Project "Time & Distance Study", SEACAP 022/002

LAOS

Final Report

Prepared for: SE Asia Community Access Program

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SE Asia Community Access Program
Time & Distance Study
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Executive Summary

This survey has been conducted in 3 diverse settings in Laos to develop technical guidance for the World Bank & SEACAP in designing surveys which are to include relevant and effective questions on travel time and distance.

The survey sample included 3 provinces, covering the different terrain conditions of Laos:
- Oudomxay - Mountainous, heavily wooded, North, 230K inhabitants
- Xiengkhuang - Agricultural hilly plateau, N-East, 210K inhabitants
- Saravanh - Mostly flat & rural, South, 290K inhabitants

For each province, 2 districts (1 rural, 1 remote) were selected. In each district, 10 villages distributed within a 25km-plus radius were selected. 10 random interviews per villages were conducted.

Thus the sample was 100 per district, Laos N = 600.
The survey used face-to-face interviews, based on a structured closed questionnaire. Fieldwork was conducted between May 14th and June 4th 2006.

The results were subjected to a detailed analysis (described in the following pages), and can be thus resumed, referring to SEACAP's ToR original questions (Annex 1)

- ***How reliable are reported distances as proxies of actual distances?***
- ***How reliable are reported times as proxies of actual times?***

- Perceived walking distances - provided infrastructures are of a certain quality - are in general more reliable indicators than perceived walking times. They don't show a constant over- or under-estimate (whereas perceived walking times are constantly overestimated), and have a good correlation with GPS distances.
- Perceived motorbike distances are more reliable than perceived walking distances.
- Perceived walking distances on fairly flat ground are more reliable than distances in mountainous areas (GPS distances, and times, are shorter as well).
- Perceived walking time is always overestimated; perceived motorbike time is always overestimated, but to a lesser extent, and its error seems independent of distance.
- Time from home to destination is less unreliable than time from destination to home.
- The better the condition of the road and the more extensive the road network the better distances are estimated. Better road conditions improve time estimates as well, but not to the same extent. In both cases, road infrastructure seems to explain most of the variance.

- ***How can travel times be explained by travel distances?***

- Perceived and GPS walking distances are only moderately correlated with perceived walking times. Perceived walking times have a similar reliability to perceived walking distances in the 2 poorer provinces: they both seem to be less reliable for short distances.
- Motorbike times and motorbike distances are better correlated- motorbike times are more reliable, albeit still overestimating, indicators of travel times. Motorbike distances explain

motorbike times better than in the case of walking. As a corollary, length of motorbike trip time does not seem to affect accuracy.

- ***What is the impact of personal characteristics on reported and actual travel times?***

- In the majority of cases, destination frequencies are distributed by ascending distance thus: water, rice, admin. office, school, health centre, market. Rice is sometimes more distant than administrative office, sometimes less; the same happens with school and HC.
- However, a destinations' actual distance does not seem correlated with the accuracy of its estimates (in other words, the distance of close destinations is not estimated more accurately).
- Among destinations, schools (followed by markets) have the highest estimate/ GPS correlations, both for distance and time; water sources the lowest. While this could point to some constant external influences (distance from school could be taught, going to water means coming back carrying it and thus is perceived as longer), the distribution of correlations by destination varies widely.
- Experience seems to improve estimates - in Xiengkhuang, where people travel more and not only on foot, distance estimates are fairly accurate; time ones are constantly overestimated as usual, but less so. Assuming experience comes with age, the very young seem, albeit not in all cases, to be more inaccurate (but so do the very elder, to a lesser extent).
- Contrary to expectations, education does not have a constant impact on estimates. Nor does gender.

- ***Which measure, time or distance, is recommended as probably more reliable and relevant under particular circumstances – and why?***

- Distance should be preferred under all circumstances reviewed in this survey. People seem much more familiar with distance measurements than with time measurements. Moreover, time needed from home to any destination is subject to many factors (e.g. encounters, chats etc) which make it very difficult to relate it uniformly to either actual distance or the methodically-measured GPS time.

- ***How should time and/or distance questions be best phrased in each survey country?***

- Interviewees should be subjected to an informal screening in order to gauge their familiarity with time/distance measurements. One could consider using two questionnaires - the standard one, and a very simplified version.
- Distance should be asked using the interviewee's units, translating them in kms if needed.
- Time should be done in very general terms, possibly using natural indicators (sun, etc). Asking time in hours/ mins does not seem very useful.
- The best indicator is surely the distance by most used mode of transport.

- Asking time from destination to home is superfluous.
- Six potential destinations seem too many, and are too subject to local specific conditions: it would be better to identify a short-distance one, a middle-distance one and a long-distance one (e.g., water, school, market).

IRL's recommendations are as follows:

- Re-examining the results of the study, there seem to have been two main drawbacks: the size of the sample, and the number of the provinces chosen. Combined with the quantity of segmentations offered (mode of transport and destination chiefly, but potentially there was also frequency of trips, etc), it made for too many subsegments that, given a sample of only 200 per province, could hardly be significant. To answer the questions the present study raises, a future study would require:

- A larger sample size per province, so to guarantee that none of the theoretical subsamples ends up empty or nearly empty;

- Instead of choosing three diversified provinces, it would be interesting to choose pairs of provinces with similar socio-economic and infrastructural characteristics, and conduct comparative studies. That would also allow the construction of a more homogeneous sample, yielding statistically sounder results;

- The questionnaire should be simplified along the lines described above;

- However, a section could be introduced, probing the interviewees' perceptions of distance, both with practical examples (and tests), and in the abstract.

- The study could be planned along the lines of a baseline survey, designed to be repeated at fixed intervals.

Introduction

Objectives, Methodology,
General Sample Characteristics

SEACAP aims at improving the quality of statistical data for travel indicators and at developing a technical guidance note on the relative and absolute reliability and accuracy of time and distance reports.

The present survey has been conducted in 3 diverse settings in Laos to develop technical guidance for the World Bank & SEACAP in designing surveys which are to include relevant and effective questions on travel time and distance. Together with a parallel survey in Cambodia, this survey addresses the distance estimates made by respondents in terms of:

- How reliable are reported distances as proxies of actual distances?

- How reliable are reported times as proxies of actual times?

- How can travel times be explained by travel distances?

- What is the impact of personal characteristics on reported and actual travel times?

- Which measure, time or distance, is recommended as probably more reliable and relevant under particular circumstances – and why?

- How should time and/or distance questions be best phrased in each survey country?

The survey sample was constructed by a four-stage process:

- ❑ 3 provinces were selected, covering the different terrain conditions of Laos:
  - Oudomxay - Mountainous, heavily wooded, North, 230K inhabitants
  - Xiengkhuang - Agricultural hilly plateau, N-East, 210K inhabitants
  - Saravanh - Mostly flat & rural, South, 290K inhabitants
- ❑ For each province, 2 districts were selected:
  - 1 containing the provincial capital or close to it;
  - 1 remote district.
- ❑ For each district, 10 villages were selected, in concentric circles:

  2 at 0-5 km from the district centre; 2 at 5-10; 2 at 10-15; 2 at 15-20; 2 at more than 25 km.

  For each village, 10 households were randomly selected. 1 respondent per household was finally randomly selected, with the following stratifications (proportional to population):
  - Gender
  - Age groups: 13-18, 19-24, 25-34, 35-44, 45+.

Thus the sample was 100 per district, Laos N = 600.

The survey used face-to-face interviews, based on a structured closed questionnaire. Fieldwork was conducted between May 14th and June 4th 2006.

Xiengkhuang
Pek - N=100 - inh. 63,537
Nonghed - N=100 - inh. 35,610
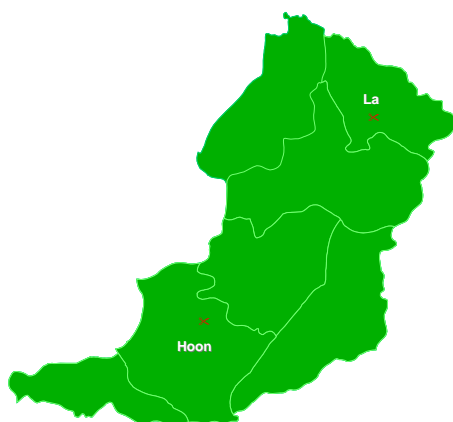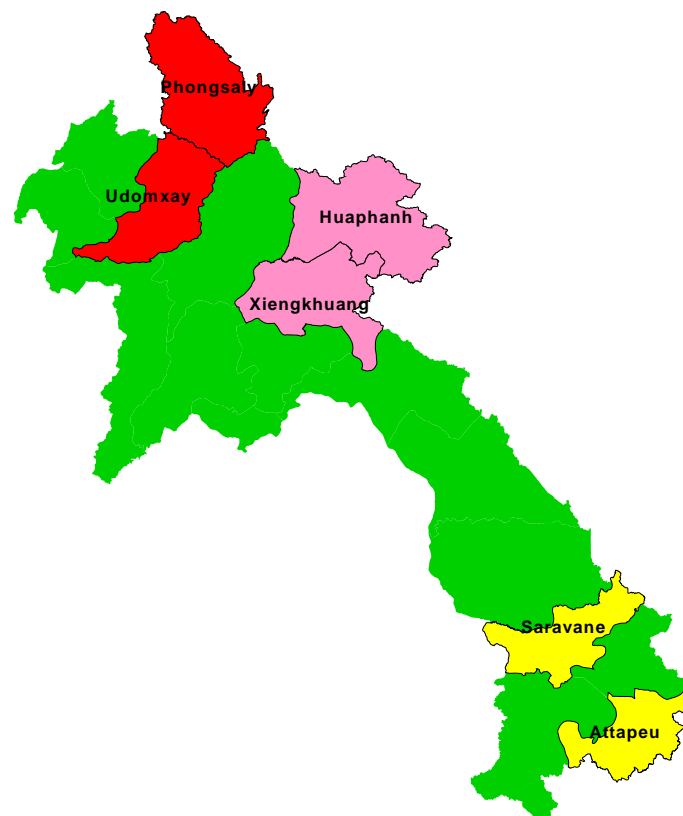
Oudomxay
Lah - N=100 - inh. 16,229
Hoon - N=100 - inh. 52,470
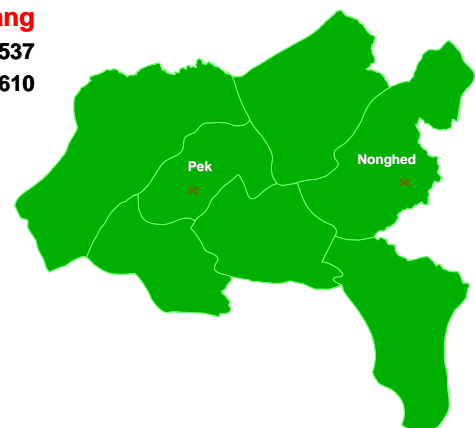
For all three provinces, the first district is close to the capital, and rural (i.e., accessible by road). Xiengkhuang's second district is accessible by road too.

Saravanh
Laognam - N=100 - inh. 48,396
Ta Oi - N=100 - inh. 19,052
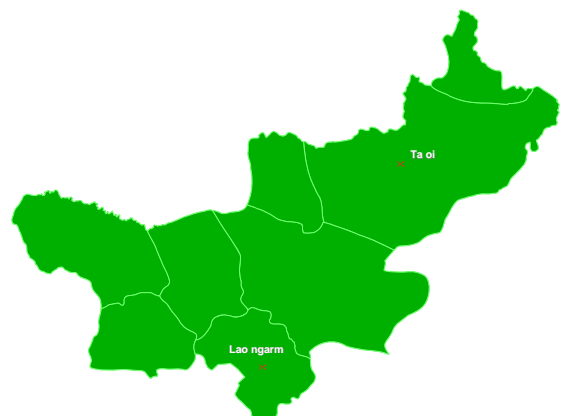
General Characteristics

Gender	
Male	50%
Female	50%

Age group	
13 to 18	21%
19 to 24	19%
25 to 34	20%
35 to 44	21%
45 and over	18%

Province by type of district	
Oudomxay rural	72%
Oudomxay remote	28%
Xiengkhuang rural	100%
Xiengkhuang remote	0%
Saravanh urban	9%
Saravanh rural	50%
Saravanh remote	41%

Education	
Some primary school	47%
Completed primary school	18%
Some secondary school	27%
Completed secondary school	7%
Some/completed vocational school	1%
Some/completed college	0%
Some/completed university	0%
Never attended school	0%

There is a balanced gender distribution; and 40% of the interviewees are under 25. This roughly corresponds to Laos demographics in the chosen areas.

Educational levels are rather low: 52% have completed primary school, but nearly half have just some primary school, and only 7% have completed secondary school. This was to be expected, given both the choice of provinces and the choice of rural districts.

It is relevant to data interpretation that all Xiengkhuang areas are reachable by road, whereas in Oudomxay (28%), and especially Saravanh (41%) a large number of interviewees live in roadless areas.

Overall modes of transport
By province
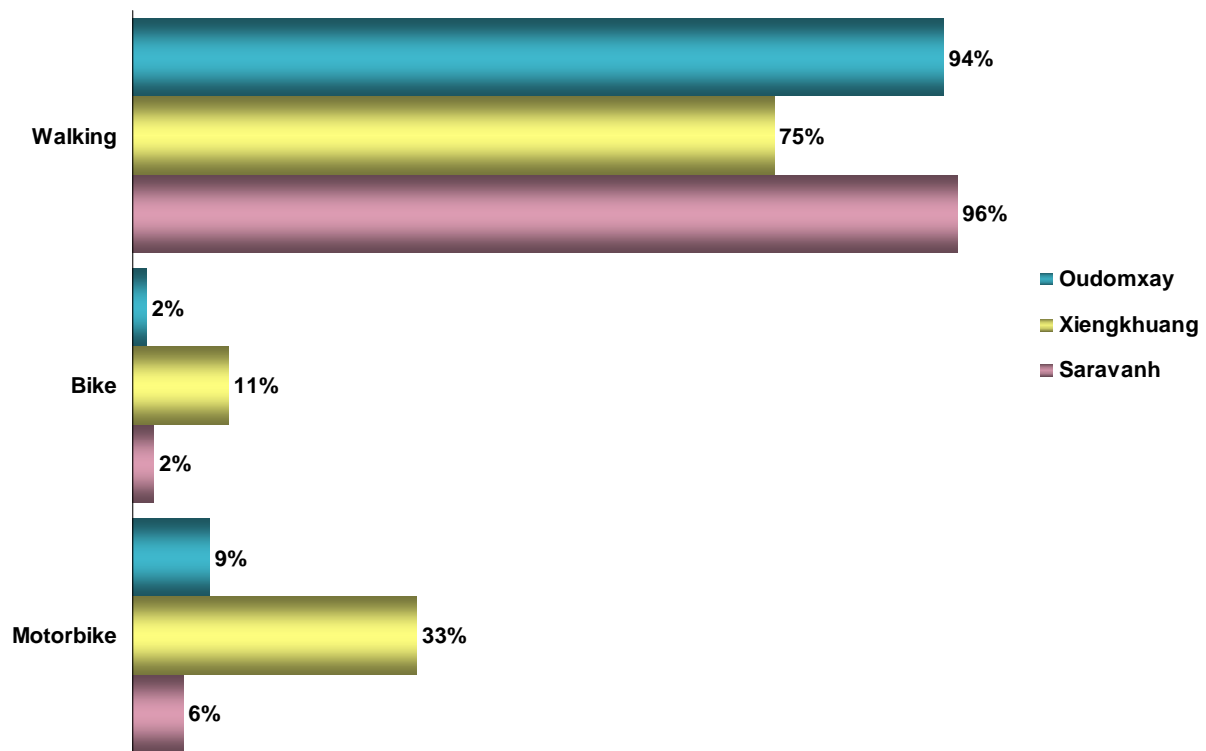
- Walking is the overwhelming predominant mode of transport (%s are >100, because multiple choices were allowed), as one would expect.

- Motorbikes are relevant in Xiengkhuang (together with the more marginal bikes, and with a sprinkle of other modes). That's because the province is comparatively richer, has better infrastructure, and some tourism, which encourages transport diversification.

- There is little motorbike use in Oudomxay, and even less in Saravanh (the 2nd poorest Laotian province).

Most used mode of transport
By province

Walking
- 92% (Oudomxay)
- 62% (Xiengkhuang)
- 95% (Saravanh)

Bike
- 0% (Oudomxay)
- 4% (Xiengkhuang)
- 0% (Saravanh)

Motorbike
- 7% (Oudomxay)
- 29% (Xiengkhuang)
- 4% (Saravanh)

Legend:
- Oudomxay
- Xiengkhuang
- Saravanh
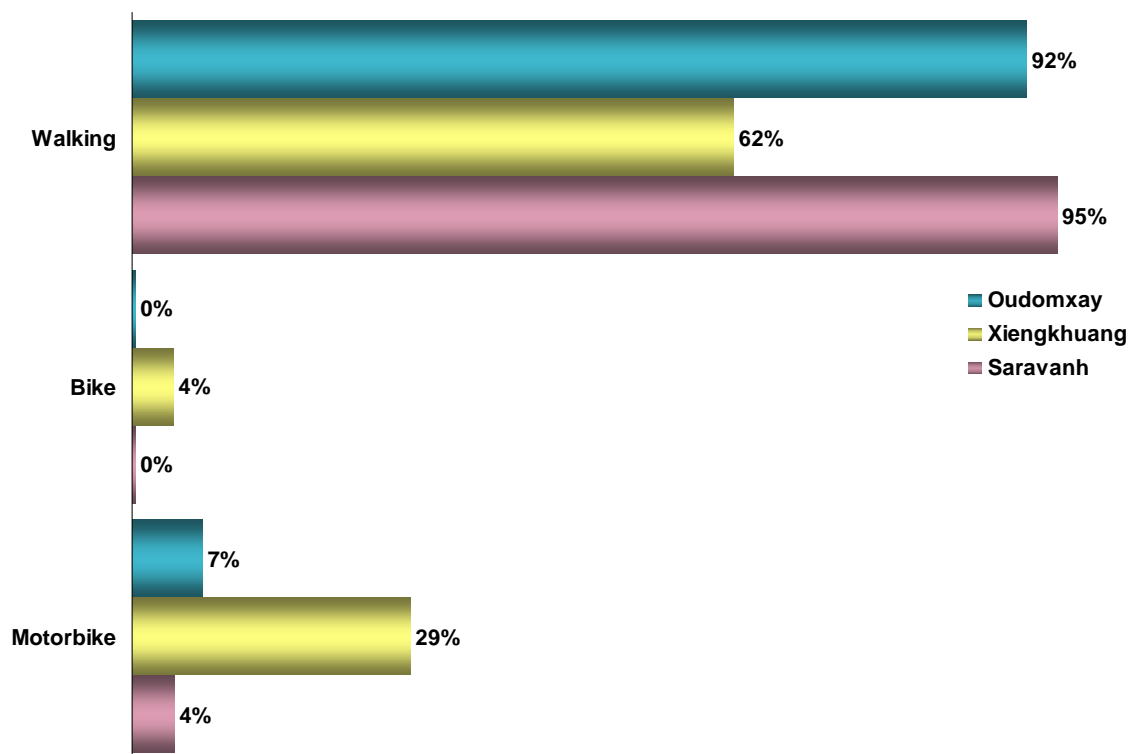
▫ When it comes to selecting the mode most used to a given destination, the gap between walking and other modes consolidates. The rest of our remarks will be mostly concerned with walking.

▫ In Saravanh and Oudomxay walking is practically the sole mode (we will consider motorbike use in those two provinces, but results are obviously erratic). In more developed Xiengkhuang, motorbikes are used by nearly 1/3 of the sample (mostly for the farthest destinations).

Time From home vs Time To home: cases of significant difference (%)
By province

School
- Oudomxay: 3%
- Xiengkhuang: 6%
- Saravanh: 3%

Water Source
- Oudomxay: 17%
- Xiengkhuang: 21%
- Saravanh: 32%

Admin Office
- Oudomxay: 0%
- Xiengkhuang: 15%
- Saravanh: 6%

Rice Field
- Oudomxay: 24%
- Xiengkhuang: 30%
- Saravanh: 36%

Legend: ■ Oudomxay ■ Xiengkhuang ■ Saravanh
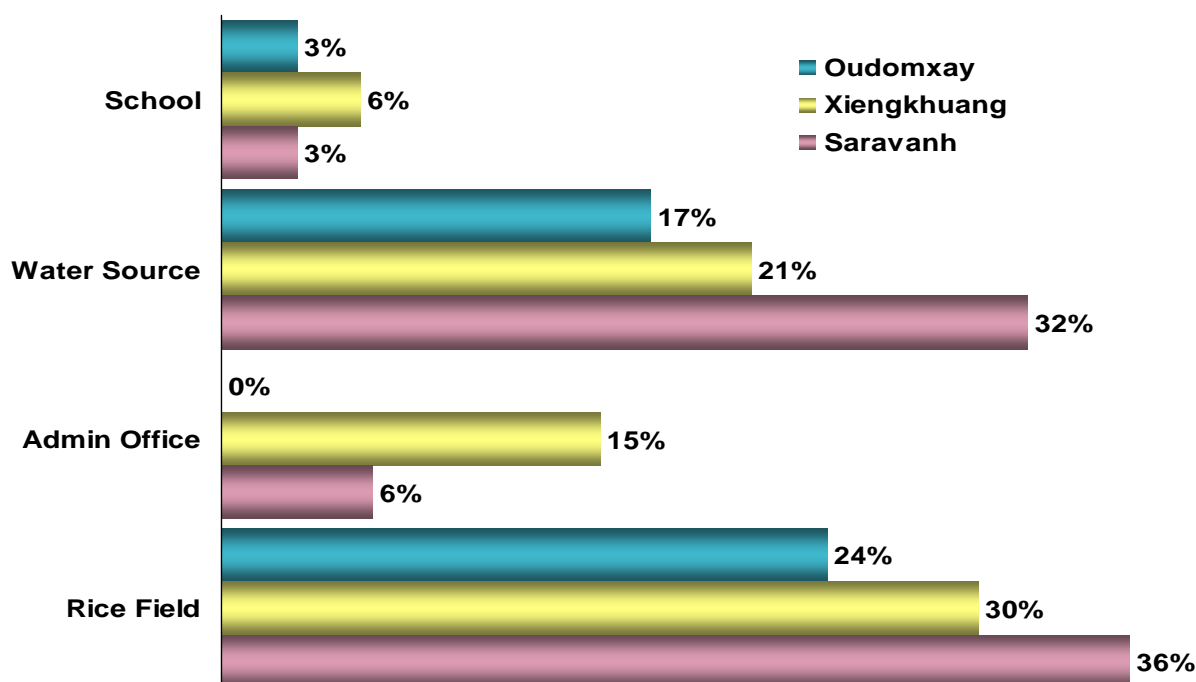
Since the questionnaire asked both times from home to each of the destinations, and times from destinations to home, we examined the differences in results. They are less relevant than one could have expected.

All significant differences concern walking, and are limited to the 4 destinations above; only exception, in Xiengkhuang 15% of motorbike trips to market show time differences.

In most cases, it takes longer (between 1 and 10 minutes) to walk from destination to home. Water sources and rice paddies are often at lower level than villages (and typically one walks back from the water source carrying water).

On the whole, slightly less than 1/3 of the interviewees report a time difference. (GPS findings yield walking differences of more than 1 minute only in 4 cases.) That is why the Time to home tables are difficult to compare both among themselves and with the other tables.

Part II - Oudomxay

Oudomxay – distances
Mean distances FROM home TO…
Respondents vs GPS (kms)

Chart: Mean distances from home (Respondents vs GPS) in kms

Destination	Respondents	GPS
Water Source	0.64	0.36
Rice Field	1.69	1.14
Administrative Office	1.11	1.17
Health Center	1.8	1.99
School	2.33	2.32
Market	6.55	4.62
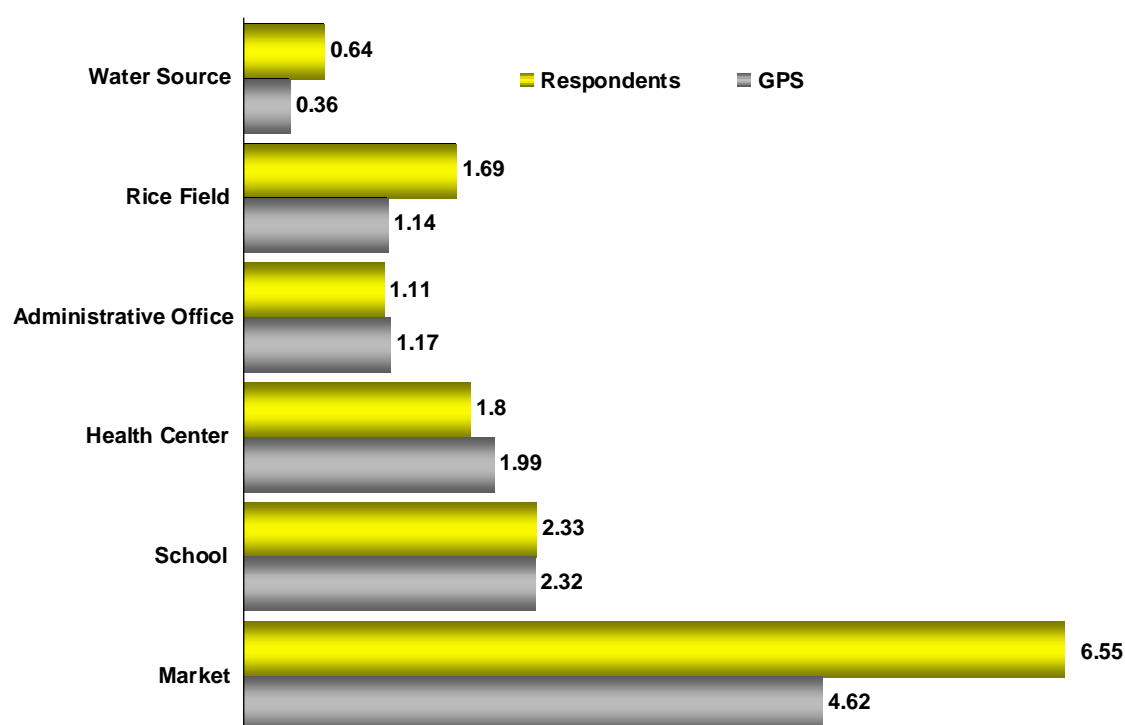
- All villages are situated near a water source, and have an administrative office. Rice paddies are equally near.
- The difference between respondent and GPS distance could be attributed to the fact that sometimes in Oudomxay rice is dry rice, grown in slash-and-burn fields on hillsides which can be above the village, and thus perceived as more distant.
- Health centres and schools are less close - on average -, and markets exist only in fairly large agglomerations.
- Mean distances aggregate walking and motorbike - thus very close and comparatively far destinations are bundled together. The data are included to give an overall perspective, but the picture gets clearer if one considers each mode of transport separately.

Oudomxay – distances
Walking (92%) FROM home TO…
Respondents vs GPS (kms)

Administrative Office — 0.13 / 0.18
Health Center — 0.31 / 0.28
Water Source — 0.61 / 0.34
Rice Field — 1.64 / 1.08
School — 1.78 / 1.76
Market — 2.63 / 3.22

■ Respondents
■ GPS
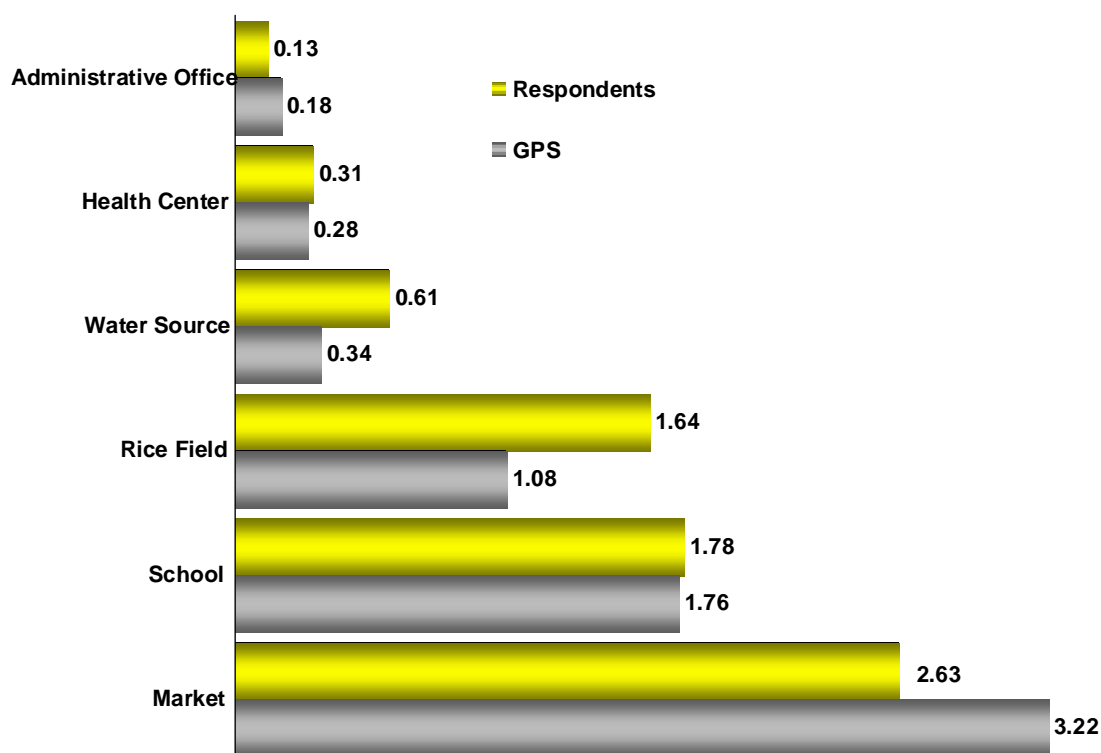
- This chart gives an image of the territory as perceived by most inhabitants. For all the three provinces, it is probably the most relevant chart.
- Distances are averages.
- For those who walk to them, administrative offices and health centres are in their village; water sources are slightly more distant.
- Rice paddies are out of the village, but at about 1 km (perceived as 1.6); schools are on average a little bit farther (kids will have to walk a bit more than 3 kms every time they attend school).
- People who walk to markets in Oudomxay average more than 6kms' walk - but perceive a shorter distance (by 18% of GPS distance).
- The largest % differences between respondents and GPS concern water (respondents' estimate is GPS +79%) and rice (GPS +52%).

Oudomxay – distances
Motorbike (7%) FROM home TO…
Respondents vs GPS (kms)
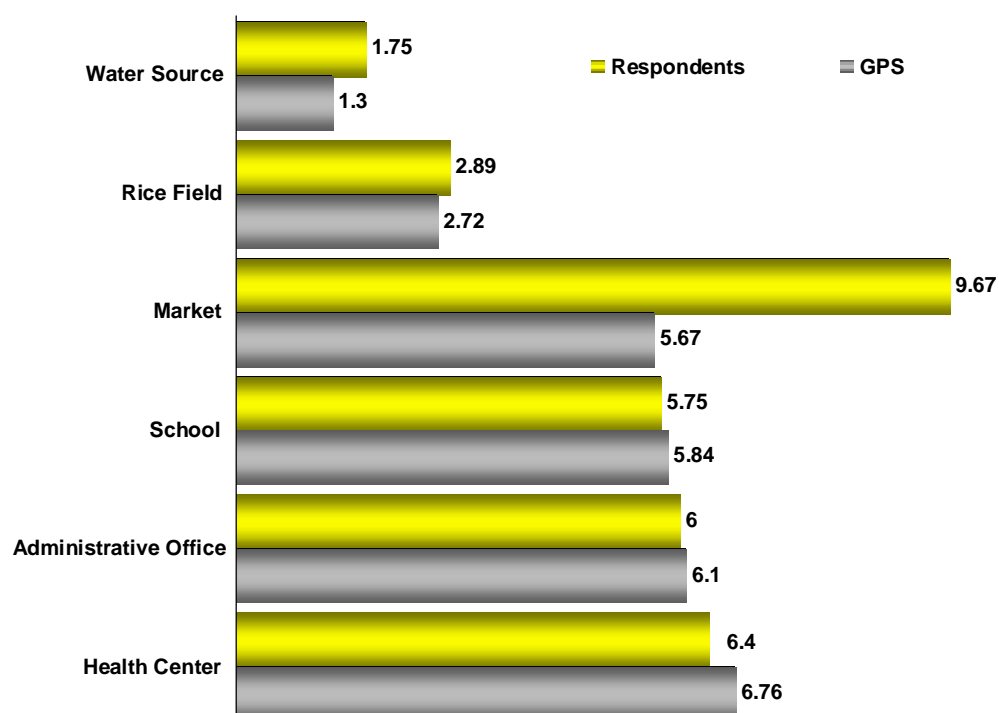
- This chart applies to the small minority who has larger distances to cover, and uses a motorbike.
- The figures for water sources and rice paddies are based on just a handful of cases.
- Other figures are more reliable, and confirm that people recur to motorbikes only when the return distance is 10 kms or more (which in Oudomxay often means half that amount of uphill roads).
- There is on the whole a good fit between respondents and GPS, with the sole exception of markets.

