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I. Introduction

The city that never sleeps demands a transit system that never quits. Unlike other cities, New York City's Metropolitan Transportation Authority (MTA) operates 24 hours a day, 7 days a week and has for over 100 years. This continuous service presents a problem unique to New York: when can the MTA maintain and repair the system? The only answer, of course, is to schedule construction work to occur simultaneously with passenger service. Unfortunately, this solution requires that trains be rerouted and passengers redirected, which in a subway system that accommodates over 5.5 million passengers on an average weekday, is no small feat. ¹

Of all the MTA divisions, the service diversions required for scheduled maintenance are felt most greatly by the riders of the subway system. New York City Transit is in charge of leading passengers through the maze of track service diversions and outages so that they can continue to use this city's vital resource. NYC Transit must not only plan the service changes, they must also communicate those changes and how to navigate them to the ridership. When done well, this process can foster goodwill about the system, but when done poorly can easily cause riders to be lost, confused, and frustrated, resulting in an overall negative perception of the system.

The New York City Transit Riders Council (NYCTRC) has been concerned with system diversions for several years, and in 2012, the NYCTRC released *Diverted! – But how do we know?*, a report on subway service diversions and how they are communicated to the riders. The *Diverted!* report concluded NYC Transit did not sufficiently ensure that:

- All impacted station platforms and entrances had diversion notices
- ADA impacted stations had ADA accessible travel alternative information
- Travel alternatives were provided on all signage posted ²

Now, two years later, the Council is again being called on by riders to assess communication efforts during service diversions. Since the release of *Diverted!*, the Council has also become concerned that the frequency and intensity of service diversions has increased, putting more stress on riders. This increased intensity makes good communication across all platforms that much more important.

¹ MTA-New York City Transit, *Transit & Bus Committee Meeting Book*, (February 2014), 4.8.

² Permanent Citizens Advisory Committee to the MTA, *Diverted! – But how do we know?*, (April 2012), 4-8. Previous council recommendations are included in *Appendix A: Diverted! – But how do we know? Selected Recommendations*

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Although NYC Transit utilizes multiple technologies to communicate service diversions, the Council surveys focused on paper signage and service announcements because those are the two modes of communication universally available throughout the system. This universality makes it imperative that the usage of paper signage and service announcements continue and improve.

The Council recognizes the tremendous effort NYC Transit staff deploys every day in redirecting thousands of riders. In order to maximize the benefits of these efforts, appropriate resources must be allocated to ensure that communications to riders are handled by a right-sized staff at all levels including a stable, well informed and trained front line.

Therefore, in this report the Council examined:

- The processes behind how service diversion information is created and communicated to riders
- How NYC Transit staff is trained to relay service diversion communications
- The practical knowledge of service diversions gained through field surveys that captured what information is included on service diversion signage, what service diversion announcements are made, crowding conditions, and passenger travel times

II. Background Research

NYC Transit General Orders

NYC Transit maintenance and capital projects require complex coordination between many NYC Transit departments and divisions, all of which are headed by the Department of Operations Planning and the Division of Rapid Transit Operations (RTO). Work to be completed is administered through the use of General Orders (GOs). GOs detail:

- What work is to be completed
- Which departments are impacted
- Dates of work to be conducted
- Service diversions required to accommodate passengers³

The complexity of the coordination process is compounded by the ever-changing environment in which transit operates. Weather-related cancellations cause projects to be rescheduled; emergency situations such as signal and switch failures require immediate attention; unprepared contractors prevent projects from starting on time; and unprecedented natural disasters like Superstorm Sandy cause system-wide upheaval. Meanwhile the system's increased ridership means more passengers are impacted with each GO that require a service diversion. In this report we are only reporting on GOs that require service diversions.

Off-Peak Ridership Challenge

Typically, GOs are scheduled during weekends and weeknights to reduce the impacts on riders. However, as ridership continues to increase, planning operations to impact the least number of riders becomes increasingly difficult. As can be seen in Figure 1, annual subway ridership has increased from 989 million in 1982 to 1.7 billion in 2013. Moreover, recent trends indicate that ridership is increasing on weekends and during late-night hours, even more than on weekdays. For example, during the five-year period from 2007 to 2012, weekday ridership grew just under 7 percent while weekend ridership grew over 10 percent.⁴ This weekend-heavy trend is especially apparent on the L line. From 2005 to 2010, L line weekday ridership doubled while weekend ridership in some cases either tripled or

³ A General Order is a document, issued by the Department of Subways' Division of Rapid Transit Operations notifying all NYCT's personnel of any special operating arrangements impacting normal train service. It also authorizes the performance of work on the tracks and structures of the rapid transit system by providing the required diversions of service and specific power and signal operations to support the work. A General Order is developed jointly by MOW [Maintenance of Way], CPM [Capital Program Management], RTO, and Operations Planning (Source: NYC Transit, NYCT Department of Subways Rolling Stock and MOW Departmental Procedure, 2006).

⁴ Eric Jaffe, *Far Beyond Rush Hour: The Incredible Rise of Off-Peak Public Transportation*, (The Atlantic Cities Place Matters, Feb 06, 2014), Date accessed: 03/18/2014, <http://m.theatlanticcities.com/commute/2014/02/far-beyond-rush-hour-incredible-rise-peak-public-transportation/8311/>.

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quadrupled. For example, at the Morgan Avenue station in Bushwick, Brooklyn, weekday ridership increased by 59 percent, while weekend ridership grew by an astonishing 174 percent for the five-year period.⁵ As off-peak ridership increases, the number of passengers impacted by GOs will also increase.

Changing Investment Needs

In October 2013, the MTA Twenty-Year Capital Needs Assessment 2015-2034 was released. The report details the numerous investments that are needed by all MTA agencies to keep the system running with reliable service. NYC Transit, for example, requires a minimum of \$68 billion between 2015 and 2034, in order to “maintain, replace, and upgrade its capital assets.”⁶ As seen in Figure 2, Signals is the largest needs category constituting \$15.6 billion, or 23 percent of NYC Transit’s total investments. The MTA explains this investment saying, “a well-functioning signal system is critical for reliable service; currently, signal failure is a leading cause of train service delays.”⁷ All of these investments require GO coordination of track outages and service diversions.

Figure 1: Annual Subway Ridership 1981-2013



Source: MTA, “Annual Reports” 1983-2013

Figure 2: Twenty-Year Needs Capital Program Investments in Categories That Most Affect Passenger Travel

Asset Investment Category	Asset Investment Needs (in 2012 \$ millions)	% of Total NYCT Asset Investment Needs
Tracks & Switches	\$5,671	8%
Passenger Stations	\$9,449	14%
Signals	\$15,610	23%
Line Structures	\$3,100	5%
Line Equipment	\$3,439	5%
Communications System	\$2,644	4%
Total Investments	\$39,913	59%

Source: MTA Capital Program, “MTA Twenty-Year Capital Needs Assessment 2015-2034”

5 Carson Qing, *Rush Hour in Williamsburg...at 1 AM*, (Rudin Center For Transportation Policy & Management, Jan 2013), Date accessed: 03/18/2014, <http://wagner.nyu.edu/blog/rudincenter/rush-hour-in-williamsburg-at-1-am/>.

6 MTA Capital Program, *MTA Twenty-Year Capital Needs Assessment 2015-2034*, (October 2013), 30, <http://mta.info/mta/capital/pdf/TYN2015-2034.pdf>.

7 MTA Capital Program, *MTA Twenty-Year Capital Needs Assessment 2015-2034*, 34, <http://mta.info/mta/capital/pdf/TYN2015-2034.pdf>.

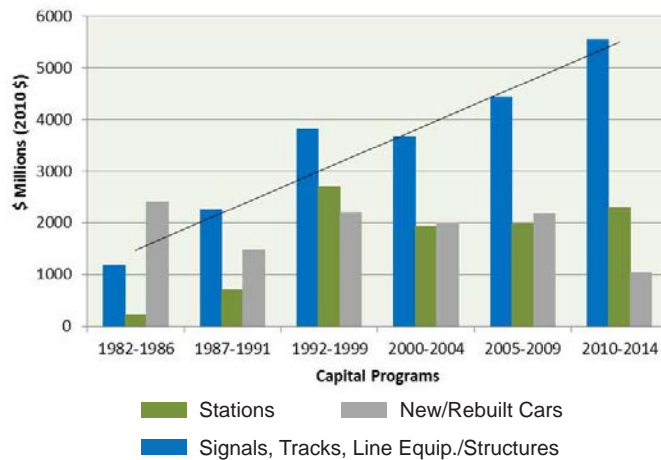
In the early years of the Capital Program, 17.7% of investments were allocated to overhauling and rebuilding subway cars. As the car stock became reliable, NYC Transit shifted its attention to infrastructure needs.⁸ Therefore, as can be seen in Figures 2 and 3, infrastructure investments, particularly signal investments, have been steadily increasing. Total infrastructure investments constitute 59 percent of total assets in need of replacements and upgrades by 2034. Unlike investments like overhauling subway cars, though, investments in passenger stations, the signaling system, tracks, and line equipment and structures affect passenger service through station and track outages.

NYC Transit was unable to provide information on track outages that measures the amount of time active passenger tracks are out of service. However, this metric is crucial in understanding how increased investments in categories such as signals and tracks have impacted riders.

In addition to ridership increases and changes in types of projects, important worker safety flagging rules were added in 2007 after the tragic deaths of two NYC Transit track workers, Daniel Boggs and Marvin Franklin. The flagging rules now require trains traveling through a work area to reduce their speed to ten miles per hour from approximately thirty to thirty-five miles per hour.⁹ Reduced speeds decrease the number of trains that can be run each hour. Decreasing the number of normally scheduled trains from as much as thirty-two trains to as few as fifteen trains per hour depending on the line, results in greater passenger crowding and increased travel times.

All of these factors combined: increased ridership, increased track and signal investments, and fewer trains due to new flagging rules contribute to growing passenger stress. The discomfort of passengers makes the need for a strong and effective communication program all the more important.

Figure 3: Capital Program Investments Categories 1982-2014



* 1992-1999 Capital Program was a seven-year program, while all other Capital Programs were five

Source: MTA Capital Programs 1982-2014

⁸ Appendix C: MTA's Capital Program - Why The Need for Continued System Work?, provides information about the MTA's Capital Program and why it is necessary to continue investments to keep the system reliable and in a "state of good repair."

⁹ PCAC staff correspondence with the Department of Operations Planning.

III. Methodology

In order to have a more complete understanding of the current rider experience, the NYCTRC members conducted surveys examining the four travel alternatives provided by NYC Transit when GOs are scheduled. The four travel alternatives are:

1. Back riding
2. Existing bus service
3. Shuttle bus service
4. Parallel subway service



These travel alternatives are explained in detail in *Appendix E: Individual Survey Results*.

Council members conducted twelve service diversion surveys between January and March 2014. Three surveys of each of the four travel alternatives were conducted to capture information particular to each alternative. Sample survey forms can be found in *Appendix D: Survey Forms*. Survey information included:

Communication to Passengers

- Availability and placement of station signage
- On-board service diversion signage
- Dates and times of service diversions
- Indication of travel alternatives
- Directions to travel alternatives
- Inclusion of ADA accessible information
- Subway platform service diversion announcements
- On-board service announcements on trains, buses, and shuttle buses

Crowding Conditions

- Subway platform crowding conditions
- Bus stop crowding conditions
- Crowding conditions on trains and buses

Passenger Travel Time

- Total passenger travel time during survey periods
- Regularly scheduled travel time derived from mta.info's TripPlanner

IV. Findings

The following is a summation of findings from all twelve surveys completed. Individual survey information can be found in *Appendix E: Individual Survey Results*.

Service Diversion Signage

Across surveys, the location of service diversion signage in subway stations was inconsistent. Surveyors found that some station signage was placed in obscure locations within stations or was not posted at all. Signage on subway cars was difficult to find, if found at all. This lack of continuity could cause travelers to be confused when it comes to way-finding, deciphering travel alternatives, and understanding accessible travel alternatives.

Station Signage

- In 9 out of 12 stations, signage was posted at station entrances; however 2 signs had been removed, reducing the count to 7 out of 12 (masking tape was still attached to station entrances)
- When laminated signs were posted at station entrances they were not removed
- All station signage included dates and times of service diversions
- In 11 out of 12 surveys, travel alternatives were included on the signage

Bus Signage

- All shuttle buses surveyed had signage directing passengers to shuttle bus loading areas
- On existing buses surveyed, none had signage directing passengers to existing bus stops. In addition, only one of the three surveys had existing bus service indicated as a travel alternative. On mta.info, service diversion information also includes existing bus service as travel alternatives, however this information was not found on the station signage at two of the three stations surveyed.

On-board Train Signage

- During back riding surveys, none of the six trains surveyed had on-board signage about the current service diversion. If signage was posted on-board it did not pertain to the current service diversion but to other current and future service diversions for that line.

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Accessible Station Signage

- In 9 out of 12 surveys, accessible travel was affected. Unfortunately, accessible travel information was not on the signage at two accessible stations. When accessible travel information was given it informed passengers to call 511 for travel assistance.

511 Note: Calling 511 is challenging due to multiple prompts. Upon reaching NYC Transit in the voice response system, the caller is first prompted to choose subway and bus status, then plan-a-trip, and finally wheelchair accessible travel. After these prompts the caller is directed to make a series of voice prompts to determine the location by borough and subway stop. This process is time consuming and frustrating due to the system's frequent inability to distinguish what users are trying to say. Also, as cellphone reception is not available in most stations, 511 cannot be used by someone en route.

When station signage was not posted at all key points within stations, finding service diversion information was a challenge. Key points within stations include station entrances, on walls and columns approaching turnstiles, near turnstiles, and on station platform walls and columns. If signage is not posted consistently at all key points, information can be missed by passengers, leading to confusion and preventing passengers from making informed decisions.

The continued placement of weekday and weekend directories before passengers swipe their MetroCards is vital. The directories, in addition to station-specific signage helps to inform passengers of system-wide service diversions. Also, if service diversion signage is not posted adequately in train cars, a passenger's ability to replan their route when they learn of a change is limited.

Service Announcements

Surveyors found that service diversion announcements were inconsistent across station platforms and on trains and buses. Announcements were not made on all station platforms surveyed or on all trains. When automated and manual announcements were made, travel alternatives were clearly stated informing passengers of where to transfer to connecting services. While shuttle bus operators made service and stop announcements on all surveys, no bus operators on existing bus service made service or bus stop announcements.

- On 5 out of 8 station platforms, service diversion announcements were made
- On 5 out of 7 trains, on-board service diversion announcements were made
- On 0 out of 3 existing buses, service/ stop announcements were made

- On 4 out of 4 shuttle buses, service/ stop announcements were made

One surveyor noted that the subway conductor informed passengers that the current stop was the transfer point to the opposite-direction trains to access skipped stops. This was noted as a good communication practice, guiding passengers through the route and giving key information at critical decision points.

While many NYC Transit personnel were available during an A line shuttle bus survey conducted on February 8, 2014, not all were properly equipped with knowledge of the service diversion to relay to passengers. NYC Transit personnel working the shuttle bus operation did not make clear to passengers where to go to board local and express shuttles. The surveyor asked multiple personnel where to board the express bus and the response was, “I don’t know.” Approximately five to seven minutes later, a representative from the Department of Buses arrived to assist NYC Transit personnel. It was apparent to the surveyor that passengers were confused as to where to go, which was exacerbated by extreme crowding conditions.

