National Capital Region
Transportation Planning Board

TPB Technical Committee
Agenda Item 7
March 3, 2023

MEMORANDUM

TO: TPB Technical Committee

FROM: Ken Joh, Principal Statistical Survey Analyst, TPB Staff
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SUBJECT: MPO Household Travel Survey State of the Practice 2022

DATE: February 22, 2023

The TPB Planning Data and Research Team is conducting a project to consider the approach and methodology for future household travel surveys. As part of this project, between August and October 2022, staff performed online research and conducted interviews to gather information about recent survey efforts and methodologies employed by other federally designated metropolitan planning organizations (MPOs).

This memo is a summary of the information gathered during the interviews.

APPROACH

In preparation for the interviews, staff developed a questionnaire template to be used for the interviews, see Appendix A. The questionnaire included three sections: background on agency and survey work, survey methods under consideration by TPB, and other questions/considerations. In advance of the interviews, TPB staff conducted online research to learn more about each agency, reviewing documents such as the agency's work program and budget. The first part of the interview was designed to obtain a general sense of the agency's recent survey activities and confirm any information that was collected online. During the second part of the interview, participants commented on survey methods under consideration by TPB. During the third part of the interview, TPB staff inquired if they should consider any other survey methods and requested suggestions of other experts to contact. The interviews were jointly conducted by Ken Joh and Nicole McCall via Microsoft Teams and were 45 minutes in length.

For each agency that was interviewed, Table 1 provides the name of the federally designated MPO, the staff interviewed, date of the interview, the date of the most recent household travel survey(s), and if add-on surveys are acquired through the NextGen National Household Travel Survey (NHTS) Program for model development and calibration.

Table 1. Agencies Interviewed

Federally Designated MPO	Contact & Title	Interview Date	Most Recent Household Travel Survey(s)	NextGen National Household Travel Survey Add-On Samples Acquired
Atlanta Regional Commission (ARC)	Guy Rousseau, Transportation Models & Travel Surveys Manager	September 23, 2022	2011	Yes, acquired in 2022
Baltimore Regional Transportation Board at the Baltimore Metropolitan Commission (BMC),	Todd Lang, Director of Transportation Planning Robert Berger, Senior Transportation Planner	September 19, 2022	2018/19	No
Metropolitan Council, Twin Cities (Met Council)	Jonathan Ehrlich, Manager, Travel Modeling and Research Ashley Asmus, Data Scientist	September 29, 2022	2019	No
North Central Texas Council of Governments (NCTCOG)	Arash Mirzaei, Senior Program Manager, Model and Data Development Kathy Yu, Principal Transportation System Modeler, Model and Data Development	October 3, 2022	1996	Plan to acquire in 2024. Previously used NHTS in 2008/09 and a larger sample in 2016/17
Puget Sound Regional Council (PSRC)	Brian Lee, Program Manager – Data Solutions & Research	August 1, 2022	1999, 2006, 2014/5, 2021	No
San Diego Association of Governments (SANDAG)	Grace Miño, Principal Research Analyst	October 3, 2022	2019, 2023 (in progress)	No
Metropolitan Transportation Commission, San Francisco Bay Area (MTC)	Shimon Israel, Senior Planner	October 12, 2022	2012/3, 2018/9 (partial), 2023	No

FINDINGS

A. Agency Background

The staff at the seven MPOs who were interviewed can be divided into three groups: (1) conducting or actively preparing for their next household travel survey; with a more frequent, smaller sample size approach (2) participating in and purchasing add-on samples of the household travel survey through the Next Generation National Household Travel Survey (NextGen NHTS) Add-on Program, managed by the Federal Highway Administration (FHWA); (3) and planning to conduct a large-scale household travel survey once a decade.

The impact of the pandemic on land use and transportation frequently came up in these discussions. Most MPO staff noted that the nature of work has changed, office vacancy rates have increased, brick and mortar retail is evolving and adapting, and transit ridership has declined. Several MPOs paused data collection during the pandemic; others found that data collection performed during the pandemic must be repeated since it may not reflect "normal" or typical regional travel patterns and behavior. Several interview participants wondered if data collected prior to the pandemic remains appropriate to use in a post-pandemic period and, if so, for how long.

