Subsiding subsidies and affordable fares: an international comparison of local transport subsidies

[Published as: Local transport subsidies and affordable fares: international comparisons]

This item was submitted to Loughborough University's Institutional Repository by the/an author.


Additional Information:

- This is a book chapter. It was published in the book, Any more fares? Delivering better bus services [© IPPR] which is available from: http://www.ippr.org/publicationsandreports/

Metadata Record: https://dspace.lboro.ac.uk/2134/3376

Publisher: © Institute of Public Policy Research

Please cite the published version.
This item was submitted to Loughborough’s Institutional Repository by the author and is made available under the following Creative Commons Licence conditions.

For the full text of this licence, please go to:
http://creativecommons.org/licenses/by-nc-nd/2.5/
Subsiding subsidies and affordable fares: An international comparison of local transport subsidies

Dr Stephen Potter and Dr Marcus Enoch,
Energy and Environment Research Unit,
The Open University, Milton Keynes MK7 6AA.
Tel: 01908 653634 and 01908 652964
Email: s.potter@open.ac.uk and m.p.enoch@open.ac.uk

Introduction

This chapter explores the relationship between institutional arrangements for financing buses and the policy goals that bus services are expected to address in France, The Netherlands, Canada and the United States. There is a particular focus on the aims behind public transport development, what this means for fare levels, and how any necessary subsidies are funded. There is a common theme that, to be effective, transport and environmental policies require affordable fares; yet this is in conflict with fiscal policies seeking to reduce public spending. International best practice shows that there are ways to reconcile this conflict, and these experiences need to be understood for affordable fares to become part transport policy in the UK.

Figure 1: Ridership trends of bus and coach in selected EU countries, 1970-1996

Source: European Commission (1999)

As can be seen from Figure 1, bus and coach ridership in countries across Europe increased or remained stable between 1970 and 1996. In particular, bus passenger kilometres Italy rose by 170%, Denmark by 139%, Spain by 82% and Sweden by 64%. Only in the UK was a significant decline recorded, of 42%, while overall in the European Union, bus and coach use rose by a healthy 39% in that time.
In terms of trips per person, in 1996 the average Briton travelled 732 passenger kilometres by bus and coach, the third lowest figure in the EU after Greece (544pkm) and France (706pkm). By contrast, the average German travelled 832pkm, the average Italian 1509pkm, and the average Dane 2090pkm in the same year (EC, 1999). It should also be noted though, that the average modal share of bus travel in the EU fell from 12.5% to only 7.8% - indicating a far faster growth in car use (EC, 1999). Interestingly, even in the heavily car-dependent United States, bus use was 5% higher in 1997 than it had been in 1977, although patronage dropped in between (APTA, 1999).

The Netherlands

Of the four cases examined, the Netherlands has perhaps the most consistent approach to bus service planning; this is possibly because the Dutch Government has effectively controlled bus operations in the country since the late 1960s. The initial motivation for this was social - to ensure that bus, and all public transport, services remained available to non car-users. This was made explicit in the First Transport Structure Plan of 1981. However, over a decade before it was understood in the UK, it was realised that simply providing more road capacity could not accommodate the projected increase in car traffic, and so public transport development was also needed to achieve a ‘balanced growth’ in transport.

The policy role of public transport thus called for a combination of enhanced quality and coverage of public transport with affordable fares. This meant that public finance was needed for both capital development and fares subsidies. The policy process initially involved strong Central Government direction (for example, the transport minister approving the service schedules of regional bus companies). A keystone was the national zonal ticketing system, introduced on January 1st 1980. This allows passengers to use the same, standard priced, ‘stripenkaart’ (ticket strip) to travel on buses, trams and metros anywhere in the Netherlands.

This very centralised approach, although providing consistency, did not allow for much customisation to local situations. It also proved to be expensive to finance, with national government providing all fare subsidies. The Dutch, initially, simply proposed to cut subsidies by fare rises, but consequent fall in public transport use showed this to be self defeating. Policy thus evolved along different lines, with reforms to allow both more local autonomy (within clearly set national transport policy goals) and to achieve efficiency improvements to reduce public transport subsidies.

