

# Transit Coding and the Asheville Travel Demand Model

Model User's Group  
Greenville MPO Conference  
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# Outline

- Overview of model
- Asheville Model Transit
- LRTP Scenarios
- Lessons Learned

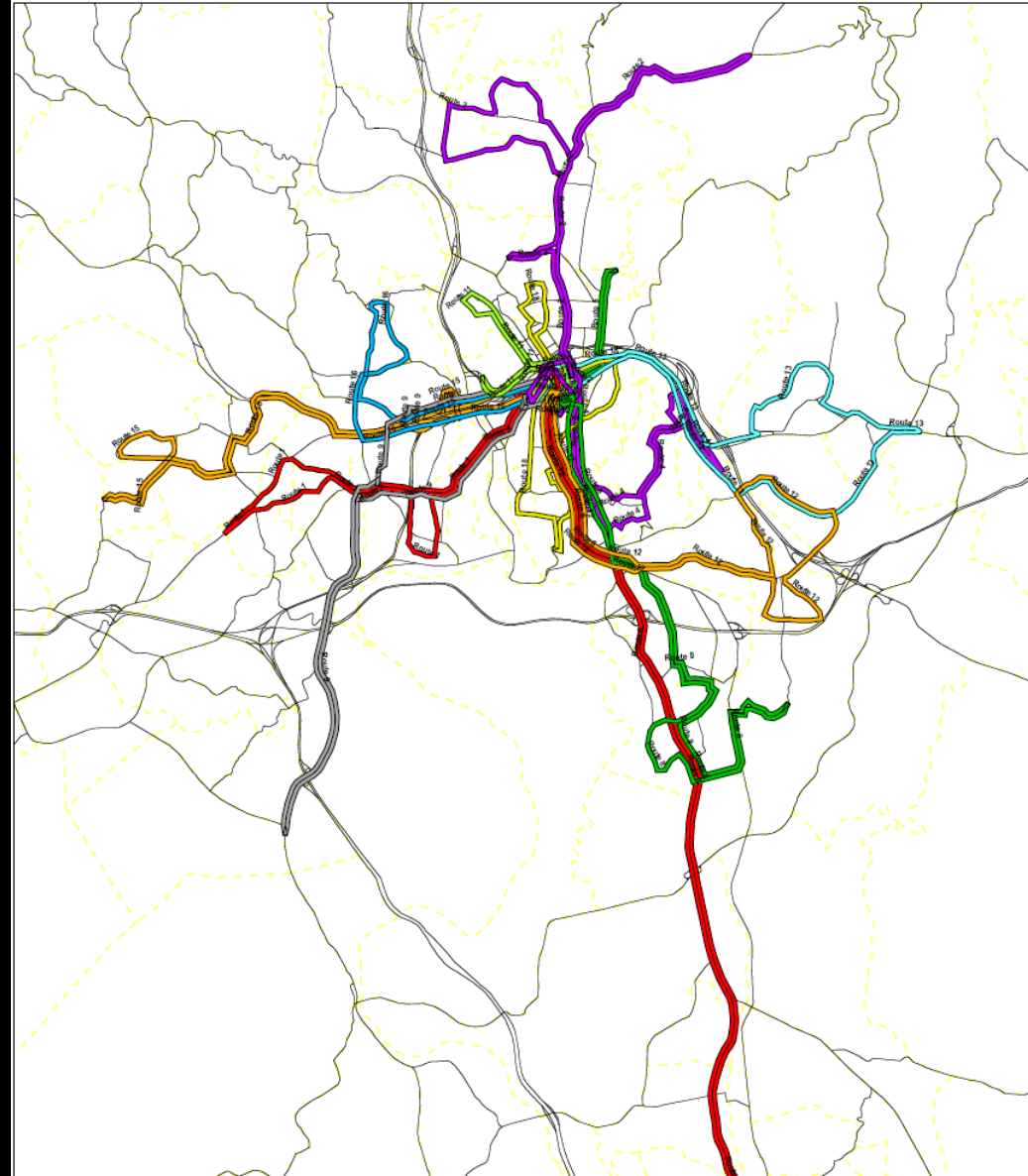
# Asheville Travel Demand Model

- Mode choice model with borrowed coefficients
- Calibrated to 2000 (BY) ridership data
- BY transit = route structure in 2000
- No FY scenario beyond routes as existed when coded (2003)



