

Behavior of New York City Subway Riders

**An Observational Study Conducted by Students at Hunter
College**

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Principal Investigators

Peter Tuckel

Ptuckel@hunter.cuny.edu

Mike Benediktsson

Mob201@gmail.com

William Milczarski

Wmilczar@hunter.cuny.edu

Reading the newspaper on the subway in 1914



“Rather than hiding behind newspapers, riders stare into tablets and smartphones. Instead of actual straps overhead, strap hangers today have a stainless steel bar to grab” (Ephemeral New York, 2016).

Introduction

Almost 6 million individuals ride the New York City subways every day. This figure translates into approximately 1.8 billion rides a year, the highest figure since 1948 when the subway fare was 5 cents (Fitzsimmons, 2016).

The enormous increase in ridership over the past several years has produced overcrowding and a number of associated problems. During rush hour, passengers sometimes have to wait for several trains to arrive at the station before being able to board. Overcrowding also leads to blocked doors, which, in

turn, cause delays. And then, of course, there is the forced intimacy of being in close proximity to other riders.

While considerable attention has been focused on the consequences of the growth in ridership, little systematic inquiry has been undertaken concerning the behavior of riders in the New York City subway system. This is surprising given not only the increase in the number of riders, but also the popularization of mobile electronic devices, both of which can be assumed to influence riding behavior in ways that are not yet understood.

One study which has examined the behavior of subway riders compared the use of information devices by commuters in New York City and Paris (Lopatovska, 2013). The findings of the study were based upon observations of 4,461 passengers in New York (gathered in the fall of 2010) and 1,238 passengers in Paris (collected in the spring of 2011). Overall, the study revealed that, among New York City travelers, the majority were observed “doing nothing.” The incidence of other “activity types” ranked in descending order was: “listening to music on a mobile device” (16.9%), “reading or typing on a mobile device” (7.9%), “reading books” (7.5%), “reading newspaper” (5.1%), and “reading magazines” (2.2%). The remaining activity types (e.g., “making mobile phone calls,” “staring at advertising on the walls of the train,” “playing a game on a mobile gaming device,” etc.) all were observed occurring among less than 2 percent of the passengers. The study found that the two cities were comparable in the relatively high frequency of passengers reading printed material (primarily books). The two cities diverged, though, with respect to the usage of electronic media. New York City riders were found to be much more disposed toward the use of electronic devices than their counterparts in Paris. One limitation of the study was the absence of any demographic correlates of the types of activities which were engaged in by the travelers in the two cities.

The present study aims to provide an updated analysis of the behavior of New York City subway riders. It has two primary objectives. The first objective is to examine the overall incidence of different activities engaged in by passengers and the characteristics of passengers who engage in these different types of activities. The types of activities range in scope from more “passive activities” such as sleeping/dozing, staring into space, looking around, to more “engaged activities” such as using an electronic device, reading printed material, or interacting

verbally with other passengers. The second objective is to examine the incidence of violations of specific rules of etiquette promoted by the Metropolitan Transit Authority and the characteristics of passengers who violate these rules of etiquette. The specific rules of etiquette include: grooming, eating, wearing a backpack while standing on a crowded train, and “manspreading.”

One focal point of the study will be to compare both the usage of electronic devices and the frequency of reading printed materials with the findings outlined above from previous research. A second focal point will be to compare how passenger behavior differs in areas of the subway system that contain strong cellular signals (e.g. where the train is travelling above ground) from behavior in below ground areas where cellular service is inconsistent or nonexistent.

Methodology

The results of the study are based upon observations carried out by Hunter College students in the fall of 2016. Students who carried out the study were enrolled in one of three sociology department courses (Introduction to Research Methods, Seminar in Selected Problems in Sociology, Intermediate Statistics) or one of two Urban Policy and Planning Department courses (Quantitative Approaches for Urban Analysis or Urban Data Analysis).

Students were assigned to carry out their observations on a subway line they typically rode to school and/or work. Students were also assigned a type of day of the week (any of the five weekdays or Saturday/Sunday), and a time interval (6:00 am – 10:00 am, 10:01 am – 4:00 pm, or 4:01 pm – 8:00 pm) during which to conduct their observations.

The assignment of a particular subway line was not based upon a random sample but upon a convenience sample. It should be pointed out, though, that the students who participated in this study come from geographically dispersed neighborhoods throughout New York City. Thus, the lines in this study represent a broad swath of all lines in the City.

