Testing potential solutions to control urban sprawl

Inter-city comparison

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scatter

Inter-city comparison

- **1. Do rail investments generate sprawl ?**
- **2. Which measures are most effective to control sprawl and reduce its negative effects?**

Do rail investments generate sprawl ?

	Hhlds in urban centre	Hhlds in urban zones	Jobs in urban centre	Jobs in urban zones
Brussels-RER (8 lines) – 002B (001B)	-3.6 %	-1.4 %	0.8 %	0.4 %
Brussels- RER + orbital connections (*ganzenpoot*) – 121B (001B)	-5.5 %	-2.8 %	0.8 %	0.3 %
Helsinki – HMA PT plan – 004H (002H)	0.0 %	0.2 %	0.2 %	0.0 %
Helsinki – increase of speed (+ 25 %) on existing rail connections – 113H (001H)	-1.7 %	-0.6 %	1.7 %	0.5 %
Stuttgart – New S-bahn (light rail) line S1 - 111S (001 S)	-0.1 %	-0.1 %	-0.1 %	-0.2 %
Stuttgart – S1 + motorway A81 + park&ride facilities – 114S (001S)	-0.3 %	0.4 %	-0.4 %	+0.8 %

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Do rail investments generate sprawl ?

	Average trip distance	Car mileage	CO2 emissions	PT modal share
Brussels-RER (8 lines) – 002B (001B)	+ 7 %	- 6.2 %	- 8 %	+ 8.9 pts
Brussels- RER + orbital connections (*ganzenpoot*) – 121B (001B)	+ 11.8 %	- 9.2 %	- 11.5 %	+ 11.5 pts
Helsinki – HMA PT plan – 004H (002H)	0 %	0 %	0 %	
Helsinki – increase of speed (+ 25 %) on existing rail connections – 113H (001H)	+ 10 %	0 %	+ 2 %	
Stuttgart – New S-bahn (light rail) line S1 - 111S (001 S)	- 2.7 %	+ 0.4 %	+ 0.4 %	+ 0.4 pts
Stuttgart – S1 + motorway A81 + park&ride facilities – 114S (001S)	- 1 %	+ 7.2 %	+ 7.2 %	- 0.1 %

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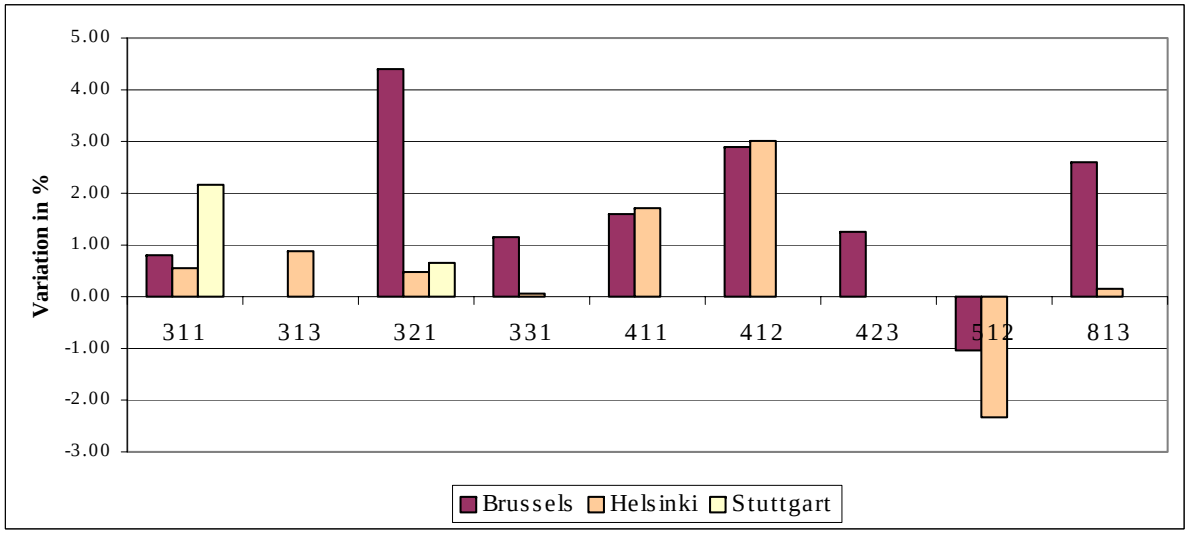
Do rail investments generate sprawl ?

