



ITLS

**WORKING PAPER**  
**ITLS-WP-07-10**

**The dark side of making transit  
irresistible: The example of France**

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May 2007

ISSN 1832-570X

**INSTITUTE of TRANSPORT and  
LOGISTICS STUDIES**

The Australian Key Centre in  
Transport and Logistics Management

The University of Sydney

*Established under the Australian Research Council's Key Centre Program.*

**NUMBER:** Working Paper ITLS-WP-07-10

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**ABSTRACT:** The French experience in developing policies to reduce car use in metropolitan areas is presented in this paper as an illustration of the lack of recognition of the broader set of criteria on which specific policy frameworks should be judged. One of the major challenges, and often failings of policies focussed on reducing car use, is the lack of a structure that ensures that the downside impacts are not relocated to other parts of a system such that potential gains end up being eroded by the potential losses. We draw on experiences throughout France as well as case studies in Lyon, to highlight the dark side of French transport policy promoting a switch from car to public transit and non-motorised modes, in terms of financial, equity, and environmental outcomes.

**KEY WORDS:** *French transport policy, modal share, charging, car dominance, challenges for public transport*

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**DATE:** May 2007

## 1. Introduction

There are several reasons to favour public transit in comparison to cars. The first is pollution, with transport in France in 1999 being responsible for 13 percent of SO<sub>2</sub> emission, 30 percent of CO<sub>2</sub>, 70 percent of CO and 70 percent of NO<sub>x</sub>. This is all the more important when placed in the context of the generation of French electricity which is substantially produced by nuclear plants with very few emissions. The second reason is congestion. Ever expanding cities are struggling to accommodate increasing road congestion. The third reason is the promotion of wellbeing in societies with increasing numbers of inactive individuals, who would gain health benefits through walking to public transit. Finally, in the old world, ancient city centres are not very well suited to car traffic, making it increasingly necessary to protect the ancient cores of these cities.

To fulfil these objectives, many European countries have developed sets of measures to promote public transit and discourage the use of cars in cities. France is one of the countries which has moved a long way in this direction. In this paper we present some major elements of this policy and discuss its results.

## 2. Measures in France to promote public transit

### 2.1 A new resource for financing public transit and the subsidization process that ensued

Instituted in 1971 for Paris and progressively during the mid 70s for the Regions, the “versement transport” (hereafter the VT) is a payroll tax devoted to public transit. It is collected by the AOTU, an association of municipalities in charge of urban transport policy for an area coinciding with the urban areas. The rates, as of 2002, are summarised in Table 1. This tax is justified in terms higher productivity benefits of employers and employees located in a city because of agglomeration economies. Both employers and employees can benefit, with the transit system, from access to a larger employment market.

*Table 1 The 2002 Rate of the VT*

	Nature of the area	rates
Regions	10,000-100,000 inhabitants	0.55 %
	more than 100,000 inhabitants	1 %
	urban area with subsidized TCSP*	1.75 %
Paris metropolitan area	Centre (Paris city or municipality)	2.50 %
	inner suburbs	1.6 %
	outer suburbs	1 %

\* Public transit line with full right of way: BRT, LRT, metro.

Source: GART.

This tax, in 2002, has raised 2.2 billion euro for the Paris urban area and around 2 billion for the regional cities. In the Paris municipality this translates into 400 euros per resident.

One of the implications of the VT is the reduced contribution to the financing of public transit paid by transit users, amounting to 20 percent in the Regions and 26 percent in Paris (GART). Some of the money has also been used to support new investment in public transit. Despite the benefit of lower cost transit use and support for new infrastructure, the VT has some major downsides. France is already a heavily taxed country with some costly fringes benefit imposts on employees, hence adding even more to the cost of labour in a country with a high unemployment rate. Moreover, by increasing the cost of labour, especially in central jurisdictions of urban areas, the VT tends to encourage urban sprawl, which is not favorable to public transit.

The availability of substantial sums of hypothecated funds, however, through the VT has provided an opportunity to develop very efficient public transit that compensates to some extent the decentralisation pull, pushing activity back towards the centre, albeit with longer journeys to work. The example of the RER in the Paris metropolitan area is one such example, detailed in the next section.

