OPTIMAL POLICIES FOR TRANSIT INFRASTRUCTURE

Presentation by
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'What is Good Public Policy in Canadian Municipalities?'

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Overview (1)

- Good public policies support society's long-term interests while acknowledging short-term interests.
- One long-term interest is to have urban transit that, compared with automobile use, provides better service in most respects, conserves resources, reduces pollution, and has fewer adverse impacts on the social fabric (e.g., teenage isolation).
- Such urban transit cannot be achieved only through subsidies, which may in any case be counterproductive.
- Better public policy may involve creating urban environments in which people choose not to own or use automobiles and use transit often enough for it to pay its way.

Overview (2)

- Transit subsidies are a relatively new phenomenon. Transit in Canada didn't receive subsidies until the 1960s (capital) and 1970s (operating).
- The subsidies may well have been counterproductive.
- Capital subsidies can favour provision of transit supply without consideration of its use.
- Operating subsidies can reduced motivation to increase use.

Expenditures on roads vs. transit

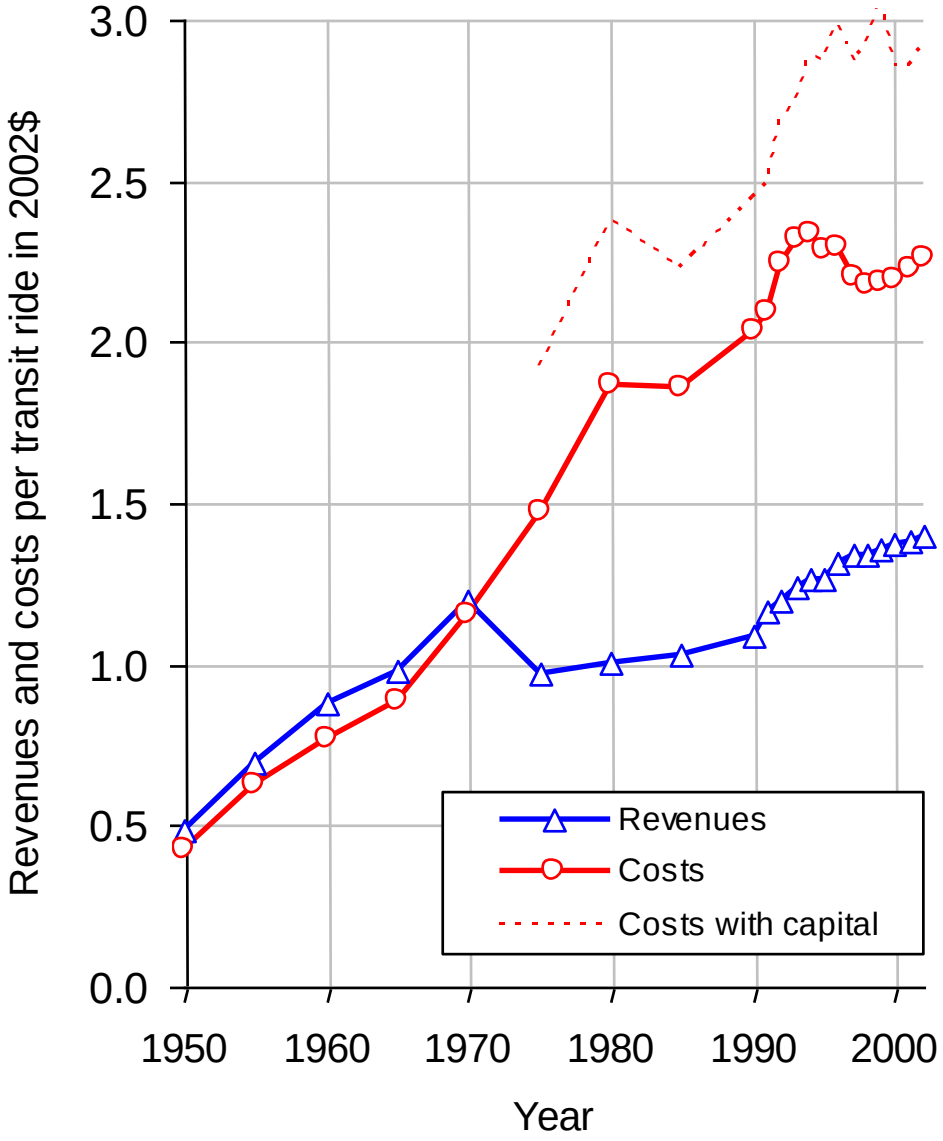
	Per-capita expenditures in 2001$				Ratio 2001/1991			
	On roads		On transit				Overall ratio roads/ transit	Shift to roads
CMA	1991	2001	1991	2001	Roads	Transit		
Toronto	72.1	176.9	175.9	68.7	2.5	0.4	1.0	6.3
Montréal	320.0	243.8	200.4	197.2	0.8	1.0	1.4	0.8
Ottawa-Gatineau	165.1	260.7	125.4	141.8	1.6	1.1	1.6	1.4
Calgary	233.0	276.2			1.2			
Edmonton	232.8	226.6	126.3	128.8	1.0	1.0	1.8	1.0
Winnipeg	173.0	45.8			0.3			
London			56.1	19.2		0.3		
Kitchener-Waterloo	153.4	86.6			0.6			
Windsor	94.6	98.5			1.0			
Regina	165.7	158.3			1.0			

History of revenues and costs per transit ride in Canada, 1950-2002

Something extraordinary happened in the 1970s and 1980s. Costs continued to rise but revenues (i.e., fares) did not. Differences represent subsidies.

Revenues and operating costs came more back into balance in the 1990s, although capital costs did not.

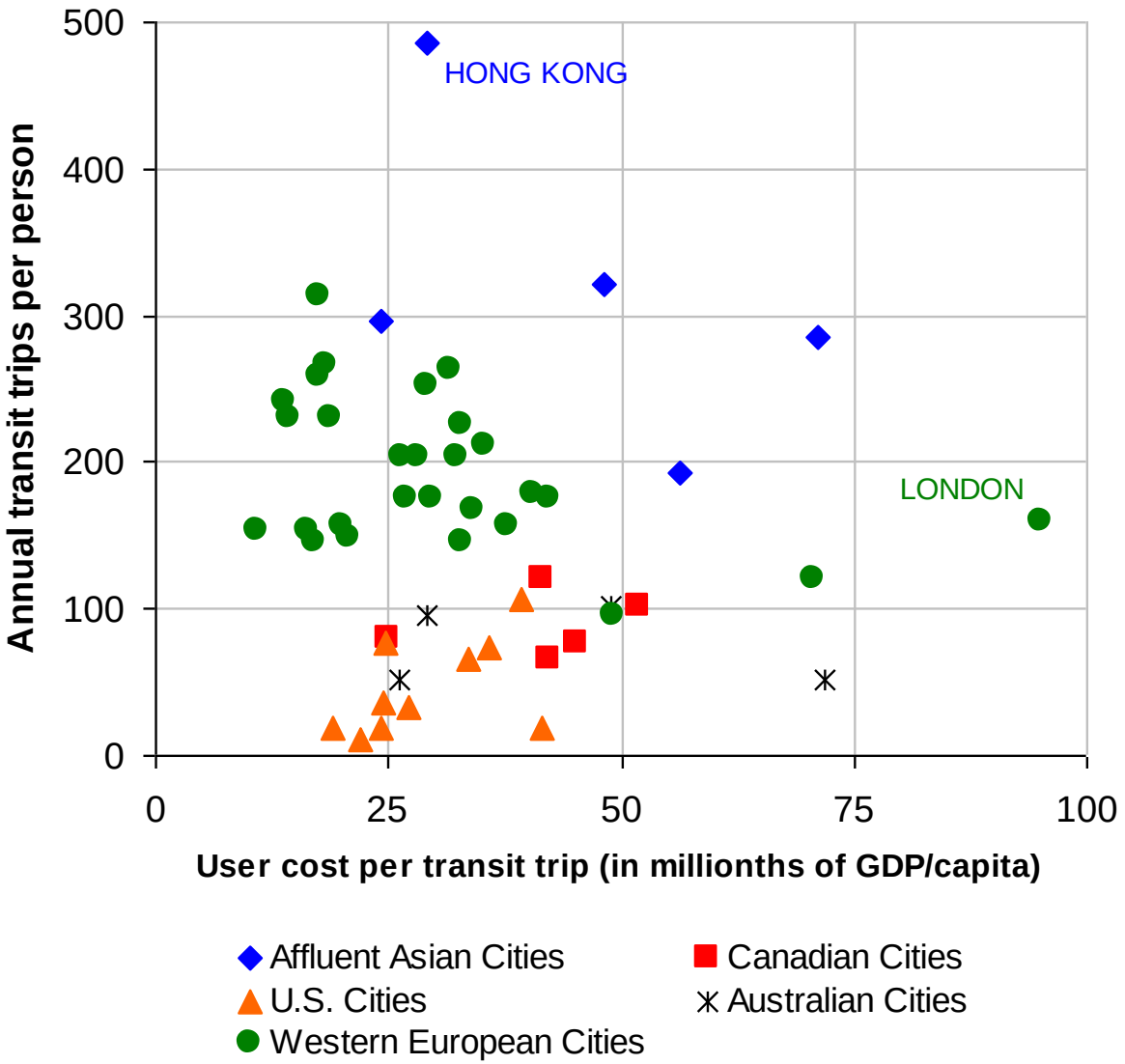
Capital costs before 1975 are uncertain. Started in 1960s (Toronto's Bloor-Danforth line funded by 55% by Metro, 45% by TTC).