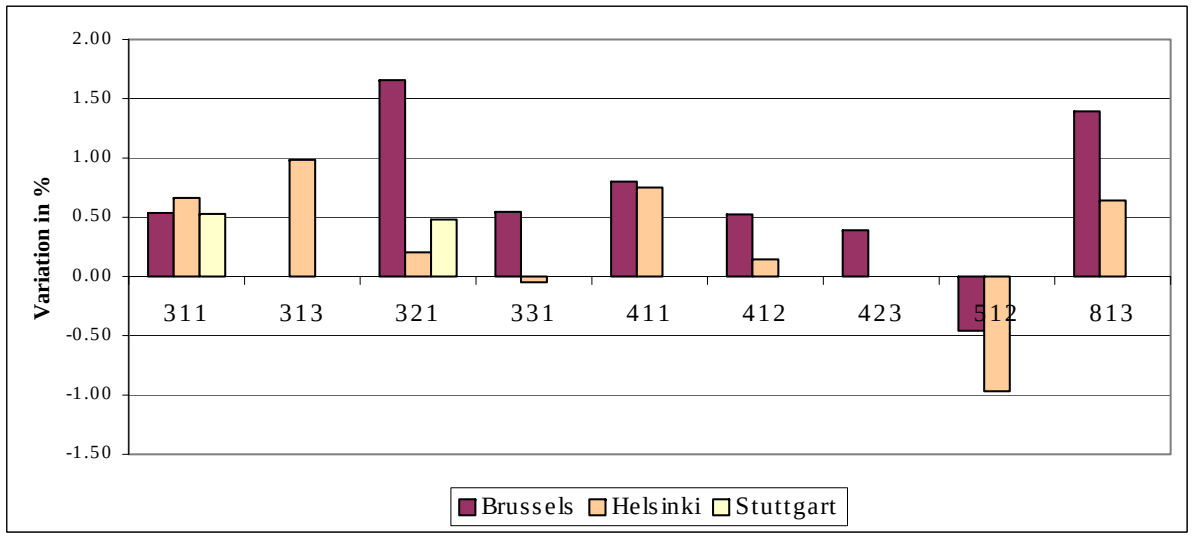
- **It generates sprawl, if rail network extends to the suburban/rural areas**
- **It generates sprawl, if network is radial or radial + orbital**

Which measures are most effective w.r.t. urban concentration ?