Moves to local autonomy came first. In 1988, the ‘Wetspersonvervoer’ legislation granted limited autonomy to local authorities, enabling them to introduce fare initiatives provided fare levels were not more than 10% more or less than national fares, and as long as any revenue shortfall was paid for locally. Other developments following this saw subsidies paid on a performance instead of a production basis. In 1990, the Dutch Government published the Second Transport Structure Plan (SVV-II). Taken together with the Fourth Physical Land Use Plan (VINEX) and the National Environment Plan (NEPP+) at around the same time, and a series of Government Commissions, they continued to highlight the importance of public transport in moderating car use. But they also called for a shift to less Government intervention, more decentralisation of responsibility to the local level, and for greater efficiency savings and better value for money.

In terms of subsidy provision, legislation due in 2000 will see national government remain as the only source of public transport subsidy payments. But, instead of contributing direct to the operators, it will now grant payments via the 12 provinces, seven recently-created metropolitan regions and 16 cities (of between 50,000 and 100,000 people) which have public transport responsibilities.

In parallel to this, is the adoption of the ‘Scandinavian franchising model’ for supplying public transport services. Through this, increased efficiency is sought through competitive tendering, which the Dutch see as allowing costs to be cut by involvement of the private sector, while the planning and functions remain in the public sector (Bruggeman, 1999). The legislation suggests a maximum six-year concession, unless significant investment is envisaged.

These actions are intended to both devolve public transport planning away from national government while at the same time improve efficiency and therefore cut subsidies. Introducing such changes, has not been without its problems. Although the first experimental bus franchises were let in Lindburg (to the incumbent VSN Groep subsidiary) and Zeeland (to Vancom, now owned by Arriva) in 1995, the first mainstream contracts are likely to be issued only in 2001. This delay has largely been because of legal opposition by
labour unions in particular, and by the larger municipal operators. To overcome these concerns, Bruggeman (1999) notes the Dutch system will have two unique features:

1. a guarantee to all existing public transport employees that they will be offered jobs for the same pay and conditions by any new company that may take over the running of a public transport concern; and

2. that consumer groups and passenger representatives will asked to comment on tender document proposals to overcome concerns of ‘weaker routes’ and guarantee social services.

The plan is to have tendered at least 35% of the regional bus sector by 2003, and 100% by 2005, with a longer term goal that 100% of all public transport in Holland must have been tendered for at least once by 2010 (Boot, 1999). From this, the Government hopes to see subsidy fall from around 60% of costs, to 50%.

As a result, while bus use has fluctuated a little in line with the nation’s economic cycle, the trend overall has been upward (see Figure 2).

---

**Figure 2: Ridership trends of bus and coach in the Netherlands, 1970-1996**

Source: European Commission (1999)

But, this has been at a cost. In 1970 fares covered between 50% and 90% of costs (This varied between the three public transport operating sectors explained in the footnote to Figure 3). By the mid 1980s this had fallen to between 20% and 40%, although this had improved slightly by 1996 (see Figure 3).
Figure 3: Revenue cost ratio trends in the Netherlands, 1970-1998

Note: ‘BOVs’ are urban companies owned by the nine largest city municipalities, ‘BOS’ companies operate in other cities where local public transport is operated by regional transport companies, and ‘Streek’ are regional companies covering the rest of the country. Source: Savelberg (1999)

Lessons

Twenty years on, the Netherlands’ strategic vision for high-quality and affordable public transport has made them a world class examples of transport policy. However, the means by which this is achieved continues to evolve. Having set a clear national framework for public transport standards (cost, quality, coverage etc.), the Dutch have moved to (a) decentralise decision making within this framework to allow cities and regions to tailor developments to their situation, and (b) to achieve efficiency gains via private sector franchising.

France

During the 1960s the prevailing doctrine in France was to invest in building roads to accommodate rising car use. However, by the end of the decade, it became clear that worsening congestion and the decline in public transport use was threatening the vitality of French cities. As in the Netherlands, there were serious social and economic reasons for intervention to enhance public transport.

