

Evaluating and Communicating Model Results: Guidebook for Planners

NCHRP Project 08-36, Task 89

presented to

**WDCSITE – September 2010 Technical Meeting
George Mason University**

presented by

Cambridge Systematics, Inc.

Dan Goldfarb, P.E.

September 16, 2010

Transportation leadership you can trust.

CAMBRIDGE
SYSTEMATICS

Guidebook Stats

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Why?

- Evolving Roles of Travel Demand Forecasting Models
- Stakeholder Involvement
- Who's the Audience
- Guidebook Objectives
 - » Clear and concise
 - » What questions to ask
 - » Reasonableness and sensitivity
 - » Communicating results

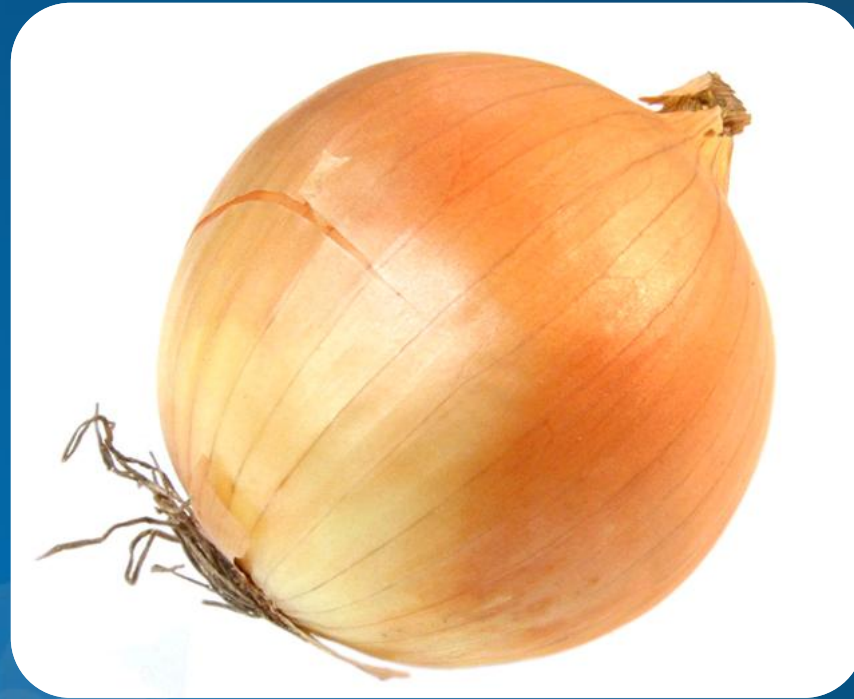
What's Missing?

- FHWA
 - » Introduction to Travel Demand Forecasting Self Instructional CD-ROM (TMIP)
 - » Introduction to Urban Travel Demand Forecasting (NHI)
 - » Travel Demand Forecasting: A Compilation of Plans, Reports, and Data (BTS)
- State
 - » Florida Standard Urban Transportation Model Structure Online Training
- MPO
 - » PSRC – Transportation 2040 Guide
- Non-Governmental Organizations (NGOs)
 - » Inside the Black Blackbox: Making Transportation Models Work for Livable Communities (EDF)

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- Evolving Roles of Travel Demand Forecasting Models
- Stakeholder Involvement
- Audience
- Guidebook Objectives
 - » Clear and concise
 - » What questions to ask
 - » Reasonableness and sensitivity
 - » Communicating results
 - » **Informative**
 - » **Unbiased**

Approach



Organization

- ✓ Overview
- ✓ Role
- ✓ Process
- ✓ Dissect
- ✓ Applications
- ✓ Results

EVALUATING AND COMMUNICATING
MODEL RESULTS:
GUIDEBOOK FOR PLANNERS

Requested by:

American Association of State Highway
and Transportation Officials (AASHTO)

Standing Committee on Planning

Prepared by:

Daniel Goldfarb, P.E.
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Bethesda, Maryland

June 2010

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Chapter I - Introduction

● Purpose

● Audience

● Organization

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Chapter 2 - Role of TDF Model

