

# Workplace location, polycentricism and car commuting



Presentation at the ByBy conference, Oslo  
November 14, 2018,  
based on forthcoming papers by  
Wolday, Næss & Tønnesen (2018) and  
Næss, Tønnesen & Wolday (2018)

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# Polycentric workplace location – a measure to reduce car traffic in urban areas?

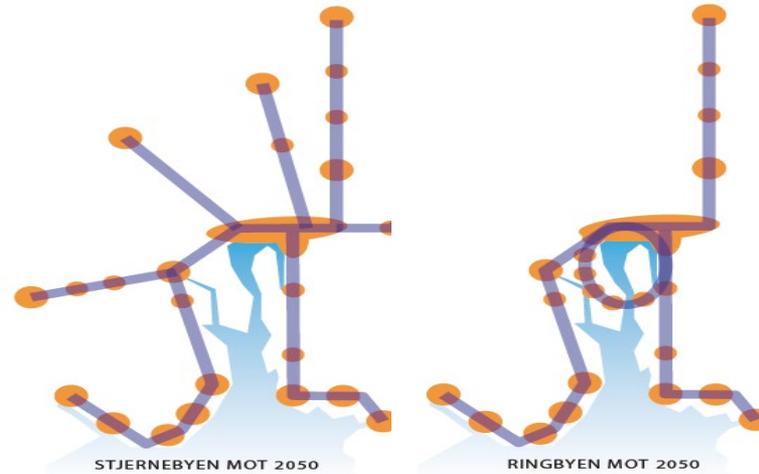
- Planning policy documents increasingly promote the ‘**polycentric city**’ as a measure to promote sustainable mobility in urban areas, underpinned by concepts such as ‘jobs-housing balance’.
- A widespread assumption is that location of new jobs to compact, transit-oriented suburban employment centers will reduce travel distances and discourage car driving
- Studies have shown that residents of **neighborhoods** with high availability of local jobs tend to commute shorter distances and drive less than residents of neighborhoods with a deficit of jobs
- This still does not mean that higher local jobs-housing balances have reduced commuting distances and car driving at a **metropolitan scale**

# What do debaters mean by polycentric?

- Polycentricity at a national scale?
- Polycentricity at a provincial scale
- **Polycentricity within the functional urban region?**
- Polycentricity within the morphological city?

# Three transport-related claims raised about polycentric urban development

- “Polycentric urban development offers shorter travel distances”
- “Polycentric urban development therefore results in less car traffic”
- “(Transit-oriented) polycentric urban development leads to more use of public and non-motorized transport”



Flerkjernestruktur anses å skape forutsetninger for en bærekraftig utvikling med hensyn til økonomisk utvikling, sosiale forhold og miljø. Flerkjernestruktur anses å være bedre enn en kompakt storby på den ene side og en spredt byregion på den annen.

Regjeringen ser både regionforstørring og flerkjernet byutvikling som viktig for å skape en balansert regional utvikling og motvirke tendensene til sentralisering. Den differensierte transportpolitikken

# A mixed-methods study of influences of workplace location on commuting distances and modes

- Questionnaires among employees at 16 workplaces, with 1349 respondents
- Qualitative interviews with 13 employees at eight of the workplaces
- ‘Knowledge industry’ workplaces are overrepresented in the questionnaire survey as well as the interviews
- Persons with high income and particularly with long academic education are overrepresented among the survey respondents and even more so among the interviewees
- Interviews were transcribed and interpreted according to an ‘interpretation scheme’ developed for explanatory interview research in some of our earlier studies

