

# **Waiting and Watching**

**Results of the New York City Transit Riders Council  
Bus Service and Destination Signage Survey**

**February 2007**

## **Introduction**

The members of the New York City Transit Riders Council (NYCTRC) maintain a keen interest in bus and subway operations and use both services extensively. Over the years the NYCTRC has conducted several surveys to monitor bus service. The members have conducted these studies in response to bus service that does not adequately serve transit users' needs. One of the major complaints of bus riders is that they do not find service to be reliable. Many bus riders complain to the Council that a long wait for service, followed by several buses in quick succession, is a frequent experience.

As a result the NYCTRC addressed the problems of bus bunching and unacceptable waiting times between buses in this project. In this survey, the Council members collected arrival and departure times for each bus observed at a survey point. This information allowed us to calculate headways, or the period of time between consecutive buses serving the same route recorded at a given point, for most of the bus runs observed and to make comparisons between actual and scheduled headways. The comparison between actual and scheduled headways was used as an indicator of correct spacing of buses.

This indicator is different from a measure of schedule adherence, in which we would have collected run numbers of buses observed and matched them to schedule information. We chose to use the headway comparison rather than schedule adherence in our analysis because riders are primarily concerned with having a bus available at a stop within a given period of time and are less concerned whether a particular bus is operating according to its schedule.

Our headway statistic also differs from wait time assessment measures such as those employed by NYC Transit. While a case can be made that wait time is the true primary concern of riders, wait time analyses can mask situations where there is frequent bus bunching combined with large gaps in service. The bunched buses, which effectively provide little more service than a single bus, are essentially counted as "successful" runs. These "successes" can easily overwhelm the impact of the gaps in service when the overall results are presented.

This project also sought to systematically examine the quality and accuracy of bus destination signage. In the course of their everyday observations of the bus system, many members have noticed that bus destination signage often does not accurately reflect the actual bus route. To date, the NYCTRC has not examined this problem in a systematic fashion and the members' discussions of this issue have been grounded in sightings of notable incorrect signage on a single bus or anecdotal collections of observations of incorrect bus signs.

While the Council does not have sufficient resources to perform a comprehensive survey of bus signage throughout the entire NYC Transit and MTA Bus systems, the members of the NYCTRC believe that a limited survey of buses in peak and off-peak hours is useful to assess the scale of the problem of buses having destination signs that do not accurately or adequately reflect their actual destination. Bus signs were recorded as faulty for having a number of defects, including having incorrect route or destination information, being illegible because of malfunctioning sign displays, or displaying information that is confusing or contrary to the route information that should be on the sign.

## **Methodology**

The results discussed in this report are derived from a field survey of MTA New York City Transit and MTA Bus Company buses. The survey was primarily conducted in the period from Tuesday, September 12 through Friday, September 22, 2006. Some remaining survey assignments were completed at later dates in the next two months, but traffic and operating characteristics on the make-up dates were essentially similar to those observed in the initial survey period. Each route was surveyed on non-holiday weekdays in four one-hour periods, two in peak hours and two in off-peak hours. Each element of the pairs of peak and off-peak assignments were completed on different days but during the same hour of each day. For example, if the first peak period observation of a bus route was conducted between 8:00 and 9:00 am, then the second observation was conducted between 8:00 and 9:00 am on a later date.

Transit Riders Council members and staff served as the surveyors for this project. The surveyors were assigned sets of routes to be surveyed and locations through which all routes in each set operate.

The following bus routes were surveyed at the locations specified. MTA Bus Company routes are identified with an asterix (\*); all other routes are operated by MTA New York City Transit.

### **Routes**

B41/southbound  
B44/southbound  
Q35/southbound\*

Bx9/westbound  
Bx12/westbound  
Bx22/westbound

M7/northbound  
M11/northbound

### **Location**

Flatbush Avenue and Nostrand Avenue

Fordham Road/Third Avenue

Amsterdam Avenue/79<sup>th</sup> Street

M86/westbound

Central Park West/86<sup>th</sup> Street

Q4/northbound and southbound  
Q5/northbound and southbound  
Q85/northbound and southbound

Merrick Boulevard/Linden Boulevard

**Routes**

**Location**

Q53/westbound\*  
Q59/westbound\*  
Q60/westbound\*  
Q29/southbound\*  
Q38/southbound\*

Queens Boulevard/57<sup>th</sup> Avenue

Q44/northbound  
Q46/eastbound

Union Turnpike/Main Street

S53/eastbound and westbound  
S61/eastbound and westbound  
S62/eastbound and westbound  
S66/eastbound and westbound  
S67/eastbound and westbound  
S91/eastbound and westbound  
S92/eastbound and westbound  
S93/eastbound and westbound  
X13/eastbound or westbound  
X14/eastbound or westbound  
X16/eastbound or westbound

Victory Boulevard/Clove Road

Surveyors noted the arrival and departure time of each bus at the designated stops. These observations allowed us to calculate actual headways on the routes that were surveyed. They also evaluated the front destination sign of each bus and noted those vehicles with incorrect signage as well as other signage problems.

