# Measuring & Controlling **Subway Fare Evasion: Improving NYCT's Safety** and Security

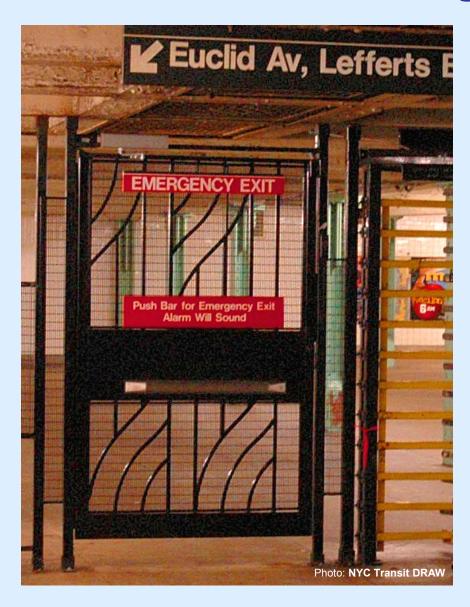
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Office of Management & Budget
New York City Transit Authority

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### **Background**



- Fare evasion measured by station agents since early 1990s
- Reduced from 6.9% to supposedly about 0.2% because of:
  - New AFC system
  - Graffiti control
  - Police patrols
  - Civil penalties
  - General crime reduction
- Renewed concerns:
  - Booth destaffing program
  - Fare increases
  - 'Panic bars' on exit gates

#### **Fare Collection Hardware**



# Fare Tariff & Defining Evasion

#### Official methods:

- Children under 44"
  - Must crawl under turnstile
  - Not allowed alone
- Passengers with bulk items, school field trips
  - Request agent assistance
  - Enter through gate
- 'Block' or half-fare tickets
  - Surrender paper ticket
  - Enter through special entry turnstile

#### Unofficially:

- Riders open gates for paid passengers with bulk items
- Children squeeze through high-wheels with paid adults
- Flash passes, uniforms, contractors go through gates



#### **Turnstile Fare Evasion Methods**



#### **Gate Fare Evasion Methods**



Backcocks, then use panic bar to open gate

Catches gate to enter after others exit



Opens unlocked gate to enter, or gate ajar

Police opens gate for stroller, bystander enters

## **Observation Methodology**

Evasions	Questionable	Legal Entries					
<ul> <li>Traditional Turnstile</li> <li>Under (over 44")</li> <li>Jump</li> <li>Backcock</li> <li>Bump <ul> <li>(a) Low TS</li> <li>(b) HEET</li> </ul> </li> <li>Gate (Panic Bar)</li> <li>Opportunistic</li> <li>Deliberate</li> <li>Gate Left Open</li> </ul>	<ul> <li>Tracked</li> <li>School Group</li> <li>Police/Fire/Court: <ul> <li>(a) Badge</li> <li>(b) Uniform</li> </ul> </li> <li>Flash Pass</li> <li>Open Gate with Key: <ul> <li>(a) TA key</li> <li>(b) Emergency key</li> </ul> </li> <li>"Other"</li> <li>Not Tracked</li> <li>Selling 'Swipes'</li> <li>MetroCard passback</li> </ul>	<ul> <li>Normal Turnstile Entry</li> <li>Normal HEET Entry</li> <li>Child under 44", with fare-paying adult</li> <li>Paper Ticket</li> <li>Bulk Item</li> </ul>					

 Discreet observations in half-hour periods divided into six-minute blocks; stratified sample (income and throughput); capture unusual activity only. Entries recorded in one of 19 categories.

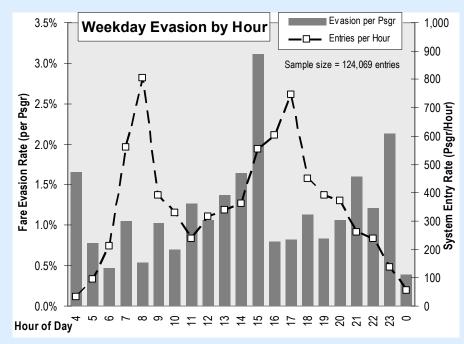
### **Data Collection Forms**

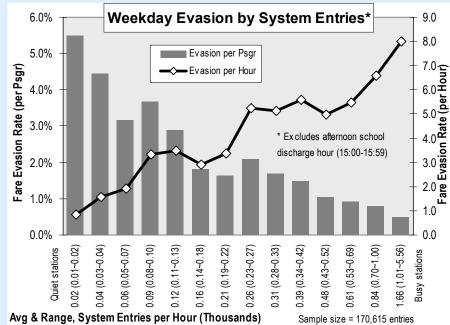
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	Unusual Low Turnstile Entries				HEET Entries Sta Cust				Unusual Gate E				Entries Agent-Ai				uthorized Gate Entries					
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# Subway Fare Evasion Trends