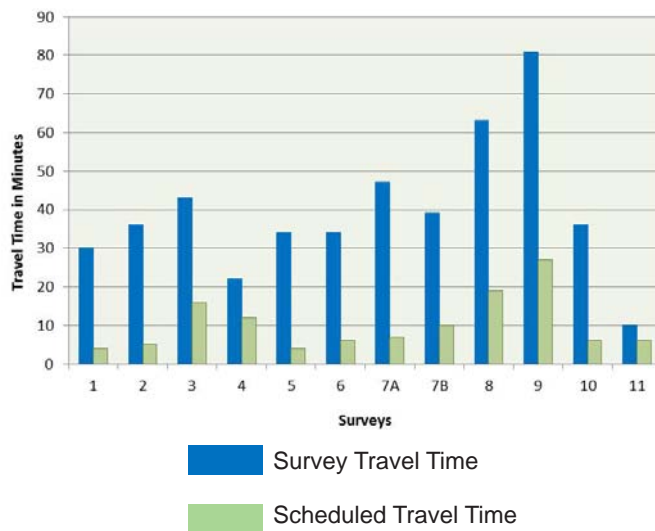
Crowding Conditions

Crowd sizes were acceptable during most of the surveys conducted. With a few exceptions, most station platforms trains, buses, existing bus stops, and shuttle bus stops had low to medium crowding conditions. Heavy crowding conditions were documented primarily on trains where passengers had to back-ride and make transfers. Heavy crowding conditions were also more apparent at shuttle bus stops. During one survey, passengers had to wait for the next shuttle bus due to overcrowding.¹⁰

Passenger Travel Times

Travel times during the surveys were greater than scheduled travel times for all but one survey conducted. The travel time of the 1 line parallel subway service survey conducted on March 22, 2014 (survey 11 in Figure 4), was only four minutes longer than the scheduled travel time.

Figure 4: Survey Travel Time Compared to Scheduled Travel Time



Source: Survey results and mta.info

¹⁰ Criteria surveyors used to assess crowding conditions are available in *Appendix D: Survey Forms*.

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Cancelled GO Survey Information

The multiple storms our region endured this winter caused cancellations of several GOs during the survey period. On two occasions, a Council member began a survey only to find it had been cancelled at the last minute. The abrupt cancellations meant that station signage was still posted and service diversion announcements were still being made, and the surveyors witnessed the confusion of their fellow passengers. The following lists highlight some of the events that transpired during those two surveys:

01/10/2014: Survey of 6 Train, south-bound from Parkchester to Hunts Point in the Bronx

- When the surveyor arrived at Elder Avenue the booth attendant informed the surveyor that the GO had been recently cancelled
 - Attendant reported to surveyor that he had been “yelled at” all day by confused passengers
 - GO posters were still displayed in the station, however no signage was present at the station entrance
 - Count-down clocks were still displaying the service diversion information
 - Audio announcements in the station stated, “no Manhattan-bound service,” although trains were making all stops toward Manhattan
-

03/02/2014: Survey of F train, south-bound from 57 St to 34 St-Herald Square in Manhattan

- The GO was cancelled between the time the surveyor checked the MTA website and the time she arrived at the station
- Station signage was displayed at the station entrance, informing passengers of the service diversion, even though the GO was recently cancelled
- Station signage read “No downtown trains at this station,” however downtown M trains were pulling into the station

V. Conclusions

Accurate and clear travel information is important for a rider to easily navigate any transit system. The type of information and the means by which it is delivered can also impact rider experience. Poorly displayed and inconsistent messaging can adversely impact a rider's impression of the system and perception of system management. While conducting the surveys, the New York City Transit Riders Council found that signage related to NYC Transit service diversions lacks continuity and clarity. Anecdotal evidence found that these inconsistencies led to negative rider experiences.

In the most recent surveys, the Council found:

1. NYC Transit frontline personnel are not always aware of what travel information to relay to passengers
2. Station agents sometimes create their own signage to help aid passengers because they are not consistently supplied with service diversion signage
3. Paper signage in stations is not consistently available, signage placement is inconsistent, and the information included on signage can be limited and therefore confusing
4. Station and on-board service announcements are not consistently made, making obtaining necessary information en route a challenge
5. When service diversions are cancelled, signage and announcements are not always updated or removed in a timely manner

This NYCTRC survey, following on the heels of the Council's *Diverted!* report, suggests that NYC Transit is not prioritizing service diversion communications with the riders. Because the scope of these two surveys was limited by the size and capacity of the Council, the Council strongly urges NYC Transit to conduct an independent in-depth review of rider communications involved in the GO process. As changing investment needs, safety improvements, and an increasing ridership cause many more passengers to be impacted by GOs, NYC Transit needs to assess:

1. If the effort is right-sized for a positive rider experience
2. How to use business analytics to assess the quantity of track outages over time that impact the rider experience in order to better understand staffing requirements
3. How information is conveyed to riders during service diversions
4. How they train, inform and update frontline employees for service diversions

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5. How significantly service diversions can impact a rider and influence their perception of the system
6. The need to evaluate each service diversion and conduct lessons learned exercises for each one

While NYC Transit is expanding its technological capacity through the introduction of *On-the-Go* kiosks and an expansion of the Public Address Systems throughout the B Division,¹¹ it must not neglect more basic means of communication: paper signage and audible communication. Despite multiple station configurations, it is imperative that NYC Transit provide continuity across the system so passengers know where to look for service information. Common places that are the same for all stations are at station entrances, station booths, and near turnstiles. NYC Transit frontline personnel must have the necessary knowledge and training to assist riders when it comes to service diversions.¹² Through basic yet important changes like these, NYC Transit can demonstrate that it has the rider foremost on its list of priorities.

The current GO effort often reflects poorly on the system itself, and risks riders interpreting the effort as a demonstration of how maintenance or capital work is performed on the system as a whole. As the nature of GOs change, now is the time for NYC Transit to reassess how successfully it is presenting diversion information to the riders.

11 Western Queens Gazette, *Gianaris Brings Real Time Train Countdown To Astoria*, (August 14, 2013), Date accessed: April 17, 2014, http://www.qgazette.com/news/2013-08-14/Front_Page/Gianaris_Brings_Real_Time_Train_Countdown_To_Astor.html.

12 See Appendix H: GO Personnel Training, for specific questions with answers that were sent to NYC Transit regarding staffing and training for GOs and service diversions

VI. Recommendations

During the surveys, the Council found that the greatest source of passenger frustration stemmed from how service changes were communicated. All the recommendations therefore center on improved communications with passengers. The NYCTRC service diversion recommendations cover service diversion signage, platform and on-board service diversion announcements, MTA website information, and training and communication for MTA personnel.

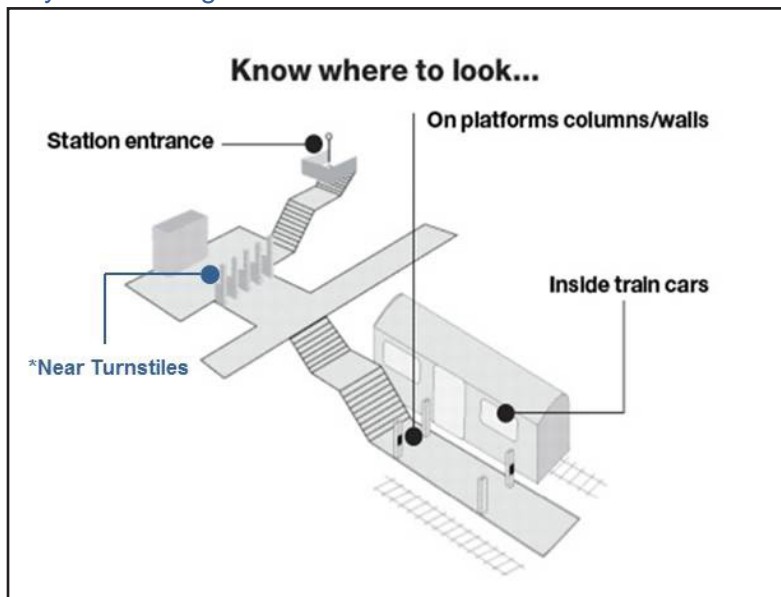
Nine Ways to Improve the Rider Experience

1. **Establish a strong GO training program for NYC Transit personnel and attendants**
 - Prior to the start of the GO, require a field pre-briefing and information session with a run-through of affected stations to ensure all personnel know their roles and responsibilities
 - All NYC Transit front line employees should know what information they need to provide to passengers during GO periods
 - Ensure personnel are familiar with the area where the service diversion is located, enabling them to be knowledgeable of travel options in the immediate area
 - Create a consistency checklist for tasks that need to be accomplished before each GO starts
 - Conduct “lessons-learned” performance reviews after all GOs
2. **Prioritize internal communication to station agents during GO work periods**
 - Station agents should understand what information needs to be provided to passengers regarding service diversions and travel alternatives
 - When abrupt changes or cancellations to service diversions are made, station agents should be notified immediately to inform passengers of such changes
3. **Consistently provide signage outside subway stations at street level before entering the station**
 - Laminate station entrance signage
 - Install enclosed display cases outside stations, attached to subway entrances, to hold and protect signage

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4. **Place signage along the path that riders follow as they enter a subway station**
 - o Place station-specific signage at station entrances, on walls and columns approaching turnstiles, and near turnstiles. Signage should be viewable, at eye level, at every key point before passing through the turnstile
 - o Post current service diversions signage on all station platforms
 - o Continue the posting of weekday and weekend system-wide planned service changes to serve as customer information centers

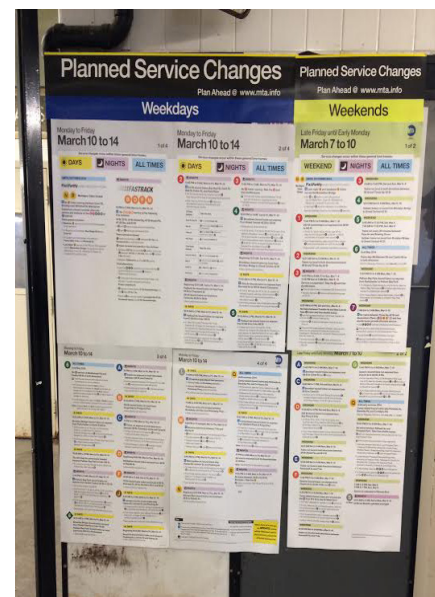
Key Points Diagram



Source: MTA, September 2010

*edited to include signage near turnstiles

Customer Information Center



Source: NYCTRC

5. Outline all travel alternatives and service diversion information on signage

- Improve the formula for where information needs to be included on station signage
 - Upper portion includes borough(s), direction(s), and line(s) affected; part of week; time of day; and calendar duration of service diversion
 - Middle portion includes subway travel alternatives, accompanied diagrams, and borough directions
 - Lower portion includes additional travel alternative(s), and website information
- Coordinate *Planned Service Changes* information from mta.info with station signage
- Communicate accessible travel options on signage for passengers who need accessible stations, and post at all accessible stations
- Import line colors onto signage to enable easy identification

NYCTRC Signage Recommendations

Current	Recommendation	Current	Recommendation	Current	Recommendation

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6. **Post and remove signage promptly**
7. **Create a policy requirement establishing that every train that will be directly impacted by a service diversion will have signage posted explaining the impact and alternative travel options**
8. **Communicate service disruptions and travel alternatives on station platforms and on both trains and buses in a consistent manner**
 - Prioritize installation of Public Address Systems in all stations so service diversion announcements with travel alternatives can be made
 - Prioritize communication that reflects the service diversions for the line the rider is currently traveling followed by system-wide diversions
 - Bus operators should make all required stop announcements, ensuring both passengers who are transferring to bus service and existing bus passengers know when and where to exit the bus
 - Include critical information about service diversions and travel alternatives in on-board train announcements. It is extremely helpful when conductors make additional announcements at transfer points to inform passengers they have reached the station where they need to transfer to connecting services.
9. **Extend the *Weekender* format to weekdays to interactively show service diversions**
 - As GOs are being scheduled more frequently during weekdays, the interactive map showing planned service changes and system delays available through the *Weekender*, should be extended as well
 - Expand the *Weekender* to include a six month calendar “looking ahead” at planned service changes
 - Rephrase language on the MTA website to include a time-stamp of the last service diversion update and instructions for users to check back for the latest information. This is important to include due to frequent last-minute cancellations.
 - Add context to the construction through links to the Capital Program, improvement projects, and maintenance work so passengers know why their service is being diverted
 - The service change information displayed on *London Underground* website may be a good model (See *Appendix F: MTA vs. London Underground Website Service Diversion Information*)

Appendix A: *Diverted!-But how do we know?* Selected Recommendations

General

- *Insure that all ADA stations affected by a service change have signage that specifically addresses alternative accessible routes from that location*
- *Insure that all stations affected by a service change have signage that specifically addresses alternative routes from that location*
- *Insure that signage is placed in an area highly visible to riders*

Entrances

- *NYCTRC has long advocated that dedicated spaces be set aside for service change signage and specifically that frames be installed near station entrances*
- *Place station specific signs at all street level entrances even when other service is still running at the station. Riders need to be informed of all service changes prior entering the station.*

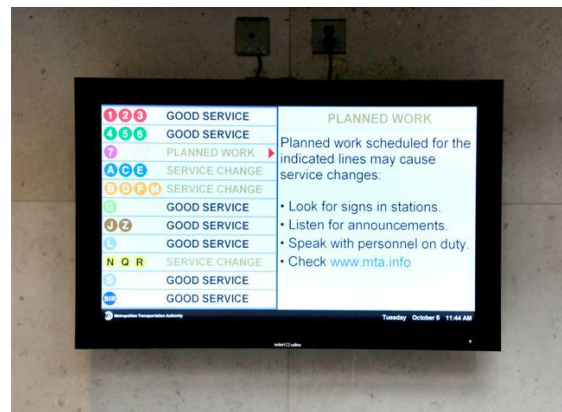
Platforms

- *Conductors should supplement service notices with announcements about future stops when rerouted trains arrive in stations*