- Definition of TDF Model
- Model Uses
- Model Classifications
- Model Limitations
- Basic Terminology

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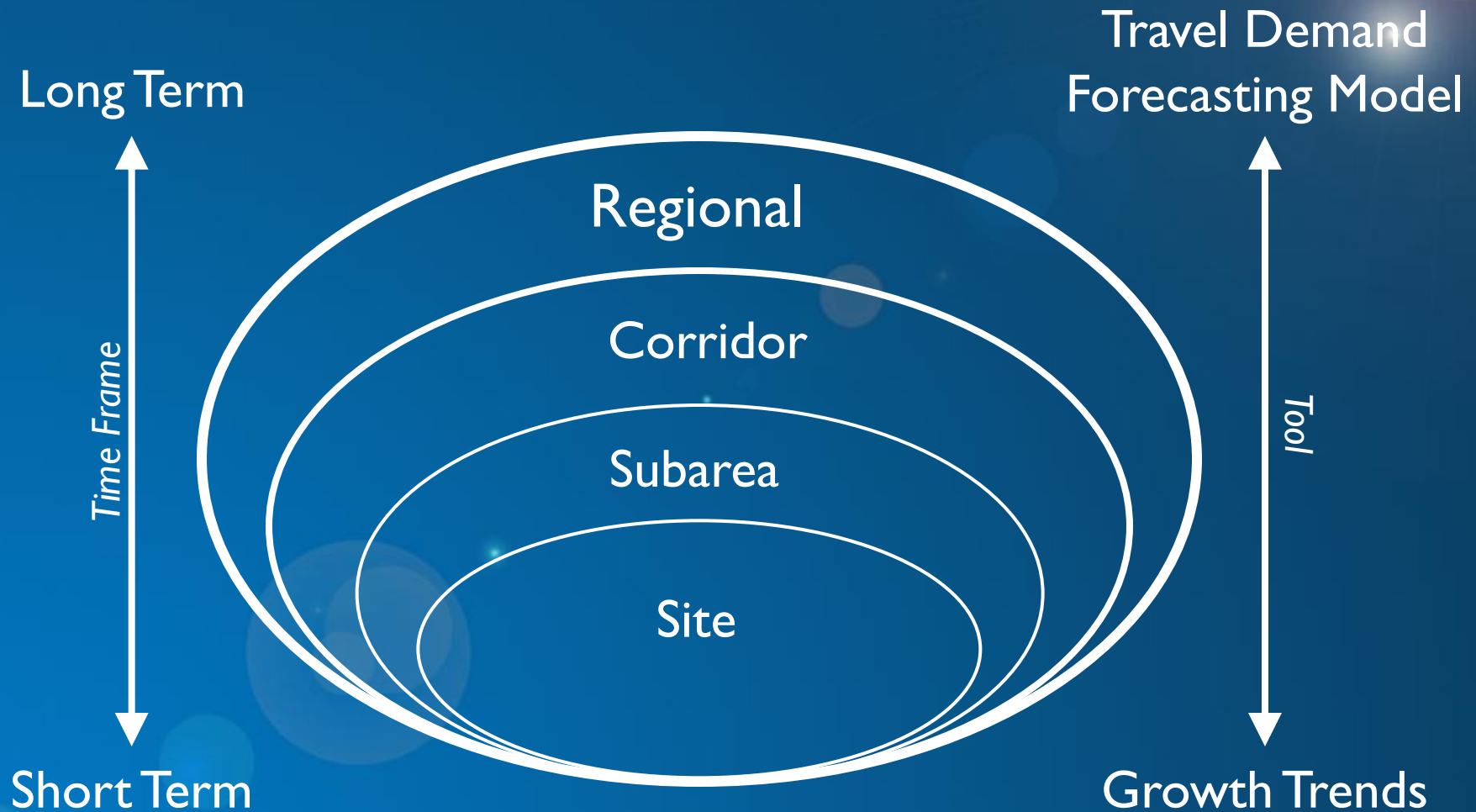
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Chapter 2 (continued)

