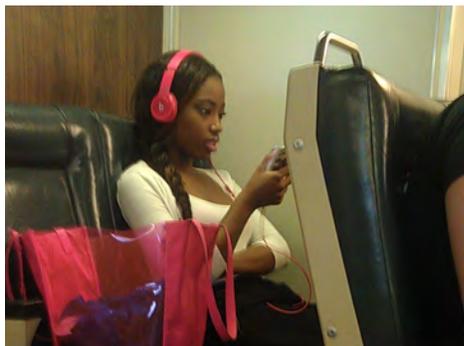
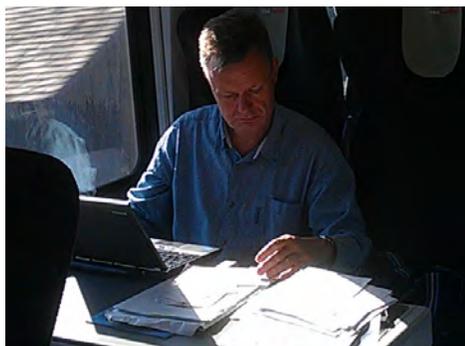


The Digitally Connected Commuter

The Rapidly Rising Use of Personal Electronic Devices on Chicago's Suburban Trains



An update to the Digitally Connected Commuter report, released in May 2013

Chaddick Institute for Metropolitan Development



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Introduction

This report, an updated version of *The Digitally Connected Commuter* report released in April 2013, explores the manner in which the growing prevalence and sophistication of personal electronic devices is changing the way Americans experience public transportation. These personal devices—whether used for business or pleasure—enable travelers to do many activities that were once impossible, including watching movies, preparing documents and presentations, and surfing the internet.

This report presents newly-collected data from 2014 and explores the growing dependence on electronic devices among commuter rail travelers in the Chicago region. The study, drawing upon the Chaddick Institute’s Technology in Intercity Travel study, which is now in its fifth year, evaluates information about how passengers engage with portable devices on weekday trips. As the findings below suggest, use of personal electronic devices rose dramatically over the past year.

The study began in September 2009 and since then has grown to encompass more than 32,000 unique passenger observations—in which no passenger is counted more than once on a given trip—on 516 trips throughout the United States. Among these, more than 10,000 observations are commuter rail passengers in the metropolitan Chicago region. Complete results for intercity air, bus and train travelers and commuter rail passengers will be summarized in a separate report released in July 2014.

Characteristics of Sample and Key Findings

Researchers measured the use of three basic features of electronic devices:

Table 1
Types of Activity Recorded

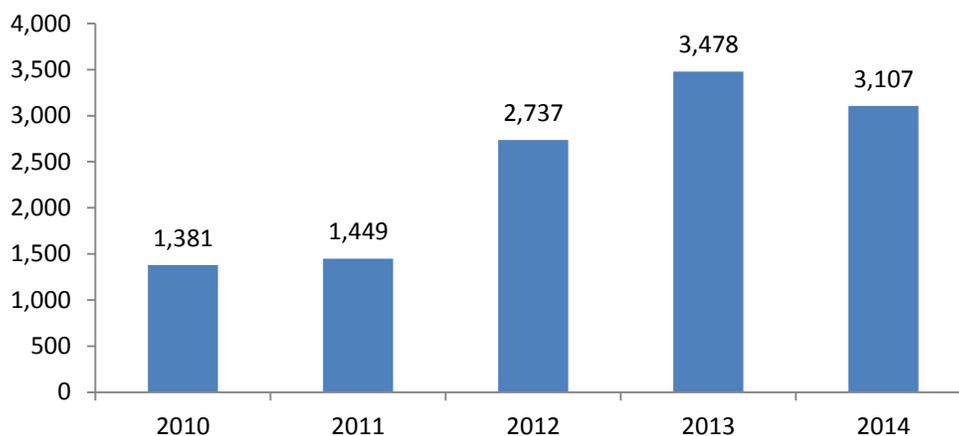
1. Audio Activities: Tasks, such as those involving cell phones or CD players that can be used with earphones, speakers, or headsets, that are being used strictly an audio function.

