TORONTO

STAFF REPORT
INFORMATION ONLY

Supplemental Report to: Proposed 30 km/h Speed Limit Policy (PW3.3)

Date:	May 2, 2015
To:	City Council
From:	General Manager, Transportation Services
Wards:	All
Reference Number:	P:\2015\ClusterB\TRA\TIM\cc15002tim.docx

SUMMARY

This report provides data, information and statistics related to collision frequency, collision outcomes and their locations involving pedestrians and cyclist during the period of 2009 to 2013 across the City of Toronto. The information presented allows for some high level conclusions to be drawn, specifically that, most severe outcomes (fatalities) involving pedestrians and cyclists occur on higher speed Major and Minor Arterial roads.

Financial Impact

There are no financial implications resulting from the receipt of this supplementary report.

DECISION HISTORY

Please refer to PW3.3 (Proposed 30 km/h Speed Limit Policy Report).

The Board of Health, at its meeting on April 30, 2012, considered a report from the Medical Officer of Health titled the "Road to Health: A Healthy Toronto by Design Report" and in so doing, requested staff to examine and report on reducing vehicle speed limits to 30 km/h on residential streets and adopting a city-wide speed limit of 40 km/h on all other streets, unless otherwise posted.
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.HL13.1

COMMENTS

The General Manager of Transportation Services was asked by some councillors, during the April 9, 2015 meeting of the Public Works and Infrastructure, to bring forward some additional information which would better inform Council on what has been happening in the City in terms of vehicle collisions and what impacts those collisions have had on pedestrians and cyclist.

Most traffic accidents occur in urban areas, where there is a more complex and a higher predominance of road users that are susceptible to injury and fatality in the event of a collision.

Motor vehicle speed is a contributing factor in the number of fatalities and severity of injuries that result from road collisions. Research has indicated that reduced speeds not only reduce the likelihood of a collision but also reduce the severity of injuries when collisions occur.

Impact of Vehicle Speeds

In 2012, Toronto Public Health published a report entitled, "*Road to Health: Improving Walking and Cycling in Toronto*." The report refers to research done on the relationship between vehicle speed and pedestrian and cyclist injuries. Research has shown that the risk of pedestrian death greatly increase with impact speeds of 50 km/h or higher. The severity of injuries and fatalities to pedestrian and cyclists, in collisions with motor vehicles, is related to the speed and differential weight of those vehicles. Figure 1 below illustrates that pedestrians have an estimated 85% chance of dying when hit by a car travelling at 50 km/h but fatality rates decrease to less than 5% when the car travels at 30 km/h.

