (V) of a roadway segment approaches the capacity (C), expressed in a ratio as V/C, there is an increase in stop-and-go delays and travel times increase. A delay formula is used to estimate the speed and travel time along a roadway given its volume-to-capacity ratio.

For example, if a congested freeway with a speed limit of 60 mph was carrying 15,000 vehicles per hour, and the roadway's operational capacity was 12,000 vehicles per hour, the V/C would be calculated as

1.25. Using the delay curve shown in Figure 12, a 1.25 V/C ratio would signify the average speed on a 60 mph free-flow roadway would be reduced to 20 mph, or 33% of the free-flow operating speed.

In 2020, the region saw an average VMT decrease of 15%. Using the previous example, reducing 15,000 vehicles per hour by 15% to 12,750 per hour results in a V/C of 1.06 and an average speed of 35 mph. Thus, a 15% reduction in volume results in a 43% reduction in travel time, as depicted in Table 2 and Figure 11.

Figure 11: Freeway travel delay curve



Key takeaways:

- Decreases in vehicle turbulence from weaving traffic and on- and off-ramp movements have a significant effect on travel delays. How traffic flows is similar to how water moves in a river or through a pipe.
- Synchronization and maintenance of traffic signal timing on arterial streets affects overall congestion.
- Transportation demand management efforts which reduce minor amounts of total traffic can have a significant effect on congestion.

Congestion in 2050

Based on forecast data, DRCOG's staff anticipates the region will grow by more than 1 million people and add 600,000 new jobs by 2050. Between now and then, technological advancement will result in additional travel modes, mobility services and safety systems. [DRCOG's 2017 Annual Report on Roadway Traffic Congestion in the Denver Region](#) examined the future effects technology may have on regional transportation and DRCOG's endeavors to address them through efforts like the Advanced Mobility Partnership. Several categories of unknowns beyond DRCOG's staff's ability to make predictions will likely affect travel, including changes to transportation costs, and local and global economic and environmental disruptions. As DRCOG's staff plans for the transportation future of 2050, the pace of innovation and need to respond to unanticipated challenges guarantees that the region's overall transportation system will operate much differently in 30 years.

While all long-range planning efforts involve levels of uncertainty in their estimates, the COVID-19 pandemic demonstrated how quickly unpredictable disruptions to long-established norms can happen. Reflecting on the past year begs the question: Will the effects of the pandemic still have ramifications in 2050 or did they just accelerate existing trends and changes that were to come? Are some of the lifestyle changes people made in 2020 here to stay, or will the region's travelers return to status quo behaviors?

The 2050 Metro Vision Regional Transportation Plan outlines how the region will continue to improve transportation infrastructure and services as population grows. Considering the rapid adoption of teleworking during the pandemic, DRCOG has adjusted future-year modeling to reflect a sustained

increase in teleworking and working from home. Census data already indicated an increase in working from home from 2012-2019 and ongoing observations and reports from the business community indicate that an increased level of telework will likely be sustained into the future.

Understanding the limitations of long-range transportation planning estimates, this report is the first to include congestion metrics associated with DRCOG's 2050 Metro Vision Regional Transportation Plan. While the metrics represent just one future scenario, they are DRCOG staff's best attempt to represent travel in the region in 2050. The large increase in people and jobs in the region will be the primary influence on increased VMT and its associated congestion.

Because 2020 was such an anomaly, comparing 2020 with 2050 isn't meaningful, so this section uses 2019 congestion levels as the baseline for reference. The map in Figure 12 compares the most congested segments from 2019 with 2050 and demonstrates how many additional roads will experience high levels of congestion in the future based on four key metrics:

- **Severity:** How bad does congestion get on the roadway during rush hour?
- **Duration:** How many hours per day is the roadway congested?
- **Magnitude:** How many people (traffic volume) are affected by congestion on the roadway?
- **Reliability:** How often do crashes or incidents occur on the roadway?

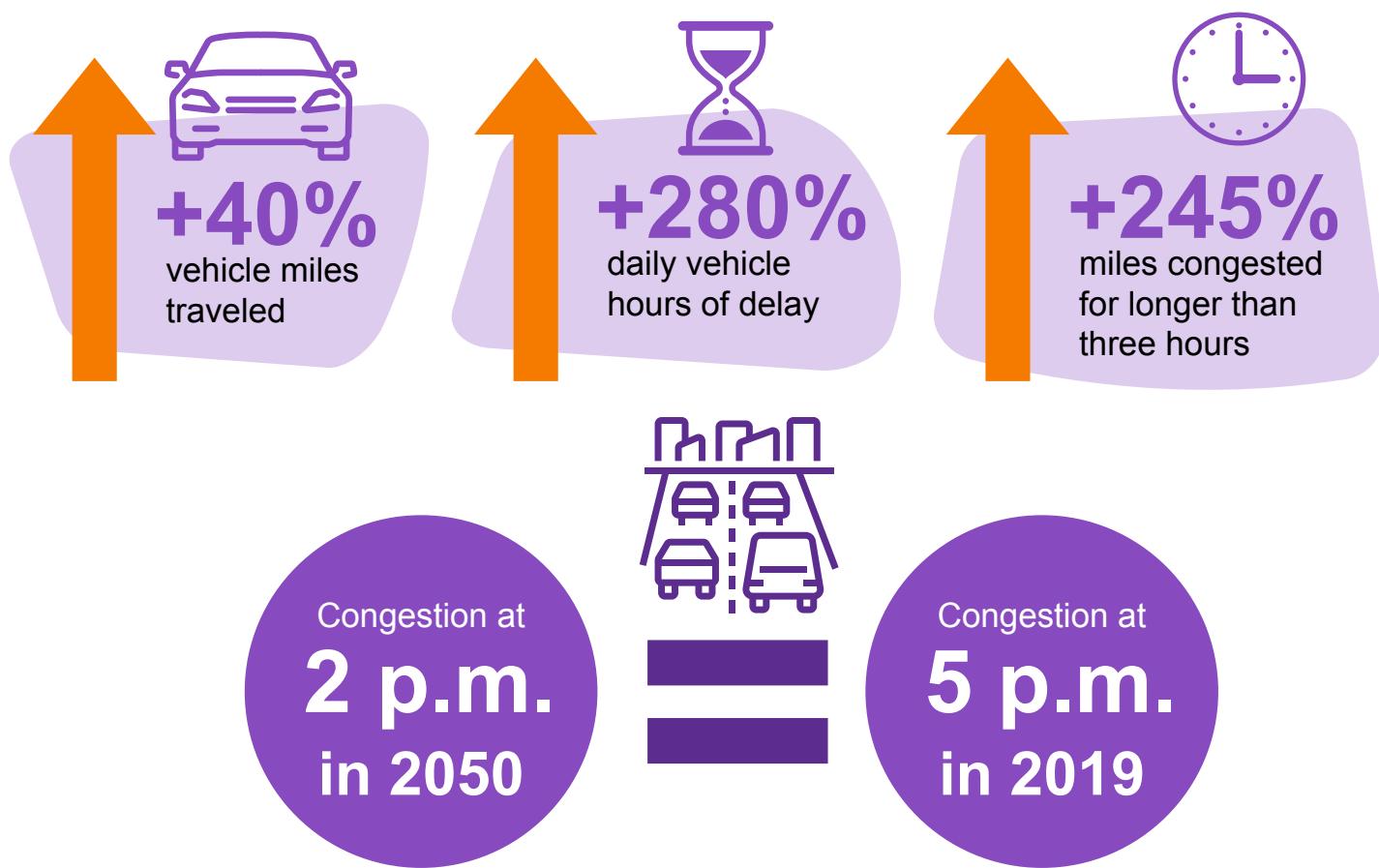
Regionwide, DRCOG staff estimates a 41% increase in daily VMT compared with 2019, primarily associated with the increase in population. The

increase in VMT will lead to a significantly larger percentage increase in congestion. As illustrated by examples in the “Why congestion decreased in 2020” section, there is not a linear relationship between increased traffic volume and congestion. A 31% increase in VMT will likely result in immensely more congestion on some roadways — resulting in longer

delays and increasing travel times.

The infographics below reflect regionwide congestion measures, comparing 2019 with 2050. Table 3 includes a summary of congestion measures across three timeframes: 2019 (pre-pandemic), 2020 (pandemic) and 2050.