2. Visual or Audiovisual Activities on Devices, not including iPads, Kindles and other Tablet Use: Visual or audiovisual features, such as laptop computers, iPhones and other smart phones, DVD players, and iPods. (This category includes any traveler looking at an LCD screen for the purpose of engaging in an activity more substantial than placing a phone call.)

3. Visual or Audio-Visual Activities on iPads, Kindles and other Tablets: Same as Category 2 except focusing specifically on tablet usage. This final category was newly-introduced in 2012 to better calculate how small and lightweight devices affect traveler behavior.

This year, the study team observed 3,050 passengers on 36 departures operated by Metra and the South Shore Line between March 20 and June 23, 2014 (*Figure 1*). The sample included at least 450 passengers on trains operating south, southwest, west, northwest, and north from downtown Chicago, and included both rush hour and non-rush hour trips on these routes. As in past years, the entire sample was drawn on weekdays between 8 a.m. and 7:30 p.m.

Figure 1
Number of Commuter Rail Passengers Observed
Metra and South Shore Li



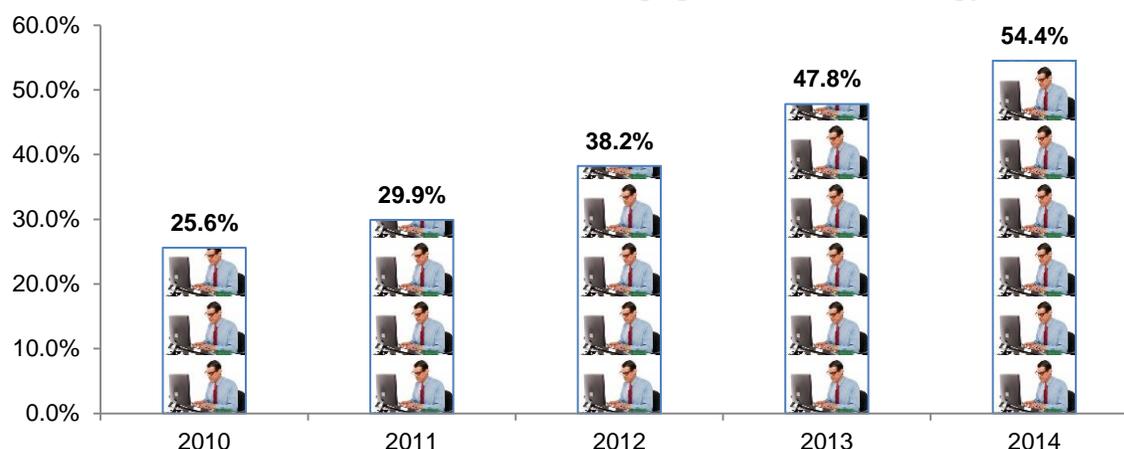
Note: data for 2010 - 12 was collected in the first quarter but also included trains from November/December of the previous year.

Four findings warrant emphasis:

Finding 1: The share of passengers using technology increased sharply between 2013 and 2014—the fourth consecutive year of significant growth. For the first time, more than half of passengers are now engaged with personal devices at random points, compared to slightly over a quarter in 2010.

The share of passengers using personal electronic devices rose for the fourth consecutive year. At randomly selected points, 54.4% of passengers are now engaged with technology, compared to 47.8% last year, 38.2% in 2012, 29.9% in early 2011, and just 25.6% in 2010 (*Figure 2*). Technology use has grown more than 40% (or 16.3 percentage points) since 2012 and has more than doubled since 2010.

Figure 2
% of Commuter Rail Riders Engaged with Technology



Note: data for 2010 - 12 was collected in the first quarter but also included trains from November/December of the previous year.

