



SFMTA
Municipal
Transportation
Agency

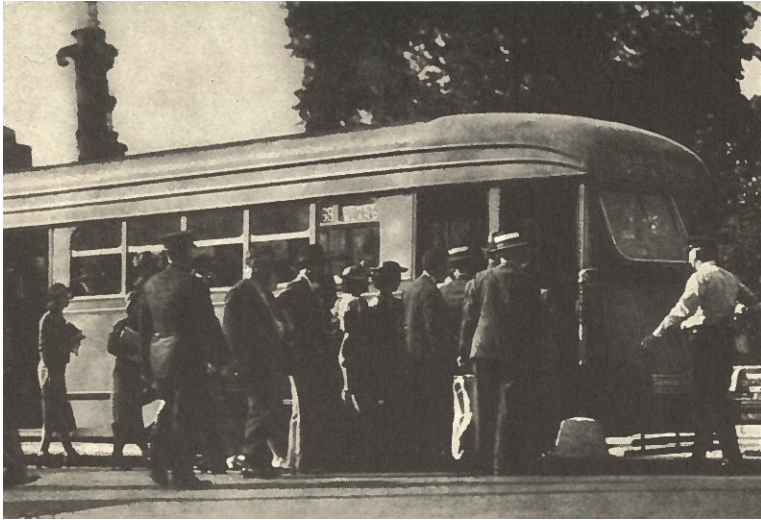
All-Door Boarding Evaluation

December 4, 2014

SFMTA Citizens' Advisory Council (CAC)

San Francisco, CA

All-Door Boarding



Brooklyn, NY (1937)



Akron, OH (1945)

- For generations, the transit industry has had to balance service speed with fare revenues
- Fare collection by the operator has required front-door boarding
- On July 1, 2012, the SFMTA became the first multimodal transit operator in North America to implement All-Door Boarding system-wide after many years of an informal practice

SFMTA's Approach

- Many cities have All-Door Boarding and Proof-of-Payment on selected light rail and BRT lines, but not a system-wide policy
- Two main challenges have precluded system-wide adoption by the transit industry

Challenge	SFMTA Approach
Enforcing fares over a large geographical transit network cost-effectively	<ul style="list-style-type: none">• Rotate Transit Fare Inspector deployment to different police districts• Creates a customer expectation that they could be checked anywhere anytime
Having ticket vending machines at every stop and incurring installation, servicing and maintenance costs	<ul style="list-style-type: none">• Permit customers to enter at the front to pay• Promote Clipper® and pilot mobile ticketing to reduce cash transactions (only about 1 of 10 boardings at busy stops at peak times)

An Agency-wide Implementation Effort

Supported by the SFMTA Board, the six-month coordinated implementation effort involved most SFMTA divisions

- Finance & Information Technology
- Sustainable Streets
 - Security, Investigations and Enforcement
- System Safety
- Taxi & Accessible Services
- Transit
 - Transit Management
 - Operations Planning & Schedules

Implementation Steps

Transit Fare Inspector Staffing Increase

- Increased active TFIs from 44 to 63 over two years

Transportation Code Amendments

- Requested that Board of Supervisors to legalize rear-door entries

Fare Survey

- Conducted abbreviated fare survey to benchmark fare compliance levels

Vehicle Preparation

- Removed “Stop” signs and affixed language-neutral decals illustrating policy

Public Outreach

- Installed car cards, outreached to community groups, held media event and created YouTube videos

Internal Communications

- Issued bulletins to Transit Operators explaining protocols and safety procedures

Communication Initiatives

Muni Opens Its Doors for Faster, More Reliable Service

Muni customers may enter through the rear doors of any bus or streetcar using the following Proof of Payment:



Clipper Card, Limited Use Ticket, Valid Paper Pass, Valid Transfer/Fare Receipt

Please note: Customers paying with cash must board through the front doors.

All-door boarding: Another way we're making your Muni better.

SFMTA Municipal Transportation Agency

Muni abre sus puertas para un servicio más rápido y más confiable

Los clientes de Muni pueden ingresar a través de las puertas traseras de cualquier autobús o tranvía utilizando las siguientes pruebas de pago:

Abordaje a través de todas las puertas: Otra forma en la que estamos mejorando su Muni.

