

Distraction Shouldn't Be Deadly

New York City Department of Transportation

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Introduction

As mobile device ownership has become more prevalent, concerns about the dangers of “distracted walking” while crossing the street have grown. In 2017, New York State passed a law (Chapter 306 of 2017) directing the New York City Department of Transportation (DOT) to study and report on its efforts to educate pedestrians and drivers about 1) the dangers of being a distracted pedestrian who is texting or using a mobile device and 2) the necessity for motor vehicle operators to watch for distracted pedestrians. This report addresses the requirements of that law, found within section 19-197 of the Administrative Code of the City of New York. Reports of device distraction are scarce in the New York City and national fatality data, and estimates of annual mobile device-related injuries are dwarfed nationally by pedestrian injury estimates where pedestrian distraction was not cited. In short, despite growing concerns, **DOT found little concrete evidence that device-induced distracted walking contributes significantly to pedestrian fatalities and injuries.**

Nevertheless, because research studies demonstrate that mobile device usage changes the way pedestrians interact with their environment, DOT targets school-aged children -- especially ages 9 through 11 -- who have likely received their first phones. Walking unsupervised for the first time, these “tweens” will be most receptive to lessons from teachers and safety educators about the inherent risks in distracted walking.

However, the growth in distractions, especially electronic, further underscores the need to create a safe street network regardless of the choices made by vulnerable road users. DOT believes that the most significant gains in reducing pedestrian fatalities and severe injuries can be made by continuing to target the most dangerous behaviors -- such as driver speeding and failure-to-yield -- and by implementing street improvement projects that reduce the severity of crashes.

Since its start in 2014, DOT's Vision Zero program has helped drive down fatalities for five straight years. Creating a street network that is forgiving of human error, including distraction of all types, is a central goal of Vision Zero.

Data and Analysis:

Pedestrian Fatalities and Portable Electronic Device Use

Despite the increasing attention to device use and pedestrian distraction, the available national or New York City fatality data do not support a strong connection to fatalities. Data from the United States' National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS)

suggests that portable electronic device use by pedestrians occurred in only a small fraction of pedestrian fatalities (National Highway Traffic Safety Administration, 2010-2015). According to the last six years of available national data, fatalities involving the use of portable electronic devices by pedestrians ranged from one to twelve per year, representing 0% to 0.2% of pedestrian traffic fatalities (Table 1).

Table 1: U. S. Pedestrian Fatalities Involving Pedestrian Use of Portable Electronic Devices

Year	Pedestrian Fatalities Involving Pedestrian Use of Portable Electronic Devices	All Pedestrian Fatalities	Percent of Device-Involved Pedestrian Fatalities
2015	12	5,376	0.2%
2014	1	4,910	0.0%
2013	5	4,779	0.1%
2012	5	4,818	0.1%
2011	9	4,457	0.2%
2010	6	4,302	0.1%

Additionally, an in-depth review of the written crash narratives in New York City fatality reports from 2014 through 2017 suggests little evidence of pedestrian device involvement in citywide pedestrian fatalities. Records show two cases (0.2%) in which there was electronic device involvement, of 856 with available narratives. One pedestrian fatality in 2015 involved a pedestrian who was texting, and one fatality in 2014 involved a person reaching for a dropped mobile device. This lack of reported pedestrian device involvement is notable, as the crash reports rely largely on drivers' accounts. In comparison, from 2014-2017, there were 112 pedestrian fatalities where vehicles failed to yield to pedestrians with the right of way (13%).

Pedestrian Injuries and Cell Phone Use

NHTSA releases annual estimates of pedestrian injuries (National Highway Traffic Safety Administration, 2009-2015). The United States Consumer Product Safety Commission maintains the National Electronic Injury Surveillance System (NEISS), a sample database of emergency room injury visits related to consumer products which are extrapolated to produce annual estimates (United States Consumer Product Safety Commission, 2009 - 2015). The NEISS sample database was queried for cell phone-related injuries using the product code 550 to identify cell phone involvement and the location code 4 to limit the query to injuries that took place on a street or highway. According to the narratives provided by NEISS, the majority of incidents involved a driver, passenger, or cyclist using a cell phone, rather than a pedestrian. Even with this data limitation, the estimated number of cell-phone related injuries on a street or highway is dwarfed by the number of annual pedestrian injuries provided by NHTSA (Table 2).

