# EXCLUSIVE TRUCK FACILITIES IN THE TORONTO AREA: RATIONALE AND MODEL DEVELOPMENT

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## Introduction

There are strong competing demands for existing transportation infrastructure in many Canadian urban transportation corridors. Particularly in urban areas with high rates of population and employment growth, such as the City of Calgary, the Greater Toronto Area (GTA) and the Vancouver Lower Mainland, transportation networks are experiencing unprecedented demands from both the goods movement and the passenger travel sectors. Increasing congestion threatens the future of both mobility of urban residents and the economic competitiveness of firms that rely on fast and reliable goods transportation. Furthermore the traffic safety, emissions, and noise impacts of transportation infrastructure use are significant. This is a direct and imminent threat to not only our lifestyle, but also our economic prosperity and the quality of the environment that we live in.

One potential solution to this dilemma, the focus of this study, is to segregate truck traffic from passenger traffic by implementing exclusive truck facilities in key economic corridors. Exclusive truck facilities can be dedicated lanes on existing roadways or exclusive truck highways. The benefits of exclusive truck facilities to industry are obvious. Mobility can be improved, productivity gains for the logistics sector can be realized through the safe use of larger vehicle configurations, and safety improvements are possible by segregating trucks and cars that have very different operating characteristics. There are significant potential infrastructure cost savings in construction and repaving and there are significant potential public or private revenue opportunities from tolls that can be charged on exclusive truck facilities.

Disbenefits of exclusive truck infrastructure must also be recognized and assessed. Reductions in truck idling may result in improvements in emissions of particulate matter and $NO_x$ from truck exhaust that permeates into communities adjacent to the highway infrastructure. However if a larger number of trucks are attracted to a corridor as a result of an exclusive truck facility, deterioration of air quality and increases in vibration and noise might occur.

The purpose of the project discussed in this paper, which is currently underway, is to quantitatively assess the various benefits and disbenefits of exclusive truck infrastructure in the Toronto Area. The project involves the development of travel demand modelling techniques for passenger vehicles and trucks, the development of a microscopic traffic simulation model of the entire freeway system in Toronto, and an analysis of accessibility/development pressure. Only with this suite of modelling tools can operational, safety, emissions, and other characteristics of alternative truck facilities be evaluated in detail. To our knowledge, this is the first modelling system that has included comprehensive travel demand models for both passenger cars and trucks, in coordination with a microscopic traffic simulator of very large geographic scope.

The entire project cannot be described in the paper. Emphasis is therefore placed on the demand analysis techniques that have been developed and tested. The paper is organized as follows. The next section describes the rationale for exclusive truck facilities. The following sections describe the data and the modelling approach that has been developed to estimate passenger vehicle and truck demand in the GTA, which is used as input for the microscopic traffic simulation model. The simulation model is described very briefly, followed by a presentation of selected model results, conclusions and future work.

## Rationale for Exclusive Truck Infrastructure

*Safety* - In Canada, over the period from 2001 to 2005, the following statistics were observed (Transport Canada, 2006). The vehicles (commercial and other) in all collisions (fatal, injury and property damage) involving commercial vehicles accounted for 9.1 per cent of all vehicles involved in road collisions on average. When commercial vehicles are involved in a collision, however, the likelihood of fatalities is greater, because of the size and weight of commercial vehicles. An annual average of 536 commercial vehicles (including buses, straight trucks and tractor trailers) were involved in fatal collisions, representing 12.2% of total vehicles involved in fatal collisions. Fatal collisions involving commercial vehicles involved a total of 1019 vehicles, representing 25.0% of total vehicles involved in fatal collisions. These collisions, which involved commercial vehicles, resulted in an average of 574 deaths per year, representing 20.3% of all fatalities caused by vehicle collisions.

Large trucks are thought to present safety hazards in mixed traffic because of their decreased stopping capabilities, their lack of maneuverability, and their large size, which occupies more lane space and blocks motorist's visibility (Mannering *et al.*, 1993). The increased separation of trucks and passenger vehicles through the implementation of exclusive truck facilities results in a more uniform mix of vehicles, which has potential for improved traffic safety.