啟開其門，為大眾提供更快捷更可靠的服務

乘客可使用下述的票類收據證明，從任何一輛公車或路軌車的後門上車。

請注意：用現金購票的乘客必須在前門上車。

願您所有車門以供上車，我們以另一種方式為您服務。



Clipper Card, Limited Use Ticket, Valid Paper Pass, Valid Transfer/Fare Receipt

SFMTA Municipal Transportation Agency

Car Cards in English, Spanish and Chinese



SF TRANSPORTATION CODE, DIVISION I, SECTIONS 72.101 & 72.104 CALIFORNIA PENAL CODE SECTION 690



Language-Neutral Vehicle Decals

All-door boarding by SFMTA Muni Taxi Streets



All Aboard with Professor Muni

"Professor Muni" YouTube Video



ALL DOOR BOARDING

Operators shall make use of the following tips when operating in revenue service and loading customers.

Ensure mirrors are properly set to see clearly along the entire length of the vehicle and beyond the rear bumper.

When pulling into the transit stop make sure the bus is parallel to the curb and that you can see all doors clearly. Be sure that no customer aboard the coach is leaning against the doors before opening them.

Park the bus so that there are no obstacles, such as puddles, mailboxes, or poles by the door. If you cannot place the bus within a foot of the curb, then for customer safety, raise the bus four feet out and parallel to the curb.

Watch for vehicles that may start up and attempt to pass on the right side of the bus.

The interlock is actuated by an electrical solenoid and is subject to failure. Always apply the Park Brake when taking on large loads, especially on hills.

If your bus is not parallel to the curb and you cannot see traffic in your mirror, move out very slowly until you can check safely for traffic.

Take extra care when servicing stops for disabled customers. Position the coach as close as possible to the curb and use the kneeling feature. Encourage disabled customers to board through the front doors in order to utilize the kneeling feature.

The following instructions explain the opening of front, middle and rear doors for all coaches and P-Line cars regardless of their home divisions.

Transit Operator Bulletin

Evaluation Methodology

Goal	Performance Metric	Data Sources
Speed the boarding process	<ul style="list-style-type: none">• Dwell Times• Percentage of Customers Entering through Rear Door	<ul style="list-style-type: none">• Physical Observations at Busy Stops• Ride-Along Observations
Reduce travel time	<ul style="list-style-type: none">• System Speed	<ul style="list-style-type: none">• Automatic Passenger Counter (APC) Travel Time Data
Maintain or improve fare compliance levels	<ul style="list-style-type: none">• Fare Compliance Levels• Total Fare Revenue	<ul style="list-style-type: none">• On-Board Fare Surveys• Financial Records

Transitioning to Official All-Door Boarding



Dwell Time Findings

The boarding distribution through each door affects dwell times

Average Dwell Times per Boarding and Alighting (2-Door High Floor Buses and Streetcars)

Boarding Distribution	Definition	Before	After	Combined
“Even”	25-75% through rear door	2.5 s	1.8 s	2.0 s
“Uneven”	<25% or >75% through rear door	4.9 s	4.1 s	4.7 s

Dwell Time Findings

All-Door Boarding has encouraged boarding customers to distribute themselves more evenly, thereby reducing average dwell times.

