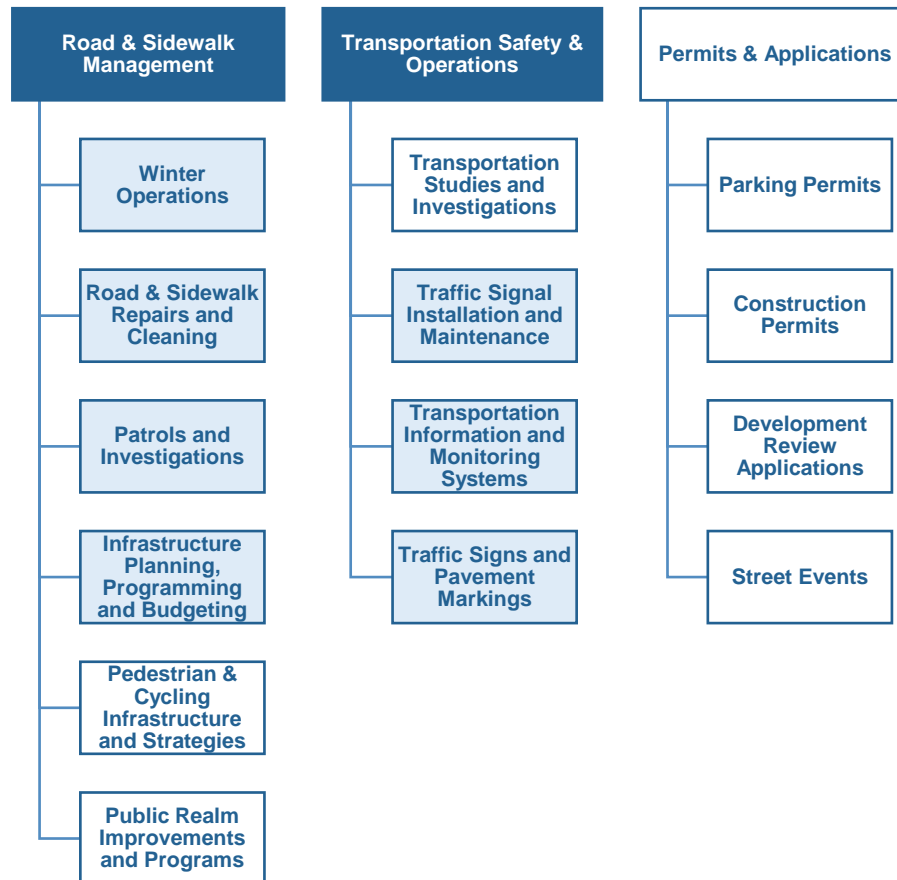




ROAD SERVICES

PROGRAM MAP

Transportation Services



Shaded boxes reflect the activities covered in this report

Toronto's Transportation Services division is responsible for maintaining the City's transportation infrastructure in a state of good repair for the purposes of public safety and the efficient movement of people, goods and services. This infrastructure includes: roads; bridges; culverts; sidewalks; boulevards; signage; and traffic signals.

The division is responsible for all aspects of traffic operations, roadway regulation, and street maintenance and cleaning, transportation infrastructure management, road, sidewalk and boulevard use, as well as snow plowing and removal and road salting. The focus of the costing data in this section is with respect to maintenance of road surfaces and winter control of roads.

SUMMARY OF PERFORMANCE MEASUREMENT RESULTS

Question	Indicator/Measure	Internal Comparison of Toronto's 2016 vs. 2015 Results	External Comparison to Other Municipalities (MBNC) By Quartile for 2016	Chart & Page Ref.
Service Level Indicators				
How long is Toronto's road network?	Number of Lane KM per 1,000 Population – (Service Level)	Stable Lane km of roads was stable (service level indicator)	4 Lowest rate of lane km of roads relative to population, compared to others (service level indicator) (related to high population density)	28.1 28.2 pg. 6/7
Community Impact Measures				
How many vehicle collisions occur?	Vehicle Collision Rate per Million Vehicle km or per Lane km – (Community Impact)	Decrease Collision rate decreased	2 Lower collision rate compared to others	28.3 28.4 pg. 8/9
How congested are major roads?	Road Congestion on Major Roads (Vehicle km Traveled per Lane km) – (Community Impact)	Stable Road congestion was stable (no graph)	4 Highest rate of congestion on Toronto's roads compared to others	28.5 pg. 10
Customer Service/Quality Measures				
What is the pavement condition of the roads?	Percentage of Paved Lane Kms. With Pavement Condition Rated Good/Very Good – (Quality)	Decrease Percentage of pavement rated good to very good decreased	1 Higher percentage of pavement rated good to very good compared to others	28.6 28.7 pg. 11/ 12
What is the condition of bridges and culverts?	% of Bridges and Culverts with Condition Rated as Good to Very Good – (Quality)	Decrease Percentage of bridges rated in good to very good condition decreased (no graph)	2 Higher percentage of bridges & culverts rated good to very good compared to others	28.8 pg. 13

Question	Indicator/Measure	Internal Comparison of Toronto's 2016 vs. 2015 Results	External Comparison to Other Municipalities (MBNC) By Quartile for 2016	Chart & Page Ref.		
What is the proportion of Transportation service requests completed within the standard?	Percentage of Transportation Service Requests Completed Within Standard – (Customer Service)	Stable and High The proportion of service requests completed within the standard was high and stable at 98%	N/A	28.9 pg. 14		
Efficiency Measures						
How much does it cost to plough, sand and salt roads in the winter?	Operating Costs for Winter Maintenance of Roadways per Lane KM Maintained in Winter – (Efficiency)	Increase Cost of winter maintenance increased	3 Higher cost of winter maintenance compared to others	28.10 28.11 pg. 15/ 16		
How much does it cost to maintain the road surface?	Operating Costs for Paved Roads (Hard Top) Maintenance per Lane KM – (Efficiency)	Increase Operating cost of paved road maintenance increased	3 Higher operating cost of paved road maintenance compared to others (no graph)	28.12 28.13 pg. 17/18		
How much does it cost to maintain the road surface?	Total Costs for Paved Roads (Hard Top) Maintenance per Lane KM – (Efficiency)	Increase Total cost of paved road maintenance increased	2 Lower total operating cost of paved road maintenance compared to others	28.12 28.13 pg. 17/18		
How much does it cost to maintain Toronto's roadside?	Operating Cost of Roadside per Edge Kilometre – (Efficiency)	Decrease Operating cost of roadside decreased	4 Lower operating cost of roadside compared to others. (no graph)	28.14 pg. 19		
How much does it cost to manage Toronto's traffic?	Operating cost for Traffic Management per Lane Km –(Efficiency)	Decreased Operating cost for traffic management decreased	4 Lower operating cost for traffic management compared to others. (no graph)	28.15 pg. 20		
Overall Results		Service Level Indicators (Resources) 0 - Increased 1 - Stable 0 - Decreased. 100% stable or increased	Performance Measures (Results) 4 - Favourable 1 - Stable 5 - Unfavourable 50% favourable or stable	Service Level Indicators (Resources) 0 - 1st quartile 0 - 2nd quartile 0 - 3rd quartile 1 - 4th quartile 0% in 1st and 2nd quartiles	Performance Measures (Results) 1 - 1st quartile 3 - 2nd quartile 2 - 3rd quartile 3 - 4th quartile 44% in 1st and 2nd quartiles	

For an explanation of how to interpret this summary and the supporting charts, please see the Guide to Toronto's Performance Results. These quartile results are based on a maximum sample size of 14 municipalities (maximum of 9 for single tier municipalities).

