



Going Cashless? Considering Changes to Transit Agency Fare Collection Systems

Washington Metropolitan Area Transit Authority

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Paying a fare is as easy as tapping an app-enabled smartphone—or watch—to a sensor, just one of the payment options on Washington Metropolitan Area Transit Authority buses. It's contactless, quick, and customers can consolidate cards and skip fare machines.

Over the past decade, a few transit agencies in the United States have considered eliminating cash fare collection from onboard buses. Although many bus rapid transit, light rail, and heavy rail operators require prepayment of transit fares before boarding vehicles, nearly all large- and medium-size local bus operators continue to accept cash onboard vehicles.

Discontinuing the use of cash in transit vehicles has many potential benefits, including improvement to operations, safety, and security. Despite this, fare collection on buses presents unique challenges because of the sheer number of bus stops distributed throughout large metropolitan areas with few—if any—stations or terminals where fare-collection infrastructure can be more easily installed and maintained. Even when new fare payment systems that rely primarily on personal devices and payment instruments—such as smartphones and credit or debit cards—are implemented,

transit agencies recognize that they have diverse constituencies of riders, including those who either prefer or need to pay with cash. This can pose challenges for riders who are “unbanked,” which is typically defined as those persons lacking a checking or savings account at a bank or credit union.

Considering these challenges, *TCRP Synthesis 163: Considering the Unbanked in Cashless Fare Payment at Point of Service for Bus/Demand-Response Services* aims to inform transit agencies of the potential impacts of going cashless from the perspectives of bus, demand-response, and cable car operators (1). The study examined various elements of cashless fare collection systems, including operations, advantages and drawbacks, policy, and regulations, as well as considerations for certain populations of riders such as the unbanked.

The primary method was to provide detailed case examples of transit agencies, based on interviews with agency staff. Some of the selected transit agencies



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Riders use their respective Clipper cards on all Bay Area transit systems, including Muni. Fares can be paid on surface transportation with any U.S. currency. However, exact change is required.

conducted small-scale pilot programs of cashless fare collection on one or a few routes; others suspended cash fare collection due to the COVID-19 pandemic. The remainder were considering or implementing cashless fare collection systemwide. The transit agency examples were classified into the three groups shown in Figure 1. Short summaries for six of the examples follow, with more details about these examples—as well as additional transit agency case examples—found in *TCRP Synthesis 163*.

Example 1

San Francisco Municipal Railway (Muni), California

Cable cars have unique fare-collection challenges. Muni implemented a pilot program that took a step toward cashless by aiming to significantly reduce onboard cash fare payments on three cable car routes. Tourists are the primary market for cable cars. Therefore, the transit agency focused marketing and outreach on this group. Motivating

factors for reducing cash fare payments onboard were to decrease fare evasion, improve operator safety (conductors also help with braking the cable car), and boost security by reducing cash handling. In 2019, the pilot program was implemented with the following three primary changes:

1. Prepayment was required at sales kiosks in primary locations, such as near the touristy Fisherman’s Wharf neighborhood;
2. Pricing was changed to incentivize prepayment; and
3. A comprehensive marketing, communications, and signage plan was implemented.

This pilot program was conducted before the COVID-19 pandemic, and cable car service was suspended from the spring of 2020 until fall 2021 due to COVID-19. Since reinstating service, Muni requires prepayment at terminal locations. However, to board cable cars in all other nonterminal locations or outside of terminal kiosk hours, customers may pay fares to the cable car operator in cash with exact change only.¹

¹ To learn more about Muni’s fare payment options, go to <https://www.sfmta.com/fares/cable-car-single-ride>.