Correlation Matrix
- Explanation & Results Guide –

Correlation variables measure the relationship between different factors. Correlation can be thought of as representing the extent to which a change in one particular factor will have an impact upon another factor, or group of factors. Correlation influences are summarized as follows:

Equal Size & Equal Direction - this means that if one variable changes then a related variable will change in exactly the same way (e.g. if one variable increases by 1% then the related factor will also increase by 1%). This is said to be a "direct positive correlation".

Equal Size & Opposite Direction - this means that if one variable changes then a related variable will change in the inverse / opposite manner (e.g. if one variable increases by 1% then the related factor will decrease by 1%). This is said to be a "direct inverse correlation".

Proportional Size & Direction - this means that if one variable changes then a related variable will also change but not in exactly the same manner. In other words the related variable may increase or decrease by an amount, that is some proportion of the change in the original factor. (e.g.. If one variable increases by 1% then the related factor may increase by 0.37% or decrease by 0.18% depending upon what the relationship or correlation is between the two factors. This is said to be a "proportional correlation".....this relationship is shown in the following tables...

Oudomxay – distances
Correlation FROM home To…
Respondents vs GPS
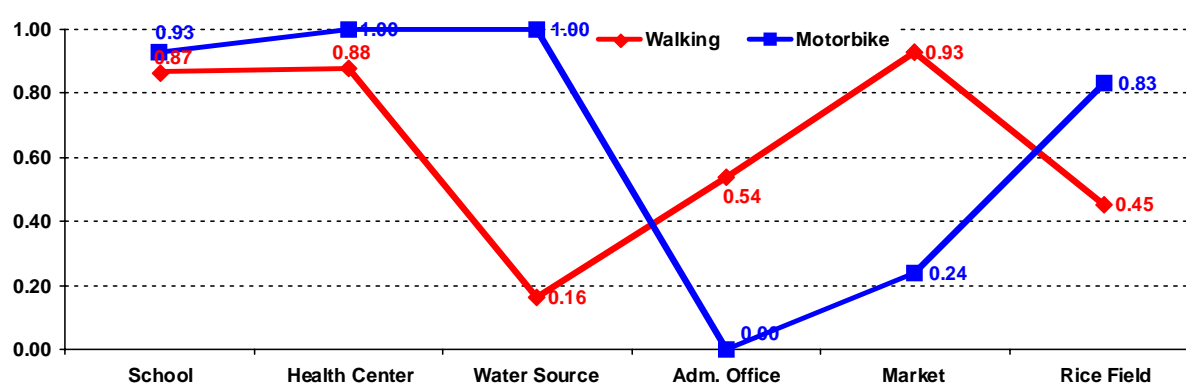
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- Walking. There is a very high correlation between respondents' and GPS walking distances to school, health centre and market (in other words, the value of respondents' distances increases in nearly exact proportion to the increase of real distances).
- Correlation is obviously not dependent on distance (on foot, HC is close, school & market are far).
- There is a moderate correlation for admin office and rice fields, again not apparently dependent on distance.
- Motorbike. The low numbers produce some odd results. Very high correlations for school, health centre, water, rice fields.

Oudomxay - time From

Mean times FROM home TO…
Respondents vs GPS (mins)

Oudomxay most used	
Bike	**0.3%**
Tuk Tuk	**0.3%**
Motorbike	**7.2%**
Walking	**92.1%**
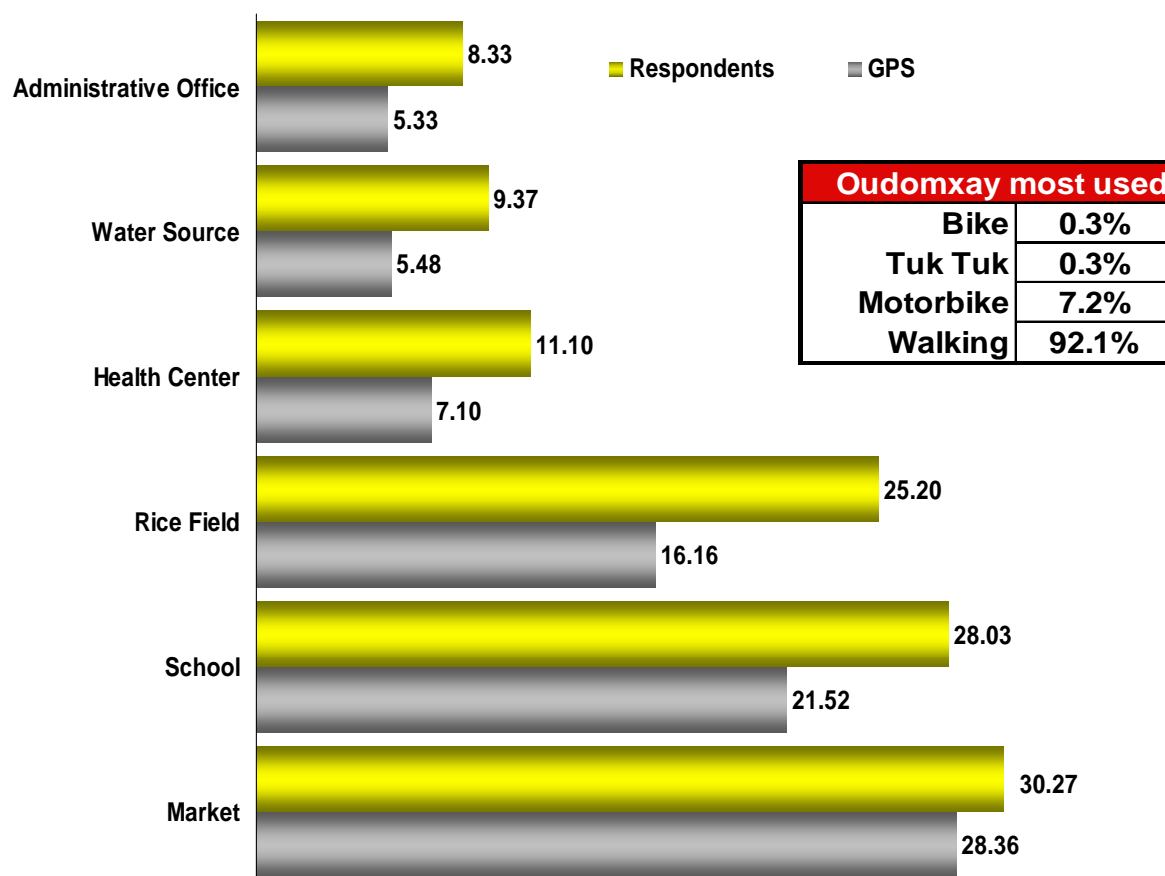
The mean times from home to destination fit overall the distribution of mean distances to destination.

Respondents regularly overestimate the times: we'll see this applies both to walking and motorbike.

Basically, there are two sets of times: "short" times (avge 10 / 6 mins) for destinations which are within the village, and "long" ones
(27 / 23 mins) for more distant ones

The best correspondence between respondents and GPS is with markets.

Oudomxay - time From
Walking (92%) FROM home TO…
Respondents vs GPS (mins)

Administrative Office
- Respondents: 6.00
- GPS: 2.80

Health Center
- Respondents: 6.29
- GPS: 4.43

Water Source
- Respondents: 9.52
- GPS: 5.53

Rice Field
- Respondents: 25.81
- GPS: 16.48

School
- Respondents: 30.76
- GPS: 22.76

Market
- Respondents: 46.25
- GPS: 35.75

Legend: ■ Respondents ■ GPS
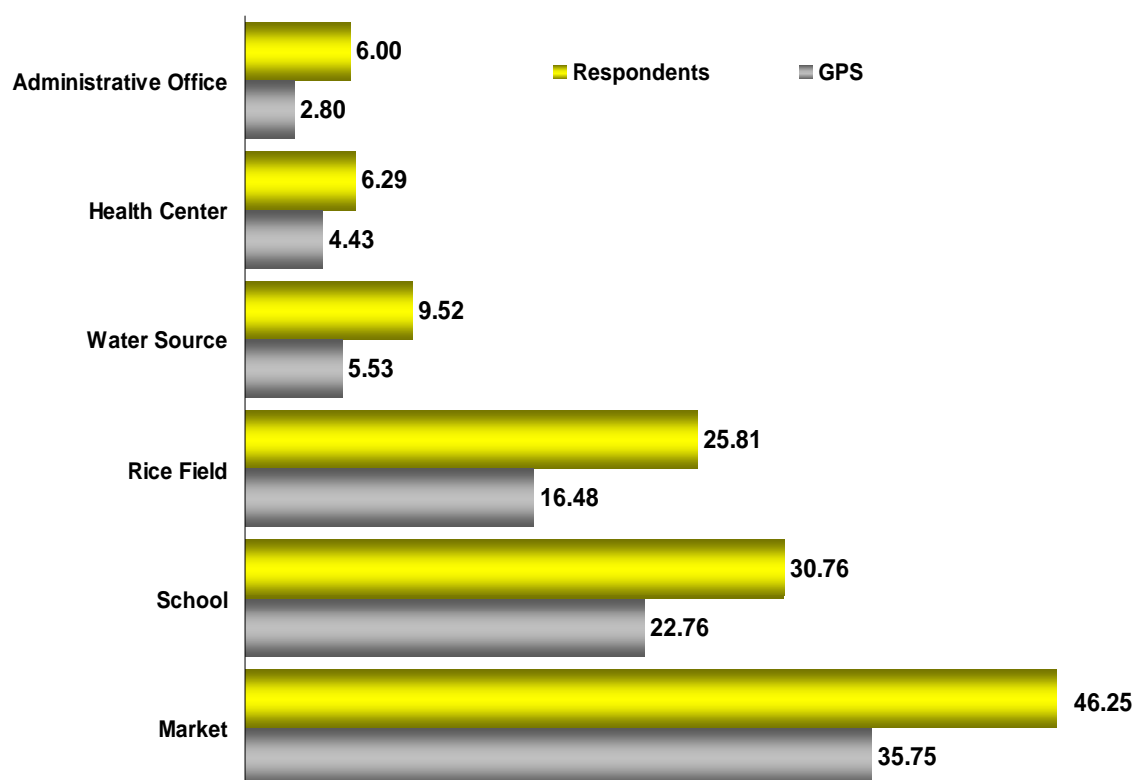
- Walking average times yield the same profile than mean ones.
- Respondents overestimate the "short" times by 114% for admin office, by 72% for water, and by 42% for health centre.
- "Long" times are on the whole more precise: +57% for rice, 35% school, 29% market. In this case, inaccuracy seems to decrease with distance.
- It is worth noting that of the three provinces, Oudomxay has the longest GPS time to rice paddies - owing to the province's mountainous nature.

Oudomxay - time
Motorbike (7%) FROM home TO…
Respondents vs GPS (mins)

Legend:
- Respondents (yellow)
- GPS (grey)

Location	Respondents	GPS
Water Source	4	3.5
Rice Field	10.71	8.43
School	11	13.75
Health Center	31	16.5
Administrative Office	20	18
Market	19.67	25.17
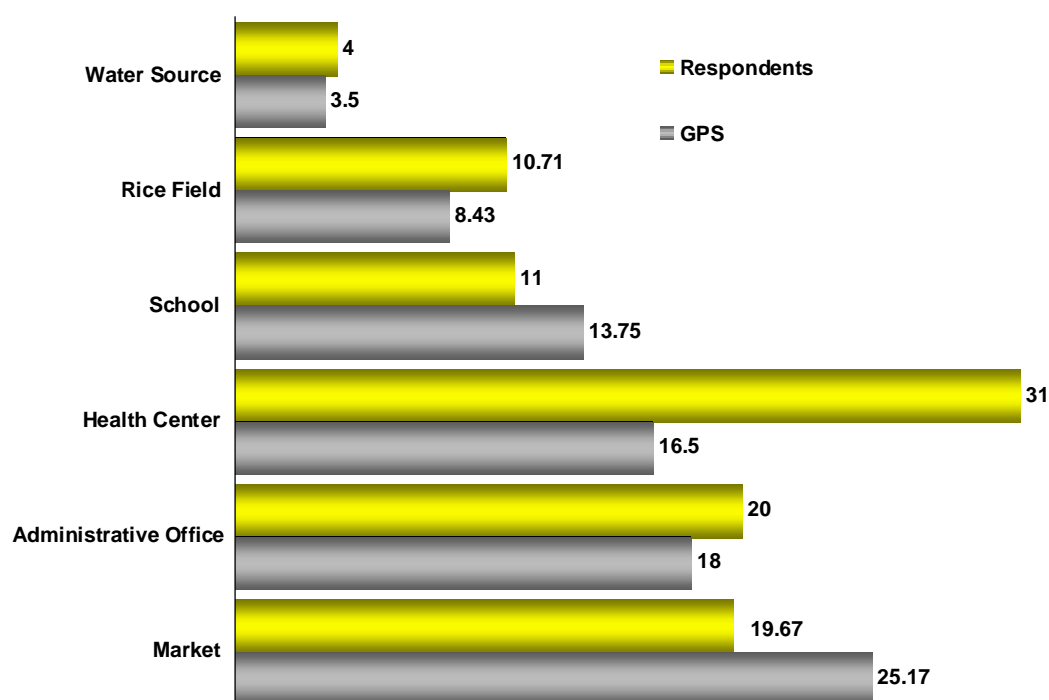
- Absolute times of course increase, since a motorbike is needed for distances.
- Respondents still tend to overestimate travel times, but less than when walking (with the exception of the health centre, over by 87%): for instance, admin is + 11% of GPS, rice paddy +27%.
- Market is underestimated: it is the GPS longest distance by nearly 8 minutes, but it's actually perceived as 22% closer. It could be that the longer the travel time the lesser its perception.

Oudomxay - time
Correlation FROM home To…
Respondents vs GPS
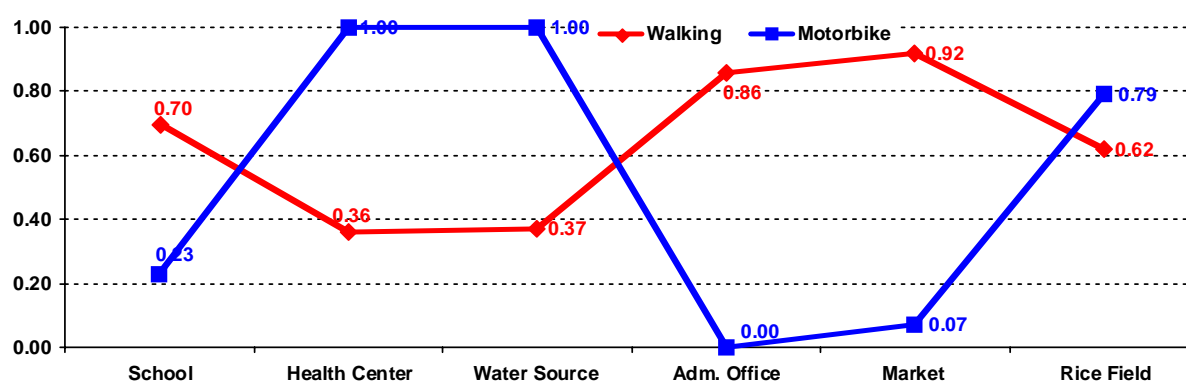
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- Walking. There is a very high correlation between respondents' and GPS walking times to administrative office and market.
- It is not dependent on the length of time needed to get to either.
- There is a high correlation for school and rice field. There is a low correlation for health centre and water.
- Motorbike. Again, some odd results. Very high correlations for health centre, water, and (nearly) rice fields.

Part III – Xienghuang

Xiengkhuang - distances
Mean distances FROM home TO…
Respondents vs GPS (kms)

Xiengkhuang most used	
Bus	0.6%
Lot Tork Tork	1.2%
Taxi	2.2%
Bike	4.2%
Motorbike	28.7%
Walking	61.9%
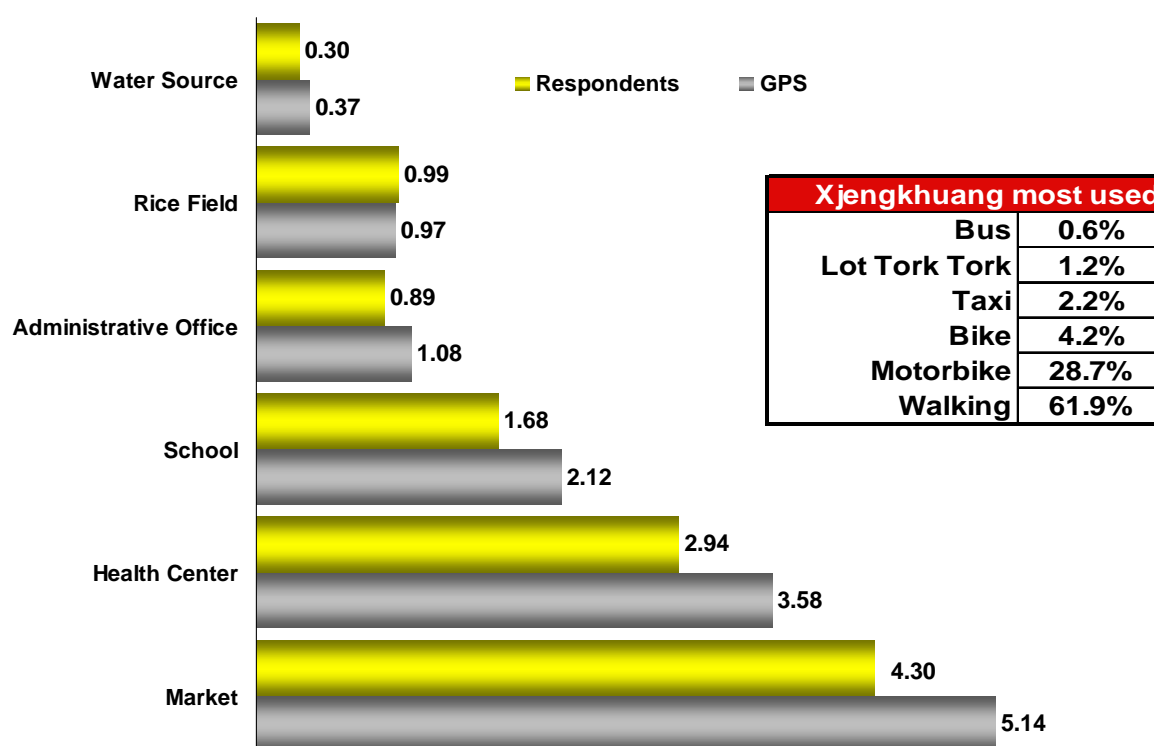
In Xiengkhuang too, all villages are situated near a water source. Rice paddies are on average closer than in Oudomxay, because Xiengkhuang is flatter. Administrative offices are more or less at the same distance than rice fields.

Compared to Oudomxay, health centres and schools are slightly more distant, because the province is more spread out. Markets on average are slightly more distant.

Again, mean distances aggregate walking, motorbike and other modes: the overall distance profile is however similar to the Oudomxay one.

Xiengkhuang - distances
Walking (62%) FROM home TO…
Respondents vs GPS (kms)
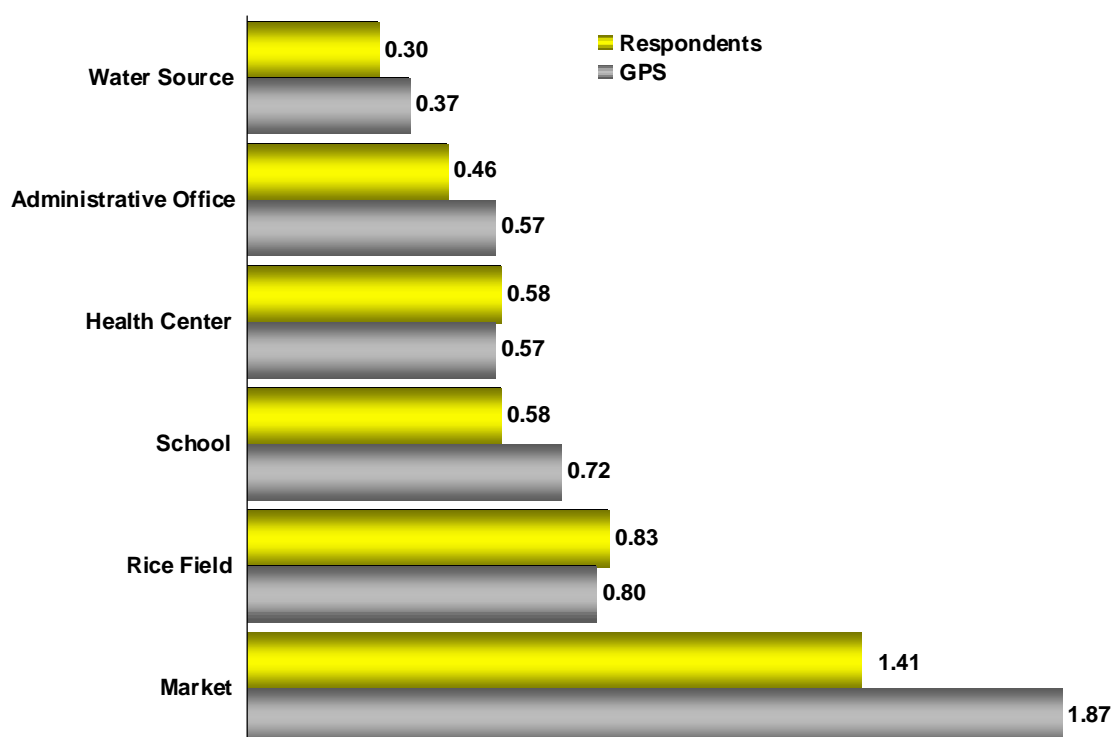
- Distances are averages.

- For those who walk to them, water sources are the closest destination (in Oudomxay they are farther); administrative offices and health centres are in the village; and so are schools, which were more distant in Oudomxay.

- Rice paddies are out of the village, but half the distance than in Oudomxay.

- Again, markets are the farthest destination, but half far away than before.

- In Xiengkhuang too, people who walk to markets perceive a shorter distance (by a similar proportion, here 25%).

- Percentage differences between respondents and GPS are much smaller than in Oudomxay. One can think that it is mainly due to the flatter terrain which makes distance assessment easier (cfr. Saravanh), but better education levels could also have an impact. The largest gaps - about half than in Oudomxay - concern admin and school (both around 20% of GPS).

Xiengkhuang - distances
Motorbike (29%) FROM home TO…
Respondents vs GPS (kms)
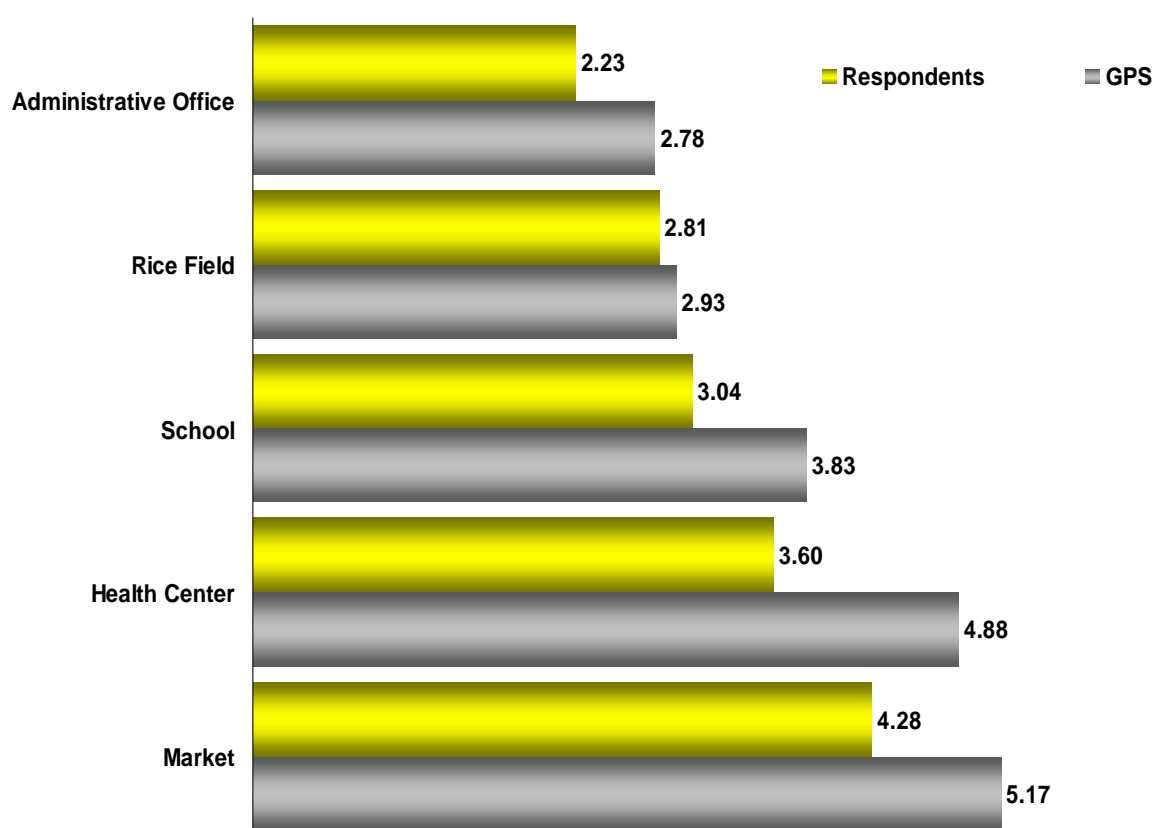
- Xienghuang charts regarding motorbikes deal with significant numbers - nearly 30% of respondents.

- The figures for most destinations are fairly similar. (Nobody goes to water by motorbike - it's close enough to walk.)

- The combination of flatter terrain, better infrastructure and comparatively more wealth has people using motorbikes on 3-5 kms stretches, on average.

- In Xiengkhuang too there is a good fit between respondents and GPS. The biggest error margins (underestimating) are health center 26%, school 21%, markets 17%.

Xiengkhuang - distances
Correlation FROM home To…
Respondents vs GPS
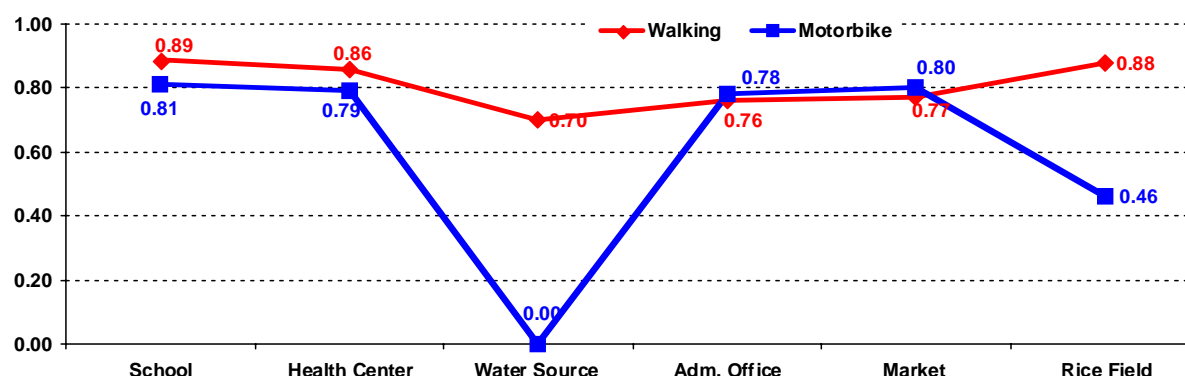
On the whole, in Xienghuang walking and motorbike correlations yield high or very high results: respondents' estimates increase nearly proportionately with real distances.

This is probably independent from the terrain (flattish Saravanh's results look more like Oudomxay's): better (i.e. easier to measure) roads, entailing more road experience could make the difference. (Better education could have been a factor, but segmenting the sample by education yields no results - see Appendix).

Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

Walking. There is a very high correlation between respondents' and GPS walking distances to school, health centre (like in Oudomxay) and rice fields. It is not dependent on distance (on foot, HC and school are close, rice is a bit farther).

There is a high (higher than Oudomxay) correlation for water, admin office and market, again not apparently dependent on distance. In fact, correlation borders on very high..

Motorbike. Very high or borderline very high - and this time reliable - correlations for school, health centre, admin, market. Rice fields are moderately correlated, but that's probably because their numbers are low.

Xiengkhuang - time From

Mean times FROM home TO…
Respondents vs GPS (mins)

Water Source: Respondents 10.81, GPS 5.75
Administrative Office: Respondents 12.06, GPS 8.40
School: Respondents 13.88, GPS 11.75
Health Center: Respondents 15.44, GPS 12.24
Rice Field: Respondents 16.17, GPS 12.34
Market: Respondents 19.13, GPS 16.98

Legend: Respondents, GPS

Xjengkhuang most used	
Bus	0.6%
Lot Tork Tork	1.2%
Taxi	2.2%
Bike	4.2%
Motorbike	28.7%
Walking	61.9%
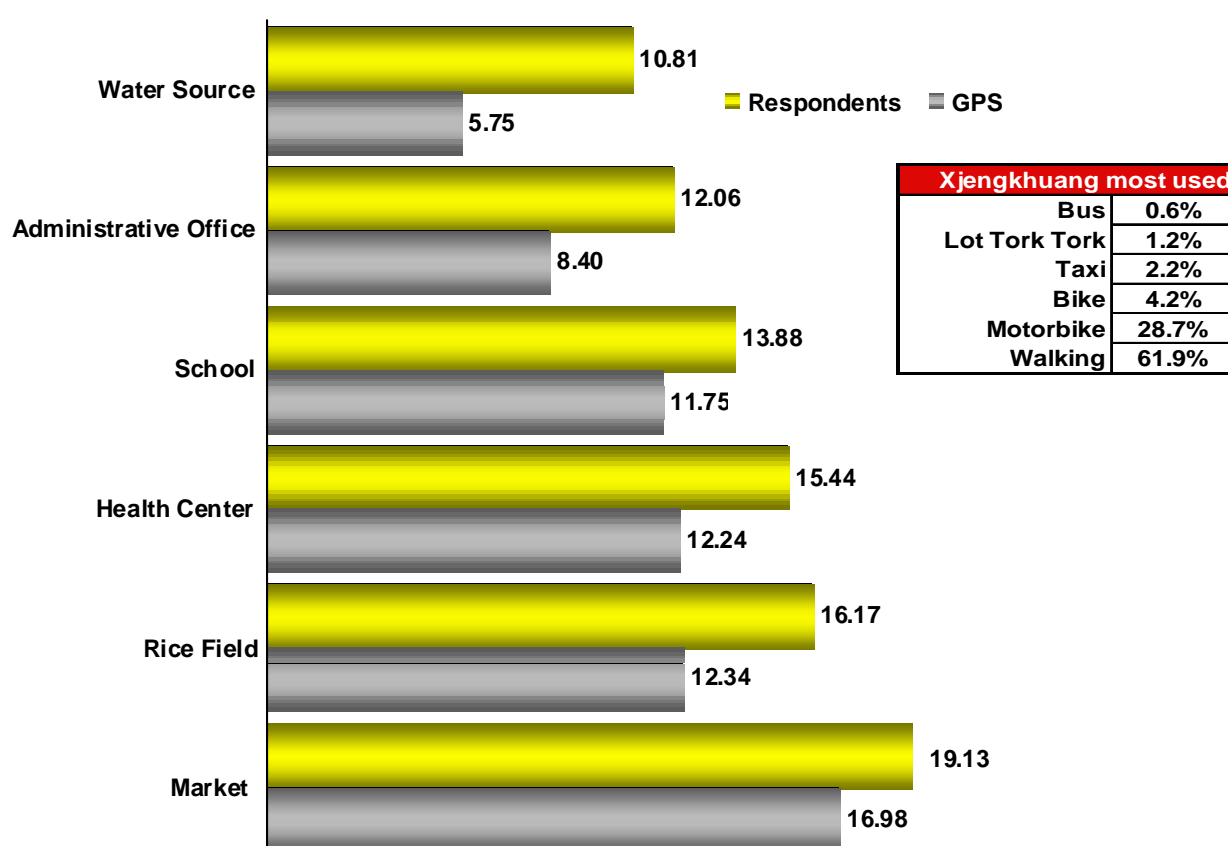
Here again, mean times from home to destination fit overall the distribution of mean distances to destination (taking into account that nobody goes to water by motorbike).