## **2.2 Investment in public transit: the example of the RER**

The RER consists of a network of suburban trains with special characteristics: they are generally faster than ordinary trains; have higher frequency, facilitate ease of movement from suburbs to suburb; and are well interconnected to other RER trains, as well as metro and suburban trains. These attractive features were inspired by the Tokyo transit system. The RER system is today the core of the public transit network in Paris and is highly successful in attracting patrons.

The building of this sub network, however, has been very expensive. The RER stations inside Paris are typical ancient metro stations with the two tracks in the middle and a platform on each side. The rationale for this design was based on the relative ease of digging a trench in the surface streets and then covering it up after construction was complete. For the RER Stations, this was no longer feasible because they were to be built very deep below the surface. Instead of building such “cathedral stations” (Gérondeau 2003), it would have been financially more attractive to adopt a design with the platforms in the middle of the station and two smaller parallel tunnels for train circulation.

It is very easy to find many examples of costly choices for public transport in France such as oversized engines for metro locomotives, and magnificent but almost useless station for the airport at Lyon. The general belief is that if the people in charge of designing the project know that there is a lot of money potentially available, they will use it, with some unnecessary expenses.

## **2.3 Creation of difficulties for the car in cities**

In France, transport policy at the urban level increasingly focuses of ways of creating obstacles to car use. The creation of a large number of bus lanes in Paris, for example has hampered the efficient movement of cars. This works relatively well in Paris, where there is a good transport network; however in cities in the regions which have adopted the same strategy, this has been far less successful. The examples in Lyon of light rail

(LRT) and the new planning (the “beautification”) of the low wharves of the Rhone river illustrate the impacts.

### 2.3.1 Light Rail

After having almost disappeared from French cities in the 1950s, LRT has shown a revival since the mid 80s, linked to a government subsidy scheme for the “TCSP” which consists of public transit with full right of way. Central government provided varying but generous subsidy levels for metro (20 percent), LRT (40 percent) and variable amounts for Bus Rapid Transit (BRT). The subsidy strategy was designed to meet a number of objectives.

The first one is to increase public transit ridership by increasing the quality and the quantity of the supply of public transit, with a full right of way. This new supply was supposed to be totally protected from traffic congestion, making transit more attractive than buses competing in mixed traffic. The second objective was to reduce the space available for cars in the cities. For example, the metro, which in France is mostly underground, was less subsidized than the LRT, which have been constructed to the detriment of space available for cars. The third objective was the desire to create an industry with public subsidies in conformity with the “colbertist” model and to export public transport technology, especially LRT. To a certain extent this has been successful although the main expected market (China) is now heading increasingly toward BRT than LRT (Hensher 2007).

A further reason to favour implementation of TCSP was the desire to reduce the operating costs of public transit companies. As the speed of transit increases, the labour cost per vehicle kilometre diminishes. Moreover, with a greater capacity (as opposed to buses<sup>1</sup>), LRT decreases the driving cost per seat-kilometre offered. This subsidization scheme has led, and continues to lead, to huge investment programs. For example Lyon invested 1.2 billion Euros between 1993 and 2002, and Toulouse has an impressive program of more than 3 billion Euros. For the period 2002-2015, LRT has been the favourite investment (see Table 2)

*Table 2 Investment in TCSP 1994-2002*

LRT	58 %
Metro	37 %
Bus (BRT)	7 %

Source: cour des comptes.

The impacts of these investments have not been formally assessed, although it is required by law. The results on ridership are conflicting, but overall, an increase of patronage has been observed in the metropolitan areas with TCSP. Contrary to what was expected, the operating costs seem to have increased more for the large metropolitan areas (more than 300,000 inhabitants, which all have TCSP) than for the totality of the metropolitan areas.

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<sup>1</sup> Although this is now being shown in Bogota, with the TransMilenio BRT, to be incorrect (Hensher 2006). Indeed The bus rapid transit system of Bogota, Colombia, has earned the distinction of being the world’s first mass transport project to be approved for participation in the Kyoto Protocol’s Clean Development Mechanism.

