RAPID TRANSIT- AND COMMUTER RAIL-INDUCED RETAIL DEVELOPMENT

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Overview

Increasing automobile congestion is reviving interest in heavy-rail rapid transit and rail as alternative transport modes for commuter traffic in large metropolitan areas in North America. Although these modes cater to passenger flows that are peaked, under certain circumstances attractive opportunities for certain kinds of retail activities can be generated. They are particularly appropriate in those metropolises that have retained a large labor force in downtown locations—such as the Greater Toronto Area (4.8 million people), the study area for this research. Retail facilities (280 stores) most associated with *rapid transit* are convenience stores, coffee shops, and lottery ticket sales outlets. Generally, a minimum daily traffic flow of 6,600 persons is required to support one store, and stations that are major exit points for office complexes have three times as many stores as those that are not. Retail facilities (130 outlets) most associated with *commuter rail* are coffee kiosks, quick food, dry cleaners, and auto repair. The minimum daily traffic required for one retail facility at a commuter station is 1,100. By far the greatest generation of commuter associated retailing (1,055 stores, 4.3 million square feet of space), however, is at the *confluence* of the rapid transit and commuter rail networks in an interconnected underground mall system that links five rapid transit stations with the commuter rail terminus at Union Station. Thus, to be

advantageous for retailing, these types of public transport facilities must be focused at high-density employment locations that are interconnected in a manner that maximizes pedestrian flow.

■ Introduction

Although heavy-rail rapid transit and commuter rail cater to passenger flows that are highly peaked, nevertheless the focused and channelled nature of this traffic, and the infrastructure (such as stations and parking areas) associated with it, provide attractive opportunities for certain kinds of retail activities and commercial development (Jones and Simmons, 1993, p.231; Simmons et al., 1996, p. 43). These opportunities may be related *directly* to the traffic flow, or occur *indirectly* as a result of improvements and property development associated with facility upgrading and expansions (Gatzlaff and Smith, 1993). Direct impacts are defined as those retail activities serving the consumer needs of passengers using the transport facility. Indirect impacts include those that benefit from a market induced by infrastructure improvements and developments associated with rapid transit and commuter rail networks, but are located farther away from the entry/exit point to the facility.

Rapid transit facilities connecting inner suburban areas, and commuter rail facilities connecting suburban and exurban communities to employment in downtown areas, have been part of the transport fabric of North American urban areas for over 100 years. Since 1950, widespread use of automobiles for the journey-to-work, suburban sprawl, and the deconcentration of manufacturing and many kinds of service employment opportunities have resulted in a significant decline in the use of these commuter facilities relative to automobiles for work trips. Deconcentration, dispersion and low population densities are antithetical to rapid transit and commuter rail, because of the need for high traffic volumes on a limited number of lines to achieve necessary economies of scale. As a consequence, significant volumes of rapid transit and commuter rail traffic currently occur in only a few large metropolises, such as New York, Boston, Toronto, Chicago, Montreal, Washington DC, and San Francisco (Yeates, 1997, pp. 462–463).[1]

Nevertheless, there are signs of a revival in importance of rapid transit and commuter rail in a number of metropolitan areas. This revival is related to:

(i) The increased importance of producer and government and public services since 1970 as a major source of employment in the

United States and Canada.[2] A large share of this employment tends to concentrate in the downtown areas of large urban centers, thus providing the type of large focused employment that favors mass transit (Smerk, 1991). This is particularly so with the business service component of producer services, employment in which has grown fastest in the largest metropolises.

(ii) The emergence of automobile gridlock on major circumferential and radial highways in suburban areas, particularly in the vicinity of "edge city" employment nucleations, has generated speculation[3] about alternate transport modes in a number of metropolitan areas and regions (Downs, 1992).

(iii) Realization by transport planners and the public that one of the paths to sustainable urban development in North America is through greater use of rapid transit and commuter rail—which can be provided from rights-of-way and terminals that are frequently already in place (Hodge, 1992).

(iv) A desire by many households, in the face of constrained incomes, to reduce or contain the proportion of their household expenses devoted to transport (which average about 17% of annual household expenditures in the United States, and 20% in completely auto-oriented metropolises such as Dallas/Fort Worth). Associated with this is an expectation of continuing increases the total "price" of household automobile use.

In response to these pressures, a number of large metropolises, such as Washington DC and San Francisco, are expanding their rapid transit and commuter rail facilities (BART, 1993; WMATA, 1994).[4]

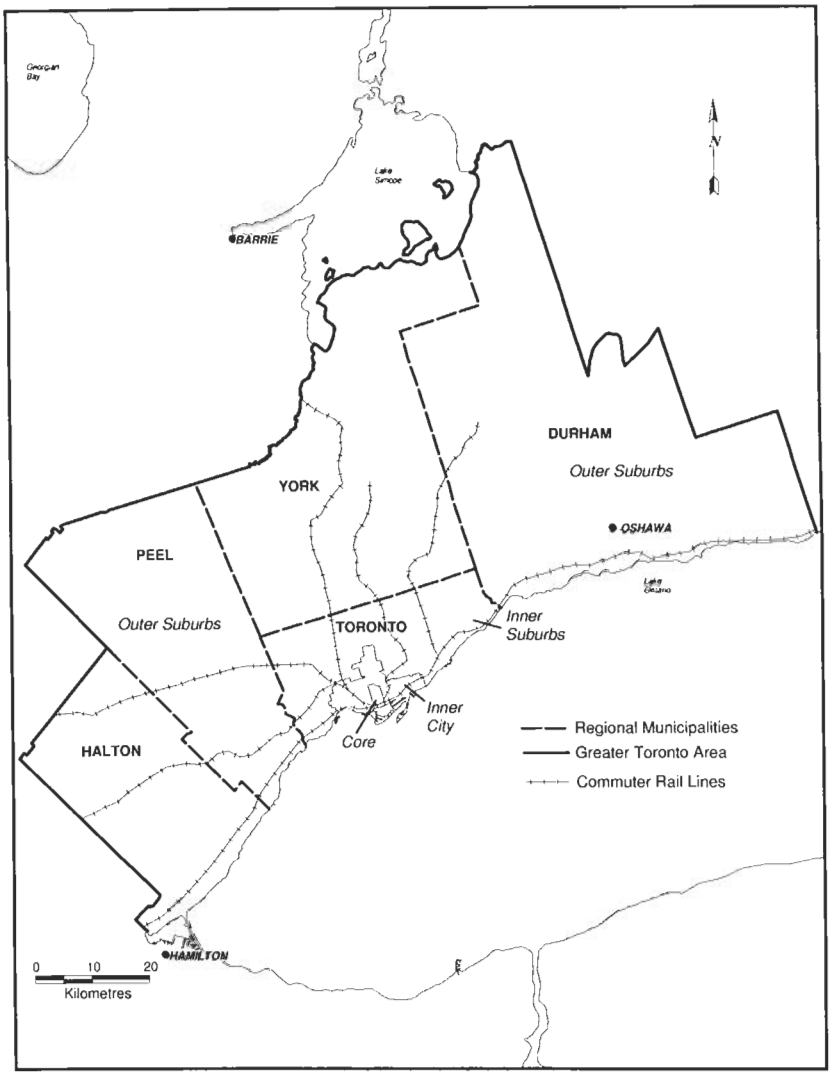
■ Study Area and Methodology

The Greater Toronto Area provides an excellent environment for an analysis of the direct and indirect impacts of the expansion of rapid transit and commuter rail facilities on retailing (Cervero, 1986). The GTA is an extensive urban region consisting of the municipality of Toronto[5] and four surrounding regional municipalities—Durham, Halton, Peel, and York (Figure 1)—with a total population of 4.8 million, employment of 2.3 million, and an annual per capita income of $24,400. The GTA was defined by the Golden Commission in 1996 on the basis of its web of commuting patterns, sense of cohesiveness, and anticipated development (GTA, 1996).

Urban Structure

The region consists generally of four spatial zones defined on the basis of age of development (Simmons and Yeates, 1998; and Figure 1):

FIGURE I METROPOLITAN REGIONS AND URBAN ZONES WITHIN THE GREATER TORONTO AREA AND THE REACH OF COMMUTER RAIL



(i) The **downtown core**, which was settled in the early nineteenth century and has since incurred continuous redevelopment. This small area has a population of 50,000 with the highest per capita income in the region, employment of 300,000,[6] over 10,000 hotel rooms and facilities for three major league (hockey, baseball, and basketball) sports teams.

(ii) The **inner city** includes the area of the former City of Toronto (excluding the core), and was constructed chiefly between 1860 and

1950, exhibiting many elements of the 1890–1930 streetcar suburb era. Most commercial buildings date from the 1920s. Although the population in 1996 (630,000) is somewhat less than it was in 1971 due to decreasing household size, the per capita income level is slightly higher than that for the region as whole.

(iii) The **inner suburbs,** occupying primarily the land between the former City of Toronto and the new Toronto boundary (Figure 1), were largely developed during the suburban expansion of the 1950s and 1960s, and in 1996 contained a population of about 1.75 million people with a per capita income 5% less than that for the region as a whole. Though these are automobile-oriented suburbs, development generally pre-dates the great growth period of large shopping centres and the era of suburbanised office complexes.

(iv) The **outer suburbs,** involving the regional municipalities of Halton, Peel, York, and Durham, and the many cities and towns that lie within them, are largely the result of post-1970 suburban growth, though there are pockets of older settlements (such as Oakville, Oshawa, and Newmarket). This sub-region, which houses 2.36 million people, is growing rapidly, and in general has a per capita income slightly above the average for the region as a whole. Developments within the outer suburbs include housing, large shopping centers, office clusters and strips, new retail formats and power centers.

Though there are many employment clusters within this extensive polynucleated region, not least of which is the automobile-related manufacturing cluster in Oshawa and Whitby within the regional municipality of Durham, the Toronto downtown remains a focus for many kinds of financial and business related activities, and also retains 7% of the region's employment in retailing. In 1996 there were 120,000 jobs in financial and business service activities *alone* in the downtown (about 30% of the GTA total), and most of these were concentrated in offices located on 10 contiguous city blocks[7] just north of Union Station (Simmons et al., 1998). It is this concentration in the downtown of economic activity in primarily producer services, and secondarily retailing (and entertainment), that underpins the rapid transit and commuter rail system.

