EXHIBIT 3-7: AVERAGE DAILY TRAFFIC (ADT) COUNT INFORMATION

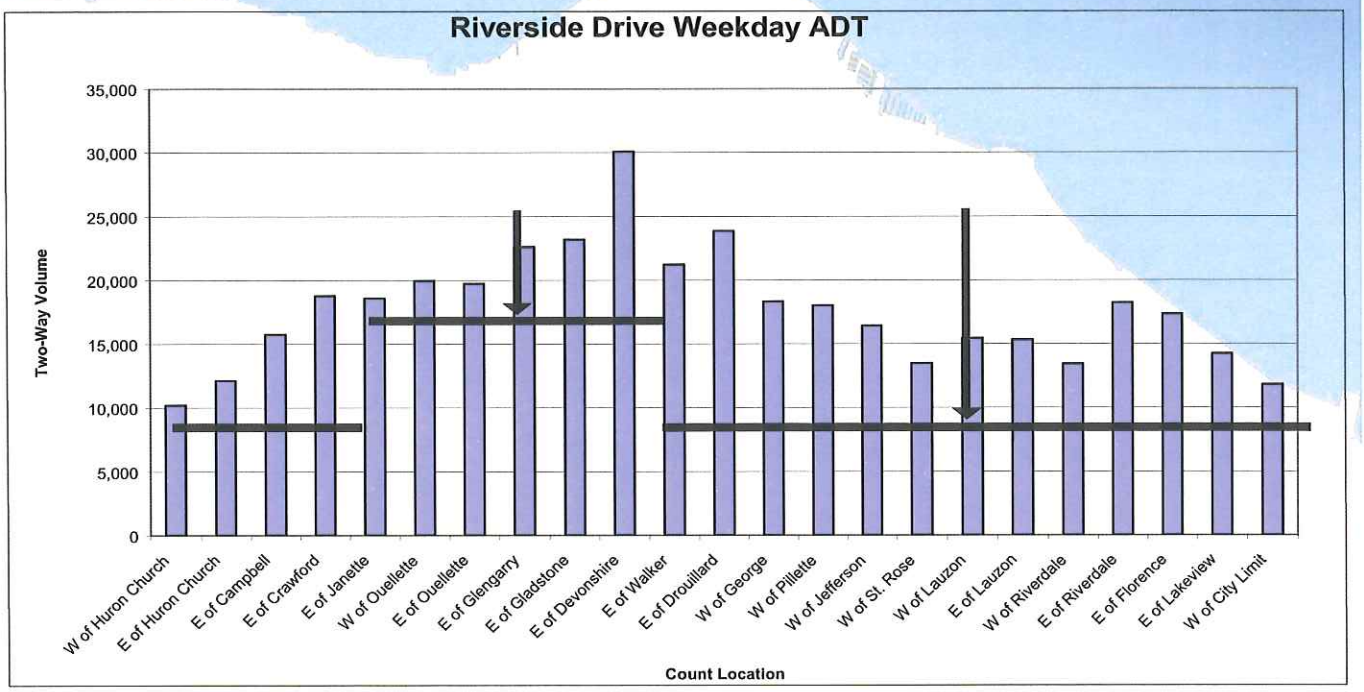
Street	Number of Locations Counted	Year / Number of Locations Counted	Number of Weekdays Counted per Location
Riverside Drive	24	1993: 1 2001: 2 2002: 9 2003: 1 2004: 11	Minimum: 3 Maximum: 9 Median: 5
University Avenue	11	2001: 1 2002: 5 2003: 4 2004: 1	Minimum: 3 Maximum: 8 Median: 5
Wyandotte Street	26	1993: 1 1997: 4 2000: 2 2001: 5 2002: 8 2003: 3 2004: 3	Minimum: 2 Maximum: 8 Media: 4
Intersecting Riverside Drive	23	2001: 5 2002: 2 2003: 6 2004: 10	Minimum: 3 Maximum: 7 Median: 5

Riverside Drive ADT data was used to next produce Exhibit 3-8. Riverside Drive has a two-way traffic volume of between 10,000 and 30,000 vehicles throughout the study area, with the lowest volume recorded west of Huron Church Road, and the highest recorded east of Devonshire Road. Throughout the downtown core, Riverside Drive carries a two-way volume of between 18,000 and 21,000 vehicles.