*Mobility* - Exclusive truck facilities have potential to provide congestion relief for commercial vehicles in key economic corridors. This is particularly important on key trade routes such as the Quebec City - Windsor Corridor, which links the major manufacturing centres in Quebec and Ontario to the United States market. Highway 401 and the QEW are the most important freight routes within this corridor (iTrans, 2004). Over 30,000 commercial vehicles travel on some segments these roads, and the economic value of goods carried has been estimated to exceed $1 billion in certain sections (iTrans, 2004). These two highways provide access to the border crossings at Niagara, Windsor and Sarnia, which together handle 63% of all of the commercial vehicles that travel between Canada and the US. The daily commodity value is highest on these two routes in the GTA. An estimated $900,000,000 worth of commodity value is carried daily on Highway 401 and $390,000,000 on the QEW entering or leaving the GTA (iTrans, 2004).

*Infrastructure cost-* Loaded trucks cause a vast majority of pavement damage on a roadway. A fully loaded tractor-semi trailer (80,000 lb) causes pavement damage equivalent to that of approximately 8,000 passenger cars (4,000 lb) (depending on pavement type and axle configuration). Clearly, therefore, there is potential to optimize pavement design on truck facilities to withstand heavy loads, while realizing "savings" in pavement damage on other traffic lanes from which trucks are diverted. The Clarence Henry Truckway in New Orleans is an example of an exclusive truck facility that has been designed to withstand heavy loads and pavement damage as a result of heavy truck flows. The truckway is constructed with 17.5 inches of concrete, on top of a crushed stone base and a prepared sub-base, a specification that is comparable to that of airport runways suitable for large jets (Reich *et al.*, 2002).

*Productivity* - Currently in the United States, the majority of long haul trucking is made in vehicles with a single trailer, largely because it is only legal to operate double and triple trailer vehicles (known as Longer Combination Vehicles or LCVs) in certain states (Poole and Samuel, 2004). While all provinces in Canada have agreed to allow LCVs on at least a portion of their roads, the standard maximum vehicle dimensions adopted in Canada are represented by the Canadian B-Double, whose maximum length (25 m) is less than that of the maximum in the US (34.75m) (Samuel *et al.,* 2002). The use of LCVs has the potential to improve the productivity of the trucking industry, and ultimately reduce shipping costs by increasing the amount of goods shipped by one driver. The US DoT (2000), has estimated that permitting LCVs on a greater portion of the US Interstate system could result in a net savings of $10 to $40 Billion. Exclusive truck facilities would mitigate the danger associated with the operation of such vehicles in mixed traffic.

*Revenue generation* - Given that commercial vehicle operators have a higher value of time, in general, than auto drivers and that they especially value reliable travel times, many truck drivers would be willing to pay tolls to use an exclusive truck facility. This opens up the possibility for revenue generation that can be used to recover construction costs and to pay for highway maintenance. It also provides a revenue source as an incentive for potential public private partnerships. Congestion pricing can be used on truck only toll (TOT) lanes so as to maintain fast and reliable service. In the Atlanta

Region TOT feasibility study, for example, tolls are only proposed to be charged when necessary to avoid congestion; rates are set such that trucks can operate on the TOT lanes at reasonably high speeds (PBQD, 2005).

*Land use / accessibility* - Implementation of exclusive truck lanes on existing congested highways potentially has the effect of reducing network travel times more for trucks than for passenger vehicles. Implementation of an exclusive truck highway may provide no accessibility improvement for households at all, while transportation intensive firms may benefit greatly from such dedicated infrastructure. No research, however, has been found on the differential accessibility effects of exclusive truck infrastructure on households and firms and effects that differential accessibility improvements may have on residential and commercial development patterns.

*Social and natural environment* - Noise, vibration and air pollution are three of the key environmental impacts that are particularly relevant to truck facilities. The noise level generated by traffic at a given distance from the road can be estimated as a function of average travel speed, traffic volume, proportion of heavy trucks, distance from the road, and level of attenuation with distance (effects of road structure, embankments and noise walls) (Taniguchi *et al.*, 2001). The volume of large vehicles is an important factor, since large commercial vehicles produce much more noise than small passenger vehicles. Clearly, exclusive truck facilities produce disproportional noise relative to conventional highway facilities because of the vehicle mix, and therefore noise mitigation measures may be required in population centres or ecologically sensitive areas.

