Ride On Zero & Reduced Fare Study

SEPTEMBER 21, 2021

Prepared by IBI Group for
Montgomery County DOT

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Introduction

Purpose of Effort

The COVID-19 pandemic required transit systems nationwide, including Ride On, to quickly adapt and adjust their day-to-day fare collection practices. It also created an opportunity to fundamentally reexamine both fare collection policy and collection practices. Although Ride On and most transit systems enacted fare elimination as a temporary public health and safety measure, there were several examples of transit systems across the country considering or implementing zero-fare transit service prior to 2020. Reduced or discounted fares are a commonplace with most transit operators for seniors and people with disabilities, as required by law, as well as children, students, and veterans. Many transit systems are questioning or examining whether and how zero-fare or reduced-fare transit programs can be expanded as a tool to promote more equitable mobility, reduce barriers to access transit, increase ridership, and achieve other community goals.

Discussions around zero-fare transit have been increasing in the past decade. In early 2020, the coronavirus (COVID-19) pandemic forced nearly every North American transit agency to apply safety measures to protect their customers and operators. On March 16, 2020, Ride On implemented a back-door policy, effectively discontinuing fare collection. Many transit agencies resumed fare collection over the summer of 2020, and more have done so since depending on local conditions. Funding from the federal government from the CARES Act (passed in the summer of 2020) and the American Rescue Plan (early 2021) have been used to varying extents for covering the cost of lost fares, making it easier for some agencies to take more time to consider when to resume collection. WMATA Metrobus and many surrounding local transit agencies remained zero-fare in 2020 but reinstated fares in January of 2021. Ride On has continued with suspended fare collection, as of August 2021 having decided to continue without collection until at least September 30, 2021.

Based on interest expressed by the Montgomery County Executive and County Council members, MCDOT staff began work on an examination of zero-fare and reduced-fare options, and has engaged IBI Group to research, analyze, and deliver this report on

them. The examination of zero-fare and reduced-fare options in this report has been conducted specific to Ride On, and this report's findings may not be applicable to other transit agencies operating in the Washington, D.C. region.

Goals

The fare policies of individual transit operators differ widely. Many have historic roots as far back as the early twentieth century, when public transportation services were owned and operated by private entities that turned a profit. Now largely provided by publicly controlled entities, transit agency fare policies have been shaped by market forces and efforts to pursue an array of public goals. The most common of these goals are provided in **Table 1** with considerations for how zero or reduced fares may relate to them. MCDOT engaged IBI Group to consider this set of goals when evaluating the fare alternatives.

Goal	Considerations for Zero and Reduced Fares
Equity	Fares can be a significant barrier to low-income riders. Minimizing their financial burden through reduced or zero fares can increase their access to opportunities across the transportation network.
Fiscal Sustainability	Stabilize or reduce the system's reliance on local, state, or federal funds. This goal is fundamentally in tension with policies which would reduce or eliminate fares.
Increase Ridership	Reduced or zero fares will attract new riders and encourage more travel by existing ones, promote sustainable transportation, and if the increase is large enough, possibly alleviate regional congestion.
Improve Customer Experience	Zero fare may reduce boarding times per passenger to reduce overall trip times. Zero fare also eliminates any customer confusion about fares. On the other hand, additional fare products required to achieve reduced fares may make the fare system more confusing to customers, who may ultimately miss the opportunity to pay the lower fare.
Improve Safety and Security	Zero fare may increase nuisance passengers riding buses without a specific destination and causing disturbances for other riders. However, without a fare being required to board, there is no longer a cause for fare disputes between bus operators and passengers, reducing stress on operators and risk to both operators and passengers.
Improve Transit Operations and Performance	Zero fare eliminates the costs of collecting fares and maintaining fare programs. However, some types of reduced fare products can increase the administrative costs. For zero fares operating cost savings may be achieved on heavily traveled routes.
Climate and Sustainability	Ridership increases from zero or lower fares may both shift travel from less 'sustainable' modes and increase the passenger-miles produced per vehicle-hour.

Table 1: Fare policy goals and considerations for zero and reduced fares

Types of Equity

Based on the socioeconomic characteristics of Ride On customers, and the impact of the ongoing COVID-19 pandemic, Montgomery County elected officials have expressed specific interest in establishing a fare policy that promotes equity benefits. In general, equity may refer to the distribution of impacts (benefits and costs), and whether that distribution is considered fair and appropriate. However, equity may have different meanings based on context related to the types of scenarios, projects, or policies that are being considered. A sample of how equity may be applied through different contexts is provided in **Table 2**.

Horizontal Equity	**Vertical Equity** (RE: Income and Social Class)	**Vertical Equity** (RE: Need and Ability)
Every person or group should be treated equally, regardless of status, need or ability	Programs and policies should favor lower-income groups or individuals to compensate from overall inequities	Programs and policies should be designed to meet the specific needs of groups and individual with mobility impairments

Table 2: Types of equity and their context

Transit service is an important element of Montgomery County's efforts to improve racial equity. This study focuses on the impact of fare policy on the financial strain to families that rely on the service. To promote equitable outcomes through this study IBI Group has specifically considered vertical equity with respect to income or social class, often referred to as social justice. This definition of equity aims to favor socially and economically disadvantaged groups to counter-balance inequities that may be borne by lower-income Ride On customers and County residents. Therefore, this analysis focuses on assessing how various fare scenarios would contribute to improving lower-income users' ability to save, access employment opportunities, and improve their overall quality of life through a reduction of their financial burden. For this purpose, a closer look has been given to the specific socioeconomic conditions of the most vulnerable groups of the Montgomery County population as well as their typical traveling patterns. A special targeted focus was also given to Ride On riders, a large

proportion of which earn significantly lower incomes than the general county population.

Approximating Vertical Equity & Fare Discounts

The significance of transportation savings differs among families and can be difficult to measure. IBI Group developed an index to approximate the magnitude of benefits received from fare discounts, which may be viewed as the level of financial relief provided to households who are completely transit reliant. The index includes the fraction reduction in annual transit expenditures, as well as a financial 'stress factor,' defined as that family's annual expenses divided by their annual income. This 'expense-to-income ratio' or 'debt-to-income ratio' is a common metric of financial stress often used to determine creditworthiness. A 'stress factor' above 1.0 indicates a family in debt, and a figure below 1.0 represents a family with disposable income. For example, an expense-to-income ratio of 1.5 means that a family spends 50% more than it earns each year. Typical annual expenses for each household were calculated using costs of food, housing, and other essentials in Montgomery County from the MIT Living Wage Calculator[1].

The index represents a 'multiplier effect' for different types of families, relative to the effect of giving one adult with a balanced budget (*i.e.* annual income = annual expenses) the same fare reduction. For example, **Table 3** shows how a family of two adult transit-users and one child earning a total of $54,000 per year (half the county median income) would experience over three times the benefit of the single adult household with a balanced budget under a zero-fare policy. Similarly, a family of two adult transit-users and one child earning a total of $108,000 per year (the County's median income) would experience over one and a half times the benefit of the single adult household with a balanced budget.

[1] Glasmeier, Amy K. Living Wage Calculator. 2020. Massachusetts Institute of Technology. livingwage.mit.edu.

	Household Type		
	Single adult	Two adults and one child earning half the County's median income level	Two adults and one child earning the County's median income level
Trip Frequency per User	Six roundtrips per week per year		
Annual Fare Expenditure per User ($2.00 per trip)	$1,248		
Fare Reduction per User (Zero Fare)	$1,248		
Fare Reduction / Annual Fare Expenditure	1.0		
Transit Users	1	2	2
Household Expenses	$41,222	$85,656	$85,656
Household Income	$41,222	$54,000	$108,000
'Stress Factor' (Expenses / Income)	1.00	1.59	0.80
Index of Fare Benefits	**1.00**	**3.18**	**1.60**

Table 3: Example index calculation of fare reduction benefit received under zero-fare scenario

Figure 1 shows how the benefits accrue for a range of use cases based on household composition and household income, showing distinctly how zero-fare and reduced-fare policies provide a more benefit to lower-income households. If the trip frequency is held constant among the different use cases, the order of magnitude for all use cases will increase according to the ratio of fare savings while maintaining the same proportional differences between groups. This means that any form of fare discount that is applied universally (*e.g.* zero-fare for all, or 50 percent fare for all) will maintain a greater benefit towards lower-income households.

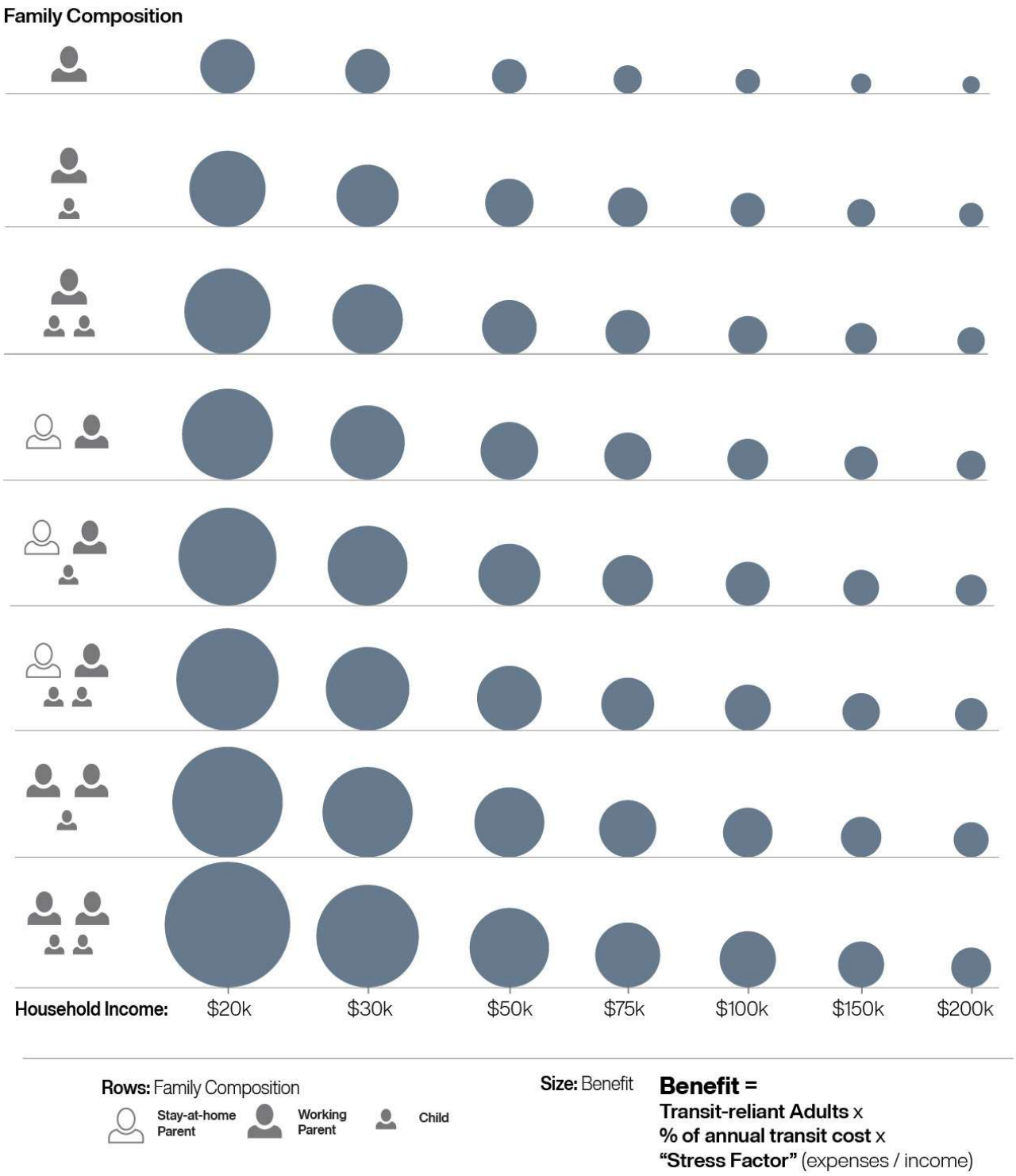

Figure 1: Index of benefits from fare reduction based on composition and household income

Background Conditions

To consider the case for zero and reduced fare policies, it is relevant to look at the overall socioeconomic conditions of the county compared to the self-reported income distributions of Ride On customers.

Countywide Socioeconomic Conditions

Countywide Income and Cost of Living

Montgomery County is relatively affluent with an overall median household income of $108,000 and 74 percent of Census block groups comprised of a median income of more than $100,000. However, **Figure 2** shows a patchwork of lower-income Census block groups is distributed amongst the urban areas located towards the center of the county, and across the Ride On service area. Because the dispersion of lower-income areas is distributed across the Ride On service area, the majority of Ride On services likely provide a highly valuable and needed service to disadvantaged residents.

