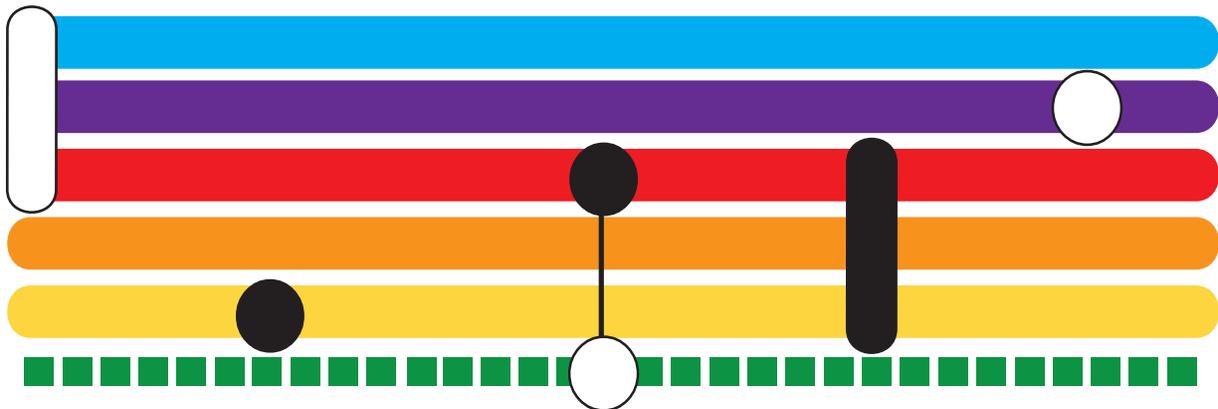


# OFF TRACK

## A Review of NYC Transit's Service Indicators and Recommendations for Improvement



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## Introduction

The Office of the Comptroller recently reviewed the customer service statistical information released by NYC Transit in its monthly committee agendas and website. In conducting this review, we consulted several outside experts familiar with transit performance measurement and NYC Transit operations.

We also consulted the Transit Capacity and Quality of Service Manual—2nd Edition, prepared by the government-funded Transportation Research Board (TRB). The Manual offers a framework for presenting useful, easily understood service performance measurements that NYC Transit should more closely follow.

In this document, we outline the key findings of our review, including specific shortcomings in the statistical information NYC Transit compiles and releases publicly, with suggestions for how these could be improved. We also review the presentation of this data.

Finally, we make several recommendations about how NYC Transit could improve its service-performance information and give all New Yorkers a better sense of how our transit system is performing in a timely, clear, concise way.

Such improvements are particularly important in light of NYC Transit's ongoing need for adequate funding and increased transparency. The public must have a way of tracking whether service reliability, cleanliness and other aspects of service are deteriorating as service and maintenance budgets get stretched tighter. By establishing a 2009 baseline, NYC Transit will be able to better assert the need for funding and whether it is truly able to perform adequately with limited funds.

## Overview

Currently, NYC Transit releases a large amount of operational data in committee reports that may be useful internally but add little to an understanding of service quality for riders, MTA Board members and others. Additional data is sometimes released on an *ad hoc basis* to the media or elected officials. The monthly NYC Transit Committee Agenda can contain 30 or more charts and 56 or more graphs, along with dozens of tables.

Many of the measurements NYC Transit collects and releases reflect the “business aspects” of running a transit agency and are submitted to the Federal Transit Administration's National Transit Database, as the Transportation Research Board (TRB) notes in its Transit Capacity and Quality of Service Manual (Part 1, page 7).

Our review shows that even this information often is unnecessarily complex, incomplete and presented in a way that prevents riders and outside observers from finding out how NYC Transit is actually performing.

For instance, 12-month averages are used that fail to reveal month-to-month changes in performance. In most of the charts in the NYC Transit Committee Agenda, there are no comparisons to performance in previous years, which obviously would help inform the public about whether performance is getting worse or better. The use of percentages also obscures measurements that riders are particularly interested in, such as the frequency of delays. For instance, a 90 percent on-time performance means one in 10 trains is late, while 85 percent means that more than one in seven trains are late, a very noticeable difference to the riding public, even if it might not sound that way when expressed in percentages.

The result is that it is very difficult for many observers to decipher the data and to understand which information actually reveals NYC Transit performance and which is irrelevant.