- Systemwide: 1.3%
- By time period:
  - − Peak periods: ~0.9%
    - more evasions per hour
    - but lower rates per passenger
  - Midday and nights: 1.3%~1.9%
    - high evasion rates
    - but not many evaders
  - School hour: almost 3.0%
    - highest evasions per psgr
- By system entry rate:
  - − Busy stations: ~0.5%
    - low per-passenger rates
    - high per-hour rates (8.0 /hr)
  - Quiet stations: up to 5.5%
    - high per-passenger rates
    - low per-hour rates (<1.0 /hr)</li>





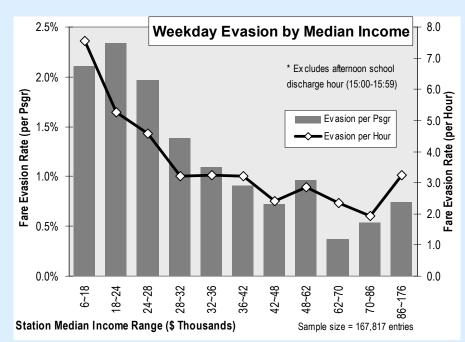
# Evasion Trends: Income & Season

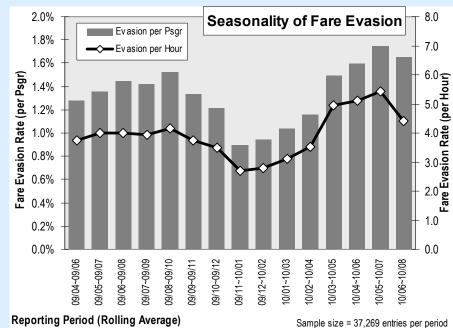
#### By median income

- Higher evasions observed in stations where adjacent census tract median income < \$30k</li>
- No effect when income > \$30k

#### Seasonality

- Evasion is more prevalent during warm summer months
  - Summer = ~1.7%Winter = ~0.9%
  - Consistent with literature on general crime trends
  - Seasonal ridership impacts (trip purpose)





## **Combating Fare Evasion**



- Properly locking service access gates at all times
- Improve communication of child height restrictions
- Fare control configuration and staff presence don't seem to have much effect
  - Gate evasion rates:0.9% unstaffed, 1.0% staffed
  - High-wheel evasion rates:1.2% unstaffed, 1.0% staffed
- Tackling organized fare abuse operations (swipers)
  - Vending machine vandalism costs repair expenses
  - Swiping impacts revenue
  - Work with NYPD Transit
     Bureau and community courts
  - Use video evidence if available

#### Fare Enforcement Issues



#### Legal framework

- New York's rules were well established by the 1980s
- Important clarifications:
  - · arrest versus summons
  - undercover enforcement permissible?
  - arresting powers
  - dispute/appeals process
- Expected fines versus fares
  - New York's fine = \$100
  - progressive?
  - "street economics"
- "Surge" enforcement
- Video recording cameras
  - Shared use for anti-terrorism

#### **Public Relations**

DAILY NEWS Woolyllows.com

# CHEATERS COST MTA

#### Fare-beaters underestimated for years

FOR YEARS, NYC Transit has wildly underestimated how often riders beathe fare, which cheats the cash crunched agency out of millions of dollars, the Daily News has learned.

Pare-beaters jump turnstiles or enter through emergency exit gates about 19 million times a year, a new agency

analysisshows.

That's far more than the old estimate of about 5 million a year, which went out the window in April, when agency beam counters changed the way, they tally scofflaws.
The lost revenue is staggering

Fare-beating deprived NYC Transit of approximately \$27 million last year alone, based on an average subway fare of \$1.48, according to the new

Under the old method of estimating fare-beating, the agency believed it was losing about \$7 million event The lost revenue is even larger than

the amount the Metropolitan Transportation Authority plans to save with subway service outs that are scheduled to go into effect soon to help plug a largebudget gap.

