

Travel Demand Forecast Model

Central Corridor Management Committee
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● **Purpose of Travel Demand Forecast Model:**

- Evaluate transportation needs, now and in future.
- Evaluate impacts of changes to transportation system.
- Provide input for designing and sizing transportation projects.
- Provide input for required assessments, such as air quality and FTA's CEI

● Inventory of existing conditions

- Travel Surveys
- Socio-Economic Data
- Networks
 - Highway
 - Transit

● **Travel Behavior Inventory**

- Home Interview Survey
- Transit Survey
- Other

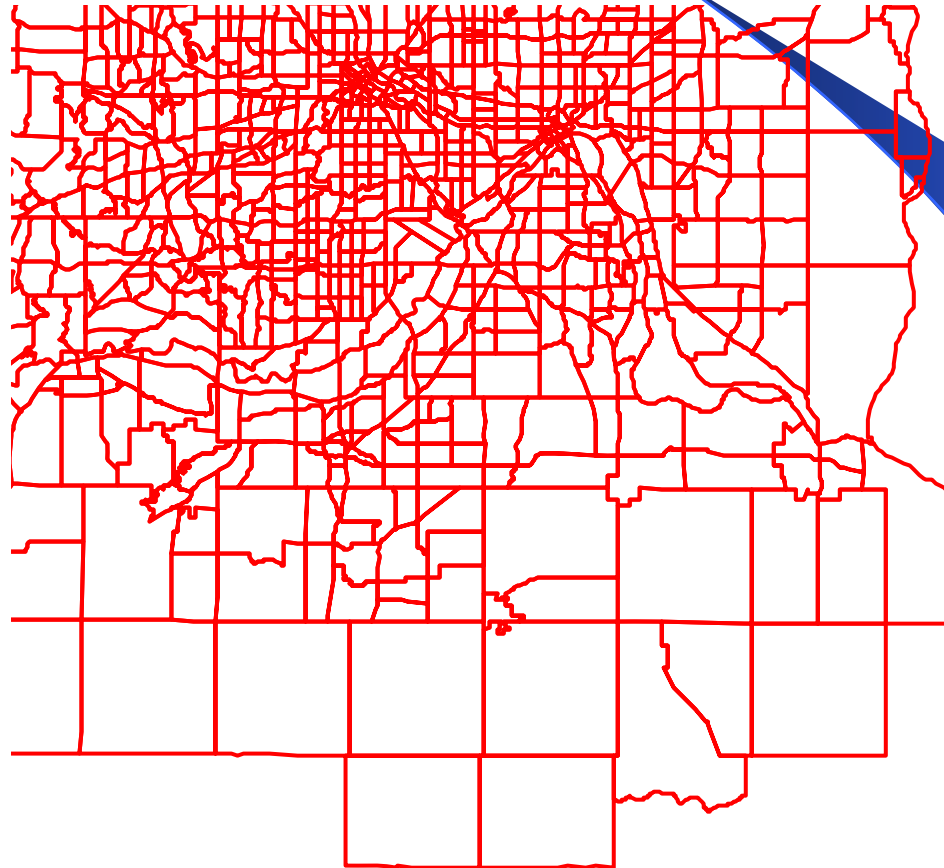
● Home Interview Survey

- Conducted in 2000-2001
- 6,219 Households included in Survey
- Demographic and Socio-Economic characteristics of household and residents
- Daily activity or travel diary
 - Origin-Destination
 - Purpose
 - Mode
 - Time of Day