We will take a closer look at what has happened in Lyon, which is indicative of many regional cities in France. Lyon (PTU<sup>2</sup> 1.3 millions, metropolitan area 1.6 millions) has four metro lines (among them one is very small) and three new LRT lines since 2001 (see Figure 1).



Figure 1 The Lyon Metropolitan Area

In Lyon, the objective of reducing the space available to cars through the introduction of LRT has been largely achieved. The capacity of some major arterials has been seriously reduced (e.g., avenue Berthelot, quai du Rhone) as has the capacity of some minor arterials (e.g., rue de Marseilles). We estimate that on some major avenues the capacity has been reduced to less than half of the previous capacity. An important bridge on the Rhone River has been particularly affected.

In the absence of precise data, it is difficult to formally determine the results of this policy on car traffic. Anecdotal evidence suggests that congestion has increased significantly in some areas. It remains to be seen if this congestion will induce behavioural change, modal shifts and/or location changes. We will deal with this point later. In terms of public transit ridership, some increases are noticeable but many factors may have caused this. It seems very likely that the extensions of the LRT system in the suburbs have led to some increase of patronage. However the service level did not increase for all patrons. The desire to benefit from density economies has resulted in the re-configuration of many bus lines to serve the LRT lines, taking away the opportunity for much more systemwide multi-modal coverage in which buses can serve longer haul trips. It follows from this that more connections are needed and that the routes are less direct. For example, many students are unhappy with the frequencies and the route of a number of LRT services serving an external campus of one university.

<sup>2</sup> The PTU is the public transit perimeter, where the transit policy is decided and implemented. It consists of a set of municipalities encompassing a large municipality which gives its name to the PTU.

Overall, LRT in Lyon has decreased the space available for cars, increased the comfort of some public transit users, and has compelled many users to incur a modal transfer. There has, disappointingly, been no significant shift in the modal share of each mode, with a mix of increased and decreased the travel times of the travellers; and most noticeably, the presence of LRT has contributed to increased congestion through a policy of ‘take one lane’ in contrast to ‘add one lane’.

This policy to restrict car access to the city has many consequences. We present briefly some aspects of another project related to the new planning for what we call the “low wharf” of the Rhone River to highlight the experience.

### ***2.3.2 The low wharf of the Rhone river***

The banks of the Rhone River in the central business district offer 10 kilometres of very green grass and tree covered parks that are very pleasant walking precincts. The planned low wharf project is designed to extend this green area along the river to the centre of the city and beyond. New recreational space will be created in space formerly devoted to free car parking, eliminating ten thousand parking spaces. The area has two hospitals and two universities and many small businesses. That means that this new recreational area, which will mainly benefit central residents, will create some serious difficulties for other people. The implicit assumption is that former car users will use the public transit, but even in a metropolitan area well served by public transit as Lyon is, it is not obvious that such a modal transfer will occur. It is very likely that a significant number of former users of the parking lots will be driving in the city looking for a space to park during the peak hours. Before the policy against the car was implemented, it took in 2002 at least 10 minutes to find a parking place in Lyon (Sytral 2007). We can reasonably assume that the search time has increased today, increasing the disutility of time spent in cars (as well as the pollutants emitted).