Beyond household travel surveys, the MPO staff described other surveys and data collection efforts that compete for staff time and resources at their agency. The following types of surveys were mentioned: commuter, external, transit on-board, air passenger/ground access, regional college/university, workplace, parking, business, residents, commercial vehicle, and special generator (e.g., malls, mixed use). In addition to surveys, these agencies were also preparing to collect other data, such as information on commercial vehicles and trucks, and evaluate potential data sources from vendors.

Agencies conducting or actively preparing for smaller scale and more frequent household travel surveys:

Metropolitan Council (Twin Cities)
Met Council staff began asking if collecting a household travel survey once a decade was sufficient in 2013. Met Council decided it was not sufficient partially due to the high-stakes nature of securing adequate funding for a large once-a-decade project. In 2016 and 2017, it developed a continuous data collection program with three cross-sectional waves every other year from 2019 to 2023. The agency used some lessons learned during the 2019 survey to refine its methodology in 2021 and is now preparing for a new survey in 2023. The agency suspended data collection during the pandemic and opted to conduct a separate COVID-19 survey in 2020 with three waves, one at the height of the pandemic, one during recovery, and one a few months later.

Puget Sound Regional Council
PSRC conducted its last large-scale household travel survey in 2014. It included over 6,000 households and a seven-figure budget. Following the survey, staff began discussing the timing for the next survey. A large light rail expansion plan was implemented, and the region was undergoing rapid growth. Staff also discussed the trade-offs of using smaller sample sizes collected more frequently versus larger sample data that was a decade old. In

2016, the agency transitioned from doing large scale surveys every eight to ten years, to conducting smaller surveys every other year. In addition to its large cross sectional household travel surveys used for model development, PSRC also conducted a longitudinal panel survey in the 1980s and 1990s; a specific part of modeling where the data set was particularly helpful was never identified and the data has been used primarily for academic research.

San Diego Association of Governments
SANDAG conducted its last large-scale household travel survey in 2016. It included 6,200 households and a budget of $2 million. SANDAG found that the data became quickly out of date as new modes emerged such as ride-hail/transportation network companies (TNCs), electric scooters, and neighborhood electric vehicles (NEVs) in beach areas. With its new activity-based transportation model and a desire to make more informed decisions, SANDAG staff wanted its household travel survey to reflect evolving travel behavior and opted to move towards smaller scale and more frequent data collection. They developed a plan to conduct the survey in three cross-sectional waves (2021, 2023, and 2025).

Metropolitan Transportation Commission (San Francisco Bay Area)
MTC coordinated with the California State Department of Transportation (Caltrans) on an oversample for the San Francisco Bay Area during the 2012-2013 California Household Travel Survey. This survey utilized GPS loggers and the data was used for developing the regional travel demand model. It also conducted a partial household travel survey / TNC study in 2018 and 2019 in partnership with SANDAG and the Southern California Association of Governments (SCAG) that was person based and utilized a smartphone app. MTC staff is now overseeing the transition of a once-a-decade travel diary survey to a biennial, cross-sectional approach. Data will be collected every other spring, starting in 2023.

Agencies participating in or acquiring add-on surveys through the NextGen NHTS:

Two agencies (ARC and NCTCOG) intend to obtain add-on samples through the NextGen NHTS Add-On Program in lieu of conducting their own household travel survey. They consider the NextGen NHTS to be a lower cost and higher value alternative that provides alignment with their state department of transportation. These agencies consider acquiring add-on surveys through the NextGen NHTS to be more cost effective and a greater return on investment for two main reasons. First, MPO staff have confidence in the team of experts (FHWA Staff, its consultant, and a Technical Advisory Committee) acquired through the pooled fund effort. Second, because the responsibility of developing the survey instrument and administering the survey is shouldered by FHWA and its consultant, MPO staff capacity is freed up for other surveys and projects. Rather than actively managing a large project, MPO staff from these agencies can simply attend and express their opinions during the Technical Advisory Committee meetings. These agencies also find the NextGen NHTS website user-friendly and that it is easy to extract data.

