



Daily Travel Time Variability in the Twin Cities, 1990-2001

Gary Barnes, Stephanie Erickson

University of Minnesota

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Overview

- Study of daily personal time spent traveling
- Three major issues:
 - Land use and total daily travel time
 - Relationship between commute and non-commute travel time
 - How use of alternate modes affects total travel time and auto time
- Geographic and temporal variations examined



Background

- Zahavi study of Twin Cities in 1958 and 1970, finds essentially constant total daily travel time
- Barnes update to 1990
 - Total time still basically constant
 - Variations within region, but small relative to land use differences
 - Alternate modes reduce auto time, but not one for one



Claimed transportation benefits of dense mixed-use development

- Closer destinations will facilitate reductions in total travel time
- Personal (non-commute) travel will be especially reduced because of neighborhood destinations
- Focus on non-auto modes will reduce auto travel even more than total travel



Data

- Twin Cities Travel Behavior Inventory (TBI)
 - 1990: about 14,500 travelers
 - 2001: about 5,700 metro-county travelers
- Some exclusions to make data comparable to earlier analyses
 - Adults only
 - Auto travelers only, for historical analyses



Methods

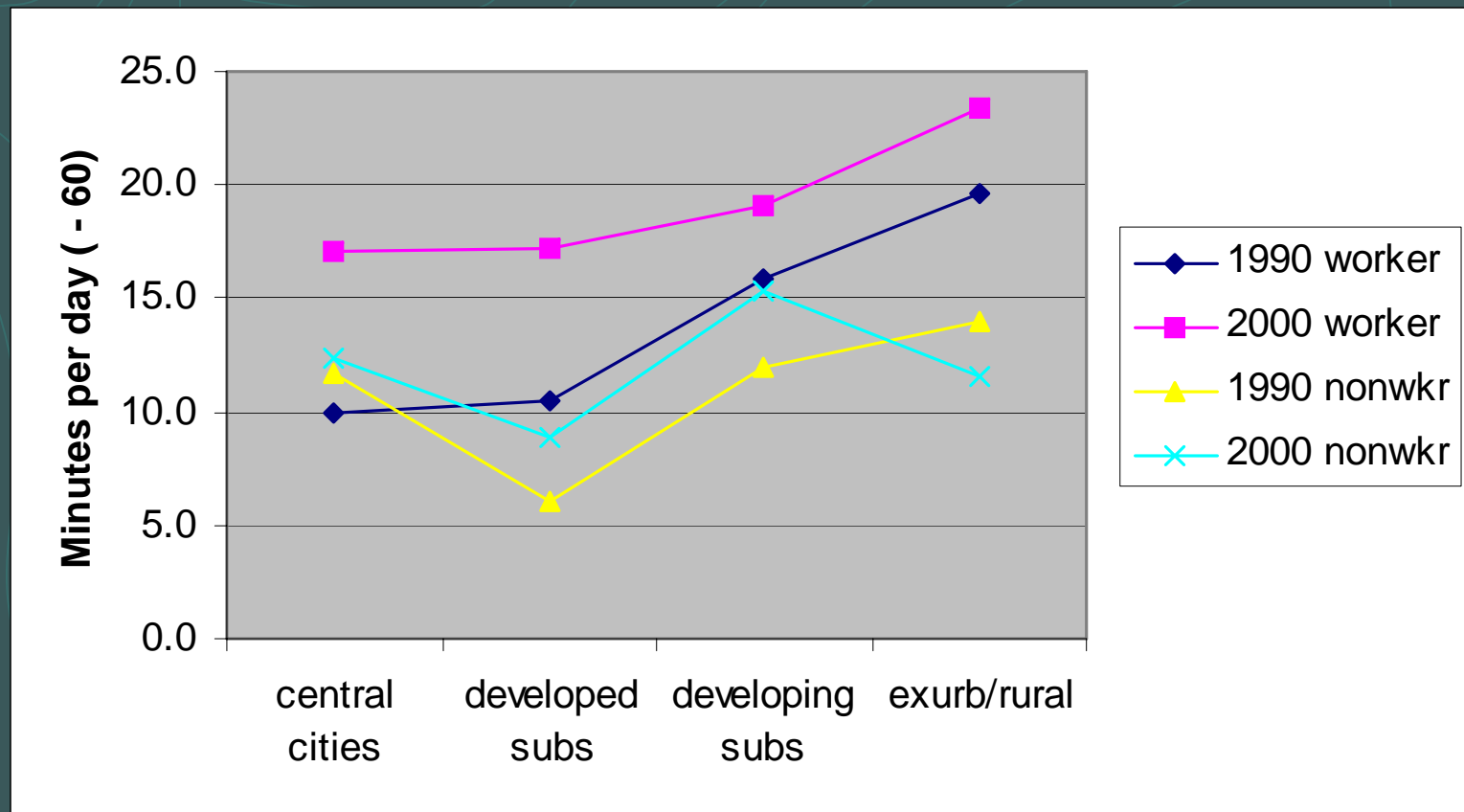
- 1990 to 2001 comparison
 - Auto travelers only
 - Workers, non-workers
 - For workers, commute and other time
- Mode choice analysis
 - Time in different modes (car, transit, walk, bike)
 - Compare total time for auto-only travelers to auto time for mixed mode travelers
- Four parts of region: central cities, developed suburbs, developing suburbs, rural/exurb



