Raising awareness on mobility costs for households: a lever for changing residential choices and improving local governance?

Experimentation in the French Alpine metropolitan area
in the framework of Interreg MORECO Project

Marion Allard

Rhône-Alpes Region

Grégoire Feyt, Marie-Christine FOURNY, Magali TALANDIER

Grenoble- Alpes University, PACTE Laboratory
F-38000 Grenoble

Smart locations for better liveability

Introduction

➢ Contribution produced by three researchers (PACTE laboratory) and the MORECO project manager from the Rhône-Alpes Region (6.4 millions inhabitants)

➢ Challenge to present a three years work :

▪ done in collaboration with several european partners … … achieved within very diverse types of region, with different structures and members of varying professional or scientific specialties

▪ Including theoretical, technical, experimental as well as political dimensions

▪ Based on concrete actions led in collaboration with pilot sites and local stakeholders

Thematic choice for the presentation :

1- To give a global and quick overview of the purposes and contents of the MORECO project at the alpine level and, more precisely, at the French level

then to focus :

2- on the presentation of the aims and principles of the mobility costs simulator *Mobicost,* developed and implemented in the specific context of the French *Alpine Corridor* area

3- on the estimated impacts of a cost mobility transparency for private and public professional stakeholders taking part in the residential strategies of households.

The MORECO project : an opportunity for confrontation between different territorial contexts and multidisciplinary approaches

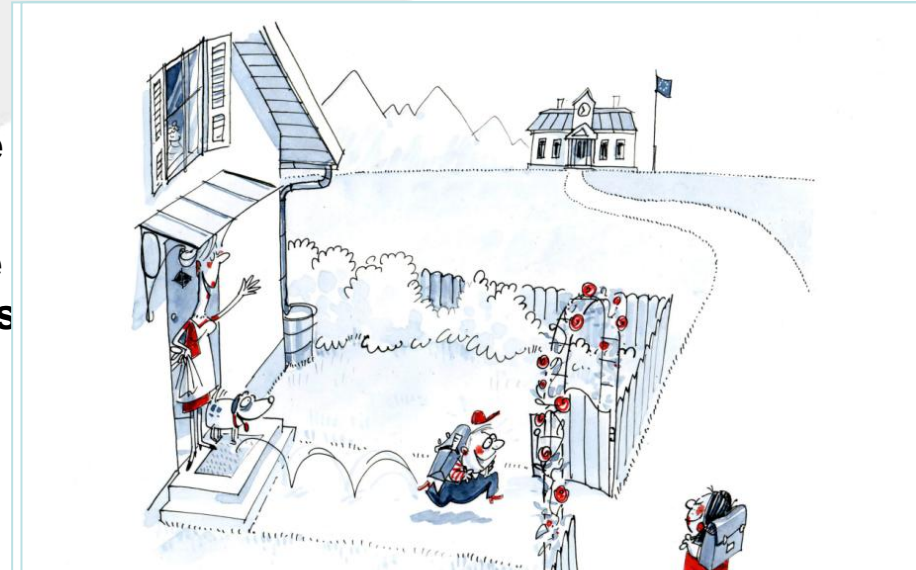**MO**bility and **RE**sidential **CO**sts

> ➤ **co-funded by the Alpine Space Programme**

> ➤ **an opportunity of collaboration between different kind of**

> ✓ countries and partners : State, Provinces, Regions, Urban Institutes, Universities…

> ✓ territories : mountainous areas, valleys, urban or periurban areas, metropolis…

> ✓ disciplinary and professional backgrounds : spatial planners, transport technicians, geographers, economists, GIS specialists…

> ➤ **10 partners among 5 alpine countries (Austria, France, Germany, Italy, Slovenia)**

> ➤ **with several pilot sites for each countries and/or partners**

> ➤ **around 80 experimental actions conducted towards various target groups, based on different approaches and tools**

A project based on general observations regarding the households residential strategies…

(illustrated by sensitization supports produced in the framework of the program)

➢ **Either :**

- **the wish to access to propriety and to have an individual house outside urban area**