Atlanta Regional Commission
ARC's last household travel survey was conducted in 2011. In partnership with the Georgia Department of Transportation, the agency is moving forward with NextGen NHTS. It was one of the first agencies to purchase NextGen NHTS add-on data. Factors that led to this decision include pooled fund effort and greater return on investment, the collaboration

opportunity between ARC and GDOT, and the latest travel survey methods and technologies employed by the NextGen NHTS.

North Central Texas Council of Governments
NCTCOG conducted its last household travel survey in 1996 and since then has used NHTS data for model development. The agency acquired NHTS data in 2008/09 and a larger sample in 2016/17. Initially, NCTCOG was not confident in the NextGen NHTS, but NCTCOG has grown to appreciate its transferability, website, and cost effectiveness (low cost per household). The agency actively participates in the NextGen NHTS meetings. It plans to postpone acquiring NextGen NHTS add-on samples until at least 2024 to assure the data reflects travel behavior in a post-pandemic era.

Agencies planning to conduct a large-scale survey once a decade:

Baltimore Metropolitan Commission
BMC conducted the Maryland Statewide Household Travel Survey (Maryland Travel Survey) between April 2018 and May 2019 in coordination with TPB's Regional Travel Survey. Following the survey, the agency also purchased origin-destination cell phone data (LOCUS, from Cambridge Systematics, Inc.) for validation purposes. The agency considered NextGen NHTS data; it believes it may be helpful on the freight side but does not plan to use it to replace a household travel survey. The agency is in conversations with nearby universities, such as the University of Maryland, College Park, about the possibility of taking over some of the work for the next household travel survey. For now, it plans to focus on modal surveys and on-board transit surveys and then conduct another household travel survey in five to seven years.

B. Survey Methods Under Consideration by TPB Staff

The below table summarizes the overall impression of each agency to the survey methods under consideration by TPB staff. These impressions were interpreted by TPB staff based upon comments each agency provided on each survey method.

Table 2. Agency Impression of Survey Methods Under Consideration by TPB Staff

	Atlanta Regional Commission	Baltimore Metropolitan Commission	Metropolitan Council	North Central Texas COG	Puget Sound Regional Council	San Diego Association of Governments	San Francisco Metropolitan Transportation Commission
Smartphone App Based Survey	+	-	+	+/-	+	+	+
More Frequent Travel Surveys (Every 2-3 Years) with Smaller Sample Sizes	+	-	+	-	+	+	+

	Atlanta Regional Commission	Baltimore Metropolitan Commission	Metropolitan Council	North Central Texas COG	Puget Sound Regional Council	San Diego Association of Governments	San Francisco Metropolitan Transportation Commission
Employ a Mixed-Methods Approach Using Both Probability and Non-Probability Based Sampling	+	+/-	+	ND	+/-	+	+/-
Consider a Separate Panel Frame Sampling Survey	+	+/-	+/-	ND	+/-	+	+/-
Include Attitudinal and Stated Preference Questions on the Survey	+/-	-	+/-	-	ND	+/-	-
Incentives	+	-	+	+	+	+	+
+ = Positive reception. Primarily positive comments. +/- = Balanced reception. Negative and positive comments. - = Negative reception. Negative and/or cautionary comments. ND = Not determined or discussed							

1. Smartphone App-Based Survey

Most of those interviewed were in favor of the use of smartphone apps with passive data collection for household travel surveys. Smartphones are continuing to improve market penetration and people are increasingly comfortable with using app-based surveys. In 2021, a smartphone was available in 90 percent of households in the United States (Census Bureau, American Community Survey, 2021: ACS 1-Year Estimates). One of the benefits of this data collection technology is that it captures trips historically underreported by respondents completing travel diaries, in particular shopping and errand trips. Smartphone apps also reduce respondent burden by passively recording trips using global positioning system (GPS) technology.

