

= New York City Subway =

The New York City Subway is a rapid transit system owned by the City of New York and leased to the New York City Transit Authority , a subsidiary agency of the state @-@ run Metropolitan Transportation Authority . Opened in 1904 , the New York City Subway is one of the world 's oldest public transit systems , one of the world 's most used metro systems , and the metro system with the most stations and the most trackage . It offers service 24 hours per day and every day of the year .

The New York City Subway is the largest rapid transit system in the world by number of stations , with 469 stations in operation (422 , if stations connected by transfers are counted as single stations) . Stations are located throughout the boroughs of Manhattan , Brooklyn , Queens , and the Bronx . The Staten Island Railway is not officially considered part of the subway , as it lacks a rail link with the subway system , so passengers to another borough take a ferry or bus . The Port Authority Trans @-@ Hudson and the AirTrain JFK , in Manhattan and Queens respectively , accept the subway 's MetroCard but are not part of the subway ; thus , free transfers are not allowed .

The system is also one of the world 's longest . Overall , the system contains 233 miles (375 km) of routes , translating into 660 miles (1 @,@ 060 km) of revenue track ; and a total of 846 miles (1 @,@ 362 km) including non @-@ revenue trackage .

By annual ridership , the New York City Subway is the busiest rapid transit rail system in the United States and in the Western world , as well as the seventh busiest rapid transit rail system in the world ; the metro (subway) systems in Beijing , Seoul , Shanghai , Moscow , Tokyo , and Guangzhou record a higher annual ridership . In 2015 , the subway delivered over 1 @.@ 76 billion rides , averaging approximately 5 @.@ 7 million daily rides on weekdays and a combined 5 @.@ 9 million rides each weekend (3 @.@ 3 million on Saturdays ; 2 @.@ 7 million on Sundays) . Ridership continues to increase , and on September 23 , 2014 , more than 6 @.@ 1 million people rode the subway system , establishing the highest single @-@ day ridership since ridership was regularly monitored in 1985 .

All services pass through Manhattan except for the G train , the Franklin Avenue Shuttle , and the Rockaway Park Shuttle . Large portions of the subway outside Manhattan are elevated , on embankments , or in open cuts , and a few stretches of track run at ground level . In total , 40 % of track is not underground despite the " subway " moniker . Many lines and stations have both express and local services . These lines have three or four tracks . Normally , the outer two are used for local trains , while the inner one or two are used for express trains . Stations served by express trains are typically major transfer points or destinations .

= = History = =

Alfred Ely Beach built the first demonstration for an underground transit system in New York City in 1869 and opened it in February 1870 . His Beach Pneumatic Transit only extended 312 feet (95 m) under Broadway in Lower Manhattan operating from Warren Street to Murray Street and exhibited his idea for a subway propelled by pneumatic tube technology . The tunnel was never extended for political and financial reasons , although extensions had been planned to take the tunnel southward to The Battery and northwards towards the Harlem River . In 1912 , workers excavating for the present @-@ day BMT Broadway Line dug into the old Beach tunnel ; today , no part of this line remains as the tunnel was completely within the limits of the present day City Hall Station under Broadway .

The Great Blizzard of 1888 helped demonstrate the benefits of an underground transportation system . A plan for the construction of the subway was approved in 1894 , and construction began in 1900 . The first underground line of the subway opened on October 27 , 1904 , almost 36 years after the opening of the first elevated line in New York City , which became the IRT Ninth Avenue Line . The fare was \$ 0 @.@ 05 and on the first day the trains carried over 150 @,@ 000 passengers . The oldest structure still in use opened in 1885 as part of the BMT Lexington Avenue Line in Brooklyn and is now part of the BMT Jamaica Line . The oldest right @-@ of @-@ way , which is part of the BMT West End Line near Coney Island Creek , was in use in 1864 as a steam

railroad called the Brooklyn , Bath and Coney Island Rail Road .

By the time the first subway opened , the lines had been consolidated into two privately owned systems , the Brooklyn Rapid Transit Company (BRT , later Brooklyn ? Manhattan Transit Corporation (BMT)) and the Interborough Rapid Transit Company (IRT) . The city built most of the lines and leased them to the companies . The first line of the city @-@ owned and operated Independent Subway System (IND) opened in 1932 ; this system was intended to compete with the private systems and allow some of the elevated railways to be torn down , but stayed within the core of the City due to its small startup capital . This required it to be run ' at cost ' , necessitating fares up to double the five @-@ cent fare popular at the time .

In 1940 , the city bought the two private systems . Some elevated lines ceased service immediately while others closed soon after . Integration was slow , but several connections were built between the IND and BMT ; these now operate as one division called the B Division . Since the IRT tunnels , sharper curves , and stations are too small and therefore can not accommodate B Division cars , the IRT remains its own division , the A Division . However , many passenger transfers between stations of all three former companies have been created , allowing the entire network to be treated as a single unit .

The New York City Transit Authority (NYCTA) , a public authority presided by New York City , was created in 1953 to take over subway , bus , and streetcar operations from the city , and placed under control of the state @-@ level Metropolitan Transportation Authority in 1968 .

Organized in 1934 by transit workers of the BRT , IRT , and IND , the Transport Workers Union of America Local 100 remains the largest and most influential local of the labor unions . Since the union 's founding , there have been three union strikes over contract disputes with the MTA : 12 days in 1966 , 11 days in 1980 , and three days in 2005 .

By the 1970s and 1980s , the New York City Subway was at an all @-@ time low . Ridership had dropped to 1910s levels , and graffiti and crime were rampant on the subway ; in general , the subway was very poorly maintained during that time , and delays and track problems were common . Still , the NYCTA managed to open six new subway stations in the 1980s , make the current fleet of subway cars graffiti @-@ free , as well as order 1 @,@ 775 new subway cars . By the early 1990s , conditions had improved significantly , although maintenance backlogs accumulated during those 20 years are still being fixed today .

Entering the 21st century , progress continued despite several disasters . The September 11 attacks resulted in service disruptions on lines running through Lower Manhattan , particularly the IRT Broadway ? Seventh Avenue Line , which ran directly underneath the World Trade Center . Sections of the tunnel , as well as the Cortlandt Street station , which was directly underneath the Twin Towers , were severely damaged . Rebuilding required the suspension of service on that line south of Chambers Street . Ten other nearby stations were closed for cleanup . By March 2002 , seven of those stations had reopened . The rest (except for Cortlandt Street on the IRT Broadway ? Seventh Avenue Line) reopened on September 15 , 2002 , along with service south of Chambers Street . In 2012 , Hurricane Sandy wreaked havoc , flooding several underwater tunnels and other facilities near New York Harbor . The immediate damage was fixed within six months but long @-@ term resiliency and rehabilitation projects continue .

= = = Construction methods = = =

When the IRT subway debuted in 1904 , the typical tunnel construction method was cut @-@ and @-@ cover . The street was torn up to dig the tunnel below before being rebuilt from above . Traffic on the street above would be interrupted due to the digging up of the street . Temporary steel and wooden bridges carried surface traffic above the construction .