However, in contrast to the Netherlands, the organisation and financing of public transport developments in France instead has been very decentralised. Outside of Paris, planning and operating urban public transport across France is the responsibility of the 37,000 Communes. As the vast majority of these have populations of less than 2,000, most operate a syndicate to discharge their urban transport responsibilities. Under the 1982 Loi d’Orientation des Transport Interieurs (LOTI - the law on orientation of internal transport) urban transport authority must:

- create an urban transport area;
• organise public transport (choose routes, operators, technical operating methods, set fares, establish contracts with companies, and set and finance subsidies for finance and operation);

• create and manage transport infrastructure and equipment;

• regulate and monitor transport activity; and

• develop information on the transport system.

Inter-urban and school services are the responsibility of the 100 Departments, while the 26 Regions (including the Ile-de-France which covers Paris) organise and contract out regional railway and bus services. Finally, at the national level, national government has responsibility for regulating transport activities, preparing national transport plans, setting financial, technical and safety regimes, and conducting research. National Government also has responsibility for organising transport in the Ile-de-France Region, which it exercises through Syndicat des Transports Parisiens.

This devolved and hierarchical structure led to a devolved and local method of financing public transport development. From 1971, the French adopted a funding mechanism that is only now being considered for British cities - a discretionary local levy, funds from which are earmarked to support public transport. This was the Versement Transports (VT) employer tax, established by a Finance Law passed in 1971, which led to VT being introduced in Paris in 1971, in cities with populations of more than 300,000 in 1973, 100,000 in 1974, 30,000 in 1982, and more than 20,000 in 1992. It is notable that while commentators in Britain have contrasted Britain’s expensive and often poor public transport to the affordable fares and high quality of public transport services in French cities, there has been little acknowledgement of the parallels of the VT to Britain’s proposed road user and workplace parking charges.

The rationale behind VT was that beneficiaries of improved public transport, employers, should contribute to the public transport system’s improvement. While originally intended only to fund capital investment in public transport and to cover special discount arrangements in the public transport for employees, from 1982 the VT levy has also been used for general fare subsidies.

In addition, the motorist contributes to specified public transport equipment through fines for parking and driving offences, where any ‘additional revenues’ have been earmarked to paying for public transport infrastructure since 1973. This was enabled by the passing of the same piece of finance legislation that resulted in the VT in 1971.

In the special case of the Ile-de-France region, 50% of the money is allocated to the Syndicat des Transports Parisiens (STP), 25% to the Region, and the rest to the local authorities. The STP element from the fines is earmarked to finance projects which improve either a connection between the different transport modes (transfer stations, regional car parks, etc.) or operation of transport networks, and accessibility to the network (passenger transfer tunnels, travelators, road crossing improvement, etc.). These subsidies are matched by the Ile-de-France region.

Thus in France, over the past thirty years, the development of hypothecated employer levies, the dedication of motoring fines for public transport financing, and increased public investment in public transport generally has led to a major improvement in the quality of urban public transport. In terms of transport policy, this has achieved an impressive increase in ridership (see Figure 4). In addition, in 1993, one in three tram passengers was a recent convert to public transport, and 16% of motorists were reported to have switched to the tram from the car, while ridership had grown by 20% over the previous two years (Flowerdew, 1993).

---

1 The majority of transport operators outside of Greater Paris are private companies (around two-thirds of urban areas over 100,000, amounting to 60% of the population, and 55% of staff and vehicles). Public sector operators control around 10% of the networks, population, vehicle fleets and staff, while so-called ‘mixed-economy’ companies make up the remainder. As in the UK, a small number of large groups dominate the market. By contrast in the Ile-de-France Region, 80% of public transport vehicles and 95% of staff in the hands of the publicly-controlled Regie des Transport Parisiens (RATP) and the SNCF.
But, although VT provided the investment needed to modernise and expand urban local public transport (allowing new metros in Lille, Lyon and Marseille and several new tram systems to be built), there remains some feeling that this was carried out in a state of euphoria created by the availability of ‘easy’ finance, without proper evaluation of its medium term consequences. This increasing reliance on public money to cover costs is illustrated in Figure 5.

Source: GART (1998)
Like in the Netherlands, in France there has been a trend to public transport systems being run by private sector management companies, with contracts won on a competitive basis. This has improved efficiency while maintaining a strong state planning and control function.

However, a major issue now appears to be that it is no longer possible to increase income from Versement Transport in line with expenditure needs. Growth in unemployment has slowed down the rate of increase in revenues (Coindet, 1994). Furthermore, the relaxation of the rules will divert all tax revenues to cover operating costs, with no margin for investment. It now appears that VT may have played out its role as the driver of development, and that it will not finance further major construction work unless ways are found to increase revenue yield.