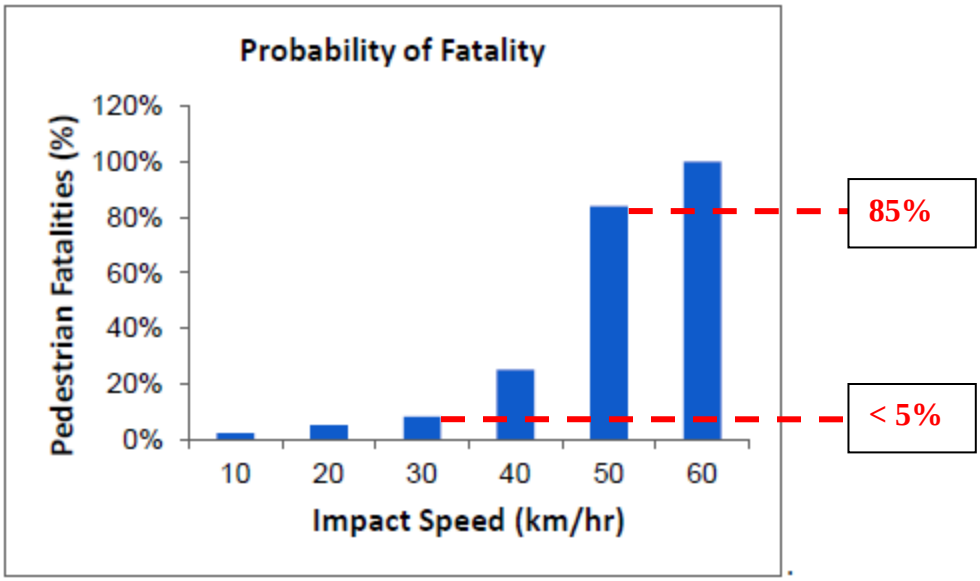

Figure 1: Probability of Pedestrian Fatality by Impact Speed

Source: Derived from Anderson et al. 1997

[Sourced from Toronto Public Health report titled, "Road to Health: A Healthy Toronto by Design"]

While lower speeds, at impact, have been proven to reduce pedestrian fatalities, a city-wide reduction in speed limit alone may likely not change driver behaviour. Road characteristics such as pavement width or the presence of on-street parking can influence speeds at which drivers travel. Simply posting a speed limit change does not automatically change driver behaviour.

Pedestrian and Cyclist Collision Data Analysis

To provide some context to the data and statistics provided further in this report, some facts about the City's current road network length, by Road Classification, is provided in Appendix 'A' attached to this report.

The collision and fatality data, which is examined in greater detail throughout this report, is sourced from the Toronto Police Services' accident reports for the period 2009 to 2013. The data presented does not included data related to collisions that have occurred on private property or where the collisions were identified as 'unknown' in the accident reports.

From 2009-2013, the combined frequency of pedestrian and cyclist collisions in the City of Toronto has generally remained at about the same level, ranging from 3,000-3,200 events annually. The exception being in 2013 where there was slight decline in numbers for both pedestrian and cyclists, as shown in Table 1 below.

Table 1: Pedestrian and Cyclist Collisions - Totals 2009 to 2013

Type	2009	2010	2011	2012	2013	Total
Pedestrian	1,787	1,778	1,899	1,794	1,411	8,669
Cyclists	1,140	1,246	1,285	1,445	1,153	6,269
Totals	**2,927**	**3,024**	**3,184**	**3,239**	**2,564**	**14,938**

A further examination of the above collision numbers for this period by Road Classification, in Tables 2 and 3 below, show that the majority of collisions involving pedestrians and cyclist, 83.2% and 87.5% respectively (*refer to boxed items in the tables*), occur on Major and Minor Arterial roads. In comparison to Collector and Local roads, the amount of collisions involving pedestrians and cyclists are significantly lower, 16.5% and 12.3% respectively.

Table 2: Pedestrian Collisions by Road Classifications - 2009 to 2013

Road Class	2009	2010	2011	2012	2013	Total	% of Grand Total
Major Arterials	1,205	1,179	1,276	1,164	948	5,772	**66.6%**
Minor Arterials	302	312	296	300	231	1,441	**16.6%**
Collector	117	142	154	181	106	700	**8.1%**
Local	160	137	165	145	124	731	**8.4%**
Expressways	3	8	8	4	2	25	**0.3%**
Laneway	0	0	0	0	0	0	**0.0%**
Totals	**1,787**	**1,778**	**1,899**	**1,794**	**1,411**	**8,669****	
% of Grand Total	**20.6%**	**20.5%**	**21.9%**	**20.7%**	**16.3%**	**100.0%**	**100.0%**

** - Grand Total

Table 3: Cyclist Collisions by Road Classifications - 2009 to 2013

Road Class	2009	2010	2011	2012	2013	Total	% of Grand Total
Major Arterials	732	872	878	949	757	4,188	**66.8%**
Minor Arterials	239	247	251	302	256	1,295	**20.7%**
Collector	84	57	80	101	77	399	**6.4%**
Local	83	64	75	87	59	368	**5.9%**
Expressways	2	6	1	6	4	19	**0.3%**
Laneway	0	0	0	0	0	0	**0.0%**
Totals	**1,140**	**1,246**	**1,285**	**1,445**	**1,153**	**6,269****	
% of Grand Total	**18.2%**	**19.9%**	**20.5%**	**23.0%**	**18.4%**	**100.0%**	**100.0%**

