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# Zero-Fare August Impact Analysis

## Final Report

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In partnership with Amey Consulting, JSE Associates, NWC Partners, and Transportation Management & Design

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# 1 Executive Summary

In August 2022, RTD provided zero-fare service on all of the agency's transit modes (fixed-route bus, light rail, commuter rail, FlexRide and paratransit) as part of the Zero Fare for Better Air (ZFBA) initiative. This initiative was part of a statewide effort resulting from the passage of Colorado Senate Bill (SB22-180), which created the Ozone Season Free Transit Grant Program in the Colorado Energy Office designed to reduce ground-level ozone by increasing the use of public transit across the state. The grant program provides funding to recover up to 80% of the lost fare revenue and other costs incurred by RTD if fares are offered at no cost to customers for at least 30 days during ozone season (June-August) in 2022 and 2023. The total cost to RTD associated with the ZFBA initiative in August 2022 was approximately \$10.3 million.

This impact analysis of ZFBA assesses the impact on RTD ridership, revenue and costs, operations and customers. The operational impacts assessed include overcrowding, on-time performance and impact on the roles of frontline employees. This report provides recommendations should the ZFBA initiative be continued in 2023 and forms the evaluation to be provided to the Colorado Energy Office by December 1, 2022, as required by SB22-180.

This report identifies a number of successes and challenges from the ZFBA period:

- Regular transit ridership increased, but ridership gains may also be in part attributable to general post-COVID rebounding ridership, the mid-August 2022 service change and/or the start of the new academic year, as well as seasonal trends seen within the transit industry.
- RTD was able to support the increased ridership without incurring significant costs related to increased service demand.
- ZFBA did not yield significant fixed-route operating impacts.
- ZFBA did not lead to a major increase in quality of life/crime incidents on RTD services.
- Impacts of ZFBA on air quality are difficult to quantify.

Overall, RTD's experience with the ZFBA initiative was positive, as most customers appreciated the zero-fare period and there were minimal disruptions to day-to-day operations. Costs to RTD for implementing the program would be significant without financial assistance from the Colorado Energy Office. It must be noted that the ZBFA initiative provides a snapshot of data, and drawing conclusions on the success of the one-month pilot is difficult as transit trends and data are influenced by a wide-range of outside factors. Factors include changing travel trends as impacts of the pandemic subside, professional sporting event schedules, concerts, and the beginning of the school year.

## 2 Introduction

In August 2022, RTD provided zero-fare service on all of the agency's transit modes (fixed-route bus, light rail, commuter rail, FlexRide and paratransit) as part of the Zero Fare for Better Air (ZFBA) initiative. This was a statewide initiative, in partnership with the Colorado Energy Office, designed to reduce ground-level ozone by increasing the use of public transit. The Colorado Senate Bill (SB22-180) provides funding for RTD to recover up to 80% of the lost fare revenue if fares are free for at least 30 days during ozone season (June-August) in 2022 and 2023. The total cost for the Zero Fare for Better Air in August 2022 was approximately \$10.3 million.

Other public transit agencies have offered zero-fare initiatives. Of the 6,800 organizations providing public transportation in the United States, approximately 50 transit systems have some form of fareless transit on a permanent basis.

A number of agencies have recently considered or undertaken zero-fare pilots systemwide or for a subset of customers or routes, including the Utah Transit Authority (UTA) in Salt Lake City (one-month systemwide zero-fare pilot), the Massachusetts Bay Transportation Authority (MBTA) in Boston (zero-fare on select bus routes) and the Los Angeles County Metropolitan Transportation Authority (LA Metro) (zero-fare for K-12 and community college students with desire to extend the pilot to low-income customers if funding becomes available). The main drivers of the pilot programs are to encourage customers back to the system following ridership decline due to the COVID-19 pandemic, support economic recovery and reduce the financial burden on customers. Given that agencies nationwide are currently experiencing lower ridership and lower fare revenue, agencies implementing zero-fare pilots experience a smaller impact on total revenue than if the pilots had been undertaken pre-COVID. These agencies have used a number of funding sources to mitigate the lost fare revenue during these pilots including funding from the city of Boston (MBTA), pass partners and sponsors (UTA) and American Rescue Plan Act of 2021 (LA Metro).

In 2021, RTD initiated the Systemwide Fare Study and Equity Analysis. In doing so, the agency is reexamining its fares holistically, taking into consideration the three study goals of equity, affordability and simplicity. This effort is ongoing and is a separate and tangential effort to the ZBFA initiative.

RTD is the primary public transportation provider in the Denver Region. The agency operates over 100 bus routes, four commuter rail lines, six light rail lines, 24 FlexRide zones, as well as complementary paratransit service. In August 2022, all of RTD's services were provided at no cost to the customer.

RTD operated under its May 2022 schedule during the first three weeks of August. The August 2022 service changes went into effect on August 21, 2022, and will remain in effect until the January 2023 service change.

RTD implements a schedule change with service adjustments every August for schools returning to session. The service adjustments associated with the mid-August 2022 service change included a 2.9% increase in weekday in-service revenue hours and a 3.0% increase in weekday in-service vehicle miles for bus and no change to rail, for a 2.6% and 2.5% increase in systemwide hours and miles, respectively.

Table 1. RTD Weekday Scheduled Service

	Bus		Rail		System	
	Revenue Hours	Vehicle Miles	Platform Hours	Vehicle Miles	Platform Hours	Vehicle Miles
May22 Schedule	5,259.0	76,570.1	642.6	16,624.0	5,901.6	93,194.1
Aug22 Schedule	5,411.8	78,901.1	642.5	16,624.0*	6,054.3	95,525.1

*\*Rail Vehicle Miles for the Aug22 service schedule reflect scheduled service levels, not necessarily actual, delivered service levels. Additional rail capacity was added to the Aug22 schedule for ZBFA that is not reflected in this value*

*Source: RTD "2016-Service Recap Summary" Reports. Weekday (bus) and Mon.-Thurs (rail) in-service Platform Hours and in-service Vehicle Miles*

This impact analysis of the Zero Fare for Better Air for RTD assesses the impact on RTD ridership, revenue and costs, operations and customers. The operational impacts assessed include overcrowding, on-time performance and impact on roles of frontline employees. The report provides recommendations if zero-fares are also implemented in 2023.

This report forms the evaluation to be provided to the Colorado Energy Office by December 1, 2022, as required by SB22-180.