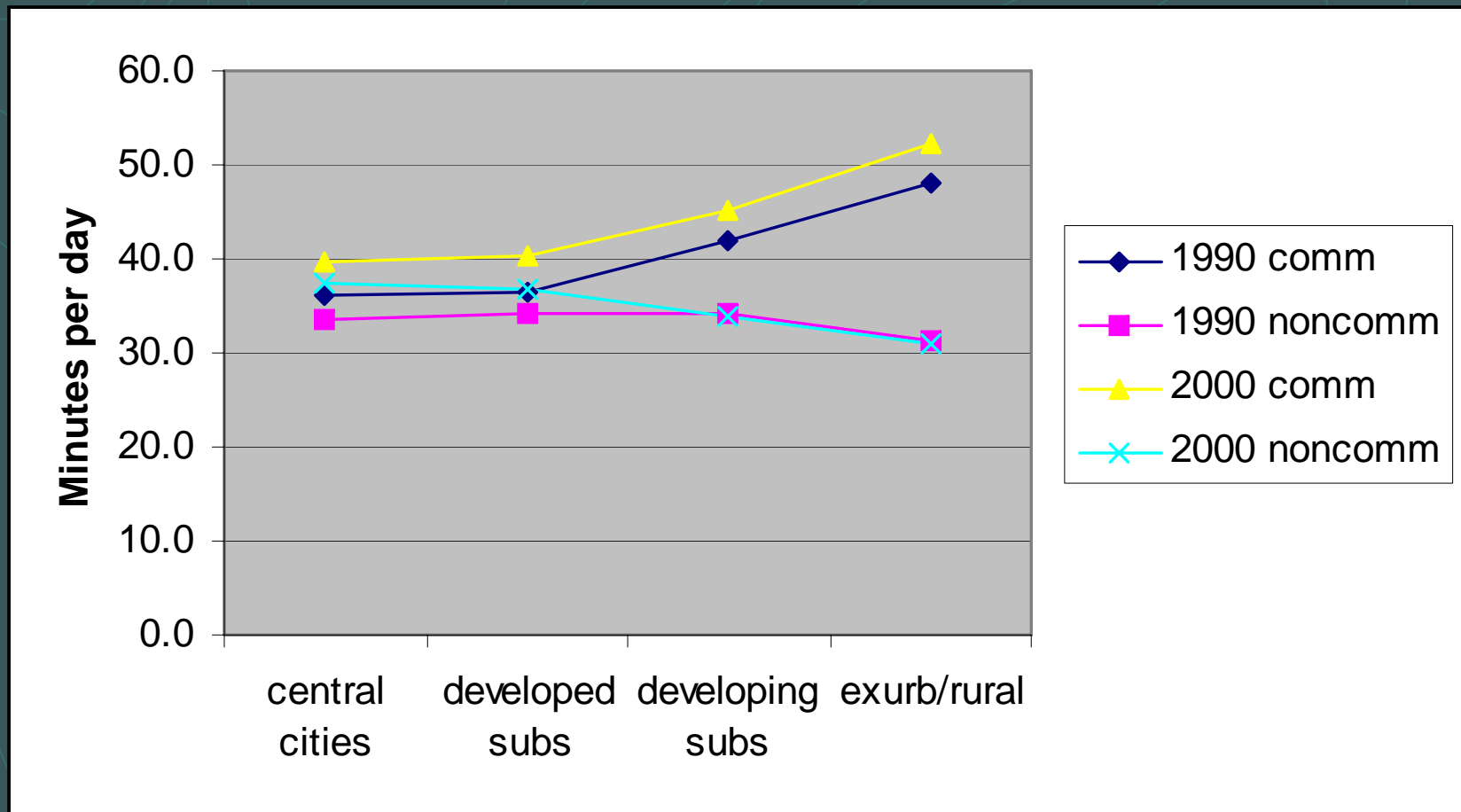
Auto Travel Time Questions

- Look at subset of adult who traveled only by auto, to avoid possible variations due to modal shifts
- Has total daily travel time changed since 1990, and does it vary across the region?
- Are changes or variations due to commuting or non-work travel?