Students were told to observe the behavior and demographic characteristics of 40 different passengers. To ensure the accuracy of observation, they were not allowed to observe more than 4 passengers between any two consecutive subway

stops. All observations had to be carried out on either a weekday (Monday through Friday) or Saturday/Sunday and during the same time interval.

Importantly, students were given explicit instructions as to where to situate themselves in a car when undertaking their observations and whom to observe. The guidelines stipulated the following: “Enter any subway car through the rear set of doors, turn toward the front of the train, and “take a natural, comfortable position, as you would if you were simply riding from one place to another.” They could either stand or sit.

Once they positioned themselves in the car, they were to carry out their first observation on the passenger who was closest to them and in their field of vision. Their second observation was to be focused on the passenger who was next closest to them and in their field of vision. Thus, their observations might include passengers who were either standing or seated. Importantly, the students were told not to choose passengers based on any criteria other than the riders’ proximity and visibility. In addition, observations were to be carried out only in cars which had a minimum of 5 riders and, at the other extreme, not in cars with so many riders as to make impossible or seriously impair the collection and entry of the data.

To record their observations, students used a smartphone app that had been configured for this study. When entering the data, the students were instructed to base their observations on what the passengers were doing at that moment in time and not what passengers may have been doing just a few seconds beforehand.

Using the app on their smartphones had several advantages. Digital data entry proved to be an efficient way of gathering data that did not require a more cumbersome process of manually entering the data with paper and pencil. Through the app, students answered a series of close-ended questions about each passenger they observed, using a set of designated response categories. The app thus constrained and standardized data entry, producing reliable and accurate observational data, once students had been trained to identify and differentiate the behavioral categories of interest. Moreover, the app was configured to permit data entry even when the students’ smartphones were offline, allowing observations in all areas of the subway system, including “dead zones” with no

cellular service or wireless (Wifi) signal. The observation data were automatically transmitted to a centralized database from each student's smartphone when an internet connection was established.

In carrying out their observations, students were told to remain as inconspicuous as possible. They were not to engage in any verbal interactions with other riders nor look at them for any prolonged period of time. They were instructed to casually glance around them without drawing attention to themselves and to record the data as inconspicuously as possible. In this regard, the use of the app provided a convenient "cover" for recording observations in an unobtrusive manner.

The students gathered data on the following variables:

1) Contextual variables:

the day of the week

the time interval

the subway line

the name of the subway stops at the beginning and end of each segment

whether the subway segment was above or below ground

the number of passengers in the rear third of the car

2) Demographics and traits of passengers:

estimated age

estimated race/ethnicity (Asian, Black, Hispanic, White, and Other)

estimated age range,

gender

whether the passenger is accompanied by one or more children,

whether the passenger is travelling alone or part of a group

whether the passenger is standing or sitting

whether the passenger is wearing earphones or earbuds

3) Passenger activities: Is passenger

sleeping/dozing?

Verbally interacting with other passengers?

If passenger is looking at an electronic device, what is passenger doing on the

device? (Student observers were trained to make educated inferences from their position in the subway car, using postural and gestural clues to infer whether a passenger was reading, typing, talking, gaming, or watching videos on their device. Under no circumstances were students to make an effort to look at passengers' smartphone screens or otherwise violate their privacy.)

- 4) Passenger compliance with specific rules of etiquette: eating, grooming, pole-hogging, wearing a backpack while standing, and manspreading.

Altogether, there were 5,108 passengers who were observed during the time span of the study. The observations were conducted in roughly the same proportions in each of the three major time periods (6:00 am - 10:00 am, 10:01 am – 4:00 pm, and 4:01 pm – 8:00 pm) on weekdays and weekends between October 6 through November 7, 2016. The observations were carried out on 21 different subway lines.

Findings

Overall profile of passengers who were observed

The share of riders who were male or female was almost exactly the same. With respect to estimated age category, the modal category was between 20-29 (37%). The estimated age category with the next highest frequency was between 30-39 (27%) followed by the estimated age category 40-49 (16%). In terms of the estimated racial-ethnic composition of riders, Whites were the most populous group (32%) followed in descending order by Hispanics (25%), Blacks (23%), Asians (15%) and Other or indeterminate (6%). Only about 6 percent of riders were observed accompanied by a child (with the overwhelming majority of these riders being female). Approximately 18 percent of riders were observed travelling in a group – composed disproportionately of school-age children estimated to be 13-19 years of age.