Contractors in this type of construction faced many obstacles , both natural and man @-@ made . They had to deal with rock formations , and ground water , which required pumps . Twelve miles of sewers , as well as water and gas mains , electric conduits , and steam pipes had to be rerouted . Street railways had to be torn up to allow the work . The foundations of tall buildings often ran near the subway construction , and in some cases needed underpinning to ensure stability .

This method worked well for digging soft dirt and gravel near the street surface . However , tunnelling shields were required for deeper sections , such as the Harlem and East River tunnels , which used cast @-@ iron tubes . Segments between 33rd and 42nd streets under Park Avenue , 116th Street and 120th Street under Broadway , and 145th Street and Dyckman Street (Fort George) under Broadway and Saint Nicholas Avenue as well as the tunnel from 96th Street to Central Park North ? 110th Street & Lenox Avenue , used either rock or concrete @-@ lined tunnels .

About 40 % of the subway system runs on surface or elevated tracks , including steel or cast iron elevated structures , concrete viaducts , embankments , open cuts and surface routes . All of these construction methods are completely grade @-@ separated from road and pedestrian crossings , and most crossings of two subway tracks are grade @-@ separated with flying junctions . The sole exceptions of at @-@ grade junctions of two lines in regular service are the 142nd Street junction and the Myrtle Avenue junction , whose tracks both intersect at the same level .

The 7 @, @ 700 workers who built the original subway lines were mostly immigrants living in Manhattan .

More recent projects use tunnel boring machines , which increase the cost . They minimize disruption at street level and avoid already existing utilities . Examples of such projects include the extension of the IRT Flushing Line and the IND Second Avenue Line .

= = = Expansion = = =

Since the opening of the original New York City Subway line in 1904 , various official and planning agencies have proposed numerous extensions to the subway system . One of the more expansive proposals was the " IND Second System " , part of a plan to construct new subway lines in addition to taking over existing subway lines and railroad rights @-@ of @-@ way . The most grandiose IND Second Subway plan , conceived in 1929 , was to be part of the city @-@ operated IND , and was to comprise almost 1 ? 3 of the current subway system . By 1939 , with unification planned , all three systems were included within the plan , which was ultimately never carried out . Many different plans were proposed over the years of the subway 's existence , but expansion of the subway system mostly stopped during World War II .

Though most of the routes proposed over the decades have never seen construction , discussion remains strong to develop some of these lines , to alleviate existing subway capacity constraints and overcrowding , the most notable being the Second Avenue Subway . Plans for new lines date back to the early 1910s , and expansion plans have been proposed during many years of the system 's existence .

After the IND Sixth Avenue Line was completed in 1940 , the city went into great debt , and only 29 new stations have been added to the system since . Five stations were on the abandoned New York , Westchester and Boston Railway @-@ operated IRT Dyre Avenue Line , fourteen stations were on the abandoned LIRR Rockaway Beach Branch (now the IND Rockaway Line) , six were on the Archer Avenue Lines and 63rd Street Lines (built as part of a 1968 plan) , two stations (57th Street and Grand Street) were part of the Chrystie Street Connection , the Harlem ? 148th Street terminal , and the 7 Subway Extension to the west side of Manhattan .

= = Lines and routes = =

Many rapid transit systems run relatively static routings , so that a train " line " is more or less synonymous with a train " route " . In New York City , however , routings change often because of changes in the availability of connections or the setup of service patterns . Within the nomenclature of the subway , the " line " describes the physical railroad track or series of tracks that a train " route " uses on its way from one terminal to another . " Routes " (also called " services ") are distinguished by a letter or a number and " Lines " have names . They are also designations for trains , as exemplified in the Billy Strayhorn song " Take the " A " Train " .

There are 24 train services in the subway system , including three short shuttles . Each route has a

color and a local or express designation representing the Manhattan trunk line of the particular service . The color lime green is exclusively assigned to the Crosstown Line route , which operates entirely outside Manhattan , while the shuttles are all assigned dark slate gray . The lines and services are not referred to by color (e.g. , Blue Line or Green Line) by native New Yorkers or by most New York City residents , but out @-@ of @-@ towners and tourists often refer to the subway lines by color .

The 1 , 6 , 7 , C , G , L , M and R trains are fully local and make all stops . The 2 , 3 , 4 , 5 , < 6 > , < 7 > , A , B , D , E , F , N and Q trains have portions of express and local service . The J train normally operates local , but during rush hours it is joined by the Z train in the peak direction ; both the J and Z run local , express or skip @-@ stop on different parts of their shared route . The letter S is used for three shuttle services : Franklin Avenue Shuttle , Rockaway Park Shuttle , and 42nd Street Shuttle .

Though the subway system operates on a 24 @-@ hour basis , during late night hours some of the designated routes do not run , run as a shorter route (often referred to as the ' shuttle train ' version of its full @-@ length counterpart) or run with a different stopping pattern . These are usually indicated by smaller , secondary route signage on station platforms . Because there is no nightly system shutdown for maintenance , tracks and stations must be maintained while the system is operating . This work sometimes necessitates service changes during midday , overnight hours , and weekends . See also FASTRACK below .

When parts of lines are temporarily shut down for construction purposes , the transit authority can substitute free shuttle buses (using MTA Regional Bus Operations bus fleet) to replace the routes that would normally run on these lines . The transit authority announces planned service changes through its website , via placards that are posted on station and interior subway @-@ car walls , and through its Twitter page .

== Trunk lines ==

== Subway map ==

The current official transit maps of the New York City Subway are based on a 1979 design by Michael Hertz Associates . The maps are not geographically accurate due to the complexity of the system (i.e. Manhattan being the smallest borough , but having the most services) , but are known to help tourists navigate the city , as major city streets are shown alongside the subway stations serving them . The newest edition of the subway map , which took effect on June 27 , 2010 , reflects the latest service changes and also makes Manhattan bigger and Staten Island smaller . Part of the reason for the current incarnation is that earlier diagrams of the subway (the first being produced in 1958) , while being more aesthetically pleasing , had the perception of being more geographically inaccurate than the diagrams today . The design of the subway map by Massimo Vignelli , published by the MTA between 1972 and 1979 , has since become recognized in design circles as a modern classic ; however , the MTA deemed the map flawed due to its placement of geographical elements .

A late night @-@ only version of the map was introduced on January 30 , 2012 . On September 16 , 2011 , the MTA introduced a Vignelli @-@ style interactive subway map , " The Weekender " , to its website ; as the title suggests , the map is a way for riders to get information about any planned work , from late Friday night to early Monday morning , that is going on either on a service (s) or station (s) of the subway during the weekend only .

There are several privately produced schematics which are available online or in published form , such as those by Hagstrom Map . Additionally , the New York City subway map has served as the subject of artistic endeavors . Among these are works by Fadeout Design and by Alexander Chen .

== Stations ==

Most of the 469 stations are served 24 hours a day . Underground stations in the New York City Subway are typically accessed by staircases going down from street level . Many of these staircases are painted in a common shade of green , with slight or significant variations in design . Other stations have unique entrances reflective of their location or date of construction . Several station entrance stairs , for example , are built into adjacent buildings . Nearly all station entrances feature color @-@ coded globe or square lamps signifying their status as an entrance .

