# The Oregon Statewide Integrated Land Use & Transport Model – Generation 1

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# **Required Analytical Capabilities**

- Effect of land supply on land use and location decisions
- Effect of land supply on travel behavior
- Effect of highway capacity increases on travel behavior
- Effect of rail investment on highway use
- Effect of changes in the demographic and economic composition of Oregon

# Statewide Model



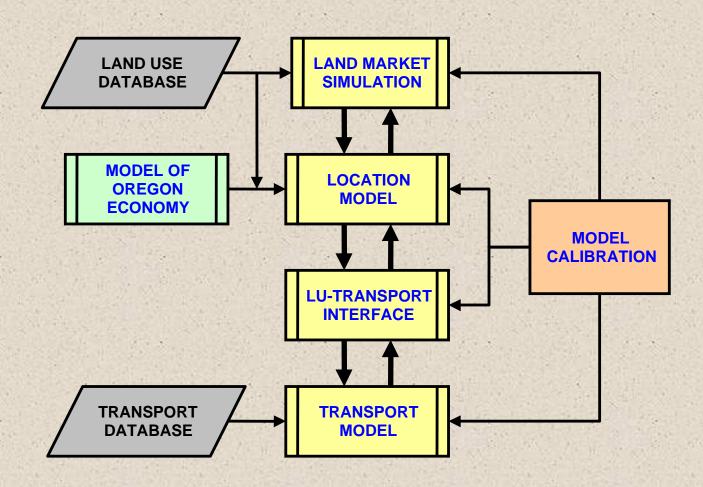
# Model structure

- Economy represented in terms of production and consumption relationships
- Includes markets and prices including land and floorspace prices
- Travel arises as a result of economic interactions
- Calibrated using Oregon data

## **Principal Features of TRANUS**

- Consistent theory and structure
- Truly integrated land use and transport models
- Nested MNL structure
- Integrated time series framework
- Hierarchical scenario definition
- Graphical user interface

## **Statewide Model Structure**



### **Economic Model**

- Spatially aggregate (statewide)
- Specific to Oregon
- Based on IMPLAN Model (528 sectors)
- Annual transactions in \$ million
- Aggregated to 28 sectors, then to 12 sectors
- 3 household and 4 land sectors

