

Mobility and Time-Use

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Eurostat, Luxemburg, August 2005

MOTUS project :

- Project financed by the Belgian Science Policy
- Partners :
 - GRT (FUNDP)
 - TOR (VUB)
 - CES (FUSL)
- Project integrating a quantitative vision and a qualitative vision of mobility

Objective of the quantitative part of the project:

Comparison of databases

TIME USE
and
MOBEL

to study mobility behaviour indicators
(travel time, modal share, mobility rate...)

Why ?

Observation:

- hardly comparable mobility surveys in Europe
- harmonized time-use surveys

Possibility of studying mobility through these time-use surveys,

BUT are these TU surveys « good tools » to approach mobility ?

(travel = activity as any other ; effects of the rounding at 10 minutes ;...)

1. mobility according to 2 highly compatible statistical sources

Mobel :

- Trips base
- 11/98 – 12/99
- 3064 households
- 7037 individuals
- Sample base:
Registre National
- Weighting INS-NSI

Time Use :

- Activities base
- 12/98 – 02/00
- 4275 households
- 8382 individuals
- Sample base:
Registre National
- Weighting INS-NSI

Differences in the conceptual frames:

- From « segment » to « trip »
- Interpretation of purposes (purpose \neq activity ; quid of activities at home ?)
- Rounding of durations at 10 minutes in TU

2. Preprocessing data in two steps:

- On MOBEL data
 - Deletion of walks and trips during worktime
 - Rounding travel times at 10 minutes (i.e. discretization of trip durations and of departure and arrival times)
- On TU data
 - Aggregation of consecutive transport activities into trips
 - Aggregation of consecutive activities between two trips into a « trip purpose »

Special questions raised on TU data by the search for compatibility:

- Trips having the same place for origin and for destination: return trips to realize a very short activity?
 - + 3.158 trips for a **zero minute activity**?
- Activities realized in 2 different places, without any trip mentionned : forgetting of a very short trip?
 - + 11.972 **zero minute trips**?

Consequences on some crucial indicators:

a) 2 ways to measure immobility in TU surveys:

| % immobiles TU | Zero trip | Same place | Zero trip | Same place | Zero trip | Same place |
|----------------|-----------|------------|-----------|------------|-----------|------------|
| | All | All | Men | Men | Women | Women |
| Week | 13,6 | 8,8 | 10,2 | 5,7 | 16,8 | 11,7 |
| Saterdag | 14,8 | 9,2 | 14,0 | 8,7 | 15,6 | 9,7 |
| Sunday | 22,5 | 15,6 | 18,7 | 12,3 | 25,9 | 18,8 |

b) 2 ways (at least) to measure the daily number of trips in TU surveys:

| | TU without additions | TU with additions | Mobel |
|----------|----------------------|-------------------|-------|
| Week | 3,85 | 4,70 | 3,92 |
| Week-end | 3,65 | 4,49 | 3,88 |

And finally... ?

- Non totally reliable locations
 - Comparison with Flemish TU survey: the reporting of real durations of trips (no round off) doesn't justify such a difference among short trips
- **Caution !** For safer analysis, no trip added