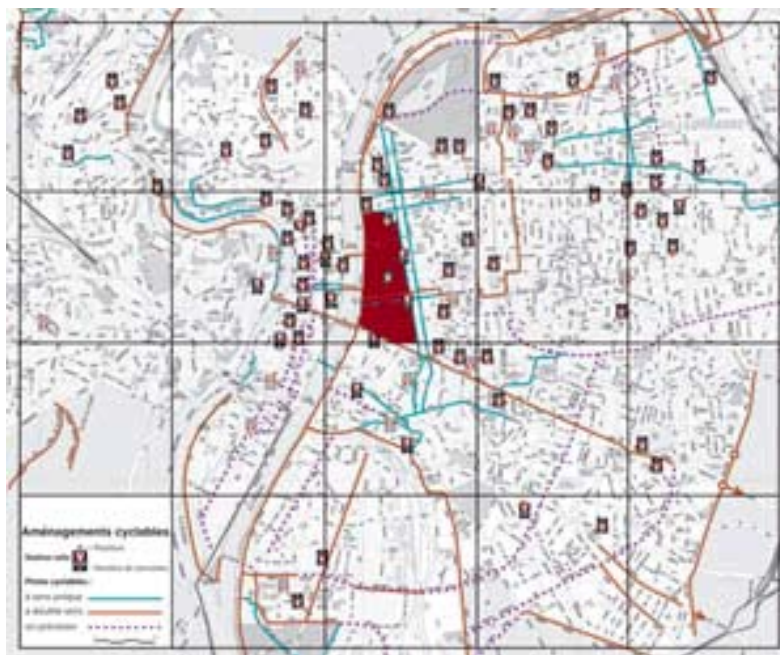
It is more likely that the number of car users will not reduce significantly, with the number of cars entering the city, estimated between 400,000 and 500,000<sup>3</sup>, with an increasing number actually cruising around searching for parking.

### ***2.3.3 Velo’v: an apparent success with few impacts***

Another system developed in Lyon, to promote “active modes” known as Velo’v, is also designed to discourage car use. It was introduced in 2005 by Lyon municipality as a scheme to lend or rent bicycles to individuals travelling in the central area. Using the bicycle requires a season ticket (one year to one week) at very low cost (respectively 5 euros and one euro) and the client can pick up a bicycle at any of the 180 plus stations in the core of the city. Renting is free for the first half hour and cost 0.5 euro (for the one year season ticket) for the subsequent hour and then 1 euro per hour (up to 24 hours). A bond is required when registering for the season ticket. Theoretically a GPS system and a set of trucks make sure that every bicycle station will always have a sufficient number of bicycles available. Figure 2 shows the locations of bicycle stations in Lyon.

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<sup>3</sup> Carrying 600,000 commuters.



*Figure 2 Location of Bicycle Stations in 2006*

As of June 2006, one year after the introduction of the scheme, 50,000 people registered. This corresponds to approximately 20,000 trips per day. A recent survey found that about 7 percent of those trips would have been made by car. Thus, a maximum of 1,400 car trips are avoided out of a total of 1.7 millions car trips within Lyon PTU. Despite the success of the scheme in increasing the use of bicycles, its influence on car use has been miniscule. But by stimulating other people to use bicycles, it has increased the modal share of bicycle from 0.6 percent (1995) to 1.7 percent (2006). The city is not very suited to bicycle traffic, resulting in increased the fatalities of bicycle users.

The bicycle stations are concentrated in the centre of the metropolitan area. Given the low speed of the bicycle and the low density of suburbs, and that many car trips are between low density suburbs, it is likely that this kind of experiment while promoting a “green” image of the city, is not likely to alter significantly the modal share in the metropolitan area. Although technicians and politicians are very proud of the photos of streets with many bicycles, the impact of modal share is extremely limited.

### **3. Consequences of these policies**

#### **3.1 Modal share**

Modal share is estimated through periodic surveys conducted in the main cities, generally within an area corresponding to the urban area (or more or less the urban area which are smaller than the metropolitan area). The results are summarised in Figure 3.