- **the constraint to go far from the city centre in order to find housing at reasonable costs**

➢ **Inducing dependency on private car with :**

- a lot of travels (linked with working places, services places, shops, leisure places…)

- costs effects: time, monetary, pollution, health issues…

➢ **Risks of vulnerability for low-income households**

➢ **Worrying social, economic and environmental consequences…**

- urban sprawl
- land consumption
- pollution
- infrastructural costs (roads, networks…)
- functional costs
- …

➢ **… which question efficiency of public policies :**

- **Efforts and innovations in urban planning and public transport do not really manage to prevent urban sprawl and predominance of car use in metropolitan and periurban areas**

- **Facing individual and micro-local decisions, public policies seem not to be matching individual behaviors and aspirations.**

→ **This leads to consider complementary approaches, aiming at influencing individual choices through information, education, "awareness-raising"…**

The MORECO hypothesis and perspective

➤ **Highlighting mobility costs is a lever for influencing residential strategies and mobility behaviors of households, by encouraging to give priority to :**

- smart housing location (i.e. close to public transport, specially train stations)
- and/or alternative or multimodal mobility

➤ **This objective requires three pre-conditions :**

- ✓ an estimation and an expression of mobility costs in a way that matches households' reasonings and feelings
- ✓ housing offer linked to public transport axis (proximity of infrastructures)
- ✓ public transport offer meeting households' needs and expectations, both from and to residential location and working place

➢**The choice to address four specific target groups in this awareness rising :**

✓Househunting households (difficult to identify)

✓Public local decision makers (elected representatives)

✓Public spatial planners and transport experts or operators

✓Private actors who are part of the decision making process of households (banks, notaries, promoters, information and welfare services…)

➢**Thanks to three family of tools :**

✓*calculator or simulator of mobility costs*

✓GIS tool box, supporting decision making in planning systems, focused on accessibility of infrastructures and services (transport…)

✓Information and communication material for public decision makers

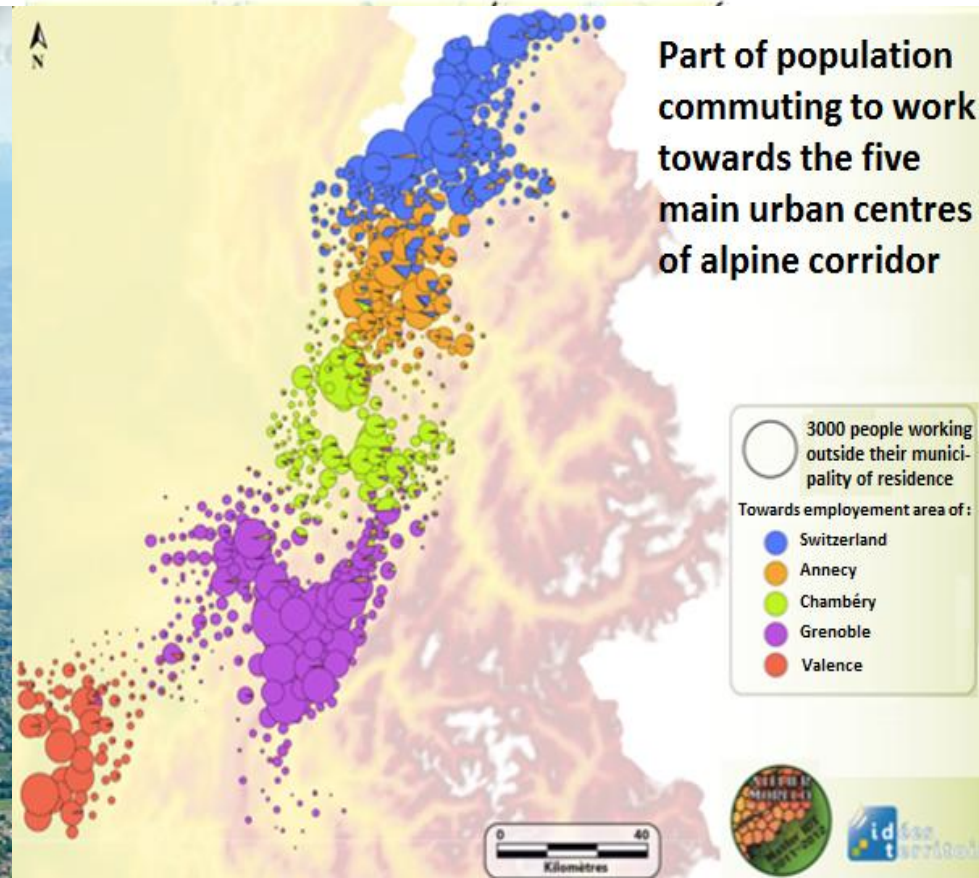# Experimentation in the french "*alpine corridor*" context

