

Research Conducted in Association With: Texas Department of Transportation (Project 0-5178)

> PC - Karen Dunlap, TxDOT PD - Paul Moon, TxDOT PI - Chandra Bhat, UT

RESEARCH TEAM Jessica Guo, UW-Madison Qisheng Pan, TSU Robert Paterson, UT

Jeff LaMondia, UT Stacey Bricka, UT Sudeshna Sen, UT Aarti Kapur, UT

### **Overview**

- Background
- Objectives
- Accessibility Characteristics Model
- Transit Accessibility Software
- Software Performance
- Applications
- Conclusions



# Background

- Public transit plays an important role in urban areas
  - Reduce congestion, improve the environment, & provide alternative transport
- Need to better understand ridership to help transit grow
   Declining ridership & social inegualities
- Important aspect is accessibility
- Previous research focuses on efficiency-related variables
  - Frequency, passenger loads, service coverage, speed
- Need for customer-oriented analysis
  - Population characteristics, ease of access, & trip purposes

### **Objectives**

- Identify and Model the user-perspective factors that affect a transit user's most likely trip route.
- Develop a universal software program that allows transit operators to evaluate the current transit system, identify critical areas, and understand how changes will effect user transit accessibility.









### **Accessibility Characteristics**

U = -13.29\*WalkAccess – 51.90\*TransitTime – 29.22\*Transfer – 19.45\* TransitTime\*Female

### Where

- WalkAccess = Distance walked between origin and boarding point and distance walked between alighting point and destination (in 2 mi.s)
- TransitTime = Time spent riding on the bus (in 50 min.s
- Transfer = Dummy (1 if path includes a transfer, 0 otherwise)
- Female = Dummy (1 if respondent is female, 0 otherwise)





# Other Indices Transit Dependency Index (TDI) Low Car Ownership/ Low Income Areas Transit Need Index (TNI) High TDI & Low TAI Critical Need Areas

## **Applications**

• Identify & Compare Transit Accessibility for:

- Different Areas
- Different Land Uses
- Different Travel Purposes
- Different User Groups
- Analyze Effects With Changes In:
  - Transit Stop Placement
  - Route Design and Placement
  - Efficiency of Transit