SERVICE LEVEL

One method of comparing service levels is to examine the equivalent lane kilometres of the road network, which factors in differences in roads with respect to the number of lanes and width of those lanes. For example, a four-lane road of standard lane width (3.65 m) over one kilometre is four equivalent lane kilometres.

28.1 –HOW MANY LANE KILOMETRES OF ROADS ARE THERE IN TORONTO?

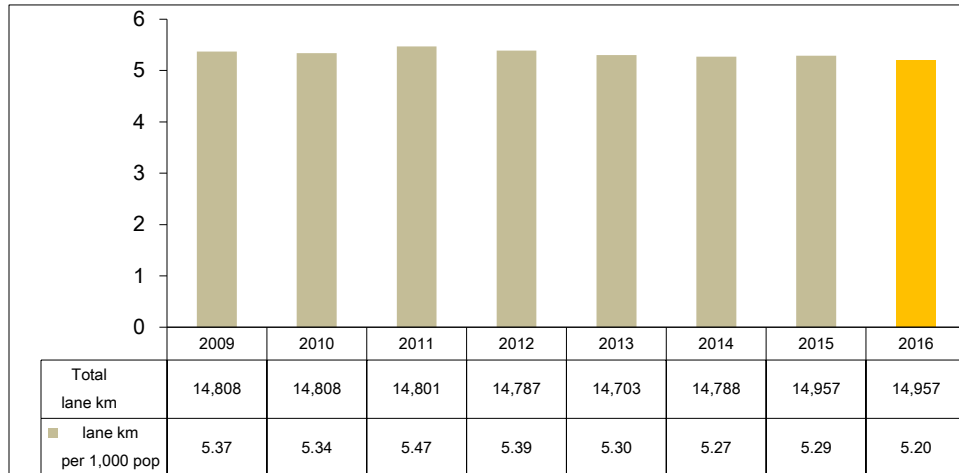


Chart 28.1 illustrates Toronto's total number and rate of lane km of roads per 1,000 population.

Chart 28.1 (City of Toronto) Equivalent Lane Kilometres of Roads per 1,000 Population

The total size of Toronto's road network has remained relatively unchanged, but as the annual population has grown, the lane km per 1,000 population was relatively stable with a slight decrease of 1.7%, contributing to increased traffic congestion.

28.2 –HOW DOES THE RELATIVE SIZE OF TORONTO'S ROAD NETWORK COMPARE TO OTHER MUNICIPALITIES?

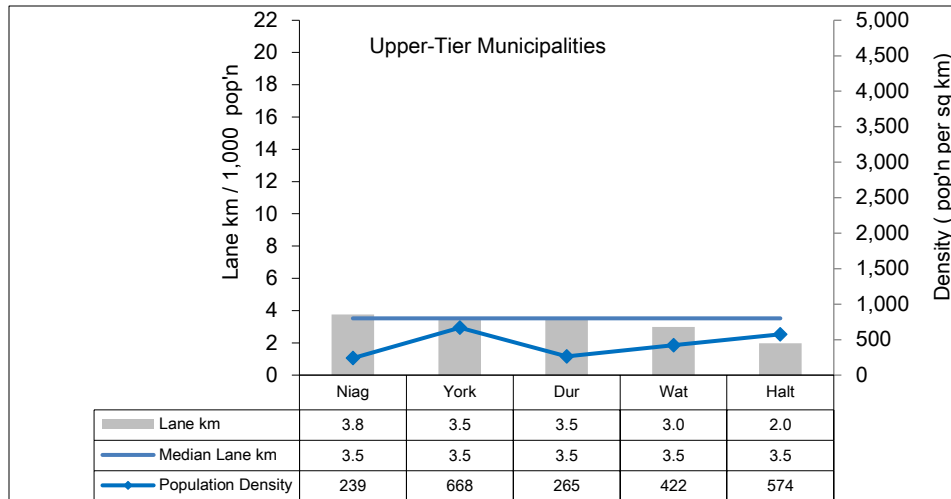
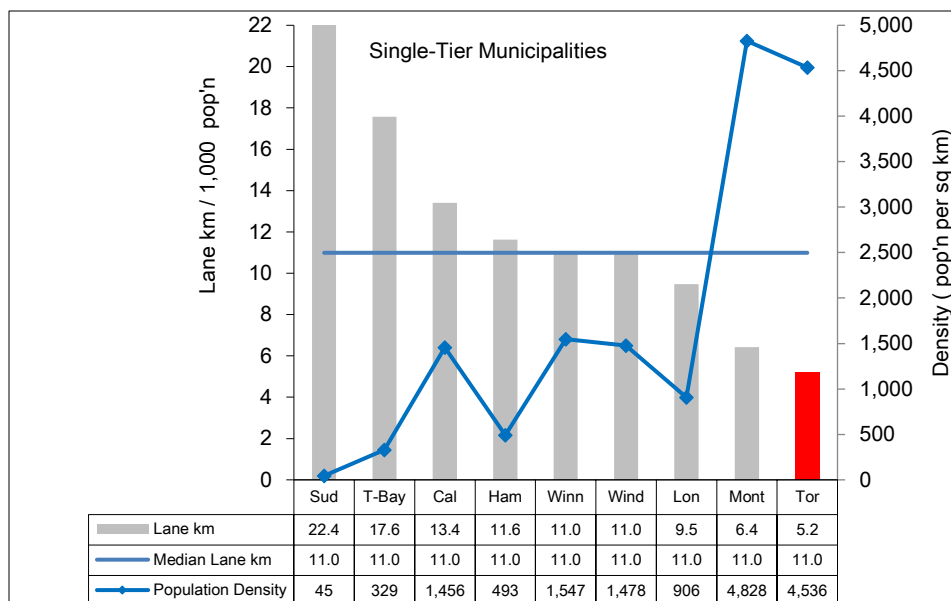


Chart 28.2 compares the relative size of Toronto's road network in 2016 per 1,000 population basis to other Ontario municipalities, plotted as bars relative to the left axis.



The single-tier and upper-tier municipalities have been grouped separately on Chart 28.2 as well as some of the subsequent charts to reflect different service delivery responsibilities for different classes of roads.

The first group is comprised of upper-tier municipalities that usually have responsibility for

Chart 28.2 (MBNC 2016) Lane Kilometres of Roads per 1,000 Population

major road types such as arterial and collector roads, but do not have responsibility for local roads. The second group, which includes Toronto, is comprised of single-tier municipalities who have responsibility for all road types.

