Advancing Household Travel Surveys

Innovations in Survey Instruments, Recruitment, and Big Data Integration

presented to

2025 Modeling Mobility Conference

presented by

Cambridge Systematics, Inc.

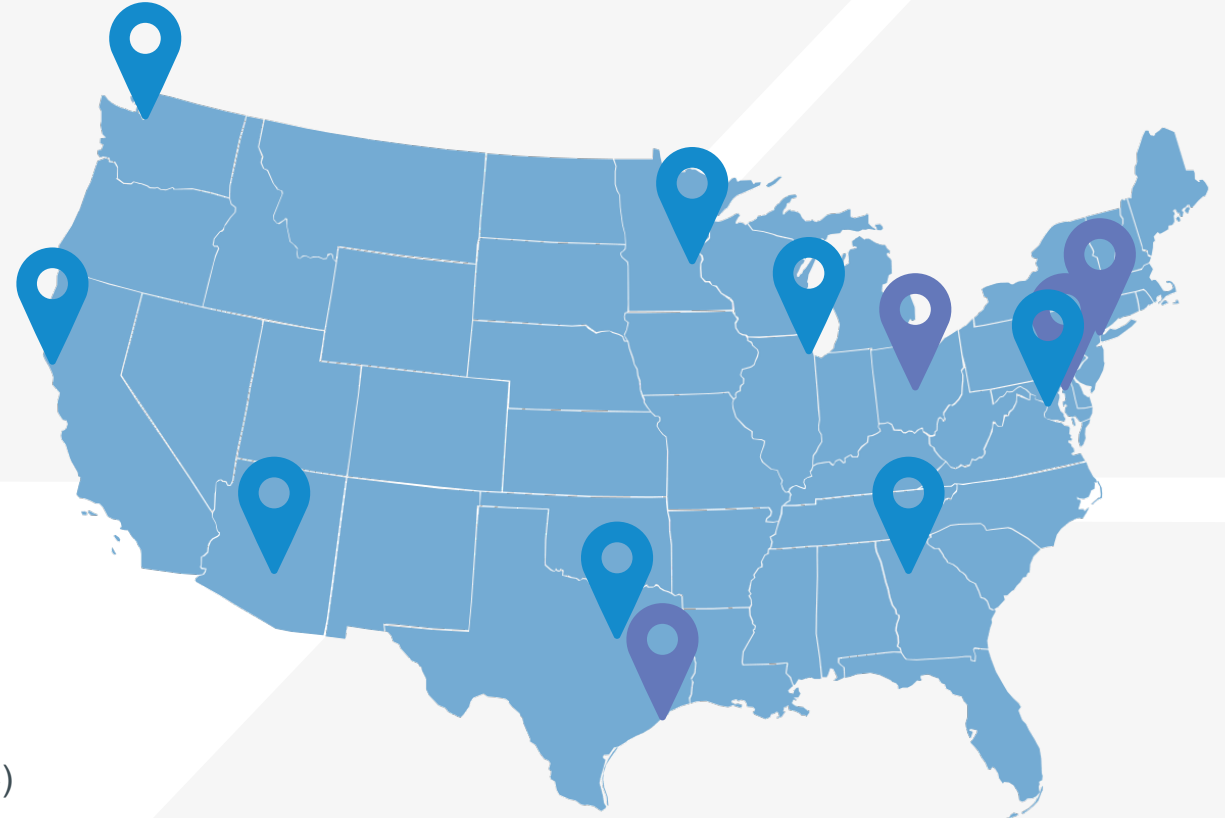*Kate Dannemiller*

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Background and Agenda

➤ In 2024, CS conducted research for the **Delaware Valley Regional Planning Commission (DVRPC)**, the Philadelphia region MPO.

➤ Interviews held with U.S. agencies that conducted **large Household Travel Surveys since ~2017**.

➤ Ongoing wave of **post-COVID Household Travel Surveys**.

➤ Today's Agenda:
  » Survey Instruments & Technology used for Data Collection
  » Methods for Reaching & Recruiting Participants
  » Survey Questions and Responses
  » Role of Big Data in Household Travel Surveys

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

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Peer Agency Interviewed
Agencies Interviewed and Reviewed Across the United States