We selected adherence to scheduled headways as an indicator of the reliability of bus service from the rider's point of view. While it would be ideal if buses operated in full compliance with published schedules at all times, this is not a realistic expectation. Riders recognize that factors that are beyond the control of bus operators and dispatchers, such as traffic, may cause buses to deviate from published schedules. Rather than adherence of individual buses to published schedules, it is a reasonable expectation that buses be properly spaced over the

course of the route. If a schedule indicates that buses on a given route pass a stop every ten minutes, for example, riders are primarily concerned that the interval between buses does not substantially exceed ten minutes. Whether individual buses are operating according to their particular schedules is of secondary importance.

In this project, headways were determined for all buses for which intervals between buses could reliably be ascertained. Because surveys were conducted in one hour shifts, we did not have information about prior trips and could not determine headways for some buses. We also did not calculate headways for some shifts and locations where surveyors reported that some buses may not have been recorded on survey forms.

## Findings

In terms of reliability of service, we found that the average observed headway differed by 5 minutes and 15 seconds from published headways for the appropriate route and time of day. The deviation between published headways and observed headways amounted to 46.6 percent of the published headway. In peak hours, the average deviation between published and observed headways was lower in absolute terms at 4 minutes, 53 seconds. Because peak hour headways tend to be shorter, this deviation is higher relative to published headways, with an average deviation of 48.8 percent of published headways. In off peak hours, the average deviation from published headways was 5 minutes, 37 seconds, which was 44.2 percent of the published headway for the route and time.

As for signage, out of the total of 1,012 buses that the surveyors monitored, 51 buses had front destination signs that did not correctly reflect the route to be traveled. This results in an overall rate of problem signs of about 5 percent. The problem sign rate for NYC Transit and MTA Bus services was similar; problem signs were observed on 5.1 percent of buses operated by NYC Transit and 4.1 percent of buses operated by MTA Bus. As might be expected, we found a higher rate of problem signs in peak hour operations, where a larger portion of the fleet is required for service, than in off peak hours. In peak hours, we observed 33 buses with problem signs, for a rate of problem signs of 6.1 percent. In off peak hours, we recorded 18 buses with problem signs, for a rate of problem signs of 3.8 percent.

<b>Problem Signs</b>	<b>Peak Hour Buses</b>	<b>Off Peak Hour Buses</b>	<b>Total</b>
Percent of all buses with problem signs	6.1%	3.8%	5.0%

The problems observed with bus destination signs were varied. Among defects found in more than one of the 51 buses with problematic signage, 15 buses displayed a clearly erroneous message, such as "Subway Shuttle," "Evacuation Center," or "Not in Service." A total of twelve buses had destination signs that were not functioning at all. Eight buses displayed the incorrect destination for their route. Seven buses had signs that were illegible because of damage or malfunctions in the display. Four buses displayed the wrong route and three indicated the correct route, but the wrong direction of travel.

Some buses in all Boroughs had problem signs, but the incidence of problem signs varied from Borough to Borough. Surveyors observed the lowest proportion of problem signage on Brooklyn buses and the highest proportion on Staten Island buses. In Manhattan, surveyors observed relatively more problem signs; in Queens, they observed relatively fewer problem signs. The proportion of problem signs in the Bronx was approximately the same as that for all buses surveyed.

<b>Problem Signs</b>	<b>Bronx</b>	<b>Brooklyn</b>	<b>Manhattan</b>	<b>Queens</b>	<b>Staten Island</b>	<b>Total</b>
Percent of all buses with problem signs	5.2%	1.6%	8.2%	2.9%	10.2%	5.0%

The relatively large number of problem destination signs on Staten Island routes, however, is largely due to a recurring malfunction in which destination signs displayed either a message reading either "evacuation center" or "hurricane center." These messages accounted for about one half of the problem signs on Staten Island buses. One may argue that bus riders can ignore clearly erroneous information such as this, but, particularly at stops serving multiple routes, riders often have to act on only a momentary glimpse of a destination sign. Secondly, seeing that the destination of one's bus is "Evacuation Center" could be at least mildly troubling to many riders.