Several of the individuals we interviewed were actively participating in a demonstration of smartphone apps organized by MTC. MTC is in the process of transitioning to biennial data collection for its household travel survey and conducted the app demonstration to identify a preferred vendor. MTC noted that a range of approaches was used by vendors. Some shortcomings observed during the demonstration included (1) lack of proxy reporting,[1] (2) limited trip purpose categories, and (3) inability to recognize punctuated stops and dwell times. Some relative advantages included (1) attempts to determine mode and name of

[1] Proxy reporting means one person reporting survey information for another person, such as a parent reporting on travel made by a child.

destination, (2) recognition of punctuated stops, and (3) ability to enter escort trips. MTC also noted that the Census American Community Survey asks for smartphone ownership at the household level; this can help with weighting.

Despite the enthusiasm for smartphone app-based surveys, most of those interviewed cautioned against requiring participants to respond with smartphone apps and recommended other response options remain available, like internet-based data collection and telephone. This is particularly important to encourage responses from lower income households, children, and the elderly.

In fact, some participants explained that they have softened the requirements to use these apps. For example, Met Council required a household to use a smartphone for data collection in 2018 if all members of the household used smartphones. Met Council observed an increase in participation among young people, and a decrease in participation from older people. Given that response rates from some groups were so low, they concluded that all feasible response options should be offered and, in 2021, enabled households to opt into whatever data collection option they preferred. Met Council also offered a higher incentive for smartphone app collection and asked them to report trips for multiple days. While PSRC used smartphone data collection in the 2014/15 survey, the agency used an online diary during its most recent survey in 2021. The agency is moving back to smartphone data collection for its next survey.

Additional reservations about smartphone app-based surveys included:

- Effort required by respondents to report trip details; certain applications can be onerous and increase respondent burden
- App performance – some apps capture trips late
- Privacy concerns
    - Children's travel. For privacy reasons, people under 18 are typically not asked to use these apps. While travel with adults is reported, other travel is frequently underreported, such as school field trips and neighborhood trips.
- Bias against populations without smartphone
- Imputation for origin and destination is questionable

Note: In preparation for its 2017/2018 Regional Travel Survey, TPB staff elected to use an online travel diary rather than smartphone app-based data collection based on pretest results. TPB staff were not confident in the technology after they observed problems associated with transit trips in underground sections of the Metrorail subway system. Following the survey, TPB staff conducted an add-on 7-Day Smartphone Panel Survey. TPB staff recently completed a comprehensive review of the data files, including trip logic and consistency checks and review and analysis of user comments. These findings are summarized in a memo and presentation which can be accessed at the following link: https://www.mwcog.org/events/2022/11/18/travel-forecasting-subcommittee/

2. More Frequent Travel Surveys (Every 2-3 Years) with Smaller Sample Sizes

Among the MPOs that were interviewed, about one-half conduct or are in the process of moving to frequent travel surveys: Met Council, PSRC, SANDAG, and MTC.

In the last decade, staff at these MPOs began asking if conducting a household travel survey once a decade was sufficient and decided it was not. Some of the reasons and benefits shared by these staff for adopting a more continuous data collection approach include:

- Shifting away from the high stakes nature of securing adequate funding and using it for a single project. By moving to continuous data collection, a lower amount of funding is needed each year. Additionally, if the expense occurs regularly, Boards grow to anticipate it and understand what it supports.
- In the 1960s, policy makers were comfortable with working with data that was over five years old, but policy makers are now dissatisfied with older data given the emergence of new modes and technologies such as TNCs and micromobility, in addition to global disruptions such as the COVID-19 pandemic. There is an expectation of near-real-time travel behavior data.
- Travel patterns and behavior have become increasingly complex in terms of travel modes, origins and destinations, and frequency of trips. The emphasis on commute work trips has become less relevant today given that the share of non-work trips has increased, combined with increased teleworking which was accelerated by the pandemic.[2] Even without the pandemic, in the last decade there has been far more complexity and evolution in travel trends, and these patterns are expected to remain in the future as well. Continuous data collection enables these travel trends to be captured temporally, shifting focus at different moments in time. It allows for inter-decade changes to transport systems to be captured in the surveys.
- If a significant transportation project is coming up, more frequent data collection eliminates the need to determine whether to perform the survey before or after it is complete.
- Other surveys already adopted this approach, including the Census Bureau's American Community Survey and FHWA's National Household Travel Survey (NHTS). This means that approaches for expanding data collected frequently, or even continuously, already exist that can be further tailored for smaller regional surveys.