## **Sector Definitions**

#### **Industries**

Agriculture/Forest/Fisheries

Construction & Mining

Lumber & Wood

**Printing & Publishing** 

High Tech & Electronics

Manufacturing

Other Manufacturing

Transport/Communications/

**Utilities** 

Wholesale

Retail

FIRE

Services

Government

#### Households

Low Income

Middle Income

High Income

#### Land

Industrial

Commercial

Urban residential

Rural residential

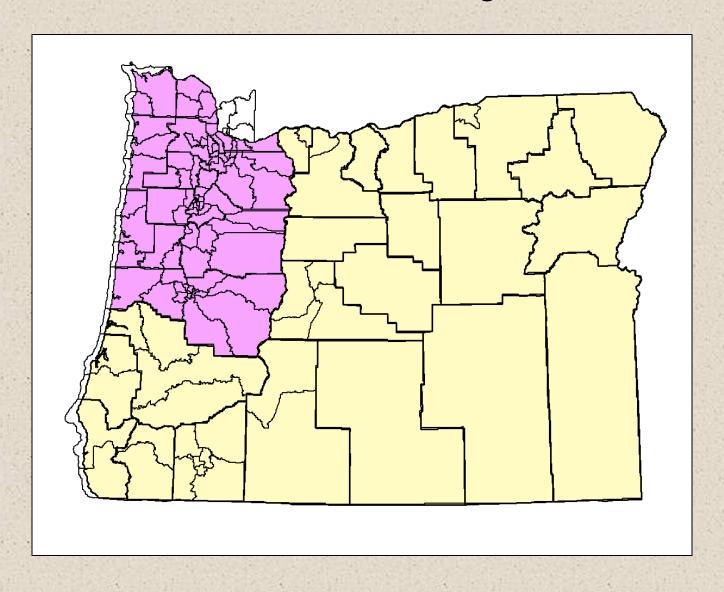
# **Social Accounting Matrix**

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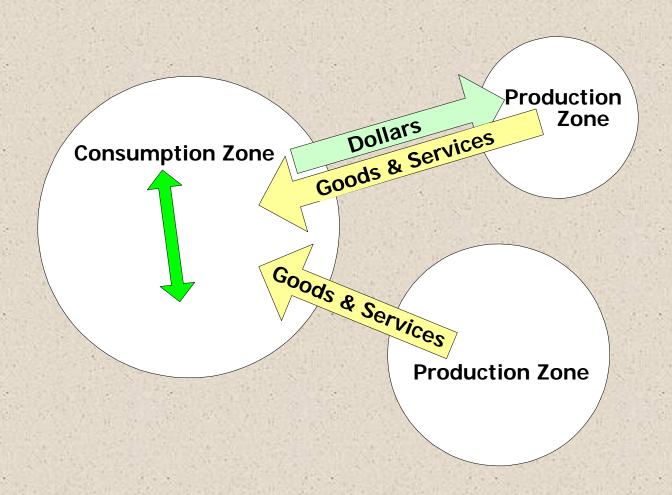
# **Location Model Highlights**

- Production and consumption relationships
- Generation of induced demand
- Location of induced demand
  - Utility function
  - Utility scaling
  - MNL distribution function
- Equilibration of demand and prices

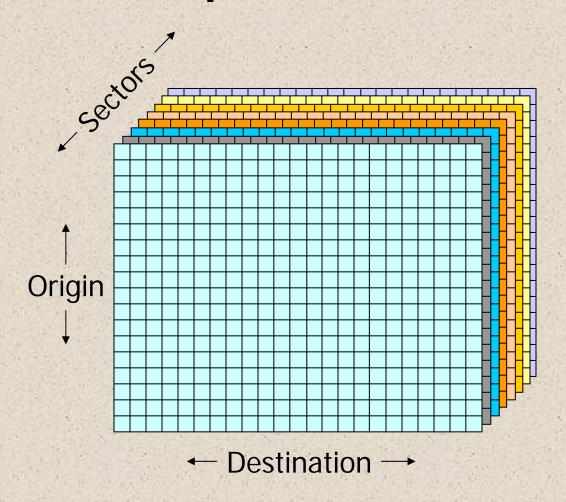
# **Model Structure: Zone System**



# **Spatial Relationships**



# Sectors and Spaces Define the Model

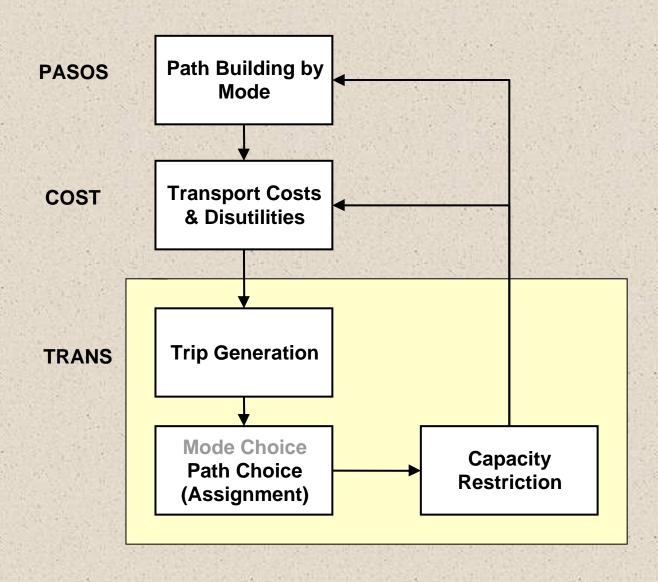


## Land Use-Transport Interface

- Maps socioeconomic sectors to transport categories
- Specific unit conversions
  - Dollars to households for person travel
  - Dollars to tons for freight movement
- Defines directionality
  - Two-way for person travel
  - One-way for freight movement
- Defines temporal relationship

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# **Transport Model**



# **Model Structure: Temporal Dynamics**