Traffic-induced vibration can result in problems such as differential settlement for houses built on weak ground and interference with the performance of high precision machines (Taniguchi *et al.*, 2001). Similar to noise, traffic-induced vibration levels are related to factors including average travel speed, traffic volume, proportion of large vehicles, road and road surface characteristics, and distance from the roadway, and the level of attenuation with distance. Given that heavy vehicles contribute disproportionately to vibration, these design factors are important in the design of exclusive truck facilities.

Emission of air quality pollutants (CO, $NO_x$, HC and particulate matter) from highway facilities are related to the average travel speed of vehicles, traffic volume, type of vehicles, and diffusion factors such as distance from the road to the prediction point, wind velocity and the height of the source. Large trucks with diesel engines emit 15-20 times more $NO_x$ than passenger cars (Taniguchi *et al.*, 2001). Similarly, particulates are emitted primarily from trucks. Therefore, the proportion of trucks in the traffic flow considerably influences emissions of these exhaust gases suggesting that the local air quality impacts of exclusive truck facilities would be quite different from those of conventional highway facilities.

**Data**

*Transportation Tomorrow Survey* - The Transportation Tomorrow Survey (TTS) is a household travel survey undertaken on 5.8% of the Toronto Area population in 2001, including municipalities from Niagara Falls to Peterborough (DMG, 2003). This database is the primary data source for passenger travel in the GTA.

*MTO Commercial Vehicle Survey* - The 2001 commercial vehicle survey is a road-side vehicle survey, conducted at over 150 road-side directional sites in the province of Ontario. In the MTO CVS survey, truck drivers are asked to report on truck activity characteristics related to the: trip, driver, carrier, commodity and vehicle. The MTO CVS is successful in the collection of long-haul intercity freight movements to/from and through Ontario, but under-represents intra-urban truck movements.

*Region of Peel Commercial Travel Survey* - The Region of Peel Commercial Travel Survey was a survey conducted in 2007 of 600 business establishments in the Region of Peel, including business establishment information, commercial vehicle trip generation, a record of all inbound and outbound shipments made over one day, including commodity type, weight, value, origin/destination (Roorda et al., 2007). The survey was designed to provide information describing urban commercial vehicle movements to supplement the intercity goods movement data provided by the MTO CVS.

*Cordon Counts* - The cordon count program, maintained by the Data Management Group at the University of Toronto, consists of counts of passenger vehicles, commercial vehicles and buses crossing a series of screenlines (cordons) defined along political, natural or man-made boundaries (e.g. highways or rail lines) within the GTA (DMG, 2002). Cordon counts are undertaken over a period of approximately 12.5 hours, and have been undertaken every 2-3 years for over 30 years in some municipalities.

*Freeway Traffic Management System (FTMS) Count Data* - The MTO FTMS has vehicle detector stations installed across the 400 series freeways in the Toronto Area. These stations are composed of inductance loops embedded in the pavement at approximately 500 to 800 meter intervals on mainline freeway segments and freeway ramps.

*Land Use Data* - Land use data (i.e. data describing whether a piece of land is considered to be rural, urban, suburban or part of the Central Business District) was provided to the project by IBI Group. These data were obtained by IBI Group from the municipalities in the GTA as part of the MTO sponsored project "Multi-Modal Transportation Forecasting Tools for the Greater Golden Horseshoe".

*Employment Data by Industry* - 2001 Employment by industry classification by traffic zone was obtained from the MTO. The original source of these data is the Statistics Canada 2001 Census.

*2001 GTA EMME2 Road Network* - EMME2 is a transportation modelling software that is suitable for computing deterministic user equilibrium traffic assignment (INRO, 2009). The GTA EMME2 Road Network includes a computer representation of all freeways, arterial roads, most collector roads and some local roads in the Cities of Toronto and Hamilton, and the Regions of Peel, York, Durham and Halton. The network was obtained from the Data Management Group (DMG, 2004).