Install SAID boards throughout the subway system

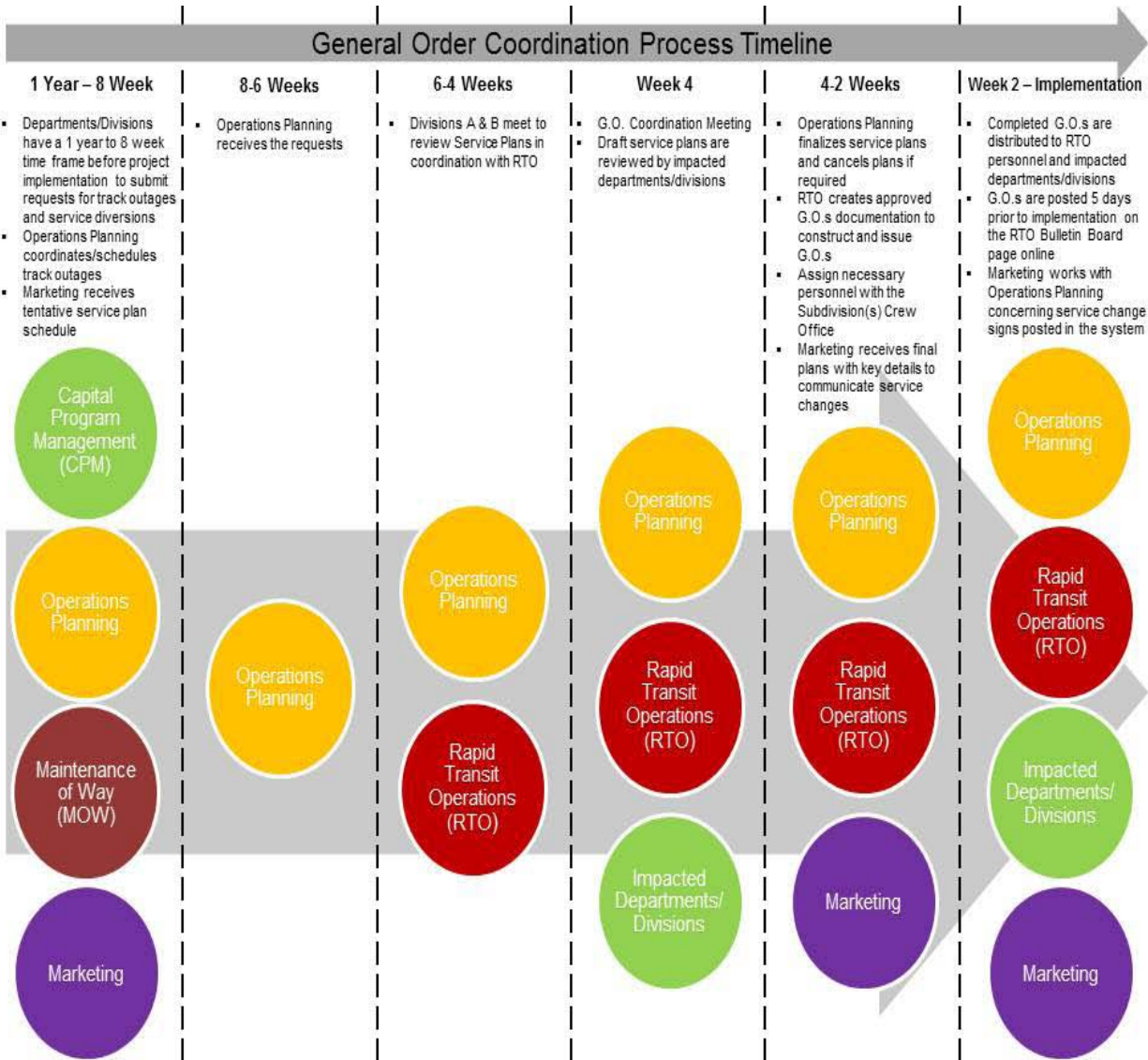
- *One initiative that would greatly enhance the delivery of information about service diversions for riders would be the installation of Station Advisory Information Display (SAID) boards throughout the subway system. Currently, SAID boards are only at a few select stations: Grand Central, Penn Station, Atlantic Terminal, and Times Square.*

SAID Board at Grand Central Terminal



Source: PCAC

Appendix B: General Order Coordination Process



Source: PCAC staff meetings with Operations Planning and Rapid Transit Operations

Appendix C: MTA's Capital Program - Why The Need for Continued System Work?

In 1982, the MTA's Capital Program was created to combat decades of underfunding and deferred maintenance that were crippling New York's transit system. Prior to the Capital Program's creation, expansion projects were prioritized over upkeep resulting in a disintegrating existing infrastructure that made passenger travel often impossible. The Rudin Center's 2004 paper on the achievements of the MTA Capital Program, *From Rescue to Renaissance*, presents a dreary picture of decline:

Tracks were not inspected on a regular basis. Stations were left to deteriorate. The subway system suffered repeated derailments – one every 18 days in 1981-82 – caused by crumbling tracks and structures. Trains routinely arrived late, if at all: in 1981, 325 train runs were abandoned on a typical day. Mean Distance Between Failure (MDBF), a standard measure of reliability, fell to a low of 6,640 miles for subway cars in 1981. Graffiti covered every surface; even the doors were broken on more than one-third of all subway cars.¹³

Since the 1982 inception of the MTA's Capital Program, the MTA has invested nearly \$115 billion in improving the performance and reliability of the network.¹⁴ Replacement of rolling stock, upgrades to shops and equipment, and the introduction of a scheduled maintenance system have all contributed to the system's increase in reliability.¹⁵ For example, MDBF¹⁶ has drastically risen from 7,186 miles in 1982 to over 150,000 miles today and annual ridership has increased from 989 million to 1.7 billion.¹⁷ Wait assessment, a measure of the percentage of trains that are operating on or close to schedule, is slowly increasing to the desired one hundred percent.¹⁸ These improvements started a long run of General Orders that continues today.

13 Allison L.C. de Cerreño; Mark Seaman; Seth Young-English, *From Rescue to Renaissance: The Achievements of the MTA Capital Program 1982-2004*, (December 2004), 1-2, www.wagner.nyu.edu/rudincenter.

14 MTA 2010-2014 Approved Capital Program Amendment, (July 2013), 3.

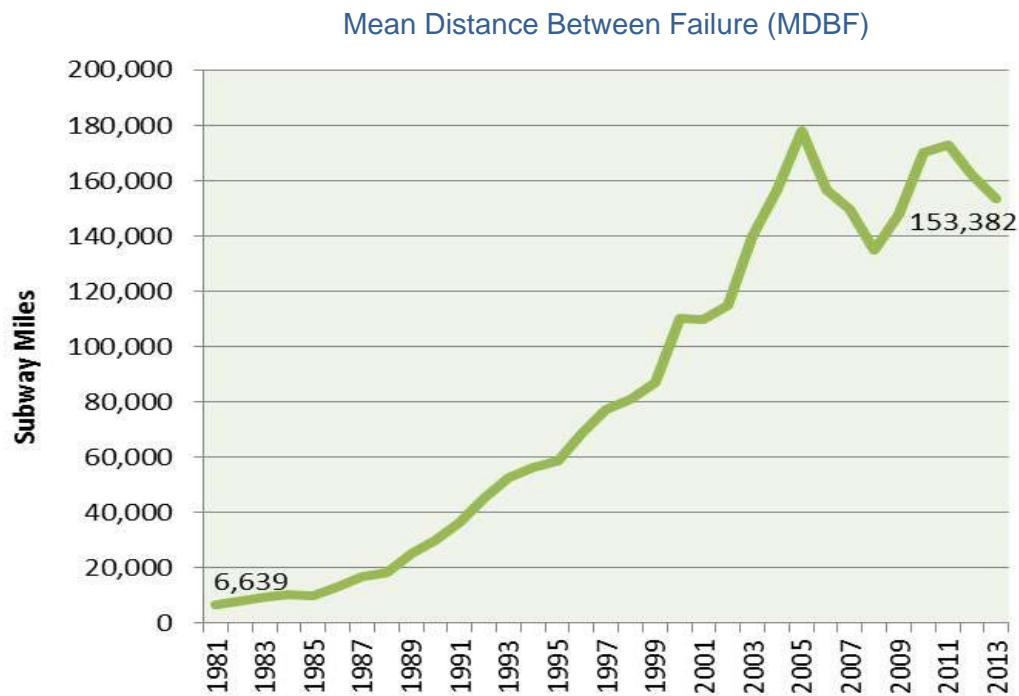
15 Permanent Citizens Advisory Committee to the MTA, *The Road Back: A Historic Review of the MTA Capital Program*, (May 2012) ii.

16 Mean Distance Between Failure (MDBF): is the primary measure of subway car fleet reliability and is calculated as revenue car miles divided by the number of delay incidents attributed to car-related causes (Source: MTA-New York City Transit, *Transit Committee Meeting Book*, (July 2010), 3.15.

17 MTA-New York City Transit, *Transit Committee Meeting Books*, through 2013.

18 Wait Assessment (WA), which is measured between 6:00am-midnight is defined as the percent of actual intervals between trains that are no more than the scheduled interval plus 25%. (Source: MTA-New York City Transit, *Transit Committee Meeting book*, (September 2010), 3.10).

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Source: Data compiled from MTA New York City Transit, Transit Committee Meeting Books, through 2013.

Appendix D: Survey Forms



G.O. Survey Form 2013-14 **Back Riding** Surveyor _____

Date: _____ Time of Week: Weekday (10am -3pm Mon-Fri) Weeknight (12midnight – 5am Mon-Fri) Weekend Day (10am – 3pm Sat-Sun)

- Observed Line: _____
- Direction of Travel: Southbound Northbound
- Closed Platforms: Northbound Southbound Both Directions
- Origin Station: _____
- Destination Station: _____

Member Complete Form Below

G.O. Signage/Countdown Clocks:

1. Is there signage present outside the station at street level? Yes No
2. Is there signage present inside the station? Yes No
Where is the signage located? Turnstiles Walls Columns _____
Please take **Photos** of signage!
Notes: _____
3. Are the dates, times and duration of the closures indicated on signage? Yes No (PHOTOS)
Notes: _____
4. Are travel alternatives clearly indicated on station signage? Yes No (PHOTOS)
Notes: _____
5. Are count-down clocks present in the station? Yes No
If yes, was the train arrival time information accurate? Yes No Did signs display service disruption information? Yes No
Notes: _____
6. Is ADA accessible signage posted indicating travel alternatives for affected stations? Yes No

Alternative Route: Back Riding

7. Time you entered the origin station? _____
8. Time you reached opposite platform (1st Platform)? _____
9. Did you have to exit the station to access the opposite platform? Yes No

1st Platform Questions

10. 1st Platform Crowding Conditions* (Take Photos) (Origin Station: see diagram):
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____
11. Were platform service disruption announcements made? Yes No
12. What time did the train arrive? _____

On-Board Questions

13. On-Board Crowding conditions** (Take Photos)
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____

14. Were on-board service disruptions announcements made? Yes No
15. What time did the train you are on arrive at the second station? _____

2nd Platform Questions

16. 2nd Platform Crowding conditions (Take Photos) Platform used to board train traveling in correct direction. (see diagram)
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____
17. Were platform service announcements made? Yes No
18. What time did the train arrive? _____

On-Board Questions

19. On-Board Crowding conditions (Take Photos)
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____
20. Were on-board service disruption announcements made? Yes No
21. What time did the train arrive at your destination? _____

Every Which Way But Direct!

22. Rate the level of difficulty accessing the alternative route. E.g. traffic, lights, street conditions etc...

Minimal Moderate Maximum

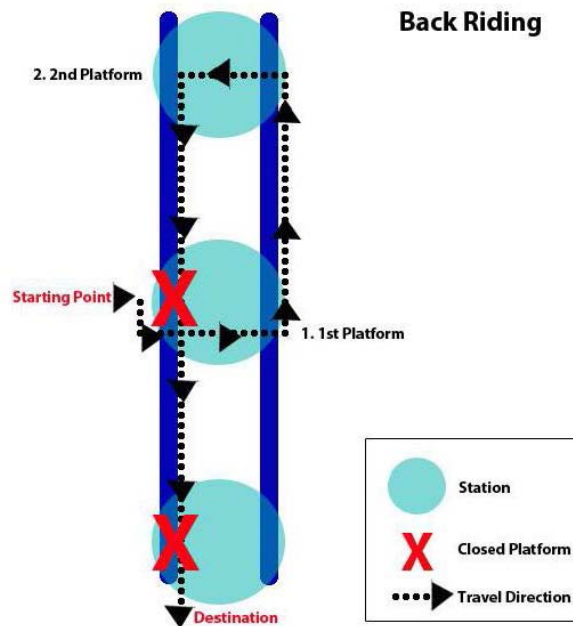
Minimal = less than 5 min. to access alt. route with fewer physical barriers such as traffic, lights, construction etc...
Moderate = approximately 5 min. to access alt. route with some physical barriers such as traffic, lights, construction etc...
Maximum = more than 5 min. to access alt. route with many physical barriers such as traffic, lights, construction etc...

***Platform Crowding Conditions:**
Low Crowd = Only minimal amount of people waiting (approx. 25% capacity), no crowding, no difficulty walking through the platform.
Med. Crowd = The platform in halfway full (approx. 50 % capacity), some difficulty walking through the platform.
Heavy Crowd = The platform is at or close to full capacity (approx. 65-100% capacity), difficulty walking through the platform.

****On-Board Crowding Conditions:**
Low Crowd = Plenty of space on train to sit-down with minimal to no people standing, ease of movement.
Med. Crowd = Limited space to sit-down with people standing, but room to move around on train.
Heavy Crowd = No space to sit-down, standing room only without ease of movement on train. In extreme cases, have to wait for next train due to overcrowding

Example map (Not actual NYC Transit map)

Back Riding





Existing Bus Service

G.O. Survey Form 2013-14 Existing Bus Service Surveyor _____

Date: _____ Time of Week: Weekday (10am -3pm Mon-Fri) Weeknight (12midnight – 5am Mon-Fri) Weekend Day (10am – 3pm Sat-Sun)

- Observed Line: _____
- Direction of Travel: Southbound Northbound
- Closed Platforms: Northbound Southbound Both Directions
- Origin Station: _____
- Destination Station: _____

Member Complete Form Below

G.O. Signage:

1. Is there signage present at the station to indicate station/platform closure? Yes No
 Where is the signage located? Turnstiles Walls Columns Outside/Street level
 Please take **PHOTOS** of signage!
 Notes: _____
2. Are the dates, times and duration of the closures indicated on signage? Yes No (PHOTOS)
 Notes: _____
3. Are travel alternatives clearly indicated on station signage? Yes No (PHOTOS)
 Notes: _____
4. Is ADA accessible signage posted indicating travel alternatives for affected stations? Yes No

Alternative Route: Existing Bus Route

5. Existing bus route _____
 Bus stop location _____
6. Your arrival time at the origin station? _____
7. Was signage present directing passengers to existing bus service? Yes No
8. Your arrival time at the bus stop? _____
9. Bus Stop Crowding Conditions*: (Take Photos)
 Low Crowd Med. Crowd Heavy Crowd
 Notes: _____
10. What time did the bus arrive? _____
11. On-board Bus Crowding Conditions**: (Take Photos)
 Low Crowd Med. Crowd Heavy Crowd
 Notes: _____

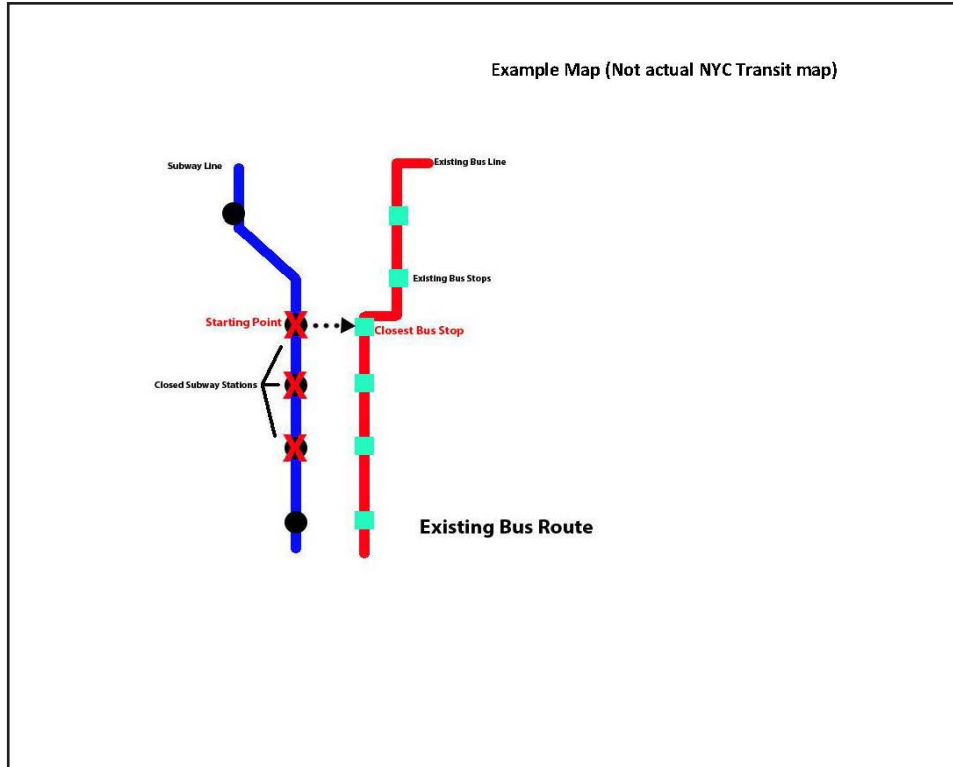
12. Did the bus operator make service and bus stop announcements? Yes No
13. What time did the bus arrive at your destination? _____
14. Rate the level of difficulty accessing the alternative route. E.g. traffic, lights, street conditions etc...
 Minimal Moderate Maximum

Minimal = less than 5 min. to access alt. route with fewer physical barriers such as traffic, lights, construction etc...
Moderate = approximately 5 min. to access alt. route with some physical barriers such as traffic, lights, construction etc...
Maximum = more than 5 min. to access alt. route with many physical barriers such as traffic, lights, construction etc...