In addition, while the county has grown overall richer since 2013, the income gains have not been evenly distributed across all locations, with 43 percent of Census block groups showing a reduction in median income. Similar to the dispersion of lower-income Census block groups, **Figure 3** shows areas with a median income decrease are distributed across the Ride On service area. This is especially true for areas that had a median income decrease by at least 30 percent, which are primarily located within the denser urban areas served by high-ridership Ride On routes and Metrorail stations. The drop in income for these locations has likely been amplified as a result of the pandemic, as the unemployment rate in Montgomery County has gone from three percent in 2019 to over eight percent in 2020, and has not yet fully recovered as of June 2021.[2]

[2] U.S Bureau of Labor Statistics

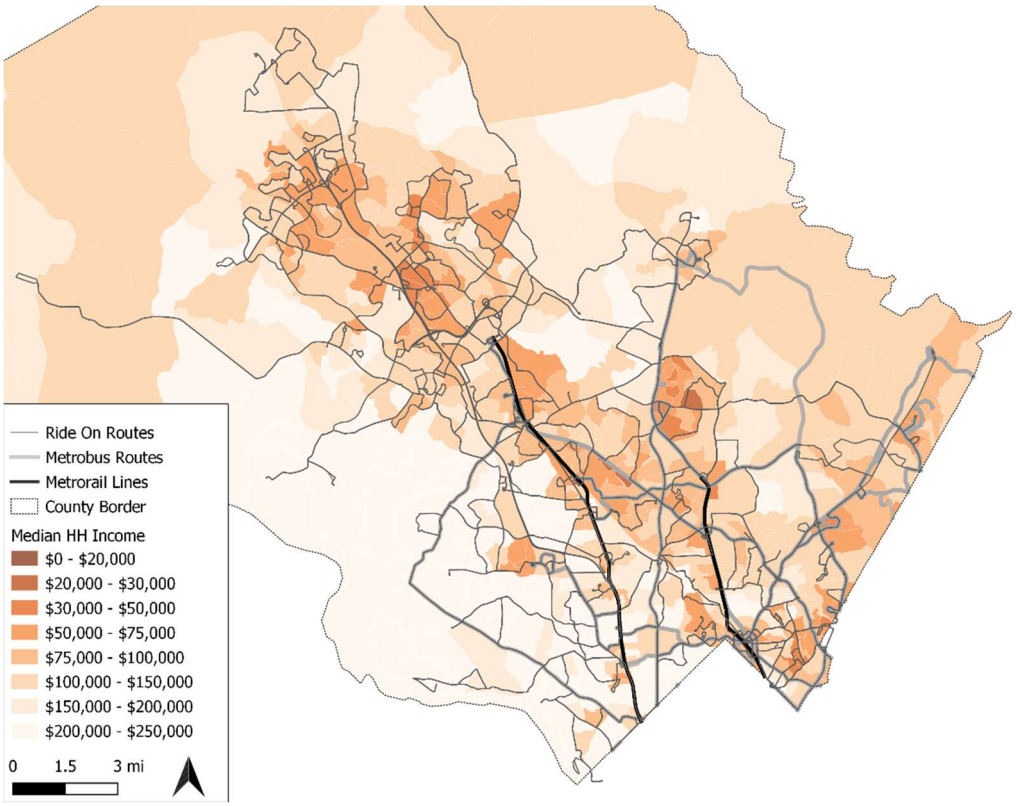

Figure 2: Median household income across Montgomery County

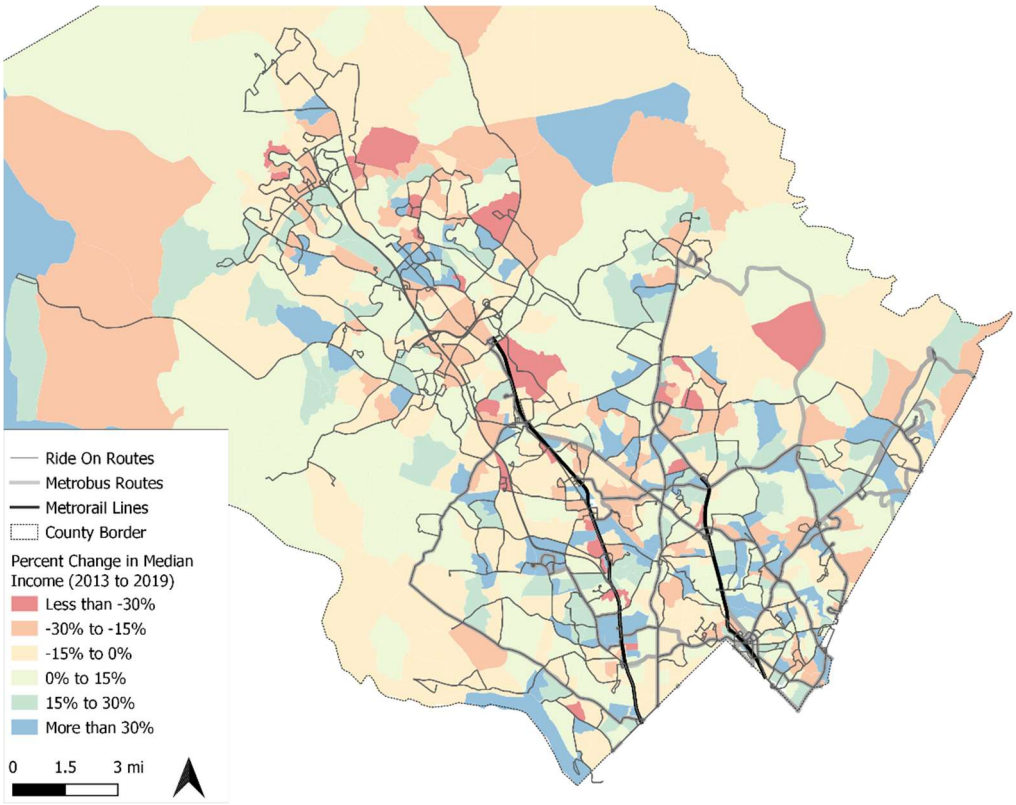

Figure 3: Change in median income across Montgomery County from 2013 to 2019

The relatively affluent nature of the county also contributes to a high cost of living. For a household of two adults and one child in Montgomery County, which corresponds to the county average household size, an estimated combined income of $69,826 is required to sustain financial independence, which is a minimum income standard that, if met, draws a very fine line between the financial independence of the working poor and the need to seek out public assistance or suffer consistent and severe housing and food insecurity.[3] In addition, 32.1 percent of Montgomery County households are considered cost-burdened, which are those who pay more than 30 percent of their income for housing, and may have difficulty affording necessities such as food, clothing, transportation, and medical care.[4] These high costs of living continue to be on the rise. Over the last year, for instance, housing costs have risen 14.3%.[5]

Countywide Vehicle Ownership

The patterns of vehicle ownership closely track the geographic distribution of income. **Figure 4** shows nearly all households in Census tracts on the outskirts of the Ride On service area own at least one vehicle, while many Census tracts within the dense urban areas in the center of the county have as many as a quarter of all households without access to a vehicle. High-ridership Ride On lines running through the center of the county serve the highest concentrations of residents with lower vehicular access.

[3] MIT Living Wage Calculator
[4] U.S. Department of Housing and Urban Development
[5] Greater Capital Association of Realtors

Figure 4: Percentage of households without a vehicle across Montgomery County

Characteristics of Ride On Customers

Although Montgomery County has been shown to house a population that is largely affluent, Ride On predominantly serves a much lower income population. While the median income of the county is $108,000, the median income of Ride On customers is estimated around $35,000 using data from the 2018 passenger survey. **Figure 5** shows the overall income distribution for Montgomery County is skewed toward residents with high household incomes, while the distribution of Ride On customers, constructed from a 2018 passenger survey, is nearly a mirror image. County-wide, the greatest number of residents fall into the $200,000 or more category, while among Ride On riders, the greatest number of survey respondents reported making less than $20,000 per year. Respondents making less than 50 percent of the countywide median income make up the majority of Ride On riders. These pre-COVID survey results are now likely to be even more skewed towards lower-income riders, as inquiries conducted by peer agencies have shown that riders who have continued to use transit during the

pandemic, and who have come back as its effects became less pronounced, are more likely to be lower income and transit-reliant.[6]

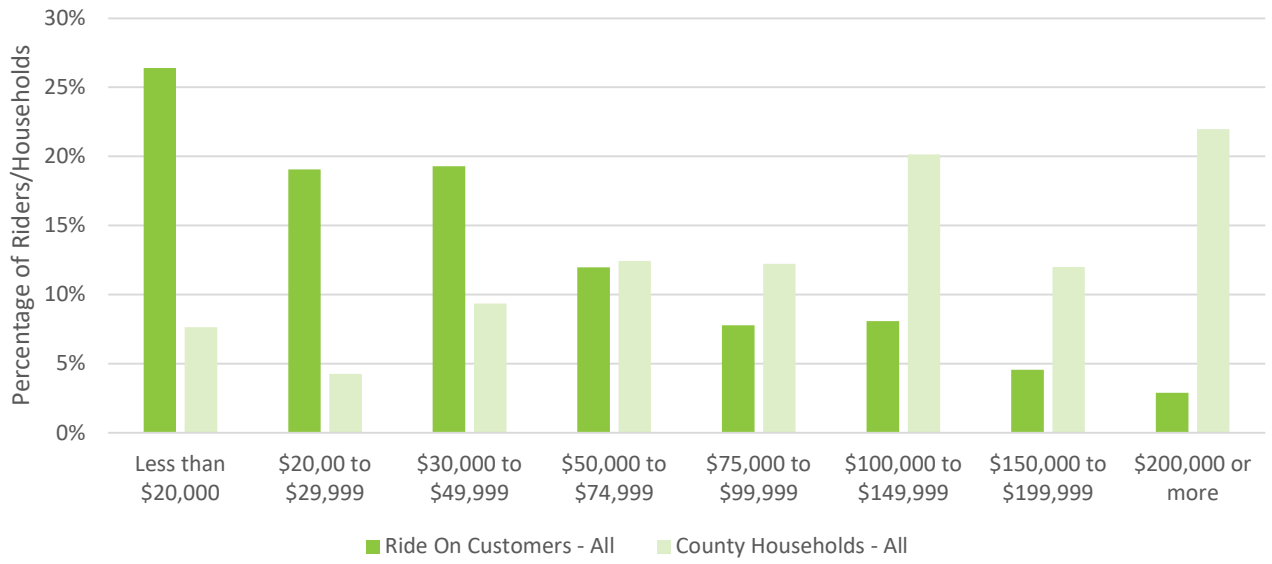

Figure 5: Household income across Ride On riders and Montgomery County households

Figure 6 shows that lower-income Ride On customers account for the majority of Ride On only trips with multiple legs (at least one transfer). 19 percent of riders making less than $20,000 (six percent of all riders) were making a Ride On-to-Ride On transfer in the 2018 passenger survey, while less than seven percent of riders making $150,000 or more were doing the same (less than one percent of all riders). Possibly, lower income riders have fewer transportation alternatives available for shorter trips within the county.

[6] Parker et al. September 2021. "Public transit use in the United States in the era of COVID-19: Transit riders' travel behavior in the COVID-19 impact and recovery period". *Transport Policy.*
Online: https://www.sciencedirect.com/science/article/pii/S0967070X21002067?via%3Dihub (Viewed August 23, 2021).

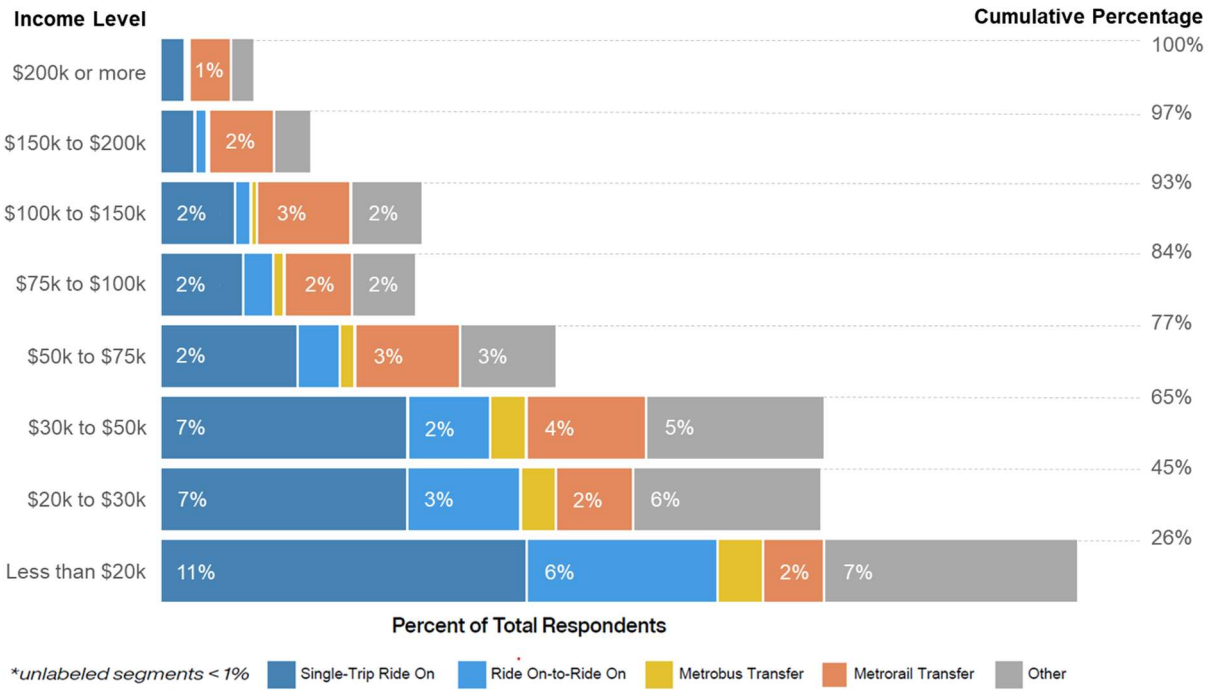

Figure 6: Ride On transfer types by income level

By contrast, high-income riders appear to primarily use Ride On service to transfer to or from WMATA Metrorail. According to the 2018 passenger survey, more than 40% of riders making more than $150,000 per year transferred to or from Metrorail, compared to only 6% for riders making less than $20,000, as shown in **Figure 7.** Because more than 80% of Metrorail trips from Montgomery County disembark in Washington, DC, it is possible that high-income riders mainly value Ride On as feeder routes for their DC commute. These riders likely use private vehicles for shorter trips within Montgomery County.

Figure 7: Ride On to Metrorail transfer vs. non-transfer

Impacts of Covid-19

The review of Ride On peer agencies and fare policy precedent agencies has made it clear that as of August 2021, the COVID-19 pandemic has significantly clouded the picture of the status of zero-fare and reduced-fare implementation in the US. The principal obscuring factors are:

- Many all-bus transit operators (including Ride On) suspended collection of fares early in the pandemic for public health reasons.
- The course of the pandemic differed significantly among urban areas, leading to decisions as to the resumption of fare collection being made locally or regionally.
- The distribution of Federal COVID relief funding has differed among regions, and operators have made different decisions as to the use of this funding, depending on their fiscal and operational circumstances.