Congestion in 2050 compared with 2019



Sources: DRCOG Congestion Management Program Database, RTD Ridership Statistics, 2040 Regional Transportation Plan

Figure 12. Key Congested Locations in 2019 and 2050
Segments with a Congestion Mobility Score of 11 or Higher

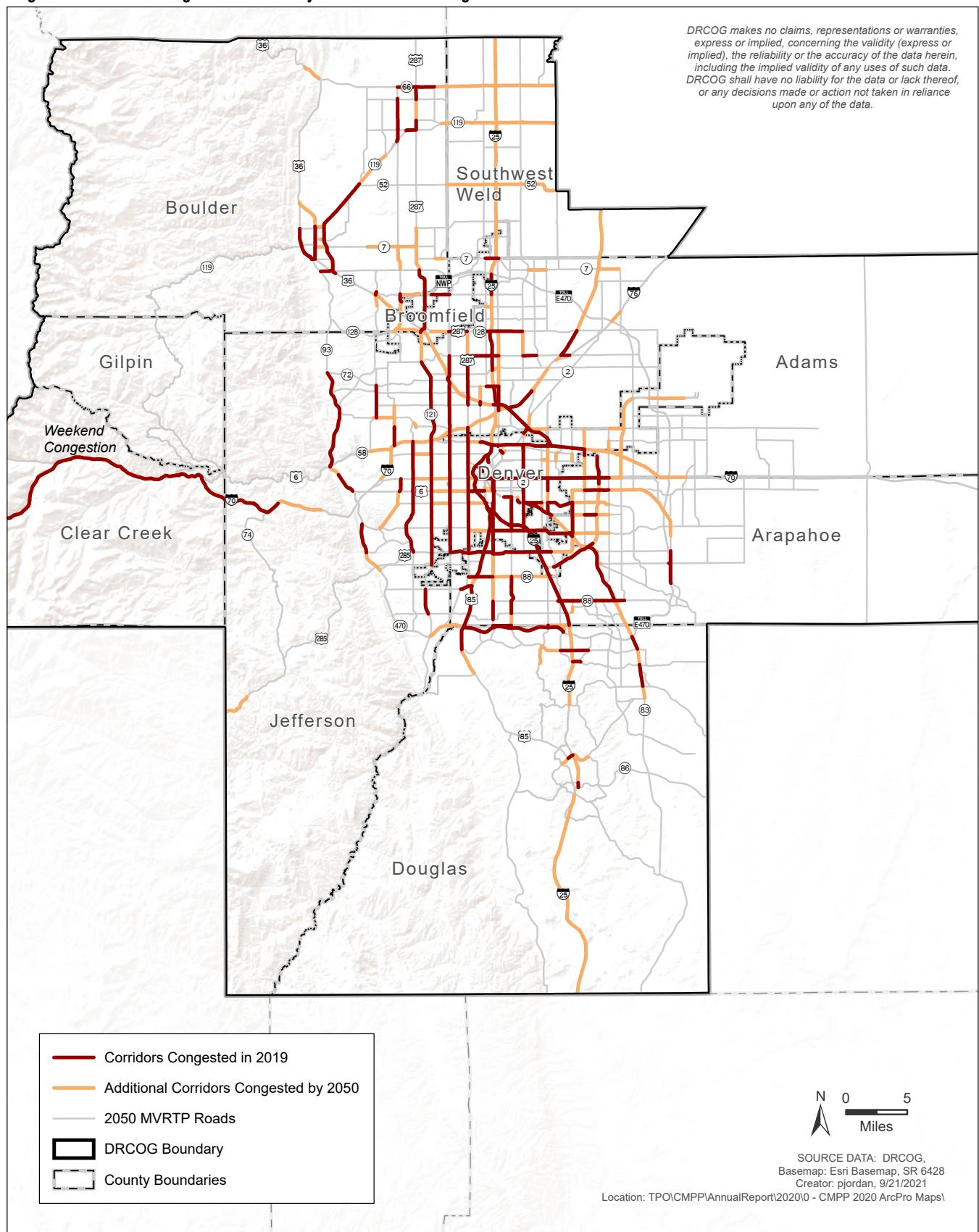


Table 3: Current and future congestion measures on Denver regional freeways and major roads on an average weekday

Note: These measures are only for the designated Regional Roadway System.	2019 weekday	2020 weekday	2050 weekday	Change between 2019 and 2050
Vehicle measures				
Vehicle miles traveled	66,191,000	56,355,000	93,045,000	41%
Vehicle hours traveled	1,425,000	1,177,000	2,250,000	58%
Vehicle hours of delay	183,500	119,900	523,000	185%
Travel delay per driven registered vehicle ¹ (minutes)	4.1	2.7	8.9	117%
Person measures				
Person miles traveled	90,848,000	77,404,000	128,825,000	42%
Person hours traveled	1,963,000	1,621,000	3,111,000	58%
Person hours of delay	254,300	166,000	720,700	183%
Travel delay per household (minutes/day)	11.4	7.5	23.4	105%
Travel delay per resident (minutes/day)	4.6	3.0	9.9	116%
Other congestion measures				
Percent of travel time in delayed conditions	13%	10%	23%	79%
Extra travel time (5 p.m. peak vs. free-flow)*	19%	13%	31%	69%
Extra travel time (2 p.m. peak vs. free-flow)	14%	10%	23%	66%
Lane-miles of roads congested for three or more hours	1,306	859	3,026	132%
(Percent of total lane-miles)	18%	12%	37%	106%
Economic travel delay costs				
Commercial vehicles ²	\$1,221,000	\$807,000	\$2,978,000	144%
Passenger vehicle individuals ²	\$3,641,000	\$2,321,000	\$5,679,000	56%
Total cost of delay	\$4,862,000	\$3,128,000	\$8,657,000	78%

Technical notes:

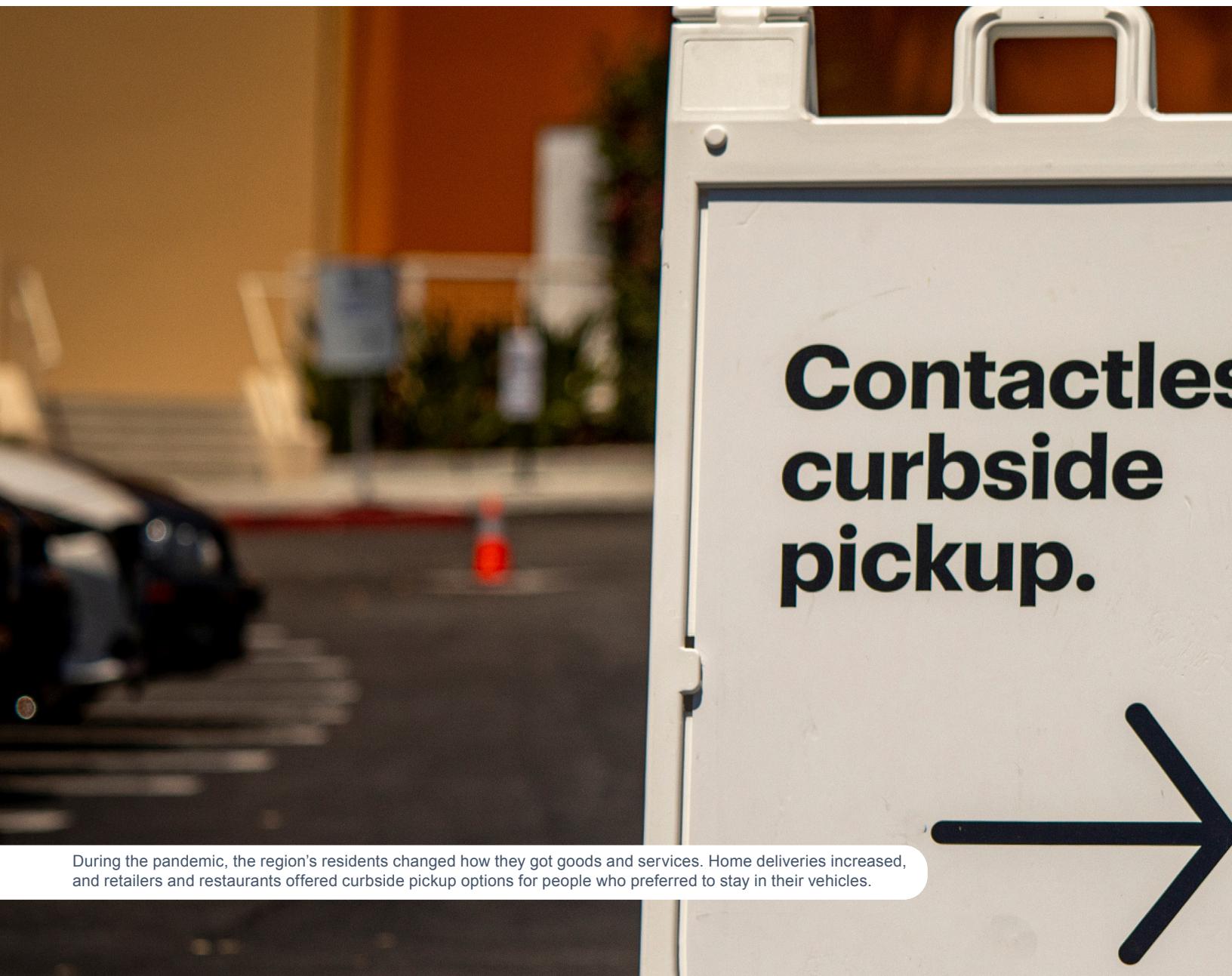
¹ Assumption of 2,681,546 driven registered vehicles in 2020 and 3,520,719 in 2050.