*Bus Stop Crowding Conditions:
Low Crowd = Only minimal amount of people waiting (approx. 5-10 people), no crowding, not a long wait to get onto the bus.
Med. Crowd = Approx. 10-25 people waiting, some crowding, had to wait a bit to get onto the bus.
Heavy Crowd = Over 25 people waiting, crowding, long wait

**On-Board Crowding Conditions:
Low Crowd = Plenty of space on the bus to sit-down with minimal to no people standing, ease of movement.
Med. Crowd = Limited space to sit-down with people standing, but room to move around on the bus.
Heavy Crowd = No space to sit-down, standing room only without ease of movement on the bus. In extreme cases, have to wait for next bus due to overcrowding.

Every Which Way But Direct!



Shuttle Bus Service

G.O. Survey Form 2013-14 Shuttle Bus Service Surveyor _____

Date: _____ Time of Week: Weekday (10am -3pm Mon-Fri) Weeknight (12midnight – 5am Mon-Fri) Weekend Day (10am – 3pm Sat-Sun)

- Observed Line: _____
- Direction of Travel: Southbound Northbound
- Closed Platforms: Northbound Southbound Both Directions
- Origin Station: _____
- Destination Station: _____

Member Complete Form Below

G.O. Signage:

1. Is there signage present at the station to indicate a station/platform closure? Yes No
Where is the signage located? Turnstiles Walls Columns Outside/Street-level
Please take **PHOTOS** of signage!
Notes: _____
2. Are the dates, times and duration of the closures indicated on signage? Yes No (PHOTOS)
Notes: _____
3. Are travel alternatives clearly indicated on station signage? Yes No (PHOTOS)
Notes: _____
4. Are clear directions posted directing passengers to the shuttle buses? Yes No (PHOTOS)
Notes: _____
5. Is ADA accessible signage posted indicating travel alternatives for affected stations? Yes No

Alternative Route: Shuttle Bus Service

6. Shuttle Bus service _____
7. What time did you arrive at the origin subway station? _____
8. What time did you arrive at the Shuttle Bus stop? _____
9. Was signage present directing passengers to the shuttle buses? Yes No
10. Shuttle Bus Stop Crowding Conditions*:
(PHOTOS)
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____
11. What time did the Shuttle Bus arrive? _____
12. On-Board Crowding Conditions**:
(PHOTOS)
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____

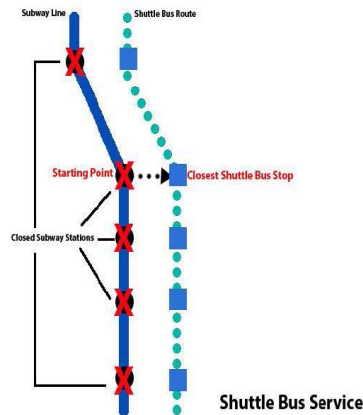
13. Did the shuttle bus stop at all designated stops for that route? Yes No
14. Did the bus operator make service and bus stop announcements? Yes No
15. When did you arrive at your final destination? _____
16. Rate the level of difficulty accessing the alternative route. E.g. traffic, lights, street conditions etc...
 Minimal Moderate Maximum

Minimal = less than 5 min. to access alt. route with fewer physical barriers such as traffic, lights, construction etc...
Moderate = approximately 5 min. to access alt. route with some physical barriers such as traffic, lights, construction etc...
Maximum = more than 5 min. to access alt. route with many physical barriers such as traffic, lights, construction etc...

*Bus Stop Crowding Conditions:
Low Crowd = Only minimal amount of people waiting (approx. 5-10 people), no crowding, not a long wait to get onto the bus.
Med. Crowd = Approx. 10-25 people waiting, some crowding, had to wait a bit to get onto the bus.
Heavy Crowd = Over 25 people waiting, crowding, long wait to get onto the bus.

**On-Board Crowding Conditions:
Low Crowd = Plenty of space on the bus to sit-down with minimal to no people standing, ease of movement.
Med. Crowd = Limited space to sit-down with people standing, but room to move around on the bus.
Heavy Crowd = No space to sit-down, standing room only without ease of movement on the bus. In extreme cases, have to wait for next bus

Example Map (Not actual NYC Transit map)





Parallel Subway Service

G.O. Survey Form 2013-14 Parallel Subway Service Surveyor _____

Date: _____ Time of Week: Weekday (10am -3pm Mon-Fri) Weeknight (12midnight – 5am Mon-Fri) Weekend Day (10am – 3pm Sat-Sun)

- Observed Line: _____
- Direction of Travel: Southbound Northbound
- Closed Platforms: Northbound Southbound Both Directions
- Origin Station: _____
- Destination Station: _____

Member Complete Form Below

G.O. Signage:

1. Is there signage present at the station to indicate station/platform closure? Yes No
 Where is the signage located? Turnstiles Walls Columns Outside/Street-level
 Please take **PHOTOS** of signage!

Notes: _____

2. Are the dates, times and duration of the closures indicated on signage? Yes No (**PHOTOS**)
 Notes: _____

3. Are travel alternatives clearly indicated on station signage? Yes No (**PHOTOS**)
 Notes: _____

4. Is ADA accessible signage posted indicating travel alternatives for affected stations? Yes No

Alternative Route: Parallel Service

Notes: _____

5. Parallel Service _____ / Station _____

6. What time did you get to the origin station?

7. What time did you get to the parallel service station? _____

8. Where signs posted, directing passengers to parallel service? Yes No

9. Platform Crowding Conditions*:(**PHOTOS**)
 Low Crowd Med. Crowd Heavy Crowd

Notes: _____

10. What time did the train arrive? _____

11. On-Board Crowding Conditions**:(**PHOTOS**)
 Low Crowd Med. Crowd Heavy Crowd

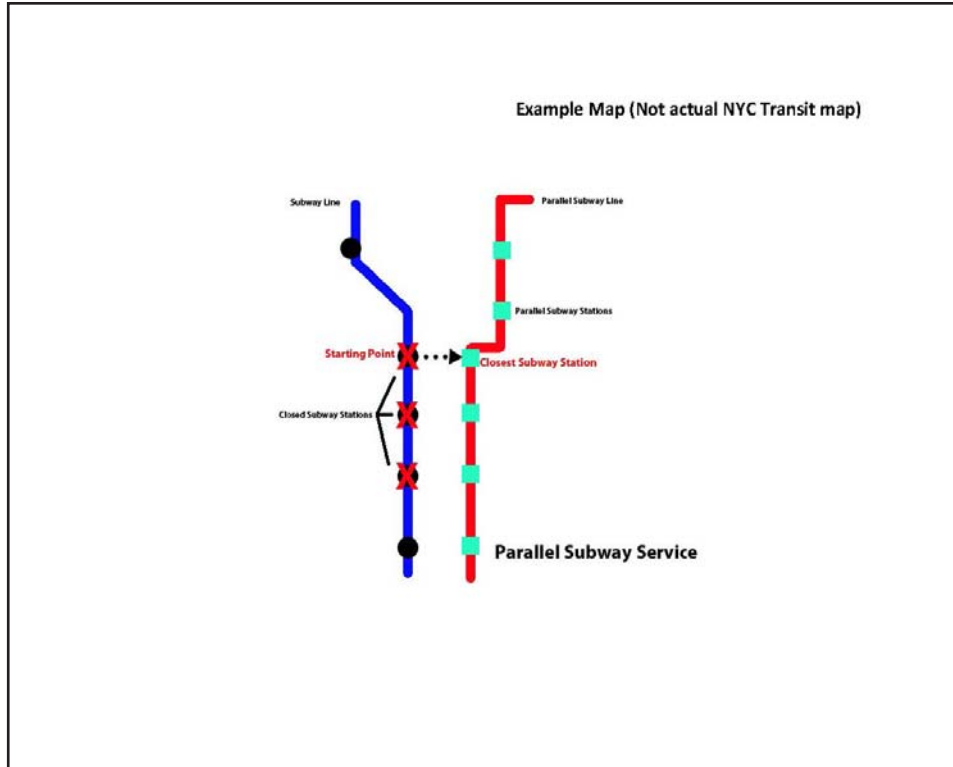
12. What time did the train arrive at the final destination? _____

13. Rate the level of difficulty accessing the alternative route. E.g. traffic, lights, street conditions etc...
 Minimal Moderate Maximum

Minimal = less than 5 min. to access alt. route with fewer physical barriers such as traffic, lights, construction etc...
Moderate = approximately 5 min. to access alt. route with some physical barriers such as traffic, lights, construction etc...
Maximum = more than 5 min. to access alt. route with

*Platform Crowding Conditions:
Low Crowd = Only minimal amount of people waiting (approx. 25% capacity), no crowding, no difficulty walking through the platform.
Med. Crowd = The platform is halfway full (approx. 50% capacity), some difficulty walking through the platform.
Heavy Crowd = The platform is at or close to full capacity (approx. 65-100% capacity), difficulty walking through the platform.

**On-Board Crowding Conditions:
Low Crowd = Plenty of space on train to sit-down with minimal to no people standing, ease of movement.
Med. Crowd = Limited space to sit-down with people standing, but room to move around on train.
Heavy Crowd = No space to sit-down, standing room only without ease of movement on train. In extreme cases, have to wait for next train due to overcrowding



Shuttle Bus/Parallel Subway Service



G.O. Survey Form 2013-14 **Shuttle Bus/Parallel Service** Surveyor _____

Date: _____ Time of Week: Weekday (10am -3pm Mon-Fri) Weeknight (12midnight – 5am Mon-Fri) Weekend Day (10am – 3pm Sat-Sun)

- Observed Line: _____
- Direction of Travel: Southbound Northbound
- Closed Platforms: Northbound Southbound Both Directions
- Origin Station: _____
- Destination Station: _____

Member complete form below
G.O. Signage:

1. Is there signage present at the station to indicate a station/platform closure? Yes No
 Where is the signage located? Turnstiles Walls Columns Outside/Street-level
 Please take **PHOTOS** of signage!
 Notes: _____
2. Are the dates, times and duration of the closures indicated on signage? Yes No (**PHOTOS**)
 Notes: _____
3. Are travel alternatives clearly indicated on station signage? Yes No (**PHOTOS**)
 Notes: _____

Every Which Way But Direct!

4. Are clear directions posted directing passengers to the shuttle buses? Yes No (PHOTOS)

Notes: _____

5. Are the stations and the route ADA accessible? Yes No

Notes: _____

Alternative Route: Shuttle Bus/Parallel Service

6. Shuttle Bus service from _____

7. What time did you arrive at the origin subway station? _____

8. What time did you arrive at the Shuttle Bus stop? _____

9. Was signage present directing passengers to the shuttle buses? Yes No

10. Shuttle Bus Stop Crowding Conditions*:
(PHOTOS)
 Low Crowd Med. Crowd Heavy Crowd

Notes: _____

11. What time did the Shuttle Bus arrive? _____

12. On-Board Crowding Conditions** (PHOTOS)
 Low Crowd Med. Crowd Heavy Crowd

Notes: _____

13. Were on-board service disruption announcements made? Yes No

14. What time did you arrive at the second subway station? _____

15. Were platform service disruption announcements made? Yes No

16. Was station signage present directing passengers to parallel service? Yes No

15. What time did you arrive at the parallel subway station? _____

17. What time did the train arrive? _____

18. On-Board Crowding Conditions** (PHOTOS)
 Low Crowd Med. Crowd Heavy Crowd

Notes: _____

19. What time did the train arrive at the third subway station? _____

20. Was signage present directing passengers to the shuttle buses? Yes No

21. Shuttle Bus Stop Crowding Conditions*:
(PHOTOS)
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____

22. What time did the Shuttle Bus arrive? _____

23. On-Board Crowding Conditions** (PHOTOS)
 Low Crowd Med. Crowd Heavy Crowd
Notes: _____

24. Did the shuttle bus stop at all designated stops? Yes No

25. Were on-board service disruption announcements made? Yes No

26. What time did the Shuttle Bus arrive at your destination? _____

27. Rate the level of difficulty accessing the alternative route. E.g. traffic, lights, street conditions etc...
 Minimal Moderate Maximum

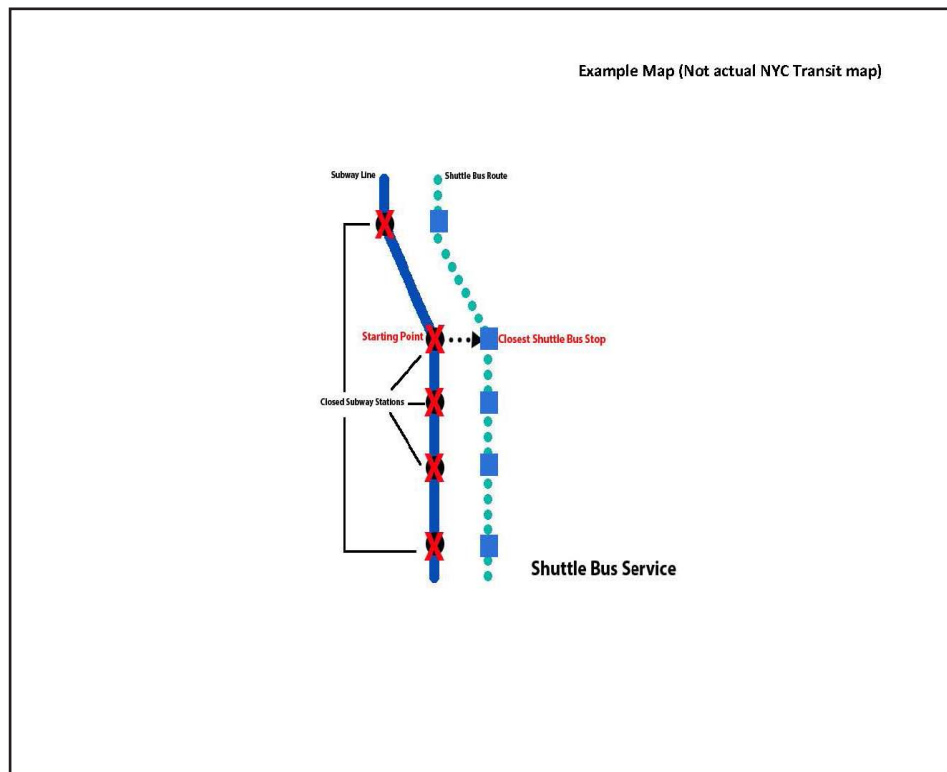
Minimal = less than 5 min. to access alt. route with fewer physical barriers such as traffic, lights, construction etc...