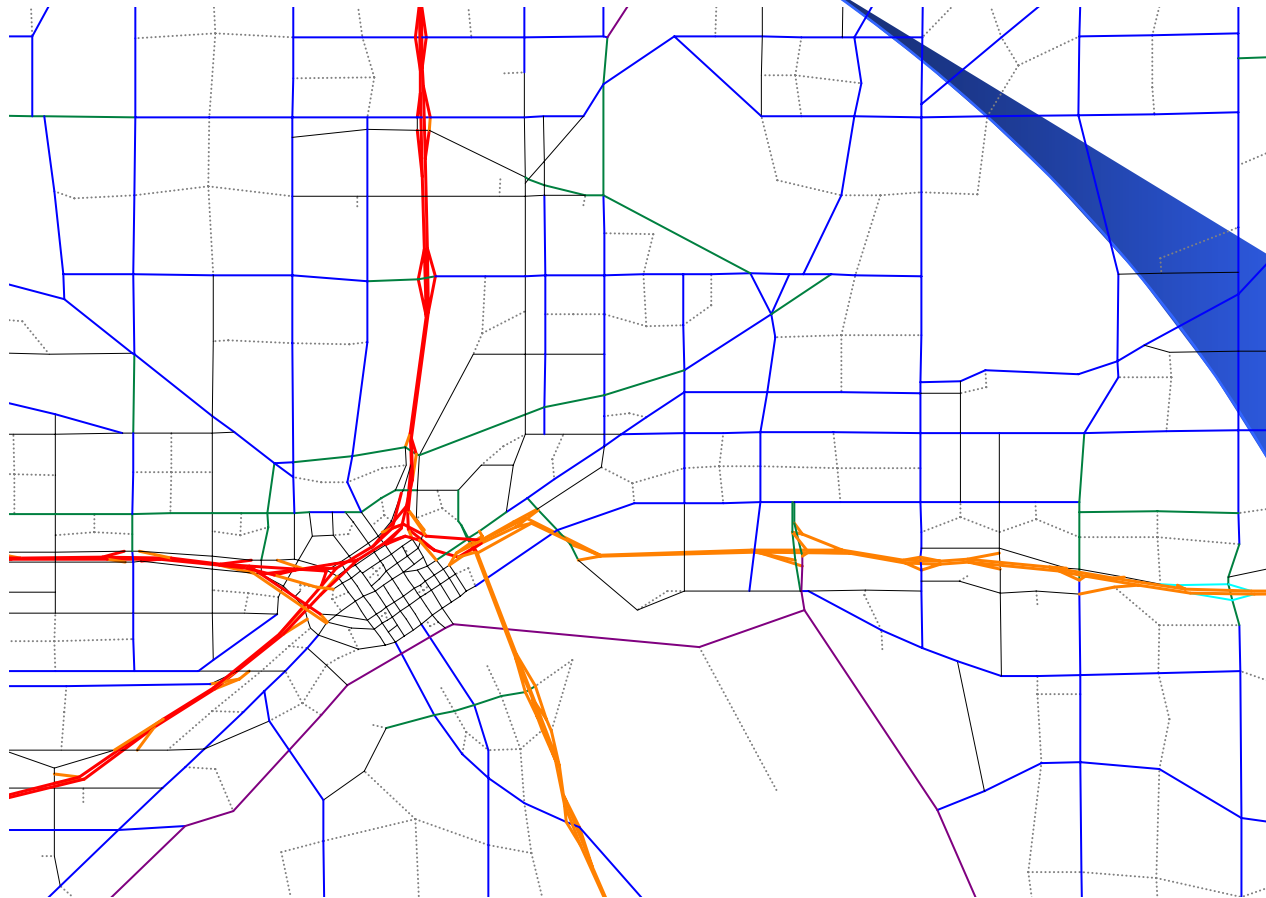
● **Transit On-Board Origin-Destination Survey**

- Conducted in 2005 and early 2006
- Demographic and Socio-Economic characteristics of rider and household
- Information about the transit trip
 - Origin-Destination
 - Purpose
 - Mode of access and egress
 - Transfers
 - Vehicle availability
- Data currently being used to re-calibrate and re-validate the mode choice model

Transportation Analysis Zones (TAZs)