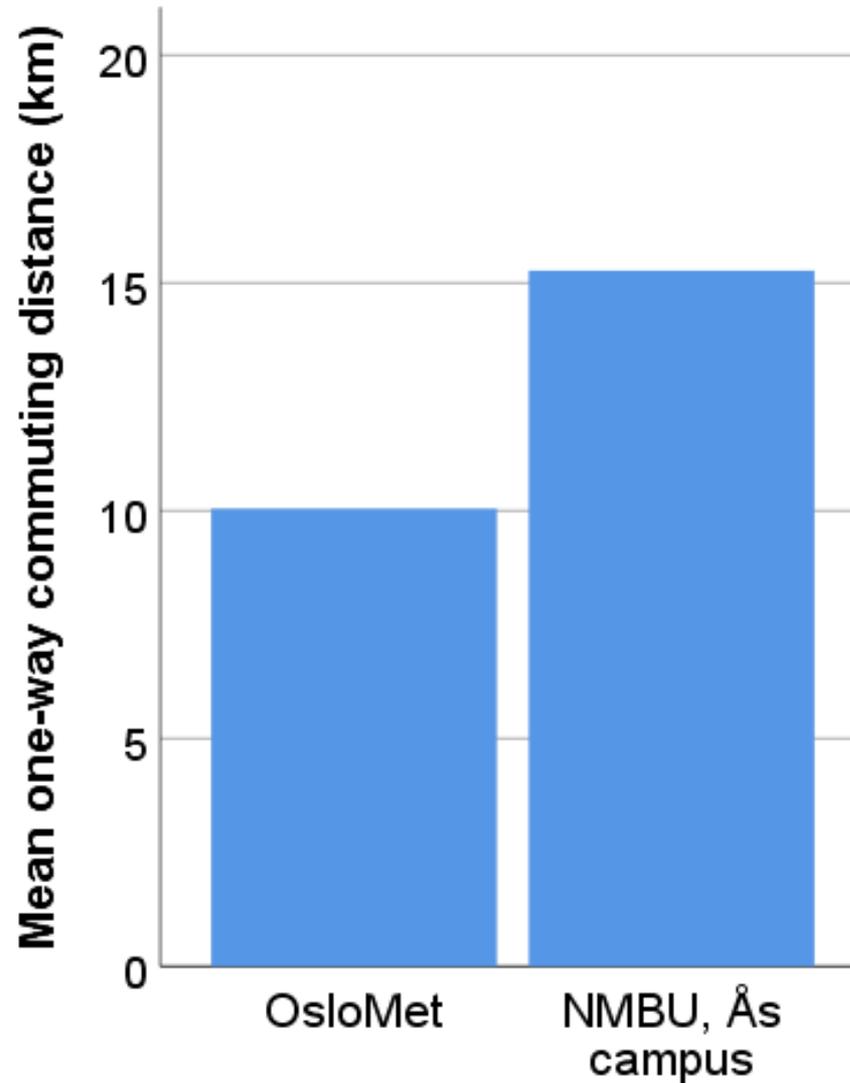


Two workplaces with similar jobs, different locations  
and very different **commuting** patterns:  
NMBU and OsloMet

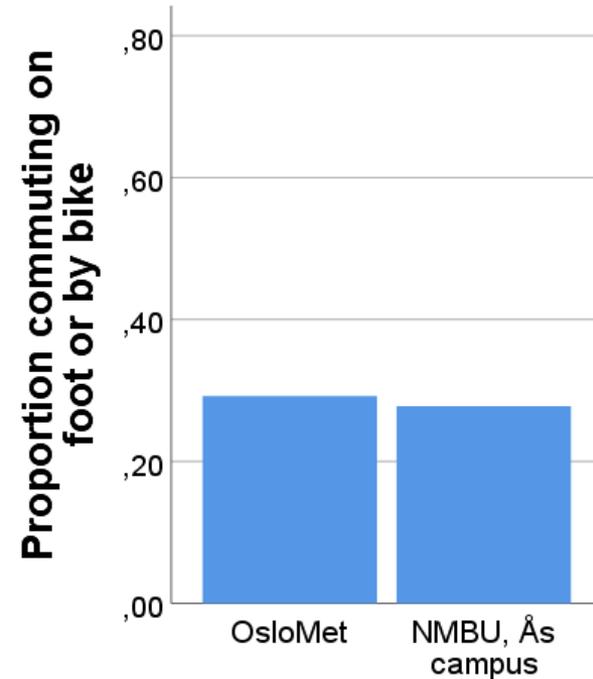
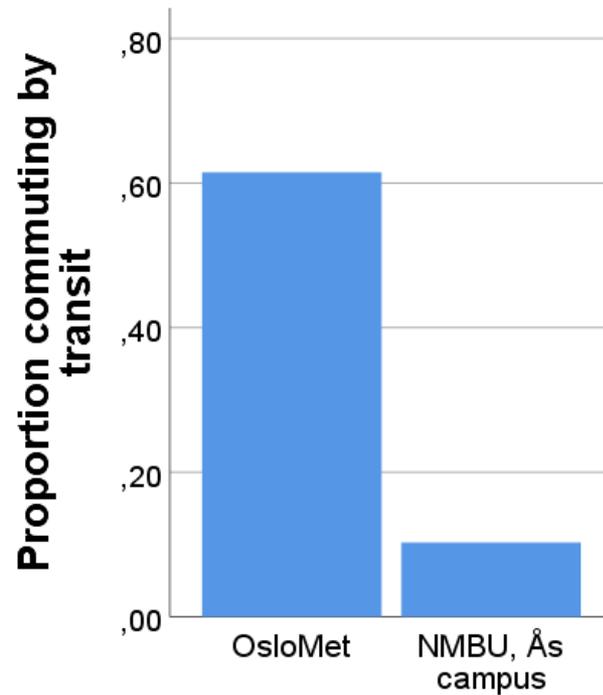
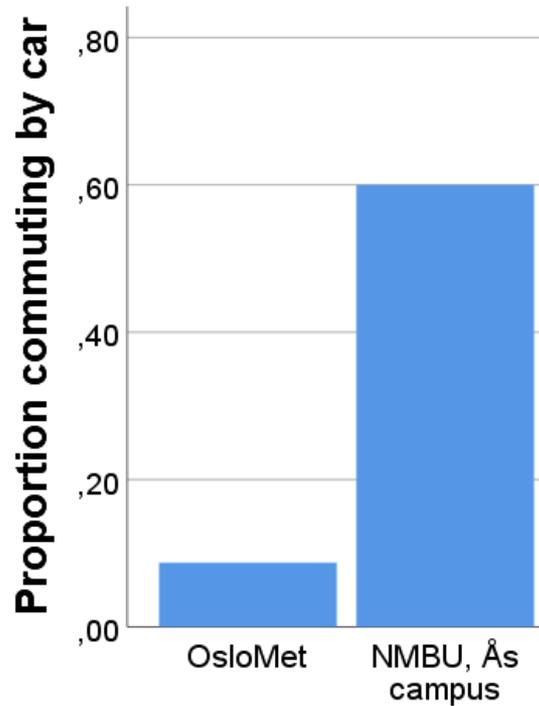