NOTE: The planning capacity established by the City for Riverside Drive as a Scenic Drive is 400 vehicles/lane/hour, which equates to 4,000 vehicles/lane/day, or a two-way daily volume of 8,000 vehicles on two-lane sections and 16,000 vehicles on the four-lane sections of Riverside Drive. This is the maximum daily volume of traffic that Riverside Drive is intended to carry as a Scenic Drive. Additional traffic volume places the roadway over its planning capacity, measured as Level-of-Service F and considered by the transportation planning industry to be congested and an unacceptable condition.

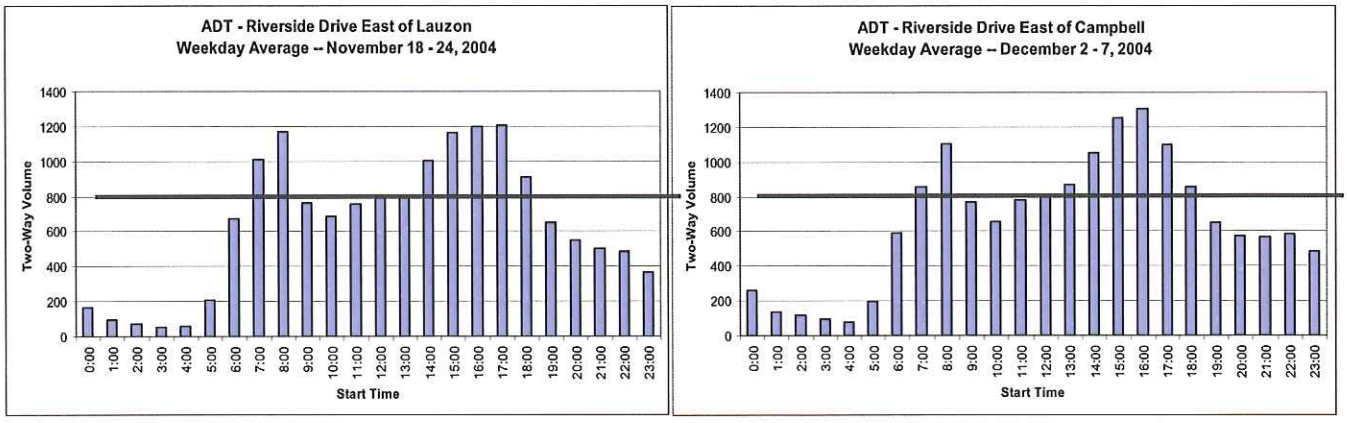
Therefore, as shown on Exhibit 3-8 below, average daily traffic (ADT) volumes on Riverside Drive currently exceed both the four-lane planning capacity of 16,000 ADT, and the two lane capacity of 8,000 ADT along its entire length. The main conclusion from this data is that all of Riverside Drive is carrying too much daily traffic for a designated Scenic Drive. As a result, traffic management and traffic calming measures are justified on Riverside Drive to divert some of this traffic volume to parallel arterial streets.

EXHIBIT 3-8: RIVERSIDE DRIVE AVERAGE DAILY TRAFIC



Changes in average daily traffic flow over a 24-hour period also provide some indication of the types of users on the road. For example, distinct peaks around 8:00 a.m. and 5:00 p.m. can indicate use of a road as a commuter route. The daily flow profile on Riverside Drive is shown on Exhibit 3-9 for the west section at Campbell Avenue and for the east section at Lauzon Road.