² Cost calculations incorporate \$12 per hour per adult in car, \$48.30 per hour per light commercial vehicle operator and \$71 per hour for heavy commercial.

Conclusion

As this report was being finalized, it included the most up-to-date data on traffic volumes and congestion in the Denver region. However, DRCOG staff knows the effects of the pandemic on travel behaviors, traffic volumes and roadway congestion continue to evolve. As the nation and the region continue to meet the challenges of, and recover from, the COVID-19 pandemic, residents will seek to reestablish many of the habits and ways of life they'd pursued before the pandemic.

The growth in population and jobs in the Denver region requires thoughtful management of transportation system resources. As people and economic participants increase travel demand, they compete for the limited supply of resources that constitute the regional transportation system. As demand for limited resources becomes more competitive, transportation demand management partners, transit agencies and innovation in mobility technologies will be essential to mitigating congestion and its negative effects on air quality, the



During the pandemic, the region's residents changed how they got goods and services. Home deliveries increased, and retailers and restaurants offered curbside pickup options for people who preferred to stay in their vehicles.

economy and residents' well-being and quality of life. Providing the region with dynamic, flexible and safe multimodal travel options will be more important than ever. DRCOG's staff takes seriously the responsibility of creating partnerships to mitigate the most severe negative effects of congestion and monitoring regional trends.

As 2050 approaches, congestion in the region is expected to worsen significantly. Some growth in

congestion is expected, but the amount which is acceptable is a matter of perception. Changing the trajectory of major increases in congestion, while supporting economic growth, a growing population, and efforts to reduce greenhouse gas emissions, will require effective planning, partnership and innovation. DRCOG is committed to partnering with state, regional and local agencies to keep people, goods and services moving efficiently across all modes.



Visit DRCOG's partner agency websites for more information:

Colorado Department of Transportation | codot.gov

Regional Transportation District | rtd-denver.com

Colorado Department of Transportation Traveler Information | cotrip.org

For ways to avoid or adapt to congestion, visit Way to Go | waytogo.org

Preparation of this report has been financed in part through grants from the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. This report and others are available at DRCOG's congestion mitigation webpage (drcog.org/congestion).

Contact Robert Spotts, program manager, at rspotts@drcog.org for additional information regarding DRCOG's congestion mitigation program.



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2020 ANNUAL REPORT ON TRAFFIC CONGESTION IN THE DENVER REGION

Looking back at 2020 traffic volume data &
looking ahead to the future

Mobility Analytics Team | October 19, 2021

AGENDA



1. 2020 Traffic Volumes and Observations
2. 2021 Traffic Volumes
3. Why congestion decreased
4. 2050 Congestion
5. Implications for future planning



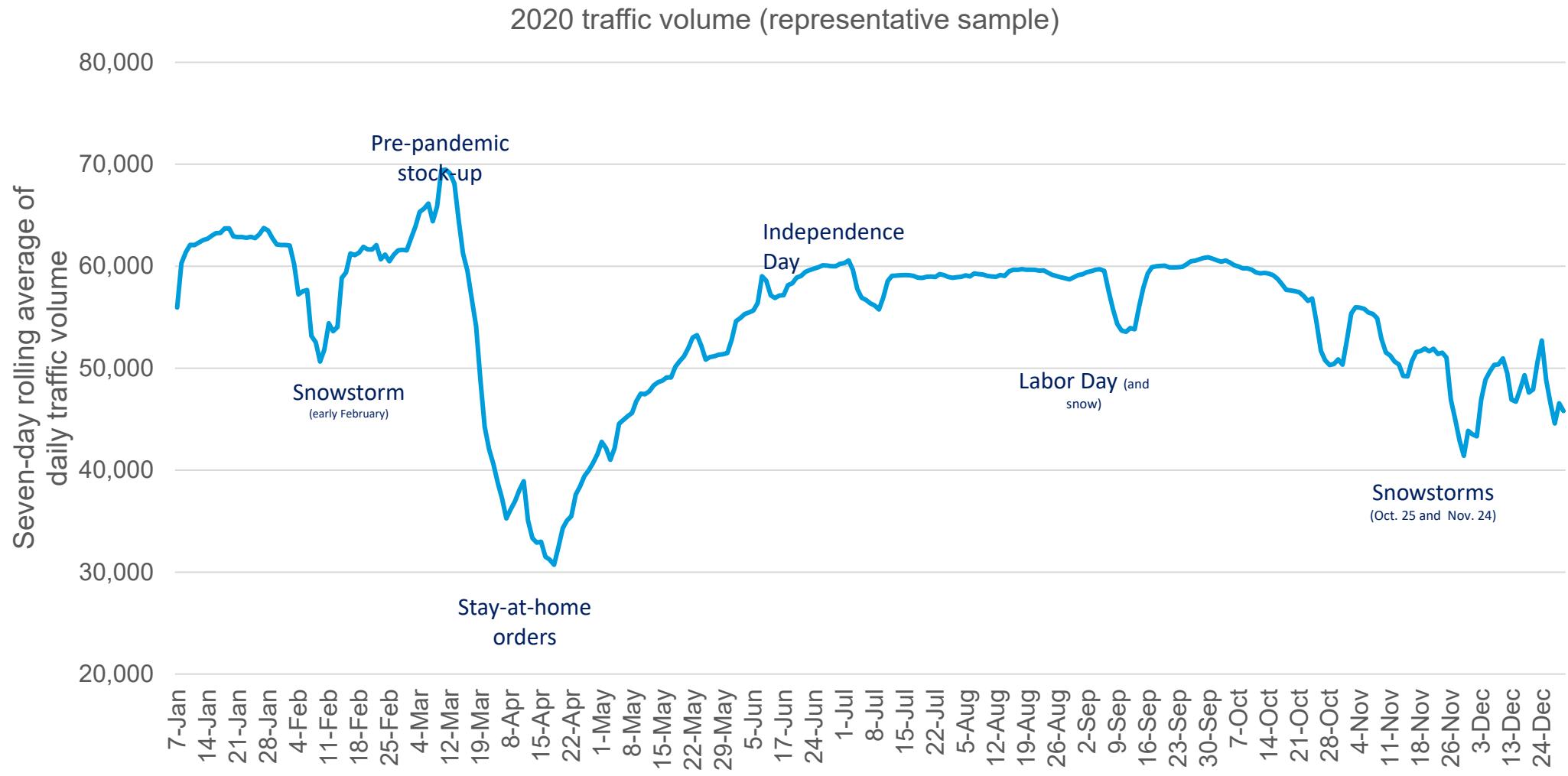
2020 Annual Report on Roadway Traffic Congestion in the Denver Region