The combination of these factors has yielded a wide range of fare collection status, which continues to change for individual operators. Many systems appear to be planning for resumption of collection at a future date, which may or may not have been established. Others have chosen to continue with a suspension of fares

indefinitely or to an established date; some of these have represented this decision as a zero-fare pilot program. These pilots might well not have come into being without the pandemic. This suggests that undue attention should not be placed on the experiences of operators which have undertaken pilot projects during the pandemic, even if they have been identified as peers of Ride On.

Considering the above, IBI Group has paid particular attention to systems which undertook planning for and implemented zero-fare and reduced-fare policies before the pandemic. Similarly, we view the NTD data for 2019 being the latest year for which 'steady state' pre-pandemic conditions prevailed.

Key Takeaways from Background Conditions

Montgomery County is a predominantly affluent county, with half of all households earning over $108,000. However, Ride On customers do not reflect county-wide demographics, and with an estimated median income of $35,000 they are typically more vulnerable to financial hardship. Lower-income households are spatially dispersed across the county, making the full extent of Ride On's network a valuable service to provide access to opportunities for lower-income populations. Within Ride On's customer-base there are also key differences in behavior. Low-income customers are more likely to make single-seat Ride On or Ride On-to-Ride On transfer trips within the county, while higher-income customers are more likely to transfer to Metrorail, and likely outside of the county.

Operational Peers and Fare Policy Precedents

Fare Policy in the Washington, D.C. Region

Although other transit agencies serving the Washington, DC region are mostly dissimilar to Ride On in many respects, consideration of their recent fare collection practices is helpful to understand the context and common factors related to Montgomery County. Like Ride On, and other transit agencies nationwide, almost all DC area bus transit providers eliminated fare collection at the onset of the pandemic. Now, as public health conditions have improved somewhat but remain unpredictable, these neighboring agencies have adopted fare collection policies that vary considerably, with some agencies collecting fares again, some with an announced future date for resuming fare collection, and others maintaining their zero-fare operations as ongoing.

Notably, transit agencies in Virginia appear to have the most interest in continuing zero-fare policies. This is likely related to the State of Virginia's 2021 Transit Ridership Incentive Program (TRIP), which has set aside $40M for agencies statewide to pilot zero-fare programs. Ride On's closest peer agency in the region, Fairfax County Connector, has responded to a request for ideas from the Virginia Department of Rail and Passenger Transportation, including the possibility of a means-tested program. The City of Alexandria implemented zero-fare on September 5, 2021 without a specific funding strategy to continue it into its fiscal year 2025; it is anticipated that a long-term resolution will be identified in 2023. Although no similar statewide effort yet exists in Maryland, interest in zero-fare does exist among Ride On's neighboring providers, with Frederick County TransIT continuing its fare elimination policy and with The Bus in Prince Georges County continuing zero-fare for certain rider groups. A full snapshot of current fare policies within the Washington DC region is shown in **Figure 8**.

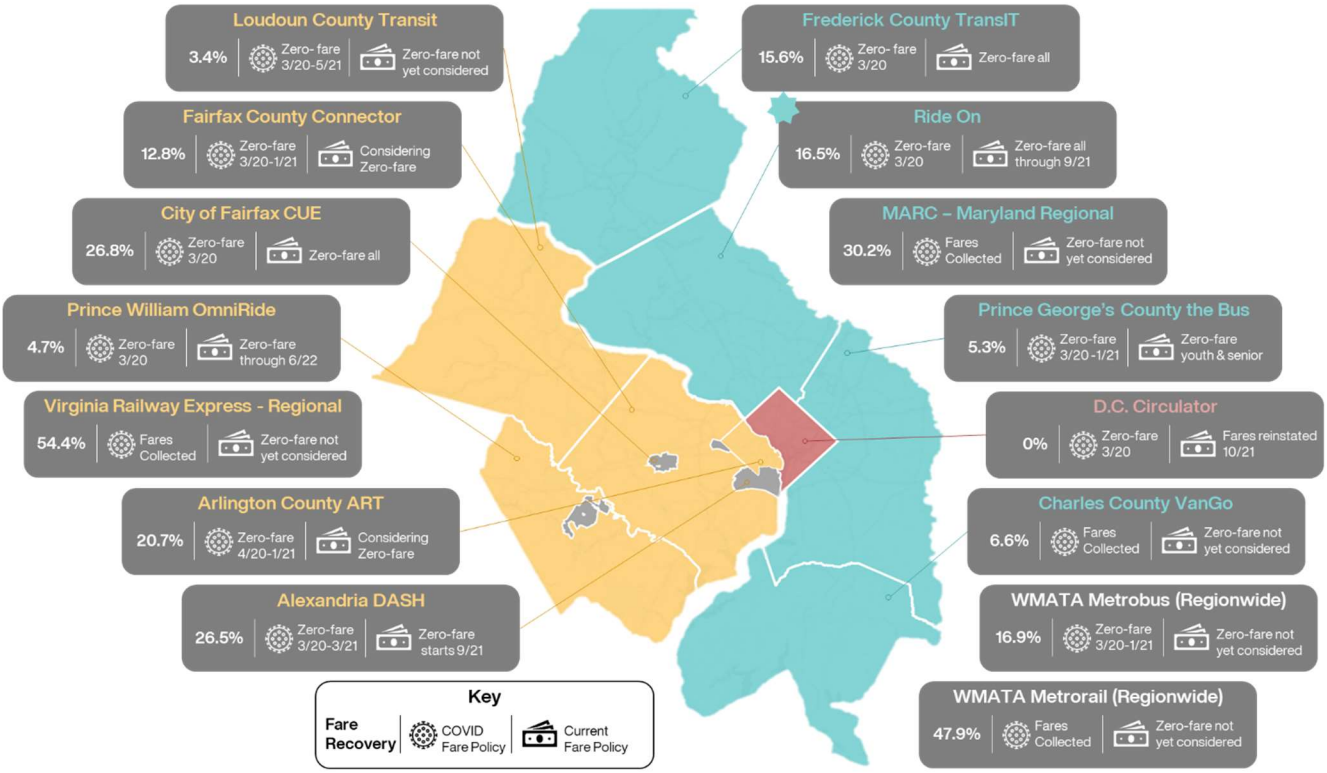

Figure 8: Washington Region fare policy by transit agency

Ride On Operational Peer Agencies

This evaluation identified twenty-two peer transit agencies that have similar operating metrics as Ride On. Peer agencies were identified solely by their bus operation; for example, although also operating light rail and commuter rail services, only the bus division at Denver Regional Transportation District (RTD) is considered for this analysis. Given the suburban service area of Ride On, the metrics used to compare against peer agencies include the bus fleet size, average bus occupancy (ABO), average trip length, and passenger-miles traveled. Comparing transit agencies with similar metrics to Ride On yielded the twenty-two agencies seen in **Figure 9**. A comparison of bus operational metrics between Ride On, its operational peers, and Washington DC area agencies is provided in **Figure 10** to depict why the fare policies of these operational peers should be studied and considered in more detail than the neighboring agencies.

Figure 9: Ride On peer agencies based on operational similarities

Figure 10: Comparison of key operational metrics between Ride On and its peer and neighboring agencies

Trends in Ridership and Fare Recovery

In the years preceding the COVID-19 pandemic, Ride On followed a similar ridership and revenue trajectory as its peers. **Figure 11** shows a gradual decline in both farebox recovery ratios, or the proportion of operating expenses covered by fare revenue, and average vehicle occupancy, or the average number of people onboard a bus at any point, between 2015 and 2019. Ride On, in 2015, had a farebox recovery ratio (FRR) over 20 percent and an average bus occupancy (ABO) of around 7.8. Since then, the FRR dropped to around 16 percent and the ABO decreased to just over 6 people per vehicle in 2019. The peer agencies selected had a similar decline in ridership, with the average FRR going from 20 percent in 2015 to 15 percent in 2019. The average bus occupancy decreased from nearly 8 to 6 over the same period. This shows how the peers align similarly in ridership to Ride On and how both have been in decline in the second half of the 2010s.

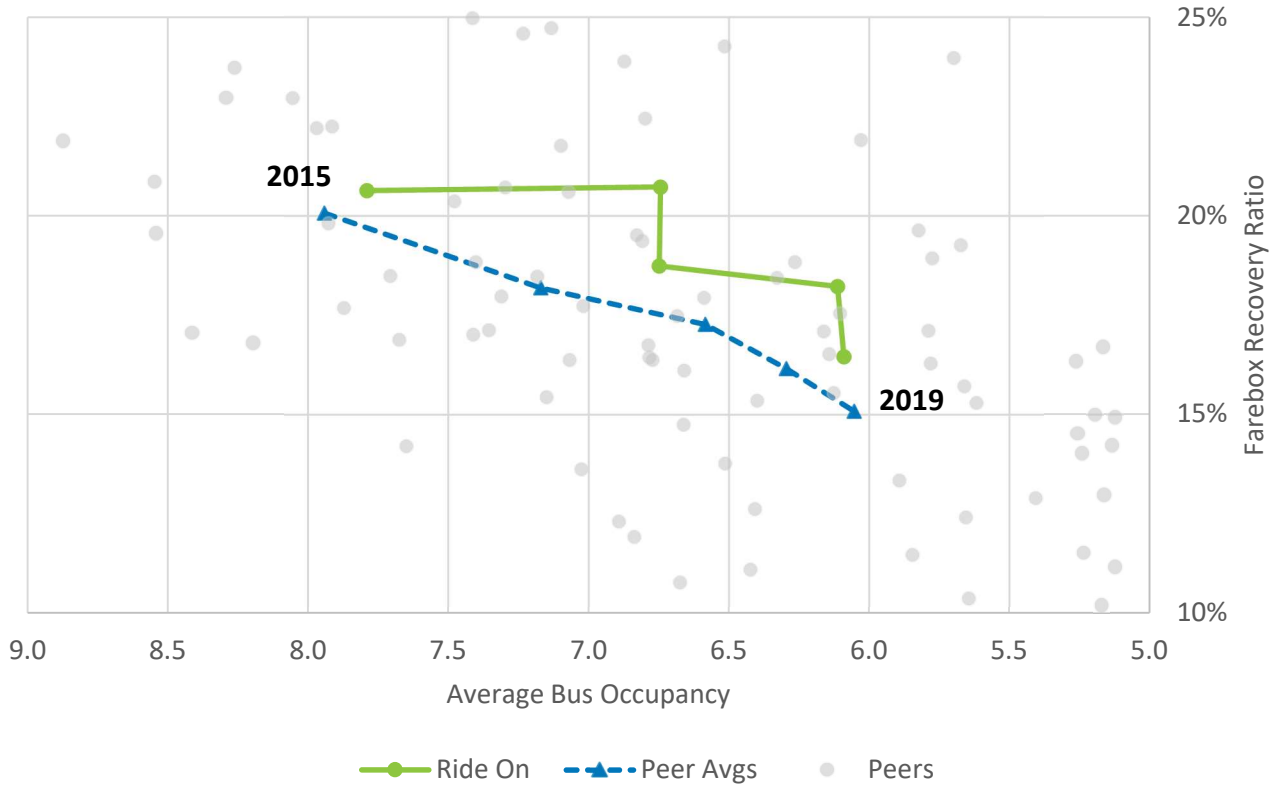

Figure 11: Farebox recovery ratio and average bus occupancy per agency between 2015 and 2019

The decline in ridership, revenue recovery, and the increase in fares has led to public discourse around zeroing fares and providing discounted tickets for low-income riders. While many transit agencies took the risk and became precedents for these fare policies, only five of the twenty-two peer agencies identified have implemented zero

fares or a low-income reduced fare policy. The other seventeen agencies have the traditional fare structure, with discounts for seniors and people with disabilities, as required by law, and occasionally extend those discounts to students and veterans.

Zero & Reduced Fare Policies Among Peers

Of the operational peer agencies identified, only five had implemented or considered implementing a fare strategy similar to one of the four scenarios. SamTrans (San Mateo, California), RTD (Denver, Colorado), and the Utah Transit Authority (Salt Lake City, Utah) currently have a low-income reduced fare program in place. Kansas City Area Transportation Authority (KCATA) is the largest transit agency in North America that has moved to eliminate fares before the COVID-19 pandemic began. Albuquerque's city council has proposed a one-year zero-fare pilot, although it has not yet been approved.