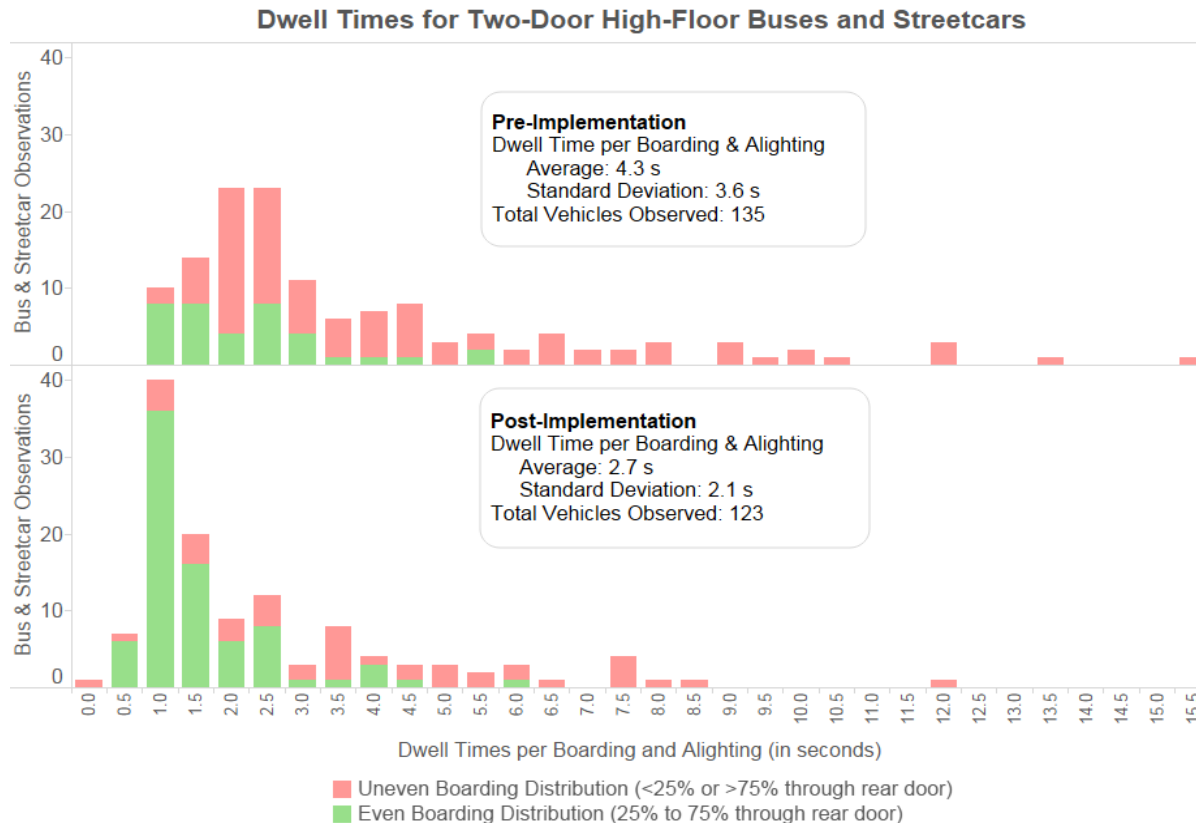
Metric	Before	After
“Even” Boarding Distribution Occurrence	28%	63%
Customers entering through rear doors	22%	48%
Average Dwell Times	4.3 s	2.7 s

All-Door Boarding has also reduced dwell time variability.

Metric	Before	After
Standard Deviation of Dwell Times	3.6 s	2.1 s

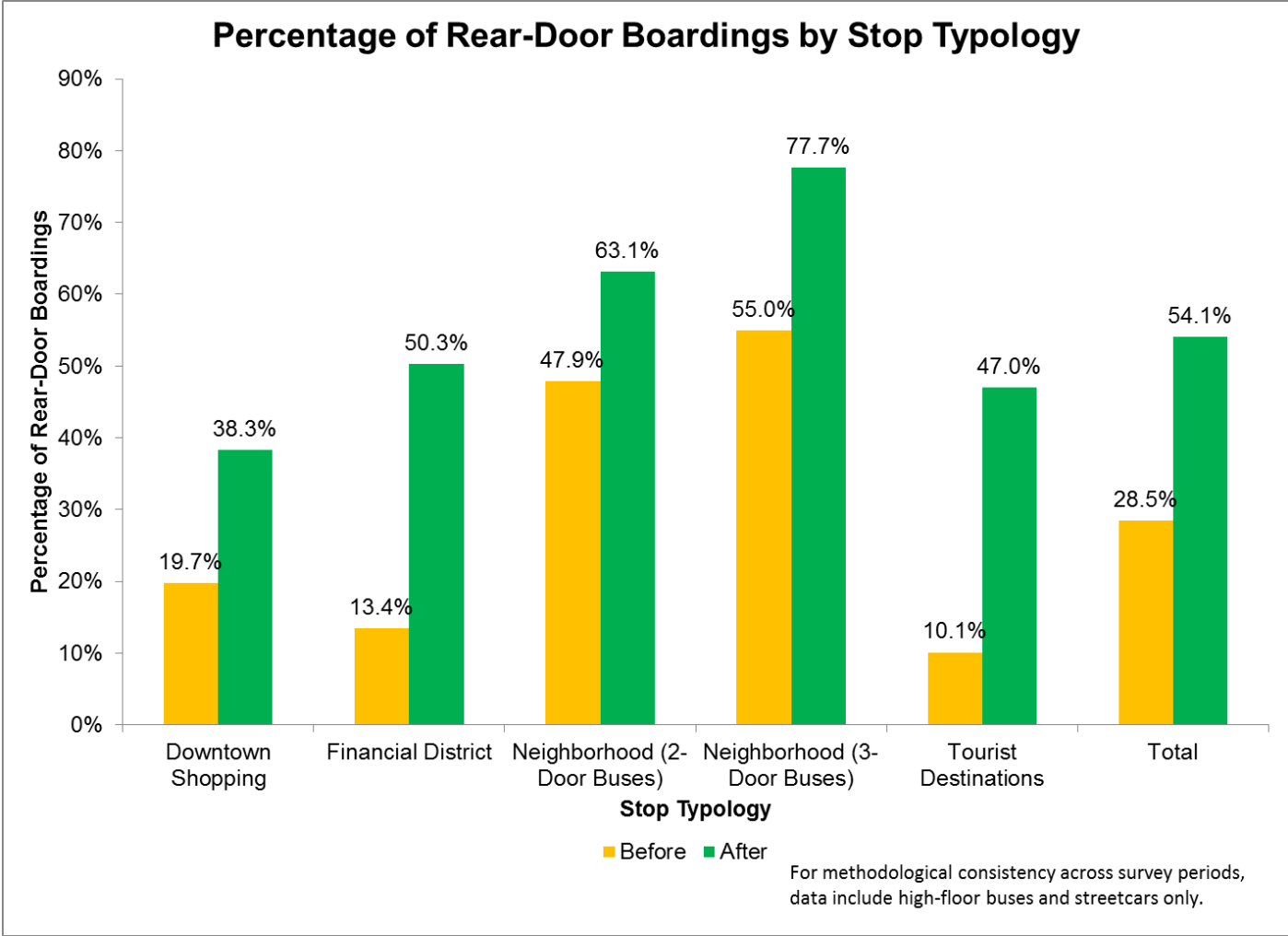
Note: Data shown above is for 2-door high floor buses and streetcars

