

Speed Limit Reduction on Residential Roads: A Pilot Project

Summary of Findings

Recommendation:

That the April 12, 2011, Transportation Department report 2011TD3776 be received for information.

Report Summary

The City of Edmonton's Office of Traffic Safety undertook a speed reduction pilot project (from 50 km/h to 40 km/h) from May 2010 to the end of October 2010, in six Edmonton communities. This report provides a summary of findings from the implementation and evaluation of the pilot project.

Report

In collaboration with our partners at the University of Alberta's Civil Engineering Faculty, a scientific methodology was developed that identified and prioritized communities for the pilot project. Out of this list, six communities were identified who agreed to participate in the pilot project:

- Beverly Heights/Rundle Heights
- King Edward Park
- Ottewell
- Woodcroft
- Westridge/Oleskiw
- Twin Brooks

Bylaw

Speed Zone Bylaw 15410, Amendment No. 52 (Amendment to Bylaw 6894, the Speed Zone Bylaw) which reduced the speed limits in the pilot communities from 50 km/h to 40 km/h, was passed by

Council on April 14, 2010, and became effective May 1, 2010.

Surveys

Pre- and post-community perception surveys were conducted in all six communities.

Data Collection

Prior to and during the speed reduction pilot study, speed data was collected from the pilot, and adjacent communities, as well as control communities that were not close to the pilot communities. In addition, three years of pre-study collision data was obtained, analyzed and compared with the collision data collected during the study period.

Community Perception Survey

Surveys were undertaken prior to May 2010, and repeated at the conclusion of the six months. The result of the community perception survey by the Consultant, indicates the majority of respondents were aware of their community's involvement in the pilot project. More so, the awareness rate was highest for residents in Ottewell and Westridge/Wolf Willow. A total of 48 percent of the respondents reported the speeds were lower after the pilot project ended, while 45 percent felt it was about the same. Moreover, 48 percent of respondents believed the pilot project would be highly effective in lowering residential speeds; in particular, 64 percent of Ottewell residents felt this. Finally, 70 percent of respondents indicated the importance of community involvement and support for the success of the pilot project in improving traffic safety in their community.

Traffic and Speed Analysis

The results of the traffic and speed analysis indicated that speeds were reduced after the implementation of the new residential speed limit of 40km/h in the pilot project communities. This decrease was magnified by the observed increase in speeds of the

Speed Limit Reduction on Residential Roads: A Pilot Project – Summary of Findings

control communities over the duration of the pilot project. This implies that even though there was a general tendency for drivers to exceed the speed limit during the “After” period, the pilot communities were still exhibiting a reduction in speeds. Moreover, the speeds were consistently lower regardless of temporal factors like time of day and day of week.

Speeds were also found to vary with community development and the type of roadway network. Higher operating speeds were observed in new (1970s/80s) communities, followed by grid-based communities and old (1950s/60s) communities. There were reductions in operating speed in all communities, regardless of network type; the largest reduction in operating speed was observed in new communities, (11 percent reduction), compared to a six percent reduction in old communities and a four percent reduction in grid-based communities. However, new communities still had the highest recorded speeds in the “After” period when compared to the old and grid-based community types. Again, the results show the operating speed decreased consistently (with varying rates) in all of the pilot community types regardless of time of day or day of week.

The analysis of the proportion of drivers complying with the posted speed limit showed drivers in pilot communities during the “After” period were much less likely to comply to the lower posted speed limit than drivers in other communities or during the “Before” period. In the pilot communities, 65 percent of drivers exceeded the 40 km/h speed limit compared to 39 percent exceeding the 50 km/h limit before the study. However, the distribution of driver speeds decreased by approximately 4 km/h compared to the control communities, indicating that drivers were slower overall in pilot communities. This result is consistent with published studies where the posted speed limit was changed without concurrent changes to roadway geometry, such as new

markings, land use changes, or traffic calming techniques.

Moreover, the percent compliance was found to be highly correlated with the speed allowance or tolerance level. The percent compliance of drivers traveling 15 km/h over the un-posted 50 km/h speed limit in the control communities was 92.9 percent (pre-surveys) and 91 percent (during 2010). The percent compliance of drivers travelling 15 km/h over the posted 40 km/h speed limit in the pilot communities was 93.1 percent (pre-surveys) and 84.3 percent (during 2010). The percent compliance was also found to vary with level of community development and type of roadway network. The degree of compliance was highest for old communities and lowest for new communities.

A four percent reduction in the average number of vehicles was observed after the implementation of the new residential speed limit of 40 km/h in the pilot project communities. Once again, the reductions were found to vary with the level of community development and the type of roadway network. Generally, the number of recorded vehicles decreased from the “Before” to the “After” phase for all community types, with the largest decrease in new (1970s/80s) and grid-based communities and a smaller decrease in the old communities.

The proportion of tailgating vehicles was found to be very small. The analysis revealed drivers in pilot communities during the “After” period were slightly less likely to tailgate than the drivers in other communities or during the “Before” period. The results indicated no statistical differences in the proportion of tailgating vehicles across different community types (i.e., grid, new, old) from the “Before” to the “After” phase.

Collision Analysis

The results of the collision analysis showed the pilot project had an impact on the frequency and severity of crashes. The results revealed that reducing the posted speed from

50 km/h to 40 km/h in the six pilot communities was more successful in reducing severe (i.e., injury and fatal) collisions than Property Damage Only collisions. This finding seems to be consistent with other research which indicates general reduction in driving speed may reduce the number of deaths and serious injuries; yet, the number of slight injury or damage-only collisions may not decrease to the same extent, or may even increase. Severe collisions were reduced by 25 percent, if the collision from all six communities were included. Alternatively, severe collisions were reduced by 59 percent, if the Westridge/Wolf Willow results were excluded. An increase in collisions was noted in the West Ridge/Wolf Willow communities; however, at this time the increase cannot be explained and as such may be included in future research studies.

Full Report

Full documentation of the results of this study, entitled “Speed Limit Reduction: A Pilot Project” are posted on the City website.

Attachments

1. Map showing the Locations of the Community Groups Selected for the Traffic and Speed Analysis

Map Showing the Locations of the Community Groups Selected for the Traffic and Speed Analysis