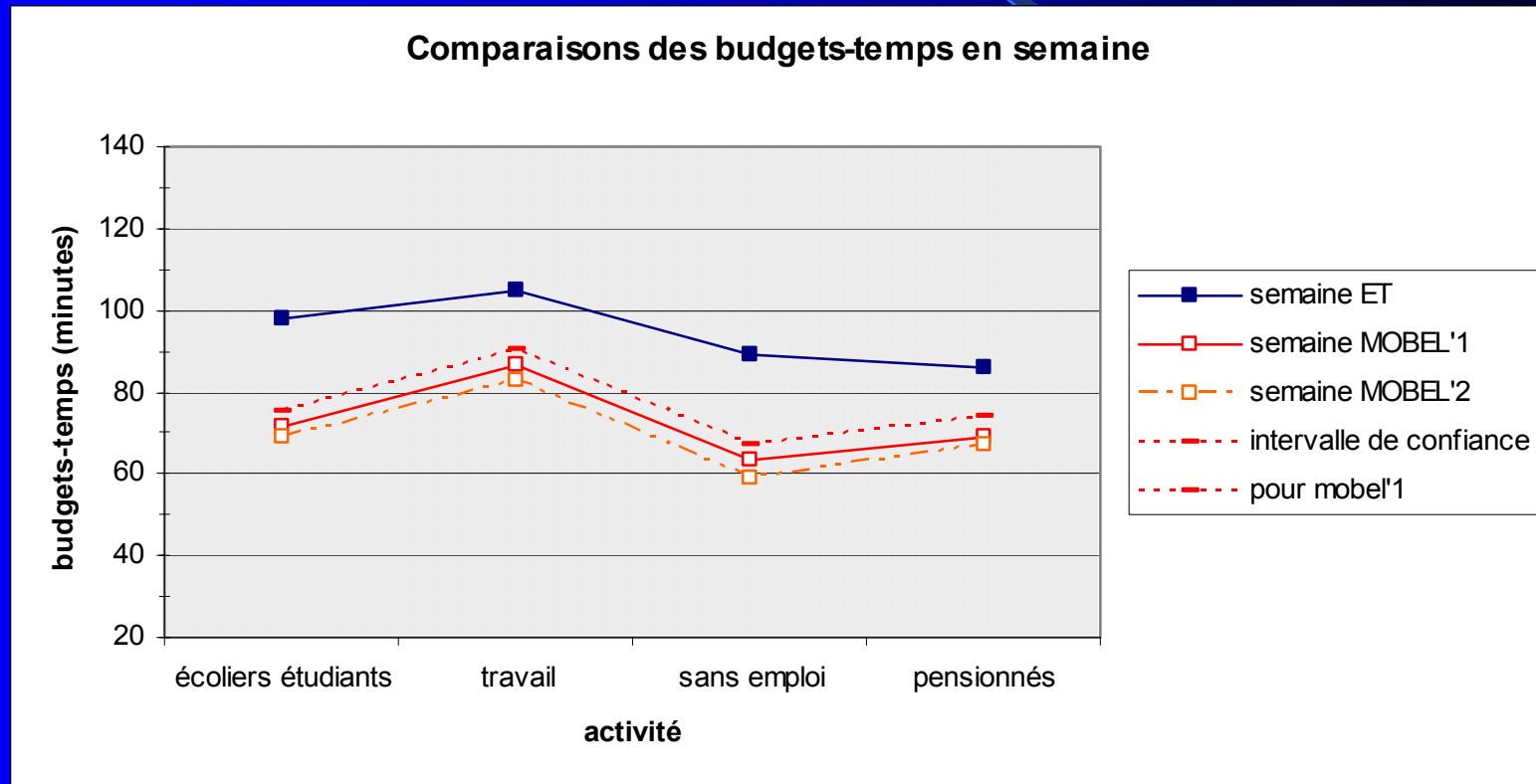
3. Some results

- Mobility rates,
- Daily time budgets: averages and distributions,
- Daily number of trips,
- Average trip duration...

