Welcome Back!

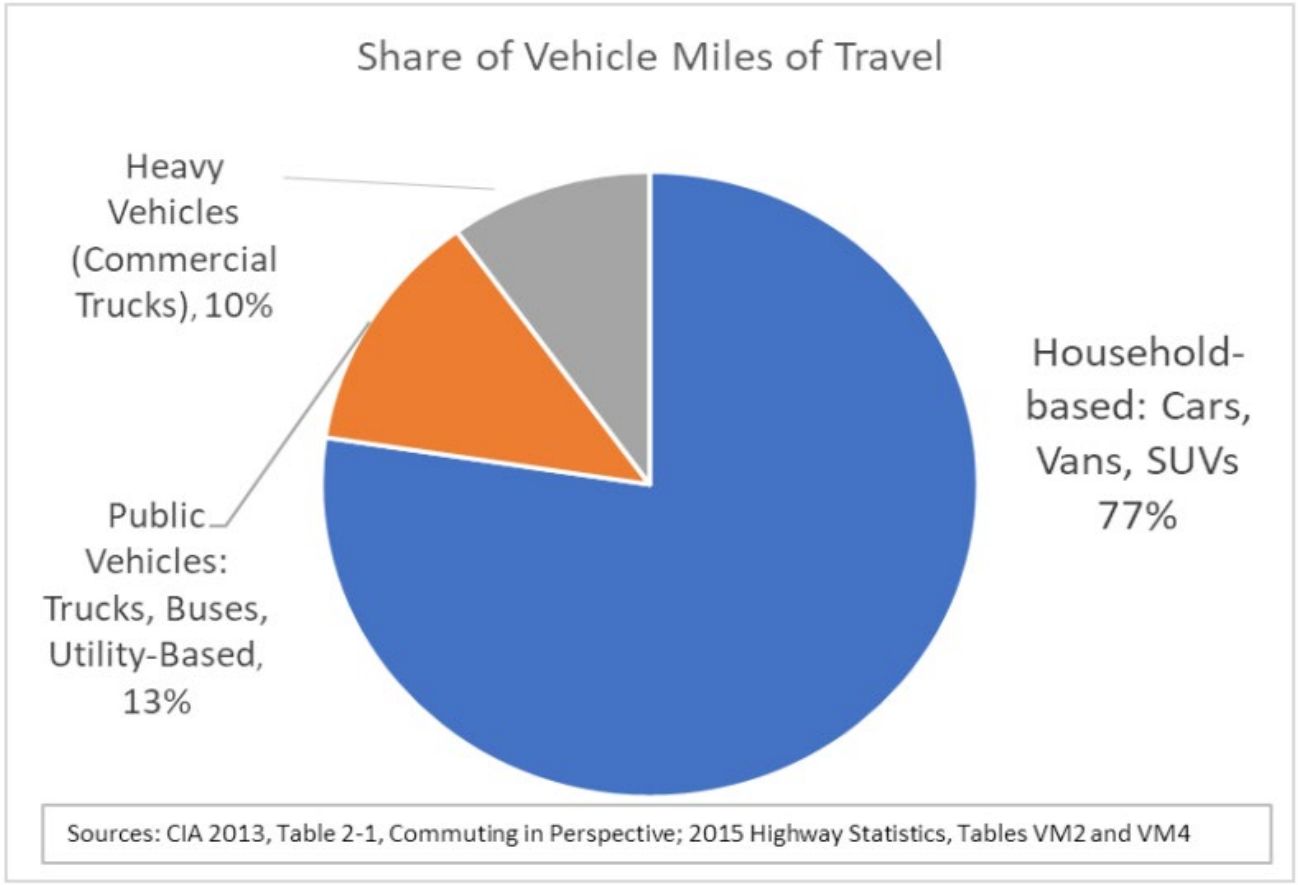
SES 5394: Travel Behavior and Forecasting (Day 13)

