

NATIONAL  
ACADEMIES

Sciences  
Engineering  
Medicine

**TRB** TRANSPORTATION RESEARCH BOARD

# TRB Webinar: Measuring and Managing Fare Evasion

*December 15, 2022*

*1:00 – 2:30 PM*

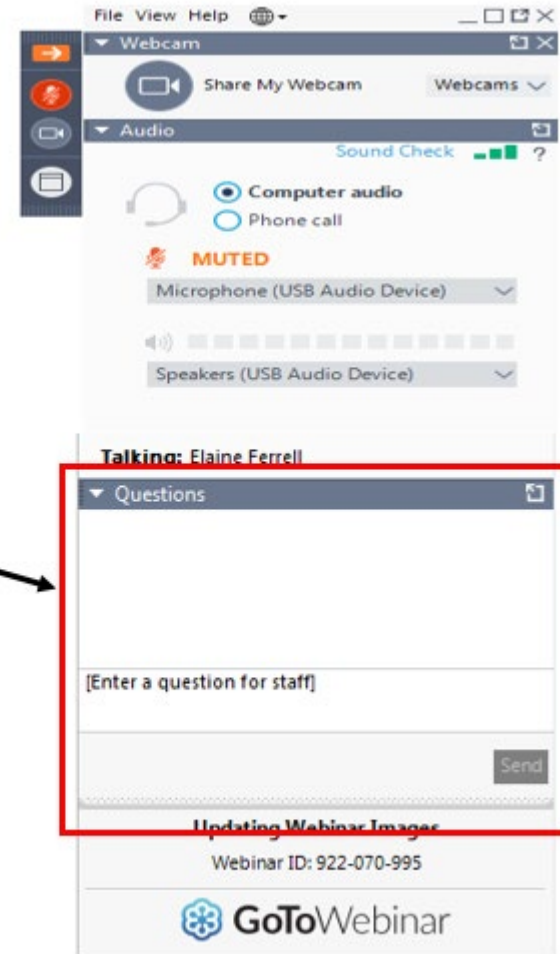


# Learning Objectives

- Identify leading fare enforcement practices
- Implement strategies to improve fare compliance

# Questions and Answers

- Please type your questions into your webinar control panel
- We will read your questions out loud, and answer as many as time allows



# TCRP 234: Measuring & Managing Fare Evasion

---

## TRB Webinar

December 15, 2022

### Moderator Principal Investigator



**Laura Wolfgram**  
Independent Consultant  
Transit Policy & Planning  
laura.wolfgram@gmail.com

### Presenters Key Researchers



**Kirstie Hostetter**  
City of Boston  
Transportation Planner  
kirstie.hostetter@boston.gov



**Andrew Amey**  
Amey Consulting  
Principal  
andrew@ameyconsult.com



**Amy Martin**  
Four Nines Technologies  
Consultant  
amy@fourninestech.com

# Motivation, Objective, Scope

---

## Motivation

Fare evasion impacts transit agency revenue, ridership, perceptions of fairness from paying passengers, and perceptions of safety

## Objective

Report on the state of fare evasion and agency initiatives on fare evasion measurement, deterrence, and enforcement

## Scope

- Definitions of fare evasion used by transit agencies across the United States
- Methods transit agencies use to calculate fare evasion
- Strategies to deter and enforce fare evasion
- Penalties for fare evasion

## Research Topics

- Defining Fare Evasion
- Factors Influencing Fare Evasion
- Fare Enforcement Program Goals
- Program Management and Oversight
- Fare Enforcement Strategies and Practices
- Methods for Measuring Fare Evasion
- Fare Evasion Penalties
- Decriminalization of Fare Evasion
- Constitutionality of Fare Enforcement
- Fare Policy and Customer Education
- Public Perception of Fare Evasion and Passenger Security
- Discrimination in Fare Enforcement
- Assisting Vulnerable Populations
- Gating and Station Hardening
- Fare Technology and Fare Enforcement

# Process

---

- Review of the existing literature, including audit reports
- Phone surveys conducted with a range of North American transit agencies
- Case studies on their approaches to measuring and managing fare evasion



# Agenda

---

- Definition of Fare Evasion and Types of Evaders/Factors
- Public Perception of Fare Evasion and Passenger Security
- Fare Enforcement Discretion
- Fare Evasion Penalties
- Strategies for Improving Fare Enforcement Outcomes for Vulnerable Populations
- Role of Police and Constitutionality of Use of Police



**Kirstie Hostetter**

City of Boston  
Transportation Planner  
kirstie.hostetter@boston.gov

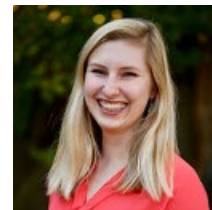
- 
- Personnel, Hiring, Training, Uniforms, and Equipment
  - Deployment Strategies and Locations
  - Methods for Measuring Fare Evasion
  - Relationship between Fare Inspection and Evasion Rates
  - Monitoring Programs for Bias/Discrimination



**Andrew Amey**

Amey Consulting  
Principal  
andrew@ameyconsult.com

- 
- Fare Policy and Customer Education
  - Fare Gate Hardening
  - Other Station Hardening and Capital Changes
  - Improving Ease of Payment
  - Fare Technology: Drawbacks and Benefits
  - Areas for Future Research