Comparison of the mobility rates measured by time of travel

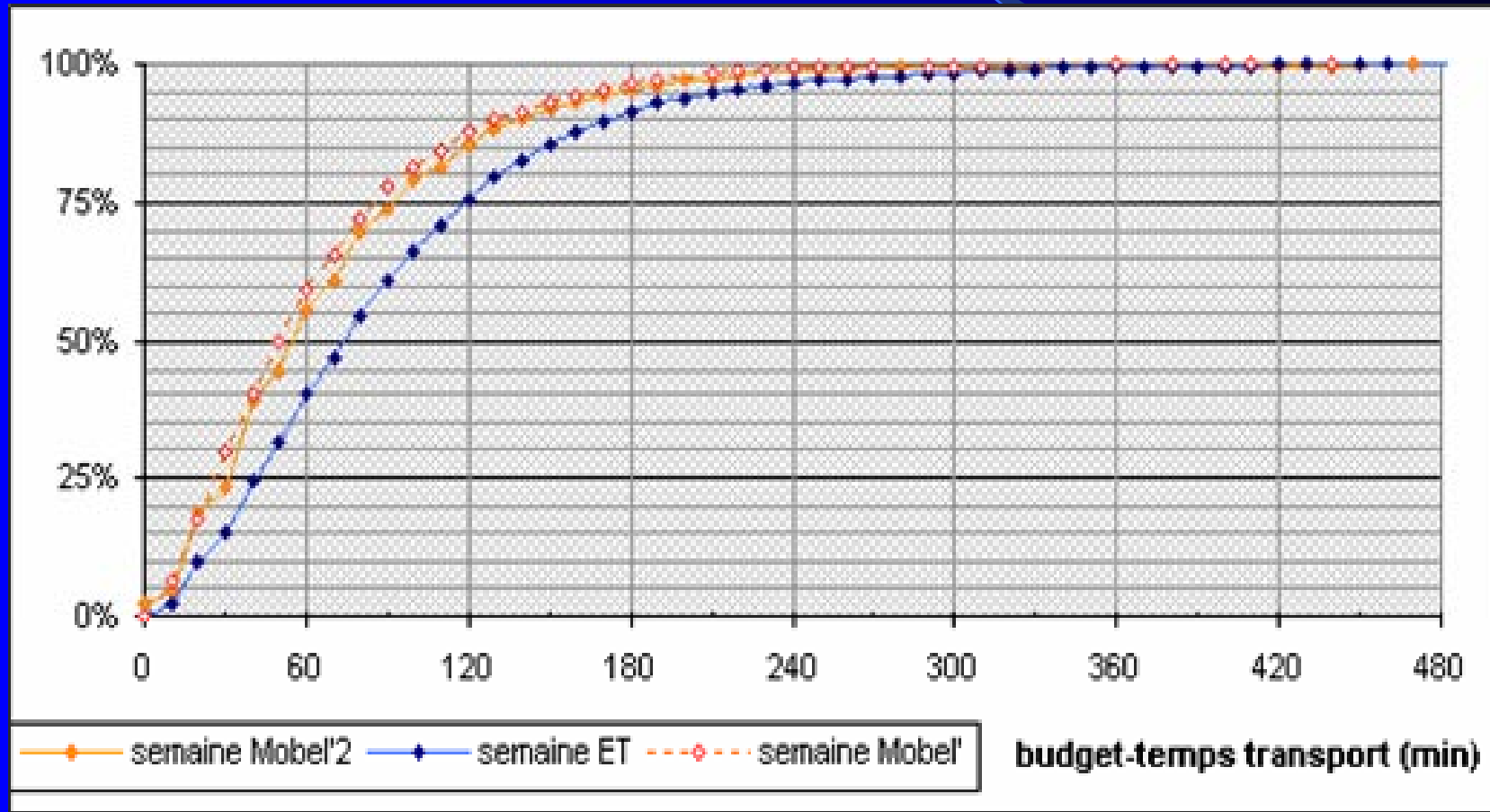
| % mobiles (time>0) | TU | MOBEL | TU | MOBEL | TU | MOBEL |
|-----------------------|-------|-------|-------|-------|-------|-------|
| | All | All | Men | Men | Women | Women |
| Week | 86,43 | 78,16 | 89,82 | 82,47 | 83,23 | 74,22 |
| Saterdag | 85,25 | 77,62 | 85,99 | 79,94 | 84,55 | 75,52 |
| Sunday | 77,55 | 61,45 | 81,27 | 65,65 | 74,07 | 57,71 |