# Base Year Transit Network

- Consisted of 14 routes
- Fare free downtown
- Fixed fare for rest of network
- Pulse-timed system

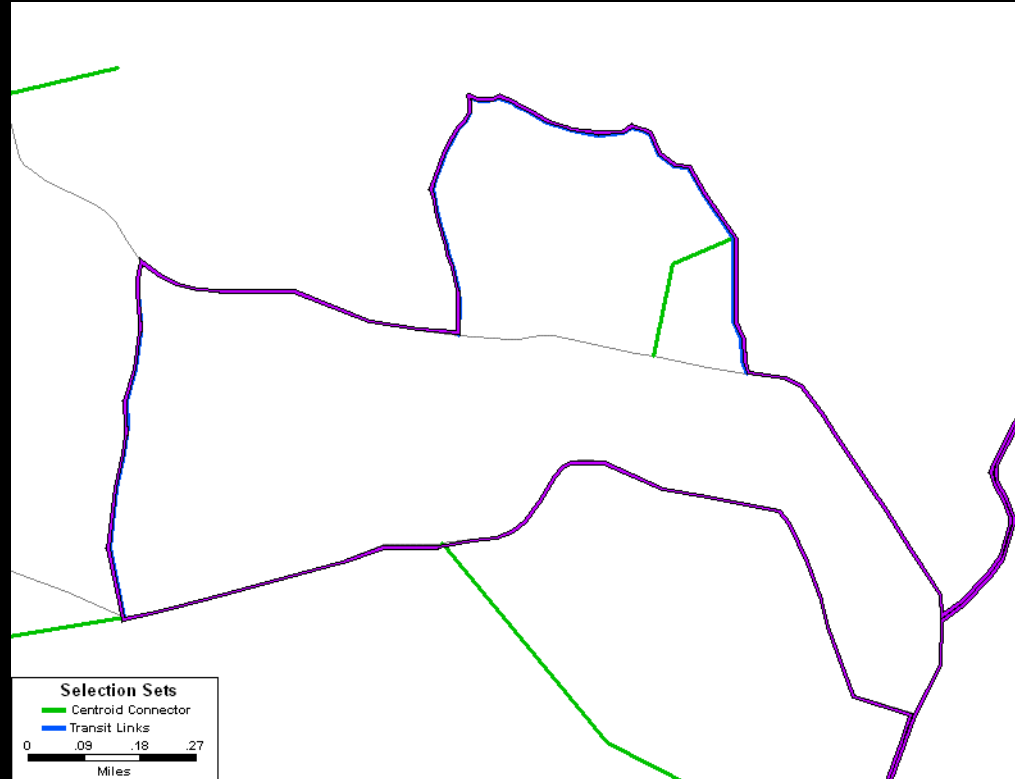


# How was it Modeled?

- Simple system with few path choices
  - ⇒ Shortest Path method
- High headways coupled with pulsed (i.e. timed-transfer) at downtown
  - ⇒ Low initial and transfer max wait times
- Because TransCAD calculates zonal fares on a link basis (rather than entire trip)
  - ⇒ A fixed fare system was used (and the downtown fare free zone ignored)
    - Note that correct fares are used in the mode choice