**Amy Martin**

Four Nines Technologies  
Consultant  
amy@fourninestech.com

# Definition of Fare Evasion

---

**Fare Evasion:** use of public transit services without paying the full and appropriate fare

- Defining explicit types of fare evasion helps codify and enforce fare payment
- Important to differentiate between fare evasion resulting in revenue loss and not resulting in revenue loss
- Historically, agencies focused on issuing citations for fare evasion resulting in direct revenue loss
- Failure to tap/swipe has introduced complexities when fare collection data is used for pass pricing and/or revenue sharing among agencies and with the introduction of fare capping

## Three Types of Fare Evasion

### No Ticket

- Not possessing valid ticket, transfer, pass
- Refusing to show ticket or pay
- Illegally entering station/fare-paid area without ticket

### No Valid Ticket

- Using/paying discount fare without meeting qualifications
- Using someone else's pass
- Paying less than the correct fare

### Ticket Forgotten

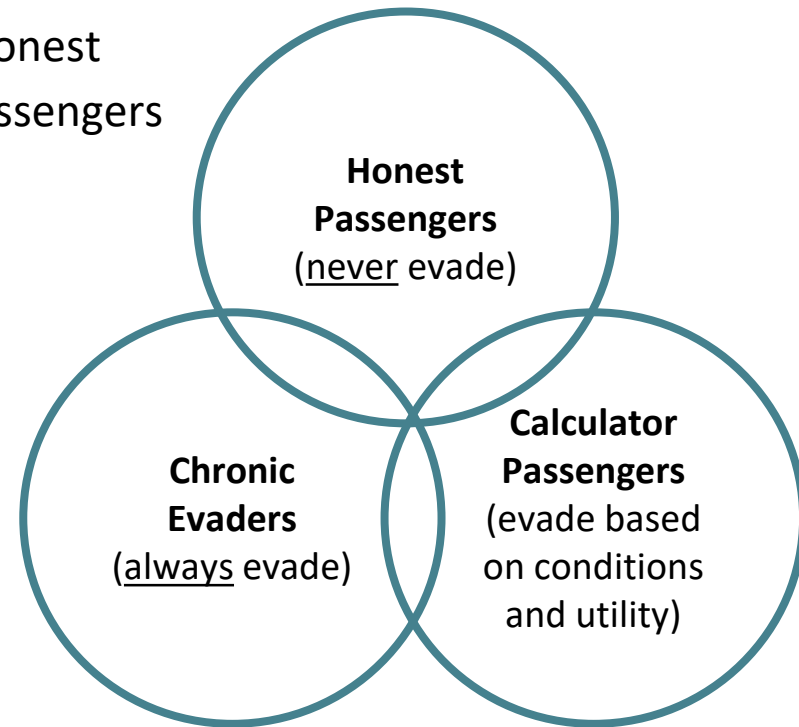
- Not carrying pass/forgot at home
- Failing to tap/swipe pass prior to boarding
- Eligible for discount fare but not carrying proper proof of eligibility



# Types of Fare Evaders

---

- Understanding the types of fare evaders and factors that influence fare evasion can enable an agency to better **understand potential causes of fare evasion and identify strategies to address fare evasion**
- Passenger can be divided into three subsets: honest passengers, chronic evaders, and calculator passengers
- While honest passengers always pay and chronic evaders always evade, a subset of passengers evade based on the conditions and the utility of evading versus paying the fare
- These **“calculator passengers” are sensitive to inspection levels, fares, and fines**. They may also respond to strategies to increase compliance by creating a culture of paying through education and customer service



# Fare Evasion Factors

---

Factors that Influence Fare Evasion		
Psychological	Structural	Demographic
<ul style="list-style-type: none"><li>– Satisfaction</li><li>– Likelihood of being inspected</li><li>– Passenger's norms and values</li></ul>	<ul style="list-style-type: none"><li>– Vehicle design</li><li>– Operating characteristics</li><li>– Infrastructure design</li><li>– Fare policy</li></ul>	<ul style="list-style-type: none"><li>– Education</li><li>– Employment</li><li>– Income</li><li>– Gender</li><li>– (Dis)ability</li><li>– Race/ethnicity</li></ul>

**Given the different types of fare evaders and fare evasion factors, one-dimensional strategies to enforce fare payment are unlikely to be effective**