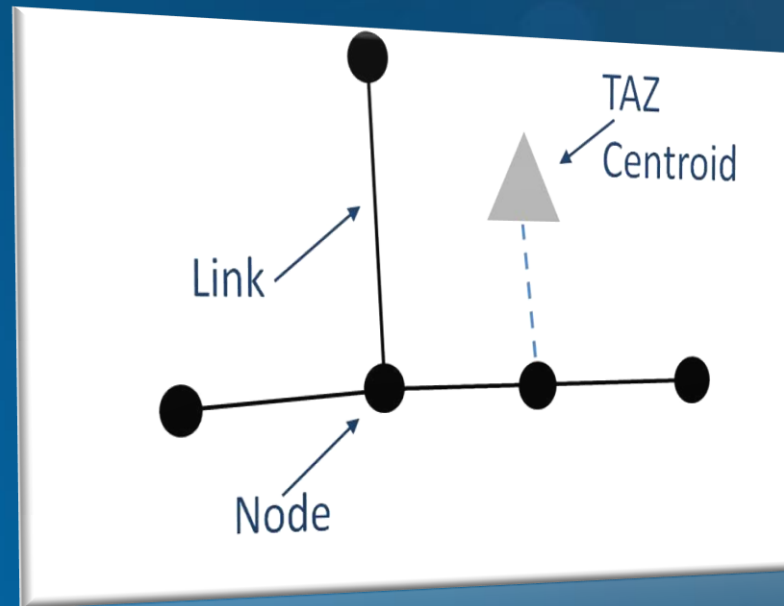


Chapter 2 (continued)

● Terms

- » Links & Nodes
- » TAZ
- » Centroid Connector
- » Trip
- » Trip Ends
- » Trip Table

● Glossary



Chapter 3 - TDF Model Process

- TDF Model Structures