In addition, some potentially useful information is either not collected or not released publicly. For instance, no subway or bus crowding data is regularly published in NYC Transit public documents, although occasionally NYC Transit will release crowding data to reporters.

We were not able to evaluate whether the data that is collected and released by NYC Transit is accurate, although the NYC Transit President raised accuracy as a concern last fall when NYC Transit changed the way it collects on-time information. We recommend that, in addition to reviewing the type of data that is collected and how it is presented, NYC Transit also look at ways to ensure quicker turn-around time so that data such as the Passenger Environment Survey is more timely and useful.

Following is a review of several key measurements and an evaluation of their value, their presentation and how NYC Transit could improve them.

## **SUBWAYS**

### ***Regularity of service: Length of wait is excluded***

#### **Wait assessment**

Intended to gauge the reliability of subway service, Wait Assessment is NYC Transit's attempt to capture an accurate reflection of the rider experience by rating whether trains are arriving regularly at key stations along a subway line. In the past, NYC Transit relied primarily on 24-hour terminal on-time performance, which was a very flawed measurement since trains can make up time closer to terminals.

Unfortunately, the recently revised wait assessment measure is flawed as well. During rush hour, for instance, a train that arrives at the observation station more than two minutes after its scheduled interval is appropriately counted as a late train. That makes sense. But there is no penalty for significantly longer delays. A train arriving 10 or 15 minutes outside the line's scheduled interval is rated no differently than the rush-hour train that is two minutes off-interval. These longer delays often result in severely over-crowded trains and even make it impossible for some riders to board trains.

#### **Recommendations**

- Revise the measurement to more heavily weigh longer delays. Revise the wait assessment graphic presentation to include monthly information, not only the 12-month rolling average. The current graph shows essentially just a level line that does not convey useful information.
- Collect data for specific timeframes. For instance, there is currently no publicly released data that shows how regularly subway lines are operating during rush hours, when ridership is at its highest. More information about service during late nights and weekends, when capital projects often delay trains, should also be supplied.
- Review ways of using measurements in addition to, or instead of, percentages to more fully show the frequency of delays or other problems.

### ***Line breakdowns (subway car reliability): No month-to-month or comparison data***

#### **Mean Distance Between Failure (MDBF)**

MDBF, the measurement of how frequently a vehicle must be taken out of service because of mechanical failure, has long been considered a key measurement of subway and bus performance. Its improvement from an average of about 8,000 miles in the early 1980s to 125,000 miles or more between breakdowns in 2009 has contributed greatly to the revival of New York City's subway system.

Unfortunately, until recently, NYC Transit released MDBF by car model only, making it impossible for riders to evaluate how their own subway line is performing and how it compares to other lines. Riders relied instead on annual line-by-line calculations by the NYPIRG Straphangers Campaign, compiled in the group's State of the Subways reports.

After years of requests from rider advocates, however, NYC Transit finally agreed to release line-by-line MDBF data, starting this July. It heralded this as an example of how it would measure the success of its line managers and promised more line-by-line information—a welcome pledge.

NYC Transit should make additional improvements to the MDBF data it discloses. For instance, system-wide MDBF data is now combined in a 12-month rolling average rather than month-by-month, which limits the usefulness of this measurement in spotting and responding to declines. Furthermore, graphs should measure how MDBF performance compares to NYC Transit's MDBF goals, with a more complete explanation when goals aren't met.

## Recommendations

- Along with the release of monthly MDBF data by line in the monthly NYC Transit Committee Agenda, this and other indicators should be posted on the NYC Transit website for the public to see. Currently, NYC Transit does not even post on the website MDBF by car class; only a single MDBF statistic for all model cars is available on the website.
- Present month-by-month breakdown rates along with the 12-month rolling average.
- Compare MDBF performance with NYC Transit goals. In one current table, the Authority discloses its 2009 overall goal for MDBF (145,000 miles), but there is no way of telling whether the goal is being met.

### ***Crowding: No data regularly released, methodology unclear***

No crowding information is released in NYC Transit's monthly committee reports, although the NYPIRG Straphangers Campaign does use line-by-line data from the Authority in its annual reports on subway performance. More specific information—such as how crowded lines are at different times of day or information about whether lines exceed NYC Transit's own subway loading guidelines—is not released either.

Beyond that, the methodology used to measure crowding is unclear, including whether calculations take into account the presence of strollers, backpacks or other packages, which riders frequently carry onto the subways. (The TRB's Transit Capacity and Quality of Service Manual notes that it may make sense for some transit agencies to calculate crowding using the "concept of equivalent passengers," which takes into account passengers who may take up more space. A passenger with a suitcase, for instance, occupies 3.8–5.9 square feet—double or triple the amount of space other passengers occupy.)