A Toronto-wide rapid transit system, constructed since 1955, and an extensive commuter rail system called GO Transit, focus on the downtown area (Figures 1 and 2). The heavy rail system is run by the Toronto Transit Commission, which operates an integrated public transit system involving buses, streetcars, and rapid transit. In recent years this whole system has required a 30% annual subsidy from the Provincial Government.[8] The GO Transit system, radiating from Union Station, is operated

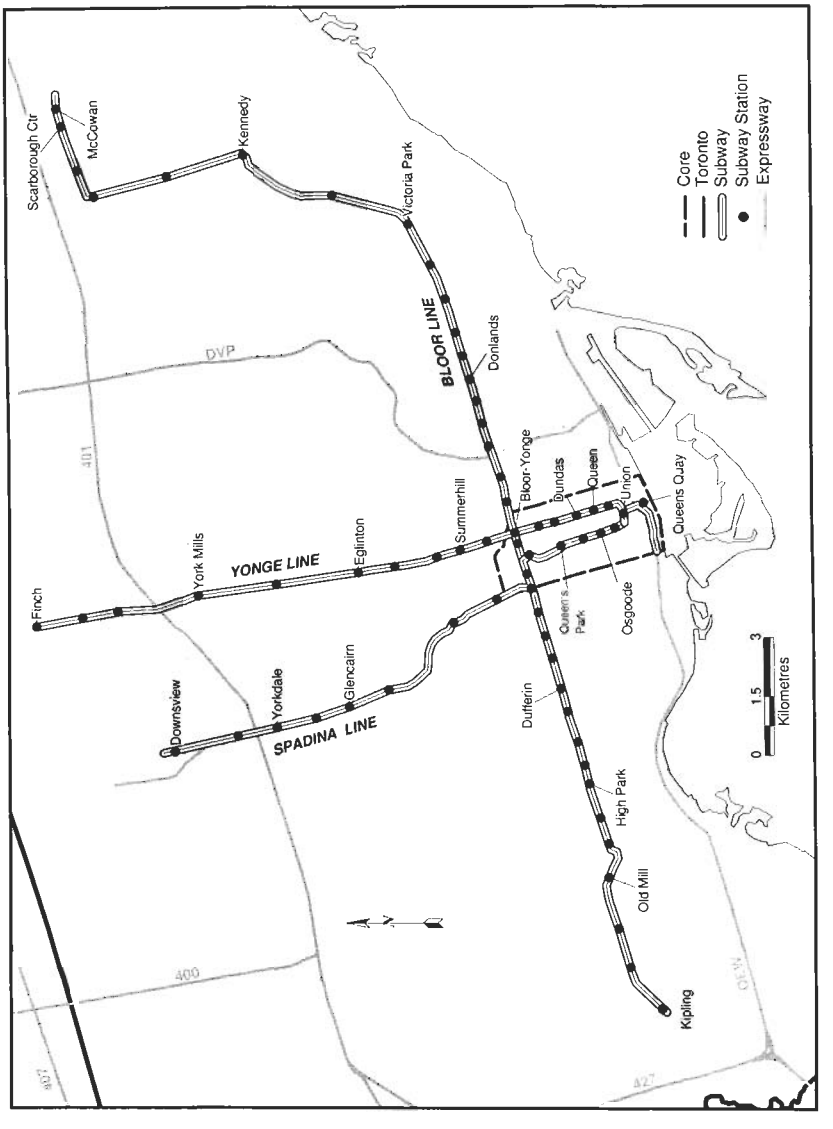


FIGURE 2 THE REACH OF RAPID TRANSIT WITHIN TORONTO

by a provincial Crown Corporation, and in recent years has required a 35% annual subsidy from the Provincial Government.[9] The volume of commuter traffic carried by these two systems is quite large (Table 1). In 1995, about 62% of all person trips *entering* the downtown during the morning commuter peak did so by GO Transit or on TTC operated facilities, particularly rapid transit (METROT, 1996).

TABLE 1. TTC AND GO TRANSIT: AVERAGE DAILY PASSENGER TRAFFIC, CORDON COUNTS, 1995

	Morning Peak Inbound		Daytime Two-Way	
Cordon Line	TTC	GO	TTC	GO
Inner Suburban	18600	31900	103400	64400
Inner City	83900	37200	380200	74800
Central Area	145800	36800	596600	77300

Notes: Inner suburban cordon lies between inner and outer suburbs.
Inner city cordon located farther out from inner city/suburbs boundary.
Central area cordon located close to downtown core boundary.
Source: METROT, 1996.

Structure of the Study

This study therefore focuses on direct and indirect impacts of the rapid transit and GO-train facilities on retailing within the GTA. The study focuses on three aspects of the retail impact: (i) rapid transit-induced retail activity; (ii) GO Transit-induced retail activity; and (iii) the special effect of the confluence of the two systems when they come together to serve the financial district adjacent to Union Station.

The analysis of direct and indirect retail activity at rapid transit stations is based on an inventory of all retail activities immediately adjacent to station entrances and exits, and that in associated property developments, which was undertaken during the summer of 1997. This inventory has been collected utilizing standard Centre for the Study of Commercial Activity (CSCA) survey techniques, and provides information on exact location, occupancy, store type and store size. The information is compiled in GIS format as part of the extensive existing GTA data base maintained at CSCA. This inventory is used to provide information on the range of types and functions of retail activities directly or indirectly associated with commuter-oriented rapid transit facilities.

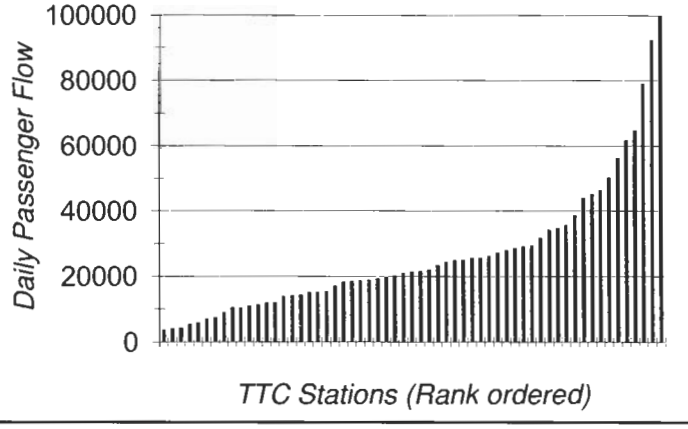
The reach of the GO Transit system extends slightly beyond the boundaries of the GTA—west to Hamilton (population 625,000), and north to Barrie (118,000). None of the retail activities associated with stations on the GO Transit system have been previously inventoried, except those associated with the downtown commuter rail facility at Union Station. In consequence, a survey of all stores directly and indirectly associated with stations on the extensive GO Transit network will be undertaken and the same information collected as that in the rapid transit-induced retail study. This inventory is used to determine the range of store types most commonly associated with commuter rail facilities.

Although the vast volume of the supply pattern of late twentieth century retailing is related to a demand network structured by automobile use, one of the interesting features of the Toronto retail structure is that particular elements of the supply pattern are almost entirely public transport-oriented. Nowhere is this more explicit than in the downtown, which in 1997 had about 10 million square feet of retail space in department stores and malls, underground facilities, retail strips, entertainment complexes, and occasional big boxes.[10] Of this 10 million square feet, about one million square feet is associated with a mall system that has developed in conjunction with a series of underground pathways linking the main high rise office complexes with the rapid transit and commuter rail systems. The underground mall system is, therefore, related in large part to a demand pattern generated at the confluence of the two public transport systems.

■ Rapid Transit-induced Retail Activity

There are 59 stations on the TTC rapid transit system, with daily passenger volumes varying between a low of about 4,000 at such stations as Old Mill, Glencairn and Summerhill, to well over 100,000 at the major intersection of the system at Bloor/Yonge (Figure 3). The median volume is 20,000 passengers per day. Some stations have retail services associated with them—not on the stations themselves, but immediately adjacent to the pay-booths.[11] Given their location adjacent to the entry and exit points from the platforms, retail activities contiguous to a service

FIGURE 3 DAILY PASSENGER FLOW BY STATION



within 40 meters of a pay-booth or within the fare-paid area are classified as "direct." Those farther away are classified as "indirect." The indirect uses can, therefore, include those that are: (i) part of a shopping mall within an office/entertainment development that has been constructed in conjunction with, or above, a station; or (ii) adjacent, usually opposite, a station at street level.[12]

Forty-three of the stations have one or more retail activities located within the direct vicinity of the pay-booth (Figure 4). The vast majority

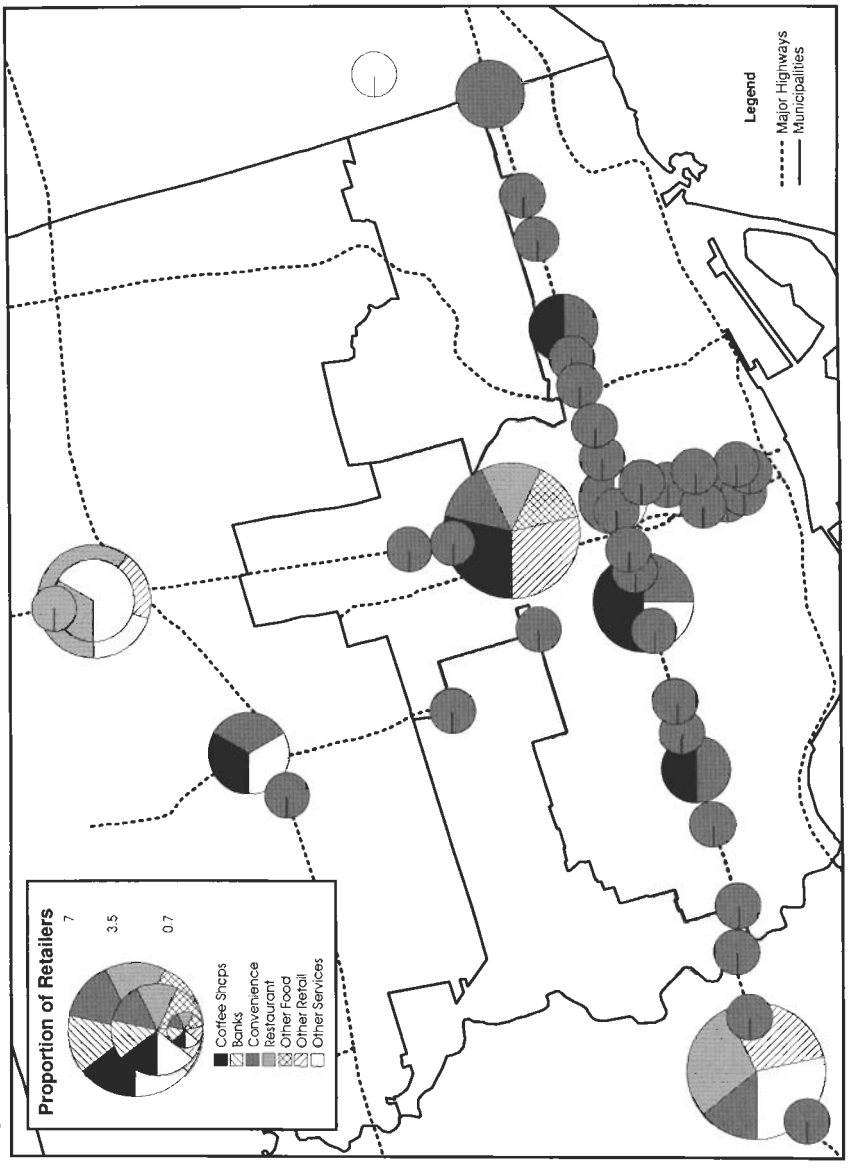
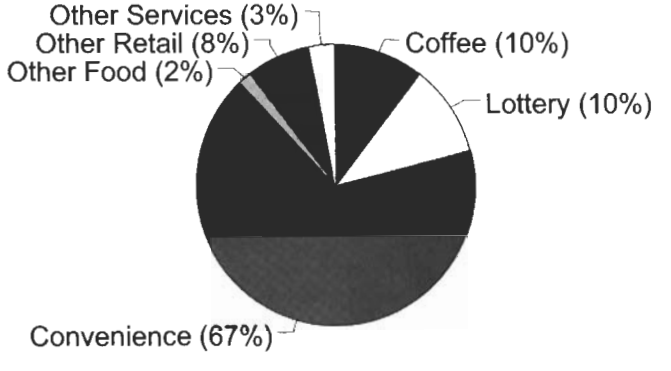


