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18th TRB Conference on



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Transportation Planning Applications

A Multi-Regional Transportation- Economic Model: O-D Detail for Freight and the Economy

June 21st 2021

Derek Cutler

Introduction

Shifting a paradigm: Moving away from averaged model responses to distinct economic corridors through leveraging existing data structures and more sophisticated modeling



- Glen Weisbrod
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- Kyle Schroeckenthaler



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- David Hensher
- Wen Liu
- Edward Wei



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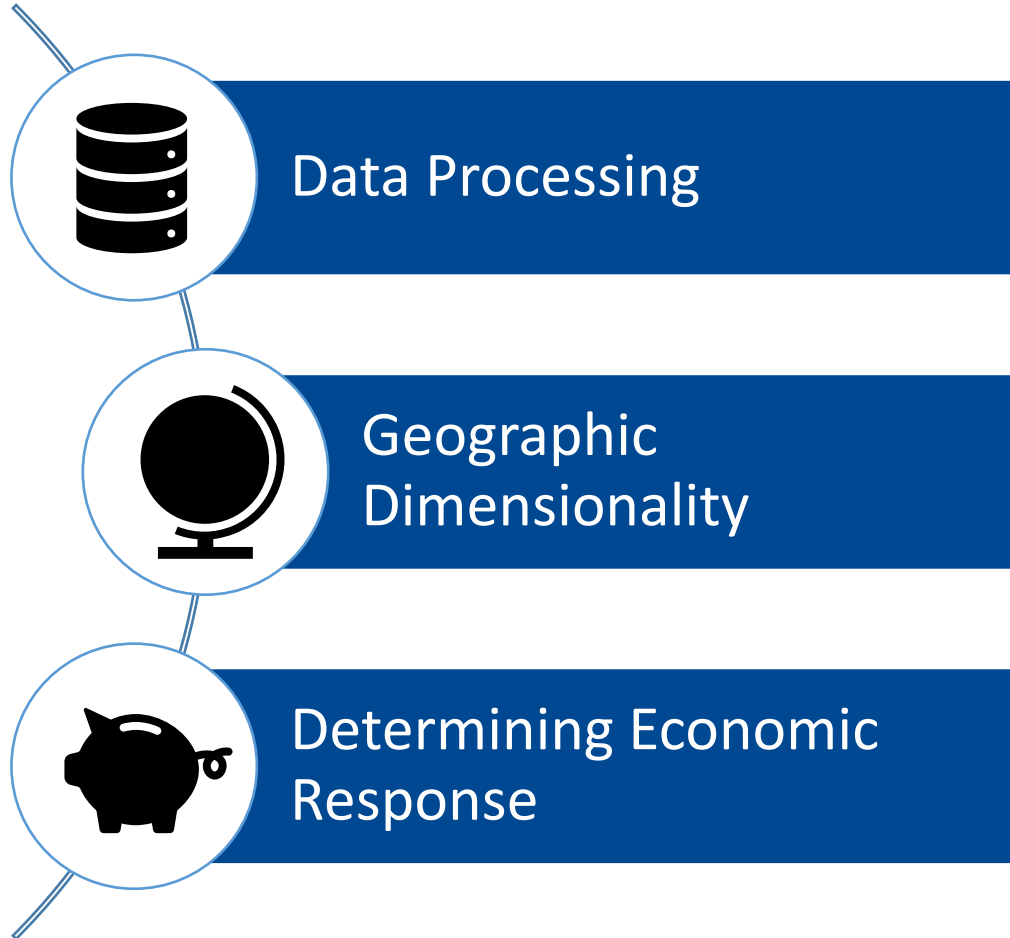


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Sequence of Steps



- Mechanisms for adopting model data
- Processing of data into usable inputs
- Leverage additional supplementary Zonal data
- Linking freight and economy to zone-to-zone movements
- Positioning to answer more complex questions

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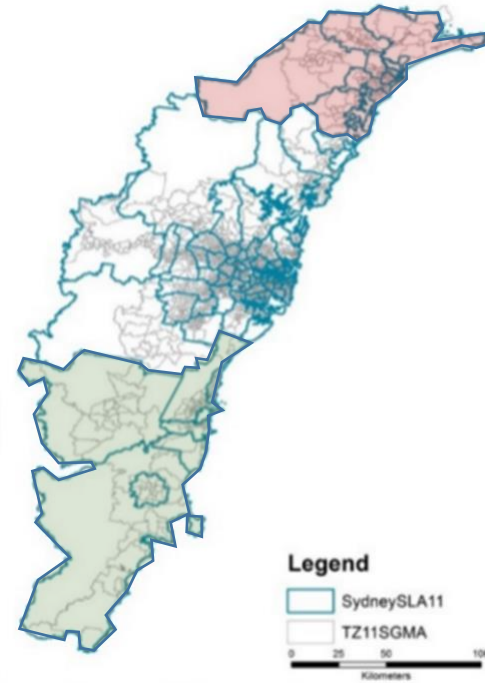
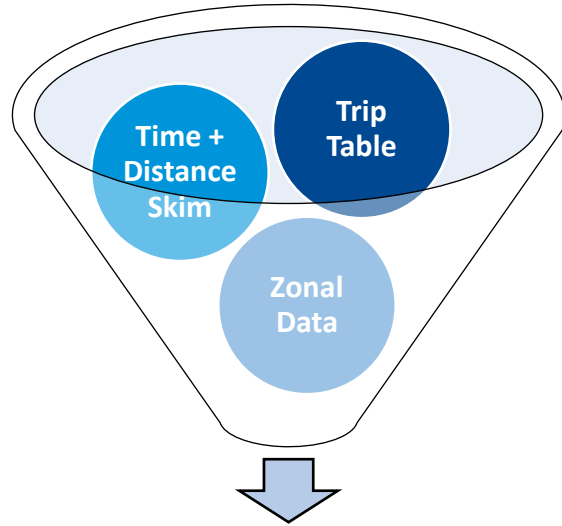


