Model Development in Oregon:
Past, Present, and Future

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Presentation Overview

- Why We're Here
- The Past (Gen1)
- The Present (Gen2)
- The Future (?)
- Symposium Program

Why We're Here

- Advance integrated land use-transport-economic modeling
- Further USDOT's Travel Model Improvement Program (TMIP)
- Communicate with users
- Information exchange

First Steps

- Oregon Travel Behavior Inventory
  - Piloted in the Portland region
  - Extended to remainder of the state
  - Includes rural counties
- Portland blazes new trails
  - Activity-based travel models
  - Commodity-based freight models
  - TRANSIMS case study

First Steps

- ODOT development of consistent urban models
- Early consideration of statewide models (1996)

Genesis of TLUMIP

- Transportation and Land Model Integration Program (TLUMIP) formed in 1996
  - Build useful prototype models
  - Proof of data and concept
- Parallel model development tracks
  - Established model for statewide (↓risk)
  - Original model for urban areas (↑learning)

Gen1 Major Products

- TLUMIP web site
  - Meeting notes
  - Technical reports
  - Development Guidelines
  - Development Protocol (draft)
  - Procedures Manual
  - Application Manual
- Databases

Gen1 Major Products

- Strategic Plan
  - Developed to guide ODOT efforts
  - Expand to MPOs
  - Incorporate state agencies
- The models themselves
  - Gen1 statewide model
  - Gen1 urban model

Gen1 Statewide Model

- Implemented in TRANUS
  - Profiled at first symposium
  - Most documentation on TLUMIP web site
- Reduce risk by using established platform
  - Aggregate equilibrium treatment
  - Fully integrated land use and transport models
  - Met some design goals (DCM, RUT, …)
  - Closed source

Gen1 Statewide Model

- A qualified success
  - Validated well to available data
  - Limited by data availability and aggregation
  - Coarse zonal and network detail

Gen1 Urban Model

- Original development resulting in UrbanSim
  - Exogenous economic trends
  - Embedded transport model
- Embodied many original design goals
  - Random utility theory and discrete choice models
  - Dynamic disequilibrium formulation
  - Open source

Gen1 Urban Model

- Eugene-Springfield testbed
- Also a qualified success
  - Proved concept
  - Robust residential location model
  - Data availability

Major Outcomes

- Useful and successful prototypes
  - Functioning models
  - Knowledge base
- Data more difficult than anticipated
  - Land price and supply data required major work
  - Inconsistent coverages and definitions
  - GIS lag

Oversight and Collaboration

- Peer Review Panel
- Oregon Modeling Steering Committee
  - Peer review
  - Education and training
  - Communications
  - Technical
- Technical Users Committee
- University collaboration

Oversight Committees

OMSC

- Metropolitan planning organizations
- ODOT
- Other Oregon cabinet agencies (DEQ, DAS, DLCD, OECDD, OHCS)
- FHWA

Peer Review Panel

- Julie Dunbar (NCTCOG)
- Doug Hunt (Calgary) *1996-98*
- Frank Koppelman (Northwestern)
- David Simmonds (DSC) *1998-present*
- Gordon Shunk (TTI)
- Michael Wegener (Dortmund)
- Ed Weiner (USDOT)

Second Generation Models

- 1998 to present
- Build on successes and experiences from Gen1 models (good and bad)
- Work in progress
  - Gen1 review and Gen2 design
  - Eugene-Springfield case study
  - Training and implementation assistance
  - Gen2 data and model development
  - Statewide Model Application Program (SMAP)