EXHIBIT 3-9: RIVERSIDE DRIVE AVERAGE DAILY TRAFFIC (ADT) FLOW PROFILES

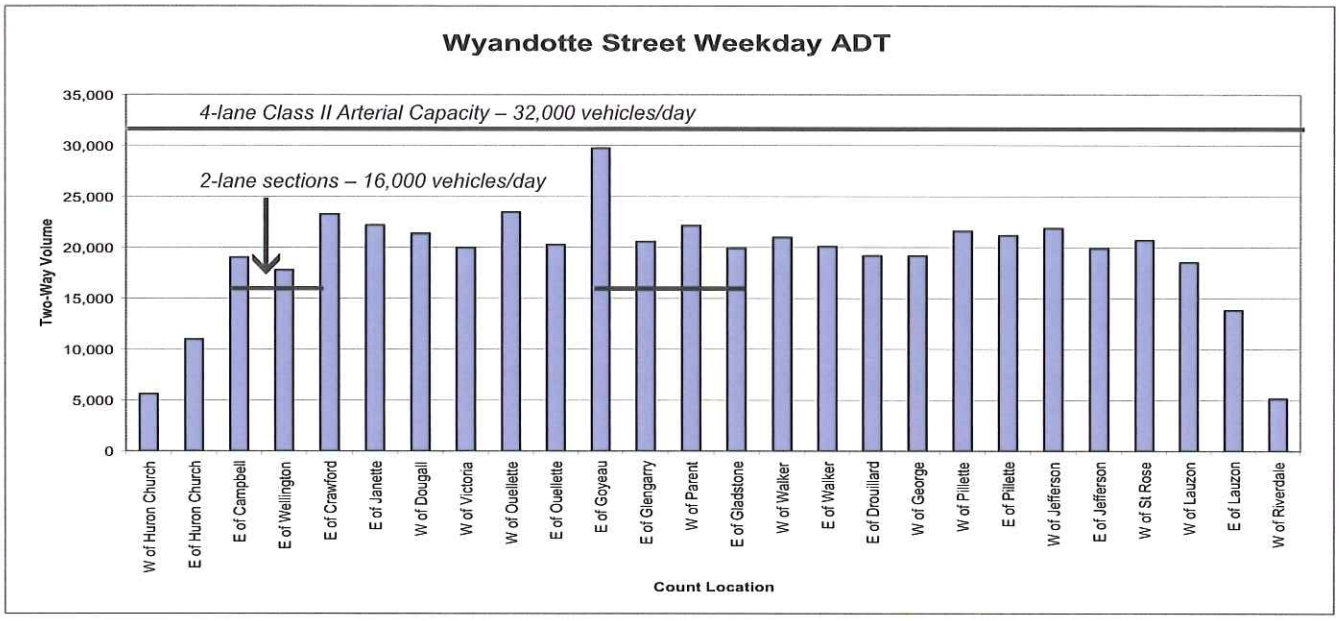


2 lane capacity 800 v/hr

As shown in Exhibit 3-9, the daily flow profile on Riverside Drive is very similar in both study sections, showing distinct traffic peaks in the morning between 8:00 and 9:00 a.m., and a more spread out peak between 3:00 p.m. and 6:00 p.m. This indicates the Drive is being used as a commuter route, but the daily flow profile also shows a steady traffic volume during off-peak traffic periods, exceeding 800 vehicles per hour (two-way flow) between 6:00 a.m. and 11:00 p.m.

It is useful to compare traffic volumes on Riverside Drive and Wyandotte Street, as Wyandotte Street parallels Riverside Drive through Windsor from Riverdale Avenue through to the western boundary of the study area. Average daily traffic volumes on Wyandotte Street remain relatively consistent throughout much of the extended study area, as shown in Exhibit 3.10, with two-way volumes ranging between 18,000 and 23,500 vehicles from Campbell Avenue to Riverdale Avenue (with the exception of the section east of Goyeau Street where the two-way volume is approximately 30,000 vehicles). Note that according to the WALTS study, the planning capacity of Wyandotte Street as a Class II Arterial is 800 v/l/hr, or 32,000 total daily two-way vehicles in the four lane sections of the road, and most of these sections currently operate well below capacity.