Some paying straphangers fussed vesterday when told about thievery at

"It makes me mad because I have to pay for them," said 44-year-old Bronx baby sitter Elene Ramicocz.

Juesday, April 27, 2010

DAILY NEWS MODIFICATION

BY PETE DONOHUE

"There should be a guard there," Thomas DeMarcus, a 30-year old Oueens actor, said at the unstaffed

47th St. entrance to the station. The unstaffed station turned has ried Long Island parents Maria and Os-

**BYMIKEJACCARINO** 

and PETE DONOHUE

DAILY MEWS STAFFWOITEDS

THIS IS THE key to the city, and

The key unlocks swing gates

next to every subway turnstile,

granting easy - and free - access

it cost only \$27.

Get magic keys that open

the gates at 468 stations

'If you find an area that's not

The Daily News tried out the

supervised by the police, you're

key at 15 stations across the city,:

including Yankee Stadium on

the B line in the Bronx, Junction

Blvd. on the No. 7 in Queens and

68St. on the Lexington Ave. line.

in. It's like a key to the city."

THIEVES OWN THE **SUBWAY FOR \$27** 

exclusive report found.

DAILY NEWSWIDS (NEW

BY MIKE MELAUGHLIN PETE DONOHUE and ERIN EINHORN

NYCTRANSIT officials yowed a swift crackdown yesterday on illegal master subway keys that let fare-beaters ride the rails free. Straphangers and elected officials furned over the "shocking" security breach exposed in Son day's Daily News, which report ed copies of the keys have made it into-criminal hands. "It's mind-boggling" said City Council Transportation Committee Chairman James Vacca (D-

Bronx), who said he would grill transit houghos when they come

before his committee next week.

problem if these keys get into the wrong hands," Vaccasaid,

"This could be a major security

They already have, The News's

The keys are supposed to go

only to police, firefigliters and

authorized MTA workers to let

them enter the subway through

emergencygates - but illegal cop-

DAILYNEWS

4 times as many fare-beaters as thought \$27M lost could stop train service cuts

EXCLUSIVE - SEE PAGE 5 Up for the count

5.2 million

18.9 million \$27 million\*\*

2008

# is to stop

The key

DAILY NEWS Influit/fews.com

"If shard," Garcessaid.

NYC Transit for years arrived at fare-beating figures by using a formula based on the observations of token booth clerks. A one-day count was conducted each month, assney snokesDAILY=NEWS THIEVES OWN THE SUBWAY FOR \$27

28 Wednesday, March 17, 2010

DAILY NEWS WoodyNews.com

#### Enforcement's down as fare-beating grows

ways, but police enforcement has been declining NYPD statistics reveal

Pols and the public are outraged over 'shocking' security breach in our subways

Police ticketed or arrested about 87,000 riders who lumped turnstiles or entered through emergency exits last year, the lowest number cited in five years, the data show. The Daily News yesterday reported that a

new NYC Transit analysis estimates 19 million riders are beating the face annually much higher than previous estimates of about5 million. The Metropolities Transportation

Authority said that transit officials "continue to work with the NYPD on cost-effective strategies such as targeting high-incidence locations and placing cameras in key areas." The police gave fire-evasion tickets to

ed an additional 19,000 for immoine the

That's a 12% drop from the 99,000 straphangers cited in 2005, with about 86,000 getting summonses and nearly 13,000 arrested.

The NYPD pointed out that although overall enforcement is down, arrests are up "The department focused on the arrest of more serious offenders," Set, Carlos Nieves

Transit advocates some that fare exacts will worsen if the MTA coes through with plans to eliminate up to 450 token booth clerk positions. The MTA denied fare evasion is impacted by the number of agents.

#### I got to pay every trip,' he whines

10 had one of the illegal 55 - until cops stopped all feetherest of us. "old method of calculating fare-beating oil," said the year, who "New method and higher rate calculated for ved only if his name was April-June 2005. Final numbers not yet available. Hotofricorey, New I got Source 495 Transit

d when police saw hire charging straphungers discount rates to let

The 25 year, old said beharabithe convol the masterikey from a transit worker for \$50. The worker was very solemn when he handed overthe prize.

"Don't get caught," the worker warned. For the most part, the mansaid, he used the lorgrounly to using free familifor biraself, by opening up the locked security gates near the sub-

But if he was short on cash, he'd peddle \$1 feee who arrested him on a related solway of and \$2 subway rides to people waiting in line "Sense was angry when finding the key, he said for MatroCarde or to those who didn't have crocch for a trip. That's when he got caught. "I made some money," he said. "Nebody pothurt."