**Lessons**

Overall there are similarities and significant contrasts between the Dutch and French situation. Both recognised thirty years ago that economic well being required the significant improvement of public transport services. To achieve this goal, affordable fares for public transport were a key issue. In France this initially concentrated upon Paris and the larger cities and involved the development of new funding sources. In the Netherlands national government took the lead.

It is significant that the use of local, hypothecated funding proved an acceptable and effective mechanism to develop public transport. Despite some qualifications, the success of local hypothecated funding, consistently applied over 30 years, contains important lessons for British cities now contemplating the use of similar funding mechanisms.

**Canada**

Until the 1970s, Canadian policy makers basically viewed bus support as a social service for those unable to afford cars. However, with the abandonment of large scale urban road projects due to public opposition, and increased awareness of congestion and other environmental and economic problems caused by the car, this led public authorities across the country to promote cheap and high quality public transport as a major tool of urban regeneration.

Compared with Europe though, a number of additional problems existed. For instance, while operating costs were no lower, in North America the price of fuel for car users was and is considerably less. In order to attract car users therefore, fares had to be reduced, meaning that fare subsidies formed a crucial part of any policy to enhance bus patronage. Other policy elements were also needed, and these included tough land use policies, a halt to major urban road building and innovative methods to improve bus service delivery to the customer, including park-and-ride, high quality information systems, reserved bus lanes, transitways (exclusive bus only roads), queue jumpers and traffic signal priority.

By the 1980s, the effect of these policies in Canada was that, in spite of increasing car use and suburbanisation, patronage levels even surpassed those reached during the so called ‘golden age’ of the 1950s. But, this progress proved fragile to a series of events in the early 1990s, including the onset of recession and a political shift towards reducing budget deficits. To this was added a fundamental restructuring of Government as a whole by several of the strongly-independent provinces (see Figure 6).
There was a double source of instability as funding to support public transport was cut at the same time as its institutions were reformed. All of the Provincial Governments which had previously largely funded and controlled public transport in partnership with regions and/or municipalities, divested much of this responsibility to those regions and municipalities. The main response to devolution with inadequate funds was to cut the most loss making services. Furthermore, new investment programmes were cut or cancelled altogether. The result was that revenue cost ratios increased from the range 53-55% between 1980-1995 to 57% in 1996, and then to 61%, where it has since stabilised (Hemily, 1999).

However, some regional systems (Quebec City, Montreal, Vancouver and Victoria) were granted tax raising powers to make up any shortfall. In Montreal, a $C30 a year vehicle tax, and a 1.5 cent a litre petrol tax are hypothecated to pay for public transport, while in Vancouver public transport is funded through a earmarked levies on hydro-electric power, commercial parking, property and fuel. In Ontario however, the Conservative administration has not as yet awarded such powers to the regions or municipalities. Interestingly, while various forms of privatisation have been looked at as a possible way forward, such a move looks unlikely at the present time.

**Lessons**

The rationale for affordable fares and bus service development in Canada has relied very much upon its role in enhancing the economies of major city centres. This is considerably narrower than the more comprehensive policy drivers in France and the Netherlands. Affordable fares were a very necessary part of bus development, due to low fuel prices, but what is notable in Canada is that policy did not rely upon affordable fares alone. These were just part of a package of policy measures, including land use planning, restrictions on urban road building and a host of innovative features that enhanced bus service quality.

However, the cost of this subsidy became politically difficult to sustain. Bus development policy in Canada wobbled in the 1990s, with fare rises, service cuts and project cancellations. It has now begun to come together again, and, once again, the theme of devolved bus development responsibilities coupled with new hypothecated funding sources appears to be the key. It is notable that reforms to achieve efficiency gains have not had prominence in this process.
United States

In the United States too, the 1970s proved a time of Government intervention in mass transit. Between 1945 and 1975, public transport ridership fell from 22.3 billion to 7.0 billion trips. Allowing for the growth of the USA population over this period, the fall in trips per person would be even larger. Loss making bus operators were often taken over by municipalities, which then began to depend on Federal capital subsidies for new vehicles and equipment. By the early 1970s it became clear that not even operating costs were being fully covered, and so in 1974 Congress enacted Federal subsidies to help pay these.

