

Regional Architectures: Institutions of the Metropolis

Day 4
11.953

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 - The “Future” of Travel Demand Modeling
 - Integrated LUT Models
- Regional Architectures
 - Governing Systems
 - Metropolitan Dynamics
 - Realms of Relevance
 - Challenges of Different Disciplines
 - Practical Possibilities for Moving Forward

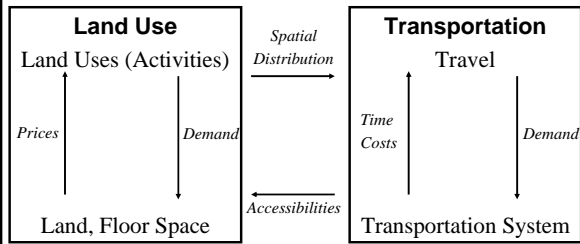
Travel Demand Modeling - Promise

- Technology advances
 - Computing power, GIS
- Theoretical advances
 - Direct-demand models
 - Integrated transport-use models
 - Transport-Emissions modeling
 - Activity modeling and Microsimulation (TRANSIMS)
- Practical advances
 - Mode consideration
 - Lower-cost data collection methods

“Integrated” Urban (LUT) Models

- Attempt to replace the typical approach to land use forecasting (i.e., “professional judgment”, Trend-Delphi) with more robust representations of land use development
- Attempt to capture the natural relationship/feedback between land use and transportation
- First models date to 1960s (i.e., Lowry)

Land Use-Transport Models General Schematic



“Integrated” Urban Models

- Probably 12-15 “operational” integrated urban models around the world
- In the US, the 3 best known are ITLUP (DRAM/EMPAL), MEPLAN, TRANUS
 - Operational, commercially available, history of use, applied in US
 - DRAM/EMPAL: spatial interaction (Lowry-based)
 - MEPLAN/TRANUS: spatial input/output

Source: Miller et al., 1999.

“Integrated” Urban Models

- Other notable models:
 - MUSSA (U. de Chile): academic research, prototypical application, discrete choice
 - UrbanSim (U. of Washington): academic research, prototypical application, discrete choice/microsimulation, **open source**

Source: Miller et al., 1999.

Integrated LUT Models: General Observations

- All fall short of ideal
 - Excessive spatial aggregation
 - static equilibrium
 - aggregate household representation
 - lack of endogenous processes (demographics, auto ownership)
 - reliance on 4-step travel models
 - data intensive

Source: Miller et al., 1999.

Integrated LUT Models: General Observations

- Still, strengths and solid basis for evolution
 - Microeconomic formulations of land market
 - framework for dealing with land use-transport interaction
 - integration with “off-the-shelf” computing capabilities (i.e., GIS, disaggregated databases)
- New generation of models needed
 - Disaggregate, dynamic, non-equilibrium

Source: Miller et al., 1999.

Implications for Us

- We all use Models, both normative and positive
- Models can be powerful
- Models can be abused
- Know your models
 - Strengths and weaknesses
- Question your models
 - Assumptions
- Recognize that *all* modeling is an *art*

Regional Architectures

Relevant Dimensions

- Degree of Bureaucratic Centralization
- Degree of Territorial Consolidation
- Degree of Bureaucratic Professionalism
- Degree of Bureaucratic Autonomy
 - From political process

Influencing Factors

1. Governance Systems
2. Metropolitan Dynamics
3. Metropolitan Responsibilities
4. Conflicting Disciplines
5. Conflicting Interests
 - Public over Private
 - Local over Regional

“Caricatures” of Governing Systems

	Deconcentration (Local Admin)	Devolution (Local Govt)
Origin/ Legitimacy	Arms of Central Government	Semi-autonomous
Broad Powers	Delegated powers	Elective powers
Oversight	Central Ministry control	Some oversight (some linked to \$)
Decision-making autonomy	Directed by center	Elected local council
Revenue Mechanisms	Share of national taxes, some local	Grants, local taxes/fees

Smoke, 1999.

The “caricatures” in practice

- Most places display a mixture of deconcentration and devolution
- Results can be confusing
 - Who has responsibility?
- Most metropolitan governments function at the “second tier”
 - through voluntary coordination among municipalities (e.g., typical US approach) *or*
 - through a political and institutional restructuring, with direct elections empowering metropolitan political authority (e.g., Toronto, Ontario).

“Caricatures” of Conflicting Disciplines?