Source: The URBANEFF project

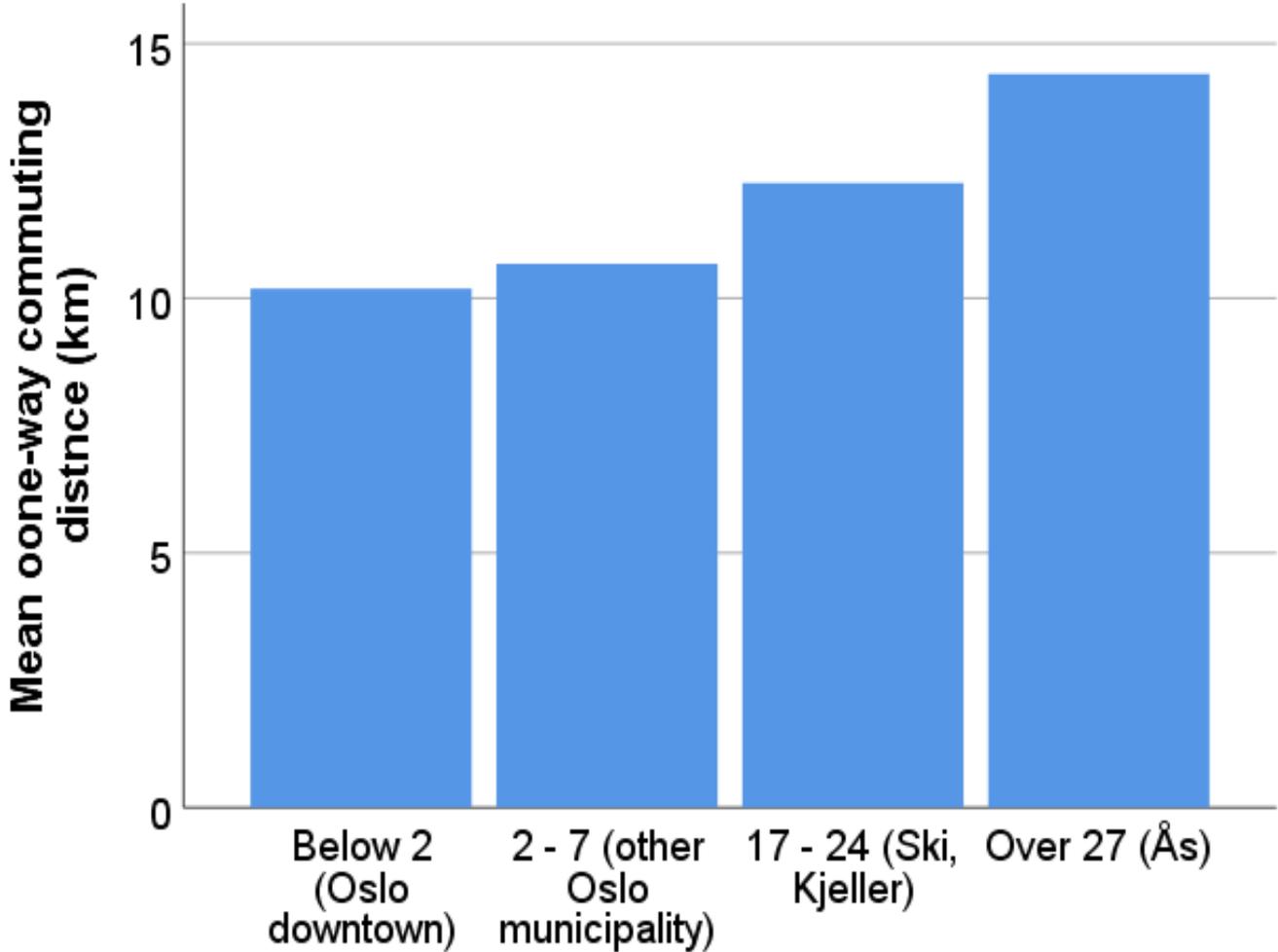
## Longer, not shorter average commuting distances at NMBU ...



