Does new bicycle infrastructure lead to new cyclists?

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Main research question

What is the effect of bicycle network changes in terms of route and mode change?

Route shift

Mode shift
Two cases
PAPER 1 - TRONDHEIM

BEFORE
• 2 bus lanes and 2 car lanes

AFTER
• 2 lanes converted to separated bi-directional bike path
• Total length: 1.8km
• Midpoint of road closed to through-traffic
BEFORE
- One-way street with parallel parking on both sides

AFTER
- One parking lane replaced with contraflow bike lane
- Total length: 400m
Methods

PAPER 1 - TRONDHEIM

• SoftGIS mapping survey (letter invite) after intervention

PAPER 2 - OSLO

• Local recruitment before (letters, social media, media, posters)
• Smartphone GPS before and after
• Passive tracking and mode-ID
• Video based counting
Video-based bicycle counts (Oslo)
Map-matching of sparse and/or large GPS datasets

- 36000 trips to be matched (all modes)
- Project OSRM - Open Source Routing Machine

A) Default matching  B) Routing
Findings Paper 1
Trondheim
Change in bicycle route choice (n=211)
Significant change in mode of transport (n=690)*

Bicycle before: 41.6%
Bicycle after: 53.5%

Walk before: 20.9%
Walk after: 22.5%

Transit before: 21.3%
Transit after: 13.9%

Car/MC before: 16.2%
Car/MC after: 10.1%

*p = 0.0014
Purpose: Intervention study – before and after bike path

1. Route and mode choice in online survey

2. n=211 of 719 drew satisfactory routes for both time intervals (recalled prior behaviour and present)

3. Results – change of route and change of mode
Findings Paper 2
Oslo
Route choice

- Average deviation from shortest path increased from 171m to 221m (p=0.032)
- i.e. More attractive for existing cyclists
Paired comparison bicycle volumes

GPS

Intervention street:
43% - 70% (4-5 trips per day)

CAMERA

46% - 50% (400-500 trips per day)
Mode shift to cycling

- Consideration of an exposed group (those who had travelled along the intervention street) $n=39$
- Control group $n=47$ (have travelled nearby but not on the intervention)
- Non-significant increase (DiD = 4.7%)
Route and mode choice using smartphone app (GPS)

1. $n = 113$

2. Result – route change, no significant mode change

3. Conclusion – new infrastructure has increased cycling on intervention street but marginal net effect in short term (2 months)
Take-home points

1. The ‘grass IS greener on the other side’
2. Route shift occurs very quickly
3. Mode shift may require more adjustment time
4. Car-restrictions or more substantial interventions are likely to assist generating mode shift
Thanks for listening!

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Discussion

- Hidden purpose in Oslo vs. known purpose in Trondheim
  (recalled travel behaviour for before situation)
- Car-restrictions
- Scale of change – how much better for cyclists is the initiative?