For bus services, social issues dominated as the central rationale. It was rail-based metros that were seen to have an economic or environmental justification for public funding. Thus, rather than affordable fares being part of a package of policy measures to enhance bus use, revenue subsidy became more or less the only measure. The fares had to be low because buses were for the poor. Between 1970 and 1980 total operating subsidies to US public transport rose massively from $318m to $3705m (Table 1), with 54% of this coming from Federal sources.

Table 1: US operating subsidies to public transport, 1970, 1980, 1990 and 1997 ($m)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>0</td>
<td>1094</td>
<td>970</td>
<td>578</td>
</tr>
<tr>
<td>State</td>
<td>30</td>
<td>862</td>
<td>2971</td>
<td>3879</td>
</tr>
<tr>
<td>Local</td>
<td>288</td>
<td>1749</td>
<td>5327</td>
<td>3956</td>
</tr>
<tr>
<td>TOTAL</td>
<td>318</td>
<td>3705</td>
<td>9267</td>
<td>10243</td>
</tr>
</tbody>
</table>


Table 2: US capital subsidies to public transport, 1970, 1980, 1990 and 1997 ($m)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>133</td>
<td>2787</td>
<td>2873</td>
<td>4121</td>
</tr>
<tr>
<td>State &amp; Local</td>
<td>67</td>
<td>647</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>State</td>
<td>0</td>
<td>303</td>
<td>697</td>
<td>1013</td>
</tr>
<tr>
<td>Local</td>
<td>0</td>
<td>344</td>
<td>1177</td>
<td>868</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>4344</td>
<td>4936</td>
<td>6002</td>
</tr>
</tbody>
</table>


This vast increase in subsidy money made transit funding a political battleground, while apparently doing little more than maintaining the level of ridership (see Figure 7). States and districts sought to maximise their cut of Federal funds, with no relationship to transport policy needs. As noted by Taylor (1999), the result has been a misallocation of funds, resulting in well funded, but little used public transport systems in one area, with relatively poor funding for the big cities that need to develop their public transport systems for environmental and economic reasons. Even worse, it results in favouring lightly patronised suburban transit systems over heavily patronised central city networks. This encourages metropolitan decentralisation, trip lengthening and car dependence.

Figure 7: Public transport patronage in the United States, 1977-1997
The 1980s Reagan and Bush Administrations sought to slash the Federal budget. Aid to transit was seen as a key target and funds from Washington declined. As a result, States and local governments began looking at alternative ways of funding public transport to make up the shortfall. In the USA, states are able to make local charges and tax levies, and many states and districts have used these powers to maintain the funding of their bus and metro systems. Examples include local sales taxes, property taxes, bridge tolls, fuel taxes, parking charges, employment taxes, income taxes, vehicle registration taxes, landing charges at airports, and developer fees. Less common taxes include hypothecated taxes on cigarettes (in Massachusetts), on beer (Birmingham, Alabama), on lotteries (Pennsylvania and Arizona), on gambling (Atlantic City, New Jersey) and on student fees (Berkeley, California).

Meanwhile the 1990s saw a return to explicit Federal support for transit, through the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), and still further with the 1998 Transportation Equity Act (TEA 21), again designed to meet social, environmental and economic objectives. This increased level of Federal money is almost exclusively focused on capital projects (in some cases providing up to 80% of the funds required), and operational support remains almost exclusively the domain of local, regional and state bodies (Millar, 1999).

Lessons

The United States has thrown a lot of money at both capital and operating subsidies for public transport, but has only succeeded in slowing decline. To a large extent, subsidies have been the only policy measure and the lack of any real progress can be seen as a result of the neglect of other factors in an integrated transport policy (particularly fuel price, land use planning, bus quality and efficiency gains).

Added to this, the allocation of money is now widely regarded as grossly inefficient and little, if any attention, has been given to measures to improve the operational efficiency of public transport services. The main thrust has simply been to find new, and politically acceptable, sources of revenue to maintain subsidies. Interestingly this involves local charges similar in principle to the Versement Transport, to those made in Canada and proposed for the UK.