Crowding information is particularly important in winning support for certain key capital expenditures, since expensive infrastructure improvements—signal upgrades, additional subway cars or even new subway lines—often are the only way to add service during rush hours.

## Recommendations

- Release crowding statistics by line, by time of day and week.
- Disclose how loading guidelines are determined; which subway lines exceed those guidelines and by how much; and what measures, if any, are being taken to reduce overcrowding on individual lines.
- Describe what technological upgrades are needed, by line, to add service. For lines where service could be increased without major investment, describe why service has not been added.

### ***Crime: Only major felonies are reported, and only system-wide***

Crime data, compiled by the New York Police Department and published in the monthly NYC Transit Committee Agenda, documents the number of major felonies in the subway system. These include statistics showing the number of homicides, rapes, robberies, felony assaults, burglaries and grand larcenies. These figures document a major subway and policing success story, with the number of such crimes plummeting from nearly 20,000 a year in the late 1980s and early 1990s to fewer than 3,000 a year now. This achievement has helped revive the subways and the city itself.

Unfortunately, other subway crime, particularly fare beating and petit larceny offenses like pick-pocketing, are not enumerated, even though they are far more prevalent. The only evidence that there are a significant number of these crimes is that the number of arrests and summonses, also listed in the monthly reports, far outstrip the number of major felonies. In addition, there is no line-by-line or station-by-station information about any crime, whether major or "minor."

In addition, the monthly data includes no information at all about crimes on NYC Transit buses.

## Recommendations

- Require the NYPD to report minor felonies and misdemeanors by offense as part of the monthly reports.
- Release monthly statistics about major felonies and other crimes by Transit Police district, by time of day and, if possible, by location (such as by subway station or subway line).
- Release overall and route-by-route bus crime data, including the kind of crimes, arrests and summonses.

## BUS

### ***Bus service measurements: No route, en-route, crowding or level of service data***

#### **Weekday Pullout, MDBF, Mean Distance Between Service Interruptions (MDBSI) and Percentage of Completed Trips**

In the monthly NYC Transit Committee agendas, these measurements are intended to give an overview of bus system performance. They are useful measurements, especially internally for NYC Transit managers, who need to know if there are enough operators and buses (Weekday Pullout) and whether buses arriving at terminals as required (Percentage of Completed Trips). The MDBF measures the distance between mechanical failures, and Mean Distance Between Service Interruptions measures non-mechanical failures as well.

However, these measurements do not come close to giving a sense of what bus riders encounter. For instance, NYC Transit does not release bus crowding data, nor is route-by-route or depot-by-depot information available, and system-wide information is not available over time.

Aside from information about wait assessment and bus “environmental” conditions (see below), no other information on bus performance is released publicly. Again, rider advocates have attempted to add to this data, including supplementing wait assessment data with their own measurements of bus speed on particularly low-scoring routes.

#### **Wait Assessment**

NYC Transit’s attempts to measure what riders do experience are released only every six months, usually in the February and September committee agendas. These include an overall rating of wait assessment between 7 AM and midnight, borough-by-borough information and specific wait assessment information for 42 “high-volume” bus lines and 10 limited-stop lines. Unfortunately, these suffer from the same flaw as the subway wait assessment, since short and long deviations from reliability are weighted equally. The rest of the system’s 208 bus lines are never rated individually.

#### **Recommendations**

- Revise wait assessment measurement to more heavily weigh longer delays.
- Release weekday pullout, MDBF, MDBSI and percentage of completed trips by bus line and by depot.
- Release level of service and crowding data on a periodic basis by bus route, including methodology for determining crowding.
- Measure and release data on crowding and average bus speeds on all routes.
- Release level of service, bus speed and crowding data by bus line, including the methodology for determining crowding.
- Develop ways of using measurements other than percentages to better show the frequency of delays or other problems.
- Re-evaluate “bus loading guidelines,” which are used to determine the level of service based on a line’s ridership. Current guidelines may not take into account that bus riders often are carrying packages or backpacks that make buses more crowded.
- Release regular level-of-service information for all lines, with comparison to past years.