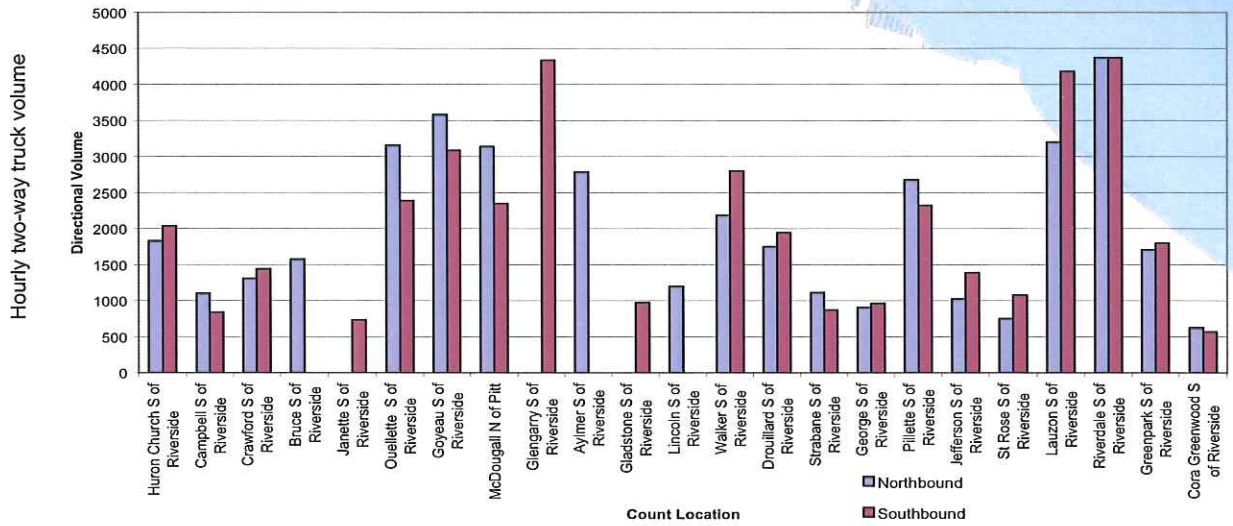
EXHIBIT 3-10: WYANDOTTE STREET AVERAGE DAILY TRAFFIC



Daily traffic volumes were also collected at 23 locations intersecting Riverside Drive. As shown in Exhibit 3-11, the highest north-south street volumes can be found on Riverdale Avenue, Lauzon Road and Glengarry Avenue. Each of these roads has directional volumes of at least 4,000 vehicles per day. While Lauzon Road is a major roadway in Windsor, particularly south of Wyandotte Street, the high volumes on Lauzon Road and Riverdale Avenue indicate motorists may be using these routes to travel between Riverside Drive and Wyandotte Street.

For westbound traffic travelling towards downtown Windsor, Riverdale Avenue currently represents the first opportunity to switch from Riverside Drive to Wyandotte Street, with Lauzon Road providing the second opportunity. Likewise, for eastbound traffic leaving the city, these roads are the last opportunities to leave Wyandotte Street for Riverside Drive.

