



Safety and Operations Committee

Board Information Item III-A

**Modal Safety Performance
Benchmarking and Improvement**

Washington Metropolitan Area Transit Authority

Board Action/Information Summary

☐ Action ☒ Information

Document
Number:
206778

Resolution:
☐ Yes ☒ No

Presentation Name:

Modal Safety Initiatives and Benchmarking

Project Manager:

Theresa Impastato

Project Department:

Safety

Purpose/Key Highlights:

To keep Metro Board and leadership informed and aligned on the key safety initiatives and performance compared to peer agencies.

One component of the Agency Safety Plan (ASP) is to establish safety targets utilizing data from the National Transit Database (NTD), which are intended to drive continuous improvement. Two key inputs to this process are benchmarking with other agencies and key safety initiatives to identify a path to meeting established targets. This outlines those items.

Interested Parties:

None.

Background:

In July 2018, the Federal Transit Administration (FTA) published its Public Transportation Agency Safety Plan found at 49 CFR Part 673. Transit operators that receive federal funds (under the FTA's Urbanized Area Formula Grants) are required to develop ASPs that specify how the Safety Management System (SMS) will be implemented over the course of a three-year period. Metro's ASP has been approved by the Senior Executive Team (SET), Board of Directors, Washington Metrorail Safety Commission (WMSC), and certified with the FTA. One component of the ASP is to establish safety targets utilizing data from the NTD that are aimed at continuous improvement. Two key inputs to this process are benchmarking with other agencies

and key safety initiatives to identify a path to meeting established targets. This outlines those items.

Discussion:

Bus Benchmarking and Performance

This analysis compares Metro's performance to peer agencies in four categories: NTD pedestrian and cyclist collisions, NTD overall collision rate, NTD employee injury rate, and NTD customer injury rate. Data are obtained from the NTD. The most recent comparison is calendar year 2023. Metro's performance is compared to seven peer agencies: City and County of San Francisco, Metropolitan Atlanta Rapid Transit Authority, Southeastern Pennsylvania Transportation Authority, Massachusetts Bay Transportation Authority, Chicago Transit Authority, Los Angeles County Metropolitan Transportation Authority, and MTA New York City Transit.

The NTD pedestrian/cyclist collision metric (i.e., pedestrians or cyclists transported from the scene for medical care) has increased slightly from 2022 to 2023; however, Metro's rate is down 30% from 2019. Nearly half of these incidents involve pedestrians attempting to board a moving bus. Beyond that, Metro has seen an increase in scooter and cyclist incidents.

The NTD bus collision rate decreased 56% from calendar year 2019 to calendar year 2023, now performing better than average among our peers. "Hit while stopped" and "Hit in rear" make up 40% of all collisions. Some of our most severe incidents have involved intersections collisions (primarily left turns, and head-on collisions), which made up 20% of collisions.

The NTD metric for injuries (both employees and customers) includes people who require transport from the incident scene for medical attention. There has been a 9% decrease from 2019. 55% of employee injuries are caused by collisions. Of note, the next highest category is slip/trip/falls, especially during the winter months.

The customer injury rate has decreased 27% from 2019 to 2023. Of note, 45% of customer injuries are related to a collision and 40% slip/trips/fall occur when the bus is in motion. These on-board injuries are usually either related to inattention, not holding the grab bars, or are caused by unexpected movement.

Bus Safety Initiatives

As part of the agency's Safety Management System and Agency Safety Plan, Bus now has Safety Risk Coordinators in place across their operation. They are staff in bus transportation and maintenance who identify, prioritize and develop mitigation plans for safety hazards. The Safety Risk Coordinators own the bus hazards and manage them for the agency. There is a maturing Safety Risk Management system in place to support them, including safety committees at the department level, which can escalate hazards of concern to the Executive Safety Committee to review and mitigate. Safety Risk Coordinators work with their management and Safety colleagues to conduct proactive safety blitzes or campaigns, for example, to help

operators safely brake or make left turns, or working groups to prevent collisions with roadside objects. In response to FTA's latest additions to their requirements of agencies, Bus staff are developing a risk reduction program to formalize many of the data-driven safety initiatives.