# Public Perception

---

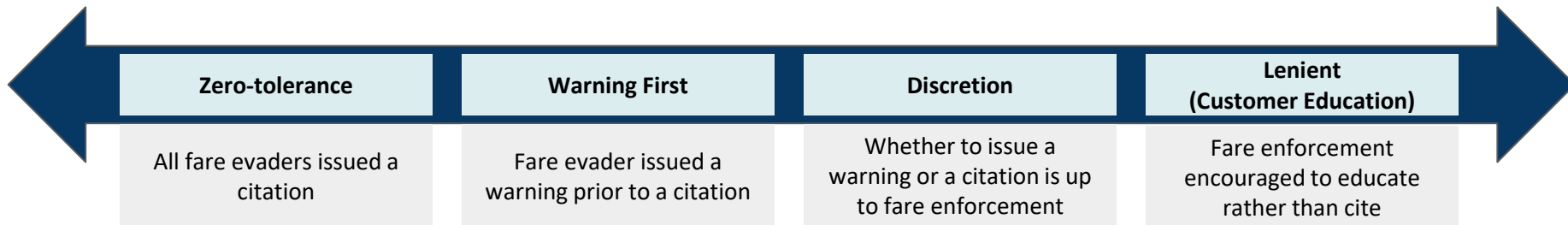
- **Perception that other passengers are not paying influences the likelihood an individual will pay their fare and the perception of the agency**
- Code of Conduct policies can establish rules to control safety, security, and quality of life for transit users
- Increasing security presence and fare inspections is often positively received by passengers
- Increasing fare enforcement presence is a balancing act because **increased fare enforcement can exacerbate public feelings about sensitivities to over-policing and concerns about criminalizing poverty**
- Trend towards civilian ambassadors to increase presence while responding to sensitivities related to over-policing
- There is also an **increasing focus on fare compliance rather than enforcement**

## Public perception of fare evasion influences:

- Fare evasion levels
- Sense of safety and security
- Perception of management and performance of the transit system

# Fare Enforcement Discretion

- Discretion can be considered as a **continuum from zero-tolerance to lenient**
  - Some agencies focus on educating customers rather than issuing citations; others remove discretion to improve consistency in handling fare evaders
  - Zero-tolerance and warning first policies emphasize the importance of fare payment and ensuring that passengers are treated consistently, eliminating confusion about fare payment requirements
  - Discretion (and leniency) allows personnel to read the situation and determine how best to handle it and provides opportunities to educate customers about fare payment requirements and options



**Fundamental trade-off** - Reduce potential for bias and discrimination through zero tolerance vs. educating passengers to increase fare compliant behavior

A **formal discretion policy and procedures** with detailed scenarios can provide guidance and prescriptive steps to enable discretion while minimizing bias and discrimination

# Fare Evasion Penalties

---

Fare evasion may be considered a **criminal, civil, or administrative violation**, depending on codes or ordinances

**Criminal:** either a misdemeanor or an infraction

- A misdemeanor can result in the offense becoming part of a criminal record and possibly lead to imprisonment
- An infraction, which is less severe (similar to a traffic stop for a minor moving violation and other low-level misconduct), usually only requires payment of a fine

**Civil:** noncriminal and punishable by a fine enforced through the civil court system

**Administrative:** transit agency has implemented an administrative review and resolution process to handle violations in-house

# Decriminalization of Fare Evasion

---

- Increasing interest in **decriminalizing fare evasion and developing in-house administrative resolution** options
  - Civil or administrative penalties better align with the violation
  - Criminal penalties for fare evasion are onerous for those who are most affected by them
  - Concerns that issuing criminal citations for fare evasion is criminalizing poverty
  - Concerns about racial disparities in fare-related stops and citations
- Most agencies surveyed have decriminalized fare evasion but retained ability to issue criminal citations for more serious infractions (e.g., fraud)
  - In a few instances, state legislatures have explored changes to state code that would prevent transit agencies from issuing criminal citations or arresting individuals for failure to provide identification or providing false information
  - Decriminalizing fare evasion may pose challenges for fare enforcement since the name provided may be a preferred name and not align with a legal name or may be a false name

*Prosecuting even a low-level offense like fare evasion can create spiraling negative consequences for those charged – including a permanent criminal record and, for undocumented residents, potential deportation – and does not make our city safer.*

- David R. Jones, New York Municipal Transportation Authority Board Member

# Administrative Resolution of Fare Violations

---

- Administrative resolutions minimize interactions with court system by enabling individuals to resolve citations with the transit agency directly
- Two ways to offer administrative resolutions:
  - **In-house resolution process:** lifecycle handled fully in-house
  - **Diversion programs:** individuals have a set time to resolve directly with transit agency before transmitted to the court system
- **Advantages:**
  - Reduced interaction of individuals with court system
  - More cost effective: reduced court caseload and lower costs
  - Increased control over penalties, including lower fines (and reduced fines for early payment) than through court system, and opportunity to offer alternative resolution options
  - Revenue from paid fines retained by transit agency
- **Disadvantages:**
  - Require software, hardware, and/or additional staffing to administer and collect fines

## Alternative resolution options may include:

- Reduced fines for early payment
- Payment plans
- Enrollment in a discount fare program
- Transit school
- Community service
- Loading value to smart card account

# Strategies for Improving Fare Enforcement Outcomes for Vulnerable Populations

---

- **Decriminalizing fare evasion and exploring administrative penalties** to minimize long-term negative consequences of being cited
- Revising **fare enforcement policies and procedures** to support agency equity and social justice goals
- **Monitoring fare enforcement outcomes** to identify inequitable outcomes and potential discrimination
- Implementing new **training programs** to change the fare inspection culture and improve fare enforcement interactions with vulnerable populations
- **Demilitarizing uniforms** to make fare inspectors more approachable and differentiate them from police and ICE
- Developing **public education campaigns** to counter misperceptions of the role of fare inspectors
- Participating in **community events** to improve community relationships
- Partnering with organizations to **translate materials** into the most widely spoken languages
- Deploying **multidisciplinary outreach teams** with mental health technicians and caseworkers to persuade individuals in crisis to accept help and connect them to resources
- **Reevaluating the role of police** in communities that have experienced over-policing



