



# Self-Reported Passenger and Driver Exposure in the National Household Travel Survey



## Self Reported Exposure in the NHTS

- How do the presence and characteristics of passengers affect the risk of being involved in a crash?
- Crash data are available from FARS, NASS, etc.
- Evaluation of crash risk requires measures of exposure (e.g., number of crashes per mile driven)
  - By subject attribute
  - Associated with the behavior of interest
- Where are suitable measures of exposure found?

# Self Reported Exposure in the NHTS

- National Household Travel Survey
  - 2001-2002 (26,000 HHs in national sample + add-ons)
  - 2008-2009 (25,000 HHs in national sample + 125,000 HHs in add-on sample)
  - RDD telephone survey measuring travel conducted by each HH member on a specific, assigned travel day
    - Recruitment call records characteristics of each HH member
    - Travel day interviews records details of each trip made by each HH member
    - All modes of travel
    - All days of week
    - 12 months of year

# Self Reported Exposure in the NHTS

- What are the components of teen travel that must be analyzed to assess risk with passengers ?
- Behaviors of interest
  - Driving a POV - car, light truck, SUV, van (road transport but not transit)
  - With or without passengers
- Attributes of interest
  - Person characteristics
  - Vehicle characteristics
  - Trip characteristics

# Self Reported Exposure in the NHTS

- Attributes available from NHTS (<http://nhts.ornl.gov/>)
  - Role of occupant (driver or passenger)
  - Occupant age and sex for each HH member on trip
  - Number of passengers
  - Relationship of occupants
  - Trip characteristics
    - Mode (POV only mode of interest)
    - Purpose
    - Distance
    - Duration
    - Time of day
    - Vehicle type
  - Data weighted to enable annual, national estimates

# Self Reported Exposure in the NHTS

- Exposure measures useful for various crash risk analyses of driver/passenger combinations
  - Number of people on trip
  - Number of trips by person
  - Vehicle or person miles of travel
  - Vehicle or person hours of travel
- Exposure measures must be computed for each combination of person and trip attributes

# Self Reported Exposure in the NHTS

- Challenges

- Computation of exposure requires thorough understanding of complicated database
- Age and sex of non-household members on each trip is not available – requires imputation to estimate numbers and characteristics of these trips
- Imputation of age and sex is complicated
  - Trips with HH driver and HH passenger(s)
  - Trips with HH driver and non-HH passenger(s)
  - Trips with non-HH driver and HH passenger(s)

# Self Reported Exposure in the NHTS

- Other potential sources of exposure data
  - Other travel surveys (state and regional surveys that measure person and trip attributes of interest)
  - Observational surveys of vehicle presence and occupant characteristics
    - National Occupant Protection Use Survey (NOPUS) is a national probability sample of 2,000 sites. Controlled intersection protocol records age categories of persons by seating position – can estimate number of vehicle trips and miles of travel by occupant age mix. Needs finer grained age groupings to estimate teen exposure.
  - Others?