Planejamento, dimensionamento, programação, análise e avaliação de sistemas de transporte de passageiros

Prof. Dr. Claudio Barbieri da Cunha

Escola Politécnica

Universidade de São Paulo
Brasil

cbcunha@usp.br

Função do Transporte

- **Movimentação geográfica de pessoas e de cargas/ mercadorias produzidas em uma economia entre um ponto de origem e um de destino**

- **Relevância econômica**
  - Maior empregador na India
  - 13% do GDP dos EUA

    Fonte: Sussman, Joseph (2000) Introduction to Transportation Systems. Artech House
  - Pode representar de 30 até 70% do custo logístico total

Importância do Transporte

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Com o que sonhamos?

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Nossas necessidade básicas

Sistemas de transporte - Componentes

- Veículos
- Vias (infra-estrutura)
- Terminais
- Gestão
- Sistemas de controle

Poluição do ar

- Causam doenças respiratórias
- Veículos circulando na RMSP emitiram em 2010 257 mil toneladas de gases poluentes (90% do total)
- Veículos de carga (18% da frota): 24% dessas emissões (60 mil toneladas)
- Diesel é o combustível mais poluente

População em áreas urbanas está aumentando

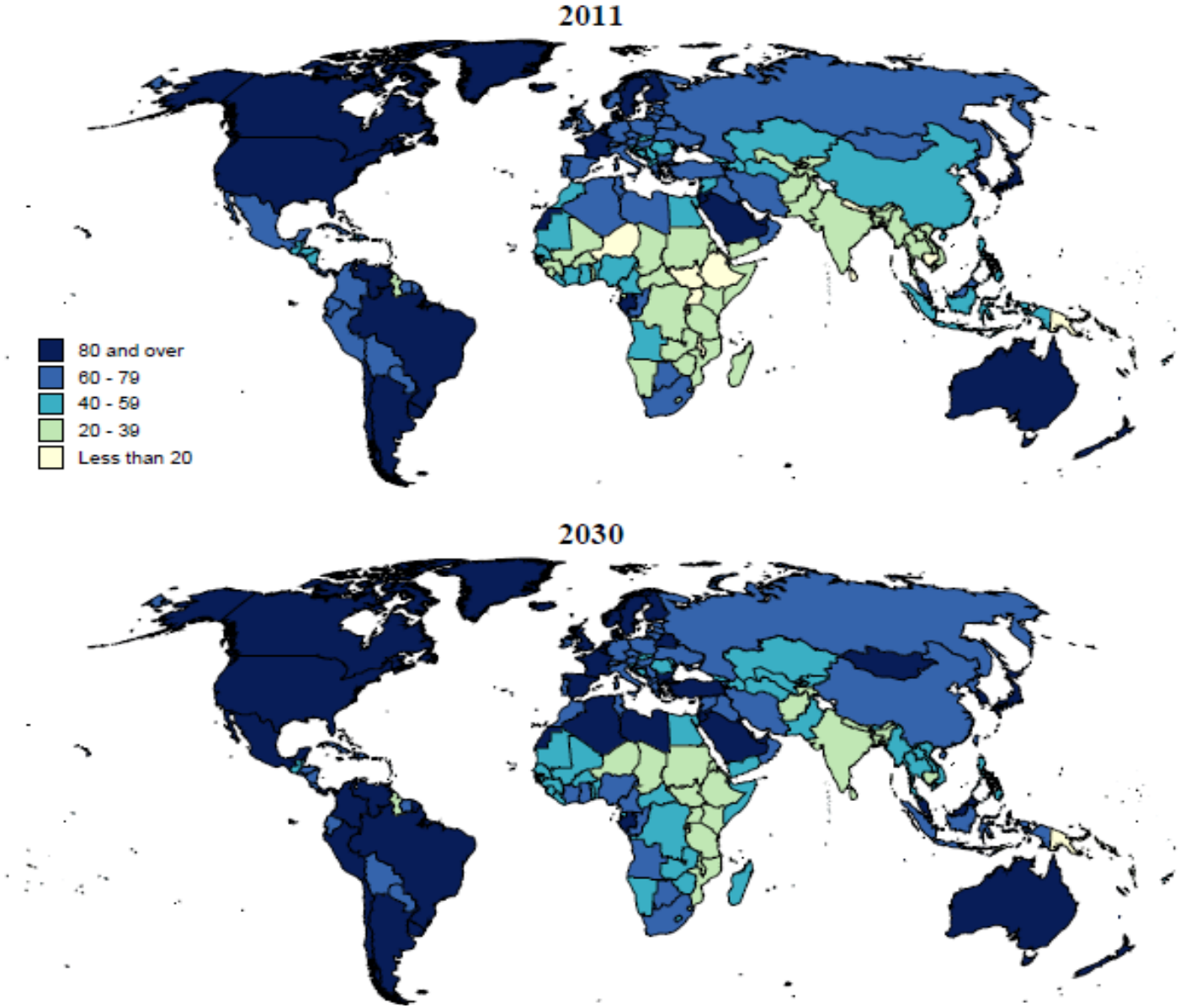
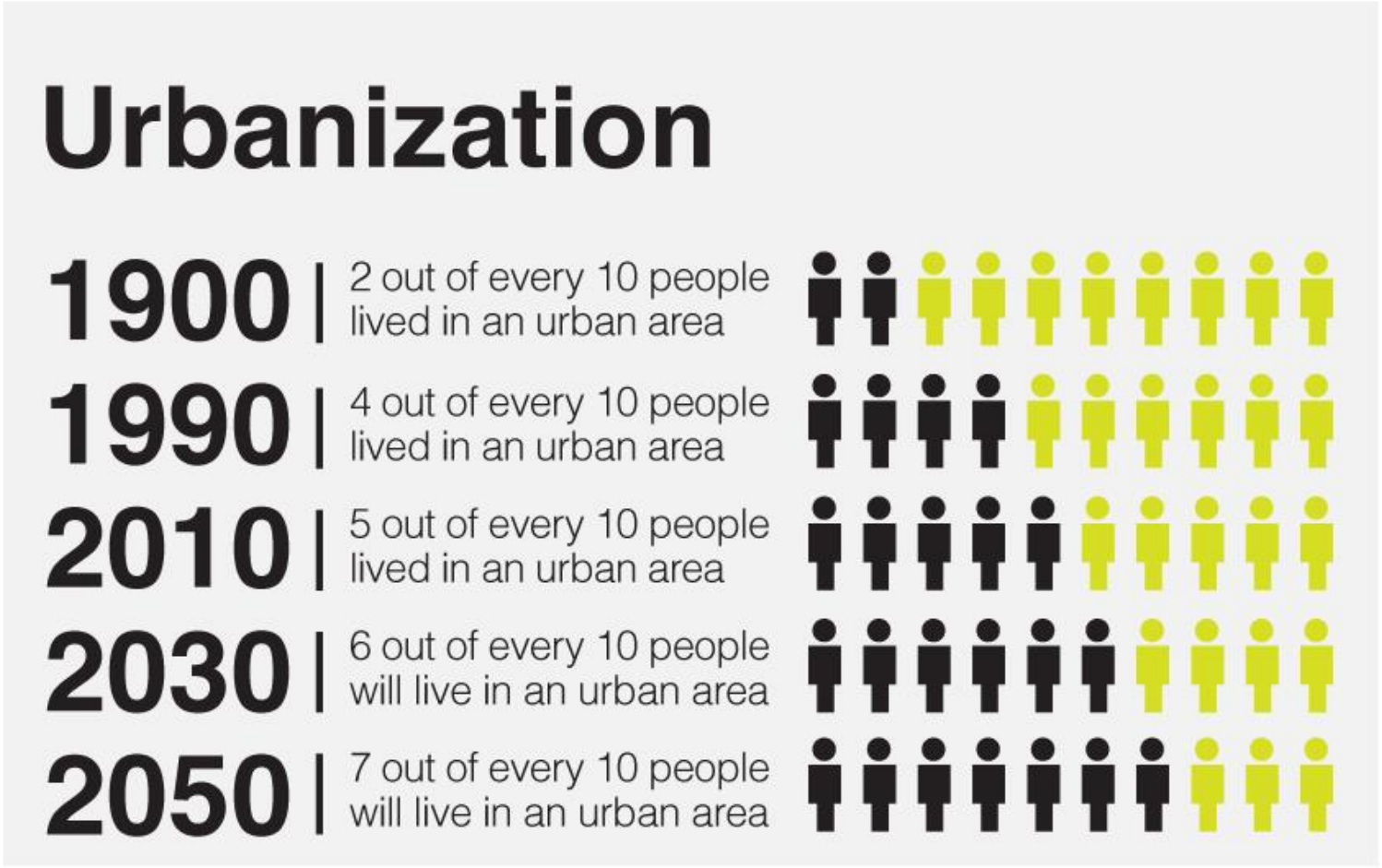


Fig. 1. Spatial distribution of the current mega cities of the world and their population development since 1975.
Data source: UN (2007).

Urbanização



Importância do Planejamento de Transportes

- **Investimentos elevados**
  - Podem ser superiores a R$ 100 milhões por km!!!
- **Amplo espectro de impactos, inclusive ambientais**
- **Impactam desenvolvimento econômico e qualidade de vida!**

Como mitigar os efeitos do trânsito de veículos?