*Freeway EMME2 Road Network* - A freeway EMME2 network is also required for the modelling exercise. This network is extracted from the GTA EMME2 road network, and includes all of the 400 series freeways, and the ramps entering or exiting those freeways. It also includes a stretch of Brock road, which serves as a major access route from Highway 401 to 407.

**Overview of Travel Demand Modelling System**

A multi-step process, shown in Figure 1, is applied to utilize all available sources of travel demand data to produce travel demand matrices for cars and trucks that are suitable as input into the microscopic corridor simulation tool. Each of the steps in the process (as numbered in Figure 1) is described as follows:

*Development of passenger vehicle demand (Steps 1 – 4 in Figure 1)*

*1) GTA Passenger Vehicle O/D Matrix* - Data from the 2001 Transportation Tomorrow Survey are used to develop a GTA-wide regional passenger vehicle O-D matrix. Matrices are developed for the 2001 AM Peak Hour (7:30 a.m. to 8:29 a.m.) and the 2001 PM Peak Hour (4:30 p.m. to 5:29 p.m.).

*2) GTA Passenger Vehicle Trip Assignment* - The GTA Passenger Vehicle O/D matrix from step 1 is assigned to the GTA EMME2 road network using a multiclass user equilibrium traffic assignment. The process of arriving at an acceptable GTA traffic assignment required a detailed review of the EMME/2 GTA network freeway corridors to ensure that freeway traffic was assigned with a good degree of accuracy.

*3) Initial Ramp-to-Ramp Passenger Vehicle O/D Matrix* - The focused study area for the microscopic freeway simulation requires a ramp-to-ramp passenger vehicle O/D matrix. This matrix is extracted from the GTA Passenger Vehicle Trip Assignment in Step 2, by capturing all trips that are assigned to freeways, and recording which entrance and exit ramp are utilized. The passenger vehicle demand thus takes the form of a freeway user O/D matrix in which origins are entrance ramps or freeway segments entering the GTA, and destinations are exit ramps or freeway segments exiting the GTA.

*4) Freeway Passenger Vehicle Trip Assignment* - The ramp-to-ramp passenger vehicle O/D matrix is then assigned to the Freeway EMME2 road network using a static user equilibrium assignment. This assignment is a necessary step to allow the ramp-to-ramp Passenger Vehicle O/D matrix to be updated to reflect freeway traffic management system and cordon counts on freeways (see step 11).