FIGURE 4 DISTRIBUTION OF TTC DIRECT RETAILERS

(67%) of these activities have been classified as "convenience" stores as they sell a wide variety of items of merchandise including newspapers, cigarettes, cold drinks, and packaged food (Figure 5). The second and third largest categories of activity are coffee shops (10%) and booths providing lottery tickets (10%). Thus, the stations that do not have any retail activities are generally those that have low traffic volume or are not high volume exit points. Eating and reading on the subway at peak travel times is often difficult, and the consumption of hot items can be hazardous! So, people generally make purchases at the end of a trip (coffee/croissant, and so forth) if they have a few minutes' extra time before they need to walk into their place of work. Furthermore, these places of work generate retail business throughout the work day.

A similar number (41) of the stations have one or more retail activities located within the general vicinity of the pay-booths, but farther away (Figure 6). These "indirect" activities tend to involve more mixed uses than those closest to the stations (Figure 7). The two largest categories are "other" retail (25%), which includes women's specialty clothing, shoe repair, photographic services, and so forth and coffee shops (25%)—which at this distance from the stations usually include some seating. Bank services (10%, usually ATMs), fast-food restaurants/"other" food (14%), and other services (17%) provide the rest of the mix. Frequently, these facilities are located along a transition corridor that leads into an office complex mall, such as at Eglinton or St. Clair. The Dundas

FIGURE 5 TTC DIRECT RETAILERS



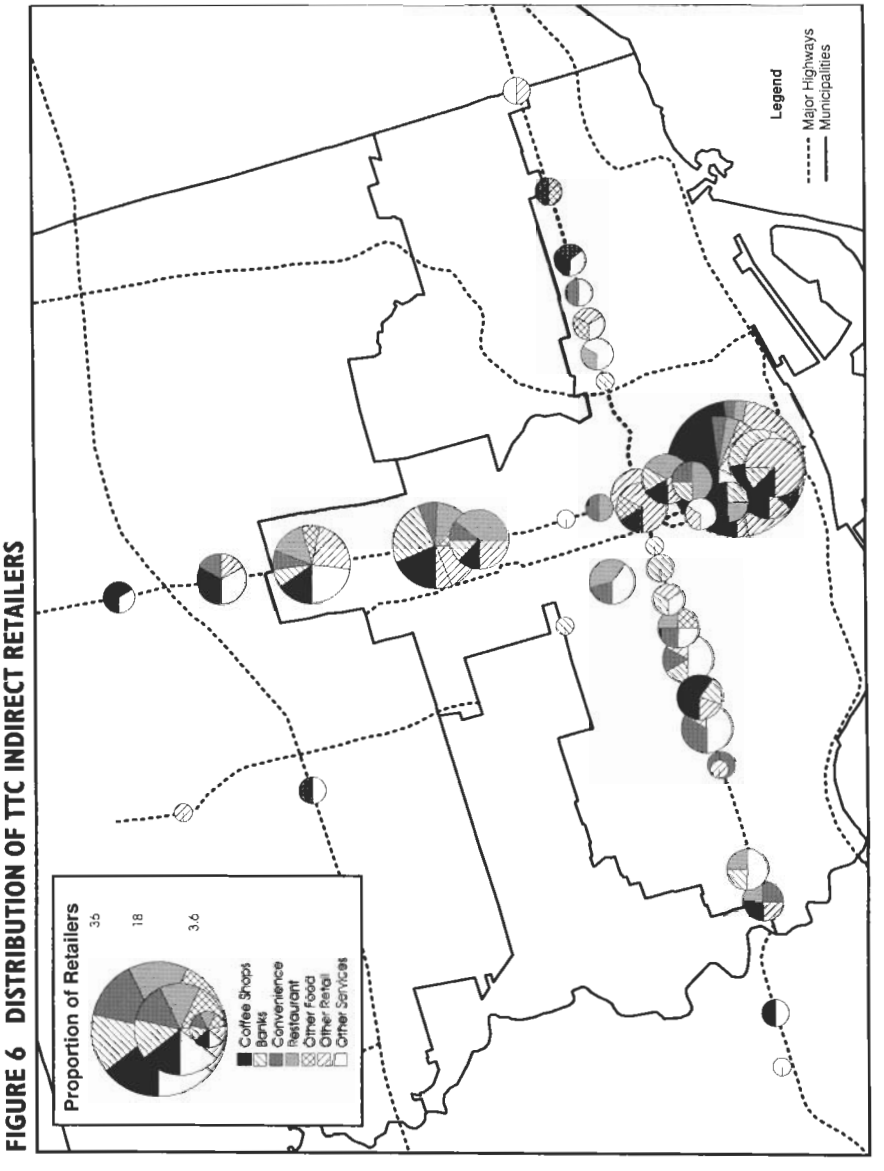


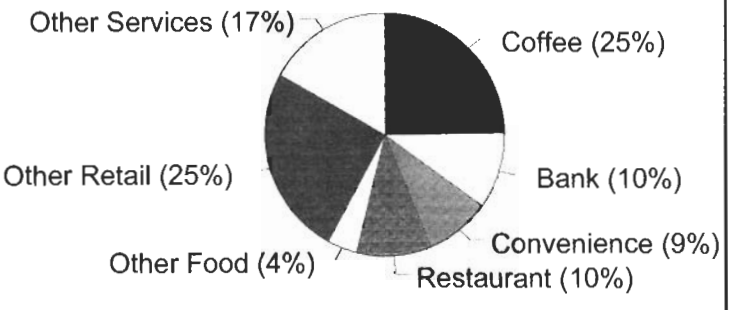
FIGURE 6 DISTRIBUTION OF TTC INDIRECT RETAILERS

and Queen totals include retailing that is transitional to the downtown Eaton Centre/Bay complex (2.5 million square feet of retailing).

TTC Retailing, Traffic Flow and Exit Behavior

Theoretically, it would be expected that the number of retail stores located close to a station (#RS) would be related to the traffic flow (TF).[13]

FIGURE 7 TTC INDIRECT RETAILERS



Figures 8 and 9 suggest that this is so for both direct and indirect groups, but the relationship is clearly weak.[14] If the direct and indirect data are summed, the relationship strengthens.[15] Thus, the ensuing analysis involves the summed store data. The best-fit linear equation,[16] with the dependent intercept set at zero for zero traffic flow, for the summed data is: $\#RS = 0.151(TF)$, where the traffic flow is in thousands. This implies a retail store threshold value—the traffic flow required in general to support one store—of 6,600.

FIGURE 8 DIRECT RETAILING AT TTC SUBWAY STOPS

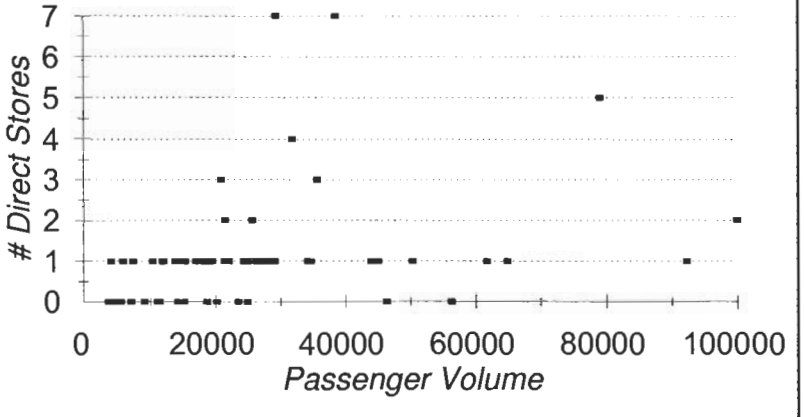
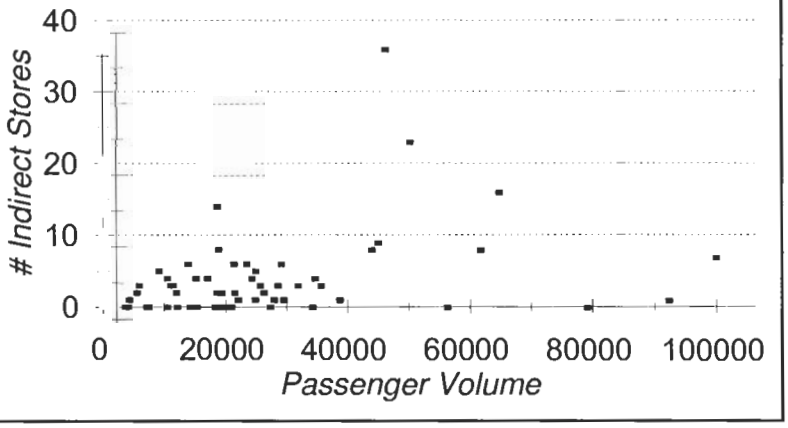


FIGURE 9 INDIRECT RETAILING AT TTC SUBWAY STOPS



The predictive equation should, however, take into account the previous observation that most purchases involve people exiting the system in the morning—for example, purchasing coffee or other food/beverage items while walking from their exit point on the transit system to their place of work. A nominal variable, or dummy variable, has been incorporated within the linear model to reflect this exit behavior (EB)—17 stations have been flagged (with a number 1) as morning exit points serving major office complexes. These are mainly, but not entirely, downtown stations.[17] The conceptual model is, therefore: *#RS* = f (*TF; EB*). The parameters for this equation, again with the dependent intercept held to zero, are:

#RS = .107 (TF) + 3.63 (EB) R^2 = .286 (F = 11.24 with 2,56 df)

The regression coefficients in the multivariate regression model (those related to TF in thousands, and EB) indicate the change in #RS at a station associated with a change in an independent variable with the other held constant. Thus, the parameter 0.107 indicates the change in #RS associated with TF with EB held constant—and is, therefore, different from that estimated in the univariate linear equation.