Police arrested him earlier month at a mid forenstation of environment incoming a rate and charging a rider. Cops charged him with possessing burglar tools and petty browny -

rathe's most upset his key is gone. "I was enad " he said "It was kind of reion." less Anydoor younced, you getright in. Most

people don't notice. Even/body's rishing." The Daily News yesterday also tracked down a 51-war-old Manhattan man arrested with a key lost month.

He claimed he didn't know its purpose. It was on a ring of keys that belonged to a friend do recently died, he insisted. The transit of

harbed," Why do you have it? I didn't know the key opened any door. ... But they were not happy that I had it. I wish that key never showed up. Got me introuble.

Transit police configured VV kers from ses. pects arrested in the subway system last year and howeveled 15 so farthis year.

NYC Transit estimates it loses \$27 million a year from fare-bearing, including turnetile jumping. The agency estimates rickers bear the fare about 19 million times last year.

MTA Inspector General Barry Kluger said a would coordinate with the NYPD up investigation into the distribution of the kens. which are only supposed to be in the bands of police, finelighters and authorized transit per-

#### It opens subway gates & is FDNY emergency tool, too BYPETEDONOHUE thousands, of buildings"

THE KEY to the subway is plenty useful aboveground, too.

After revealing that scammers are selling fare-beaters a \$27 key Brooklyn man who said he paid: that opens subway emergency ex- transit worker \$27 for a copy its, the Daily News found the key which he used to avoid payin also controls elevators at the \$2.25 trainfare. thousands of city buildings.

The FDNY confirmed the "firemen's service" key - used in keys told the Daily News h emergencies - can call all elevators to the lowest floor and workerfor about \$50. hold them there.

Thousands of firefighters have been using for many years, FD-NY spokesman Frank Gribbon

including all high-rises, he said.

NYC: Transit -

commercia

The News got a key from

A second man busted by cop recently for having one of th bought his copy from a transi

Thomas Prendergast said the the kews, which the FDNY has agency may have to replace the locks on the system's 1,412 gates, which would likely cost more than \$1 million, he said.

Prendergast said. Fare-beating costs NYC Transit an estimated \$27 million

About 50 people have been arrested since January 2009 for unauthorized possession of the

of the Public Safety Committee. said he was even more concerned knowing the key also can be used to control elevators.

"That's not a key I want in unauthorized hands," he said. "We know terrorists are

ng a firemen's service key commercial bieb-rise triggersan alarm, Gribbon said. When all elevators are held in the lobby, firefighters can use the

Angry riders,

pols rip MTA

key to maneuver individual eleva-

how and training, he said. pdonohue@rwdailynews.com

tors, but it requires some know

1.62 Million

A CO HITTON

1.7%

**New York City Transit** 

#### **Conclusions & Future Work**

#### Multi-pronged approach is required to manage evasion

- AFC security & audit features
- Legal enforcement framework
- Data collection & analysis to identify 'hot spots'
- Task-force based approach
- Comprehensive press strategy

#### Information sharing is key

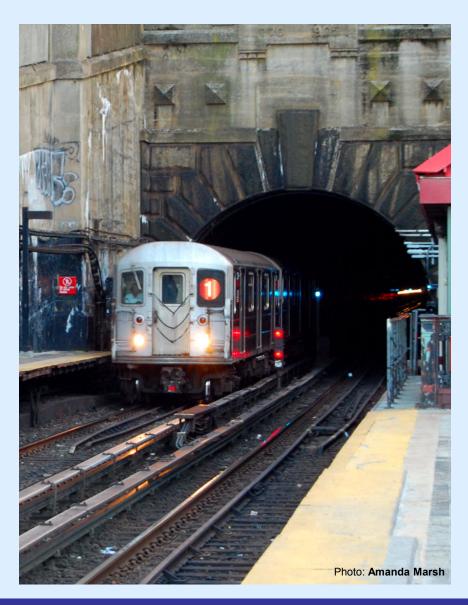
- Crime of opportunity
- Controls are necessary

#### Future work

- Measurable benefits of fare enforcement
- Evader-criminal correlation
- Countermeasure effectiveness
- Socio-demographic patterns



# Acknowledgements



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  - Office of Management & Budget
- TRB AP030 Committee's Anonymous Reviewers