Gen2 Design Goals

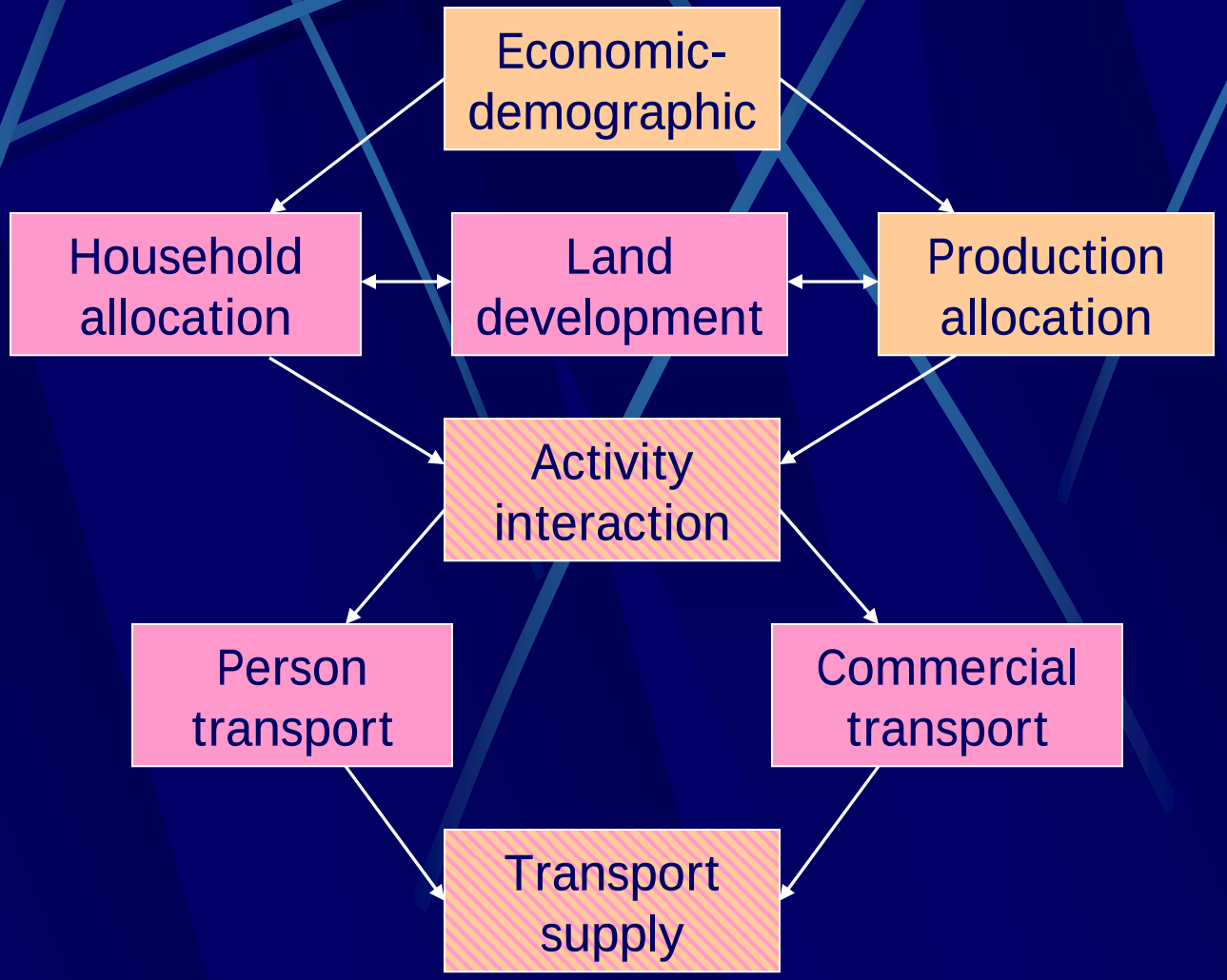
Rick's Idea

- Unify Gen1 streams
- Variable geographic scale
- Fully integrated model
- Quasi-dynamic
- Equilibrium approxi-mation
- Tour-based extension of traditional models
- Survive to the end

Bill's Idea

- Unify Gen1 streams
- Single geographic scale
- Fully integrated model
- Fully dynamic
- Hybrid equilibrium-disequilibrium
- Activity-based travel model
- Affordable data

Gen2 Model Structure



Statewide Model Application Program (SMAP)

- First real application of Gen1 statewide model
  - Exercise technical abilities
  - Communicating model results
- Training and implementation assistance

Beyond Gen2

- Convergence of MPO and ODOT work
  - Further research and development
  - Difference in detail and scope
  - Complementary models exchanging information
  - Common data programs
- Augment/Lead TMIP Tracks E and F
- Useful policy decision-making tool
  - Accepted, practical, and useful
  - Broad and regular application

Symposium Program

- This afternoon
  - Advances in Portland
  - UrbanSim case study
- Wednesday morning
  - TMIP Update
  - Research in integrated land use-transport modeling

Symposium Program

- Wednesday afternoon
  - Statewide Model Application Program (SMAP)
  - Second Generation Models
  - Communicating Model Results
- Thursday morning
  - Applications of integrated land use-transport models
  - Panel discussion

On the Web

- www.odot.state.or.us/tddtpau/modeling.html
- www.urbansim.org