Master's Thesis of Marie Borowski

Mentoring:

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Study area: Munich-Laim (west)



Study area and key streets (OpenStreetMap)

2. Methodology



0.0440

0.043

0.0430

0.042

-0.7%

External Mentoring: M. Sc. Christian Bews

(Möhler+Partner Ingenieure GmbH)

1. Introduction

Motivation: Air pollution in cities, new EU NO₂ limits

Objective: Assess how speed limit reductions (30 km/h) affect traffic, emissions, and air quality

Study area: Munich-Laim: Landsberger Straße & bypass routes





Source: https://cepr.org/voxeu/columns/road-trafficflow-and-air-pollution-concentrations-evidence-japan



Difference in daily traffic volumes S0-S1 (top) and S0-S2 (bottom) (VISUM)

3. Results

S1: \downarrow 20% traffic on main road, \uparrow 50% on bypasses \downarrow NO₂ on Landsberger Straße, \uparrow on side streets \uparrow Travel time by 36%, emissions \downarrow slightly

S2: More balanced redistribution \uparrow Cut-through traffic \uparrow Travel time by 46%, fuel use \uparrow , NO₂ \downarrow slightly

- Speed limits help but are not enough
- Emission reductions mainly due to reduced traffic
- NO₂ emissions for HGVs increase, improve for LCVs
- New NO₂ limit (20 µg/m³) not met in any scenario
- Traffic shifts can offset local gains

Speed limits should be complemented with: Area-wide planning, Signal coordination, Public transport incentives, Fleet electrification

Network-wide emission changes across scenarios



0.02

0.02

0.027