Standing or sitting

Two-thirds of the passengers were observed sitting. As expected, this percent was somewhat higher during the off-peak hours (71%) and there was a monotonic increase in the percent sitting with increasing age -- going from 56% among the 13-19 age group to 85% among those 60 years of age and older.

A gender divide in the percent seated was also noticeable. Overall, 71 percent of females were observed seated versus 63 percent of the males. What is most striking is that this disparity between females and males in the percent seated widens considerably as the subway car becomes more crowded. For example, when there are less than 10 people in the rear third of the subway car, there is about a 3 percentage point gap favoring females in the number who are seated. When the passenger “load” of the rear third of the car totals between 10 to 19, the difference in the percent females who are seated and the percent males who are seated rises to 7 points. And when there are 40 or more passengers in the rear third of the car, the gap between the percent females vs. percent males who are seated climbs to 13 percentage points. A similar finding was uncovered by analysts at the Metropolitan Research Authority who studied seating patterns of New York City subway riders in the winter of 2012.

What passengers are looking at

When students recorded what passengers were looking at, the highest response category was “electronic device” (34%). This category was followed by “looking around,” a category indicating that the passenger was glancing around the car at other passengers (26%). The third most common visual activity was “staring into space” – a category indicating that the passenger was gazing in a sustained manner at something other than other passengers in the car, for example, the floor, the overhead advertisements, or out the window (16%). Slightly over 10 percent of passengers had their “eyes closed” and only 8 percent of riders were observed reading printed material such as a book, magazine or newspaper (see Table 1 below).

A higher percent of riders were observed looking at an electronic device above ground vs. below ground (41% vs. 33%), a distinction that roughly corresponds to the strength and consistency of cellular signals within any given subway car. It can reasonably be assumed that passengers on above ground trains had stronger and more consistent access to mobile broadband, and thus enjoyed an enhanced ability to type text messages or instant messages, make calls, use the internet, or access streaming content. But it also should be noted that above / below ground is not a perfect proxy for cellular signal strength or internet access: an increasing underground portion of the system, particularly areas in or near station stops, offers cellular signals and/or free Wifi courtesy of the MTA. For this reason, it is safe to assume that many of the passengers who were looking at their devices while below ground had cellular signals, and that the 8 percentage point

difference noted above would perhaps be even greater if we had an accurate indication of passengers’ access to cellular or wireless signals when their behavior was observed, permitting us to measure the difference in behavioral tendencies between those who did have a signal and those who did not.

Table 1. What Passengers Are Looking At

		Above/Below Ground		Total
		Above ground	Below ground	
Looking at:	Electronic device	40.5%	32.6%	34.0%
	Looking around	25.2%	26.5%	26.3%
	Staring into space	14.7%	16.4%	16.1%
	Eyes closed	8.8%	11.5%	11.0%
	Books et al	7.2%	8.2%	8.0%
	Other/uncertain	3.6%	4.7%	4.5%
Total		864	4221	5085
		100.0%	100.0%	100.0%

As expected, there was a steep decline in looking at an electronic device with increasing age. Among those in the youngest age category (13-19), over 40 percent were looking at an electronic device compared to just slightly over 10 percent among the highest age category (60 and over). Omitting cases in which the type of activity on the electronic device could be not be ascertained, the most frequent activity engaged in when looking at an electronic device was reading (36%), followed in succession by typing (26%), watching a film or video (22%), and then gaming (15%).

A scant 8 percent of riders were observed reading different categories of printed materials. Slightly less than 5 percent of riders were found reading books, 2.6 percent of riders were observed reading newspapers, and less than 1 percent were observed reading magazines.

The relationship between age and looking at printed materials (books, magazines, and newspapers) was the inverse of the pattern noticed between age and looking at an electronic device. Here there was a dramatic increase in looking at these types of materials with advancing age. Only 3 percent of those in the age category of 13-19 were found to be reading a printed book, magazine, or

newspaper compared to a corresponding figure of 24 percent among those 60 years of age or older.

The data in Table 1 further reveals that the vast majority of passengers either consciously or unconsciously were averting their gaze from other riders. Only 26 percent of riders were “looking around” the subway car at other riders. Somewhat surprisingly, the percent of riders who looked around was lower when the subway car was less densely populated.¹

Wearing earphones or earbuds

More than a third of all passengers were observed wearing earphones or earbuds (35%). As expected, there was a strong relationship between age and use of these devices. Slightly greater than half of the youngest age group were found to be wearing earphones/earbuds and nearly half of the second youngest age group (20-29) were found to be doing so. By contrast, less than 1 percent of those 60 and over were using one of these devices. In addition, there was a gender imbalance in the use of these devices with proportionately more males than females using earphones/earbuds (38% vs. 32%). Also aligning with expectations, riders who were looking at an electronic device were considerably more likely to wear earphones/earbuds than other riders (49% vs. 26%). Lastly, riders wearing earphones/earbuds were more likely to be socially isolated. Only 6 percent were observed interacting with other passengers vs. 21 percent of those who did not use earphones/earbuds.