Out of all the stations on the New York City Subway ,

277 are fully underground

153 are elevated stations

29 are on an embankment

9 are open cut stations

This means that 61 % of the stations are below the surface (59 % being fully underground and about 2 % being sub @-@ surface stations) . 39 % of stations are above the surface or overground .

== = Concourse == =

Many stations in the subway system have mezzanines . Mezzanines allow for passengers to enter from multiple locations at an intersection and proceed to the correct platform without having to cross the street before entering . Inside mezzanines are fare control areas , where passengers physically pay their fare to enter the subway system . In many older stations , the fare control area is at platform level with no mezzanine crossovers . Many elevated stations also have platform @-@ level fare control with no common station house between directions of service .

Upon entering a station , passengers may use station booths (formerly known as token booths) or vending machines to buy their fare , which is currently stored in a MetroCard . Each station has at least one booth , typically located at the busiest entrance . After swiping the card at a turnstile , customers enter the fare @-@ controlled area of the station and continue to the platforms . Inside fare control are " Off @-@ Hours Waiting Areas " , which consist of benches and are identified by a yellow sign .

== = Platforms == =

A typical subway station has waiting platforms ranging from 480 to 600 feet (150 to 180 m) long , though some IND platforms may be as long as 660 to 745 feet (201 to 227 m) long . Platforms of former commuter rail stations , such as those on the IND Rockaway Line , are even longer . Due to the large number of transit lines , one platform or set of platforms often serve more than one service . Passengers need to look at the overhead signs at the platform entrance steps and over each track to see which trains stop there and when , and at the arriving train to see which one it is .

There are a number of common platform configurations :

On a double track line , a station may have one center island platform used for trains in both directions , or 2 side platforms , one for a train in each direction .

For lines with three or four tracks with express service , local stops will have side platforms and the middle one or two tracks will not stop at the station . On these lines , express stations typically have two island platforms , one for the local and express in one direction , and another for the local and express in the other direction . Each island platform provides a cross @-@ platform interchange between local and express services . Some lines with four @-@ track express service have two tracks each on two levels and use both island and side platforms .

== = Accessibility == =

Since the majority of the system was built before 1990 , the year the Americans with Disabilities Act (ADA) went into effect , many New York City Subway stations were not designed to be handicapped @-@ accessible . Since then , elevators have been built in newly constructed stations

to comply with the ADA . (Most grade @-@ level stations required little modification to meet ADA standards .) In addition , the MTA identified " key stations " , high @-@ traffic and / or geographically important stations , which must conform to the ADA when they are extensively renovated . As of March 2016 , there are 103 currently accessible stations ; many of them have AutoGate access . Under the current MTA plans , the number of ADA accessible stations will go up to 144 by 2020 . The MTA has been sued by a disability rights group for not including an elevator during the \$ 21 @,@ 000 @,@ 000 renovation of the Middletown Road subway station in the Bronx . Only 19 % of all of the subway system 's stations are fully accessible to people with disabilities .

= = Rolling stock = =

As of December 2015 , the New York City Subway has 6 @,@ 407 cars on the roster . A typical New York City Subway train consists of 8 to 11 cars , although shuttles can have as few as two , and the train can range from 150 to 600 feet (46 to 183 m) in length .

The system maintains two separate fleets of cars , one for the A Division routes and another for the B Division routes . All B Division equipment is about 10 feet (3 @.@ 05 m) wide and either 60 feet 6 inches (18 @.@ 44 m) or 75 feet (22 @.@ 86 m) long , whereas A Division equipment is approximately 8 feet 9 inches (2 @.@ 67 m) wide and 51 feet 4 inches (15 @.@ 65 m) long . There is also a special fleet of B Division cars that is used for operation in the BMT Eastern Division , where 75 @-@ foot (22 @.@ 86 m) long cars are not permitted .

Cars purchased by the City of New York since the inception of the IND and the other divisions beginning in 1948 are identified by the letter " R " followed by a number ; e.g. : R32 . This number is the contract number under which the cars were purchased . Cars with nearby contract numbers (e.g. : R1 through R9 , or R26 through R29 , or R143 through R160B) may be relatively identical , despite being purchased under different contracts and possibly built by different manufacturers .

Since 1999 , the R142 , R142A , R143 , R160 , and R188 cars have been placed into service . These cars are collectively known as New Technology Trains (NTTs) due to modern innovations such as LED and LCD route signs and information screens , as well as recorded train announcements and the ability to facilitate Communication @-@ Based Train Control (CBTC) . Live conductor announcements can still be made .

On March 24 , 2012 , the MTA announced that it ordered 300 R179 subway cars from Bombardier . The total price of the contract is US \$ 599 million , with the first test train of ten cars arriving in June 2016 , due to ongoing delivery problems .

= = Fares = =

Riders pay a single fare to enter the subway system and may transfer between trains at no extra cost until they exit via station turnstiles ; the fare is a flat rate regardless of how far or how long the rider travels . Thus , riders must swipe their MetroCard upon entering the subway system , but not a second time upon leaving .

As of April 2016 , nearly all fares are paid by MetroCard ; the base fare is \$ 2 @.@ 75 when purchased in the form of a reusable " pay per ride " MetroCard , with the last fare increase occurring on March 22 , 2015 . Single @-@ use cards may be purchased for \$ 3 @.@ 00 , and 7 @-@ day and 30 @-@ day unlimited ride cards can lower the effective per @-@ ride fare significantly . Reduced fares are available for the elderly and people with disabilities .

Currency collected throughout the system is handled by the Money room .

= = = MetroCard = = =

In November 1993 , the subway system introduced a fare system called the MetroCard , which allows riders to use cards that store the value equal to the amount paid to a station booth clerk or vending machine . The MetroCard was enhanced in 1997 to allow passengers to make free transfers between subways and buses within two hours ; several MetroCard @-@ only transfers

between subway stations were added in 2001 . With the addition of unlimited @-@ ride MetroCards in 1998 (for 7 @-@ day and 30 @-@ day periods , later 1 @-@ day " Fun Pass " and 14 @-@ day periods , both of which have been discontinued) , the New York City Transit system was the last major transit system in the United States with the exception of BART in San Francisco to introduce passes for unlimited bus and rapid transit travel . In January 2014 , the MTA stated that it wants to implement a contactless fare system to replace the MetroCard by 2019 .

= = Modernization = =

= = = FASTRACK = = =

In January 2012 , the MTA introduced a new maintenance program , FASTRACK , to speed up repair work . This program involves a more drastic approach than previous construction , and completely shuts down a major portion of a line for overnight work on four consecutive weeknights from 10 p.m. to 6 a.m. According to the MTA , this new program proved much more efficient and quicker than regular service changes , especially because it happened at night and not the weekend , when most transit closures had occurred before . In 2012 the program only closed lines in Midtown and Lower Manhattan , while in 2013 it expanded to other corridors requiring minimal shuttle buses and in 2014 to even more locations . There were corridors scheduled for 2014 during 24 weeks of the year , and in 2015 there were 12 corridors scheduled during 22 weeks . In 2016 , there are 13 corridors scheduled during 21 weeks .