Table 2: Annual U. S. Cell Phone-Related Injuries on a Street/Highway and All Pedestrian Injuries

	Estimate of Cell Phone-Related Injuries on a Street/Highway	Estimate of All Pedestrian Injuries
2015	2,469	70,000
2014	3,475	65,000
2013	2,812	66,000
2012	2,096	76,000
2011	1,673	69,000
2010	1,731	70,000
2009	1,656	59,000

During this time period, mobile device adoption has greatly increased. In 2011, 35% of adults owned a smartphone, growing to 68% in 2015 and 77% in 2018. In 2009, 85% of adults owned a cellphone, growing to 92% in 2015 and 95% in 2018 (Pew Research Center, 2018).

New York City Pedestrian Distraction

In November 2017 DOT undertook a study of pedestrian mobile device distraction at three signalized intersections in Queens: Queens Boulevard & 44th Street, 34th Avenue & 30th Street, and Broadway & Hooper Street. The observer watched pedestrians crossing the street and noted if a pedestrian was distracted by looking at or interacting with their devices while crossing the street. Depending on the signal phase the rate of pedestrian distraction ranged from 10% - 14%, with a rate of 13% overall. The vast majority of pedestrians (87%) were not distracted when crossing the street (Table 3).

Table 3: Pedestrians Looking at Devices While Crossing

Pedestrian Signal Phase	Count	Percent	Total Observations
Don't Walk	25	13%	187
Flashing Don't Walk	16	10%	155
Walk	60	14%	441
All Phases	101	13%	783

In addition to DOT’s study, a 2018 study from Northern Arizona University examined pedestrian distraction at four signalized intersections, one of which was in New York City (6th Avenue and 14th Street in Manhattan). At this location over 1,400 pedestrians were observed crossing the street and 130 (9%) were texting, similar to the rate observed in the DOT study (Russo, James, Aguilar, & Smaglik, 2018).

It is of note that while observations reflect that 9-13% of pedestrians are distracted by a phone while crossing the street, only 0.2% of New York City pedestrian fatality reports reflect electronic distraction at

the time of the crash. Cell phone use by pedestrians does not appear to be disproportionately contributing to fatal pedestrian crashes.

Pedestrian Self-Reports of Distraction

Using emergency room data from 1,075 pedestrian injuries (2008 – 2011), researchers at Bellevue Hospital found that 7.7% of admitted pedestrians were using an electronic device at the time of the crash. Hand-held games were being used by 0.1% of pedestrians, mobile phones were being used by 3.5% of pedestrians, and music/movie devices were being used by 4.1% of pedestrians. Of the pedestrians aged 7 to 17, 10.4% were using electronic devices (Dultz, et al., 2013).

In a study of 200 injured pedestrians, 14% of respondents reported being distracted at the time of the crash. However, only one reported looking down at an electronic screen and four reported talking on a mobile device, much fewer than the number that reported being distracted. Other kinds of distraction, beyond that caused by electronic devices, exist and may be related to pedestrian crashes. Additionally, 10% of respondents reported being fatigued and 8% reported being stressed, highlighting that many factors, especially those that are not controllable, may increase risk of injury (Nieuwesteeg & McIntyre, 2010).

Literature Review:

Distracted Pedestrians Don't "Look Both Ways" Before Crossing

Many studies have demonstrated that distracted pedestrians were less likely to perform the behavior of looking left and right before crossing. This was observed for pedestrians using their phone to access the internet (Byington & Schwebel, 2013) as well as for those texting, listening to music, and interacting with a child (Thompson, Rivara, Ayyagari, & Ebel, 2013). This behavior change was observed at intersections both with and without a signal (Hatfield & Murphy, 2007).

Mobile Device Use Changes the Way Pedestrians Walk

Mobile device use increases the amount of pedestrian exposure to vehicles during a crossing. Studies have shown that mobile device use causes pedestrians to cross more slowly, increasing overall crossing time (Hatfield & Murphy, 2007; Neider, McCarley, Crowell, Kaczmariski, & Kramer, 2010). This was observed for those using both hand-held and hands-free devices (Thompson, Rivara, Ayyagari, & Ebel, 2013). Texting was shown to have greater effect on speed than talking on a mobile device (Lamberg & Muratori, 2012; Schabrun, van den Hoorn, Moorcroft, Greenland, & Hodges, 2014). Those who were texting also walked in less of a straight line, increasing the amount of time spent in the intersection (Schabrun, van den Hoorn, Moorcroft, Greenland, & Hodges, 2014; Lamberg & Muratori, 2012). Mobile device use had a greater effect on older adults; within a virtual street environment they were less likely to cross difficult streets in the allotted time (Neider, et al., 2011). However, even when undistracted, those walking in a group and those 65 years or older took longer to cross (Thompson, Rivara, Ayyagari, & Ebel, 2013).