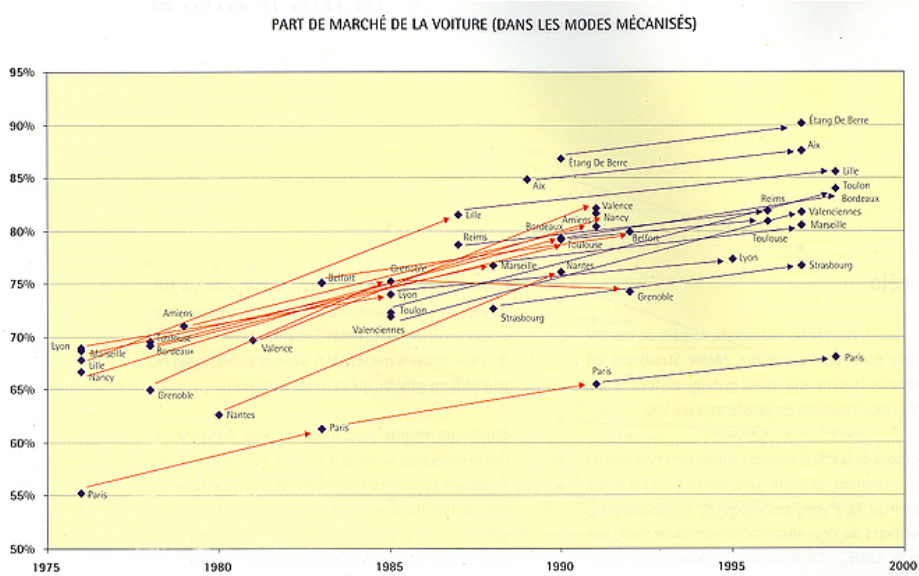


Figure 3 Car Modal Share in French Urban Areas (CERTU)

The evidence reinforces the view that the modal share of car keeps growing almost everywhere. The only exception is Grenoble, where the quality of the diagnostic (i.e. problems with the selection of the survey area) played a role. Subsequent to the surveys used to develop Figure 3, a new survey in Grenoble has shown a rise of car modal share (75 percent) in the Grenoble PTU and an even higher modal share of car in the metropolitan area. Moreover it is likely that the modal share of cars, calculated in passenger-kilometre has grown substantially.

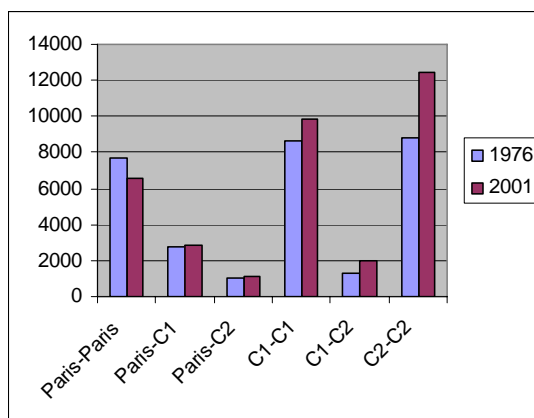
The reasons for the progressive growth in car use are clear. Using the example of Paris, urban sprawl continues to accelerate (Table 3) and non-work related travel is increasing its share of trip activity. As in much of the developed world, French metropolitan areas are affected by urban sprawl. The policy to favour urban transit has not deeply altered this trend.

Table 3 Population of Paris metropolitan area<sup>4</sup> (000)

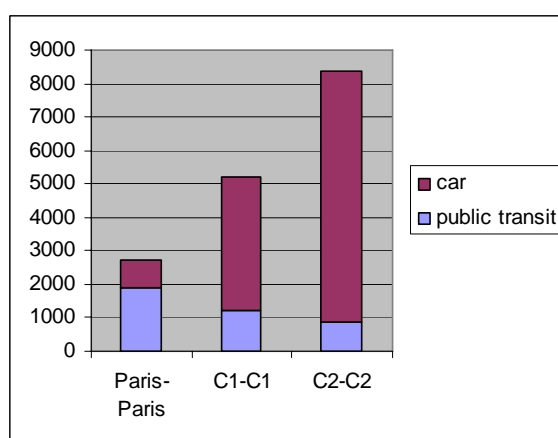
	1975	1982	1990	1999
Paris municipality	2300	2180	2150	2120
C1 (inner suburb)	3980	3900	3990	4040
C2 (outer suburb)	3600	3990	4520	4790

Although the figures might vary between metropolitan and regional jurisdictions throughout France, the outer suburbs are increasing more than the old centres. This gives rise to an increase in the number of trips between suburbs, which are predominantly by car (Figures 4 and 5).

<sup>4</sup> The French definition does not correspond exactly to the US definition of a metropolitan area. In this paper the departments belonging to the Region Ile de France (RIF) are taken into account. This definition applies to all subsequent tables.



