

Urban space and mobility analysis in the Paris region

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- **A quick portrait of the Paris region**
- **Assessments of problems and policy options through mobility analysis**

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The Paris region portrait

The Paris region: basic portrait (1)

Inhabitants: 11.5 million

Workers: 5,4 million

Area: 12012 sq km²

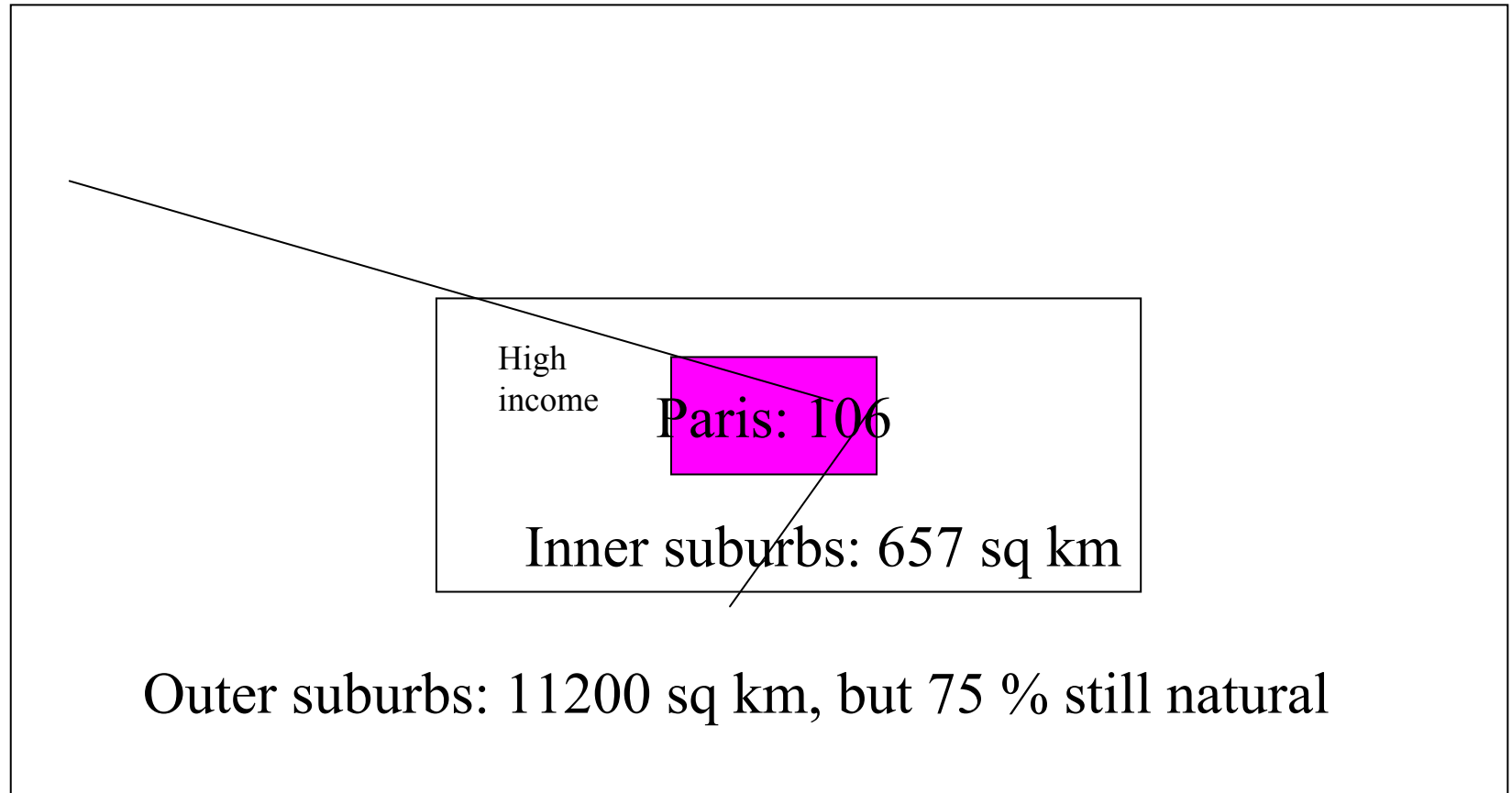
Gdp per head:

43400 euros (France: 28700)