Variations of the number of households in the urban centre



Variations of the number of households in the urban zones



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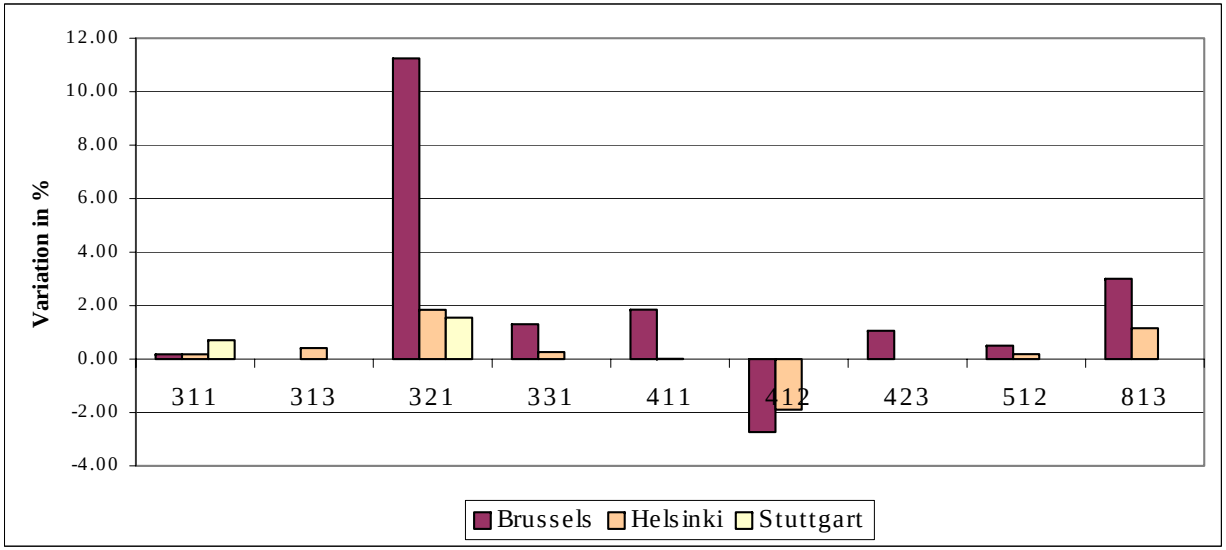
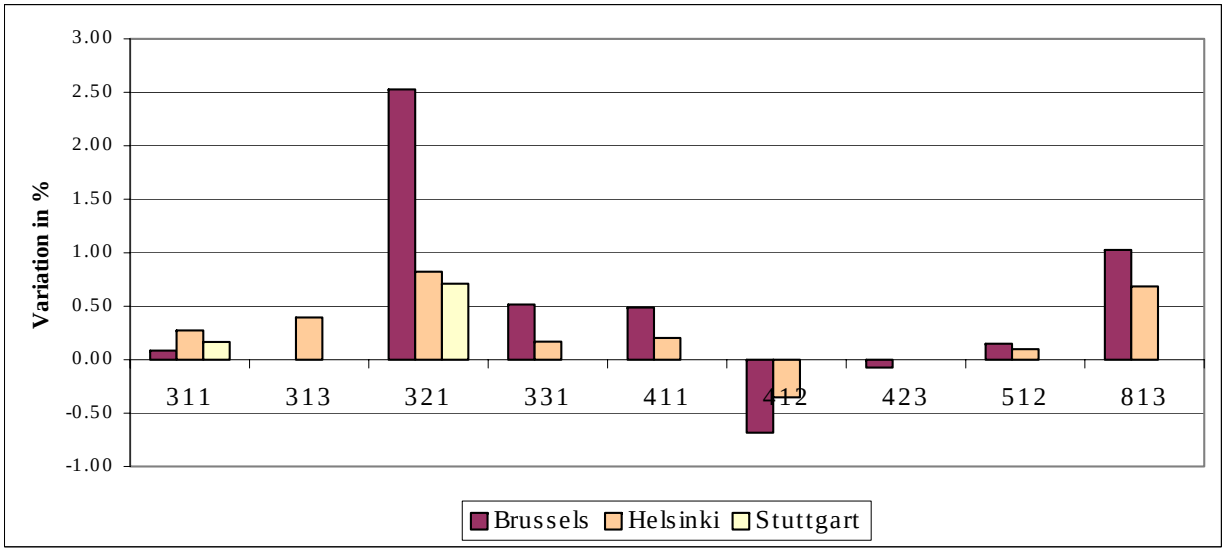
Which measures are most effective w.r.t. urban concentration ?