Thus, though the model "explains" only a small (29%) proportion of the variation in number of retail stores associated with the 59 rapid transit stations, it does cast interesting light on the importance of the EB

variable. The question is—does the EB variable add a "significant" increase in explanatory power to the univariate model which involves TF as the only independent variable? The short answer is that it does.[18] Furthermore, the actual parameter value for EB (3.63) indicates that the major morning exit points in the system have nearly four more stores than those with a similar traffic flow (above the store threshold[19]) that are not major morning exit points. Commuter related retail location in a rapid transit system is thus influenced by both traffic flow and exit behavior related to employment.

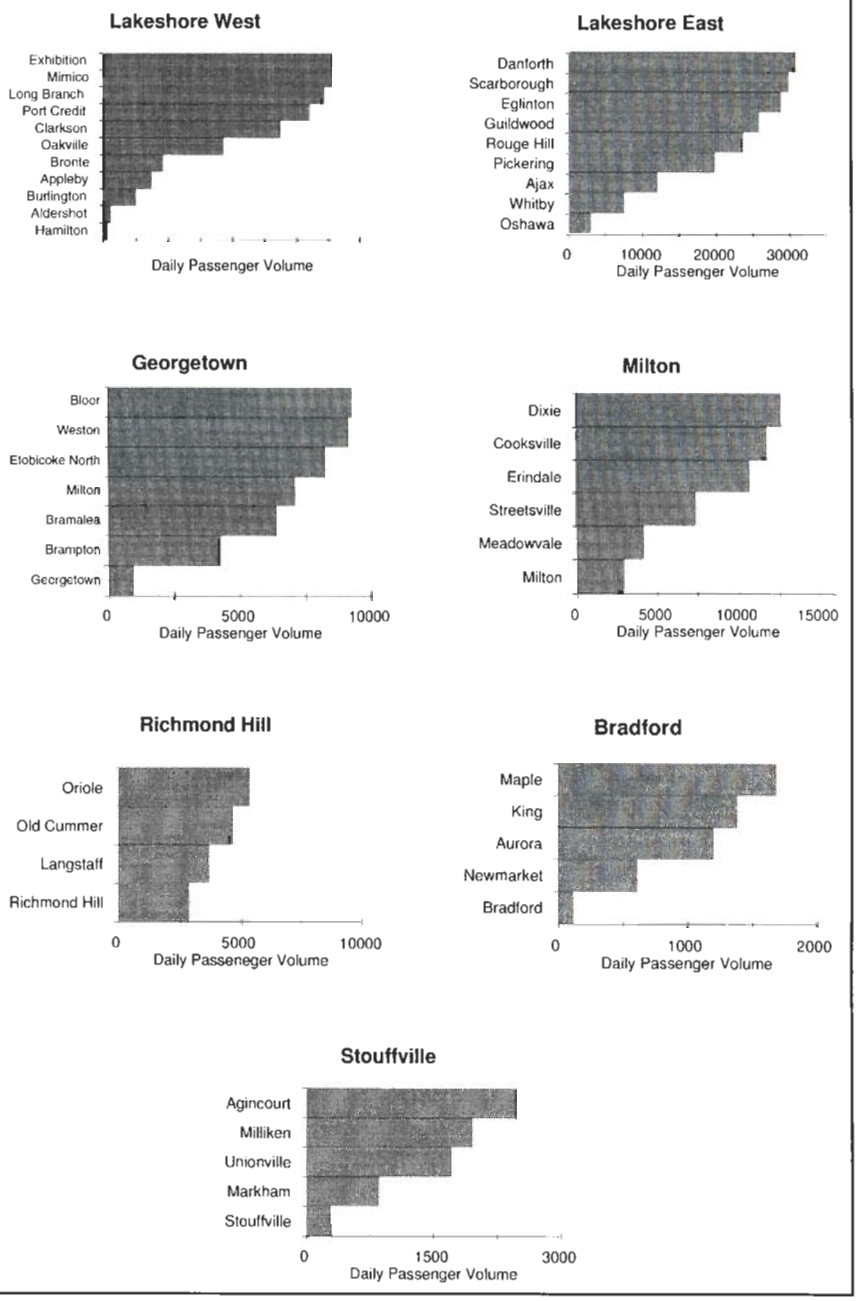
Commuter Railroad-Induced Retail Activity

The radius of the seven commuter GO Transit lines that focus on Union Station is about 90 km (55 mls). The service provides efficient access from an increasingly wide geographic reach. This reach is reflected in the increased morning peak GO Transit ridership to the downtown—from 23,500 passengers per day (excluding weekends) in 1985 to 36,800 per day in 1995[20] (METROT, 1996). While the lakeshore commuter lines have been long established, particularly that to the west connecting the high income exurbs of Oakville and Burlington to the downtown, others, such as that to Bradford (and thence Barrie), are fairly recent. The well-established lines maintain a service during off-peak hours and on weekends, while the less well-established maintain only workday peak hours service. The cumulative ridership histograms (Figure 10) for each of the seven lines reflect these different levels of service—ridership to Union Station on the lakeshore lines is at least three times greater than that for the other lines.

The total number of retail outlets directly within the precincts, including an associated commuter parking facility, of a GO Transit station is relatively few (32).[21] Many outer suburban GO Transit stations have been built in fairly isolated locations where land has been available for parking. In consequence, there has been little directly associated retail development—highly peaked traffic flow is not an advantage to retailers. GO Transit leases space[22] to retailers within the precincts of the station properties that it owns/operates. Retailers are responsible for constructing their own retail space—this required up-front capital investment, though in most cases quite minimal, may be a deterrent to some potential retailers. Nevertheless, some interesting direct station-associated retail responses have occurred (Figure 11).

The main types of direct retail outlets are coffee kiosks, fast food, convenience stores (selling a variety of low cost items), dry cleaners, and an "other" category that includes newsagents (Table 2). These are all retail facilities that would be expected within commuter rail facilities. The signifi-

FIGURE 10 CUMULATIVE RIDERSHIP HISTOGRAMS BY CORRIDOR



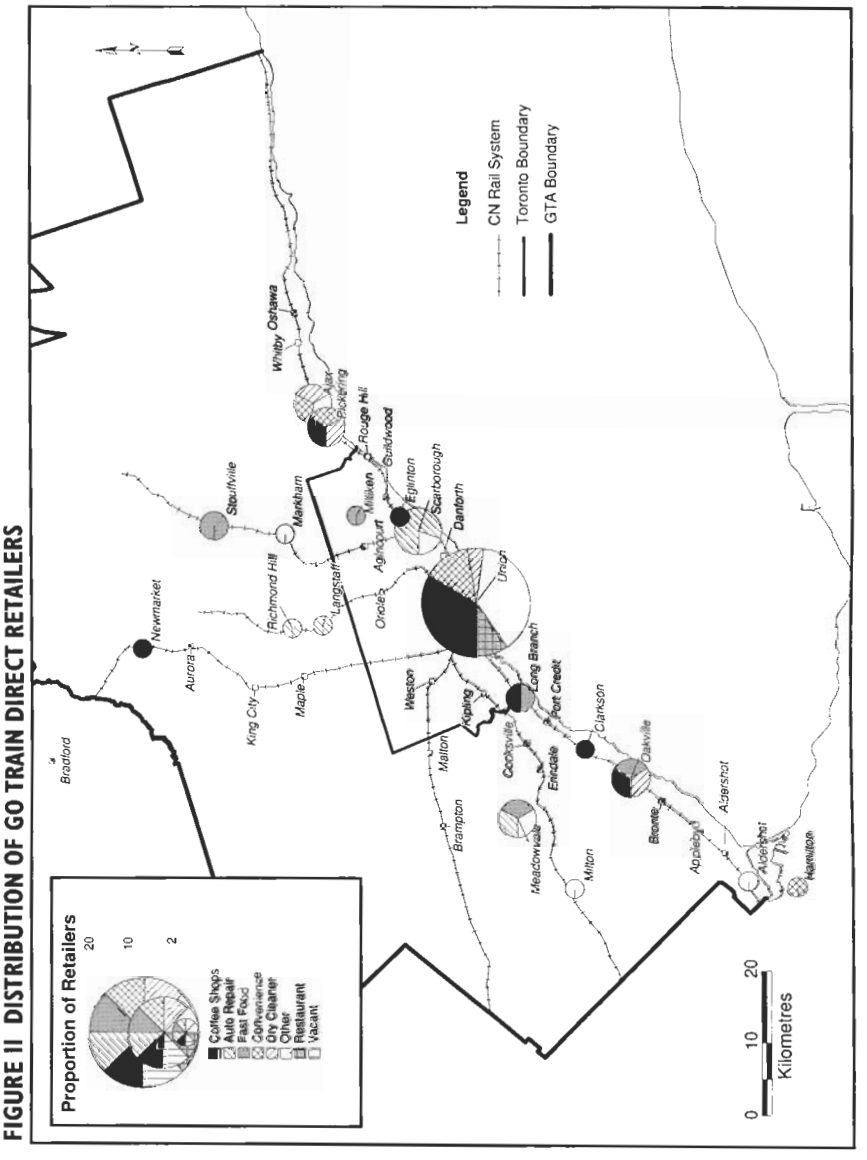


FIGURE II DISTRIBUTION OF GO TRAIN DIRECT RETAILERS

cant presence of auto repair shops within the bounds of commuter parking areas[23] is interesting, reflecting perhaps the occasional negative impact of cold Canadian winter days on parked cars, and that for commuters auto services are like dry cleaners—in in the morning, and out in the evening.

