

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

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Background



Photo: NYC Transit DRAW

- 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

Photos: NYC Transit DRAW



Booth
(Full Time & Part Time)



HEETs



HXT
(Not surveyed)



Painted HXT
(Not surveyed)

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

Deliberate



Backcocks, then use panic bar to open gate

Opportunistic



Catches gate to enter after others exit

Gate Left Open



Opens unlocked gate to enter, or gate ajar

Questionable



Police opens gate for stroller, bystander enters



Observation Methodology

Evasions	Questionable	Legal Entries
<p>Traditional Turnstile</p> <ul style="list-style-type: none"> • Under (over 44") • Jump • Backcock • Bump • (a) Low TS • (b) HEET <p>Gate (Panic Bar)</p> <ul style="list-style-type: none"> • Opportunistic • Deliberate • Gate Left Open 	<p>Tracked</p> <ul style="list-style-type: none"> • School Group • Police/Fire/Court: <ul style="list-style-type: none"> (a) Badge (b) Uniform • Flash Pass • Open Gate with Key: <ul style="list-style-type: none"> (a) TA key (b) Emergency key • "Other" <p>Not Tracked</p> <ul style="list-style-type: none"> • Selling 'Swipes' • MetroCard passback 	<ul style="list-style-type: none"> • Normal Turnstile Entry • Normal HEET Entry • Child under 44", with fare-paying adult • Paper Ticket • Bulk Item

- **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

New York City Transit MetroCard Station Entry Count Study

(Observations to be compared with MetroCard data.)

N004Wkd022017

Block 000 Type PART Booth Number H27

Name WU010

Pass # 1 2 3 4 5 6 7 8 9 0

Schd Time 15:00 Page 2

Station Myrtle-Wyckoff Avs

Date 3/5/2010 Day Fri

Line CNR **L M**

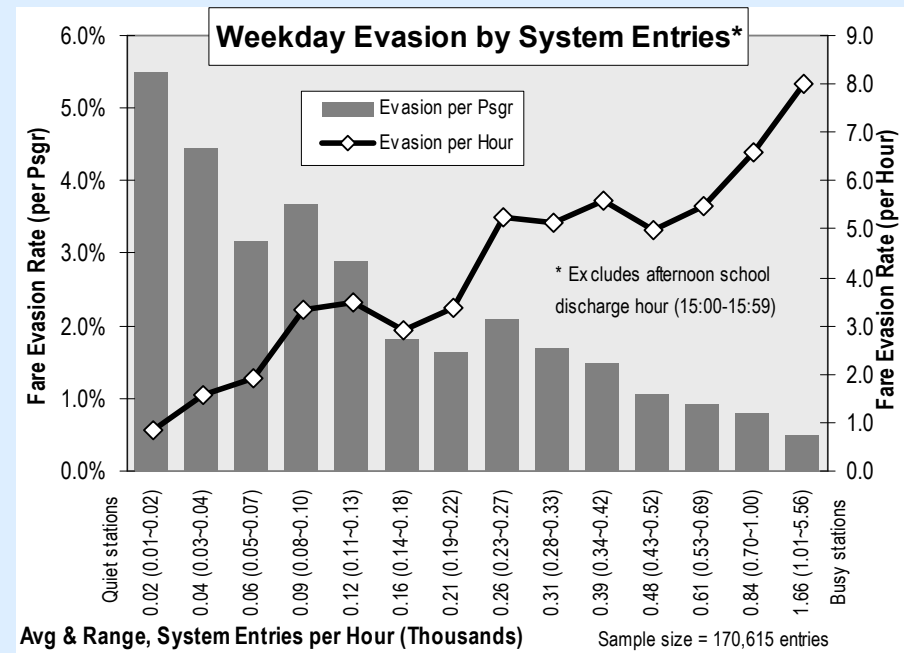
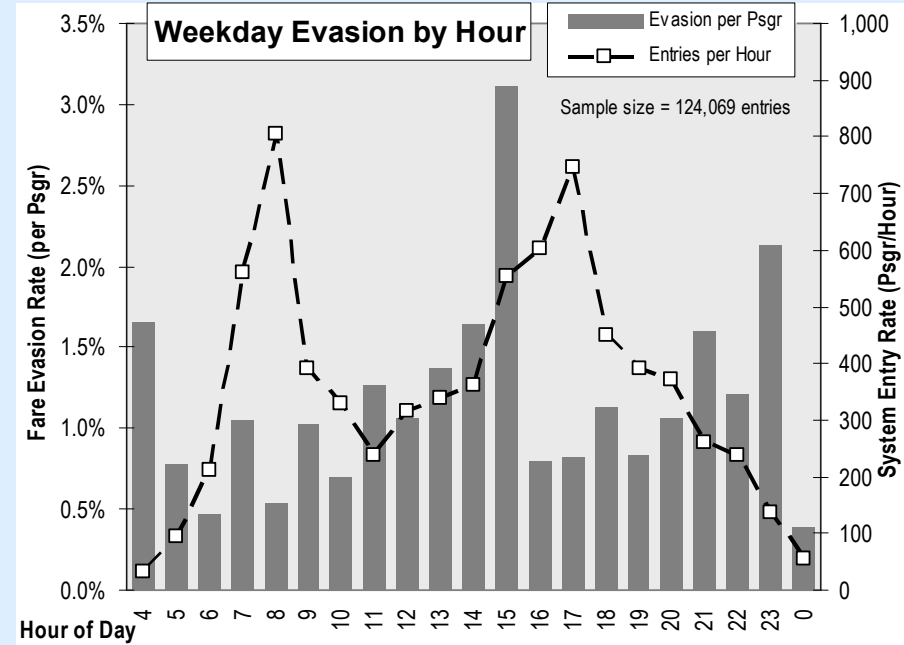
Div BMT