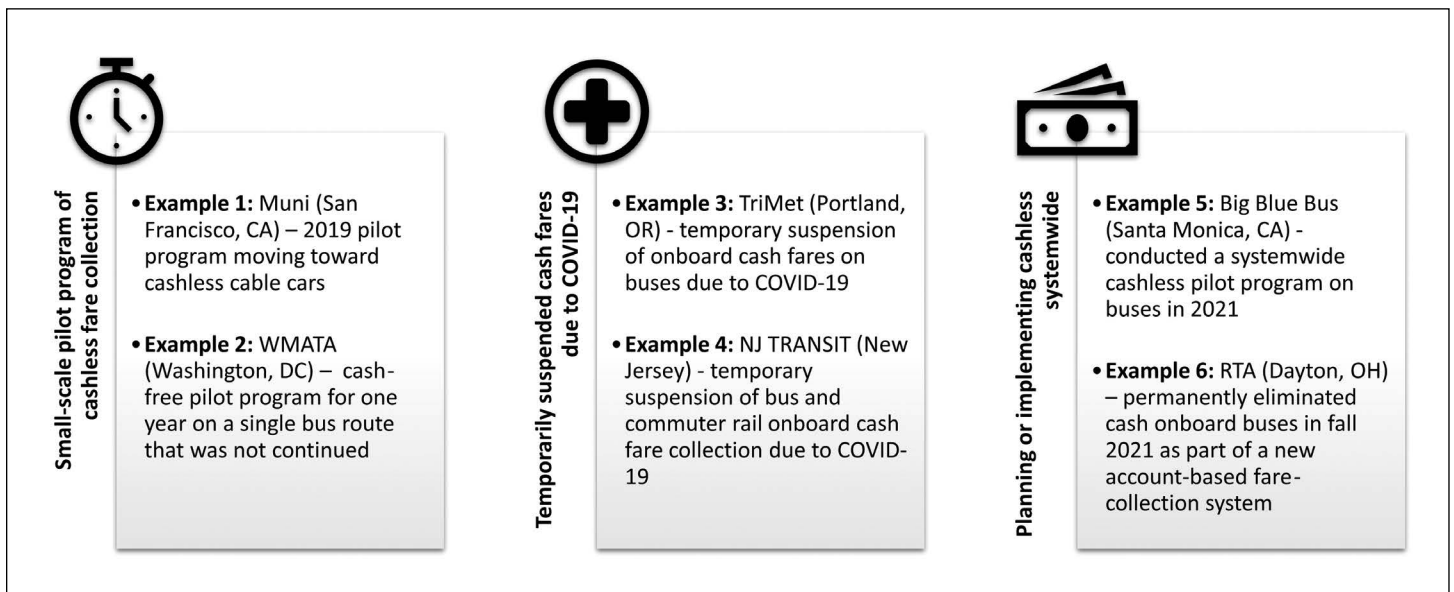


FIGURE 1 Transit agency examples.



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Often referred to as moving historic monuments, San Francisco's cable cars fare payment system now operates by offering options via ticketing apps and the Bay Area Clipper card. However, they still accept good old-fashioned cash—with exact change.

Example 2

Washington Metropolitan Area Transit Authority, Washington, DC

Washington Metropolitan Area Transit Authority (WMATA) conducted a one-year pilot program on a single bus route to evaluate cash-free boarding. The Route 79 MetroExtra was selected because it had good alternatives for those customers who wanted to continue to pay with cash (e.g., at ticket vending machines in nearby

MetroRail stations), and there was a relatively small amount of cash payments onboard this route prior to the start of the pilot program. During the pilot, the agency collected customer and operator surveys. In general, both groups liked the cash-free boarding pilot program. WMATA also conducted a detailed technical evaluation of the program. However, operational changes such as running-time savings showed limited, if any, impact. After the pilot program ended, WMATA resumed



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Starting this year, WMATA's 20-year-old combination SmarTrip card-cash fareboxes will be upgraded on more than 1,500 buses. The new bus fare collection system will allow customers to use the same payment methods, but with faster processing of coins and bills.

onboard cash fare collection on the pilot route. One lesson learned is that the agency selected a route with low cash use prior to the pilot program. This meant that there was not much room to benefit by going fully cash free.

Example 3

Tri-County Metropolitan Transportation District, Portland, Oregon

The Tri-County Metropolitan Transportation District (TriMet) suspended cash fare collection onboard buses during the COVID-19 pandemic due to public health concerns. The suspension lasted for approximately six months in 2020, which gave the agency time to install barriers at the front of vehicles to protect operators. During this time, TriMet customers were encouraged to pay fares by using the account-based Hop system. The results of suspending onboard cash fare collection are unclear, since there were numerous other service and policy changes during the same time frame. TriMet intends to continue collection of cash fares onboard buses in the future.

Example 4

New Jersey Transit Corporation

Like the previous example, the New Jersey Transit Corporation (NJ Transit) temporarily halted onboard cash fare collection on bus, as well as commuter rail, service for a short period in 2020 during the COVID-19 pandemic. The primary motivation was again public health concerns. Local intrastate and commuter interstate buses implemented rear-door boarding when possible and blocked off the space around the driver at the front of the vehicle. Bus customers were encouraged to prepurchase tickets, particularly through NJ Transit's mobile fare app. However, this was on the honor system. Cash fare payments resumed onboard buses, as well as onboard commuter rail services, in the summer of 2020. The results of temporarily moving to cashless fare collection during the COVID-19 pandemic also are unclear since there were numerous other changes during this time frame.



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Bright blue and orange NJ Transit fare machines are easy to spot at Montclair State University at Little Falls. As of a year ago, the agency had installed 558 ticket vending and office machines with faster transactions, contactless payment, and mobile wallet applications. Displays provide travel information and advisories.