➢ **A spatial configuration which differs from "classical" metropolitan schema**
- 1,6 M inhabitants (1/3 of regional population and metropolitan jobs)
- Population : +9% from 1999 to 2007
- 300km from Geneva to the Rhône Valley
- Mountains ranges on both sides almost all along the corridor
- A highway from Valence to Geneva
- A performing regional rail service between Valence and Annecy

… with :
- A multipolarisation including several bipolarised area
- 85% of travels by car
- On average, commuting to work : 20km and 40 mn a day

Part of population commuting to work towards the five main urban centres of alpine corridor

○ 3000 people working outside their municipality of residence

Towards employement area of :
- 🔵 Switzerland
- 🟠 Annecy
- 🟢 Chambéry
- 🟣 Grenoble
- 🔴 Valence

- **A priori, a favorable configuration for an axial and polycentric organization of housing and public transports but…**

- **A segmented and heterogeneous political and administrative structure with :**
 - ✓ 4 departments (+ Geneva State)
  - ✓ 5 urban centers (including Geneva)
  - ✓ 10 urban transport authorities
  - ✓ regional and national transport railway operators
  - ✓ Hundreds of municipalities…

  and…

- **A problematic distribution of competences**
  - ✓ Town planning = municipalities
  - ✓ Land planning and urban transport = municipalities' community
  - ✓ Interurban buses = department
  - ✓ Regional train = Region Rhône-Alpes
  - ✓ Railway network = national SNCF+RFF