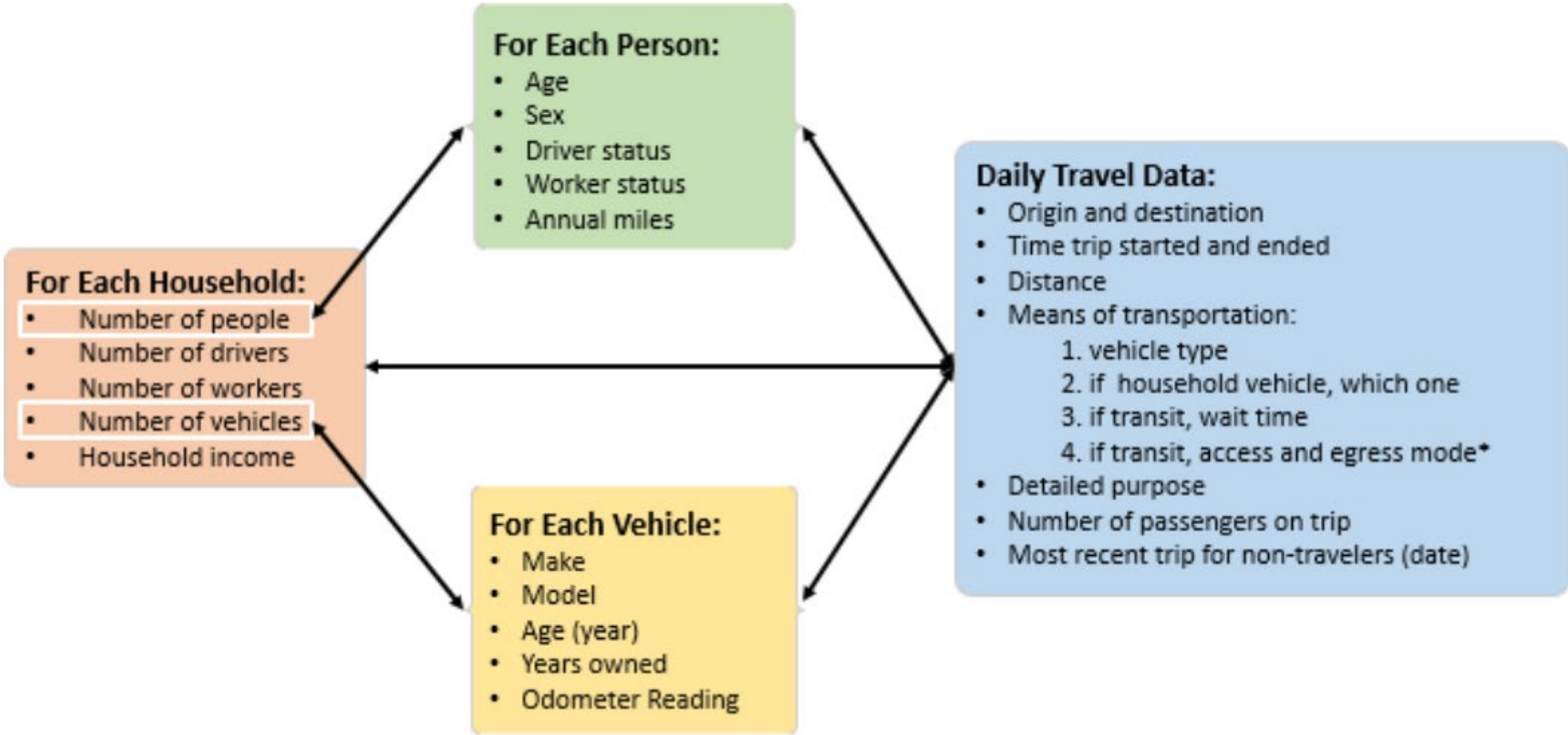
National Household Travel Survey

Background

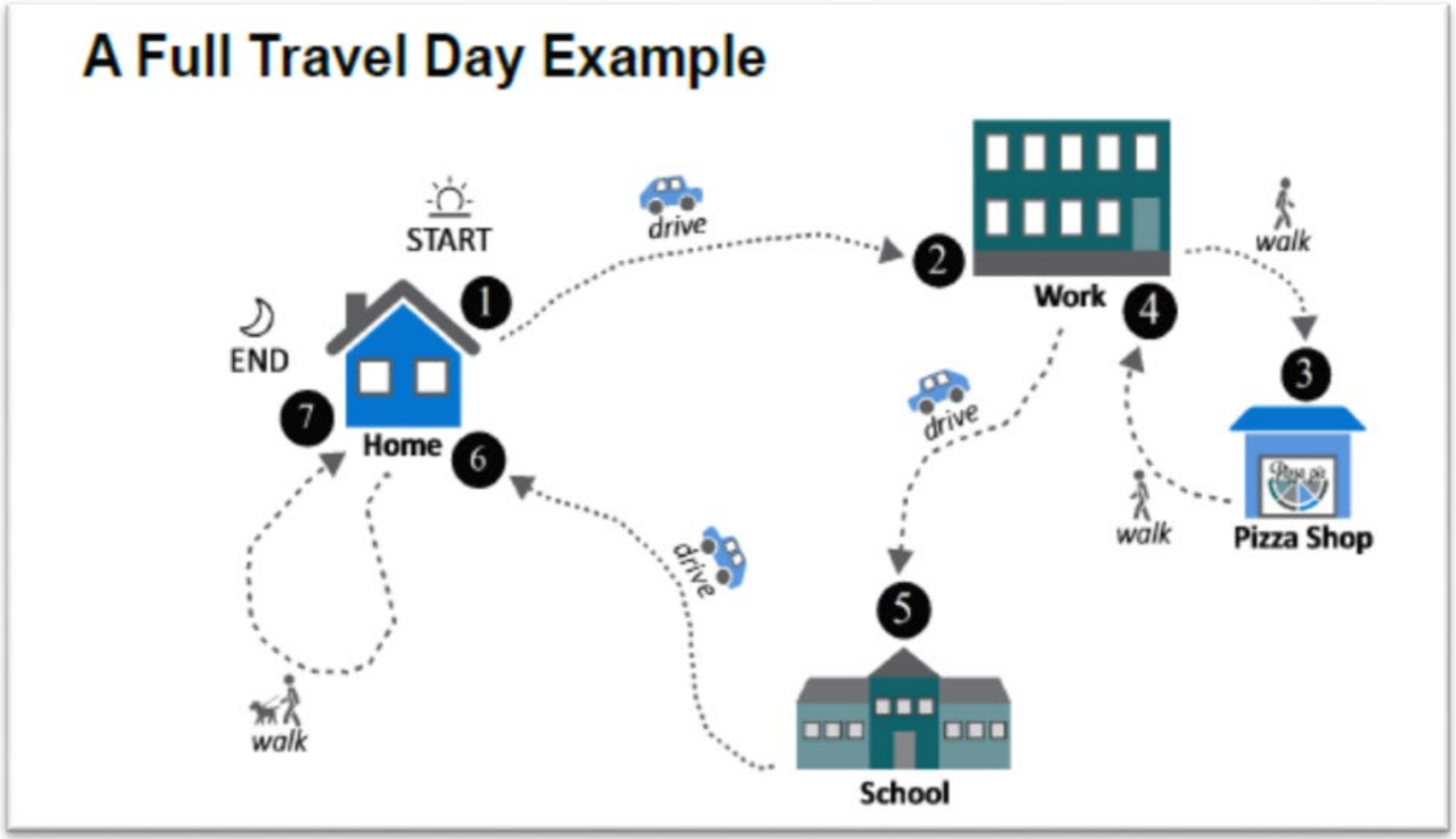
- Sponsored by the Federal Highway Administration
- Additional funding through add-on agencies
- Collected in 1990, 1995, 2001, 2009, and 2017
- 2017: Address-based sampling of households
- Prior years: Random-digit dialing to select households

Household travel




For Each Person:
• Age
• Sex
• Driver status
• Worker status
• Annual miles
For Each Household:
• Number of people
• Number of drivers
• Number of workers
• Number of vehicles
• Household income
Daily Travel Data:
• Origin and destination
• Time trip started and ended
• Distance
• Means of transportation:
1. vehicle type
2. if household vehicle, which one
3. if transit, wait time
4. if transit, access and egress mode*
• Detailed purpose
• Number of passengers on trip
• Most recent trip for non-travelers (date)
For Each Vehicle:
• Make
• Model
• Age (year)
• Years owned
• Odometer Reading

Travel log, followed by phone interview



Estimating and applying a trip production model

From households to zones

Number of household trips

β_0 +
β_1 x car ownership indicator +
β_2 x low income indicator +
β_3 x high income indicator +
β_4 x small family indicator +
β_5 x large family indicator

Number of zone trips

(β_0 +
β_1 x % households with cars +
β_2 x % low income households +
β_3 x % high income households +