Comparison of time budgets: a systematic difference of almost 20 minutes



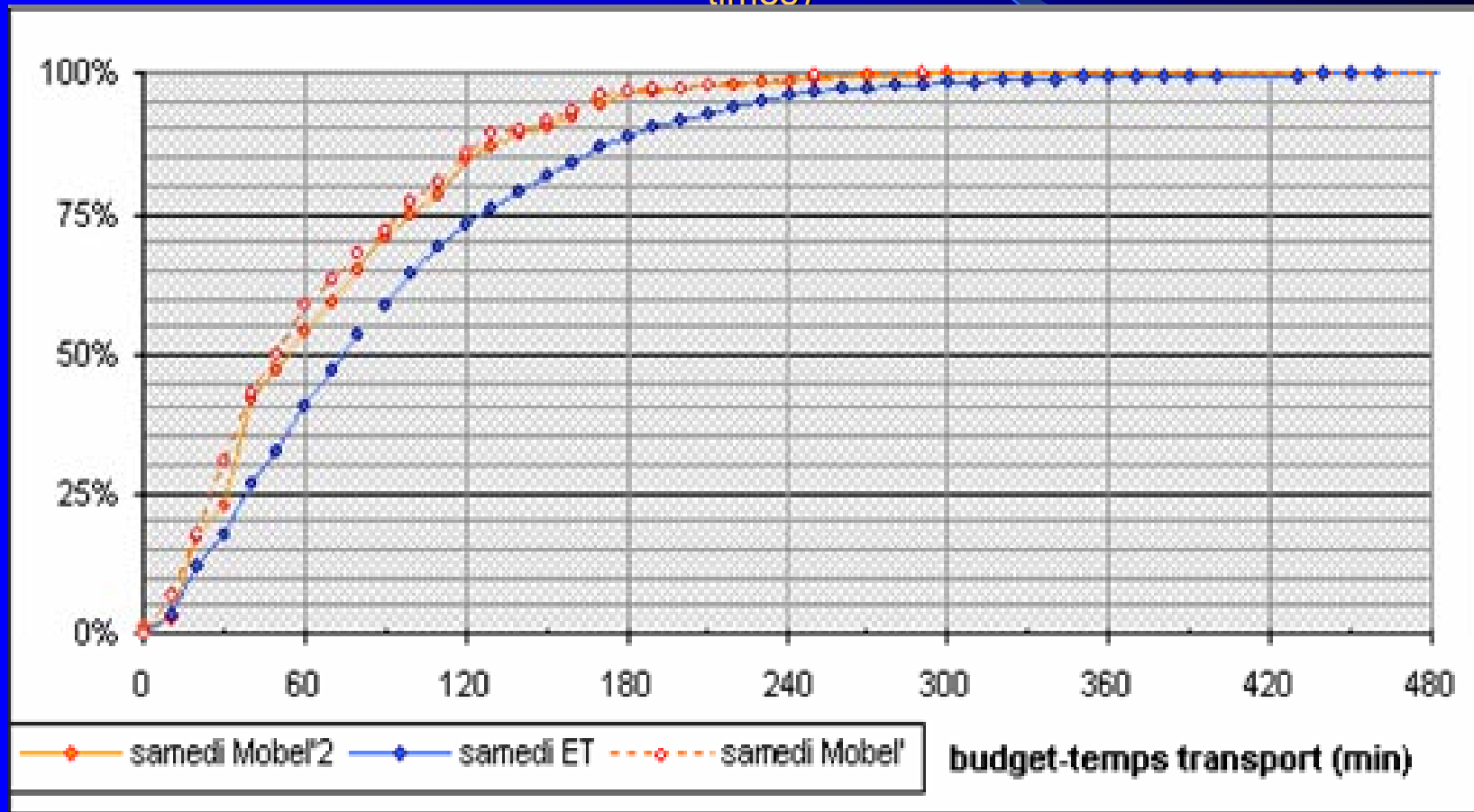
Distribution of time budgets: week

(Mobel'2 = TU excluding visits for work and walks, with discretization on departure and arrival times)