London parents will get fined for dropping their kids at school by car

Katherine Martinko (@feistyredhair)
Transportation / Cars
March 1, 2017

Share on Facebook

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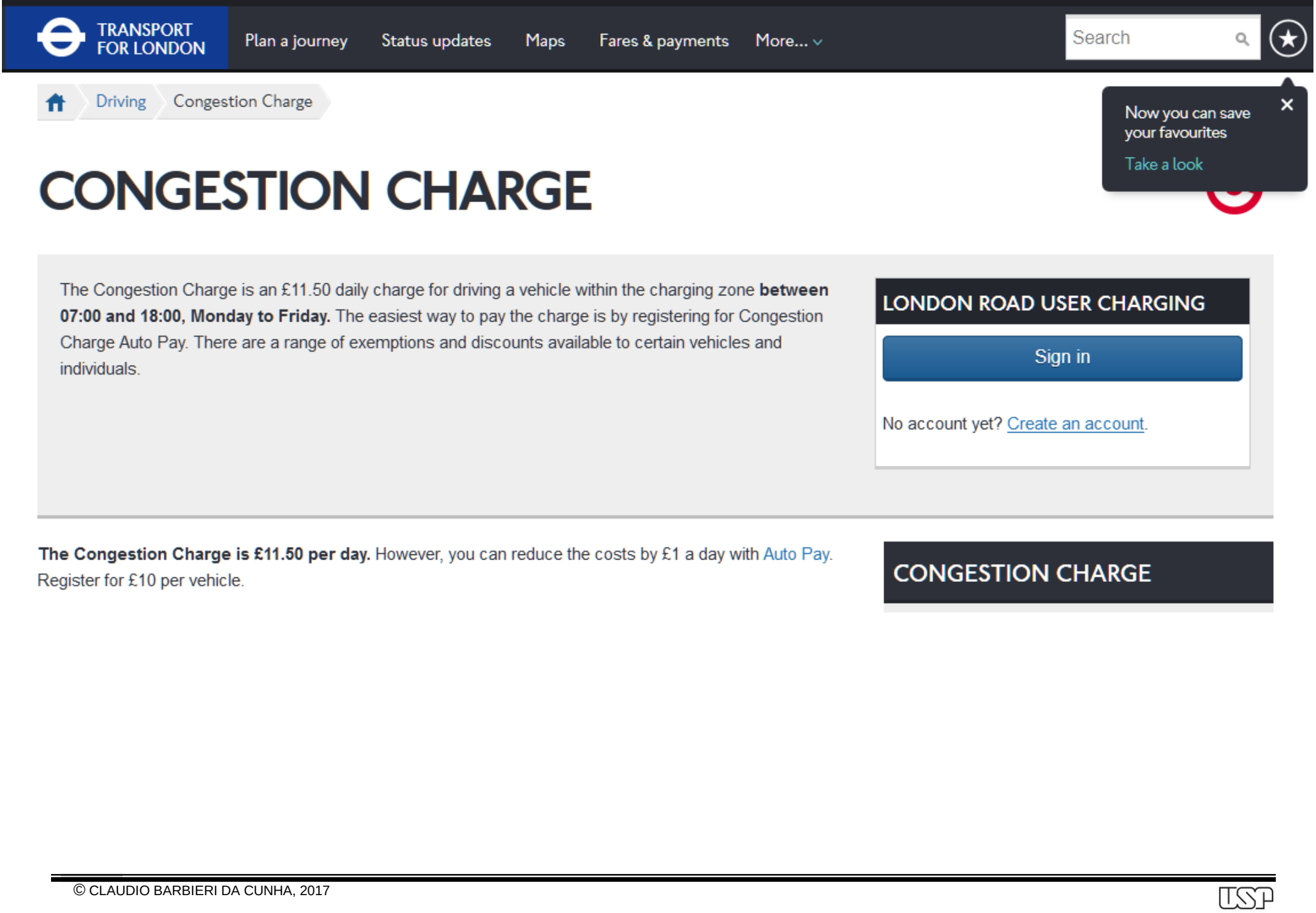
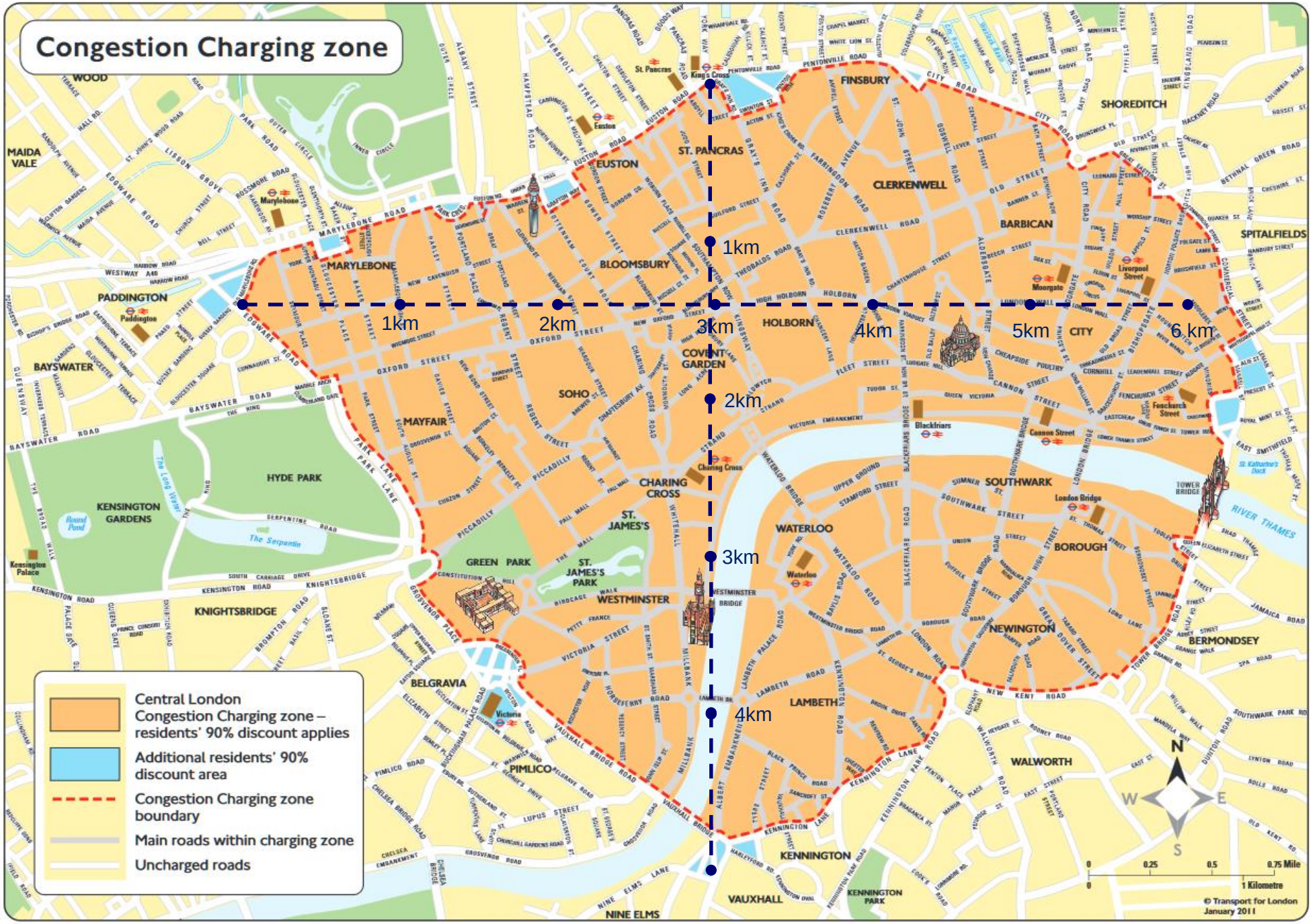
In an amazing reversal of American policies, a neighbourhood in east London is prioritizing the safety of children over the convenience of cars.