- Current Practice
- Model Development Process

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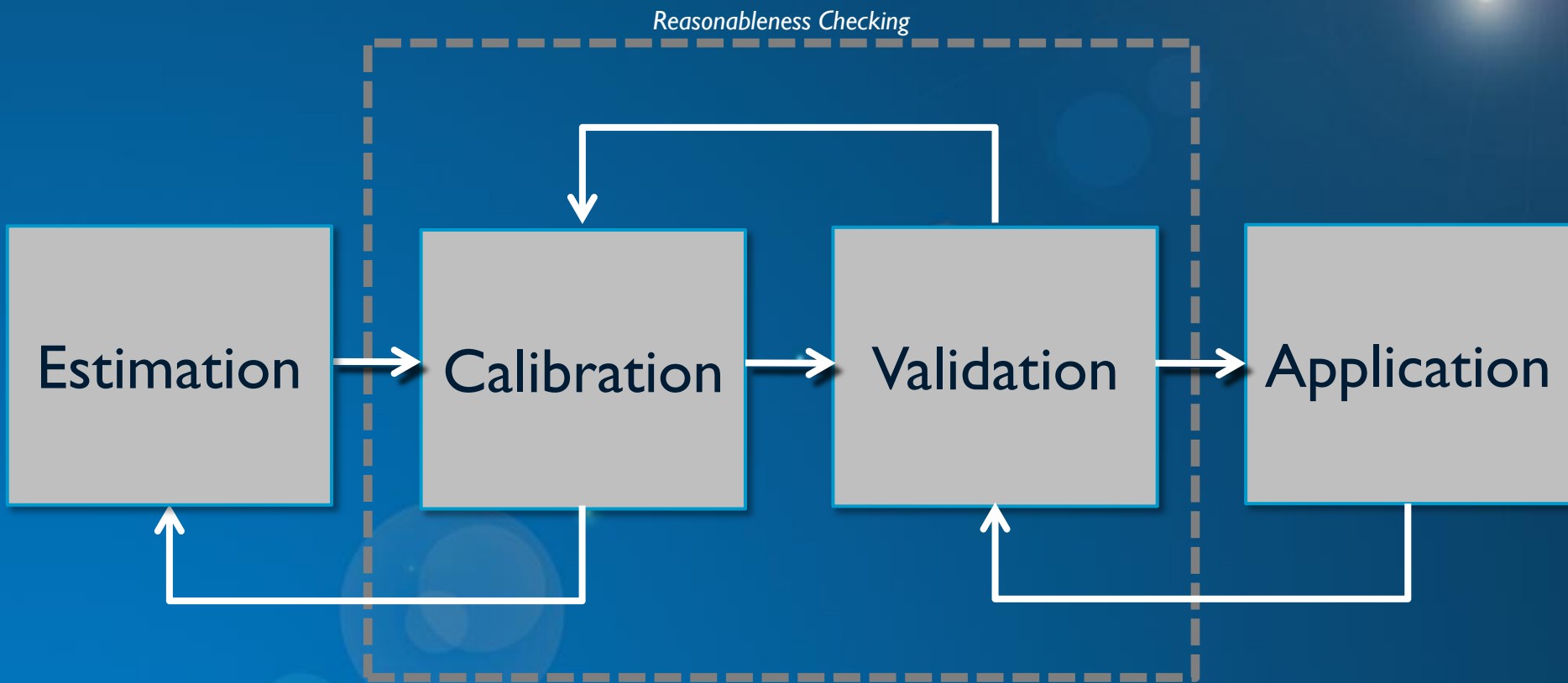
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Chapter 3 (continued)