### 3 Ridership Impacts

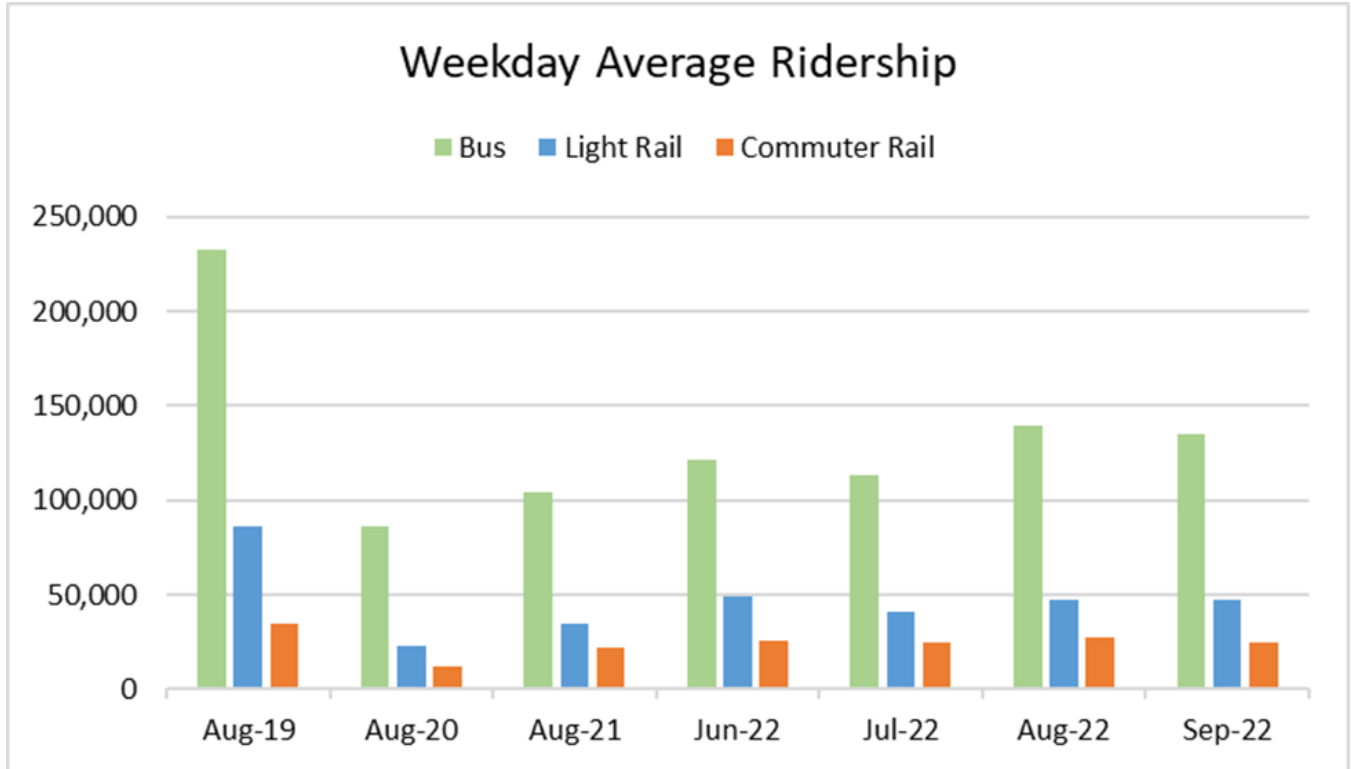
RTD, like virtually all other major U.S. transit agencies, has experienced a significant decline in ridership as a result of the COVID-19 pandemic. While ridership is still below pre-COVID levels and remained so in August 2022, the ZFBA initiative had a positive impact on RTD’s systemwide ridership.

Overall ridership increased by 22% from July 2022 to August 2022, and 36% from August 2021. Due to the start of the school year, the agency typically experiences an increase in ridership between July and August each year. Average weekday daily ridership increased 19.9% in August compared to July and increased 32.4% as compared to August 2021.<sup>1</sup> Bus saw the largest increase with a 23.4% increase over July and a 33.3% increase over August 2021. Light rail and commuter rail ridership increases were more modest from July 2022 to August 2022, at 15.1% and 12.1%, respectively. As shown in Figure 1 below, weekday ridership still remains well below pre-COVID levels from August 2019, a trend anticipated by industry analysts to continue into future years, with ridership only projected to return to 75% of pre-COVID levels by 2025 according to S&P Global Ratings.

<sup>1</sup> Ridership data utilized in this analysis is from RTD’s APC-based monthly totals for NTD reporting.

Much of RTD’s ridership growth observed in August 2022 was sustained into September 2022, even with the resumption of fare collection. Weekday systemwide daily ridership averaged 207,472 in September 2022, down 3.1% from 214,215 in August 2022 but much higher than the July 2022 daily average of 178,468.

Figure 1. Average Weekday Ridership by Month

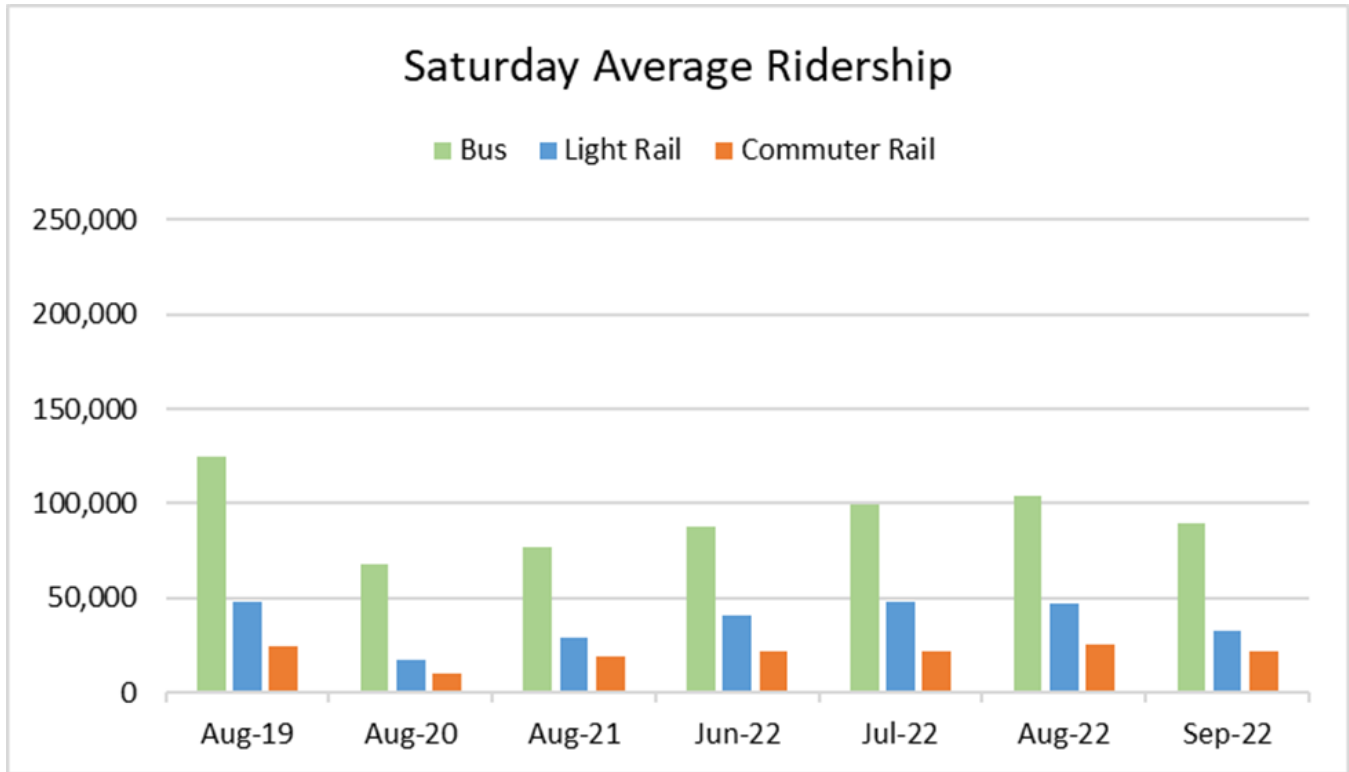


The average daily Saturday ridership during the ZFBA period was up 54.9% systemwide as compared to August 2021, but only experienced 3.8% increase over July 2022. The agency’s weekend services have recovered much more of their pre-COVID ridership than have weekday services, making the increase during the ZFBA period much more modest. (See Figure 2 below for a monthly comparison by mode.)

