

Research Questions & Methodology

- Motivation:** American transit agencies are rapidly planning and deploying new fare payment systems
- Research Questions:**
 - Why** are transit agencies deploying new fare payment systems?
 - How** are new fare payment systems being implemented?
- Methodology:** Multiple case studies, including:
 - Structured interviews with agency staff and vendors
 - Review of documentation from:
 - Transit agency websites
 - Minutes from meetings
 - Local news stories
 - Request for Proposals (RFPs)



Image: TriMet Android App

Comparison of Case Studies

Question	Dimension	Chicago	Philadelphia	Portland
Why?	Existing Fare Collection Methods	<ul style="list-style-type: none"> Barrier: Heavy Rail Pay On-Board: Bus 	<ul style="list-style-type: none"> Barrier: Heavy Rail Pay On-Board: Bus, Light Rail & Streetcar Conductor-validated: Commuter Rail 	<ul style="list-style-type: none"> Proof-of-Payment: Bus, Light Rail, Commuter Rail & Streetcar
	Rationale to Change	<ul style="list-style-type: none"> Aging existing equipment Reduce fare collection costs 	<ul style="list-style-type: none"> Increase customer convenience Obsolescence of aging existing system 	<ul style="list-style-type: none"> Increase customer convenience Reduce fare collection costs
How?	New Fare Payment System	<ul style="list-style-type: none"> Open Payment System: Ventra card (plastic) & ticket (paper)  <p>Image: transitichicago.com/ventra/</p>	<ul style="list-style-type: none"> Open Payment System: Closed loop contactless prepaid card (initially)  <p>Image: septa.org/fares/npt/</p>	<ul style="list-style-type: none"> Mobile Ticketing Smartphone Application  <p>Image: Trimet.org</p>
	Benefits of New Fare Payment System	<ul style="list-style-type: none"> Increase customer convenience Potential reductions in fare collection costs Increase flexibility to change fares & accept emerging payment technologies 	<ul style="list-style-type: none"> Increase customer convenience Potential reductions in fare collection costs Potential for faster transactions & passenger boarding Potential reductions in fare evasion 	<ul style="list-style-type: none"> Increase customer convenience Potential reductions in fare collection costs Increase data about fare collection operations & enforcement
	Contract Structure	<ul style="list-style-type: none"> Fixed base fee & transaction-based variable fee paid to vendor 	<ul style="list-style-type: none"> Fixed fee paid to vendor 	<ul style="list-style-type: none"> Transaction-based variable fee paid to vendor
	Cost & Duration	<ul style="list-style-type: none"> \$454M Contract length of 12 years 	<ul style="list-style-type: none"> \$129.5M Contract length of 4 years 	<ul style="list-style-type: none"> Cost information not available Contract length of 3 years
	Other Noteworthy Elements	<ul style="list-style-type: none"> Partnered with Pace (suburban bus operator) Increased availability of fare products (required outlet within 1/3 mile of every bus stop) 	<ul style="list-style-type: none"> Contract open to other Pennsylvania transit agencies Paratransit included in installation Installing gates (barriers) at 5 downtown commuter rail stations 	<ul style="list-style-type: none"> Significant development & customer research period Long-term strategy is to pursue an open (electronic) payment system

Case Study Selection

Case studies were selected from the 20 largest American transit agencies based on modes, current media, and plans for deployment.

Transit Agency	Chicago Transit Authority (CTA)	Southeastern Pennsylvania Transportation Authority (SEPTA)	Tri-County Metropolitan Transportation District of Oregon (TriMet)
City	Chicago, Illinois	Philadelphia, Pennsylvania	Portland, Oregon
Annual Unlinked Pax Trips, Thousands¹ (Ranking)²	516,783 (2)	346,884 (6)	104,340 (13)
Modes Operated	Urban Bus, Heavy Rail	Urban Bus, Heavy Rail, Light Rail, Commuter Rail	Urban Bus, Light Rail, Commuter Rail, Streetcar ³
Fare Media in Current System	Smart Cards, Magnetic Stripe Tickets, Cash  Image: ventrachicago.com	Tokens, Magnetic Stripe Tickets, Paper Tickets, Cash  Image: currencies.wikia.com	Paper Tickets, Cash  Image: trimet.org
Deploying New Fare Payment System	Yes	Yes	Yes

Conclusions

- Primary reasons for deploying new systems are:
 - Replacing aging equipment
 - Increasing customer convenience
 - Potential reductions in fare collection costs
- Technology selection is influenced by the existing system
 - Barrier-free system deploying mobile payments
 - Gated systems implementing open payments
- The two new types of fare collection will likely converge to an open-standards based model with acceptance of near field communications (NFC)-enabled devices.



Image: ventrachicago.com



Image: septa.org/fares/npt/

Future Research

- Cost Analysis:** After system-wide implementation, cost analyses should be conducted to determine if reductions were actually achieved.
- Demand Analysis:** After system-wide implementation, changes in travel behavior attributable to new fare payment systems and adoption levels by market segment could be analyzed.
- Best Practices:** Assess best practices on a larger sample of transit agencies, including a comparison of agencies with new fare payment systems to those who are foregoing investments.

Footnotes
 (1) Unlinked passenger trips rounded to the nearest thousand
 (2) Number of trips & national ranking from the 2012 APTA Fact Book using 2010 statistics (Source: apta.com)
 (3) TriMet operates the streetcar under contract with the City of Portland

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