Distracted Pedestrians Demonstrate Reduced Situational Awareness

In a simulated environment, pedestrians using mobile devices to access the internet or to text are more likely to be hit or nearly hit than those who are not distracted (Stavrinos, Byington, & Schwebel, 2011; Schwebel, et al., 2012; Byington & Schwebel, 2013). This also held true for younger children, who, even when undistracted, are likely to find it more difficult to cross the street (Stavrinos, Byington, & Schwebel, 2009). Additionally, those distracted by a mobile device are more likely to walk when there is an oncoming car and stop when there is a stopped car, compared to those who are not distracted (Nasar, Hecht, & Wener, 2008).

DOT Outreach:

Student Education

Younger adults, ages 18-30, generally have more experience with, and a more positive perception of smart phones than older adults; relatedly, they are more likely to look favorably on using them while crossing the street (Lennon, Oviedo-Trespalacios, & Matthews, 2017). DOT believes the best way to change attitudes is to educate children about the risks associated with mobile device usage and street crossing when they are first being introduced to this technology, as they will be more receptive to the message. To this end, DOT provides age-appropriate education to school-aged pedestrians about the dangers of being distracted in the roadway environment.

DOT's 'Cross This Way' campaign is aimed at students in 4th through 6th grade. The program makes participants aware of the leading causes of traffic injuries for children and educates them on how to be attentive pedestrians. It calls special attention to putting phones away when crossing the street, as



'Cross This Way' video instructing students to put away phones before crossing

aggressively even if pedestrians are in the crosswalk and have the right-of-way. The New York City Department of Education has now adopted this campaign into its curriculum due to the success of the program.

The 'Take Action Against Distraction' program works with students in 7th through 10th grade to educate them about the risks of texting and walking as well as texting and driving. Students 11-14 years of age make up more than 50% of student injuries in every borough. Over the past three school years, the

program has reached 13,163 students across 103 schools, representing 25% of all middle and high schools visited by NYC DOT Safety Education in those years. (Table 4).

Table 4: Take Action Against Distraction Outreach Statistics

School Year	Schools	Classes	Students	% of All Middle and High Schools Visited
2017 – 2018	30	125	3,750	23%
2016 – 2017	38	124	3,555	28%
2015 – 2016	35	150	5,858	24%
Total	103	399	13,163	25%

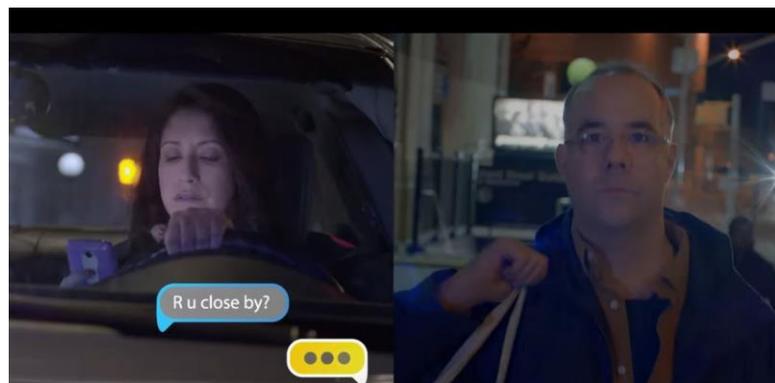
Media Campaigns

Due to DOT’s focus on street redesign, only a small portion of the overall Vision Zero budget allocation is earmarked for media campaigns. In order to most efficiently utilize these resources, the campaigns address the behaviors that most frequently cause crashes that result in severe injuries and fatalities. This often means that drivers are targeted for communication and outreach efforts, as dangerous driver choices are a primary cause or contributing factor in 70% of pedestrian fatalities. Campaigns include ‘It Can Wait,’ an anti-texting and driving campaign, as well as ‘Your Choices Matter,’ a campaign providing education on the responsibilities of using the street.