Retail activities categorized as indirectly associated with GO Transit are those located immediately adjacent to the precincts of stations—typically the block opposite the station, or in a "mall" equivalent.[24] On the whole, retail activities adjacent to the stations are more numerous (96 in

TABLE 2. GO TRANSIT SYSTEM: RETAIL OUTLETS BY TYPE

	Direct	Indirect
Coffee etc.	25.0%	5.2%
Auto Repair	13.5%	1.0%
Fast Food	11.5%	6.3%
Restaurant	-	13.5%
Convenience	11.5%	2.1%
Dry Cleaners	7.7%	2.1%
Other	30.8%	61.5%
Vacant	-	8.3%
Total	**100.0%**	**100.0%**

total) and different from those within station precincts (Figure 12). There are few coffee, auto repair, fast food, convenience, and dry cleaners, more restaurants and many stores in the "other" category that includes the rest of retailing.[25] Whereas no vacancies have been recorded among the direct group, because when a kiosk is closed, the space that it occupied tends to revert to general station use, store vacancies do appear in the indirect category. The vacancy rate (8.3%) is within the equilibrium range (7 to 9%) expected for retail strips (Montgomery and Yeates, 1998, pp. 8–10).

GO Transit Retailing and Traffic Flow

As with commuter-related retailing associated with the TTC system, it would be expected that the number of retail stores located close to a GO Transit station (#GORS) would be related positively to the traffic flow generated at the station (GOTF).[26] Figure 13 graphs the relationship between the number of stores within the precincts of train stations and traffic flow for six commuter lines, and Figure 14 presents the same type of graphs for retail activities indirectly associated with the stations. The graphs in general are not particularly persuasive, and particularly troublesome is the small number of stores included in Figure 13. For this reason, the direct and indirect data have been summed for each station to test the hypothesis that, in general, *#GORS = f (GOTF).*

The best-fit linear equation (traffic flow in thousands), with the intercept set at zero for zero traffic flow, is *#GORS = .911 (GOTF).* Though the regression coefficient tests[27] as being significantly greater than zero, the explanatory power of the equation is not great. Nevertheless, the calculation is of some interest as it implies that the retail store threshold value for the GO system—the traffic required in general to support one store—is 1,100. In other words, a traffic flow of about 1,000 generally

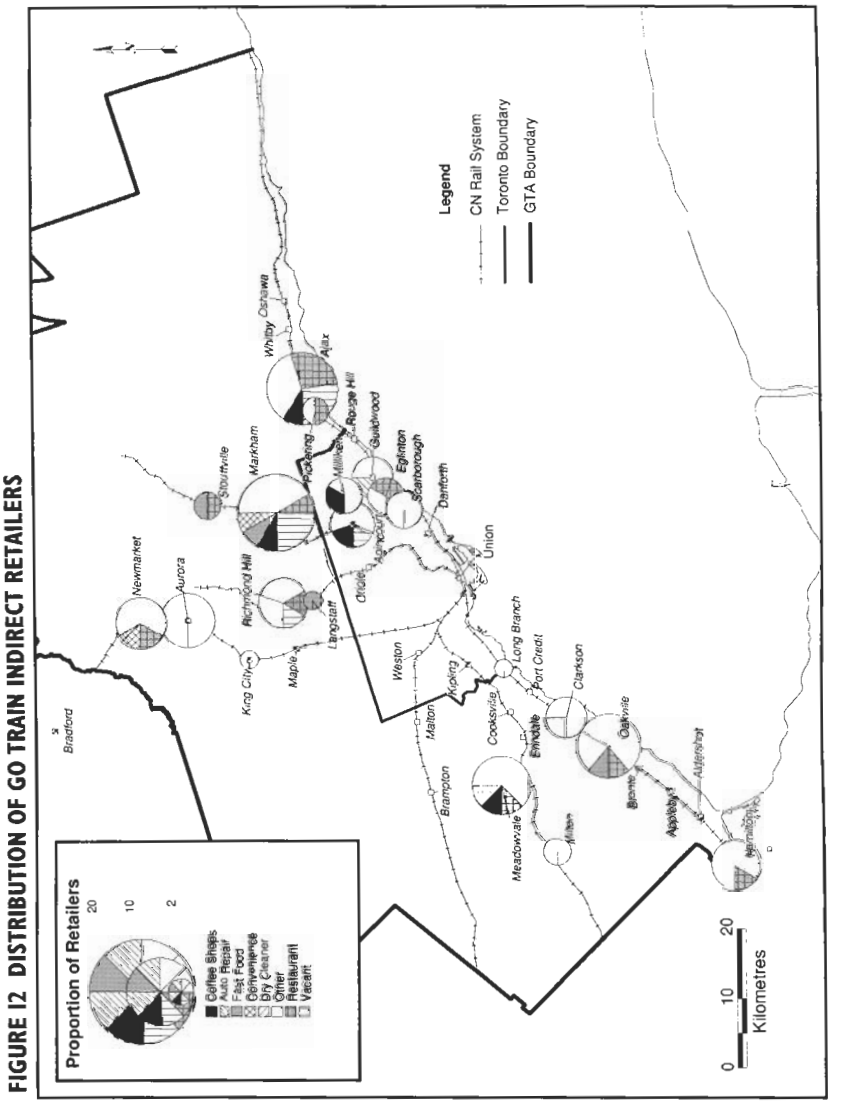


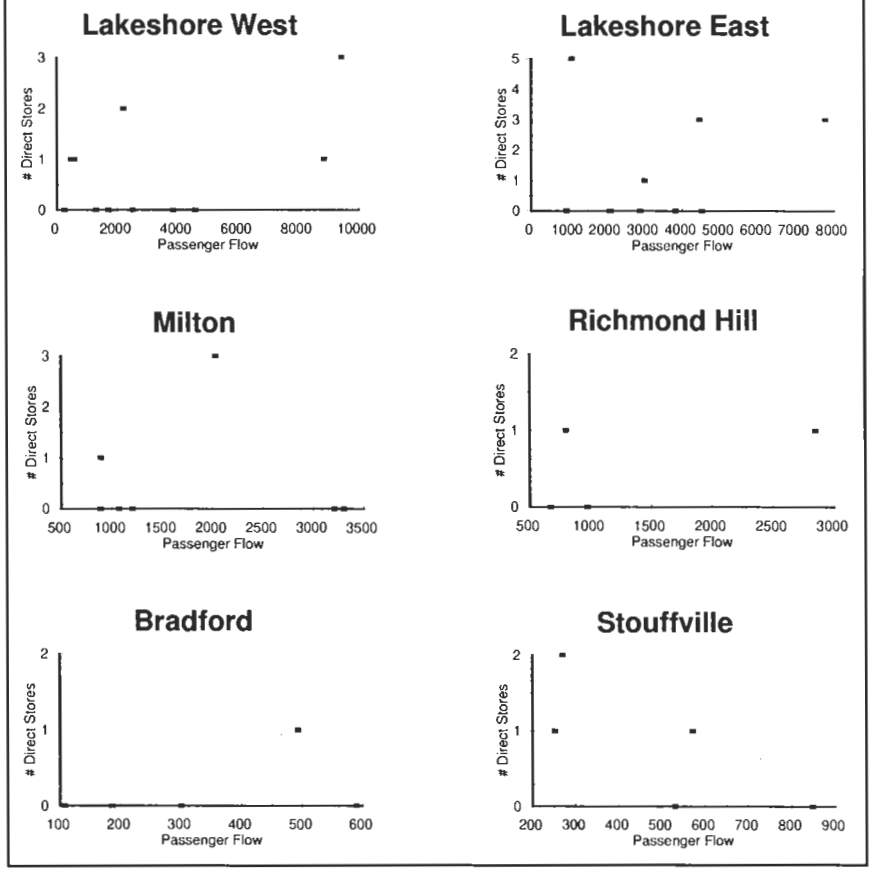
FIGURE 12 DISTRIBUTION OF GO TRAIN INDIRECT RETAILERS

supports one retail activity, usually a coffee kiosk (perhaps selling some newspapers), within the precincts of a train station.[28]

■ Commuter-Associated Retailing at the Confluence of Rapid Transit and Commuter Rail Activity

At the confluence of the TTC rapid transit and GO Transit systems lie the high-rise towers of the downtown office district and an extensive under-

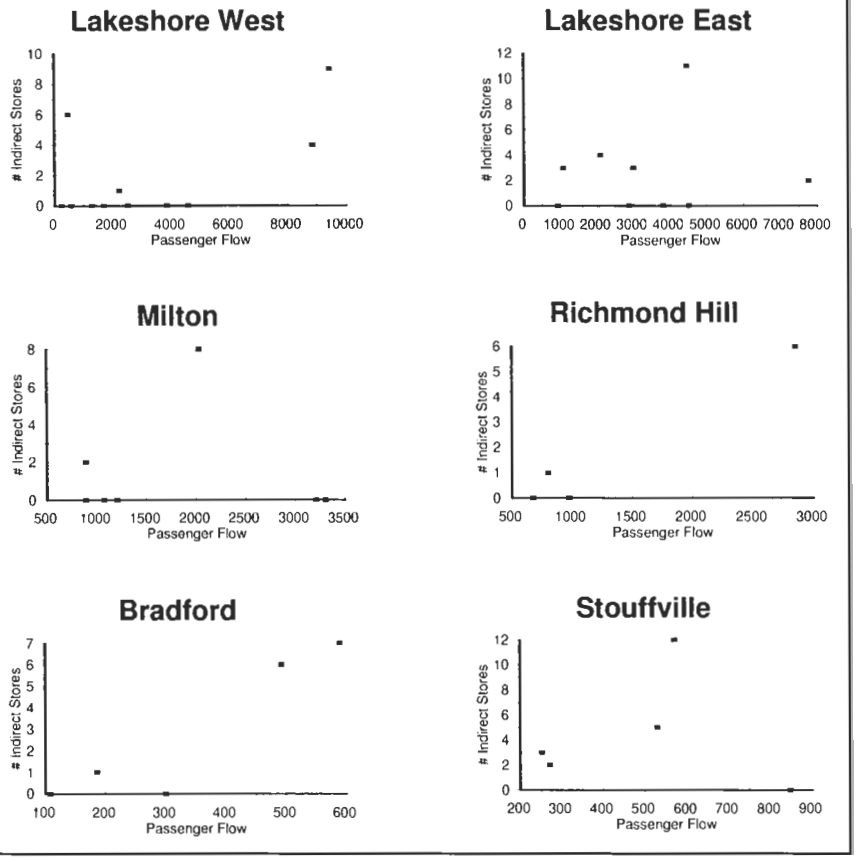
FIGURE 13 DIRECT RETAILING AND PASSENGER FLOW AT GO STATIONS



ground retail mall system that serves the mainly commuter office work force. This underground mall system is linked directly to both the main GO Transit terminus at Union Station and five rapid transit subway stops (see Figure 15). The first elements of this interlinked system were put in place in the late 1960s with the construction of the Richmond-Adelaide Centre (1966) and the Toronto-Dominion Centre (1968). Retail activities rely upon pedestrian traffic generated by the day-time work population as it flows between transit stations and places-of-work during the course of the day and at lunch and coffee breaks. The underground mall system has expanded fairly regularly with each building cycle since the 1960s, and now links 22 major office complexes through a nine kilometer network of underground walkways known as the "path."