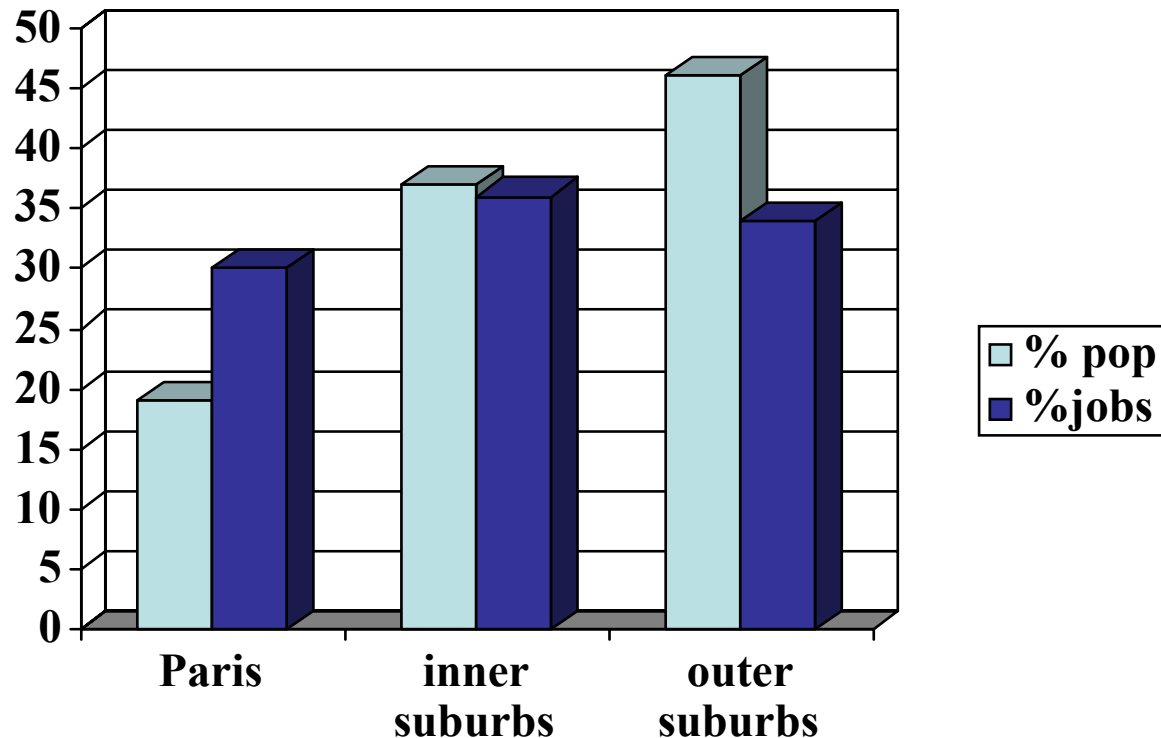
Gdp per worker: 92 300 euros (France: 71400)

**Car ownership: 80 % of households as a whole,
more for households with workers**

The Paris region: basic portrait (2)



The Paris region: population and jobs



The Paris region: governance

A power distributed among:

- **1281** municipalities, with power for land use
- **8 counties**
- **1 region**
- **And the national level for some strategic decision**
- **With budget capacities / inhabitant decreasing from municipalities to the region**
- **With political legitimacy decreasing from the municipalities to the region**

The Paris region: internal networks

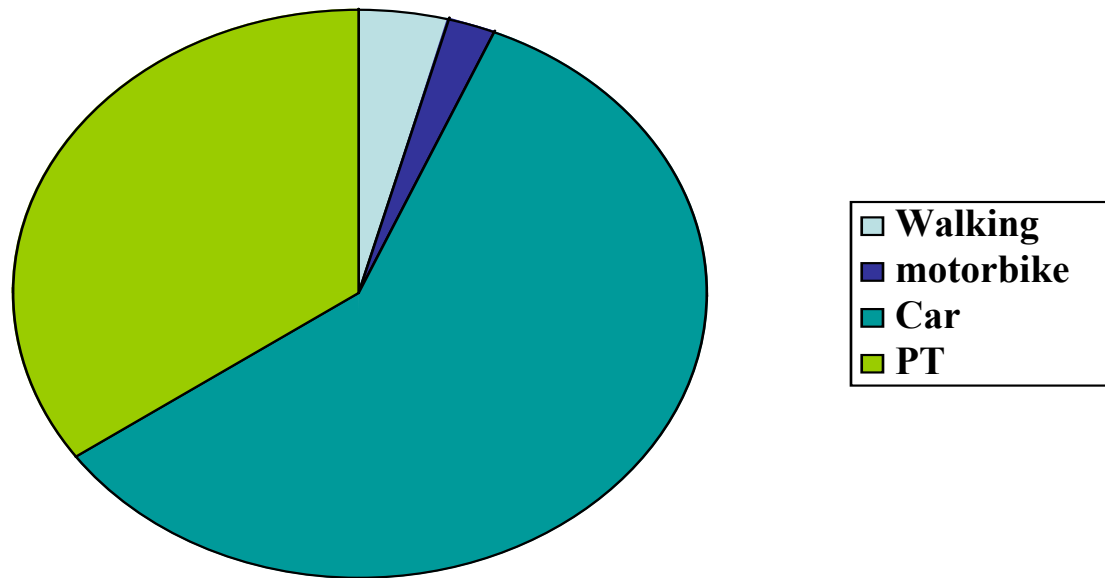
- **Bus: 3000 km in Paris and inner suburbs**
- **Rail: 1400 km**
- **Tube: 200 km**
- **Tram: 50 km**
- **Freeways: 600 km**
- **Trunk roads: 1400 km**
- **Local roads and streets: 35000 km**

The Paris region: network governance

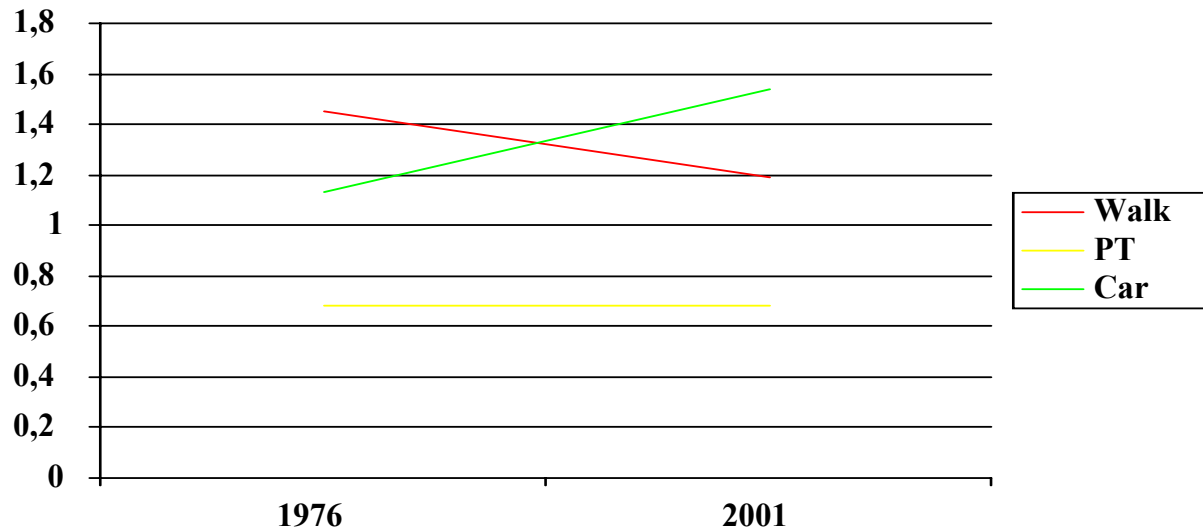
- 2 powerful **government** transport companies (RATP SNCF)
- A regulatory body for P.T. governance (STIF) with leadership of the **region** and financial participation of the counties and the employers
- Roads under governance of **municipalities** (streets), **counties** (local roads) and national **government** (freeways and trunk roads)