Variations of the number of jobs in the urban centre



Variations of the number of jobs in the urban zones



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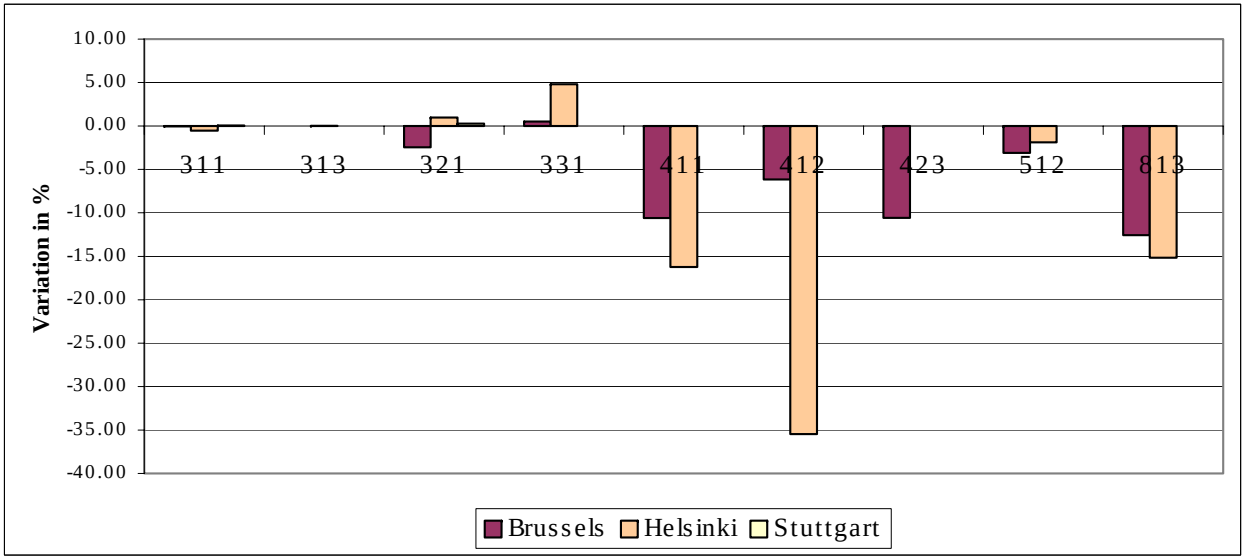
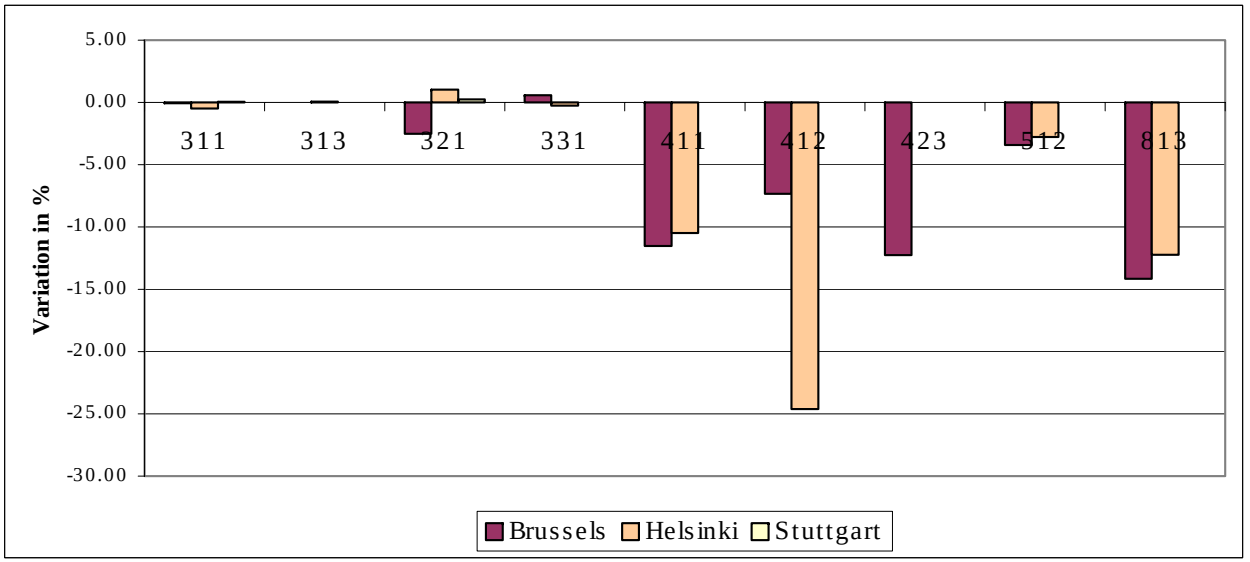
Which measures are most effective w.r.t. fuel consumption and CO2 emissions ?