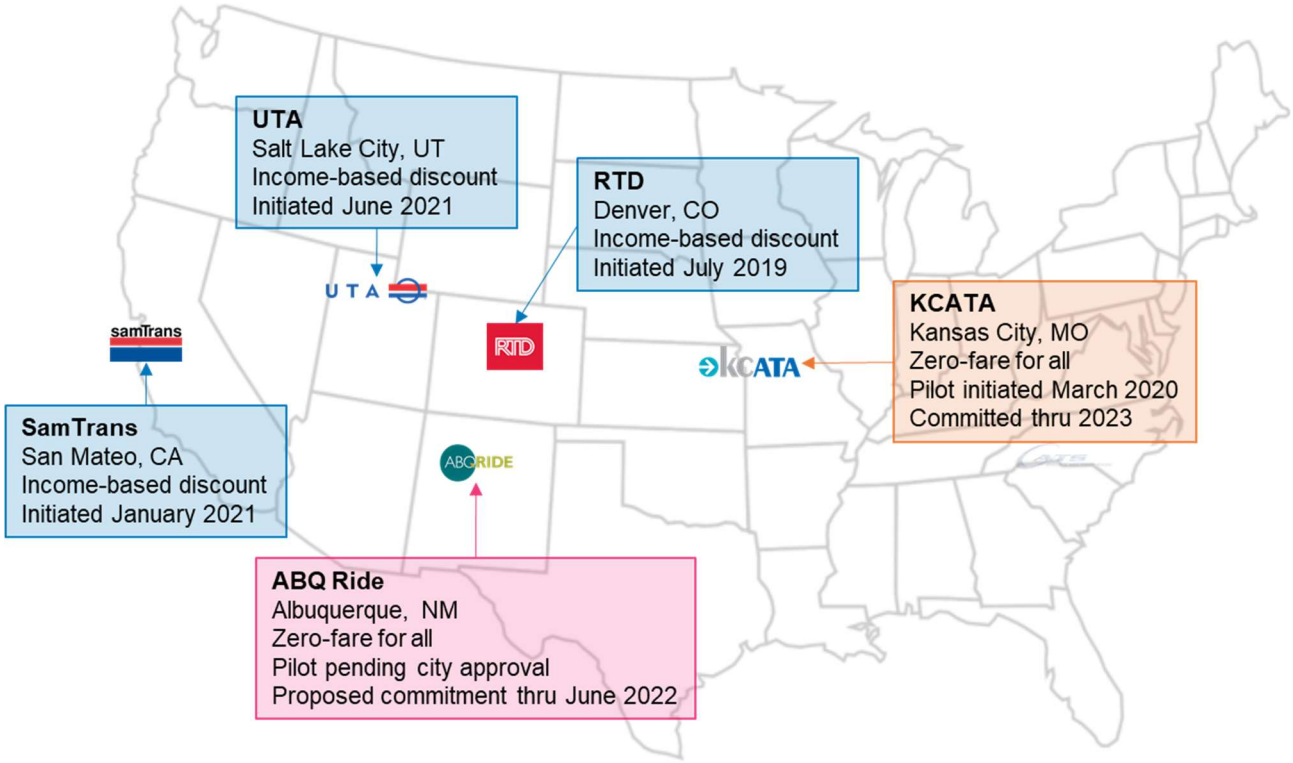

Figure 12: Operational peers proposing or implementing zero or reduced fare programs

Fare Revenue per Capita

The difference in strategy taken by these peer agencies can be understood through their fare revenue per capita, as seen in **Figure 13**. Fare revenue per capita roughly captures the annual per person cost of converting to a zero-fare system. Agencies with higher values are more likely to be hesitant about becoming a zero-fare system while agencies with lower values have a lower lift to provide free transit. Among the Ride On peers, KCATA and ABQ Ride, which are either implementing or considering zero fares, have a lower fare revenue per capita than RTD, SamTrans, and UTA, which all provide a low-income fare discount. However, it is important to note that some agencies, particularly those with lower fare revenues per capita, may have already purposely established lower fares to achieve vertical equity goals, while Ride On's base fare has been typically adjusted over time in response to inflation. Additional financial metrics for the five peer agencies with zero or reduced fare policies are provided in Table **4**.

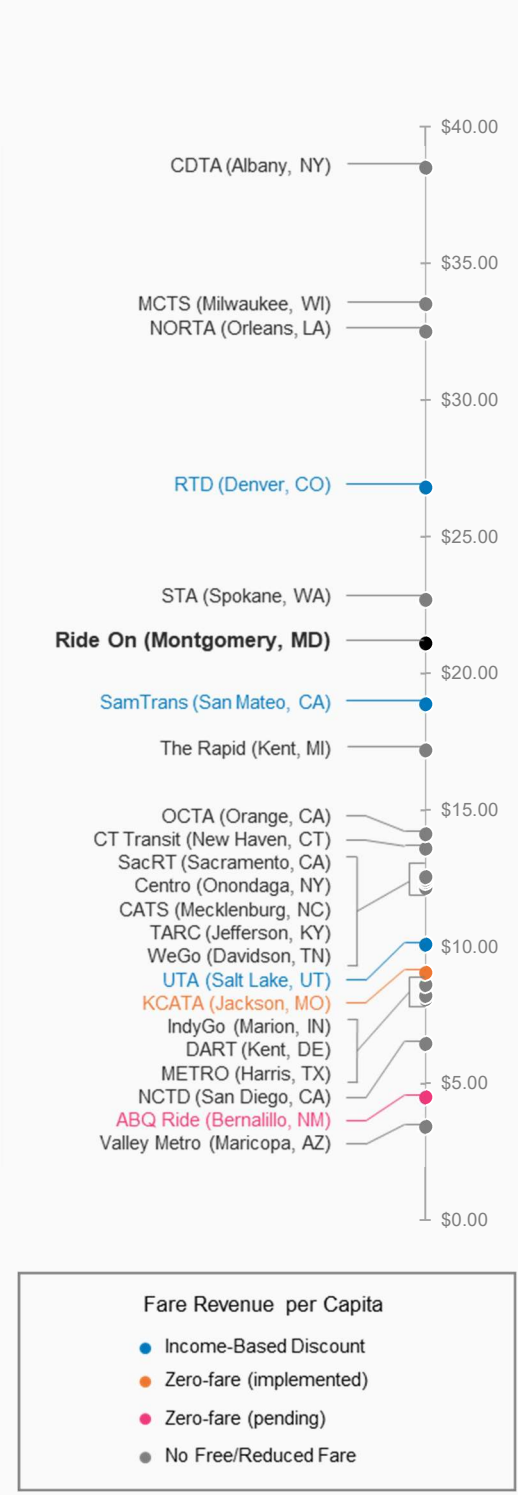

Figure 13: Fare revenue per capita of peer agencies

Agency	Fare Revenue per Capita	Fare Recovery	Fare-Revenue per Passenger-Mile
RTD	$26.81	25.0%	$0.26
Ride On	$21.10	16.5%	$0.25
SamTrans	$18.88	10.2%	$0.32
UTA	$10.08	12.7%	$0.22
KCATA	$9.05	9.0%	$0.18
ABQ Ride	$4.50	6.9%	$0.09

Table 4: Financial metrics for peer agencies providing zero or reduced fares

Income & Cost of Living

Figure 14 shows how fare strategy may also be influenced by the income and cost of living characteristics of the service area. Agencies serving populations with lower median incomes and large proportions earning less than the required income for financial independence may feel more pressure to explore zero-fare policies, while agencies serving populations with higher median incomes may feel a need to look at more targeted means-tested policies to provide relief to lower-income customers while maintaining fare revenues from more affluent riders. Interestingly, the agencies and governments serving populations with higher incomes may be more financially capable of sustainably implementing zero-fare policies. In relation to these peers, Ride On is once again more closely aligned with agencies that have implemented means-tested policies. Additional income and cost of living metrics for the five peer agencies with zero or reduced fare policies may be found in **Table 5**.

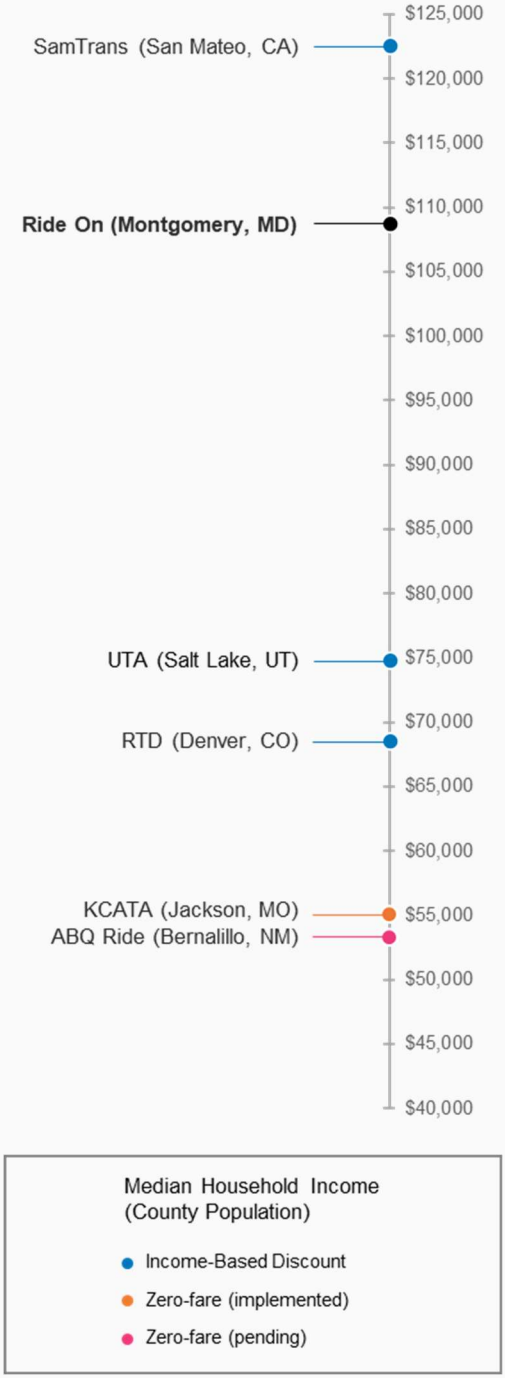

Figure 14: Median income of populations served by peer agencies with zero and reduced fare policies

Agency	Median Income	Income for Financial Independence	Cost-Burdened Households
SamTrans	$122,641	$102,860	36.3%
Ride On	$108,820	$69,826	32.1%
UTA	$74,865	$61,116	27.3%
RTD	$68,592	$67,923	34.6%
KCATA	$55,134	$60,447	29.0%
ABQ Ride	$53,329	$58,605	32.2%

Table 5: Income and cost of living statistics of populations served by peer agencies with zero and reduced fare policies

Means-tested Precedents

Many transit agencies have begun offering reduced transit fares for lower-income riders as a strategy to reduce the cost of transit and increase transportation access for riders who can be determined to be the most financially burdened, while retaining a higher portion of baseline fare revenue. As shown previously in **Figure 13** and **Figure 14**, the operational peers that enacted means-tested reduced fare programs had higher fare revenues per capita and median incomes in the counties than those that implemented or are considering zero-fare strategies. For these agencies, a higher fare revenue per capita means there is more financially 'at stake' to account for when fare revenue is forgone. A service area with a higher median income is likely to have more opportunity to retain fare revenue from customers who are not financially burdened and who may not consider the cost of fares as a primary motive for choosing transit over other available transportation options.

Means-tested programs can vary by eligibility requirements and by the level of discount offered. Many agencies refer to the Federal Poverty Line (FPL) in determining eligibility for riders. In cities with a high cost of living, the FPL is adjusted to reflect the higher incomes needed to pay for basic expenses. For example, UTA allows anyone at or below 150 percent of the FPL to enroll in their reduced fare program. Denver RTD, which serves an area with a higher income required for financial independence than UTA, uses a higher threshold of 185 percent of the FPL for eligibility. SamTrans, located in the Bay Area and having the highest income required for financial independence, permits those at or below 200 percent of the FPL to enroll in their reduced fare program. SamTrans also has the advantage of participating in a means-tested program that is administered for a set of San Francisco Bay Area agencies using a common fare product. This likely provides SamTrans a significant reduction in the administrative cost of their means-tested implementation.

Figure 15: depicts a plot of US agencies presently offering means-tested fares, with placement based on FPL qualification terms and discount offered. Because FPL is defined at a national scale, qualification based on these terms can lead to different levels of inclusivity for the same threshold when applied to different regions or systems. To illustrate this**, Figure 16** normalizes the FPL qualification threshold for each

agency based on how it relates to the region's median income for a household of average size. It can be seen here how some agencies that established higher qualification thresholds, likely in response to higher incomes within their region, may still serve a smaller proportion of the population than other agencies with lower qualification thresholds. For example, San Francisco Bay Area agencies (including SamTrans) have established one of the most inclusive qualification thresholds in terms of percentage of FPL, but when normalized the qualification threshold corresponds to about 37 percent of the region's median income, one of the least inclusive qualifications by this separate measure. Overall, these findings indicate the challenges faced by agencies looking to establish localized eligibility criteria and discounts that achieve vertical equity goals while retaining meaningful fare revenues as part of a means-tested fare program.

