Overview of the Program

Travel surveys were first conducted in Texas in the 1950s and 60s. A comprehensive approach to collecting data to support urban transportation models began in 2000 with the creation of TxDOT’s Travel Survey Program. Key features of the program include:

Who? TxDOT in partnership with the Texas A&M Transportation Institute (TTI)
What? Household, Work Place, Commercial Vehicle, and External Station Surveys (coordinated with urban counts/model updates)
When? Cyclical basis, about once every 10 years
Where? 25 Texas MPOs, 14 travel regions (see Texas Travel Survey Regions map)
Why? Ensures availability of data for every MPO

Bidding & Procurement

TxDOT’s Travel Surveys are procured through a process whereby detailed specifications are used by data collection firms and consultants to bid on projects. The ‘specs’ include general requirements that are applicable to all areas, but tailored to meet the unique needs and survey requirements of each study area. TxDOT uses the bidding process in its ongoing survey program due to the following:

Advantages
- Cost effective
- Expedites procurement
- Clearly defines data collection requirements
- Field work and analysis segregated
- Independent data review
- Coordination with modelers
- Coordination with MPOs
- Provides technical expertise to smaller MPOs and TxDOT

Surveys: Types, Methods & Uses

There are typically three types of surveys performed in a given area to obtain data needed for transportation planning and travel demand modeling.

Household Survey
- Address based sample that includes cell phones
- CATI with 10% GPS
- 2 or 3-way stratifications using
  - Household size
  - Household income
  - Number of household members employed
- 2,000-6,000 households per region

Key Modeling Data:
- Trip production rates by trip purpose
- Trip length frequency distributions

Work Place Survey
- Sample stratified by establishment type (full or partial), employment sector, and (sometimes) area type
- Includes surveys of visitors and employees, and counts of persons or vehicles
- Special generators pre-selected

Key Modeling Data:
- Trip attraction rates by trip purpose
- Estimates of non-resident travel
- Commercial vehicle trip rates

Commercial Vehicle Survey
- Sample stratified by ‘cargo’ and ‘service’ vehicles
- Drivers complete 1-day diary of trips/stops

Key Modeling Data:
- Estimates of internal CV trips
- CV trip length frequency distributions
- Cargo/transport data

Emerging Technologies

New technologies and methodologies are presenting ways to improve the efficiency of travel survey data collection. Recent innovations include:

Bluetooth
- Wireless means of exchanging data over short distances
- Often embedded in phones and in-vehicle navigation units
- Unique device identifiers can be anonymously detected
- Commonly used in developing travel time/speed estimates
- Recent use by TxDOT/TTI for external O&D data collection

Challenges:
- Inability to determine residency; can use to develop E-E matrices but not I-E; lack of accompanying demographic data

GPS Data Mining
- Use of 3rd-party data – no equipment deployments
- O&Ds determined with trip-end algorithms
- Basis for local/through movements and trip tables

Challenges:
- Validation of GPS-derived O&D data; Acquiring, aggregating data from private sources; lack of accompanying demographic data

Cellular Location Data
- Cell tower triangulation (instead of power-intensive GPS) used to estimate location, travel patterns and flows
- Device ‘home’ and ‘work’ locations can be determined
- Provides O&D estimates, population movements

Challenges:
- Less precise positioning data; less frequent ping rates; measures device locations, not necessarily trip ends; lack of accompanying demographic data

Smartphone ‘Tracking ‘Apps’
- GPS tracking and trip/activity logging
- Can be interactive or passive
- Trip times, speeds, lengths, purpose, routes can be collected

Challenges:
- Battery life; privacy; recruitment; bias; potential respondent burden and error with interactive approaches