Total Daily Travel Time (auto travelers only)



Commuting and Other (workers, auto travelers only)





Auto Travel Time Comments

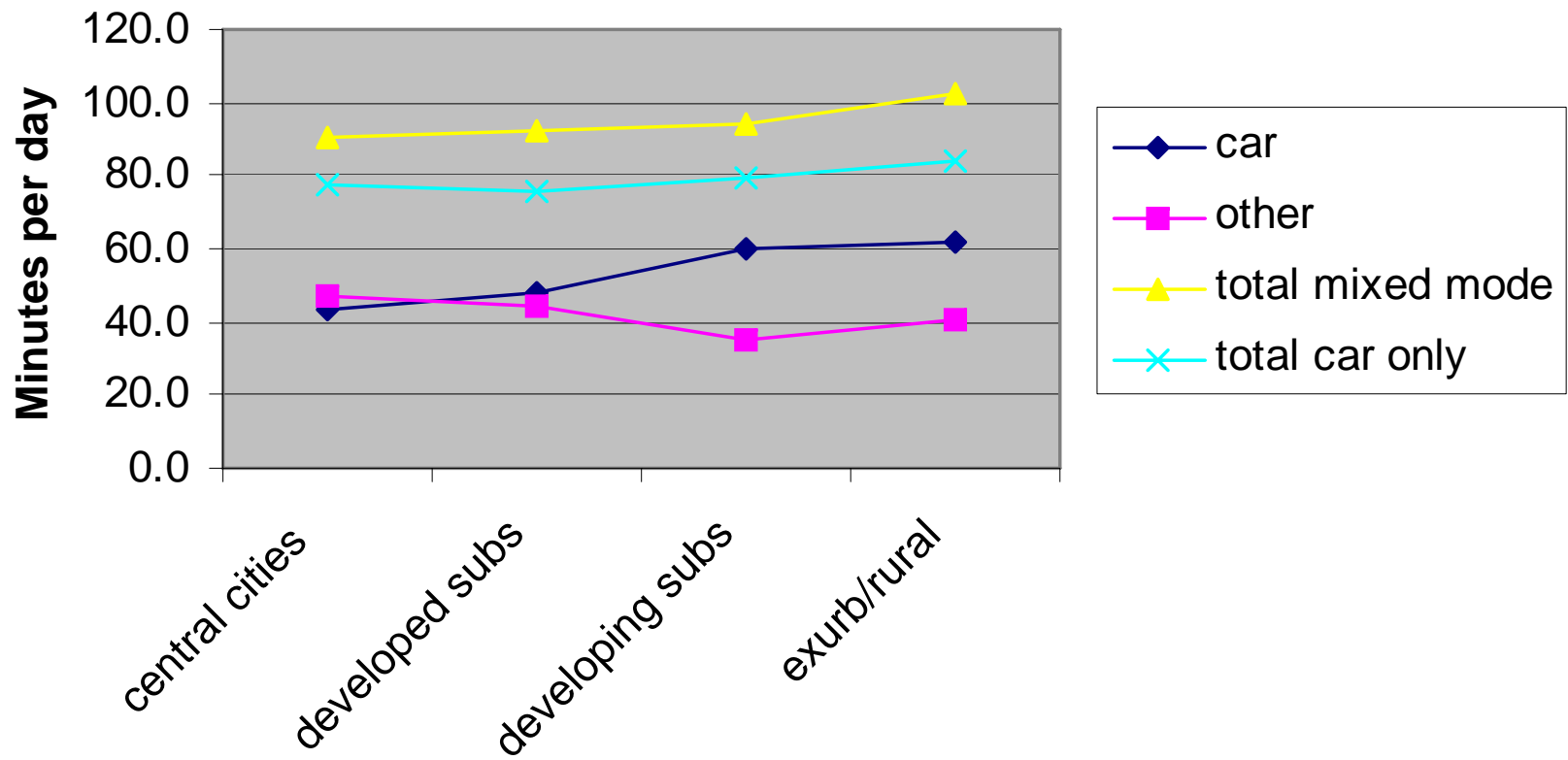
- No systematic geographic differences for non-workers or non-work travel for workers
- Longer commutes in outlying areas
- Constant increase in commute durations across the region between 1990 and 2001
- Small increase in non-commute travel by workers in central part of region
- Commute durations rose throughout Minnesota (and the U.S.)