The bus engineering team has worked closely with their operations colleagues and drawing on industry best practice to design out safety concerns. For example, we installed stickers on bus shields next to the operator to bring awareness to and deter operator assaults. Engineers are also piloting a retrofit fully-enclosed shield to enclose the operator compartment. We're exploring whatever is necessary to keep operators safer.

Additionally, the bus team is leading a culture change. Proactive and reactive use of DriveCam is standard to coach and learn lessons from bus operators. There is a drive to use onboard bus cameras to enhance the situational awareness and responsiveness of the Metro Integrated Command and Communications Center. There is a growing emphasis on coaching to look at events on the individual level with operators, but also at a system level to develop enhancements to operator training when trends in event types are detected.

Rail Benchmarking and Performance

This analysis compares Metro's performance to peer agencies in four categories: NTD fire events, derailments, employee injuries, and customer injuries. Data are obtained from the NTD. The most recent comparison is the calendar year 2023. Metro's performance is compared to seven peer agencies: San Francisco Bay Area Rapid Transit District, Metropolitan Atlanta Rapid Transit Authority, Southeastern Pennsylvania Transportation Authority, Massachusetts Bay Transportation Authority, Chicago Transit Authority, Los Angeles County Metropolitan Transportation Authority, and MTA New York City Transit.

Metro reports fire events to the NTD based on whether a Major or a Minor reporting threshold has been met. This is most commonly evacuation of a facility or vehicle, or an injury requiring transport. In calendar year 2022, Metro saw a significant number of insulator fires that resulted in evacuation. In 2023, while Metro has had the same number of fires overall, we are performing better than average among our peers, with most of the fires classified as Minor events with less impact to customers and operations.

In calendar year 2023, Metro saw a marginal increase in derailments noted from 2019 to 2023, from 0.5 to 0.8 per 10 million vehicle revenue miles, but still remain better than most of our peers. Metro had seven derailments in 2023, with six of those being Class II vehicle derailments with minimal impact to service. In September 2023, train 406 derailed outside of National Airport after hitting debris from another train. There were no associated injuries noted.

The NTD rail employee injury rate is a representation of Metro employees injured and requiring medical transportation from the scene of the incident for safety incidents,

which excludes security-related incidents, such as assaults. Over the last five years, Metro saw a 17% increase in employee injuries, which follows the industry trends. All but two comparable agencies have seen significant increases in the last five years.

About one-third of employee incidents are slips/trips/falls. The remaining injuries include things like “sprains/strains from lifting/lowering” and “pushing/pulling.” Finally, “struck by or against” and “caught in/on/between” is the last major category of employee injuries.

The NTD customer injury rate was 18.3 customer injuries per 10 million vehicle revenue miles in the calendar year 2023. When compared to our peers, Metro had the lowest customer injury rate. Customer injuries have decreased 44% since 2019. Nearly 50% of Metro’s customer injuries occur in stations while customers are riding escalators.

The next highest category of incidents is “customers tripping on platform.” In detailed analysis conducted on these incidents, the overwhelming majority are a result of customer inattention, distraction, or perceived intoxication.

Rail Safety Initiatives

Rail operations, maintenance and infrastructure teams have formally introduced Safety Risk Coordinators to their staffs, dedicated to identification, management and ownership of hazards associated with Metrorail. This is an enhancement to what has happened before and supports the systematic implementation of the Safety Management System per Metro’s Agency Safety Plan. With this purposeful and coordinated approach, the safety data is improving to inform rail management of the most appropriate safety campaigns to deter or even prevent safety events.

Central to the success of both rail and bus safe operations is the Metro Integrated Command and Communications Center launch and evolution since October 2023. We have seen the earlier benefits of centralized coordination and decision-making, and these safety benefits are sure to grow as the function continues to mature in 2024.