September 2021

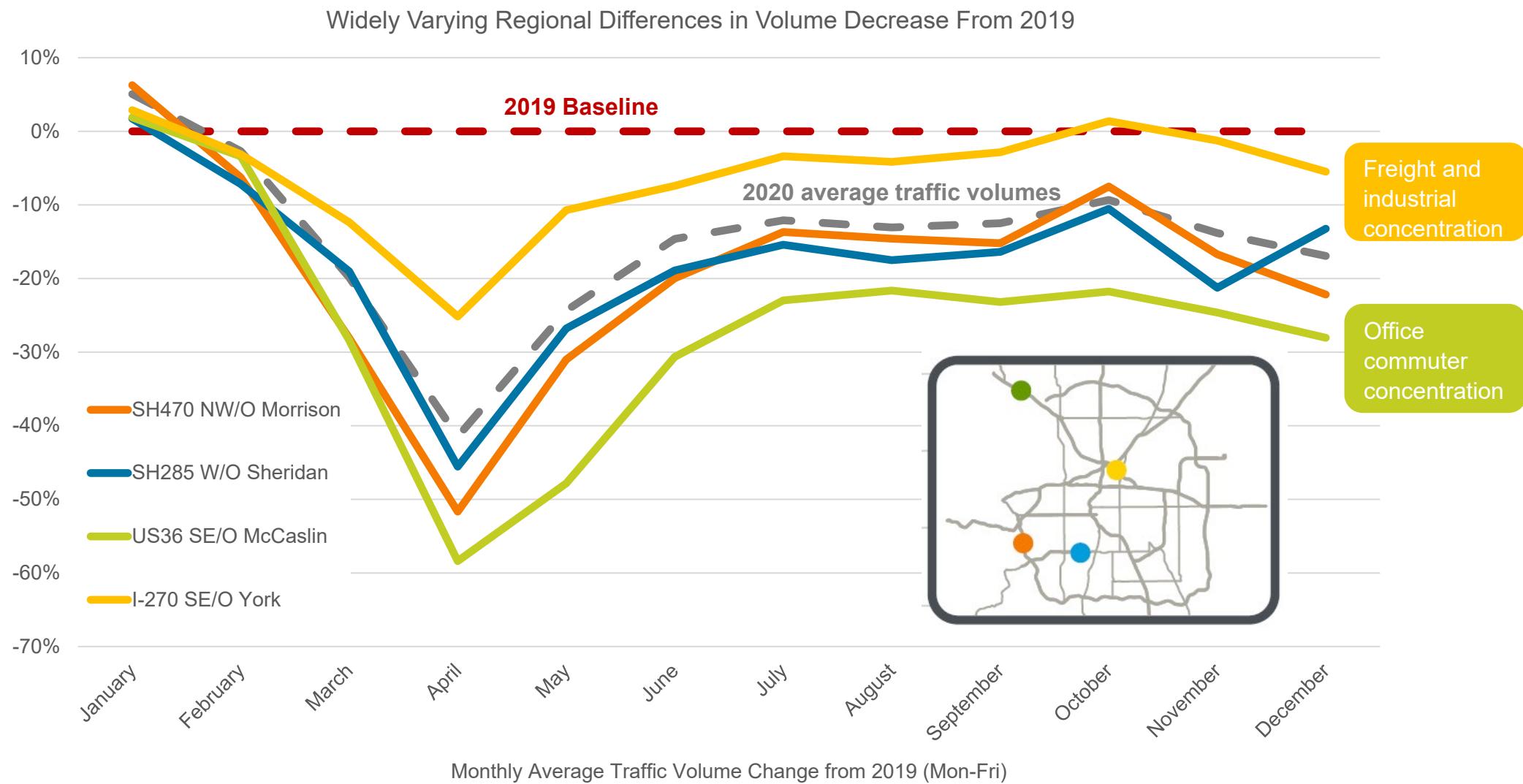


2020 TRAFFIC VOLUMES AND OBSERVATIONS

TRAFFIC VOLUME VARIATIONS IN 2020

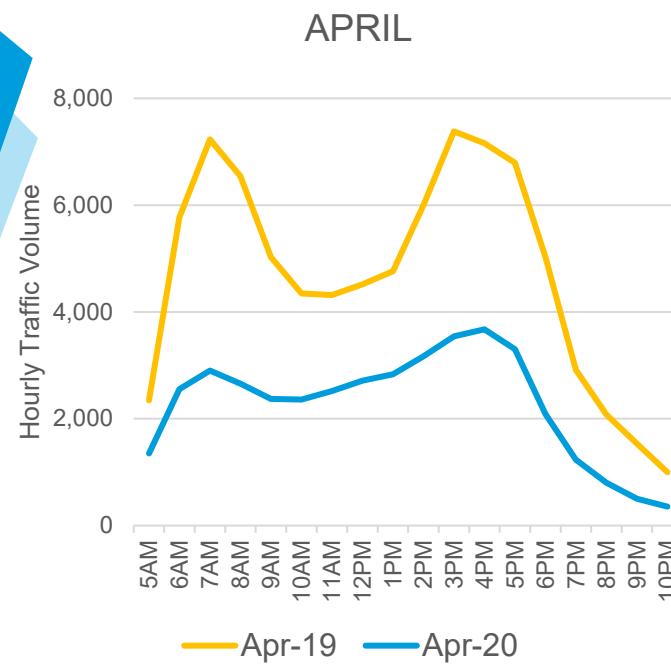


DIFFERENCES BY LOCATION

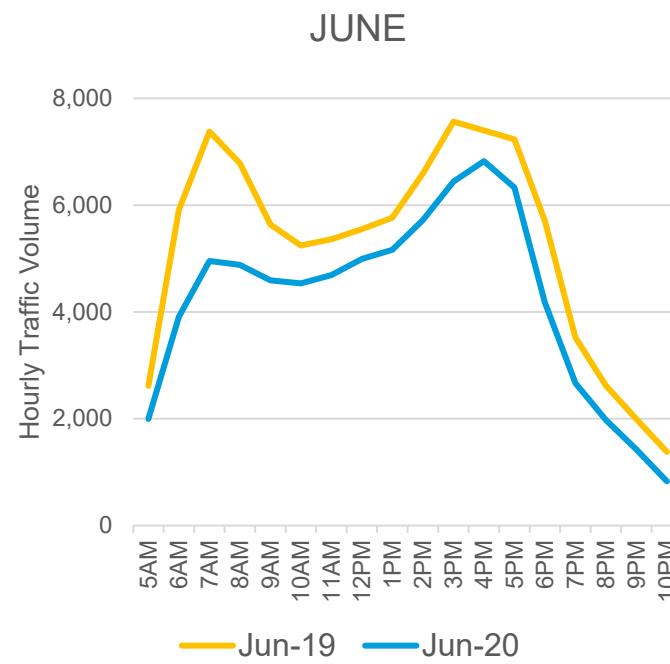


Source: Colorado Department of Transportation Automated Traffic Recorder Data

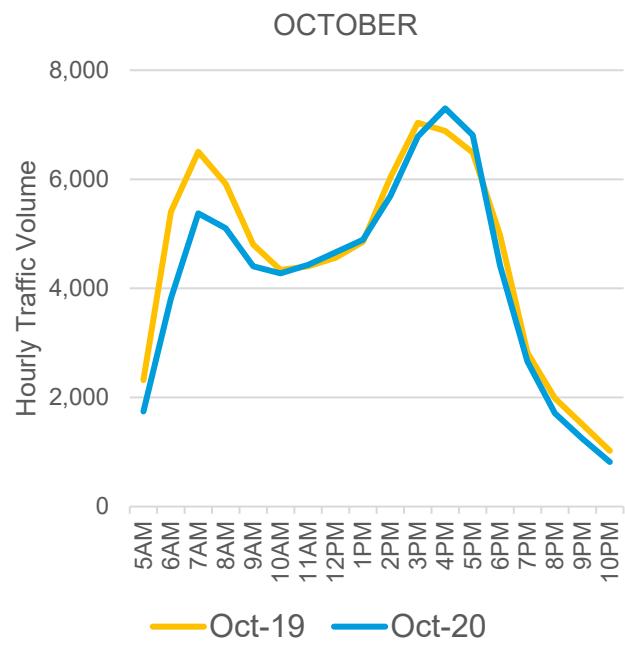
DIFFERENCES BY TIME OF DAY



Low volumes
and peaks were
eliminated



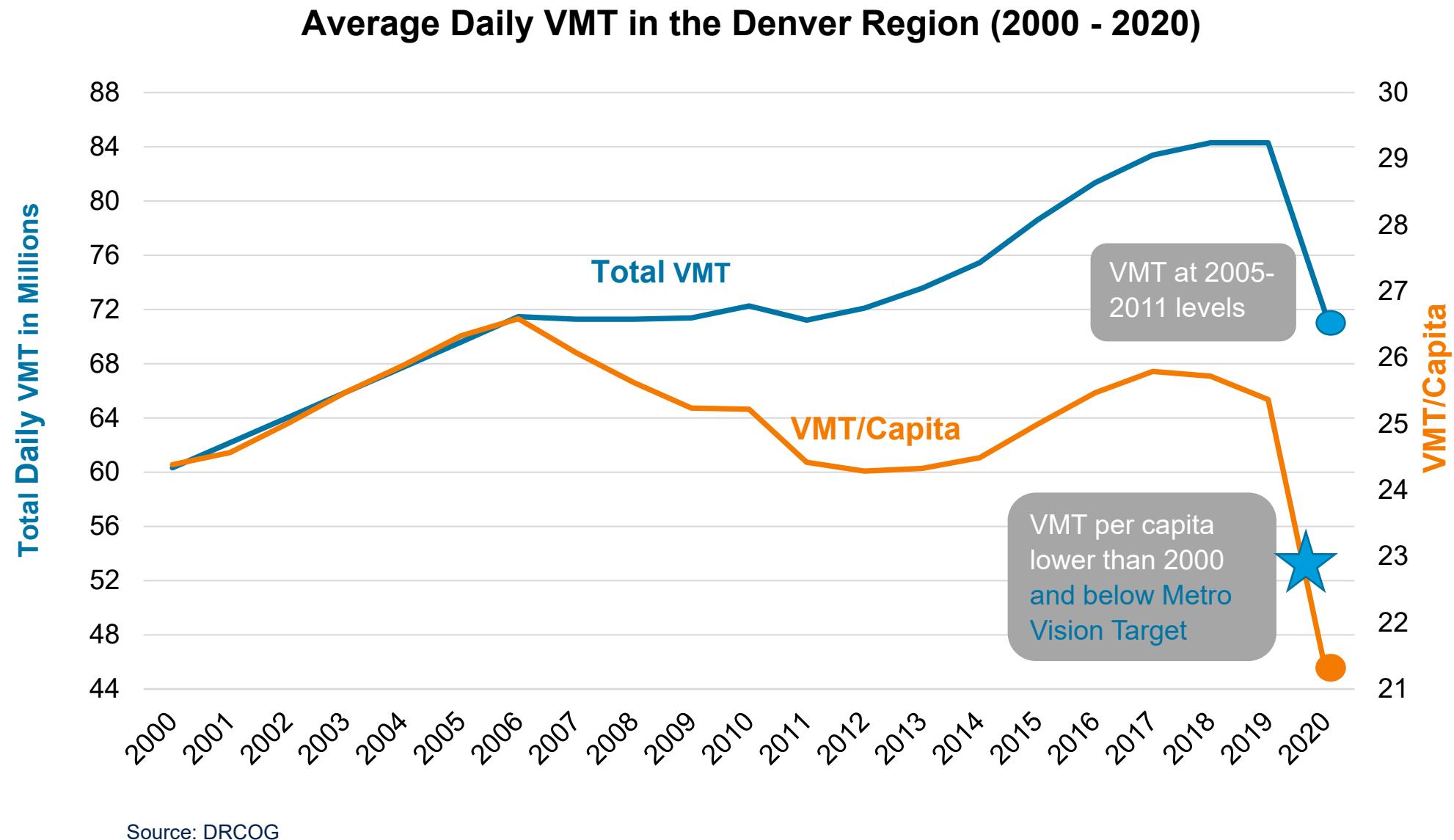
PM Peak returned
more than AM
peak traffic