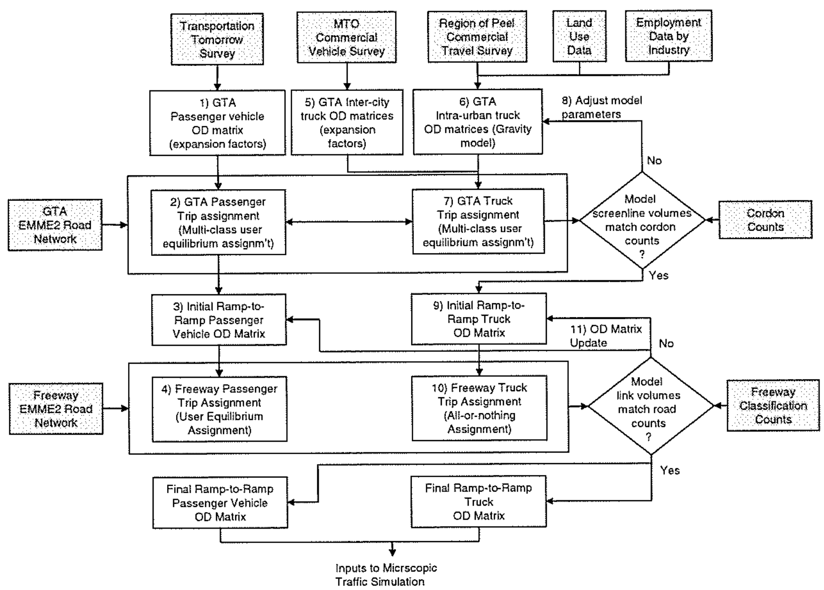


Figure 1 – Overview of Travel Demand Modelling System

*Development of truck demand (Steps 5-10 in Figure 1)*

*5) GTA Intercity Truck O/D Matrices-* The MTO Commercial Vehicle Survey data required significant processing in order to be suitable for use in this modelling exercise. First, each interview record in the MTO CVS database included information about multiple trips on the vehicle tour. Each of these trips were extracted and represented separately in the intercity O/D truck matrix. Second, the level of geographic detail with which trip ends were coded was inconsistent. For example, in some cases a full address was given while in other cases only the city was given. A technique was developed in order to "smooth" the data, by reassigning imprecise trip ends to zones in proportion to the distribution of employment (with greater weight for employment in industries that generate greater numbers of truck trips).

*6) GTA Intra-Urban Truck O/D Matrices* - The only source of data dedicated to the collection of intra-urban truck trips is the Region of Peel Commercial Travel Survey. In this study, a three-stage truck model is developed. The process is consistent with the Greater Golden Horseshoe Commercial Vehicle Model developed for the MTO (IBI, 2007). The first two stages of this model, trip generation and trip distribution, result in a set of O/D matrices of truck trips for a 12.5 hour period (a 12.5 hour period is used because this is the time period available for calibration using the cordon count data). The process is conducted separately for three classes of truck, light trucks, medium trucks and heavy trucks.

In the trip generation stage, base 24 hour trip generation rates for light, medium and heavy trucks from the Region of Peel Commercial Travel Survey are utilized, which reflect the number of daily truck trips generated as a function of employment by industry classification. These base rates, however, are average rates collected for a relatively small sample of firms (n=600) in the Region of Peel. Adjustment factors are applied for zones with different land uses (rural, suburban, urban, and CBD). A second set of adjustment factors are applied to reflect a conversion from 24 hour base trip generation rates to 12.5 hour cordon counts. A third set of adjustment factors are applied to enhance the model correspondence with truck cordon counts. These adjustment factors are calibrated as discussed in Step 8. Inter-city truck trips, as computed in Step 5, are subtracted from these trip generation rates, to ensure that these trips are not double counted.

The trip distribution stage utilizes a doubly constrained gravity model approach, in which trip origins and destinations are linked based on Equation 1, and adjusted to ensure that both commodity generation and attraction rates are respected for each zone.

$$V_{ij} = \frac{O_i D_j F_{ij}}{\sum_{j=1}^{n} D_j F_{ij}} \tag{1}$$

Where:
$V_{ij}$ = trips (volume) originating at zone i and destined to zone j;
$O_i$ = total trips originating at zone i;
$D_j$ = total trips destined for zone j;
$F_{ij}$ = friction factor for trip interchange ij,

The friction factor for trip interchange ij ($F_{ij}$), as shown in Equation 2, is an exponential function of average daily travel time from i to j. Because the travel time varies over the day due to congestion, the O/D average travel time is assumed to be the average of the AM and the PM peak hour travel times. The trip distribution parameter is a calibrated parameter, as discussed in Step 8.

$$F_{ij} = e^{\beta t_{ij}} \tag{2}$$

Where:
$t_{ij}$ = travel time from zone i to zone j;
$\beta$ = trip distribution parameter;

*7) GTA Truck Trip Assignment* - The intercity and intra-urban truck O/D matrices from Steps 5 and 6 are combined and assigned to routes using a multiclass user equilibrium assignment. The truck trip assignment is conducted simultaneously with the passenger vehicle trip assignment in step 2.

*8) GTA Truck Model Calibration* - The base truck trip generation rates are based on a small sample survey from the Region of Peel, and very little prior information exists with which to calibrate the trip distribution parameter. Therefore, a calibration process is undertaken to select a defensible set of trip generation adjustment factors and trip distribution parameters that result in a reasonably close correspondence between modelled trips from the assignment in Step 7 and observed traffic counts crossing cordons within the GTA.