There has been a marked increase in the scale and quality of customer engagement. This increases customers’ awareness and confidence in a safe system. The spring saw an extensive marketing campaign covering topics such as Metro ambassadors, enhanced police patrols, new faregates, and station maintenance and crisis intervention specialists active across the network. Efforts continue to improve messaging in stations to tackle a range of safety-related issues like escalator falls or wayfinding at L’Enfant. Union representatives have also worked with management to ensure station managers are working outside their kiosk when safe to do so, proactively identifying hazards before incidents occur.

Innovation has been driving safety forward on the rail side, leading the industry in many respects. Proactively learning lessons and responding to unique situations, the

Chief of Fleet's engineers have designed and proved industry-leading inspections related to the wheels, brakes and power systems of our railcars. Our Safety department collaborated with rail operations to change the way Metro responds to station overruns, prioritizing contributing factors and root cause and not automatic post-incident testing of operators. We're also implementing Point and Call training (where a train operator points with their finger and says the action out loud to themselves, critical steps in their procedures), which is proven in other industries to improve performance and compliance with procedure.

MetroAccess Benchmarking and Performance

This analysis compares Metro's performance to peer agencies in two categories: collision rate and NTD customer injury rate. Data are obtained from the NTD. The most recent comparison is calendar year 2022, including data through November 2022. Metro's performance is compared to three peer agencies: Metropolitan Atlanta Rapid Transit Authority, Southeastern Pennsylvania Transportation Authority, and the Massachusetts Bay Transportation Authority.

The overall MetroAccess collision rate had a 20% increase from 2019; however, there was a year over year decrease of 44% since 2023 from our five-year high in 2022. The majority of collisions were the result of a MetroAccess vehicle being rear-ended while stopped or being broadsided at intersections. When compared to our peers, Metro's rate was about average among transit agencies.

The NTD customer injury rate decreased 33% from 2019 to 2023. 65% of injuries were related to collisions, followed by slips/trips/falls during boarding/alighting and the door-to-door service. When comparing customer injuries to our peers, Metro was better than average.

MetroAccess Safety Initiatives

Being a contractor-delivered service, MetroAccess is maturing its use of available safety data, including leading indicators before an event occurs, or data after an incident has occurred. Safety campaigns are driven by available data. For example, operators participated in extra training to improve braking practices to avoid collisions but also prevent customer injuries or complaints that may occur onboard.

Similar to rail and bus, MetroAccess continues to innovate with new ways of approaching persistent safety challenges. They are continuing to evaluate a cognitive computer-based game to test driver alertness. This is the future, and MetroAccess is the tip of the spear in experimenting and proving this technology. This is in addition to the formal fitness for duty procedures and testing, which remain in place. The MetroAccess vehicles have an advanced driver attention warning system (which many modern vehicles are also fitted with) to flag any abnormal or potentially unsafe activity by the operator (e.g eating while driving or nodding of the head). This data is not only used during collision investigations, but proactively as a management tool to intervene and support operators prior to a safety event occurring. Similarly, the mobile eye is technology that assesses the environment outside the vehicle and alerts the

operator to hazards (such as pedestrians or obstructions) to prevent collisions. The software uses Artificial Intelligence to continually improve its accuracy and performance.

Finally, there has been a drive over the last couple of years to change the culture and put safety at the heart of every action and procedure for MetroAccess operators and support staff. "Locked into Safety" is a campaign run in recent months to promote proactive thinking and action, creating a mindset where reporting safety problems is part of everyday duties. The results demonstrate the positive results of this continued focus and effort.

Funding Impact:

The implementation of SMS through the noted initiatives is accounted for in the budget.

Previous Actions:

As documented in the ASP.

Next Steps:

Implementation of SMS throughout Metro is planned as a multi-year process. No change to the timeline is proposed. The Operations Department has been prioritized for baseline implementation. Implementation in support offices will follow that of operational departments.