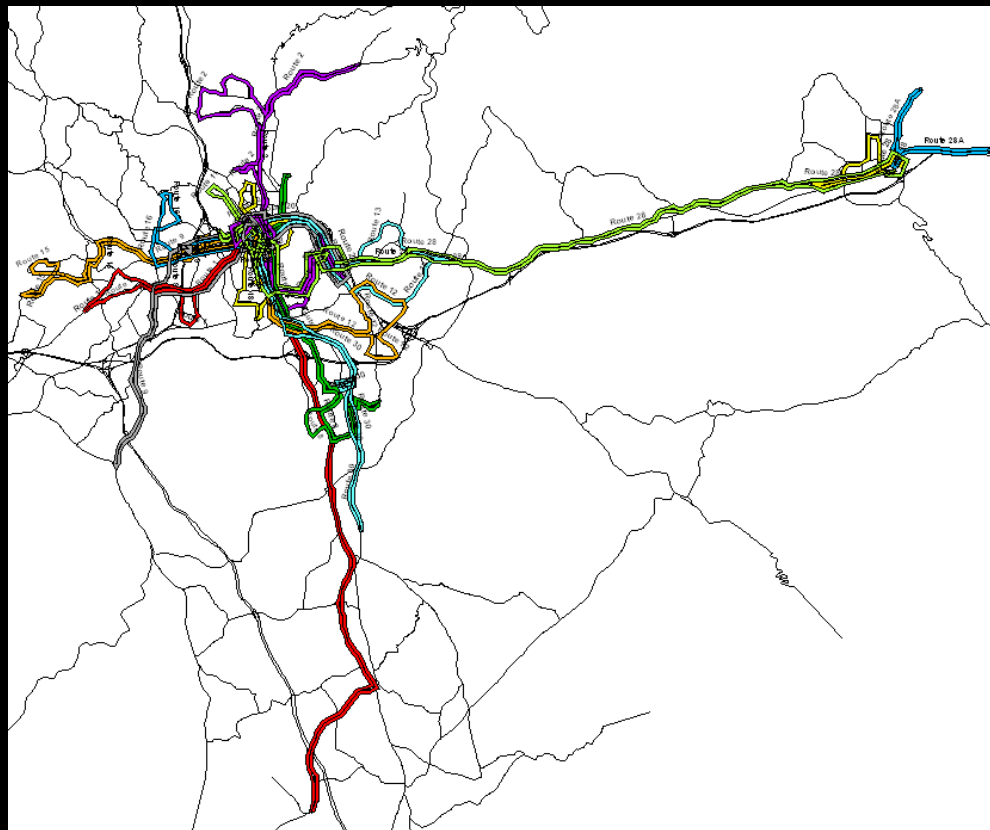
# How was it Modeled?

- To improve accuracy of travel times, “transit only” links were included
- Special “walk only” centroid connectors were added in several instances to these transit only links