Again, respondents regularly overestimate trip times: again, this applies both to walking and motorbike.

Reflecting the nature of the terrain and the distribution of destinations, in Xiengkhuang we don't have a set of "short" times (within the village) and a distinct set of "long" ones. There is just a gradual increase, from water to market (treble in GPS times, only double in perceived ones).

The best correspondence between respondents and GPS is again with markets.

Xiengkhuang - time
Walking (62%) FROM home TO…
Respondents vs GPS (mins)
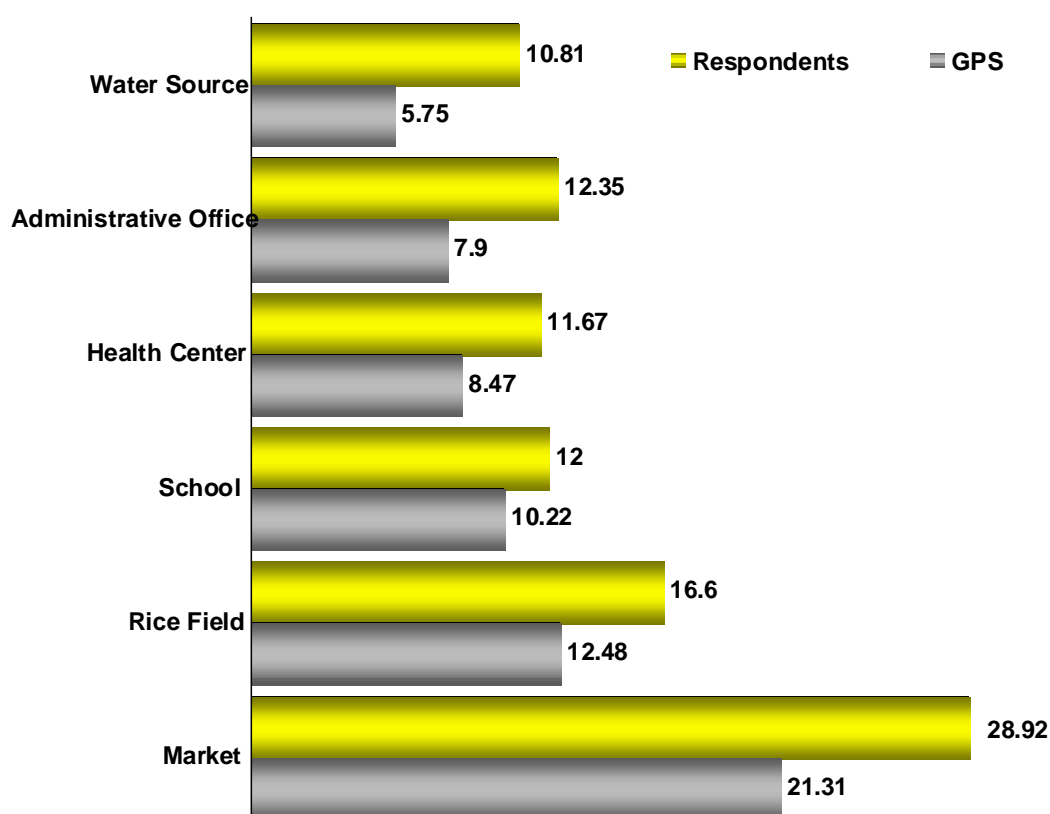
- Walking average times yield a slightly different, more slanted profile than mean ones.
- Respondents overestimate walking times by 88% of GPS for water, by 38% for health centre, by 56% for admin office. School gets the best estimate: +17%.
- More distant time estimates are only slightly more accurate: +33% of GPS time for rice, 36% for market.
- In Oudomxay inaccuracy seemed to decrease with distance - but here the effect is much less perceptible.
- Xiengkhuang's average times are very close to Saravanh's - Xiengkhuang has hillier terrain, but better infrastructure -, and markedly lower than Oudomxay's.

Xiengkhuang - time
Motorbike (29%) FROM home TO…
Respondents vs GPS (mins)
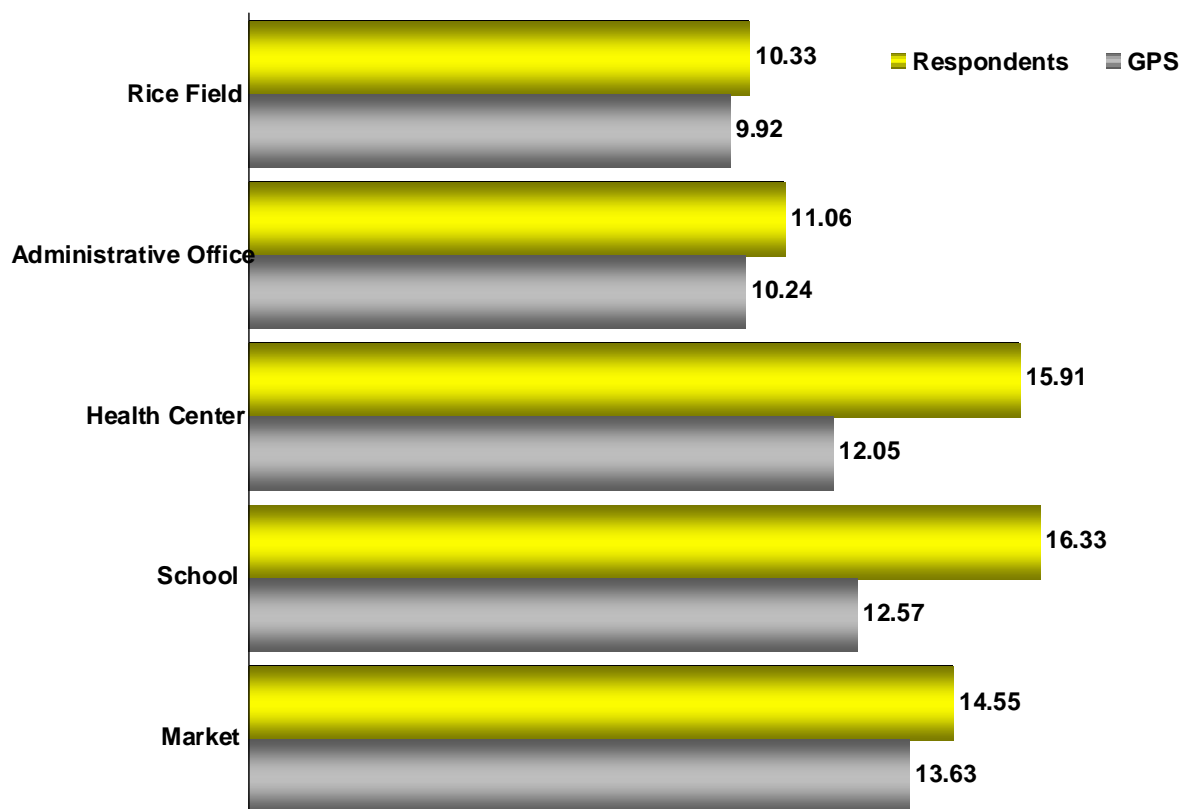
Here again, motorbike use means absolute times increase (and water disappears).

Respondents still overestimate travel times, but, as in Oudomxay, less than when walking (with the exception of health centre, improving at + 32% and school, worsening at 30%): for instance, admin is 8% and rice paddy is +4%.

Since the number of motorbike users here is significant, one could possibly say that respondents' motorbike times are more reliable, albeit still overestimating, indicators of travel times.

As a corollary, length of trip time does not seem to affect accuracy.

Xiengkhuang - time
Correlation FROM home To…
Respondents vs GPS
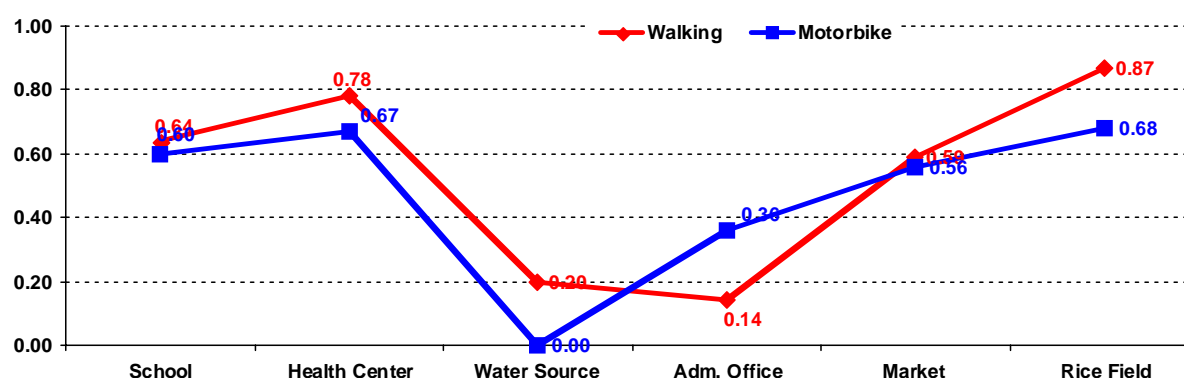
The most interesting Xiengkhuang time correlation data is the very similar profiles of walking and motorbike (excluding of course water).

This could confirm the remark originated by Xiengkhuang's distance correlation: better correlation (and % accuracy as well) probably depends on infrastructure levels (not on education - see Appendix).

Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

Walking. There is a very high correlation between respondents' and GPS walking times to rice field (in Oudomxay it was high). There is a high correlation for school (as in Oudomxay), health centre, and (borderline) market (v. high in O.). There is a low correlation for water (as in Oudomxay).

Motorbike. Results closely parallel walking. High or very high correlations for school, health centre, and rice fields. Moderate for market.

Part IV - Saravanh

Saravanh - distances

Mean distances FROM home TO…
Respondents vs GPS (kms)

Saravanh most used	
Bike	0.3%
Tuk Tuk	0.3%
Motorbike	4.3%
Walking	95.2%
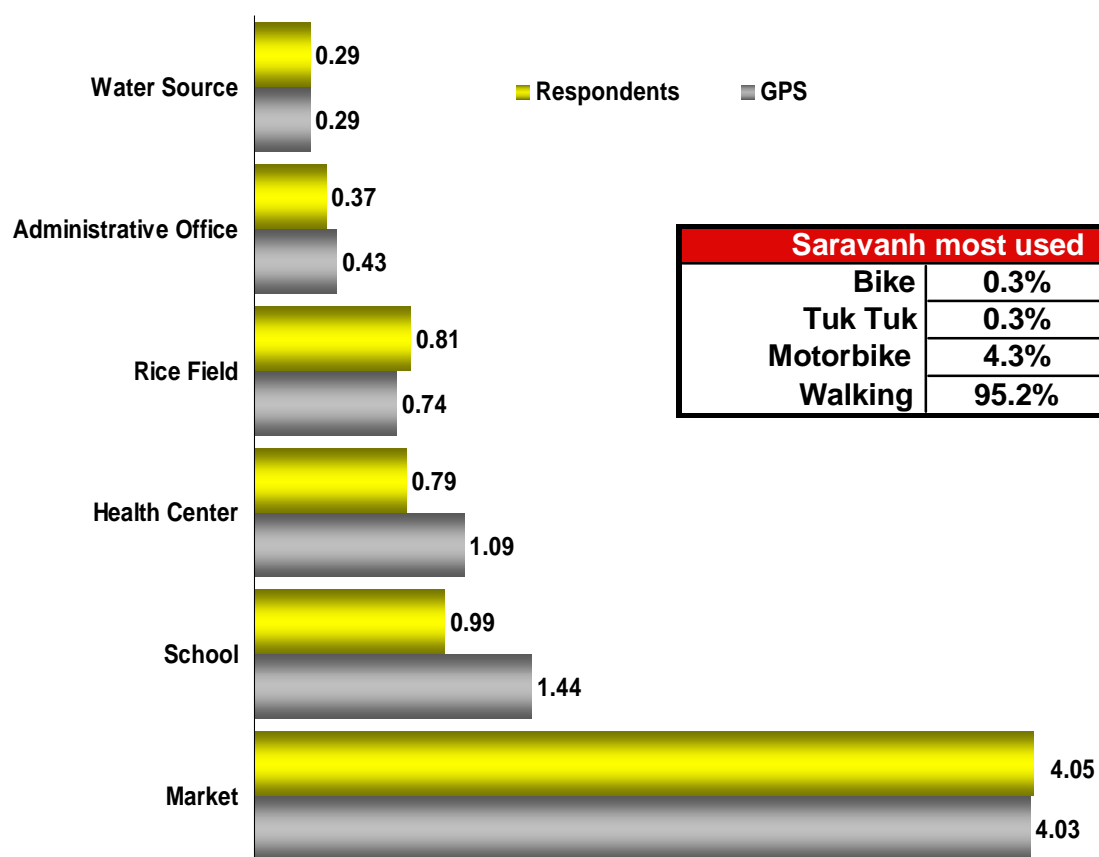
- In Saravanh too, villages are situated near a water source. Rice paddies are on average close, because, like Xiengkhuang, Saravanh is mostly flat.
- The distance distribution, reflecting the nature of the terrain, is similar to Xiengkhuang. Admin offices, and markets are more or less at the same respective distances. Health centres and schools are closer.
- Here, mean distances aggregate only walking and motorbike.

Saravanh - distances
Walking (95%) FROM home TO…
Respondents vs GPS (kms)
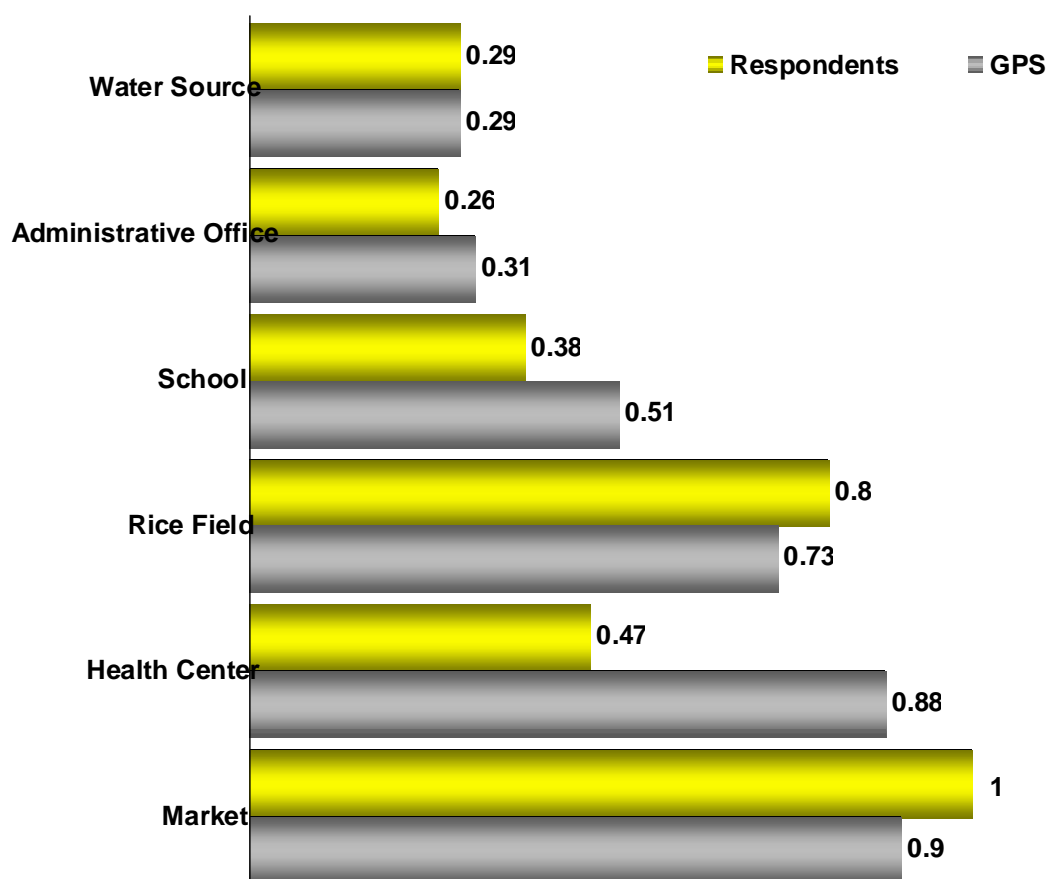
- Distances are averages, and represent the near totality of distances in Saravanh.
- For those who walk to them, water sources are, as in Xiengkhuang, the closest destination (in Oudomxay they are farther); administrative offices are in the village; schools and health centres are distributed as in Xiengkhuang.
- Rice paddies are out of the village, but half the distance than in Oudomxay.
- Again, markets are the farthest destination, but half far away than in Xiengkhuang.
- Percentage differences between respondents and GPS are smaller than in Oudomxay, but larger than in Xiengkhuang.
- The flatter terrain makes distance assessment easier, but the difference with Xiengkhuang could point to infrastructure and education levels. Largest (underestimated) gaps: health centre (-47%), school (-25%).

Saravanh - distances
Motorbike (4%) FROM home TO…
Respondents vs GPS (kms)
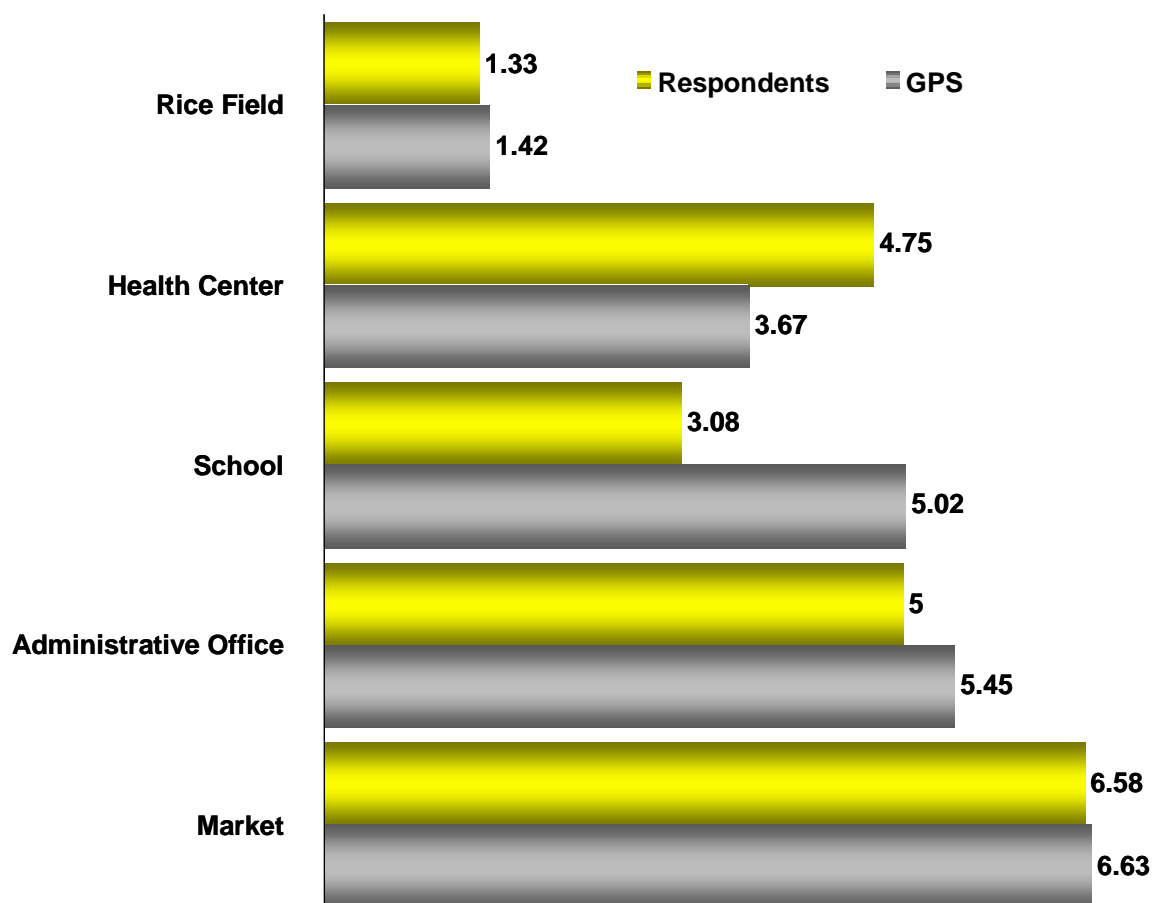
▪ The figures for most destinations are relatively close (with the exception of rice fields, quite smaller). In Saravanh, like in Xiengkhuang, nobody goes to water by motorbike - it's close enough.

▪ Distances covered by motorbike are akin to Xiengkhuang, and shorter than Oudomxay.

▪ In Saravanh there is a good fit between respondents and GPS - however, data are limited.

Saravanh - distances
Correlation FROM home To…
Respondents vs GPS
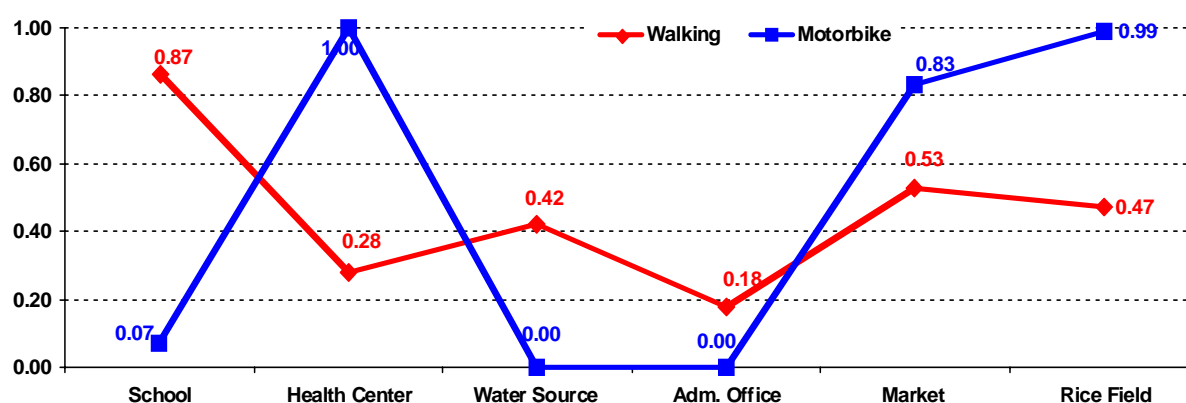
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- Saravanh's results look uneven, rather more like Oudomxay's than Xiengkhuang's, and with even less overall correlation. That is a further pointer to factors like road quality (40% of the province's interviewees live in remote areas).
- Walking. There is a very high correlation between respondents' and GPS walking distances to school (like in the other 2 provinces).There is a moderate correlation for water, rice field and market (as in Oudomxay); a low one for health centre.
- Motorbike. Too few data for reliable correlations.

Saravanh - time From
Mean times FROM home TO…
Respondents vs GPS (mins)

Administrative Office	Respondents: 7.40 / GPS: 4.83
Water Source	Respondents: 9.39 / GPS: 5.14
School	Respondents: 9.73 / GPS: 8.77
Health Center	Respondents: 12.70 / GPS: 10.26
Rice Field	Respondents: 18.27 / GPS: 11.35
Market	Respondents: 19.55 / GPS: 19.36

■ Respondents   ■ GPS

Saravanh most used	
Bike	0.3%
Tuk Tuk	0.3%
Motorbike	4.3%
Walking	95.2%
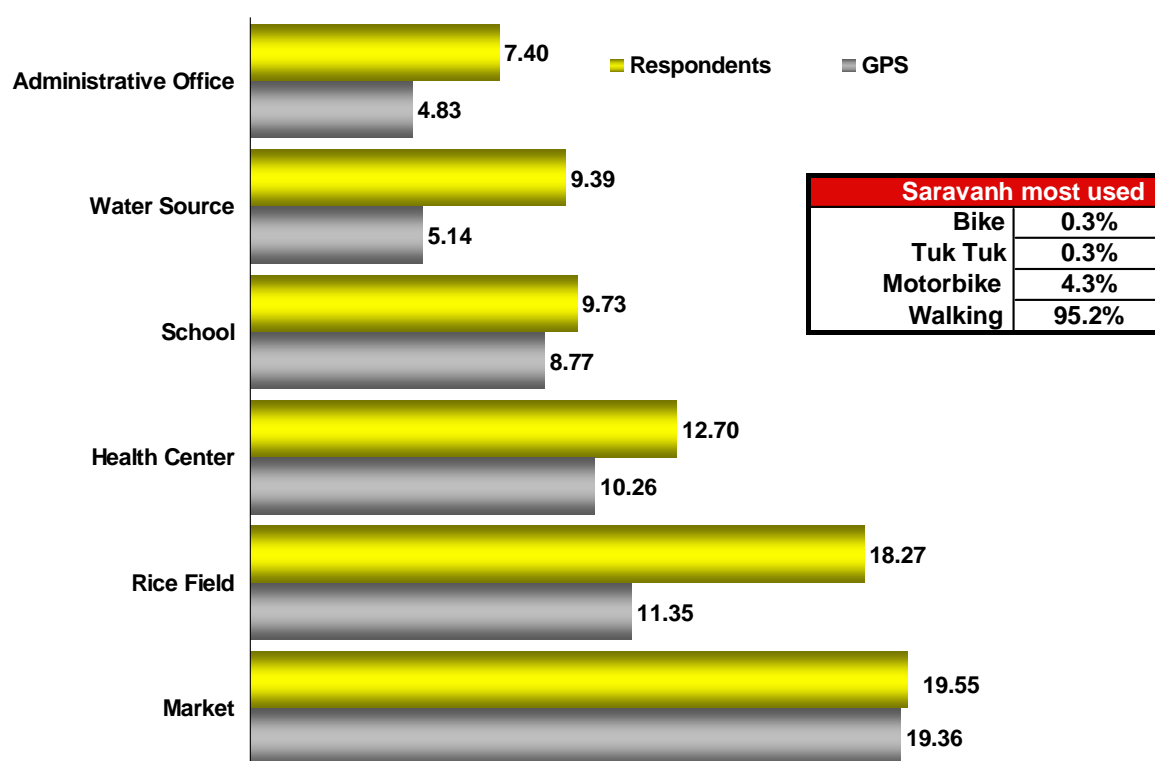
▦ Again, mean times from home to destination basically correspond to the distribution of mean distances to destination.

▦ As in the other provinces, respondents regularly overestimate times: in Saravanh's case, this applies to walking more than to motorbike - but walking is 95% of the sample...

▦ As in Xiengkhuang, the nature of the terrain yields a gradual increase in travel times, from admin to market (quadruple in GPS times, only triple in perceived ones).

▦ The best correspondence between respondents and GPS occurs - as in Oudomxay and Xiengkhuang - with markets. This could mean that the trip to market, being longer and more of an event, is factored into the day's time budget more clearly than other trips.

Saravanh - time
Walking (95%) FROM home TO…
Respondents vs GPS (mins)
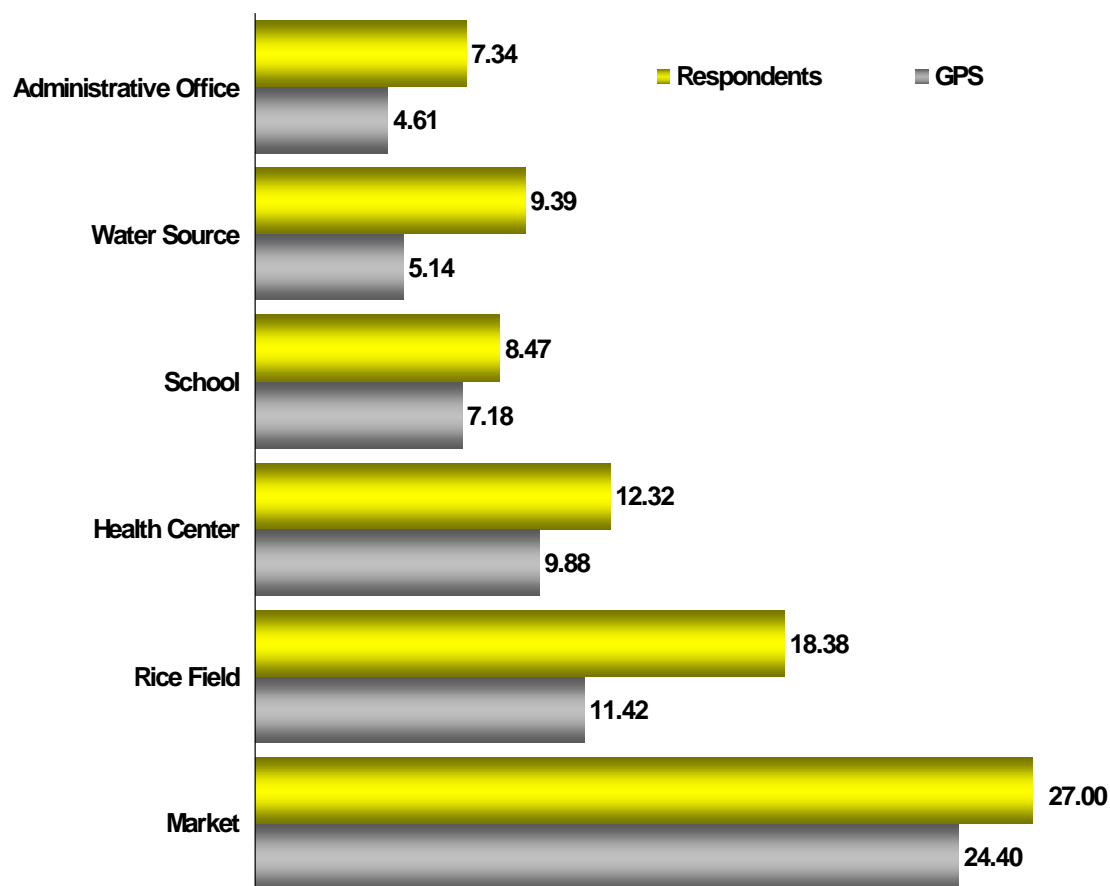
- Walking average times have the same profile than mean ones.
- Respondents overestimate walking times by 83% of GPS time for water, by 25% for health centre, by 59% for admin office. School gets the best estimate: +18%.
- More distant times vary: +61% of GPS for rice, 11% for market. Inaccuracy decreases with distance only in the case of markets.
- Saravanh's average times are very close to Xiengkhuang's - Saravanh has flatter terrain, but worse infrastructure -, and markedly lower than Oudomxay's.