Use tally (hash) markings - Do not count low turnstile swipes - Write comments on reverse side - Each row is for six minutes' observations

	Write Time	Unusual Low Turnstile Entries					HEET Entries		Police Present (Y/N)?	Sta Cust Present (Y/N)?	Hear Panic Alarm (Y/N)?	Unusual Gate Entries					Agent-Authorized Gate Entries				
		Crawl Under Child	Over 44"	Jump Over	Back-cocking	Bump-ing	Normal	Bump-ing				Opportunistic	Left Open	Deli-berate	Used Key	Other (Specify)	Paper Ticket	School Group	Bulk Item	Police Badge	Uniform
6 Min	15:00						 		N	N	N										
6 Min	15:06			 					N	N	Y	 									
6 Min	15:12						 		N	N	N										
6 Min	15:18		(adult)				 		N	N	Y										
6 Min	15:24						 		N	N	Y										

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)



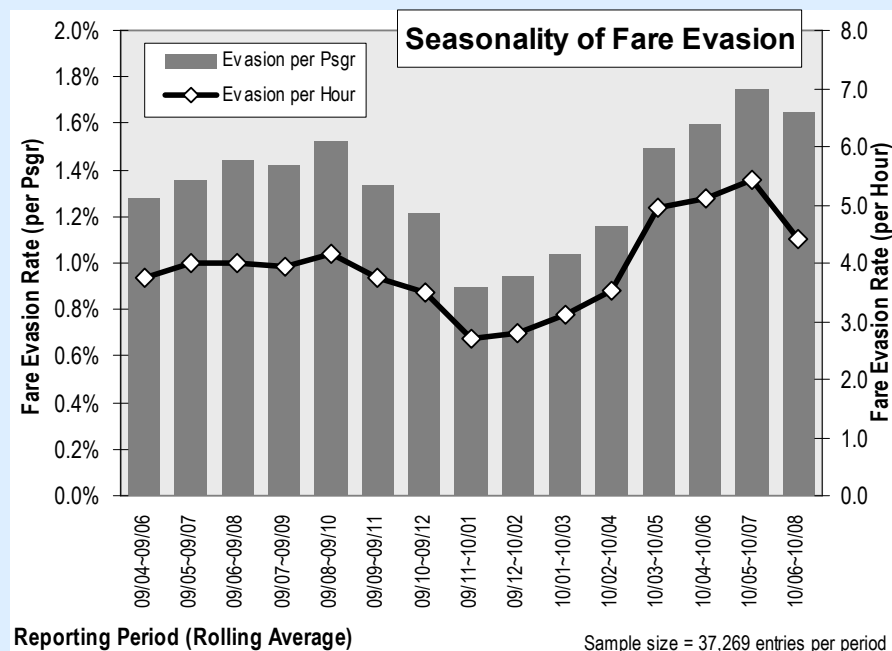
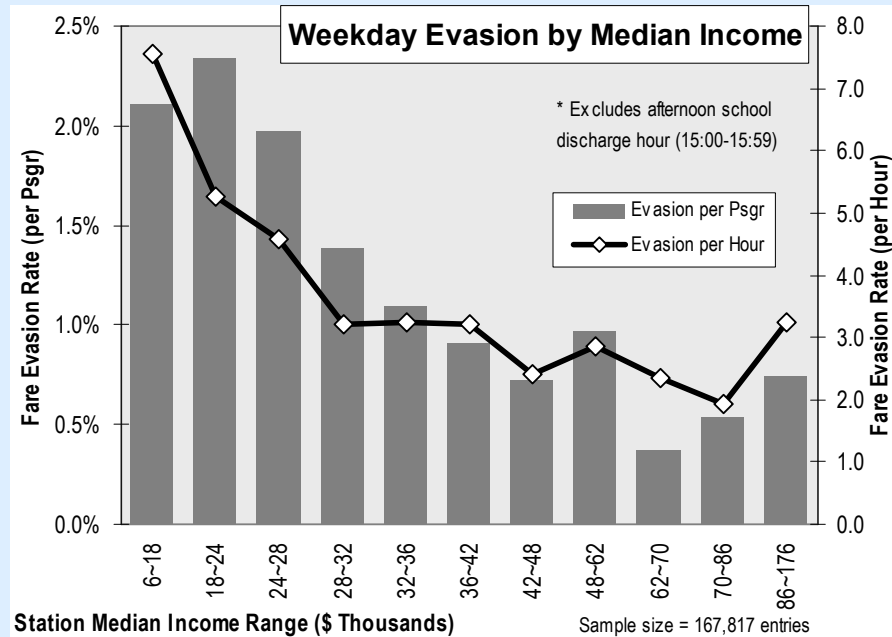
Evasion Trends: Income & Season