** - Grand Total

In Tables 4 and 5 below, pedestrian and cyclist collisions by Road Classification, for the 5 year period, point to the fact that a disproportionate number of pedestrian and cyclist fatalities have occurred on Major and Minor Arterial roads. Of the total pedestrian fatalities (135), 84.5% have occurred on the Major and Minor Arterials roads, while 14.8% have occurred on Collector and Local roads. Of the total cyclist fatalities (12), all (100%) have occurred on Major and Minor Arterials roads (*refer to boxed items in the tables*).

Table 4: Pedestrian Collisions by Road Classifications - 2009 to 2013

Road Class	Outcome of Collision				Total	% of Grand Total
	Fatal		Personal Injury	Property Damage		
Major Arterials	92	(68.2%)	5,521	159	5,772	**66.6%**
Minor Arterials	22	(16.3%)	1,375	44	1,441	**16.6%**
Collector	8	(5.9%)	667	25	700	**8.1%**
Local	12	(8.9%)	698	21	731	**8.4%**
Expressways	1	(0.7%)	23	1	25	**0.3%**
Laneway	0	(0%)	0	0	0	**0.0%**
Totals	**135**	**(100%)**	**8,284**	**250**	**8,669****	
% of Grand Total	**1.6%**		**95.6%**	**2.9%**	**100.0%**	**100%**

** - Grand Total

Table 5: Cyclist Collisions by Road Classifications - 2009 to 2013

Road Class	Outcome of Collision				Total	% of Grand Total
	Fatal		Personal Injury	Property Damage		
Major Arterials	9	(75%)	3,649	530	4,188	**66.8%**
Minor Arterials	3	(25%)	1,129	163	1,295	**20.7%**
Collector	0	(0%)	343	56	399	**6.4%**
Local	0	(0%)	327	41	368	**5.9%**
Expressways	0	(0%)	17	2	19	**0.3%**
Laneway	0	(0%)	0	0	0	**0.0%**
Totals	**12**	**(100%)**	**5,465**	**792**	**6,269****	
% of Grand Total	**0.2%**		**87.2%**	**12.6%**	**100.0%**	**100%**

** - Grand Total

In Tables 6 and 7 below, a breakdown of pedestrian and cyclist collisions based on posted speed limit over a 5 year period is provided. The number of pedestrian and cyclist collisions, 0.5% and 0.8% respectively (*refer to boxed items in the tables*), are the lowest on those roads with a posted speed limit of 30 km/h, which also do have some form of traffic calming measure (typically speed humps). The rate of collisions is also more pronounced on those roads with higher posted speeds (50 and 60 km/h), which are generally the City's Major and Minor Arterial roads.

Table 6: Pedestrian Collisions by Posted Speed Limit - 2009 to 2013

Posted Speed Limit	2009	2010	2011	2012	2013	Total	% of Grand Total
30 km/hr	8	7	10	12	8	45	**0.5%**
40 km/hr	174	211	209	213	158	965	**11.1%**
50 km/hr	633	578	635	592	458	2,896	**33.4%**
60 km/hr	962	964	1,033	965	782	4,706	**54.3%**
70 km/hr	2	3	2	1	2	10	**0.1%**
80 km/hr	2	5	5	3	1	16	**0.2%**
90 km/hr	6	10	5	8	2	31	**0.4%**
Totals	**1,787**	**1,778**	**1,899**	**1,794**	**1,411**	**8,669****	
% of Grand Total	**20.6%**	**20.5%**	**21.9%**	**20.7%**	**16.3%**	**100.0%**	**100.0%**