	Trip-End-Based	Tour-Based	Activity-Based
Accommodates latent demand based on changes in the transportation system			X
Accounts for complex intrahousehold travel interactions (limited vehicle availability, etc.)			X
Accounts for complex travel patterns and trip chains		X	X
Accounts for home end of trips	X	X	X
Advanced time-of-day analysis		X	X
Allows for more disaggregate data inputs and analysis			X
Analysis of nonmotorized trips	X	X	X
Ease of data collection	X		
Minimizing computational resources	X		

Chapter 3 (continued)



Model Development Process

Chapter 4 - Sequential Travel Demand Forecasting

- TDF Model Inputs
- Trip Generation
- Trip Distribution
- Mode Choice
- Assignment

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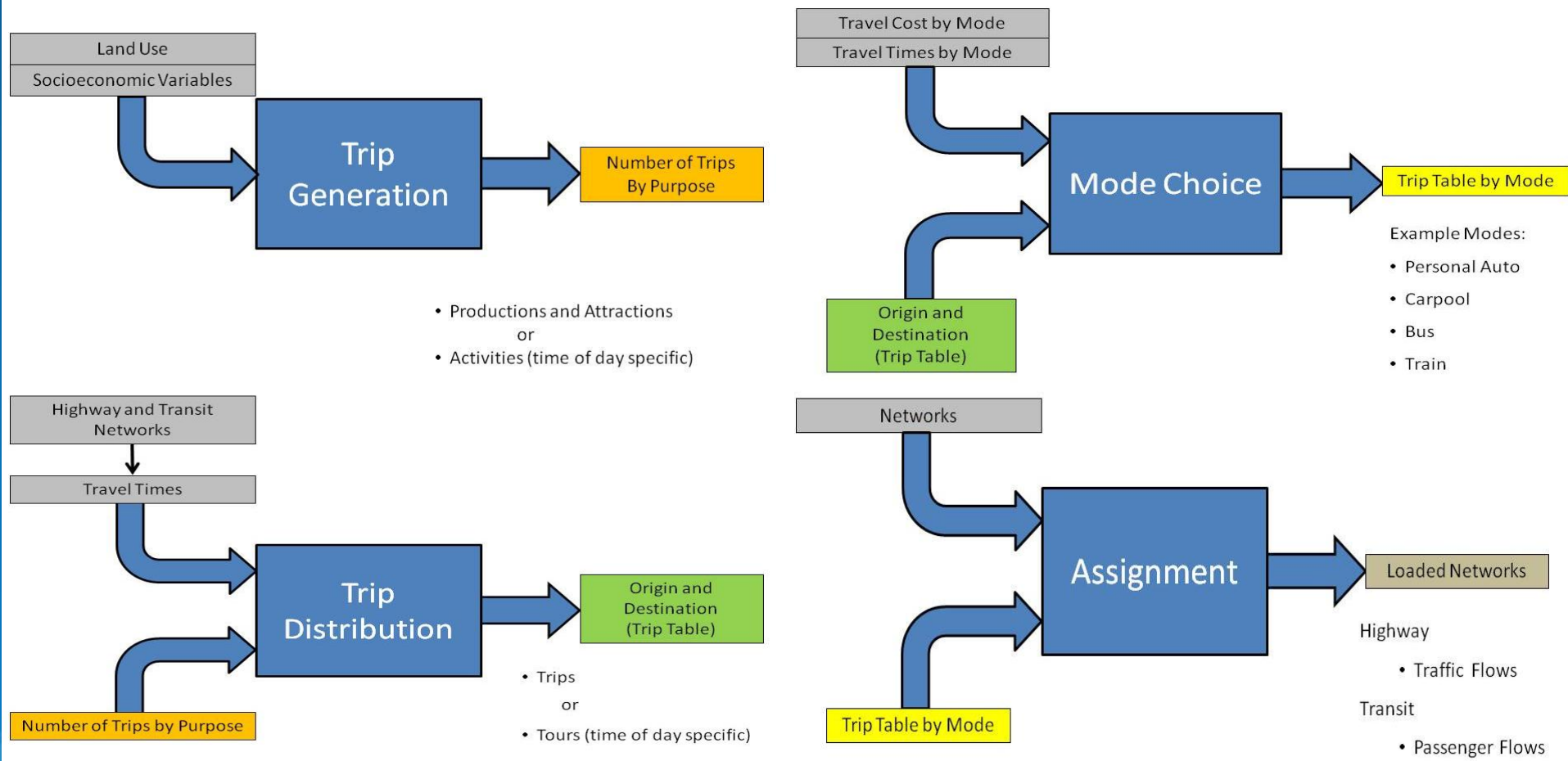
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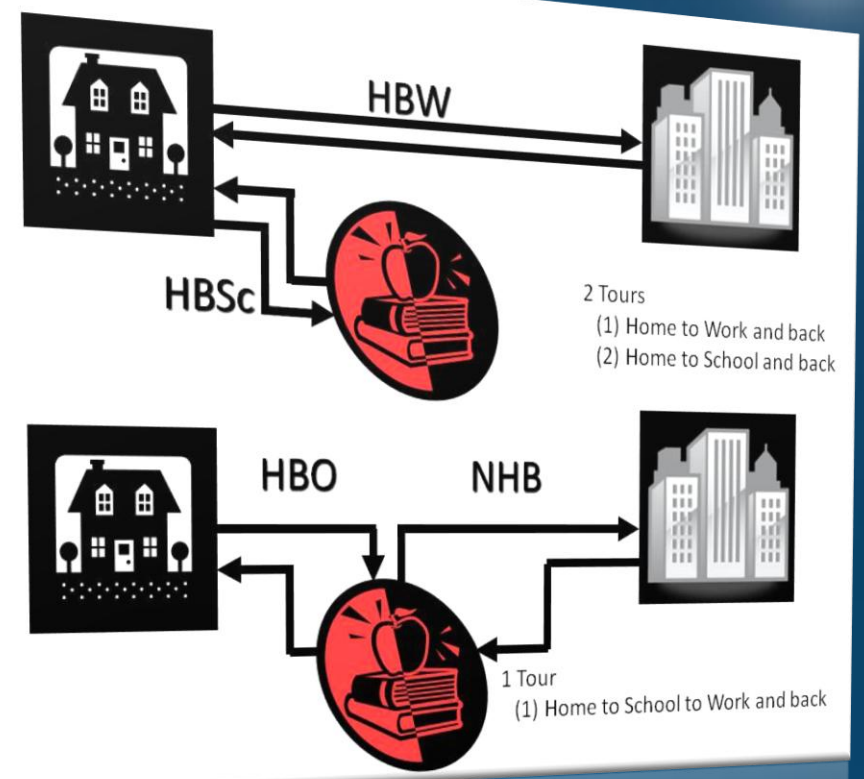
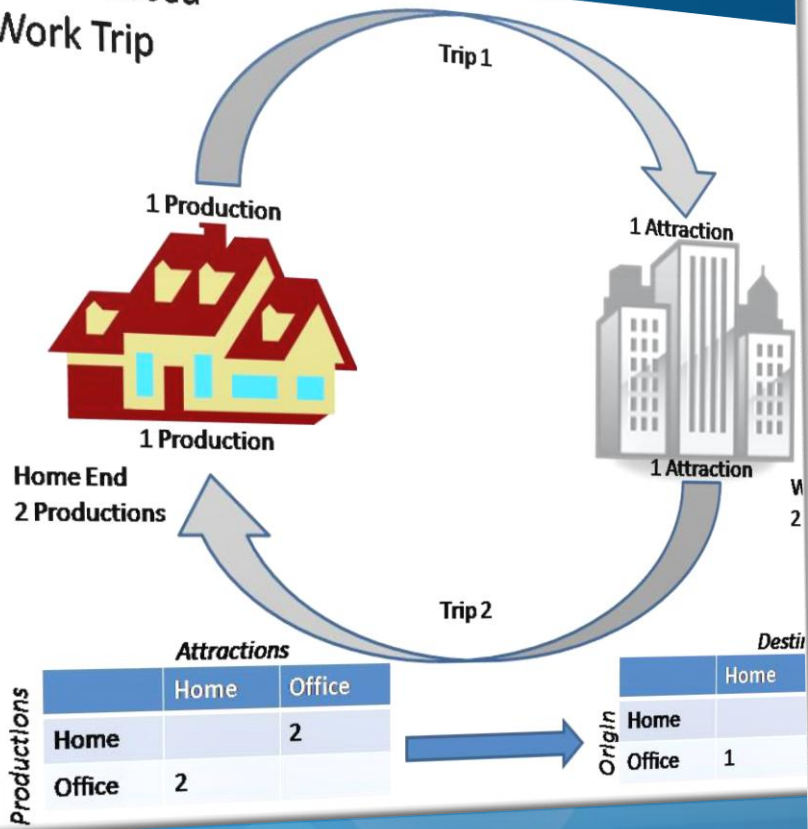
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Chapter 4 (continued)