• By median income

- Higher evasions observed in stations where adjacent census tract median income < \$30k
- 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

CHEATERS COST MTA MILLIONS

Fare-beaters underestimated for years

FOR YEARS, NYC Transit has wildly underestimated how often riders beat the fare, which costs the embattled agency out of millions of dollars, the Daily News has learned.

Fare-beaters jump turnstiles or enter through emergency exit gates about 10 million times a year, a new agency analysis shows. That's far more than the old estimate of about 3 million a year, which went out the window in April, when agency brass 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 \$1.85, according to the new analysis.

Under the old method of estimating fare-beating, the agency believed it was losing about \$7 million a year.

The lost revenue is even larger than the amount the Metropolitan Transportation Authority plans to save with subway service cuts that are scheduled to go into effect soon to help plug a large budget gap.

Some paying straphangers fumed yesterday when told about misery at the turnstiles. "It makes no mad because I have to pay for them," said 44-year-old Bronx baby sitter Eliseo Hernandez.

Published in the Daily News, NY, March 16, 2010.

Tuesday, April 27, 2010

DAILY NEWS NYDailyNews.com

It opens subway gates & is FDNY emergency tool, too

BY PETE DONOHUE
DAILY NEWS STAFF WRITER

THE KEY to the subway is plenty useful aboveground, too. After revealing that scammers are selling fare-beaters a \$27 key that opens subway emergency exits, the Daily News found the key also controls elevators at thousands of city buildings.

The FDNY confirmed the "fireman's service" key — used in emergencies — can call all elevators to the lowest floor and hold them there.

Thousands of firefighters have the keys, which the FDNY has been using for many years, FDNY spokesman Frank Gribbon said.

EXCLUSIVE
BY PETE DONOHUE
DAILY NEWS STAFF WRITER

"There should be a guard there," Thomas DeMarco, a 30-year-old Queens actor, said at the unstaffed 47th St. entrance to the station.

The unstaffed station turned hated Long Island parents Maria and Octavia into a daily scene.

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THIEVES OWN THE SUBWAY FOR \$27

NYC Transit officials vowed a swift crackdown yesterday on illegal master subway keys that let fare-beaters ride the rails free.

Straphangers and elected officials fumed over the "shocking" security breach exposed in Sunday's Daily News, which reported copies of the keys have made it into criminal hands.

"It's mind-boggling," said City Council Transportation Committee Chairman James Vacco (D-Brooklyn), who said he would grill transit henchmen when they come before his committee next week.

"This could be a major security problem if these keys get into the wrong hands," Vacco said.

They already have. The News's exclusive report found. The keys are supposed to go only to police, firefighters and authorized MTA workers to let them enter the subway through emergency gates — but illegal copies have been circulating around the city.

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DAILY NEWS NYDailyNews.com

N.Y. KEY PARTY!

Angry riders, cops rip MTA on subway gate breach

Fare-beating costs NYC Transit an estimated \$27 million a year.

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

MetroCard

Up for the count

Year	Fare evasion rate	Estimated number of fare-beaters	Lost revenue 2008	
2008	1.62 billion	3.2%	5.2 million	\$7 million
2009	1.58 billion	1.7%	18.5 million	\$27 million

"old method of calculating fare-beating" and "higher rate calculated for April-June 2009. Final numbers not yet available."

When all elevators are held in the lobby, firefighters can use the key to maneuver or individual elevators, but it requires some know-how and training, he said.

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

"I was mad," he said. "It was kind of priceless. Any day you could see your right in his possession. I was mad. I was mad."

"The Daily News yesterday also tracked down a 51-year-old Manhattan man arrested with a key last month."

"I don't know his purpose. It was a ring of keys that belonged to a friend who recently died, he said. The transit of

Police arrested his earlier arrests at a midtown station after reporting him on a gate and charging a rider. Cops charged him with possessing a dangerous weapon and petty larceny — but his next stop is his key in jail.

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The key is to stop 'magical morons'

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Enforcement's down as fare-beating grows

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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



Photo: NYC Transit DRAW

Acknowledgements



Photo: Amanda Marsh

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