*9) Initial Ramp-to-Ramp Truck O/D Matrix-* For microscopic freeway simulation, ramp-to-ramp truck O/D matrices are required. This matrix is extracted from the GTA Truck Trip Assignment from Step 7 (after the calibration process is complete), by capturing all trips that are assigned to freeways, and recording the entrance and exit ramps.

*10) Freeway Truck Trip Assignment-* Truck trips are then assigned to the freeway EMME2 road network using all-or-nothing assignment.

*11) O/D Matrix Updating-* In order to make use of all available data, it is possible to update the resulting O/D matrices from Step 3 (passenger vehicles) and Step 9 (trucks). The goal of this matrix updating technique is to make the smallest possible adjustments to the initial ramp-to-ramp O/D matrices such that the trip assignment models result in freeway volumes that match freeway classification counts. This is achieved using the gradient method (Spiess, 1990).

**Microscopic Traffic Simulation Model**
A microscopic traffic simulation model is developed for the analysis of the operational and safety impacts of exclusive truck facilities. The geographic scope of the simulation model is identical to the scope of the Freeway EMME/2 model. It utilizes demand outputs as described in the previous section. However, a much greater level of detail is included in this model, including detailed representation of car following, lane changing, and gap acceptance models. Travelers receive updated route information throughout the course of the dynamic traffic assignment. The network is coded in the Paramics simulation software (Quadstone, 2008). A blown up view of a typical freeway/arterial interchange is shown in Figure 2. A complete description of this model exceeds the scope of this paper.

**Results**
The results presented in this paper focus only on a small sample of the outputs of the travel demand modelling system for the base case (2006) AM peak hour (Selected results of the traffic simulation model will be presented at the CTRF conference). The model traffic volumes resulting from the Freeway EMME/2 model for East-West freeways are compared to traffic counts in Table 1 (Similar

comparisons were run at various stages to ensure that each step produced reasonable results, however, these intermediate comparisons are not reproduced here). The correspondence between model volumes and counts is very reasonable, considering that these are link level volumes generated from a regional scale model. Traffic volume on some road segments is over-simulated and on other segments is under-simulated. On average, modelled traffic volumes on each freeway in each direction are always within 4% of traffic counts, and usually within 2%.

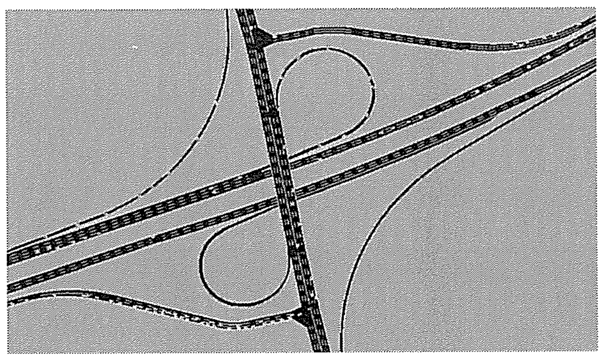

Figure 2 - Blow up of a Typical Freeway/Arterial Interchange

**Conclusions**

Calibration of the base model is clearly only the first step of analysis, but is one of the most challenging steps to complete successfully. Remaining steps involve the testing of exclusive truck alternatives, comparing indicators from the traffic simulation model such as average travel speeds, point to point travel times, traffic conflicts (rear end, merging, lane changing) and accessibility. To our knowledge, this is the first modelling system that has included comprehensive travel demand models for both passenger cars and trucks, in coordination with a microscopic traffic simulator of this geographic scope.

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**Table 1–Model volume relative to traffic counts* - 2006 AM Peak**