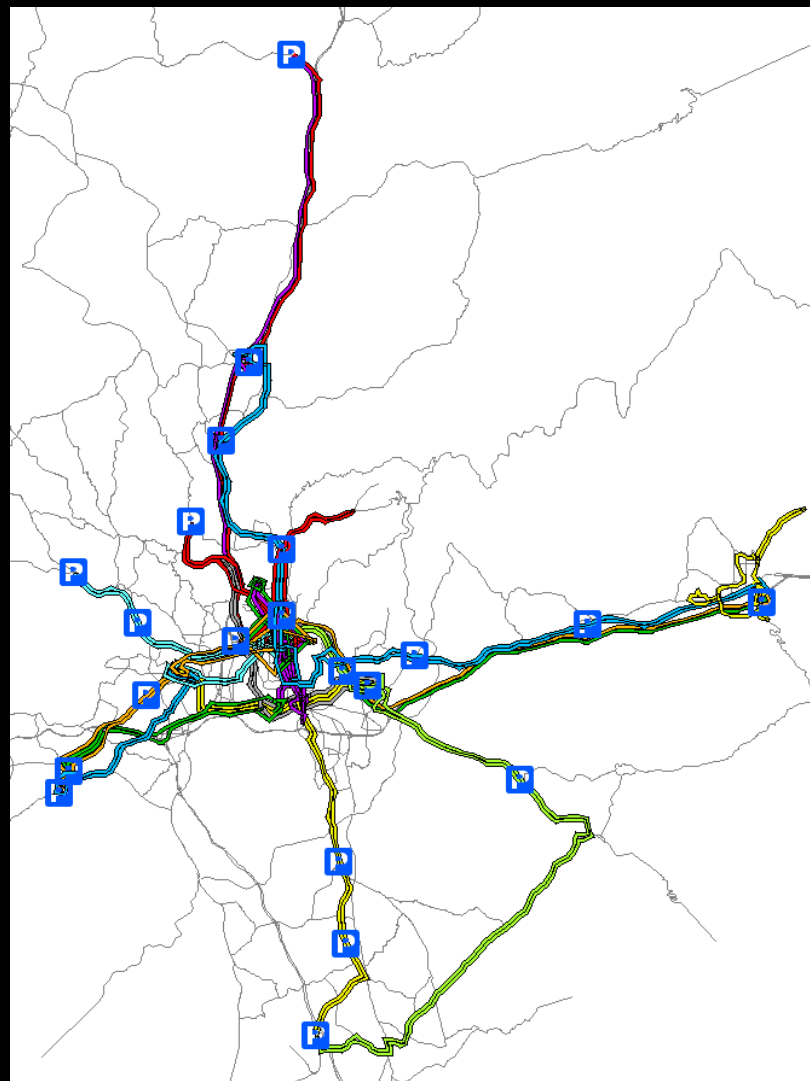
# Future Year Transit

- Service added to Black Mountain including feeder routes
- Switched to mixed fare system
  - Correctly modeled downtown
  - Known issue of per-leg vs per-trip
  - Manually corrected fare for Mode Choice
  - Switched because of bug at time related to fixed fare system