A vertical strip on the left side of the slide shows a topographic map of a region, likely a mountainous area, with contour lines and a network of roads. The map is oriented vertically, with the top of the slide at the top of the map strip.

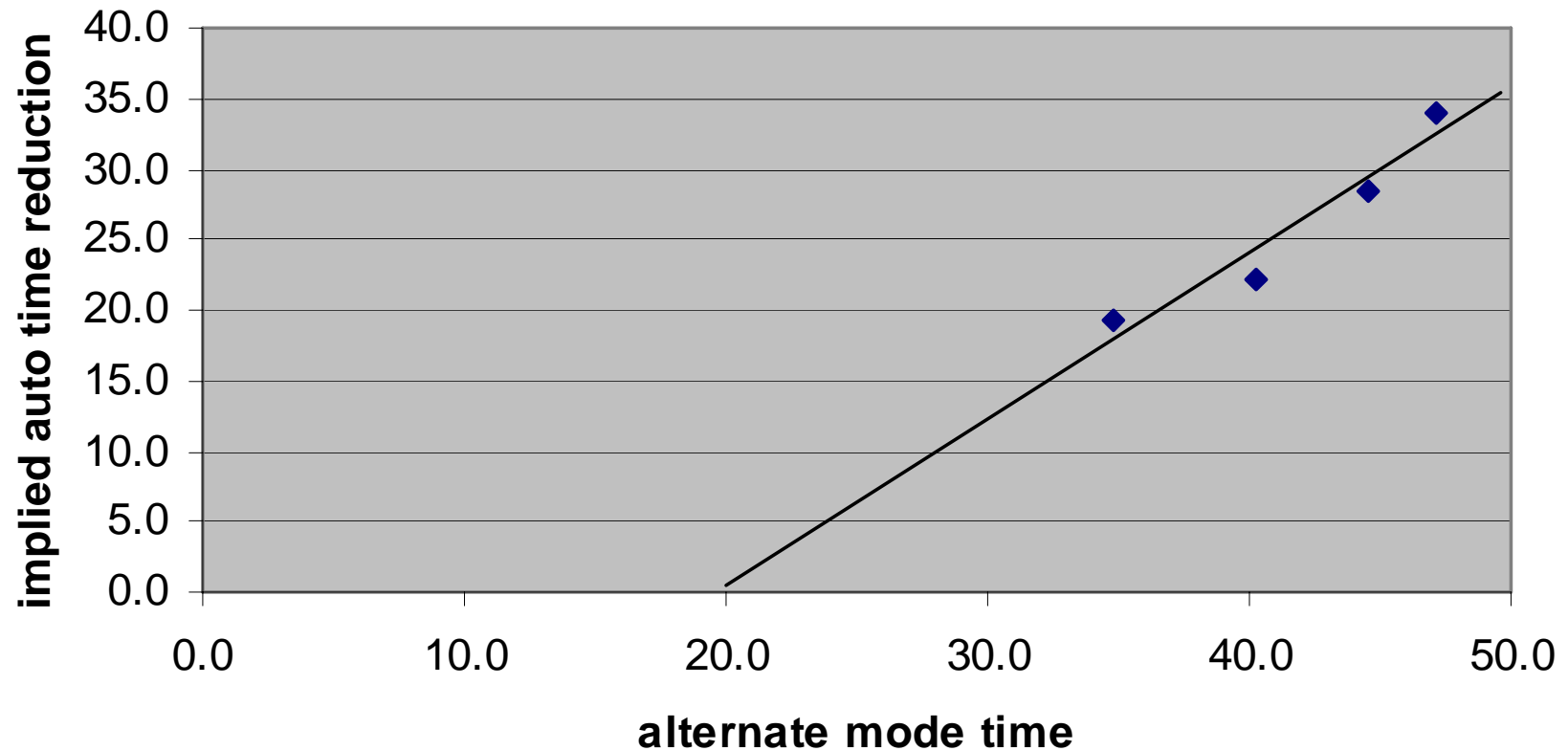
Mode Choice Questions

- Does use of alternate modes reduce auto travel or just increase total daily travel time?
- Consider just 2001 data, geographic comparisons within region
- Temporal comparisons not possible because walking and biking were not measured in 1990