Dwell Time Findings

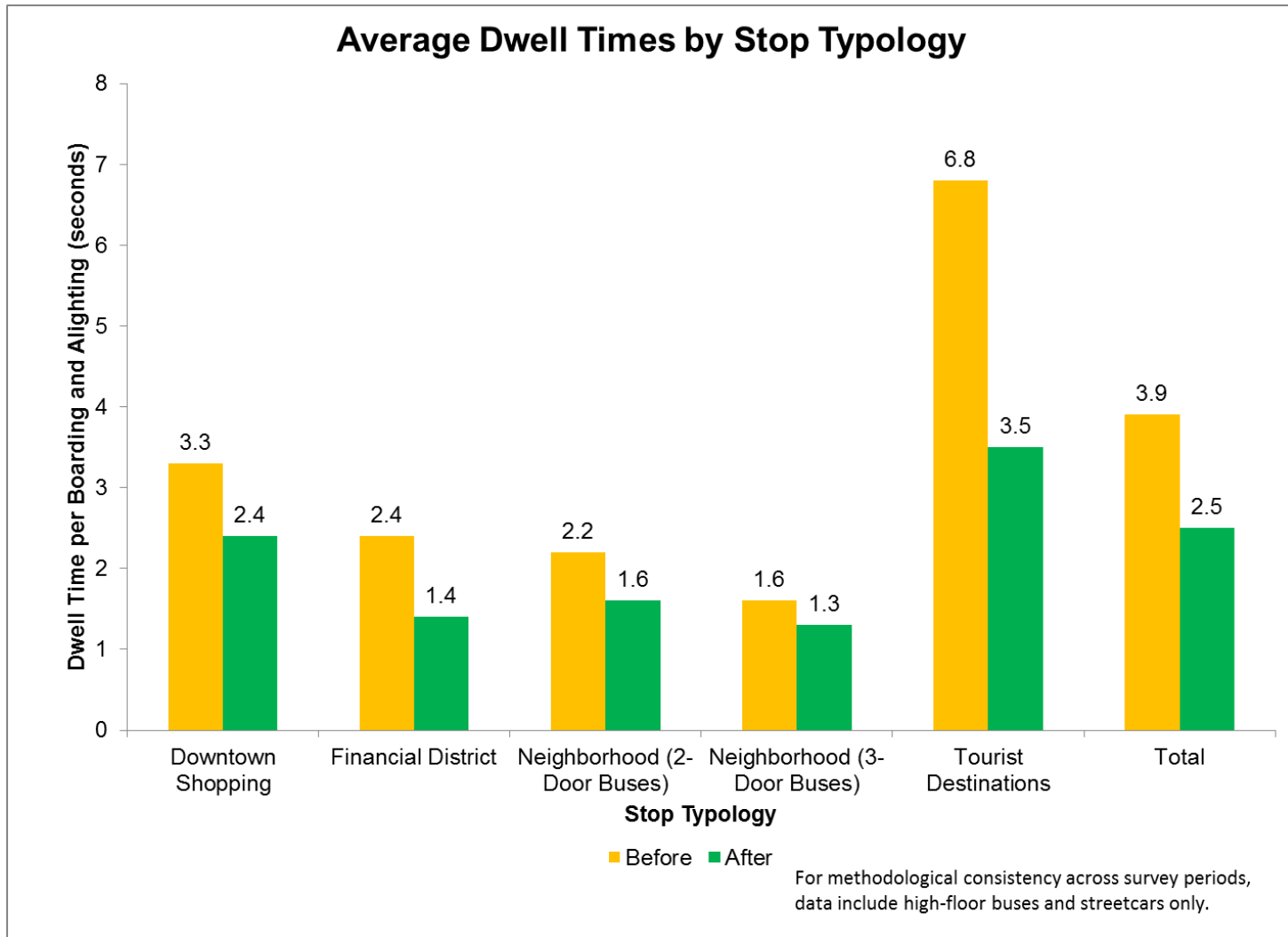


- With more rear-door entries, “even” boarding distributions have increased
