



EXPERIMENTAL TRAVEL PILOT KALEIDOSCOPE REVIEW FOR POSTAR K/1238

AIM OF PROJECT

To be able to compare and contrast the trip information obtained from using a *GPS* tracking device against the traditional survey method that has been used by Postar in recent years.

OVERALL APPROACH

In order to compare both methods we wanted to recruit a sample of respondents who would complete a travel survey interview in the same way that we have done in the past but, in addition, they would also carry a *GPS* tracking device for the same time frame.

We have traditionally collated information for 'Yesterday' and 'Past 2 week' trips. The bulk of the sample has been 'Yesterday' trips as this has been the only viable way of collating a large sample of accurate trip information in a cost effective manner. If the approach moving forwards will be to use *GPS* tracking devices, then the minimum placement period will realistically be for one week - we would no longer have the same cost issues and also it would be inefficient use of the equipment to only record single day information.

Units were therefore placed for a one week period for this study.

GPS TRACKING DEVICES

Postar were keen to explore how a variety of *GPS* devices perform, which will enable them to see which has the greatest potential. Two types of device were included in this project: one supplied by Longdin & Browning (LABtrac) and the second was a MobiTest device from the Czech Republic. We placed an even number of both types of *GPS* device in each area to ensure that Postar could directly compare the results. If we had only placed one type of device in any particular area we would have run the risk that other factors could create a difference in results. Even if we had matched sample points by type of area/demography there could be external geographic factors that could affect the *GPS* readings in one particular area. By placing both devices in the same points we knew that all of them would be affected in a similar way (as many of the journeys made in any given sample point are likely to be within a similar catchment area).



RESEARCH AREA

To test the *GPS* devices rigorously it made sense to conduct the project in the London area, conducting the majority of interviews in built up urban areas (to test if the *GPS* trackers could cope with the density/height of buildings and also with the classic commuter patterns of using a variety of transport including the underground). We also included some more suburban areas for comparison. In total we included 8 areas in the study:

- Barnet
- Romford
- Lambeth
- Islington
- Kensington & Chelsea
- Ealing
- Twickenham
- Waltham Forest

TARGET NUMBER OF PLACEMENTS

Originally we planned to place each *GPS* unit with a target of approximately 45 - 50 respondents (90-100 respondents in total across the 2 *GPS* devices), with the aim of achieving 30-35 completed interviews per device (so 60-70 in total).

Given that the nature of the research was experimental, no rigorous quotas were set on demographics but we ensured that the profiles of respondents who were given each *GPS* device were broadly matched.

METHODOLOGY REVIEW

The initial intention for the pilot was to replicate the recruitment method as far as possible against the previous travel surveys, recruiting respondents in a free-find manner, face-to-face. In practice we found that a free-found sample was impossible to achieve. We had almost universal refusals, even with a high level of incentive (where we increased from £20 to £40 to try to encourage response).

There were several reasons for this

- We were asking people to take on a much greater commitment than in previous travel surveys as we were running a dual method for this survey (*GPS* plus a mapping interview). Respondents didn't want to take the *GPS* and also complete a diary/long recall interview
- In spite of our reassurance that we were not interested in their personal travel patterns, people still felt this was a bit 'Big Brother' - there has recently been a



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lot of media coverage about constant CCTV observation, monitoring via loyalty cards/oyster and GPS tracking for criminals/in relation to road tax

- Some people didn't want to have the hassle of taking/using the GPS units and were a bit nervous of being responsible for them

When we failed to recruit any respondents via this approach we decided to review the methodology.

Given that the primary objective of the study was to see how the 2 methodologies of data collection compared (GPS vs mapping interviews) it was important to ensure that we placed a reasonable number of each GPS unit and conducted a comparable mapping interview.

With this in mind it was decided that we would use a panel to access respondents and secure participation. Panels have been used successfully in other countries and have the major advantage that people have a prior relationship with the market research company. This raises fewer concerns with regard to the nature of this type of research and therefore respondents are receptive to taking part.

Given the timing constraints we didn't have the luxury to "shop around" so we used a panel that we had immediate access to that is primarily used to recruit people for focus groups. In addition, because of our prior relationship, we were able to negotiate a reduced fee.

Potential respondents were screened to ensure that they were eligible and if so, they were invited to take part in the survey. The GPS units were then personally delivered by interviewers. They explained what was required and set up a recall appointment for L&B to conduct the mapping interview and collect the GPS device.