Moderate = approximately 5 min. to access alt. route with some physical barriers such as traffic, lights, construction etc...

Maximum = more than 5 min. to access alt. route with many physical barriers such as traffic, lights, construction etc...

***Bus Stop Crowding Conditions:**
Low Crowd = Only minimal amount of people waiting (approx. 5-10 people), no crowding, not a long wait to get onto the bus.
Med. Crowd = Approx. 10-25 people waiting, some crowding, had to wait a bit to get onto the bus.
Heavy Crowd = Over 25 people waiting, crowding, long wait to get onto the bus.

****On-Board Crowding Conditions:**
Low Crowd = Plenty of space on the bus to sit-down with minimal to no people standing, ease of movement.
Med. Crowd = Limited space to sit-down with people standing, but room to move around on the bus.
Heavy Crowd = No space to sit-down, standing room only without ease of movement on the bus. In extreme cases, have to wait for next bus.

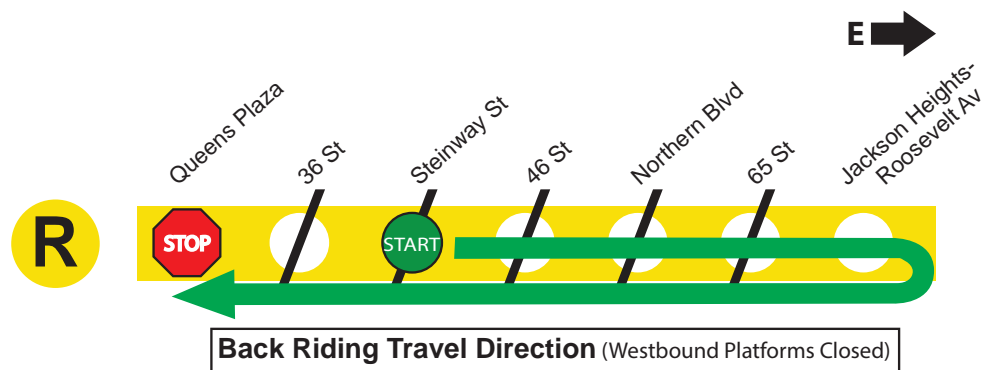


Appendix E: Individual Survey Results

Back Riding

Back riding is a travel alternative offered when construction requires one platform of a station to close. For back riding, a passenger must first travel in the opposite direction of the desired station. For example, a traveler wants to travel north from Station A to Station B, but the northbound platform of Station A is closed. The passenger must instead travel from the opposite platform of Station A south to Station C, where they will transfer to a northbound train back to Station B.

Survey 1: 02/08/2014, 5:57 pm – 6:27pm



Communication to Passengers

Steinway Street Station

- Signage was placed outside the station at street level, however it had been removed
- Signage was present inside the station on walls and columns
- Travel alternatives, dates, and times of the service diversion were displayed on signage
- Service diversion announcements were made in the station

On-board train to Roosevelt Av

- No service diversion signage was posted on-board

- No service diversion announcements were made on-board

Jackson Heights – Roosevelt Av Station (Transfer)

- The conductor on southbound train made service diversion announcements while the train was dwelling in the station

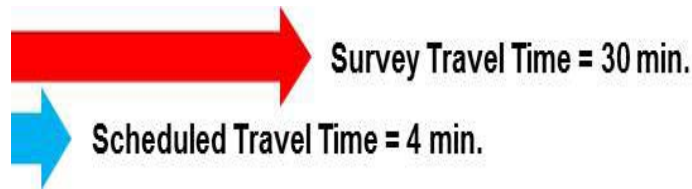
On-board train to Queens Plaza

- No service diversion signage was posted on-board

Crowding Conditions

- Platforms at Steinway Street and Roosevelt Avenue had medium crowding; platform benches were full and numerous people were standing
- Heavy crowding on the Roosevelt Av- bound train. Standing room only
- Medium crowding on the Queens Plaza-bound train with only a few seats available

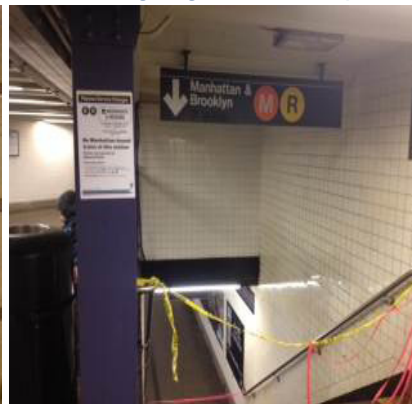
Passenger Travel Time



Station Signage



Station Signage & Red Tape



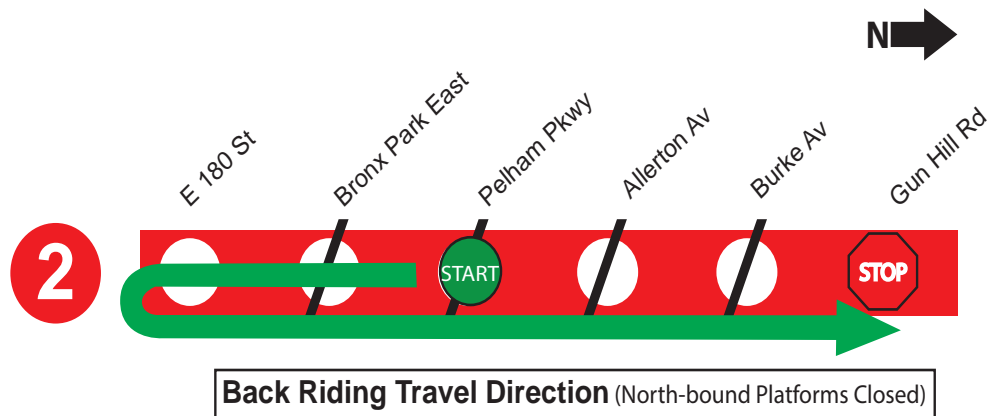
Med-Heavy Train Crowding



Source: NYCTRC

Every Which Way But Direct!

Survey 2: 02/12/2014, 11:03am – 11:39am



**This survey was conducted to highlight the level of accessibility for wheelchair passengers and therefore was conducted at wheelchair accessible stations.*

Communication to Passengers

Pelham Pkwy station

- No signage posted outside the station at street level
- Signage was posted inside the station on walls and in the agent's booth
- Travel alternatives, dates, and times of the service diversion were displayed on signage
- Signage did not display accessible travel options for wheelchair passengers
- Platform service diversion announcements were made at Pelham Pkwy
- Station count-down clocks were present in the station with accurate train arrival-time information, but did not display information on service diversion

On-board train to E 180 St station

- No service diversion signage was posted on-board
- No service diversion announcements were made on-board

E 180 St station

- No service diversion announcements were made in the station

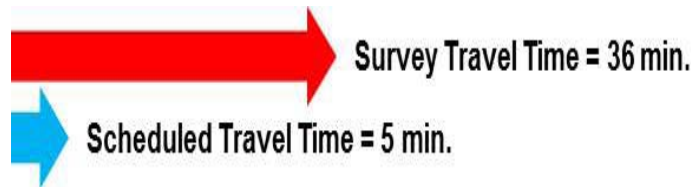
On-board train to Gun Hill Rd station

- No service diversion signage was posted on-board
- Service diversion announcements were made on-board

Crowding Conditions

- Pelham Pkwy platform had low crowding conditions
- E 180 St platform became more crowded with passengers making the connection to the northbound train
- On-board crowding conditions were medium to heavy; seats were full and people were standing on both trains

Passenger Travel Time

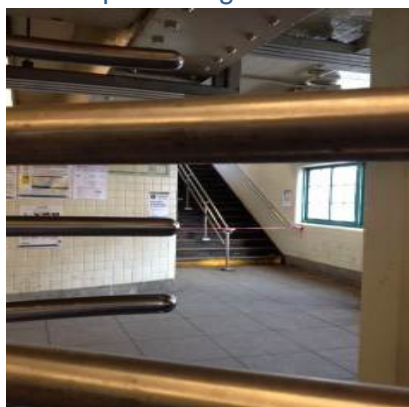


Pelham Pkwy station signage without accessible info.



Source: NYCTRC

Red Tape closing stairwell

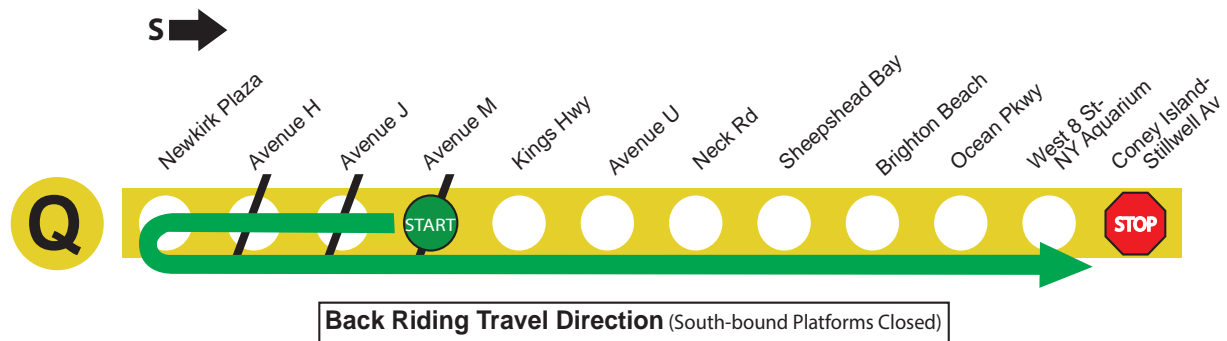


Medium Train Crowding



Every Which Way But Direct!

Survey 3: 03/20/2014, 11:40am – 12:23pm



* Surveyor was able to use the northbound B train to get to Newkirk Plaza, as it was making local northbound stops

Communication to Passengers

Avenue M Station

- Signage was posted at street-level
- Signage was posted on the walls in the station
- Red tape was used to block off the southbound entrance after entering through the turnstiles
- Travel alternatives, dates, and times of the service diversion were displayed on signage
- Automated service diversion announcements were made on the platform and informed passengers that the Manhattan-bound B trains were making local stops

On-board train to Newkirk Plaza Station

- No service diversion signage was posted on-board
- Service diversion announcements were made on-board
- Announcements stated the Manhattan-bound B trains were making local stops

Newkirk Plaza Station

- Automated service diversion announcements were made on the platform detailing travel alternatives, where to transfer, and mentioned that B trains were making all local stops

On-board train to Coney Island-Stillwell Av Terminal

- No service diversion signage was posted on-board
- Conductor made an announcement at Kings Hwy, informing passengers to transfer to a Manhattan-bound Q or B train to connect to southbound skipped stations.
- Conductor informed passengers that the train would be now making all local stops to Coney Island-Stillwell Av

Crowding Conditions

- Platforms at Avenue M and Newkirk Plaza had low crowding conditions
- Northbound B train to Newkirk Plaza had low crowding conditions with plenty of available seats
- Southbound Q train had low to medium crowding conditions, and only a few seats were available

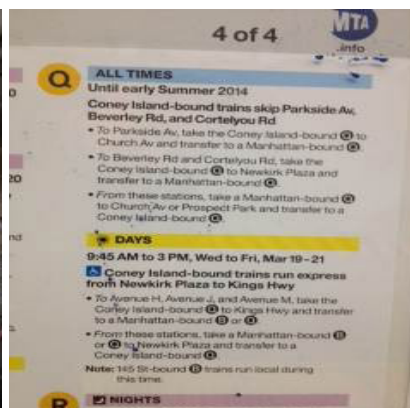
Passenger Travel Time



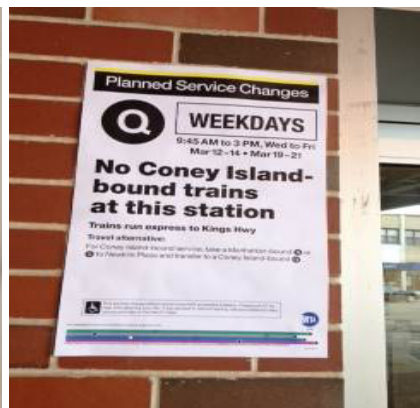
Directional Signage



Q line Service Diversion info.



Station Entrance Signage



Source: NYCTRC

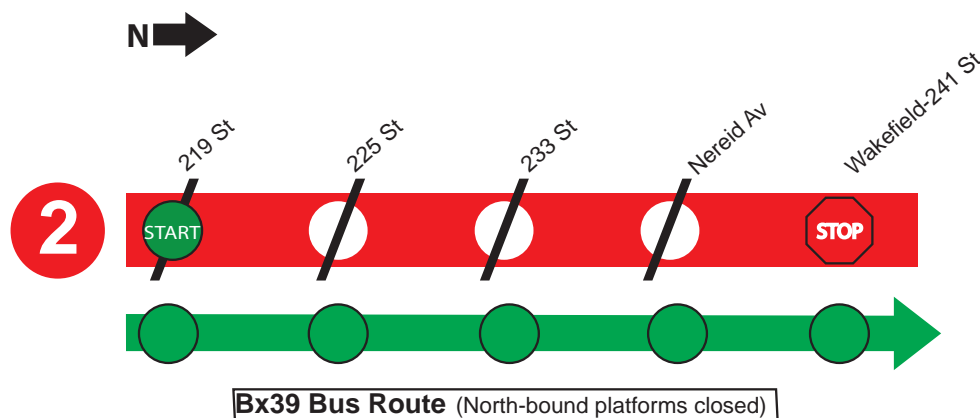
Every Which Way But Direct!



Existing Bus Service

Existing bus service is implemented when a NYC Transit bus stop is nearby for passengers to utilize. This is especially convenient when a bus route is running along the same corridor as the affected subway line.