While Saturday commuter rail ridership grew at a rate from July 2022 to August 2022 similar to that experienced on weekdays (15.1% growth on Saturdays vs. 12.1% on weekdays), Saturday bus ridership grew more modestly, with only a 4.5% increase from July 2022 to August 2022. Surprisingly, Saturday light rail ridership actually declined 2.8% between July 2022 and August 2022, driven by an 11.1% decline in daily H Line ridership and 17.1% decline in daily W Line ridership on Saturdays between July 2022 and August 2022. Saturday ridership declined dramatically between August 2022 and September 2022, with a 17.8% decline systemwide in daily average boardings following the end of the ZFBA period and the resumption of fare collection.<sup>2</sup>

<sup>2</sup> The decline in Saturday boardings between August 2022 and September 2022 also coincides with, and may be partially attributable to, fewer professional sports games occurring in September 2022. Two Broncos preseason games were held and only one Rockies home game over the month of August, whereas only two Rockies home games were held on Saturdays in September.

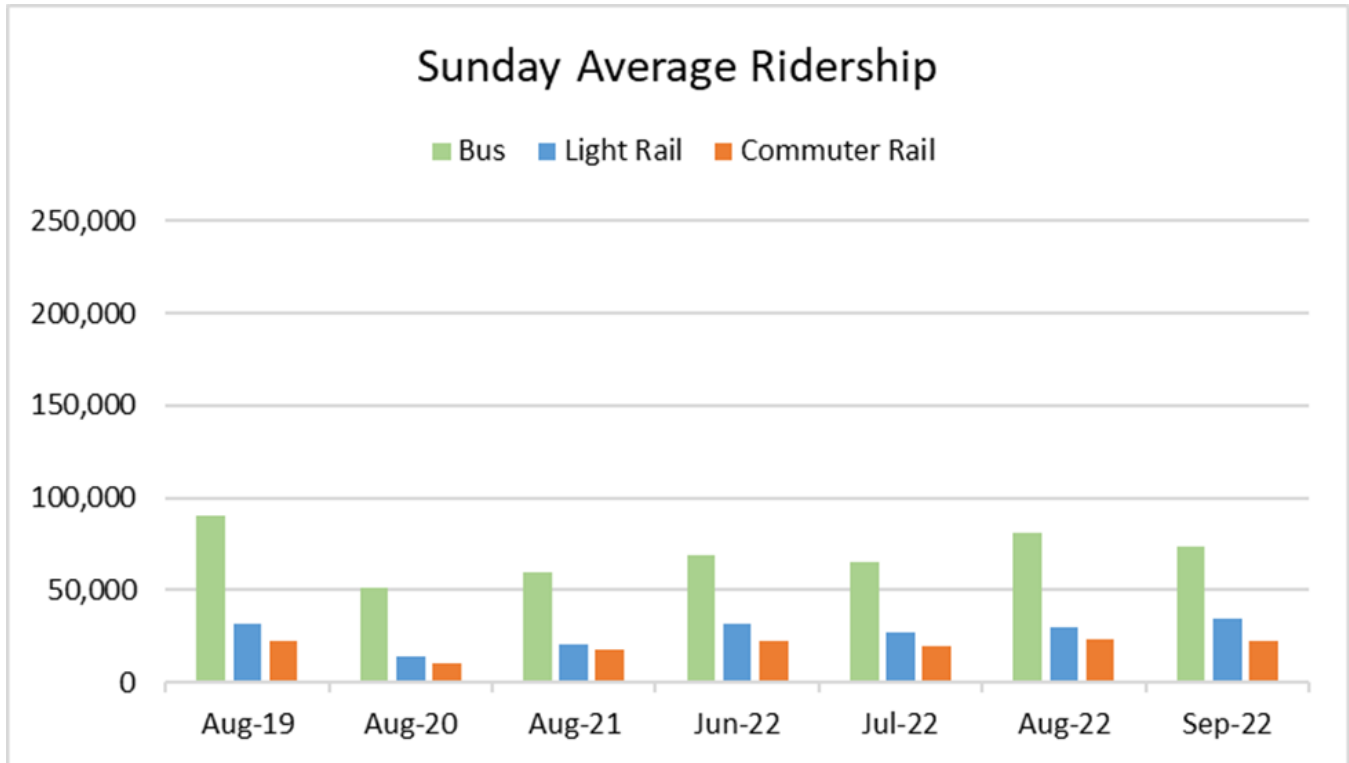
Figure 2. Average Saturday Ridership by Month



Systemwide, Sunday ridership during the ZFBA period was similar to that experienced on weekdays, with a nearly 20% increase in average daily boardings over July 2022 and a 36.2% increase over August 2021 (see Figure 3 below for a monthly comparison by mode). Sunday bus ridership experienced the highest increase, with a 23.7% increase from July 2022 to August 2022, as compared to a 12.1% increase for light rail and 17.4% for commuter rail. Sunday ridership also mirrored weekdays, with a modest decline between August 2022 and September 2022 after the end of the ZFBA period. Systemwide daily average Sunday boardings decreased by only 2.6%.

Compared with August 2019, Sunday ridership has increased compared to pre-COVID figures more than any other service day, with systemwide daily average boardings having declined only 6.4% in August 2022 compared to August 2019. Weekday daily boardings decreased nearly 40% systemwide; Saturday boardings decreased 11%, in August 2022 as compared to August 2019.

Figure 3. Average Sunday Ridership by Month



Ridership increased during the ZFBA period across all of RTD’s complementary paratransit services, including Access-a-Ride, Access-a-Cab and the Uber-based Access-on-Demand service. (See Table 2 and Figure 4 below.)

Access-a-Ride ridership increased 24% in August 2022 over the monthly average between January 2022 and July 2022 and remained higher than the monthly average in September 2022 and prior years. Access-a-Ride ridership for 2022 peaked in August and September 2022, with 52,468 and 46,487, respectively. Access-a-Cab boardings grew more modestly, with 11% more boardings in August 2022 than the prior seven months’ average.

RTD experienced explosive growth on its Uber-based Access-on-Demand service<sup>3</sup>, with August 2022 boardings up 170% over the aggregated monthly average from January 2022 to July 2022, during which period ridership also increased month-over-month. During the ZFBA period, paratransit customers were granted up to 60 zero-fare Uber trips, up to a maximum subsidy value of \$22, anywhere in RTD’s service area.

Overall all ADA ridership declined by 12.6% between August and September. However, Access-a-Ride ridership remained 10.1% higher than the January to July average. While Access-a-Cab ridership dropped to below the January to July average, Access-on-Demand ridership remained more than double the average of the first seven months of the year. The continued high utilization of the Access-on-Demand service suggests that the ZFBA

<sup>3</sup> The service allows certified paratransit customers to request a curb-to-curb trip using the Uber smartphone app. Customers pay \$2 of the fare plus any amount in excess of the agency-subsidized portion of the fare up to \$20. Individuals’ trips are capped at four per day and 60 per month.