Chapter 4 (continued)

Home Based Work Trip



Chapter 5 - Applications of TDF Models

- Historical Applications
- Current Applications
- Evolving Applications

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Chapter 6 - TDF Model Results

● Interpretation

● Communicating

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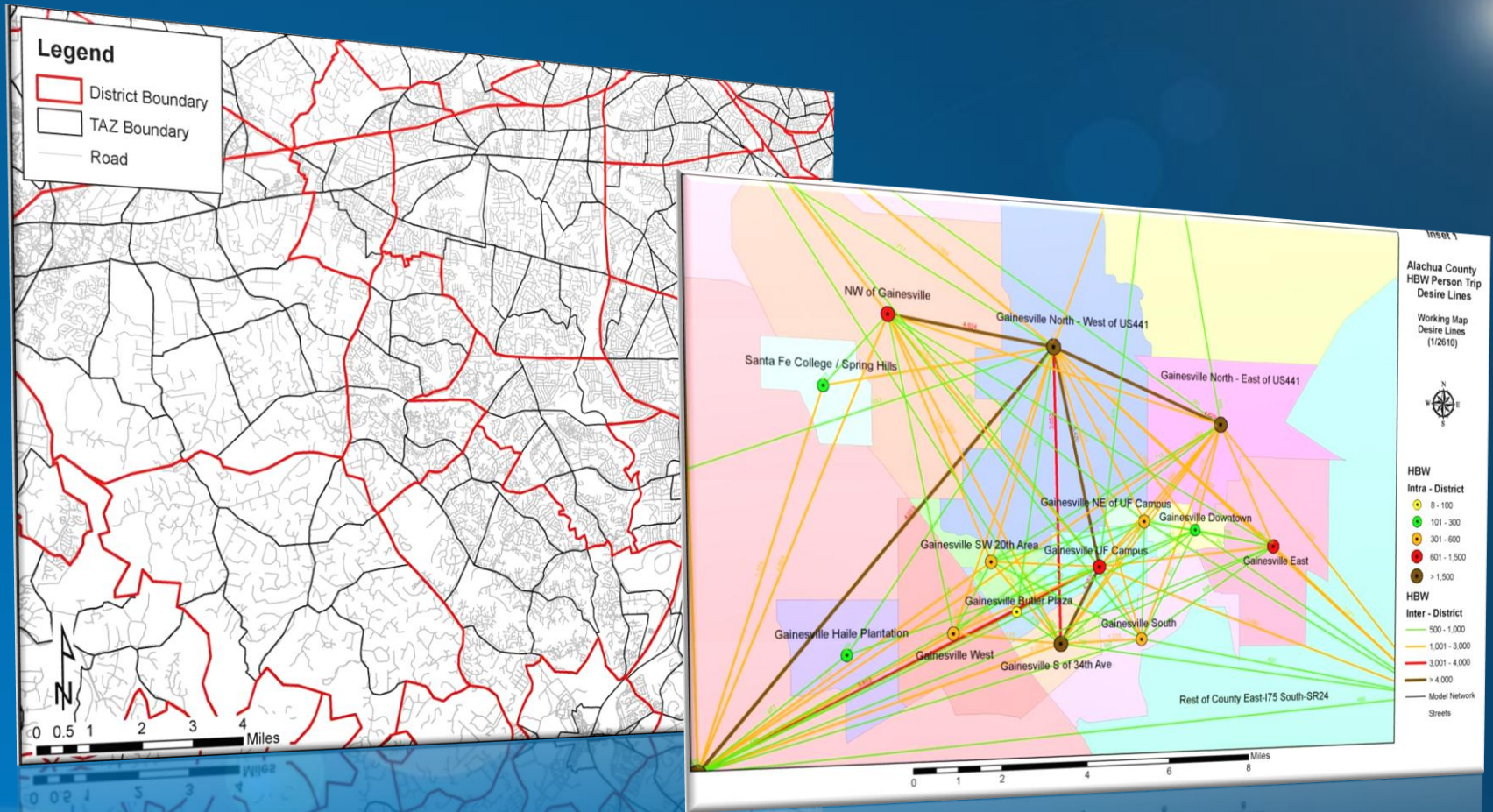
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Chapter 6 (continued)



Chapter 7 - Reasonableness and Sensitivity

- Reasonableness Checks

- Sensitivity Tests

- Additional Resources

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Chapter 7 (continued)

● Sources of Error

Coding Errors – Errors in coding the highway and transit networks, and errors in recording survey results.

Sample Errors – Errors from bias that occur in the survey sample frame. An example is a telephone survey where only land lines are reached for the survey calls. This would miss households without land lines, potentially resulting in a demographic bias in the observed travel patterns (i.e., missing low income households with no phone, young or very active persons with cell phones only, etc.).

Computation Errors – Errors which occur in developing the model programs.

Specification Errors – Errors from improper structure of the model where key variables or parameters are overlooked in the estimation phase. Errors from transferring model parameters from one region to another.

Data Errors – Error in underlying model data or through aggregation of data where key elements are overlooked.

Chapter 7 (continued)