Recommendation:

Information Only

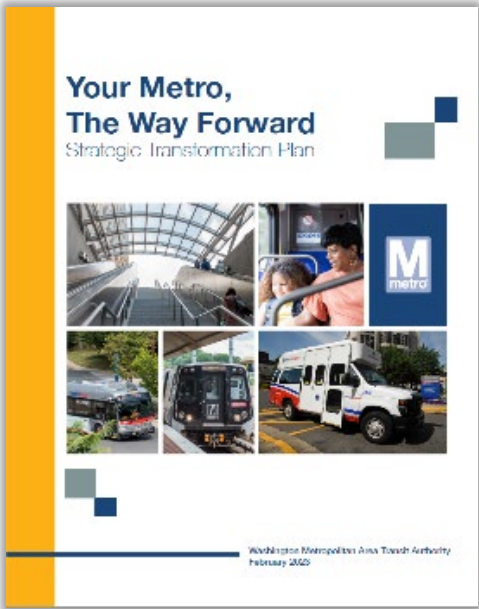
Modal Safety Benchmarking & Initiatives

Safety & Operations Committee



Strategic Transformation Plan: Guides long term strategy and day-to-day decision making of Metro over the next five + years

Modal Safety Benchmarking
and Initiatives



Guiding



Day-to-day decisions

- Customer interactions
- Service schedules
- Communications



Long-term strategy

- Budget allocation
- Capital improvements
- Priority projects



Goals — Our priorities to achieve the vision

Service Excellence







Talented Teams

Regional Opportunity and Partnership

Sustainability



Safety Performance Benchmarking

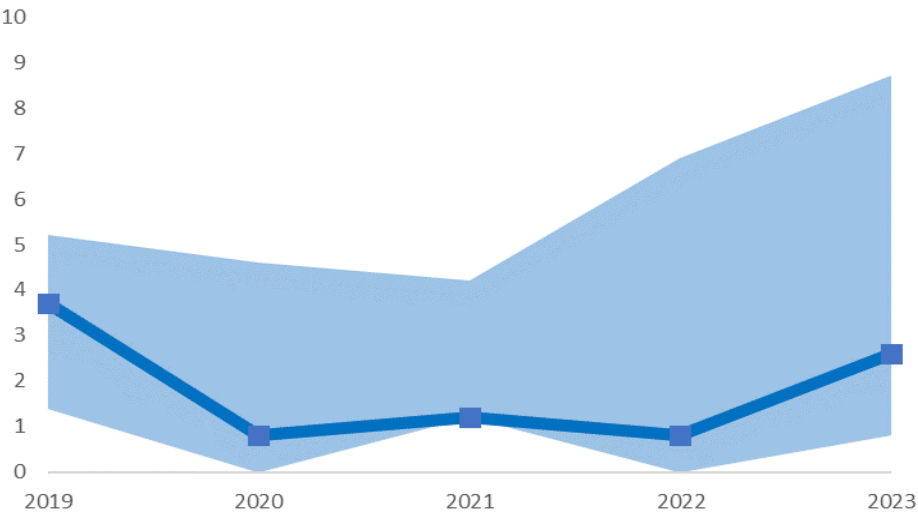
- Metro's safety performance is benchmarked against **eight peer agencies**:
 - Chicago – CTA 
 - Boston – MBTA 
 - Atlanta – MARTA 
 - San Francisco – BART/MUNI  
 - Philadelphia – SEPTA 
 - Los Angeles – MTA 
 - New York – NYCT 
- Each mode's safety performance is shown as a **trend over the past five years** using National Transit Database (NTD) data, including data up to December 2023
- Rates are **normalized across agencies** by the number of incidents per 10 million vehicle revenue miles
- Utilize benchmarking and initiatives in the target-setting process for next year