The underground mall system extends from the Atrium-on-Bay (1982) in the north to Union Station in the south; and from Metro Hall (1995) in the west to Yonge Street in the east. The current network of

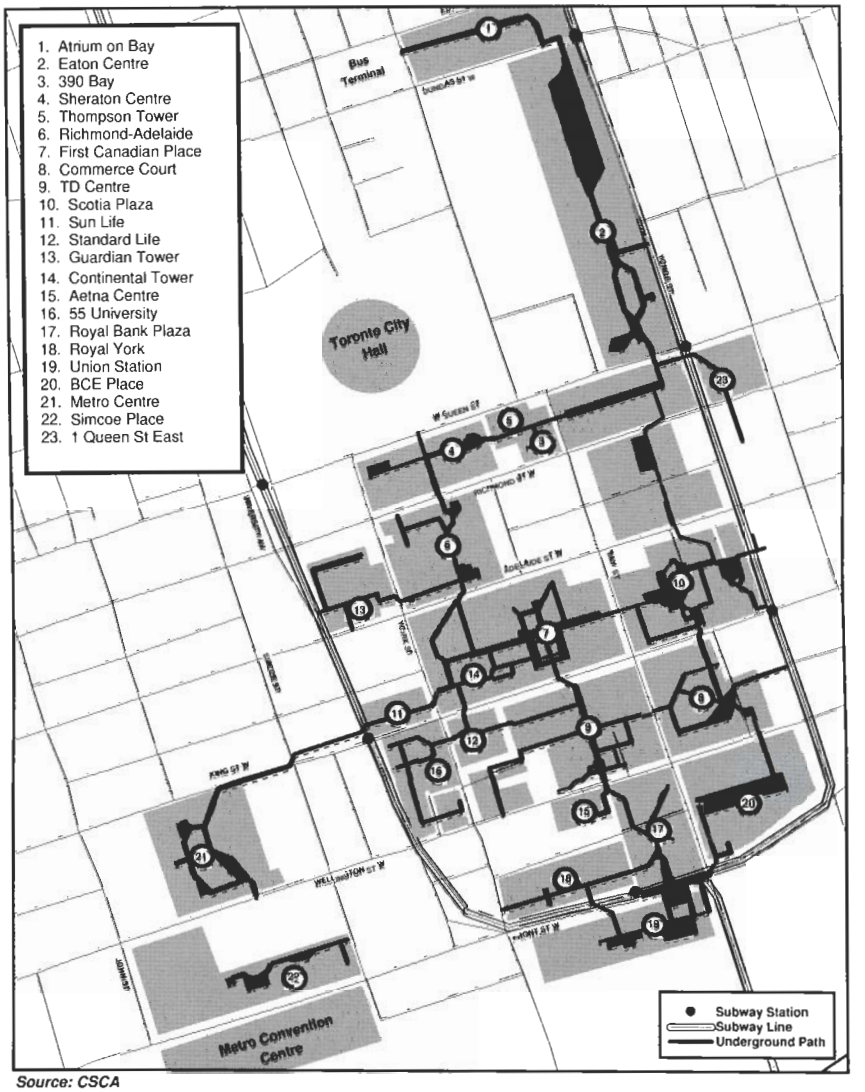
FIGURE 14 INDIRECT RETAILING AND PASSENGER FLOW AT GO STATIONS



malls includes over 1,050 commercial establishments which serve a daytime office workforce of approximately 100,000.[29] In addition, within a half kilometer radius of the underground mall a further 230,000 persons are employed. The underground is directly served by the Toronto subway system through direct connections to the Dundas, Queen, King, Union and St. Andrews stations. On a typical weekday, these stations generate a total pedestrian traffic flow of 324,850.[30] Through Union Station alone, 139,000 commuters enter and exit on a daily basis. These pedestrian volumes provide the underground mall retailers with an extraordinary market potential.

Data collected on the retail structure of the underground malls since 1994 permit a detailed analysis of the nature of its retail change—particularly with respect to changes in tenant mix, vacancy rates, and turnover rates. These data inventories are linked to a GIS system which

FIGURE 15 TORONTO UNDERGROUND MALL SYSTEM



Source: CSCA

provides the analytical means necessary to evaluate *spatial* aspects of tenant stability and vacancies. During the 1994–97 period, the number of outlets in the Toronto underground mall system increased steadily from 975 to 1,053 for an average *annual* growth rate of 2.6% (Table 3). The growth in number of outlets has occurred primarily through expansion of the "path" system to include more office centers.

In general, the store mix is remarkably stable (Table 4)—restaurants, food retailing/convenience stores, and personal and financial ser-

TABLE 3. THE TORONTO UNDERGROUND MALL SYSTEM: NUMBER OF STORES BY OFFICE CENTRE

	Number of Commercial Outlets			
Office Centre	1994	1995	1996	1997
1 Atrium on Bay	66	68	70	69
2 Eaton Centre	229	220	220	223
3 390 Bay	7	6	5	5
4 Sheraton Centre	54	46	49	51
5 Thompson Tower	12	11	11	11
6 Richmond-Adelaide	47	46	45	45
7 First Canadian Place	149	142	149	147
8 Commerce Court	58	57	50	60
9 T-D Centre	68	61	67	70
10 Scotia Plaza	43	41	36	40
11 Sun Life	11	11	11	11
12 Standard Life	14	14	15	15
13 Guardian Tower	11	10	11	12
14 Continental Tower	8	8	11	11
15 Aetna Centre	25	25	24	20
16 55 University	9	14	14	14
17 Royal Bank Plaza	64	63	65	65
18 Royal York	33	33	34	36
19 Union Station	23	23	24	24
20 BCE Place	46	47	50	50
21 Metro Centre	-	44	44	44
22 Simcoe Place	-	32	32	32
Total	977	1,022	1,037	1,055

TABLE 4. FUNCTIONAL COMPOSITION OF THE UNDERGROUND: 1994–1997

Activity	% Share 1994	% Share 1997
Food Retail/Convenience	7.6	8.3
Fashion	21.3	21.9
General Merchandise	1.2	1.7
Miscellaneous Retail	20.7	22.3
Business Services	3.7	2.8
Restaurants	26.3	26.0
Personal Services	14.5	12.8
Miscellaneous Services	0.5	0.7
Financial Services/Banking	4.2	3.5
Total	100.0	100.0