- ➤ Agencies interviewed:
  - » **Atlanta** Regional Commission (ARC)
  - » **Chicago** Metropolitan Agency for Planning (CMAP)
  - » **Phoenix**: Maricopa Association of Governments (MAG)
  - » **Minneapolis-St. Paul**: Metropolitan Council (Met Council)
  - » **San Francisco Bay Area**: Metropolitan Transportation Commission (MTC) with San Francisco County Transportation Authority (SFCTA)
  - » **Washington, DC**: Metropolitan Washington Council of Governments (MWCOG)
  - » **Dallas-Fort Worth**: North Central Texas Council of Governments (NCTCOG)
  - » **Seattle**: Puget Sound Regional Council (PSRC)
- ➤ Agencies reviewed, as well:
  - » **Baltimore** Metropolitan Council (BMC)
  - » **Houston-Galveston** Area Council (HGAC)
  - » **New York** Metropolitan Transportation Council (NYMTC)
  - » **Ohio** Department of Transportation (ODOT)

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Data Collection Methodologies

Online Surveys, Phone Interviews, Paper Surveys and GPS-Enabled Applications

Methodology	Notes and Discussion
Online Surveys	Used universally across all reviewed surveys.
	Benefits: Response tracking and auto-fill of prior info.
Phone Interviews	Supplemental, often for specific needs (e.g., less common languages).
Paper Surveys	Largely retired (formerly large mailed booklets).
GPS-Enabled Applications	40–75% of responses in identified surveys.
	Advantages: Higher trip counts, lower burden, background location tracking, and trip validation prompts.
	Challenges: Imperfect trip detection, joint travel identification, privacy concerns, and OS updates.
	Incentives and opt-out options vary by agency.
	Children not tracked → adults must report their trips.

Reaching the Population

Sampling and Recruitment Methods

- **Primary Methods**
  - » Address-Based Sampling – Standard, random from address databases.
  - » Convenience Sampling – Using existing lists.
  - » Social Media – Promoted survey links.

- **Other Methods (limited use)**
  - » Random Digit Dialing – Rarely used.
  - » In-Person Recruitment – Attempted but not effective.

- **Importance of Trust**
  - » Build trust between respondents & survey developers.
  - » Partner with community orgs, schools, and trusted groups.
  - » Enhance trust through:
    - Outreach & advertising.
    - Local recognition (e.g., surveys must feel relevant to residents' area).

More on Recruitment

Incentives and Targeting

- **Incentives**
  - » Universal and essential.
  - » **Higher Incentives**: Larger households, harder-to-reach groups, and app-based responses.
  - » **Cost is justified** by increased response rates.

- **Targeting Approaches**
  - » **Geographic Targeting**: Use tract/block group data.
  - » **Convenience Sampling**: Toll pass, transit users, schools, and community programs:
    - ▪ Incentives via schools can be **donations** rather than cash.

- **Hard-to-Reach Groups**
  - » Minority populations (Hispanic/Latino, African-American/Black),
  - » Lower-income households,
  - » Younger adults, and
  - » Older adults (when tech barriers exist).

- **Challenges**
  - » **Privacy Concerns** with government data collection.
  - » Limits of **Geographic Targeting**.
  - » Need for **Varied Tech-Based Interactions** (phone, text, apps).

Questions and Responses
Balancing Standardization with Emerging Topics

➤ Core Content
- » Universal questions regarding **Demographics and Trip Data**.
- » Some efforts toward **Inter-Region Comparability** or standardization.

➤ Evolving Topics
- » **Work-From-Home** and **Telecommuting**
  - ▪ More prominent now than 5–10 years ago.
  - ▪ Variety in phrasing → challenges for standardization.
- » Other Emerging Areas: **Broadband Availability**, **Package and Food Deliveries**, and **Home Services**.

➤ Region-Specific Questions
- » **Tailored** to local projects, tolls, or transit facilities.

➤ Survey Periods
- » Traditionally: **Single-Day Surveys**.
- » Now: **Multi-Day Surveys** are possible with GPS apps (verification on Day 1, continued tracking).

➤ Multi-Year Surveys
- » **Smaller Samples**, conducted **More Frequently** (e.g., Met Council).
- » Challenge: Data not fused across years → **Independent Datasets**.

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Big Data in Household Travel Surveys

Current Use, Potential Applications, and Future Outlook

➤ **Current Use**
- » Applied in **Sample Planning**.
- » **Long-Distance** travel data (often missing in Spiring/Fall, weekday-focused surveys)**.**

➤ **Potential Applications**
- » Fill gaps for **Interim Year Travel** (between decennial or 2-10- year surveys).
- » Provide **Seasonal Trend Insights** (longitudinal vs. short survey snapshots).
- » Supplementary/complimentary data for **Modeling**.

➤ **Future Outlook**
- » Today, **Integration** with HTS is **Still Limited**.
- » Strong **Potential** for **Expanded Use Cases** in the future.

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Thank You for Your Time

Please reach out with additional questions or queries.

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