Relationship between transit use and fares (52 rich urban regions, 1995)

There seems to be no relation-ship between transit use and fare levels.

Note very low ridership per capita in urban regions in U.S., Canada, and Australia.



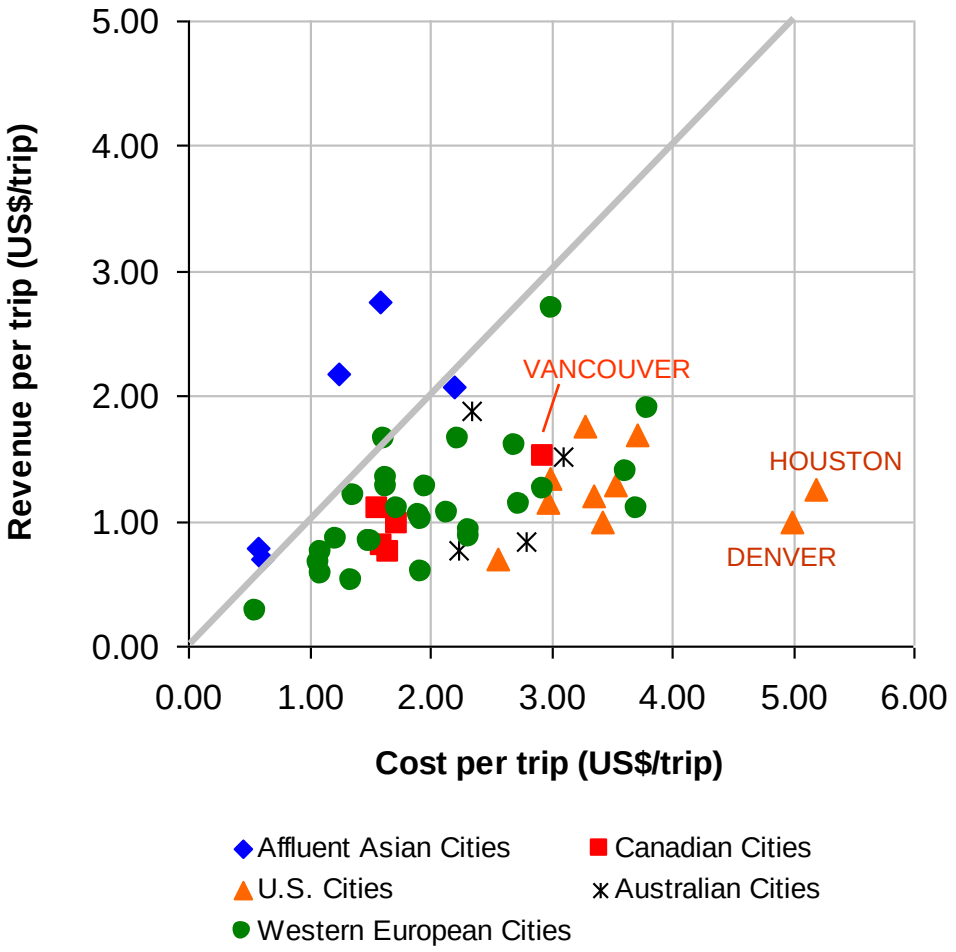
Operating costs and revenues of transit in 52 rich urban regions (1995)

Cost per trip includes operating costs only, not capital costs (which would add 20-40%). Revenue includes all receipts except subsidies.

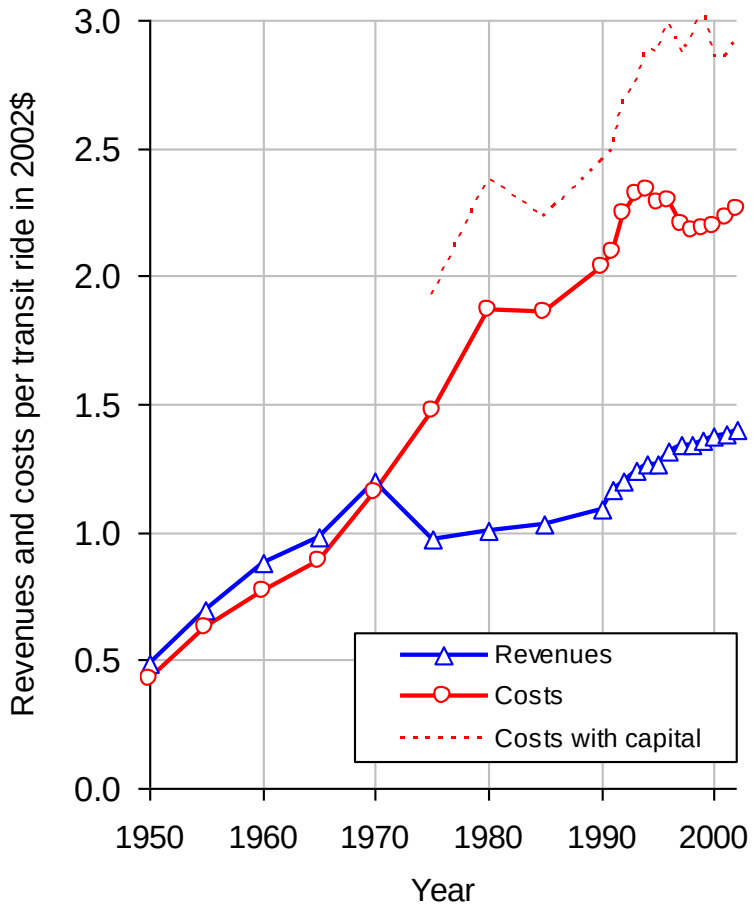
Note that only transit systems in some 'Affluent Asian cities' pay their way.

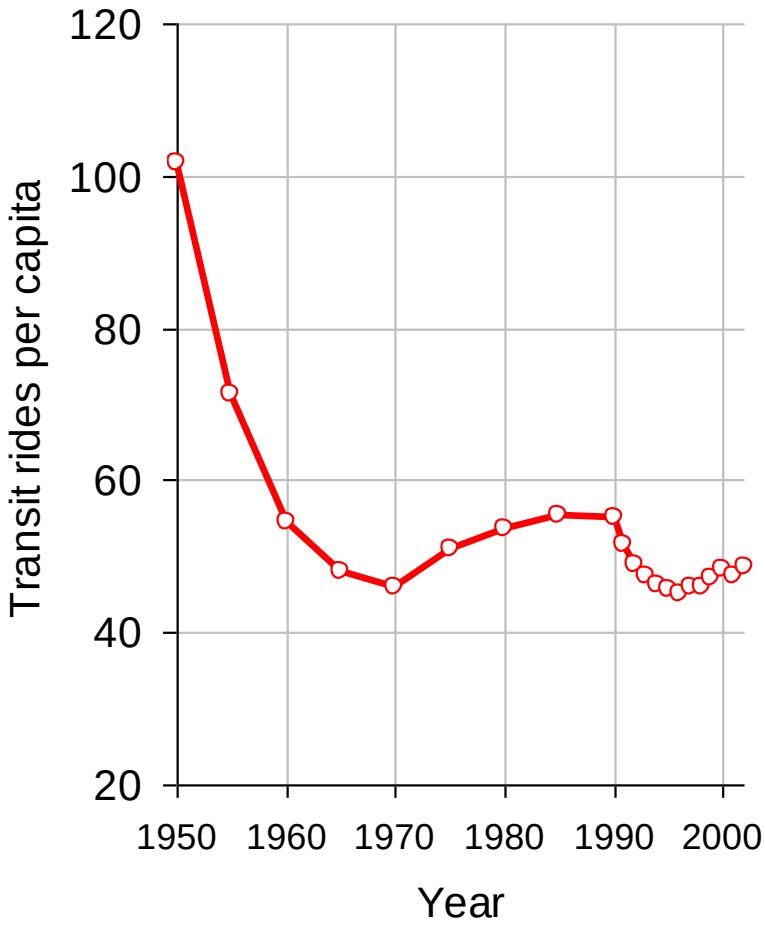
They are generally privately owned and also cover their capital costs from operating revenues.