.... but much less environmentally friendly travel modes to NMBU than to OsloMet



# The wider picture: Longer **commuting distances** to suburban workplaces, not shorter

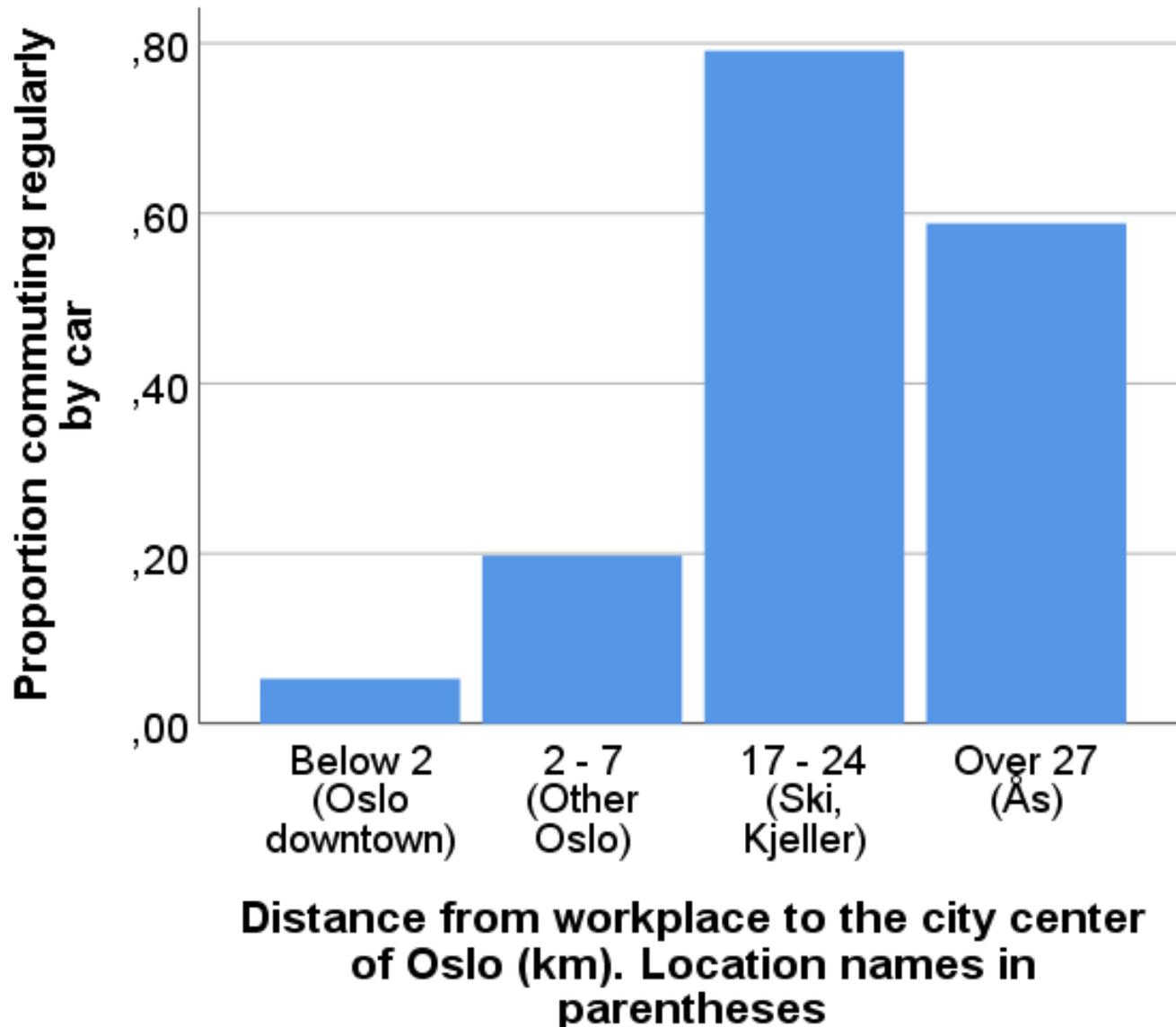


**Distance from the workplace to the city center of Oslo (km). Location names in parentheses**

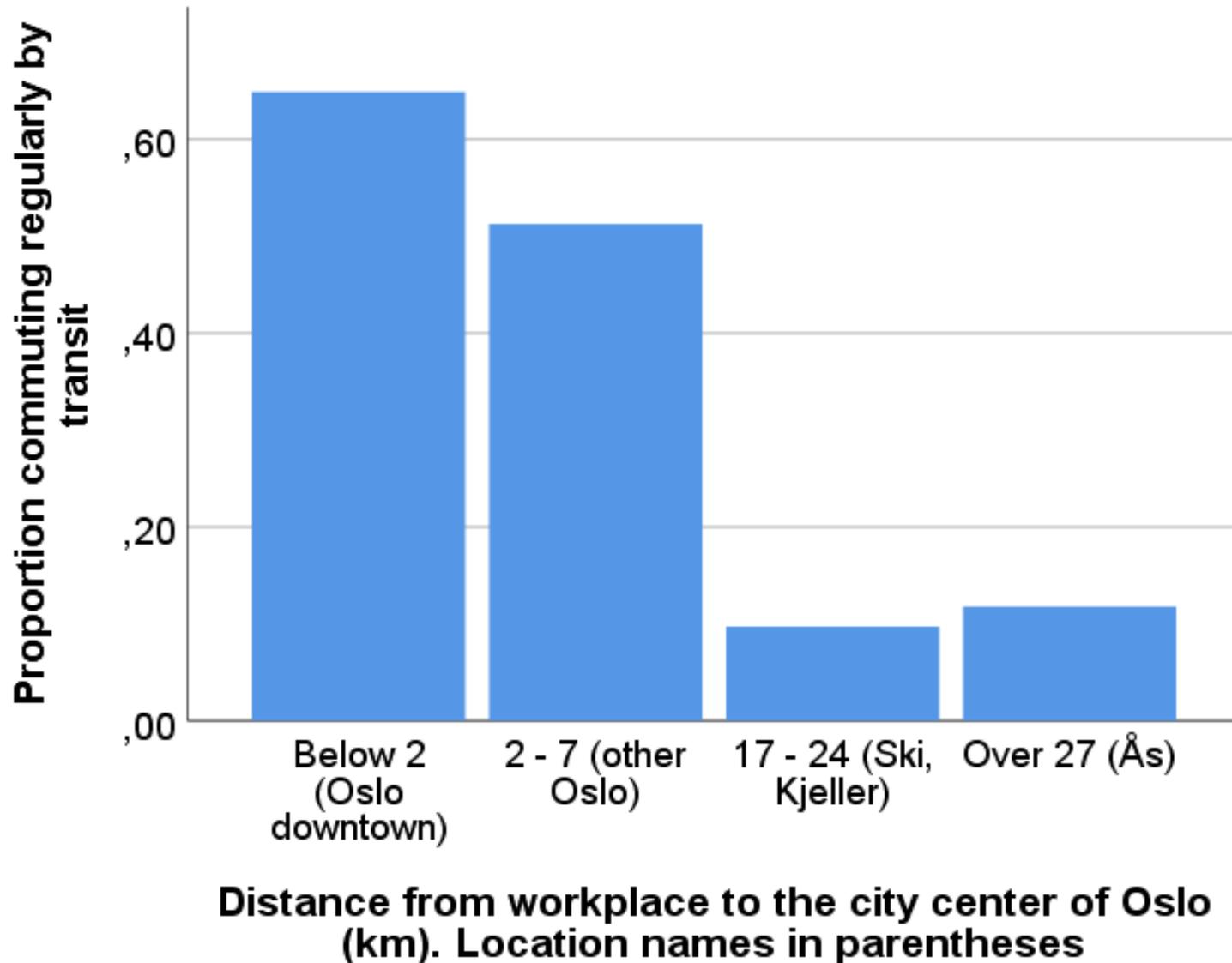
**Variables associated with commuting distance.** Standardized coefficients. (n.s. = not significant at 0.1 level)