Verbally interacting with other passengers

All told, roughly 16 percent of riders were found to be verbally interacting with other riders. Riders in the youngest age group were greatly overrepresented among passengers interacting with others (29%). This finding could be attributed to school-age individuals who were far more likely to be travelling in a group.

Violations of rules of etiquette

The student researchers in this study observed violations of five rules of subway conduct: manspreading, wearing a backpack while standing on a crowded train, eating, grooming, and pole-hogging.

For the sample as a whole, 39 percent of riders who were standing were found to be wearing a backpack and 26 percent of seated male passengers were found to be manspreading. Both categories of behavior become more serious violations of

etiquette when conditions become crowded, but our results suggest only minor modifications of behavior, even when space on a subway car is limited. The percentage of standing riders who are wearing a backpack only dips by a few points (41% to 37%) when a subway car progresses from mostly empty to completely full. Similarly, there was no indication that male seated riders were less likely to manspread as adjacent seats filled up.²

Age is the most important determinate of whether a rider was found to be wearing a backpack when standing. A whopping 70 percent of riders in the 13-19 age bracket (many of whom can be assumed to be high school students on their way to or from class) were found to be wearing a backpack when standing. Among those 20-29 years of age, the figure stands at 43 percent and among those 30-39 years of age the figure is 35 percent. After 40 years of age, the percent who wear a backpack tapers off considerably to about 23 percent.

Age is also related to the percent of males who manspread. The occurrence of manspreading is greatest among those males in the 30-39 age group (30%) and in the 40-49 age group (29%). Another correlate of manspreading is whether or not a male passenger is sleeping. Among those manspreading, 17 percent were found to be dozing.

Only 4 percent were observed to be eating and a minuscule proportion were observed to be grooming. The overall incidence of pole-hogging could not be ascertained because of the nature in which the sample of riders was selected (i.e. students may not have situated themselves near a pole when carrying out their observations).

With respect to eating, a slightly greater proportion of females than males were recorded as violating this rule. Most noticeably, about 8 percent of those in the youngest age category were found to be eating – double the percent for the sample as a whole.

Finally, with respect to pole-hogging, among those engaged in this behavior, there was little discernible difference between males and females. Once again, though, age seems to play a role. The frequency of pole-hogging declines with increasing age.

Conclusions

Several major findings have emerged from this study. Consistent with previous research, this study has uncovered a gender gap in the percent of riders who stand. Overall, the percent of males who stand is considerably greater than the corresponding percent of females who stand. Noteworthy is that the percent of males who stand rises steadily as the population density of the subway car increases. MTA analysts, finding a similar tendency, have suggested that this finding is “probably because New York’s gentlemen do live up to cultural expectations regarding giving up seats to ladies and children,” and we have no reason to second guess this explanation (Berkovich et al, 2016). It is possible that other factors lead more male passengers to stand in crowded cars – perhaps women take up less space on the seats, or are quicker to respond when a seat opens up. But a plausible explanation of our findings is that when it comes to the city’s straphangers, chivalry, perhaps, is not quite dead.

What is dead, however, is the longstanding tradition of reading a printed newspaper while riding the rails. The number of riders who were observed reading printed material of any sort (books, magazines, and newspapers) was just 8 percent. This figure is considerably below the figure of 15 percent found in the earlier study conducted just 6 years ago. Of particular note is that only 2.6 percent of the riders were observed reading newspapers. The iconic image of subway riders clutching their newspapers (or glancing over the newspaper of the passenger seated next to them) is now a thing of the past. Far less reliance on printed material is good news for the environment, perhaps, but it remains to be seen how these changes in daily media consumption will affect the civic or cultural life of the city. It is quite possible that many of the riders absorbed with electronic devices were reading digital editions of the Daily News, the New York Post, or the New York Times. But it can be reasonably assumed that the expansion of cellular and wireless signals in the system will lead, overall, to a decline in the proportion of riders who are reading books, magazines, or newspapers, simply due to the increasing availability of competing options, such as participating in social media, gaming online, or watching streaming video content.