Systems in Vancouver, the U.S., and some other regions have have very high costs (>US$3/trip).



Transit rides per capita, Canada, 1950-2002





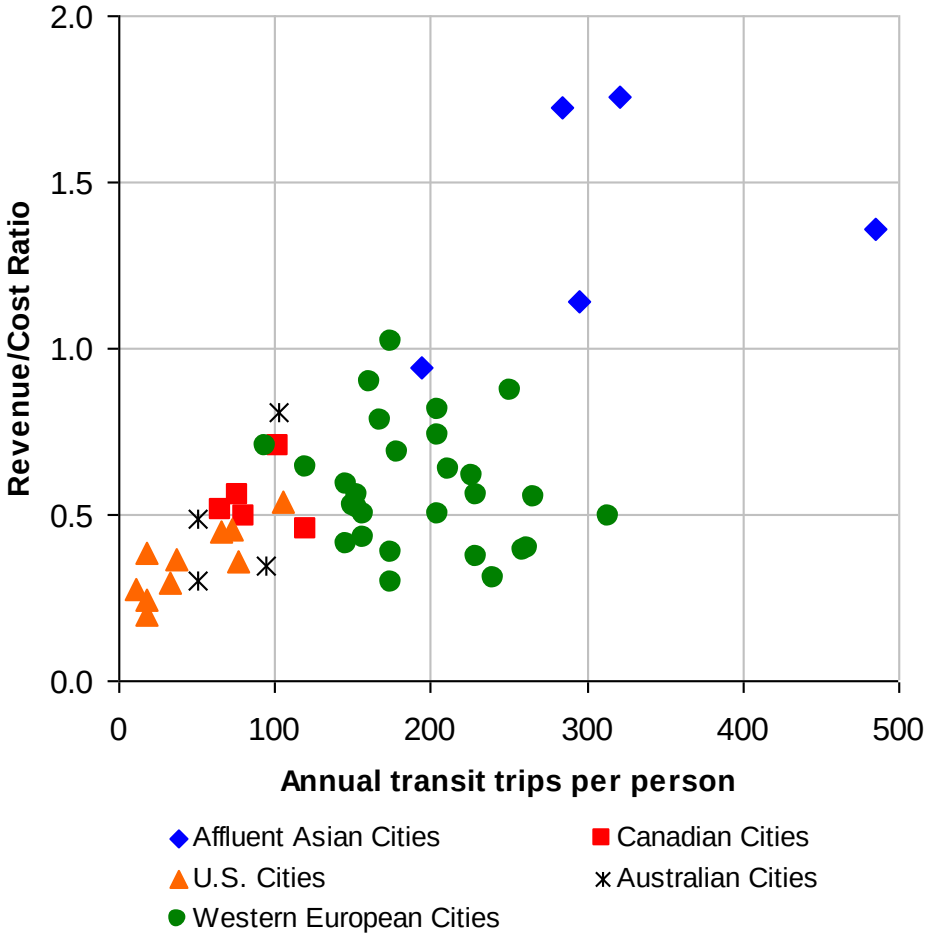
Note that rides per capita were falling steeply in the 1950s and 1960s, even though transit was paying its way. Since 1960, rides per capita have been relatively constant,

Rides per capita, 52 rich urban regions, 1995

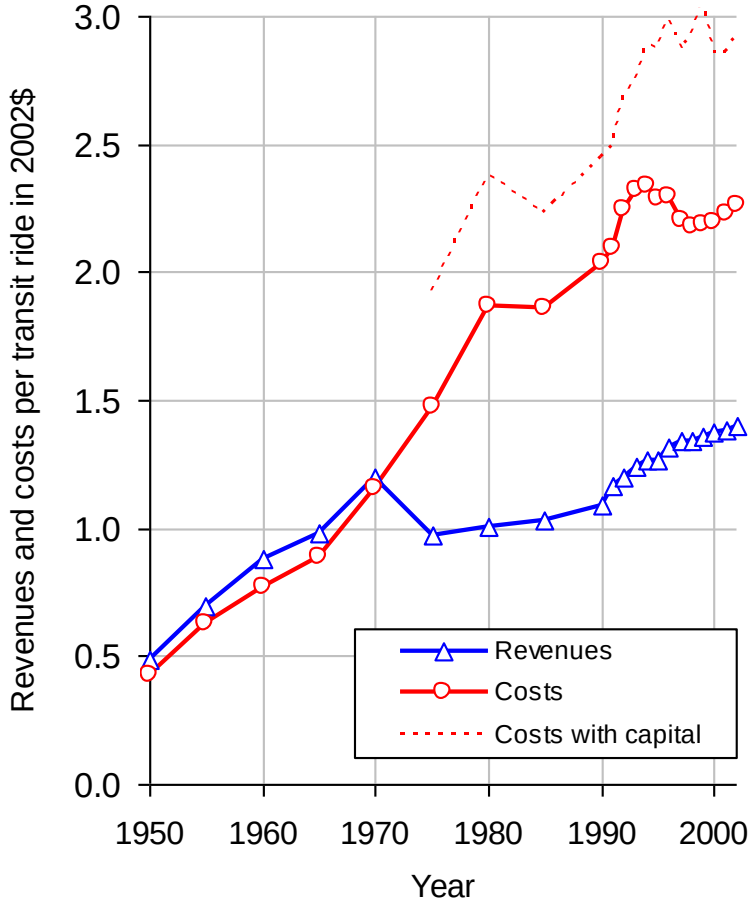
Canadian rides-per-capita values are higher here than in the previous slide, which was based on the national population not just the population of the urban regions.

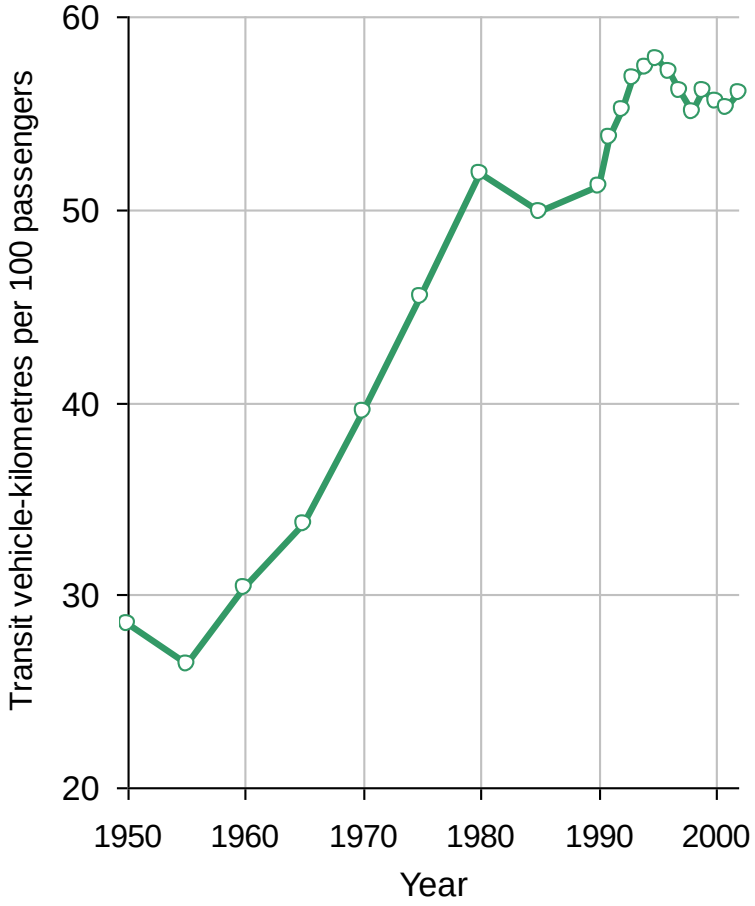
R/C ratio generally increases with ridership, although some European systems have high ridership and low R/C ratios.