Passenger flows

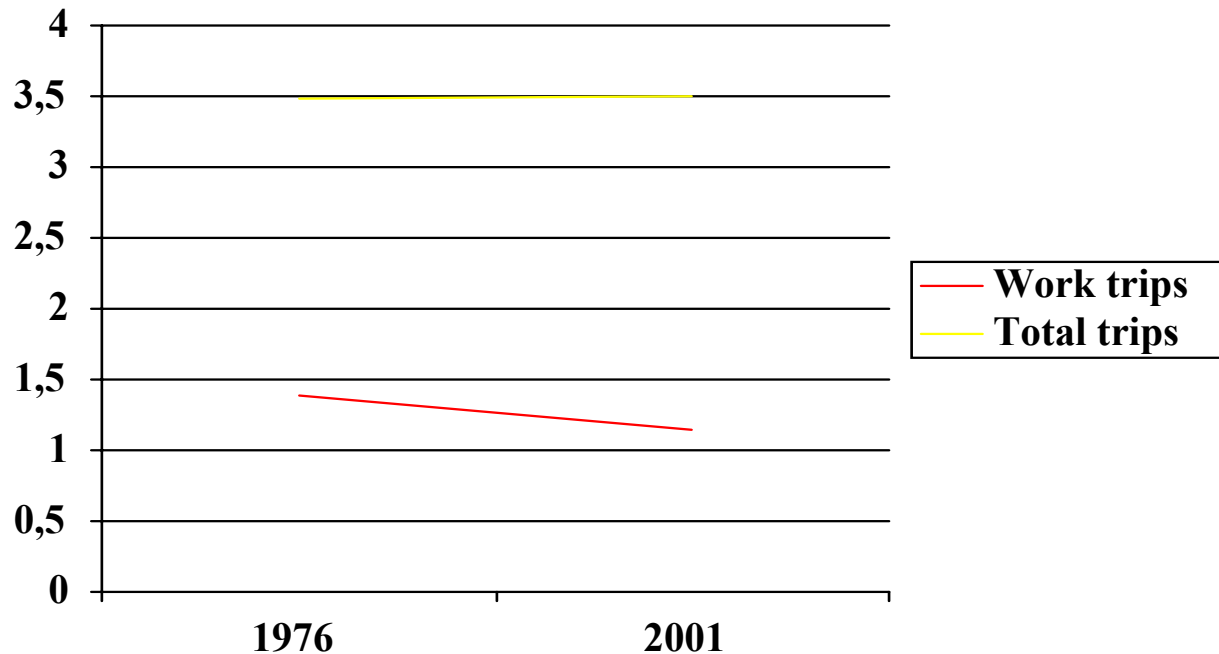
daily km in the modes, 224
millions Km / day



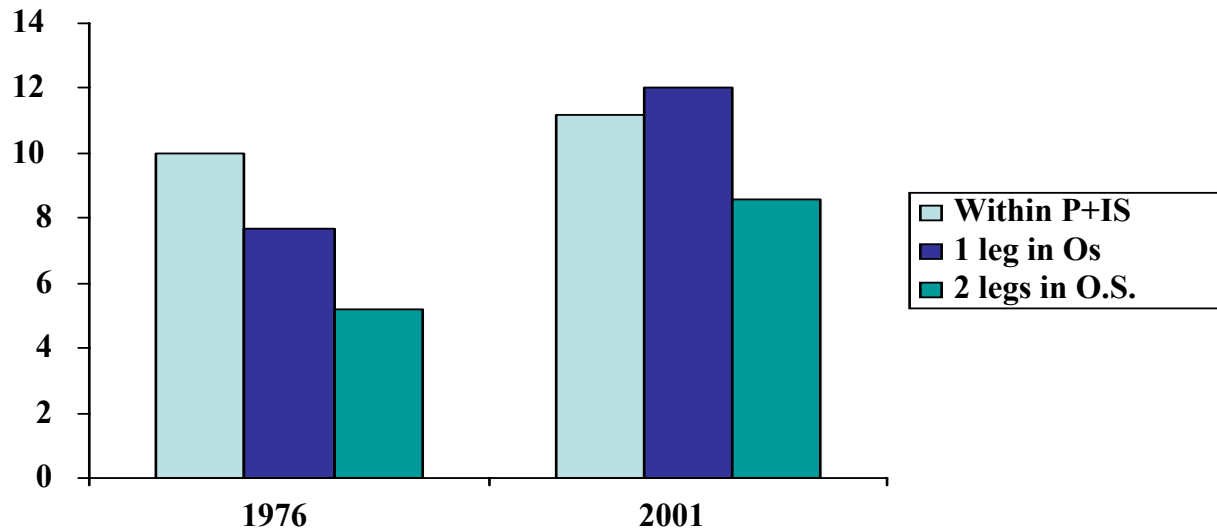
Mobility in the Paris region: more and more car trips