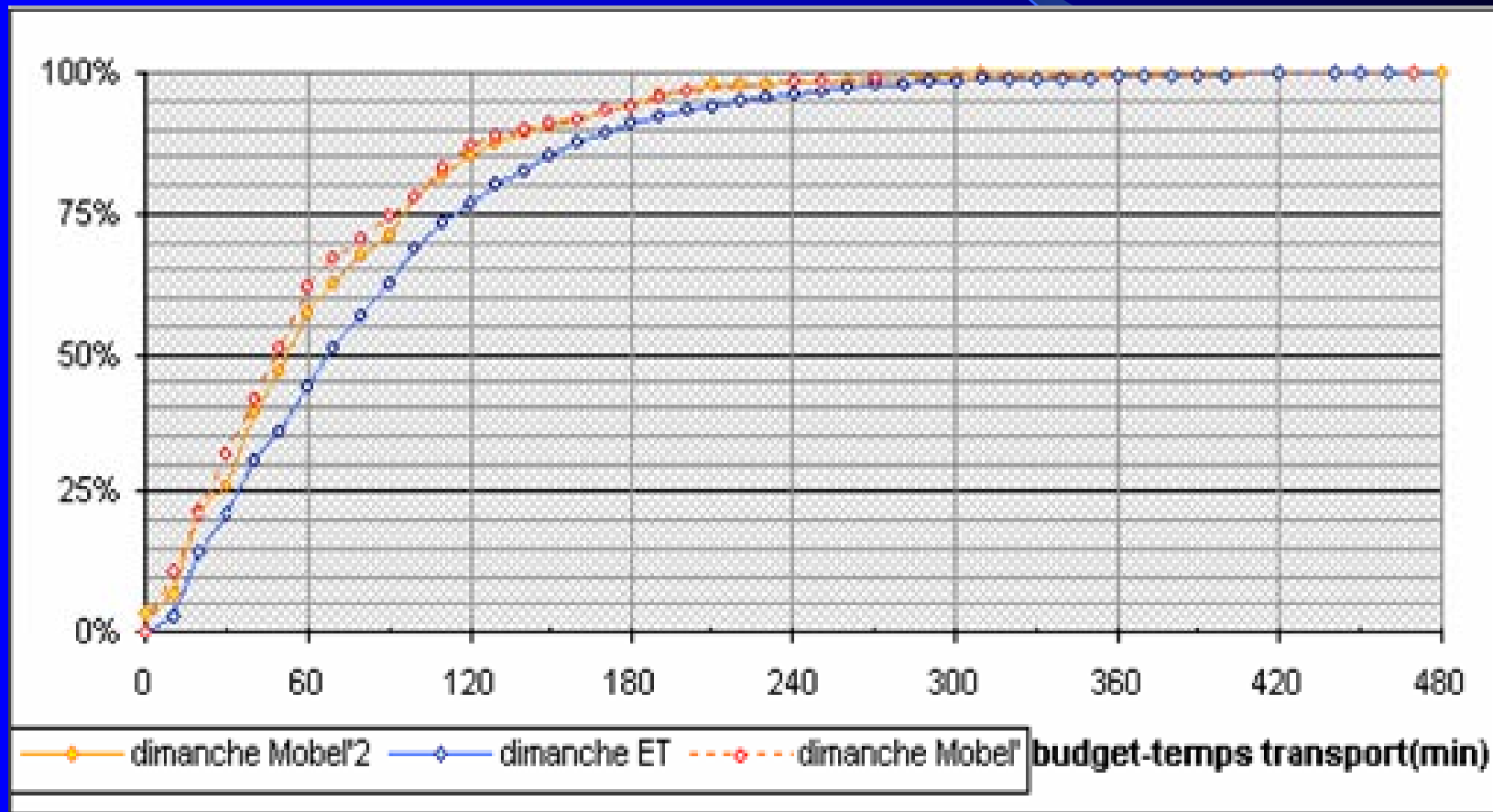
Distribution of time budgets: saturday

(Mobel'2 = TU excluding visits for work and walks, with discretization on departure and arrival times)



Distribution of time budgets: sunday

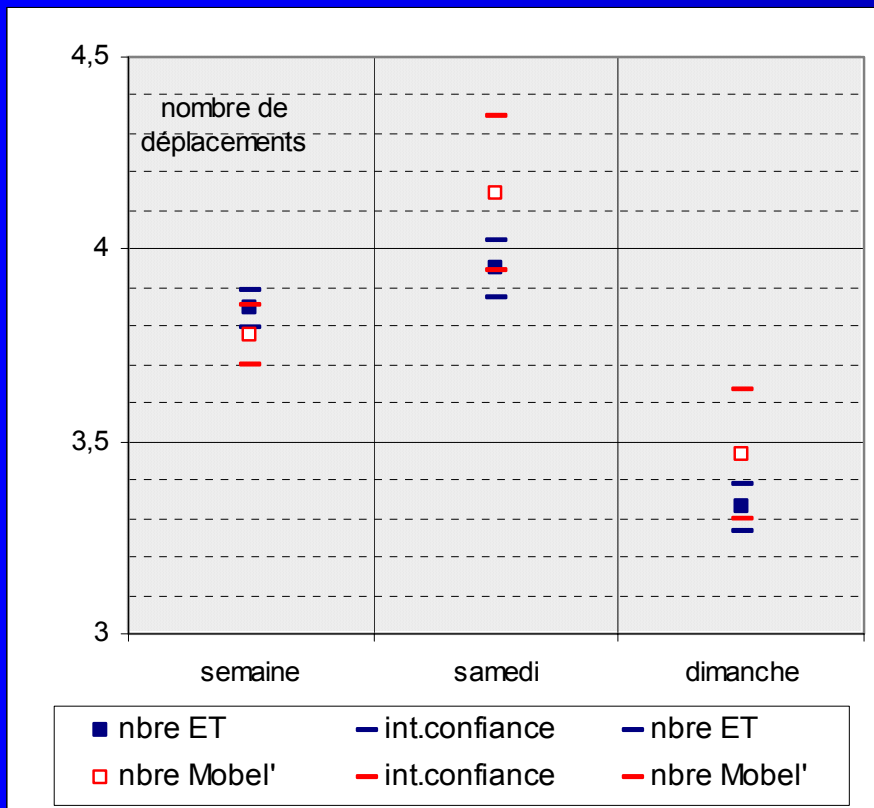
(Mobel'2 = TU excluding visits for work and walks, with discretization on departure and arrival times)