Bus Performance compared to peer agencies: 2019 - 2023

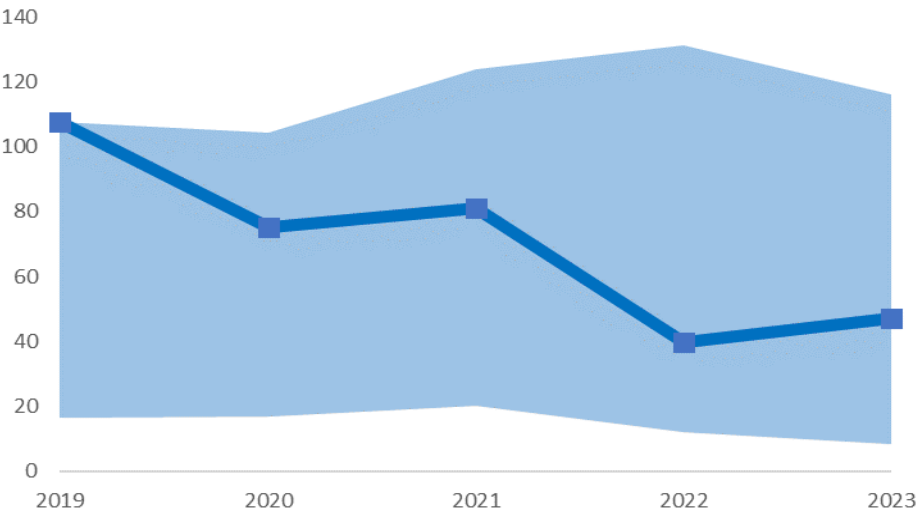
Modal Safety Benchmarking and Initiatives

Peer agency performance range
WMATA

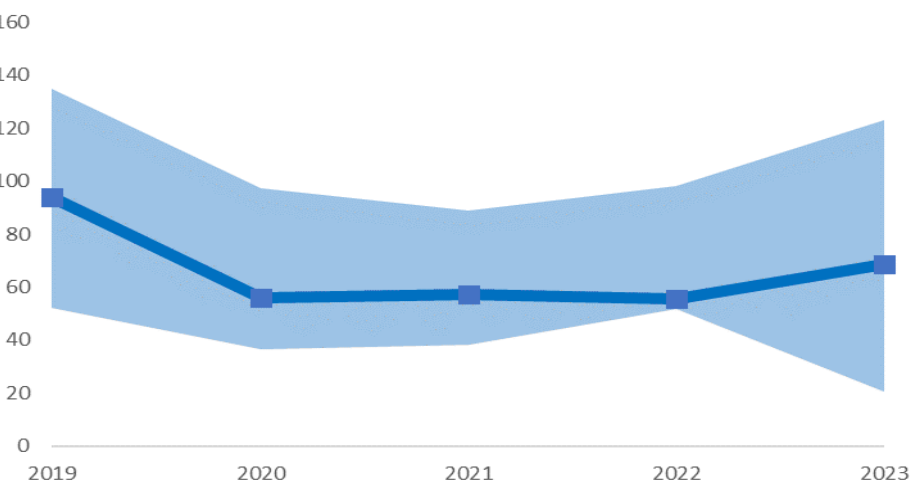
1 Bike/Pedestrian Injuries – Better than Industry