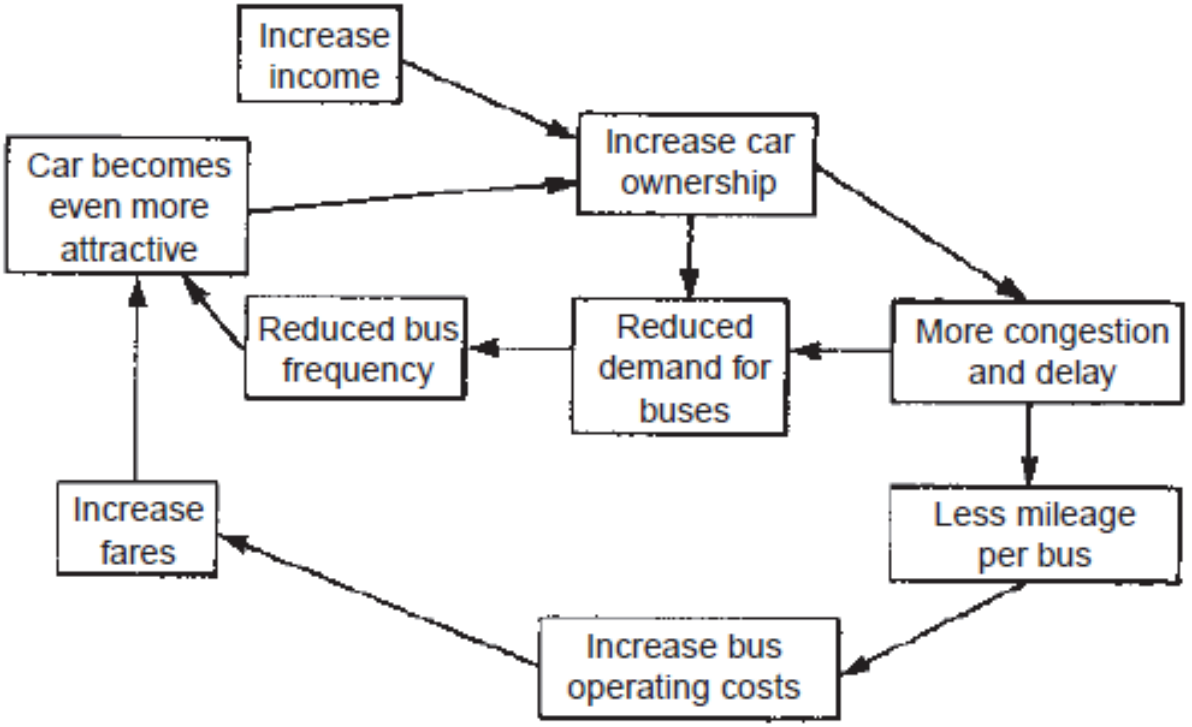
"It's a sledgehammer to crack a nut." This is how one angry parent described the recent crackdown by London police on parents who drop their kids off at school by car. Yes, you read that correctly – the very mode of transportation that many American schools insist is the only safe way to deliver kids to school is now being *criminalized* in the United Kingdom.