	Coeff.	p-value
Distance from workplace to the city center of Oslo	0.091	0.003
Distance from workplace to closest second-order center	0.052	0.073
Combined jobs and population density in workplace neighborhood		n. s.
Number of household members 18 years and above	-0.070	0.010
Personal income	0.072	0.013
Number of household members below 18 years		n. s.
Age of respondent		n. s.
Female		n. s.
Long university education		n. s.
Driver's license for car		n. s.

# Car commuting: Much more common at suburban workplaces



# Transit commuting: Much more common at central workplaces



**Variables associated with the likelihood of being a regular car or transit commuter.** Standardized coefficients. (n.s. = not significant at 0.1 level)

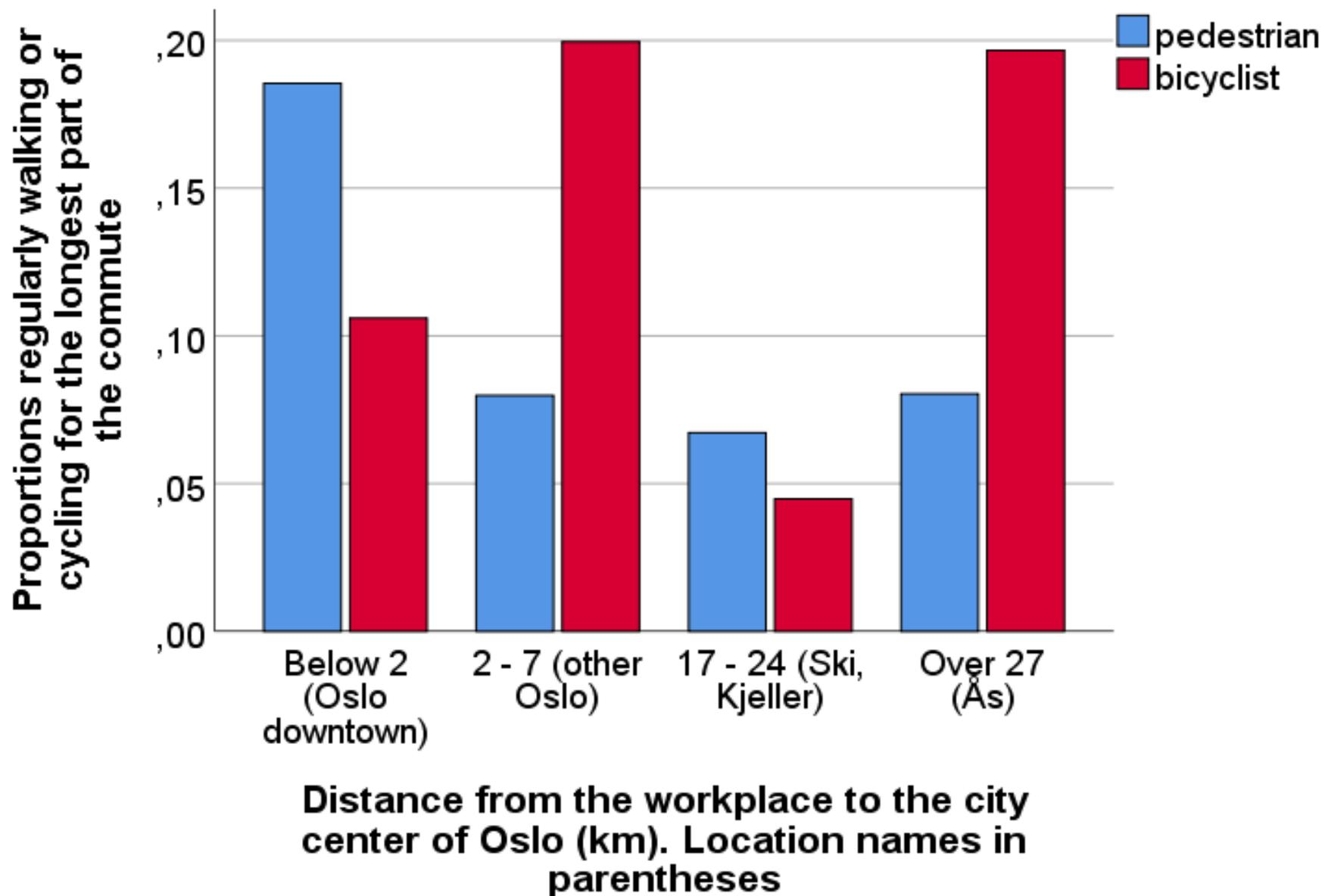
	Car commuter		Transit commuter	
	Coeff.	p-value	Coeff.	p-value
Distance from workplace to the city center of Oslo	0.362	0.000	-0.369	0.000
Combined jobs and population density in workplace neighborhood	-0.302	0.000	0.208	0.000
Distance from workplace to closest second-order center	0.075	0.053	-0.156	0.004
Index for transit accessibility at the dwelling	0.082	0.019		n. s.
Driver's license for car	0.346	0.000	-0.199	0.000
Number of household members below 18 years	0.158	0.000	-0.124	0.000
Age (mean centered)	0.113	0.002	-0.192	0.000
Long university education	-0.155	0.000	0.105	0.009
Female	0.052	0.072		n. s.
Number of household members 18 years and above		n. s.		n. s.
Personal income		n. s.		n. s.