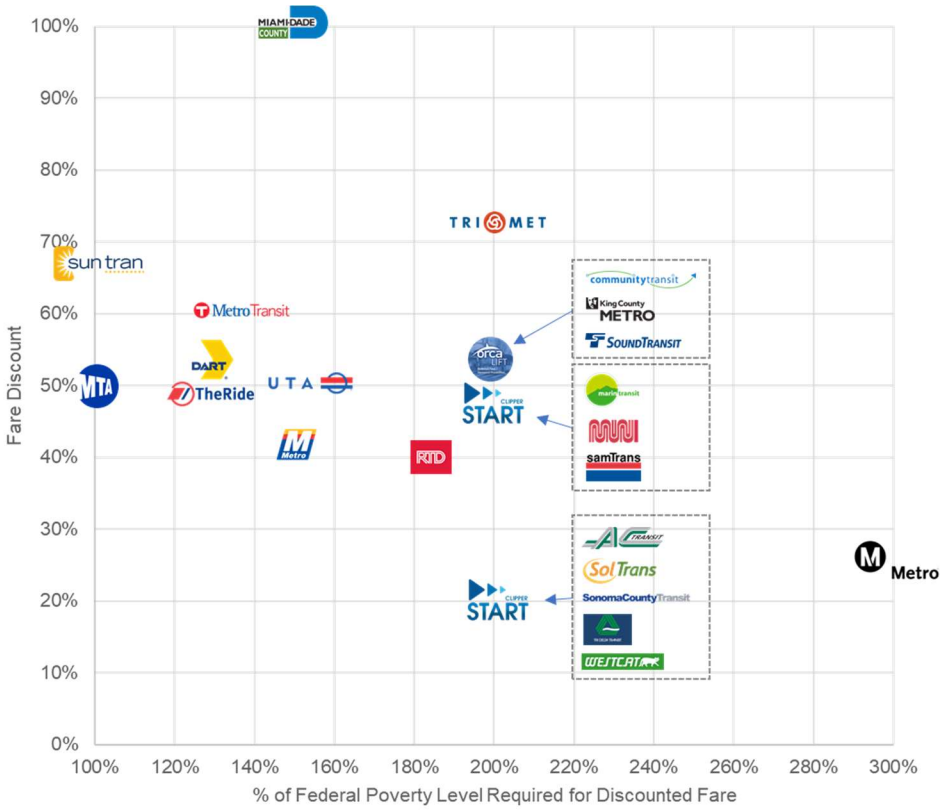

Figure 15: Qualification and discount offered for means-tested fare programs

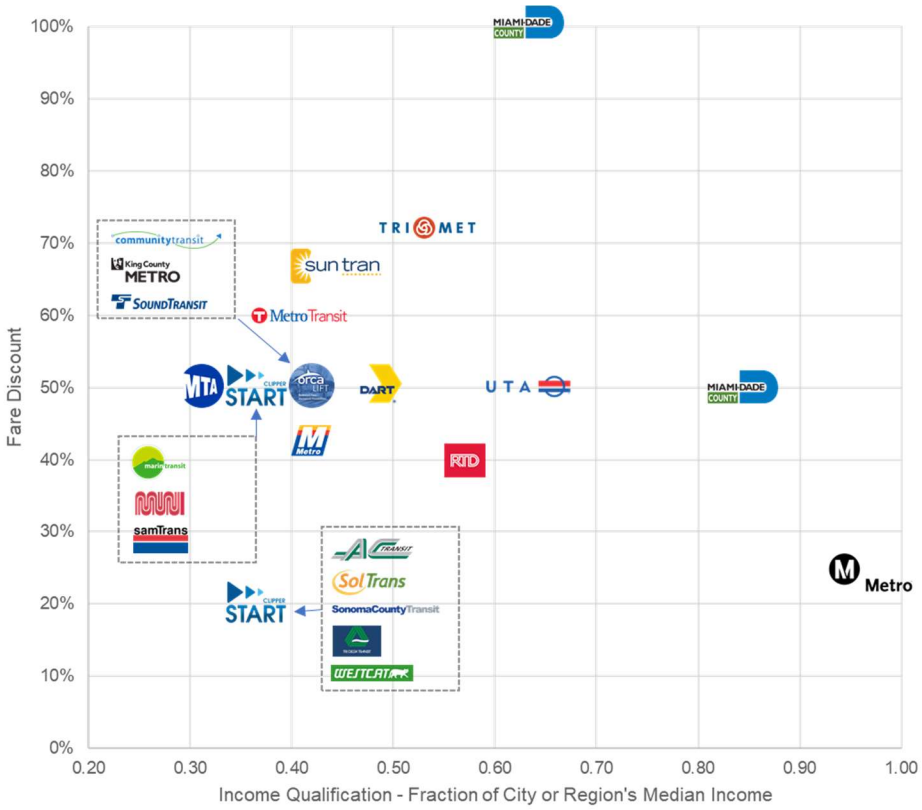

Figure 16: Means-tested qualification normalized by regional income

Key Takeaways from Operational Peers and Fare Policy Precedents

In the decade preceding the pandemic, many transit agencies across the country were considering the impacts of fares on low-income communities. Some agencies, such as KCATA, decided to fully remove fares from their system. Other agencies and regions chose instead to offer reduced fare programs intended for low-income riders. Among its operational peers, Ride On has the second highest fiscal 'lift' required to provide a zero-fare system. KCATA, which implemented zero fares, and ABQ Ride, which is proposing a zero-fare system, are less than half and a quarter of fiscal 'lift' per capita, respectively, compared to Ride On. However, although the fiscal lift is higher for Montgomery County, so is the median income of the county. The median household income of Jackson County, Missouri, of which Kansas City is the seat, is $55,000, nearly half of Montgomery County's. Still, other agencies with fiscal lifts comparable to Ride On's have instead implemented means-tested reduced-fare programs, such as SamTrans, UTA, and RTD. SamTrans is participating with transit agencies in the Bay Area to provide a central location for enrollment, hosted by the regional MPO and applied on the regional fare payment card (Clipper card).

Definition of Fare Alternatives

Fare Implementation Options

Fare policies can be applied differently in terms of distinct aspects of the transit service. For example, many transit systems separate fares by mode, by time of day, towards targeted customer demographics, or by zone or route. An overview of these four dimensions of fare implementation is provided in **Figure 17**.

	TIME PERIODS	CUSTOMER GROUPS	GEOGRAPHY / ROUTES	MODE / CLASS OF SERVICE
HOW IT WORKS	Price based on peak/off-peak, time of day or day(s) of week	Groups such seniors. children, students, disable, lower-income receive discounts	Fares are determined by route, zone, or distance	Fares differ by modes (e.g. bus rail) or class of service (e.g. local, express)
MOST PREVALENT USE(S)	Shift demand from crowded peak periods. Encourage ridership growth when service is lightly used	Improve vertical equity	Improve cost recovery for longer trips; encourage ridership in specific zones, most often 'free fare' zones downtown.	Improve cost recovery for 'premium' services, usually with longer trips
EQUITY PROS	Improves equity because off-peak users tend to have lower incomes than ridership in general	Focuses benefits on intended customer groups. Most operators have a tier of discounted fares already in place	In specific instances, can focus benefits on populations linked to zones or routes	Elimination of higher 'premium' fares can improve vertical equity
CONS	Changeover during the course of an operating day can be complex	Administrative costs of establishing and verifying eligibility	Can introduce uneven treatments which may cause dissension	Can complicate transfer arrangements in a multimodal system.
USE IN THIS PROJECT	Considering a fare alternative where fares are free on weekends and holidays	Considering a fare alternative where low-income users are offered reduced fares	Not applicable to Ride On, and therefore not used	Not applicable to Ride On, and therefore not used

Figure 17: Overview of fare implementation options

IBI Group considered each of these four aspects as a possible basis for a fare alternative aimed at improving vertical equity:

- Changing fares by **time period** is represented by eliminating fares on weekends and holidays. Introducing a weekday time-of-day variation could form a basis for an additional alternative but improving vertical equity does not figure prominently in decisions to decrease off-peak fares among precedents. The 2018 ridership survey for Ride On suggested that across entire operating days the fraction of lower-income users on weekends is not markedly higher than on weekdays.

- Customizing fares for **groups** is the most prevalent form of achieving some level of vertical equity via fares. Discounts for seniors and people with disabilities are required by law, while so-called 'concessionary' fares or discounts for children are almost universal, and commonly offered to students, veterans, or other classes of users. Programs based on customers' means (usually household income) are the prevailing form of focusing on vertical equity through fares. This is the basis for one of the fare alternatives that examines offering reduced fares to a means-tested population. Across-the-board zero fares have also received attention in this regard. Offering zero fares or reducing fares in half are examples of such programs.

- **Regional variation** (either zones or routes) as a basis for increasing equity is not likely to be applicable for Ride On. As previously shown, areas with concentrations of lower-income population are well distributed across Ride On's service area, and it is difficult to imagine a manageable structure of 'low income' zones that would not be a burden for bus operators to comply with. This would be less of an obstacle if lower-income customers were concentrated on a route-basis, and there is a least one precedent for that. The city of Lawrence, MA reimburses regional transit operator Merrimack Valley Regional Transportation Authority (MVRTA) to operate three of its 30

routes without fares[7]. Two of the routes are entirely within the city of Lawrence, and one extends into an adjoining municipality to provide access to a significant concentration of lower-income employment. Similarly, the MBTA has implemented a three-month pilot of fare free service for its Route 28, one of its highest ridership routes with more than two-thirds of its riders classified as low-income[8]. However, IBI Group has concluded that this approach would not be applicable to Ride On. Although estimated average incomes for Ride On routes each vary widely, they overlap significantly, so that the extent of a potential network operated by zero-fare or discounted routes intersecting and overlapping with regular-fare routes would be problematic.

- Differentiation of fares by **mode** is not applicable to Ride On, which is essentially an 'all-bus' transit system. Looked at from the standpoint of class of service, it presently operates two routes which might be considered 'premium' services. Route 100 is an express service between Shady Grove and Germantown Transit Center via I-270, with a much more affluent passenger profile than most Ride On routes. The new US 29 FLASH bus rapid transit service offers a visibly higher quality of service. However, neither of these two services charge a fare premium, so eliminating or reducing such a premium does not present an opportunity to seek increased vertical equity.

Having established a means-tested approach as a preferred candidate for one of the fare alternatives, IBI Group defined the particulars for this alternative based on the situations and choices of other systems, with considerations for Ride On's specific circumstances. The aim was to establish a likely qualification threshold and discount, knowing in advance that the particulars which might ultimately be established if this alternative were selected might differ from the ones assumed for this study. Based on the choices of other systems, and the relation to Montgomery County's high median income, a 50 percent fare discount was applied towards a 200 percent FPL qualification threshold in this analysis. **Figure 18** shows how this definition compares with other

[7] http://www.mvrta.com/alerts/free-rides/
[8] https://www.mbta.com/news/2021-07-26/pilot-program-offering-free-fares-route-28-bus-three-months-fall

means-tested agencies, and shows that it would place Ride On in the same vicinity as other agencies operating in higher-income areas, such as agencies in the San Francisco Bay Area and Puget Sound regions.

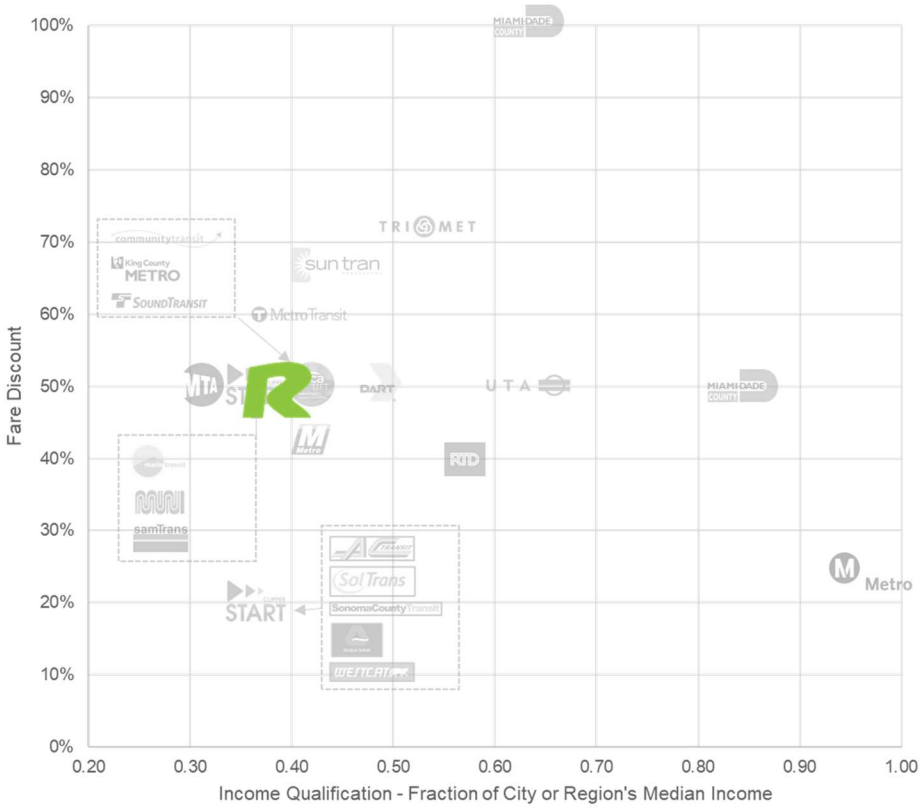

Figure 18: Placement of means-tested alternative relative to fare precedents

Analysis of Fare Alternatives

IBI Group conducted an analysis of fare alternatives using operational and financial information gathered from Ride On, peer transit agencies, and research documentation to compare the potential benefits, costs, and operational considerations among them. The comparative analysis covers the following topics—equity, fiscal impact, ridership, transit operations and performance, customer experience, climate and sustainability, and fare program administration. We have also treated the topics of safety and security separately from the customer experience in general.

Overview of Alternatives

Alternative	Definition
A	Zero-fare for all riders (all day, every day)
B	Zero-fare for all riders (weekends & holidays)
C	Reduced fare for all riders (reduced from $2.00 to $1.00)
D	Means-tested fare discount (50% discount at 200% FPL)

Table 6: Fare policy alternatives

Four fare policy alternatives were analyzed in response to direction from the County Execute and Montgomery County Council. The four alternatives shown in **Table 6** include zero-fare for all riders every day, zero-fare for all riders on weekends, reduced fare (50 percent) for all riders, and means-tested discount for qualified customers based on income eligibility. The means-tested alternative was defined based on examination of peer practice and was modeled as a 50 percent discount for users from households under 200 percent of the Federal poverty level. Included within each alternative is zero-fare for seniors and youth—a policy adopted permanently in response to recent County Council action.

Representing the ‘New Normal’

The course and consequences of the Covid-19 pandemic remain subject to considerable uncertainty, suggesting undue weight should not be placed on the recent ridership levels and resulting operational changes in effect for Ride On. In the long term, it is likely that a new ‘steady state’ will become evident. This will be the appropriate context in which to look at both ridership and fiscal implications of the fare policy alternatives. We have adopted the prevalent term “new normal” to designate this condition, under which the following are presumed to have occurred:

- Conditions are effectively post-pandemic, and short-term fluctuations in travel demand related to the pandemic are no longer occurring
- Perceptions of the relative risk of traveling by transit or other forms of shared mobility have stabilized at a long-term steady level
- Special funding sources related to the pandemic have been exhausted, and operators are relying on predictable long-term funding sources
- People have had post-pandemic opportunity to make and act on decisions regarding residential locations and both workplace location and work style.