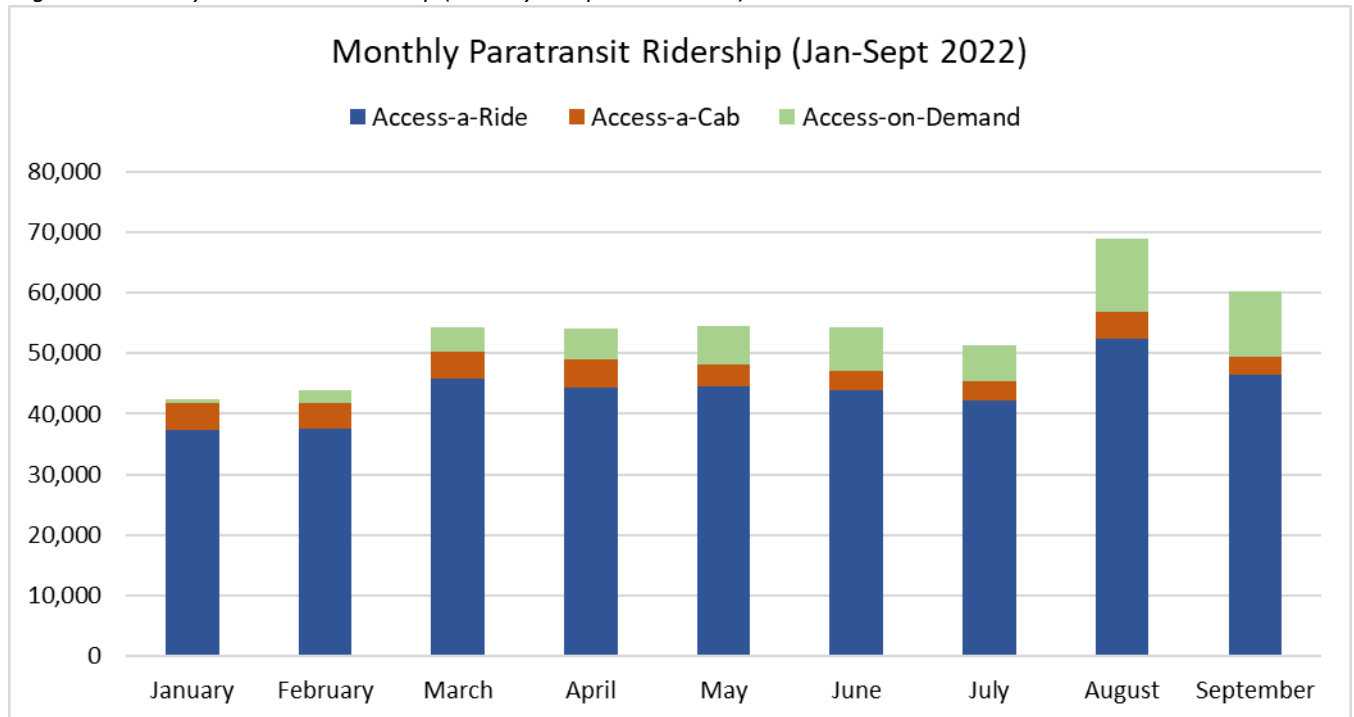
program may have exposed more paratransit riders to this option and that customers continue to find the service to be an important mobility option.

Table 2. RTD Paratransit Ridership

Monthly Paratransit Ridership	Jan-Jul 2022 Monthly Average	Aug 2022	Jan-Jul vs Aug Difference	Sep 2022
Access-a-Ride	42,214	52,458	24%	46,487
Access-a-Cab	3,953	4,370	11%	2,941
Access-on-Demand [RC1]	4,512	12,164	170%	10,875
<b>All Paratransit Services</b>	<b>50,679</b>	<b>68,992</b>	<b>36%</b>	<b>60,303</b>

Source: RTD Data

Figure 4. Monthly Paratransit Ridership (January – September 2022)



Access-a-Ride cancellations or no-shows did not change significantly during ZFBA or see an impact after the resumption of fare collection. As shown in Table 3 below, the Access-a-Ride cancel rate remained in the 3-4% range throughout July, August, and September 2022.

Table 3. NTD Access-a-Ride Data

Month	Access-a-Ride Trips	Cancellations	No-Shows (Including Late Cancellations)	Cancel Rate
July	40,168	788	743	3.81%
August	48,627	917	833	3.60%
September	42,175	771	709	3.51%
<i>Source: RTD Data</i>				

## 4 Revenue and Cost Impacts

RTD incurred both reimbursable and non-reimbursable expenses related to the ZFBA initiative. Reimbursable expenses included those directly incurred in the course of providing zero-fare transit, as well as expenses related to marketing and public relations (PR), additional security and cleaning, and assessment and reporting related to the initiative. Non-reimbursable expenses included those incurred prior to the grant approval date of July 25, 2022, such as certain marketing costs related to print media and digital ads, and those items deemed to be outside of the scope of the grant agreement, such as the customer survey conducted as part of the initiative.

Table 4 presents the anticipated state grant amounts along with the incurred expenses by expense type, including non-reimbursable expenses incurred in conjunction with ZFBA.

Table 4. ZFBA Expenses

ZFBA Funding and How It was Used	Approved Grant Amount	Incurred Expenses
<b>Expenses Submitted to the State for Reimbursement</b>		
Forgone Fare Revenue	\$9,267,964	\$9,267,964
Additional Rail Operations	\$1,172,036	\$576,205
Marketing and PR (incurred on or after July 26, 2022)	\$250,000	\$188,231.23
Security and Cleaning	\$60,000	N/A
Impact Assessment and Reporting	\$100,000	\$100,000
<b>Subtotal of Reimbursable Expenses*</b>	<b>\$10,850,000.00</b>	<b>\$10,132,400.23</b>
<b>Non-Reimbursable Expenses Incurred by RTD</b>		
Marketing and PR (incurred before July 26, 2022)	N/A	\$50,938.04
Customer Survey (outside of grant scope)	N/A	\$149,000
<b>Subtotal of Non-Reimbursable Expenses</b>		<b>\$199,938.04</b>
<b>Grand Total of Expenses Incurred</b>		<b>\$10,332,338.27</b>
*Reimbursable Expenses are subject to a 20% agency match		

## 4.1 Forgone Fare Revenue and Additional Costs incurred by RTD

The single largest financial impact associated with ZFBA was forgone fare revenue in the amount of \$9,267,964<sup>4</sup>. While this amount is based upon revenue forecasts and historical ridership data, an assessment of the true amount of forgone fare revenue is made more complicated by the addition of bus service capacity and the return to school for many primary and secondary school students, changes in historical ridership trends from previous years, and higher than usual demand for transit due to attendance at Colorado Avalanche games during the National Hockey League playoffs and the subsequent parade following their championship victory.

RTD staff had originally anticipated that additional rail capacity would be needed throughout the ZFBA period to accommodate potential overcrowding as a result of zero-fare operation. While rail capacity needs cannot always be anticipated, Rail Operations staff had planned to dispatch additional vehicles to enhance capacity on previously scheduled trains to manage high demand. Staff anticipated that R Line and E Line trains, specifically, required additional cars to be added to the consists. Accordingly, cars were added to the E Line for the first 11 days of August to the R Line for the first five days of the month, although these cars were later removed when the anticipated level of ridership did not materialize. As a result, additional expenses associated with train

<sup>4</sup> Source: RTD 2022 Adopted Budget, anticipated fare revenue for August 2022 based on forecasting of historical trends.

operations were not as significant as initially planned. Table 5 below provides a breakdown of the costs associated with the additional E and R line trips.

*Table 5. Additional Trip Costs*

Line	Miles per Added Train	Expense per Mile	Days Cars Added	Cost Per Day	Total Cost
E	3,152	\$13.33	11	\$42,021	\$462,233
R	1,710	\$13.33	5	\$22,794	\$113,972
<b>Total</b>					<b>\$576,205</b>

Marketing and PR expenses were largely in alignment with the amounts agreed upon between the Colorado Energy Office and RTD. Certain marketing expenses were incurred prior to the execution of the grant agreement and will be borne by RTD exclusively.

While staff anticipated the need for additional security and cleaning services in response to the increased demand as a result of ZFBA, no such costs were incurred, largely due to workforce constraints.