Midday and PM
peak return to
“normal”

Source: Colorado Department of Transportation Automated Traffic Recorder Data

VEHICLE MILES TRAVELED



CONGESTION BY THE NUMBERS IN 2020



-15%
vehicle miles
traveled



-35%
miles congested
for longer than
three hours

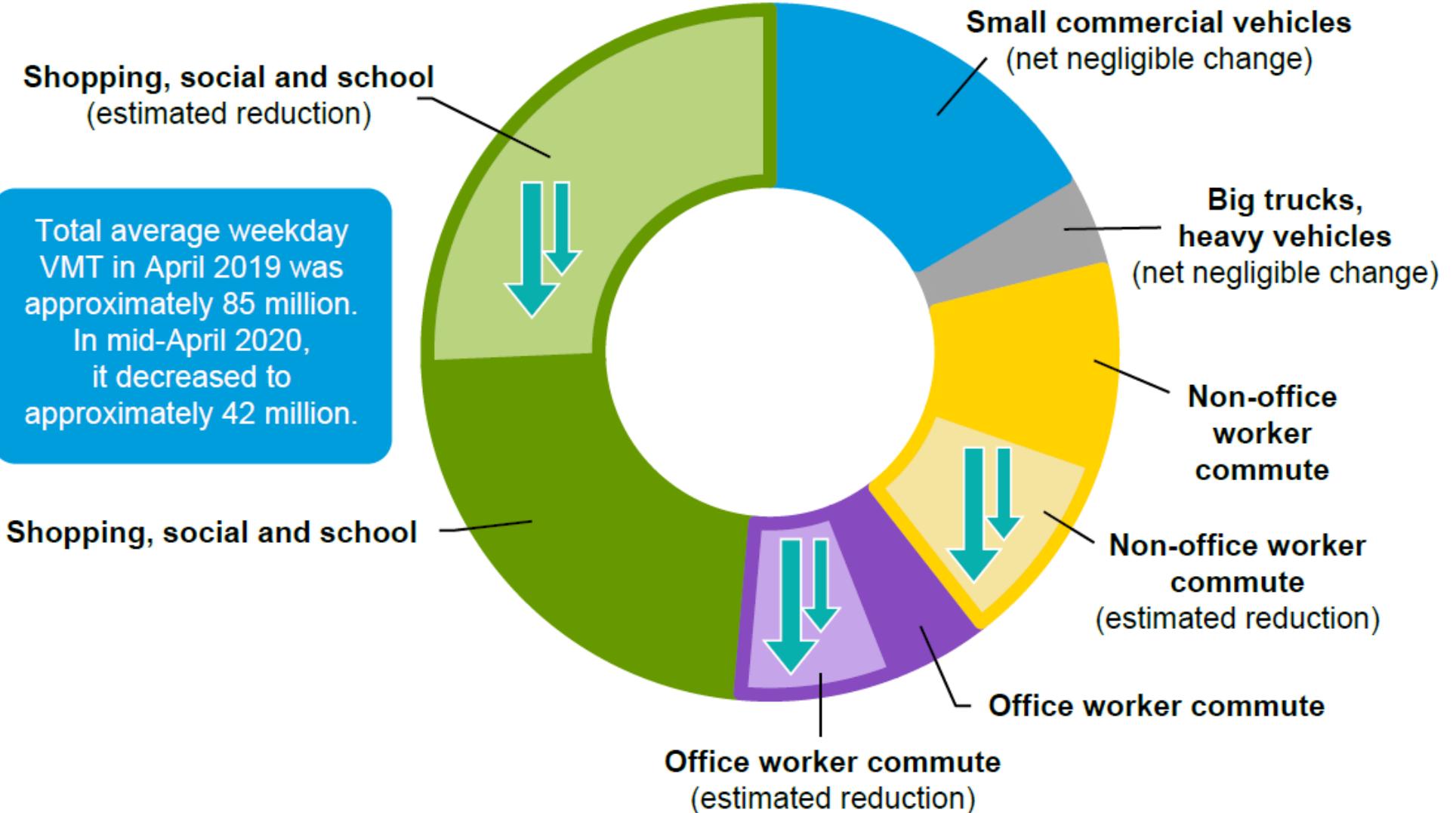


-35%
daily vehicle
hours of delay



In mid-April, there
was virtually no congestion
in the entire region

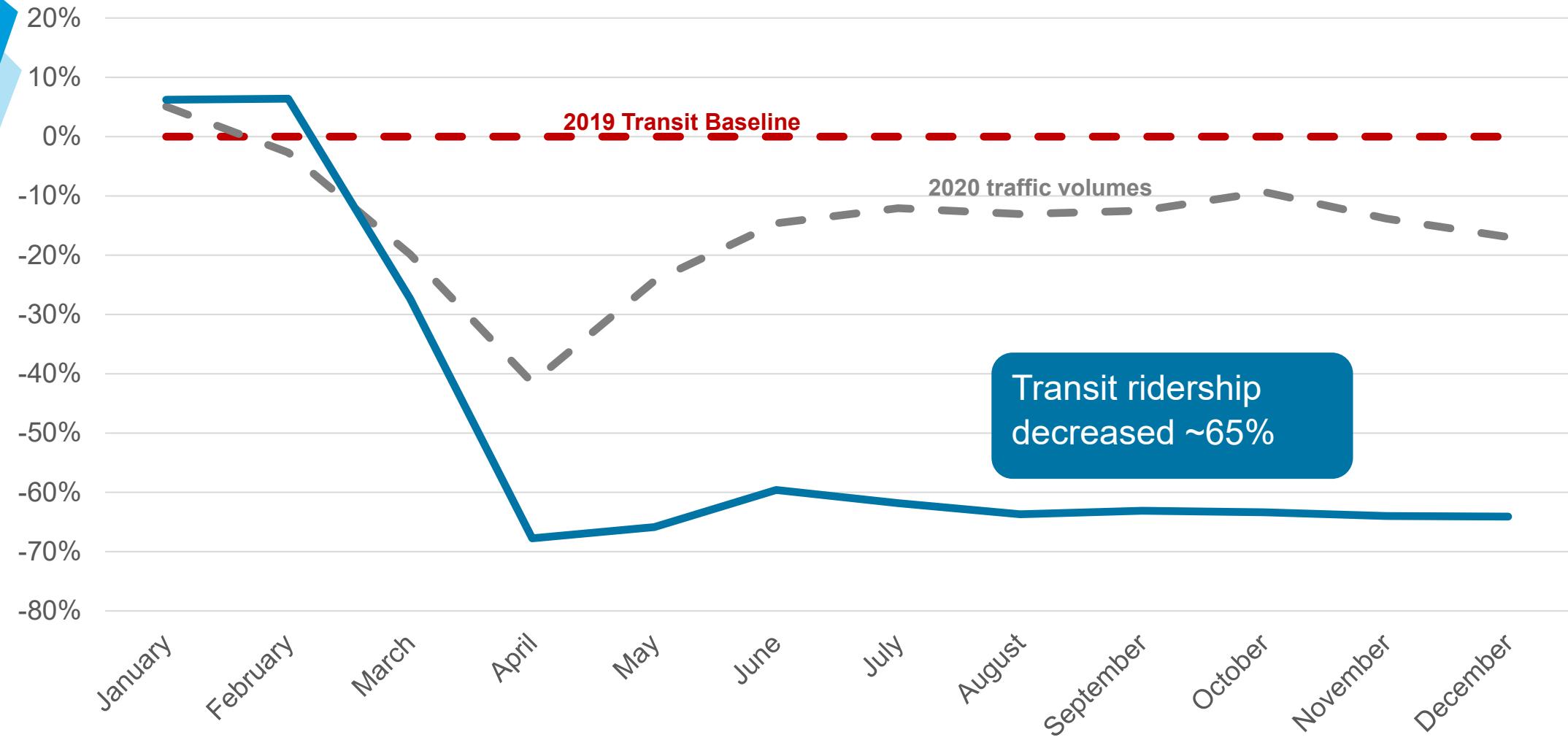
VMT CHANGE BY TRIP PURPOSE



2020 RTD TRANSIT RIDERSHIP



2019 to 2020 Transit Ridership and Traffic Volume Changes



2020 ROADWAY FATALITY DATA



	2015	2016	2017	2018	2019	2015-2019 average	2020*
Denver region	238	274	264	242	270	258	250
