Modeling traffic Hindrance caused by Road Maintenance

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Outline

• Introduction,
• Goal of the Project,
• The Theoretical Framework,
• Traditional vs Alternative Traffic Assignment,
• Using of the framework, incl. alternative approach
• Case N342, new approach
• Conclusions.
Goal of the Project

Related to Costs, Quality and Hindrance of Road Maintenance:

• Developing knowledge,
• Developing a Tool to manage (DSS),
• Making LCA possible related to Traffic/Road management
Goal of the Project

Presenting the results, Pareto analysis
Complete Framework Lay-Out
Framework: part i

- Pavement quality
- Road management
  - Planning
  - Construction
- Road works
- Capacity change
  - Traffic management
  
Improves quality
Framework: part i

Construction phase of Road works

Considering the balance between:

- Construction method, and,
- Remaining traffic throughput.

Construction method: following factors included:

- Procedures and work hours,
- Equipment needed,
- Day or night,
- Planning,
- Etc.
Framework: part ii

4-step model:
- Trip generation
- Trip distribution
- Modal split
- Route choice

Additional components:
- Information
- Capacity change
- Traffic management
- Demand control
- Mobility management
- Traffic flow patterns
Framework: part ii

Traffic effects: the 4 step model Availability of the network and links:

1. travellers make a trip (Trip generation),
2. destination of trip (Trip distribution),
3. which transport mode (Mode choice), and,
4. what route (Route assignment).
Framework part iii
Framework part iii : Hindrance vs Nuisance

Objective Hindrance: Three levels:

– Area based
– Network based
– Traveller based

Subjective hindrance: Nuisance

– Information provision
– Credibility of administration and/or contractor
– Duration road block
– Time day or night
Traditional vs Alternative Traffic Assignment

Route choice/Assumptions:
• Road users minimise costs and travel times
• Full knowledge of traffic situation

During Road works:
• Blocked roads,
• Signed detours,
• No knowledge of local situation.
Traditional vs Alternative Traffic Assignm.

Define:
- Road works Project Area
- Local traffic vs non-local traffic
- Road works traffic vs non-road works traffic

Alternative Approach →
Panelise specific groups to influence Traffic Flows
Case N342, Traditional Traffic Assignment

Modelling traffic flows:

- Underestimation rat-run traffic
- Overestimation use of detour routes

→ Traditional Approach did not work properly
Case N342, Alternative Traffic Assignm.

Modelling traffic flows:

- rat-run traffic routes less frequently used
- Shift of traffic to official detour routes

→ Results more in line with reality
Conclusions

• During Road Works it is difficult to find **balance** between Costs, **Quality** improvement & remaining **traffic flows**.

• UT developed a **framework** to model traffic flow during Road Works and **calculated Hindrance**

• **Traditional Traffic Assignment** did not forecast traffic flows properly

• Development of **alternative Traffic Assignment** forecasted traffic flows more in line with reality.

• **Alternative Traffic Assignment** makes use of:
  - Road works Project Area
  - Local traffic vs non-local traffic
  - Road works traffic vs non- road works traffic
Thanks for your attention,

Questions!