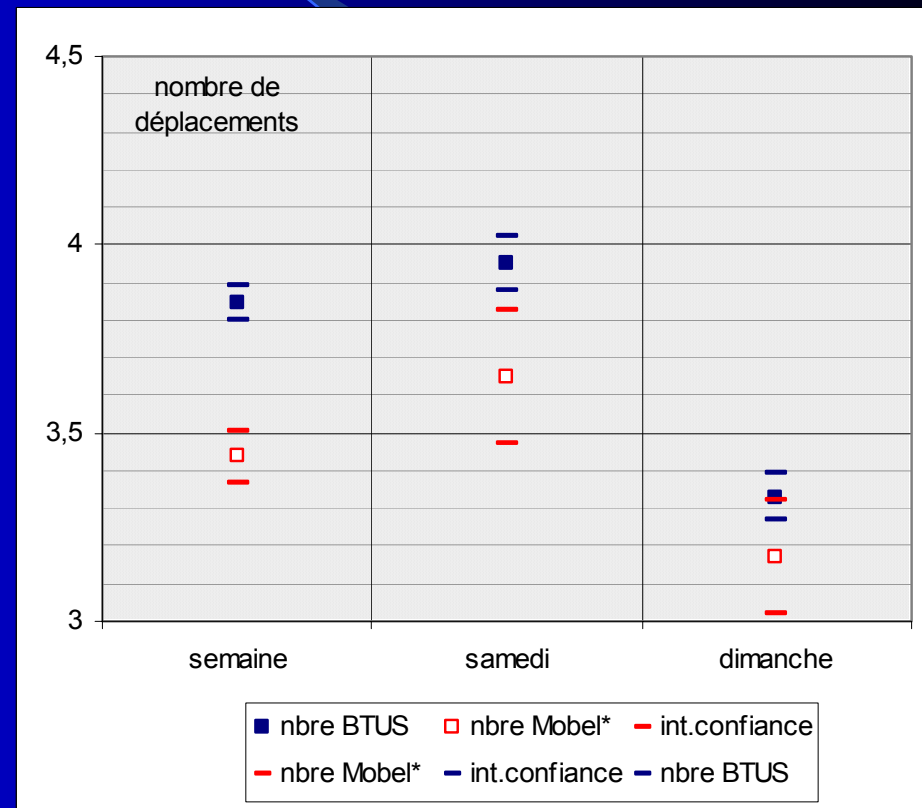
How to understand this difference
in daily time budgets?

Average number of trips or average length of
each trip?