- Average dwell times have decreased

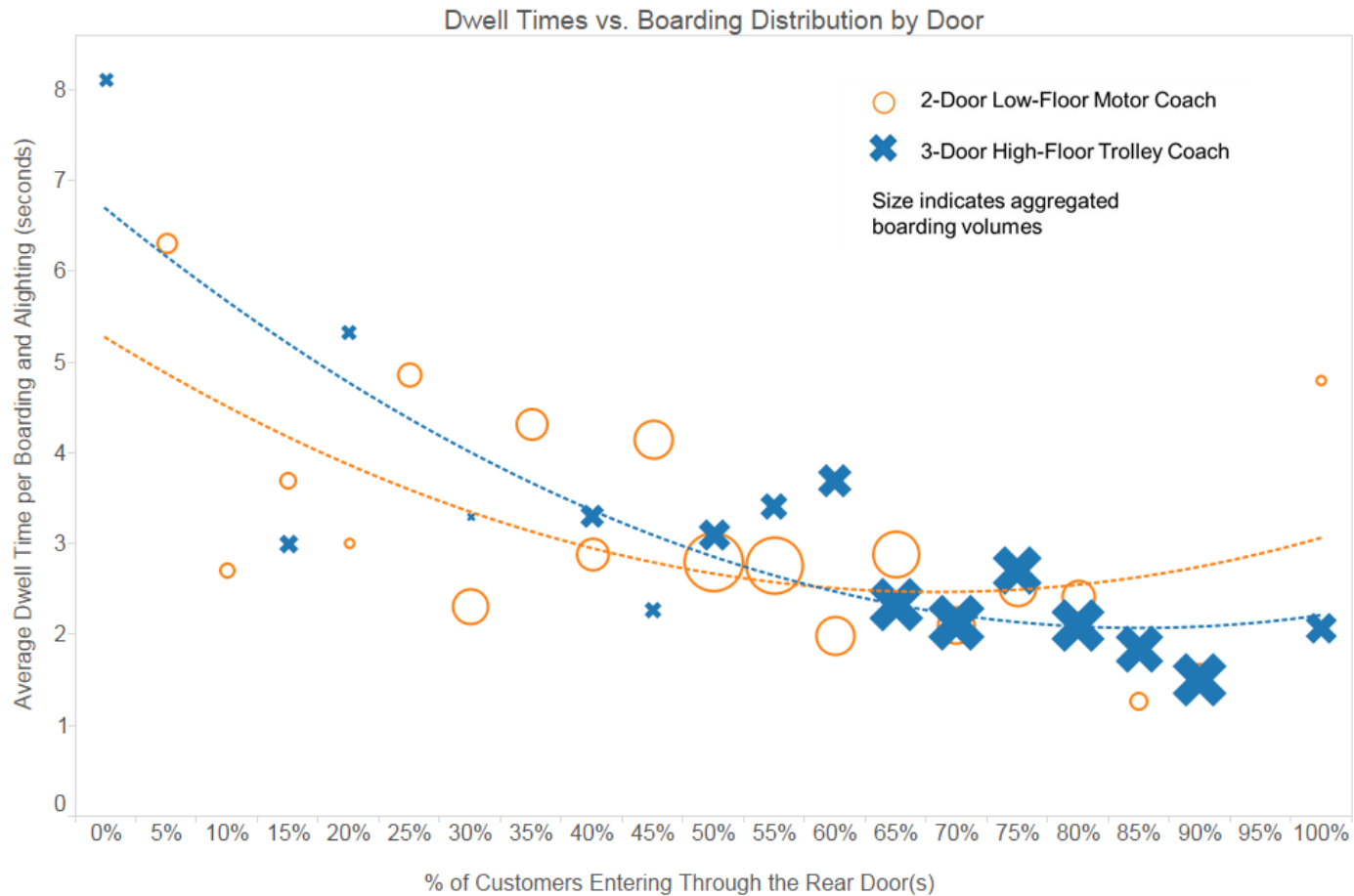
Diverse All-Door Boarding Ridership Markets