** - Grand Total

Table 7: Cyclist Collisions by Posted Speed Limit - 2009 to 2013

Posted Speed Limit	2009	2010	2011	2012	2013	Total	% of Grand Total
30 km/hr	2	5	8	10	9	50	**0.8%**
40 km/hr	169	171	162	206	164	872	**13.9%**
50 km/hr	455	517	541	597	478	2,572	**41.0%**
60 km/hr	512	551	566	621	496	2,746	**43.8%**
70 km/hr	0	2	0	0	0	2	**0.0%**
80 km/hr	0	0	3	2	4	9	**0.1%**
90 km/hr	2	0	5	9	2	18	**0.3%**
Totals	**1,140**	**1,246**	**1,285**	**1,445**	**1,153**	**6,269****	
% of Grand Total	**18.2%**	**19.9%**	**20.5%**	**23.0%**	**18.4%**	**100.0%**	**100.0%**

** - Grand Total

Tables 8 and 9 below, provide a summary breakdown of pedestrian and cyclist collision outcomes based on posted speed limit over a 5 year period. Of the total pedestrian fatalities (135), 89.6% have occurred on roads with posted speed limits of 50 and 60km/h (combined), with zero fatalities having occurring on roads with a posted speed limit of 30km/h. Similarly for cyclist, of the total fatalities (12), 91.7% have occurred on roads with posted speed limits of 50 and 60km/h, with zero fatalities having occurred on roads with a posted speed limit of 30km/h.

Table 8: Pedestrian Collisions by Posted Speed Limit - 2009 to 2013

Posted Speed Limit	Outcome of Collision				Total	% of Grand Total
	Fatal		Personal Injury	Property Damage		
30 km/hr	0	(0%)	43	2	45	**0.5%**
40 km/hr	12	(8.9%)	907	36	955	**11.0%**
50 km/hr	44	(32.6%)	2,781	81	2,906	**33.5%**
60 km/hr	77	(57.0%)	4,498	131	4,706	**54.3%**
70 km/hr	0	(0%)	10	0	10	**0.1%**
80 km/hr	0	(0%)	16	0	16	**0.2%**
90 km/hr	2	(1.5%)	29	0	31	**0.4%**
Totals	**135**	**(100%)**	**8,284**	**250**	**8,669****	
% of Grand Total	**1.6%**		**95.6%**	**2.9%**	**100.0%**	**100%**

**- Grand Total

Table 9: Cyclist Collisions by Posted Speed Limit - 2009 to 2013

Posted Speed Limit	Outcome of Collision				Total	% of Grand Total
	Fatal		Personal Injury	Property Damage		
30 km/hr	0	(0%)	27	6	33	**0.5%**
40 km/hr	1	(8.3%)	759	112	872	**13.9%**
50 km/hr	5	(41.7%)	2,215	369	2,589	**41.3%**
60 km/hr	6	(50.0%)	2,438	302	2,746	**43.8%**
70 km/hr	0	(0%)	1	1	2	**0.0%**
80 km/hr	0	(0%)	9	0	9	**0.1%**
90 km/hr	0	(0%)	16	2	18	**0.3%**
Totals	**12**	**(100%)**	**5,465**	**792**	**6,269****	
% of Grand Total	**0.2%**		**87.2%**	**12.6%**	**100.0%**	**100%**

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ATTACHMENTS

Appendix A - City of Toronto Street Network Length by Road Classification

APPENDIX A

City of Toronto Street Network Length by Road Classification

Road Class	District				Total
	Toronto and East York	Etobicoke-York	North York	Scarborough	
City Expressway	55 km	34 km	35 km	6 km	**129 km**
Major Arterial	159 km	244 km	173 km	180 km	**757 km**
Minor Arterial	124 km	97 km	59 km	131 km	**411 km**
Collector	115 km	188 km	212 km	256 km	**771 km**
Local	622 km	992 km	879 km	798 km	**3,291 km**
Total	**1,075 km**	**1,555 km**	**1,358 km**	**1,371 km**	**5,359 km**

Note: Laneways excluded (approx. 200 km)