# Role of Police in Fare Enforcement

---

- Agencies are **decreasing use of police and instead using civilian personnel** for fare enforcement, in particular for proof-of-payment inspections
- Agencies are limiting law enforcement's role to aspects of fare enforcement that civilian personnel may not have the authority to perform
- Increasing use of civilians responds to the complicated relationship between law enforcement and vulnerable communities
- There can also be **legal and operational challenges** to the use of police officers for fare inspections:
  - ID verification process for police requires full NCIC check for outstanding warrants and missing person information, resulting in potential escalation of fare evasion violation
  - Recent state laws (e.g., Racial and Identity Profiling Act in California) limit the ability to use police officers as demographics are required for all police interactions, making use of police officers prohibitively difficult for proof-of-payment inspections
  - There continue to be legal challenges to the constitutionality of proof-of-payment inspections conducted by police officers

# Constitutionality of Use of Police

---

- Fourth Amendment to the **U.S. Constitution protects people against unreasonable searches and seizures** without a warrant or probable cause
- Warrantless stops are permitted as long as law enforcement has a reasonable and articulable suspicion that a violation occurred (e.g., observed fare evasion)
- **Administrative searches are an exception** and are permissible without probable cause or individualized suspicion requirements
  - As such, police officers can conduct proof-of-payment inspections as long as the conditions for a valid administrative search are met
  - Nonetheless, there have been a number of court cases in the United States regarding the constitutionality of fare enforcement
- While the court decisions have not resulted in binding precedent, some U.S. agencies have **proactively updated their policies or procedures** in response to the rulings

# Decreasing the Use of Police for Proof-of-Payment Inspections

---

- **Use of police officers for fare enforcement is more common on gated systems** without proof-of-payment inspections, as the officers can observe someone fare evading by illegally entering the station
- Most of the transit agencies surveyed only **use civilian personnel to conduct proof-of-payment inspections**
  - In addition to minimizing legal challenges, use of civilian personnel enables peace officers to address matters that require police officers and minimizes fare enforcement costs
- Two of the agencies surveyed were in the process of requesting authority from their legislatures to use civilian personnel (one was successful)
- A challenge with use of civilian personnel is limitations on their authority (e.g., inability to detain, arrest, request identification)
- It is also important to **consider safety of civilian fare enforcement personnel**
  - Often deployed in teams for security purposes and to more efficiently and effectively conduct inspections
  - Some agencies team security personnel, who may be armed, with civilian fare inspectors

# Fare Enforcement Strategies and Measuring Fare Evasion

- Personnel, Hiring, Training, Uniforms, and Equipment
- Deployment Strategies and Locations
- Methods for Measuring Fare Evasion
- Relationship between Fare Inspection and Evasion Rates
- Monitoring Programs for Bias/Discrimination

# Contracted vs. Agency Personnel

- Most transit agencies use **agency personnel for fare enforcement**
- Agencies that use contracted security may also use agency personnel
- The responsibilities and authorities of agency and contracted personnel may differ when deployed together
- **Contracting can give the transit agency more consistent coverage, but may limit control over hiring, training, and specific deployment assignments**
- For smaller agencies, recruiting and allowing for career advancement can be challenges, so contracting may be more effective than having in-house personnel
- Use of both agency and contracted personnel can result in tension between union and non-union positions and may not be permitted under bargaining agreements

Number of Agencies	Agency	Contracted Security	Contracted Law Enforcement
10	✓		
3		✓	
2	✓	✓	
1	✓	✓	✓
1	✓		✓
1	<i>not applicable; discontinued POP inspections</i>		

# Civilian Personnel Hiring and Training

---

- Hiring requirements are influenced by the responsibilities and authority of the personnel
- In addition to **meeting basic qualifications**, applicants may be required to take a written test, an oral exam, a physical agility test, background check, psychological test, and/or medical check
- Transit agencies are reviewing hiring requirements to **minimize barriers for applicants and increase diversity**
  - Customer service experience and ability to handle stressful situations rather than previous law enforcement or security experience
  - Identification of financial barriers (e.g., Security Guard Card, fitness tests)
- **Training for fare enforcement depends on the type of personnel** and agency
  - Requirements are different for police officers and civilian personnel
  - Police officers must go through formal training at a certified academy followed by agency training
  - Increasing number of agencies are formalizing their training programs for civilian personnel
  - Increasing emphasis on training on how to interact with diverse populations (anti-bias, youth, mental health) and de-escalation training

# Uniforms and Equipment

- Uniformed personnel rather than “plainclothes” **increase the perception that fares are being enforced** and provide a reassuring presence
- Uniforms can help **distinguish agency personnel from law enforcement and ICE**
- Agencies are making personnel more approachable by making uniforms less “militaristic”
- Personnel who carry defensive equipment must undergo associated training
- Agencies may allow personnel to wear a protective vest; however, the cost may be prohibitive if not provided
- Especially for personnel without defensive equipment, there is an increased focus on de-escalation techniques and deployment in teams