**Variables associated with the likelihood of having increased one's car commuting due to workplace relocation.** Standardized coefficients.  
(n.s. = not significant at 0.1 level)

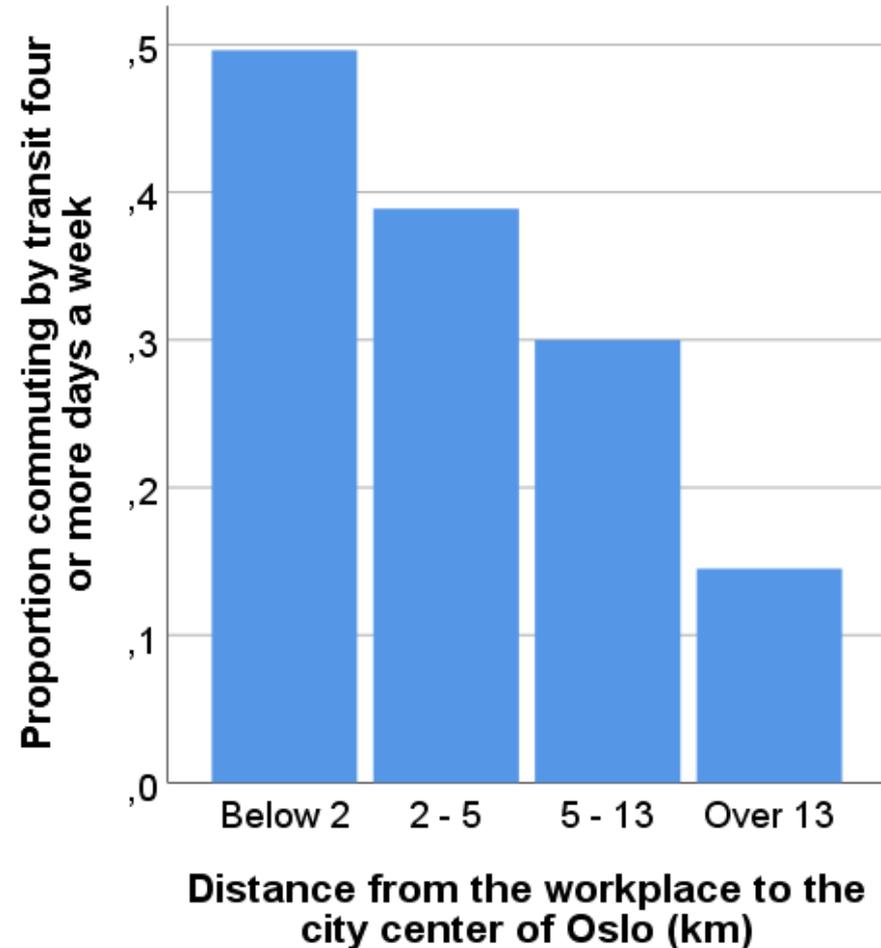
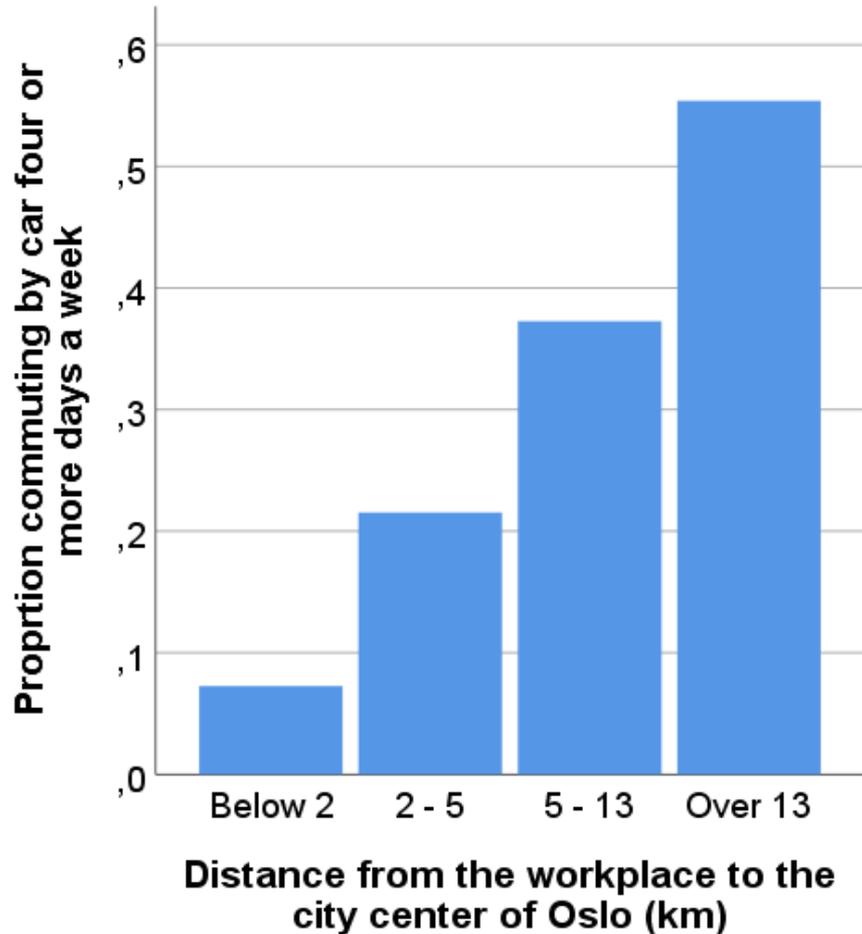
	Sign	p-value
Increase in distance from workplace to the city center of Oslo	0.620	0.000
Increase in combined jobs and population density in workplace neighborhood		n. s.
Increase in distance from workplace to closest second-order center		n. s.