Saravanh - time
Motorbike (4%) FROM home TO…
Respondents vs GPS (mins)

Rice Field — Respondents: 8, GPS: 7.67
Administrative Office — Respondents: 10, GPS: 14
Health Center — Respondents: 17.5, GPS: 15
Market — Respondents: 13.33, GPS: 15.17
School — Respondents: 12.5, GPS: 15.75

Legend: ■ Respondents ■ GPS
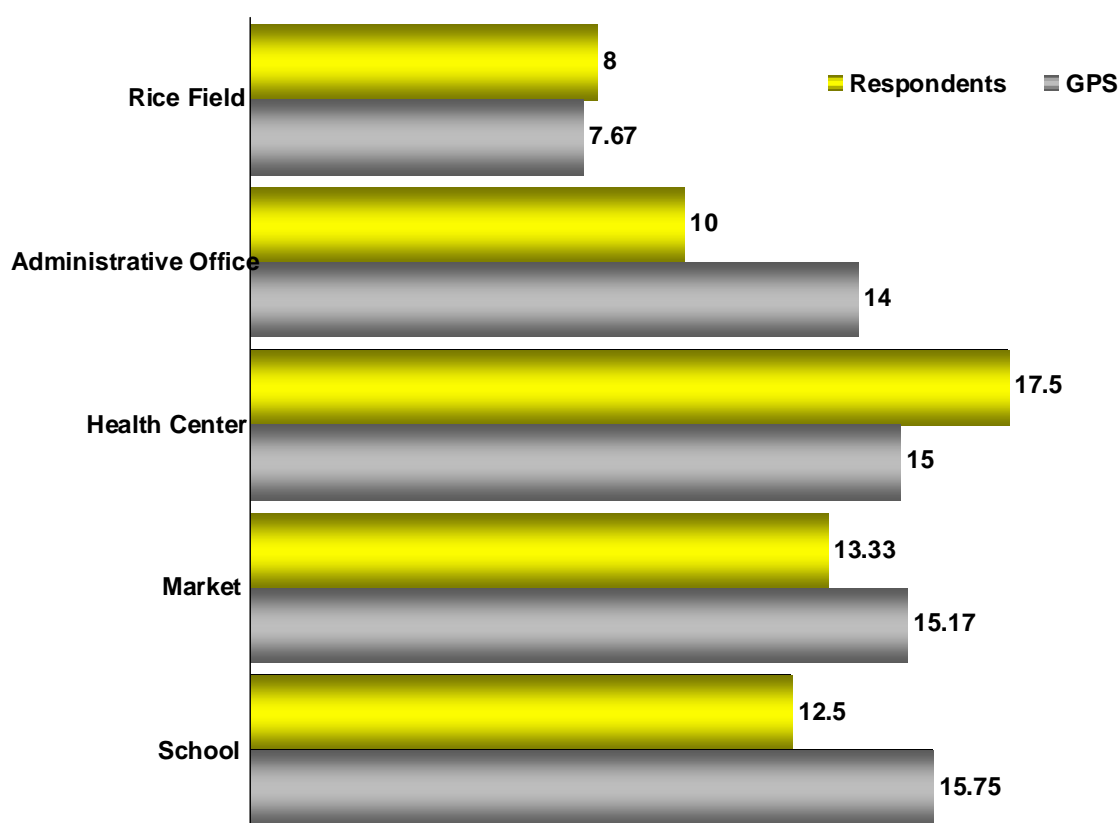
Again, motorbikes are used only for longer trips (and water disappears).

In this case, respondents mostly underestimate travel times, but the subsample is too small to allow any inferences to be drawn

Saravanh - time
Correlation FROM home To…
Respondents vs GPS
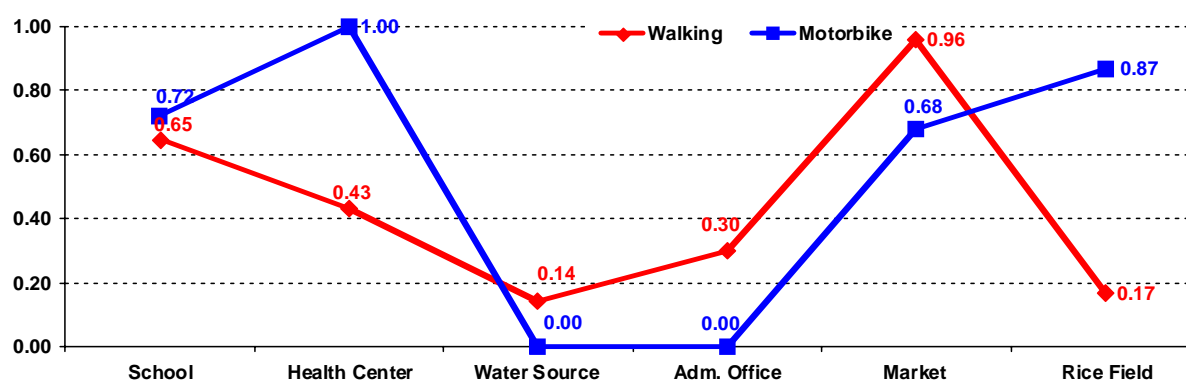
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- Saravanh's time correlation profiles of walking and motorbike are fairly similar to each other: this makes Saravanh's time assessments closer to Xiengkhuang's than Oudomxay's. However, the motorbike profile is based on too few cases to enable conclusions.

- Walking. There is a very high correlation between respondents' and GPS walking times to market (as in Oudomxay). There is a high correlation for school (as in Oudomxay), a moderate one for health centre (in Oudomxay it was low), and a low correlation for admin (very high in Oudomxay).

- There are less similarities with Xiengkhuang: again a pointer to infrastructural rather than merely topographic factors.

Comparisons and Conclusions

3 provinces - distances
Correlation FROM home To…
Walking - Respondents vs GPS

Chart legend: Oudomxay, Xiengkhuang, Saravanh

Values plotted (X-axis: School, Health Center, Water Source, Adm. Office, Market, Rice Field):
- School: 0.87, 0.89
- Health Center: 0.88, 0.86, 0.28
- Water Source: 0.7, 0.42, 0.16
- Adm. Office: 0.76, 0.54, 0.18
- Market: 0.93, 0.77, 0.53
- Rice Field: 0.88, 0.47, 0.45
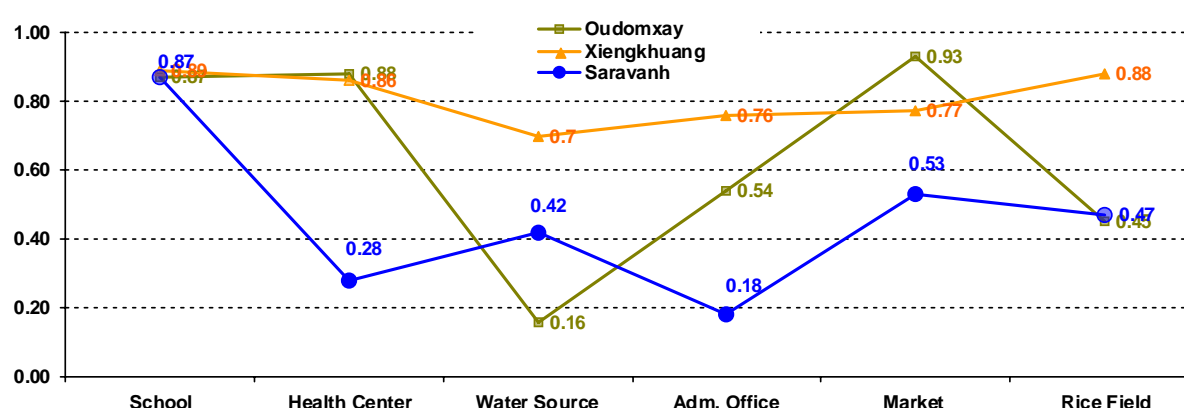
- The comparison between the three distance correlations shows a marked difference between Xiengkhuang and the two other provinces.
- All Xiengkhuang perceived distances are highly or very highly correlated to actual ones. (Quantitatively, Xiengkhuang respondents tended to underestimate walking distances, with the error margin increasing with distance up to 25%.)

| Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- The gap with Saravanh is telling. Saravanh has easier terrain, but less roads and is quite poorer and less developed. It is more similar to Oudomxay, and their profiles present analogies, even if Saravanh as a whole shows lower correlation.
- Saravanh is Laos' 2nd poorest province. This points to lack of infrastructures as an important factor affecting distance estimates. Terrain also plays a role (as shown by Oudomxay), but it seems less important.
- On the whole, perceived walking distances can be considered fairly reliable under sufficient conditions. (Interestingly, distance to school is always very highly correlated - is it because teachers exemplify measurement with home-school distances?)

3 provinces - time From
Correlation FROM home To…
Walking - Respondents vs GPS
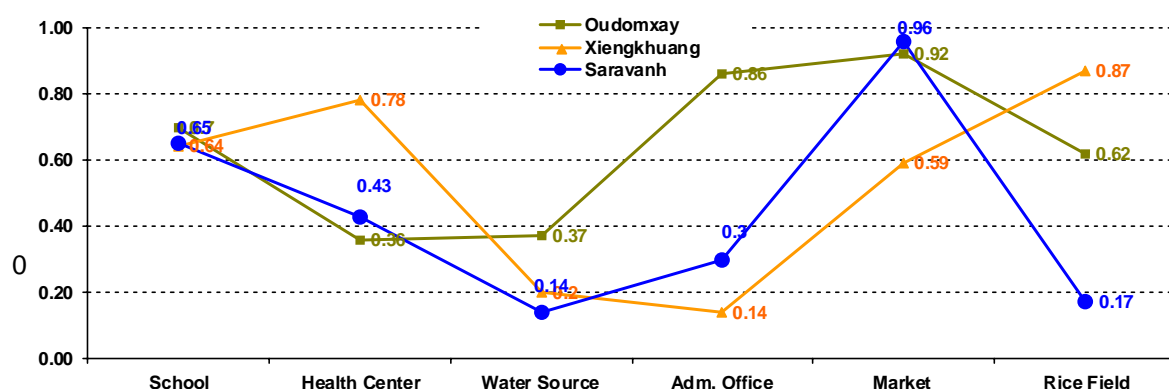
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- In the case of perceived walking time vs GPS time, the comparison between the three correlations shows more similar profiles.

- Quantitatively, all respondents tended to grossly overestimate walking times. The biggest percentage error margins were for the closest destinations (especially water, which also has the lowest correlation).

- Apart from some difficulties in timekeeping (see motorcycles, below), one suspects that GPS time is obtained by timing one steady walk, whereas respondents' time also accounts for encounters, chats etc…

- Again, school shows all three provinces clustered together, on high correlations. Teachers must play a part… Markets also score well, for the same reason that they usually showed perceptually lower time gaps between perceived and GPS times: going to market is a specific routine, more clearly mapped in people's minds.

- Perceived walking times show, on the whole, a level of correlation with actual times similar to that between perceived and actual distances in the poorer provinces. In particular, they seem to be less reliable for short distances (school excepted).

3 provinces:
distance vs time – 1
Correlation FROM home To…
Walking - Respondents' distance vs respondents' time
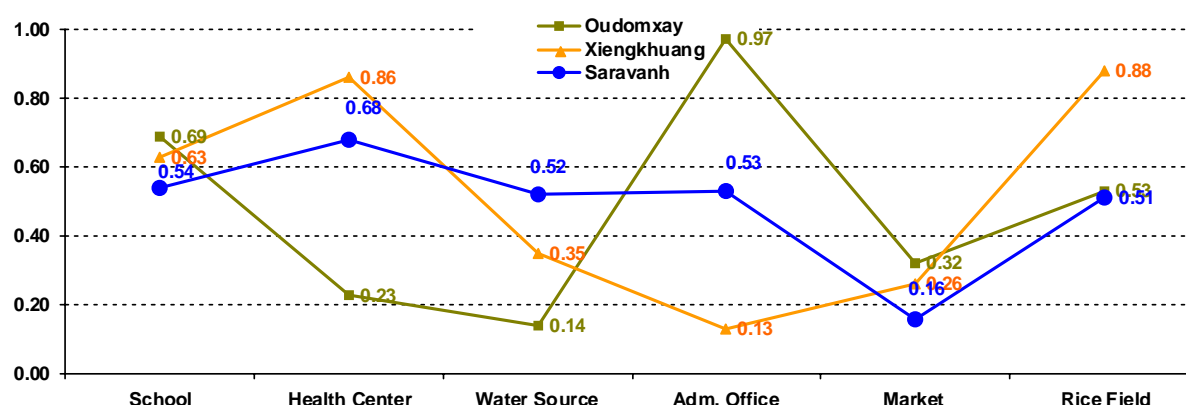
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- With the exception of administrative and health offices, where each province's correlation level is inversely proportional to actual mean distance, the other perceived distance/ perceived time correlations are similar in all three provinces.

- School shows high correlation levels, for the reasons discussed in the previous slides. Time to rice fields is also fairly highly correlated with distance. Instead walking times to markets and water sources show on the whole low levels: this may happen because trips there are social opportunities as well (whereas when walking to the rice paddies one is bound by working obligations and cannot linger)…

- Most correlations are anyhow under 6; thus one can say that perceived walking distances don't vary with a very close relation to perceived walking times.

3 provinces:
distance vs time - 2
Correlation FROM home To…
Walking - GPS distance vs respondents' time
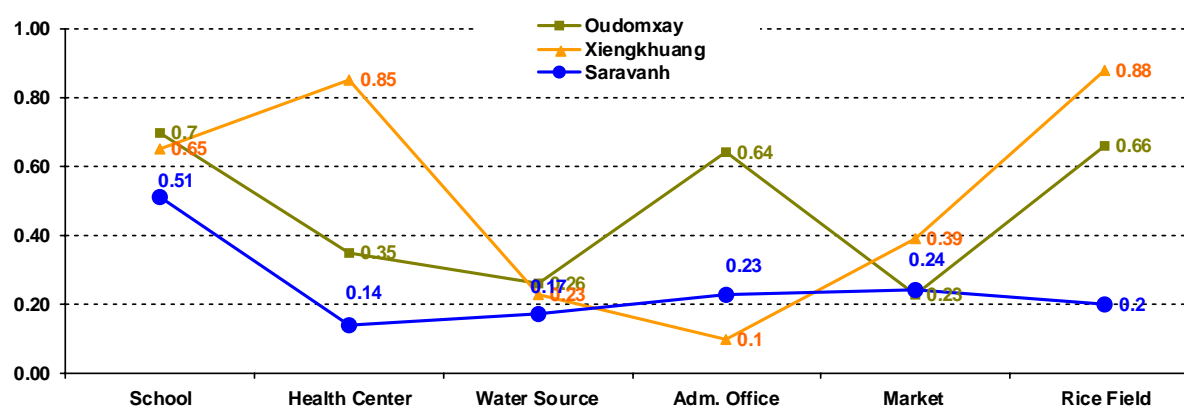
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- In the case of correlation between GPS actual distance and respondents' time, the three provinces' profiles are closer (the exceptions remaining admin offices, which in Oudomxay are very close to villages, and health centres - Xienkhuang's health centres are closed): subjectivity has somehow been filtered out of distance.

- Schools show high correlation levels, for the reasons discussed previously. Water sources and markets keep showing low or no correlation, again for the same reasons as before.

- In this case as well, most correlations are moderate to low: thus even GPS walking distance doesn't explain fully perceived walking times.

Xiengkhuang: motorbike
Correlation FROM home To…
respondents' distance vs GPS dist, respondents' time vs GPS time
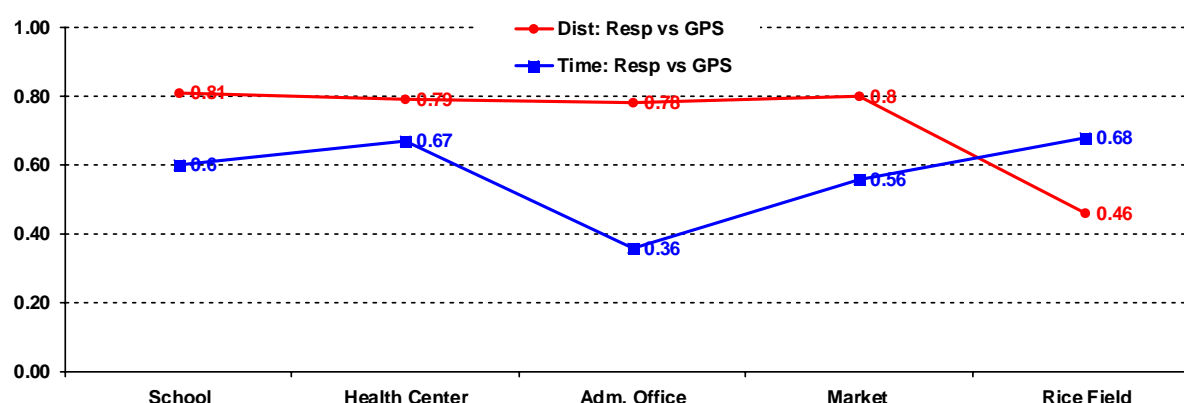
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- (Oudomxay and Saravanh are omitted from the motorbike analysis - too few cases. So is water source from Xiengkhuang - no cases.)
- Distances. There is a very high correlation (with the exception of rice paddies, moderate correlation) between respondents' assessments of motorbike distances and GPS motorbike distances. (Quantitatively, respondents' figures tended to underestimate; biggest margin of error was -26% of GPS, for health centre.)
- Times. The level of correlation varies between high and moderate. (Quantitatively, respondents' figures tended to overestimate times; biggest margin of error was +32% of GPS.)
- On the whole, motorbike distance estimates seem to vary in close relation with the actual distance variations, and to be - albeit with a tendency to underestimation - more reliable than motorbike times (this may have to do with the fact that motorbikes have an odometer, whereas many people don't carry a watch.).

Xiengkhuang: motorbike
Correlation FROM home To…
GPS & respondents' distance vs respondents' time
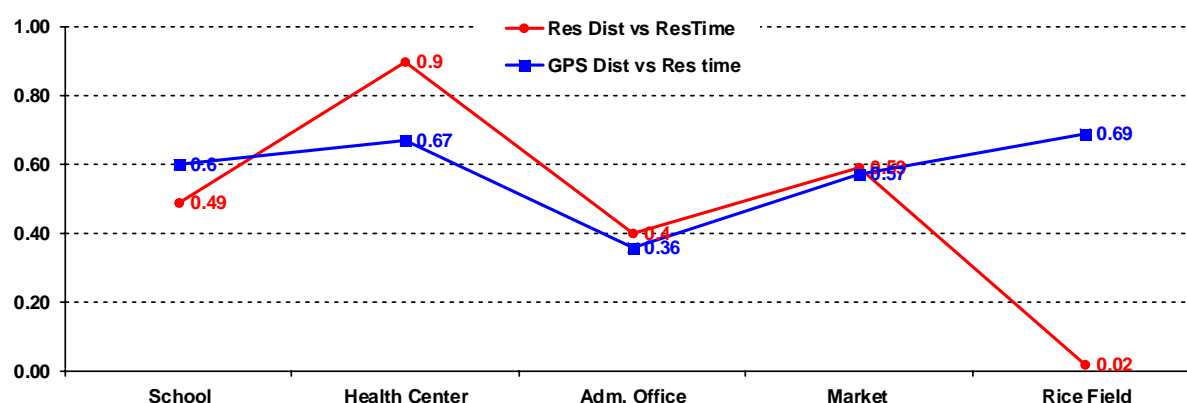
Correlation Size	Strength of Relationship
0.8 to 1.0	Very high +ve correlation
0.6 to 0.8	High +ve correlation
0.4 to 0.6	Moderate +ve correlation
0.2 to 0.4	Low +ve correlation
0.2 to -0.2	No real correlation
-0.2 to -0.4	Low -ve correlation
-0.4 to -0.6	Moderate -ve correlation
-0.6 to -0.8	High -ve correlation
-0.8 to -1.0	Very High -ve correlation

- There is a very good fit between the two correlations (apart from for rice paddies - which were moderately correlated with GPS distance as well).

- Resident distances. There is a moderate to very high correlation between respondents' assessments of motorbike distances and their assessments of motorbike times. So the increase of either perceived distance or time is closely associated with a related increase in perceived time or distance.

- GPS distances. The correlation between actual motorbike distances and respondents' estimates of times needed is as good, with less peaks.

- On the whole, perceived motorbike times increase reliably with the increase of both actual and perceived motorbike distances. Thus, motorbike distances explain motorbike times better than in the case of walking.

Addressing SEACAP questions in Laos

- *How reliable are reported distances as proxies of actual distances?*
- *How reliable are reported times as proxies of actual times?*

▪ Perceived walking distances - provided infrastructures are of a certain quality - are in general more reliable indicators than perceived walking times. They don't show a constant over- or under-estimate, and have a good correlation with GPS distances.

▪ Perceived motorbike distances are more reliable than perceived walking distances. Perceived walking distances on fairly flat ground are more reliable than distances in mountainous areas (GPS distances, and times, are shorter as well). Perceived walking time is always overestimated; perceived motorbike time is always overestimated, but to a lesser extent, and its error seems independent of distance.

▪ Time from home to destination is less unreliable than time from destination to home.

▪ The better state of roads, and the larger size of the road network, improves distance estimates. They improve time estimates as well, but not to the same extent. In both cases, road infrastructure seems to explain most of the variance.

- *How can travel times be explained by travel distances?*

▪ Perceived walking distances are only moderately correlated with perceived walking times. GPS walking distances, too, are only moderately correlated with perceived walking times.

▪ Perceived walking times have a similar reliability to perceived walking distances in the 2 poorer provinces: they both seem to be less reliable for short distances (schools excepted).

▪ Motorbike times and motorbike distances are better correlated - motorbike times are more reliable, albeit still overestimating, indicators of travel times. Motorbike distances explain motorbike times better than in the case of walking. As a corollary, length of motorbike trip time does not seem to affect accuracy.

- *What is the impact of personal characteristics on reported and actual travel times ?*

▪ In the majority of cases, destination frequencies are distributed by ascending distance thus: water, rice, admin. office, school, health centre, market. Rice is sometimes more distant than administrative office, sometimes less; the same happens with school and HC. However, a destinations' actual distance does not seem correlated with the accuracy of its estimates (in other words, the distance of close destinations is not estimated more accurately).

▪ Among destinations, schools (followed by markets) have the highest estimate/ GPS correlations, both for distance and time; water sources the lowest. While this could point to some constant external influences (distance from school could be taught, going to water

means coming back carrying it and thus is perceived as longer), the distribution of correlations by destination varies widely.

- Experience seems to improve estimates - in Xiengkhuang, where people travel more and not only on foot, distance estimates are fairly accurate; time ones are constantly overestimated as usual, but less so. Assuming experience comes with age, the very young seem, albeit not in all cases, to be more inaccurate (but so do the very elder, to a lesser extent).
- Contrary to expectations, education does not have a constant impact on estimates. Nor does gender.

- *Which measure, time or distance, is recommended as probably more reliable and relevant under particular circumstances – and why?*

- Distance should be preferred under all circumstances reviewed in this survey. People seem much more familiar with distance measurements than with time measurements. Moreover, time needed from home to any destination is subject to many factors (e.g. encounters, chats etc) which make it very difficult to relate it uniformly to either actual distance or the methodically-measured GPS time.

- *How should time and/or distance questions be best phrased in each survey country?*

- First of all, interviewees should be subjected to an informal screening in order to gauge their familiarity with time/distance measurements. One could consider using two questionnaires - the standard one, and a very simplified version.
- Distance should be asked using the interviewee's units, translating them in kms if needed. Time should be done in very general terms, possibly using natural indicators (sun, etc). Asking time in hours/ mins does not seem very useful.
- The best indicator is surely the distance by most used mode of transport.
- Asking time from destination to home is superfluous.
- Six potential destinations seem too many, and are too subjects to local conditions: it would be better to identify a short-distance one, a middle-distance one and a long-distance one (e.g., water, school, market)

Recommendations

- Re-examining the results of the study, there seem to have been two main drawbacks: the size of the sample, and the number of the provinces chosen. Combined with the quantity of segmentations offered (mode of transport and destination chiefly, but potentially there was also frequency of trips, etc), it made for too many subsegments that, given a sample of only

200 per province, could hardly have been significant. To answer the questions the present study raises, a future study would require:

- A larger sample size per province, so to guarantee that none of the theoretical subsamples ends up empty or nearly empty;

- Instead of choosing three diversified provinces, it would be interesting to choose pairs of provinces with similar socio-economic and infrastructural characteristics, and conduct comparative studies. That would also allow the construction of a more homogeneous sample, yielding statistically sounder results;

- The questionnaire should be simplified along the lines described above;

- However, a section could be introduced, probing the interviewees' perceptions of distance, both with practical examples (and tests), and in the abstract.

- The study could be planned along the lines of a baseline survey, designed to be repeated at fixed intervals.

Appendix: Segmentation Analysis

Oudomxay - distances
Walking (92%) FROM home TO…
GENDER vs GPS (kms)
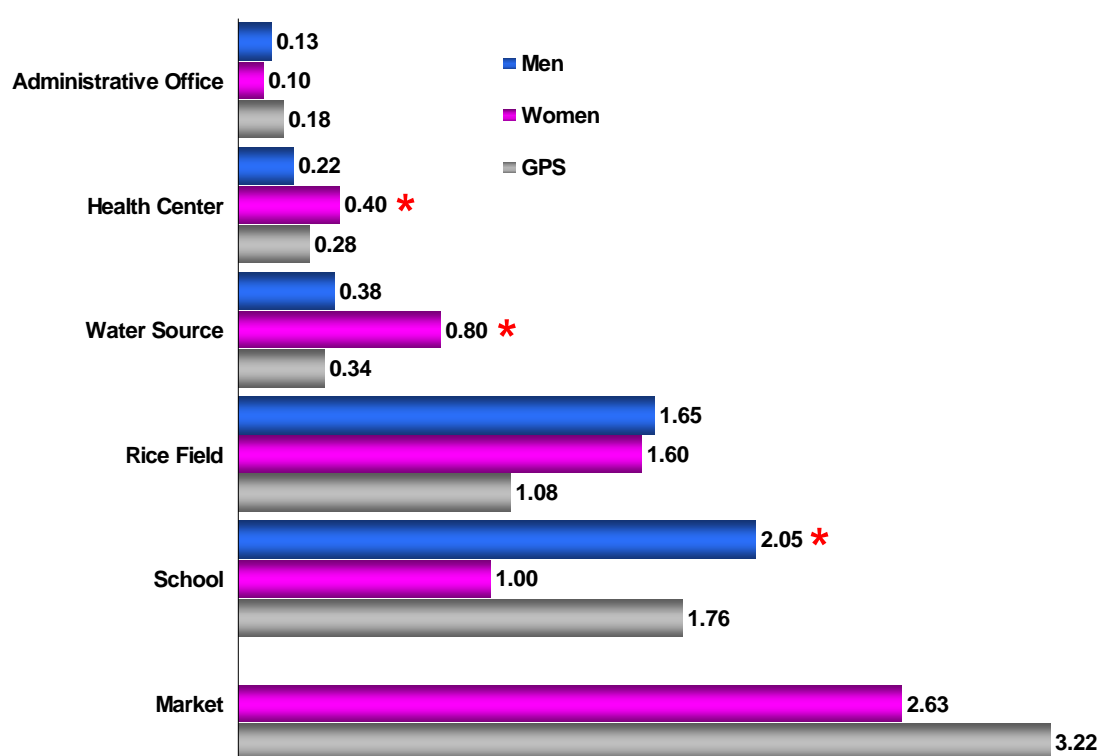
- The chart doesn't show a constant pattern of gender differences. On 3 destinations there are significant (*) gender differences.
- Women significantly surpass men on two short distances (water and health centre - both overestimates); men overestimate a longer one (school).
- The number of men who regularly walk to markets in Oudomxay is too small to be significant.

Oudomxay - time From
Walking (92%) FROM home TO…
GENDER vs GPS (mins)

Location	Men	Women	GPS
Administrative Office	6.00	6.00	2.80
Health Center	8.50 *	3.30	4.43
Water Source	8.49	10.40 *	5.53
Rice Field	26.02	25.50	16.48
School	36.72 *	15.40	22.76
Market		46.20	35.75
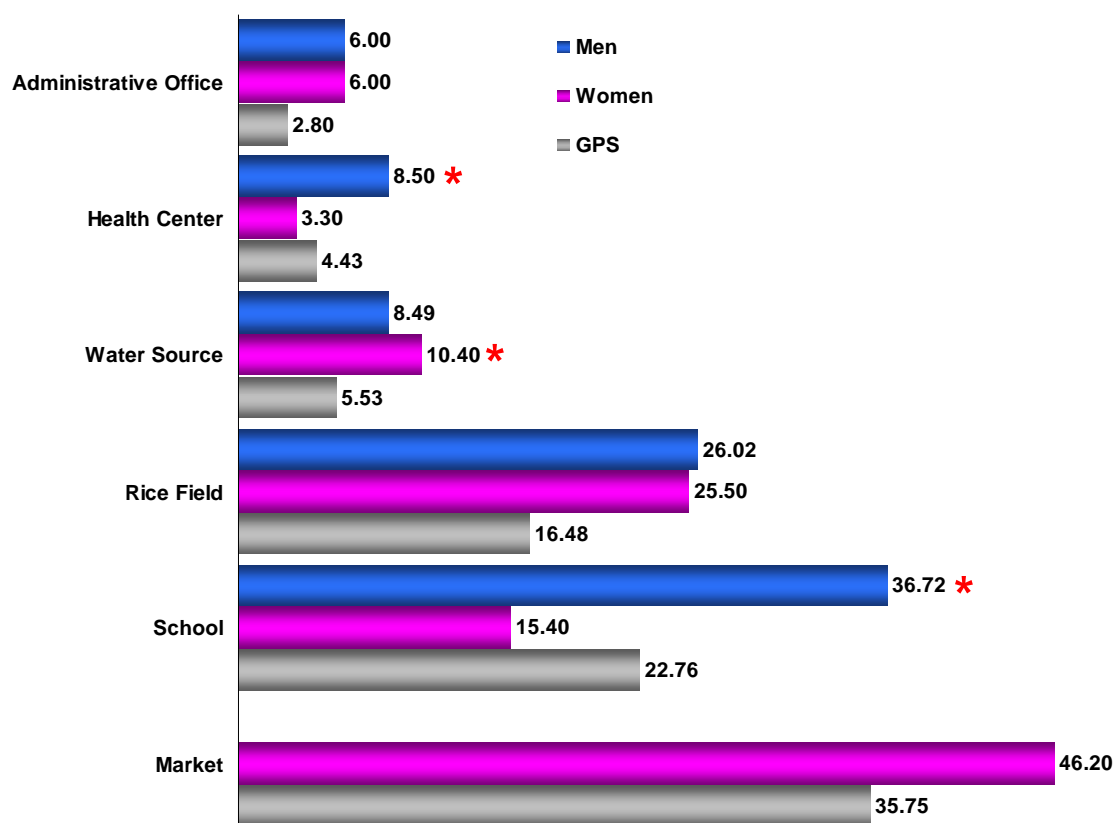
- On time perceived, there are three significant differences - which broadly correspond with Oudomxay's gender-related distance differences, as one would expect (there is correlation between perceived distance and perceived time).
- No pattern, apart from a tendency by men to overestimate times more than women.

Xiengkhuang – distances
Walking (62%) FROM home TO…
GENDER vs GPS (kms)

Water Source: Men 0.32 *, Women 0.20, GPS 0.37
Administrative Office: Men 0.39, Women 0.50 *, GPS 0.57
Health Center: Men 0.39, Women 0.90 *, GPS 0.57
School: Men 0.46, Women 0.70, GPS 0.72 *
Rice Field: Men 0.97, Women 0.60, GPS 0.80
Market: Men 1.24, Women 1.50, GPS 1.87 *
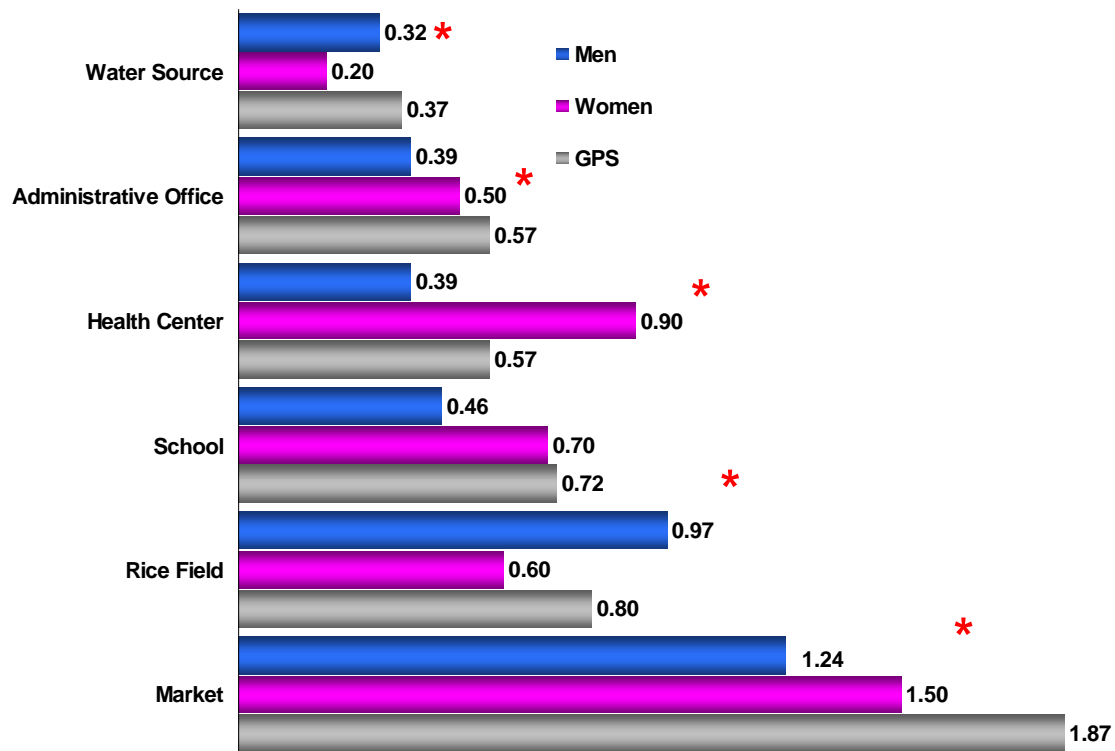
- In Xiengkhuang there are 5 significant gender differences.
- Women top men on two short distances (admin office - underestimate - and health centre - overestimate -) and a longer one (market, underestimated)
- Men overestimate rice paddies, and underestimate, but significantly less than women, water source.