Note low ridership per capita of U.S., Canadian, and Australian urban regions.



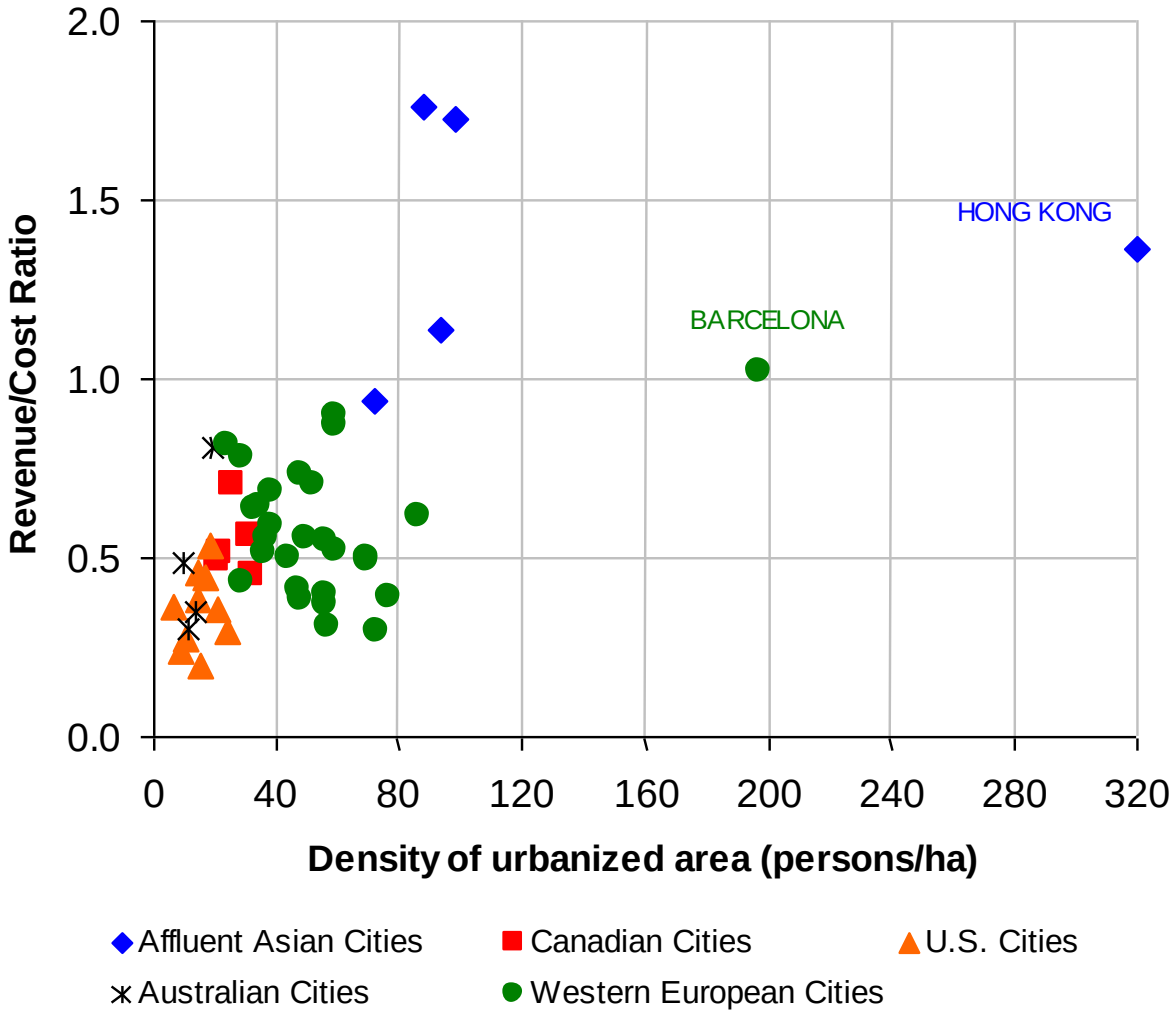
Transit-vehicle-kilometres per 100 passengers, Canada, 1950-2002





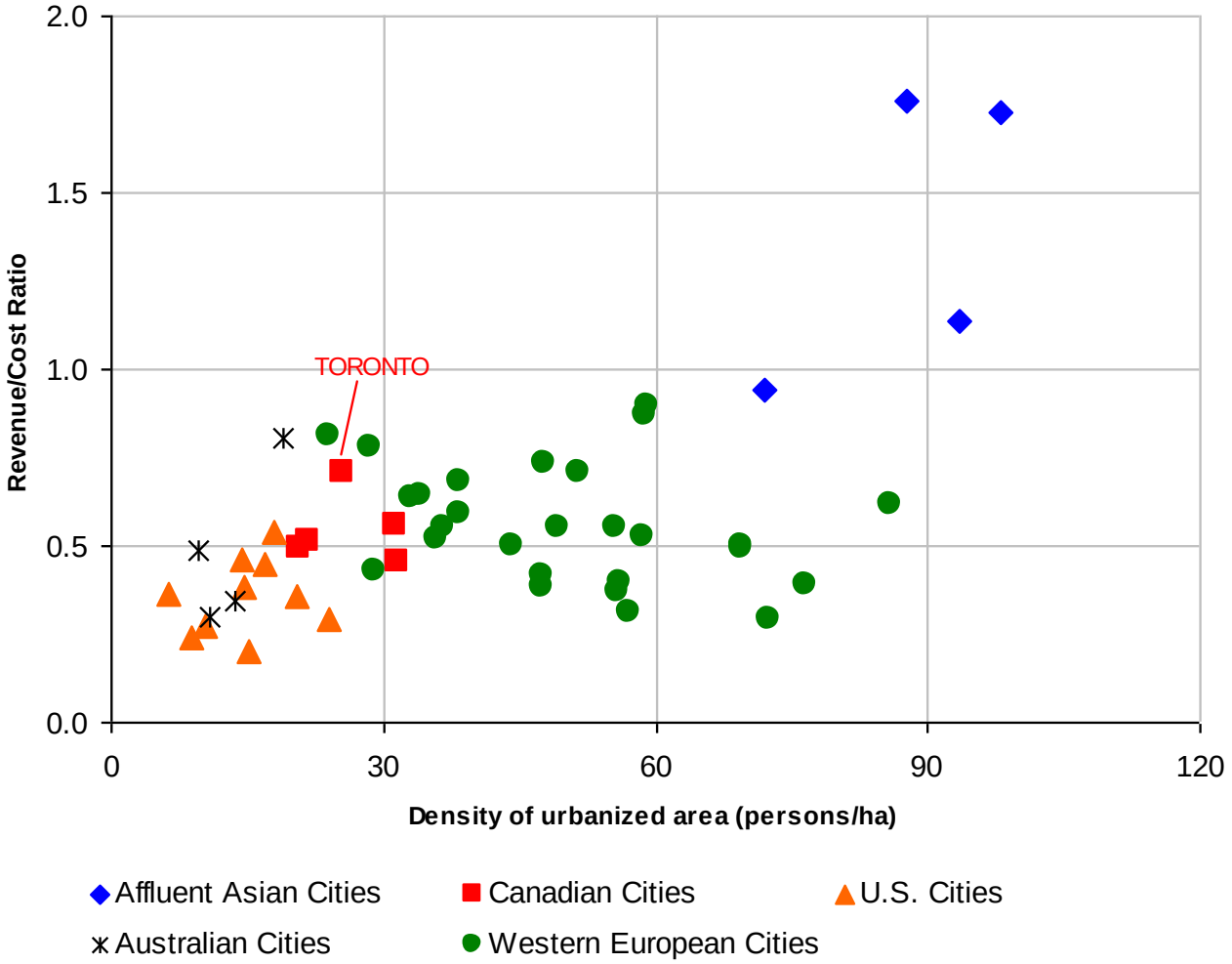
Note that transit had to work twice as hard to serve a passenger in 2002 as in the 1950s, likely a key reason for the growth in costs, in turn likely caused by urban sprawl.