Survey 4: 02/20/2014, 12:36pm - 12:58pm



Communication to Passengers

219 St Station

- Signage was posted outside the station at street level, however it had been removed
- Signage was placed on the walls within the station
- One sign was placed on the glass door panel entering the station, however it was placed with the back of the sign facing the stairwell so incoming passengers could not read it
- Travel alternatives, dates, and times of the service diversion were displayed on signage
- Because no red-tape was used to close off the stairwells to the closed platform a man was waiting on the closed platform
- No signage was posted directing passengers to Bx39 bus stop

On-board Bx39 bus to Wakefield-241 St Terminal

- The bus operator did not make any announcements until the one for “last stop”

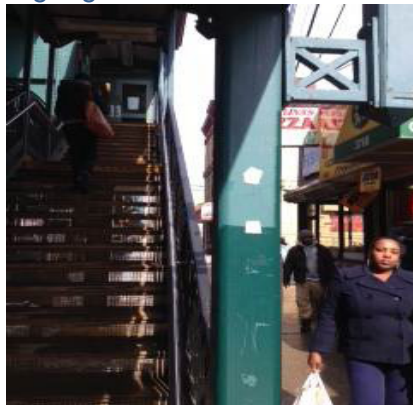
Crowding Conditions

- No one was waiting for the Bx39 bus
- Low crowding on-board with plenty of seats available

Passenger Travel Time



Signage removed



Inaccessible sign location



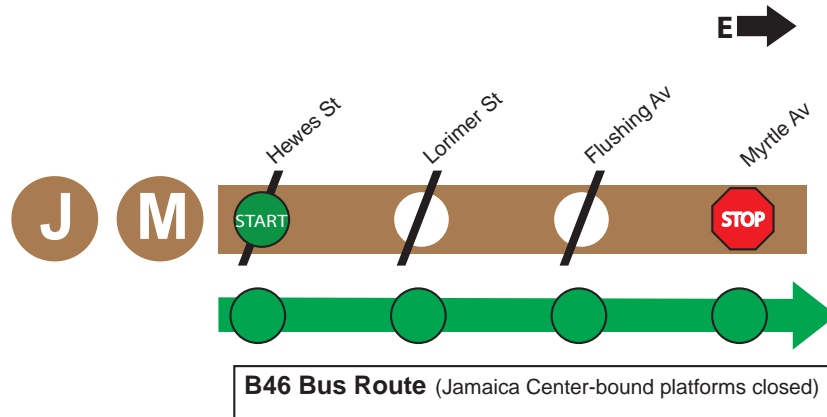
Signage with existing bus info.



Source: NYCTRC

Every Which Way But Direct!

Survey 5: 03/05/2014, 11:04 am - 11:38 am



Communication to Passengers

Hewes St Station

- No service diversion signage was posted outside at street level
- Service diversion signage was not posted within the station; the only available information about this service diversion was posted with all upcoming service diversions, making it difficult to find
- The station booth clerk put up her own handwritten signs at the turnstiles informing passengers “no Queens-bound service at the station”
- Signage that was mixed with other notices did not display the B46 alternative existing bus route as a travel option
- No signage was posted directing passengers to the B46 bus stop

On-board B46 bus to Myrtle Ave

- Bus operator was not making service and bus stop announcements

Crowding Conditions

- The bus stop had low crowding conditions
- After the stop at Woodhull Hospital, the bus became heavily crowded

Passenger Travel Time



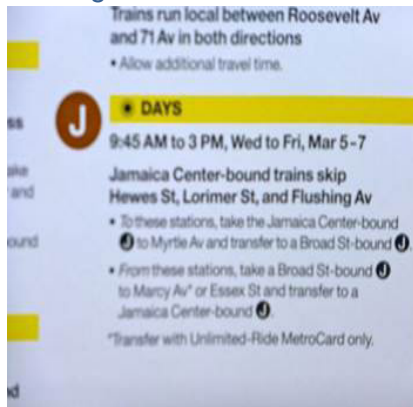
Hand-written sign at Hewes St



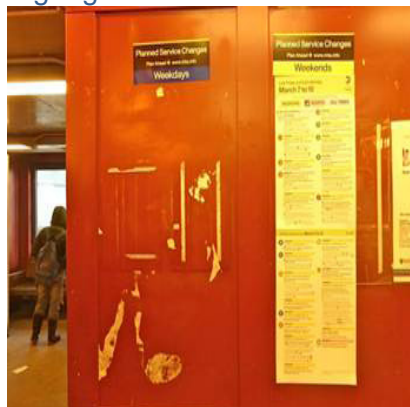
Med-Heavy bus crowding



Signage with back riding alternative and no indication of existing bus service



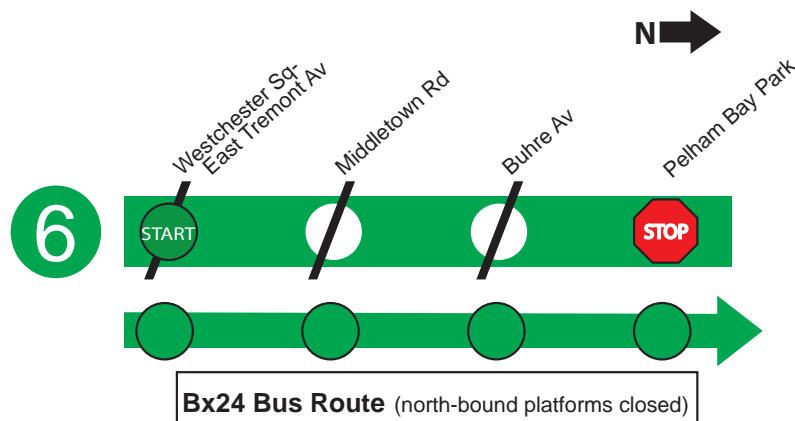
Signage removed



Source: NYCTRC

Every Which Way But Direct!

Survey 6: 03/09/2014, 1:45pm - 2:19pm



Communication to Passengers

Westchester Sq. – East Tremont Av station

- No service diversion signage was posted outside the station at street level
- Service diversion signage was displayed on turnstiles, walls, and columns inside the station
- Train travel alternatives were displayed on signage, although not all bus alternatives were displayed on signage (surveyor boarded the Bx24 to travel north-bound to Pelham Bay Park, however this alternative was not listed. Only south-bound options for Bx4 and Bx4A were posted)
- Signage directing passengers to bus service was not present

**Bustime* indicated that the Bx24 bus stop was located at Lane and E Tremont, however this is not the location for the Bx24. It stops at Westchester and Blondell Ave, a block away from the subway station

**Bustime* only gave Bx8 information for Westchester and Blondell Ave, however the schedule on the bus stop pole indicated the Bx24 information

On-board Bx24 bus to Pelham Bay Park

- Bus operator did not make service or bus stop announcements

Crowding Conditions

- Bus stop had low crowding conditions with only four people
- On-board the bus had low crowding conditions with many seats available

Passenger Travel Time



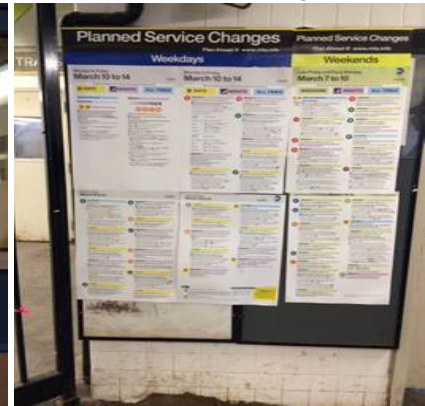
Signage with back riding alternative and no indication of existing bus service



Signage in agent's booth



Planned service changes



Source: NYCTRC

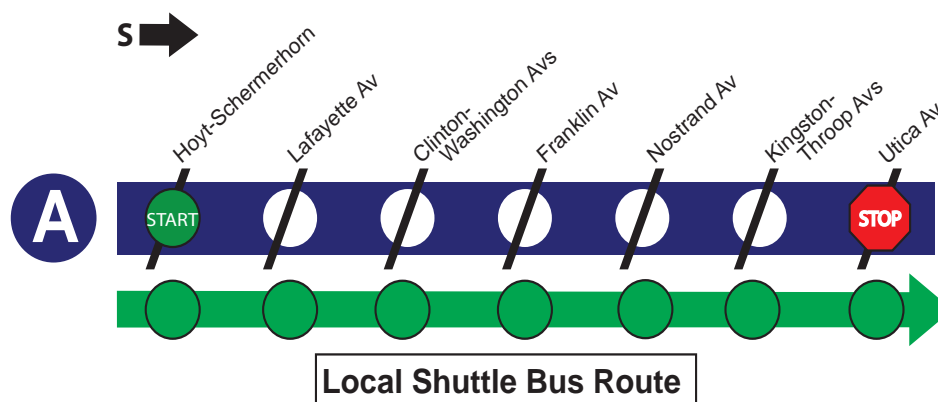
Every Which Way But Direct!



Shuttle Bus Service

Shuttle bus service is provided when both directions of a subway line are closed and no other modes of public transit are easily accessible. Even when other subway lines or bus routes are nearby, it may be determined that these alternatives cannot handle the additional passengers and therefore shuttle buses are provided.

Survey 7A: 02/08/2014, 1:45pm - 2:32pm



Communication to Passengers

Hoyt-Schermerhorn Station and Shuttle Bus stop

- At G train Hoyt-Schermerhorn station, attendants were directing passengers to shuttle buses on the platform level
- Attendants were at the turnstiles handing out transfer slips to the shuttle buses, giving directions, and warning passengers that there were large crowds at the shuttle buses
- Surveyor found verbal directions confusing because they were not guiding passengers in the same direction as the signage
- Shuttle bus signage was posted on station walls and outside station on bright yellow laminated paper
- Travel alternatives, dates, and times about the service diversion were displayed on signage

Every Which Way But Direct!

- Shuttle buses were directly outside of the subway station. However, it was difficult to determine which buses were local or express. Although there was a laminated sign indicating the location of the shuttle buses, there was no directional information provided, requiring a handwritten sign directing passengers across the street for Utica Avenue- bound shuttle buses.

On-board Shuttle Bus to Utica Avenue

- Automated announcements were made on the bus detailing the service changes and saying “allow for additional travel time”
- Bus Operator made bus stop announcements

Crowding Conditions

- Medium crowding at the shuttle bus stop at 1:53pm
- At 1:53pm, surveyor reached the Utica bound bus stop and tried to board the express bus, but it was too full. Surveyor had to wait for the next bus which was a local bus
- Bus was extremely crowded and full to the front door

Passenger Travel Time



Signage directing passengers to shuttle bus from the G line



Hand-written sign directing passengers to opposite direction shuttle buses



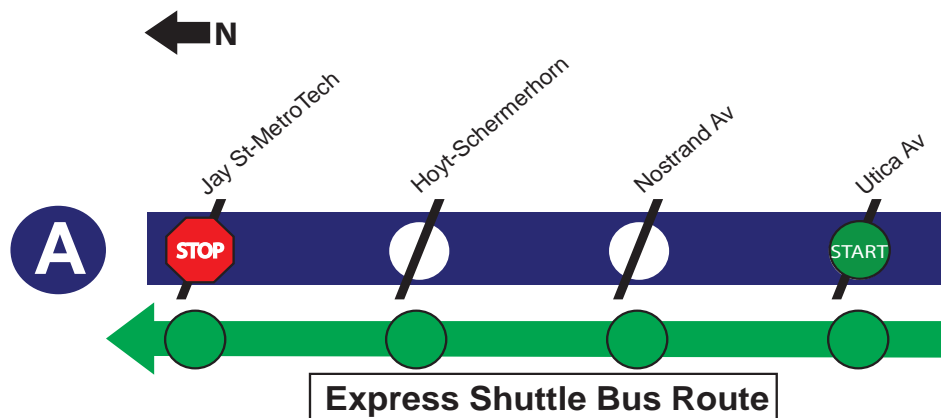
Med-Heavy crowding at shuttle bus stop



Source: NYCTRC

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Survey 7B: 02/08/2014, 2:37pm - 3:16pm



Communication to Passengers

Utica Avenue Station and Shuttle Bus Stop

- Shuttle bus signage was posted on station walls and outside station on bright yellow laminated paper
- Travel alternatives, dates, and times about the service diversion were displayed on signage
- Many attendants were giving directions to passengers; one attendant was using a megaphone to direct passengers
- While most attendants were well informed, surveyor received incorrect directions from one attendant. Surveyor noticed this attendant was then repositioned.
- As shuttle buses arrived they were determined to be local or express depending on customer demand
 - Bus operator did not know if her bus would be local or express
 - This made matters confusing when the buses were arriving
 - A man from Dept. of Buses told the driver that she would be running express, not local as she had been doing

On-board Shuttle Bus to Jay St-Metro Tech station

- At Hoyt-Schermerhorn, people coming from the subway trying to head to Utica Avenue mistakenly boarded the bus. The bus operator directed them to the correct bus and across the street.
- At Jay Street there were numerous signs directing passengers to Manhattan-bound A/F trains, which was very easy to understand

- The bus operator was making bus stop announcements

Crowding Conditions

- Utica Avenue shuttle bus stop had a heavy crowd
- Extremely crowded, not everyone could get onto the bus
- On-board was extremely crowded

Passenger Travel Time



Heavy crowding at Utica shuttle bus stop



Laminated station entrance signage



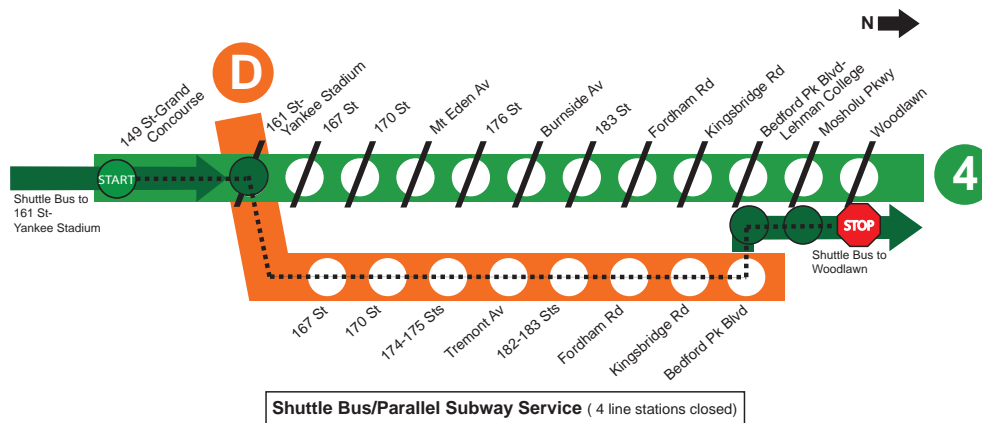
Signage directing passengers to connect to the A line at Jay St-MetroTech



Source: NYCTRC

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Survey 8: 02/22/2014, 10:48 am - 11:45 am



* This survey was conducted capturing both shuttle bus and parallel subway service, as each operated at different segments of the survey route.