| | Total vehicles | | Light trucks | | Medium trucks | | Heavy trucks | |
|---|---|---|---|---|---|---|---|---|
| **Freeway Segment** | **East/ North** | **West/ South** | **East/ North** | **West/ South** | **East/ North** | **West/ South** | **East/ North** | **West/ South** |
| **Highway 407** | | | | | | | | |
| West of Winston Churchill Blvd | -12% | -15% | -5% | -21% | -8% | -26% | 6% | -11% |
| East of Highway 10 | -11% | -14% | -5% | 12% | -5% | 13% | -23% | -4% |
| East of Highway 410 | 12% | 13% | 10% | -9% | 4% | -2% | 21% | -4% |
| At Peel/York Boundary | 3% | 8% | 0% | 1% | 0% | 0% | 15% | 10% |
| East of Highway 400 | -7% | -18% | -1% | -2% | -1% | 0% | -7% | -18% |
| West of Bathurst St(YR 38) | -3% | -1% | 1% | 3% | 1% | 1% | 7% | 13% |
| West of Highway 404 | 7% | 8% | -1% | -2% | -1% | -1% | -2% | 5% |
| **Total** | **-2%** | **-1%** | **-1%** | **-2%** | **-1%** | **-2%** | **0%** | **-2%** |
| **Highway 401** | | | | | | | | |
| West of Dublin Line | 12% | -2% | 75% | 12% | 36% | 5% | 26% | 1% |
| East of 1st Line | 9% | 22% | -14% | 106% | -7% | 63% | -17% | 12% |
| West of Winston Churchill Blvd | -12% | -19% | -10% | -23% | -6% | 3% | -11% | -5% |
| East of 9th Line (Halton) | -29% | 2% | -34% | -25% | -17% | -28% | 1% | 9% |
| At the Credit River | 40% | -2% | 6% | -5% | 14% | 3% | 27% | 6% |
| East of Hurontario St | -3% | 4% | 22% | 53% | -2% | 2% | -6% | 2% |
| West of Renforth Dr | 1% | -5% | -2% | -1% | 0% | 1% | 3% | 4% |
| At Rouge River | 2% | 3% | 0% | 0% | 0% | 0% | -1% | 0% |
| **Total** | **0%** | **1%** | **-1%** | **1%** | **0%** | **2%** | **0%** | **3%** |
| **Highway 403/410** | | | | | | | | |
| East of King Rd | -9% | -2% | 0% | 1% | 0% | 1% | -4% | -5% |
| South of Dundas St | 26% | 15% | 35% | 55% | 27% | 2% | 16% | 2% |
| North of Dundas St | -16% | 8% | 2% | -12% | 4% | -6% | 5% | -10% |
| At the Credit River | 1% | -5% | 22% | -8% | 3% | -3% | -14% | 2% |
| East of Highway 10 | -3% | 7% | -9% | 18% | -3% | 3% | 21% | 14% |
| North of Eglinton Ave | 10% | 7% | 6% | 2% | 10% | 2% | 32% | -8% |
| North of Highway 401 | -9% | -9% | 32% | 1% | -2% | 0% | -7% | 6% |
| Brampton/Mississauga Boundary | -30% | -19% | -22% | -24% | -39% | 20% | -32% | -13% |
| North of Highway 407 | 20% | 27% | 12% | 27% | 187% | -11% | 96% | 8% |
| **Total** | **-3%** | **1%** | **4%** | **1%** | **2%** | **0%** | **2%** | **-2%** |
| **QEW/Gardiner Expressway** | | | | | | | | |
| Bronte Creek | 5% | 10% | -3% | 20% | 0% | -1% | 2% | 4% |
| Oakville Creek | 11% | -8% | 2% | -5% | -2% | 5% | 0% | -4% |
| West of Winston Churchill Blvd | 7% | 18% | 19% | 15% | -4% | -3% | 12% | 35% |
| Credit River | -1% | 45% | -3% | 123% | 9% | -3% | -26% | -5% |
| East of Hurontario St | 4% | 0% | 287% | 5% | 9% | 5% | 31% | 18% |
| Etobicoke Creek | 4% | -2% | -13% | -1% | -3% | -1% | 12% | -15% |
| Gardiner East of Bathurst St | 7% | -1% | 5% | 16% | -1% | 2% | 11% | 19% |
| Gardiner West of DVP | -8% | 2% | 0% | -2% | 3% | -1% | -20% | -35% |
| **Total** | **2%** | **4%** | **3%** | **3%** | **0%** | **0%** | **0%** | **0%** |

* Traffic counts reported in this table only include cordon counts. A large number of FTMS counts were also used in the OD updating for total vehicles, but are not reported.

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