Perimeters of urban transport authorities in the alpine corridor in 2008
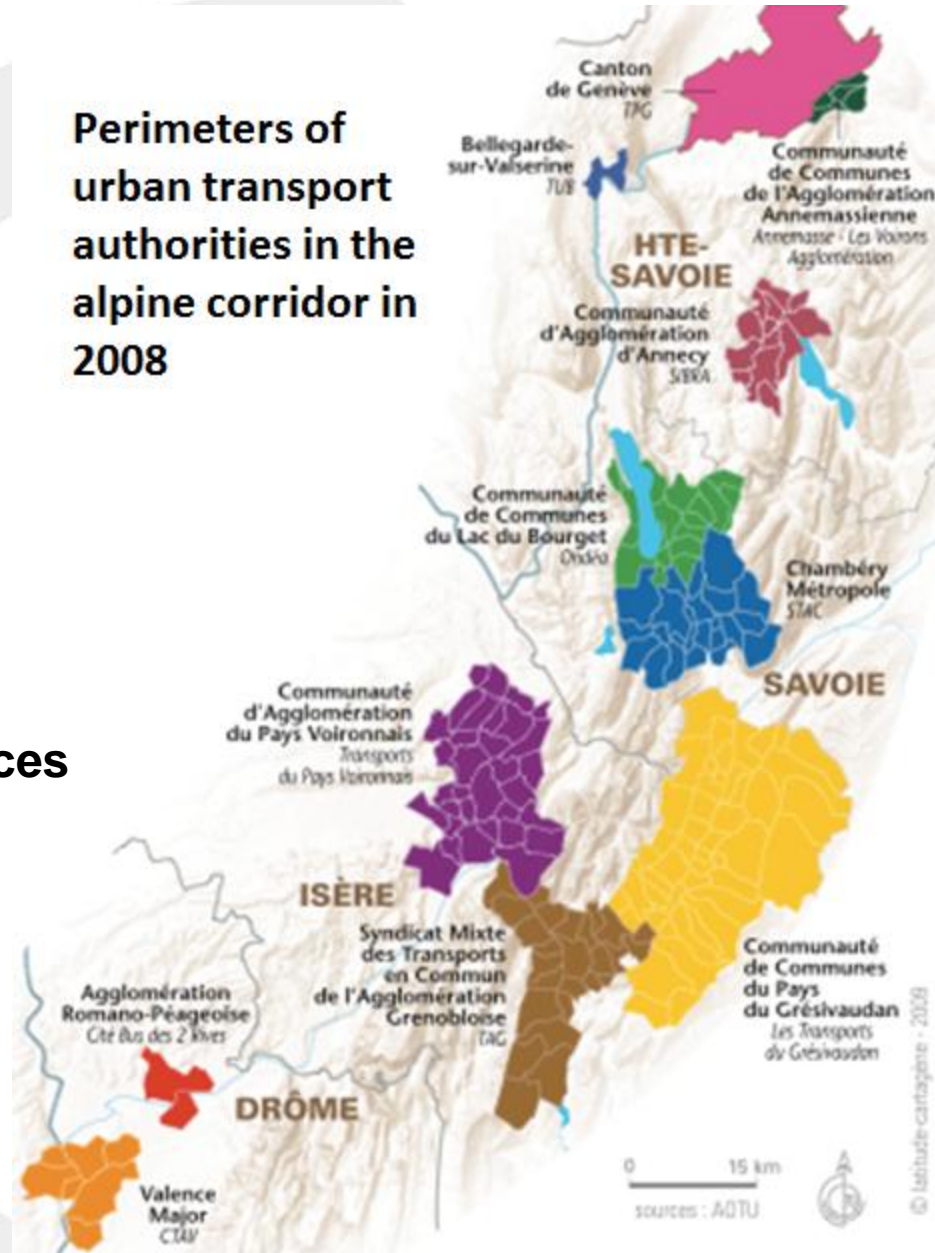
Consequences of this context for the definition and the implementation of a mobility cost calculator

➢ **Weakness of political and administrative structure of alpine corridor :**

→ No institution nor structure with the means and legitimacy for centralizing and exploiting data related to intra- and inter- urban public transport

→ Not possible to pretend to reach the geographic and temporal precision requested from a public organization managing a politically and technically structured area.

But by chance…

➢ **The perspective of MORECO is not to propose a *service tool* to households but to sensitize them to the importance of mobility costs, specially in length :**

→ Not *"how much doest it cost when…"*, but *"what would be the reasons, natures and levels of costs if…"*

➢ **and symmetrically to lead up decision makers and land planning experts to take into account the problematic of mobility costs for the inhabitants and, even, before the inhabitants**

→ **Thus, excepted results of mobility costs will not be considered *per se*, but as an ingredient serving a more global message or discussion**

Resulting constraints and expectations for the regional mobility cost calculator

➢ **A use-oriented conception with three main constraints :**

- **To ensure spatial continuity and homogeneity over the whole Alpine Corridor :**
  - → Households with members working in different urban area need to be able to arbitrate location place from comparable information

- **To guarantee coherency and durability of data used for computation** :
  - → Considering the number and the heterogeneity of providers, only data easily and surely accessible (technically, politically) have to be integrated

- **Paying close attention to the simplicity of the tool and to the expressiveness of given information.**
  - → The challenge is to encourage households to use the tool (till the end…) and to make their mind change
  - → The number and complexity of questions have to be as reduced as possible
  - → The results have to be presented in a way matching as much as possible the "real life" constraints (money/time/distance, by day/month/year, household/individual…)

A mobility costs *simulator* rather than a *calculator*

➢ **What would happen if I reside in this municipality...**

Considering my household's structure, what would be :
- ✓ the reasons for moving ?
- ✓ the closest place for finding usual services ?
- ✓ the modes of transport concretely usable ?
- ✓ the corresponding levels of distance, duration, cost ?
- ✓ Shall I have to buy an additional car? What will be the cost per km?