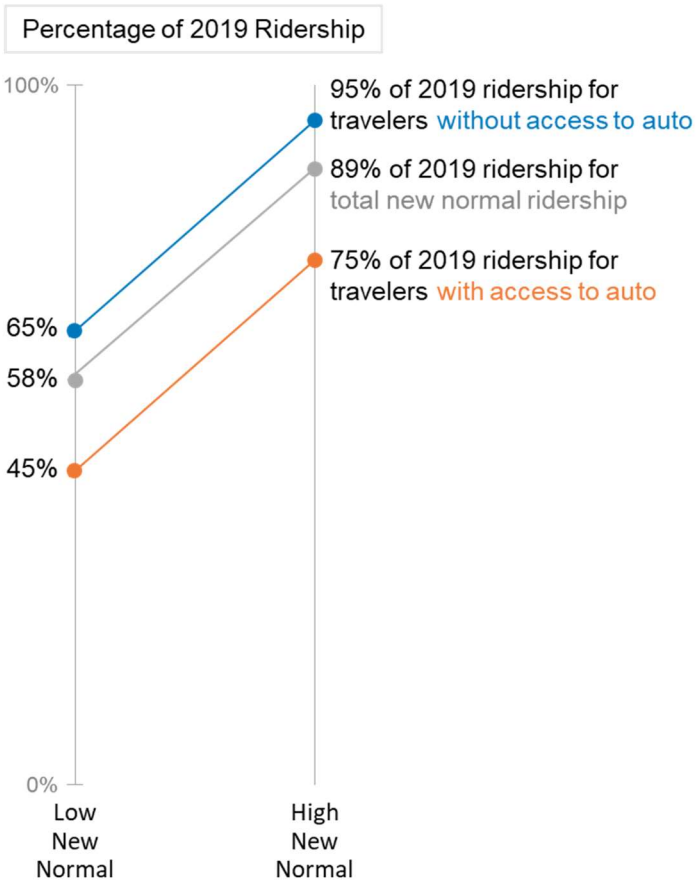

Figure 19: Ridership approximations for the 'New Normal'

As of August 2021, there is little basis for positing either what the demand level would be for a 'new normal' or when it would be reached. Transit ridership has grown since the spring of 2020, but these trends do not suggest what the steady state level might be. The full implications of many workers' ability to work from home and other lifestyle changes are not apparent. In lieu of attempting to forecast a most likely single future case, IBI Group has posited high and low ridership cases for the new normal in terms of demand relative to 2019 as shown in **Figure 19**. Low and high estimates of total ridership recovery—58 percent and 89 percent respectively —were established based on separate 'high' and 'low' estimates for those with or without access to an automobile for their trip, a delineation suggested by differential ridership retention during the pandemic. In our comparison of alternatives, we have most frequently used values based on the 'high case' because this makes comparison with the pre-pandemic conditions easier. As of August 2021, Ride On passengers boardings were reported to be approaching the 'low' estimate[9], suggesting that 'new normal' conditions have a reasonable chance of surpassing this threshold.

Because there is no good basis to establish when the new normal might be reached, no specific timeframe for the conditions has been assumed, and all fiscal results are expressed in year 2019 dollars to facilitate comparisons with pre-pandemic conditions.

[9] **Ride On ridership may have occurred in part due to shifts from Metrobus as a result of WMATA's resumption of fare collection in January 2021**

Equity

Under **Alternative A (Zero-Fare)** households would save $1,248 per adult who averages six round trips per week. This represents 1.2 percent of income for an adult making the median income in Montgomery County. However, many Ride On riders fall far below the county's median income and could greatly benefit. For example, a year's worth of zero-fare represents 12.5 percent of income for a family of two traveling adults earning a total of $20,000 per year, and 7.1 percent of income for a family of two traveling adults earning a total of $35,000 per year—the estimated median income of Ride On customers.

Alternative B (Zero-Fare Weekends) has a limited financial impact, bringing financial benefits primarily to households with adults who work on the weekend. According to the Bureau of Labor Statistics, 31 percent of single job holders and 58 percent of multiple job holders work on the weekend. Although low-income households are more likely to work multiple jobs with atypical schedules, including night, evening, weekend and holiday shifts, the overall percentage of trips taken during the weekend tends to trail off at around 25 percent. This means a year's worth of zero-fare on weekends would tend to represent at most 3.1 percent of income for a family of two traveling adults earning a total of $20,000 per year, and 1.8 percent of income for a family of two traveling adults earning a total of $35,000 per year.

In addition, it is not uncommon for low-income users to pay single-trip fares despite the existence of a monthly pass that may provide a more cost-effective means. This can often be the result of limited financial flexibility to afford the up-front cost of the monthly pass. Under this alternative, such users may become even more disinclined to pursue the monthly pass product.

Under **Alternative C (Half-Fare)** the percent income saved and the reduction in financial stress is half of that of Alternative A, with a year's worth of half-fare representing 6.2 percent of income for a family of two traveling adults earning a total of $20,000 per year, and 3.6 percent of income for a family of two traveling adults earning a total of $35,000 per year.

Under **Alternative D (Means-Tested Half-Fare)** the same savings would occur for the two use cases described for Alternative C. However, this scenario does not guarantee that all households which may be financially burdened to a substantial degree will receive the benefits of this policy, due to the presence of a qualification threshold and barriers to access which can form due to proof of eligibility. To illustrate the dividing line of the 200 percent of FPL threshold for qualification, **Figure 20** reintroduces the index of fare benefits presented in the introduction of the report, indicating the household types which would qualify for half-fare under the definition of Alternative D.

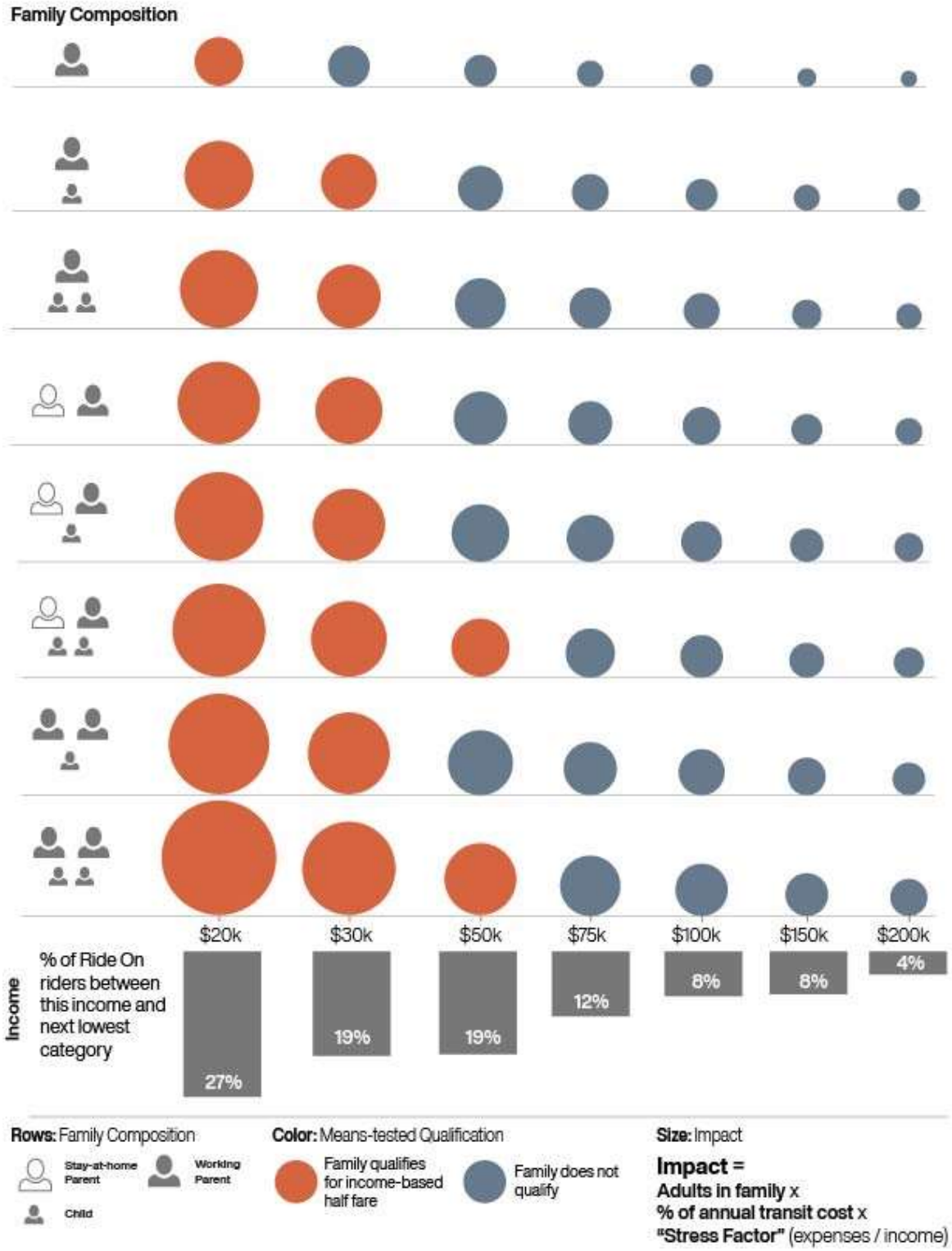

Figure 20: Impact of transit costs on families based on composition and household income

Fiscal Impact

The fiscal impact of fare reductions, especially a zero-fare operation, is a significant consideration in moving to address vertical equity with fares. As established in previous sections of this report, the particulars of each transit operator considering such a move mean that the same approach may not be the best fit for all systems. This is particularly true of the fiscal impacts (*i.e.* "of or relating to taxation, public revenues, or public debt" per Merriam-Webster). As established previously, the extent of fare revenues to be made up for depend on the system's characteristics, chiefly the extent of transit use and the established fare structure. Ride On is in a 'middle ground' between systems where the cost per capita of taking these steps is relatively small, and those where it may be seen to be insupportably large.

This section is intended to set out the estimated fiscal consequences of the four fare alternatives to Montgomery County under post-pandemic 'new normal' conditions. To that end, the following assumptions have been made:

- Montgomery County is the entity financially responsible for Ride On.
- The County's revenues are and will be raised from general measures which apply to all inhabitants of the County so that net changes in expenditure can be compared on a County-wide per capita basis.
- There will be no change in market share between WMATA Metrobus and Ride On, notwithstanding differences in fare policy.
- Montgomery County will make its own determination as to the sources of any increase in annual net operating support (NOS) for the long term; no consideration of financing a transition, or the use of one-time funds for COVID relief, is made.

The appropriate measure for fiscal impact on the County is net operating support (NOS). This is the portion of annual system operating and maintenance (O&M) cost not covered by fare revenues. O&M costs are estimated to vary somewhat by alternative, depending on ridership and some costs related to collection and

administration, but the principal determinant of changes in NOS is the amount of fare revenues foregone under each alternative. If the fare program was extended to Metrobus system with the County offsetting the revenue loss to WMATA, the effective change in NOS is much larger. In per capita terms, under 'high new normal' conditions relative to the corresponding baseline:

- **Alternative A (Zero-Fare)** is estimated to increase NOS by $20.5 million (2019$), or about $19.52 per capita per year without considering WMATA reimbursement. When including WMATA reimbursement those values are $35.9 million NOS (2019$), or about $34.17 per capita per year.
- **Alternative B (Zero-Fare Weekends)** is estimated to increase NOS by $3.1 million, or about $2.97 per capita per year without considering WMATA reimbursement. When including WMATA reimbursement those values are $6.1 million NOS, or about $5.83 per capita per year.
- **Alternative C (Half-Fare)** is estimated to increase NOS by $11.1 million, or about $10.70 per capita per year without considering WMATA reimbursement. When including WMATA reimbursement those values are $18.3 million, or about $17.46 per capita per year.
- **Alternative D (Means-Tested Half Fare)** is estimated to increase NOS by $11.3 million, or $10.65 per capita per year without considering WMATA reimbursement. When including WMATA reimbursement those values are $16.2 million, or about $16.40 per capita per year.

Table 7 provides the composition of the NOS estimates and a selection of additional fiscal metrics.

		Baseline (High New Normal)	**Alternative A** (Zero-Fare All)	**Alternative B** (Zero-Fare Wknd)	**Alternative C** (Half-Fare All)	**Alternative D** (Means-Tested)
Ride On Agency Costs, Revenues, and Savings	Operations & maintenance (O&M) costs[1]	$121.0M	$124.5M	$120.9M	$123.3M	$122.4M
	Fare revenues	$19.1M	-	$15.9M	$10.2M	$12.6M
	Savings from discontinued fare collection	-	$2.2M	-	-	-
	Admin cost of means-tested fare program	-	-	-	-	$3.4M
	Subtotal net operating support (NOS) *(Change from Baseline)*	**$101.9M** -	**$122.4M** *(+$20.5M)*	**$105.0M** *(+$3.1M)*	**$113.1M** *(+$11.2M)*	**$113.1M** *(+$11.2M)*
Reimb to WMATA	Change in reimbursement to WMATA	-	$15.4M	$3.0M	$7.2M	$4.9M
	Total NOS including WMATA reimbursement	**$101.9M**	**$137.8M**	**$108.0M**	**$120.2M**	**$118.1M**
Comparative Fiscal Performance	Increase in total NOS from baseline *(with WMATA reimbursement)*	-	$20.5M *($35.9M)*	$3.1M *($6.1M)*	$11.1M *($18.3M)*	$11.3M *($16.2M)*
	Percentage increase in total NOS from baseline *(with WMATA reimbursement)*	-	20.1% *(35.2%)*	3.0% *(6.0%)*	11.0% *(18.0%)*	11.0% *(15.9%)*
	Fare recovery (fare revenue / O&M costs)	15.8%	-	13.2%	8.3%	10.3%
	Reduction in fare revenue per capita	-	$19.68	$3.32	$9.15	$6.69
	Total NOS per capita *(with WMATA reimbursement)*	$96.96	$116.48 *($131.13)*	$99.93 *($102.79)*	$107.66 *($114.42)*	$107.61 *($112.37)*
	Per capita increase in NOS from baseline *(with WMATA reimbursement)*		**$19.52 *($34.17)***	**$2.97 *($5.83)***	**$10.70 *($17.46)***	**$10.65 *($15.41)***

Table 7: Estimates of fiscal changes under 'high new normal' conditions (2019$)

Ridership

Table 8 shows all four fare alternatives are estimated to increase Ride On's ridership relative to 'new normal' baseline conditions. For the 'high new normal' case, **Alternative A (Zero-Fares)** is estimated to increase ridership slightly over the pre-pandemic (2019) level. The 'high' case estimates of change in Ride On passenger-miles traveled (an indicator which takes average trip length into account) range from 2.4

percent for **Alternative B (Zero-Fare Weekends)** to 15.1 percent[10] for **Alternative A (Zero-Fare)**. **Alternative C (Half-Fare)** is not surprisingly about halfway between these. **Alternative D (Means-Tested)** is estimated to be a bit less than **Alternative C (Half-Fare)** because the discount is not available to higher-income travelers.