= = = Technology = = =

= = = = Train arrival " countdown clocks " = = = =

In 2003 , the MTA signed a \$ 160 million contract with Siemens Transportation Systems to install digital real @-@ time message boards (officially Public Address Customer Information Screens , or PA / CIS) at 158 of its IRT stations to display the number of minutes until the arrival of the next trains . Payments to the company were stopped in May 2006 following many technical problems and delays and MTA started to look for alternative suppliers and technologies . In January 2007 Siemens announced that the issues had been resolved and that screens would start appearing at 158 stations by the end of the year . In 2008 , the system @-@ wide roll @-@ out was pushed back again , to 2011 , with the MTA citing technical problems .

An in @-@ house simpler system developed by MTA for the L trains was operational by early 2009 and the first three displays of the larger Siemens system became operational at stations on the IRT Pelham Line (6 < 6 > trains) in the Bronx in December 2009 . Siemens signs were in operation in 110 A Division stations by March 2011 and in 153 IRT mainline and 24 Canarsie Line stations by late 2011 . Simpler countdown clocks , which only announce the track on which the train is arriving and the number of stops the train is from the station , are used at 40 stations . This includes thirteen stations on the IND Queens Boulevard Line , nineteen stations on the IND Eighth Avenue Line , three stations on the BMT Broadway Line , and five stations on the BMT Astoria Line ; however , the clocks on the Broadway and Astoria Lines are no in use As of 2016 . The announcements are voiced by radio traffic reporter Bernie Wagenblast and Carolyn Hopkins .

In 2012 , real @-@ time station information for the 1 through 6 trains and the 42nd Street Shuttle was made available , through MTA 's ' Subway Time ' mobile app and as open data , to third party developers via a API . In early 2014 , data for the L train were also given to developers .

Displays at 22 IRT Flushing Line and the 5 IRT Dyre Avenue Line stations are not expected to be operational until the late 2010s , with the delay being attributed to upgrades to upgrading the signal system with CBTC for the IRT Flushing Line stations and to signal modernizations for IRT Dyre Avenue Line stations . Displays at 267 B Division stations will be installed as part of the 2015 ? 2019

capital funding program . Upon the October 2015 approval of funding for the 2015 ? 2019 capital program , full installation of the countdown clocks was deferred to beyond 2020 , with 320 out of 469 stations having countdown clocks by then . This was attributed to the rate of installation of wi @-@ fi and 3G systems in subway stations , which , among other things , makes countdown clocks viable . The B , D , and N were expected to get countdown clocks in 2016 ; the B and D would get the PA / CIS along their shared IND Concourse Line stations , the D along the BMT West End Line , and the N along the BMT Sea Beach Line . Meanwhile , the IRT Flushing Line (7 < 7 >) was to get the clocks in 2018 , a delay from an earlier announced date of 2016 . The countdown clocks for the rest of the B Division will be installed as part of the Integrated Service Information and Management ? B Division (ISIM @-@ B) project , which will upgrade signal towers and connect track circuits to a central database .

== == PayPass trials == ==

The MTA signed a deal with MasterCard in the first few months of 2006 to test out a new RFID card payment scheme . Customers had to sign up at a special MasterCard website and use a MasterCard PayPass credit or debit card / tag to participate . Participating stations included IRT Lexington Avenue Line (4 5 6 < 6 > trains) from the Third Avenue ? 138th Street and 138th Street ? Grand Concourse stations in the Bronx to Borough Hall in Brooklyn , as well as the Court Square ? 23rd Street in Queens for the E M 7 < 7 > trains . Originally scheduled to end in December 2006 , the trial was extended into 2007 due to " overwhelming positive response " .

In light of the success of the first PayPass pilot project in 2006 , another trial was started by the MTA . This one started on June 1 , 2010 , and ended on November 30 , 2010 . The first two months started with the customer just using the MasterCard PayPass debit or credit card . However , this trial was the debut of having a rider use the VISA PayWave debit or credit card to enter the system , which started on August 1 , 2010 . For six months , a rider could use either a MasterCard Paypass or VISA PayWave credit / debit card to pay for a fare on an expanded list of subway and bus routes .

== == Help Point == ==

The MTA set up another technology pilot project for the New York City Subway called " Help Point " on April 5 , 2011 . Help Point is a new digital @-@ audio communications system for use in case of an emergency or to obtain subway information for travel directions . The top button is labeled red for emergencies and connects to the Rail Control Center . The bottom button is labeled green and connects to a MTA station agent for any inquiries . All units are equipped with a microphone and speaker , and can optionally be installed with a camera . Also , the test units were equipped for the hearing impaired (under ADA compliance) .

The two subway stations that were part of this trial were on the IRT Lexington Avenue Line . They were the 23rd Street and the Brooklyn Bridge ? City Hall stations . The Help Points at the Brooklyn Bridge ? City Hall station were wireless , while those at the 23rd Street station ones were hard @-@ wired , to test which type of transmission is best for the subway .

After the Help Point test was successfully completed , the MTA started to install Help Points in all 469 subway stations to replace the existing Customer Assistance Intercom (CAI) units . The help points were to be installed in 139 stations by 2014 , and the remaining 333 stations would have Help Points by the end of 2019 .

== == On The Go ! Travel Station == ==

On September 19 , 2011 , the MTA set up another pilot project , an online , interactive touchscreen computer program called " On The Go ! Travel Station " (OTG) . It lists any planned work or service changes occurring on the subway as well as information to help travelers find landmarks or locales near the stations with an OTG outlet , with advertisements as well . The first station to test this new

technology was Bowling Green on the IRT Lexington Avenue Line . Other stations scheduled to participate in this program were Penn Station (with the LIRR) , Grand Central Terminal (with Metro @-@ North) , Atlantic Avenue ? Barclays Center in Brooklyn , and Jackson Heights ? Roosevelt Avenue / 74th Street ? Broadway in Queens .

New and existing On the Go ! kiosks were to receive an interface overhaul as a result of the MTA 's partnership with Control Group , a technology and design consultancy firm . Control Group were adding route lookups , countdown to train arrivals , and service alerts . Between 47 and 90 interactive wayfinding kiosks were scheduled to be deployed in 2013 . As of January 2016 , there are 155 kiosks at 131 stations .

= = = Cellular phone and wireless data = = =

New York City Subway began to provide underground cellular phone with voice and data service , and free Wi @-@ Fi to passengers in 2011 at six stations . The new network was installed and owned by Transit Wireless as part of company 's \$ 200 million investment . The company expanded the services to 30 more stations in 2013 and signed an agreement with all 4 major wireless network operators (Verizon Wireless , AT & T , Sprint , and T @-@ Mobile) to allow their cellular phone customers to use its network . The MTA and Transit Wireless are splitting the fees received from those wireless carriers for the usage of the network . The Wi @-@ Fi service , which operates using antennae , is operated by Boingo Wireless .

