1. Background

- 80% of passenger trips (car, bus, train, tram, metro) by car
- Congestion → time loss
- Air pollution
- High fuel costs
- Brussels and Antwerp
- Top 2 congested cities in the world

![Image of Belgium cities](image)

(IECD 2013)

2. Objectives

- Examine daily commuting patterns in Flanders
- Where is congestion a major problem?
- Travel times with public transport
- Comparison of car and public transport → where is public transport a decent alternative?

3. Data and methods

- Flanders
- Data available per Traffic Analysis Zone (TAZ)
- Origin-destination matrices between all TAZs
- Number of simulated commuting trips (Multi Modal Model)
- Actual travel times with floating car data (BeMobile)
- Car off-peak, car on-peak, public transport
3. Data and methods

- GIS
  - Spatial analysis of car congestion and potential time gain with public transport
  - Circular statistics
    - Circular mean
    - Index of circular spread
  - Two scale levels
    - Flanders
    - Large cities

4. Results – Flanders

- Average time per departing commuting trip
- Relative time loss in congestion
- Relative time loss with public transport

4. Results – Large cities

- More in detail for 13 large cities → radar charts
4. Results – Large cities

- Average time per trip

5. Conclusion

- Combination of simulated commuting trips and accurate travel times → detailed view
  - Congestion
    - Brussels and Antwerp
    - Highways to these cities
  - Public transport as alternative
    - Mainly to Brussels and Antwerp!

6. Strengths

- Previous literature: focus on potential accessibility (e.g. to jobs), without commuting flows and travel times
  - Now: modeled commuting flows + accurate travel times
- Travel times: often freeflow data
  - Floating car data: very accurate
  - Off-peak, on-peak → congestion
- Combination with public transport data

4. Results – Large cities

- Time loss
- Relative time loss in congestion and with public transport

5. Conclusion

- Combination of simulated commuting trips and accurate travel times → detailed view
- Congestion
  - Brussels and Antwerp
  - Highways to these cities
- Public transport as alternative
  - Mainly to Brussels and Antwerp!

6. Strengths

- Policy makers: where action needs to be taken
- Traditionally: on what road segments congestion occurs
  - Now: from which areas people experience most time loss

THANK YOU