Mobility in the Paris region: more non « usual work » trips



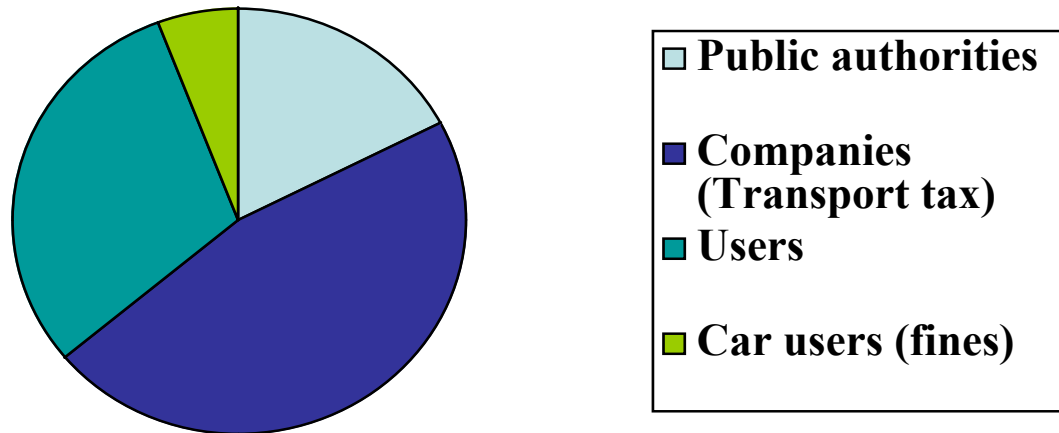
Explosion of trips in the periphery



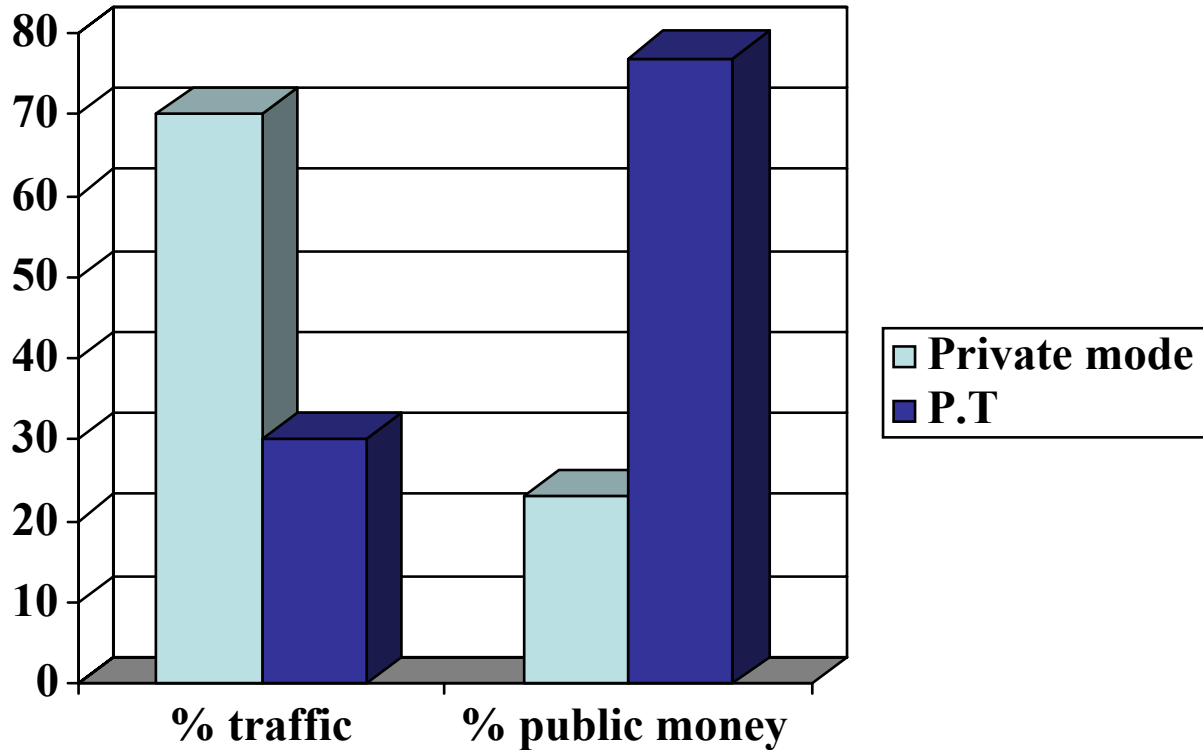
The Paris region: financing the P.T. system

7,8 billion euros / year (Operations+Investment)

Coverage of operating costs



P.T. and road outputs and public costs



2

The problems today

Planning the Paris region to day: general formulation of the problem by the decision makers

- We have planned the region since the master plan of 1965 with one aim: to increase **accessibility** and insure the **unity** of the region, especially for the job market.
- For that aim, we have used options which reveal to be a problem to day: zoning, extensive view of urbanisation, regional infrastructures (trains and freeways) with high severance effects

Our vision of the future

(1) General options

We want

less land consumption,

**a lower concentration of population with
problems,**

**and a region with ultra low exhausts in the
environment.**

Our vision of the future

(2) Transportation options

- We want **less car travel** in the region, less pollution, less Ghg emissions, higher usage of walk, bike, P.T. in the whole region, and especially in Paris

3

The point of view of mobility research

- **Yes, these are probably good aims**
- **But let 's use the surveys to look:**