And if :
- ✓ gas price increases ?
- ✓ we manage to make car-sharing ?

And if I finally choose to live in an secondary urban center fitted with services and a train station linked with my work place ?

Methodological aspects of MobiCost:

DATA

➢ **Distances and travel durations are issued from a commercial data base (Odomatrix) functioning from municipality center to municipality center**

➢ *A comparison with a survey concerning commuters of the pilot site has shown that differences between computed and indicated durations do not exceed 5 mn*

➢**Information concerning the closest municipality offering usual services is issued from the french national statistical institute (INSEE)**

➢**Matrix and tabs related to train, bus, highways have been laboriously created from the information published by the different concerned operators**

➢**Other parameters and formula are issued from various sources** (for ex. Touring Club of Switzerland for computing of kilometric cost**)**

COMPUTING METHOD

The algorithm was conceived in order :

- ➢ **to minimize and simplify asked information from user**
- ➢ **but to automatically integrate complementary (and modifiable) variables**
- ➢ **to integrate remarks and proposals of pilot sites' stakeholders**
- ➢ **to allow an iterative use, i.e., for a given household's specifications, costs are computed for all the municipalities of location in the concerned area, with two objectives :**
  - ✓Producing maps
  - ✓Integrating these costs values in socio-economic analysis

PROGRAMMING

- ➢ **The application has finally been developed with XL**, in order to facilitate modifications and adaptations, specially in the framework of applied workshops and surveys with students
- ➢ **MobiCost will soon be accessible through a web application**
- ➢ **Output interfaces (numeric, graphic and cartographic) still have to be improved** according to the contributions of pilot sites' users.

Current input interface and basic parameters of MobiCost

Information related to the household		
Number of working members	2	
Number of mobile children	0	
monthly global income	4000	*discretionary information*
housing surface	100	
rent or repayment	400	

Access to services	member 1	member 2
Weekly number of round-trips to the closest municipality with usual services (supply, school...)	4	1

Mobility conditions		
You give priority to	Time	Cost
Car assigned to the working member : purchase new price	32.000 to 36.000	None
Gas price	1,36	0
Number of km/year corresponding to leisure	5000	0
Do you have a highway pass	25%	None
Use of public transport : Do you benefit of a discount for public transport ? (average level if several)	None	50%
Do you give priority to train or bus ?	No matter	Train

Information related to journeys to work		
municipality of workplace :	38_Le Moutaret	73_Chambéry
Number of work round trips per week :	5	4
during flowing or peak hours ?	peak hours	flowing hours

Leaving from the municipality of residence...		
Which fastest mode of transport would you be ready to practise for going to your departure train ou bus stop ?	none	bike
How long time would you be ready to devote that for (in minutes) ?	15	10

... arriving to the workplace		
From the arrival train or bus station, can you reach your workplace by :	None	foot
How long time necessary (minutes)	none	10

Municipality of residence	
Choose a municipality	38_Saint-Ismier

MobiCost functional structuration

Input by user

Additional data computed from information given by the user

Daily analytic results

Synthetic or selective "views" on results according to the target groups and finalities

Editorial and graphic results presentation

Information about the household

Choice of residential location

Information provided by the calculator but modifiable

Parameter directly used by the simulator

Data basis on costs, distances,...

Search of data on costs, distances... related to the residence and work locations....

Values without any other option (ie. bike speed...)

Computing core

Distances

Time duration

Costs

Co2

Various

Household

Worker 3

Worker 2

Worker 1

Combined results according topics,, time scale...

Combined results according topics,, time scale...

Combined results according topics,, time scale...