*Figure 4: number of trips in Paris metropolitan area (RIF) according to the sub area implied in origin or destination.*



*Figure 5 Modal share of traffic flows (mechanized trips) according to the direction of the trips.*

The increasing proportion of trips for purposes other than commuting, going to and from school and travel as part of work, tends to increase the modal share of car as shown in Table 4 for the Paris metropolitan area.

*Table 4 Trip purpose in 1976 and 2001*

	1976	2001
journey to work	5540	5890
business	3600	3790
education	1680	2490
leisure	2060	3600
other	4830	7390

The trip purposes grouped under “other” increased by more than 50 percent, in contrast to commuter trips that increased only by 6 percent. Public transit accounts for 36 percent of journey to work trips and only 9.5 percent of trips with the purpose “other”. So the share of trips carried out for “other purposes” favour the use of cars. The origins and destinations of these kinds of trips are scattered everywhere in the metropolitan area and not especially well served by public transit.

Two other interrelated factors are detrimental to the use of public transit in France, particularly in Paris; the core of the cities are subject to gentrification and, partly linked to this, reverse commuting is progressing. The evidence for Paris (Aguilera 2006) is given below.

Between the 1982 census and the 1999 census, the number of skilled professionals increased by 57 percent in Paris city as the number of intermediate professions increased by 14 percent and the number of clerical workers decreased by 28 percent and finally the number of blue collar workers decreased by 50 percent. This gentrification of the centre is not unique to the Paris metropolitan area but this has here important transport consequences. Skilled professionals tend to reverse commute more, only 62 percent of them living in Paris work in Paris, as compared to 82 percent for clerical workers and 71 percent for blue collar workers. So, together, about 30 percent of Parisians (i.e., living in Paris city) reverse commute. This could be detrimental to the modal share of public transit but also the low income workers are more and more living in the outer suburbs and tend to use their cars.

The same trend can be observed in other cities. For example in Lyon between 1999 and 2002, the share of workers living in the centre (Lyon and Villeurbanne) and working in the centre decreased from 75 percent to 66 percent. Meanwhile the commuting distance increased by 7 percent in the metropolitan area (Sytral 2007).

The conclusion from this brief overview is that whatever the obstacles you create for the use of cars, if individuals really need it, they will use their cars. The trends previously mentioned (urban sprawl, evolution of trips purpose) constitute strong factors to favour the use of cars, in spite of the various disincentives created.

## **3.2 Other consequences**

### ***3.2.1 Pollution***

Although there is no precise data, there appears to be a reduction in the amount of car traffic in the city centre (notably Paris). However, it is difficult to evaluate how much of this diminution is caused by a specific transport policy and how much is due to other causes (urban sprawl, and more recently the surge of oil prices). However, in spite of the reduction in car traffic, the pollution emitted by cars has increased, in part due to speed reduction. Prud'homme *et al.* (2005) have calculated for Paris, with a traffic decrease of 9 percent and a speed decrease of 12 percent that pollutant emissions have increased from 32 percent (hydrocarbons) to 99 percent (NO), and fine particulates which are very dangerous, increasing by 59 percent. All those results are obtained with the hypothesis that the cars do not evolve technologically. Those results are crude estimates, but it is likely that decreasing the speed of the cars increased the pollution in spite of the traffic decrease. The preliminary results of another study, by Airparif (2006), concerning NO<sub>x</sub> indicate that pollution in the Paris city decreased by 32 percent between 2002 and 2007. Of this, 26 percent were due to vehicle improvement and only 6 percent were due to traffic reduction. They do not provide the effects of speed reduction. However we can appreciate that the reduction of pollution due to traffic “management” is not very strong compared to the improvement due to technology evolution: New cars with “Euro IV” engines specifications are between 10 to 20 times

less polluting than the oldest cars on the roads (Airparif 2006). We wonder if it is worth creating problems for many people if the result is only to achieve a fraction of what can be obtained by the car fleet renewal. The aggregated data in Table 5 for broad global contexts support this tendency.