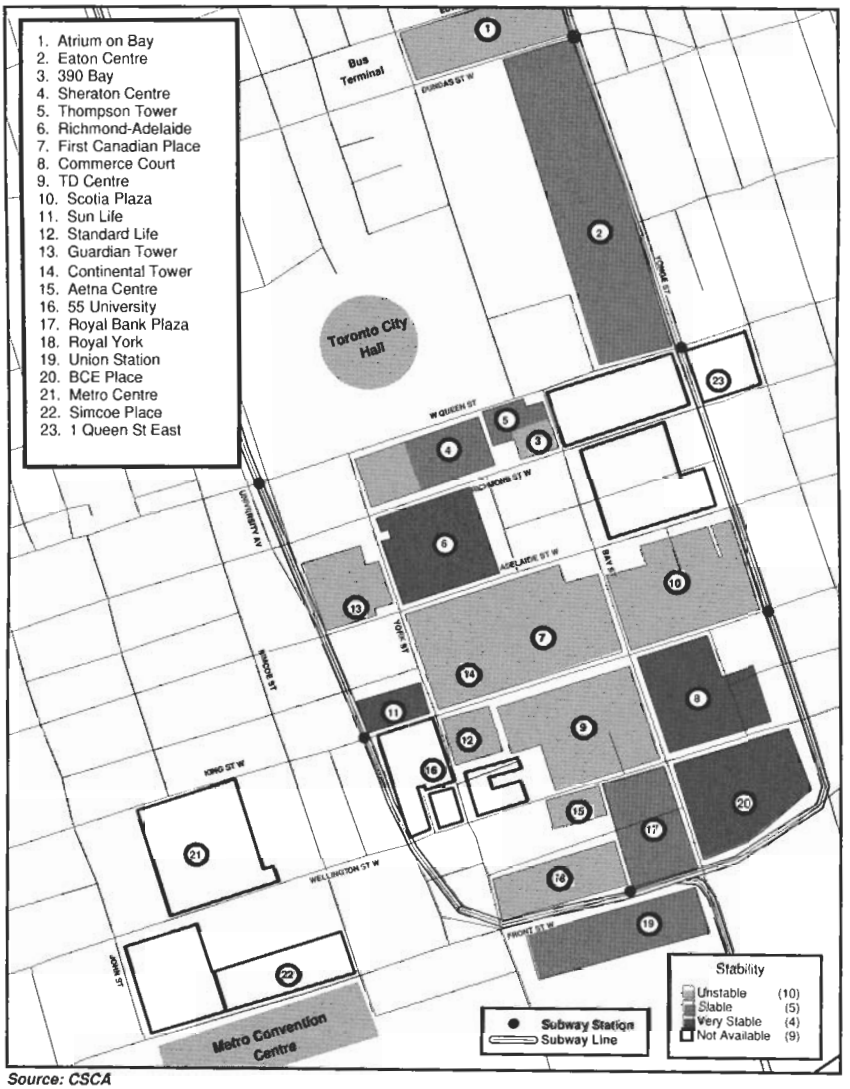
TABLE 5. VACANCY RATES IN THE TORONTO UNDERGROUND MALL SYSTEM

	Vacancies (% Vacancies)			
Office Centre	**1994**	**1995**	**1996**	**1997**
1 Atrium on Bay	6 (9.9)	7 (10.3)	5 (7.1)	4 (5.7)
2 Eaton Centre	7 (3.1)	13 (6.0)	17 (7.8)	14 (6.3)
3 390 Bay	0	0	1 (20.0)	0
4 Sheraton Centre	20 (37.0)	4 (8.7)	5 (10.2)	4 (9.3)
5 Thompson Tower	0	1 (9.1)	1 (9.1)	1 (9.1)
6 Richmond-Adelaide	1 (2.1)	1 (2.2)	7 (15.6)	5 (13.5)
7 First Canadian Place	21 (14.1)	25 (17.6)	26 (17.4)	23 (19.6)
8 Commerce Court	13 (22.4)	13 (22.8)	1 (2.0)	4 (8.8)
9 T-D Centre	1 (1.5)	2 (3.3)	5 (7.5)	3 (4.3)
10 Scotia Plaza	10 (23.3)	9 (22.0)	2 (5.6)	2 (3.9)
11 Sun Life	0	0	1 (9.1)	3 (27.2)
12 Standard Life	1 (7.1)	1 (7.1)	1 (6.7)	0
13 Guardian Tower	0	0	0	1 (8.3)
14 Continental Tower	1 (12.5)	1 (7.1)	2 (18.2)	1 (9.1)
16 55 University	0	2 (14.3)	1 (7.1)	4 (28.6)
17 Royal Bank Plaza	0	2 (3.2)	3 (4.6)	2 (3.1)
18 Royal York	5 (15.3)	7 (21.1)	6 (17.6)	6 (16.7)
19 Union Station	0	1 (4.3)	1 (4.2)	0
20 BCE Place	6 (13.0)	7 (14.9)	3 (6.0)	2 (4.0)
21 Metro Centre	-	9 (20.5)	6 (13.6)	6 (13.6)
22 Simcoe Place	-	14 (43.8)	7 (21.9)	6 (18.8)
Total	**99 (10.2)**	**127 (12.5)**	**108 (10.4)**	**96 (91)**

vices provide half of the tenant base in the underground system in 1994 and 1997. These three categories comprise 26%, 8.3% and 16.1% of the total tenant mix in 1997. Collectively, they illustrate the "convenience" niche that the malls in the underground complex satisfy; spatially, they also exhibit their own distinct patterns. Restaurants tend to cluster at various food court locations. Convenience stores capitalize on various access points that link the office towers to the subway system. Personal and financial services exhibit a more evenly dispersed pattern, thus giving the users of the underground ready access to these goods and services. Fashion, the other important retail category in the underground, comprises nearly 22% of the tenant mix. This category is concentrated in the larger shopping complexes such as the Eaton Centre, First Canadian Place, T-D Centre, and the Atrium on Bay.

With vacancy rates a major concern for all shopping center owners/managers, it is important to note that the rates have been declining along with the improving economy since 1995 (Table 5). During the en-

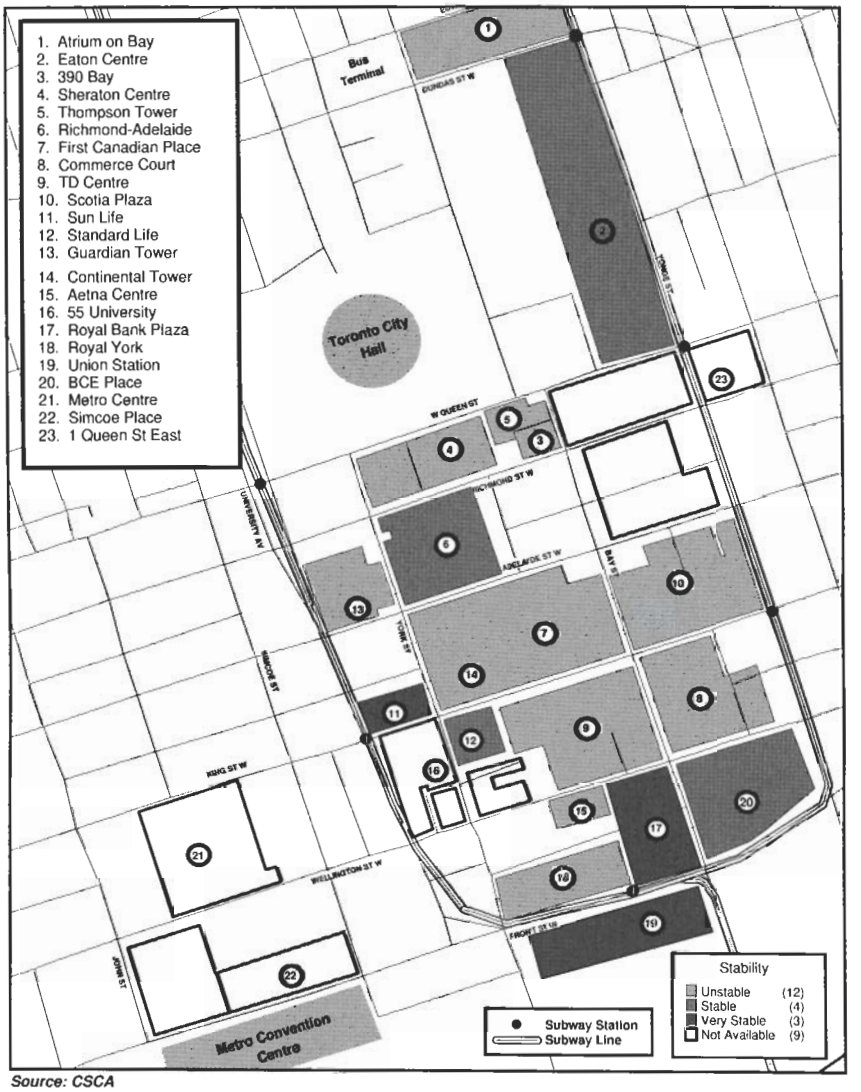
FIGURE 16 UNDERGROUND SHOPPING CENTRE STABILITY: 1994



Source: CSCA

tire 1994–97 period, the average vacancy rate experienced in the various centers in the system was 10.5%. This figure is slightly higher than the average level of retail vacancy rates for retail strips in the Metro Toronto region that was measured at 9.2% over the same period. However, these averages mask some important spatial variations. Some centers in the system, such as the First Canadian Place, Royal York and Aetna Centre, have tended to experience high vacancy rates through the entire period under investigation. Others, such as the Eaton Centre, Royal Bank Plaza, Union Station and the T-D Centre, have been well leased and have had

FIGURE 17 UNDERGROUND SHOPPING CENTRE STABILITY: 1995

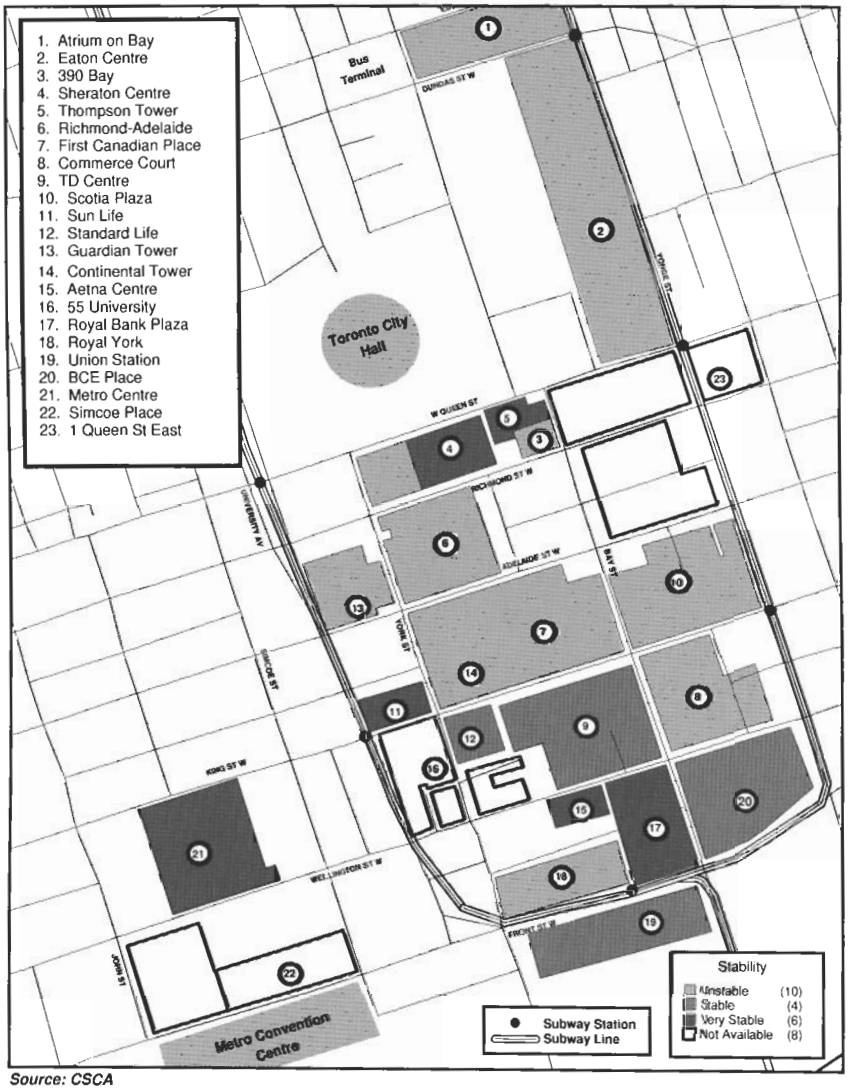


Source: CSCA

consistently low vacancies. Some newer centers have continued to experience lower vacancies and improved leasing over the study period (e.g., BCE Place and Simcoe Hall). However, the data suggest that the vacancy rates in the majority of the properties exhibit a high degree of annual variation.