Communication of/on the results

Communication of/on the results

Communication of/on the results

Example of MORECO output results

Cost/Time

	Member 1		Member 2		Household	
	Only by car	Inter-modality	Only by car	Inter-modality	Only by car	Inter-modality
monthly cost (euros)	637	223	334	105	971	328
Difference (euros)	-414		-229		-643	
daily travel time (mn)	64	120	48	88	112	208
Equivalence in number of work days per year	33	62	20	37	53	99
Travel to the municipality offering usual services						
Distance to the pole (km)			0			
Cost by travel (round trip)	0,0	0,0	0,0	0,0	0,0	0,0
monthly cost (euros)	0		0		0	
Mobility car costs for leisure						2022
kilometric cost of car	0,40	1,05	0,51	0,66		

RhôneAlpes Région · moreco mobility and residential costs · Alpine

Example of valorization of MORECO output results

> **Perspectives for the cartographic and statistical use of MobiCost results**

- Proposing a more attractive sensitization tool

- Facilitating and orientating the households' approach in their househunting strategy

- Promoting a comparative approach, consistent with MobiCost's vocation as a simulation tool rather than a service.

- Providing data that can be used to cross mobility costs with other types of variables (property prices, demographic structure, etc.).

Monthly mobility cost for a household with two workers using train + car(s) if necessary to reach the station
(worker A works 5 days/week, worker B 4 days/week)

railway stations   600   800   1000   1500

Euros/month
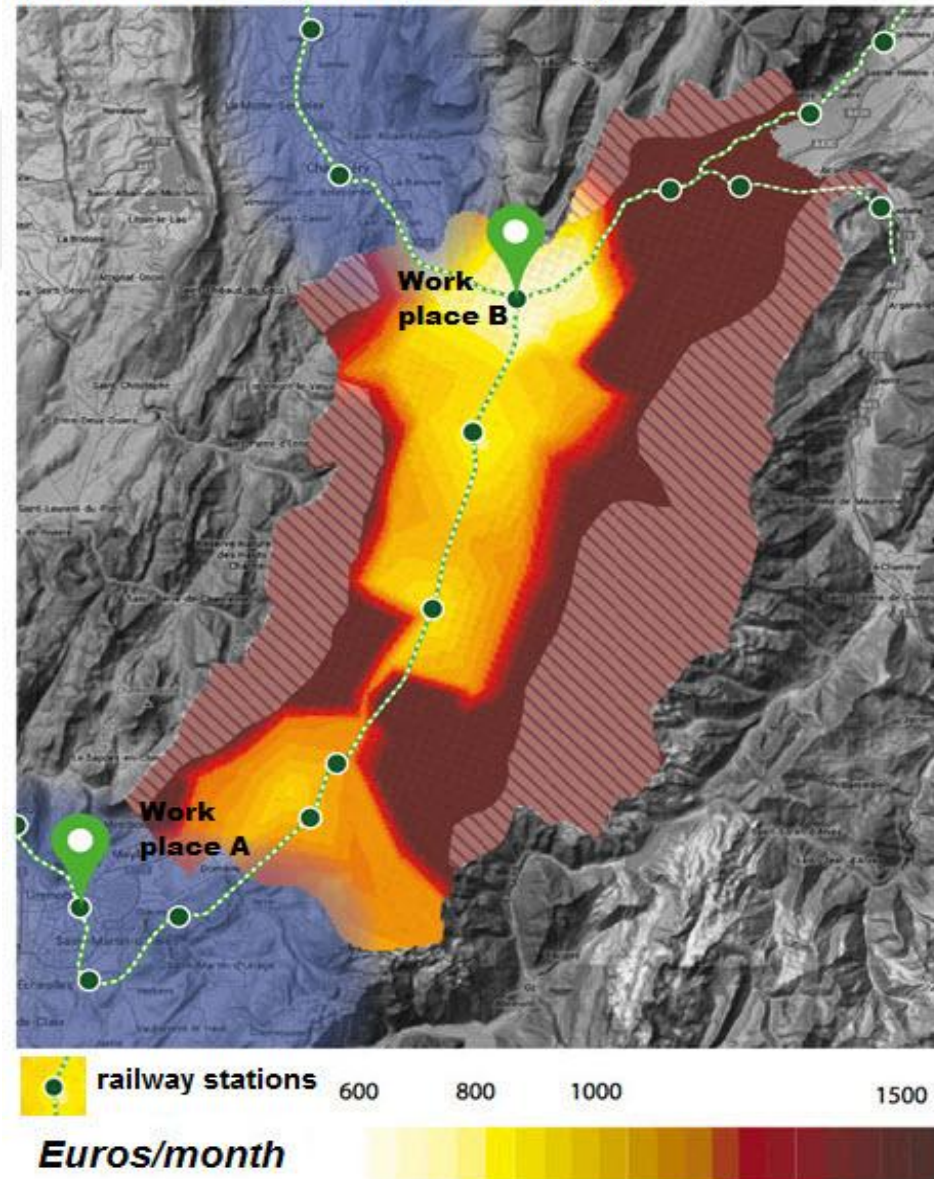
Source : Mobicost 2104, Région Rhône-Alpes+Laboratoire PACTE