*Table 5 CO emissions due to urban transport*

Zones	Density	Pollution per person	Pollution per urban ha.
US and Canada	18.7 (7.5)	183 (75)	1.22 (0.7)
Northern Europe	46 (13)	57 (20)	1.7 (1.5)
Southern Europe	73 (43)	101.8 (54)	2.89(1.6)
China	146 (43)	57.5 (20)	2.46 (0.9)
Developed Asia	134.3 (104)	18.1 (15)	1.17 (1.4)

Standard deviations are in brackets.  
 Source: UITP millennium data base.

Southern Europe appears more polluted if we consider the pollution per surface unit. The global effect of density results from two conflicting factors: as density increases, public transit tends to be more attractive and the pollution due to transport tends to decrease; but as density increases the pollution per urban hectare tends to increase as well, because there are more vehicle kilometres per surface unit. Southern Europe does not appear to benefit sufficiently from the first effect to counterbalance the second effect.

Many French policy analysts tend to favour some policy toward more dense cities. Given the evidence above, we question whether a policy tending to increase the density of the urban areas could be beneficial to pollution, given the threat to health. We question whether various measures taken in favour of public transit are consistent with this policy. Setting up a payroll tax in the city centres or in Paris that is higher in the city centre has contributed to the migration of jobs toward the urban fringes. If obstacles are created for car movements, a decrease in speed and a pollution increase are likely to occur.

### **3.2.2 Congestion and travel time**

It is generally agreed in France that the travel time in US cities is superior to the travel time in French cities, because of congestion. The data shows exactly the opposite, if we consider the journey to work (see Table 6).

*Table 6 Travel time for the journey to work 2000*

Cities	Travel time (minutes)
Paris	36 (2001)
Los Angeles	29.1
Chicago	31
Boston	27.8

Sources: Census for US cities and EGT for Paris.

This higher travel time for Paris is not uniquely the result of the transport policy; it is also linked historically to location practises. If we jointly assess urban planning and the transport policy, we conclude that French cities are surpassed by more extensive cities like the American ones, as a result of travel time for the journey to work and pollution per urban hectare.

Congestion is not limited to car traffic. Congestion within public transit, commonly referred to as overcrowding, exists often in public transit, especially if it is under priced. Although we do not have a quantitative indicator of overcrowding, an indicator of satisfaction is available (Table 7). A marked decrease is observed in the Paris metropolitan area since the mid 1990s.

*Table 7: satisfaction index of the public transit users in Paris metropolitan area 1996-2004.*

Network	Satisfaction index 1996	Satisfaction index 2004
Bus Paris city	90.4	84.2
Bus RATP suburbs	88	79.8
Bus suburbs other than RATP	84.2	81.3
Metro	90	87.2
RER	86.3	69.4
Suburban trains	80.6	71.7

Source: STIF (2005)

Given that the regularity, frequency and cleanliness did not deteriorate, we hypothesise that overcrowding is a significant influence on the decline in the satisfaction index from 1996 to 2004.

### **3.2.3 Financial issues**

Turning to the economic impact of those policies, the evaluation is not very favourable. The financing of the investments by loans places severe pressure on the finances of the local governments. Taxing wages with the VT, added to existing substantial fringe benefits taxes, increases the cost of labour, which is especially detrimental to low skilled workers. Within OECD countries, France has the highest minimum cost of labour, measured as a percentage of the cost of average workers.

Another aspect of the French policy that leads to a contradiction is the yield of the TIPP (tax on the petroleum products), which amounts to 40 percent of personal income tax. This revenue stream highlights government reluctance to see car traffic significantly decrease.

Instead of the “versement transport” (VT) or a reduced tax level, we can think of other ways to finance public transit. It has been a long tradition, particularly in the US, to finance railroads with land grants. It has been effective (Heckelman and Wallis 1997). The same idea underlies the use of property taxes to finance public transit. This is theoretically justified (Sheppard and Stover 1993, Batt 2001) and some empirical studies have identified the presence of rent increases around the places well served by light rail or metro (e.g., Cervero and Landis 1993) although some studies found weak (Gatzlaff and Smith 1993) or null effects (McDonald and Osuji 1994) Given the perverse side effect of the VT, it is probably better to resort to a kind of property tax or if possible, a tax on land value.