Xiengkhuang - time From
Walking (62%) FROM home TO…
GENDER vs GPS (mins)
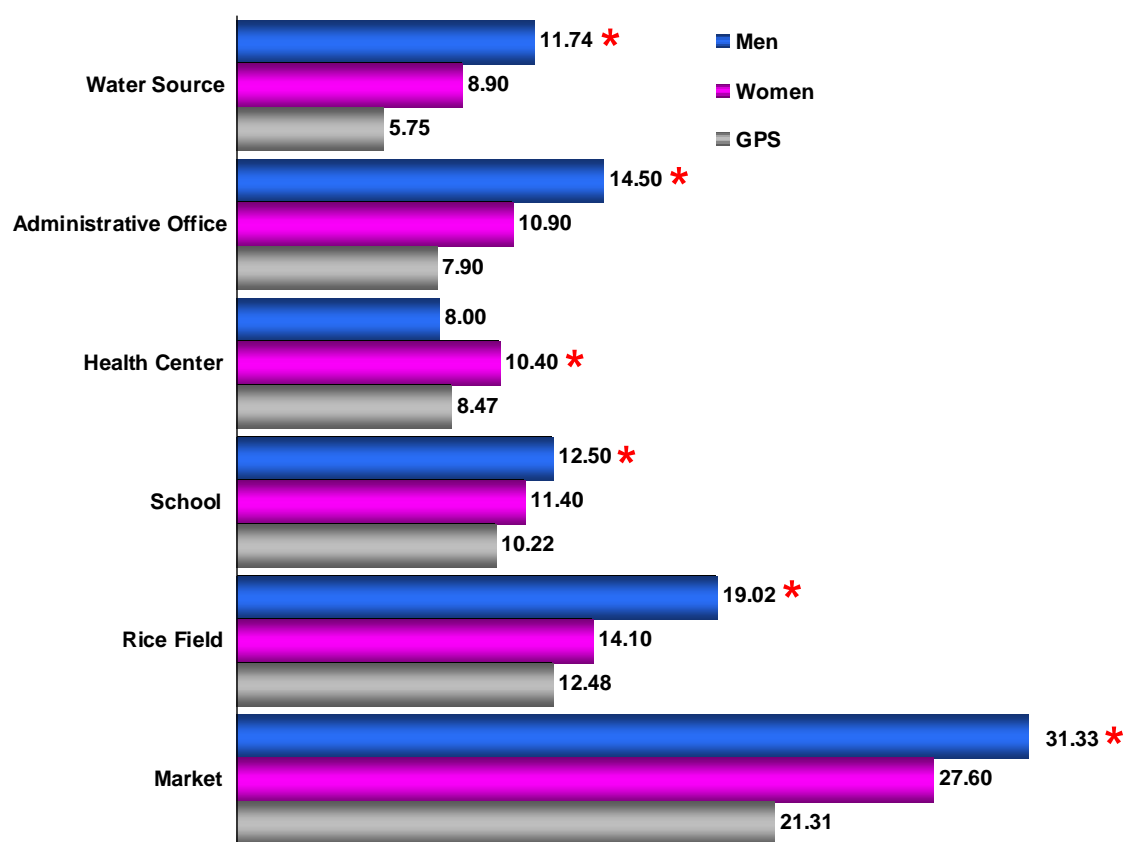
- There are six significant differences, which however don't reflect the Xienghuang distance ones.

- Nearly everybody overestimates times, of course. Men do it more than women in 5 cases out of 6.

Saravanh – distances
Walking (95%) FROM home TO…
GENDER vs GPS (kms)

	Water Source	Administrative Office	School	Rice Field	Health Center	Market
Men	0.29	0.20	0.32	0.96	0.10	
Women	0.30	0.30	0.40	0.60	0.40	1.00
GPS	0.29	0.31	0.51	0.73	0.88	0.90
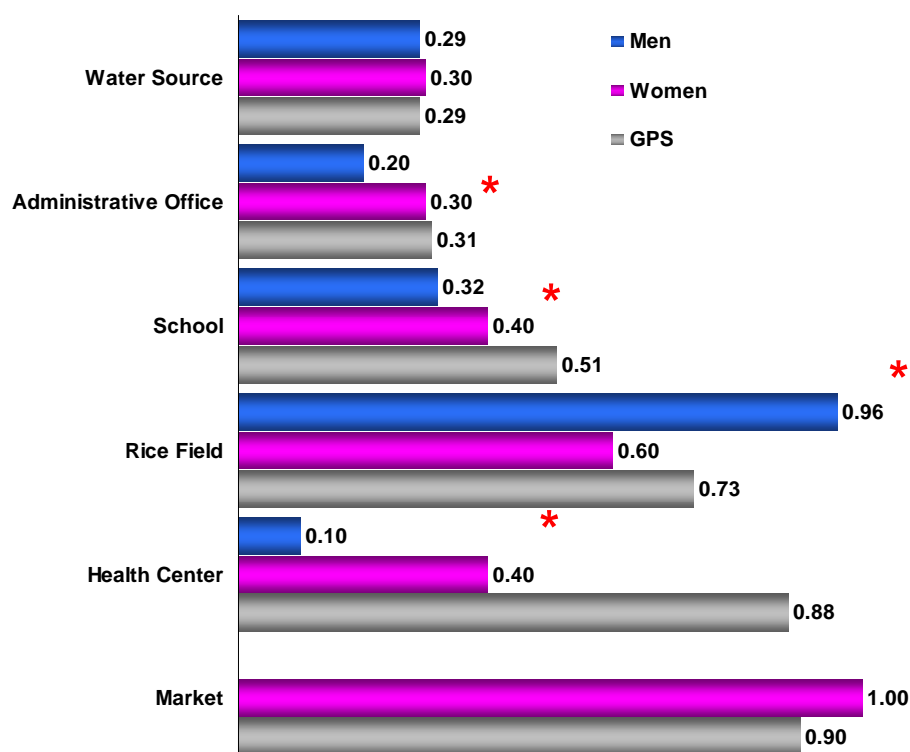
- Four significant differences in Saravanh.
- Women top men on admin, school and health centre (all underestimated though)
- Men overestimate rice paddies.
- The number of men who regularly walk to markets in Saravanh is too small to be significant.

Saravanh - time From
Walking (95%) FROM home TO…
GENDER vs GPS (mins)

Legend: ■ Men ■ Women ■ GPS

Location	Men	Women	GPS
Administrative Office	5.14	12.00 *	4.61
Water Source	8.42	10.30 *	5.14
School	12.29 *	5.80	7.18
Health Center	10.00	12.40 *	9.88
Rice Field	20.97 *	15.80	11.42
Market		27.00	24.40
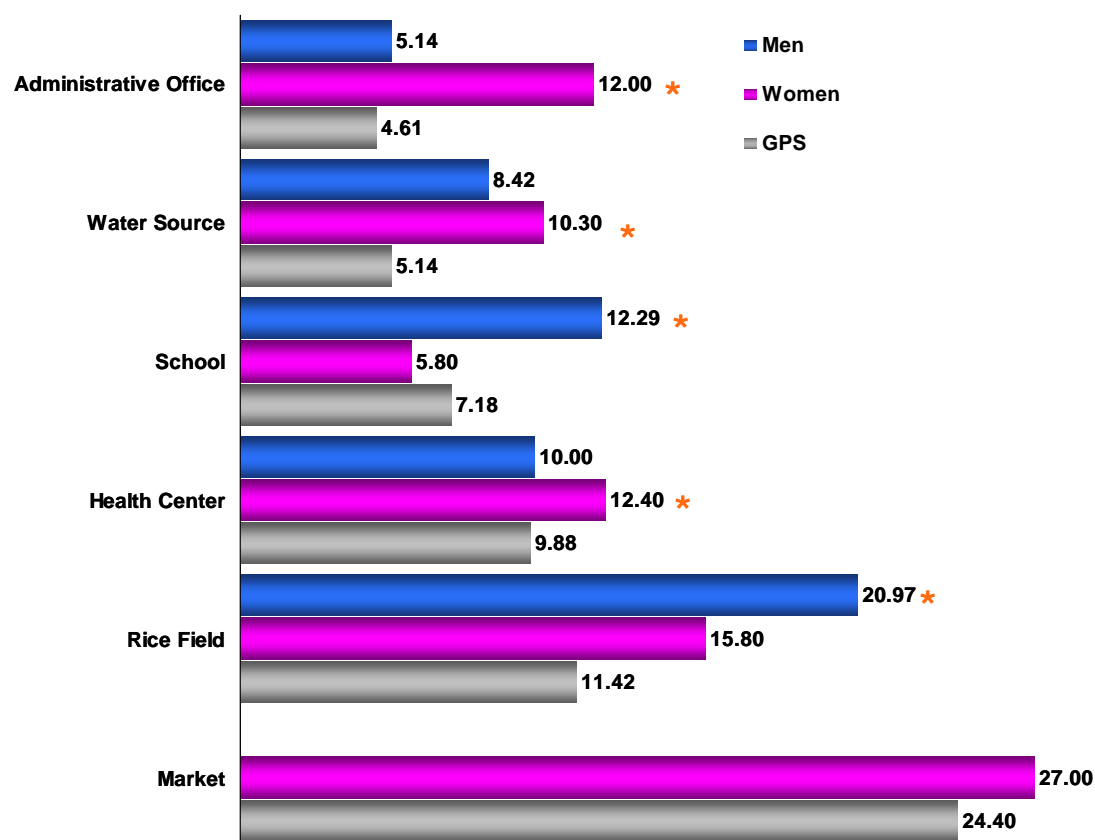
▨ There are five significant differences - one more than Saravanh's gender-related distance differences. Not much relation to them.

▨ Nearly everybody overestimates.

INDOCHINA RESEARCH

Oudomxay – distances
Walking (92%) FROM home TO…
AGE vs GPS (kms)

Legend: 13-18, 19-24, 25-44, 45 +, GPS

	Administrative Office	Health Center	Water Source	Rice Field	School	Market
13-18	0.10	0.25	0.35	1.94 *	2.12	1.50
19-24	0.13	0.35 *	0.90 *	1.28	1.27	—
25-44	0.10	0.20	0.57	1.72	1.09	3.00
45 +	0.18	0.28	0.50	1.50	2.70 *	3.00
GPS			0.34	1.08	1.76	3.22
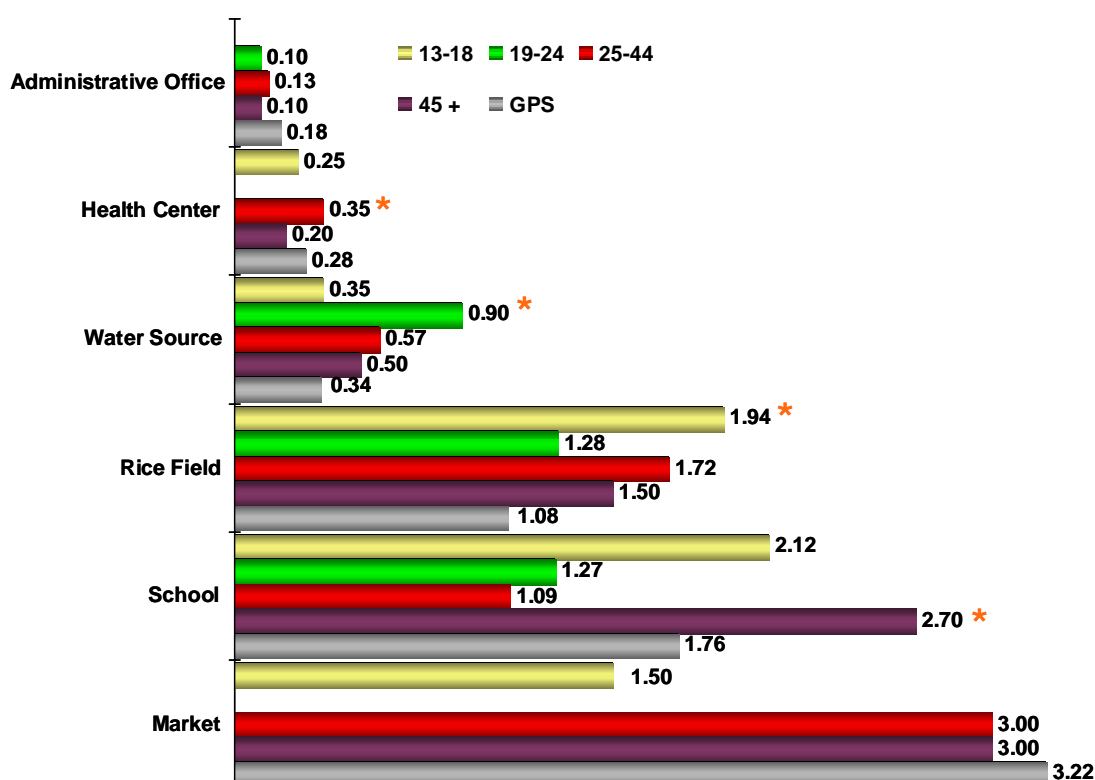
▦ There are significant differences(marked by the asterisk) in 4 cases out of six. (In all age and education, distributions there can be gaps, owing to the low sample size.)

▦ However, there is no clear pattern.

Oudomxay - time From

Walking (92%) FROM home TO…

AGE vs GPS (mins)

Location	13-18	19-24	25-44	45 +	GPS
Administrative Office		2.00	6.00	10.00 *	2.80
Health Center	6.50		4.00	15.00 *	4.43
Water Source	12.64 *	8.11	9.52	8.00	5.53
Rice Field	28.45 *	28.13	25.73	21.20	16.48
School	42.92	18.33	10.86	40.00	22.76
Market	60.00 *		60.00	5.00	35.75
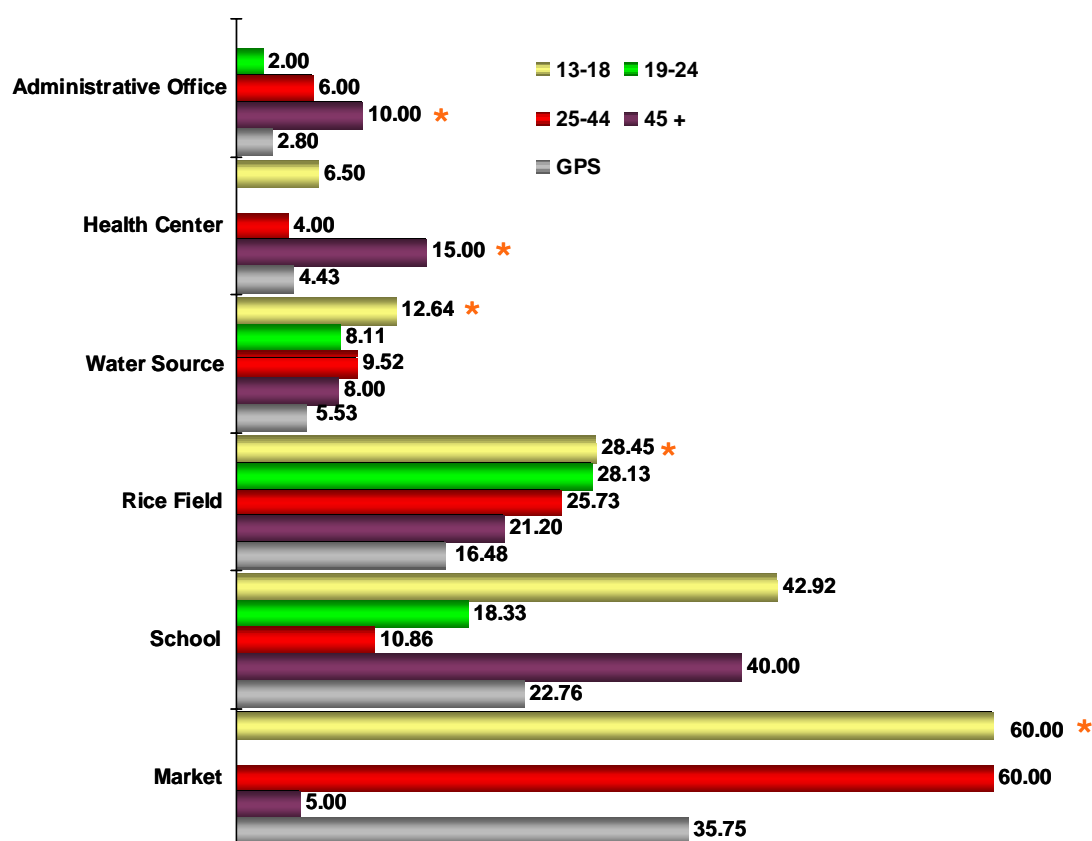
There are five significant differences - not corresponding with distance differences.

The elder seem too overestimate constantly more.

Xiengkhuang – distances
Walking (62%) FROM home TO…
AGE vs GPS (kms)
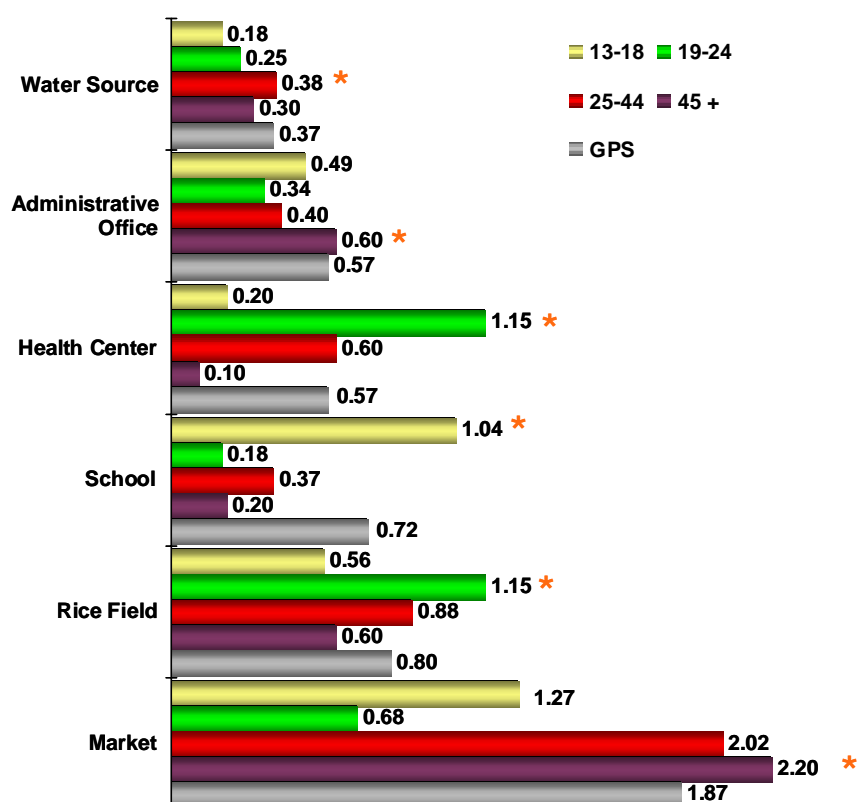
Legend:
- 13-18
- 19-24
- 25-44
- 45 +
- GPS

Water Source
- 13-18: 0.18
- 19-24: 0.25
- 25-44: 0.38 *
- 45 +: 0.30
- GPS: 0.37

Administrative Office
- 13-18: 0.49
- 19-24: 0.34
- 25-44: 0.40
- 45 +: 0.60 *
- GPS: 0.57

Health Center
- 13-18: 0.20
- 19-24: 1.15 *
- 25-44: 0.60
- 45 +: 0.10
- GPS: 0.57

School
- 13-18: 1.04 *
- 19-24: 0.18
- 25-44: 0.37
- 45 +: 0.20
- GPS: 0.72

Rice Field
- 13-18: 0.56
- 19-24: 1.15 *
- 25-44: 0.88
- 45 +: 0.60
- GPS: 0.80

Market
- 13-18: 1.27
- 19-24: 0.68
- 25-44: 2.02
- 45 +: 2.20 *
- GPS: 1.87

Significant differences in all cases.

No clear pattern.

Xiengkhuang - time From
Walking (62%) FROM home TO…
AGE vs GPS (mins)
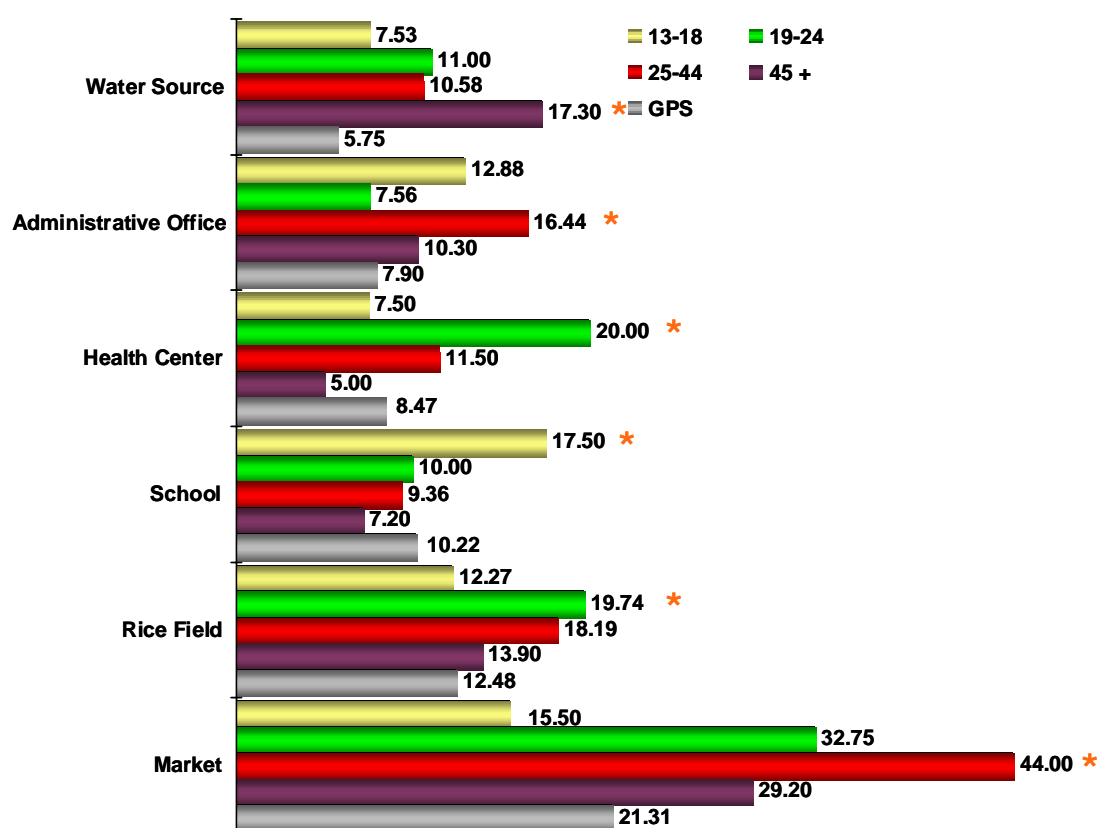
There are six significant differences - which don't correspond with age-related distance differences.

Here the worst over estimators seem to be the 25-44s

Saravanh – distances

Walking (95%) FROM home TO…
AGE vs GPS (kms)

Water Source
- 13-18: 0.34
- 19-24: 0.36 *
- 25-44: 0.27
- 45 +: 0.20
- GPS: 0.29

Administrative Office
- 13-18: 0.33 *
- 19-24: 0.17
- 25-44: 0.26
- 45 +: 0.20
- GPS: 0.31

School
- 13-18: 0.56
- 25-44: 0.18
- 45 +: 0.30
- GPS: 0.51

Rice Field
- 13-18: 1.10 *
- 19-24: 0.79
- 25-44: 0.72
- 45 +: 0.70
- GPS: 0.73

Health Center
- 13-18: 0.14
- 19-24: 0.38
- 25-44: 0.73 *
- 45 +: 0.10
- GPS: 0.88

Market
- 19-24: 1.00
- 25-44: 1.00
- GPS: 0.90

Legend:
- 13-18
- 19-24
- 25-44
- 45 +
- GPS
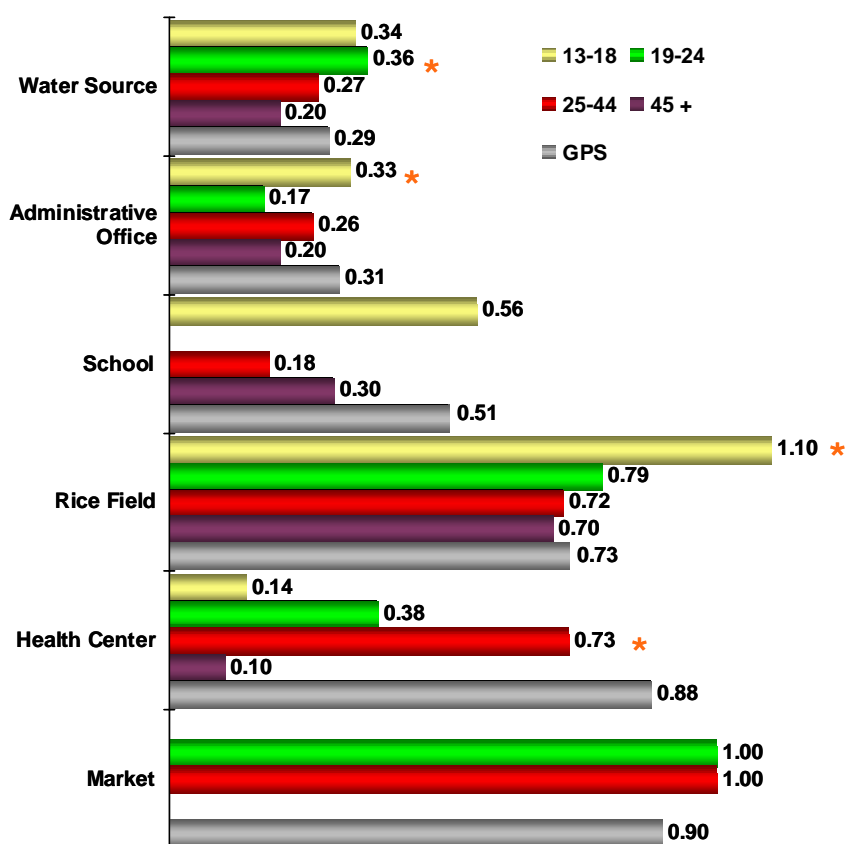
Significant age variations in 4 cases.

No pattern, even if the youngest overestimate most in 3 cases

Saravanh - time From

Walking (95%) FROM home TO…

AGE vs GPS (mins)

Legend: 13-18 | 19-24 | 25-44 | 45 + | GPS

Administrative Office
- 10.00 *
- 3.75
- 7.20
- 8.40
- 4.61

Water Source
- 9.37
- 10.83 *
- 9.17
- 9.00
- 5.14

School
- 11.29 *
- 7.00
- 6.10
- 7.18

Health Center
- 5.00
- 11.60
- 17.08 *
- 7.50
- 9.88

Rice Field
- 23.20 *
- 18.32
- 16.66
- 18.60
- 11.42

Market
- 60.00
- 18.75
- 24.40
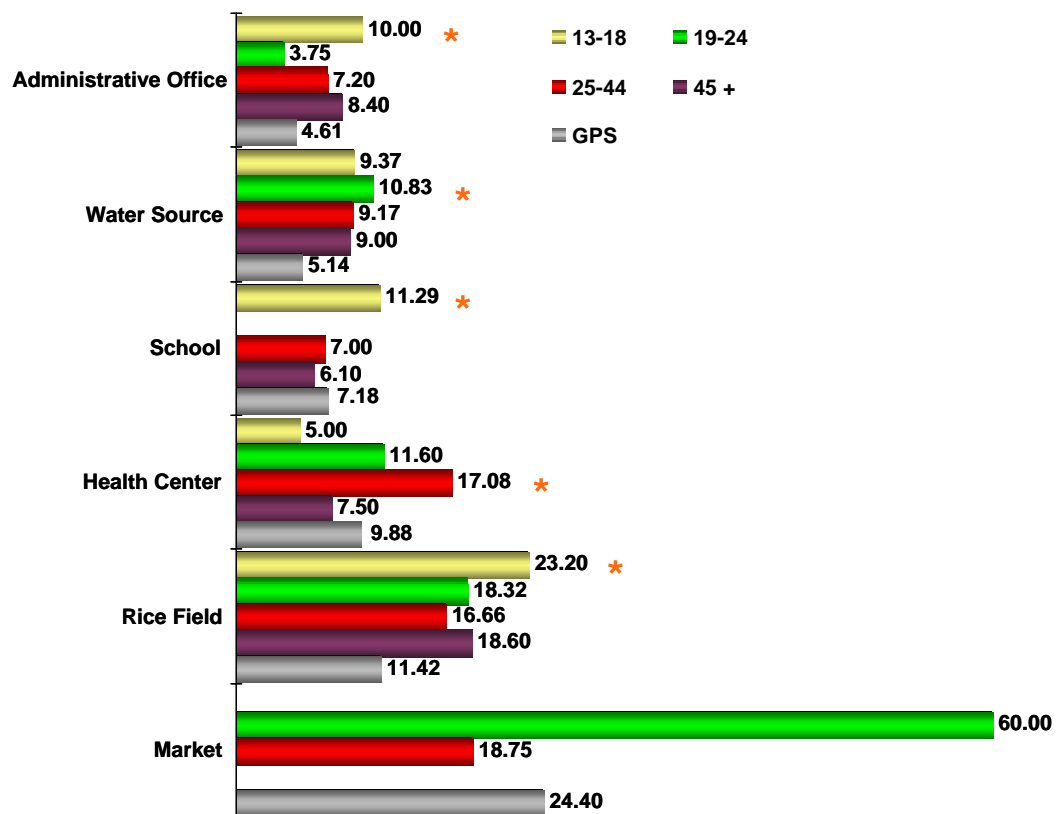
5 cases, but not much of a pattern - the youngest tend to overestimate a bit more though

Oudomxay – distances

**Walking (92%) FROM home TO…
EDUCATION vs GPS (kms)**

Legend:
- ■ Some Prim.
- ■ Compl. Prim.
- ■ Some Sec.
- ■ Compl. Sec.
- ■ GPS

Administrative Office
- Some Prim.: 0.15 *
- Compl. Prim.: 0.10
- Compl. Sec.: 0.10
- GPS: 0.18

Health Center
- Some Prim.: 0.40 *
- Compl. Prim.: 0.23
- Compl. Sec.: 0.10
- GPS: 0.28

Water Source
- Some Prim.: 0.46
- Compl. Prim.: 1.65 *
- Some Sec.: 0.48
- Compl. Sec.: 0.40
- GPS: 0.34

Rice Field
- Some Prim.: 1.56
- Compl. Prim.: 1.66
- Some Sec.: 1.69
- Compl. Sec.: 2.10 *
- GPS: 1.08

School
- Some Prim.: 0.96
- Compl. Prim.: 2.94
- Some Sec.: 3.25 *
- Compl. Sec.: 1.40
- GPS: 1.76

Market
- Compl. Prim.: 2.00
- Some Sec.: 1.50
- Compl. Sec.: 3.50 *
- GPS: 3.22

Significant differences in all cases.

No clear pattern.

Oudomxay - time From

**Walking (92%) FROM home TO…
EDUCATION vs GPS (mins)**

Legend:
- Some Prim.
- Compl. Prim.
- Some Sec.
- Compl. Sec.
- GPS

Administrative Office
- 10.00 *
- 2.00
- 4.00
- 2.80

Health Center
- 5.00
- 9.00 *
- 6.00
- 4.43

Water Source
- 9.46
- 13.67 *
- 8.36
- 5.20
- 5.53

Rice Field
- 25.89
- 24.19
- 26.67
- 27.60 *
- 16.48

School
- 13.54
- 56.00
- 66.25 *
- 16.00
- 22.76

Market
- 30.00
- 60.00 *
- 47.50
- 35.75

Significant differences in all cases.