Costs associated with impact assessment and reporting include the preparation of the final report and evaluation as required pursuant to the grant application. Creation of the report has been delegated to a third-party contractor at a fixed cost. This cost does not include non-reimbursable RTD staff time associated with ZFBA-related project management, reporting, and preparation of the final report and evaluation, as those tasks were performed by employees in the course of their duties.

## 4.2 Cost Savings Achieved by RTD

Staff initially anticipated the ZFBA initiative would yield certain cost savings, specifically with respect to fare collection and related activities. However, given the relatively short amount of time between when the ZFBA grant agreement was executed on July 26, 2022, and when the agency began offering zero-fares on August 1, 2022, certain non-service related costs for the month had largely been incurred. Further, due to the fixed-price structure of some of RTD's vendor contracts, no significant savings were realized.

RTD sells fare media through various sales channels. For paper fare products sold through retail sales channels such as Safeway and King Soopers grocery stores, a small commission is paid to those vendors. Staff estimated that savings from reduced sales commissions amounted to approximately \$5,000 for August 2022. While the printing of paper fare media may have been avoided altogether in August with sufficient lead time, the ZFBA grant agreement was executed well after fare media had already been printed resulting in no cost savings.

Management of cash payments including those collected via bus fareboxes and ticket vending machines, is undertaken internally by agency staff. While there was less need to manage cash payments in August, Treasury Division employees embraced the opportunity ZFBA presented by engaging in additional maintenance activities, asset management and restocking of ticket vending machines. Further, RTD employs an armored car service for

transporting cash fares. While the number of armored vehicle trips were reduced, the contractor receives contract payment via a fixed monthly fee, so no cost reductions were possible. Similarly, RTD’s mobile ticketing vendor also receives monthly payments at a fixed rate, and no cost reductions were realized with the suspension of electronic ticket sales.

In some cases, fare collection-related labor costs increased, offsetting labor savings elsewhere. Team members responsible for fare collection systems, such as ticket vending machines and electronic fare collection, were required to spend additional time planning for and ensuring that systems were rendered inoperable in early August 2022 and then tested and placed back into service in early September 2022.

Additionally, RTD is providing partial credits to employers, neighborhoods, and institutions of higher education toward prior EcoPass, Neighborhood EcoPass, and CollegePass payments, respectively, as a way for these entities to recoup the costs they would not have otherwise paid due to the zero-fare month.

## 5 Operational Impacts

### 5.1 Overcrowding

The increased ridership across many of RTD’s services during ZFBA also yielded corresponding increased average onboard loads. This section summarizes the overcrowding that occurred during ZFBA, using an analysis of average maximum trip-level passenger loads as a share of planned onboard capacity during the same time periods as the ridership analysis.<sup>5</sup>

In August 2019 and August 2021, the agency experienced no weekday bus trips averaging 80% of planned capacity or above at their max load points. (See Table 6 below.) While the same is true for June and July 2022, 18 such trips occurred in August 2022, though at a lower level than that experienced in 2019. Notably, this loading trend continued into September 2022, with 11 weekday bus trips with maximum loads averaging 80% or more of planned capacity. The vast majority of these high-volume trips were those of local bus routes.

*Table 6. Average Weekday Bus Trips at or Above 80% and 100% of Planned Capacity*

Average Weekday Bus Trips		Above 80% of Planned Capacity	Above 100% of Planned Capacity
Pre-COVID	August 2019	186 <sup>1</sup>	23 <sup>2</sup>
Previous Year	August 2021	0	0
Previous Month	July 2022	0	0

<sup>5</sup> The planned capacity for an RTD vehicle is equal to the seated capacity plus the total available standee square footage divided by 4.3 square feet per average standee. Per RTD’s “Transit Service Policies & Standards” (July 19, 2016), “RTD defines crowding as a seated load plus the standing passenger space, as calculated for each vehicle by subtracting the area occupied by seats and other objects from the gross interior floor area. The amount of crowding on a route is defined as the percent of total trips during a defined time period that exceed a comfort passenger level of 4.3—5.3 square feet per standee...” This analysis used the lower end of 4.3 square feet per standee to calculate the absolute maximum planned capacity for each trip segment.

Average Weekday Bus Trips		Above 80% of Planned Capacity	Above 100% of Planned Capacity
ZFBA Month	August 2022	18 <sup>3</sup>	3 <sup>4</sup>
Post-ZFBA Month	September 2022	11	1
Notes: 1 - 43 trips during May Schedule and 143 during August Schedule 2 - 0 trips during the May Schedule and 23 during the August Schedule 3 - 5 trips during the May Schedule and 13 during the August Schedule 4 - 1 trip during the May Schedule and 2 during the August Schedule			

Saturday bus trips with maximum loads at or above 80% of planned capacity increased in August 2022 as well, with more trips above this threshold than on weekdays. While the Saturday trips with heavy loads were almost all on the Free MallRide in August 2019, the 25 trips in August 2022 above this threshold were predominantly on local routes (19 trips), with six on the Flatiron Flyer. Of these 19 local trips, the vast majority were associated with routes operating on the East or West Colfax corridor. Sundays followed a similar pattern.

Table 7. Average Saturday Bus Trips at or Above 80% and 100% of Planned Capacity

Average Saturday Bus Trips		Above 80% of Planned Capacity	Above 100% of Planned Capacity
Pre-COVID	August 2019	173 <sup>1</sup>	64 <sup>2</sup>
Previous Year	August 2021	2	0
Previous Month	July 2022	0	0
ZFBA Month	August 2022	28 <sup>3</sup>	11 <sup>4</sup>
Post-ZFBA Month	September 2022	1	0
Notes: 1 - 115 trips during May Schedule and 58 during August Schedule 2 - 29 trips during the May Schedule and 35 during the August Schedule 3 - 3 trips during the May Schedule and 25 during the August Schedule 4 - 0 trips during the May Schedule and 11 during the August Schedule			

While ZFBA did increase bus ridership and result in higher onboard passenger loads, it did not result in widespread overcrowding. Only two weekday trips in August 2022 and one trip in September 2022 regularly exceeded 100% of planned capacity and were thus overcrowded. During the ZFBA period, 11 Saturday trips experienced average maximum loads over 100% of capacity, as compared to 23 weekday bus trips and 35 Saturday bus trips above 80% capacity in August 2019.

At no point in the review period of this impact analysis, from August 2019 through September 2022, did light or commuter rail trips experience max loads at or above 100% of planned capacity. One Saturday B Line trip had a