http://www.treehugger.com/cars/london-parents-will-get-fined-dropping-their-kids-school-car.html



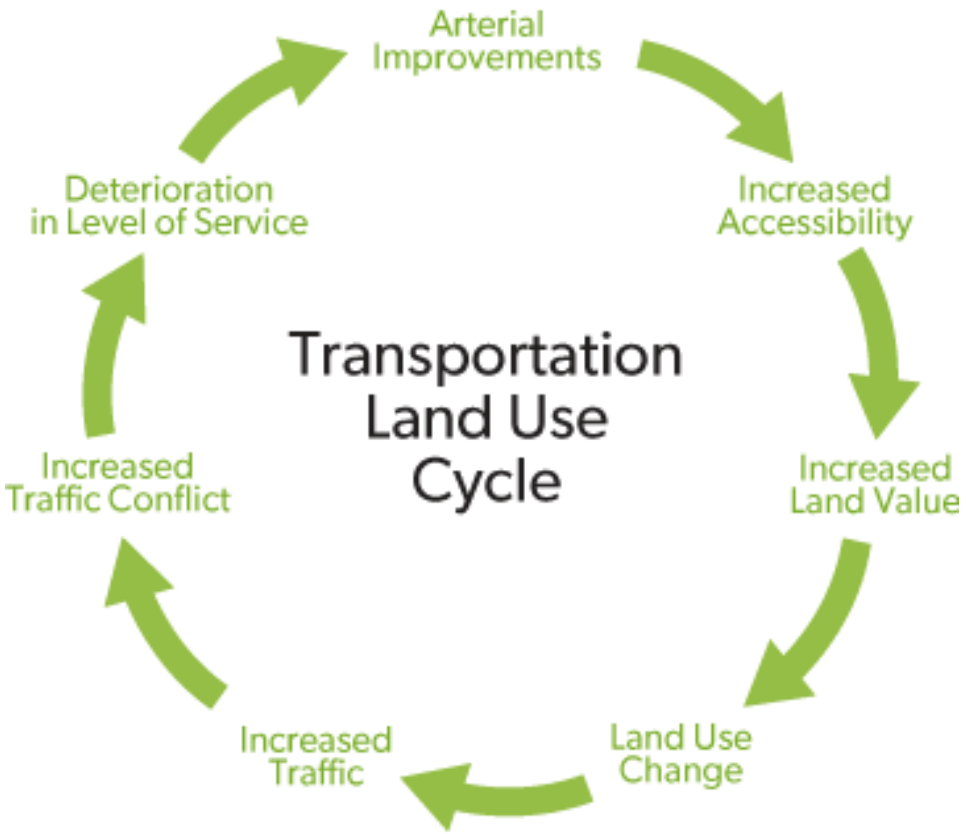


Car and public-transport vicious circle

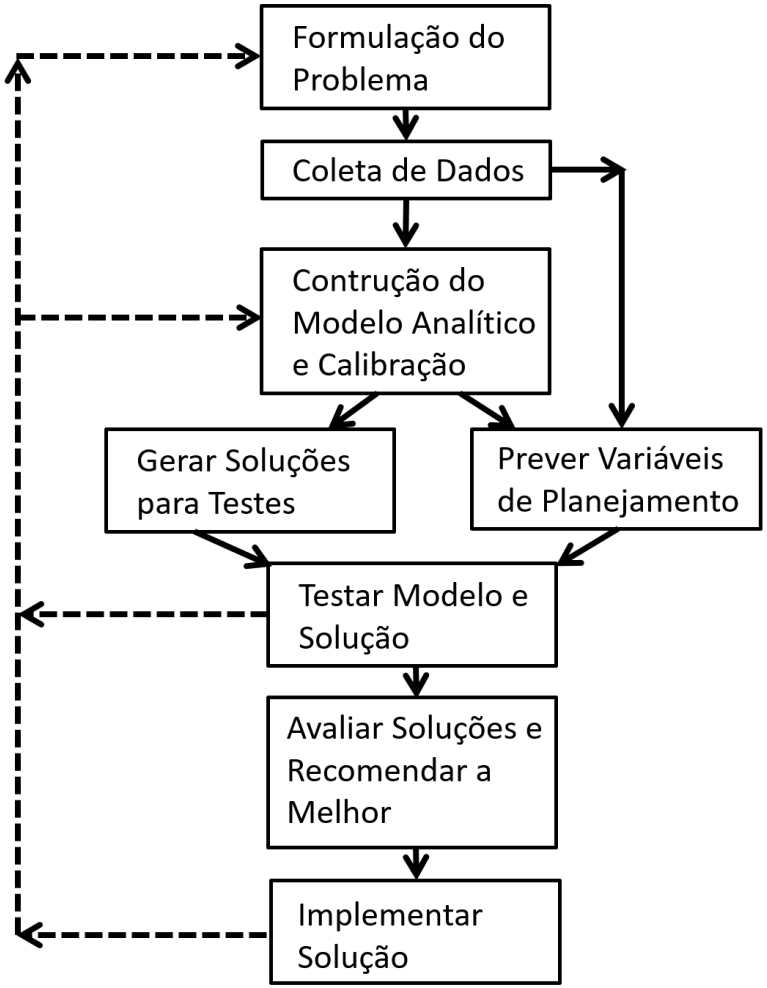


Fonte: Ortúzar e Willumsen (2011) Modelling Transport.