	2019 Benchmark (Pre-Covid)	**Baseline** (High New Normal)	**Alternative A** (Zero-Fare All)	**Alternative B** (Zero-Fare Wknd)	**Alternative C** (Half-Fare All)	**Alternative D** (Means-tested)
Annual Ride On passenger boardings (APB)	21.54M	19.21M	22.07M	19.71M	20.56M	20.04M
Increase in APB over baseline	-	-	14.9%	2.6%	7.0%	4.3%
Average Increase in $NOS per added APB[11]	-	-	$12.53	$12.22	$13.62	$19.51
Annual Ride On passenger-miles (APM)	82.6M	73.6M	84.7M	75.3M	78.8M	76.7M
Increase in APM over baseline	-	-	15.1%	2.4%	7.1%	4.2%
Average unlinked trip length (miles)	3.83	3.83	3.84	3.82	3.83	3.82
Estimated fraction of unlinked trips by riders without access to an automobile	67.4%	67.4%	65.6%	67.4%	66.6%	68.7%

Table 8: Estimates of ridership changes under 'high new normal' conditions

The alternatives are not anticipated to result in a noticeable change in the composition of the ridership. Relative to pre-pandemic fare levels, it is anticipated that fare decreases would cause an increase in ridership among higher-income groups for whom the attractiveness of Ride On to access Metrorail would change noticeably. Among the ridership without access to an automobile, mode share for transit is already high, and

[10] As a point of reference, a March 2021 study of zero-fare undertaken for the City of Alexandria, although using an entirely different methodology, estimated that system-wide zero-fare for DASH would increase city-wide ridership on DASH and WMATA by 8.3 percent if fares on both DASH and Metrobus were set to zero, and 11.2 percent if only DASH were to eliminate fares. It is worth noting that IBI Group does not consider DASH an operational peer to Ride On; for example, its average unlinked trip length in 2019 was only 1.9 miles versus 4.0 for Ride On.

[11] For pre-pandemic 2019 the average net operating support (including the fare revenues) was $4.80 per annual passenger boarding.

the percentage growth is expected to be somewhat less; however, it is estimated that there would also be a shift from walk and bike trips to transit with zero fares, as well as some 'latent' demand (*i.e.* trips which would not have been made under the 2019 fare structure). As might be expected, means-tested **Alternative D** is projected to make the largest change in the composition of Ride On ridership. Because trips made by higher-income travelers tend to be longer than for lower-income travelers, the estimated average unlinked trip length (the distance traveled on a Ride On bus per boarding) varies a bit among the alternatives. To the extent that higher-income riders are benefiting from employer-based programs reducing their cost to ride transit, the benefits of fare reductions may accrue at least in part to employers.

It is worth noting that if the primary goal of this study were to be increasing ridership, it might be possible to find more cost-effective ways of doing that. The estimated increase in net operating support (discussed further under Fiscal Impacts) per incremental rider is higher than the system's average for 2019 for **Alternatives A, B, and C. Alternative D**, which aims to focus benefits on lower-income travelers is even less cost-effective than the others in this regard.

Transit Operations and Performance

Table 9 shows the overall productivity of the Ride On network (in terms of passenger-miles carried per revenue vehicle-hour of operation) is anticipated to increase under each alternative, chiefly from higher ridership relative to the baseline, and secondarily with operating speed improvements for **Alternatives A and B**, which eliminate delays from fare payment either every day (A) or on weekends and holidays (B).

	2019 Benchmark (Pre-Covid)	**Baseline** (High New Normal)	**Alternative A** (Zero-Fare All)	**Alternative B** (Zero-Fare Wknd)	**Alternative C** (Half-Fare All)	**Alternative D** (Means-tested)
Average bus occupancy (ABO)	6.09	5.54	6.22	5.67	5.86	5.73
ABO increase over baseline	-	-	0.68	0.13	0.33	0.20
Average operating speed (mph) (AOS)	16.6	16.6	16.9	16.7	16.6	16.6
AOS increase over baseline	-	-	0.3	0.1	0.0	0.0
Productivity (passenger-miles per revenue vehicle-mile)	**77.8**	**70.6**	**80.6**	**72.3**	**74.8**	**73.1**

Table 9: Estimates of operations and performance metrics under 'high new normal' conditions

It is not anticipated that running time savings from eliminating fare payment will amount to enough to allow for significant reductions in service hours or fleet size. Ride On routes typically have headways which amount to a significant fraction of their one-way running times, limiting the opportunities to 'save a bus' on routes, even at peak times. Our estimates of revenue service hours do include some provision for adjusting the service plan to ridership, which result in estimated service hours changing by about 1/5 of the change in ridership, presumed to occur from headway adjustments rather than fleet savings.

Customer Experience

It is not anticipated that any of the fare alternatives would result in a significant change to the Ride On customer experience. This might not be true for another transit system; local particulars do matter. It is estimated that the average number of persons on a bus (over all routes for the entire operating day) would increase by no more than 5 percent relative to baseline 'high new normal' condition for **Alternatives B (Zero-Fare Weekends), C (Half-Fare), and D (Means-Tested)** which would continue to collect fares. Very few passengers would perceive a lower level of comfort in terms of seating or crowding. The increase in average bus occupancy for **Alternative A (Zero-Fare)** over the baseline is estimated at 12 percent. It is possible that some passengers on heavily

traveled routes might experience a modestly lower level of comfort on parts of their journeys. It should be borne in mind that ridership in the baseline 'high new normal' condition is slightly less than pre-pandemic (2019) levels. The risk of the system being overwhelmed by new riders responding to the reduction or elimination of fares appears to be quite low.

Alternatives A and B which eliminate fare collection are estimated to increase the average operating speed of buses network-wide from the present 16.6 mph to 16.9 mph during their effective periods. This is the result of decreasing the time required for passengers to pay fare on boarding. The relatively modest increase is due to the traffic density of the Ride On network being relatively light[12], so that the average level of passenger activity at a stop is low. A significant fraction[13] of Ride On's passengers board or alight at the terminals of the route, so queuing at intermediate curb stops, a source of delay savings on more densely traveled systems, is not anticipated to be significant overall.

The need to prove eligibility for the means-tested fare program of **Alternative D** could be perceived as a burden and present an obstacle to its use. Not taking any steps to pay a fare will be perceived as an increase in convenience for the passengers.

Safety and Security

Two considerations have come to the fore with respect to zero-fare and safety or security:

- Nuisance passengers riding buses without a specific destination and causing disturbances for other riders.

[12] The annual passenger traffic density or PTD (passenger-miles per distinct mile of route) was 73,000 in pre-pandemic 2019. Other suburban operators in greater Washington (DASH, ART, and Fairfax Connector) ranged between 140,000 and 200,000. Operational peer Spokane Transit Authority's PTD was estimated at 159,000 for 2017. Integrated regional bus systems in very large metropolitan areas may reach 400,000 or more. At these higher PTD levels, the opportunity to save time with zero-fare can be more pronounced.

[13] For five Ride On routes operating in the MD 355 corridor, IBI Group found this fraction to be 36%.

- Without a fare being required to board, there is no longer a cause for fare disputes between bus operators and passengers, reducing stress on operators and risk to both operators and passengers.

There has been considerable experience with zero-fare in several waves of interest and experimentation since the 1960s. Transit Cooperative Transit Program (TCRP) *Synthesis 101* "Implementation and Outcomes of Fare-Free Transit Systems", indicated that as of 2012 systems running zero-fare were concentrated in communities under 175,000 population. Operators surveyed indicated that nuisance passenger issue was manageable with measures such as educating younger customers. This source also alludes to prior trials in larger cities including Austin, Denver, and Trenton, where nuisance passengers were found to be problematic. Austin's 15-month trial program launched in October 1989 was not continued, in significant part due to a rise in incidents involving intoxicated passengers and joyriding youths.[14] The South Beach local route in Miami Beach was launched as free bus shuttle service in a very popular area, but a nominal $0.25 fare was later instated because passengers were causing disturbances on the buses; this is reported to have mitigated the problem.

There appears to be some correlation of the risk of nuisance passengers with the size of the system and the community it serves. Given the predominantly suburban character of its network, Ride On would not appear to pose a high risk of nuisance passengers, and the absence of the possibility for fare disputes would also act to offset this. This issue might warrant some further consideration.

Climate and Sustainability

Table 10 shows the increased ridership of the fare alternatives is anticipated to result in increased fuel economy per passenger mile and a net reduction in vehicle miles traveled (VMT) on the highway network. These effects would be generally proportional to the ridership change, and in regional terms not highly significant. **Alternative A's (Zero-Fare)** estimated reduction in VMT under the 'high new normal' case amounts to about 7 vehicle-miles per County resident per year, roughly the equivalent of one local

[14] Hodge, D.C., Orrell III, J.D., & Strauss, T.R. (1994). Fare-free Policy: Costs, Impacts on Transit Service and Attainment of Transit System Goals. Report Number WA-RD 277.1. *Washington State Department of Transportation*

shopping or personal business trip. **Alternative D (Means-Tested)** is estimated to reduce VMT by less than **Alternative C (Half-Fare)** because the average distance traveled by higher-income riders is longer than that for lower-income riders. It is not anticipated that the increased ridership under any of the alternatives will perceptibly reduce traffic congestion.

	2019 Benchmark (Pre-Covid)	**Baseline** (High New Normal)	**Alternative A** (Zero-Fare All)	**Alternative B** (Zero-Fare Wknd)	**Alternative C** (Half-Fare All)	**Alternative D** (Means-tested)
Average Ride On passenger-miles per gallon	20.12	17.97	19.84	18.39	18.81	18.31
Estimated annual reduction in highway vehicle-miles traveled from baseline	-	-	6.98M	0.79M	3.39M	2.02M
$NOS per highway vehicle-mile reduced **without** increased reimbursement to WMATA	-	-	$2.93	$3.94	$3.17	$5.58
$NOS per highway vehicle-mile reduced **with** increased reimbursement to WMATA	-	-	$5.14	$7.79	$5.21	$8.02

Table 10: Estimates of climate and sustainability metrics under 'high new normal' conditions

Fare Program Administration

Changes to a transit system's fare policy can call both for some one-time costs and administrative changes to make the transition and for changes to a system's ongoing costs for operations, which include administrative expenses as well as fare collection costs. This section addresses conditions for the long-term 'steady state' under 'new normal' conditions. It does not address transition costs or include an implementation plan for any alternative which might be moved forward.

In terms of ongoing program administration, **Alternative C (Half-Fare)** does not differ significantly from a routine periodic fare change; it would be unusual in that the fares would decrease, but once implemented each established fare category and product would be handled the same on boarding, including any farebox codes the operator

might need to enter. No new fare products would be added. Farebox dumping, handling of cash revenues, and back office accounting would be essentially unchanged.

Alternative B (Zero-Fare Weekends) would require one or more new fare categories to be established, paralleling steps made to implement Kids Ride Free and Seniors Ride Free. Operators would enter the new farebox codes for passengers boarding on weekends. No new fare products would be introduced, and other aspects would be essentially unchanged from the present.

Alternative A (Zero-Fare) would introduce substantial changes, which would depend on whether passenger counting would still rely on fareboxes. Ultimately, the costs of maintaining fareboxes, physical cash handling, and considerable back-office accounting would be eliminated. Costs for producing fare media, at least for intra-system passengers, could be reduced. In the absence of fareboxes, a process for periodically classifying passenger boardings would likely be needed to complement automatic passenger counts to track relative use by seniors, children, students, etc. This might take the form of a periodic ride check or a more frequent and/or augmented on-board passenger survey. IBI Group has not included any provision for this in its estimates of annual cost.

Alternative D (Means-Tested) introduces a new dimension with its means-tested fare and might be considered the outlier in terms of administrative change. IBI Group has assumed the overall approach would resemble that of the ORCA LIFT program in greater Seattle and similar programs in other metropolitan areas, to limit additional administrative effort for Ride On:

- A parallel set of bulk fare products would be added for the means-tested fares
- Income eligibility requirements would be set by Ride On in terms of the Federal poverty level. Ride On might choose to set these requirements based on an already existing program.
- Ride On would distribute bulk fare products to contracted partner organizations such as social service providers

- Contracted partner organizations would be responsible for inventory, distribution, accounting., and reporting on fare products purchased
- Contracted partner organizations would be responsible for qualifying purchasers of the products.

As indicated in the section on fiscal impacts, the combination of some additional administrative effort by Ride On and the costs of the contracts with partner organizations is anticipated to exceed the value of the additional fare revenue received from non-qualifying passengers. However, the prevalence of the above model with the means-tested precedent operations suggests there could be economies of scale with a regional approach. Determining whether such an approach could succeed in a complex region with three high-level civil jurisdictions (DC, MD and VA) and a jurisdiction-spanning WMATA is outside the purview of this study.

Summary of Findings

The economic circumstances of much of Ride On' s customer base differ from those of the county when seen as a whole. The median household income of Ride On customers ($35,000) is substantially lower than the median income of households county-wide ($108,820). It is estimated that about 2/3 of Ride On customers did not have an automobile available for their trips, and that most riders are from households which may not be able to cover their total annual expenses for basic needs. This study is intended to explore zero and reduced fares for Ride On as a means of improving vertical equity with respect to income.

Lower-income households are distributed across the county, making Ride On's extensive connected network of real value to travelers from these households. Ride On's effective connections to WMATA Metrorail also make Ride On attractive to a larger fraction of higher-income customers with automobile access than is typical of its 'all-bus' peer systems. Almost all these operational peers include the downtowns of their metropolitan areas.