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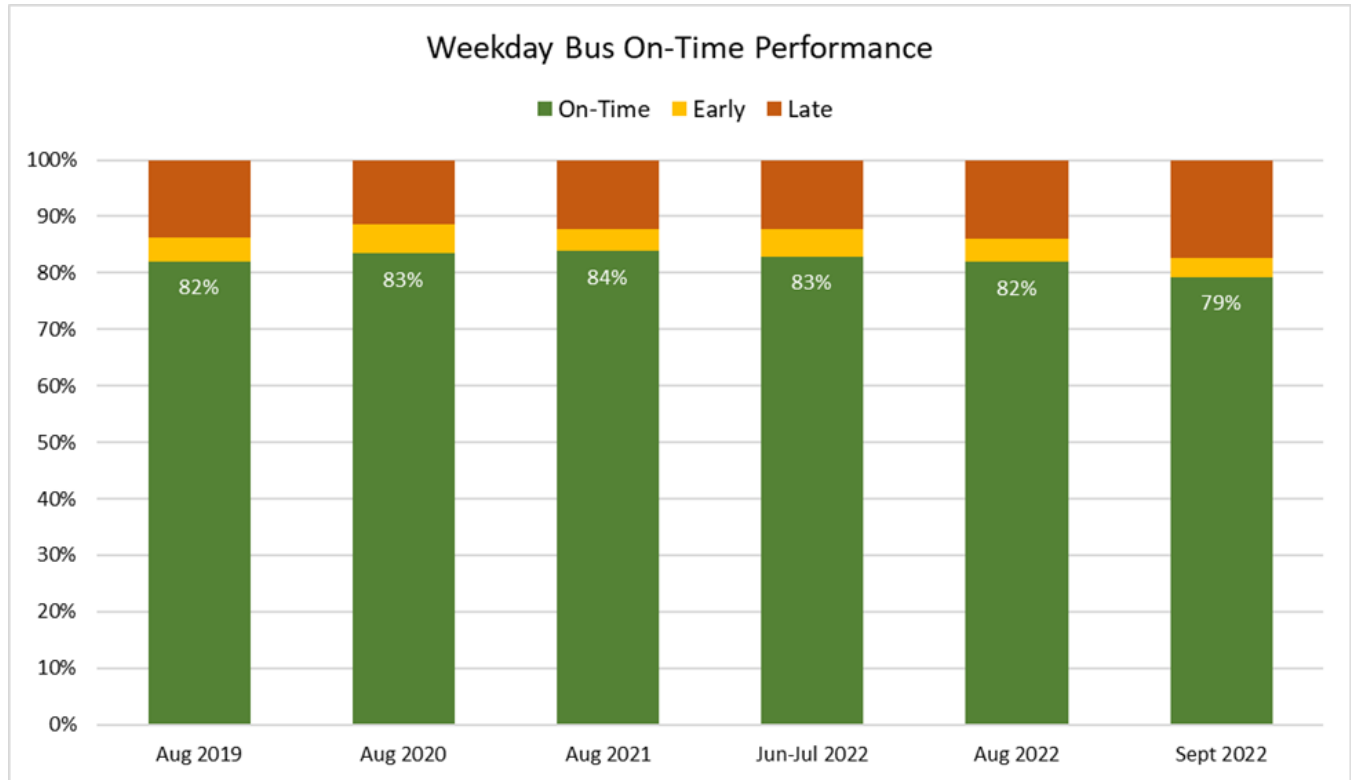
maximum load averaging above 80% in August 2019 and one Sunday A Line trip did so in September 2022. No commuter rail trips averaged 80% of planned capacity or above at their maximum load points during the ZFBA period.

RTD's light rail lines see more trips with higher loads than commuter rail lines, but there are no widespread capacity or overcrowding concerns. In August 2019, the light rail system experienced 16 weekday trips with 80% of planned capacity or higher at their maximum load points, 15 of which were on the H Line, as opposed to once each month in June and July 2022 and twice in August 2022. As with the bus system, more high-volume trips occurred on Saturdays than on weekdays during the ZFBA period. Five Saturday H Line trips averaged 80% of planned capacity or higher in August 2019; whereas nine Saturday H Line trips occurred in August 2022, with seven of the nine averaging above 100% of planned capacity at their maximum load points. The seven Saturday H Line trips that were regularly overcrowded during the ZFBA period were all late-afternoon or evening trips that began between 5 p.m. and 11 p.m.

## 5.2 On-Time Performance

The suspension of fare collection during the ZFBA period could potentially have yielded on-time performance (OTP) impacts for the bus system, either positively due to reduced door-open dwell times (as a result of shorter boarding queues with no fare payment), or negatively due to widespread overcrowding from higher passenger loads that counterbalanced the fare-free boarding time savings. However, as noted in the previous section, the agency experienced no widespread capacity issues. In fact, there was no significant impact on bus OTP during the ZFBA period. As shown below in Figure 5, weekday bus OTP did not change significantly during the ZFBA period and only declined one percentage point from the weekday average for June and July 2022. RTD's systemwide weekday bus system OTP in August 2022 mirrored that of August 2019 and was one to two percentage points lower than August 2020 and August 2021. In September 2022, bus system OTP declined three percentage points as compared to August 2022. Bus system OTP for Saturdays and Sundays during the ZFBA period mirrored that of weekdays, with no significant change compared to June and July 2022 or to August 2020 or 2021.

Figure 5. RTD Weekday Bus OTP Comparison



### 5.3 Operator Conflicts

Along with understanding the impacts to ridership and operational performance during ZFBA, it is important to also assess how zero-fare service impacted customer incidents and operator conflicts. The following sections summarize the incidents that took place during August 2022 as compared to July 2022 and August 2021. Security incidents, which include interactions with ill, impaired, or disorderly customers, or assaults on customers or operators, did not increase significantly during the ZFBA period. In fact, security incidents declined 17% year over year from 47 in August 2021 to 39 in August 2022. Only two more incidents occurred in August 2022 than in July 2022.

Vandalism and biohazard incidents were both up in August 2022 as compared to July 2022 and were much higher in both months as compared to August 2021. (See Table 8 below.)



Table 8. RTD Incident Reports

Incident Reports				
Date	Security Incidents	Vandalism Incidents	Biohazard Incidents	Total
August 2021	47	18	5	70
July 2022	37	30	16	83
<b>August 2022</b>	<b>39</b>	<b>38</b>	<b>20</b>	<b>97</b>
September 2022	38	28	11	77

*Note: Security Incidents include the following: Drunk or disorderly Customer, Incident with Customer, Operator Verbally or Physically Assaulted, Customer Physically Assaulted, Customer initiated emergency, RTD Security Action, or Sick Customer.*

## 5.4 Non-Destination Individuals and Crime Reports

The suspension of fare collection during ZFBA raised the concern non-destination individuals would take advantage of zero-fare transit by lingering aboard transit vehicles. While RTD does not explicitly capture data on non-destination individuals, no widespread impacts to operations were reported as a result of non-destination individuals.

Crime report data shows there was no major increase in drug-related or other quality-of-life complaints during ZFBA. As shown in Table 9 below, calls related to disturbances, narcotics and trespassing in August 2022 were all below the monthly average for the first seven months of 2022. Assault calls in August 2022 matched the prior YTD monthly average. Calls for criminal mischief or those regarding damage to property rose modestly in August 2022 to the highest volume seen in 2022, surpassing the 34 calls received in April 2022, whereas the monthly call average from January through July 2022 was 30. Crime data for September 2022 shows a 43% decline in assaults, from 44 in August 2022 to 25 in September 2022. This trend continued with 28 assaults recorded in October 2022. Service calls in other categories did not change significantly in September 2022, with “Criminal Mischief/Damage to Property” events returning to their pre-ZFBA average from earlier in calendar year 2022. Similarly, trespassing complaints rebounded toward, but remained below, the pre-ZFBA average.

Table 9. Crime Data

Monthly Crime Data	Jan-Jul 2022 Monthly Average	Aug 2022	Jan-Jul 2022 vs Aug 2022 Difference	Sep 2022
Assaults	44	44	--	25
Criminal Mischief/Damage to Property	30	36	20%	29
Disturbances	515	474	-8%	470
Narcotics	785	770	-2%	779
Trespassing	302	252	-17%	284
<i>Source: RTD "CAD Calls for Service" Report</i>				

## 5.5 System Cleanliness

While RTD did not incur additional costs related to cleaning vehicles during ZFBA, Service and Cleaning staff did note that, on average, more vehicles required cleaning and more time was needed to service the vehicles each evening during the ZFBA period. However, RTD did not receive a significant increase in the number of customer complaints related to cleanliness of transit vehicles between the months of July and August 2022, though customers registered a slightly higher number of complaints regarding bus stop and shelter cleanliness, with 32 complaints in July 2022 and 38 in August 2022. Bus stop and shelter cleanliness complaints decreased in September 2022. There was no change in the number of complaints about the cleanliness of vehicles or stations.