**Whether these options will lead to the
aims**

At which rhythm

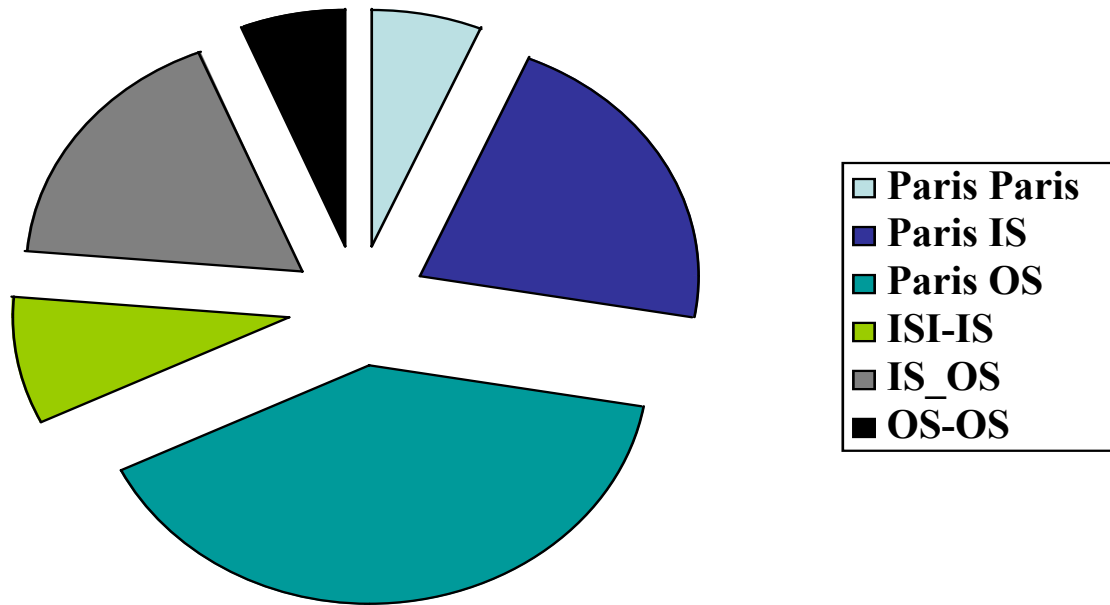
With which problems for the individuals

Examples of diagnosis studies

**Are individual rational from the
point of view of modal split?**

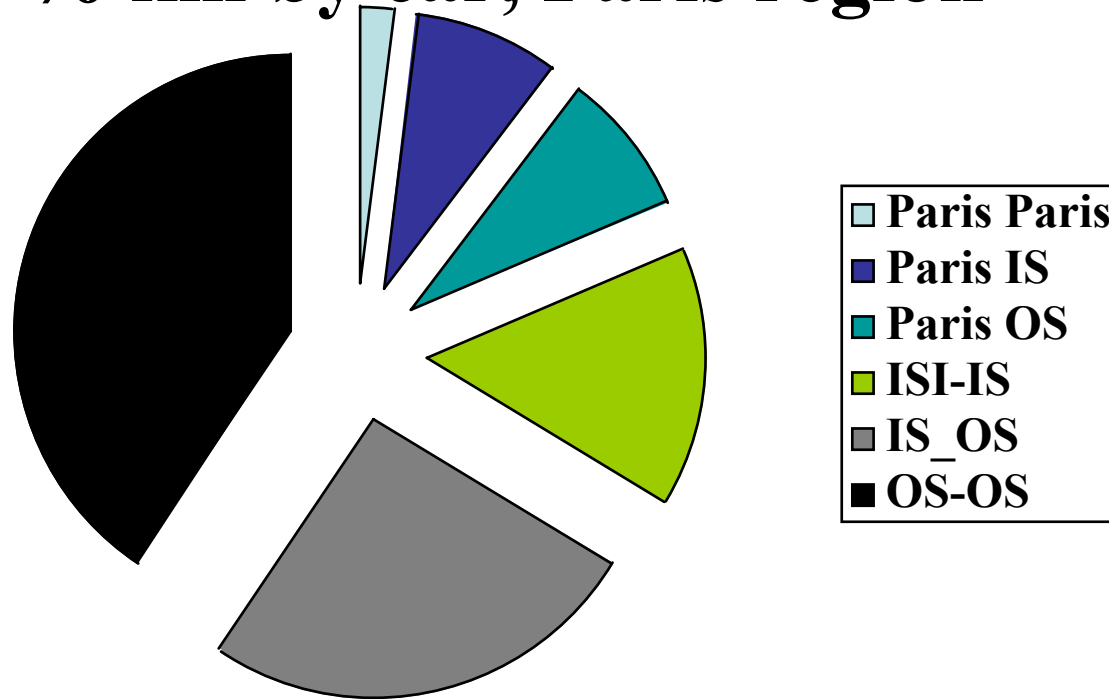
The geographical structure of flows

% km by P.T., Paris region

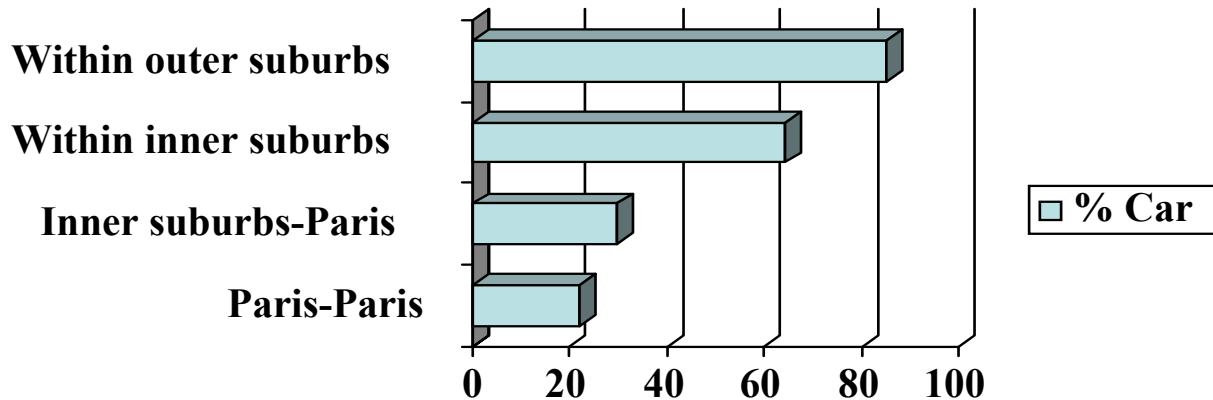


The geographical structure of flows

% km by car, Paris region



Examples of dependence of mode choice to the trip types



Results of a modelling exercise

Method

- **For each person in the survey and each trip chain of the person:**
- **Consider current car trip**
- **Compare the travel time with bike (limited to 8 km) or with P.T.**
- **Consider the mobility on the full day and accept the modal transfer to bike or P.T. if and only if the total travel time over the day is not too much increased**