Comparison of the number of trip by type of day

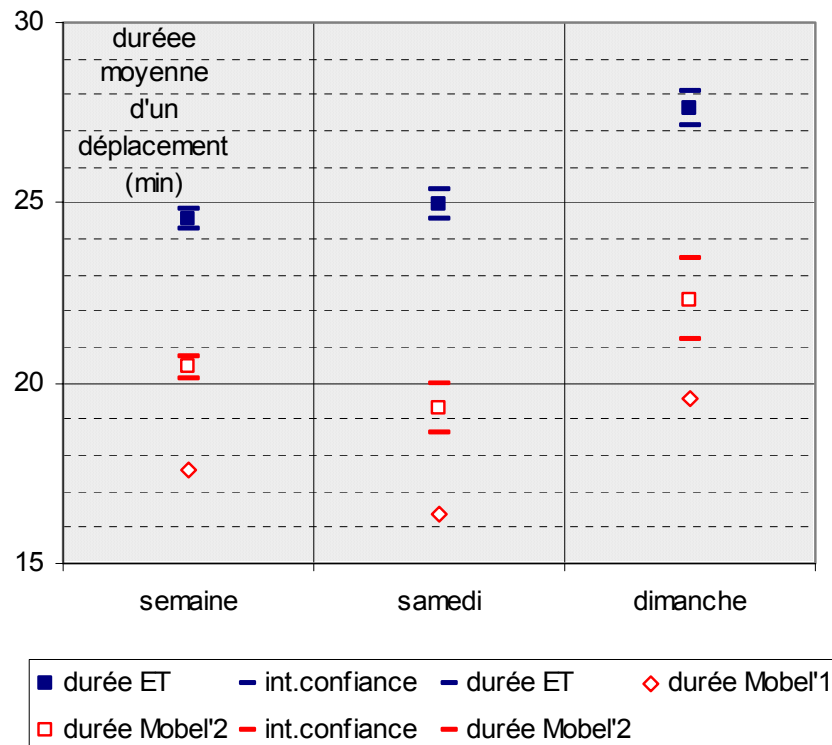


With trips < 5 min in Mobel

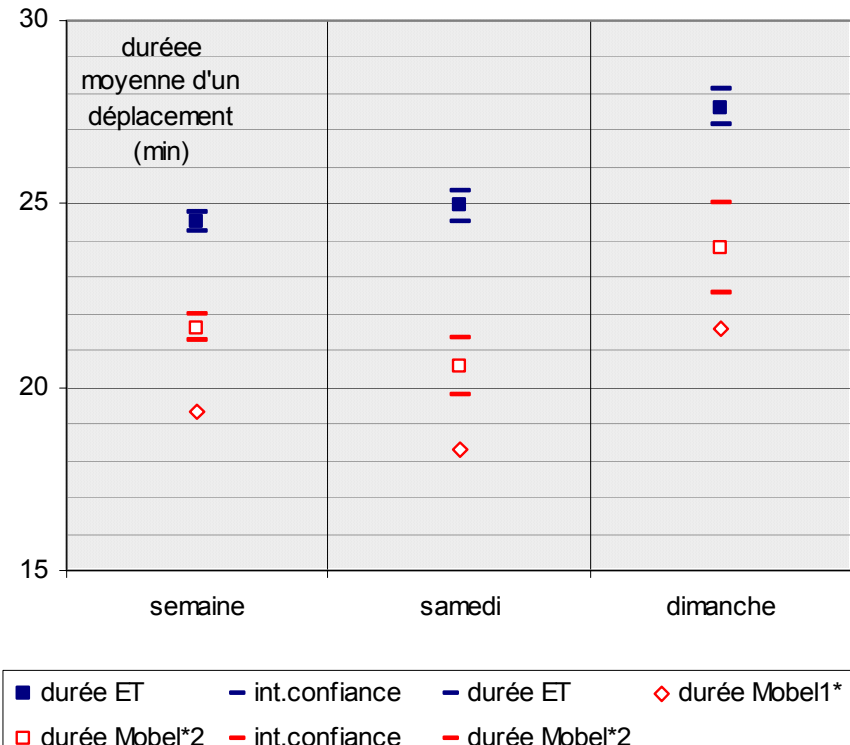


Without trips < 5 min in Mobel

Comparaison of average trips durations by type of day



With trips < 5 min in Mobel



Without trips < 5 min in Mobel

Conclusion

- Analyses on mobility (and immobility) realized from Time Use surveys seem coherent (confirmed by crossing with social variables and factorial analysis)
- Systematic overestimation of individual trip durations by TU survey which explains a lot of the difference in travel time budgets (probable cause: rounding)
- The question about “zero minute” trips and activities is not totally solved
- A big gap remains between the 2 surveys: the distances

A proposal:

- Practical european analysis of mobility behaviours according to harmonized TU surveys
- Project of a methodological complement survey for time use surveys
 - New part in the questionnaire
 - Additional surveys on sub-samples to impute missing data (e.g. with GPS)