Transit Wireless expects to provide service to the remaining 241 underground stations by 2017 , including the three deep @-@ level subway stations under construction . The next 40 key stations (11 in midtown Manhattan and 29 in Queens) have antennas that were in service by March 2014 . The wireless for these 40 underground stations were completed by October 2014 . Phase 3 of the project was completed in March 2015 and added service to the Flushing @-@ Main St station in Queens , as well as stations in Lower Manhattan , West Harlem and Washington Heights . Phase 4 of the project covered twenty underground stations in the Bronx and seventeen in Upper Manhattan ; this phase , completed in November 2015 , provided service to major stations such as Lexington Avenue ? 53rd Street , Lexington Avenue ? 59th Street , 149th Street ? Grand Concourse , and 125th Street . Phases 6 and 7 of the Transit Wireless network build @-@ out will connect the 90 remaining Brooklyn and Manhattan underground stations in 2017 , about one year ahead of schedule .

= = = 2015 ? 2019 Capital Program overhaul = = =

Under the 2015 ? 2019 MTA Capital Plan , thirty @-@ one stations in all five boroughs will undergo a complete overhaul and would be entirely closed for up to 6 months at a time , according to Governor Andrew Cuomo . Updates would include cellular service , Wi @-@ Fi , charging stations , improved signage , subway countdown clocks , service alerts , neighborhood maps , new art , and improved station lighting . The stations would also include glass barriers near fare control areas (rather than the current metal fences that separate the paid and unpaid areas of the station) , as well as new tiled floors that are easy to clean . Minor component work , such as station signage , tiling , and lighting , would also be performed at over 170 other stations as part of the plan .

In addition , at least 1 @, @ 025 R211 subway cars are expected to be ordered under the plan . The R211s would include 58 @-@ inch (150 cm) wide doors , wider than the current MTA standard of 50 inches (130 cm) , thereby projected to reduce station dwell time by 32 % . The new cars will have Wi @-@ Fi installed , USB chargers , digital advertisements , digital customer information displays , illuminated door opening alerts , and security cameras , unlike the current New Technology Trains , which lack these features . Some lines , like the IND Eighth Avenue Line , would get communications @-@ based train control as part of a larger plan to automate the system . These measures are all projected to help reduce overcrowding on the subway , which is prevalent .

= = Safety and security = =

Crime , train accidents , suicides and threats of terrorism all impact the subway system .

= = = Signalling = = =

= = = Manual signalling = = =

The system currently uses Automatic Block Signaling with fixed wayside signals and automatic train stops in order to provide safe train operation across the whole system . The New York City Subway system has , for the most part , used block signalling since its 1904 opening , and many portions of the signaling system were installed between the 1930s and 1960s . Some replacement parts must be custom built for the MTA , as they are no longer available from signaling suppliers . Additionally , some subway services have reached their train capacity limits and cannot operate extra trains with the current Automatic Block Signaling system . As of May 2014 , the system consists of about 14 @, @ 850 signal blocks , 3 @, @ 538 mainline switches , 183 major track junctions , 10 @, @ 104 automatic train stops , and 339 @, @ 191 signal relays .

These signals work by preventing trains from entering a " block " occupied by another train . Typically , the blocks are 1 @, @ 000 feet (300 m) long . If no train is in the block , the signal will light up as green . When a train enters the block , the signal turns red , marking the block as occupied . The train 's maximum speed will depend on how many blocks are open in front of it . However , the signals do not register a train 's speed , nor where in the block the train is located .

Subway trains are stopped mechanically at all signals showing " stop " aspects by automatic train stops located alongside the tracks ; all cars are equipped with tripcocks . Although this is a simple principle of train stops , that wayside trippers must not be moved to trip (" stop ") position until it is guaranteed that the train has fully passed the signal with all its cars .

Today , the majority of all subway delays are caused by signal problems . Whenever a signal stops working , all of the signals behind of it turn red , as it is uncertain whether there is a train in that section .

= = = Automation = = =

In the late 1990s and early 2000s , the MTA began automating the subway by Communication @-@ Based Train Control (CBTC) . Under CBTC , the fixed @-@ block signal system is removed . Instead , equipment aboard every train identifies the location of the train . The central control center uses this information to adjust speed for best use of the track . Trains , with CBTC , can then operate closer together . With the new system , signals and interlockings aren 't needed , their job being done better by trackside controllers , controllers on the train , and a control center . The location of the train is also used to inform passengers of arrival times . The MTA 's form of CBTC uses a reduced form of the old fixed @-@ block signaling system , requiring that both be maintained at high cost .

The BMT Canarsie Line , on which the L train runs , was chosen for pilot testing because it is a self @-@ contained line that does not operate in conjunction with other lines . CBTC became operational in February 2009 . Due to an unexpected ridership increase , the MTA ordered additional cars , and increased service from 15 trains to 26 trains per hour , an achievement beyond the capability of the block system . The total cost of the project was \$ 340 million .

After the success of the BMT Canarsie Line automation , the IRT Flushing Line , carrying the 7 < 7 > trains , was next chosen to be outfitted with CBTC . Eventually , the MTA has plans to automate a much larger portion , using One Person Train Operation (OPTO) in conjunction with CBTC . Siemens Transportation Systems built the CBTC system on the Canarsie line . Thales is building the CBTC system for the Flushing Line . In late winter 2008 , the MTA embarked on a 5 @-@ week renovation and upgrade project on the 7 < 7 > trains between Flushing ? Main Street and 61st

Street ? Woodside to upgrade signaling and tracks for CBTC . On February 27 , 2008 , the MTA issued an Accelerated Capital Program to continue funding the completion of CBTC for the 7 < 7 > trains and to begin on the IND Queens Boulevard Line (E F trains) . The proposed plan is estimated to cost US \$ 1 @. @ 4 billion . At the current pace of installation , it would take 175 years for CBTC to be installed at a cost of \$ 20 billion .

The New York City Subway uses a system known as Automatic Train Supervision (ATS) for dispatching and train routing on the A Division (the Flushing line , and the trains used on the 7 < 7 > services , do not have ATS .) ATS allows dispatchers in the Operations Control Center (OCC) to see where trains are in real time , and whether each individual train is running early or late . Dispatchers can hold trains for connections , re @-@ route trains , or short @-@ turn trains to provide better service when a disruption causes delays .

== = Train accidents == =

Despite the signal system , there have been at least 64 major train accidents since 1918 , when a train bound for South Ferry smashed into two trains halted near Jackson Avenue on the IRT White Plains Road Line in the Bronx . Several accidents resulted when the train operator ran through red signals and rear @-@ ended the subway train in front of it ; this resulted in the signaling practice of " keying by " , which allowed train operators to bypass red signals . The deadliest accident , the Malbone Street Wreck , occurred on November 1 , 1918 beneath the intersection of Flatbush Avenue , Ocean Avenue , and Malbone Street (the latter of which is now Empire Boulevard) near the Prospect Park station of the then @-@ BRT Brighton Line in Brooklyn , killing 93 people . As a result of accidents , such as the 1995 Williamsburg Bridge crash , timer signals were installed . These signals have resulted in reduced speeds across the system . Accidents such as derailments are also due to broken equipment , such as the rails and the train itself .

