Mitigating Pedestrian Crashes Through the Use of Automated Speed Enforcement Systems

The following analysis of available data performed by the New York State Department of Transportation demonstrates that speed enforcement camera programs have proven to be a highly effective tool for reducing pedestrian fatalities and injuries in New York City and throughout the country. It further reinforces the Governor's common-sense position that the State Senate must reauthorize and expand New York City's speed camera program before it expires on July 25, 2018. Failure to do so will result in 140 cameras shuttering permanently, leaving New York's pedestrians and schoolchildren more vulnerable to injury and death.

➢ **Pedestrian crashes are a serious public health concern**

Between 2012 and 2016, an average of 144 people died each year in motor vehicle crashes in New York, according to Department of Motor Vehicle data. During that period, an average of 8 children under the age of 18 were killed each year in motor vehicle crashes in New York City.

For NYC, 5-year period 2012-2016 (+ preliminary 2017 data):

Pedestrian Fatalities and Injuries due to Motor Vehicle Crashes						
	2012	**2013**	**2014**	**2015**	**2016**	**2017***
Fatalities						
Bronx	17	38	15	22	29	20
Kings	41	45	45	47	33	28
New York	32	35	23	20	40	19
Queens	37	57	38	36	32	29
Richmond	8	8	6	10	7	4
Total	**135**	**183**	**127**	**135**	**141**	**100**

Source: DMV's TSSR System

***Data is preliminary for 2017

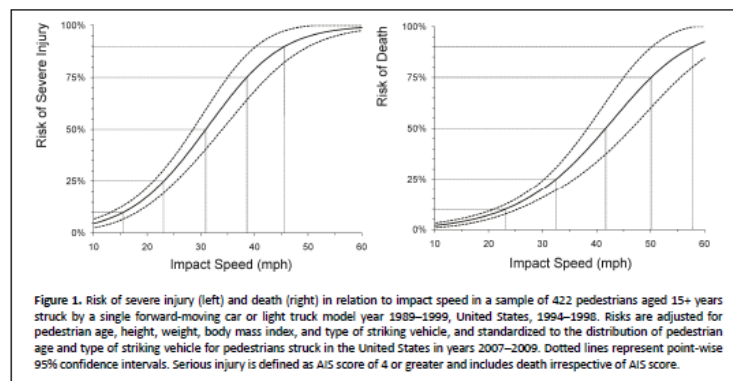| Pedestrian Crashes in New York City	
	5-year average (2012-2016)
Fatalities	144.2
< age 18 Fatalities	8.2

Source: DMV's TSSR System

➢ **Pedestrian crash survivability is directly related to vehicle speeds**

As outlined in the 2017 NYS Strategic Highway Safety Plan, pedestrians are "vulnerable users" competing for roadway space with cars and trucks, and the severity of injuries increases directly with the speed of the motor vehicles involved in these crashes. Studies show the direct correlation between speed to pedestrian injury severity. Two recent studies include:

1) **2011 study sponsored by AAA Foundation for Traffic Safety:**

According to a 2011 AAA Foundation for Traffic Safety study: "Results show that the average risk of severe injury for a pedestrian struck by a vehicle reaches 10% at an impact speed of 16 mph, 25% at 23 mph, 50% at 31 mph, 75% at 39 mph, and 90% at 46 mph. The average risk of death for a pedestrian reaches 10% at an impact speed of 23 mph, 25% at 32 mph, 50% at 42 mph, 75% at 50 mph, and 90% at 58 mph. Risks vary significantly by age. For example, the average risk of severe injury or death for a 70-year-old pedestrian struck by a car travelling at 25 mph is similar to the risk for a 30-year-old pedestrian struck at 35 mph…"

Figure 1. Risk of severe injury (left) and death (right) in relation to impact speed in a sample of 422 pedestrians aged 15+ years struck by a single forward-moving car or light truck model year 1989–1999, United States, 1994–1998. Risks are adjusted for pedestrian age, height, weight, body mass index, and type of striking vehicle, and standardized to the distribution of pedestrian age and type of striking vehicle for pedestrians struck in the United States in years 2007–2009. Dotted lines represent point-wise 95% confidence intervals. Serious injury is defined as AIS score of 4 or greater and includes death irrespective of AIS score.

