

Dallas-Fort Worth Regional TransCAD Travel Model

(Documentation Prepared July 6, 2004)

Travel Model Zones

- 4813 Internal + 61 External = 4,874 Analysis Zones Retained for ALL Modeling Steps
- The Zone Boundaries represent aggregations of 76,000 rectified Census Blocks
- Modeled Area = 5,000 square miles (five full counties + four partial counties)

Roadway Networks

- 1999
 - ⇒ 22,185 roadway links (26,799 lane miles) + 9,600 zone connector links
 - ⇒ Includes 63 HOV links (37 lane miles)
 - ⇒ 18,566 network nodes (which includes the 4,874 centroids)
- 2025
 - ⇒ 27,227 roadway links (37,400 lane miles) + 9,600 zone connector links
 - ⇒ Includes 656 HOV links (750 lane miles)
 - ⇒ 21,805 network nodes (which includes the 4,874 centroids)

Transit Networks

- 1999
 - ⇒ 326 AM Peak Bus Routes (3,975 Route Miles)
 - ⇒ 6 AM Peak Rail Routes (70 Route Miles)
 - ⇒ 296 Mid-Day Offpeak Routes (3,618 Route Miles)
 - ⇒ 6 Mid-Day Offpeak Rail Routes (70 Route Miles)
 - ⇒ 14,103 transit stops; 22 rail stations; and 47 transit park-and-ride lots
- 2025
 - ⇒ 410 AM Peak Bus Routes (4,129 Route Miles)
 - ⇒ 36 AM Peak Rail Routes (1,061 Route Miles)
 - ⇒ 382 Mid-Day Offpeak Routes (3,739 Route Miles)
 - ⇒ 36 Mid-Day Offpeak Rail Routes (1,061 Route Miles)
 - ⇒ 14,486 transit stops; 171 rail stations; and 136 transit park-and-ride lots

Trip Generation Inputs

- Population
- Households
- Median Household Income (in 1999 Constant Dollars, from Census 2000)
- Basic Employment
- Retail Employment
- Service Employment

Special Generators

- Regional Shopping Malls with over 500,000 square feet (20)
- Colleges/Universities with over 1,500 enrolled students (27)
- Hospitals with over 300 service employees (42)
- DFW and Love Field Airport Terminals (special treatment)

13 Trip Purposes

- HBW Low Income Quartile
- HBW Low-Medium Income Quartile
- HBW Medium-High Income Quartile
- HBW High Income Quartile
- HNW (excluding Love Field and DFW Airport trips)
- HNW Love Field and DFW Airport trips
- NHB (excluding Love Field and DFW Airport trips)
- NHB Love Field and DFW Airport trips
- Internal-Internal Trucks (vehicles with 6 or more tires)
- Internal-External and External-Internal Passenger Vehicles
- Internal-External and External-Internal Trucks
- External-External Passenger Vehicles
- External-External Trucks

Trip Distribution –Gravity Model Formulation

- Four HBW Trip purposes based on AM Peak Roadway Skims
- HNW, NHB, and Truck trip purposes based on Offpeak Roadway Skims

Trip Distribution – Base Year Trip Table Factoring

- HNW Love Field and DFW Airport trips
- NHB Love Field and DFW Airport trips
- Internal-External and External-Internal Passenger Vehicles
- Internal-External and External-Internal Trucks
- External-External Passenger Vehicles
- External-External Trucks

Four Transit Skims for Mode Choice

- AM Peak Transit-Walk (HBW Trips)
- PM Peak Transit-Drive (HBW Trips)
- Mid-Day Offpeak Transit-Walk (HNW and NHB Trips)
- Mid-Day Offpeak Transit-Drive (HNW and NHB Trips)

13 Market Segment Trip Tables For Mode Choice

- Six HBW Groupings (three income groups and two auto ownership groups)
- Six HNW Groupings (three income groups and two auto ownership groups)
- One NHB

Mode Choice

- HBW Nested – Three Top-Level Groups = Auto Nest (Drive Alone, Shared-Ride 2 and Shared-Ride 3+); Transit-Walk Access; and Transit-Drive Access
- HNW Nested – Three Top-Level Groups = Drive Alone; Shared-Ride Nest (Shared-Ride 2 and Shared-Ride 3+); and Transit Nest (Transit-Walk Access and Transit-Drive Access)
- NHB Multinomial – Drive Alone; Shared-Ride 2; Shared-Ride 3+; Transit-Walk Access; and Transit-Drive Access

Four Production-Attraction Transit Assignments

- AM Peak Transit-Walk (for HBW Trips)
- AM Peak Transit-Drive (for HBW Trips)
- Mid-Day Offpeak Transit-Walk (for HNW and NHB Trips)
- Mid-Day Offpeak Transit-Drive (for HNW and NHB Trips)

Three Time-of-Day, Generalized Cost, 30-Iteration, Four-Class, Simultaneous User Equilibrium Traffic Assignments

- 2.5-Hour AM Peak (6:30 a.m. – 8:59 a.m.)
- 3.5-Hour PM Peak (3:00 p.m. – 6:29 p.m.)
- 18-Hour OffPeak (9:00 a.m. – 2:59 p.m. + 6:30 p.m. – 6:29 a.m.)
- Class 1 = Drive Alone Vehicles
- Class 2 = Shared-Ride Vehicles “allowed to see HOV” lanes
- Class 3 = Shared-Ride “not allowed to see HOV” lanes
- Class 4 = Trucks