Transit's R/C ratio and urban density, 52 rich urban regions, 1995



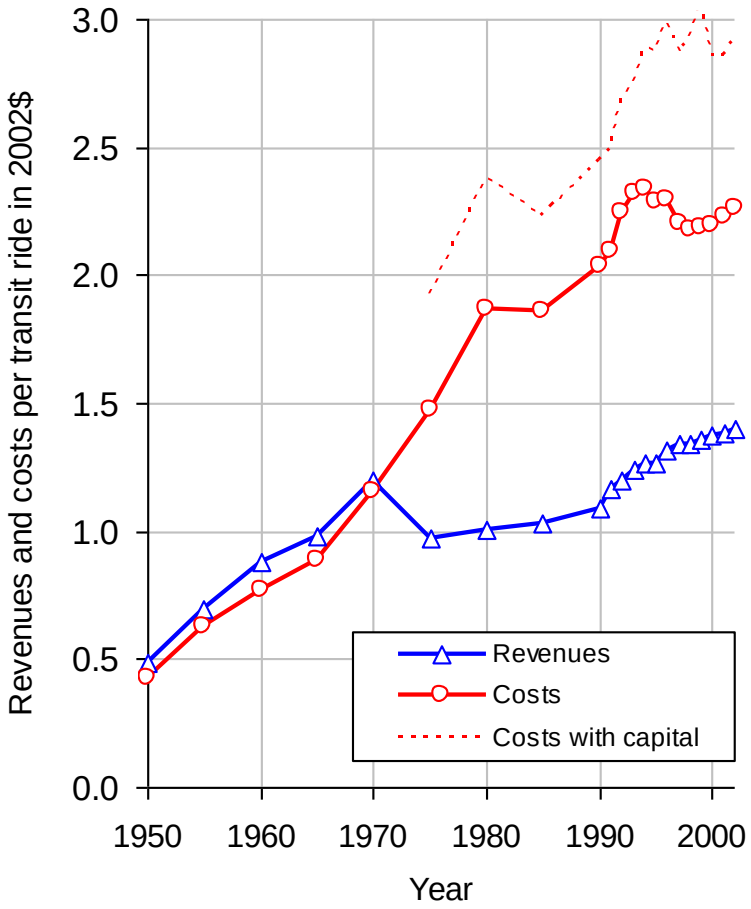
It's not so clear what is happening here because of the two remarkable outliers.

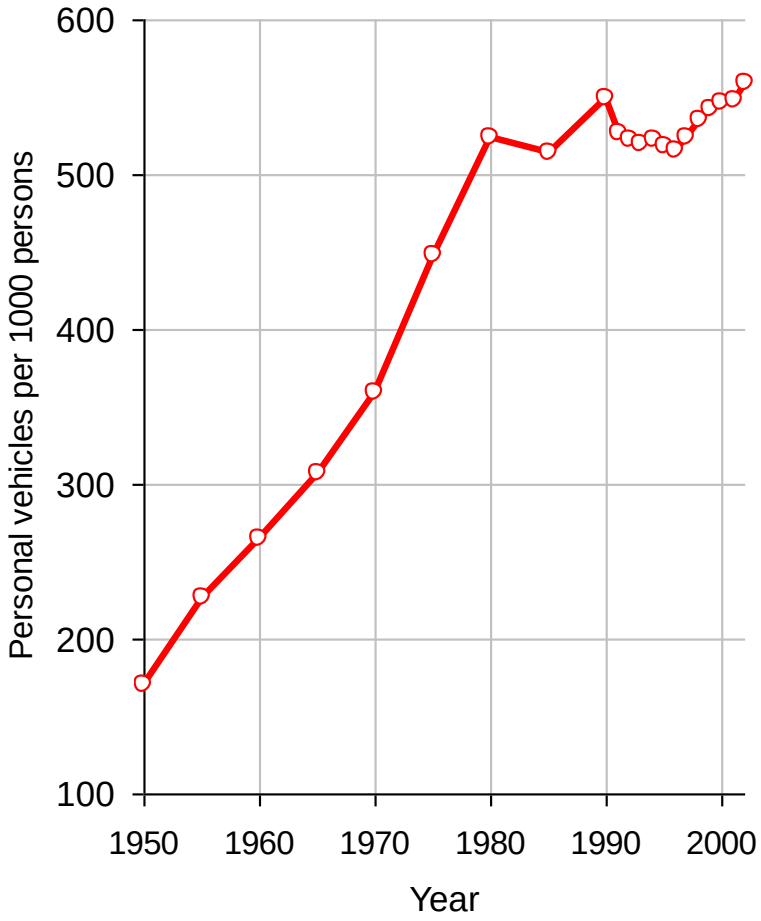
Transit's R/C ratio and urban density, 50 rich urban regions, 1995



Same graph without outliers. Now an increase in R/C ratio with density seems apparent, although many European regions have quite high density and low R/C ratio.