No clear pattern.

Xiengkhuang - distances

Walking (62%) FROM home TO…
EDUCATION vs GPS (kms)

Water Source
- Some Prim.: 0.43 *
- Compl. Prim.: 0.39
- Some Sec.: 0.24
- Compl. Sec.: 0.10
- GPS: 0.37

Administrative Office
- Some Prim.: 0.43
- Compl. Prim.: 0.35
- Some Sec.: 0.52 *
- Compl. Sec.: 0.50
- GPS: 0.57

Health Center
- Some Prim.: 1.00 *
- Compl. Prim.: 0.21
- Some Sec.: 0.56
- GPS: 0.57

School
- Some Prim.: 0.34
- Compl. Prim.: 0.29
- Some Sec.: 0.96 *
- GPS: 0.72

Rice Field
- Some Prim.: 1.04 *
- Compl. Prim.: 1.04
- Some Sec.: 0.69
- Compl. Sec.: 0.60
- GPS: 0.80

Market
- Some Prim.: 1.69 *
- Compl. Prim.: 1.15
- Some Sec.: 1.43
- Compl. Sec.: 1.10
- GPS: 1.87

Legend: Some Prim. | Compl. Prim. | Some Sec. | Compl. Sec. | GPS

Significant differences in all cases.

No clear pattern.

Xiengkhuang - time From
Walking (62%) FROM home TO…
EDUCATION vs GPS (mins)

Water Source
- Some Prim.: 9.92
- Compl. Prim.: 11.07
- Some Sec.: 9.43
- Compl. Sec.: 16.60 *
- GPS: 5.75

Administrative Office
- Some Prim.: 10.96
- Compl. Prim.: 9.32
- Some Sec.: 14.53 *
- Compl. Sec.: 12.90
- GPS: 7.90

Health Center
- Some Prim.: 20.75 *
- Compl. Prim.: 3.50
- Some Sec.: 11.10
- GPS: 8.47

School
- Some Prim.: 11.08
- Compl. Prim.: 9.75
- Some Sec.: 13.80 *
- GPS: 10.22

Rice Field
- Some Prim.: 20.41 *
- Compl. Prim.: 20.20
- Some Sec.: 13.58
- Compl. Sec.: 14.70
- GPS: 12.48

Market
- Some Prim.: 50.29 *
- Compl. Prim.: 24.83
- Some Sec.: 19.55
- Compl. Sec.: 18.00
- GPS: 21.31

Legend:
- Some Prim.
- Compl. Prim.
- Some Sec.
- Compl. Sec.
- GPS

Significant differences in all cases.

No clear pattern

Saravanh – distances

Walking (95%) FROM home TO…
EDUCATION vs GPS (kms)

Legend:
- Some Prim.
- Compl. Prim.
- Some Sec.
- Compl. Sec.
- GPS

Water Source
- 0.31
- 0.12
- 0.55 *
- 0.10
- 0.29

Administrative Office
- 0.25
- 0.44 *
- 0.10

School
- 0.31
- 0.28
- 2.00

Rice Field
- 0.51
- 0.79
- 0.78
- 1.38 *
- 0.40
- 0.73

Health Center
- 0.50
- 0.10

Market
- 0.88
- 1.00
- 0.90
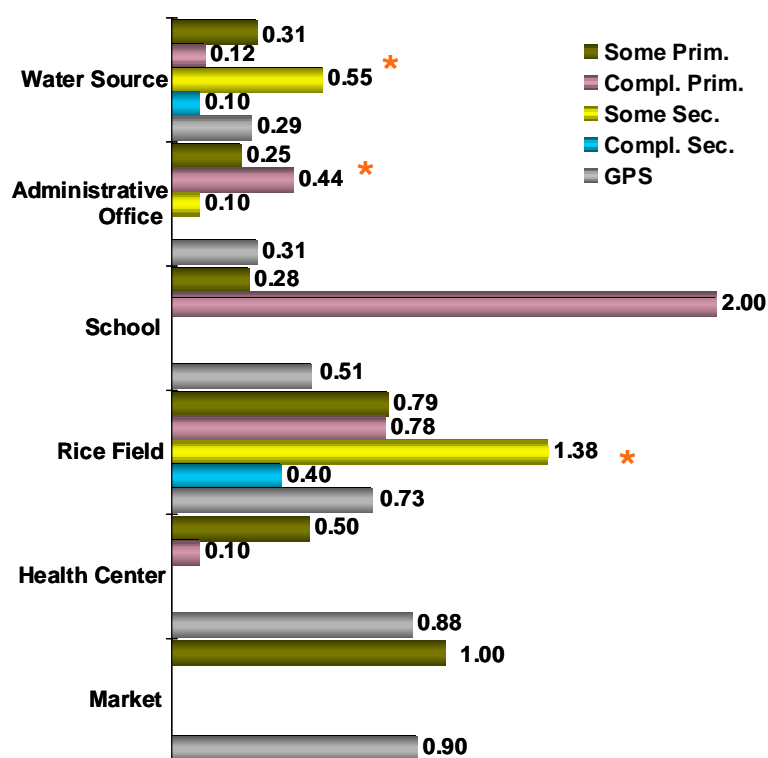
Significant differences in three cases.

No clear pattern.

Saravanh - time From
Walking (95%) FROM home TO…
EDUCATION vs GPS (mins)

Legend:
- Some Prim.
- Compl. Prim.
- Some Sec.
- Compl. Sec.
- GPS

Administrative Office
- Some Prim.: 7.24
- Compl. Prim.: 8.75 *
- Some Sec.: 6.60
- GPS: 4.61

Water Source
- Some Prim.: 9.55
- Compl. Prim.: 6.25
- Some Sec.: 17.50 *
- Compl. Sec.: 5.00
- GPS: 5.14

School
- Some Prim.: 8.06
- Compl. Prim.: 15.00
- GPS: 7.18

Health Center
- Some Prim.: 12.74
- Compl. Prim.: 7.50
- GPS: 9.88

Rice Field
- Some Prim.: 18.52
- Compl. Prim.: 16.76
- Some Sec.: 23.00 *
- Compl. Sec.: 10.00
- GPS: 11.42

Market
- Some Prim.: 27.00
- GPS: 24.40
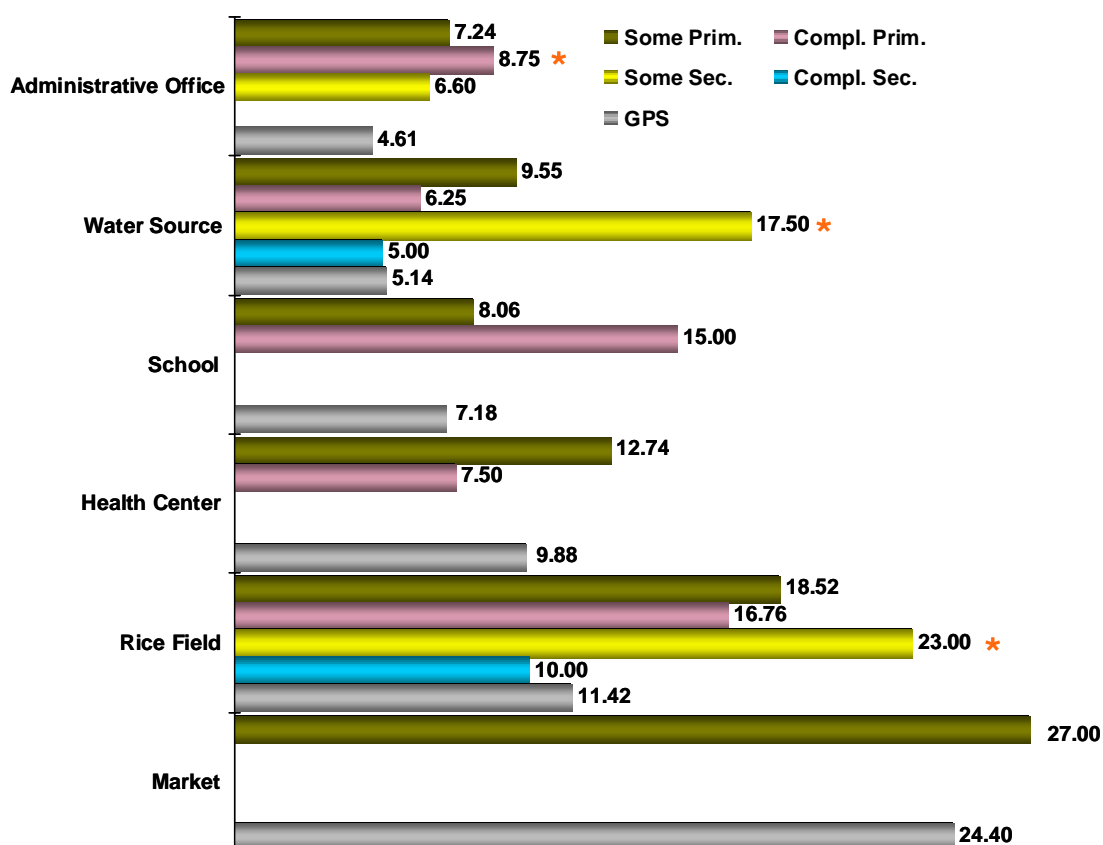
Significant differences in three cases.

No clear pattern.

Request for Proposal and ToR

Our ref: SEACAP 022/003

Date: 24 February 2006

Indochina Research (Vietnam) Ltd
Vietnam
For the attention of Tim Smyth, Managing Director

Letter of Invitation

Crown Agents for Oversea Governments and Administrations Ltd (the "Contracting Agent"), acting for and on behalf of their Principal, the Department for International Development (DFID) invites you to submit proposals to provide research into "Time and Distance study in Viet Nam, Cambodia and Laos PDR" under the South East Asia Community Access Programme (SEACAP).

The following organisations have been invited to tender for the assignment in Cambodia:

- I.T Transport Limited
- Intech Cambodia
- Roughton International
- Scott Wilson
- Indochina Research (Vietnam) Ltd

With this letter is enclosed the full Request for Proposals (RFP), including the Terms of Reference (ToR) for the assignment.   Requirements for proposal preparation and submission are set out in the RFP. Please note that the legally binding Request for Proposal and Contract documents are the English versions, the Vietnamese versions of the RFP and Contract are for information only.

We encourage bidder companies to cooperate/associate with local consultants to fulfill the tasks as specified in the ToR. Additionally, DFID wishes to encourage knowledge transfer to local consultants. Where appropriate, bidders should indicate how they will achieve these aims.

You are requested to confirm in writing by no later than on 2 March 2006 your intention to submit technical and financial proposals to undertake this assignment by the specified date and in accordance with the instructions contained in the enclosed Request for Proposals.

Yours sincerely,

Colin Choles
Contracting Officer
Project Management Organization

Time and Distance study in Cambodia

Request for Proposals

Project Reference: SEACAP 022/003

24 February 2006

Section	Contents
A	INTRODUCTION
B	PROPOSAL REQUIREMENTS
C	FORM OF CONTRACT
D	EVALUATION CRITERIA
(1)	APPENDIX A Terms of Reference

A   INTRODUCTION

1.1   This tender process forms part of the support being provided by the United Kingdom Department for International Development (DFID) under the South East Asia Community Access Programme (SEACAP), which is a poverty targeted transport initiative centred on Vietnam, Cambodia and Laos PDR.

1.2   The Client has appointed the Crown Agents (the "Contracting Agent") to act as the Client's procurement and contracting agent with respect to research projects to be funded by the Client under SEACAP. David Salter (the "Technical Agent") has been appointed to act as the Client's agent to monitor and manage the technical aspects of each SEACAP research project.

1.3   Under SEACAP, Consultants are now sought to provide research into Time and Distance study in Viet Nam, Cambodia and Laos PDR. This RFP is to seek your proposals to provide such assistance. Full details of the assignment are provided in the Terms of Reference (ToR) at Appendix A.

1.4   If your organisation is selected as the preferred supplier of the assistance specified in the appended Terms of Reference, the contract governing such work will:

- be governed by and construed in accordance with English law and will be written in the English language;

- state the period during which the defined work is to be performed, with key milestones;

- nominate specific personnel and fee rates;

- include the original Terms of Reference, modified to incorporate any agreed revisions;

- detail reporting requirements; and

- name the Contract and Technical Officers for the assignment.

1.5   Following contract award, all reports and substantive project outputs should be prepared in English, with executive summaries also provided in English.

B   PROPOSAL REQUIREMENTS

1.1   The Terms of Reference at Appendix A detail the work and outputs required from Consultants.

1.2   Consultants are required to submit proposals to undertake this assignment, as follows:
(i)   Technical offer as a response to the Terms of Reference at Appendix A
(ii) Financial offer in British pounds sterling, using the format at Appendix C

1.3   These proposals should be submitted in both hard copy and electronic format by no later than 10 March 2006 to:
Crown Agents

Unit 605, North Star Building

4 Da Tuong, Hoan Kiem

Ha Noi, Viet Nam

For the attention of Le Minh Nguyet (Ms)

Please clearly mark your proposal with the reference SEACAP 022/003 (Cambodia)

1.4   Technical and financial proposals should be separately bound and should be submitted in two separate sealed envelopes, clearly marked with the project title, project reference number, name of bidding organisation and either "Technical Proposal" or "Financial Proposal". Three hard copies of each proposal are required.

1.5   All proposals should be submitted in English.

1.6   Any requests for clarification from bidders should be submitted in writing (by email or fax) in English to:

Crown Agents

Unit 605, North Star Building

4 Da Tuong, Hoan Kiem

Ha Noi, Viet Nam

For the attention of Le Minh Nguyet (Ms)

Telephone: + 84 4 9 423 509

Fax: + 84 4 9 423 506

Email   seacap@crownagents.com.vn

Note: Bidders should not approach any other parties (including DFID and recipient Regional Governments) during the tender period. Only requests for clarification submitted in writing to the Contracting Agent will be responded to.

1.7   Such requests should be submitted to the Contracting Agent by no later than 5 days before the tender closing date (given under paragraph 1.3)**.** Clarifications will then be sent promptly to all confirmed bidders, revealing both the question and the response but not the name of the bidder sending the request for clarification. All requests for clarification should be submitted in English.

1.8   When preparing proposals to undertake this assignment, bidders should take note of the Evaluation Criteria set out in Section D of this Request for Proposals dossier.

The Contracting Agent reserves the right to terminate the tender procedure and not to proceed with the appointment of Consultants for the assignment.

Section C – Form of Contract
SOUTH EAST ASIA COMMUNITY ACCESS PROGRAMME (SEACAP)

CONTRACT FOR CONSULTANCY SERVICES

CONTRACT FOR: Time and Distance Study in Cambodia

CONTRACT REFERENCE: SEACAP 022/003/001

THIS CONTRACT is made

BETWEEN: Crown Agents for Oversea Governments and Administrations Ltd (the "Contracting Agent") as agent acting for and on behalf of their Principal, the Secretary of State for International Development at the Department for International Development, Abercrombie House, Eaglesham Road, East Kilbride, Glasgow G75 8EA ("the Client");

AND : ***[name of consultancy firm]*** (the "Consultant")

(together "the Parties").

WHEREAS:

A. The Client has committed to fund the South East Asia Community Programme (SEACAP), a poverty targeted transport initiative centred on Vietnam, Cambodia and Laos PDR, comprising a series of research projects.

B. The Client has appointed the Contracting Agent, to act as the Client's procurement and contracting agent with respect to research projects to be funded by the Client under SEACAP. David Salter (the "Technical Agent") has been appointed as the Client's agent to monitor and manage the technical aspects of each SEACAP research project.

C. Under SEACAP, the Client requires the Consultant to provide the services as defined in Appendix A ("the Services") to the Governments of Viet Nam, Cambodia and Laos PDR ("the Recipient"); and

The Consultant has agreed to provide the Services on the terms and conditions set out in this Contract.

IT IS HEREBY AGREED as follows:-

1. Documents

This Contract shall be comprised of the following documents:-

Section 1   Form of Contract

Section 2   General Conditions

Appendix A   Terms of Reference

Appendix B   Special Conditions

Appendix C   Schedule of Prices

This Contract constitutes the entire agreement between the Parties in respect of the Consultants obligations and supersedes all previous communications between the Parties, other than as expressly provided for in Appendix A and/or Appendix B.

2**.** Rights and Obligations

The mutual rights and obligations of the Client and the Consultant shall be as set forth in the Contract, in particular:

(a)   **the Consultants shall carry out the Services in accordance with the provisions of the contract; and**

(b)   **the Client shall make payments to the Consultants in accordance with the provisions of the Contract.**

3. Time of the Essence

Time shall be of the essence as regards the performance by the Consultant of its obligations under this Contract

4. **Financial Limit**

Payments under this Contract shall not, in any circumstances, exceed **[GBP..……]** ("the Financial Limit").

For and on behalf of	Name:	Colin Choles
The Crown Agents	**Position:**	**Contract Officer**
	Signature:	
	Date:	
For and on behalf of *[name of firm]*	Name:	
	Position:	
	Signature:	Date:

SECTION 2 - GENERAL CONDITIONS

CONTENTS

DEFINITIONS AND INTERPRETATION

1.   Definitions

"the Consultant" means the person(s), partnership(s) or company(ies) with whom this Contract is placed.

"the Consultant's Personnel" means any person instructed pursuant to this Contract to undertake any of the Consultant's obligations under this Contract, including the Consultant's employees, agents and sub-contractors.

"the Financial Limit" means the amount specified in Section 1 and is the maximum amount payable by the Client under this Contract.

"the Services" means the services set out in the Terms of Reference (Appendix A).

"the Technical Officer" means the person named in Appendix B who is responsible for monitoring and issuing instructions in connection with the technical aspects of the Contract.

"the Contract Officer" means the person named in Appendix B who is responsible for all contractual aspects of the Contract.

2.   Interpretation

2.1   In the event of any inconsistency between these General Conditions and the Special Conditions (Appendix B), the Special Conditions shall prevail.

2.2   Except as expressly provided in Clause 14 the Consultant is not the agent of the Client or of the Contracting Agent or the Technical Agent and has no authority to represent and shall not purport to represent or enter into any commitments on behalf of the Client, the Contracting Agent or the Technical Agent in any respect.

2.3   Nothing in this Contract is intended to make nor shall it make the Client, the Contracting Agent or the Technical Agent the employer of the Consultant or any of the Consultant's Personnel.

2.4   All communications by the Consultant in relation to this contract, including, but not limited to those relating to notifications or applications for consents or instructions must be addressed to the Contract Officer.

B. OBLIGATIONS OF THE CONSULTANT

3. Obligations

3.1　The Consultant shall perform all its obligations under this Contract (including the provision of the Services) with all necessary skill, diligence, efficiency and economy to satisfy generally accepted professional standards expected from experts.

3.2　If the Consultant is a joint venture then each of the joint venture parties shall have joint and several liability in respect of the Consultant's obligations under this Contract.

4. Personnel

4.1　All members of the Consultant's Personnel shall be appropriately qualified, experienced and in a suitable physical condition so as to ensure that the Consultant complies with all the Consultant's obligations under this Contract.

4.2　No changes or substitutions may be made to members of the Consultant's Personnel identified as key personnel in Appendix B of this Contract without the Client's prior written consent.

4.3　If the Client considers any member of the Consultant's Personnel unsuitable, the Consultant shall substitute such member as quickly as reasonably possible without direct or indirect charge to the Client with a replacement acceptable to the Client

4.4　The Consultant is responsible for all acts and omissions of the Consultant's Personnel and for the health, safety and security of such persons and their property.

5. Sub contractors

5.1　The Consultant shall not sub-contract any of its obligations under this Contract without the prior written consent of the Client

5.2　If, having obtained the Client's consent, the Consultant sub-contracts any of its obligations, the sub-contract shall:-

a) provide that payments due to the sub-contractor shall be made not more than 30 days after provision to the Consultant of a valid invoice; and

b) include rights for the Consultant and obligations on the sub-contractor to ensure that the Client's rights to require replacement of personnel (as set out in Clause 4.3) and the Client's rights and the Consultant's obligations as set out in Clauses 6 to 11 (inclusive) can be enforced against the sub-contractor.

6. Disclosure of Information

6.1 The Consultant and the Consultant's Personnel shall not, without the prior written consent of the Client, disclose to any third party any confidential information obtained during or arising from this Contract (other than in the proper performance of this Contract or as may be required by authority of competent jurisdiction). In addition, no publicity is to be given to this contract without the prior written consent of the Client.

7. **Intellectual Property Rights**

7.1 All intellectual property rights in all material (including but not limited to reports, data, designs whether or not electronically stored) produced by the Consultant or the Consultant's Personnel pursuant to the performance of the Services ("the Material") shall be the property of the Consultant.

7.2 The Consultant hereby grants to the Client a world-wide, non-exclusive, irrevocable, royalty-free license to use all the Material.

7.3 For the purpose of Clause 7.2, "use" shall mean, without limitation, the reproduction, publication and sub-license of all the Material and the intellectual property rights therein, including the reproduction and sale of the Material and products incorporating the same for use by any person or for sale or other dealing anywhere in the world.

8. Official Secrets Acts

8.1 The Consultant shall ensure that all members of the Consultant's Personnel are aware that the Official Secrets Acts 1911 to 1989 apply to them.

9. Access and Audit

The Consultant shall keep accurate and systematic accounts, files and records ("the Records"). The Records shall clearly identify, among other things, the basis upon which invoices have been calculated and the Consultant shall keep the Records throughout the duration of this Contract and for six years following its termination.

9.1 The Consultant shall upon request provide the Client or its representatives (including the Contracting Agent and the Technical Agent) unrestricted access to the Records in order that the Records may be inspected and copied. The Consultant shall co-operate fully in providing to the Client or its representatives,

including the Contracting Agent and the Technical Agent, answers to such enquiries as may be made about the Records.

9.2   Where it is found by the Client that any overpayment has been made to the Consultant the Consultant shall reimburse the Client such amount within 28 days of the date of written demand from the Contracting Agent.

10.   Corruption, Commission and Discounts

10.1   The Consultant warrants and represents to the Client that neither the Consultant nor any of the Consultant's Personnel:

(a)   has given, offered or agreed to give or accepted, any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of any contract or for showing or forbearing to show favor or disfavor to any person or entity in relation to any contract; or

(b)   has entered into any contract in connection with which commission has been paid or agreed to be paid by or to the Consultant or Consultant's Personnel or on their behalf or to their knowledge unless, before such contract was made, particulars of any such commission and of the terms of any agreement for the payment of such commission were disclosed in writing to the Client, whose written consent was subsequently given to such payment.

10.2   Neither the Consultant nor any of the Consultant's Personnel shall accept for or on their own benefit any trade commission, discount or similar payment or benefit in connection with this Contract.

11.   Conflict of Interest

11.1   Neither the Consultant nor any of the Consultant's Personnel shall engage in any personal, business or professional activity which conflicts or could conflict with any of their obligations in relation to this Contract.

11.2   The Consultant and the Consultant's Personnel shall notify the Client immediately of any actual or potential conflict together with recommendations as to how the conflict can be avoided.

12.   Insurances

12.1   The Consultant shall maintain professional indemnity insurance cover of an amount not less than the Financial Limit unless otherwise provided in Appendix B.

13.   Indemnity

13.1   Except where arising from the negligence of the Client or the Client's employees, the Consultant shall indemnify the Client and each of the Contracting Agent and the Technical Agent, as applicable, in respect of any costs or damages howsoever arising out of or related to breach of warranty or representation, contract or statutory duty, or tortious acts or omissions by the Consultant or the Consultant's personnel or agents (including any claims made against the Client, the Contracting Agent or the Technical Agent) by third parties in respect thereof.

PRICE AND PAYMENT

14.   Applicable Provisions and Financial Limit

14.1   Unless different provisions are substituted in Appendix B, Clauses 14 to 18 inclusive shall apply in relation to price and payment.

14.2   The components which comprise the Financial Limit are set out in the Schedule of Prices, Appendix C. No expenditure may be incurred in excess of the Financial Limit and no virements between components shown in the schedule of prices in Appendix C are permitted without the prior written authority of the Contracting Agent.

15.   Remuneration

15.1   The basis for remuneration of the consultant shall be as specified in Appendix B.

15.2   Any fees payable are deemed to cover the cost of salary, overseas inducements, leave allowances, bonuses, profit, taxes, insurances, superannuation, non-working days and all other costs including, but not limited to, clothing, passports, visas and vaccinations, overheads and expenses of whatsoever nature that may be incurred except those otherwise specifically provided for in this Contract.

15.3   If the amount to be paid to the Consultant by way of remuneration for the completion of the Consultant's obligations under this Contract has been fixed at the time of signature of this Contract the amount shall be as provided for in Appendix C. Payments of the fixed remuneration shall be made on a 'Milestone Payment Basis' [unless otherwise provided in Appendix C].

15.4   Where the applicable payment mechanism is "Milestone Payment", invoices shall be submitted for the amounts indicated in Appendix C as and when the relevant milestone is achieved in its final form by the Consultant or following completion of the Services, as the case may be, indicating both the amount or amounts due at the time and cumulatively.

15.5   Payments pursuant to Clause 15.4 are subject to the satisfaction of the Technical Officer in relation to the performance by the Consultant of its obligations under the Contract and to verification by the Technical Officer that all prior payments made to the Consultant under this Contract were properly due.

16.   Reimbursable Expenses

16.1   The nature and maximum amount of any reimbursable expenditure which the Consultants may claim in respect of the performance of the Services are defined at Appendix C and such expenses shall be recoverable at cost from the Client, subject to the following:

(a)   All travel will be reimbursed at the cost of Economy Class unless the Client provides written approval in advance for fares in any other class.

(b)   Subsistence is payable only for each night actually spent away from home where the services are being undertaken. Subsistence is not payable for leave periods other than public holidays spent near the site of work.

16.2   Unless the client provides contrary exemption to the Consultants in advance and in writing, the Consultants will be eligible to reclaim from the Client VAT in respect of reimbursable expenses. This will apply only to expenditure on items legitimately attracting VAT. Where the Consultants or their agents have paid VAT at point of sale, no additional VAT will be reclaimable from the Client by the Consultants.

17. **Invoicing Instructions**

17.1   Invoices should be submitted in arrears in duplicate to the Contracting Agent and in accordance with the remainder of clause 17.

17.2   In all cases, invoices shall be accompanied by a certificate signed by the Technical Officer confirming the satisfactory performance by the Consultant of the Contract and that all prior payments made to the Consultant under this Contract were properly due, in a form to be agreed between the Consultant and the Contracting Agent.

17.3   The Client shall, unless otherwise expressly provided in Appendix B, make payments due by direct credit through the UK Bank Clearing Systems (BACS) or by international bank transfer (SWIFT). All invoices must contain details of the bank account to which payments are to be made.

17.4   Invoices must bear this Contract reference, be numbered sequentially and dated, and marked "For the attention of [the Contracts Officer]". The final invoice presented in connection with this Contract should be endorsed "Final Invoice".

17.5   Unless this Contract is on a milestone payment basis, all invoices should contain details of expenditure in accordance with Appendix C of this Contract.

17.6   The Contracting Agent may request proof of payment in respect of any item and the Client shall be entitled to refuse to meet a claim if this cannot be provided.

17.7   Any invoice not presented in accordance with the above may be rejected and in any event shall be liable to query and delay in payment. The Client reserves the right not to pay any amount due in respect of an invoice received by the Contracting Agent more than 90 days after the day of the Consultant becoming entitled to invoice for the payment to which it relates.

18. **Payments**

18.1   Subject to the Client being satisfied that the Consultant is or has been carrying out their duties, obligations and responsibilities under this Contract, sums duly approved shall be paid within 30 days of receipt of a valid invoice, with corresponding certificate signed by the Technical Officer.

18.2   Payment shall be made in sterling. Reimbursable expenditure (if any) arising in foreign currency shall be reimbursed at the exchange rate stated in the London

Financial Times "Guide to World Currencies" on the Friday immediately preceding the date on which the purchase was made or services acquired by the Consultant or, if this took place on a Friday, at the rate so stated on that day.

18.3   If for any reason performance of this Contract is not considered to be satisfactory, an appropriate sum may be withheld from any payment otherwise due. In such event the Client shall identify the particular Services which are not satisfactory together with the reasons for such dissatisfaction, and payment of the amount outstanding will be made upon remedy of any unsatisfactory work or resolution of outstanding queries.

18.4   Should the Client determine after paying for a particular service that the service has not been completed satisfactorily, the Client may recover, or withhold from further payments, an amount not exceeding that previously charged for that service until the unsatisfactory service is remedied to its satisfaction.

FORCE MAJEURE AND TERMINATION

19.   Force Majeure

19.1   Where the performance by the Consultant of its obligations under this Contract is delayed, hindered or prevented by an event or events beyond the reasonable control of the Consultant and against which an experienced consultant could not reasonably have been expected to take precautions, the Consultant shall promptly notify the Client in writing, specifying the nature of the force majeure event and stating the anticipated delay in the performance of this Contract.

19.2   From the date of receipt of notice given in accordance with Clause 19.1, the Client may, at its sole discretion, either suspend this Contract for up to a period of 6 months ("the Suspension Period") or terminate this Contract forthwith.

19.3   If by the end of the Suspension Period the parties have not agreed a further period of suspension or re-instatement of the Contract, this Contract shall terminate automatically.

20   Suspension or Termination without Default of the Consultant

20.1   The Client may, at its sole discretion, suspend or terminate this Contract at any time by so notifying the Consultant and giving the reason(s) for such suspension or termination.

20.2   Where this Contract has been suspended or terminated pursuant to Clause 19.1, the Consultant shall:

(a)   take such steps as are necessary to terminate the provision of the Services, (including suspending or terminating any Sub-Contracts) in a cost-effective, timely and orderly manner; and

(b)   provide to the Client, not more than 60 days after the Client notifies the Consultant of the suspension or termination of this Contract an account in writing, stating:

(i)   the fees and expenses, if any, due before the date of suspension or termination;

(ii)   any costs to be expended after the date of suspension or termination   which the Consultant necessarily incurred in the proper performance of this Contract and which it cannot reasonably be expected to avoid or recover.

20.3   Subject to the Client's approval the Client shall pay such amount to the Consultant within 30 days after receipt by the Contract Officer from the Consultant of an Invoice in respect of the amount due.

21.   Suspension or Termination with Default of the Consultant

21.1   The Client may notify the Consultant of the suspension or termination of this Contract where the Services or any part of them are not provided to the satisfaction of the Client giving the reasons for such dissatisfaction and, in the case of suspension, the action required by the Consultant to remedy that dissatisfaction and the time within which it must be completed.

21.2   Where this Contract is suspended in accordance with Clause 21.1 and the Consultant subsequently fails to remedy the position to the Client's satisfaction the Client may terminate this Contract forthwith.

21.3   The Client may, without prejudice to its other rights, including but not limited to the right to claim for costs and losses incurred, terminate this Contract forthwith where:

(a)   the Consultant or any member of the Consultant's Personnel, either directly or through their servants or agents, breaches any of their obligations under this Contract; or

(b)   the Consultant or any member of the Consultant's Personnel has committed an offence under the Prevention of Corruption Acts 1889 to 1916 or the Anti-Terrorism Crime and Security Act 2001 or in breach of Clause 10 of this Contract; or

(c)   the Consultant is an individual or a partnership and at any time:

(i)   becomes bankrupt; or

(ii)   is the subject of a receiving order or administration order; or

(iii)   makes any composition or arrangement with or for the benefit of the Consultant's creditors; or

(iv)   makes any conveyance or assignment for the benefit of the Consultant's creditors; or

(d)   the Consultant is a company and:

(i)   an order is made or a resolution is passed for the winding up of the Consultant; or

(ii)   a receiver or administrator is appointed in respect of the whole or any part of the undertaking of the Consultant.

(e)   the Consultant is a partnership or a company and there is a Change in Control. "Change in Control" means that the person(s) (including corporate bodies) directly or indirectly in Control of the Consultant at the time this Contract is entered into cease to be in Control. "Control" means the power of a person to secure that the affairs of the Consultant are conducted in accordance with the wishes of that person.

