Study Sponsors

Executive Summary

In 2016, RSG conducted the Triangle Travel Survey household travel study (HTS) on behalf of the North Carolina State University Institute for Transportation Research and Education (NCSU-ITRE), in which over 4,000 households participated in a one-day travel diary online or over the phone. The HTS effort was supplemented by a 407-household panel that completed a three-day GPS study using RSG’s smartphone app, rMove™, after completing the one-day diary. The panel results informed trip-level weighting for the HTS data at a low per-household cost relative to traditional GPS-based surveys. Since completion of this study, costs per household have continued to drop given technological and process efficiencies, making a GPS component more attractive for small- and medium-sized agencies.

Methodology

Core Household Travel Study

Households were selected for invitation to the HTS by a random address based sample (ABS) and invited through a series of mailed materials. The invitation materials for the HTS had a pre-assigned weekday travel date (Monday–Friday). One member of the household was asked to provide household-level demographics and travel details in a recruitment survey online or over the phone, and each household member was asked to record their travel during the pre-assigned travel date as soon as the following day, adults in participating households could return online or via telephone to report travel details for themselves and any children in the household.

Smartphone Panel

Invited households consisted of the set of households who fully completed the HTS prior to fielding the smartphone panel and in which all adults owned an eligible Android or Apple smartphone. Assigned travel dates comprised three weekdays starting either on Monday or Wednesday, and were assigned to households with the goal of encompassing the same weekday as their HTS travel date. Participates were invited via email to download the smartphone app, rMove, before their travel period began. (See elsewhere in the poster for details on rMove functionality.)

Data Collection for Small and Medium Planning Agencies

 valu-able and Cost-Effective GPS

Trip distance, duration, purpose type, and trip rate by age group are compared between the household travel study (HTS) and smartphone panel (Smartphone). For both methodologies, results include unweighted data from adults age 18+. HTS data includes data only from households in which every member completed the one-day diary, and smartphone data includes data only from households in which every adult downloaded and interacted with rMove. All highlighted results below are significant with $p < 0.01$.

Benefits of Smartphone Panels

- Convenience sample
- No equipment cost
- Higher participation rates given panel of previous participants
- Multiple days of data
- Demonstrated data completeness advantage
- Very short recall period
- Results can be used for trip rate correction
- Agencies can explore detailed GPS data at lower cost than full GPS study

CONCLUSIONS

The core HTS was a success in achieving the desired sample using tried-and-true methods, while supplemental data from the smartphone panel provided a more accurate depiction of trip rates for the smartphone-owning population without incurring costs of equipment deployment. As front-end data collection and back-end data cleaning technologies and processes improve, smartphone panels such as this will become even more cost-effective in providing high quality trip data with which to weight and correct traditional HTS trip data.