Table 10. RTD Customer Complaints related to cleanliness of the system

	Number of Customer Complaints				
	Bus	Bus Stops and Shelters	Train	Train Stations	Total
July 2022	6	32	6	14	58
August 2022	5	38	7	13	63
September 2022	3	24	4	13	44

*Source: RTD Customer Complaints Data*

## 5.6 Employee Opinion

This section summarizes the findings from the focus groups and interviews held with frontline employees intended to garner an understanding of the impact of ZFBA on agency operations and on the employees whose roles are directly related to transit service delivery.

From September 13 through 15, 2022, three focus groups were held with employees engaged in rail control, customer care and security. On September 14, 2022, interviews were held with bus dispatchers and bus operators. In total, 67 RTD frontline employees provided feedback on their ZFBA experience.

Overall, most focus group participants reported experiencing little to no difference between the ZFBA period and a typical month during which fares are collected. Participants reported that they experienced more opportunities for positive customer interactions and for informing customers on how to use the transit system. Separately, the Next Ride IVR automated phone system that provides customers with the next three scheduled times for trips from specific stops saw a 57% increase in calls between July 2022 and August 2022. There was a reduction in call numbers in September 2022, but the numbers remained above July 2022 volumes.

Some participants noted an increase in non-destination individuals aboard transit vehicles, but most did not report significant impacts to operations as a result of the presence of these individuals. The majority of participants reported that customers were confused about the ZFBA period and some customers continued to try to pay and were afraid they could not find a way to pay and/or needed a refund if they found a way to purchase products.

While RTD conducted an extensive marketing campaign to raise awareness of the ZFBA initiative, several focus group participants noted that many customers were initially unaware of the initiative and suggested that better education and communication leading up to and during the subsequent ZFBA periods would reduce customer confusion. Participants also supported conducting a ZFBA period in 2023 largely because they experienced relatively few and relatively minor negative impacts. Participants reported experiencing no significant issues following the reinstatement of fare collection on September 1, 2022.

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## Positive Outcomes of Zero Fare for Better Air for Frontline Employees

Feedback from bus operators and security personnel who participated in the focus groups expressed their appreciation for the initiative, because they were not required to engage in fare-collection interactions with customers, they were free to focus on other aspects of their roles, such as operating a vehicle or responding to other security and customer needs.

Several frontline employee participants noted an overall increase in customers using the agency's transit services, including new customers and frequent customers traveling to new places and non-destination individuals.

Participants, including bus and rail operators and security personnel, reported that they did not experience the significant increase in security-related incidents they anticipated occurring during the ZFBA period. These same participants did report a moderate increase in conflicts at the end of the route/line, when non-destination individuals were asked to disembark.

## 6 Customer Survey Findings

RTD commissioned BBC Research & Consulting (BBC) to conduct a survey to assess customers' perceptions of the ZFBA initiative and their experiences using RTD services during the month of August 2022. The survey was designed to answer these key questions:

- What was the level of awareness of ZFBA among customers?
- What services did customers use during ZFBA and with what frequency?
- What factors motivated customers' use of transit services during ZFBA?
- How satisfied were customers with various service aspects during ZFBA?
- How did ZFBA potentially impact customers' future use of transit services?

BBC and its survey fieldwork partner, Davis Research, conducted the survey with a random sample of RTD customers who were demographically representative of RTD's eight-county service area. In order to qualify for the survey, potential participants had to indicate that they:

- Were 18 years of age or older at the time of the survey
- Lived within RTD's service area, which includes all or parts of the counties of Adams, Arapahoe, Boulder, Douglas, Jefferson, and Weld, the City and County of Denver, and the City and County of Broomfield
- Used RTD services at least once during the ZFBA period

The surveys were conducted between September 10 and 29, 2022, via a combination of cellular telephone-based, address-based, and survey panel-based sampling techniques to reach a random, representative sample of service area residents who used at least one RTD service during August 2022. The vast majority of survey respondents completed surveys online, with a much smaller number participating via telephone. The telephone- and web-based versions of the survey were identical in content. The overall margin of error for the data the project team collected from the surveys was +/- 2.8 percentage points at a 95-percent confidence level.

The following key findings were identified as part of the customer survey and are taken directly from the survey final report.

During the month of August 2022, 76% of respondents indicated that they used rail services, and 60% indicated that they used bus services. While survey respondents indicated they were more likely to use rail services, August 2022 ridership data showed that 65% of boardings occurred on bus and only 35% of boardings occurred on rail.

When asked to approximate how many one-way trips they took on RTD services in August 2022, slightly more than half (52%) indicated that they took between two and five one-way trips. The remainder of responses show a relatively even distribution: 18% took 10 or more trips, 16% took six to nine trips, and 14% took only one trip during this time period. A statistically significant relationship exists between respondents with access to a personal vehicle and those who reported taking between one and five trips.

Regarding use of RTD services prior to August 2022, the vast majority of respondents (91%) indicated that they had previously used RTD services. When asked to specify how frequently they had typically used RTD services prior to August 2022:

- 26% indicated that they used RTD services a few times a year
- 16% reported using RTD service daily or several times each week
- 55% of respondents indicated that they increased their use of RTD services over the course of August 2022
- 43% indicated no change in their use of RTD services
- 2% reported that their use decreased during this time

A statistically significant relationship was seen when comparing the responses to this question against customers reporting that they typically had access to a personal vehicle as a driver, passenger, or both. Respondents reporting that they typically had access to personal transportation as a passenger had a higher percentage of responses indicating that their use of RTD service increased during August 2022, when compared to the expected distribution of responses.

When asked if cost savings were a motivating factor in their use of RTD services during the ZFBA period, 60% of respondents indicated that they were substantially or very motivated by cost. Similarly, when asked if the environmental benefits were a motivating factor, 58% of respondents responded affirmatively.

More than three-quarters of respondents (77%) indicated that they were either satisfied or very satisfied with the RTD services they used during the ZFBA period. Furthermore, 54% of respondents indicated that their level of satisfaction with RTD services increased as a result of ZFBA, whereas only 2% of respondents indicated that their use of RTD services decreased and 44% indicated that their use did not change.

Overall, 72% of respondents indicated that they were likely or very likely to continue using RTD services in the future, assuming that fares return to their previous levels. When looking specifically at new customers, this percentage is 60% compared to 62% for infrequent customers and 79% for frequent customers. Just 2% of respondents indicated that they were unlikely or very unlikely to continue to use RTD services. Additionally, when asked whether ZFBA had impacted their likelihood of using RTD services in the future, 45% of respondents indicated they were more likely to use RTD services as a result, and 53% reported that ZFBA had no effect on the likelihood of their future patronage.