Lessons for Britain

This brief overview of bus subsidy practice in three countries contains a number of lessons for bus policy in Britain. It is clear that affordable fares are a crucial mechanism to fulfil a number of policy goals, and although there are other ways to influence fare levels, subsidies remain a valid and necessary way to achieve this. However it is clear that subsidies need to be part of a planned and integrated policy mix. On their own they are likely to be little more than an expensive failure.

In the USA, bus subsidies have had a predominantly social purpose and the use of subsidies reflects this; firstly that fares are affordable for non-car users, and secondly, that bus networks exist. There is great inefficiency in the USA system, both administratively and because subsidies are virtually the sole mechanism used. Faced with cuts in Federal funding, the main response has been to develop locally acceptable ad hoc funding sources. In Canada, bus developments have been used to fulfil urban
regeneration goals, with the need to provide an alternative to car users made fare levels crucial. Therefore revenue as well as capital subsidies were important. Meanwhile the French case saw the economic importance of public transport leading initially to capital support being the main use of subsidies, with Versement Transport income targeted at improving and building metro systems. Interestingly, the emphasis has shifted across, particularly in Paris, to revenue fare subsidies. As policy has developed, with employers encouraged to ‘green’ the travel of their staff, Versement Transport income has been diverted to subsidise ticket prices. Finally, the Netherlands is an example of where policy has evolved to include a portfolio of objectives. Bus services are seen as fulfilling a social need, congestion relief and to reduce environmental impacts.

There is also the drive towards increasing the efficiency of bus service provision, often as a result of pressure on national budgets. This has been particularly important in Canada since the recession in the early 1990s, and the Netherlands - illustrated by the Government’s desire to privatise bus operations there - and is again becoming an issue in France as the VT begins to encounter problems. This issue seems less prevalent in the USA, where dedicated revenue streams have seemingly largely removed this pressure, at least in the short term.

Another key trend across the case study countries has been a tendency to decentralise control of bus services to the more local level. Crucially, in France, and to a lesser extent in the United States and parts of Canada, has also been matched with a similar devolution of fund raising powers. A very important lesson is the need for a clear national policy framework within which the devolved delivery of public transport takes place. This is also true for the devolution of funding. An uncoordinated devolution of finance and planning is a sure route to failure, and there are signs that this may be the route being followed in the UK.

The overall picture to emerge is that, in the comparison countries, the level of bus fares is an issue that, unlike in the UK, has remained on the political agenda as bus services have been asked to fulfil a planning, economic and environmental policy role.

Interestingly, British public transport policy appears to have developed in exactly the opposite way to that in France, the Netherlands, Canada and the United States. In those countries, priority was given to developing bus services that would fulfil key economic, social and environmental aims. It was then within an established policy context that institutional and fiscal reforms to achieve efficiency gains have taken place.

Government policy in Britain has operated the other way around. Here, spending cuts and efficiency gains were an objective in their own right (as proposed in the 1984 Buses White Paper and as implemented in the 1985 Transport Act). Thus the move towards bus services addressing economic, social and environmental policies is constrained by the structures and processes of this 1980s view of public policy, which in particular excludes fares from being a policy issue at all (with the notable exception of concessionary fares).

A wider policy role for public transport, encompassing urban, economic development and environmental policy goals, is increasingly required of bus development in the UK. This seems destined to bring the question of affordable fares onto the policy agenda, just as it has done for rail via the franchise conditions. Elsewhere the role of subsidies has not remained unchanged, with many countries facing the paradoxical situation of requiring their public transport systems to assist a wider range of policy objectives while public finance for buses is reduced. There appears to be a move towards an ‘objectives led’ approach, with target fare levels being achieved by a mixture of measures, of which subsidies are combined with institutional and efficiency reforms. The integration of bus development and fares policy with other transport policy measures is also crucial to subsidies being an efficient policy mechanism.

References


Acknowledgements

Our thanks go to everyone who supplied help and information for this chapter. In particular, Guido Bruggeman, consultant, The Hague, Netherlands; Stéphane Canalis and Patricia Varnaison-Revolle, CERTU, Lyon, France; Brendan Hemily, Canadian Urban Transit Association, Toronto, Canada; Fons Savelberg, AVV, RWS, Rotterdam, Netherlands; and Brian Taylor, UCLA, Los Angeles, United States.