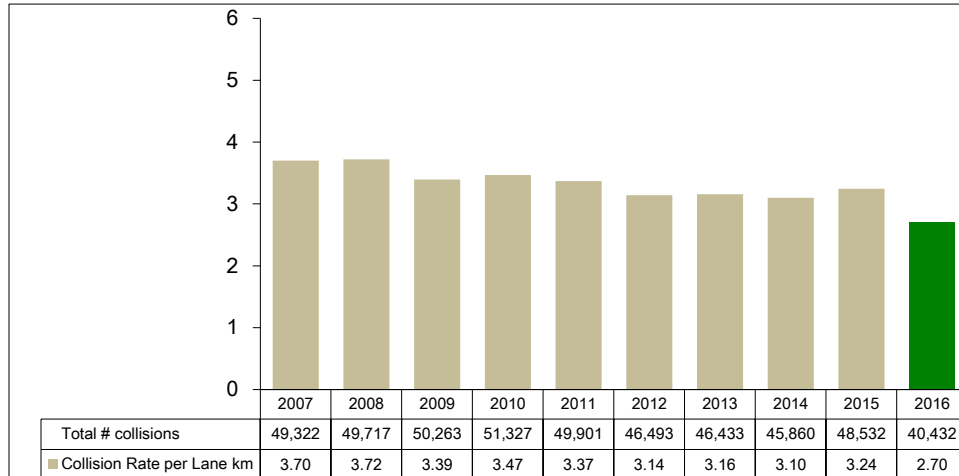
Toronto ranks ninth of nine municipalities (fourth quartile) among the single-tier municipalities in terms of having the highest number of lane km of roads per 1,000 population.

Population density (population per square kilometre) and the geographical size of municipalities greatly influence the results for this measure. Municipalities with larger geographical areas and lower population densities will tend to have proportionately more roads per person. Population density has been plotted in Chart 28.2 as a line graph relative to the right axis. Toronto is the second most densely populated of MBNC municipalities, which accounts for its lower rate of lane km of roads.

COMMUNITY IMPACT

A major objective for municipalities to provide a high level of safety for the pedestrians, cyclists and vehicle occupants that use our road networks.

28.3 –WHAT IS THE RATE OF VEHICLE COLLISIONS IN TORONTO?



Charts 28.3 reflects Toronto's total number of collisions and the rate of vehicle collisions per lane kilometre of road.

Chart 28.3 (City of Toronto) Number of Vehicle Collisions per Equivalent Lane km of Roads

Results indicate that there has been a general decline in collisions over the longer term. The number of total collisions has decreased in 2016, and the collision rate also decreased by 17%.

28.4 –HOW DOES THE VEHICLE COLLISION RATE IN TORONTO COMPARE TO OTHER MUNICIPALITIES?

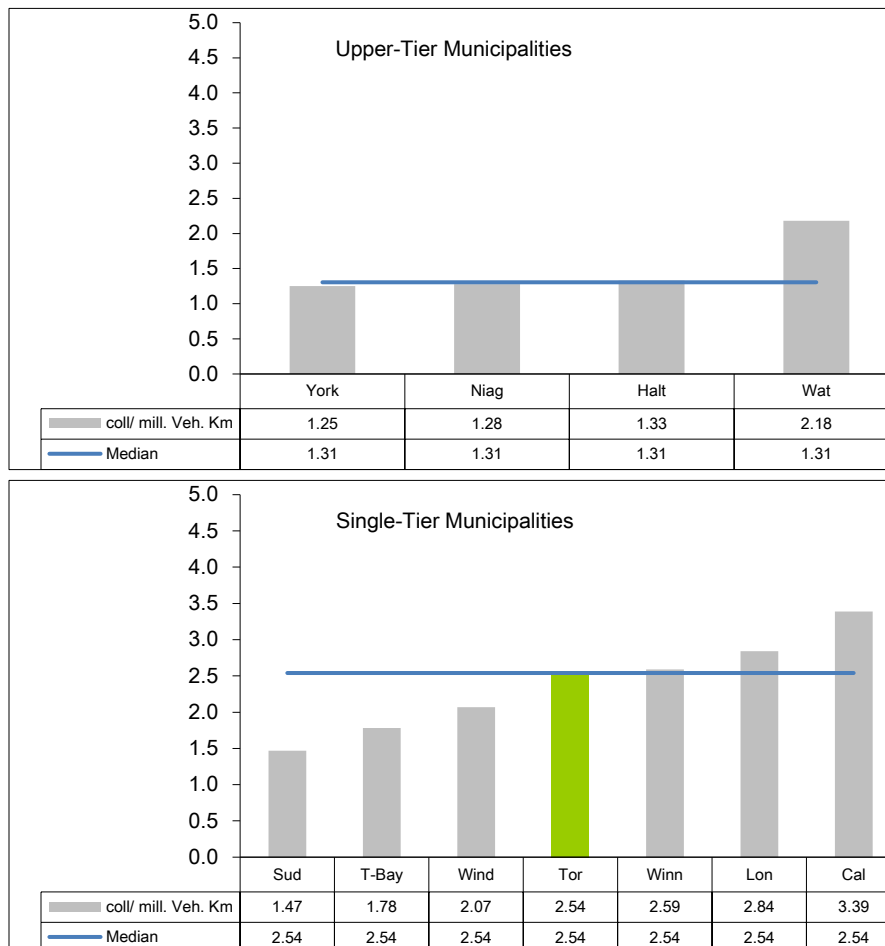


Chart 28.4 summarizes information on the 2016 annual rate of vehicle collisions per million vehicle kilometres traveled in Toronto and other municipalities.

In the basis of the lowest collision rate, Toronto ranks fourth of seven single-tier municipalities (second quartile). The vehicle collision rate per million vehicle km uses equivalent lane kilometres. Traffic congestion, discussed below, is likely a factor in Toronto's higher rate of collisions, given that Toronto roads are the most congested of the MBNC municipalities.

Chart 28.4 (MBNC 2016) Vehicle Collision Rate/Collisions per Million Vehicle Km

28.5 –HOW CONGESTED ARE TORONTO'S MAJOR ROADS COMPARED TO OTHER MUNICIPALITIES?

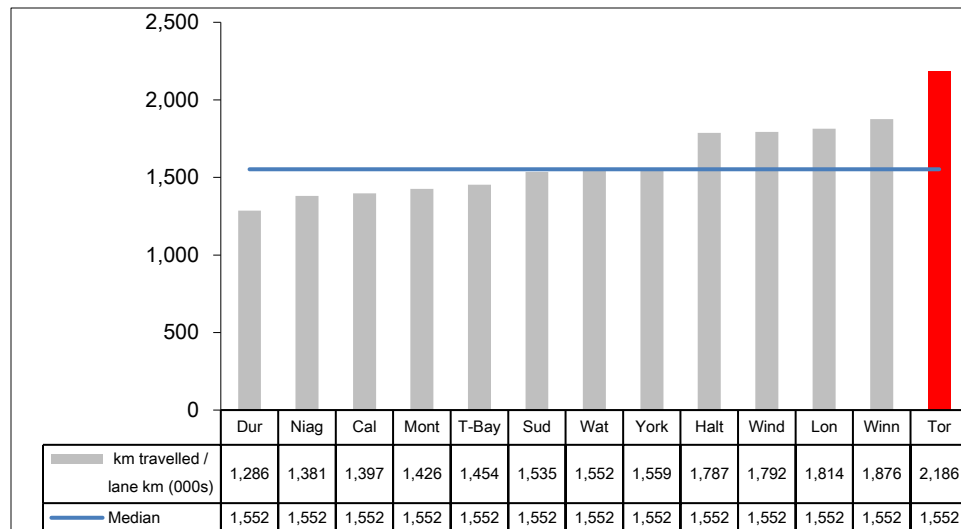


Chart 28.5 compares the 2016 level of congestion on Toronto's main roads to other municipalities.