Results

If we consider that destination places are fixed, only 8 % of car trips may be replaced by this process

If we consider large improvements in the PT system, around 12 % can be avoided

Main reason for mode choice: not « irrationality », but better travel times

Methodological conclusion

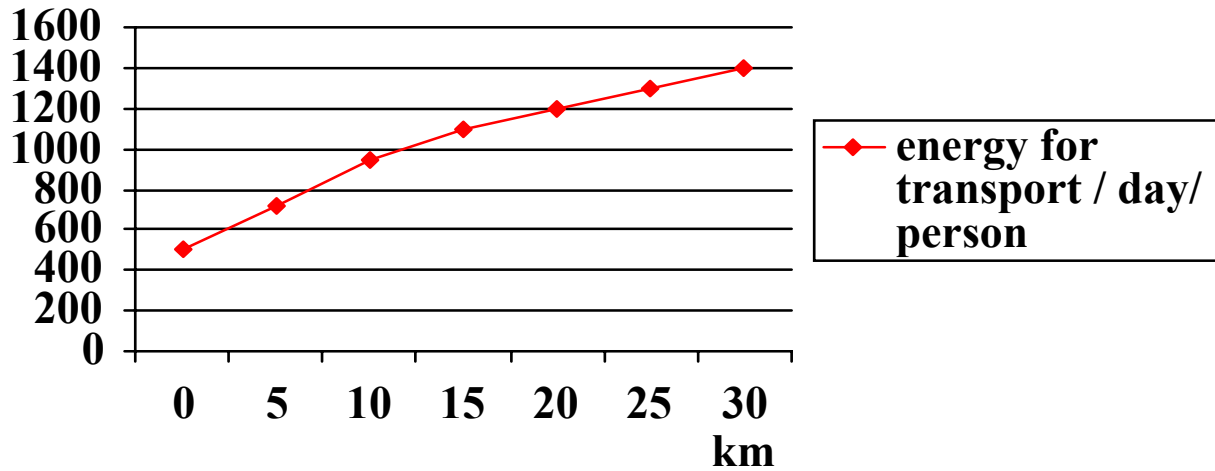
- **Modal split is a result of spatial structures, because the performance of modes depend on spatial structure**
- **Modal split has to be analysed by geographical market types**
- **Time of travel has to be known for the current choice and the alternative choice**

Policy conclusion

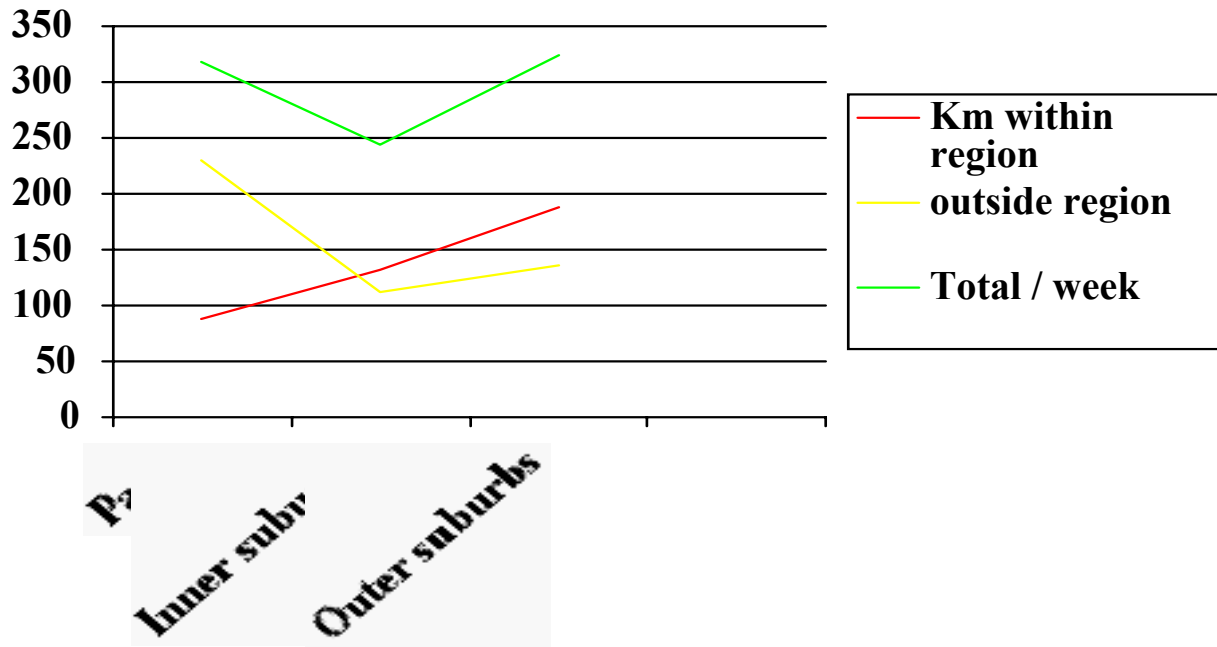
- **Refraining people to use their car is certainly possible**
- **The main adaptations will not be through modal split, but through destination choices**
- **Planners should conceive in that aim highly multifunctional zones.**