EXHIBIT 3-11: AVERAGE DAILY TRAFFIC INTERSECTING RIVERSIDE DRIVE

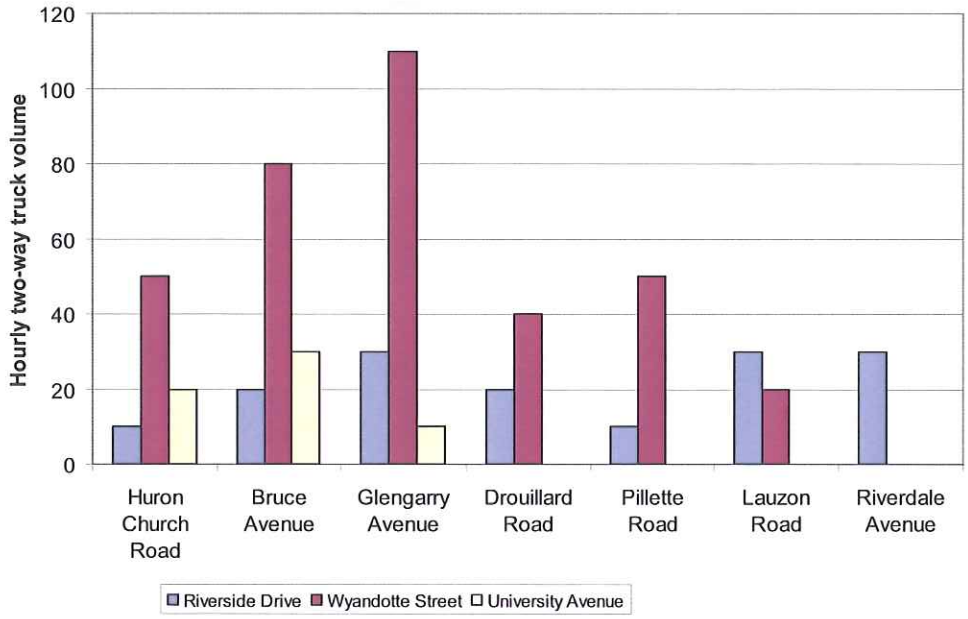


Truck Volumes

To gauge the amount of truck traffic currently travelling on Riverside Drive, vehicle counts at seven locations on Riverside Drive were analysed and compared with intersections to the south of Riverside Drive at Wyandotte Street and/or University Avenue. The truck traffic volumes were established from recent turning movement counts at the intersections, with the eastbound and westbound truck volumes summed east of the subject intersection. An average hourly two-way truck volume at each location was prepared for comparison purposes from the turning movement counts, including nine hours of data counted from 7-10 a.m., 11 a.m.-2 p.m. and 3-6 p.m. Overall, the truck traffic on Riverside Drive represents approximately 1% to 2% of the total traffic volume. Exhibit 3-12 summarizes the average hourly truck volumes at each location.

At Lauzon Road, truck volumes travelling on Riverside Drive in comparison to Wyandotte Street are similar at approximately 20–30 trucks on average per hour or approximately 2% of the total traffic volumes during the measured nine-hour time period. At Drouillard Road, the average hourly truck volumes on Riverside Drive are approximately 20 trucks per hour while truck traffic on Wyandotte Street increases to approximately 40 trucks per hour.

EXHIBIT 3-12: AVERAGE HOURLY TRUCK VOLUME



It is important to note that truck traffic on Wyandotte Street west of Drouillard Road increases significantly in comparison to the truck volumes on Riverside Drive with an average of approximately 110 trucks per hour travelling on Wyandotte Street and approximately 30 trucks per hour using Riverside Drive. To put the truck volumes in context, the two-way truck volume of 110 trucks per hour on Wyandotte Street at Glengarry Avenue represents just over 1% of the total traffic on Wyandotte Street. University Avenue experiences similar truck traffic to Riverside Drive through the west end of the city at between 10 and 30 trucks per hour.

In general, the truck volumes on Riverside Drive, Wyandotte Street and University Avenue reflect the location of the designated truck routes as described in Section 3.2.4, as well as the location of industrial land uses in the Walker Road area and the location of the Detroit-Windsor Tunnel and the Ambassador Bridge. From Exhibit 3.10, there appears to be a similar volume of trucks using Riverside Drive on and off the designated truck route. However, some of these trucks on Riverside Drive may be originating at or destined to the Sandpoint marine-based aggregate facility or the Lakeview Marina east of Riverdale Avenue.

3.4.2 TRAVEL TIME COMPARISONS

In order to gain an understanding of driving patterns and to gather information needed in the development of the traffic model for the study area, a travel time survey was conducted during the PM peak period on Tuesday, March 8, 2005 and the AM peak period on Wednesday, March 9, 2005.

Travel times were recorded on Riverside Drive and Wyandotte Street. Elapsed travel times were recorded at predetermined locations, generally at every signalized intersection. For the travel time runs, the "floating car" method was used. The floating car method is a way of approximating the average speed of a traffic stream where the number of cars passed by the test car should equal the number of cars that pass the test car.

The Riverside Drive corridor was driven three times during both the AM and PM peak period: two travel time runs were recorded in the peak direction (eastbound during the PM peak and westbound during the AM peak), and one travel time run was recorded in the off-peak direction. The second westbound run during the AM peak period started at Jefferson Boulevard, rather than the Tecumseh Town line. For comparison with the Riverside Drive data, travel time analysis on Wyandotte Street was carried out for one run in the off-peak direction during both the AM and PM peak periods.

Exhibit 3-13 shows that travel time differences on Riverside Drive, whether by direction or peak period, are relatively minor. Total time to cross the study area ranged from 20 minutes and 15 seconds (eastbound, PM peak period) to 23 minutes and 51 seconds (westbound, PM peak period). Total delay—time spent stopped due to red signals, queued traffic, parking manoeuvres, turning movements, etc—ranged from approximately 50 seconds up to approximately 2 minutes and 40 seconds. The overall average travel speeds on Riverside Drive, including delays, were calculated to range from 40 to 47 km/h. On Wyandotte Street, average speeds of 39 km/h were calculated in each direction.

Note: Average speed in this table is the speed recorded during the travel time studies, and is not intended to duplicate the average speeds of motorists recorded during the spot speed studies as summarized in Exhibit 3.14.