FIELD FEEDBACK

Number of interviews

In total 81 respondents were recruited (39 were given LABtrac units and 42 were given MobiTest). Recall interviews were successfully conducted with 77 respondents (37 LABtrac/40 MobiTest), a response rate of 95%. This was a much better conversion than we would have had on previous travel surveys, using a free-found sample and where only a mapping interview has been completed. This clearly shows one major benefit of a panel approach when combined with an attractive incentive.



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GPS units

We used a total of 13 of each GPS unit in the field and almost all (bar one LABtrac) were returned at the end of the survey. Approximately 6 mains adaptors needed to be replaced during fieldwork, as they were mislaid or damaged by respondents. A visual of the units is shown below (NB The visuals shown are not actual size but the LABtrac is smaller than the MobiTest unit)



Overall respondents thought that both the GPS units were simple to use. That said we had a considerable number of people who experienced some issues. Some general observations about the units are as follows:

- At least a third telephoned with queries about the GPS units during the placement period. These all related to concerns they had about whether the device was working properly or not. They needed confirmation about the lights, the charging process and how to switch the unit on, in spite of having detailed care notes that were left with them. The LABtrac unit generated more queries in this regard:
 - The unit was initially provided with the power button concealed by a label to dissuade respondents from turning it off. In practice they

were doing this inadvertently and it wasn't obvious to them that there was a button that they could use to switch it back on. After several enquiries about this the label was removed so that respondents could clearly see and access the power button

- The LABtrac LEDs also caused confusion as respondents were not always clear what the lights referred to. It wasn't as easy to guide respondents by phone for this unit as there was no visual next to each light and there was a Bluetooth light that was not in use
- In addition the LABtrac unit did not have any sound indicator when it was switched on and off. This meant that it was not possible to hear if the unit was responding when guiding respondents via the telephone
- The most common problem experienced for both units related to re-charging. Respondents were asked to do this every night and just over half claimed that they complied with this. The remainder felt that they did remember on most days though.
- When they did recharge the devices, the units did not always appear to take a charge. On each device there was an LED to indicate that the unit had power and, in addition, the MobiTest power LED blinked when the device was fully charged. For both units, the lights on some did not appear to work even after charging and this was a cause for concern - was the light just failing or was the unit not working at all?
- Both devices also had issues with the practicality of re-charging:
 - For MobiTest they were asked to not force the connector on the power cable too far into the GPS unit as this might cause breakage. We believe that some people may not have pushed the connector in far enough, resulting in the device failing to take a charge.
 - For LABtrac the adaptors supplied had 3 holes and respondents had to plug their 2 pin charger into this. If respondents put the 2 pin plug in horizontally this enabled the unit to re-charge. If they put it in vertically though it didn't work. The accompanying care notes showed an adaptor with only 2 holes, so it was not obvious for respondents that this may be an issue
- On both devices it was possible for respondents to turn the power on and off. For this reason it is feasible that the problems encountered were due to the unit being switched off completely without them realising
- When we asked respondents about the size of the device, almost half felt that the MobiTest unit was too big, compared to only a minority saying this for LABtrac
- Over half of the respondents claimed that they always took the GPS unit with them. The rest claimed to take it with them on most days. There was no difference between the 2 types of device. Interestingly we had one incidence where the recruited respondent gave her GPS to her husband to take out with



him - so we know that her JAD trips will not correspond to her GPS records! It may well be that this is not the only person that did something like this

- When they forgot to take the device it tended to be for either emergency/unexpected journeys where they were rushing out or for very habitual journeys such as dog walking, school runs where they are on auto-pilot
- Both types of GPS units were provided with a ribbon that allowed them to wear the device around their neck. The LABtrac also had a clip so that it could be attached to garments, belts, etc. In practice people carried them in a variety of ways. They were worn around the neck, carried in coat/jacket pockets or in handbags (women) or placed on the dashboard. In addition a few people clipped the LABtrac onto their clothes
- The MobiTest unit had buttons on the front of the device to record the mode of transport and respondents were asked to try to remember to use these. In practice very few actually claimed to do this.