== = Passenger safety == =

== = = Track safety and suicides == = =

A portion of subway @-@ related deaths in New York consists of suicides committed by jumping in front of an oncoming train . Between 1990 and 2003 , 343 subway @-@ related suicides have been registered out of a citywide total of 7 @, @ 394 (4 @. @ 6 %) and subway @-@ related suicides increased by 30 % , despite a decline in overall suicide numbers .

Due to increase in people hit by trains in 2013 , in late 2013 and early 2014 the MTA started a test program at one undisclosed station , with four systems and strategies to eliminate the number of people hit by trains . Closed @-@ circuit television cameras , a web of laser beams stretched across the tracks , radio frequencies transmitted across the tracks , and thermal imaging cameras focused on the station 's tracks were set to be installed at that station . At the unidentified station , which is rumored to be Rector Street , tests have gone so well at the testing site that these track protection systems will be installed systemwide as part of the 2015 ? 2019 capital program .

The MTA also expressed interest in starting a pilot program to install platform edge doors . Several planned stations in the New York City Subway may possibly feature platform screen doors , possibly including future stations such as those part of the Second Avenue Subway . Currently , the MTA is planning a test program to install screen doors at a subway station on the BMT Canarsie Line . As part of the 2010 ? 2014 capital program , the station was going to be Sixth Avenue , but it is uncertain whether or not that this will be the station chosen .

== = = Crime == = =

Crime rates have shown variations over time , with a drop starting in the 1990s and continuing today . In order to fight crime , various approaches have been used over the years , including an " If

You See Something , Say Something " campaign and a new initiative to ban people who commit a crime in the subway system from entering the system for a certain length of time .

In order to fight crime , various approaches have been used . A new initiative by the MTA to prevent crime is to ban people who commit one in the subway system from entering it for a certain length of time . In the 1960s , for example , mayor Robert Wagner ordered an increase in the Transit Police force from 1 @, @ 219 to 3 @, @ 100 officers . During the hours at which crimes most frequently occurred (between 8 : 00 p.m. and 4 : 00 a.m.) , the officers went on patrol in all stations and trains . In response , crime rates decreased , as extensively reported by the press . In July 1985 , however , the Citizens Crime Commission of New York City published a study showing riders abandoning the subway , fearing the frequent robberies and generally bad circumstances .

To counter these developments , policy that was rooted in the late 1980s and early 1990s was implemented . In line with this Fixing Broken Windows philosophy , the New York City Transit Authority (NYCTA) began a five @-@ year program to eradicate graffiti from subway trains in 1984 . In 1993 , Mayor Rudy Giuliani took office and with Police Commissioner Howard Safir , the strategy was more widely deployed in New York under the rubrics of " zero tolerance " and " quality of life " . Crime rates in the subway and city dropped . Giuliani 's campaign credited the success to the zero tolerance policy . The extent to which his policies deserve the credit is disputed .

New York City Police Department Commissioner William J. Bratton and author of Fixing Broken Windows , George L. Kelling , however , stated the police played an " important , even central , role " in the declining crime rates . The trend continued and Giuliani 's successor , Michael Bloomberg , stated in a November 2004 press release : " Today , the subway system is safer than it has been at any time since we started tabulating subway crime statistics nearly 40 years ago . "

== == Photography == ==

After the September 11 attacks in New York , the MTA exercised extreme caution regarding anyone taking photographs or recording video inside the system and proposed banning all photography and recording in a meeting around June 2004 . However , due to strong response from both the public and from civil rights groups , the rule of conduct was dropped . In November 2004 , the MTA again put this rule up for approval , but was again denied , though many police officers and transit workers still confront or harass people taking photographs or video . However , on April 3 , 2009 , the NYPD issued a directive to officers stating that it is legal to take pictures within the subway system so long as it is not accompanied with suspicious activity .

Currently , the MTA Rules of Conduct , Restricted Areas and Activities section states that anyone may take pictures or record video , provided that they do not use lights , reflectors or tripods . Lights , reflectors and tripods are permitted by members of the press who have identification issued by the NYPD .

== == Terrorism prevention == ==

On July 22 , 2005 , in response to bombings in London , the New York City Transit Police introduced a new policy of randomly searching passengers ' bags as they approached turnstiles . The NYPD claimed that no form of racial profiling would be conducted when these searches actually took place . The NYPD has come under fire from some groups that claim purely random searches without any form of threat assessment would be ineffectual . Donna Lieberman , Executive Director of the NYCLU , stated , " This NYPD bag search policy is unprecedented , unlawful and ineffective . It is essential that police be aggressive in maintaining security in public transportation . But our very real concerns about terrorism do not justify the NYPD subjecting millions of innocent people to suspicionless searches in a way that does not identify any person seeking to engage in terrorist activity and is unlikely to have any meaningful deterrent effect on terrorist activity . " The searches were upheld by the United States Court of Appeals for the Second Circuit in *MacWade v. Kelly* .

On April 11 , 2008 , MTA received a Ferrara Fire Apparatus Hazardous Materials Response Truck , which went into service three days later . It will be used in the case of a chemical or bioterrorist

attack .

Najibullah Zazi and others were arrested in September 2009 and pleaded guilty in 2010 to being part of an al @-@ Qaeda plan to undertake suicide bombings on the New York City subway system .

= = Challenges = =

= = = 2009 ? 2010 budget cuts = = =

The MTA faced a budget deficit of US \$ 1 @.@ 2 billion in 2009 . This resulted in fare increases (three times from 2008 to 2010) and service reductions (including the elimination of two part @-@ time subway services , the V and W) . Several other routes were modified as a result of the deficit . The N was made a full @-@ time local in Manhattan (in contrast to being a weekend local / weekday express before 2010) , while the Q was extended nine stations north to Astoria ? Ditmars Boulevard on weekdays , both to cover the discontinued W. The M was combined with the V , routing it over the Chrystie Street Connection , IND Sixth Avenue Line and IND Queens Boulevard Line to Forest Hills ? 71st Avenue on weekdays instead of via the BMT Fourth Avenue Line and BMT West End Line to Bay Parkway . The G was truncated to Court Square full @-@ time . Construction headways on eleven routes were lengthened , and off @-@ peak service on seven routes were lengthened .

= = = Capacity constraints = = =

Several subway lines have reached their operational limits in terms of train frequency and passengers , according to data released by the Transit Authority . As of June 2007 , all of the A Division services except the 42nd Street Shuttle , as well as the E and L trains were beyond capacity , as well as portions of the N train . In April 2013 , New York magazine reported that the system was more crowded than it had been in the previous 66 years . The subway reached a daily ridership of 6 million for 29 days in 2014 , and was expected to record a similar ridership level for 55 days in 2015 ; by comparison , in 2013 , daily ridership never reached 6 million . In particular , the express tracks of the IRT Lexington Avenue Line and IND Queens Boulevard Line are noted for operating at full capacity during peak hours . The Long Island Rail Road East Side Access project is expected to bring many more commuters to the Lexington Avenue Line when it opens around the year 2022 , further overwhelming its capacity .