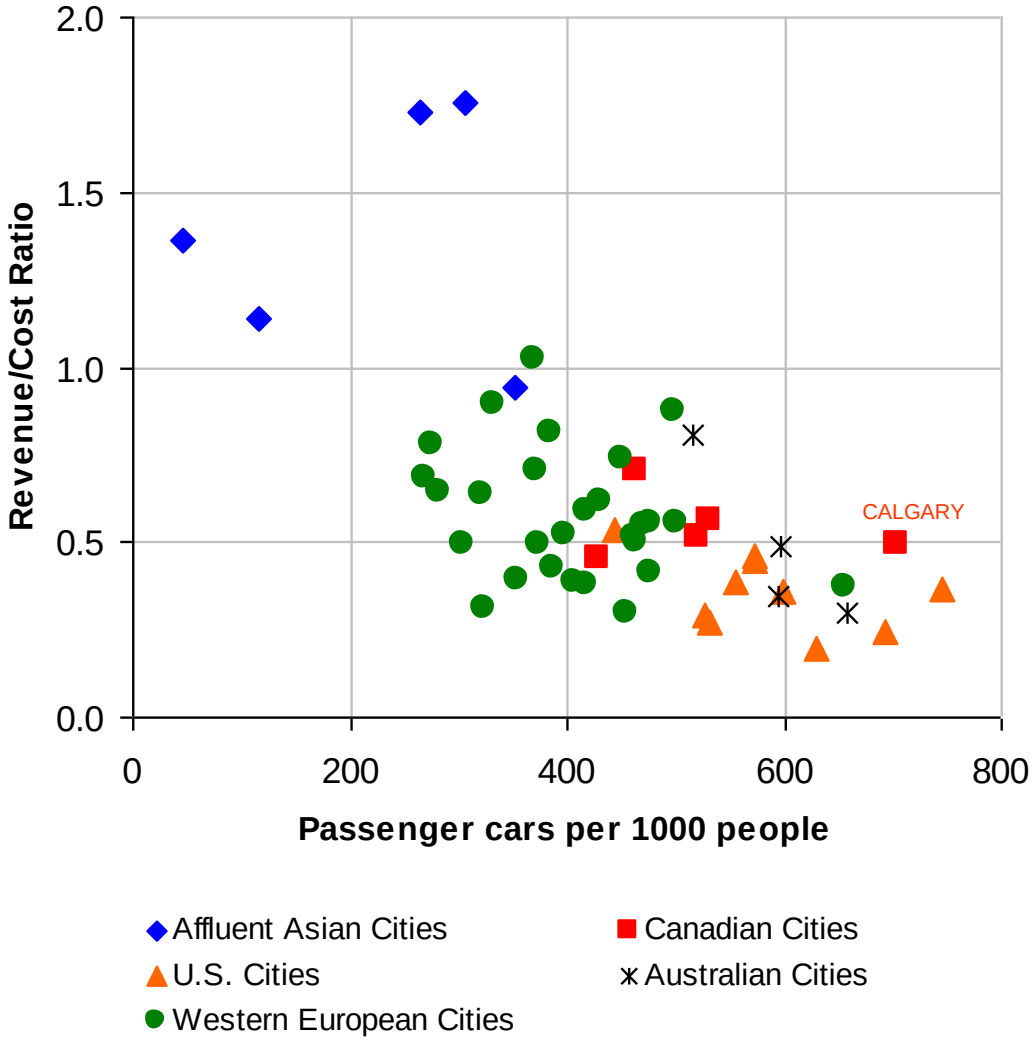
Car ownership in Canada, 1950-2002





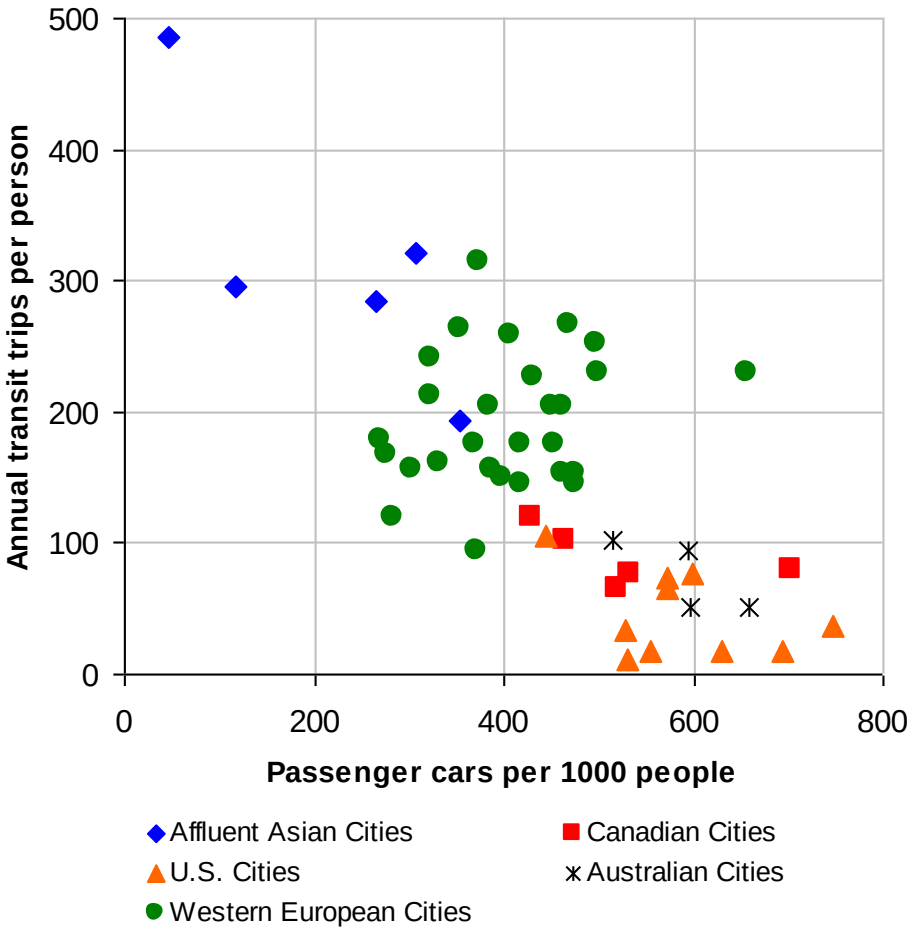
Note the sharp discontinuities in 1980 in both car ownership and transit costs.
Costs seem to track car ownership levels.

Transit's R/C ratio and car ownership, 52 rich urban regions, 1995



High car ownership may be a more likely explanation of low R/C ratios than overall density.

Transit ridership and car ownership, 52 rich urban regions, 1995



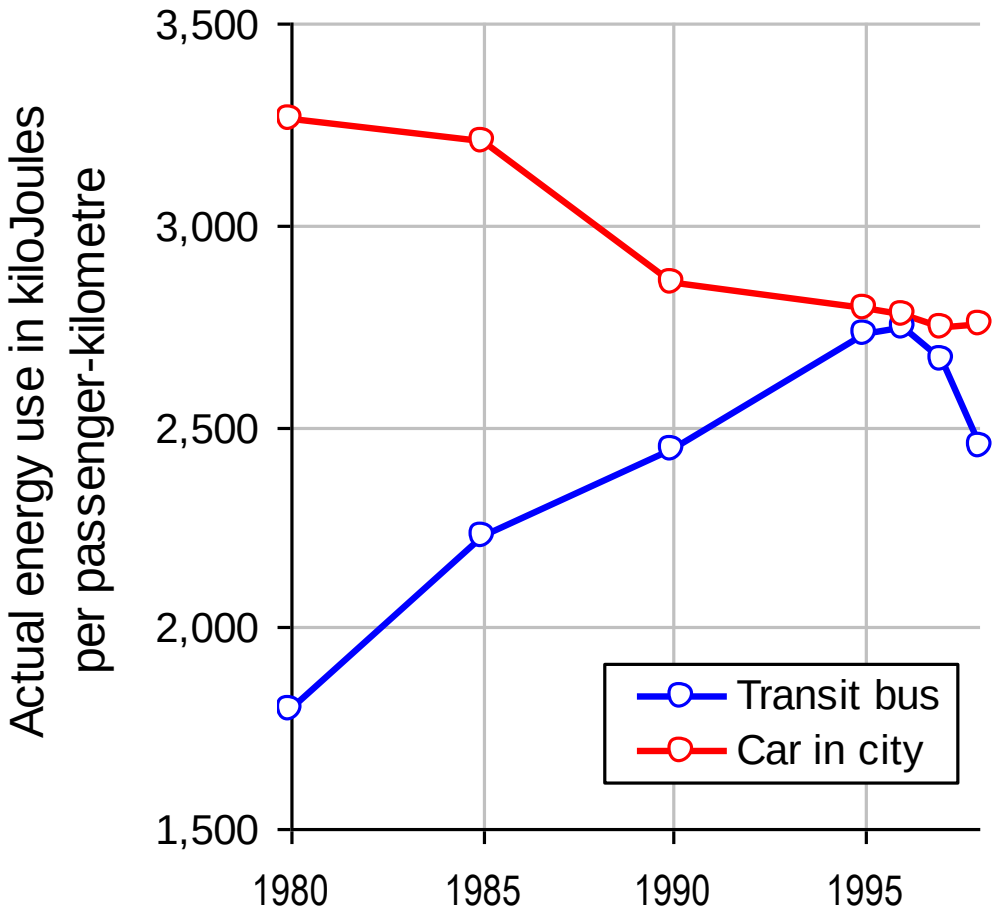
The relationship between car ownership and transit ridership seems even tighter than that with urban density.

Energy use (and thus environmental impact) per person-kilometre by transit buses and regular automobiles in U.S. urban areas, 1980-1998

In 1980, buses were almost twice as good for the environment as cars.

By 1995-6, cars had improved, buses had worsened, so that they were about the same (although add about 35% for SUVs, vans, etc.)

Recent improvement (1995-8) may be pick-up in economy, or effectiveness of pro-transit measures, or both.



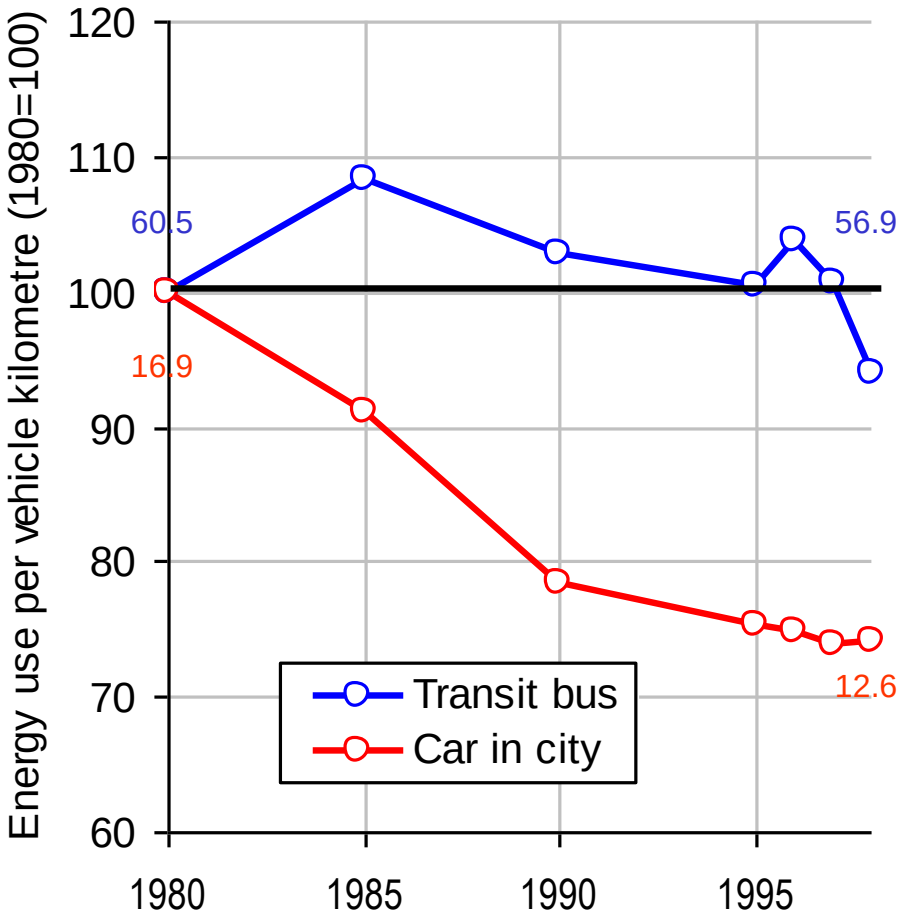
Changes in fuel use by buses and cars, U.S., 1980-1998

Here is one key reason for the relative deterioration in bus performance:

Cars became much more fuel efficient (although offset by SUVs, etc.), whereas buses did not.