Participants acknowledged challenges with frequent data collection, such as determining how to combine data collected over multiple years and how to apply weights that would ensure representativeness. For example, in a period of high inflation, how can income that has been categorically collected be properly combined? Another issue is that with a continuous survey, households may remember taking the survey previously and not want to participate repeatedly. And finally, participants noted the importance of having a plan in place in case funding is not available for data collection in a certain year.

ARC is also in support of frequent data collection and plans to obtain data from the NextGen NHTS for future household travel surveys.

In contrast, BMC, which uses an activity-based travel model, and NCTCOG, which still uses a trip-based travel model, were not in favor of frequent data collection based on the following reasons:

[2] Historically, work trips have been the focus of much transportation planning efforts because work trips tend to be longer than non-work trips, generating a larger share of vehicle miles traveled (VMT), and work trips tend to be more easily served by transit, due to their concentration on downtowns and their concentration within peak periods of travel.

- Preference to use limited budget and resources for other data collection, including modal or on-board travel surveys.
- Opinion that there is an appetite at the federal but not local level for continuous data collection.
- NCTCOG reported that experiments with continuous data collection were conducted in the 1970s, but the issue was that funding is not allocated this way. There is not a mechanism to guarantee sufficient funding for continuous surveys. NCTCOG anticipated that at least a million dollars would be needed each year to support a viable sample.
- Opinion that travel behavior changes slowly; better to wait for things to settle and then perform surveys.
- Opinion that model forecasts should remain valid for the next ten to twenty years. Conceptually, if travel behavior changes frequently, the concept of modeling should change. If not, a different paradigm needs to be applied to modeling.
- The days of staff reviewing, and cleaning survey data are coming to an end at their agency, and they believe the best route may be to buy off-the-shelf data from a vendor such as StreetLight or Google.

The MPOs also described other surveys with frequent data collection. The same approach has been adopted for transit on-board surveys and other special generator surveys. MTC uses a 7-year cycle to collect transit on-board surveys across its region.[3] NCTCOG, which began purchasing NHTS add-ons in the late 2000s, conducts a transit on-board survey every five years; the agency asserted while overall travel behavior change is not fast, this level of change for transit is merited because it is small and nimble.

3. Employ a Mixed-Methods Approach using Both Probability and Non-Probability Based Sampling

Most of the MPO staff that we interviewed shared a common interest in exploring these methods while reporting varied results to date. Nearly everyone interviewed expressed the challenges of maintaining statistical validity in the face of declining response rates, especially from disadvantaged and underrepresented groups such as low-income and minority households. A mixed-methods approach might be one way to be more inclusive and expand the reach for surveys to these groups. There was a general acknowledgement that household travel surveys using a probability-based, address-based sampling method to recruit households have likely reached the limits of efficiency and efficacy, underscoring the need to explore alternative sampling methods such as non-probability convenience and purposive sampling. Due to challenges about representativeness, it is likely that these non-probability approaches will be necessary to fill the gaps. The survey design of the NextGen NHTS includes probability and non-probability sampling approaches.

Various techniques discussed during the interviews included:

- Partnering with community-based organizations (CBO) to obtain input and solicit responses. Overall, MPOs have experienced mixed results depending upon the CBOs' priorities and capacity; some have spent tens of thousands of dollars and only

[3] The San Francisco Bay Area has about 15 transit operators. The metropolitan Washington region has about 25 transit operators.

obtained a few dozen responses or fewer. SANDAG recommended developing a performance incentive for the CBO.

- Interviews, focus groups, or snowball sampling in certain target areas through libraries, apartment buildings, or churches.
- For Transit On-Board Surveys, using apps to reach customers and matching it with automated passenger counter (APC) data.
- Oversampling certain geographic areas with a high proportion of historically underrepresented groups. However, many agencies that tried this indicated that it was not as fruitful as hoped. For example, it can lead to the overrepresentation of white respondents, who happen to live in a majority black neighborhood.
- Social media recruitment. One respondent noted that these methods were recently proposed by a contractor and the MPOs staff found this approach "too fast and loose" because social media postings do not account for statistical representation.