Is urban sprawl associated to more oil consumption and Ghg emissions?

Yes, for trips within the region



But, the mean total distance travelled per week and per person, within or out of the region is less sensitive to the place of dwelling



Methodological conclusion

- **When people become wealthier, tourism takes a greater place in their mobility**
- **As far as global stakes (such as oil consumption) are of interest, local surveys should include a part on long distance mobility**

Policy conclusion

- **Yes, urban sprawl is at the origin of more car traffic **within the region****
- **The global effect on Ghg emissions is much more unclear:it depends on behaviour for extraregional long distance trips**
- **But anyway, long distance trips are easier to cancel (in an oil crisis for example) than commuting or shopping trips**

Do the prices on the real estate market play a role in commuting distance

Method:

For each job place, to compare the prices on the housing market less than 30 mn from the job, and the actual price for housing of longer travel time commuters to that place, those who live at more than 30 mn of their job

Do the prices on the real estate market play a role in commuting distance?

Results

75 % of long travel time commuter live in a zone whose housing prices are higher than where they live

The 25 % in the other situation are wealthy people who prefer the central amenities (good school, culture, etc.)

By their behaviour, they contribute to the growth of prices in the central parts of the city

How the prices of housing and the cost of moving combine their effects on hh budgets?

Method

- To define zones with homogeneous levels of price, from the most expensive (1) to the cheaper (9)**
- To study the types of households and their travel and housing expenses**

**How the prices of housing and
the cost of moving combine
their effects on hh budgets?**

Results

From the highest price to the cheapest zone

The size of hh increases

The income / person decreases

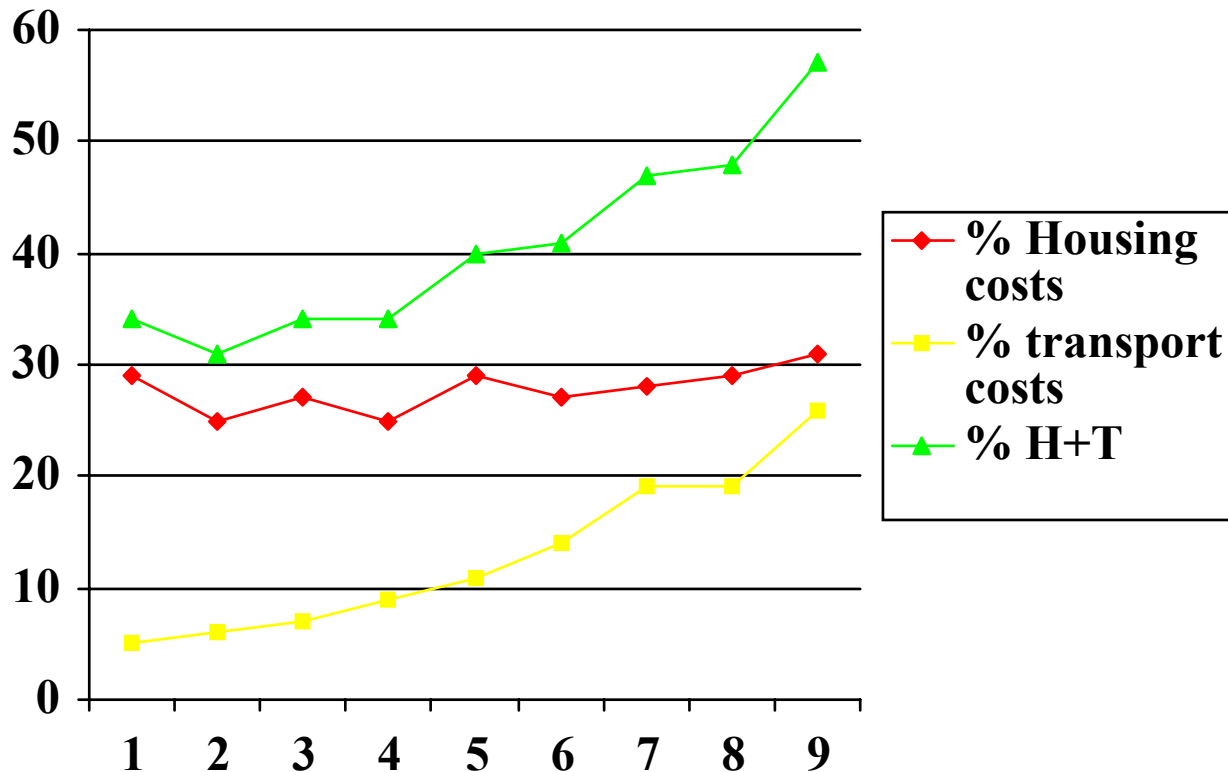
The sq m of home / person is steady

How the prices of housing and the cost of moving combine their effects on hh budgets?