Among the transit systems that have implemented zero or reduced fare policies, Ride On's socioeconomic and fiscal attributes align more closely with those that have implemented means-tested reduced fares than with those that have implemented zero-fare policies. Operational and socioeconomic peer San Mateo Transit (SamTrans) in California's Bay Area, which like Ride On does not include the downtown of its metropolitan area, has implemented a means-tested discount. However, this policy is established as part of the multi-agency regional Clipper fare product. This likely keeps programmatic costs much lower than what would be incurred by Ride On without a similar structure including participation by neighboring SmarTrip agencies.

Ride On's relatively high pre-pandemic transit usage and fare recovery place it in a 'middle ground' of sorts between operators for which zero-fare is not much of a 'stretch' in terms of funding and those for which the fiscal 'lift' to assume the burden of making up for lost fare revenue would likely be problematic. The strongest cases for zero-fare can be made where transit use is so low that the present fare recovery level is low, and where there may be a substantial population in the supporting jurisdiction

either not directly served by the system or not making much use of it. The fiscal realities for a system serving a dense city not including suburbs, such as Chicago or New York City, can be profoundly different. The diversity of these factors is evident among the transit operators within the greater Washington, DC area alone, from small local bus services in Loudoun and Prince William Counties to WMATA Metrorail. When it comes to using fare changes to increase vertical equity, one size does not necessarily fit all.

Montgomery County's relatively high median household income appears to provide the capacity to support zero-fare policies which other agencies/governments might not conclude they could afford, depending on their operational specifics. The estimated fiscal 'lift' for zero-fare for Ride On at the high end of a likely range of 'new normal' conditions on a per capita basis, is $19.51 in year 2019 dollars if WMATA Metrobus is not compensated for bringing its fares to zero in the County. With such compensation, the amount is estimated to be $34.17 per capita. This can be compared to the value of $4.50 for Albuquerque, and about $17 per capita for operational peer COTA serving Columbus, OH. At the other end of the spectrum to date is affluent Luxembourg, which has chosen to spend about $80 per capita for its immediately pre-pandemic move to zero-fare. Luxembourg's fare recovery before the transition to zero-fare was about half of Ride On's.

Among the fare alternatives identified for study the effectiveness in improving both vertical equity and ridership (and its associated environmental and other benefits) was found to be generally proportional to the net increase in annual net operating support dollars. These ranged from a low of Alternative B (zero-fare on weekends and holidays) to a high under Alternative A (zero-fare at all times). Alternative D (means-tested half-fare) was more effective at focusing on lower-income travelers and preserving cost recovery than Alternative C (half-fare). It was however found to be somewhat less cost-efficient than Alternative C because of higher administrative costs, and it generated less new ridership.

There is historical precedent for nuisance passengers being a problem for zero-fare systems. These have tended to occur on a localized basis on more highly traveled systems in major urban areas.

In summary, the alternatives studied present significant choices for the County. First and foremost is the tradeoff between the vertical equity improvement that can be attained versus the fiscal impact. Montgomery County's particulars are such that even a zero-fare program is within its fiscal 'reach' if a consensus is reached to take that course.

If a fare reduction rather than zero-fare is chosen to moderate the fiscal impact, then a secondary tradeoff arises: whether to introduce means-testing as a way to concentrate benefits on travelers who would benefit more and to preserve fare income. Ride On's operational peers at comparable levels of financial 'lift' required to forego all fare income have tended to choose means-testing rather than zero-fare. However, Ride On's relatively small share of the regional bus operation in greater Washington, DC means that it would likely be less efficient to do this for Ride On alone than at a regional scale.

A summary of the performance of each fare alternative relative to fare policy goals is depicted in **Table 11**.

Goal	Measure	**Alternative A** (Zero-Fare All)	**Alternative B** (Zero-Fare Wknd)	**Alternative C** (Half-Fare All)	**Alternative D** (Means-tested)
Equity	Magnitude of benefit to lower-income riders	High	Marginal	Moderate	Moderate
	Increased annual boardings from riders without vehicle access	1.52M	0.34M	0.75M	0.81M
Fiscal Impact	Increase in total $NOS from baseline	$35.9M	$6.1M	$18.3M	$16.2M
	Incremental $NOS per capita	$34.17	$5.83	$17.46	$16.40
Ridership	Increase in annual passenger-miles over baseline	15.1%	2.4%	7.1%	4.2%
Transit Operations	Productivity (passenger-miles per revenue vehicle-hour)	80.6	72.3	74.8	73.1
Customer Experience	Average operating speed (mph)	16.9	16.7	16.6	16.6
Climate & Sustainability	Reduction in VMT	6.98M	0.79M	3.39M	2.02M
Fare program Administration	Range and cost	Many aspects simplified	Minimal change	Minimal change	Added complexity and cost

Table 11: Performance of each alternative relative to fare policy goals

Appendix A: Peer Agency Overviews

ABQ Ride (Albuquerque, NM)

Before the pandemic, ABQ Ride had a low-income reduced fare program, a fare-free zone in Downtown Albuquerque, and there were discussions around a zero-fare transit system. The low-income reduced fare program offers half-priced day passes and a two-thirds discount on monthly passes. Eligibility is through the agency or automatic for Temporary Assistance for Needy Families (TANF) recipients. In March 2021, ABQ Ride offered veterans, college students, and seniors over 60 years old free rides. Shortly after, city council set aside $3 million to cover fares for one year. However, as of August 2021, the zero-fare pilot has not been approved by Albuquerque's city council.

Metric	ABQ Ride	Ride On
Median Income	$53,329	$108,820
Income for Financial Independence	$58,605	$69,826
Cost-burdened Households	32.2%	32.1%
Average Bus Occupancy	4.78	6.09
Average Bus Passenger-miles per Capita	49.0	84.9
Fare Revenue per Passenger-mile	$0.095	$0.249
Farebox Recovery Ratio	6.9%	16.5%
Fare Revenue per Capita	$4.50	$21.10

In terms of the amount of annual fare revenue per capita, which may be considered a proxy for the fiscal 'lift' which could be required to transition to zero-fare, ABQ Ride's is less than a quarter of Ride On's. This is a consequence of the relatively low use of transit in Albuquerque and relatively low fare revenues relative to the passenger-miles provided.

KCATA (Kansas City, MO)

Kansas City gained national attention when the Kansas City Area Transportation Authority (KCATA) became the largest transit agency to enact zero fares in North America. The original proposal intended to phase out fares over a few years, starting with a subset of riders and slowly growing that subset until the full system was zero fare. At the onset of the pandemic, the policy immediately went to zero fares for everyone. Funding for the endeavor was primarily through city council, which budgeted $4.8 million to cover about 2/3 of the anticipated loss in fare revenue. However, with the passenger of the CARES Act in 2020 and the American Rescue Plan in 2021, KCATA has been able to use these federal funds to continue the zero-fare program at least until 2022. A long-term funding plan has not yet been established.

Equity was a major motivation for KCATA to eliminate fares. KCATA ridership is more likely to be comprised of low-income persons and people of color compared to regional demographics. In addition, 72.4% of riders mentioned they did not have access to a vehicle. By removing fares, this would return money back into the pockets of these groups and allow them to reinvest those dollars into other sectors of the economy, such as housing, healthcare, and retail. In addition, KCATA found over 90% of disputes on buses to be related to fare payment. By removing fares, these disputes would no longer be occur.

It is difficult to fully assess the impacts of the zero-fare program given the pandemic. KCATA managed to retain 58% or more of their ridership while many transit agencies dropped below 50% during the height of COVID-19. In addition, there was a 17% decline in incidents per rider after enacting the zero-fare policy. Although it is not possible to know how the impacts would have been different without the pandemic, these results are promising. The remaining uncertainty revolves around a long-term funding strategy for providing zero fares.

Metric	KCATA	Ride On
Median Income	$55,134	$**108,820**
Income for Financial Independence	$**60,447**	$**69,826**
Cost-burdened Households	29.0%	32.**1%**
Average Bus Occupancy	5.45	6.09
Average Bus Passenger-miles per Capita	54.9	84.9
Fare Revenue per Passenger-mile	$0.175	$0.249
Farebox Recovery Ratio	9.0%	16.5%
Fare Revenue per Capita	$9.05	$21.10

KCATA's indicator of fiscal 'lift' to achieve zero-fare is slightly less than half that for Ride On, accounted for by both lower transit use and lower fare revenue per passenger-mile.

UTA (Salt Lake City, UT)

The Utah Transit Authority (UTA) has faced criticism for its complex fare structure and had been pressured to consider a zero-fare system before the pandemic. A local news outlet estimated the UTA had at least 74 different fare discounts, promotions, and options before the pandemic. For example, the UTA offers a fare-free zone in downtown Salt Lake City for all trips starting or ending in the zone, a fare-free express bus (fares are covered by a federal grant), has offered free fares on high-pollution days, and special events or venues can sometimes offer free rides to events, such as the University of Utah offering free UTA rides for ticketholders. The fare structure complexity led to a simplified structure starting in 2021.

Prior to the pandemic, the Utah Transit Authority offered a low-income monthly pass. The pass was offered to social service agencies who would distribute the pass to its users. The pass was offered at a 75% discount with the stipulation that the social service agency would cover the remaining cost so the low-income user would receive

their pass for free. This structure was short-lived, however, and in the summer of 2021 UTA required low-income individuals to sign-up for the pass directly. In addition, the subsidy for the pass decreased to 50% and the l ow-income individual would have to cover the remaining 50%. Eligibility for the program is offered to those who are also eligible for SNAP benefits or any state welfare program. It is unclear why UTA changed its low-income fare structure or decreased their subsidy.

Metric	UTA	Ride On
Median Income	$74,865	$**108,820**
Income for Financial Independence	$61,116	$**69,826**
Cost-burdened Households	27.3%	32.1%
Average Bus Occupancy	4.98	6.09
Average Bus Passenger-miles per Capita	45.1	84.9
Fare Revenue per Passenger-mile	$0.224	$0.249
Farebox Recovery Ratio	12.7%	16.**5%**
Fare Revenue per Capita	$10.08	$21.10

UTA's indicator of fiscal 'lift' to achieve zero-fare is about half that for Ride On, accounted for primarily by lower bus transit use per capita.

SamTrans (San Mateo, CA)

SamTrans joined the regional Clipper START program in July 2020. The Clipper Card is a regional fare product, similar to SmarTrip in D.C., that allows multiple agencies to use one fare media across different systems. In the summer of 2020, the Metropolitan Transportation Commission (MTC), the regional Metropolitan Planning Organization (MPO) for the Bay Area, began an 18-month pilot called Clipper START. The MTC covers a 10% discount on all fares and administers program eligibility. Each participating agency is required to cover another 10% but can further subsidize the low-income fares beyond the minimum requirement.

San Mateo joined the Clipper START program in the beginning of 2021. SamTrans is subsidizing an additional 30% of the fares, meaning that low-income individuals in the Clipper START program only pay 50% of their fares. The Clipper START card is available to those making less than 200% of the federal poverty level (FPL). The discount only applies to single-ride tickets. Once eligible, users can purchase a discounted ticket from any participating agency.

Metric	SamTrans	Ride On
Median Income	$122,641	$**108,820**
Income for Financial Independence	$**102,860**	$**69,826**
Cost-burdened Households	36.3%	32.1%
Average Bus **Occupancy**	6.73	6.09
Average Bus Passenger-miles per Capita	60.1	84.9
Fare Revenue per Passenger-mile	$0.314	$0.249
Farebox Recovery Ratio	10.2%	16.5%
Fare Revenue per Capita	$18.**88**	$21.10

SamTran's indicator of fiscal 'lift' to achieve zero-fare is close to that for Ride On, accounted for by a combination of somewhat lower bus transit use per capita offset by higher fare revenue per passenger-mile. The agency's choice of means-tested reduced fares is interesting in the light of some other characteristics that make It similar to Ride On: higher median household income than most of the peer systems; its service area does not include the region's central city (San Francisco); and a commuter rail line (CalTrain) runs through its service area. The presence of the regional means-tested Clipper START fare program, under which member operators may choose to participate with discounts between 20% and 50% is an important contextual difference from Ride On.

RTD (Denver, CO)

Denver's Regional Transportation District (RTD) is similar to UTA in the low-income discounted fare programs they have offered. Before 2020, RTD offered a 50% discounted monthly pass to non-profits, which had to cover the remaining 50% and offer a free pass to the end-user. Funding for this program came from RTD, which said it became too costly to maintain at the current level. Starting on January 1, 2020, RTD launched its LiVE program that requires low-income individuals to sign-up for discounted fares directly through RTD. To be eligible, riders have to be at or below 185% of the FPL. Once eligible, users can purchase a single ride or day-pass at a 40% discount.

RTD is one of the most expensive transit systems to ride on, with bus fares starting at $3.00 at regular price. Denver has one of the highest fares in part because of a Colorado law that required RTD to have a farebox recovery ratio of at least 30%. This requirement was revoked in May 2021, opening the path for lower, or even zero, fares on RTD services. In response to the law change, high cost, and concerns around equity, RTD began an 18-month system-wide study of its fares in May 2021. At about the same time, RTD embarked on a comprehensive study of fare equity, which It indicted would require a minimum of 18 months.

Metric	RTD	Ride On
Median Income	$68,592	$108,820
Income for Financial Independence	$67,923	$69,826
Cost-burdened Households	34.6%	32.1%
Average Bus Occupancy	5.70	6.09
Average Bus Passenger-miles per Capita	105.1	84.9
Fare Revenue per Passenger-mile	$0.256	$0.249
Farebox Recovery Ratio	25.0%	16.5%
Fare Revenue per Capita	$26.81	$21.10

RTD's indicator of fiscal 'lift' to achieve zero-fare is slightly higher than that for Ride On, accounted for primarily by higher bus transit use per capita, which is not surprising for a system which includes the downtown of a major metropolitan area.