Chart 28.5 (MBNC 2016) Congestion Vehicle Km (000s) per Lane Km on Major Roads

It shows the number of times (in thousands) a vehicle travels over each lane kilometre of road. In terms of having the least congested roads, Toronto ranks thirteenth of thirteen municipalities (fourth quartile), meaning Toronto roads are heavily congested.

Toronto's congestion rate was stable in 2016, remaining approximately 2,186 congestion vehicle km (000s) on major roads. The number of vehicles on the roads can be affected by population density, the type of roads (e.g. arterial, collector or local roads, and in some cases, expressways) and average commute distances.

CUSTOMER SERVICE/QUALITY

The state of repair of the City's infrastructure is extremely important in delivering effective services.

28.6 –WHAT IS THE PAVEMENT CONDITION OF TORONTO'S ROADS?

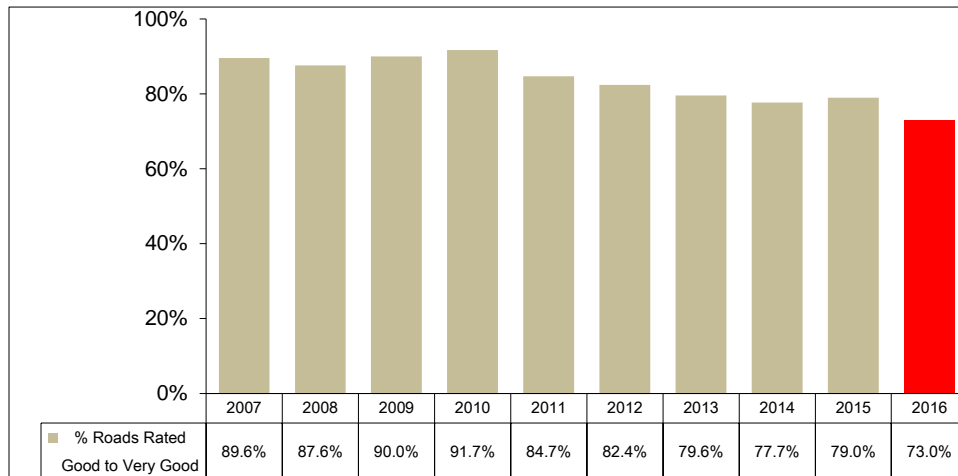


Chart 28.6 summarizes the pavement condition of Toronto's roads, providing the percentage of the road system where the pavement quality is rated as good to very good.

Chart 28.6 (City of Toronto) % of Lane Km of Roads with Pavement Condition Rated as Good to Very Good

Over the longer term there has been an improvement in pavement condition because of Toronto's asset management programs and strategies to maintain roads in a good state of repair. Toronto's result dipped in 2011 reflecting the continuing aging of Toronto's road infrastructure that requires more investment. In 2016, Toronto's result continued to decline, but remains good at 73 percent.

28.7 – HOW DOES THE PAVEMENT CONDITION OF TORONTO'S ROADS COMPARE TO OTHER MUNICIPALITIES?

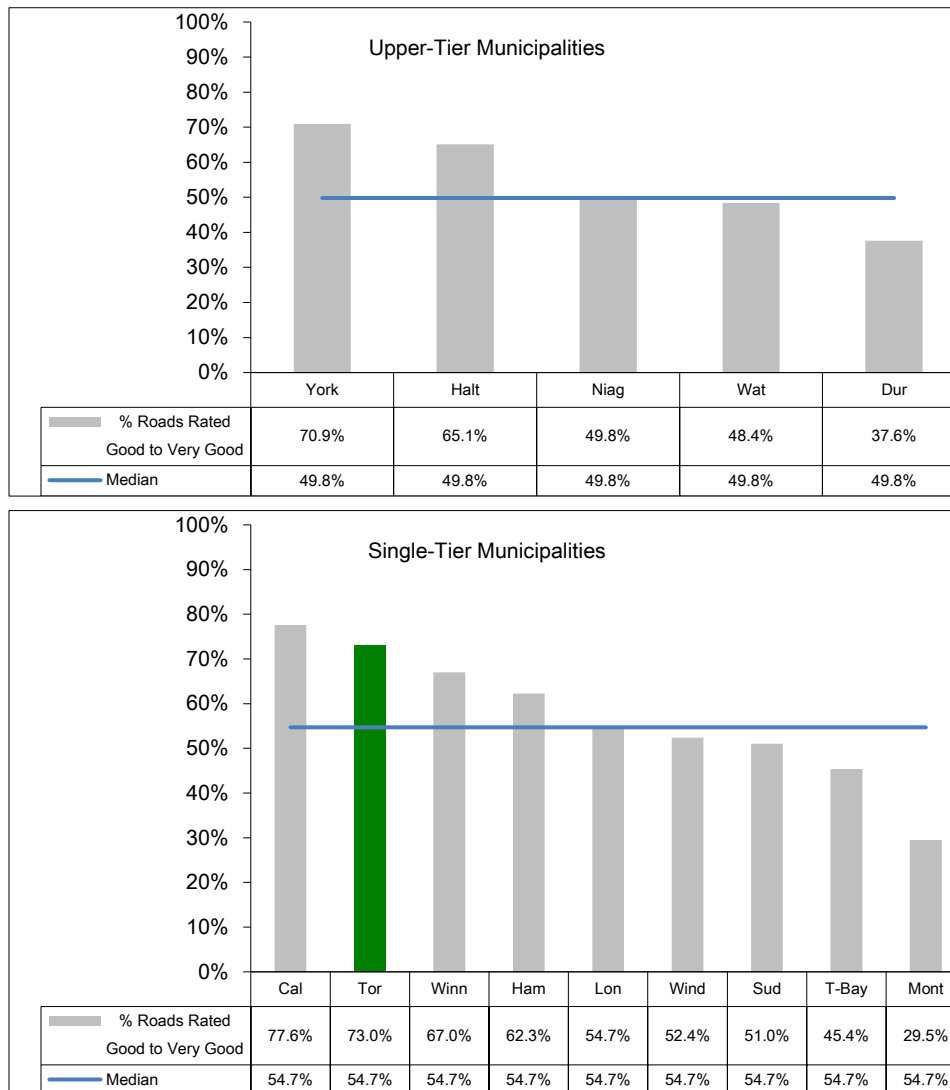


Chart 28.7 compares Toronto's 2016 percentage of roads rated in good to very good condition to other municipalities.

Upper- and single-tier municipalities are grouped separately because of differences in the road types they have responsibility for maintaining.

Toronto ranks second of nine single-tier municipalities (first quartile) in terms of having the best pavement condition of its roads.