Results

- The share of housing expenses in the budget is steady (cheaper home but lower income)**
- The travel time budget does not increase, despite a move to inner and then outer suburbs**
- The share of local transport (mainly car) in the budget explodes**

Shares of housing and transport in the hh budgets?



Methodological conclusions

If we want to understand the “full mobility behaviour” (including the choice of residence), we must include in mobility surveys questions on lodging and lodging costs

Policy conclusion

- **« Fighting sprawl » cannot be the only policy direction**
- **Our policy options should supply a better coordination between employment attraction and housing supply**
- **Housing supply is not only quantitative. It should provide housing opportunities fitted to different budgets**

An example of following-up policy: the Paris city policy

Policy contents

- To implement large (4,5 m) lanes for buses, open to bikes, and develop bus services**
- To extend the « parking for residents » schemes and reduce fares for residents**
- To promote bike through 18000 self service bikes(Velib)**
- « Green zones », with a high level of car control**

The diagnosis of the Paris city municipality

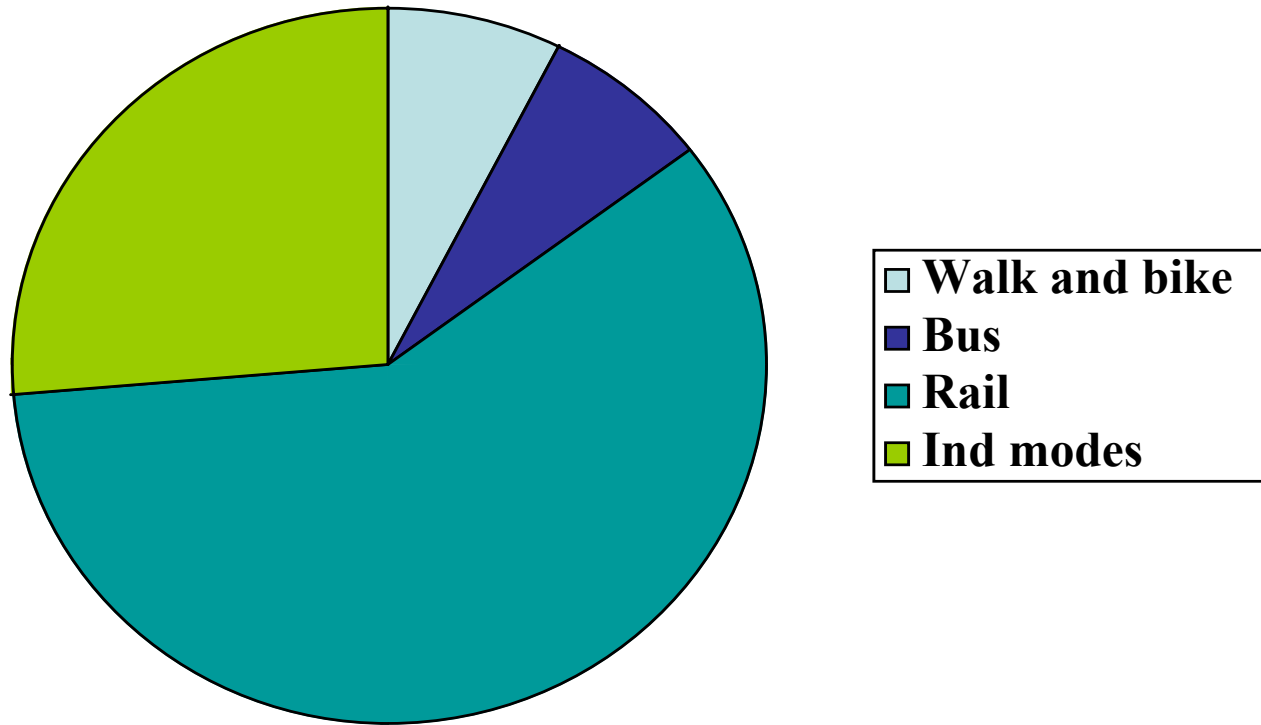
**Trips in Paris emitted by Paris city
residents comprise:**

- **54 % walking trips**
- **30 % PT trips**
- **16 % car trips**

The diagnosis from mobility analysis

- We need to compare cautiously the travel outputs of the modes, which means distances travelled in the different modes**
- Trips in Paris are not made by Paris dwellers only, but also by suburbanites**
- P.T. is too global, but and rail have to be distinguished since policy is for buses only**
- You put your confidence in walking, cycling and bus, let 's look at their share in distance travelled**

The diagnosis from mobility analysis



The diagnosis from mobility analysis

- The views of the modal shares are quite different**
- With our view, it is highly probable that buses and soft modes cannot accomodate the required transfers from car**

What is the actual result?

Paris policy: traffic results

- **Car traffic reduced (-20 %) : success**
- **Walking and cycling made easier**
- **Growing use of motorbikes**
- **Hopes of growth of bus traffic not met**
- **Transfers from car to tube and motorbikes**
- **Tube at its capacity limits on some routes**
- **Less traffic, but more congestion**
- **Pollution: unclear. Contrasted effects of less traffic, more congestion and more polluting motorbikes**
- **Progress in safety limited by motorbikes**
- **Greater use of bikes, but small part of traffic anyway**

Paris policy: distributional effects

- **The winners: Paris residents and Paris house owners, children, elderly**
- **The losers: inner or outer suburbs residents who need a car to Paris, persons with car professional use (plumbers, etc.)**
- **Environmental effects not demonstrated at the scale of the region, since lower car use in Paris may be mitigated by higher use in suburbs (destination changes)**
- **Economic effects: probably a loss of surplus (need to finance new services, less employment in Paris, more in the suburbs with lower degree of accessibility)**