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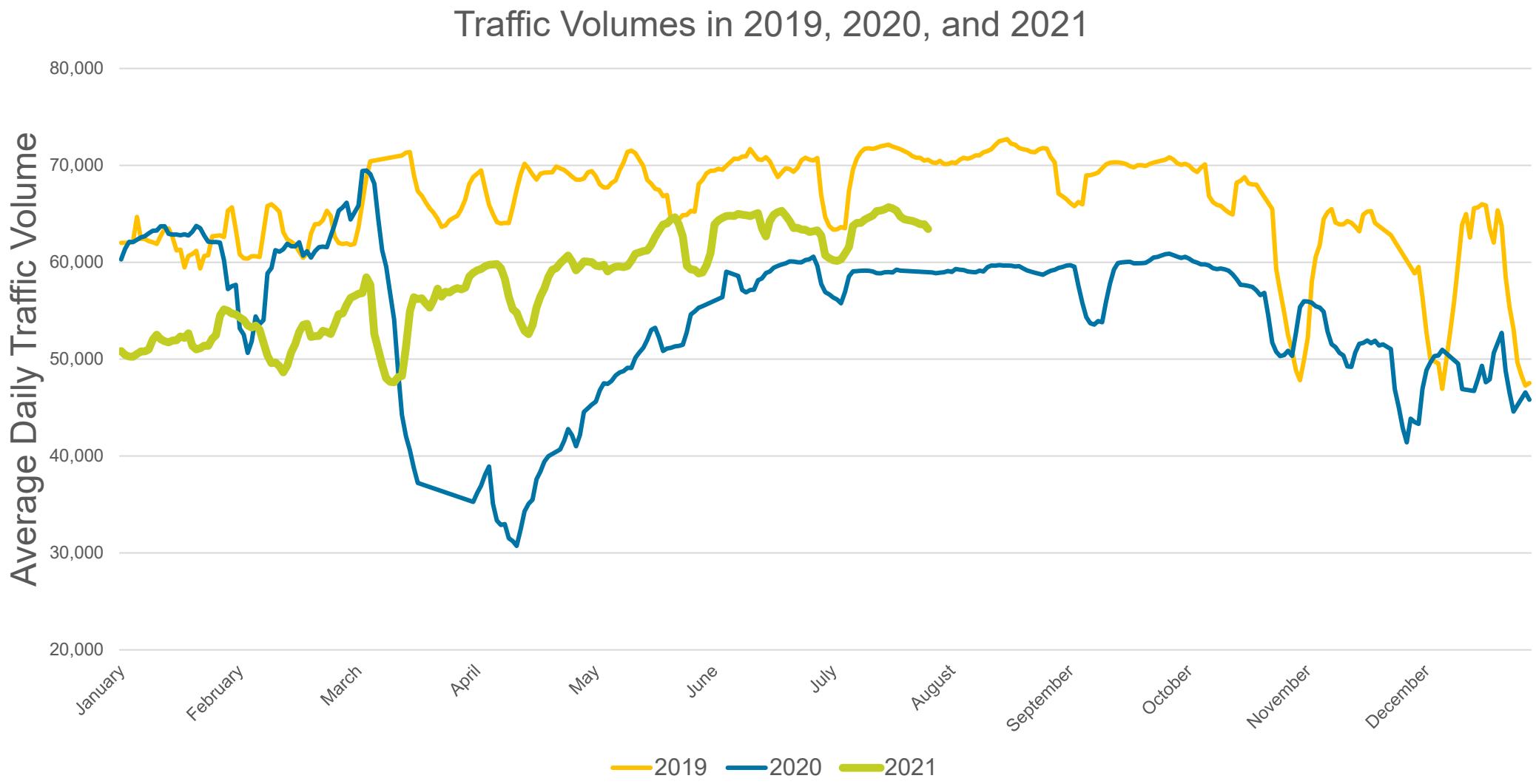
*2020 data was not official as of presstime
Source: Colorado Department of Transportation

Despite VMT being down, traffic fatalities were nearly the same in the Denver region and increased across the state



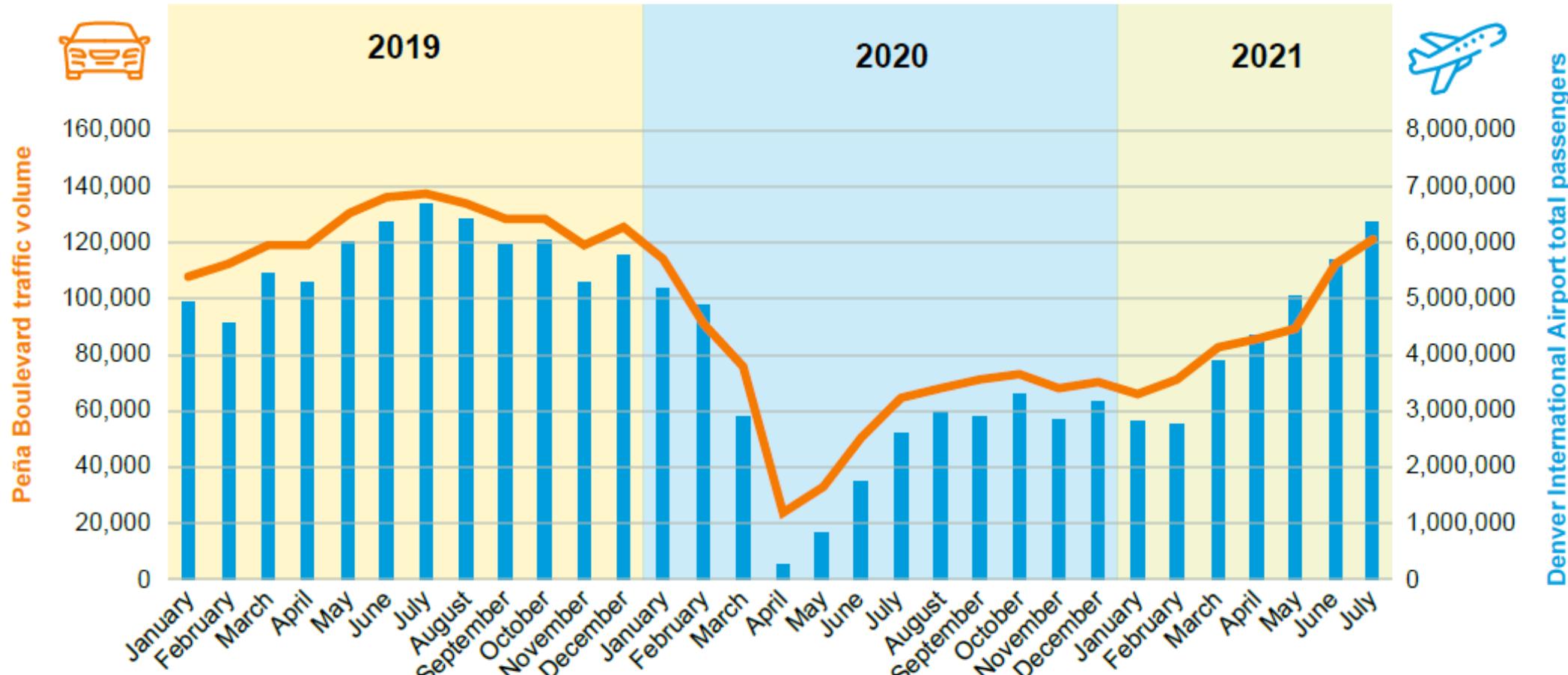
2021- THE PANDEMIC STORY CONTINUED

2021 TRAFFIC VOLUMES



Source: Colorado Department of Transportation Automated Traffic Recorder Data

PEÑA BOULEVARD TRAFFIC VOLUME

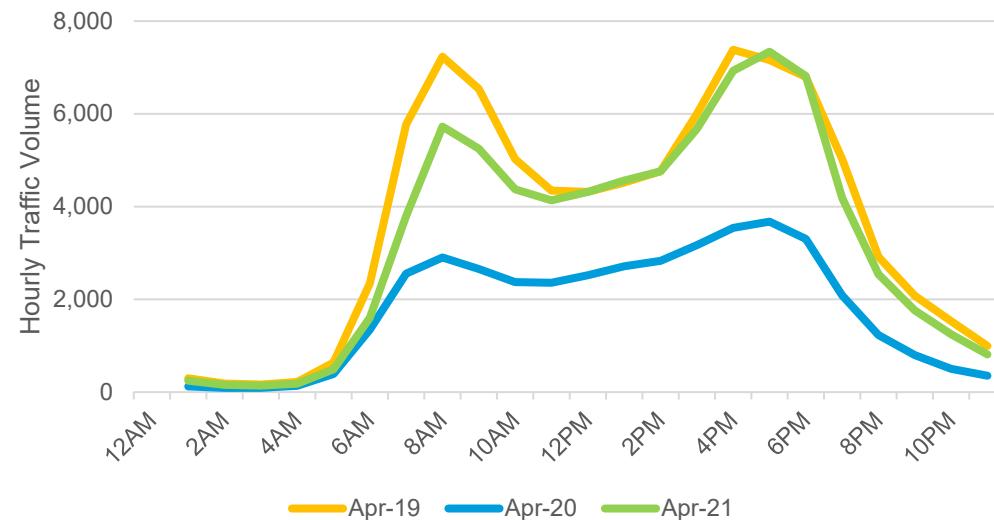


Peña Boulevard east of E-470 Traffic and Denver International Airport total passengers by month in 2019, 2020 and 2021. Source: Denver International Airport data.