## TriMet Personnel and Security Staff Webpage

### FARE INSPECTORS AND SUPERVISORS

#### Duties

- Assist with TriMet operations
- Enforce TriMet Code (including fare requirement)
- Respond to serious incidents, emergencies
- Report serious concerns to police, emergency responders
- Assist riders

#### Uniforms

- Navy blue pants or navy blue or beige shorts
- White uniform top or navy blue or yellow coat
- Patch with TriMet logo and “Fare Inspector”, “Rail Supervisor”, “Road Supervisor” or “Lead Supervisor” on sleeve



## Equipment for Civilian Personnel:

- Pepper spray
- Protective vest
- Body cameras
- Life-saving equipment (tourniquet, NARCAN)
- Handcuffs or flex cuffs (uncommon)
- Gun (uncommon)
- Baton (uncommon)

# Deployment Strategies

- Essential to **develop performance objectives to guide deployment** of fare enforcement resources, and assess performance with a monitoring plan
- Deployment strategies include systemwide coverage, focused deployments, sweeps
- Data from a range of sources can help in the development of deployment strategies
- Agencies must **balance equitable and fair fare enforcement and effectiveness, efficiency, and productivity**
  - Increasing sensitivity to the perception that specific populations are being targeted with focused deployments and sweeps

Deployment Strategies	
<b>Systemwide Patrols</b>	Cover the entire system at all times to provide the same probability of inspection across the system
<b>Focused Deployments</b>	Deploy on the basis of peak periods, problem areas, and ridership
<b>Sweeps</b> <i>("blitzes," "surges," "missions," etc.)</i>	Deploy teams to address problem areas or randomly deploy teams to provide systemwide coverage using unpredictable inspection patterns



# Deployment Locations

- Fare enforcement can occur at several locations, including on board vehicles, on platforms, and at gates/entry points
- **Location may vary** on the basis of deployment strategy, time of day, or configuration of the station or platform
- **Location may depend on what is allowed by codes/ordinances** and how well fare-paid areas are defined
- Location choice and time of day can impact efficiency/productivity of teams
- Increasing emphasis for **100% inspection to minimize bias and perception of targeting**

Fare Enforcement Locations	
<b>Onboard Inspection</b>	Inspect passengers on board the vehicle
<b>Fare-Paid Area</b>	Inspect passengers in the fare-paid area (e.g., waiting on the platform or as entering/exiting the platform area)
<b>Offboarding</b>	Inspect passengers as they alight the vehicle
<b>Fare Line Enforcement</b>	Observe fare payment at the fare gates or turnstiles  Position personnel at other access points (e.g., emergency exits)

# Methods for Measuring Fare Evasion

- Data collection is an important part of measuring and monitoring fare evasion
- **Fare evasion data can be collected in a number of ways**

Collection Method	Description	Benefits	Challenges
<b>Fare Evasion Audit / Fare Enforcement Survey</b>	Measure rates of fare evasion, types, reason for evasion, demographics	Can provide demographic, behavioral data, enabling identification of inequitable outcomes	Costly, ideally designed to be statistically accurate, surveyor training required
<b>Inspection Data</b>	Count of inspections, warnings and/or citations issued	Track different types of evasion, tracking is continuous	Results may not be representative of customer population
<b>Automated Passenger Counter (APC) / Fare Collection Systems</b>	Passenger counts (APC) can be compared to fare collection transactions for estimate of evasion	Systemwide, continuous data for monitoring potential evasion	No visibility into types of evasion (some types missed entirely), requires APC/fare collection calibration

- **Statistically valid audits/surveys are preferred for measuring evasion, but may be undertaken periodically due to resource constraints**

# Methods for Measuring Fare Evasion

---

$$\text{Fare Evasion} = \frac{\text{Number of Fare Evaders}}{\text{Number of Fares Inspected}}$$

- Challenges exist in calculating the numerator and denominator
  - Numerator - need to ensure all warnings and citations are actually captured including fare evasion for no valid ticket (e.g., not paying full fare, using/paying discount fare without meeting qualifications)
  - Denominator - need to ensure accurate measurement of the total number inspections
- Type of evasion and rider category information important in estimating revenue loss

## **Other key considerations when measuring fare evasion:**

- Developing a statistically valid sample plan that considers the level of precision, resources available
- Data collection with uniformed personnel vs personnel in plainclothes can change customer behavior, change fare evasion results
- Gathering demographic data can help in identifying inequitable outcomes and potential for bias/discrimination in fare inspection activities

# Relationship between Fare Inspection and Evasion Rates

---

- Some researchers have found a **direct link between fare inspection and fare evasion rates while others have found no correlation**
  - An inverse relationship was noted in several studies, whereby increases in fare inspection levels led to a decrease in fare evasion rates, often with a time lag
  - It has been hypothesized that the lack of correlation between fare inspection and evasion rates may be the result of lack of perceived risk

## Other key considerations when determining inspection levels:

- **Fare-to-Fine ratios** that affect the consequences of being caught – as the fine increases and the fare-to-fine ratio decreases, the optimal level of inspection required decreases
- **Diminishing returns** from increasing fare inspection rates once increasing fare inspections no longer impacts the perceived probability of detection
- **Cost effectiveness** of fare inspection – the marginal revenue and costs associated with increasing or decreasing the number of fare inspections