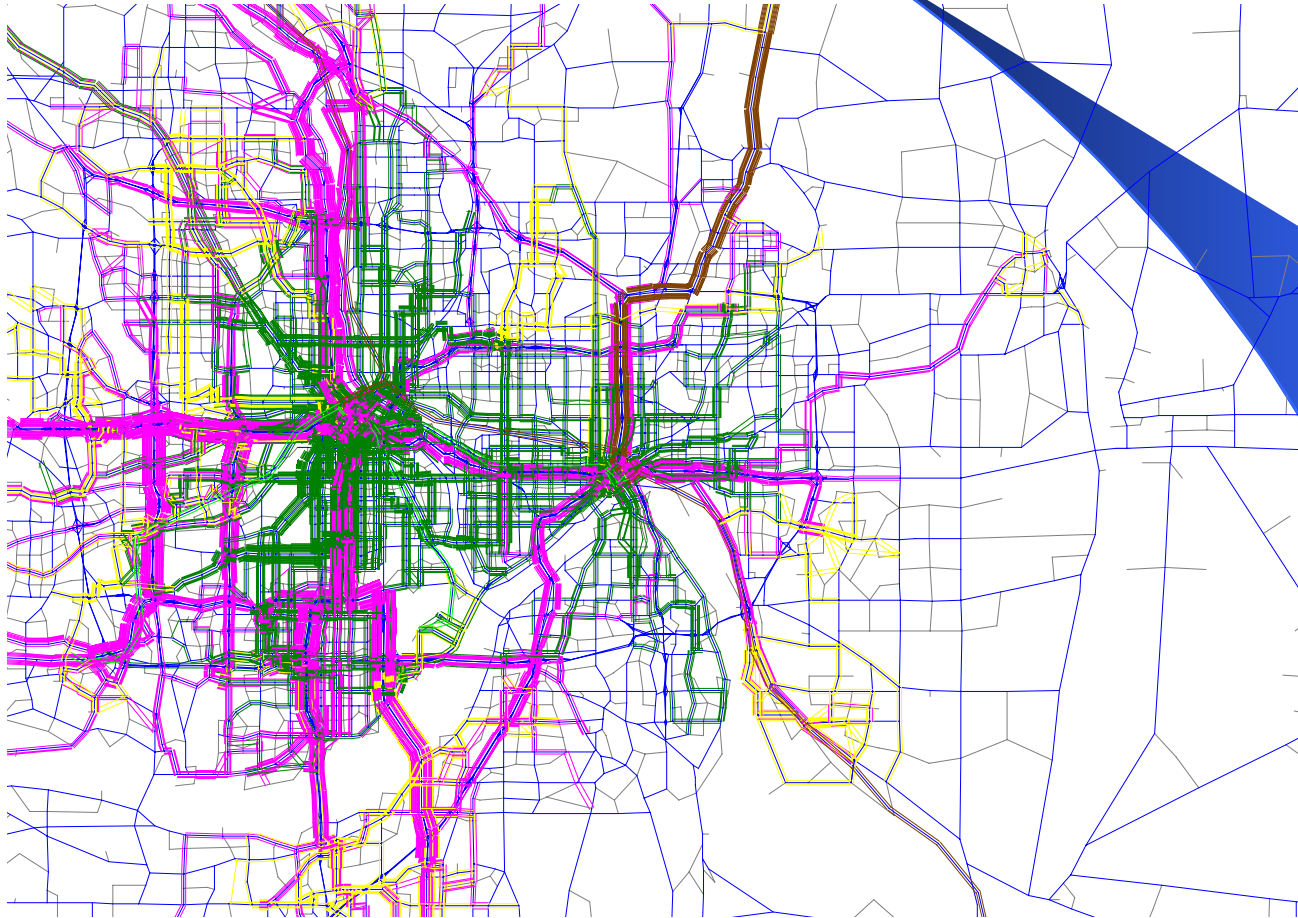
Model Highway Network



● Highway Link Attributes

- Functional Classification (Freeway, arterial, collector, etc.)
- Number of lanes
- Capacity
- Freeflow speed
- Area type (downtown, central city, rural, etc.)