Similar, but opposite effects of workplace location variables on the likelihood of having increased one's transit commuting due to workplace relocation

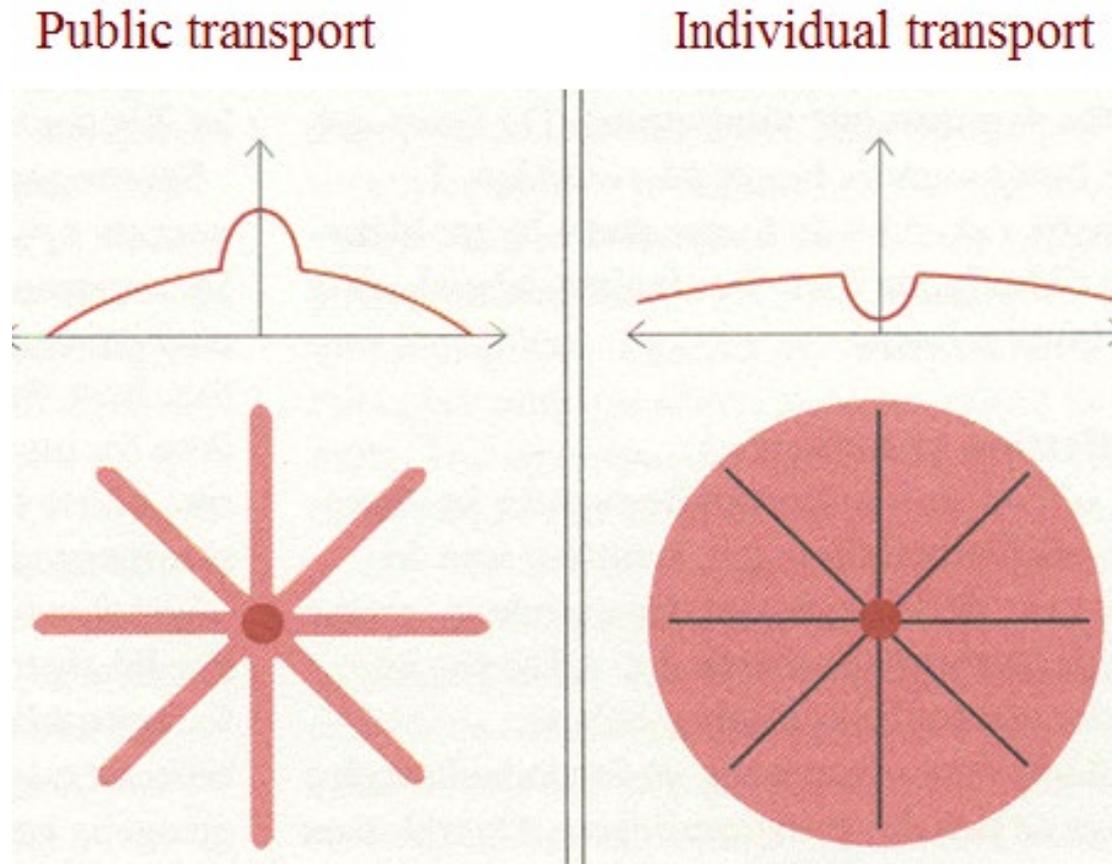
# Non-motorized commuting: A mixed pattern