Buses' small technical gains were offset by added weight to improve comfort and accessibility.

Red and blue numbers show actual fuel use for 1980 and 1998 in litres/100 kilometres.

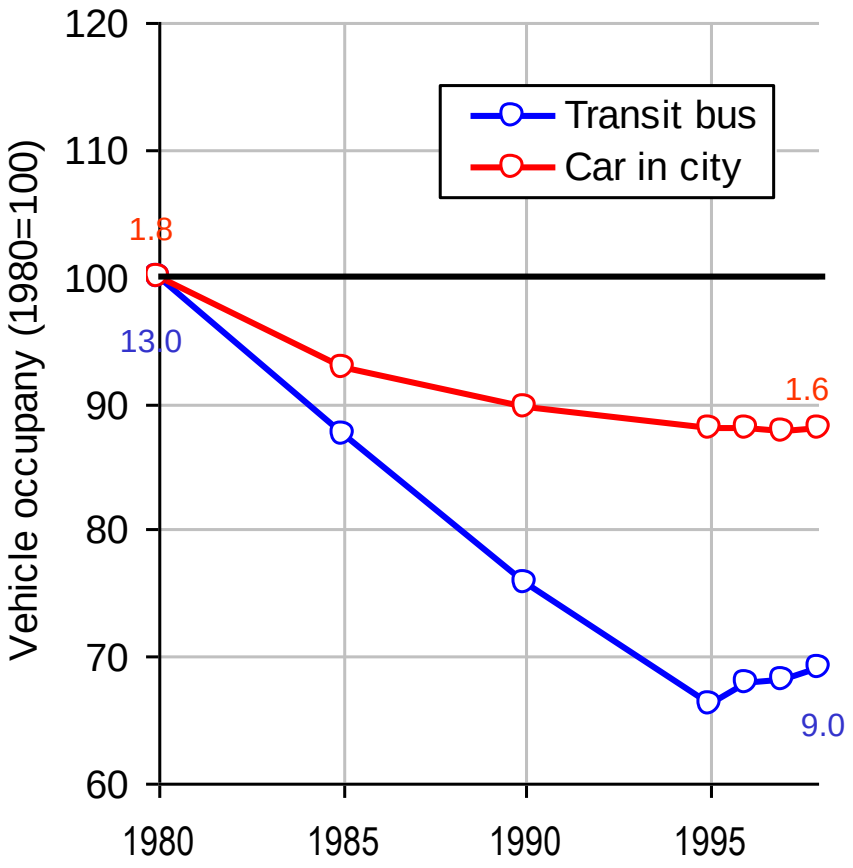


Bus and car occupancies, U.S., 1980-1998

Another key reason for the relative deterioration of buses was the more rapid fall in occupancy of buses.

This may have been in part due to higher levels of (federal) subsidy that put buses on the road in ways that did not result in commensurate increases in ridership.

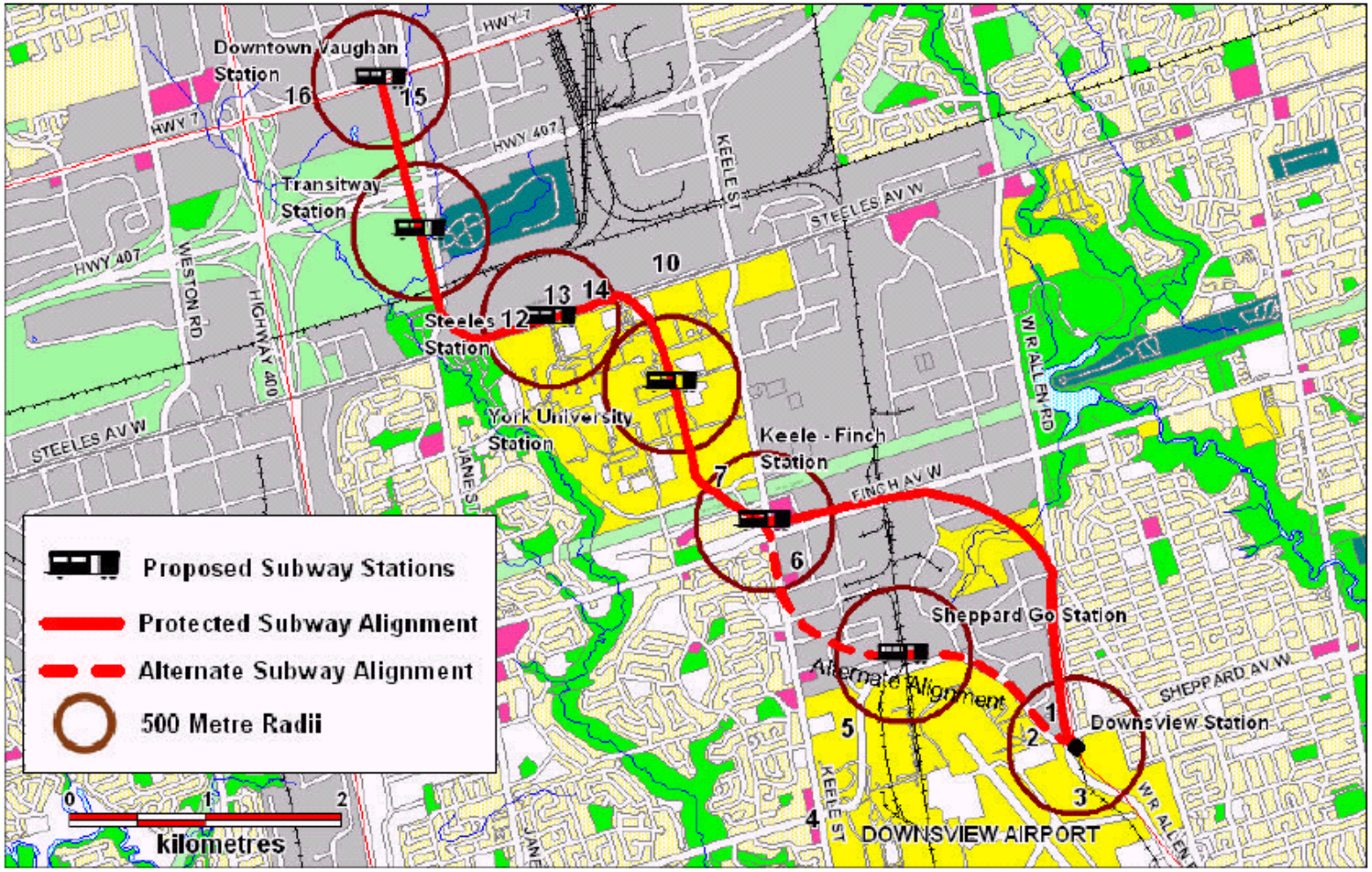
Red and blue numbers show actual occupancies in persons per vehicle in 1980 and 1998 (bus occupancies exclude drivers).



Initial conclusions

- Capital and operating subsidies in Canada are relatively new. They are required to offset the effects of sprawl and high car ownership.
- Subsidies can be perverse. If misapplied, they can worsen transit's environmental performance to below that of car, as in many places in the U.S.
- The shorter-term solution is to apply subsidies in ways that ensure *increases* in ridership.
- The longer-term solution may be enhance transit use by rearranging urban form and, if necessary, taxing automobile use.