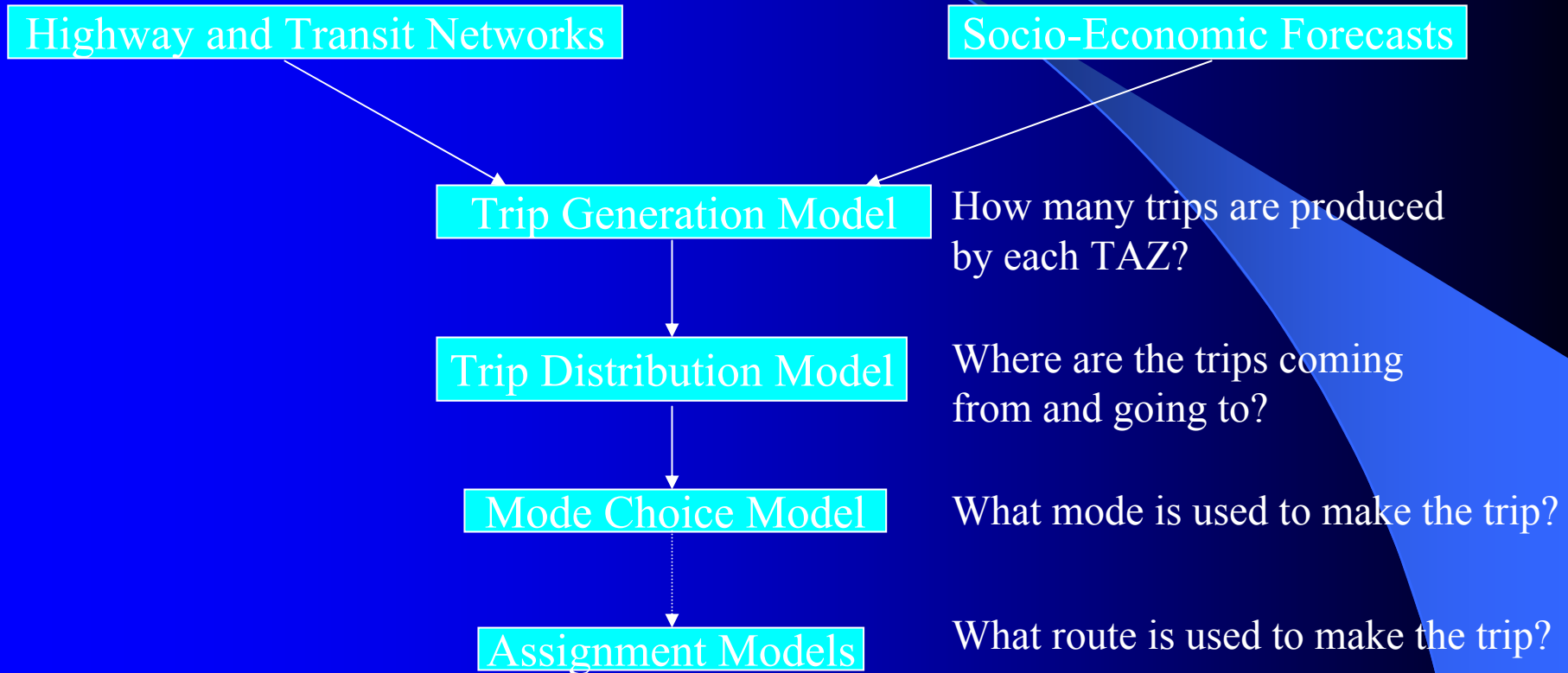
Model Transit Network



● Transit Network Attributes

- Route number
- Headway (am, pm, and off-peak)
- Speed or time (am, pm and off-peak)
- Fare
- Type of Service
- Walk Access
- Drive Access
- Route path

Travel Demand Forecast Model



● **Trip Generation Model**

- Estimates number of person trips produced by and attracted to each individual Transportation Analysis Zone

● **Typical Factors in Trip Generation Model**

- Income (autos per household)
- Household size
- Vehicles available to household
- Employment type and number
- Development density