# Monitoring Programs for Bias/Discrimination

---

**Collecting, monitoring, and reporting fare evasion data** can also establish accountability and transparency by providing visibility into performance and fare enforcement

## **Monitoring Equitable Deployment**

- Consider competing goals in developing deployment plans and how they impact results - maximize compliance vs. maximizing efficiency vs. equitable deployment
- Data can help in identifying potential inequities and minimize the perception of “targeting” of specific groups

## **Monitoring for Discrimination**

- Tracking demographics of those warned and cited can help monitor potential disparities in fare enforcement outcomes
- Baselining data is critical to understanding and identifying outcome disparities

## **Monitoring Complaints**

- Effective complaint handling programs provide for independent, systematic, consistent, and appropriate reviews of complaints and comments

# Monitoring Programs for Bias/Discrimination

---

- Establishing **fare evasion baselines** is important for measuring the effectiveness of fare enforcement and setting targets to make informed decisions about fare inspection levels and staffing/resources
- There is a **common baselining problem for identifying systemic bias/discrimination** – often its assumed that the percentage of warnings and/or citations by racial/ethnic group should equal their percentage of the local population or transit ridership
- To **accurately baseline fare evasion rates by race/ethnicity**, the actual rates of fare evasion by racial/ethnic group must be measured, often through a fare evasion audit or survey. The fare enforcement outcomes (e.g., warnings, citations) can then be compared to actual baseline rates of fare evasion
- Collecting **demographic data and establishing baseline fare evasion rates by race/ethnicity** can also help in identifying whether **systemic bias or discrimination** could be affecting enforcement outcomes

# Structural Changes

- Fare Policy
- Customer Education
- Fare Gate Hardening
- Other Station Hardening and Capital Changes
- Improving Ease of Fare Payment

## Areas of Future Research

# Fare Policy

---

Fare policies, combined with customer education, can **reduce and prevent intentional and unintentional** fare evasion

**Simplified fare structures**, with fares easy to understand and use, are more likely to minimize the possibility of misinterpretation and reduce fare evasion than complex, market-based fares

Offering more **affordable fare options** increases the chances that passengers will pay. Although surveys indicate that price is less important than service quality, rankings vary by income. Cost is more important to lower-income bus riders

**Pre-paid passes** reduce the chances of fare evasion. Fare capping where passengers pay as they go introduces new complexities and challenges for fare enforcement

Benefits of **free fares** (e.g., improving affordability, attracting ridership, eliminating the costs of fare collection and enforcement, operational improvements, reduced greenhouse gas emissions) must be balanced against their costs (e.g., lost fare revenue, service sustainability, impacts on service quality and operating and capital costs)



# Customer Education

---

Educational campaigns **inform the public and passengers** about system design and fare system features, **including consequences of nonpayment**

**Public engagement** can be bidirectional, with agency staff educating customers about the fare system and customers providing perspectives and feedback to agency staff

**Interactions between fare evaders and fare enforcement personnel** can be leveraged to promote fare compliant behavior instead of exclusively assessing fines to penalize fare evasion

**Sensitivity to the audience and how the message is delivered:** campaigns that gave the appearance of insensitivity to people who cannot afford the fare and bias in fare enforcement practices and procedures have damaged public perceptions of transit agencies

# Fare Gate Hardening

## Approaches include:

- Raising gate heights
- Reducing the time that gates remain open
- Increasing gate cinching

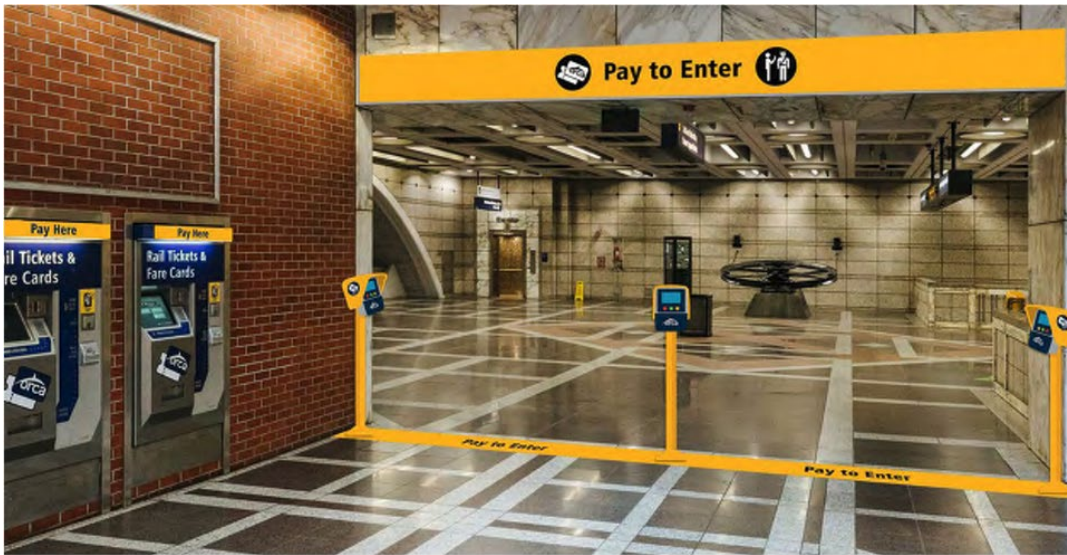
## But must consider:

- Passenger flow
- Evacuation needs
- Costs and maintenance efforts
- Passenger experience



# Other Station Hardening and Capital Changes

- Emergency exit hardening
- Egress changes
- Raising barrier heights
- Expanding fare paid areas
- Cameras and public address systems
- Strategic gating



# Improving Ease of Payment

---

Capital investments to make it easier to pay may help decrease fare evasion by improving the convenience of paying. Agencies should consider:

**Quantity of fare collection equipment:** Insufficient quantities of TVMs and validators may result in queues → some passengers may skip paying to avoid missing their train

**Equipment placement:** On-board or off-board? Relationship to fare paid area? Passenger flows? Exposure to elements? Perceived safety? Availability of power and connectivity?

**Convenient functionality:** Exact change only, restriction to cash only or credit/debit only, limited bill acceptance may prevent passengers from completing fare payment transactions

**Equipment reliability:** Reliability issues can result in passengers who have legitimately tried to pay but could not and passengers who use malfunctioning equipment as an excuse during fare inspection. Redundancy in equipment can help address

# Fare Technology: Drawbacks and Benefits

---

## Drawbacks vary by technology:

### Paper Tickets

- Susceptible to forgery and other fare evasion tactics

### Card-Based Electronic Systems

- Delays in remote loads (e.g., online) can result in passengers being unable to use value/passes they have loaded

### Account-Based Electronic Systems

- If validators are operating offline, system may allow passengers without valid fare to board

### Mobile Ticketing with Visual Validation in Proof-of-Payment Environments

- Passengers may wait to activate their ticket until they see a fare inspector

### Electronic Systems (General)

- Passholder failure to tap (loss of data, loss of revenue)
- Misuse of discount/concession fare products

## Newer electronic technologies offer benefits:

### Customer Convenience

- Increased customer convenience can help address unintentional evaders

### Increased Culture of Compliance

- Requiring everyone to tap can help counter perception that passengers are not paying

### Faster Inspection

- Quicker and easier to inspect

### Reduced Discount Fare Product Misuse

- Restrict sale of discount products to pre-verified customers using specific fare media
- Integrated IDs with smart cards/mobile apps
- Different colors/sounds on validators or displayed to operators for discount fare payment

# Areas for Future Research

---

- **Policing of Transit Systems**

*TCRP J-05 (Legal Aspects of Transit and Intermodal Transportation Programs): Topic 20-03, Policing and Public Transportation*

- **Addressing Homelessness and Other Social Issues on Transit**

*TCRP Project J-11/Task 40: Homelessness: A Guide for Public Transportation*

- **Free Fare Programs**

*TCRP Report 237 Pre-Publication Draft: Fare-Free Transit Evaluation*  
(<https://nap.nationalacademies.org/catalog/26732>)

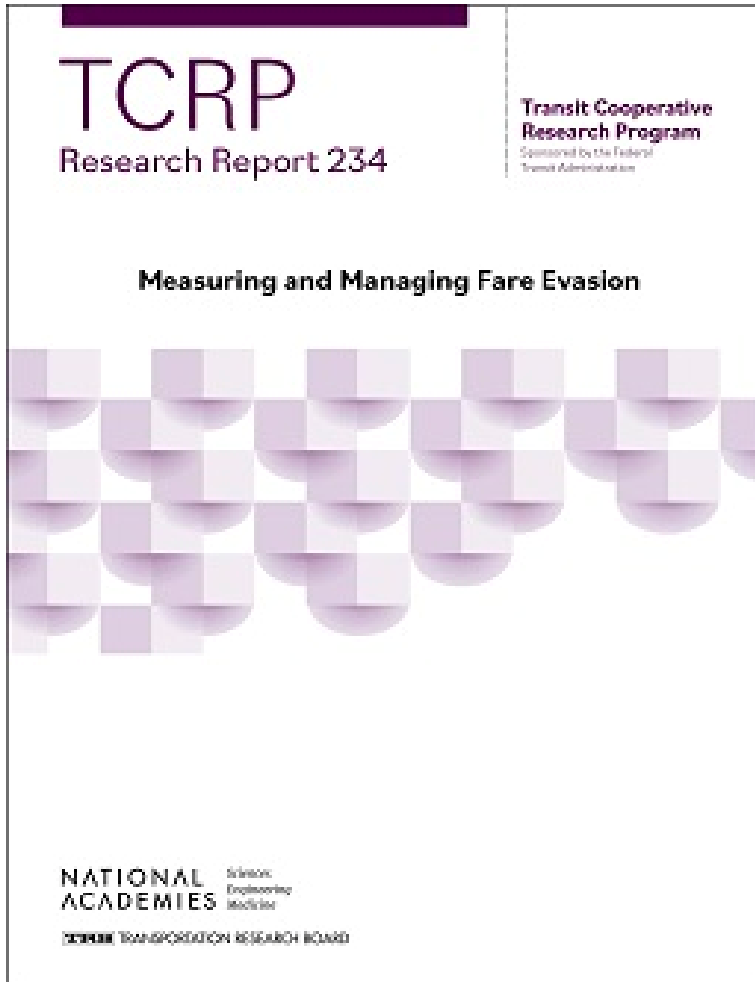
- **Standardization and Benchmarking of Fare Enforcement Performance Indicators**