In terms of turnovers,[31] the underground system experiences a high degree of volatility. During the four years under investigation, 987 tenants either entered or left the Toronto underground system. The timing of business failures appears highly variable. The highest retail closures

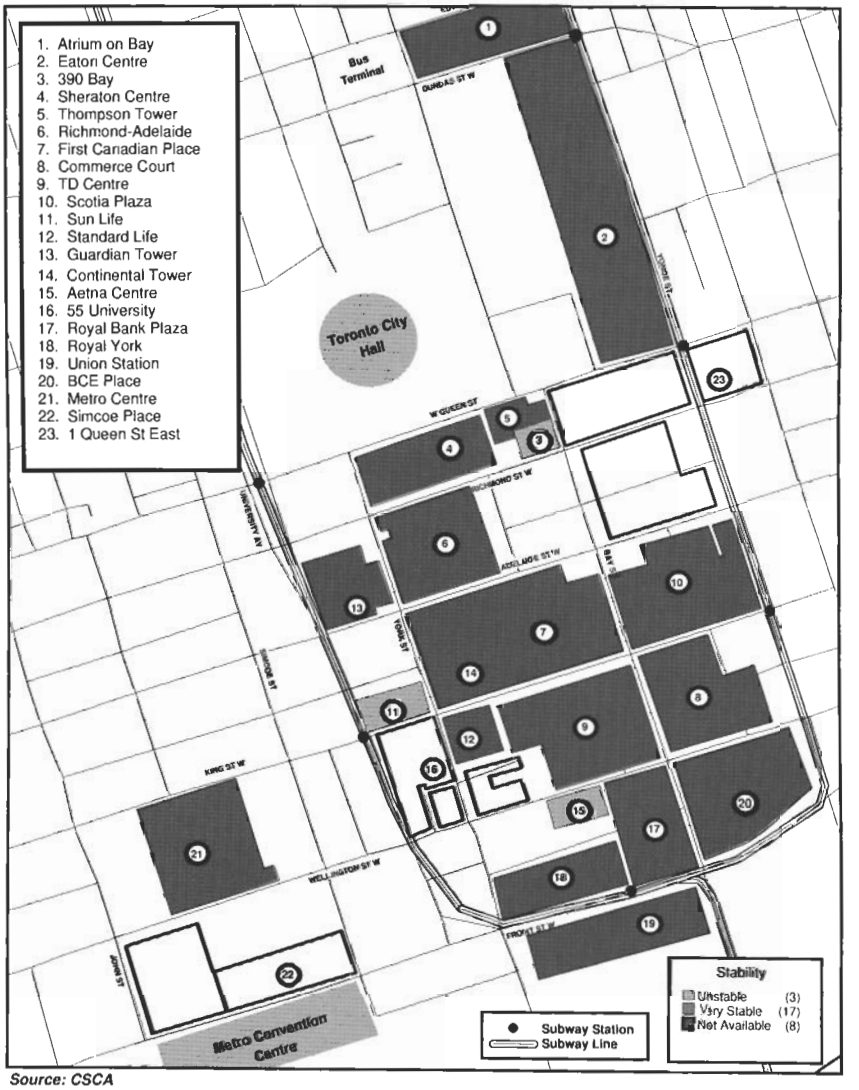
FIGURE 18 UNDERGROUND SHOPPING CENTRE STABILITY: 1996



Source: CSCA

occurred between 1995–96 when 16.3% of the tenants closed their businesses. Conversely, the 1994–95 and 1996–97 periods were more stable. In these two years, the closures dropped to 9.3% and 8.9%, respectively. With respect to stability, coefficients were calculated for each of the retail properties in the system between 1994 and 1997. These findings are presented in Figures 16 to 19. For the purpose of this analysis the following measures of stability were adopted—*unstable:* greater than 30% tenant turnover; *stable:* 20.1 to 29.9% tenant turnover; *very stable:* 20%

FIGURE 19 UNDERGROUND SHOPPING CENTRE STABILITY: 1997



Source: CSCA

or less tenant turnover. What is noteworthy is the 7% increase in the stability of the system in the 1996–97 period. As the maps indicate, for the 1994–96 period, the pattern of retail stability was somewhat random and few centers exhibited the same level of stability over the three year period. In contrast, the 1997 system is characterized by a much more consistent tenant mix. In part this may reflect a general increase in the health of the Toronto retail economy as retail sales in the Toronto area recovered from the recessionary pressures of the early 1990s.

■ Conclusion

In general, the amount of retailing associated with rapid transit and an extensive commuter rail system in the Greater Toronto Area (4.8 million population) is not that great. A limited range of retail activities is associated with stations on the 34-mile, 59- station, heavy rail rapid transit system that extends into the inner suburbs. In this entire system, only 280 retail outlets are associated directly or indirectly with the transit stations. Most of these retail activities are located at major morning exit points in the system—those serving large office complexes—and provide convenience items, coffee, and fast-food. The commuter rail system generates even less retail activity—41 stations with 130 directly and indirectly associated retail activities—though more per passenger, that the rapid transit system. Again, most of these retail activities involve coffee, convenience and dry cleaning activities, along with auto service/repair.

The big impact on retailing comes when the large passenger volume commuter facilities are focused to serve major office complexes in the downtown, and when these complexes are interconnected to create channels of pedestrian flow. The downtown Toronto underground mall system involves 4.3 million square feet of shopping space and over 1,000 outlets.[32] Evidently, retail synergy is created with interconnectedness—isolated foci at the base of large office buildings served by one station stay small. Commuter related transport improvements can generate great benefits to retailing as long as services routes are designed to maximize and concentrate pedestrian traffic flow—on the surface or through sub-surface pathways. In this context, it is interesting to note that the Building Efficient Surface Transportation and Equity Act (BESTEA) currently wending its way through the US Congress, which envisages $217 billion in infrastructure, capital and operating transport related expenditures during the next six years (McFadden, 1998), could have a significant impact on retailing in the downtowns of US metropolitan areas. If just a small part of the expenditures from this Act can be devoted toward improving pedestrian routes and providing associated commercial spaces between downtown employment centers and mass transit, retail will benefit.

■ Notes

1. There has also been considerable increase in the number of light rail (streetcar type) facilities (LRT) with routes established in Los Angeles (1990), San Jose (1987), Sacramento (1987), Portland (1986), Vancouver (1986), Buffalo (1985), San Diego (1981), Calgary (1981), and Ed-

monton (1978). LRT lines are also planned for Baltimore, St. Louis, and even Dallas (Black, 1993).

2. In the United States, 19.3% of the experienced labor force was in "producer services" in 1990 as compared with 13.1% in 1970 (Yeates, 1997, Table 6.1). In Canada, 15.7% of the experienced labor force was in "producer services" in 1991 as compared with 11.4% in 1971 (Yeates, 1998, Table 4.7). The definition of producer services for the United States includes employment in communications, whereas it does not in the Canada data. Nevertheless, the trend is the same for both countries.

3. For example, a rapid transit belt-way connecting major employment nodes around the circumference of Washington DC; and a high-speed rail service connecting the rapidly growing urban region extending from Miami north to Orlando and west to Tampa.

4. As of writing, a six-year $217 billion transportation bill is wending its way through the U.S. Congress to up-grade highways and transit systems—one of the largest public works programs ever (McFadden, 1998).

5. Which was formed by the Provincial Government of Ontario, effective January 1, 1998, by amalgamating the former City of Toronto, and the former suburban municipalities of York, North York, Scarborough, Etobicoke, and East York, into a one-tier government.

6. Or 13% of jobs in the GTA.

7. With the run in the bull market through 1997, employment in financial and business services has continued to increase.

8. This level of subsidy is by no means excessive compared with other transit systems in North America, which usually require at least a 45% subsidy (the Washington DC system requires a 46% subsidy to cover operating costs, and BART 58%), and provision of extensive capital outlays from public funds. Private transport is also heavily subsidized from public funds—estimated to be as much as $2,300 per car per year in the United States (McKenzie, et al., 1992).

9. As of January 1, 1998, the GO Transit subsidies have been passed to the municipalities that are served by the systems under some allocative formulae that in early 1998 are unclear. Although the municipalities and users will be paying for the GO system, it will still be operated by the Crown Corporation.

10. This 10 million square feet represents about 4% of the total commercial space (retailing, restaurants, entertainment, personal and business services) in the GTA (See Simmons, et al., 1998, pp. 20 and 37).

11. All the stores are category 1 in the CSCA size classification—less than 500 square feet.

12. As the field work and analysis progressed, it became clear that the direct/indirect distinction should not be over-interpreted.

13. Average daily traffic flow (1996) for passengers entering and leaving stations from Toronto Transit Commission Ridership Survey, 1997.

14. The R^2 values are .09 and .10 respectively.

15. The R^2 increases to .16.

16. In which the regression coefficient tests (t =8.58, with 59, 2 df) as being significantly greater than zero.

17. Exit points from the rapid transit system to home are not flagged in the same way because they frequently involve transfers to other transport modes, particularly automobiles and other forms of public transport such as buses and streetcars. Goods are, therefore, not usually purchased at these transfer points.

18. The F-statistic relating to the **additional** sum of squares "explained" by the EB variable is 5.14.

19. Note that the store threshold implied in the multiple regression is 9,345 people, suggesting that stations with a traffic flow of 10,000 that are not major morning exit points generate one retail outlet, whereas those that are major morning exit points with that same traffic flow generate four or five retail outlets.

20. The two-way 12-hour traffic flow on the GO-train service with respect to the downtown was 50,900 in 1985, and 77,300 in 1995—for each year the totals being little more than twice the in-bound morning peak hours flow, reflecting the classic home-work-home trip pattern.

21. The stations on the Georgetown line have been excluded from the study because the main stations on this line (Georgetown, Brampton, and Bramalea) are shared with Via Rail (the national railroad system) and it is difficult to disentangle the VIA rail passenger effect from the GO-train passenger impact on retailing.

22. Information supplied by the Realty Services Department of GO Transit.

23. Actually, usually at the edge of the parking facility with entrances from both road and parking.

24. For example, the Newmarket GO station is associated with a renovated old Station Mall. There is one kiosk directly associated with the GO station, and six other commercial outlets within the mall indirectly associated with the station (restaurants, and so forth).

25. Many outlets in the personal services category (e.g., hair fashions), tax services, travel agencies, banks and financial investments, antique furniture, hardware, and so forth.

26. Average daily traffic flow embarking (1996) at stations from GO Transit.

27. Student's t = 4.3, with 41, 2 df; but the R^2 = .10.

28. This figure supports the rule-of-thumb for the number of passengers required to support one kiosk at a train station utilized by the Realty Services Department of GO Transit. The data in Figure 13 suggest that this rule-of-thumb is not applied rigorously. Nevertheless, the combined direct and indirect data suggest it to be a good guideline.

29. Metro Toronto Employment Survey, 1997.

30. Toronto Transit Commission Ridership Survey, 1997.

31. A turnover occurs when a store changes activity and/or ownership.

32. These figures include the downtown department stores of Eaton's and the Bay through and to which the underground system connects. Each has one million square feet of space and each counts as one store in the inventory. The figures also include the 221 stores in Eaton Centre (620,000 sq. ft.).

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