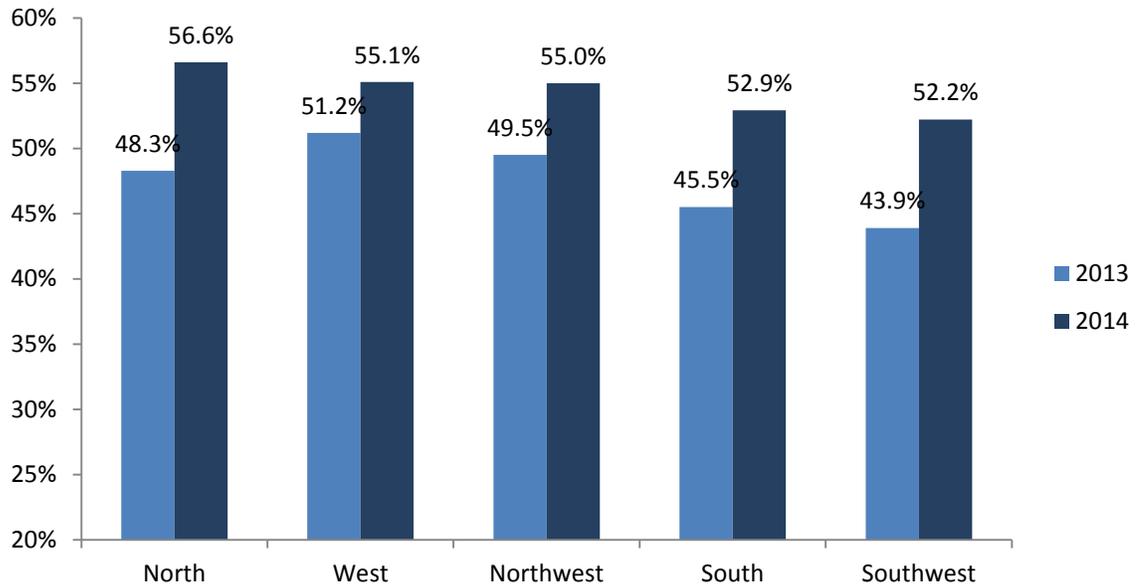
It warrants emphasis that a greater share of passengers—perhaps as many as 80%¹—use electronic devices at some point during their trip. As of January 2014, more than 90% of American adults had a cell phone or smartphone, with the rate being slightly higher among men (93%) than among women. An estimated 58% of Americans specifically had a smart phone in January 2014, compared to just 35% in May 2011 (Pew Charitable Trust, 2014).

By looking at electronic usage at specific moments in time, however, the approach used in this report provides a more accurate portrayal of the *intensity of technological engagement* than studies focusing only on whether a person is carrying or using a device at some point during the trip.

Finding 2: Trains serving the North and West suburbs have the highest technology usage. Those traveling to and from the South and Southwest suburbs, which tend to be less affluent, have markedly less usage.

A pronounced difference in usage exists between various parts of the metropolitan region. Well over half of all passengers observed on the route to the North (58.1%), Northwest (55.0%), and West (56.0%), which tend to serve suburbs with higher-than-average incomes, were using an electronic device (*Figure 3*). Technology use on trains to the South and Southwest, however, were several percentage points lower. The various commuter-rail lines were assigned to geographic regions, as noted in *Table 2*

Figure 4
% of Riders Engaged in Technology by Route



Note: Metra's Heritage Corridor and North Central service were not surveyed

Table 2
Commuter Rail Line Classification by Region

<u>Direction</u>	<u>Lines Included</u>	<u># Passengers Observed in 2014</u>
North	Milwaukee District North and Union Pacific North	594
Northwest	Milwaukee West and Union Pacific Northwest	599
West	BNSF and Union Pacific West	452
Southwest	Rock Island and Southwest Service	540
South	Metra Electric and South Shore Line	922

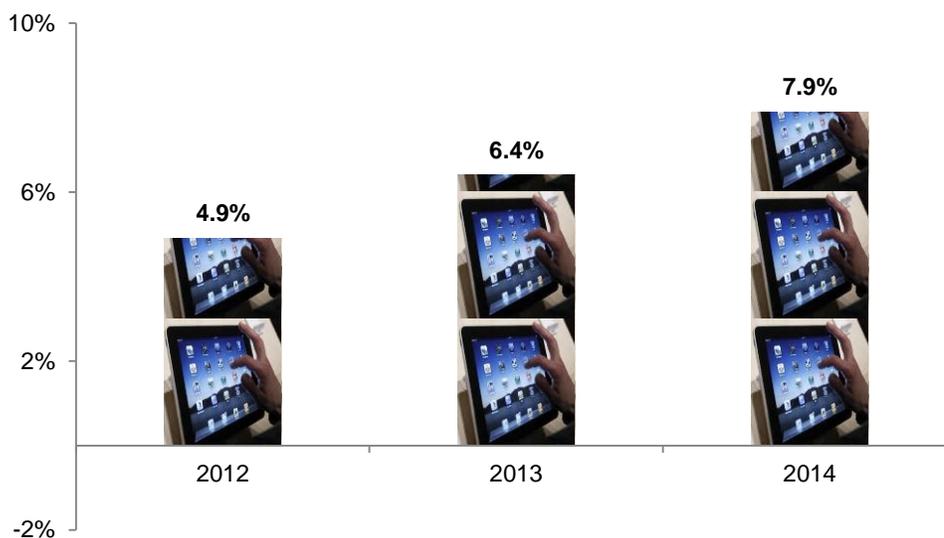
Note: Metra's Heritage Corridor and North Central service were not surveyed.