Example 5

The Big Blue Bus, Santa Monica, California

In the summer of 2021, the Big Blue Bus began a pilot program to evaluate cashless fare collection on their entire bus network. This was initially motivated by pandemic-related public health concerns. However, another key motivating factor included potential operational improvements. Customer surveys were conducted in advance of the pilot program, and data from the surveys were used in a Title VI Fare Equity Analysis.² Transit agency staff conducted extensive customer communication and education about contactless fare payment options and the cashless pilot program. The Big Blue Bus provided riders with one free 30-day pass to help increase adoption of contactless fare payment options, which helped to soften the initial implementation of the cashless pilot program. Once the pilot was underway, the transit agency was able to adjust schedules to shorten running times due to operational improvements.

Preliminary results from customer research conducted during the pilot

² Title VI of the Civil Rights Act of 1964 requires that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.



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The Big Blue Bus, the municipal bus line in Santa Monica, California, developed fare-change policies to promote safe, convenient, and equitable access. Administrators lowered fares, maintained onboard health and safety improvements, reduced boarding and travel times, and realigned fare products with customers' preferences.

program suggest that most riders do not intend to use cash again. However, some riders were concerned about possibly disenfranchising others who may be more vulnerable, such as the elderly or unbanked. According to recent press releases, the Big Blue Bus reinstated cash fare collection onboard buses in June 2022.³

³ Read the *Big Blue Bus News* announcement at <https://www.bigbluebus.com/Newsroom/News/City-Council-Approves-Big-Blue-Bus-Fare-Policy-Changes-to-Enhance-Customer-Experience.aspx?type=News>.

Example 6

Greater Dayton Regional Transit Authority, Ohio

Greater Dayton Regional Transit Authority (RTA) has gradually launched an account-based fare payment system known as "Tapp Pay" on their bus and paratransit system. One phase of this program included eliminating cash fare payment onboard buses, which was implemented in November 2021. To plan for this, the RTA collected rider surveys and feedback, held public meetings, and conducted community outreach as part of the Title VI

process. The RTA partnered with private companies to provide a large retail sales network where customers can load cash into their Tapp Pay accounts. One component of the RTA's Title VI Fare Equity Analysis included identifying retail sales locations that are within one-quarter mile of a bus route or transit center to help ensure that riders who want to pay cash have a ticket sales channel in proximity. As part of the new fare payment system, the RTA introduced daily and monthly fare capping, which the agency believes

is important—from an equity perspective—for those riders who cannot afford the upfront cost of a period pass. To encourage all customers to try out the new fare payment system, the RTA temporarily offered discounts on the fare-capping price. Additionally, the RTA implemented a “one more ride” policy with the Tapp Pay system. This allows customers to have a negative balance for one or two trips so that they can reload after the ride. Dayton's RTA continues to have cashless operations onboard buses more than a year later.

Conclusion

The public transit industry is slowly beginning to consider the concept of “cashless” or “cash-free” fare collection. The next few years should see a few leading transit agencies implement cashless fare collection policies onboard buses.

REFERENCE

1. Brakewood, C. *TCRP Synthesis 163: Considering the Unbanked in Cashless Fare Payment at Point of Service for Bus/Demand-Response Services*. TRB, National Research Council, Washington, DC, 2022. <https://doi.org/10.17226/26589>.

Based on the case examples, *TCRP Synthesis 163* identified the following 10 key findings and emerging trends in the public transit industry:

1. **Nascent idea:** The concept of “cashless” is a nascent idea for U.S. transit operators, and nearly all local bus operators at large- and medium-size metropolitan transit agencies in the United States continue to accept cash onboard buses.
2. **Terminology:** The industry lacks standard terminology to describe “cashless” or “cash-free” fare-collection systems. Some transit agencies prefer to say that they accept cash, just not onboard vehicles.
3. **Convenient alternatives:** One of the most critical elements in preparing for cashless fare-collection systems is to provide customers with convenient alternative options to pay cash, including a robust retail sales network and ticket vending machines.
4. **One more ride policy:** Some new fare policies—particularly “one more ride” policies that let customers have a negative balance for one trip so that they can reload—are likely to be implemented by agencies with account-based fare-collection systems that want to eliminate onboard cash fare collection.
5. **Vehicle operators:** A key motivating factor for removing cash onboard is operator health, safety, and security.
6. **Operational improvements:** Many agency staff believe that operational improvements are a potential advantage of removing cash from vehicles. However, more research is needed to quantify these effects.
7. **Facilitating all-door boarding:** Some agencies consider removing cash fare collection from vehicles to facilitate all-door boarding.
8. **Unbanked:** Transit agencies considering cashless fare collection systems want to understand unbanked riders and other populations who may have specialized needs. For example, these agencies consider how many riders are unbanked and how to meet their needs and the specialized needs of others.
9. **Title VI:** Title VI Fare Equity Analyses are likely to be needed as transit agencies plan for cashless fare-collection systems.
10. **Outreach:** Public outreach and communication are a key part of the planning process for cashless fare collection.