



COMPARATIVE SAFETY ANALYSIS ON CONFLICTING PEDESTRIANS WITH LEFT-TURN VEHICLES AT SIGNALIZED INTERSECTIONS

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OUTLINE

- Research question
- Data and methods
- Key findings
- Future research needs
- Implications for practice

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RESEARCH QUESTION

- A. Where pedestrian-left turn vehicle conflict points are located;
- B. How trajectory paths are defined, and
- C. How pedestrian- left turn vehicle conflict points at crosswalks are intensified by turning vehicle trajectories in permitted and protected left-turn signals.

DATA AND METHODS

- Exclusive left turn signal showed the highest crash reduction in pedestrian and cyclist injuries except left turn prohibition based on NYSDOT/NYSDMV Accident Database.

	Treatment Type	Left Turn Restrictions	Left Turn Bays	Protected Bicycle Lanes	Left Turn Only Signals	LPIs
	<i>Study Sample (# of intersections)</i>	51	140	149	34	104
	<i>Years of Crash Data Analyzed</i>	2005-2013	2006-2014	2004-2013	1996-2014	2000-2014
Left Turn Pedestrian and Bicyclist Injuries	Before (3 years)	113	117	295	55	282
	After (3 years)	67	100	250	37	243
	Change	-41%	-15%	-15%	-33%	-14%

Source: Left Turn Pedestrian & Bicycle Crash Study, NYCDOT (2016)

- Video data collection with Multiple camera views and related tracking analysis were introduced for left-turn movements in permitted phase and protected left turn phases.