EXHIBIT 3-13: AVERAGE TRAVEL TIMES ON STUDIED CORRIDORS

Street	Riverside Drive						Wyandotte Street	
Direction	WB	EB	WB	WB	EB	EB	EB	WB
Start Time	4:18 PM	4:41 PM	5:05 PM	7:29 AM	7:55 AM	8:39 AM	5:49 PM	8:19 AM
Total Time (mm:ss)	21:20	20:15	23:51	20:17	22:21	13:32	17:22	16:21
Total Delay (mm:ss)	2:03	0:51	2:38	1:18	2:00	1:32	2:26	1:52
Stop Delay (mm:ss)	0:33	0:20	1:19	0:00	0:55	0:37	0:00	0:00
Queue Delay (mm:ss)	1:30	0:20	1:19	1:11	1:05	0:55	2:26	1:52
Distance (km)	161	161	161	161	161	102	11.43	10.64
Average Speed (km/h)	45	47	40	47	43	44	39	39

Notes:

1 Mill Street to Tecumseh Town Line (EB), Tecumseh Town Line to Mill Street (EB)

2 Mill Street to Jefferson Blvd

3 Mill Street to Lauzon Road

4 Lauzon Road to Sunset Avenue

3.4.3 TRAFFIC SPEEDS

City staff conducted spot speed studies at four locations on Riverside Drive in March 2005, each surveyed for one hour, resulting in the recording of 300 to 500 vehicles at each location. Vehicles were recorded travelling in both directions on Riverside Drive, and their direction was not considered in the analysis. It can be seen in Exhibit 3-14 that the 85th percentile speed calculated from the survey results ranges from 8 to 15 km/h over the posted speed limit of 50 km/h, and that at each location, at least 71% of the traffic was traveling faster than the posted speed limit of 50 km/h.

The speed data is summarized in Exhibit 3-15, with a cumulative frequency versus speed chart produced for each of the four locations. The cumulative frequency charts highlight the proportion of vehicles that were recorded travelling above the speed limit.

EXHIBIT 3-14: RIVERSIDE DRIVE SPOT SPEED STUDIES

Location:	West of Bridge Street	West of Belleview Avenue	West of Jefferson Blvd	West of Florence Avenue
Speed Limit:	50 km/h	50 km/h	50 km/h	50 km/h
Date / Time:	March 8, 2005 1:10 – 2:10 PM	March 9, 2005 12:50 – 1:50 PM	March 10, 2005 2:00 – 3:00 PM	March 14, 2005 1:00 – 2:00 PM
85th Percentile Speed:	65 km/h	63 km/h	59 km/h	58 km/h
Average Speed:	59 km/h	57 km/h	54 km/h	54 km/h
Minimum Speed:	42 km/h	38 km/h	38 km/h	42 km/h
Maximum Speed:	80 km/h	80 km/h	68 km/h	66 km/h
Percent >= 51 km/h:	93%	86%	78%	71%
Percent >= 61 km/h:	32%	22%	7%	5%