21.4   Where this Contract is terminated in accordance with this Clause, the Consultant shall without prejudice to the Client's other remedies, take any steps necessary to

terminate the provision of the Services in a timely and orderly manner but shall not be entitled to any further payment in relation to this Contract.

21.5 Where this Contract is terminated pursuant to Clause 21.3(b) the Consultant shall pay the Client within 10 days of notification such amount as the Client shall have determined as the amount of any loss to the Client resulting from such termination together with the amount or value of any gift, consideration or commission concerned.

GENERAL PROVISIONS

22. Variations

22.1 No variation in the terms or scope of this Contract shall be effective without the Client's prior written consent and recorded in writing. The Client, the Contracting Agent and the Technical Agent shall not have any liability in respect of work performed outside the Services set out in Appendix A.

23. Assignment

23.1 The Consultant shall not, without the prior written consent of the Client, assign or transfer or cause to be assigned or transferred, whether actually or as the result of takeover, merger or other change of identity or character of the Consultants, any of its rights or obligations under this Contract or any part, share or interest therein.

24. Limit of Liability

24.1 Except where there has been misconduct, gross negligence, dishonesty or fraud on behalf of the Consultant or the Consultant's Personnel the Consultant's liability under this Contract shall be limited to the amount of the Financial Limit unless otherwise provided for in Appendix B.

25. Retention of Rights

25.1 Clauses 6, 7, 8, 9, 13, 26 and 27 of this Section 2 and any relevant clauses listed under Appendix B shall continue in force following the termination of this Contract.

26. Law and Jurisdiction

26.1 This Contract shall be governed by the laws of England and Wales.

27. Amicable Settlement

27.1 The parties will attempt in good faith to negotiate a settlement to any claim or dispute between them arising out of or in connection with this Contract. If the

matter is not resolved by negotiation the parties will refer the dispute to mediation in accordance with CEDR (Centre for Dispute Resolution in London, UK) procedures. If the parties fail to agree terms of settlement within 90 days of the initiation of the procedure the dispute may be referred to an arbitrator as agreed between the parties or failing such agreement as may be nominated by the President of the Law Society of England and Wales upon application of any party. The initiation of the procedure is defined as the written request to CEDR by any party for a mediation provided that such request is copied to the other party(ies).

27.2   The decision of the arbitrator shall be final and binding on both parties.

27.3 The place of arbitration shall be London.

Appendix A

Terms of Reference

II. 1. Brief Description

The South East Asia Community Access Programme – SEACAP, is a DFID (Department of International Development – UK based), funded programme the goals of which are

1. To help and support developing countries make the optimal decisions on providing rural access to remote poor communities
2. To improve sustainability and affordability of rural access to poor countries
3. Create opportunities for pro-poor growth and poverty alleviation.

These Terms of Reference (ToR) describe the work required to undertake data collection – on behalf of the World Bank, from household surveys in 9 individual provinces of Viet Nam, Cambodia and Laos PDR (3 in each Country) relating to the time and distance travelled.

The work will be primarily aimed at improving the quality of statistics as a priority for various international development initiatives - including the World Bank's results based agenda which is concerned with national and global data challenges and has highlighted the need for improved statistics to better measure development outcomes.

The outputs of the individual country studies are for:

*   World Bank Transport Technical Paper – the results are intended to be used to develop a guidance note on the relative and absolute reliability and accuracy issue of time and distance reports (see appendix A).

The primary purpose is to improve the quality of data collected through household surveys as they relate to time and distance travelled.

2. Background

Timely and reliable information is not just a concern of the international community - it is also needed by governments, businesses, other organizations and individuals to make informed decisions.

As development strategies have focused on poverty and on the well-being of the most vulnerable segments of society, the need for household-based economic and social data has grown. Surveys of households and individuals are an effective way to obtain this information. Combined with other sources of information, household survey data can be particularly important in better tailoring transport programmes and policies to the needs of the poor by further understanding their travel behaviour and patterns in relation to choice,

location, and scheduling of daily activities. Travel time savings are a major benefit resulting from investments in transport and are of particular importance in this regard.

Establishing the headline Rural Access indicator[1], which measures access on the basis of times and distances as reported by survey respondents, has revived concern about the quality of these time and distance reports. In general, data on travel time (t) and distance (d) is collected through face-to-face interviews of members of randomly selected households. Thus what is reported is not objective, but the perceptions of the respondents based on their own awareness and experience. Usually we do not know the exact distance travelled, nor do we know the actual time taken to travel that distance. It is suspected that estimates of time and distance are likely to be distorted. The problem could be complicated by several measurement related challenges:

(1) *Recall problem*: Cognitive research indicates that, in recalling information, respondents tend to balance (perceived) effort and their likely accuracy in recalling information. Accessibility depends on the saliency of the event being studied. The concept of 'salience' relates to the fact that the more important and memorable an event is to an individual, the easier it is to remember it accurately[2]. Thus, it is highly likely that respondents might underreport the habitual event because they are harder to recall[3]. Besides, respondents who might have used a particular route or routes, less frequently or in the distant past will have recall problems.

(2) *Unfamiliarity with measurement units:* In rural communities of developing countries, where time measurement devices are not commonly used, respondents are unable to estimate time in an accurate manner. Just as with time, large portion of rural residents are not familiar with units (kilometres or miles) to measure distance. A recently conducted study on household travel in Cambodia concludes, "*respondents found it difficult to estimate time and distance. Villagers measured the length of their trips by changes in the position of the sun or by time taken to smoke a cigarette"* (Rozemuller et al. 2000, p.7).

(3) *Rounding up*: There is tendency of respondents to round up minutes to higher values, by at least 5 minutes or more so that the time taken appears longer.

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[1] 'Rural Access Indicator' measures the number of rural people who live within 2 km (typically equivalent to a walk of 20 minutes) of an all-season road as a proportion of the total rural population. An "all-season road" is a road that is motorable all year round by the prevailing means of rural transport
[2] The opposite is also true – the less important and the more trivial an event is to an individual, the more likely it is to be forgotten, or inaccurately recalled.
[3] It is also likely that the salient events will override the habitual events in the respondents' memories.

(4) *Variation in terrain*: The terrain plays a considerable role as well, with more time taken to travel the same distance in hilly areas than on the plains, which is not easily captured in the estimates by respondents.

(5) *Variation in personal characteristics*: Time taken to travel the same distance can be expected to vary with the personal characteristics of respondents; such as gender and age. Perceptions of time and distance may also vary with those characteristics.

(6) *Variation by transport mode*: Time taken to travel the same distance varies by transportation mode.

 A pilot household survey was undertaken between May and July 2004 in Albania. Pedometers were used to measure actual distance and time walked by respondents. Altogether 250 respondents—varying in age and gender — measured the actual distances and time required to travel from their dwellings to school and work. These measurements were then compared against the time and distance estimated by these respondents to travel the same route. Preliminary analysis of the Albanian survey results shows that estimated time and distance have high correlations with the actual time and distance measurements respectively. However, it also confirmed some of the concerns indicated above. (Refer to Appendix B for an example of the questionnaire to be completed).

For other forms of survey it may be more appropriate to use a measuring wheel and stopwatch, but which ever form of recording is used it is anticipated that appropriate training to respondent will need to be given.

3. **Output**

Encouraged by the findings of the Albanian data, it is now proposed that this survey is

repeated in diverse settings before developing the technical guidance note. In doing so we

are keen to carry out this survey for respondents travelling for other purposes as well as to

work and school, in areas where the perception of time and distance in the 'modern' system

is poorer and where there is a variation in travel routes in terms of terrains.

   Verification surveys:

   1)   Verification household surveys will be conducted in Viet Nam, Cambodia and Laos
         PDR in order to collect measurements of the actual travel time and distance for

comparison with those reported by household members. At least 500 households should be surveyed in each Country.

2) Surveys will be undertaken in differing areas of terrain including mountainous, delta and plain as appropriate for each individual country and will comprise 2 different communes/villages in each Province. At least 200 household should be surveyed in each type of terrain.

3) Wherever possible households should be selected from an existing representative sampling framework.

Examples of core questions to be asked respondents are:

(a) how far do you live from facility [estimated in 'kilometres' to the nearest first decimal i.e. 100metres];

(b) how long does it take you to go to facility [estimated in 'minutes' to the nearest 5 minutes or better];

(c) How often do you go to facility [reported as x times per week, or longer].

(d) Form of transport – [reported as walking, cycle, by motorized transport etc]

In addition the time and distance will be measured with adequate precision. Respondents

will require appropriate and adequate training in the measures to be adopted to record time

and distance.

The Consultant will:

1. Produce an Inception Report of not more than 10 pages within two weeks of award of the Contract, which will cover **the requested Country – Cambodia**. The Inception report will include details of the measures/procedures to be adopted to verify the accuracy of respondents' answers to detailed questions.

2. The consultant should ensure that all relevant Government and donor agencies are aware and 'buy in' to the programme. Particularly close liaison with the World Bank office in each Country is of primary importance.

3. The consultant should ensure that all the relevant Government and donor agencies are aware and 'buy in' to this programme. Particularly close liaison with the WB office in each separate country is of primary importance.

4. The Consultant will produce a detailed list of questions to be asked to individual respondents prior to commencing the study.

5. The Consultant will produce a detailed report **of the requested Country – Cambodia** at the completion of the Verification studies.

6. The Consultant will include in the final report a detailed list of appropriate organizations, publications and web-sites where the results of the study may be made available to a wider audience.

7. Hold a half day seminar at the World Bank headquarters – if appropriate, in each individual Country covered by the study. The seminars will include a power point

presentation providing an overview of the technical guidance note as well as the results of the reports.

4.   Dissemination

The Consultant shall be responsible for producing the reports in English and the National language of the Country in which the study took place.

Electronic copies of the reports shall be placed on the World Bank's Transport intranet and internet websites (under the topic "results measurement"). Hard copies or other formats may be distributed widely within and outside the World Bank and DFID.

Electronic copies of the reports shall also be placed on the Transport Knowledge Partnership web-site.

A half day seminar shall be held in each Country covered by the study and key stakeholders invited from national governments and development agencies – including ADB, EU and bilateral organisations.

5.   Expertise and Timing

The Consultants team is expected to have experience in the following areas:

1. Good working Knowledge of South East Asia, especially in Cambodia
2. Experience in conducting similar household based studies.
3. Experience of the rural transport sector.
4. Experience in synthesizing the knowledge gained into concise reports and presentations.

The Consultant's team shall include members who have good national and international experience of each individual country covered by the study. The Client welcomes the use of local sub-consultants.

Anticipated Time schedule

    Tender Invite   24 February 2006
    Tender Return   10 February 2006
    Contract Award 17 March 2006
    Project start   24 March 2006

6.   Proposals

The Proposals should address the following issues and be as concise as possible:

1. A detailed work programme and plan and activities including the proposed start date, which should ensure completion by the end of 24 June 2006.
2. A detailed budget including daily rates, number of Days and reimbursable costs. These should be based on existing DFID rates and for National Consultants EU cost norms.
3. A detailed budget for each individual seminar.
4. Provide details of stakeholders, donors and National Government Departments to be approached to gain permission to undertake surveys.
5. Joint proposals which combine skills and organizations and disciplines are encouraged.
6. CV's of all proposed team members should be included as part of the proposal
7. Details of any proposed sub-consultants should be provided for approval by DFID/WB/ relevant government agency in each country.
8. The overall team make up and management arrangements. Please note that DFID will expect the lead Consultants to be responsible for the financial and administrative arrangements for the whole team.

7. Milestones

1. Payment will be made on the completion of the individual studies and acceptance of the final report.

Holding of individual seminars.

Annex A1

TECHNICAL GUIDANCE NOTE

The results from the individual studies are intended to be used by the World Bank to develop a guidance note on the relative and absolute reliability and accuracy issue of *time* and *distance* reports. The note will be a practical tool for designing surveys which are to include relevant and effective questions on travel time and distance. The guidance note will help to answer the important concerns about the time and distance estimates made by respondents:

1. How reliable are reported distances as proxies of actual distances?
2. How reliable are reported times as proxies of actual times?
3. How can travel times be explained by travel distances?
4. What impacts do personal characteristics of commuters have an on reported and actual travel times?

5. Which measure, time or distance, is recommended as probably more reliable and relevant under particular circumstances – and why?
6. How should time and/or distance questions be best phrased in each of the survey Countries?

Appendix B

SPECIAL CONDITIONS

1.   Officials

1.1   The Contract Agent is:

Crown Agents

St Nicholas House

St Nicholas Road

Sutton

Surrey SM1 1EL

United Kingdom

Telephone: + 44 (0) 20 8643 3311

Fax: + 44 (0) 20 8643 4502

Email   oscar.cardozo@crownagents.co.uk

Contracting Officer: Oscar Cardozo

For any information relating to the contract including invoicing, please contact:

Crown Agents

Unit 605

North Star Building

4 Da Tuong

Hoan Kiem

Viet Nam

Telephone: + 84 4 9 423 509

Fax: + 84 4 9 423 506

Email   seacap@crownagents.com.vn

Project Manager: Ms Le Minh Nguyet

1.2   The Technical Agent is:

Mr David Salter

C/o Ministry of Rural Development

Corner of St. 169 and Russian Blvd.,

Phnom Penh, Cambodia

Telephone: + 855 012 188 6474

Email   davidsalter@online.com.kh

1.   Reports

1.1   The Consultant is required to submit project reports to the Contracting Agent **[TBC]** at the address shown in Clause 1.1 of Appendix B in accordance with the Terms of Reference at Appendix A.

1.2   The Consultant is required to submit Milestone reports to the Technical Agent **[TBC]** at the address shown in Clause 1.1 of Appendix B in accordance with the Terms of Reference at Appendix A.

2.   Key Personnel

3.   Sub-Contractors

4.   Medical Insurance

The Consultant is responsible for ensuring adequate and appropriate medical insurance cover before beginning work overseas under the Contract. The Consultant's fee is deemed to include an element to cover the cost of medical insurance.

Appendix C

SCHEDULE OF PRICES

Fixed Payments

The amount to be paid for the completion of the services is fixed at GBP   ].

Payment will be made on satisfactory performance of the services, at the payment points defined below (schedule of payments):

Schedule of Payments**:**

Criteria for Payment	Amount of Payment	VAT if applicable
25% of fees payable on acceptance of Inception Report.	£[ ]	
25% of fees payable on submission of reports for each country upon completion of verification studies.	£[ ]	
25% of fees payable on acceptance of final Report	£[ ]	
25% of fees payable on holding of individual seminars	£[ ]	
TOTAL:		

D   EVALUATION CRITERIA

1.1 Selection of Consultants by the Contracting Agent will be on the basis of a combination of the technical and financial scores achieved, calculated as follows:

Technical Points Score: maximum 80 points (pass mark 60 points)

I	Understanding of the requirement	10
II	Approach, methodology and work programme	35
III	Qualifications and experience of proposed Consultants	35

Note that a technical score of 60 points will be required to ensure further consideration of the proposal.

1. Underlinetext{Understanding of requirement}   10

2. Underlinetext{Approach, methodology and work programme}   35

    2.1   Approach and methodology   20
    2.2   Work programme   10
    2.3   Knowledge Transfer   5

3. Underlinetext{Qualification and experience of proposed Consultants}   35

    3.1   Relevant qualifications (Team Leader)   5
    3.2   Relevant qualifications (Team)   5
    3.3   Experience of similar assignments (Team Leader)   10
    3.4   Experience of similar assignments (Team)   10
    3.5   Local Participation   5

    Technical Points Score (S_T)

    Financial Points Score: maximum 20 points

           Lowest Price (P_L)   =   20 points

           Bid Price (P_B)   = $\underline{P_L \ x \ 20 \ points}$
                                                     P_B

    Financial Points Score (S_P)

    Total Score   = $S_T + S_P$

Inception Report

SEACAP 022-002 (Laos)
Inception Report

Table of Contents

a)

1. Introduction to SEACAP 022-02 Laos

Background & Objectives

The South East Asia Community Access Programme – SEACAP - primarily aims at improving the quality of statistical data collected for travel indicators and the results will be used to develop a technical guidance note on the relative and absolute reliability and accuracy issue of time and distance reports.

Travel time and distance data collected can be influenced by factors, such as:

- o Recall problems (importance of trip tends to impact on saliency of recall)
- o Unfamiliarity with measurement units (type & consistency of unit of measurement)
- o Rounding up of time & Distance estimates tend to exaggerate time/distance taken
- o Variation in terrain (hilly .v. plain) and impact of time of year (dry / wet season)
- o Variation in personal characteristics (age, gender etc..)
- o Variation by transport mode (on foot, motorbike etc..)

However, previous surveys have indicated that there is a high correlation between time and distance estimated by respondents and actual time and distance covered for typical daily travel routes.

As such, SEACAP this survey will be conducted in diverse settings in Laos to develop technical guidance note for future use by the World Bank & SEACAP in designing surveys which are to include relevant and effective questions on travel time and distance.

As such, this survey will address the distance estimates made by respondents in terms of:

- o How reliable are reported distances as proxies of actual distances?
- o How reliable are reported times as proxies of actual times?
- o How can travel times be explained by travel distances?
- o What is the impact of personal characteristics on reported and actual travel times?
- o Which measure, time or distance, is recommended as probably more reliable and relevant under particular circumstances – and why
- o How should time and/or distance questions be best phrased in each survey country?

2. Description of Scope of Work & Methodologies

IRL approach to the specific tasks & scope of work required to implement and undertake this project are outlined as follows

2.1 Pre Survey Stage

2.1.1 Survey Design, Sampling Frame and Methodology

a) *Survey Province Selection*: 3 provinces are selected in order to offer coverage of the different terrain conditions of Laos are as follows.(See Also Annex II Sampling maps)

o   Saravanh - Mostly flat rural province. Population 287,998, Households 47,575
o   Xiengkhuang - Agricultural/hilly terrain. Population 211,479, Households 31,842
o   Oudomxay - Mountainous, heavily wooded terrain mostly inhabited by minorities. Population 231,175, Households 36,671

b) *Survey Districts Selection*: A total sample of N=600 across all three provinces with N=200 interviews per province and N=100 per district. In order to offer the widest possible range of traveling conditions two different districts in each province are selected. These 2 types of districts will be 1 district containing the capital city or nearby the capital and 1 remote district. The profile of districts in each province is as follows:

o   Oudomxay (N=200):
    o   Lah District - N=100 Nearby Capital - Population 16,229, Households 2,718
    o   Hoon District - N=100 Remote – Population 52,470, Households 8,522

o   Xiengkhuang (N=200)
    o   Pek District – N=100 Capital – Population 63,537, Households10,120
    o   Nonghed District – N=100 Remote – Population 35,610, Households 4,978

o   Sarahvanh (N=200):
    o   Laognam District – N=100 Nearby Capital – Population 48,396, Households 9,307
    o   Ta Oi District – N=100 Remote - Population   19,052, Household 2,850

c) *Survey Village Selection*: to ensure a comprehensive cover of different travel environments 10 villages will be selected in each of the district specified above. Each village will be selected on the basis of the following criteria:

- o 2 villages with 5 km far from district center
- o 2 villages with 10 km far from district center
- o 2 villages with 15 km far from district center
- o 2 villages with 20 km far from district center
- o 2 villages with more than 25 km far from district center

d) *Survey Household Selection* – 10 households in each village will be subject to survey. To select the household a sampling interval of 5 per road segment is applied with interviewers alternating from one side of the road to another. Once the household is located, respondent selection will be based on screening criteria (see below).

e) *Survey Respondent Selection*: Once the respondent is selected, and passes the screening process, a face-to-face interview will be conducted. To ensure that survey results are as representative of the Laos population as possible and to examine the impact of personal characteristics on reported and actual travel times, respondents will be selected on the basis of the following criteria:
- o Age – Aged over 13 – in the age groups 13-18,19-24,25-34,35-44, 45 +
- o Gender – Both Males and Females (proportional to population)
- o 1 person only per household is selected

2.1.2 Develop survey questionnaire, with detailed list of questions and translate the questionnaires and survey materials into Laos language

IRL has developed the questionnaires to be used for this study. See Annex III attached for scope & coverage of Respondent & Validation Questionnaires.

2.1.3 Train project staff (interviewers, supervisors, data entry personnel) and undertake the pre-testing of the questionnaires in pilot surveys carrying out respondent interviews and verifications surveys

a) *Survey Mobilisation & Training* – IRL will conduct a project briefing to ensure that the survey objectives, and methodologies and quality standards are fully understood by the research teams, supervisors, data processors etc who are to implement this project. All

staff will undergo specific training and briefing sessions on measurement issues required.

b) *Pilot Interviews* – The content and form of the Respondent & Validation questionnaires will be tested by way of a "pilot" survey using the interviewing team to conduct face-to-face interviews with at least 20 randomly chosen subjects. This pilot survey ensures that the final questionnaires used in the actual survey will be as accurate and efficient as possible.

c) *GPS Training* – the interviewers and supervisors will be trained in semi-rural areas around Vientiane over three days Mon 27th March – Wed 29th March. The training will be lead by 1 international GPS specialist and 1 international survey specialist and will be supported by local GPS specialists. Training will involve a combination of workshop-style presentation and discussion and as well as the practical element of pilot interviews to ensure that all interviewers are able to operate the GPS' efficiently and are able to gather the required data. Supervisors will be given additional technical training so that they are able to conduct GPS specific QA checks on the data and data downloading of GPS's data. The training schedule and contents is outlined below.

	Day 1	Day 2	Day 3
Morning	• Project background, objectives • Explain survey forms and Methodologies • Discussion	• View & Record GPS data • Maintenance, backup of GPS • Discussion	• Discuss pilot results • Supervisors training on GPS data download, Survey QA
	Lunch break	**Lunch break**	**Lunch break**
Afternoon	• Introduction to GPS • Lecture on operation • Practice GPS operation	• Conduct Pilot interviews in field (local area)	• Fine-tune procedures • Final instruction of survey procedure and review of GPS usage procedures

2.2 Survey Implementation Stage

2.2.1 Fieldwork supervision and Quality Control during fieldwork and data collection

a) *Permissions* – IRL will co-ordinate with commune/village chiefs to help facilitate the survey implementation, IRL requests that SEACAP arrange a letter of support (explaining the project in brief) to IRL so that is can be used to help this process.

b) *Survey Content & Scope* - Randomly selected respondent from a household will complete both the "main" interview as well as a validation survey in order to complete all information requirements of the study. Only when respondents complete both survey elements will the survey be considered as successful and it's data used in analysis & reporting. Details of each survey element are shown below:

- o <u>Time & Distance Respondent Survey</u> – in information scope will include a list of facilities for which time & distance will be measured are those typically used by the populations and are also the focus of most development projects. These are
  - ➢ School
  - ➢ Health Center (usual one they attend)
  - ➢ Market (usual one they attend)
  - ➢ Water source (non-backyard (usual one they attend)
  - ➢ Rice cultivation area
  - ➢ Administration office (usual one they attend)

- o The facilities / locations places they go to will be "regular" places of travel which is defined as a facility they travel to at least once per month as it is assumed that responses will be more reliable the more frequently they travel to those locations. The exception to this will be Administrative Offices as frequency of visit is likely to be less regular than for other facilities listed above.
- o In the case of gathering time & distance data for travel to schools, either the child or the parent who regularly accompanying the child to school may respond.
- o Distance will be estimated in 'kilometres' to nearest 100metres
- o Time will be estimated in hours & minutes to the nearest 5 minutes;
- o Frequency of travel to each facility [x times per day, week, month].
- o Forms of transport used to go to each facility and the main form of transport used to travel to each facility (walking, cycle, motorbike, Tuk Tuk, Boat, Ox Cart etc..]

- o <u>Verification Survey</u> - the actual time and distance will be measured by interviewers accompanying the respondent using GPS units to measure the

actual time and distance for travel journeys described in respondent surveys. The verification survey will be implemented using the following principles:

> ➢ Validation Survey conducted on the same day or following day as respondent survey - whatever is most convenient for respondent.
> ➢ GPS measurement of time and distance will be conducted for each of the usual journey mentioned in the respondents survey
> ➢ During the pilot & initial surveys the most common form of transport will be defined for each of the usual journey AND only the most common form of transport used (ie walking, Ox Cart, Rot May Mai etc..) for each of the usual journeys mentioned by respondents will be verified by GPS.
> ➢ GPS verification of time and distance for each journey will be conducted both TO and FROM the destination – as times / distance may vary given certain terrain (ie mountainous travel is likely to be uphill and downhill) in and /or respondents estimates may vary for TO and FROM the facility.

c) Fieldwork Quality Control & Reporting – experienced supervisors traveling with survey teams will manage fieldwork activities and will carry out quality control of the survey results and will work closely with IRL management to monitor the performance of interviewers. The specific roles of the supervisors are to

- o Collect the incoming completed survey forms and conduct 100% check for incomplete, omitted or otherwise erroneous data recording practices.
- o Conduct random post-checking of 30% of completed respondent surveys.
- o Delivery of weekly fieldwork progress reports to IRL for compilation and delivery to Crown Agents each week.

d) Technical GPS Field Support & QC Contingencies – several support and quality control elements will be implemented during the survey to ensure the most efficient data collection processes. The key steps taken will be as follows

- o <u>Data Security</u> - GPS battery life is approximately 12 hours and team will be supplied with enough alkaline batteries to last the survey duration with some to spare. GPS units have internal memory, so no data will be lost if the batteries should go flat during a trip. The operator will simply need to change the batteries and carry on.
- o <u>Data Back Up</u> - The most critical GPS data will also be transcribed to the paper GPS survey form (see Annex III) as the survey is conducted. Data will also be stored in the internal memory of the GPS unit and will also be subjected to the normal data security and backup procedures. Data will be downloaded to project laptops every week or at end of each fieldwork trip which ever is the most frequent. The GPS model in use (eTrex Vista) can store 1,000 points and 10,000 track points. This will be allow up to 500 individual trips to be stored on each unit, which is more than enough for each fieldwork trip.

- o Operation Supervision - Supervisors traveling with the teams will monitor the operation of the GPS units, particularly to ensure that altimeter is calibrating correctly. While the units have automatic calibration, should an error be apparent, a simple manual calibration procedure will be applied. Supervisors will be trained in manual calibration during the three day training course. As if required, technical staff can be contacted by supervisors.

- o Data Quality Control - Supervisors will monitor the GPS data being recorded at the end of each day. A simple checklist will be developed for the equipment and the data in each unit. Each unit is numbered so that the data source can be traced.

e) Data Collation & Analysis – the input and QC processes to be implemented will be:

- o Respondent Survey Database – an SPSS database will be used for data entry and tabulation of the respondent survey. This database will contain several quality controls (logic checks, cross tabulations etc..) and 100% of data will be entered twice for each survey to ensure the most accurate data set possible is provided for analysis & reporting. All data entry for this survey will be centrally input and managed at IRL's Vientiane office by experienced data entry staff.

- o Post-trip GPS Data download & QC - At the end of each fieldwork trip, the GPS units data will be downloaded. Each journey (e.g. house -> health clinic) will be extracted and the distance calculated from the X,Y,Z points making up the journey. The data in the GPS will be more detailed than the paper record and will be used as the primary data source. If for some reason the GPS data did not get recorded, the paper record will be referred to.

- o Data Validation - GPS data transcribed to the paper GPS survey form (see Annex III) will be checked against GPS memory for each journey to ensure that all journeys were recorded and that all required data is present. This would require checking of the following specific QC elements:
  1. Paper
     a. Odometer, altitude at start
     b. Odometer, altitude at end
     c. Odometer, altitude of major terrain breaks
  2. GPS memory
     a. Number of records matches paper records
     b. Start and end of each journey recorded
     c. Track of journey recorded

- o Data Follow Up - Any missing data, whether electronic or paper can be traced to the individual interviewer and corrective instruction given for the remainder of the survey. Note: there are not expected to be many errors in the paper records at this stage, since they are checked by the supervisors in the field.

2.2.2 Project Analysis Report Processes

The reporting elements to be delivered as part of this project are outlined below and the core stages of this reporting will encompass

- o Data Analysis - collate respondent survey data & validation survey data and analyze of the 2 data sets to assess the correlation of time & distance estimates to actual distances measured and the impact of personal characteristics on results.

- o Reporting – 2 main reporting elements will be delivered as follows:
  - Provide a "Project Analysis Report" that is an analysis of survey implementation including lessons learned and methodological recommendations for future time & distance studies
  - Produce a Technical Guidance Note in accordance with requirements of TOR and discussed with Crown Agents.

- o Dissemination Activities – three main activities will be undertaken
  - Translation of all presentations and reports into Lao Language
  - Conduct a half day seminar and deliver a presentation providing an overview of the technical guidance note and surveys key findings
  - Work with project partners to identify a detailed list of appropriate organizations, publications and web-sites where the survey results may be disseminated to a wider audience in Laos.

3. Fieldwork Documentation & Reports

A range of documentation will be used by IRL during this survey to assist in the implement of fieldwork activities and quality control. Details of these documents

1. Daily Contact Sheet

Description

➢ This document is used daily by each interviewers conducting the fieldwork and is checked and signed off on by their supervisor / QC staff to ensure they have completed all details correctly. Thus many copies will need to be printed for use by fieldwork teams and completed contact sheets need are retained by IRL to allow completion of weekly reports.
➢ These documents are used to tabulate summaries to be included in "Summary of Call" Documents – thus are the vital first step to maintaining accurate records of fieldwork progress and will form the basis of detailed incidence calculations.

- It is a summary of all contacts made during a particular day and whether or not they were "successful" or "unsuccessful".
- "Successful" this context means that the contact made resulted in a full interview being conducted. A successful contacts is coded SI in the "result" column on the table.
- For "unsuccessful" contacts the reason why it was unsuccessful is recorded according to the list of codes shown in the "contact results table" – these codes need to be recorded in the "result" column on the table.
- Regardless of success or unsuccessful interview the business name, address, and respondent age, gender & occupation is recorded for all contacts.
- For successful interviews the Qairre # will also be added to the contact sheet for reference

Completion Instructions

- *Survey location*: circle the correct location code
- *Interviewer Name:* write in your name
- *Date:* write in the date of phone arrangements
- *Qairre Number:* write in the questionnaire number
- *Respondent Address:* write in the address of the relevant company
- *Respondent Name:* write in the name of the selected respondent
- *Respondent Profile:* write in the Gender, Age and Position of the selected respondent

III. 2. Fieldwork Report

Description

- This is an overall summary of successful and unsuccessful interviews from contact sheet.
- For unsuccessful contacts the reason why as obtained from Daily Contact Sheets.
- For successful interviews we need profile total successful interviews in each location form information contained in Daily Contact Sheets.
- Successful interviews are profile them in terms of age, gender & occupation and this information is gained from tabulations of Daily Contact Sheets.
- This part of the file needs to be sent on a weekly basis to Client by IRL office.

3. Consistency Check Sheet (Quality Control)

Description

- This document is used firstly to brief interview staff – in conjunction with the actual questionnaire and instructions contain therein - so that they can be come familiar with the flow of the interview
- Also used by Internal QC staff to validate the content of the completed interviews returned to IRL office.

➢ Any errors / inconsistencies are raised with project supervisor/manager to determine steps for resolution.

4. Sampling Maps

Description

➢ Document is produced by IRL office for used by interview staff
➢ This document is used daily by each interview conducting the fieldwork to mark the most precise location possible of the interview location
➢ Also used by QC staff to return to place of interview to validate location and set of responses as required.
➢ Once interview is complete and validated then the interview location is plotted on IRL digital map database and location details (address, company name, contacts etc…) are attached to the points and save d a part of project documents.

5. Sampling Frame

Description

➢ This document is produced by IRL project supervisor / managers
➢ Interviewers are full briefed on the required number of interview types required in a certain location.
➢ Interviewer are allocated a certain quota of interviews for each project – and quota records are maintained for each interviewer by IRL project supervisor / managers

4. General Notes For Fieldwork Staff

Apart from the detailed project & survey questionnaire briefings given to interview team that are several areas of standard IRL instructions given to interviewing teams as outlined below:

General Interviewing Instructions

- o **You will be given an introduction letter from IRL/Client. Present it to the respondents before the interview while you are explaining the survey objectives**
- o **Ask the questions as they are written on the questionnaire.**
- o **Precisely follow the instructions as they are written on the questionnaire. DO NOT read the instructions to the respondents. Instructions are for you.**
- o **Speak slowly and loud enough to be comprehensible.**
- o Hide the questions from the respondents do not put the questionnaire on a table but keep it in your hand. If respondents can see the content of the questionnaire, they will focus on it and not on your questions.