Chart 28.7 (MBNC 2016) % of Lane Km of Roads with Pavement Condition Rated as Good to Very Good

28.8 - HOW DOES THE CONDITION OF TORONTO'S BRIDGES AND CULVERTS COMPARE TO OTHER MUNICIPALITIES?

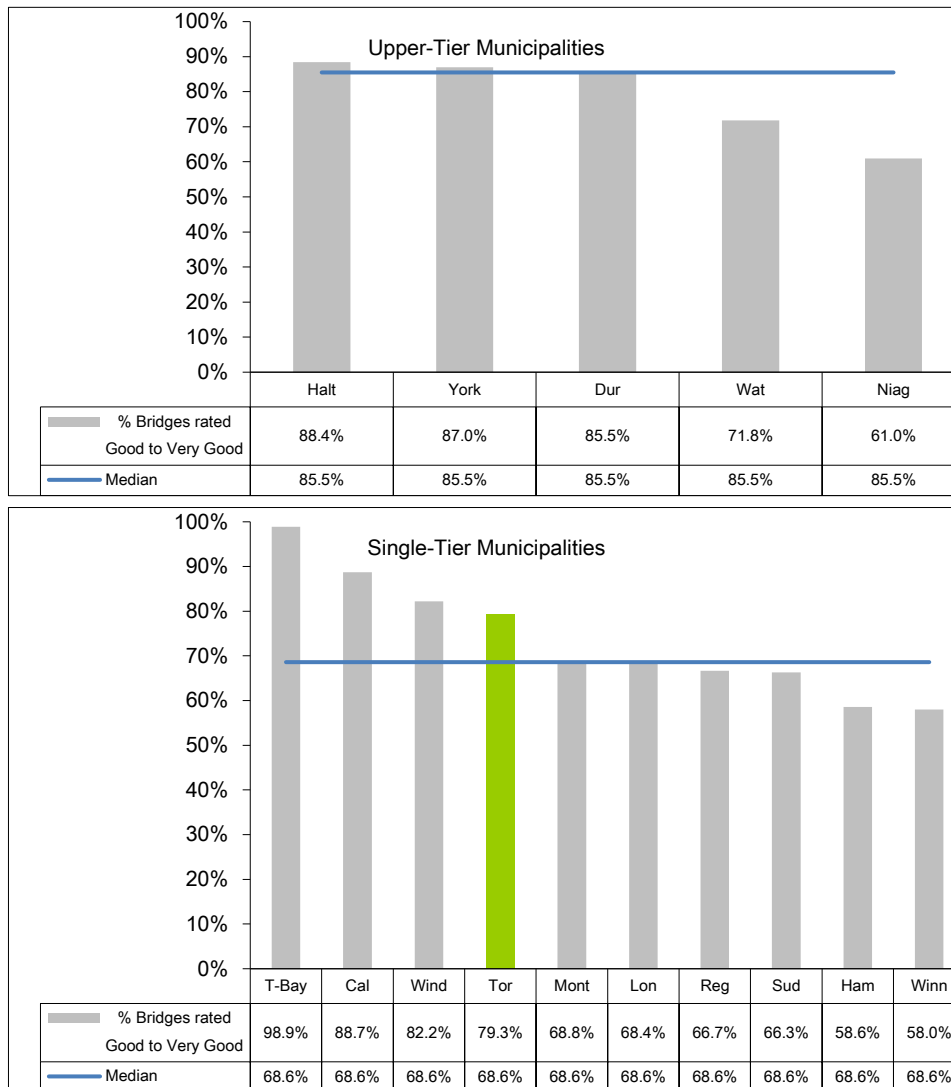


Chart 28.8 compares Toronto's 2016 percentage of bridges and culverts rated in good to very good condition to other municipalities.

Toronto ranked fourth of ten single-tier municipalities (second quartile) for the highest bridge/culvert condition rating.

Toronto's 2016 rate of 79.3 per cent was a significant increase from 2015 by 43.10%. This was due to changing the methodology for assessing bridge condition.

The Bridge Condition Index (BCI) to be consistent with other jurisdictions.

Chart 28.8 (MBNC 2016) % of Bridges and Culverts with Condition Rated as Good to Very Good

The rating was based on a comprehensive field assessment, including the elevated portion of the Gardiner Expressway.

From a customer service perspective, Toronto's Transportation Services Division publishes its service standards [online](#). These standards relate to service requests made by the public to 311(such as a pot hole in the road), and provide a time threshold for the service request to be completed within. They cover a broad range of activities for road and sidewalk maintenance, transportation operations and safety, and public right of way management.

28.9 - WHAT IS THE PROPORTION OF TRANSPORTATION SERVICE REQUESTS COMPLETED WITHIN THE STANDARD?

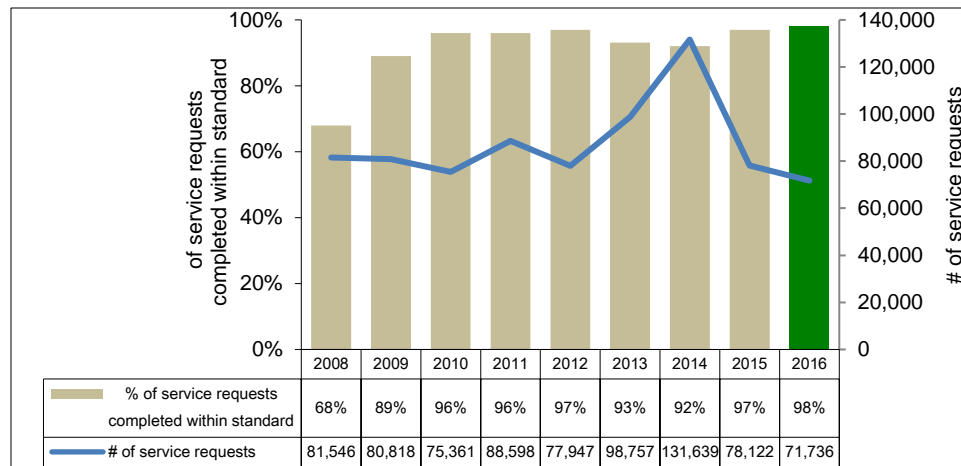


Chart 28.9 provides the number of service requests received from the public, which are shown as a line graph relative to the right axis.

Chart 28.9 (City of Toronto) Number of Transportation Service Requests & Percentage of Requests Completed Within Time Standard

It should be noted this reactive work (a service request) represents only a portion of the work done by the Division, with the bulk of their work being pro-active work initiated by staff through preventative maintenance and capital programs.

The total number of service requests decreased by 8.2% in 2016.

Chart 28.9 also shows the percentage of these service requests (reflected as bars relative to the left axis) that have been completed within the published service standard. Since 2008, a number of changes were made to the Division's business processes to improve the timeliness and efficiency of service including, staff training, enhancements to the work management system, mobile computing, the use of mapping technology and increased management review.

The improved business process changes noted above resulted in a significant improvement in results, from 68 percent of service requests completed within standard in 2008 to well over 90 percent experienced over the past seven years. These changes have not only allowed staff to become more productive and timely in responding to and completing service requests, but have also provided more accurate and current information used to update customers on the status of their service requests. The percentage of service requests completed within standard inclined slightly in 2016, but remained relatively stable and high.