Transporte e uso do solo

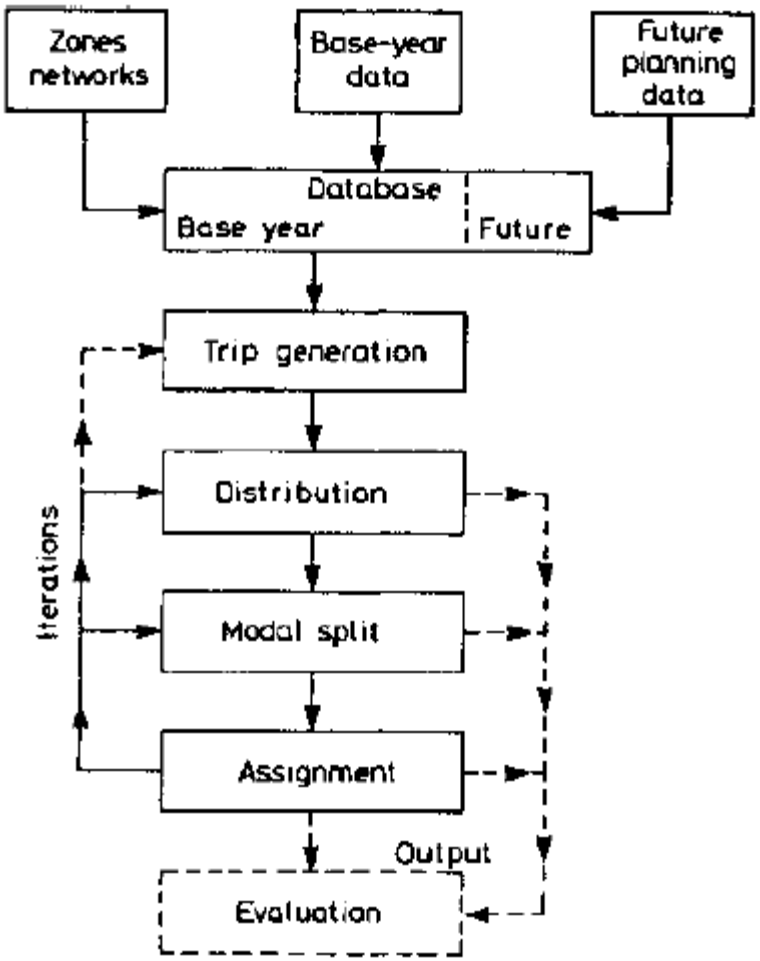


Tomada de decisão no Planejamento de Transportes



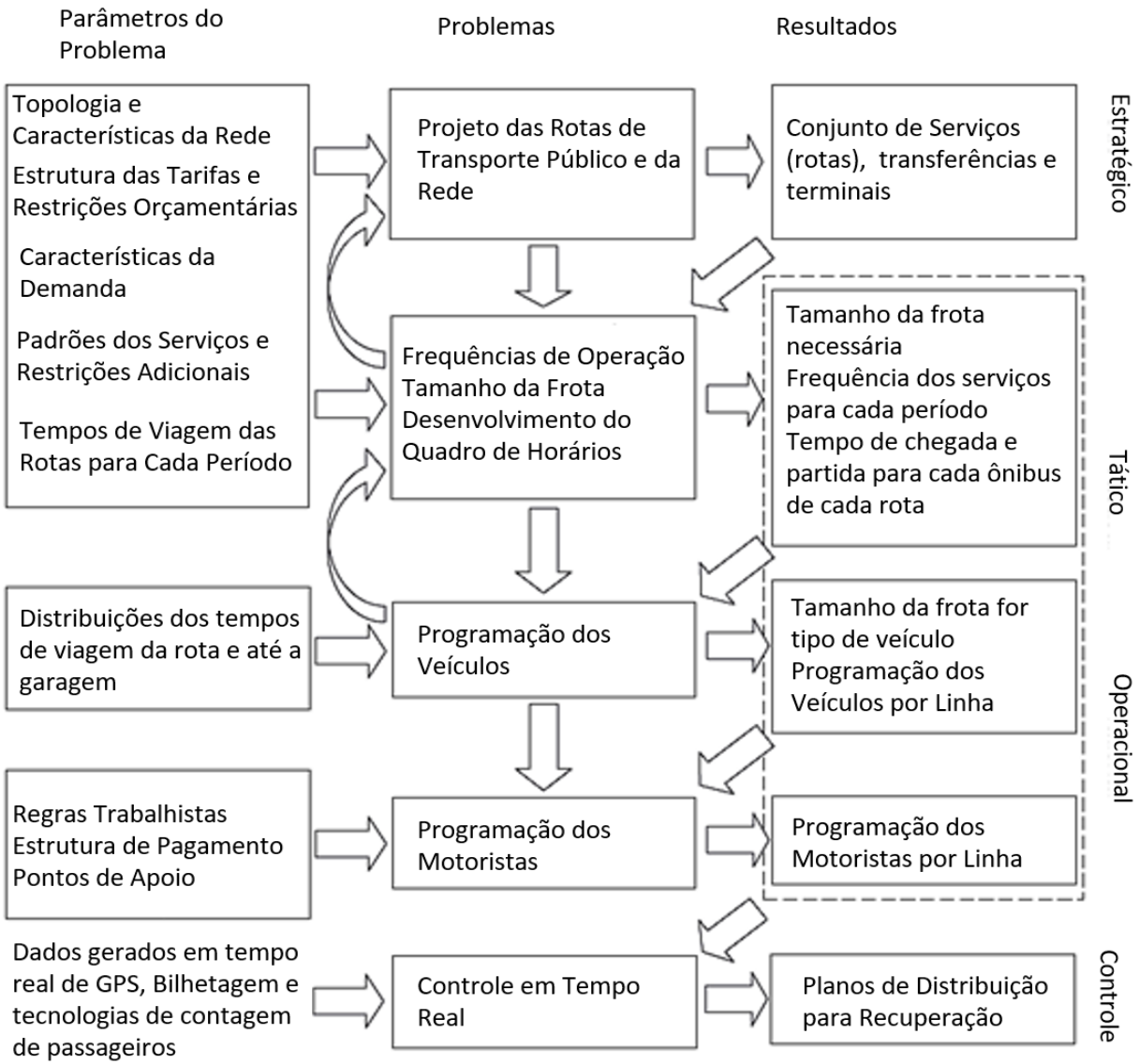
Fonte: Ortúzar e Willumsen (2011) Modelling Transport.

The classic 4-stage transport model



Fonte: Ortúzar e Willumsen (2011) Modelling Transport.

Etapas do processo de planejamento de transporte público por ônibus



Fonte: Ibarra-Rojas *et al.* (2015), adaptado de Ceder e Wilson (1986).

Types of decisions

- **Type A: Long-term decisions by public bodies (e.g. transportation infrastructure projects, Transit Oriented Development policies)**
  1. multiple decision-makers and strong impacts on contrasting stakeholder interests;
  2. complex financial procedures;
  3. high level of uncertainty and relevant impact/context variables;
  4. strong potential interactions with other systems (e.g. land-use, economy, etc.);
  5. zero-to-low levels of reversibility for implemented decisions

Source: E. Cascetta et al. A new look at planning and designing transportation systems: A decision-making model based on cognitive rationality, stakeholder engagement and quantitative methods Transport Policy 38 (2015) 27-39

Types of decisions (II)

- **Type B: Long-term decisions by private companies (e.g. project financing, fleet composition)**
  1. decisions with moderate-to-high impacts on stakeholders including public bodies and financial institutions;
  2. high level of uncertainty on relevant impact/context variables;
  3. moderate interactions with other systems (e.g. construction industry);
  4. low levels of reversibility for implemented decisions.