- **Fare Enforcement with Implementation of All-Door Boarding Systemwide**

- **Implementing Cashless Fare Collection Systems**

*TCRP Synthesis 163: Considering the Unbanked in Cashless Fare Payment at Point of Service for Bus/Demand-Response Services* (<https://www.trb.org/Publications/Blurbs/182724.aspx>)

# Thank you!



For more information, download TCRP 234 at:  
<https://www.trb.org/Publications/Blurbs/182689.aspx>

## Moderator Principal Investigator



**Laura Wolfgram**  
Independent Consultant  
Transit Policy & Planning  
laura.wolfgram@gmail.com

## Presenters Key Researchers



**Kirstie Hostetter**  
City of Boston  
Transportation Planner  
kirstie.hostetter@boston.gov



**Andrew Amey**  
Amey Consulting  
Principal  
andrew@ameyconsult.com



**Amy Martin**  
Four Nines Technologies  
Consultant  
amy@fourninestech.com

# Upcoming events for you

**January 8-12, 2023**

TRB Annual Meeting

**January 24, 2023**

TRB Webinar: Fare-Free Transit  
Policies and Programs—An  
Evaluation Framework

[https://www.nationalacademies.org/trb/  
events](https://www.nationalacademies.org/trb/events)





# Register for the 2023 TRB Annual Meeting



Register to be part  
of the **action!**



Scan me

<https://www.trb.org/AnnualMeeting/Registration.aspx>

Follow the conversation  
**#TRBAM**

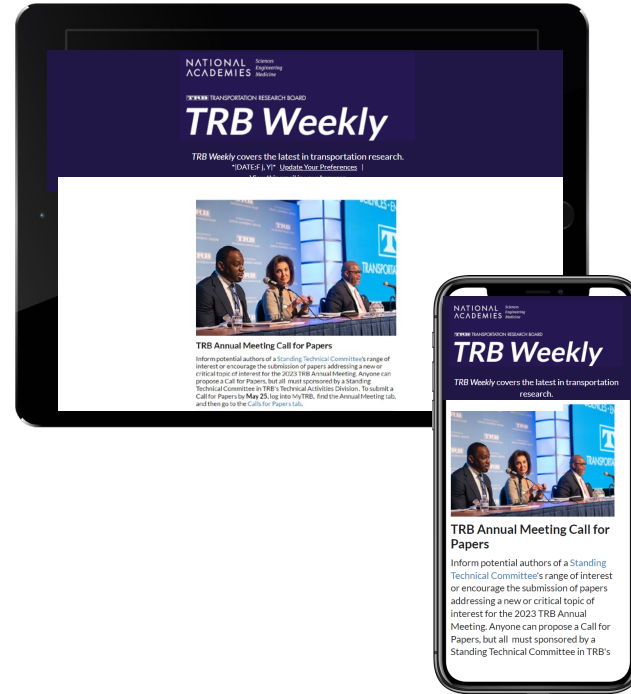
NATIONAL  
ACADEMIES *Sciences  
Engineering  
Medicine*

# Subscribe to *TRB Weekly*

If your agency, university, or organization perform transportation research, you and your colleagues need the *TRB Weekly* newsletter in your inboxes!

Each Tuesday, we announce the latest:

- RFPs
- TRB's many industry-focused webinars and events
- 3-5 new TRB reports each week
- Top research across the industry



Spread the word and subscribe!

<https://bit.ly/ResubscribeTRBWeekly>

# Discover new TRB Webinars weekly

Set your preferred topics to get the latest listed webinars and those coming up soon every Wednesday, curated especially for you!

<https://mailchi.mp/nas.edu/trbwebinars>

And follow #TRBwebinar on social media



# Get involved

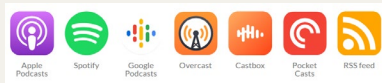
<https://www.nationalacademies.org/trb/get-involved>

- **Become a Friend of a Standing Technical Committee**

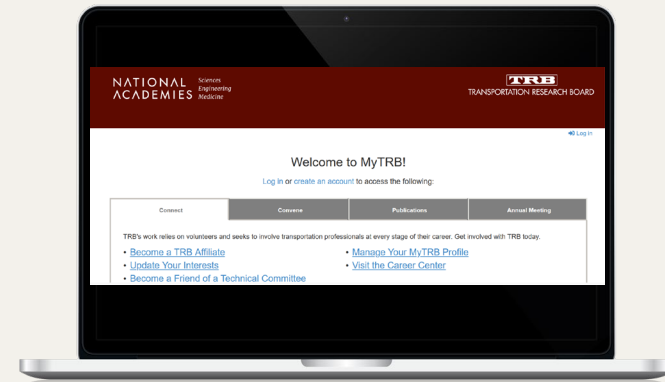
Network and pursue a path to Standing Committee membership

- **Work with a CRP**

- **Listen to our podcast**



<https://www.nationalacademies.org/podcasts/trb>



# We want to hear from you

- Take our survey
- Tell us how you use **TRB Webinars** in your work at [trbwebinar@nas.edu](mailto:trbwebinar@nas.edu)