β_4 x % small family households +
β_5 x % large family households)
x total number of households

Estimate a separate model for each trip purpose

- HBW
- HBO
- NHB

Applying a trip attraction model

NCHRP 716 Table 4-4

	Number of MPO Models Summarized	Households[a]	School Enrollment[b]	Employment			
				Basic[c]	Retail[d]	Service[e]	Total
All Person Trips							
Home-Based Work							
Model 1	16						1.2
Home-Based Nonwork							
Model 1	2	1.2	1.4	0.2	8.1	1.5	
Model 2	8	2.4	1.1		7.7	0.7	
Model 3	2	0.7		0.7	8.4	3.5	
Nonhome Based							
Model 1	5	0.6		0.5	4.7	1.4	
Model 2	8	1.4			6.9	0.9	
Motorized Person Trips							
Home-Based Work							
Model 1	8						1.2
Home-Based Nonwork							
Model 1	1	0.4	1.1	0.6	4.4	2.5	
Model 3	4	1.0		0.3	5.9	2.3	
Nonhome Based							
Model 1	6	0.6		0.7	2.6	1.0	

Balancing productions and attractions

The need for balancing

- Each trip should have one production and one attraction, so the total number of productions in the region should equal the total number of attractions.
- There's no reason your production and attraction models would produce the same regional totals.
- Trip production models are usually based on better, more recent data than trip attraction models, so we usually take the trip production total as "true" and scale trip attractions proportionately to match.
- Think carefully about the implications of this approach if your alternative "increases employment."