A case in point: the proposed Spadina subway extension



Current and anticipated development in corridor

Figure 5-6
Summary of Development and Intensification in the Proposed Downsview - VCC subway corridor

Development Node / Project/Proposal	Within 500 m Radius			Periphery of 500 m Radius			TOTAL		
	Employment	Population	Total	Employment	Population	Total	Employment	Population	Total
Downsview Station (existing)									
[1] Idomo Application		2,200	2,200					2,200	2,200
[2] Research & Technology Park				6,200		6,200	6,200		6,200
[3] Office (formerly Sports & Entertainment)	2,631		2,631				2,631		2,631
Subtotal	*2,631*	*2,200*	*4,831*	*6,200*	*0*	*6,200*	*8,831*	*2,200*	*11,031*
Sheppard/GO Transit Station						0			
[4] Keele-Sheppard Intensification Plan				1,200	5,800	7,000	1,200	5,800	7,000
[5] Keele Street Regional Hospital				3,700	0	3,700	3,700		3,700
Subtotal	*0*	*0*	*0*	*4,900*	*5,800*	*10,700*	*4,900*	*5,800*	*10,700*
Finch Station									
[6] Keele Finch Intensifcation Plan	3,042	8,140	11,182				3,042	8,140	11,182
	3,042	*8,140*	*11,182*	*0*	*0*	*0*	*3,042*	*8,140*	*11,182*
York University Station									
[7] South Lands				3,720	7,000	10,720	3,720	7,000	10,720
[8] University Core Precinct	39,000		39,000				39,000		39,000
[9] North Precinct (east running track)				9,064		9,064	9,064		9,064
[10] Milestone Development Keele				2,271		2,271	2,271		2,271
Subtotal	*39,000*	*0*	*39,000*	*15,055*	*7,000*	*22,055*	*54,055*	*7,000*	*61,055*
Steeles Terminal Station									
[11] North Precinct	11,792		11,792			0	11,792		11,792
[12] UPS Expansion Lands (Vacant)	1,771		1,771			0	1,771		1,771
[13] Glen Steeles (Vacant)	1,360		1,360			0	1,360		1,360
[14] Steeles & Keele Investors Ltd (Vacant)				17,268		17,268	17,268		17,268
Subtotal	*14,923*	*0*	*14,923*	*17,268*	*0*	*17,268*	*32,191*		*32,191*
407 Transitway									
none determined									
Subtotal	0	0	0	0	0	0	0	0	0
Vaughan Corporate Centre Station									
[15] VCCN	9,600	5,000	14,600				9,600	5,000	14,600
[16] VCCD				11,400		11,400	11,400		11,400
Subtotal	*9,600*	*5,000*	*14,600*	*11,400*	*0*	*11,400*	*21,000*	*5,000*	*26,000*
TOTAL	**69,196**	**15,340**	**84,536**	**54,823**	**12,800**	**67,623**	**124,018**	**28,140**	**152,158**

Are totals of 70,000 jobs and 15,000 residents within 500 metres of stations enough to justify investment? Probably not; for *full* cost recovery try 100,000 jobs and 200,000 residents (equivalent to residential densities in 500-metre zones of about 360 persons/hectare, or 150 persons/acre) .

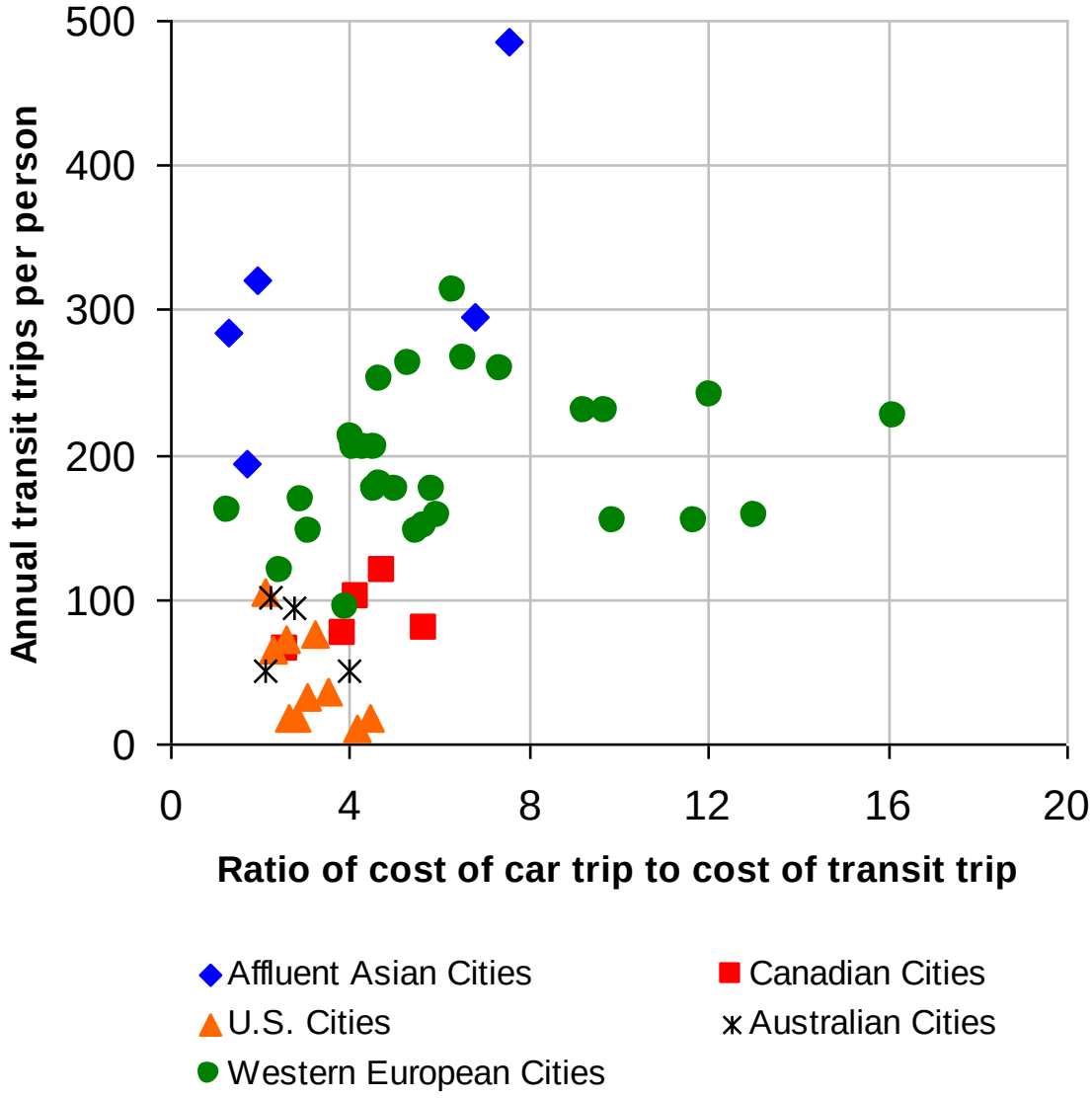
Required strategy

- In the short term, provincial and federal governments should increase funding for urban transit (cities don't have the money).
- Subsidies should be strongly conditional on evidence of implemented strategies to help ensure return to full cost recovery (as in France, where land use and other changes are a condition of central government subsidies).
- Above all, these strategies should involve commitments to increase residential densities near stations dramatically, and also commercial densities.
- They should also involve strategies to restrain automobile ownership over a wider area.
- Such restraint does not have to be coercive; it's more a matter of EANO: Equal Advantage for Non-Ownership.

Transit use and relative cost of car use, 52 rich urban regions, 1995

Merely 'getting prices right' does not seem to ensure transit ridership.

I.e., it's not simply a matter of penalizing car use (although the revenue helps).



Privatization, PPPs etc.

- Privatization of operations can increase ridership and the R/C ratio when there is competition *for* the road (Sweden and London, UK) but not when there is competition *on* the road (rest of UK).

- The key to successful privatization lies in the terms of the contract, begging the question as to whether improved public-sector management could work as well.

- If private operators assume risk, investments are more likely to be tied to performance. When investment risk is shared by government, care must be taken to sustain interest in securing a proper return.

- The perils of privatization include system fragmentation and safety concerns. Sound contractual arrangements can avoid these perils, as can good public-sector management.

Final words

- Transit subsidies are devices for redressing imbalances between transit operations and their competitors (chiefly the car).
- Logically, the same result can be achieved by restraining the car.
- Thus transit subsidies are equally subsidies of transit and the car.
- Restraining the car may be the more sustainable strategy, both environmentally and financially.
- Thus, a reasonable public policy objective could be removal of the need for transit subsidies.
- Securing this end should be the provincial and federal government's goal in providing support for urban transit.