Towards a new generation of land use transport interaction models. A viewpoint

Bert van Wee,
Delft University of Technology, The Netherlands

WSTLUR
June 2014

Outline

• Conclusions
• Introduction
• Underpinnings of conclusion

1. Conclusion:

1. Needed: next generation of LUTI models, for trends like:
   • peak car
   • decline (population, shops, services, …)
   • the impact of ICT on activity patterns and travel
   • cycling trends and policies
   • (and maybe more)

2. Lack of empirical evidence: what-if – change parameters
2. Introduction

Common in trends raising need for a new generation of LUTI models:

• Not more residential, commercial, work areas, but adaptations within current system (EU, Japan, some areas USA, ....)

• Linked to many changing policy questions (redevelopment, social exclusion, stop PT services)

• Asymmetry in effects: growth versus decline (sunk costs, behavioural aspects)
However:

- Future of trends: uncertain
- Lack in empirical research: dynamics trends, and their wider impacts on the land use and transport system

Therefore:
What-if
Also needed:

• wider set of accessibility indicators
  • potential accessibility (incl ICT?)
  • possibilities for activity patterns
• Desaggregations (groups of people, areas: fairness)
• Logsum: valuation
• interactions between key actors in the transport and land use system (serious gaming)
• dynamic visualisations

Much also relevant for conventional transport models
3. Underpinnings: trends

Peak car:
• Not only Crisis
• Parameters homogeneous groups of people probably not stable
• Trends uncertain

(e.g. Special Issue Transport Reviews, 2013, Goodwin and van Dender, eds.)

LUTI: less impact of roads on land use? What-if: parameters
**Demography**
Less growth, decline, regional heterogeneity

Example national: Japan. Regional variation: France (social exclusion)

**LUTI**: from growth to decline
Sunk costs
Behaviour: not symmetric (e.g. Dargay, 2001; air transport demand – fuel+income: Wadud, 2014)

**ICTs impact on activity patterns (working, changing shopping behaviour, e-learning)**
- Substitution, complementarity, fragmentation
- Results in past applicable for future, in case of ‘much better ICT’?
- Maybe dichotomy: social activities – proximity, other modes than car; utilitarian trips: more substitution ICT
• Less traditional shops? Inner city dynamics? ‘Shops’ for information, advise, ‘seeing and feeling’. Buying: online. Then: no need to transport goods – less car use? Less impact of car accessibility on locations of shops?
• **LUTI:** too uncertain? What-if at best ...

Electric mobility

• E-bikes, E-cars
• Range (bikes: +, cars -)
• Mode choice / substitution
• Generation
• Policies (e.g. restrictions)

**LUTI:** area specific?
Revival bicycle

Los Angeles, New York, Davis, Boulder, Paris, Lille, Germany, .... (Pucher and Bueler, 2012)

• Proximity
• Quality of urban environment
• Indirect effect: policies – reallocation of space

LUTI: short distances, slow modes/cycling

Policy relevance

• Redevelopment urban areas – interaction LU-T
• Implications of population decline. Market or interventions? Which interventions?
• Equity – social exclusion
• Infrastructure policies: are extensions ‘no regret’?
• Closures of PT (lines, stations / stops). Interventions or not? Which?

• Interaction between questions / topics
Summary of implications for LUTI models

- What-if calculations
- Accessibility indicators / how to model accessibility for which research or policy question?
- The role of key actors
- Combining LUTI and Expert Judgement
- Output, visualization

Thank you!