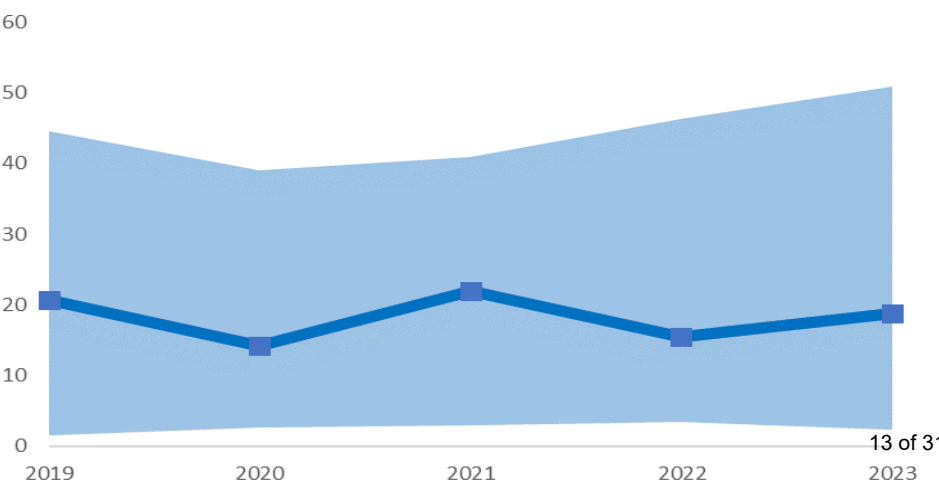
2 Collisions – Better than Industry



3 Customer Injuries – Aligned with Industry



4 Employee Injuries – Better than Industry



Bus Safety Initiatives

- **Safety Risk Management**
 - Safety Risk Coordinators & safety committees
 - Data-driven safety blitzes
 - Fixed object collision working group
 - FTA-required risk reduction program
- **Enhanced Design**
 - Assault messaging on bus shields
 - Testing fully-enclosed operator compartment
- **Changing Culture**
 - Enhanced use of DriveCam and cameras
 - Collaborative coaching
 - Frontline supervisory oversight

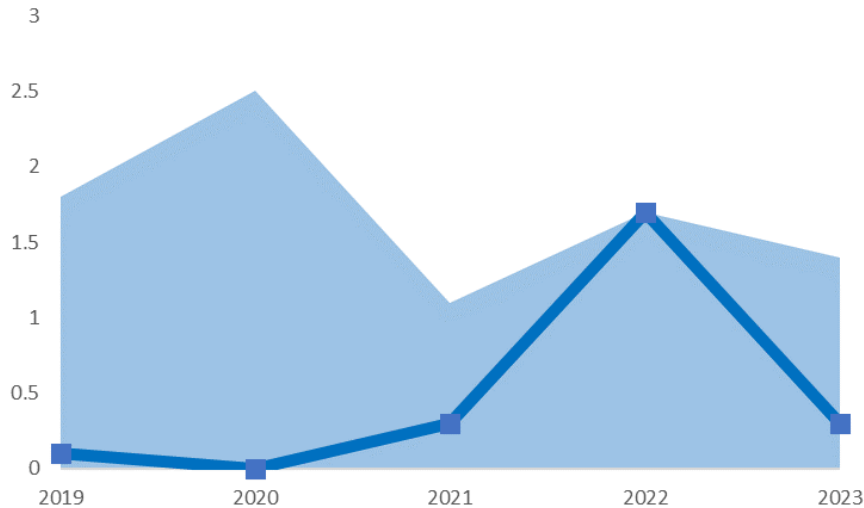


Rail Performance compared to peer agencies: 2019 - 2023

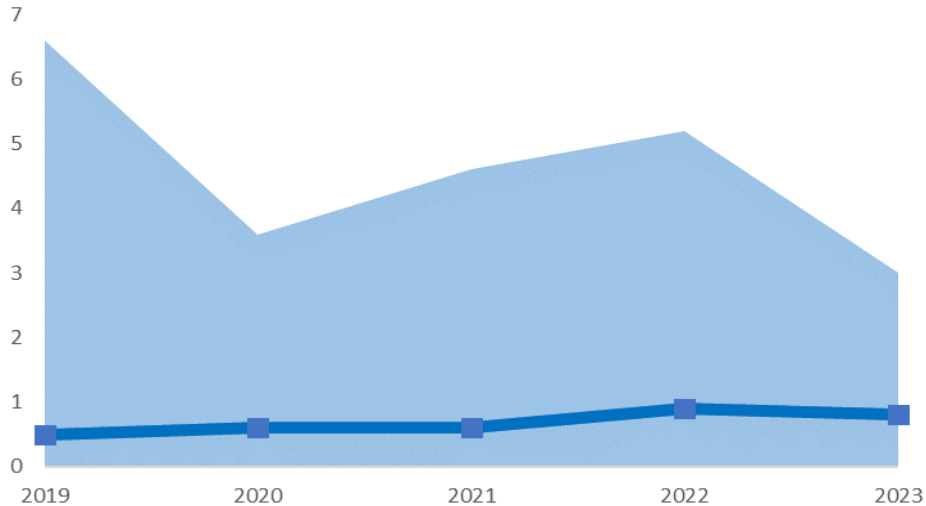
Modal Safety Benchmarking and Initiatives