Source: E. Cascetta et al. A new look at planning and designing transportation systems: A decision-making model based on cognitive rationality, stakeholder engagement and quantitative methods Transport Policy 38 (2015) 27-39

Types of decisions (III)

- **Type C: Medium/short-term decisions by public bodies (e.g. traffic regulation, demand management schemes, Intelligent Transportation Systems)**

1. identifiable decision-makers with clear responsibility, wide range of interactions with stakeholders (from very high to none);
2. systematic decision procedures in the presence of a close set of alternative project options, with quantitative design variables;
3. low level of uncertainty on relevant impact/context variables;
4. low interactions with other systems;
5. high level of reversibility.

Source: E. Cascetta et al. A new look at planning and designing transportation systems: A decision-making model based on cognitive rationality, stakeholder engagement and quantitative methods Transport Policy 38 (2015) 27-39

Types of decisions (IV)

- **Type D: Medium/short-term decisions by private companies (e.g. operation of transportation services)**
  1. identifiable decision-makers with clear responsibility, low interactions with stakeholders (e.g. workforce);
  2. relatively straightforward decision procedures;
  3. low level of uncertainty on relevant impact/context variables;
  4. low interactions with other systems;
  5. high level of reversibility.

Source: E. Cascetta et al. A new look at planning and designing transportation systems: A decision-making model based on cognitive rationality, stakeholder engagement and quantitative methods Transport Policy 38 (2015) 27-39

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Invited Review

A review of urban transportation network design problems

Reza Zanjirani Farahani [a,*], Elnaz Miandoabchi [b], W.Y. Szeto [c], Hannaneh Rashidi [d]

[a] Department of Informatics and Operations Management, Kingston Business School, Kingston University, UK
[b] Logistics and Supply Chain Research Group, Institute for Trade Studies and Research (ITSR), Tehran, Iran
[c] Department of Civil Engineering, The University of Hong Kong, Hong Kong, China
[d] Department of Industrial Engineering, Mazandaran University of Science and Technology, Iran

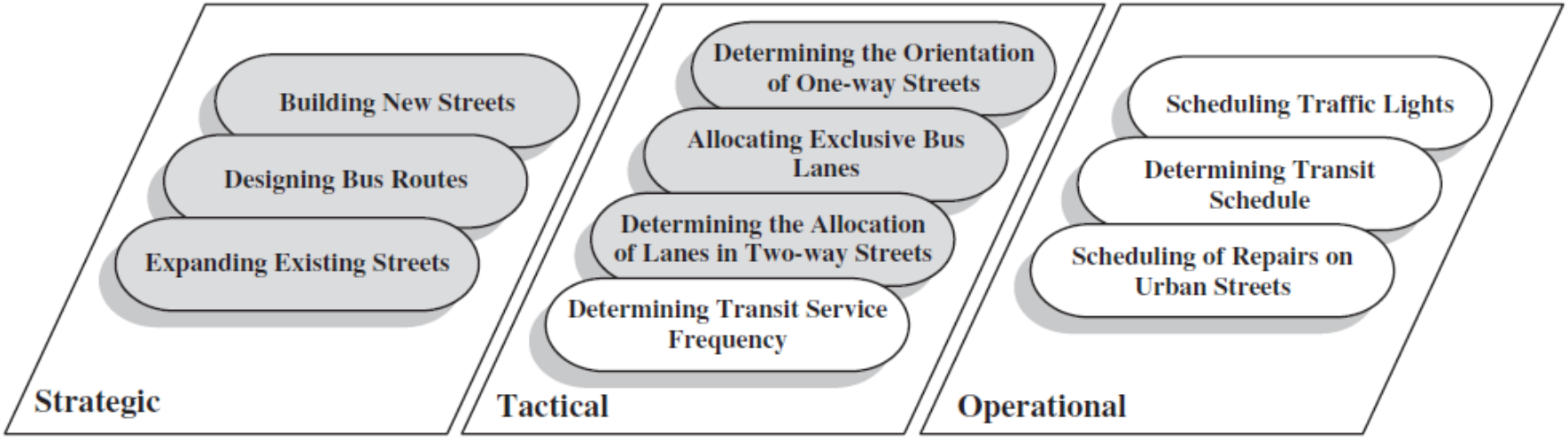

Fig. 1. Examples of decisions in UTNDP.