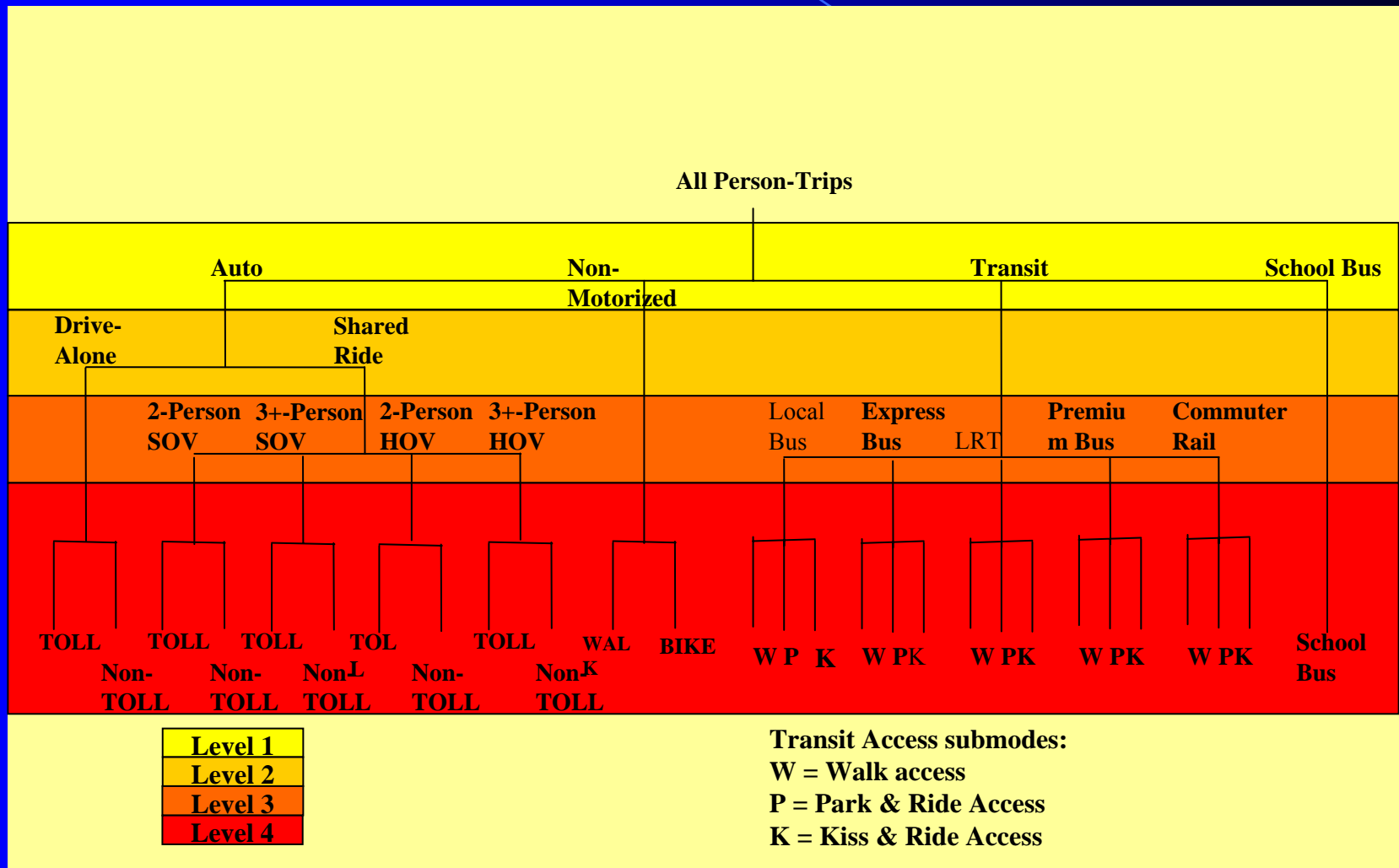
● **Trip Distribution Model**

- Distributes all person trips by all zones to all other zones

● **Typical Factors in Trip Distribution Model**

- Travel time (composite impedance)
- Travel cost

Mode Choice Model



● Typical Factors in Mode Choice Model

- Travel time
- Travel cost (transit fare, cost to drive, etc.)
- Income
- Auto ownership
- Parking cost
- Output modes - SOV, HOV, Walk-Access Transit, Drive-Access Transit

● **Assignment Model**

- Assigns trips to appropriate network
 - SOV and HOV vehicle trips to highway network
 - Person trips to transit network
 - linked trips (full trips with transfers)
 - unlinked trips (boardings)

● **Typical Factors in Assignment Models**

- Travel time
- Travel costs

- **Cost Effectiveness Index**

Annualized Capital and Operating Costs

CEI = -----

Annualized User Benefits

- User Benefits reflect travel time savings of all transit riders system-wide compared to the Base Line Alternative
- Ridership and travel time data used to calculate User Benefits comes directly from the travel demand forecast model

● User Benefits Can Come From:

- Shorter transit times from:
 - Higher speeds resulting in less in-vehicle time
 - More stops or route coverage resulting in shorter walk access (but must be balanced against added travel time)
 - Increased frequency of service resulting in less wait time
- Fewer transfers
- Higher ridership

● **FTA Role**

- Establish Cost Effectiveness Index (CEI) process
- Review and accept travel forecast model
- Review and accept CEI calculations