Finding 3: Almost one in 12 passengers (7.9%) are now using a tablet or e-reader at any randomly selected point in their trip, compared to one in 15 last year (6.4%) and just one in 20 (4.9%) in 2012. The rising prevalence of these devices reflects a gradual shift among passengers toward the use of sophisticated technology that allows several tasks, such as listening to music while engaging in social media, to be simultaneously performed.

Whereas the overall technology use rose by 14% among commuter-rail passengers between 2013 and 2014, tablet/e-reader usage rose by 31%—the same rate of increase as between 2012 and 2013. This

means that while slightly less than one in 20 passengers observed (4.9%) were using a tablet or e-reader two years ago, twice as many are using one today (Figure 4).

Figure 4
**% of Commuter Rail Passengers Using
Tablets/eReaders at Randomly Selected Points**



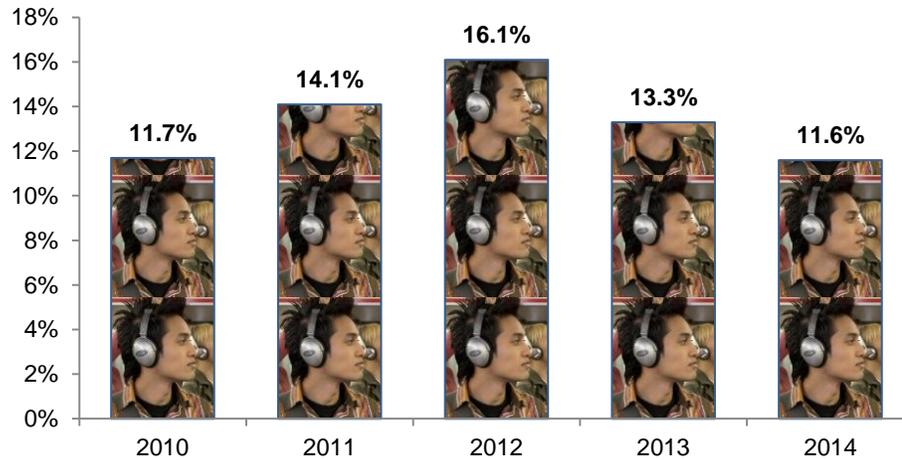
These results are consistent with Pew Research estimates on the share of Americans that own tablets and e-readers. The share of adults owning tablets rose from 25% in August 2012 to 42% in January 2014. The prevalence of e-readers has grown in a similar manner. These devices represent a breakthrough in convenience for many commuters. Their space-saving qualities and ability to boot up quickly make them almost ideal for space-confined environments. Unlike laptops and notebook computers, tablets and e-readers can be stored in a briefcase or purse and take up much less room when in use.

The long periods in which these devices can be used between battery charges are yet another advantage. Whereas power outlets are common on some intercity buses and trains, most commuter rail users must contend with the absence of auxiliary power supply. The long duration between charges is particularly advantageous on long commutes.

Finding 4: Travelers continue to gradually reduce their use of personal electronic devices for only “audio-oriented” functions, such as cell phone calls and listening to music, which typically do not require an internet connection. As more travelers shift toward LCD-based tasks or conducting multiple tasks at once, the importance of finding a seat onboard to fully interact with electronic devices has risen.

Passenger activity has rapidly shifted away from engaging in only simple activities, such as placing conventional cell phone calls and playing music with their devices. This year, for the first time, we observed a marked decline in the share of passengers engaged in strictly “audio” activities. The share fell from 13.3% of passengers in 2013 to 11.6% in 2014 (Figure 5).