Communication to Passengers

149 St-Grand Concourse station

- Service diversion signage was posted outside at street-level
- Service diversion signage was posted on the columns of the station
- Travel alternatives, dates, and times about the service diversion were displayed on signage
- Signage was posted directing passengers to the shuttle buses

161 St-Yankee Stadium station

- No signage was posted directing passengers to transfer to D line service

On-board announcements

- Prior to the survey, the surveyor traveled north on the 4 train to 149 St-Grand Concourse; the conductor was making announcements informing passengers to transfer to the D line for continuing service
- Announcements were made at Bedford Park Blvd, informing passengers that shuttle buses were available making 4 train stops to Woodlawn Terminal

Bedford Park Blvd station

- Signage was posted directing passengers to shuttle bus service

Crowding Conditions

- The shuttle bus stop had medium crowding conditions
- The shuttle bus had heavy crowding conditions
- The D line platform had medium crowding conditions
- The D train had medium crowding conditions
- The second shuttle bus stop at Bedford Park Blvd had low crowding conditions
- On-board the second shuttle bus had low crowding conditions

Passenger Travel Time



Signage directing passengers to shuttle buses from 149 St-Grand Concourse



Signage at shuttle bus stop



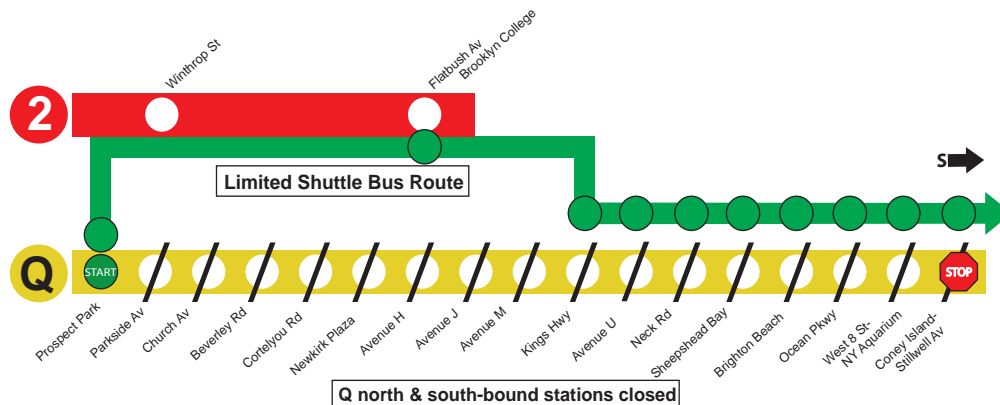
Low-medium platform crowding conditions at 161 St-Yankee Stadium (D line)



Source: NYCTRC

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Survey 9: 03/8/2014, 11:48am - 1:09pm



Communication to Passengers

Prospect Park station

- Service diversion signage was posted outside at street-level
- Service diversion signage was posted on the walls inside the station
 - The presence of the existing bus stop directly outside of subway station led to confusion
 - Passengers were waiting for the shuttle buses at the existing bus stop, although the shuttle buses were loading around the street corner
- Travel alternatives, dates, and times were posted on signage with express and local bus stop information, while other signs simply were directing passengers to the shuttle bus area
- Directions to the shuttle buses were posted on the existing bus stop shelter
 - Only one sign was posted which made finding the shuttle buses difficult

On-board announcements

- The bus operator made service and bus stop announcements

Crowding Conditions

- There were medium crowding conditions at the shuttle bus stop
- On-board crowding conditions were medium to heavy; everyone was seated although no additional seats were available

Passenger Travel Time



Hand-written notice on sign, indicating direction to shuttle bus stop for Ocean Av-bound buses

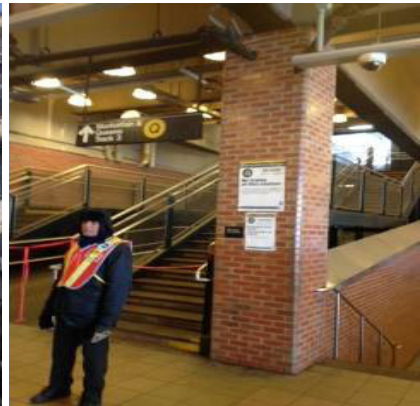


Source: NYCTRC

Confused passengers waiting at existing bus stop, when shuttle buses were located around the street corner



Signage posted at stairwell, with attendant present for passenger assistance



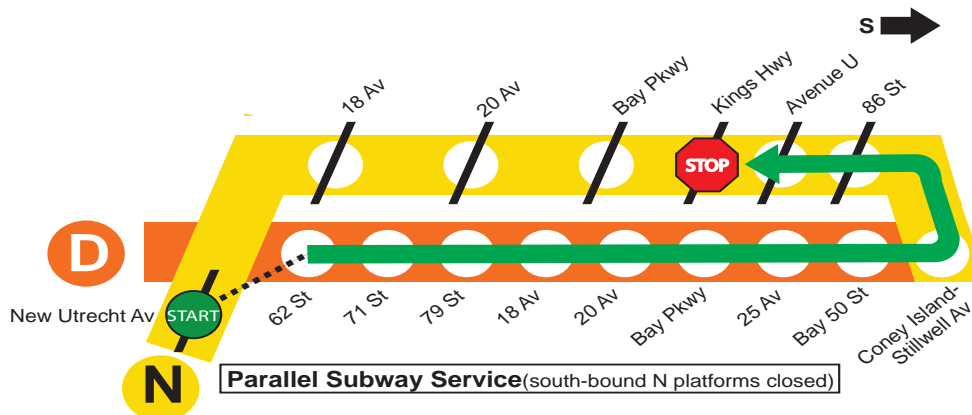
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Parallel Subway Service

Parallel subway service is when passengers can utilize a nearby subway line to complete their travels.

Survey 10: 01/12/2014, 11:41am - 12:17pm



Communication to Passengers

New Utrecht Av Station

- Service diversion signage was posted outside at street-level
- Signage was posted on turnstiles, walls, and station doors on the N train platform
- Hand-written sign was made in the token booth
- Signage was present directing passengers to parallel D service

62 St station

- No signs on D platform indicating that the N would stop at this station
- Travel alternatives were listed on signage did not indicate trains would be making limited stops

On-board and platform announcements

- No announcements were made at the platform level
- Conductor announced train was running express to Coney Island with a stop at Bay Parkway
- At Coney Island-Stillwell Av Terminal, conductor on the N train announced to passengers that this train would be making all N stops to Manhattan

Crowding Conditions

- Low crowding conditions at all platforms and on each train

Passenger Travel Time



Hand-written sign at 62 St



Coney Island-bound N trains stop at D train platforms



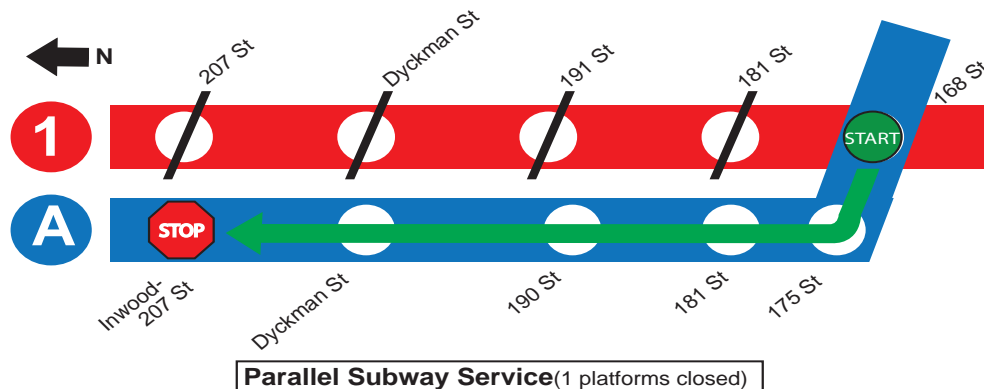
Signage at station entrance



Source: NYCTRC

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Survey 11: 03/22/2014, 11:35 - 11:50 am



Communication to Passengers

168 St station

- Service diversion signage was posted outside at street-level
- Travel Alternatives, dates, and times were displayed on signage
 - There was a lot of information on the signage, including a service diversion diagram
 - Travel alternatives consisted of shuttle buses, A train service, and the M3 bus
- Service diversion signage was posted on columns inside the station, directing passengers to the exits for shuttle bus service

Announcements at 168 St station

- Announcements were made in the station complex at 168 Street, where the 1 line and the A line intersect

Crowding Conditions

- The A train platform at 168 Street and the A train had low crowding conditions

Passenger Travel Time



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*Additional information for this survey consisted of the shuttle bus travel alternative information:

- After parallel subway service survey, surveyor walked over to the 207 St 1 line station
 - Signage was posted outside at street-level telling passengers to use nearby A train service on the downtown entrance
 - Signage was posted outside at street-level telling passengers to use shuttle buses on the uptown entrance
 - Additional signage was present inside the station stairwell displaying where the shuttle buses operate, accompanied by a route diagram
 - The information was important, but difficult to read through to make sense of where to locate shuttle buses
 - Surveyor, not familiar to the area, found it difficult to find shuttle buses since there were no signs that directed passengers to shuttle buses.

In-station signage directing passengers to shuttle buses



Station entrance signage, displaying too much info.

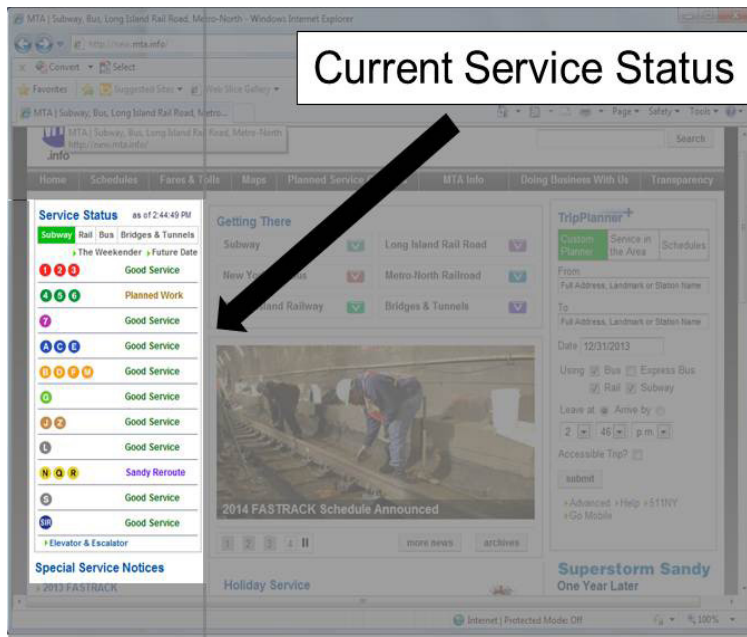


Station entrance signage with red tape

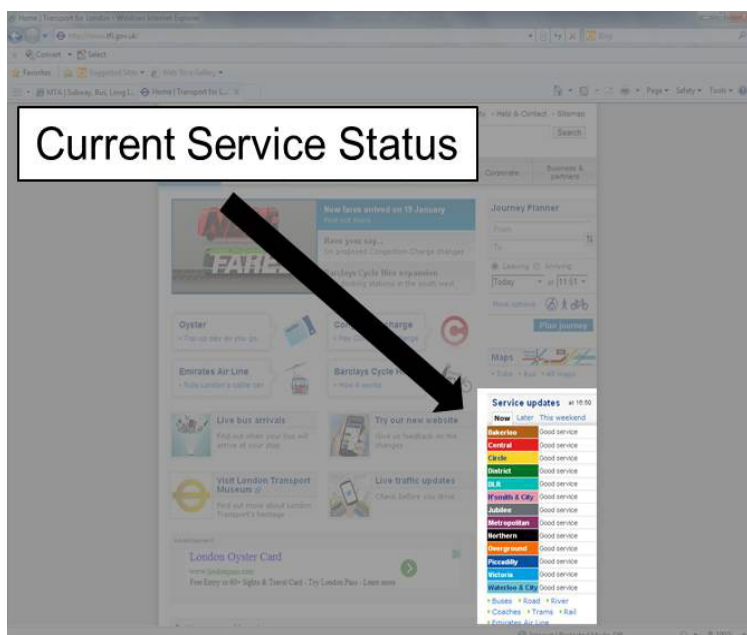


Source: NYCTRC

Appendix F: MTA vs. London Underground Website Service Diversion Information



- Current service status by line
- Link to *The Weekender*
- Link to *Future Date*



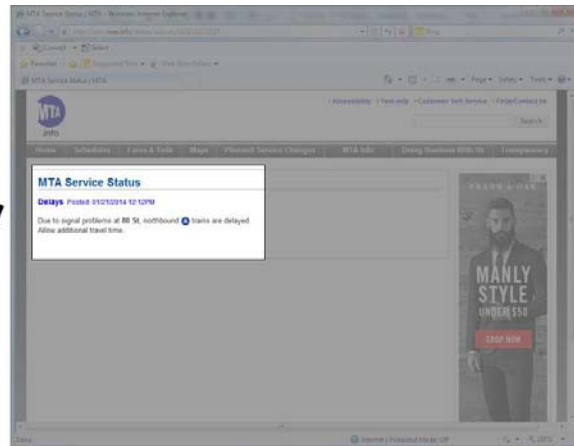
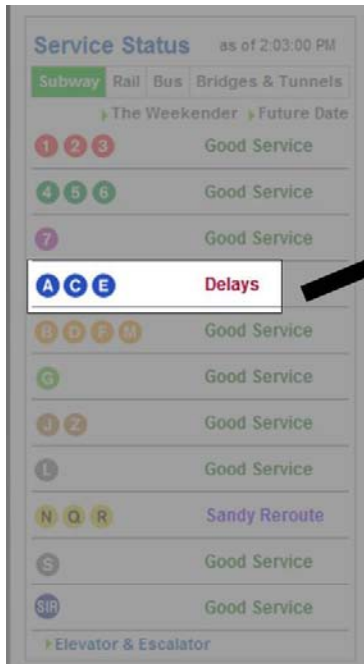
- Current service status by line
- Links to *Now*, *Later* and *This Weekend*
- Clicking on links brings viewer to *Live Travel News* webpage



Service Change Website Information

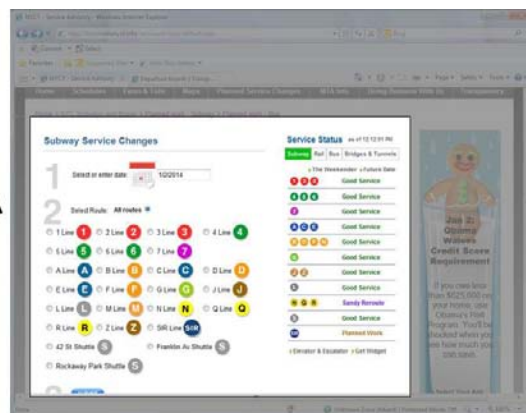
Source: mta.info

System Delays



- Displays current service delays
- Displays reason for delays, e.g. signal problems

Future Delays



- Select a date to display subway service changes
- Option of selecting all lines
- Option of selecting a specific line

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The Weekender Website Information

Source: mta.info

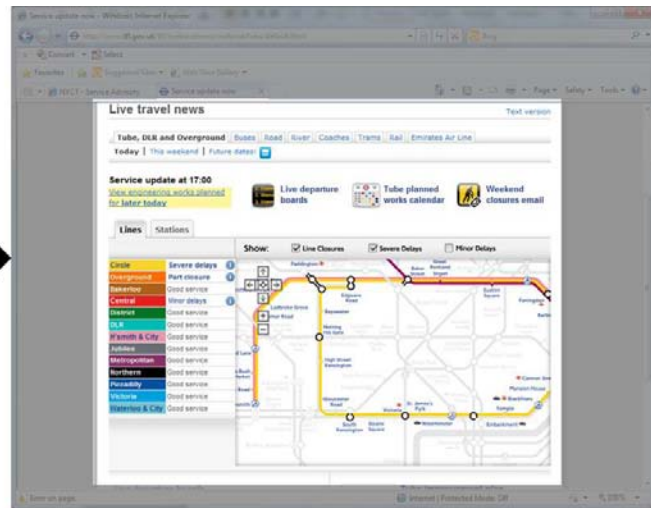
- Interactive System Map
- Select specific subway lines to view stations with service changes
- Select specific stations to view details and alternate travel options to/from stations