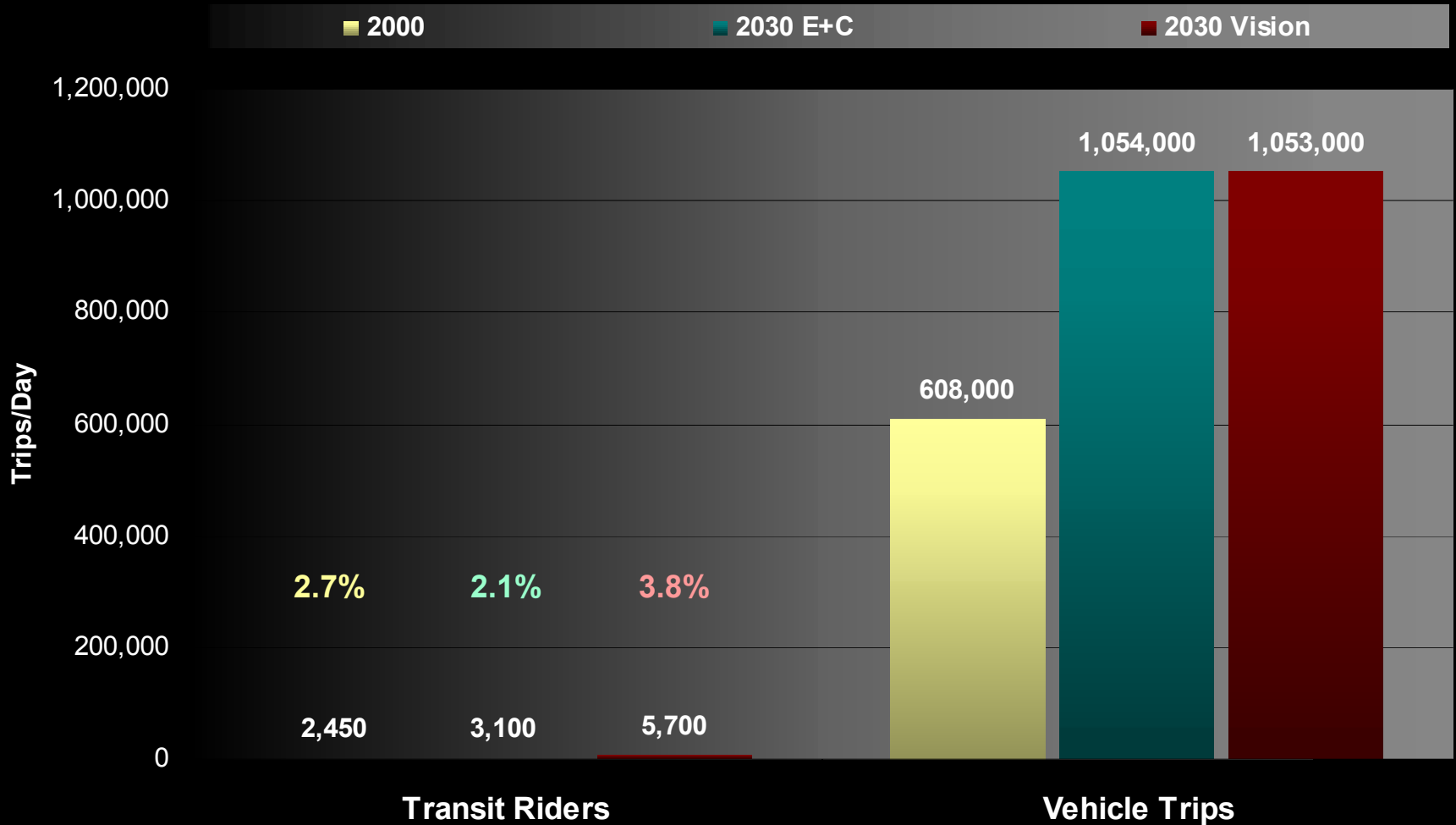
# LRTP Transit Scenarios

- Examined “High Growth” scenario for LRTP
- Complete overhaul of route structure
- Addition of Express Bus service
- Addition of Park & Ride





# Transit Riders vs. Vehicle Trips



# How was it Modeled?

- Five transit modes were used plus walk
- Modes coded with additional detail:
  - dwelling times, initial wait times, transfer penalties
- Park and ride locations identified
  - Express bus stops
  - New nodal centers
  - Existing shopping centers

The screenshot shows the 'ShortestPath Network Settings' dialog box. The 'Network' field is set to 'FY Hi-Service 1' and the 'File' field is set to '... Hi-Service Transit Network - P&R.tnw'. The 'Mode' tab is selected, showing the 'Mode Table' section with a table of transit modes and their codes. The 'Mode-Mode Transfer Table' section is also visible, showing settings for transfer penalties and fares.

Name	Code	Used
Express Bus	11	yes
Intercity Bus	12	yes
Local Bus	13	yes
Downtown Bus	14	yes
Feeder Route	15	yes

Mode-Mode Transfer Table settings:

- From-Mode: From
- To-Mode: To
- At Stop: Stop
- Penalty Time (min): Penalty
- Fare: [Transfer Fare]

# Park and Ride Modeling

- Park and ride requires special treatment
- Either walk or drive to transit
  - ⇒ two sets of assignments
- If walk access times are mapped, so are drive times
  - ⇒ must include separate drive time field
- Must use “on-the-fly” calculations to get full skims

ShortestPath Network Settings

Network: FY Hi-Service 1 Network... Info... OK

File: ... Hi-Service Transit Network - P&R.tnw Reset Cancel Update

General | Mode | Fare | Weights | **Park & Ride** | Others

Enable Park-and-Ride Mode

Origin-to-parking Time Matrix

Matrix File: None Matrix:

Parking Nodes

Parking nodes are in network (21 nodes)  
 Create parking nodes from selection set

Driving Links

Driving links are in network (4900 links)  
 Create driving links from selection set

Driving Link Time: \*\_Cong\_Drive\_T Max Driving Time: 30

Length  
\*\_AM\_Cong\_TT  
\*\_Cong\_TT  
\* Cong\_Drive\_TT  
\*\_AM\_Cong\_Drive\_TT

# Next Steps

- Expand Asheville model to French Broad River MPO (Henderson, Haywood Counties) in addition to Transylvania Co.
- Model local and intercity transit service in these areas
- Include possibility of rail service between Asheville (Biltmore Village) and Black Mountain
- Consider focused survey to revise local coefficients & weights

# Lessons Learned

- Minimal effort to increase sophistication (single mode to multi-mode)
- Park and Ride can result in a noticeable shift in mode ridership
  - Promising for more rural areas
  - More detailed calibration may ultimately be warranted
- Check skim outputs (manual and automated) to ensure behaving as you expect
- Remember to combine walk and drive to transit to get total flows

# Benefits of Transit Models

- Don't have to generate mode choice model from scratch – especially for small to medium areas
- BUT a mode choice model is important to allow scenario testing
- Transit share is small enough does not affect roadway projects – model allows us to confirm
- Individual transit scenarios are easy to test
  - Provide general feasibility
  - Need additional calibration for detailed analysis