http://aaafoundation.org/wp-content/uploads/2018/02/2011PedestrianRiskVsSpeedReport.pdf

2) **FHWA Pedestrian Safety Strategic Plan (Background Report) 2010**

According to a 2010 Federal Highway Administration Background Report: "The speed of a vehicle is a major determinant in the severity of a crash. According to one study (and several other studies have found similar results) a pedestrian hit at 40 miles per hour has an 85 percent chance of fatality, while a pedestrian hit at 20 miles per hour has only a 5 percent chance of fatality (U.K.DOT, 1987)."
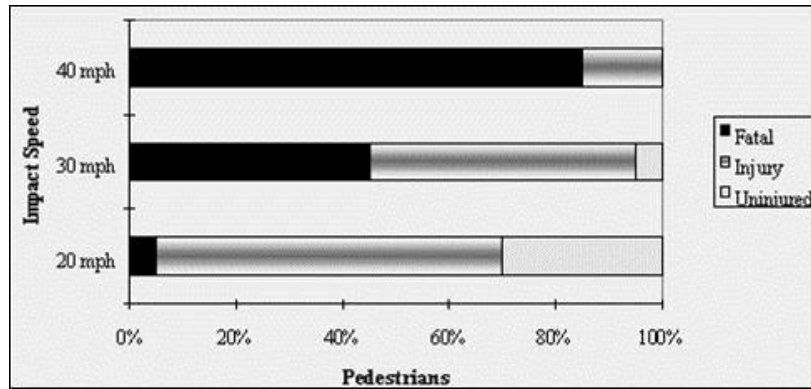
Pedestrian Injury Severity Based on Vehicle Speed.
(Source: Traffic Advisory Unit, 1993).

https://safety.fhwa.dot.gov/ped_bike/pssp/background/results.cfm#toc259002900

> ## Speed cameras have proven effective in reducing vehicle speeds in the United States and abroad

144 communities in the US have speed camera programs, according to IIHS. Most are local jurisdictions. Available data indicate speed cameras have proven effective in reducing speeds.

Montgomery County, MD

According to IIHS, speed cameras in Montgomery County, MD:

- Reduced by 59 percent the likelihood of a driver exceeding the speed limit by more than 10 mph,
- Resulted in a 19 percent reduction in the likelihood that a crash would involve a fatality or an incapacitating injury

http://www.iihs.org/iihs/sr/statusreport/article/50/8/3

Seattle, WA

Seattle found that cameras installed in 14 school zones led to:
- Speeds reduced 4%
- 50% drop in total crashes all times of day
- 71% drop in crashes during camera hours
- 0 pedestrian/bicycle crashes during camera operation periods

https://www.seattle.gov/Documents/Departments/beSuperSafe/VZ_2017_Progress_Report.pdf

New York City, NY

According to the New York City Department of Transportation, the speed camera program has led to significant changes in behavior:

- The daily rate of violations issued for excessive speeding in school zones at the typical camera has declined by over 60 percent, from 104 in the camera's first month to 35 in the camera's most recent month.
- Repeat violators were only 19% of those ticketed

In addition, the study found that crashes and fatalities declined after the cameras were installed:
- Total crashes were down 15%, from 2,870 to 2,442
- Injury Crashes were down 17%, from 2,182 to 1,873
- Fatalities were reduced by 55%, from 18 to 8

http://www.nyc.gov/html/dot/downloads/pdf/speed-camera-report-june2018.pdf

International

Automated speed enforcement programs were reviewed in a study published by the Transportation Research Record in 2008. The study reviewed 13 programs in Europe, Canada and Australia for both fixed and mobile program applications and concluded that injury crashes are reduced by 20-25% where fixed camera systems are in use.

https://www.researchgate.net/publication/238196885_Safety_Effects_of_Automated_Speed_Enforcement_Programs_Critical_Review_of_International_Literature?enrichId=rgreq-a9d4280c403135db392cb5a186bc1845-XXX&enrichSource=Y292ZXJQYWdlOzIzODE5Njg4NTtBUzozNDI0MjQyNzk4OTYwNzJAMTQ1ODY1MTcxODcxMQ%3D%3D&el=1_x_3&_esc=publicationCoverPdf