By early 2016 , delays as a result of overcrowding were up to more than 20 @,@ 000 every month , four times the amount in 2012 . The overcrowded trains have resulted in an increase of assaults because of tense commutes . With less platform space , more passengers are forced to be on the edge of the platform resulting in the increased possibility of passengers falling on the track . One possible solution that the MTA is considering is platform screen doors , which exist on the Airtrain JFK to prevent passengers from falling onto the tracks . In order to prevent hitting passengers who could fall onto the tracks , train operators are being instructed to go into stations at lower speeds . The increased proximity of riders could result in the spread of contagious diseases .

= = = = Alleviation = = = =

The Second Avenue Subway , which will have communications @-@ based train control (CBTC) , will relieve pressure on the Lexington Avenue Line (4 5 6 < 6 > trains) when the Second Avenue Subway 's first segment begins operating in December 2016 by shifting an estimated 225 @,@ 000 passengers , and CBTC installation on the Flushing Line is expected to increase the rate of trains per hour on the 7 < 7 > trains , but little relief will come to other crowded lines until later . The L trains , which are overcrowded during rush hours , already have CBTC operation . The installation of CBTC has reduced the L 's running time by 3 % . Even with CBTC , there are limits on the potential

increased service . For L service to be increased further , a power upgrade as well as additional space for the L to turn around at its Manhattan terminus , Eighth Avenue are needed . The MTA is also seeking to implement CBTC on the IND Queens Boulevard Line . CBTC is to be installed on this line in five phases , with phase one (50th Street / 8th Avenue and 47th ? 50th Streets ? Rockefeller Center to Kew Gardens ? Union Turnpike) being included in the 2010 ? 2014 capital budget . The \$ 205 @. @ 8 million contract for the installment of phase one was awarded in 2015 to Siemens and Thales . Planning for phase one started in 2015 , with major engineering work to follow in 2017 . The total cost for the entire Queens Boulevard Line is estimated at over \$ 900 million . Funding for CBTC on the IND Eighth Avenue Line is also provided in the 2015 ? 2019 capital project . The MTA projects that 355 miles of track will receive CBTC signals by 2029 , including most of the IND , as well as the IRT Lexington Avenue Line and the BMT Broadway Line . The MTA also is planning to install CBTC equipment on the IND Crosstown Line , the BMT Fourth Avenue Line and the BMT Brighton Line before 2025 . As part of the installation of CBTC , the whole fleet of subway cars needs to be remodeled or replaced .

Due to an increase of ridership , the MTA has tried to increase capacity wherever possible by adding more frequent service , specifically during the evening hours . However , this increase will not likely keep up with the growth of subway ridership . Some lines have capacity for additional trains during peak times , but there are too few subway cars for this additional service to be operated .

As part of the R211 subway car order , the MTA is planning to test a train of 10 open @-@ gangway experimental prototype cars , which could increase capacity by up to 10 % by utilizing the space , that in previous models was the unused space between cars .

The MTA also hopes to test other , smaller ideas on some services . The F , 6 , and 7 trains are expected to get 100 more " station platform controllers " to manage the flow of passengers on and off crowded trains for maximum ridership during rush hours , for a total of 129 such employees ; these workers would also answer passengers ' questions about subway directions , rather than having conductors answering them and thus delaying the trains . Subway guards , the predecessors to the platform controllers , were used during the Great Depression and World War II . Shortened " next stop " announcements on trains are being tested on the 2 and 5 trains . " Step aside " signs on the platforms , reminding boarding passengers to let departing passengers off the train first , are being tested at Grand Central ? 42nd Street , 51st Street , and 86th Street on the Lexington Avenue Line . Cameras would also be installed so the MTA could observe passenger overcrowding .

In systems like the London Underground , stations just simply get closed off when they are overcrowded , such as the busy Oxford Circus tube station , which had to close more than 100 times in a year . Currently , the restrictions are not yet necessary , according to MTA spokesman Kevin Ortiz .

= = = Subway flooding = = =

Service on the subway system is occasionally disrupted by flooding from rainstorms , even minor ones . Rainwater can disrupt signals underground and require the electrified third rail to be shut off . Every day , the MTA moves 13 million gallons of water when it is not raining . Since 1992 , \$ 357 million has been used to improve 269 pump rooms . By August 2007 , \$ 115 million was earmarked to upgrade the remaining 18 pump rooms .

Despite these improvements , the transit system continues to experience flooding problems . On August 8 , 2007 , after more than 3 inches (76 mm) of rain fell within an hour , the subway system flooded , causing almost every subway service to either be disabled or seriously disrupted , effectively halting the morning rush . This was the third incident in 2007 in which rain disrupted service . The system was disrupted on this occasion because the pumps and drainage system can handle only a rainfall rate of 1 @. @ 75 inches (44 mm) per hour ; the incident 's severity was aggravated by the scant warning as to the severity of the storm .

In addition , as part of a \$ 130 million and an estimated 18 @-@ month project , the MTA began installing new subway grates in September 2008 in an attempt to prevent rain from overflowing into

the subway system . The metallic structures , designed with the help of architectural firms and meant as a piece of public art , are placed atop existing grates but with a 3 @-@ to @-@ 4 @-@ inch (76 to 102 mm) sleeve to prevent debris and rain from flooding the subway . The racks will at first be installed in the three most flood @-@ prone areas as determined by hydrologists : Jamaica , Tribeca , and the Upper West Side . Each neighborhood is scheduled to have its own distinct design , some featuring a wave @-@ like deck which increases in height and features seating (Jamaica) , others with a flatter deck that includes seating and a bike rack .

In October 2012 , Hurricane Sandy caused a lot of damage to New York City , and many subway tunnels were inundated with floodwater . The subway opened with limited service two days after the storm and was running at 80 percent capacity within five days ; however , some infrastructure needed years to repair . A year after the storm , MTA spokesperson Kevin Ortiz said , " This was unprecedented in terms of the amount of damage that we were seeing throughout the system . " The storm flooded nine of the system 's 14 underwater tunnels , many subway lines , and several subway yards , as well as completely destroying a portion of the IND Rockaway Line and much of the South Ferry terminal station . Reconstruction required many weekend closures on several lines , as well as several long @-@ term closures on the Greenpoint Tunnel , Montague Street Tunnel , Rockaway Line , and the South Ferry station , with a long @-@ term closure planned for the 14th Street Tunnel ; some reconstruction is expected to last until at least 2020 .

= = = Full and partial subway closures = = =

On August 27 , 2011 , due to the approach of Hurricane Irene , the MTA suspended subway service at noon in anticipation of heavy flooding on tracks and in tunnels . It was the first weather @-@ caused shutdown in the history of the system . Service was restored by August 29 .

On October 29 , 2012 , another full closure was ordered before the arrival of Hurricane Sandy . All services on the subway , the Long Island Rail Road and Metro @-@ North were gradually shut down that day at 7 : 00 P.M. , to protect passengers , employees and equipment from the coming storm . The storm caused serious damage to the system , especially the IND Rockaway Line , which had many sections between Howard Beach ? JFK Airport and Hammels Wye on the Rockaway Peninsula heavily damaged , leaving it essentially isolated from the rest of the system . This required the NYCTA to truck in 20 R32 subway cars to the line to provide some interim service (temporarily designated the H) . Also , several of the system 's tunnels under the East River were flooded by the storm surge . South Ferry suffered serious water damage and did not reopen until April 4 , 2013 by restoring service to the older loop @-@ configured station that had been replaced in 2009 ; the stub @-@ end terminal tracks remain out of service pending extensive repairs and the new island @-@ platformed station is not expected to reopen until 2017 .