Variations of the total car mileage in the study area



Variations of the CO2 emissions in the study area



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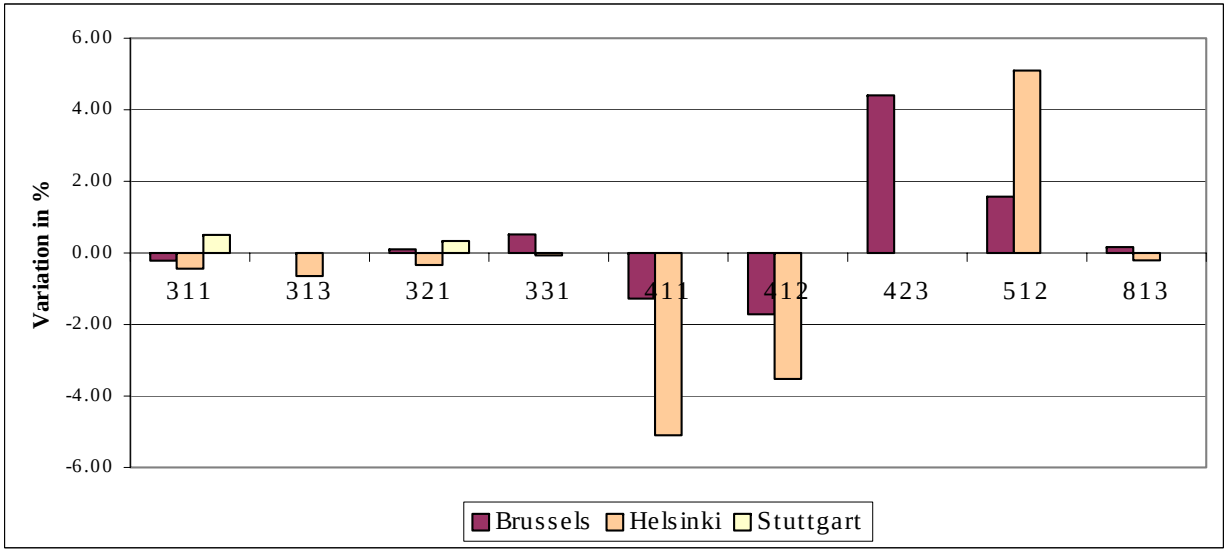
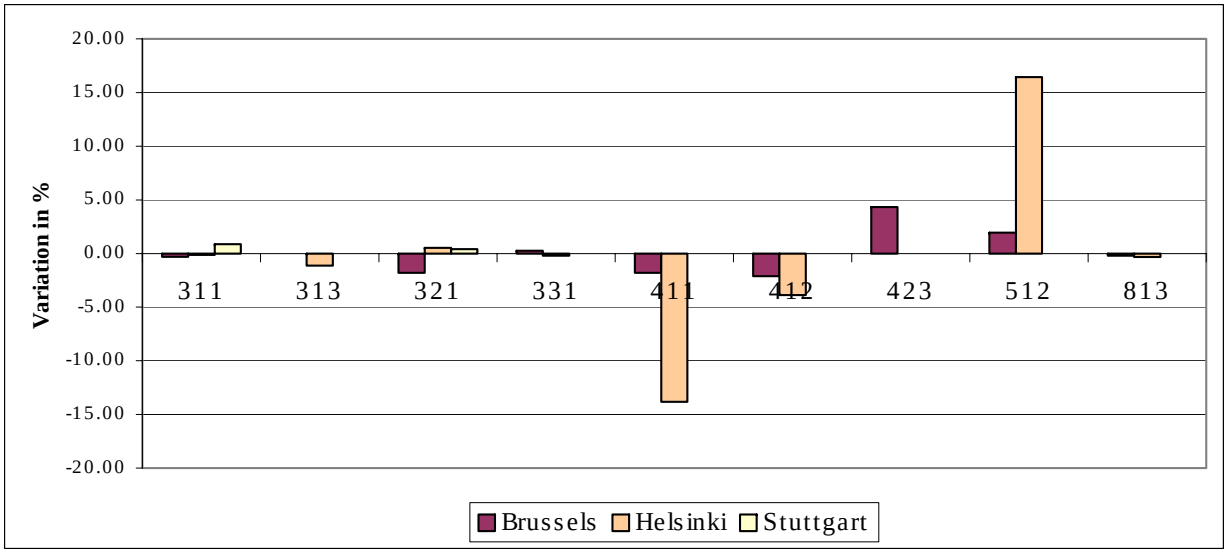
Which measures are most effective w.r.t. travel times ?

Variations of the average travel time in the study area



Variations of the home-work travel distance in the study area



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Conclusions (1/3)

- **Most effective w.r.t. urban concentration/land consumption:**
  - road pricing
  - impact fee on residential developments (both in B and H)
  - fiscal measure to incite services to locate in A-type zones: effective in B, not in H
  - % service jobs already located in A-zones in the reference scenario:
    - B: 37 %
    - H: 70 %

Conclusions (2/3)

- **Most effective w.r.t. climate change and air pollution:**
  - road pricing
  - parking policy
  - land use policies have no or low impact

Conclusions (3/3) – Assessment of combination 813

	Brussels	Helsinki	Stuttgart
Hhlds in urban centre	+ 2.6 %	+ 0.2 %	
Hhlds in urban zones	+ 1.4 %	+ 0.6 %	
Jobs in urban centre	+ 3.0 %	+ 1.2 %	
Jobs in urban zones	+ 1.0 %	+ 0.7 %	
CO2 emissions	- 14.2 %	- 12.2 %	
Average travel time	+ 0.2 %	- 0.2 %	