DOT conducts many media and educational campaigns throughout the city, so the efficacy of each individual campaign is difficult to measure. However, DOT has collected robust data on the ‘Your Choices Matter’ campaign. Despite the overall



‘It Can Wait’ event, Staten Island



‘Your Choices Matter’ video warning against texting and driving

emphasis on the driver behaviors of speeding and failure to yield, evaluation of the campaign has shown a significant effect on pedestrian behavior. When tested in focus groups, the ‘Your Choices Matter’ advertisements elicited an understanding of speeding, turning, and taking care near crosswalks amongst both drivers and non-drivers. Although there was no explicit “call to action” regarding mobile device use in the fiscal year 2017 media campaign, 73% of drivers reported they would avoid texting or making phone calls while driving. As a result of the ‘Your Choices Matter’ media campaign, non-drivers are supportive of new street designs (83%), expect more traffic law enforcement (71%), and aspire to be more careful pedestrians (76%). DOT’s data collection also shows a change in the attitudes of drivers and non-drivers over time. From 2015 to 2017, awareness of Vision Zero amongst non-drivers has risen from 51% to 62%. Support of Vision Zero as a valuable government program has risen from 74% in 2016 to 80% in 2017.

Finally, DOT also produces and distributes its ‘Getting to Zero’ brochure, which includes information about the risk of distractions for drivers, and encourages pedestrians to be aware, even when they have the right-of-way. Since 2015 the brochure has been given out 450,000 times, reaching a large cross-section of New Yorkers.

Recommendations and Conclusion

Recommendation: DOT and other City agencies should continue to focus their interventions on protecting vulnerable road users through engineering, enforcement, and education.

Studies have shown that distraction from a mobile device can lead to less safe behavior while crossing the street. To this end, DOT provides education and outreach on the risks associated with distraction, specifically targeting school-aged children.

However, even if electronic device use is underreported, which it likely is, it appears to contribute to a smaller proportion of pedestrian fatalities and injuries than other documented factors. As published in the 2014 Vision Zero Action Plan, for 53% of pedestrian fatalities, dangerous driving choices such as speeding, inattention, and failure to yield are the main causes of the crash. When measured against these factors, it appears that distracted walking is a very minor contributor to pedestrian death and injury. Ultimately, interventions that lead to more responsible driving behavior are the key to driving down fatalities throughout the city.

Additionally, DOT maintains the viewpoint that use of a mobile device is just one of many forms of distraction that may occur while crossing the street (Zeller Jr., 2007). Pedestrians are distracted when walking across the street with children, daydreaming, or feeling stressed. Human distraction has always and will always exist in some form, and is difficult, if not impossible, to entirely change. No urban environment can be entirely free from distraction.

DOT believes that the best way to address distracted walking, and all forms of distraction, is by creating a road environment focused on speed management – where vehicles are traveling at a safe speed so that crashes can be avoided, and when crashes do occur they are not fatal or severe. People will inevitably be distracted when they walk with mobile devices, or may be distracted in other ways. But, in line with New York City’s Vision Zero policy, this common human error should not result in death. Speed management has been shown to be one of the most vital tools for protection of vulnerable road users in New York City

and DOT will continue to explore strategies for expanding and enhancing its current related initiatives, including the use of speed cameras.

Distracted walking is all the more reason to create street environments that can be safe regardless of the individual choices of vulnerable road users. In addition, DOT will continue to pursue the anti-distraction educational initiatives documented earlier in this report, such as “Cross This Way”, “Take Action Against Distraction” and “It Can Wait”.

Recommendation: *DOT will continue to target the most dangerous behaviors.*

DOT will continue to target unsafe speeds and behaviors with its robust and diverse toolbox of treatments and programs, including the City of New York’s recently-expanded speed camera program (shown to reduce speeding near schools by more than 60%), leading pedestrian intervals (shown to reduce bicycle and pedestrian severe injuries by nearly 40%), street safety redesign projects, left turn traffic calming, and the retiming of corridor traffic signals for 25mph. All of these efforts, combined with an array of other programs and policies, and enhanced NYPD enforcement against dangerous driving behaviors, have together contributed to New York City’s historically low pedestrian fatality totals (down 34% since the start of Vision Zero).

DOT will focus on the most dangerous behaviors involved in pedestrian fatalities, based on the data available in NYPD crash reports. Additionally, DOT will continue to monitor crash data to see if more distraction-related outreach and communication is warranted. DOT is continually seeking out and creating new opportunities to achieve Vision Zero by using innovative and effective strategies to target the behaviors that most contribute to fatalities.

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