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# Recruitment issues for mobility surveys using GPS tracking with a smartphone app

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## Context

In France, the main method used to collect mobility data is Household Travel Surveys (HTS), which are carried by face-to-face interviews or by phone ones.

The development of digital technologies (GPS for example) offers new opportunities for engineers to improve the collection of travel data.

## Advantages/Disadvantages of GPS tracking

+
<ul style="list-style-type: none"> <li>✓ better knowledge of travel times, durations and speeds</li> <li>✓ knowledge of routes</li> <li>✓ mobility data over several consecutive days</li> </ul>

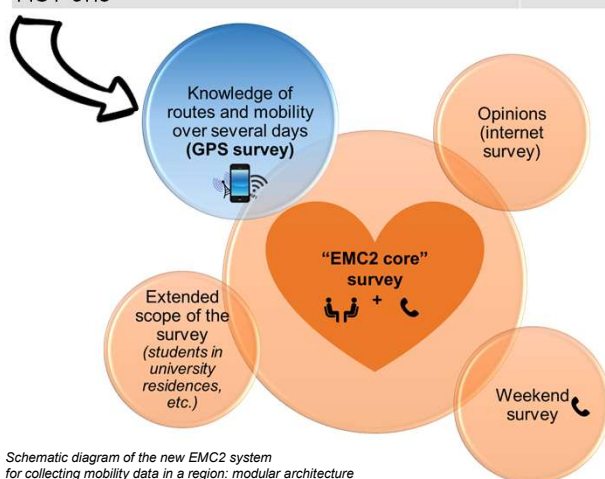
-
<ul style="list-style-type: none"> <li>✓ A technical challenge due to a great number of different smartphone models, of uneven quality, and with different operating systems = multiple developments required</li> <li>✓ The main problem: <b>recruitment of volunteers</b></li> </ul>



## Different recruitment methods for surveys based on GPS data collection



Recruitment methods	+ / -	Benchmark of GPS surveys
<i>First method:</i> soliciting a random sample of individuals without a prior survey	<ul style="list-style-type: none"> <li>- very low acceptance rate</li> <li>- no representativeness of the respondents sample?</li> </ul>	Pilot survey in Gothenburg region in 2017 (Eriksson 2018): number of respondents: 70 / target sample size: 2,800
<i>Second method:</i> recruiting volunteers by using both all types of dissemination (social networks, press advertising, web pages) and the principle of crowdsourcing	<ul style="list-style-type: none"> <li>+ not expensive</li> <li>- no control of the respondents sample</li> <li>- representativeness of the respondents sample?</li> <li>- possibility of applying statistical theory since the target population is not known?</li> </ul>	Montreal survey in 2017 (Bouchard 2019): : 2,500 volunteers recruited Montreal region survey in 2018: 8,000 volunteers Pilot survey in Gothenburg region: 410 people downloaded the app and only 279 actually used it
<i>Third method:</i> combining a GPS survey with a conventional household travel survey (HST), called EMC2 in France - Respondents are invited to answer a new GPS survey after the HST one	<ul style="list-style-type: none"> <li>+ better control of the respondents sample</li> <li>-/+ people with high daily mobility are over represented</li> <li>+ knowledge of respondents profil</li> </ul>	National Travel Survey, 2007-2008, France (Thi Huong Thao Pham 2016): 30% of the HTS respondents agreed to participate in the GPS survey= 957 volunteers



Schematic diagram of the new EMC2 system  
for collecting mobility data in a region: modular architecture

## Main results: How can EMC2 respondents be encouraged to participate in the GPS survey?

### 1. Improving the presentation speech of the GPS survey WHY? Some potential obstacles

- fear of being tracked, of an abuse use of personal data
- Difficulty in installing and using the app
- Feeling that the duration of the survey is too long

### HOW? highlighting motivations

- Getting involved in a citizen-led initiative (very trendy) by participating in local (transport) policy
- Feeling "privileged", special: having being "selected" to respond
- Testing a new product, a new application: being a pioneer
- Contributing to the production of "unique" and very detailed data

### 2. Implementing an incentive for a GPS survey ?

#### 2 main reasons

- the respondent has to be continuously involved = requires time and attention for at least 5 days
- the incentive and its acceptance = a form of moral and material "contract" between the respondent and the research institute

The opinion of volunteers? findings provided by a qualitative survey of 35 volunteers for the GPS survey after having being questioned for the HTS (EMC2): different points of view

no compensation required (17 persons)

A preference for a €20 gift voucher (11)

A preference for a €30 gift voucher (4)

Any incentive, won't respond to the GPS survey (3).

Methodology used to optimize the recruitment phase of the GPS survey following the EMC2 one (Source: Cerema-Senzo, March 2020)

#### Phase 1

#### Phase 2a

#### Phase 2b

- Interviews of **representatives** of firms **specializing** in recruiting participants for qualitative and quantitative studies, interviews with experienced socio-anthropologists, researchers or heads of studies in research institutes (from the <https://www.anthropik.org/network>).
- Objective: underlining recommendations for the presentation of the GPS survey and incentives to be offered to respondents
- Qualitative interviews of 35 people having different characteristics (gender, SPC, ages, geographical regions, household composition, mobility practices and digital practices).
- Objective: testing the presentation discourse of the GPS survey and the proposed incentives (from phase 1) after collecting spontaneous suggestions from the interviewees.
- Pilot survey using a GPS tracking app with 10 people (from the 35 mentioned above, who are not reluctant to taking a GPS survey) : 5 to 7 days of trip data collection, **payment** of an incentive perceived as the most attractive one according to the results of the interviews in phase 2.a.
- At the end of this test phase, people are interviewed once again to collect their opinion and their perceptions of the incentive received.