Dwell Time Reductions



Boarding Patterns and Dwell Times

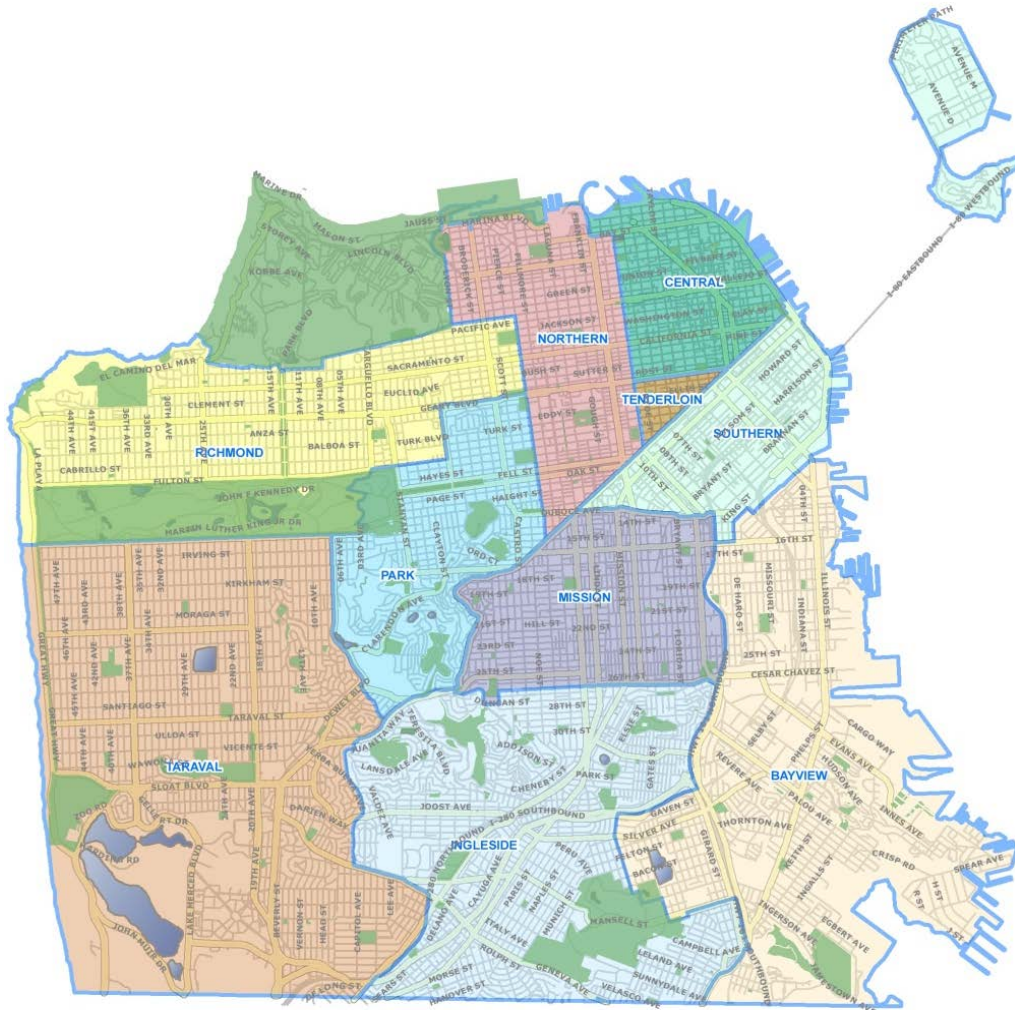


Speed

- Average bus speeds have increased 8.41 to 8.56 mph (2%) from FY 2010-2011 through FY 2013-2014
- Several factors may be reducing overall speed gains despite significant time savings at a stop level
- Approximately 80% of travel time is between stops