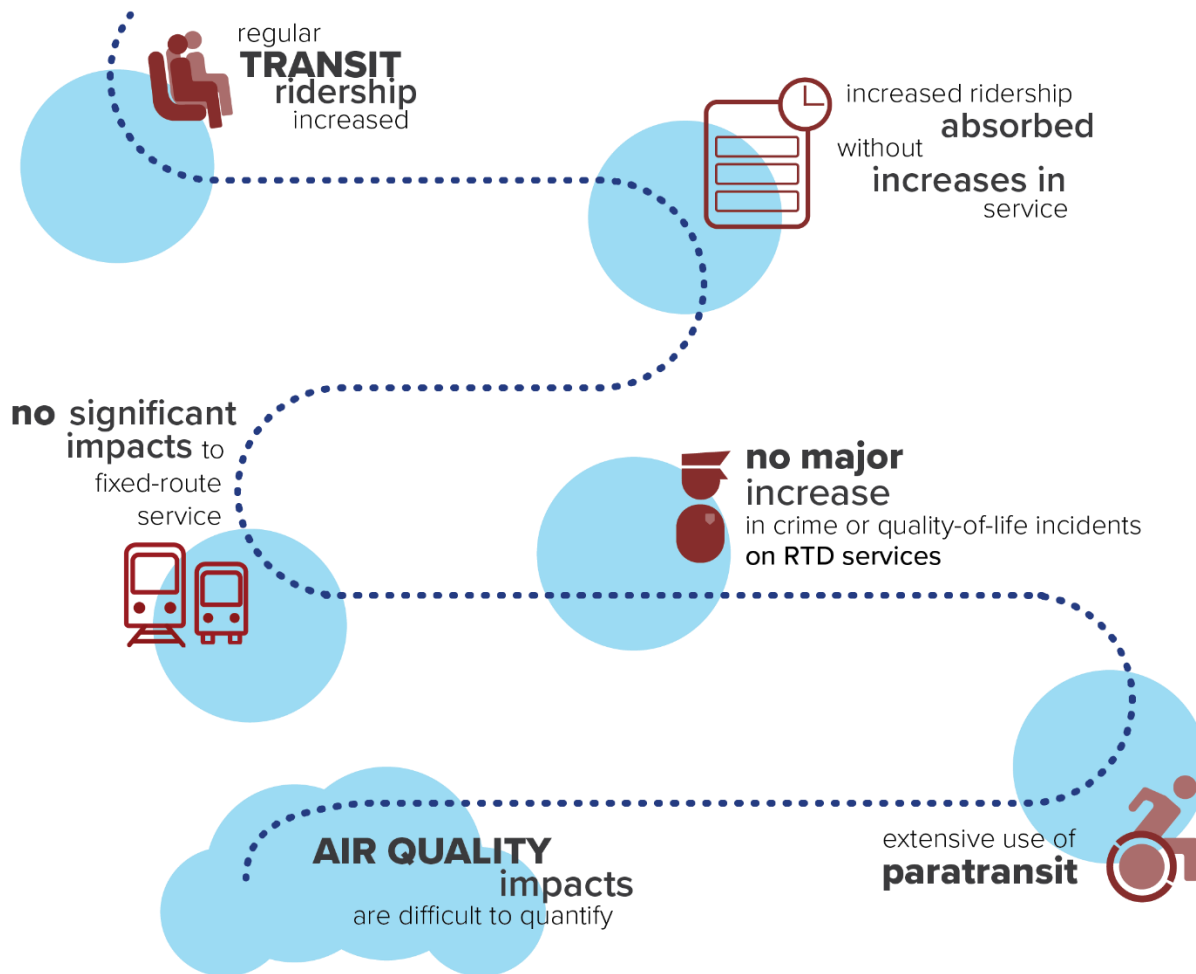
Statistically valid data regarding mode-shift as it pertains to air quality impacts was not collected as part of the ZFBA survey, though the agency intends to garner customer feedback in this area for future ZFBA or similar initiatives.

## 7 Conclusions

This section summarizes the successes and challenges of the ZFBA period and provides recommendations for future such zero-fare periods.

### 7.1 ZFBA Successes and Challenges

As outlined below, RTD experienced various successes and challenges during the ZFBA period in August 2022.



**Regular transit ridership increased, but catalysts are unclear.** The additional ridership observed during ZFBA, while a successful indicator overall, cannot be clearly attributed to ZFBA. Ridership gains may also be in part attributable to general post-COVID rebounding ridership, the mid-August 2022 service change and/or the start of the new academic year, as well as seasonal trends seen within the transit industry.

**RTD absorbed the increased ridership without substantial increases in service.** While RTD was prepared for and did preemptively enhance capacity in response to anticipated increased demand, the capacity increases were not necessary to support the increased ridership; and the agency was able to support the increased ridership without incurring significant costs related to increased service demand.

**ZFBA did not have significant fixed-route operating impacts.** The analysis undertaken did not show significant operating impacts related to onboard capacity and overcrowding or on-time performance. While the ZFBA initiative is generally considered a success in encouraging ridership in 2022, this may not hold true for future ZFBA periods should ridership continue to rebound post-pandemic or should additional customers choose to use RTD's zero-fare services.

**ZFBA did not lead to a major increase in quality of life/crime incidents on RTD services.** As detailed later in the report, no significant increase in the number of incidents aboard vehicles or at RTD facilities occurred as a result of the offering of zero-fare transit in August.

**Extensive use of paratransit services may have significant cost implications.** ZFBA demonstrated the potential pent-up demand for paratransit services if those services are either offered at no cost to eligible customers or are deeply discounted. The subsidy per boarding for paratransit trips is among the highest of all public transit service; without a fare in place to manage demand, providing these trips may prove to be a significant financial burden for RTD. While third-party provided trips (such as Access-on-Demand by Uber) are typically less costly for the agency to provide, RTD must weigh the cost savings against the drawbacks of outsourcing a large number of trips.

**Impacts to air quality are difficult to quantify.** In order to accurately assess the impacts to air quality, RTD needs to be able to understand the percentage of new ridership that would have otherwise driven a single occupancy vehicle during the ZFBA period. This is because, in addition to mode-shift from single-occupancy vehicles, customers may have taken additional trips that they otherwise might not have taken if a fare was in place, or they may have shifted from a walk or bike trip to a transit trip. Understanding the percentage of customers who shifted from driving to transit during the ZFBA period is necessary to quantify impacts to regional air quality.

## 7.2 Recommendations for Future ZFBA Periods

**Conduct more and earlier customer communications about ZFBA.** Some customers were unaware of ZFBA until they tried to pay their fares. This occasionally led to customer confusion at the time of fare purchase and/or fare payment. Additional early communication may encourage more customers to change their behavior during the ZFBA period.

**Leverage advance notice to yield cost savings.** If a ZFBA or similar program were considered in future years with greater advanced notice, some additional cost savings may be possible. Printing costs for fare media is one area where cost savings could be achieved. If ZFBA became a regular occurring program, RTD could consider changes

in contract structures that may result in potential cost savings, namely for the agency's armored vehicle and electronic fare collection contract.

**Align service provided with understanding of ridership demand.** RTD added rail cars to consists at the beginning of ZFBA in anticipation of ridership demand that did not materialize. While this enhanced vehicle capacity resulted in lower expenses than expected, costs could have been further reduced had the rail cars not been added at all. Service needs can be hard to predict, but staff will consider the lack of additional service needed in August 2022 as it plans for any future ZFBA or similar program periods.

**Consider whether August is the best month for a ZFBA promotion.** While the potential air quality benefits of a ZFBA period are highest in summer, observed changes in ridership are confounded by August service changes and the start of the academic year for many students. ZFBA in August however may present a unique opportunity for students to try transit at no-cost and potentially change their commuting habits for the new school year.

**Develop improved methods to determine the impact of ZFBA on mode-shift and air quality.** The purpose of the Colorado Energy Office grant program was to improve air quality by incentivizing a shift in travel patterns from single-occupancy vehicles to public transit. Improved methods for determining mode-shift would help RTD and other regional stakeholders understand the impacts that zero-fare transit on air quality, as would having an established baseline for ground-level ozone during typical summer months as compared to future zero-fare periods.