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Data Processing



Core dimension of Inputs

- From Region
- To Region
- Mode Purpose
- Period

.csv Import
File

Zonal
Aggregation

Estimation
Ready Inputs

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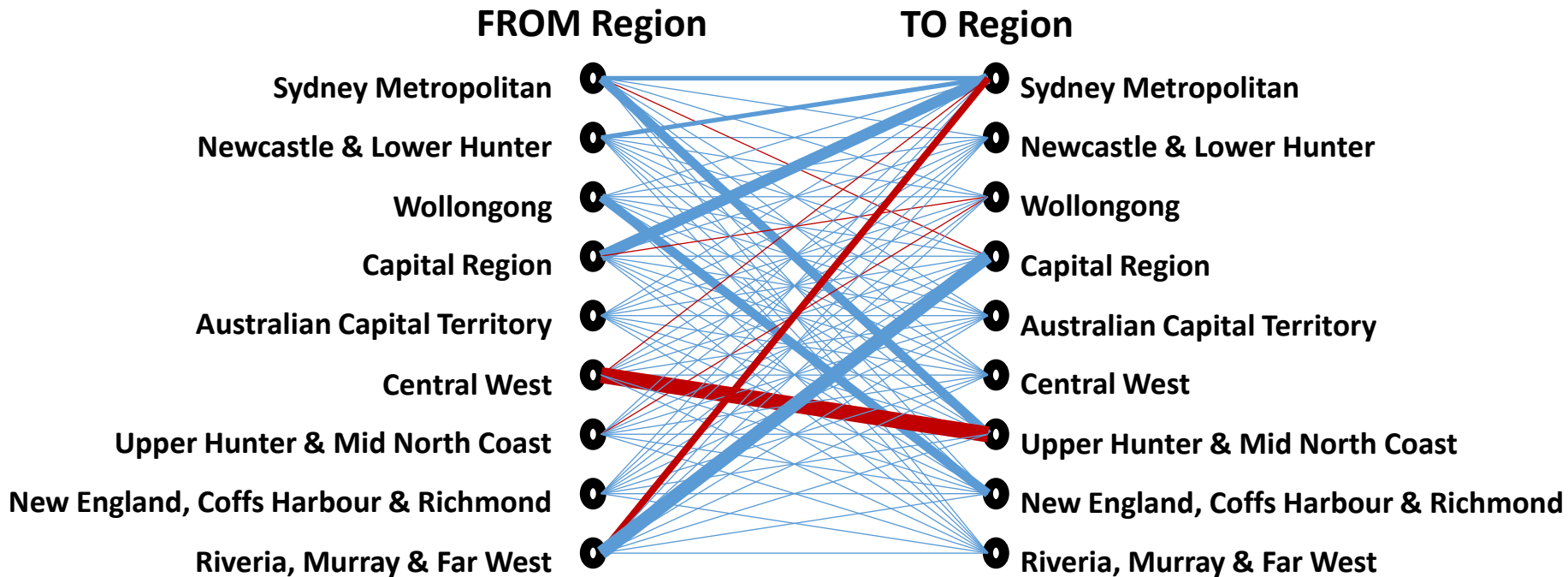


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Geographic Dimensionality



- Approximates corridor level behavior in non-network
- Ties directly into freight databases to look at goods on board moving explicitly between regions
- Visual Diagnostics



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Determining Economic Response

Business Travel

- Economic Trade Model
- Cost savings to industry takes on characteristics of O-D Economic Trade

Commute Travel

- Journey to Work Data
- Dictated by travel model inputs

Freight Traffic

- Freight Data
- Economic Trade Model
- Use economic model to look at who produces/consumes freight

- Uses information on specific region to region activities as opposed to region specific totals to determine response
- Breaking down analysis into distinct regions enables more precise modeling of localities
- Can always aggregate upwards

- Granularity of model (Regions) dictated by available economic data, or ability to generate data
- More data being crunched, though can be offset by design



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Enhancing Regional Modeling

Capabilities

- Integration with Travel models
- Better Utilization of Data Structures
- Promote integrated view of world

Applications

- Enhanced regional precision (**MPO's**)
- Enabled micro modeling (**Equity**)
- Induced Activity Generation (**Impacts**)

Transferability

- Easy to implement in other models
 - Customizable

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Thank You

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