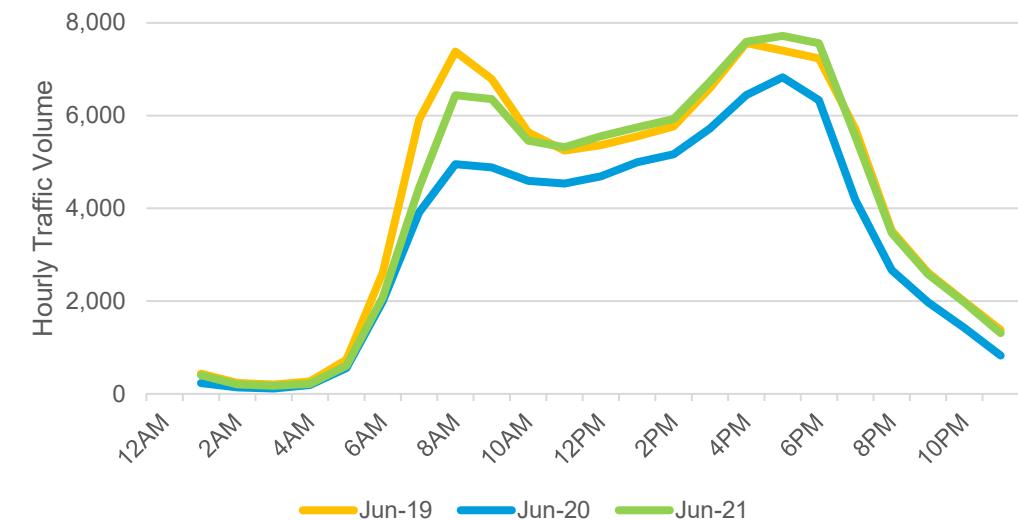
2021 DIFFERENCES BY TIME OF DAY



APRIL HOURLY TRAFFIC VOLUMES
SH 470 N/O MORRISON ROAD

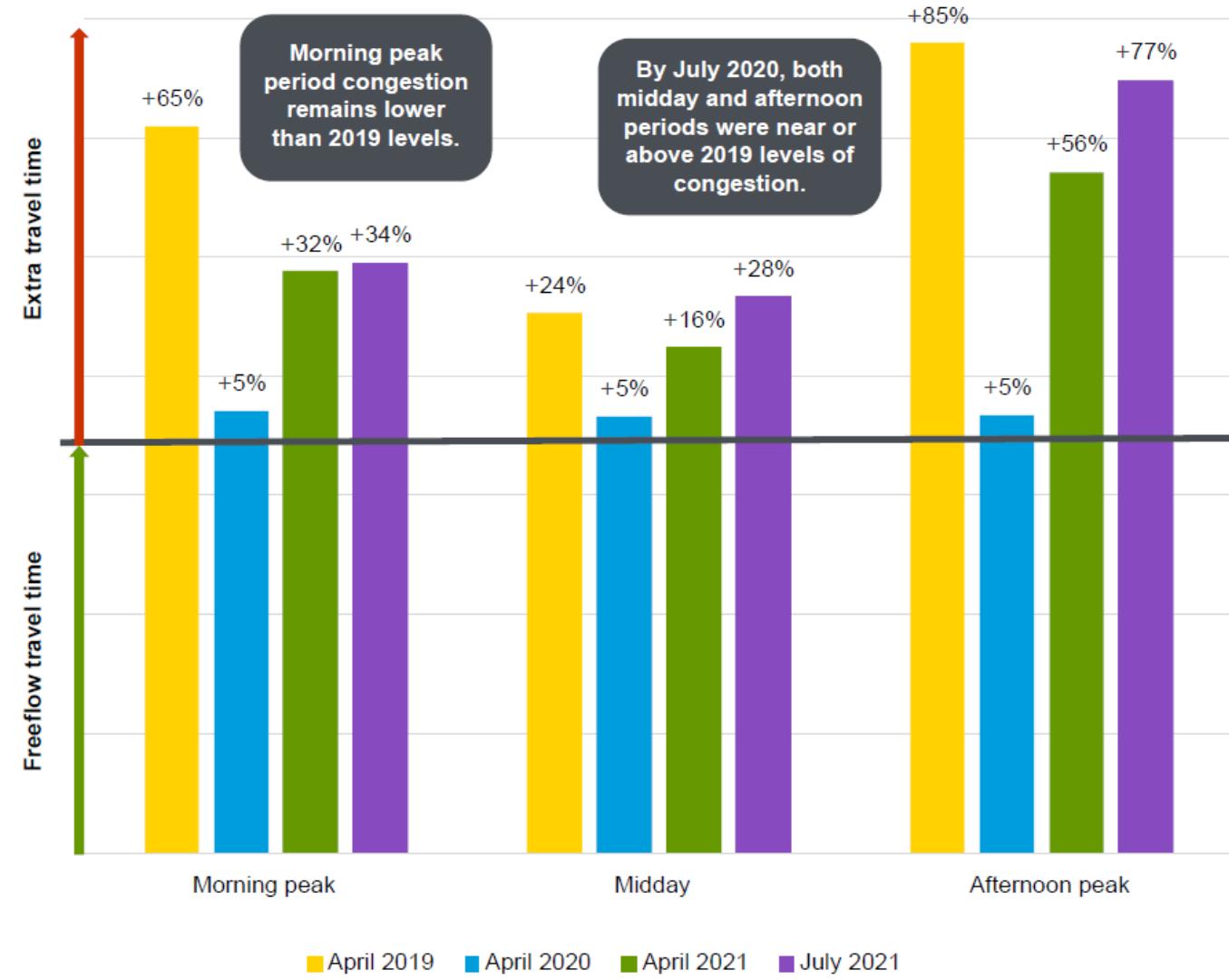


JUNE HOURLY TRAFFIC VOLUMES
SH 470 N/O MORRISON ROAD



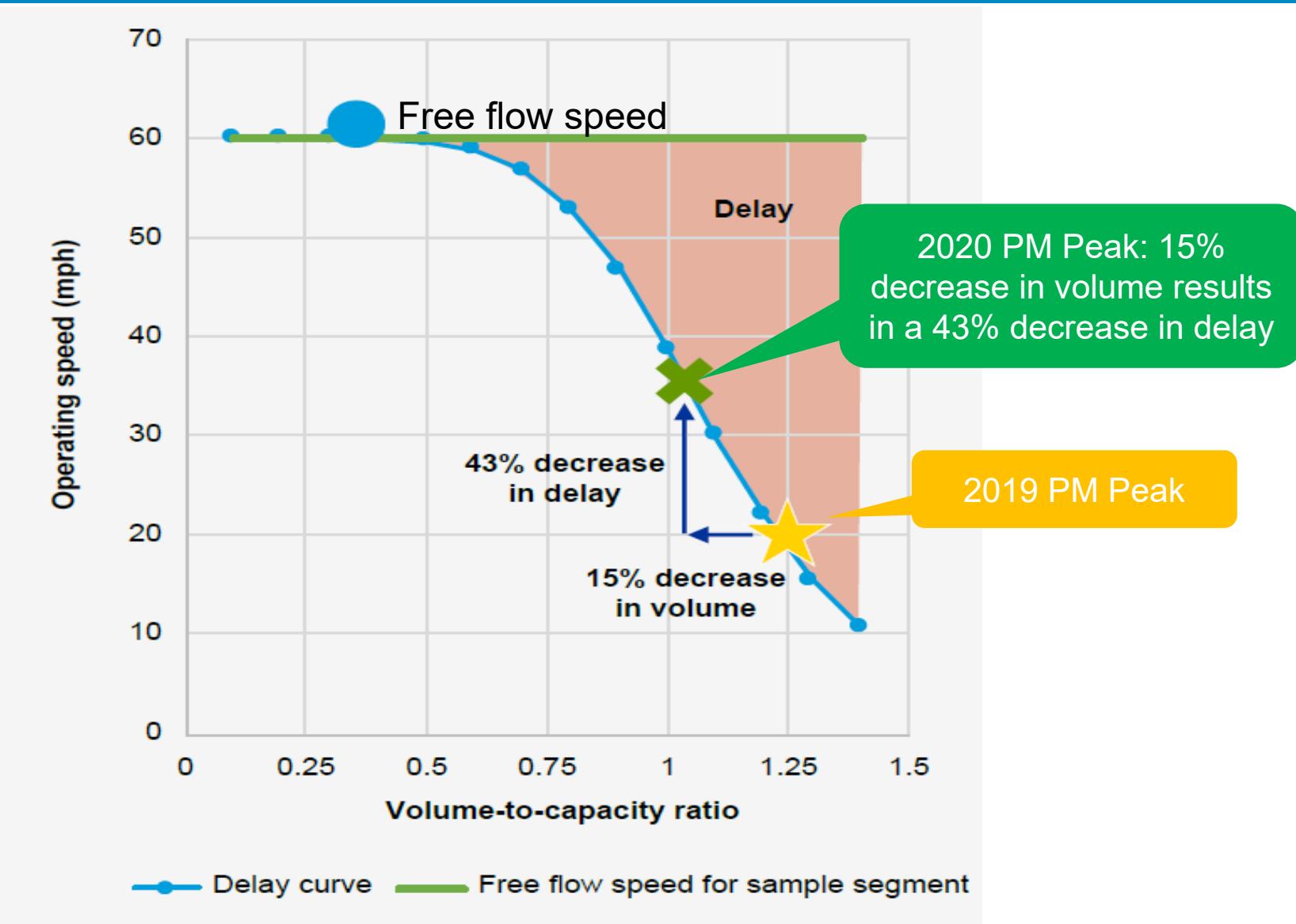
AM Peak
Volumes
Remained Low

2021 EXTRA TRAVEL TIME



Source: INRIX Data

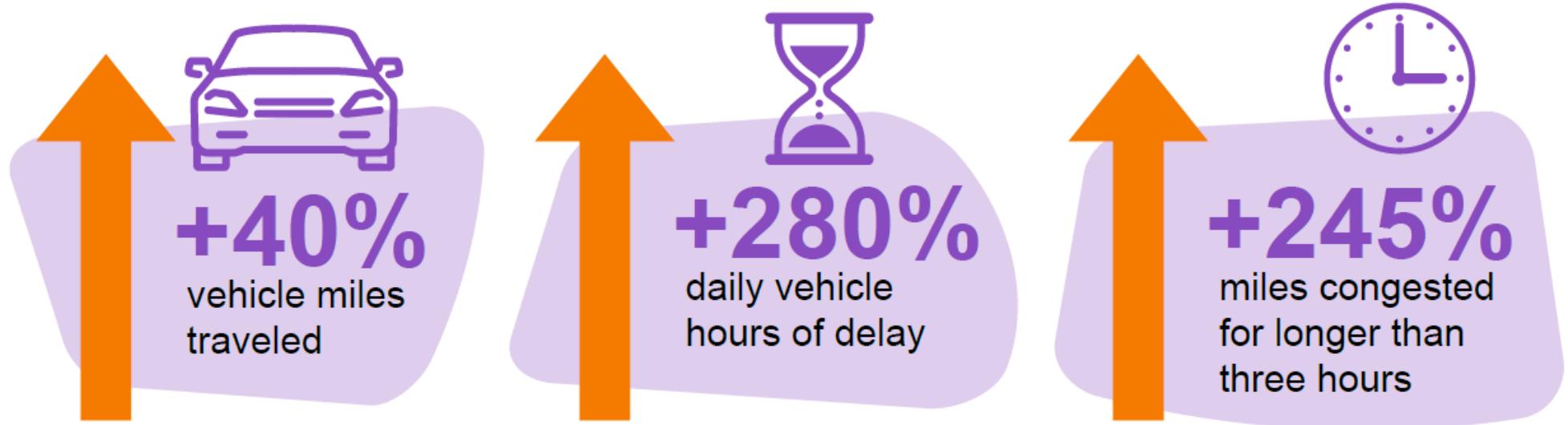
HERE'S WHY: FREEWAY "DELAY CURVE"





2050 CONGESTION

2050 CONGESTION COMPARED TO 2019

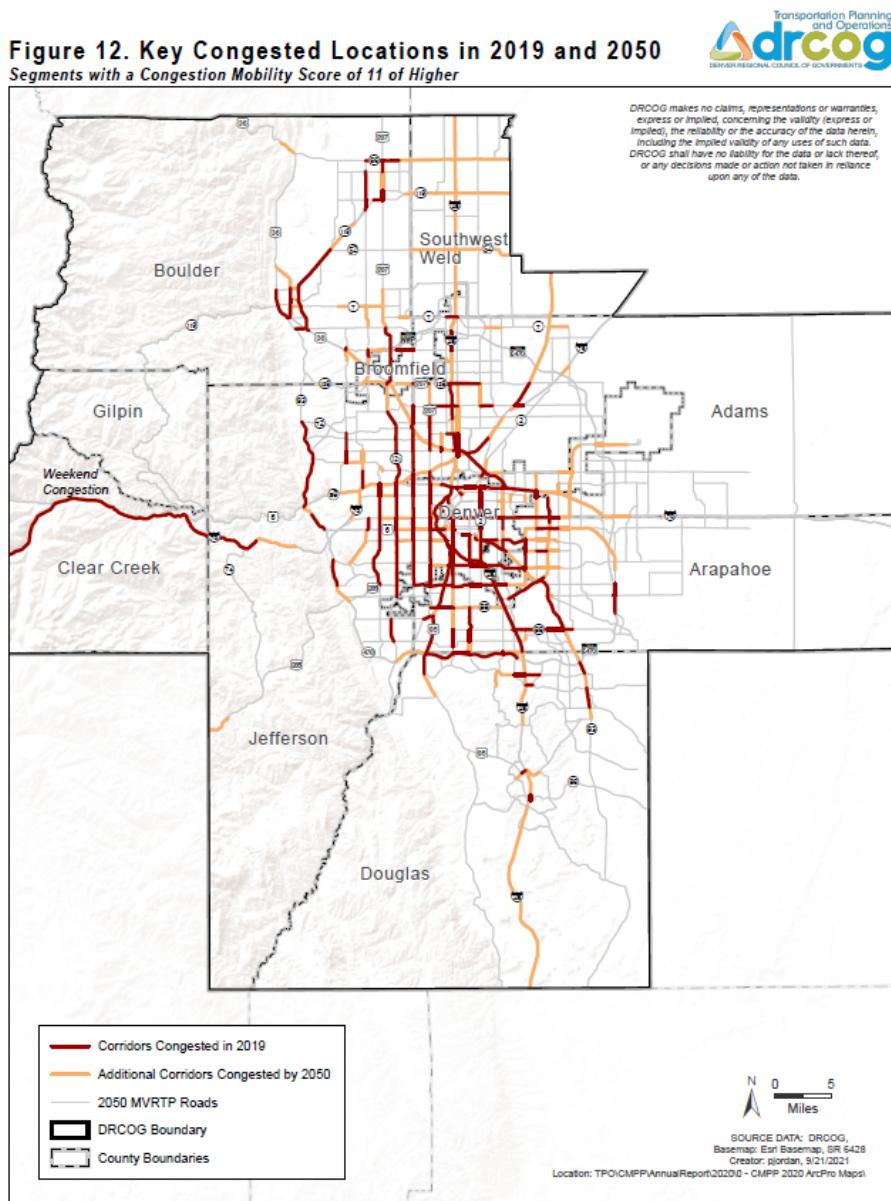


Congestion at
2 p.m.
in 2050



Congestion at
5 p.m.
in 2019

KEY CONGESTED LOCATIONS 2019 AND 2050



- In 2019, **1,310** lane-miles with severe congestion, which is **18%** percent of CMP system miles
- In 2050, **3,030** lane-miles with severe congestion, which is **37%** percent of CMP system miles
- We must provide options to help people avoid or adapt to congestion

SUBJECTS OF QUESTIONS FOR FUTURE TRAVEL



- “New-normal” level for telework by office workers?
- Restructuring of office and commercial space?
- Home deliveries and curbside pickups?
- Desire for teleworkers to live further from employer?
- Transit ridership rebound?
- Ridehailing services? Bicycle and scooter sharing?
- Denver region population and employment growth?
- Labor market supply?
- Business travel? Conventions?
- Mobility and safety technology?



Household Travel Surveys – 2022 / 2023 !



THANK YOU!
QUESTIONS?

Robert Spotts
Mobility Analytics Program Manager
rspotts@drcog.org