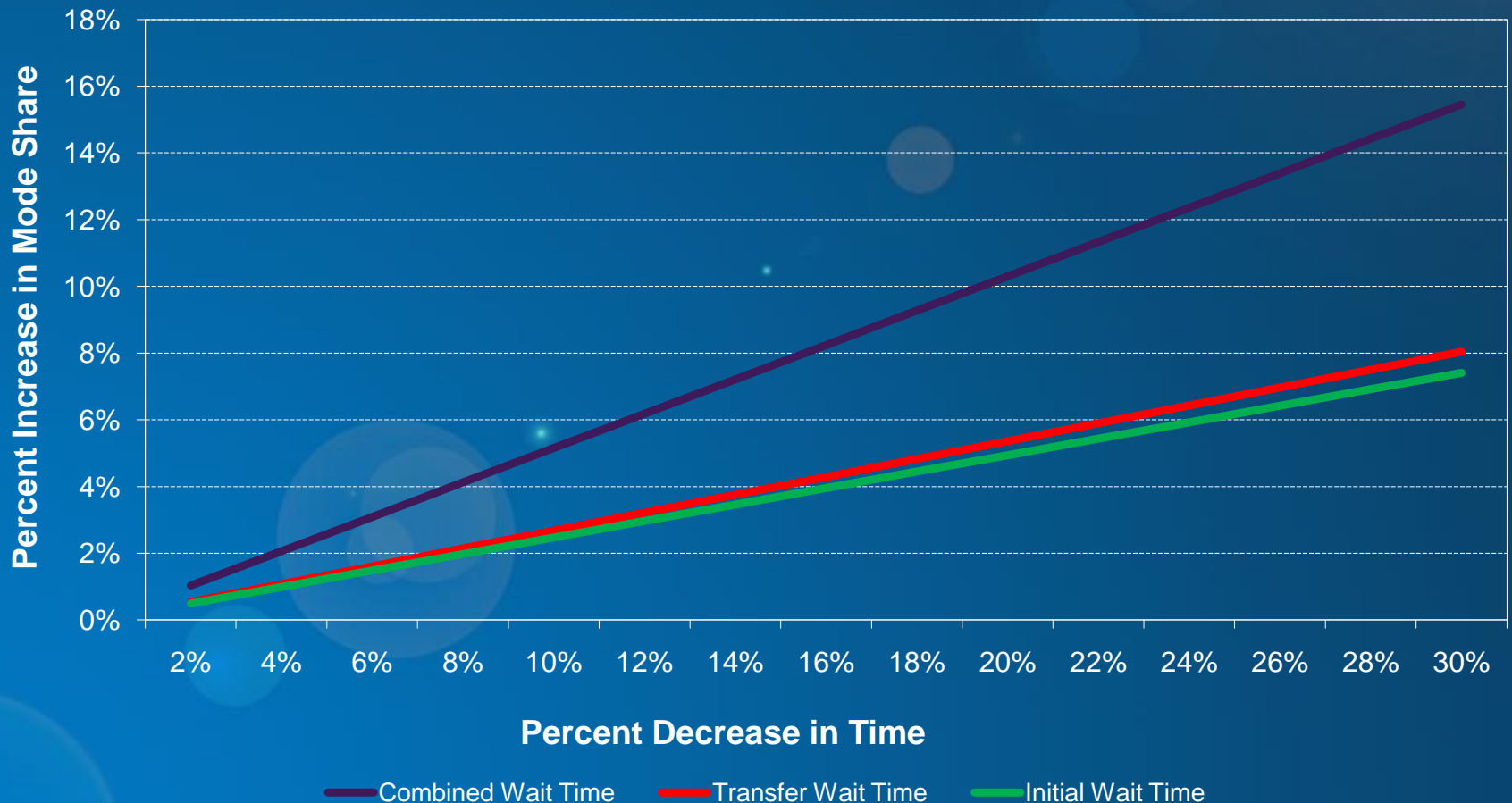
City	Transit	Carpool	Drive Alone
Dallas, Texas	4%	15%	81%
Pasadena, California	5%	16%	79%
Houston, Texas	5%	15%	80%
Atlanta, Georgia	10%	14%	76%
Baltimore, Maryland	14%	14%	72%
Oakland, California	15%	15%	70%
Pittsburgh, Pennsylvania	20%	13%	68%
Boston, Massachusetts	40%	10%	50%
San Francisco, California	41%	16%	43%
New York City, New York	61%	9%	30%

Chapter 7 (continued)

Average Wednesday Freeway Traffic by Month	Average	% of AADT
January	87,580	89.28
February	95,187	97.03
March	100,925	102.88
April	101,038	103.00
May	100,278	104.84
June	104,857	106.89
July	107,144	109.22
August	106,330	108.39
September	100,586	102.54
October	100,117	102.06
November	101,430	103.40
December	99,496	101.43

Chapter 7 (continued)

Elasticity for Wait Time to Mode Share





<http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2636>



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