4. Consider a Separate Panel Frame Sampling Survey

This method is an emerging practice in the survey industry and is typically a non-probability-based sampling method that replaces traditional sampling frames with online panels for survey design and administration. These online panels are compiled through various methods of intercept or targeted recruitments, and often have a very large sample pool that is larger than an address-based sample (ABS). Based on recent survey research, curated panels can yield a higher response rate than the ABS method.[4] Traditionally, these types of surveys have been used primarily for market research, but they are beginning to be used for travel surveys. For example, one-half of the households (7,500 households) in the 2022 NextGen NHTS will be recruited using a panel frame sampling method. However, further research is needed to determine whether the sample collected from these surveys are as representative and statistically valid compared with an ABS sample.

Interview participants noted that online panels are increasingly suggested as supplements to surveys and several researchers are evaluating these opportunities. By being able to control sociodemographic characteristics, panel frame surveys can increase the number of responses from certain population groups that are otherwise hard to reach. While panel frame surveys are typically person based, the questionnaire can be designed to involve entire households.

However, there is some controversy about the possibility of collecting this data and then expanding it after to become representative. PSRC warned that mixing sampling protocols and mixing units of analysis can lead to complications with developing weights. After an online panel was conducted during the 2021 survey, PSRC staff found it challenging to develop and apply appropriate weights. They were unable to reconcile the address-based sample that is random at the household level with an online panel. They eventually adopted person-based weights instead. Due to the pandemic, PSRC is not planning to use this data for modeling purposes.

[4] Jenkins, Daniel, Robert Torongo, and Stacey Bricka. NextGen NHTS Technical Advisory Committee Meeting – Core Data Collection Activities Status Update. Presentation delivered to the NextGen NHTS Technical Advisory Committee, July 12, 2022.

Several agencies recommended identifying the number of participants in the panel frame for the MPO region. Some have found the number inadequate for a regional survey.

MTC believes these efforts can provide benefits but should not serve as the foundation of a survey. SANDAG is considering separate panel frame sampling surveys for smaller surveys but not for household travel surveys.

5. Include Attitudinal and Stated Preference Questions with a Travel Diary

Interviewed MPO staff stated that adding attitudinal or stated preference questions to a travel diary can dramatically increase the respondent burden. Most of the individuals who were interviewed aim to simplify surveys; adding these kinds of questions can make surveys more complex. Historically, most household travel surveys have been revealed preference surveys, not stated preference surveys.

NCTCOG commented that overall, attitudinal and stated preference responses can be good to know and provide insight on the quality of life and neighborhoods, but this information is not considered critically important. The agency conducted stated preference surveys in the late 1990s and found they can be too conceptual and not useful if people have not had certain experiences. NCTCOG staff also recalled that years ago, Jim Ryan with the FTA commented that "you can perform stated preference surveys all you want but you cannot calibrate models with stated preference surveys". The agency noted that asking people things they do not know or requesting opinions can increase cost and decrease accuracy; it is better to ask what people did (i.e., revealed preference) and not what they might do (i.e., stated preference).

SANDAG indicated that if these kinds of questions are needed due to politics or a controversy, it would consider including them. SANDAG generally limits these types of questions to smaller survey efforts with topics like parking, border crossing infrastructure, and road user charge surveys.

While Met Council includes a couple of attitudinal/stated preference questions in each survey, the staff acknowledged that household travel surveys tend to be burdensome to begin with, so these questions should be limited.

MTC has included attitudinal and stated preference questions in the past but not frequently.

Overall, the sentiment by those interviewed is that the amount of data gathered must be balanced with fatigue for respondents, and that including attitudinal and stated preference questions in a travel diary would increase the burden for respondents.