General Interview Reporting

- o All interviewers to use the *Daily Contact Sheets.*
- o All interviewers to report to the field supervisors every day.

General Behavior and Manner Instructions

- o People you are going to interview are senior managers or decision makers. Inappropriate behavior like bringing a pet is absolutely forbidden.
- o Practice good hygiene, comb or brush your hair, and dress appropriately. Even if you know that the company dress is business-casual, dress up anyway. It shows professionalism and respect.
- o Arrive five to ten minutes early for the interview. But don't arrive more than ten minutes early, as it might be inconvenient for your interviewers. Definitely don't be late!
- o Don't bring uninvited guests like pets, children or significant others.
- o Turn off your cell phone and other devices that might interrupt your interview.
- o Don't eat, drink, chew gum or smoke, or even ask if it's okay. But if the respondent offers coffee or other beverages, it's okay to accept.

5. Questionnaire Briefing Document

This section is completed once the survey questionnaire is approved and contains question by question explanations that are used for fieldwork team.

6. Other Background Information

6.1 Additional Information for GPS Units

Hand-held GPS will be the primary means of measuring distance during the survey. The units are light and portable and can be utilized on any means of transport from foot to bicycle to vehicle. Although trip data can be recorded electronically, it will be transcribed to the paper questionnaire for backup. The essential information to be recorded are;

- Distance (read from the unit's odometer)
- Elevation (read at the start and end of each trip and major breaks in the terrain)

The distance reported by the unit is a 2-dimensional distance, so in mountainous terrain the elevation will need to be taken into account to calculate the true distance. The GPS units are fitted with a barometric altimeter which will accurately record changes in elevation for this purpose. The calculation of true distance will be conducted post-survey.

A survey manual will be developed to suit the specific requirements of this project and staff will be trained in the survey procedures. The survey procedure will be tested during the pilot phase and any improvements made before the main survey commences. The manual will be as concise as possible for ease of reference during the main survey. Staff will be familiarized with GPS and be given ample opportunity to practice using them during the training. The manual will be provided in English and Lao language.

Additional data such as average speed can be programmed for display, but requires more operator input. Depending on other demands placed on the survey personnel, we may train them to collect this information or alternatively, certain routes will be sampled to give representative measures of speed by terrain type and mode of transport.

Furthermore, the GPS units have an internal log capable of continuously recording the routes traveled. This information can be mapped is useful for visualizing the spatial aspects of travel. For example, it could be shown on a map whether destinations are clustered or distributed and whether they are separated by natural obstacles such as rivers. The GPS units have a limited memory which means that it is likely that the data would need to be periodically downloaded to a PC. Since this data is useful but not critical to the project, it's utilization will depend on the availability of electricity and computers in the field. The task of downloading data from the GPS units will be the responsibility of the team supervisors.

Garmin GPS eTREX SUMMIT Fact Sheet

Instead of pedometers, it is proposed that hand-held GPS receivers will be used to calculate and measure the variables of time and distance. The primary reasons for this suggested use of instrument are:

The Map Page
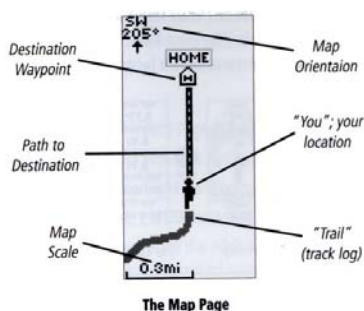
- **Versatility** - Pedometers can only measure journeys traversed by walking; GPS can be used with a moving vehicle – i.e. cart, bicycle, motorbike or car. *Thus can cover all the travel types required by this study.*

- **Modelling Capabilities** – not only can T&D surveys be conducted faster using a hand-held GPS, it is also relatively simple matter once the survey is completed to construct a matrix that determines units of time undertaken for a standard journey length (eg. 100 metres) in different types of terrain <u>and</u> by different means of transportation. GPS measurements of total distance traversed are then used with this matrix to calculate time elapsed – saving time and improving reliability of verification studies. This technique would enables the establishment of different matrices for the different regions / terrain where the surveys would be conducted *and thus addresses a primary aim of the survey to improve the reliability and accuracy of T&D reports.*

Track Log Options

The 'BEGIN' point is the starting point of a saved a track log. 'END' is the last point that was saved. The 'BEGIN-END' pair imply the direction of the saved track. If you want to retrace the track, navigate to 'END'. If you want to track back to the starting point, navigate to 'BEGIN'.


38   **Track Log Elevation Profile**

- **Future Use** - the tracks / travel paths traversed can be simply mapped in both 2D and 3D using handheld GPS. The coordinates of each traversed journey (i.e. 'tracks') can be downloaded and used in any mapping or GIS application – either for purposes of storage, visual display or further analysis. The value of storing such data in a digital environment also means that it can be retrieved at any other future time to perform new analysis on.

- **Accuracy -** The GPS units that are recommended for use in this application are Garmin eTrex Summits. These units have the added feature of containing a barometric altimeter to accurately measure the elevation of terrain traversed. This functionality is useful in that is takes into account the variations and fluctuations of elevation in 3D thus providing even more precise calculations of distance travelled on variable terrain. The standard "Trip Page" displays vital information about travels undertaken such as an odometer for displaying distance traversed, Maximum speed, Average moving speed, Time spent moving, Time spent stopped. *These summary statistics for each journey can be used for answering some of the concerns that this survey seeks to address. Namely, how travel times can be explained by travel distances **and** which measurement, time or distance, is more reliable and relevant.*

- **Additional Data** - A GPS 'track' can also be used for identifying certain types of 'way points', often useful for indicator assessment. For example, if respondents refer to a common event indicator (such as a rest area or tea house) that breaks a journey up, it might be useful to identify where that is in relation to the overall journey.
- **Simplicity** - despite the range of functionality offered in these devices, they remain quite simple and easy to use. The interface of these GPS units are very straightforward to understand and, for the purposes of this survey IRL has experience using such units for other project and the project teams have experience will undergo specific training that addresses the needs of this study. Clear instructions will be supplied the chosen methodology will honour the "KISS" principle.
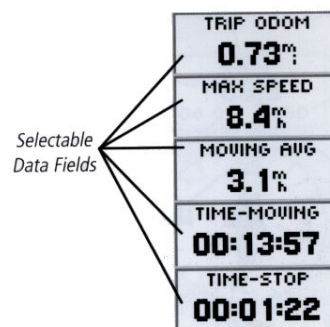
The Trip Computer Page

6.2 Sampling Locations

See Annex I – Sampling Maps

6.3 Project Schedule

See Annex II – Project Schedule

Fieldwork Report

SEACAP 022-002 (LAOS)

Time & Distance Study

Part I
Organization of Fieldwork

1.1 - Fieldwork Team

The fieldwork team was composed of the following staff:

◊ 1 Project Director
◊ 1 Project Manager
◊ 1 Fieldwork Manager
◊ 3 Fieldwork Supervisors (1 for each province)
◊ 15 Interviewers, all were males (5 for each province)
◊ 3 Technical Staff from Technical and Planning Division, Department of Road, MCTPC (1 for each province).

See Annex 1 for a list of all team members.

1.2 - Fieldwork Profile

Training/Briefing

◊ First briefing/training: 3rd – 7th April 2006
◊ Refreshment briefing: 8th – 12th May 2006

Fieldwork was completed in 23 days including mobilization, travel time to survey locations and fieldwork supervision:

◊ Fieldwork starting date: 13th May 2006
◊ Fieldwork completion date: 4th June 2006
◊ Total sample achieved was: 600

Note: the project activities were held on from 9th April to 7th May due to Pi Mai Lao holiday and national assembly election and general congress.

Below is the breakdown of fieldwork duration by survey locations:

Code	Survey locations	Area	N	No. Days*
04	Oudomxay		200	19
	Lah	Rural	100	10
	Hoon	Remote	100	9
09	Xiengkhuang		200	20
	Pek	Rural	100	10
	Nonghed	Remote	100	10
14	Saravane		200	18
	Laognam	Rural	100	9
	Ta Oi	Remote	100	9
TOTAL			600	20

including travelling time

See Annex 2 – Actual Fieldwork Timeline.

1.3 – Sampling

Survey Province Selection - 3 provinces were selected in order to offer coverage of the different terrain conditions of Laos are as follows.

o Saravanh - Mostly flat rural province. Population 287,998, Households 47,575
o Xiengkhuang - Agricultural/hilly terrain. Population 211,479, Households 31,842
o Oudomxay - Mountainous, heavily wooded terrain mostly inhabited by minorities. Population 231,175, Households 36,671

Survey Districts Selection - A total sample of N=600 across all three provinces with N=200 interviews per province and N=100 per district. In order to offer the widest possible range of traveling conditions two different districts in each province were selected. These 2 types of districts was 1 district containing the capital city or nearby the capital and 1 remote district. The profile of districts in each province is as follows:

o Oudomxay (N=200):
  o Lah District - N=100 Nearby Capital - Population 16,229, Households 2,718
  o Hoon District - N=100 Remote – Population 52,470, Households 8,522

o Xiengkhuang (N=200)
  o Pek District – N=100 Capital – Population 63,537, Households10,120
  o Nonghed District – N=100 Remote – Population 35,610, Households 4,978

o Sarahvanh (N=200):

- o Laognam District – N=100 Nearby Capital – Population 48,396, Households 9,307
- o Ta Oi District – N=100 Remote - Population   19,052, Household 2,850

Survey Village Selection - to ensure a comprehensive cover of different travel environments 10 villages were selected in each of the district specified above. Each village was selected on the basis of the following criteria:

- o 2 villages with 5 km far from district center
- o 2 villages with 10 km far from district center
- o 2 villages with 15 km far from district center
- o 2 villages with 20 km far from district center
- o 2 villages with more than 25 km far from district center

The local transportation authorities who know the areas well were involved in village selection process.

Survey Household Selection – 10 households in each village were subject to survey. To select the household a sampling interval of 5 per road segment was applied with interviewers alternating from one side of the road to another. Once the household was located, respondent selection was based on screening criteria (see below).

Survey Respondent Selection - Once the respondent was selected, and passes the screening process, a face-to-face interview was conducted. To ensure that survey results were as representative of the Laos population as possible and to examine the impact of personal characteristics on reported and actual travel times, respondents were selected on the basis of the following criteria:

- o Age – Aged over 13 – in the age groups 13-18,19-24,25-34,35-44, 45 +
- o Gender – Both Males and Females (proportional to population)
- o 1 person only per household was selected

Sampling Frame

Prov Code	Province Name	Population aged 13 to 60				
		Male	%	Female	%	Total
04	Oudomxay	60,792	49%	62,376	51%	123,168
09	Xiengkhuang	47,955	49%	50,414	51%	98,370
14	Saravane	69,926	46%	80,550	54%	150,476

Oudomxay

	Age	Total	Male	Female
1	13 to 18	40	20	20
2	19 to 24	40	20	20
3	25 to 34	40	20	20
4	35 to 44	40	20	20
5	45 to 60	40	20	20
		200	**100**	**100**

Xiengkhuang

	Age	Total	Male	Female
1	13 to 18	40	20	20
2	19 to 24	40	20	20
3	25 to 34	40	20	20
4	35 to 44	40	20	20
5	45 to 60	40	20	20
		200	**100**	**100**

Saravane

	Age	Total	Male	Female
1	13 to 18	40	19	21
2	19 to 24	40	19	21
3	25 to 34	40	19	21
4	35 to 44	40	19	21
5	45 to 60	40	19	21
		200	**95**	**105**

1.4 - Project Implementation Issues

Prior Fieldwork:

◊ The fieldwork was postponed the starting date, due to scheduled timeline was fallen into the Lao New Year and the National Assembly elections.

During Fieldwork:

Liaison with local authorities

Overall, the team received good cooperation with local authorities (village level to district

level) in all survey locations.

◊ There was only a notification problem from district to village which made some village chiefs had misunderstanding that the team will provide a fund after completing interview (this was happened in Oudomxay).

◊ Incentives and per diems were distributed to district authorities and the village chiefs for their assistance.

Communication

◊ Telephone communication was difficult to inaccessible in remote districts, particularly Ta Oi district of Saravane was the most serious area.

Transportation

◊ It was raining season during the time of fieldwork, the road access to target districts particularly remote districts were in bad condition and danger.

◊ Leech also made problem to interviewers and respondents during the verification survey.

Respondents

◊ Respondents' difficulties to express their opinions (lots of answers such as "I do not know", "no idea", etc.) and obliged interviewers to take more time.

◊ Language was also a communication problem that the team faced. To solve this problem, the team had to hire local translator (Lao to local ethnic language) from district or village.

◊ Many respondents felt unhappy as they had to accompany interviewers for GPS the measures and sometimes our survey teams had to pay more money for them.

◊ It was as usual, many respondents expected and requested for fund or infrastructures (road, school, well…) they thought the team were from donors.

Other issues

◊ The time spent to perform GPS measurement was underestimated for 2 main reasons: some places were located far away from village (particularly rice fields); the fieldwork was conducted during the rainy season (difficulties in being connected to the satellite as well as bad road conditions)

Post Fieldwork:

No particular issues

Part II

Quality Control Procedures

◊ No back check control performed as main data were recorded though GPS handsets, which guaranteed accurate results

◊ 100% consistency check on questionnaires

◊ QC standards focus on:

> ➢ Making sure the selection of respondents was correctly done
> ➢ Ensuring correct data collection
> ➢ Ensuring GPS data is correctly recorded.

◊ QC procedures were arranged as follow:

> ➢ Fieldwork Supervisor to observe all his/her interviewers (daily rotation of interviewers to ensure that all interviewers were observed)
> ➢ Fieldwork Supervisor to attend at least one interview in its full duration per interviewer per day
> ➢ Fieldwork Supervisor monitored the GPS data being recorded at the end of each day to ensure all "waypoint" (starting and ending trip points) and "track" (trip routes) were recorded. Interviewers and respondents were asked to conducted GPS verification trip again in case there was no data found in their GPS unit.
> ➢ Fieldwork Supervisor also checked settings and unit memory every day to plan or request technical support/data download when necessary.

Part III
Fieldwork Results

3.1 – Fieldwork Flow

RESEARCH
INDOCHINA

Project: SEACAP
Contacts Summary

	Sample
Oudomxay	200
Xiengkhuang	200
Saravane	200
TOTAL	**600**

Country:	Laos
Report Date:	12-Jun-06

Province	Oudomxay		Xiengkhuang		Saravane		Total	Total
Age group	**Date:** 13 May-02 Jun-2006		**Date:** 13 May-03 Jun-2006		**Date:** 13 May-01 Jun-2006		**Male**	**Female**
	Male	Female	Male	Female	Male	Female		
13-18	20	20	19	21	20	20	59	61
19-24	19	21	18	22	19	21	56	64
25-34	21	19	20	20	19	21	60	60
35-44	21	19	20	20	18	22	59	61
45+	21	19	20	20	20	20	61	59
TotaL: Successful	**102**	**98**	**97**	**103**	**96**	**104**	**295**	**305**
Total Sample size	**200**		**200**		**200**		**600**	

UNSUCCESSFUL INTERVIEWS	Date:	Date:	Date:	Total
Make Appointment	0	0	0	0
Available only at late night	0	0	0	0
Door Locked	0	0	0	0
Nobody answering the interviewing	0	0	0	0
Non-Living Quarter	0	0	0	0
Out of town	0	0	0	0
Partial Interview	0	0	0	0
Have participated in market research	0	0	0	0
Refused	10	15	7	32
Related field	0	0	0	0
No definite time of arrival	0	0	0	0
Wrong Age	75	67	23	165
Wrong Sex	25	28	31	84
Cancelled	0	0	0	0
Total Unsuccessful	**110**	**110**	**61**	**281**
Total successful	**200**	**200**	**200**	**600**
Total Contacts	**310**	**310**	**261**	**881**

3.2 – Quality Control Results

◊ No particular QC problems encountered as the questionnaire was kept short and simple. In addition, GPS handsets greatly reduced potential erroneous practices.

◊ As interviewers were asked to redo GPS verification trip in case any GPS data missing, therefore, all data was recorded properly.

PROJECT: TIME & DISTANCE STUDY – Laos 2006

RESEARCH
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Indochina Research (Laos) Ltd
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Fax: (856-21) 243 571
Vientiane, Laos.

Job No.					LMS025			CH:
	(1)	(2)	(3)	(4)				CO:
Interview No				3 /	/	/		DC:
Interviewer Name								
Interviewer No							⑤	
Date of Interview					/	/ 2006	⑥	

TIME & DISTANCE

Now... I would like to ask about your traveling activities...

Q 1a Do you regularly go to *[READ OUT LOCATION IN ANSWER GRIDj]?* "Regularly" means that at least once per mon

INTERVIEWER: CODE ANSWER IN COLUMN Q1A IN ANSWER GRID

1b What is the name and type of [READ OUT LOCATION IN ANSWER GRID]?

*INTERVIEWER: WRITE DOWN DETAIL OF NAME AND TYPE OF THAT LOCATION
IN COLUMN Q1B IN ANSWER GRID*

1c How many times per week, per month or per year do you go there?

INTERVIEWER: CODE ANSWER IN COLUMN Q1C IN ANSWER GRID

Ask only for locations the respondent goes, code "1" in Q1A.

Q 2a How do you get [READ OUT LOCATION IN ANSWER GRID IN Q1A]? By...? What else?   *(MA possible)*

*INTERVIEWER: CODE ANSWER IN COLUMN Q2A IN ANSWER GRID
ASK Q2B IF RESPONDENT MENTIONED MORE THAN 2 TRANSPORT MODES IN Q2A.
IF ONLY 1 MODE MENTIONED, THEN AUTOMATIC CODE Q2B.*

2b What is the most you use to get [READ OUT LOCATION IN ANSWER GRID IN Q1A]?   *(SA)*

INTERVIEWER: CODE ANSWER IN COLUMN Q2B IN ANSWER GRID

Q 3a What is distance to that [READ OUT LOCATION IN ANSWER GRID IN Q1A]?

INTERVIEWER: WRITE DOWN EXACT NUMBER IN COLUMN Q3A IN ANSWER GRID

3b How long it takes from your house to that [READ OUT LOCATION IN ANSWER GRID IN Q1A] by using
[READ OUT THE MOST USE TRANSPORT MODE IN ANSWER GRID IN Q2B]?
Please tell me the traveling time in this season of the year.

INTERVIEWER: WRITE DOWN EXACT NUMBER IN COLUMN Q3B IN ANSWER GRID

3c Is the time spend different when you come back from that place to your house? By using the same transport mode.
Please tell me the traveling time in this season of the year.

INTERVIEWER: CODE ANSWER IN COLUMN Q3C IN ANSWER GRID

If coded 1 "Yes" in Q3c then ask:

3d How long it takes from that place back to your house? By using the same transport mode.

INTERVIEWER: WRITE DOWN EXACT NUMBER IN COLUMN Q3D IN ANSWER GRID

ASK RESPONDENT TO MAKE ACTUAL TRIPS TO THE PLACES HE/SHE GOES TO WITH
THE MOST USE TRANSPORTATION MODE TO GO TO EACH LOCATION.

INTERVIEW ANSWER GRID

Tick to ask	Location	Q1A Do you go to... regularly?		Q1B Name and type of the place?	Q1C Frequency?			Q2A Transport modes use?	Q2B Use most mode?	Q3A Distance from house?	Q3B Time spend from house?	Q3C Times go and back is different		Q3D Time spend back to house?
		Yes	No		per week	per month	per year	(MA Possible)	(5A)			Yes	No	
☐	1. School	1 (1)	2	(2)			(3)	Walking 1 (4), Bike 2 (5), OX-Cart 3 (6), Motorbike 4 (7), Tuk Tuk 5 (8), Lot E Ten 6 (9), Lot Tork Tork 7 (10), Motorised boat 8 (11), Boat 9 (12), Car 10 (13), Other 11 (14)	(15) ...1 ...2 ...3 ...4 ...5 ...6 ...7 ...8 ...9 ...10 ...11	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	2. Health Center	1 (1)	2	(2)			(3)	Walking 1 (4), Bike 2 (5), OX-Curt 3 (6), Motorbike 4 (7), Tuk Tuk 5 (8), Lot E Ten 6 (9), Lot Tork Tork 7 (10), Motorised boat 8 (11), Boat 9 (12), Car 10 (13), Other 11 (14)	(15) ...1 ...2 ...3 ...4 ...5 ...6 ...7 ...8 ...9 ...10 ...11	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	3. Water Source	1 (1)	2	(2)			(3)	Walking 1 (4), Bike 2 (5), OX-Cart 3 (6), Motorbike 4 (7), Tuk Tuk 5 (8), Lot E Ten 6 (9), Lot Tork Tork 7 (10), Motorised boat 8 (11), Boat 9 (12), Car 10 (13), Other 11 (14)	(15) ...1 ...2 ...3 ...4 ...5 ...6 ...7 ...8 ...9 ...10 ...11	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	4. Administration Office	1 (1)	2	(2)			(3)	Walking 1 (4), Bike 2 (5), OX-Cart 3 (6), Motorbike 4 (7), Tuk Tuk 5 (8), Lot E Ten 6 (9), Lot Tork Tork 7 (10), Motorised boat 8 (11), Boat 9 (12), Car 10 (13), Other 11 (14)	(15) ...1 ...2 ...3 ...4 ...5 ...6 ...7 ...8 ...9 ...10 ...11	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	5. Market	1 (1)	2	(2)			(3)	Walking 1 (4), Bike 2 (5), OX-Cart 3 (6), Motorbike 4 (7), Tuk Tuk 5 (8), Lot E Ten 6 (9), Lot Tork Tork 7 (10), Motorised boat 8 (11), Boat 9 (12), Car 10 (13), Other 11 (14)	(15) ...1 ...2 ...3 ...4 ...5 ...6 ...7 ...8 ...9 ...10 ...11	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	6. Rice Cultivation Place	1 (1)	2	(2)			(3)	Walking 1 (4), Bike 2 (5), OX-Cart 3 (6), Motorbike 4 (7), Tuk Tuk 5 (8), Lot E Ten 6 (9), Lot Tork Tork 7 (10), Motorised boat 8 (11), Boat 9 (12), Car 10 (13), Other 11 (14)	(15) ...1 ...2 ...3 ...4 ...5 ...6 ...7 ...8 ...9 ...10 ...11	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)

INTERVIEW ANSWER GRID

Tick to ask	Location	Q1A Do you go to... regularly?		Q1B Name and type of the place?	Q1C Frequency?			Q2A Transport modes use?	Q2B Use most mode?	Q3A Distance from house?	Q3B Time spend from house?	Q3C Times go and back is different		Q3D Time spend back to house?
		Yes	No		per week	per month	per year	(MA Possible)	(SA)			Yes	No	
☐	1. School	1 (1)	2	(2)			(3)	Walking 1 (4) ...... 1 Bike 2 (5) ...... 2 OX-Cart 3 (6) ...... 3 Motorbike 4 (7) ...... 4 Tuk Tuk 5 (8) ...... 5 Lot E Ten 6 (9) ...... 6 Lot Tork Tork 7 (10) ...... 7 Motorised boat 8 (11) ...... 8 Boat 9 (12) ...... 9 Car 10 (13) ...... 10 Other 11 (14) 11	(15)	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	2. Health Center	1 (1)	2	(2)			(3)	Walking 1 (4) ...... 1 Bike 2 (5) ...... 2 OX-Cart 3 (6) ...... 3 Motorbike 4 (7) ...... 4 Tuk Tuk 5 (8) ...... 5 Lot E Ten 6 (9) ...... 6 Lot Tork Tork 7 (10) ...... 7 Motorised boat 8 (11) ...... 8 Boat 9 (12) ...... 9 Car 10 (13) ...... 10 Other 11 (14) 11	(15)	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	3. Water Source	1 (1)	2	(2)			(3)	Walking 1 (4) ...... 1 Bike 2 (5) ...... 2 OX-Cart 3 (6) ...... 3 Motorbike 4 (7) ...... 4 Tuk Tuk 5 (8) ...... 5 Lot E Ten 6 (9) ...... 6 Lot Tork Tork 7 (10) ...... 7 Motorised boat 8 (11) ...... 8 Boat 9 (12) ...... 9 Car 10 (13) ...... 10 Other 11 (14) 11	(15)	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	4. Administration Office	1 (1)	2	(2)			(3)	Walking 1 (4) ...... 1 Bike 2 (5) ...... 2 OX-Cart 3 (6) ...... 3 Motorbike 4 (7) ...... 4 Tuk Tuk 5 (8) ...... 5 Lot E Ten 6 (9) ...... 6 Lot Tork Tork 7 (10) ...... 7 Motorised boat 8 (11) ...... 8 Boat 9 (12) ...... 9 Car 10 (13) ...... 10 Other 11 (14) 11	(15)	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	5. Market	1 (1)	2	(2)			(3)	Walking 1 (4) ...... 1 Bike 2 (5) ...... 2 OX-Cart 3 (6) ...... 3 Motorbike 4 (7) ...... 4 Tuk Tuk 5 (8) ...... 5 Lot E Ten 6 (9) ...... 6 Lot Tork Tork 7 (10) ...... 7 Motorised boat 8 (11) ...... 8 Boat 9 (12) ...... 9 Car 10 (13) ...... 10 Other 11 (14) 11	(15)	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)
☐	6. Rice Cultivation Place	1 (1)	2	(2)			(3)	Walking 1 (4) ...... 1 Bike 2 (5) ...... 2 OX-Cart 3 (6) ...... 3 Motorbike 4 (7) ...... 4 Tuk Tuk 5 (8) ...... 5 Lot E Ten 6 (9) ...... 6 Lot Tork Tork 7 (10) ...... 7 Motorised boat 8 (11) ...... 8 Boat 9 (12) ...... 9 Car 10 (13) ...... 10 Other 11 (14) 11	(15)	• km (16)	h min (17) (18)	1	2 (19)	h min (20) (21)

ANNEX III III

GPS SURVEY RECORD SHEET

Location	Go to...? (from Q1a) Yes	No	By transport modes? (from Q2b)	GPS Record — to PLACE — From HOME				GPS Record — PLACE to HOME — Back from				Supervisor Check

1. School (Yes 1 / No 2)

(2)

By transport modes? (from Q2b):
- Walking 1
- Bike 2
- OX-Cart 3
- Motorbike 4
- Tuk Tuk 5
- Lot E Ten 6
- Lot Tork Tork 7
- Motorised boat 8
- Boat 9
- Car 10
- Other 11

GPS Record to PLACE — From HOME — GPS Unit ID [ ] (3)

	START	END	TOTAL
Waypoint No.	(4)	(5)	_____
Elevation	(6)	(7)	
Odometer	. (8)	. (9)	.
Time	: (10)	: (11)	:
Time taking break	: (12)	: (13)	:

GPS Record PLACE to HOME — Back from — GPS Unit ID [ ] (14)

	START	END	TOTAL
Waypoint No.	(15)	(16)	_____
Elevation	(17)	(18)	
Odometer	. (19)	. (20)	.
Time	: (21)	: (22)	:
Time taking break	: (23)	: (24)	:

Supervisor Check:
Waypoint no. ....OK
Track on map ....OK
Distance ....OK

2. Health Center (Yes 1 / No 2)

(2)

By transport modes? (from Q2b):
- Walking 1
- Bike 2
- OX-Cart 3
- Motorbike 4
- Tuk Tuk 5
- Lot E Ten 6
- Lot Tork Tork 7
- Motorised boat 8
- Boat 9
- Car 10
- Other 11

GPS Record to PLACE — From HOME — GPS Unit ID [ ] (3)

	START	END	TOTAL
Waypoint No.	(4)	(5)	_____
Elevation	(6)	(7)	
Odometer	. (8)	. (9)	.
Time	: (10)	: (11)	:
Time taking break	: (12)	: (13)	:

GPS Record PLACE to HOME — Back from — GPS Unit ID [ ] (14)

	START	END	TOTAL
Waypoint No.	(15)	(16)	_____
Elevation	(17)	(18)	
Odometer	. (19)	. (20)	.
Time	: (21)	: (22)	:
Time taking break	: (23)	: (24)	:

Supervisor Check:
Waypoint no. ....OK
Track on map ....OK
Distance ....OK

3. Water Source (Yes 1 / No 2)

(2)

By transport modes? (from Q2b):
- Walking 1
- Bike 2
- OX-Cart 3
- Motorbike 4
- Tuk Tuk 5
- Lot E Ten 6
- Lot Tork Tork 7
- Motorised boat 8
- Boat 9
- Car 10
- Other 11

GPS Record to PLACE — From HOME — GPS Unit ID [ ] (3)

	START	END	TOTAL
Waypoint No.	(4)	(5)	_____
Elevation	(6)	(7)	
Odometer	. (8)	. (9)	.
Time	: (10)	: (11)	:
Time taking break	: (12)	: (13)	:

GPS Record PLACE to HOME — Back from — GPS Unit ID [ ] (14)

	START	END	TOTAL
Waypoint No.	(15)	(16)	_____
Elevation	(17)	(18)	
Odometer	. (19)	. (20)	.
Time	: (21)	: (22)	:
Time taking break	: (23)	: (24)	:

Supervisor Check:
Waypoint no. ....OK
Track on map ....OK
Distance ....OK

GPS SURVEY RECORD SHEET

Location	Go to...? (from Q1a)		By transport modes? (from Q2b)	GPS Record to PLACE — From HOME				GPS Record PLACE to HOME — Back from				Supervisor Check
	Yes	No										

4. Administration Office

	Yes	No
	1	2 (1)

By transport modes (from Q2b) (2):
Walking 1, Bike 2, OX-Cart 3, Motorbike 4, Tuk Tuk 5, Lot E Ten 6, Lot Tork Tork 7, Motorised boat 8, Boat 9, Car 10, Other 11

GPS Record to PLACE — From HOME

GPS Unit ID [____] (3)

	START	END	TOTAL
Waypoint No.	(4)	(5)	_____
Elevation	(6)	(7)	
Odometer	. (8)	. (9)	.
Time	: (10)	: (11)	:
Time taking break	: (12)	: (13)	:

GPS Record PLACE to HOME — Back from

GPS Unit ID [____] (14)

	START	END	TOTAL
Waypoint No.	(15)	(16)	_____
Elevation	(17)	(18)	
Odometer	. (19)	. (20)	.
Time	: (21)	: (22)	:
Time taking break	: (23)	: (24)	:

Supervisor Check: Waypoint no. ....OK; Track on map ....OK; Distance ....OK

5. Market

	Yes	No
	1	2 (1)

By transport modes (from Q2b) (2):
Walking 1, Bike 2, OX-Cart 3, Motorbike 4, Tuk Tuk 5, Lot E Ten 6, Lot Tork Tork 7, Motorised boat 8, Boat 9, Car 10, Other 11

GPS Record to PLACE — From HOME

GPS Unit ID [____] (3)

	START	END	TOTAL
Waypoint No.	(4)	(5)	_____
Elevation	(6)	(7)	
Odometer	. (8)	. (9)	.
Time	: (10)	: (11)	:
Time taking break	: (12)	: (13)	:

GPS Record PLACE to HOME — Back from

GPS Unit ID [____] (14)

	START	END	TOTAL
Waypoint No.	(15)	(16)	_____
Elevation	(17)	(18)	
Odometer	. (19)	. (20)	.
Time	: (21)	: (22)	:
Time taking break	: (23)	: (24)	:

Supervisor Check: Waypoint no. ....OK; Track on map ....OK; Distance ....OK

6. Rice Cultivation Place

	Yes	No
	1	2 (1)

By transport modes (from Q2b) (2):
Walking 1, Bike 2, OX-Cart 3, Motorbike 4, Tuk Tuk 5, Lot E Ten 6, Lot Tork Tork 7, Motorised boat 8, Boat 9, Car 10, Other 11

GPS Record to PLACE — From HOME

GPS Unit ID [____] (3)

	START	END	TOTAL
Waypoint No.	(4)	(5)	_____
Elevation	(6)	(7)	
Odometer	. (8)	. (9)	.
Time	: (10)	: (11)	:
Time taking break	: (12)	: (13)	:

GPS Record PLACE to HOME — Back from

GPS Unit ID [____] (14)

	START	END	TOTAL
Waypoint No.	(15)	(16)	_____
Elevation	(17)	(18)	
Odometer	. (19)	. (20)	.
Time	: (21)	: (22)	:
Time taking break	: (23)	: (24)	:

Supervisor Check: Waypoint no. ....OK; Track on map ....OK; Distance ....OK