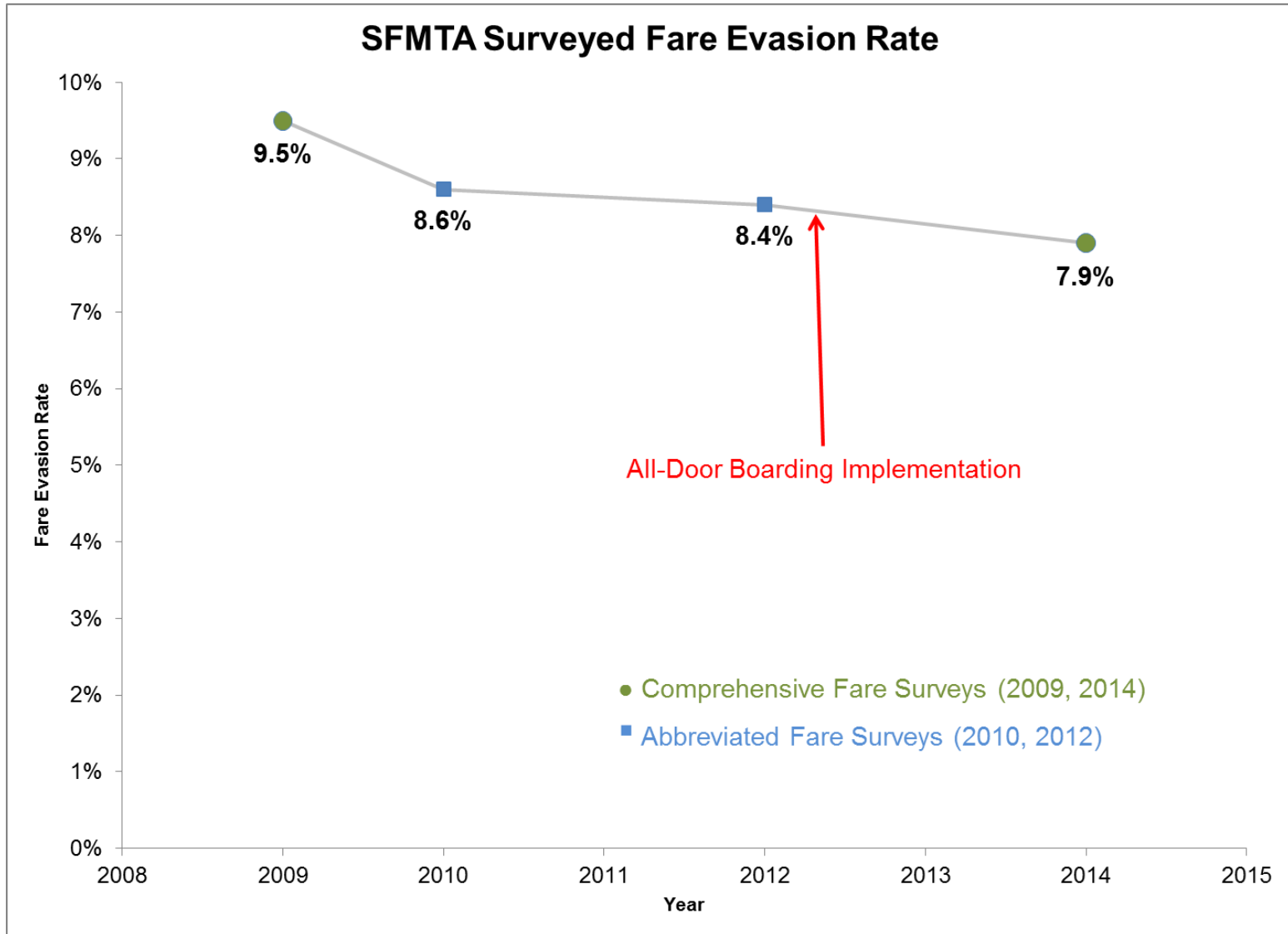
External Factors	Change
Population	+32,000 (+4.0%)
Employment	+70,000 (+12.6%)
Bus Ridership	+23,000 (+4.8%)
Vehicle Registrations	+15,000 (+3.2%)