EFFICIENCY

28.10 - HOW MUCH DOES IT COST TORONTO FOR WINTER CONTROL OF ROADS?

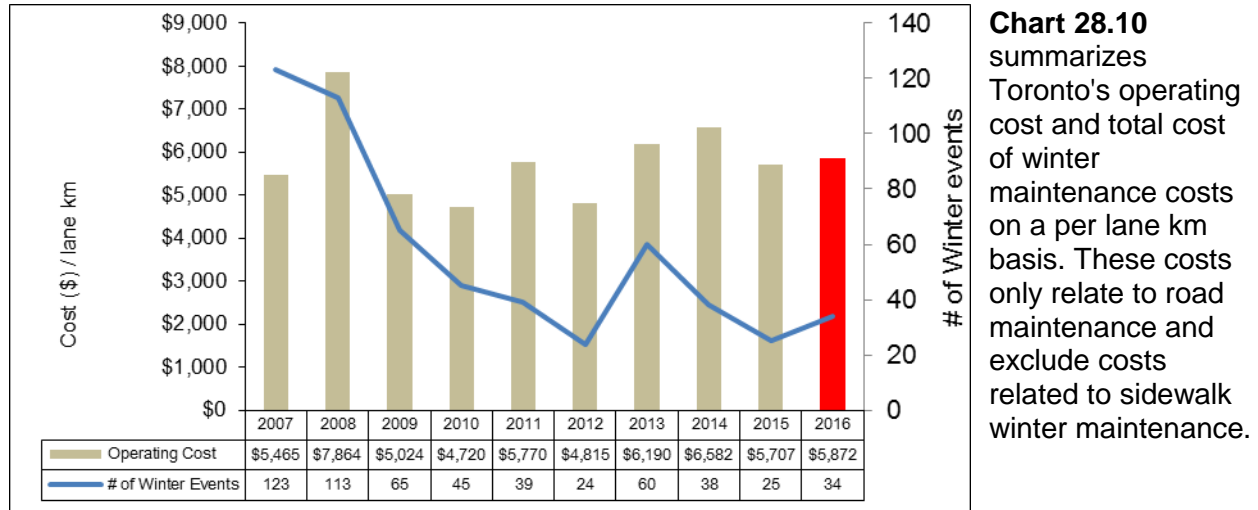


Chart 28.10 (City of Toronto) Cost for Winter Maintenance of Roads per Lane Kilometre

Starting in 2009, Toronto changed its method of measuring the length of roads from land km. to equivalent lane km. Results for 2008 and prior years continue to be based on lane km, and therefore are not comparable to 2009 and subsequent years.

In 2016, the cost for winter control maintenance per lane kilometer increased by 2.9%. Winter maintenance costs can vary significantly by year according to weather conditions and the type, severity and number of winter events, which are also shown on the chart. Toronto experienced 34 winter events in 2016, resulting in higher costs.

28.11 - HOW DO TORONTO'S WINTER CONTROL COSTS COMPARE TO OTHER MUNICIPALITIES?

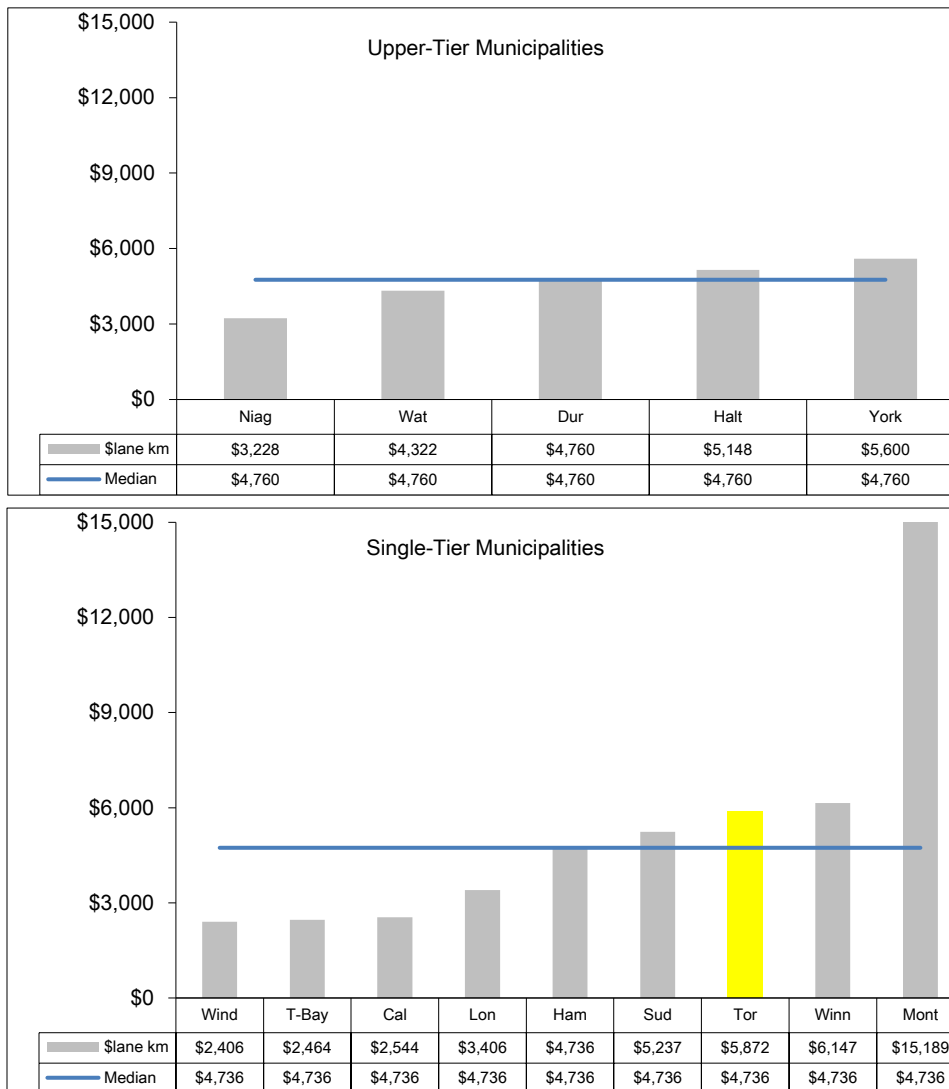


Chart 28.11 reflects Toronto's 2016 winter maintenance costs in relation to other municipalities. Single-tier and upper-tier municipalities have been grouped separately because they are responsible for maintaining different road types.

Chart 28.11 (MBNC 2016) Cost for Winter Maintenance of Roadways per Lane Km

Toronto ranks seventh of nine (third quartile) among the single-tier municipalities in terms of having the lowest cost for winter maintenance per lane km. Toronto also clears windrows at the ends of driveways on residential properties in parts of the City (about 262,000 driveways at a cost of approximately \$4.0 million) where this is mechanically possible.