An experimental approach focused on "fieldwork" and "stakeholders"

➤ **Approaching househunting households through professional stakeholders**

Quite difficult to detect and contact households that are thinking about moving to periurban areas

Thus, **in order:**

- ✓ **to comprehend the role of mobility costs in their location choice**
- ✓ **to validate the design and utility of MobiCost**
- ✓ **to identify stakeholders liable to relay information about mobility costs and/or to use or promote use of MobiCost simulator**

we have contacted public and private professionals that are likely to come into contact with households, as bankers, promoters, land planners…

with **three kinds of interrogation**:

- • Are they concerned with mobility cost in their professional practise ? (by customers for ex.)
- • Are they personally interested in this problematic ?
- • Would they use or promote the use of the MobiCost simulator ?

Overview of the surveys' results

Three main points of vue :

- **The *motivated* professionals**

  Especially those concerned with households' solvency : bankers, public welfare services

- **The "ambiguous"**

  Professionals working with local decision makers are interested but not really ready to promote this information to elected people and citizens.

- **The "pragmatic"**

  They will be interested if their customers are… (promoters, real estate agents)

	Type of population reached	Closeness of connection to households	Consideration of mobility costs in professional practices	Intellectual interest shown by those who were interviewed	Effectiveness as a relay to disseminate the MobiCost tool
Banks		++++	++	+++	+++
Real estate agents		++++	+	++	++
Promoters		++	0	+	0
Notary public		++++	0	0	+
Social housing manager		+++	+	+	++
Information and welfare services		++	+++	++++	++++
Local authorities in charge of urban planning and transport		+	+	++	++
Land use experts and organisations		0	+	0	+

General population | Specific groups | Professionals

Conclusion

➢ **Basic hypothesis of MORECO project is that mobility costs' transparency is liable to influence decision of :**

  ✓ **households** concerning their residential strategy

  ✓ **decision makers** concerning urban planning (i.e. about densification around railway stations)

This assumption seems to be pertinent but works showed that **practical implementation is quite complex and diverse**

➢ **Concerning the peri-urban households,** two cases **:**

- **Those who are constraint** to live more and more far from city center due to housing price :
  → no really need of cost sensibilization, but need of public policies for offering affordable housing

- **Those who choose to**, i.e. who assume a balance between "efforts" and desires. Mobility cost is one factor among others.
  → scientific issue consists in crossing modelisation works with cognitive and sociological approaches
  → Cooperation and experimentations with bankers could be an interesting perspective

➤ **For the land & transport planners and local decision makers :**

Mobility cost transparency seems to be more a political than a technically issue :

→ Mobility costs from a given municipality is a very sensible information as it reflects and influence its attractiveness

→ This information has to be valorized in an global decision making approach, integrating the others kinds of *collective efforts and desires*

→ That justifies a conceptual and experimental multidisciplinary work

➤ **Towards a "MORECO II" ?**

▪ Final conference in Lyon on july, 17th

▪ Several partners interested in continuing and widering problematic and partnership
… on the theme of the *costs* (in a very opened sense) of urbanization in periurban and mountainous area
… with an experimental and decision making tools perspective