EXHIBIT 3-15: RIVERSIDE DRIVE SPOT SPEED STUDIES – CUMULATIVE FREQUENCY CHARTS

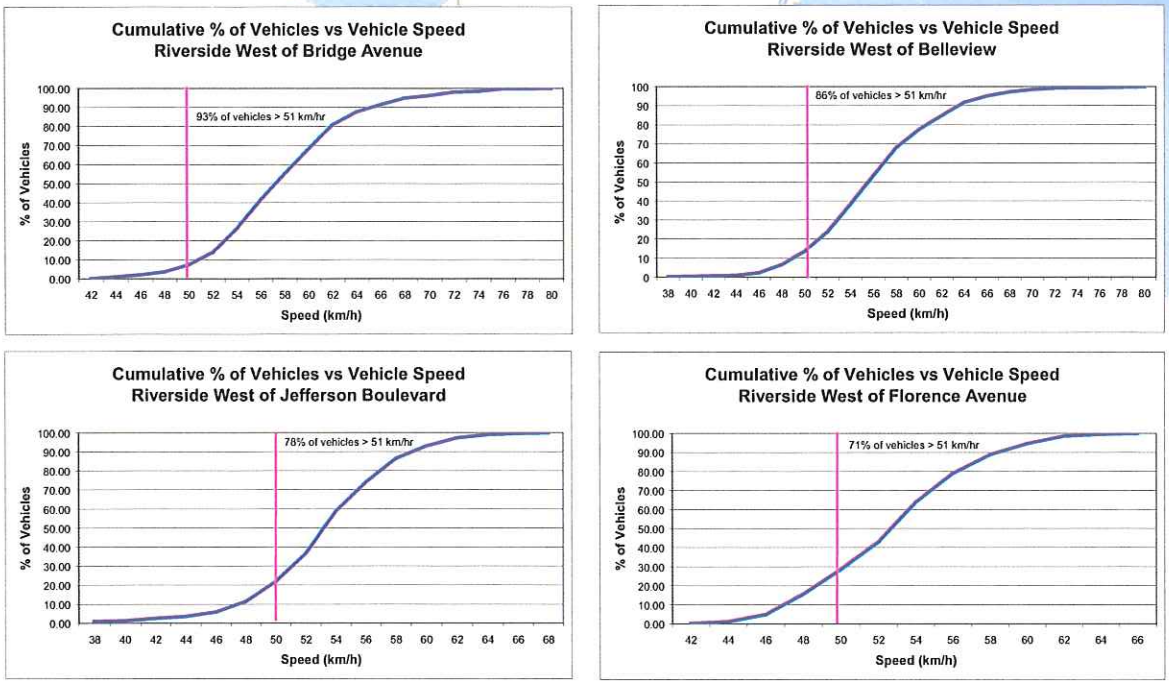


Exhibit 3-15 indicates that a significant percentage of vehicles traveling Riverside Drive exceed the posted speed limit of 50 km/h, and shows 85th percentile speeds of approximately 60 km/h. The 85th percentile speed is a statistic commonly used to measure the operating speed of a road, and is the speed that 85 percent of recorded vehicles travel at or below. In other words, the 85th percentile speed of approximately 60 km/h is exceeded by 15 percent of recorded vehicles on the surveyed sections of Riverside Drive.

Tolerable 85th percentile speeds typically depend on the road type, adjacent land uses and how many cars are "grossly" exceeding the speed limit. In Windsor, it is the practice to review remedial measures on streets posted at 50 km/h where the 85th percentile speeds exceed 60 km/hr. Since the data collected at each of the four locations indicates 85th percentile speeds of approximately 60 km/h through residential areas, this statistically confirms that there is excessive speeding at these locations. At Bridge Avenue in particular, 93% of recorded vehicles were travelling in excess of 50 km/h, and approximately 5% of vehicles were observed to exceed the speed limit by more than 20 km/h.

These speeds represent a deterrent to pedestrians and cyclists, and may have an impact on the quality of life in general of residents living or carrying out activities adjacent to the street. The impacts of speeding on pedestrians are compounded by the fact that, where provided, sidewalks are directly adjacent to the pavement, which means there is little separation or buffer between pedestrians and vehicles.

3.4.4 GENERAL TRAFFIC ORIGIN PATTERNS

A license plate survey was conducted on Riverside Drive on March 9, 2005. The license plate of vehicles registered in Ontario was recorded in order to determine the general origin of vehicle trips on Riverside Drive. It was assumed for the purposes of this analysis that the registered home location of the vehicle was the origin or destination of the recorded vehicle trip. Five locations were surveyed, as detailed in Exhibit 3-16:

EXHIBIT 3-16: LICENSE PLATE SURVEY

Location on Riverside Drive	Start Time	Direction
Florence Avenue	7:10 AM	Westbound
Jefferson Boulevard	7:50 AM	Westbound
Jefferson Boulevard	11:00 AM	Westbound
Walker Road	8:35 AM	Westbound
Bridge Avenue	9:12 AM	Eastbound

The recorded license plates were submitted to the Ministry of Transportation of Ontario (MTO), which in turn provided the Forward Sortation Area (FSA) of the address where each vehicle is registered. The FSA is the first three characters of the postal code, and each FSA represents a geographical area of the province.

MTO provided the FSA for 118 of the 124 surveyed vehicles, of which 87 are registered in Windsor and its immediate suburbs, with an additional 12 vehicles registered in other Essex County municipalities such as the towns of Essex, Amherstburg and Kingsville. The remaining 19 vehicles are registered elsewhere in the province. Windsor and the surrounding area were broken into 6 "districts" along FSA lines as shown in Exhibit 3.17 and 3.18. A seventh and eighth district were created to classify those vehicles that are registered outside of Windsor and its immediate suburbs in Essex County and beyond.