Figure 5
% of Commuter Rail Passengers Using "Audio Only" Functions of Devices



This change is attributable in part to the growing desire for travelers to multi-task when riding commuter trains, such as simultaneously listening to music and using social media. Tablets and e-readers in particular are most useful when a person is able to sit in order to fully use their touch-screen capabilities.

The decline between 2012 and 2014 is part of a long-term trend we have observed of passenger shifting to more intensive visually oriented activities. The launching of the “Quiet Car” program on Metra in June 2011, in which passengers are asked to turn off cell phones and mute electronic devices, may have contributed to the declining number of passengers limiting their audio-related activities. Our data collectors sampled these cars no differently than other cars.

Conclusion

Evidence is mounting that the growing prevalence and sophistication of portable electronic devices is boosting public transportation ridership. Sharply-rising technology use, however, illustrates the need for area transit providers to take steps to better accommodate users of personal electronic devices. Some of these steps include:

1) Accelerate efforts to introduce Wi-Fi on Metra trains to better service an increasingly tech-dependent customer base. Considering the remarkable rate in which the use of personal technology is growing, Metra has a strong incentive to pursue strategies that can be implemented relatively quickly, even if this entails relying on a subscription-based Wi-Fi service. The agency has missed opportunities to enhance its image by not rolling out Wi-Fi on any of its routes to date. (By way of example, Amtrak unveiled Wi-Fi on its Midwestern routes in February). Although Metra’s agreement with AT&T to improve 4G service along publically owned commuter-rail routes, announced in January 2014, is an important step in the right direction, they have not recently communicated to the public an explicit timetable for rolling out Wi-Fi on any of its services.

Table 3 offers a partial list of transit agencies that have made Wi-Fi available on commuter trains or light-rail vehicles. Commuter trains in Boston, San Diego, and a number of other cities are equipped with free Wi-Fi. New Jersey transit is aggressively moving to adopt a fee-for-service system.

**Table 3
Cities and Regions with Wi-Fi on Commuter Rail and Light-Rail Systems**

COMMUTER RAIL

Albuquerque, NM	New Mexico Rail Runner Express
Beaverton, OR	TriMet's WES (Westside Express Service)
Boston, MA	Metropolitan Boston Transit Authority
Minneapolis, MN	Northstar
New Jersey	New Jersey Transit*
Orlando, CA	Sunrail
San Diego, CA	Coaster
San Jose, CA	Altamont Commuter Express

LIGHT RAIL

Oceanside	Sprinter
San Jose	Santa Clara Valley Transportation Authority

* Wi-Fi is currently available at select New Jersey Transit stations and will be installed on trains. (This will not be a free service).

2) Make relatively low-cost strategies, such as the installation of Wi-Fi networks and accessible charging stations at Metra depots, including major downtown terminals, a heightened priority. These efforts would signal to customers that transit providers are committed to incremental steps toward the development of a fully Wi-Fi equipped system. At present, remarkably few Metra stations have Wi-Fi (among those that do include Schaumburg, Tinley Park-Oak Park Avenue, Tinley Park -80th Avenue, and Palatine). Increasingly, customers have come to expect this amenity in public places. Wi-Fi can be highly beneficial, even to travelers with 3G and 4G service, by giving them expanded bandwidth, thereby increasing the technological functionality. On our region's commuter rail system, providing Wi-Fi in stations is a relatively low-cost way to support tech-oriented lifestyles that is tremendously underutilized.

3) Recognize that the installation of tech-related amenities is a strategy that can help improve customer satisfaction at a time when on-time performance on some routes is sagging. Customers often feel "trapped" when on late-running trains and resent the loss of productivity that occurs when they are arriving more than a few minutes late at their destination. This phenomenon is especially acute during the winter months, when the number of weather-related delays often escalates sharply, as occurred in dramatic fashion during the difficult 2013-14 winter. Our focus groups suggest that customers take comfort in having the ability to communicate with friends and family and access social media when experiencing delays, even if such communication is not necessary to improve the efficiency of their trip. In effect, Wi-Fi can serve as an "insurance policy" to give customers a productive and emotionally soothing outlet when on severely delayed trains.