Service Change Website Information

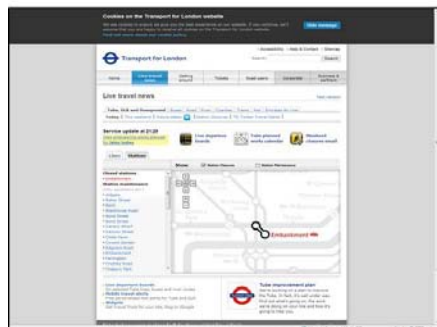
Source: tfl.gov.uk/modes/tube/

Service updates at 16:50		
Now	Later	This weekend
Bakerloo	Good service	
Central	Good service	
Circle	Good service	
District	Good service	
DLR	Good service	
H'smith & City	Good service	
Jubilee	Good service	
Metropolitan	Good service	
Northern	Good service	
Overground	Good service	
Piccadilly	Good service	
Victoria	Good service	
Waterloo & City	Good service	
<ul style="list-style-type: none"> ▶ Buses ▶ Road ▶ River ▶ Coaches ▶ Trams ▶ Rail ▶ Emirates Air Line 		



- Interactive system map
- Line closures, severe and minor delays
- Station closures
- Later today service changes
- Weekend service updates
- Live departure boards
- Tube planned works calendar
- Links to the *Tube Improvement Plan*

- Map displays system lines with closures and delays
- Station closures highlighted on map
- Hovering over lines will display closure/delay information with travel options
- Hovering over stations will display closure information with travel options



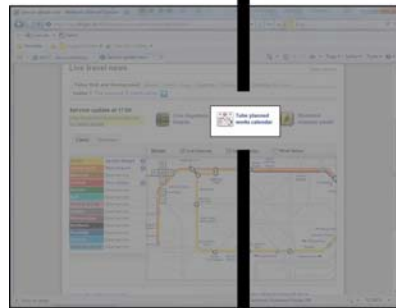
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Tube Planned Works Calendar and Improvement Plan Website Information

Source: tfl.gov.uk/modes/tube/

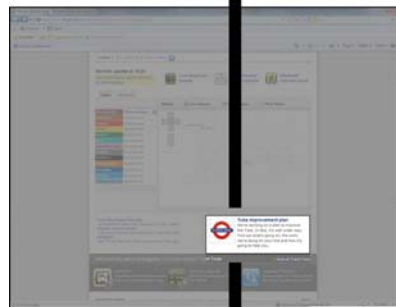
Tube planned works calendar



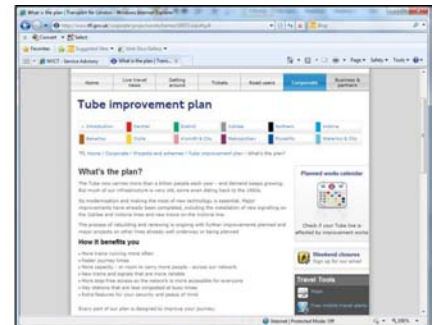
- Calendar is interactive, displaying planned work for upcoming twelve weeks
- Hovering over calendar displays closure information
- Clicking on information box displays further details with links to upgrade plan for individual lines



Tube improvement plan
We're working on a plan to improve the Tube. In fact, it's well under way. Find out what's going on, the work we're doing on your line and how it's going to help you.



- Links to Tube Improvement Plan
- Upgrade plans for individual lines





Lessons Learned
Website Recommendations



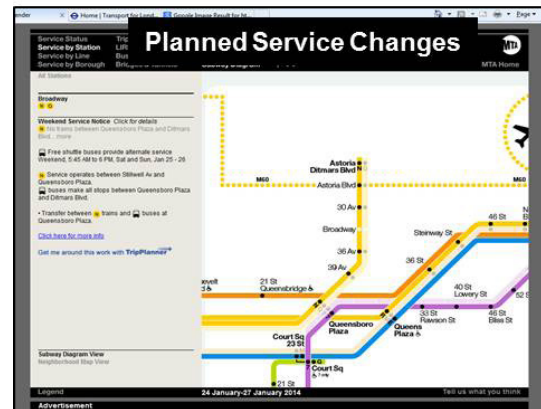
London Underground Website

1. **Interactive homepage system map**
 - o Map displays line and station closures/delays
2. **Planned works calendar**
 - o Provides passengers with a look ahead at line and station service changes
3. **Links to Tube Improvement Plans**
 - o Overall Tube Improvement Plan
 - o Individual line upgrade plans



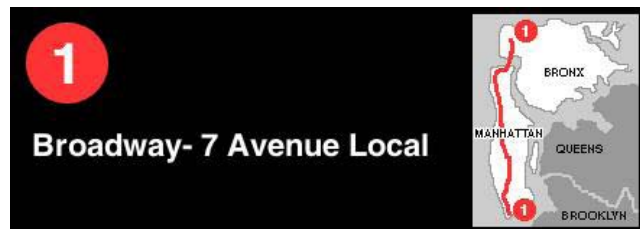
MTA Website Recommendations

1. **Extend The Weekender interactive map format to weekday/night service change information**
2. **Establish a Planned Works Calendar**
3. **Provide links to the Capital Program**

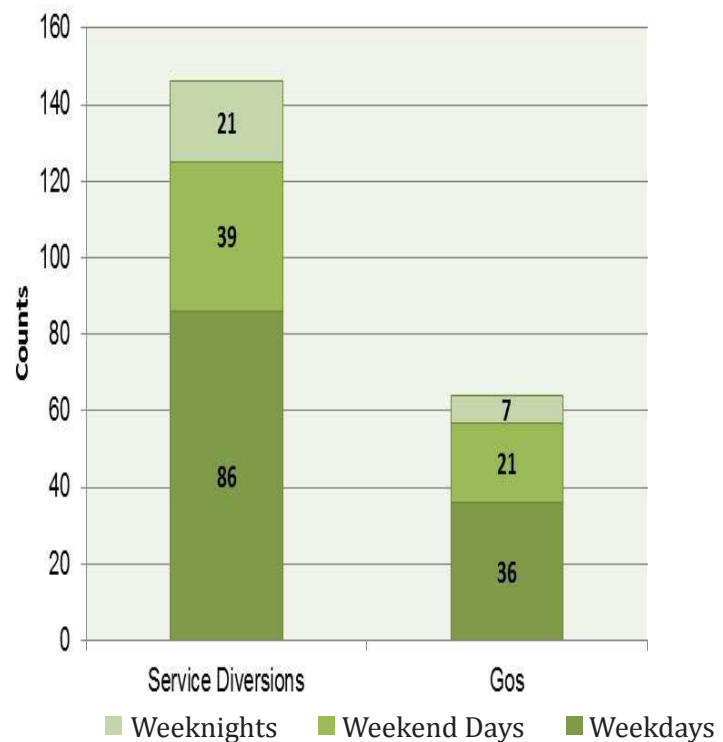


Appendix G: The Magnitude of Service Diversions on the Broadway-7th Avenue Local

As an example of how much impact GOs can have on a rider, the Council looked at the schedules of GOs on the northern end Broadway-7th Ave Local 1 line in 2013. While the 7 line construction and Superstorm Sandy-related projects also have a large number of GOs that significantly impact passenger service, the Council decided the circumstantial nature of both makes them not representative of normal GO work. In 2013 our sample area, encompassing 17 stations between the 103 Street and Van Cortlandt-242 St stations, endured a combined 146 days and nights of service diversions, occurring predominantly during weekday hours.



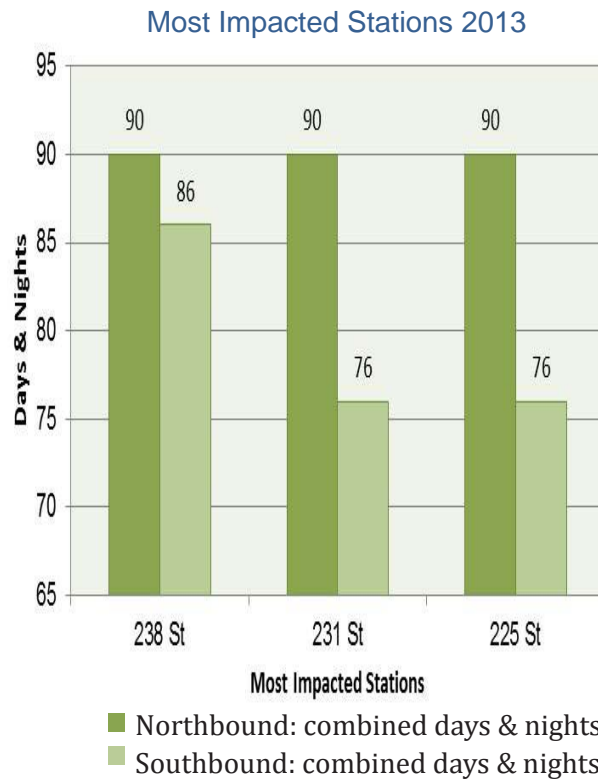
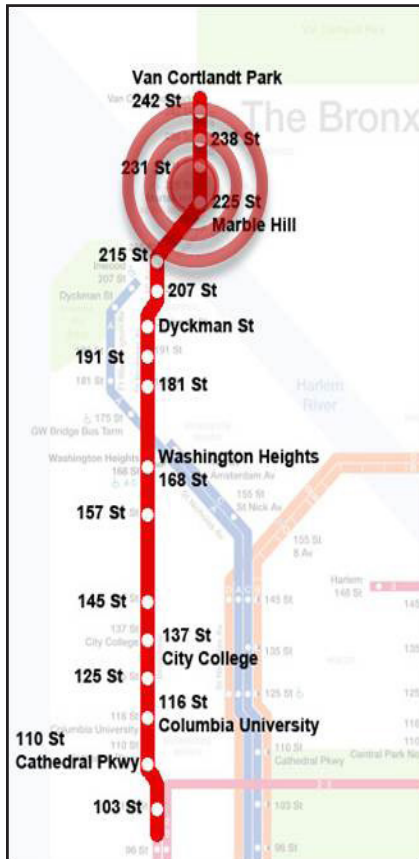
Number of Service Diversions and GOs
1 Line (103 St to 242 St): Jan-Dec 2013



Source: Data compiled from MTA Today website, General Orders Bulletin

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Three of the northernmost stations in this sample area were impacted the most. Northbound platforms of the 225 Street-Marble Hill, 231 Street, and 238 Street stations were impacted a total of 90 combined days and nights in 2013. The Southbound platform at 238 Street was impacted a total of 86 combined days and nights, and both 231 Street and 225 Street-Marble Hill were each impacted a total of 76 combined days and nights.



Source: Data compiled from MTA Today website, General Orders Bulletin

Appendix H: GO Personnel Training

NYC Transit Riders Council - General Order Questions and Responses

In order to gain greater clarity on the processes behind planning for General Orders, the NYCTRC staff was in constant communication with the Operations Planning Department of NYC Transit. The Operations Planning Department provided the Council with guidance through both emails and in-person meetings. The following is a selection of those correspondences relating to GO personnel training.

Questions:

- Is there any type of GO training program to educate NYC Transit personnel on what to do during a GO?
- Are NYC Transit employees informed on what information needs to be communicated to passengers during GO periods?
- Before a GO happens, what type of roles and responsibilities are communicated to NYC Transit personnel involved?

Answers:

As you know, there are many parts to a General Order (GO) from writing the GO to working on the track or a signal to assisting customers during service diversions. A subset of GO responsibilities include interacting with the public. Departments whose responsibilities include public engagement include bus drivers, station staff, Rapid Transit Operations (RTO) staff, and traffic checkers. Each group receives training and instructions on what to do during a General Order or Service Diversion.

Bus Operators are trained in the safe, courteous, and reliable transport of customers on a daily basis and the same standard applies while operating shuttle operations. Road Operations determines the amount of supervision required for a shuttle operation and packages are prepared and distributed to the Bus Operators, which include shuttle routing and bus stops for the GO. Bus Operators are assigned specific “runs” that include scheduled leave times from the terminals. Prior to any GO, Road Operations personnel meet with Operations Planning to discuss the service plan, which includes bus routing, running times, and bus stops, to ensure a safe and efficient operation.

Traffic checkers are part of the Operations Planning division. Among other duties, traffic checkers visit every subway station each day to post and remove signs, including service

diversion signage. New hires receive a five-week training, and receive GO Support Training during that time. When a GO calls for a shuttle bus operation, traffic checkers are in charge of crowd control and bus loading on the street.

RTO staff handle platform safety, customer direction, and ensure that all passengers have exited the train before it leaves the station for its turnaround or terminal destination. Stations staff handle passenger egress and transfers. RTO and Stations staff get detailed instructions on their roles during a GO including: how to read a GO, when it goes into effect, their responsibilities, what the alternative service options are, if/what special announcements need to be made during a GO, any special operating procedures, any supplements involved, if/what additional personnel are necessary to run the GO, who is in charge of the GO, and when the GO signage should be removed from the bulletin board.

As an example, here is what a customer may experience at an upcoming GO at Franklin Avenue in Brooklyn:

- When a customer exits the train, they will see RTO staff on the platform directing people to the proper exits for shuttle bus service. Passengers can follow the directions from staff and/or follow the yellow “way finding arrows” that will lead to the shuttle bus operation.
- When the customer gets to the mezzanine, Stations staff will be there directing passengers and giving out transfer slips.
- When the customer reaches the street, they will see Operations Planning staff who will be directing customers to shuttle buses. They will help load the buses and manage crowd control.

Each staff person with a public engagement responsibility is informed on what needs to be communicated to passengers during each service diversion. Each team knows its general role and responsibility as a part of their overall job. For each specific GO or service diversion, staff get instructions on the proper exits, service plan, route of shuttle buses, and how to direct passengers to continue/complete their travel. Given the nature of the work, and the fact that GOs are going on much of the time, GO training is typically built-in to overall work training within each NYCT division. GOs can be better understood as the Transit way of life, rather than a special or tangential assignment.

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Questions:

- If there is a debriefing session that occurs after a GO, that would be great to know as well.
- Is there a feedback loop to hear how the operation went? Is the feedback provided orally or by filling out a form? Do they go over critical items such as, if announcements were made and if signs were posted correctly, etc...?

Answers:

Debriefing sessions are held whenever we run a new GO or try a new method of service diversion, for example, FasTrack. When we started FasTrack, staff were in the field observing how things were going. Their job was to see if everything was happening as planned and instructed. Were announcements being made? Were signs posted everywhere? After a new scenario like this, we hold “Post-Mortem” debriefing sessions to discuss what worked, what didn’t, and what needs to be changed for the next GO/service diversion.

In addition to debriefing sessions after new GOs or service plans, we also at times schedule and hold post-GO meetings with senior personnel to assess problems that arose, share lessons learned, and discuss ways to improve the process next time. This kind of exercise also takes place in pre-GO coordination meetings, where staff members share past experience and offer suggestions of what to improve for the coming GO or for future GOs. In these meetings, everything from the posted signs to the bus destination signs to the service diversions are discussed in an effort to improve coordination and organization on the day of between staff and passengers.

Questions:

- Is there a checklist for NYC Transit employees to use to ensure every task gets accomplished?

Answers:

- No

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