EXHIBIT 3-17: ORIGIN OF VEHICLES ON RIVERSIDE DRIVE

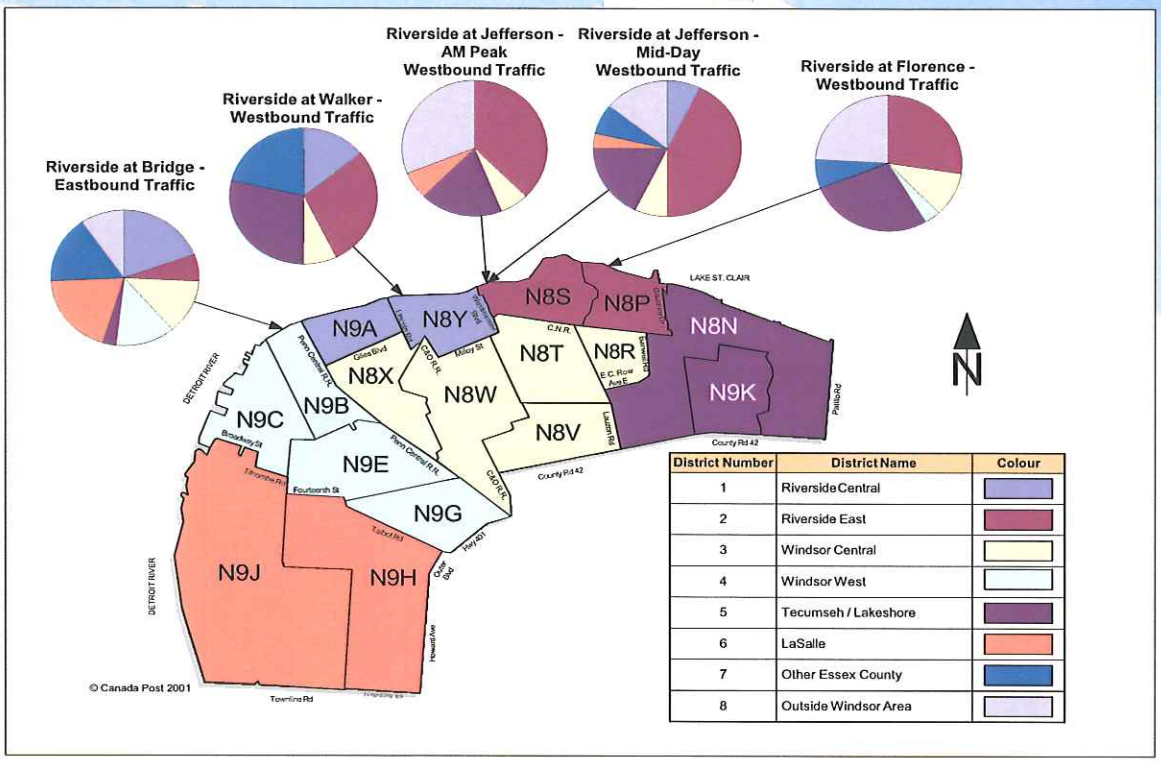


EXHIBIT 3 -18: PERCENTAGE ORIGINS OF VEHICLES ON RIVERSIDE DRIVE

	Riverside at Bridge - Eastbound Traffic	Riverside at Walker - Westbound Traffic	Riverside at Jefferson - AM Peak Westbound Traffic	Riverside at Jefferson - Mid-Day Westbound Traffic	Riverside at Florence - Westbound Traffic
1. Riverside Central	19%	14%	0%	7%	0%
2. Riverside East	6%	29%	38%	43%	28%
3. Windsor Central	13%	7%	6%	7%	10%
4. Windsor West	13%	0%	0%	0%	3%
5. Tecumseh / Lakeshore	3%	29%	19%	18%	28%
6. LaSalle	19%	0%	6%	4%	0%
7. Other Essex County	16%	21%	0%	7%	7%
8. Outside Windsor Area	10%	0%	31%	14%	24%
Total	100%	100%	100%	100%	100%