SUGGESTIONS FOR MOVING FORWARDS

Comparing the data

Once the JAD mapping data has been compared to the GPS output it will be possible to see how successful the GPS units could be:

- do they pick up all the journeys that people claim to make?
- are they more or less accurate in the detail of the journey?
- do they pick up more or different journeys that respondents may have forgotten to tell us about?
- can they consistently pick up the satellite signal in all types of area, situations and modes of transport?
- is one device better than the other at picking up the satellite signal?

When Postar are examining the data it may be useful to do this in conjunction with the "soft" information that we collected about respondents' use of the GPS units (compliance, ease of use and re-charging). We have provided this information in an excel spreadsheet with respondents uniquely identified by serial number which matches the JAD and GPS files. *For example, respondent 23 didn't appear to have any data on their GPS records. When this respondent was interviewed they said that they kept forgetting to take out the GPS unit but they certainly claimed to take it on at least some days - so this suggests that they may have had a problem with re-charging, they may have managed to turn the device off altogether or there was a problem with the unit.*



In addition it's worth bearing in mind that there may be some inexplicable differences between the 2 sets of data (GPS vs JAD), which could be due to the GPS device being carried by someone else in the household (we know of at least one occasion where this occurred in the study)

The GPS Devices

If GPS technology is to be used in future travel studies we recommend that the units are as user friendly as possible. We would suggest the following to help achieve this:

- Ideally the units should be capable of being left with the respondents without giving them any training or detailed instructions. They should be able to literally pick them up and walk out of the house with them. We know that respondents did not always refer to the care notes we left them or ask questions, so it is important that the devices be as 'user-proof' as possible
- They should also be small enough for them to carry around easily, and be able to work from a pocket, bag, etc.
- They should have the ability to store data for at least a week
- Ideally the battery should last longer than just one day - this makes the task less onerous for respondents
- The battery indicator should clearly indicate when it does need re-charging, (possibly via an audible beep) and also be able to show when it is actually taking a charge (like a mobile phone does)
- The devices should be able to be plugged straight into the mains when charging - the use of adaptors adds potential problems and is more of a hassle
- The LED lights should be easy to distinguish so that respondents can identify when there is power in the device, that a satellite signal is being received and indicate battery life remaining
- The power button should be set so that it is not easy for respondents to be able to turn the unit off accidentally
- Whilst it is extremely useful to have 'mode of travel' buttons they appear to have a poor compliance of use and it would be far less confusing to remove these and to use the GPS data to establish the most likely form of travel
- Straps/clips were appreciated and used so it would be sensible to include these. A practical type would be a 'snap hook' which would allow the device to be securely fastened to belts/bags/rucksacks, etc without little risk of them becoming detached (a few respondents had problems with the current clips/straps when they fastened them onto bags as they did not stay on securely)



Recruitment

If GPS technology is to be solely used in future studies we recommend that an initial pilot takes place to assess the feasibility of placing the units (as the current study looked at 2 combined methodologies it will be important to understand response to a purely GPS approach). A pilot stage could be used to understand whether recruitment should be done via a panel or if it can be achieved free-find. This would also allow Postar to establish the level of personal contact that is required.

That said, based on the response we observed during this experimental research, we believe that panel recruitment is likely to be the only viable way forward - fears about GPS technology and tracking are only likely to escalate. Although there may be concerns about using a panel the benefits (both cost and practical) are likely to outweigh these:

- You can achieve a better geographical dispersion as you do not need to heavily cluster respondents to facilitate an interviewers work day
- You can analyse the data by a greater number of variables as a wide variety of information is held about each respondent - eg media use/shopping behaviour
- As there is an existing relationship with panel members, not all contact needs to be face-to-face which may result in cost benefits

One of the primary concerns of panels is that respondents are over-researched and become "experts". This is a real issue if you are looking at something like reaction to a new product but we believe that this is not the case for a travel survey, as we are only concerned about their travel movements - not their opinions.

It is important that the decision of which panel to use is made carefully:

- It should be as representative as possible of the population - not only in terms of demographics but also in terms of behaviour. If a panel is recruited via the web for example it will exclude light and non users and be heavily skewed towards heavier technology users. This type of behavioural bias could have an effect on travel patterns so that it is not a reflection of the average consumer
- Many panels do recruit in this way even if they use other contact media too. So it is vital that anyone that is selected for the survey should be screened to ensure that they fit not only demographically but also behaviourally for things that are likely to affect travel patterns such as internet use, holidays etc.