This is a service that perhaps only one or two other municipalities in Canada provide and contributes to Toronto's higher costs. Other factors contributing to Toronto's higher costs include narrow streets and on-street parking in sections of Toronto that affects the efficiency of plowing and can require snow removal, congestion on roads in Toronto that slows the speed at which plows, and salters can travel during storm events, and Toronto's enhanced standards noted previously.

28.12 - HOW MUCH DOES IT COST TO MAINTAIN TORONTO'S ROAD SURFACES?

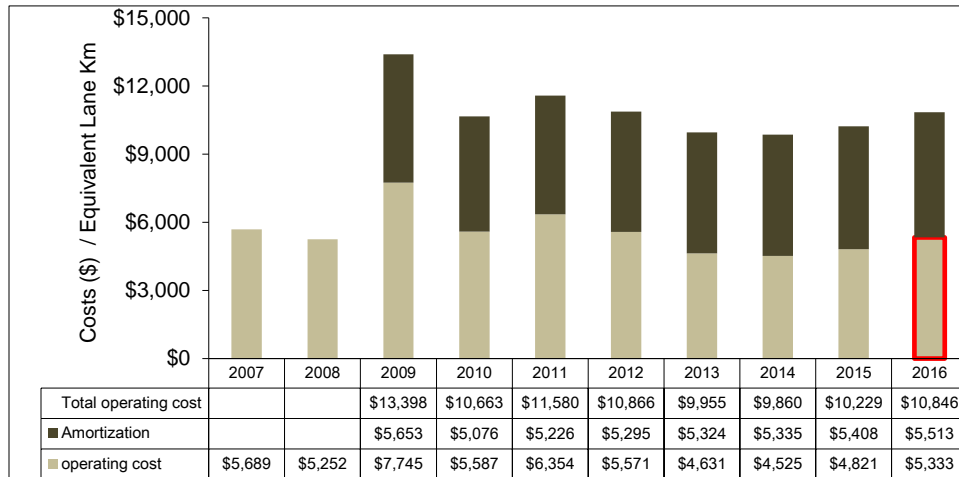


Chart 28.12 provides Toronto's operating costs and total cost (operating cost plus amortization) per lane kilometre for maintaining paved roads (i.e. patching, surface repairs, utility cut repairs, sweeping, etc.).

Chart 28.12 (City of Toronto) Operating and Total Operating Cost of Paved Roads per Lane Km

Amortization is also shown as a separate stacked bars. More information is available in the Guide to Toronto's Performance Results. Operating and total costs increased in 2016.

28.13 HOW DOES TORONTO'S COST OF MAINTAINING ROAD SURFACES COMPARE TO OTHER MUNICIPALITIES?

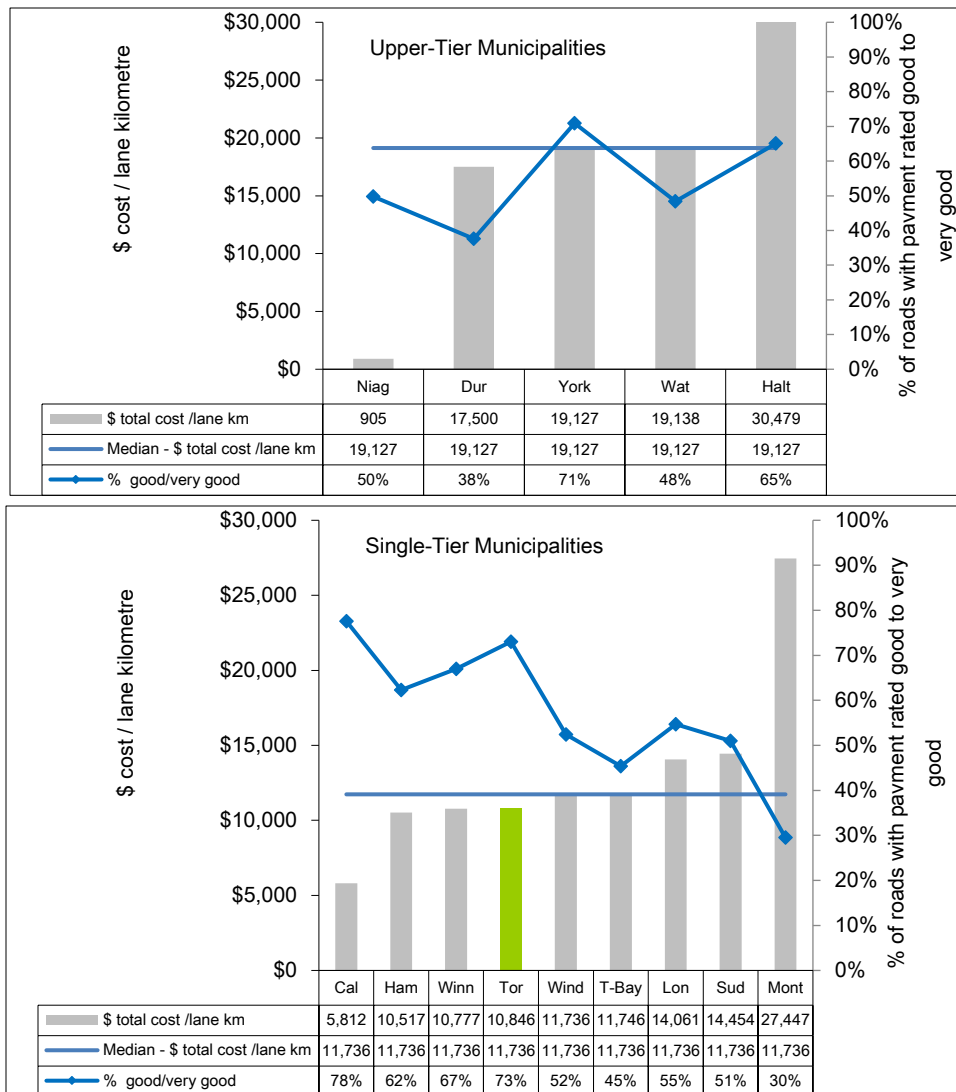


Chart 28.13 compares Toronto's total operating cost for paved roads per lane km to other municipalities, and are plotted as bars relative to the left axis. It should be noted that total cost is the combination of operating cost and amortization.

Chart 28.13 (MBNC 2016) Total Operating Costs for Paved (Hard Top) Roads per Lane Km and % of Roads Rated Good to Very Good

Toronto ranks fourth of nine (second quartile) among single-tier municipalities for total operating costs. The percentage of roads where the pavement quality has been rated as good to very good is also plotted, as a line graph relative to the right axis, to provide additional context. Toronto has one of the highest pavement quality rating (as discussed in Chart 28.7) and lowest total costs.

Factors that could influence costs include:

- Traffic congestion and the amount of work done by utility companies on Toronto roads is significant, thereby accelerating road deterioration rates and requiring more frequent road maintenance at an additional cost.
- When road maintenance work is required in Toronto, expensive traffic management protocols, such as off-peak work, are followed to ensure motorists are not adversely affected during the period of road maintenance/repair.

28.14 - HOW MUCH DOES IT COST TO MAINTAIN TORONTO'S ROADSIDE?