4) Explore steps to make power outlets standard features on all Metra trains. Metra is to be commended for taking steps to equip its Amerail-built passenger car fleet with on board power outlets on a relatively ambitious timetable.² Similarly, the new Nippon Sharyo cars placed into service on the Metra Electric routes also have power outlets. Additional measures to make power outlets available on other equipment, even if only in selected cars, warrant serious consideration. Such steps could be a practical way to demonstrate a strengthened commitment to improving the on-board environment. The availability of power outlets would be especially beneficial to travelers on trains experiencing lengthy delays.

5) Use the "tech friendly" features of transit in advertising and promotional campaigns. The recent surge in technology use illustrates the changing factors that affect the ways residents in the region make travel choices. While the ability to avoid roadway congestion has long been a staple of advertising campaigns by public transit operators, the extraordinary benefits of transforming "dead time" on long commutes into productive time is an unappreciated benefit of our comprehensive transit system. Transit companies have much to gain by riding the "Personal Tech Tidal Wave," a phenomenon that seems poised to continue for years to come.

Methodology and Sample

DATA RECORDING PROTOCOL: Data is recorded as a code, based on the type of device each passenger is using, on smart phones. Data is then sent as a text message after arrival so the results can be consolidated. Please reference *Table 1* in this report for details on how we assign codes to each type of electronic device. The Institute purchases tickets for data collectors—who travel as regular fare-paying passengers on buses, planes, and trains—and collect data in real-time settings.

TIMING ON TRAINS: Data collectors gather information 5 to 10 minutes after leaving downtown terminals and immediately upon departure on return trips from inner-ring suburbs. We assume that technology users are randomly distributed throughout trains. Only when clear and unobstructed views are possible does the data team record data of passengers sitting on upper levels of gallery cars. In many cases, this was not the case, resulting in observations on the lower level being more prevalent than those on the upper level.

SPECIAL CIRCUMSTANCES: Data collectors develop a consistent response to these situations:
When two passengers are using the same device, both passengers are counted as using a device.

When a passenger is judged to be below grade-school age (5th grade or less), that passenger is excluded, although we have observed heavy usage among many younger passengers. When a passenger is using a set of earbuds or headphones that is plugged into an electronic device, but that passenger appears to be sleeping, we classify that passenger as using an “audio device.”

Other Recent Chaddick Studies on Technology Use

"The Personal Tech Tidal Wave: The Rising Use of Electronic Devices on Intercity Buses, Planes, & Trains: 2014 Update"

Our 2014 study showing how the growing use of portable electronic technology among intercity air, rail, and bus passengers changing travel behavior. Released in July 2014.

"Who Rides Curbside Buses: A Survey of Passengers on Curbside Bus Lines in Six East and Midwest Cities"

Provides survey results from 750 curbside and conventional bus passengers in six cities, including analysis of how traffic is being diverted from other modes. Released June 2011.

Tablets and E-Readers Leap Past Music Players and Regular Cell Phones as "Technologies of Choice" on Commuter Trains

A detailed look at the type of devices used by more than 2,000 travelers on Chicago commuter trains. Released on May 23, 2012.

The Top 20 "Top Transit Suburbs" of Metropolitan Chicago": An Index Approach.

An evaluation of dozens of amenities and characteristics of Chicago suburbs in order to identify the most attractive places to live for people seeking lifestyles built around commuter-rail service. Released on July 26, 2012.

For free downloads of these studies, please visit the Research & Publications page of the Chaddick Institute website at: <http://las.depaul.edu/chaddick>

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¹ Chaddick Institute surveys show that nearly 90% of intercity bus passengers use some form of technology on intercity trips. See "Who Rides Curbside Buses: A Survey of Passengers on Curbside Bus Lines in Six East and Midwest Cities," available at las.depaul.edu/chaddick. Although we have not conducted a similar survey of airline passengers, the socioeconomic characteristics of commuter train riders suggest these travelers use technology at an even higher percentage.

² See Metra Press Release (2012), "Metra Helps Riders Recharge with Passenger Car Rehab Program", accessed on May 13, 2013 at http://metrarail.com/metra/en/home/utility_landing/newsroom/newsroom_archive/2012NewsroomArchive/metra_helps_ridersrechargewithpassengercarrehabprogramrenovatedc.html

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