## SUBWAYS, SUBWAY STATIONS AND BUSES

### ***Passenger environment: No individual station data, missing indicators***

#### **Passenger Environment Survey (PES)**

The PES contains 56 indicators intended to rate the “environment of subway cars, stations and buses from a customer-oriented perspective,” according to NYC Transit. The Authority releases this data every six months, but the subway information is broken out only by several large, undefined geographic districts, nor is the PES posted on the NYC Transit website. A separate surveying department at NYC Transit collects the data, which encourages more accurate reporting than if it were collected by the operating departments themselves.

These indicators themselves are useful and are cited in the TRB's Transit Capacity and Quality of Service manual, although a few—whether station agents and conductors are in proper uniform, for instance—are of somewhat limited relevance to the rider experience. Many of these ratings are typically at or close to 100 percent every time.

A number of important conditions that significantly affect riders aren't rated. For instance, puddles or leaks—which can cause slips and falls—are not among the 16 station indicators surveyed. Nor are areas with persistently offensive odors. NYC Transit also does not release information in the PES or elsewhere about crumbling ceilings or stairs, water-stained station walls, peeling paint, or poorly lighted locations.

The PES does not measure whether or not the MetroCard Vending Machines are working properly; riders often find that some or all of a station's MVMs are temporarily not accepting cash or credit and debit cards. Because subway tracks are not under the jurisdiction of the Stations Department, the PES also does not measure whether or not the tracks have excessive amounts of litter, which not only impacts the "passenger environment," but can cause track fires and clogged drains.

On buses, NYC Transit does not rate whether fareboxes are operating properly.

## Recommendations

- Add new measurements to more fully reflect rider concerns, including about structural conditions.
- Communicate findings rapidly to line, route and station managers and supervisors so that problems can be resolved quickly and before they get worse.
- Release current and past individual station surveys, which would allow riders to see how their station does over time. While NYC Transit surveyors get to most stations, the public cannot obtain information about ratings for individual stations; NYC Transit asserts that the single visit is not a fair indication of a station's condition. But these station-by-station surveys would be valuable over time, and should be released. In addition, subway line-by-line data about cleanliness and other indicators would be useful. (Again, NYC Transit leaves this to the NYPIRG Straphangers Campaign to release the Authority's own data on cleanliness.)
- Compile and release line-by-line and route-by-route information so riders can track and compare cleanliness and other subway and bus conditions.
- Consider whether there are ways of releasing the information collected in the PES more quickly so that station managers and line supervisors can resolve dangerous and other conditions in a more timely manner, and elected officials and other community leaders can more closely monitor conditions and press for remedial action without undue delay. The lag time between survey and release makes the PES operation of little use for NYC Transit managers; NYC Transit must find a way of using this valuable information more effectively.
- Release data about how specific bus lines, or at least depots, are performing.
- Redouble efforts to rectify deficiencies that the PES finds substandard, such as the absence of maps on buses and in subway stations.

## CONCLUSION

NYC Transit recently improved some of its performance measurements, including an attempt to depict subway reliability more accurately. Overall, however, riders, the press and elected officials must wade through data that in many cases is incomplete, presented unclearly, untimely or just not very useful.

Ultimately, NYC Transit management must work to create a benchmark set of measurements that allows everyone to understand the service performance easily. As it strives to strengthen its public image and increase support for transit, new focus on better information is particularly important.

## Summary recommendations

NYC Transit should:

- Revise on-time performance data to reflect real-life experience during rush hours, off-peak periods and night-time and weekends and add measurements on service levels and crowding.
- Produce more line-by-line, bus route-by-route and station-by-station information.

- Use measurements that more effectively show performance with a de-emphasis on rolling averages and hard-to-decipher percentages.
- Post information in a searchable on-line database and in posters so that riders can see all available information about their line, bus route or subway station. Use interactive mapping and other tools that would allow riders to identify problems and the managers who can respond to them quickly.
- Consider developing a letter grade report card for each subway line or bus route using a selection of key measurements, as is already done in NYC Transit's innovative Rider Report Cards.
- Work with the Police Department to revise crime statistics reporting to include all incidents, not just "major" felonies and felony arrests. NYC Transit should work with the department to post this information on-line, with regular updates so that riders, elected officials and other leaders can assess the NYPD's success.
- Review the TRB's Transit Capacity and Quality of Service Manual with the goal of adhering more closely to benchmarks that reflect the rider point of view, including crowding and service levels.
- Convene a task force of transit advocates, interested elected officials and outside and internal experts to develop rider-friendly measures. ■

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