6. Incentives

With the exception of one MPO, the staff we interviewed found incentives to be essential to the success of surveys. They also acknowledged that incentives can be challenging, even a nightmare to administer. One MPO noted that federal planning funds can be used for survey incentives, but it is best for consultants to deal with them. Another MPO was told that federal funds cannot be used for survey incentives. BMC staff wondered if respondents' hearts are

in the right place if they take a survey for the money or incentive. There was also general agreement that incentives are helpful but determining how much and what to offer leads to another set of research questions.

Various techniques and suggestions included:

- Targeted/differential incentives
  - Higher incentives to lower income, large households, transit dependent
  - PSRC explored offering geographically focused differential incentives. While additional participation was attained from the targeted area, it was not always from members from the demographic group they were trying to reach.
- Offering lower/limited enrollment incentives followed with incentives at completion
  - Potentially determining the incentive offered based upon information shared during recruitment survey
- Raffles can be effective and generally do not cost a lot to administer

C. OTHER COMMENTS AND SUGGESTIONS

At the end of each interview, TPB staff asked a series of questions to learn if there might be anything they missed that the participants may be willing to bring up. Questions included:

- What other methods do you suggest considering?
- What have we not inquired about that you think we should be considering?
- Who else do you think we should reach out to?

Below are bullets outlining what the interview participants shared:

- Management, coordination, and resources
  - Work closely with the team that runs the regional travel model (and land use model, if applicable).
  - Consider the project manager perspective and behind the scenes issues.
  - Staff capacity – balancing it with frequency of data collection.
  - No firm/hard answers, depends on your agency and what you are trying to get out of a survey.
  - Don't go with something just because someone else is doing it.
- Survey approach and design
  - Focus on hard-to-reach population groups.
  - Consider modifying sampling frame from household based to person based. Some data granularities are hard to follow at the household level and obtaining participation at the household level is challenging.
    - Met Council changed criteria for households – from households to families – roommates / au pairs are not required to participate for a response to be considered complete. It is hard for them to know if the flexibility led to more participation. Participation rates did not decrease as much as expected.
    - MTC also wondered if the sampling frame can be person rather than household-based.

    - Explore mixed methods with qualitative research methods. Qualitative research can offer insight on how to structure questions and answers.
        - In 2021, Met Council conducted a survey with a question on barriers to transportation. They found that many people choose 'other'. Staff concluded that the response options provided in the survey were not correct and it is necessary to talk to people in open-ended ways for this question.
- Post processing – Consider quality control methods, data imputation techniques
- Evaluate other data sources - consider data aggregators, big data, data fusion
    - SANDAG is in contract with several big data providers and finds it timely and updated frequently.
    - PSRC staff are developing a research-needs statement for big data.

Speak with: Rebekah Straub with Ohio Department of Transportation, Stacey Bricka with MacroSys, Joe Castiglione with San Francisco County Transportation Authority, Shimon Israel with MTC (interviewed for this project), Chris Johnson at Oregon Metro (Portland), Brian Lee with PSRC (interviewed for this project), Vladimir Livshits with Maricopa Association of Governments, Eric Miller with the University of Toronto, and Ramond Robinson with Bureau of Transportation Statistics.

NEXT STEPS

1. Share initial findings with TPB members and seek input.
2. Share findings with the MPOs who participated in the interviews.
3. Consolidate input from key internal and external stakeholders and draft memo with recommendations for future household travel survey.

Appendix A. Survey Planning Questionnaire

Household Travel Survey
State of the Practice
Interview Template

Name and Agency:

Agency Specific Questions:

Question	Notes
What surveys are currently underway or coming up?	
When was your last Household Travel Survey?	

Survey Methods Under Consideration by TPB:

We are examining the following methods, what input can you share?

Method	Notes
Smartphone App Based Survey	
More Frequent Travel Surveys (Every 2-3 Years) with Smaller Sample Sizes	
Employ a Mixed-Methods Approach Using Both Probability and Non-Probability Based Sampling	
Consider a Separate Panel Frame Sampling Survey.	
Include Attitudinal and Stated Preference Questions on the Survey	
Incentives	

Other Questions:

Question	Notes
What other methods do you suggest considering?	
What have we not inquired about that you think we should be considering?	
Who else do you think we should reach out to?	

General Notes