## **Conclusions**

Although our analysis of headways is based on a survey that is limited in time and scope, our results confirm that maintaining correct spacing between trips is an area in need of attention. Unfortunately, much of the problem of bus bunching is due to traffic conditions and beyond the control of NYC Transit and MTA Bus. Therefore we recommend that these agencies address the problems of bus bunching and gaps in service through two channels.

First, we recommend that NYC Transit and MTA Bus work cooperatively with the City of New York to improve the conditions for bus operations. This collaboration may include a number of measures, such as bus lanes, improved loading

facilities, and traffic signal technology. Some of these methods are currently in use and others are being considered as part of the joint MTA-City-State bus rapid transit pilot project that will be implemented in the next year.

Enforcement is also an important part of this effort to improve conditions, as even the best facilities can become useless if they are filled with unauthorized vehicles. As MTA agencies have limited enforcement powers, this duty will largely fall to New York City traffic enforcement personnel. The MTA agencies may have a greater role in the use of technology to detect violators, such as the bus-mounted cameras proposed to monitor dedicated bus lanes. NYC Transit and MTA Bus should actively pursue these solutions as a means of creating a better environment for their operations.

Second, NYC Transit and MTA Bus must continue to monitor the performance of their bus routes and modify schedules where necessary to conform to their actual operation. While it is clear that field supervisors will continue to adjust operations to respond to incidents as they occur, when the same adjustments are needed on a daily basis a more comprehensive approach to adjusting schedules should be used. By examining the performance of routes and making the adjustments necessary to bring schedules and operations together, the operating agencies can improve the riders' experience considerably.

In the area of signage, the NYCTRC's survey recorded a number of buses with front destination signs that did not accurately or legibly reflect their actual destination. While some of these problems appear to be due to equipment difficulties, a number of these problems appear to result from inattention to detail on the part of the operator. For example, it is likely that signs displaying incorrect direction of travel or final destinations are attributable to an operator failing to change the message displayed at the end of the route or entering an incorrect code for the route that was being traveled.

Clearly the average frequent rider will manage to find his or her bus in most cases even with problem destination signs. However infrequent riders or those with sight or other limitations may have great difficulty dealing with buses with problem signs. In addition, if there are destination sign problems, boarding is often delayed while passengers confirm route and destination information with the bus operator. Placing enough buses in service to provide scheduled trips should be the top priority for NYC Transit and MTA Bus, but increased efforts should be made to ensure that buses that are in service provide riders with clear and accurate information about their routes and destinations.

Access to full and accurate information from bus signage and reliability of schedules are critical issues for bus riders in New York City. There are no simple solutions for these problems, but by focusing on these issues and working

collaboratively with New York City agencies, NYC Transit and MTA Bus Company can make progress on improving these aspects of their operations and help the bus system to continue to fulfill its potential as a vital part of the MTA network.

**Appendix A  
Survey Instructions**

**MEMORANDUM**

**TO:** NYCTRC Members

**FROM:** Bill Henderson, Associate Director

**RE:** Assignments and Instructions for Bus Survey Project

**DATE:** September 7, 2006

Thanks for participating in this valuable project. The project will begin on Tuesday, September 12 and continue through the morning peak period on Friday, September 22. This somewhat unusual survey period is designed to avoid extraordinary travel patterns that might occur on September 11 and on the afternoon of September 22, as Rosh Hashanah begins at sundown on the 22<sup>nd</sup>. Each bus line will be monitored in two one-hour periods in peak travel times and two one-hour periods in midday off-peak hours. For the purpose of this project, we will consider peak travel hours to be from 7:00 to 9:00 a.m. and 4:00 to 7:00 p.m. Midday off-peak hours fall between these two peak periods.

Surveys may be conducted on any weekday that you prefer, but it is important that the time periods in which you monitor the bus lines at your assigned location are consistent for both the peak and midday off-peak surveys. For example, you could conduct peak hour surveys on Tuesday September 12 and Thursday September 14, but if you survey from 6:00 to 7:00 p.m. on Tuesday, you should also survey from 6:00 to 7:00 p.m. on Thursday. Surveyors are to record the arrival and departure times, route, direction, and vehicle number for each bus stopping at the observation point, as well as noting any inaccurate signage on the bus itself. You may also note other problems or observations in the "Comments" space.

When you conduct your surveys, choose a spot that will allow you comfortably monitor all of the routes for which you are responsible. You may wish to spend a few minutes before you start surveying to determine the best location for you.

Your assignment is attached. If you have any questions regarding the survey please call me at 212-878-7079 or email me at [whenders@mtahq.org](mailto:whenders@mtahq.org).