### ***3.2.4 Transportation issues***

When we look closely at transportation issues, we note that one very popular measure consists of creating a very affordable travel pass (as in Paris), for which, by definition, the marginal cost of a travel is zero. This induces mobility and a number of those trips are undertaken during peak hours, with nil monetary private cost and a huge collective cost.

Benefiting from abundant resources, transport planners tend to oversize some projects, especially urban rail infrastructures (see Flyberg 2000); for the same reason, some systems are unnecessarily sophisticated, such as the automatic line D of the Lyon metro which cumulated innovations, delays and high costs.

Finally, “competing” against the use of the car with some naive tools (e.g., reducing the space allocated to cars for running or parking) might be less efficient than congestion charging (Vickrey 1963). Although there is a strong rationale in favour of transport pricing (Hensher and Puckett 2007), there are, in France two main hurdles to overcome. First, making transport pricing acceptable (Raux and Souche 2004), which is difficult given the gentrification of the core of many metropolitan areas; and second, modifying the French law so that it is possible to have congestion charging on existing infrastructure. The current law limits congestion charging to new infrastructure. A cordon charging scheme such as exists in London and Stockholm would not be lawful under existing legislation in France.

### ***3.2.5 Distributive issues.***

The policy to create some obstacles for the car and to subsidize heavily public transit benefits more people living in the dense core of the cities. They enjoy better transport services and their environment is improving contrary to the inhabitants of most of the suburbs, who are facing delays to come to the centre. Yet the inhabitants of the centre tend to be richer and to have less children.

Part of the subsidy to public transit is capitalized in the rent of the most accessible dwellings. To a certain extent, people are buying their transport when they are buying their home. So you can benefit fully from the good transit network only if you can afford to pay for this. It follows that generally the best transit improvements are not for the poor (although there are some exceptions).

### ***3.2.6 Some benefits***

On other dimensions, the assessment of French transport policies is less dark. Particularly, the protection of old city centres has proven, on the whole, to be successful. However, we wonder about the future of these city centres, as they are well preserved but as economic activity is moving away.

In terms of health impacts, the evaluation of the results is more complex. An operation such as *velo’v* is largely symbolic and potentially benefits only the residents of the centre of the metropolitan area. It remains to be seen if it can trigger a more general

behaviour modification. For the walk to the public transit, which is indubitably favourable, we can observe that there are other ways to do exercise. The will to concentrate the population in the dense areas of the metropolitan areas tends to result in an increase in the proportion of the population living in the most polluted areas.

## 4. Conclusions

This paper has presented the French perspective on the provision of public transit and the challenges that are being faced in attempts to discourage car use in metropolitan areas of France where gentrification and increasing wealth only support the resistance against public transit. Despite France having a reputation as a 'success' story in the provision of public transit, the story is not so rosy when considered against the facts.

The story line however is remarkably similar to that of almost all modern societies that grapple with the challenges surrounding the increasing popularity of the car, the consequent environmental impacts of this trend and the extent to which the air quality and global warming impacts can best be attacked through vehicle technology enhancements and regulatory reforms on standards of automobile design and manufacture. We speculate that the demands on the public transit system consequent on even a small percentage reduction in car use (e.g., 2-5 percent) would be horrendous without massive investment in public transport capacity of a systemwide nature (in contrast to a corridor focus which often fails to satisfy the needs of seamless origin-destination trip making) (Hensher 2007).

Congestion charging, or more broadly based efficient variable user charging (Hensher and Puckett 2007), can contribute to the outcome by making the car less attractive, but it is relative to what is on offer by public transit systems. However, if the charging regime, assuming it can be sanctioned through legislative reform, is spatially specific to congested contexts, there is a high likelihood that it will incentivise urban sprawl even more with the de-centralization of jobs and probable increase in the cost of labour.

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