On January 26 , 2015 , another full closure was ordered by New York Governor Andrew Cuomo due to the January 2015 nor 'easter , which was originally projected to leave New York City with 20 to 30 inches (51 to 76 cm) of snow . The next day , the subway system was partially reopened . A number of New York City residents criticized Cuomo 's decision to shut down the subway system for the first time ever due to snow . The nor 'easter dropped much less snow in the city than originally expected , totaling only 9 @-@ 8 inches (25 cm) in Central Park .

On January 23 , 2016 , a partial subway closure was ordered due to the January 2016 United States blizzard , wherein all aboveground stations were closed ; the underground lines remained open during the blizzard . Most of the subway resumed service the next day , with some lingering delays due to an average of 26 inches (66 cm) of snow in the area .

= = = Litter and rodents = = =

Litter accumulation is a perennial problem in the subway system . In the 1970s and 1980s , dirty trains and platforms , as well as graffiti were a serious problem . The situation had improved since then , but the 2010 budget crisis , which caused over 100 of the cleaning staff to lose their jobs , threatened to curtail trash removal from the subway system .

The New York City Subway system is infested with rats . Rats are sometimes seen on platforms , and are commonly seen foraging through garbage thrown onto the tracks . They are believed to pose a health hazard , and on rare instances have been known to bite humans . Subway stations notorious for rat infestation include Chambers Street , Jay Street ? MetroTech , West Fourth Street , Spring Street and 145th Street .

Decades of efforts to eradicate or simply thin the rat population in the system have been unsuccessful . In March 2009 , the Transit Authority announced a series of changes to its vermin control strategy , including new poison formulas and experimental trap designs . In October 2011 , the MTA announced a new initiative to clean 25 subway stations , along with their garbage rooms , of rat infestations . Also in October 2011 , the MTA announced a pilot program aimed at reducing levels of garbage in the subways by removing all garbage bins from the subway platforms . The initiative is being tested at the Eighth Street ? New York University and Flushing ? Main Street stations . As of March 2016 , stations along the BMT Jamaica Line , BMT Myrtle Avenue Line , and various other stations had their garbage cans removed due to the success of the program . There are also vacuum trains that are designed to remove trash off of the tracks , but are ineffective and often broken . A 2016 study by Travel Math had the New York City Subway listed as the dirtiest subway system in the country based on the number of viable bacteria cells .

= = = Noise = = =

Rolling stock on the New York City Subway produces high levels of noise that exceed guidelines set by the World Health Organization and the U.S. Environmental Protection Agency . In 2006 , Columbia University 's Mailman School of Public Health found noise levels averaged 95 decibel (dB) inside subway cars and 94 dB on platforms . Daily exposure to noise at such levels for as little as 30 minutes can lead to hearing loss . Noise on one in 10 platforms exceeded 100 dB . Under WHO and EPA guidelines , noise exposure at that level is limited to 1 @. @ 5 minutes . A subsequent study by Columbia and the University of Washington found higher average noise levels in the subway (80 @. @ 4 dB) than on commuter trains including Port Authority Trans @-@ Hudson (PATH) (79 @. @ 4 dB) , Metro @-@ North (75 @. @ 1 dB) and Long Island Rail Road (LIRR) (74 @. @ 9 dB) . Since the decibel scale is a logarithmic scale , sound at 95 dB is 10 times more intense than at 85 dB and 100 times more intense than at 75 dB , and so forth . In the second study , peak subway noise registered at 102 @. @ 1 dB .

Currently , the MTA , with the engineering firm Arup , is working to reduce the noise levels in stations . In order to reduce noise , the MTA is investing in low @-@ vibration track using ties encased in concrete @-@ covered rubber and neoprene pads . Continuously welded rail , which is also being installed , reduces the noise being made by the wheels of trains . The biggest change that is going to be made is in the design of stations . Current stations were built with tile and stone , which bounce sound everywhere , while newer stations will have the ceilings lined with absorbent fiberglass or mineral wool that will direct sound toward the train and not the platform . With less noise from the trains , platform announcements could be heard more clearly . They will be clearer with speakers spaced periodically on the platform , angled so that announcements could be heard by the riders . Some of these changes will be in place on the soon @-@ opening Second Avenue Subway .

= = Public relations = =

The Board of Transportation , and its successor , MTA New York City Transit , has had numerous events that promote increased ridership of their transit system .

= = = Miss Subways = = =

From 1941 to 1976 , the Board of Transportation / New York City Transit Authority sponsored the " Miss Subways " publicity campaign . In the musical On the Town , the character Miss Turnstiles is

based on the Miss Subways campaign . The campaign was resurrected in 2004 , for one year , as " Ms. Subways " . It was part of the 100th anniversary celebrations . Featuring young models , entertainers and others , the monthly campaign , which included the winners ' photos and biographical blurbs on placards in subway cards , featured such winners as Mona Freeman and prominent New York City restaurateur Ellen Goodman . The winner of this contest was Caroline Sanchez @-@ Bernat , an actress from Morningside Heights .

= = = Subway Series = = =

Subway Series is a term applied to any series of baseball games between New York City teams , as opposing teams can travel to compete merely by using the subway system . Subway Series is a term long used in New York , going back to series between the Brooklyn Dodgers or New York Giants and the New York Yankees in the 1940s and 1950s . Today , the term is used to describe the rivalry between the Yankees and the New York Mets . During the 2000 World Series , cars on the 4 train (which stopped at Yankee Stadium) were painted with Yankee colors , while cars on the 7 train (which stopped at Shea Stadium) had Mets colors . The term could also be applied to the rivalry between the New York Knicks and the Brooklyn Nets of the National Basketball Association , or the New York Rangers and the New York Islanders of the National Hockey League ever since the Nets and the Islanders moved to the Barclays Center in Brooklyn .

= = = Holiday Train = = =

Since 2003 , the MTA has operated a Holiday Train on Sundays in November and December , from the first Sunday after Thanksgiving to the Sunday before Christmas Day . This train was made of cars from the R1 through R9 series . The route made all stops between Second Avenue in Manhattan and Queens Plaza in Queens via the IND Sixth Avenue Line and the IND Queens Boulevard Line . In 2011 , the train operated on Saturdays instead of Sundays .

The contract , car numbers (and year built) used were Arnines , specifically R1 100 (1930) , R1 381 (1931) , R4 401 (1932) , R4 484 (1932) ? Bulls Eye lighting and a test P.A. system added in 1946 , R6 @-@ 3 1000 (1935) , R6 @-@ 1 1300 (1937) , R7A 1575 (1938) ? rebuilt in 1947 as a prototype for the R10 subway car , and R9 1802 (1940) .