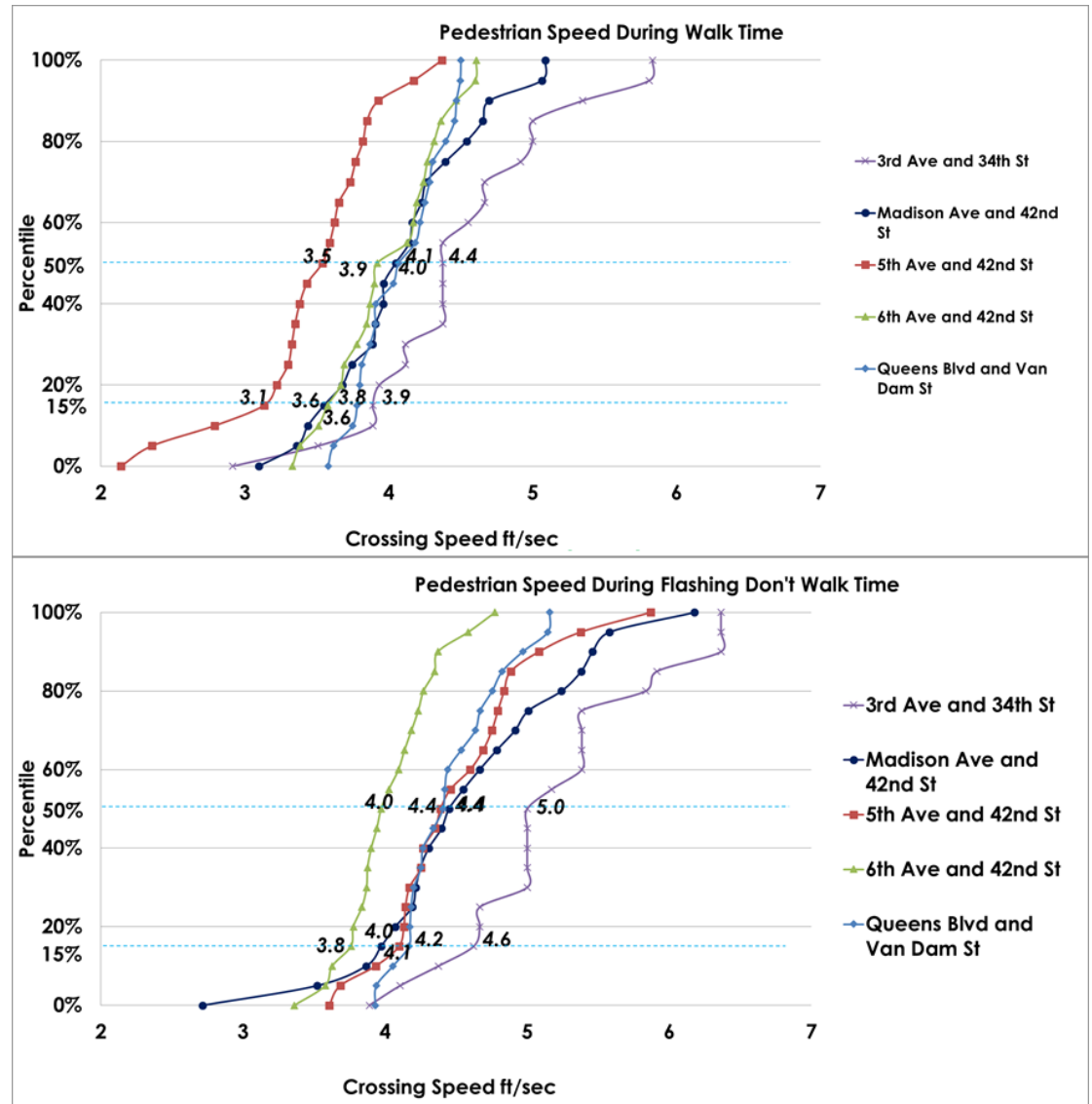


KEY FINDINGS

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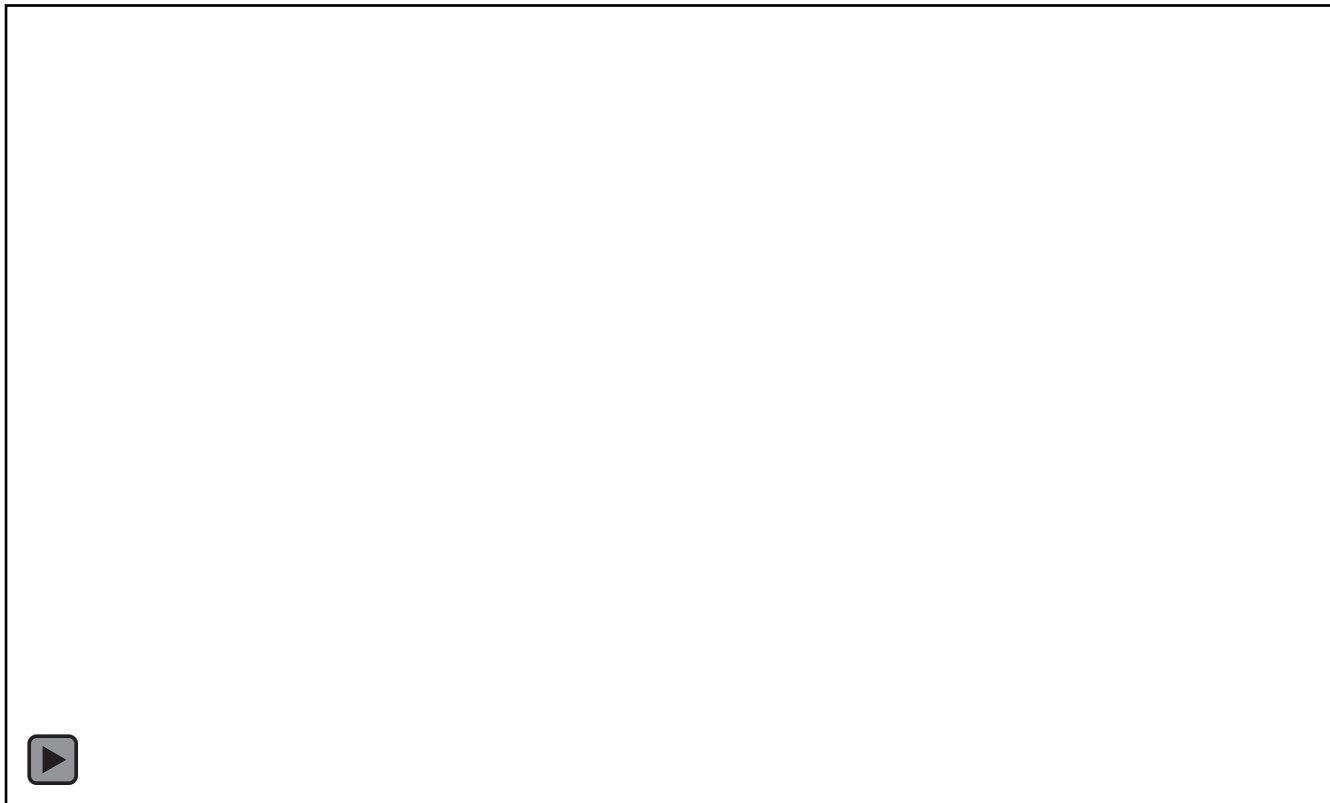
PEDESTRIAN CROSSING BEHAVIOR

- Average pedestrian crossing speed during flashing DON'T WORK is approximately 10 % higher than that during Walk time.



LEFT TURN BEHAVIOR AT PERMITTED PHASE

- Driver's more aggressiveness in gaps with opposing traffic and pedestrians;
- Variable headways, and
- Wide turning path of left turn vehicles.



LEFT TURN BEHAVIOR AT PROTECTED PHASE

- Driver's stable behavior;
- Similar headways, and
- Narrow turning path of left turn vehicles.



FUTURE RESEARCH NEEDS AND PRACTICAL APPLICATION

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FUTURE RESEARCH NEEDS

Further investigations can be subject of available video data sets:

- Safety and video analysis on more intersections with various geometries.
- Behavior analysis in relationship with crossing pedestrian density and left turn volumes Pedestrian Compliance

PRACTICAL APPLICATION

- On-going left turn traffic calming pilot program (Enhanced Daylighting/Slow Turn Wedge):
Part of 100 location pilot program, currently being implemented and evaluated through 2016



Before and after conditions at 89 Ave to SB Merrick Blvd

THANK YOU!

Questions?



NYC DOT



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