Transit Fare Inspector Deployment



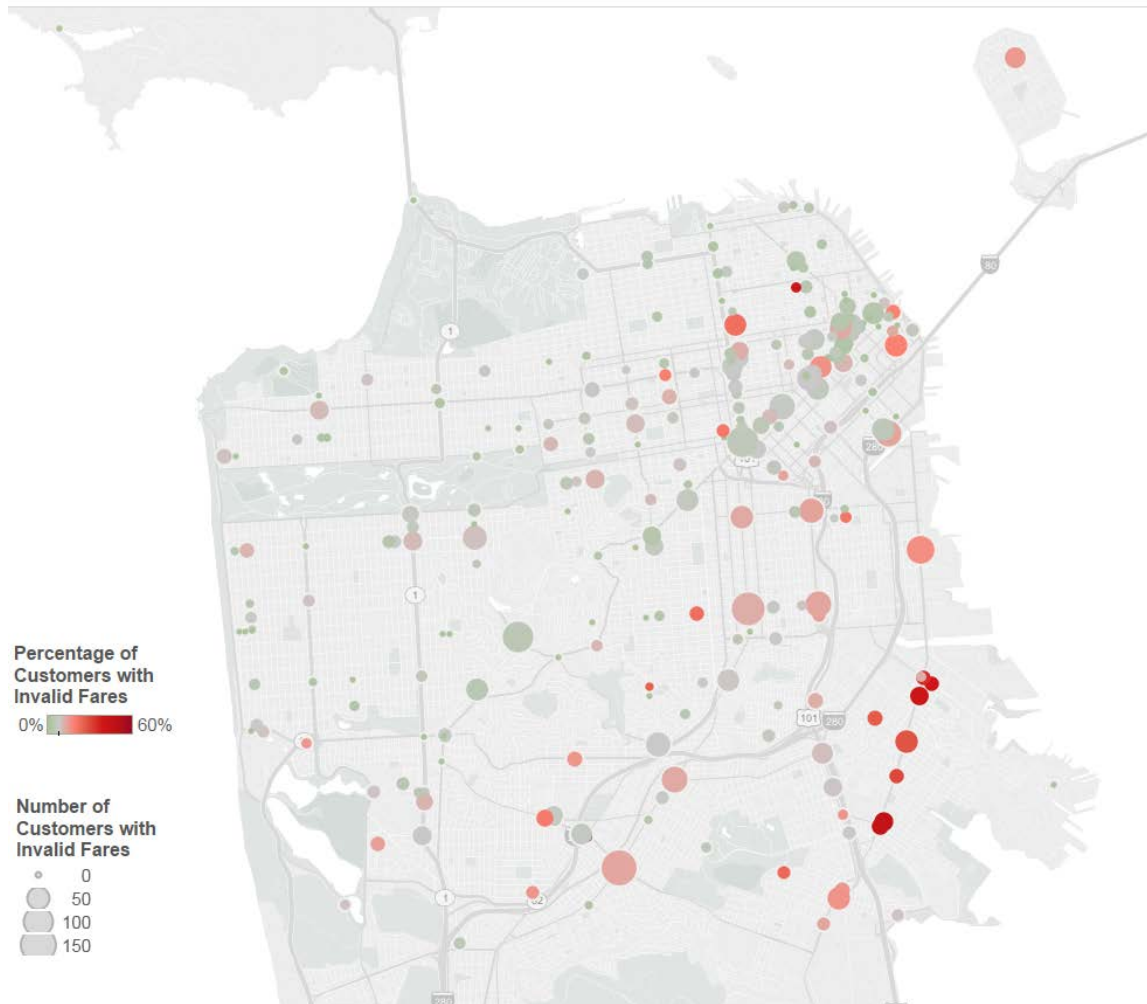
- Expanded Proof-of-Payment from light rail to buses and streetcars in 2010
- With All-Door Boarding, Transit Fare Inspector FTEs increased from approximately 41 to 54
- Police District deployment model ensures all customers have a reasonable expectation of being checked

Fare Compliance



Fare Compliance Patterns

Observed Customers with Invalid Fares
(2014 Fare Survey)



Fare Revenues

- Estimated Uncaptured Fare Revenue from non-compliance has decreased from \$19.2 million in 2009 to \$17.1 million in 2014
- Decline has not been proportional to the decrease in the fare evasion rate due to inflation-indexed fare increases

Fare Category	Estimated Uncaptured Fare Revenue
No Ticket, Transfer or Pass, Invalid Transfers/Fare Receipts, Walk Away	\$14.1 million
Underpayment	\$2.8 million
Misused Youth Pass	\$0.2 million
Total	\$17.1 million

- Non-cable car fare revenues increased from \$171.6 million in FY 2012 to \$179.1 million in FY 2013, not including \$2.2 million* (\$0.75 million pro-rated) in funding received to defray the costs of Free Muni for Youth passes

*Estimated by the Budget and Legislative Analyst's Office

Summary

Dwell Times

- More even boarding distribution between the front and rear doors
- Shorter dwell times per customer
- Reduced dwell time variability

Speeds

- Minor speed improvements
- Maintained travel speeds despite increases in ridership, traffic congestion, population and employment

Fare Compliance

- Continued modest gains in fare compliance
- Fare revenues up

To reduce travel times substantially, other strategies such as exclusive transit lanes, transit signal priority and parking management must accompany All-Door Boarding.