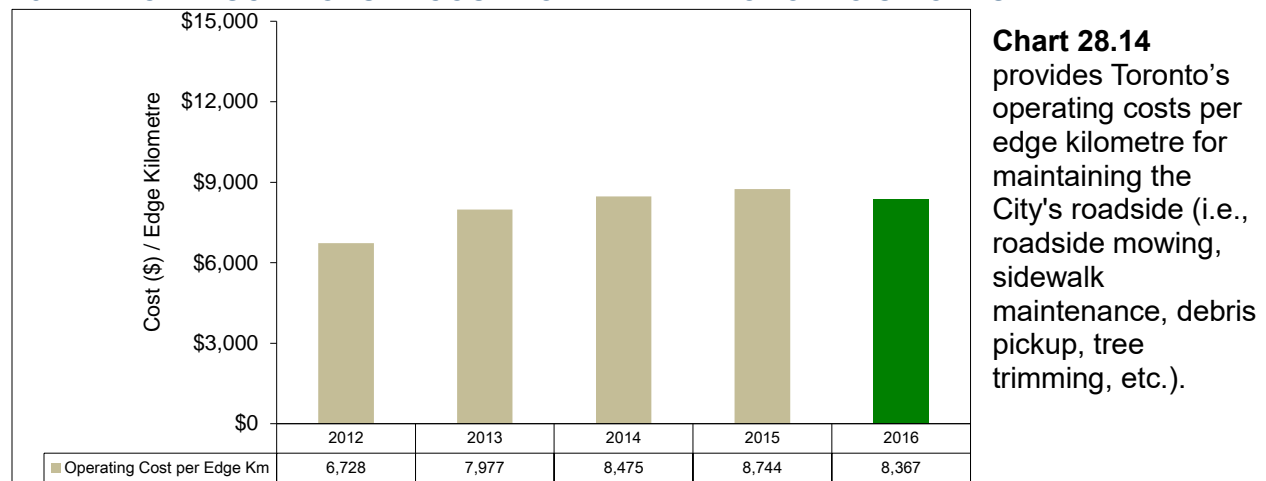


Chart 28.14 (City of Toronto) Operating Cost of Roadside per Edge Kilometre

A large portion (61%) of the cost comes from tree trimming, which is delivered by Parks, Forestry & Recreation.

In 2016, the operating costs per edge kilometre for maintaining the City's roadside decreased by 4.3%. Compared to the other MBNC municipalities, Toronto ranks twelfth of twelve (fourth quartile) in terms of having the lowest operating cost for roadsides per edge kilometer.

28.15 - HOW MUCH DOES IT COST TO MANAGE TORONTO'S TRAFFIC?

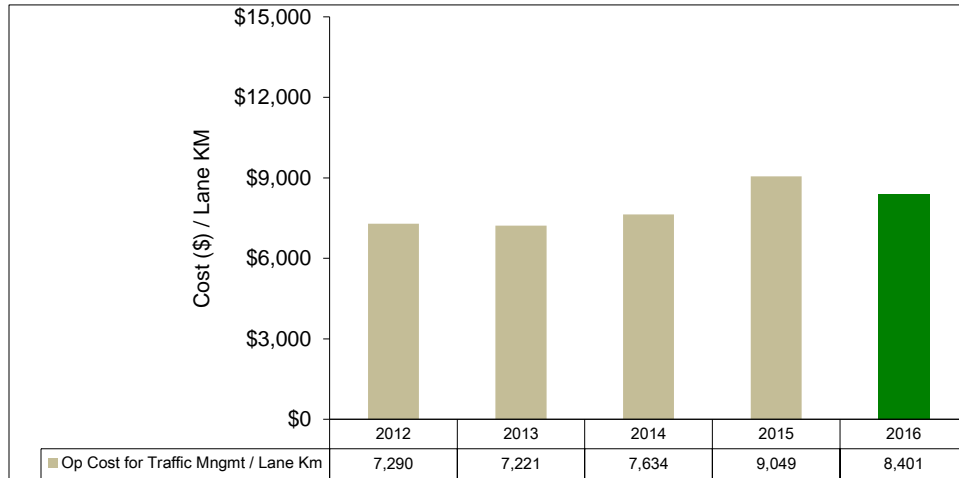


Chart 28.15 provides Toronto's operating costs per lane kilometre for undertake traffic management activities (i.e., Pavement markings, traffic sign maintenance, traffic signal maintenance, Intelligent Transportation Systems, etc.).

Chart 28.15 (City of Toronto) Operating Cost for Traffic Management per Lane Km

For 2016, operating costs per lane kilometre for undertake traffic management activities decreased by 7.2 percent. Toronto ranks twelfth of twelve (fourth quartile) in terms of having the lowest operating cost.

2016 ACHIEVEMENTS AND 2017 PLANNED INITIATIVES

The following achievements and initiatives have improved or are expected to further improve the efficiency and effectiveness of transportation and road operations in Toronto:

2016 Initiatives Completed

- Retimed 359 traffic signals along 14 corridors to improve traffic flow and reduce delays, fuel consumption and vehicle emissions.
- Installed 71 additional traffic monitoring cameras on key arterial routes.
- Installed/refreshed zebra markings at 540 intersections to enhance pedestrian safety
- Reduced the curb radii at 14 intersections to improve the pedestrian environment and enhance pedestrian safety at these locations
- Developed a Ten Year Cycle Network Plan which was approved by Council comprising 525 centreline km of new cycling infrastructure which will encourage cycling and enhance the safety of cyclists.
- Awarded 47 seven-year contracts for winter maintenance services.
- Launched a public website (PlowTO) displaying real-time location of 1300 winter maintenance vehicles

2017 Initiatives Planned

- Implement strategies to minimize lane closures due to construction through accelerated schedules, improved coordination, more stringent permit timelines and enforcement.
- Continue to connect, grow, and renew the City's cycling infrastructure through the delivery of Year 1 of the 10 Year Cycling Network Plan.
- Provide safe streets for all road users through implementation of the Road Safety Plan.
- Continue to enhance the public realm through increased street furniture deployment, graffiti removal, street art installations and beautification of abandoned spaces.
- Use preventative maintenance techniques to improve infrastructure quality and extend lifespan.
- Implement acceleration of sidewalk and utility cut repairs.

Factors Influencing the Results of Municipalities

The results of each municipality included in this report can be influenced to varying degrees by factors such as:

- The mix of roads being maintained (e.g. arterial, collector, local roads and laneways).
- Winter conditions.
- Preventive maintenance practices (timing, frequency, amounts, and type of preventive maintenance strategies).
- The condition of roads at the time that responsibility for them was assumed from the province.
- Traffic volumes, the degree of congestion and the composition of vehicles that use the road system (cars, trucks, transit vehicles).
- The extent of utility cut repairs.
- Differing service standards between municipalities for accumulation of snow and ice, before sanding, salting, plowing and snow removal operations commence and the time period before completion.
- Economic Conditions: Inflationary increases in the cost of asphalt, concrete, fuel and contract services can reduce the amount of maintenance done with a given level of funding.
- Differences in standby charges to allow for timely response to winter events.
- Variations in weather conditions between municipalities (high snowfall, winter conditions).
- The number of winter event vehicle hours required for storm events which is an indication of the degree of effort involved to combat these events.