Peer agency performance range
WMATA

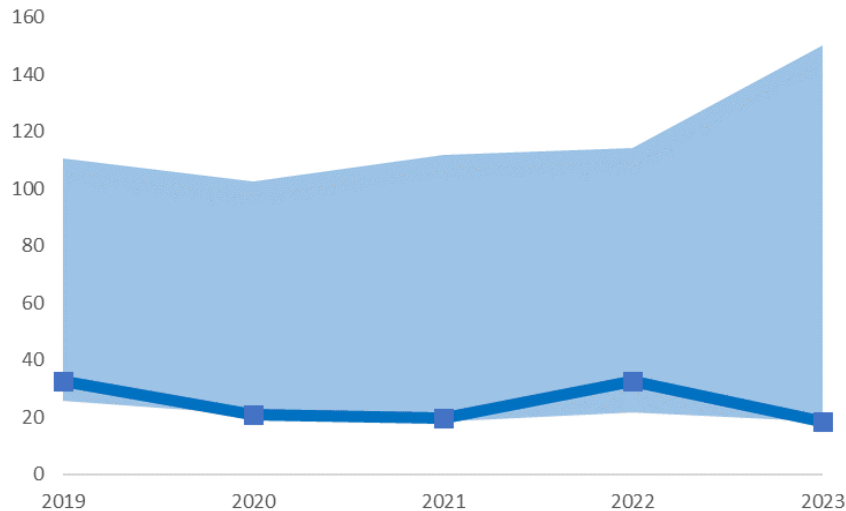
1 Fire Events – Better than Industry



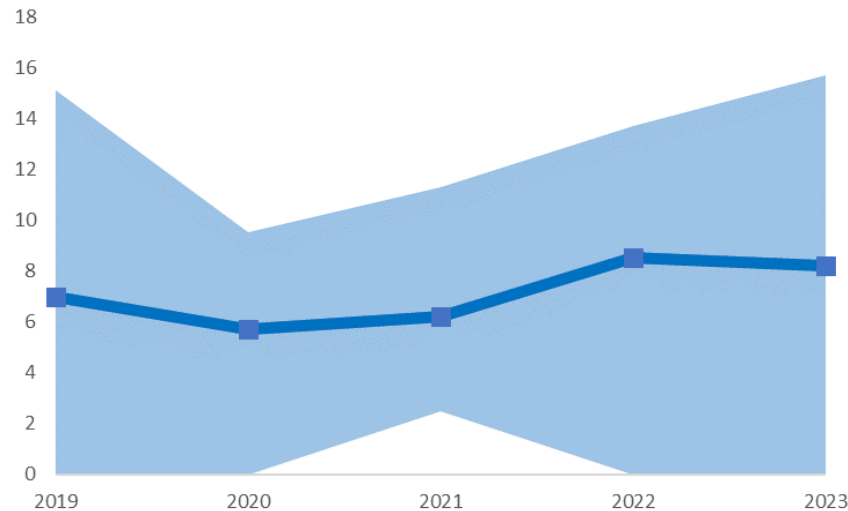
2 Derailments – Better than Industry



3 Customer Injuries – Industry Leader



4 Employee Injuries – Aligned with Industry



Rail Safety Initiatives

- **Safety Risk Management**

- Safety Risk Coordinators & committees
- Data-driven safety campaigns
- Metro Integrated Command & Communications Center

- **Customer Engagement**

- 2024 safety marketing campaign
- Targeted messaging e.g., escalators
- Station Managers out of kiosk

- **Innovative Programs**

- Enhanced railcar inspections
- Proactive station overrun response
- Point and Call training program