Relatedly, a second major finding to emerge from this study is that one-third of all riders are using an electronic device and that two-fifths of riders who are above ground (where there is internet access) are doing so. Clearly, as the MTA provides additional internet service for underground stations, the overall proportion of riders using an electronic device will rise substantially. This is particularly the case since the preponderance of riders who were observed were travelling below ground.

Providing system-wide internet connectivity to subway riders, of course, has the added benefit of heightening riders' sense of personal safety, especially, that of females. If riders feel threatened or harassed, they or fellow passengers are able to contact authorities much more readily. Even without internet connectivity, passengers already have the means to identify those who engage in inappropriate or unlawful behavior by taking their pictures or recording their activities with smartphones. Conversely the ubiquitous presence of electronic devices provides an attractive target for would-be thieves. NYPD Transit authorities report that thefts of electronic devices now constitute one half of all subway crime, a 40 percent increase since 2009 (Furfaro, 2015).

A third significant finding emanating from this study is that the overwhelming majority of riders avert their gaze from other passengers by either looking at an electronic device, sleeping, or staring into space. Sociologists refer to this phenomenon as *civil inattention* whereby individuals in close physical proximity to one another avoid direct eye contact by fixing their gaze upon a "neutral" object or place. Thus, electronic devices serve another purpose – providing a convenient method to avoid uncomfortable visual contact with other passengers. Similarly, earphones or earbuds serve an added purpose – to avoid unpleasant auditory contact with other passengers. The widespread use of earphones and earplugs benefits all riders as it lowers the amount of noise in cars. (One has only to recall the loud noises spouting from boomboxes not too long ago.)

This study has also found that of the 5 rules of subway conduct under investigation here, the two most common breaches are the wearing of backpacks while standing and manspreading. Almost two-fifths of riders who were standing were observed to be wearing a backpack and more than a quarter of male riders who were seated were manspreading. Other violations of etiquette such as eating and grooming were relatively uncommon. The authorities at the MTA

should accentuate compliance with the rules governing wearing a backpack and manspreading in their campaigns to promote courteous behavior while riding the subway. Both wearing a backpack while standing and manspreading take up valuable space which has become increasingly scarcer. Curbing the incidence of manspreading will also make the ride less intimidating – especially for females who might feel uncomfortable in this situation.

While efforts aimed at reducing the incidence of manspreading or wearing a backpack when standing will help to conserve sorely-needed space, overcrowding and its associated problems will not be overcome until a commitment is made to upgrade the antiquated physical infrastructure of the city's subway system. Only when such a commitment is made and honored will New York have a subway system befitting its size and stature.

Notes

1. This finding may be because when a car is less crowded, gazing at another passenger may be more noticeable by that passenger, or it may simply indicate that when there are fewer passengers on the train, people-watching is less interesting, as there are fewer people to watch.

2. This study produced a higher incidence of manspreading than was found in an earlier study conducted by Hunter College students in the Spring of 2016. This earlier study also noted that manspreading decreased as the number of passengers in the car increased. The authors of the present study believe that the disparity in the results of the two studies could be due to the fact that manspreading requires a more subjective judgment on the part of the observer than coding the other behaviors in the analysis which are much less subject to interpretation. The authors of the present study therefore urge a degree of caution in viewing the 26 percent of seated males who were found manspreading as a precise estimate. With this caveat in mind, though, both studies carried out by the Hunter College researchers indicate that manspreading is a fairly common phenomenon.

References

Aaron Berkovich, Alex Lu, Brian Levine and Alla V. Reddy. "Observed Customer Seating and Standing Behaviors and Seat Preferences Onboard Subway Cars in New York City." <http://docs.trb.org/prp/13-1693.pdf> (accessed November 25, 2016).

"Ephemeral New York"

<https://ephemeralnewyork.wordpress.com/2016/06/20/reading-the-newspaper-on-the-subway-in-1914/> (accessed November 25, 2016).

Emma G. Fitzsimmons, "Stand Clear of the Closing Doors, If You Can." New York Times, May 4, 2016, p. A15.

Irene Lopatovska, "Information behavior underground: New York City, Paris." Procedia – Social and Behavioral Sciences 73 (2013) pp. 224-231.

Danielle Furfaro, "Hold on to your smartphone! Electronics theft is most popular subway crime." New York Post: <http://nypost.com/2015/09/21/hold-on-to-your-smartphone-electronics-theft-is-most-popular-subway-crime/> (accessed December 4, 2016).