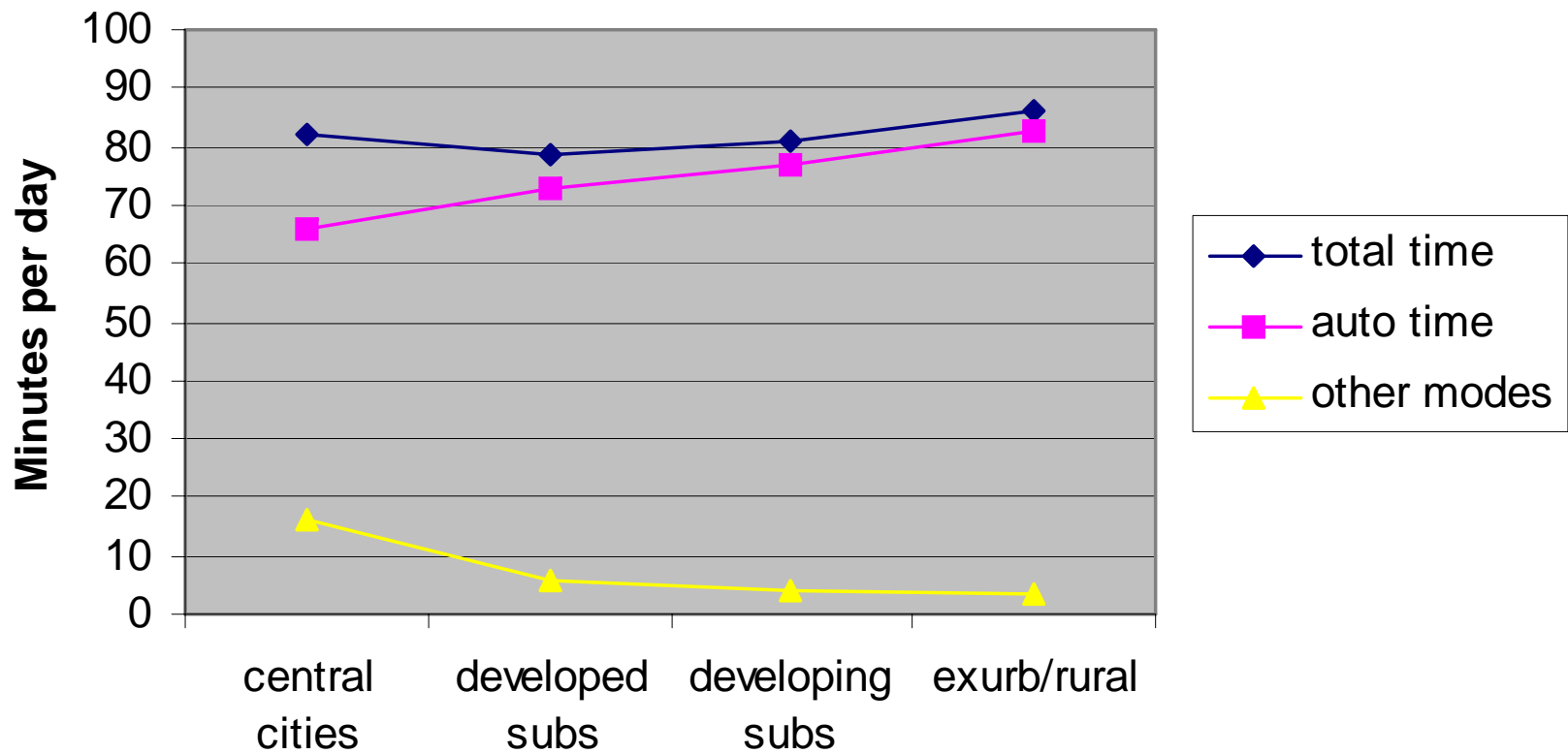
Mode Use for Mixed-Mode Travelers



Alternate Mode Time and Implied Reduction in Auto Time



Mode Use for All Travelers





Mode Choice Comments

- Mixed-mode travelers spend more total time than do auto-only
- Time about equally split between car, other modes in central areas, slightly more car in outlying parts
- Time in alternate modes appears to reduce auto travel time, but only after a certain amount of time has been spent
- Alternate modes do reduce auto travel in central cities, but not total travel time



Overall Conclusions

- Increase in total travel time in 1990s was mostly due to longer commutes (true throughout Minnesota)
- Commutes are longer in outlying areas, but non-work travel is about the same everywhere
- Mixed-mode travelers spend more total time traveling, but less in cars, compared to auto-only
- Considering all modes together, there is no variation in total travel time across the region, but a 15-minute difference in auto time from center to edge