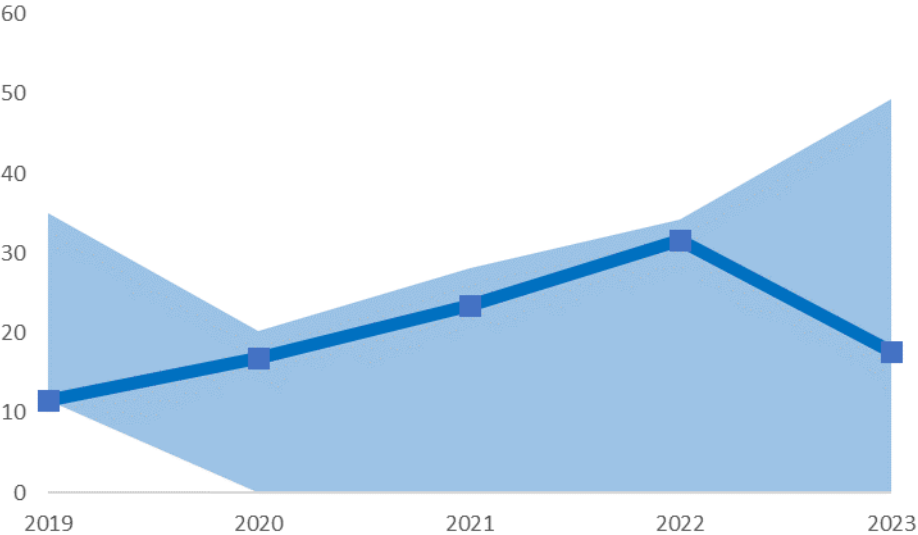


MetroAccess Performance compared to peer agencies: 2019 - 2023

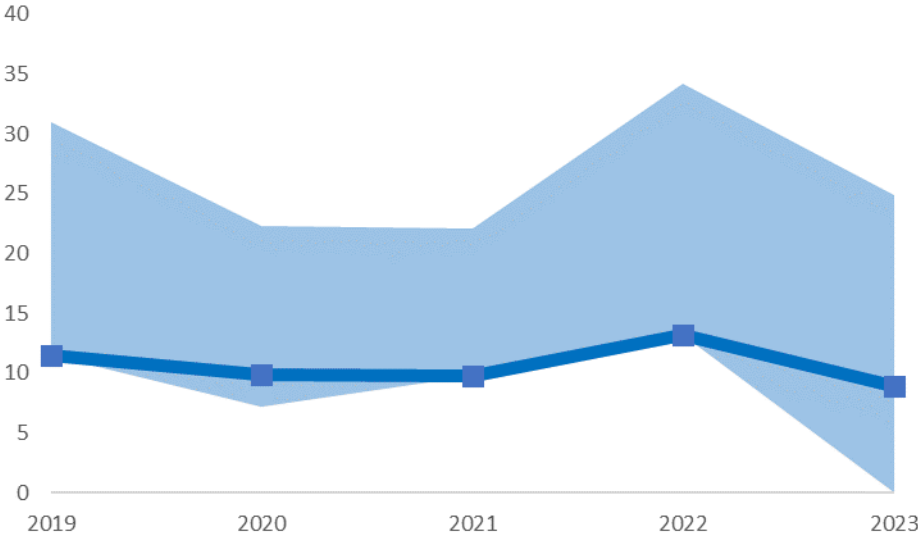
Modal Safety Benchmarking
and Initiatives

Peer agency performance range
WMATA

1 Collisions – Aligned with Industry



2 Customer Injuries – Better than Industry



MetroAccess Safety Initiatives

Modal Safety Benchmarking
and Initiatives

- **Safety Risk Management**
 - Data-driven campaigns e.g., braking practices
 - Increased wheelchair securement certification
- **Innovation**
 - Cognitive game to test driver alertness
 - Driver Attention Warning System
 - ‘Mobile Eye’ for collision avoidance
- **Culture Change**
 - “Locked into Safety” campaign