	Land Use	Transport
Objectives	Complex, Variable	Simpler and more Stable
Planning Techniques	Design Criteria	Standardized forecast tech.
Level of Government	Mostly Local	Higher-up
Horizons of Reliable Predictions	Shorter	Longer

Modified from Gakenheimer, 2005.

“Caricatures” of Conflicting Disciplines?

	Land Use	Transport
Implementation Units	Small, Incremental	Large, indivisible
Implementation Budget	Private, Incremental	Public, unitary
Implementation Prospects	Lower	Higher
Perspective	Normative	Positive

Modified from Gakenheimer, 2005.

What Metropolitanism in Land Use?

- Role of typical regional “organization” (in US)
 - Source of population, economic and other relevant data and projections
 - Forums for coordinating local government plans
 - Occasionally with powers to enforce planning and implementation
 - Typically created by state governments
 - Organized as “councils” of local governments
 - May produce metro-level (broad brush) land use plans
 - Typically patched together from local plans (remember who the members typically are...)

Challenges to the Metro Land Use Agencies

- Advisory role
- Generally “behind the times”
 - That is, unable to keep up with local government plans and Metropolitan spatial evolution
- Decisions held “hostage” to local government interests
- Ultimately, the individual takes precedent over the region...

What Metropolitanism in Transport?

- In some sense, the inverse of land use
- At local government level
 - Local capital improvement plans, in practice often fall short of needs
 - Developers have important influence
 - Need to turn to higher levels of government for resources
 - State, Federal

Metropolitan Transportation Agencies

- In US: MPO
 - Empowered by Federal (since 1962) law to coordinate state and local actions
 - Generally, no *implementing* power
- States still play a large role
- In the end suffer from same problems as their land use counterparts
- Lack of funding is chronic concern...

LUT Interaction Leverage Points in Metropolis

1. MPO forecasts for region (demographic, economic, transport, etc.) crucial mechanism for coordination
 - Local governments, however, prefer their “own destiny”
 - Forecasts often reflect the local plans (thus, not really forecasts)
 - LUT “chicken and egg”
 - Local governments plan land uses on expected transportation initiatives.

LUT Interaction Leverage Points in Metropolis (cont)

- 2. Local and Regional Plan "synthesis"
 - Offers metropolitan agencies chance to provide framework for local plans.
 - Again, local governments, however, prefer their "own destiny"...
 - Again, plans often reflect the local plans (thus, not really regional plans)
 - MPO has slightly stronger influence
 - Due to its responsibilities in the transport planning process

LUT Interaction Leverage Points in Metropolis (cont)

- 3. Feedback
 - Possibility for regional agencies to feed regional analysis results back to local jurisdictions
 - Challenged by staffing, time and resource shortfalls
 - Again, rarely any real incentive for local governments to modify their plans
 - Local governments may not even know of neighboring jurisdictions' plans

Does a "solution" to metropolitan governance exist?

Of course not...

- We can hope for incremental improvements
- Challenges rest in balancing planning, provision, enforcement
 - Among local, regional, national

Remember, we need to:

- Account for some variation in constituent preferences (i.e. "Tiebout" sorting); *and*
- aim to prevent inefficient competition across municipalities; *and*
- control for "spillovers" (such as traffic).

Towards a “Regional Architecture” for LUT Metropolitan Governance

- Effectiveness requires:
 - strong political legitimacy (through direct elections);
 - autonomy from higher and lower levels of governments (financial and human resources);
 - Relevant territorial coverage

Lefevre (1998)

Towards a “Regional Architecture” for LUT Metropolitan Governance

1. Forming a “Metropolitan Vision” Porter (1991)
and
2. Defining a Metropolitan Constituency

Towards a “Regional Architecture” for LUT Metropolitan Governance

3. Improving knowledge of regional models Porter (1991)
 - What works institutionally
 - What works analytically
- Sacramento Model “test bed”
- TRANUS, MEPLAN, SACMET/ITLUP

UrbanSIM

Towards a “Regional Architecture” for LUT Metropolitan Governance

4. Improving Programmatic and Regulatory Techniques
 - a. Incentives “from above”
 - b. Public Finance Reforms...
 - To eliminate competition for investment
 - To more equitably distribute costs of economic growth and public infrastructure investments
 - To counteract poverty concentration
- E.g.:
- Twin Cities (Minneapolis-St. Paul, MN): ~ 20% of locally-collected taxes transferred to regional tax pool for redistribution
 - Denver (CO), Pittsburgh (PA): Regional Asset Districts, suburbs contribute to center-city infrastructure

Porter (1991); Brenner (2002)
