Urban Development: Traffic Reorganization

Research Proposal 1

Instituto Tecnológico Autónomo de México

Carlos Lezama [1]

Research Question / Tested Hypothesis / Main Argument

It is common knowledge that more lanes on avenues imply more traffic, a situation perfectly modelled with incomplete information games. This is just one example of poor planning in urban public infrastructure. To this problem we can add cities designed for cars — when the population that owns them is a minority —, work centers that are far from housing units, and an intrinsic classism in the distribution of public resources for this matter. However, urban planning has a general effect on all sectors of a city that can result in high mobility and accelerated economic development. Or, catastrophic traffic jams and underdevelopment of marginalised areas.

Model / Assumptions

This research would be based on decision theory and simulation. Most important assumptions will be present on time management, regarding the weekday and time an agent moves from point A to B, and spatial analysis for unlimited “stops” before returning home. Note that circular data plays an important role here. Finally, the development of indicators for traffic management (such as closing streets, public transport demand implementation, and car flow control) is a must for future real-time decision making.

Methodology

Agents will have multiple choices on their trips and similar a priori beliefs (letting jams to exist — just like in real life when multiple people have incomplete information and decide to take the same route). Based on decision trees, and circular data, Bayesian estimation of a posteriori heterogeneous decision will play an important role at the decision making on these multiplayer games.

Data

Traffic data can be obtained from reports from various cities, and even from Google's real-time monitoring.

Inspired By

- “Infraestructura de transporte público y precios al consumidor: tiendas de cadena, vendedores ambulantes y pequeños negocios” — Angel de Jesús Espinoza Escobar.
- “PPTcirc: análisis de datos circulares con árboles de Pólya proyectados” — Karla Mayra Pérez Muñoz.

---

1. One-pager written for the research seminar on institutional economics. E-mail: **clezamaj@itam.mx** . ↩