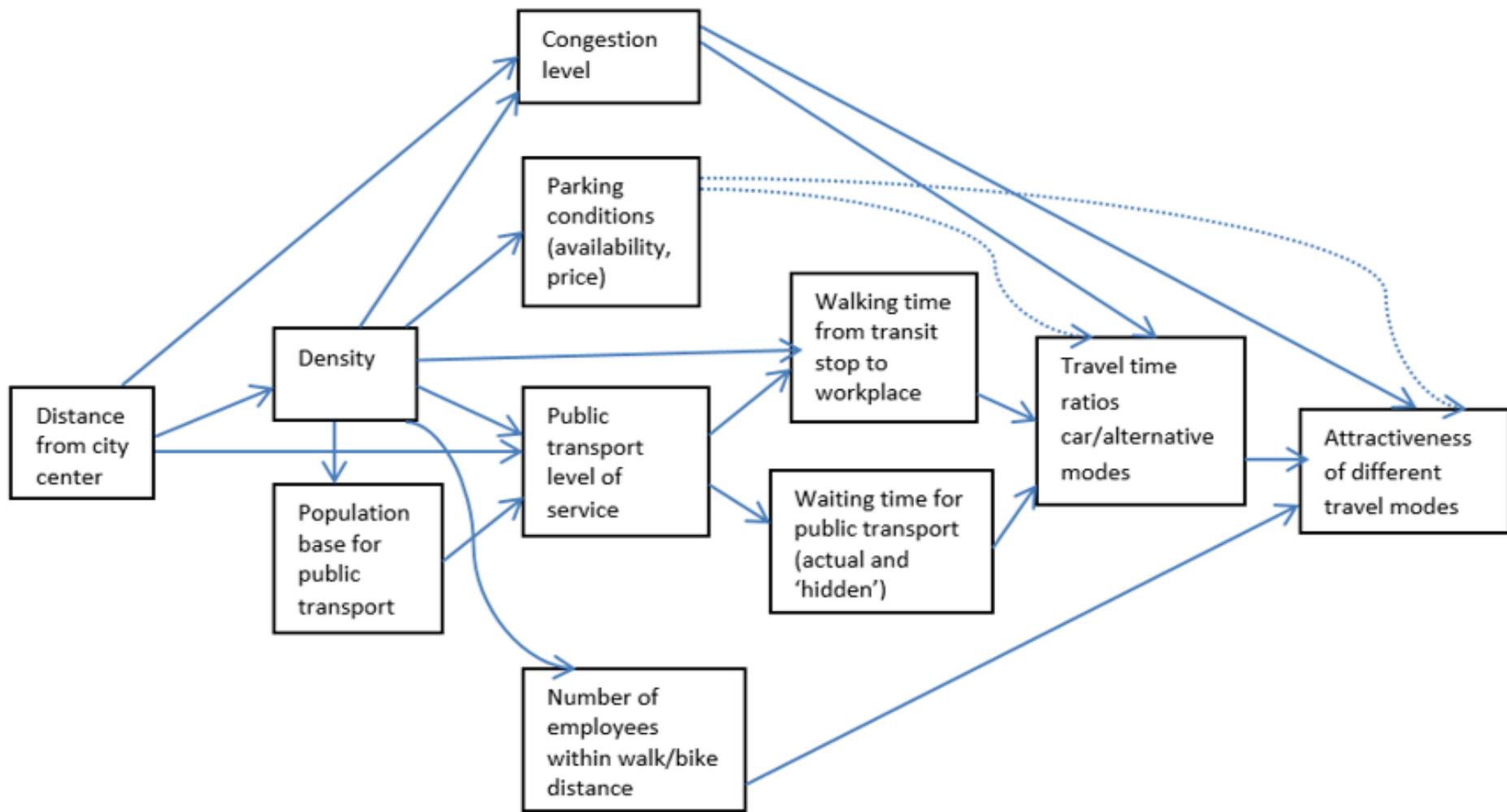
Results conform with those of another recent study, where workplaces were randomly selected all over the Oslo metropolitan area



Why do we find the geographical differences in commuting shown on the previous slides?



Central workplace location: High transit accessibility and low accessibility by car



Interviewee working as well as living in the central city,  
about her reasons for not going by car for the daily trips to  
work (instead, she went by bike):

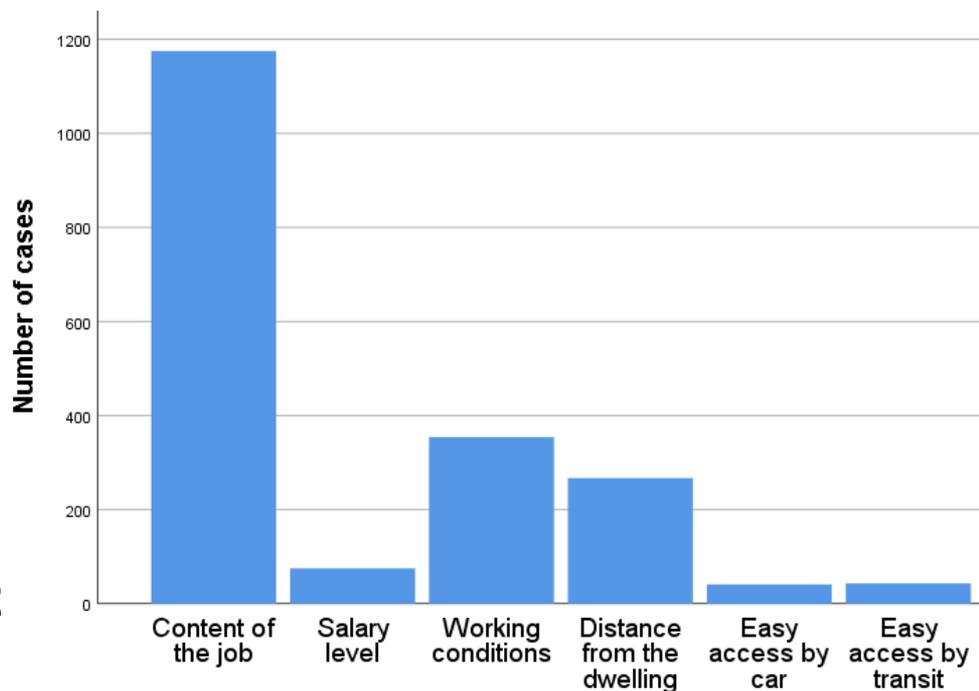
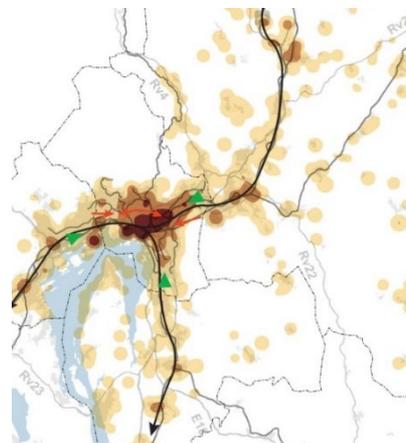
It makes no sense. [Driving by car] will take  
longer, or there is at least no time to save.  
There is parking at both ends [of the car  
commute], payment and there is the  
environment. (...) So why on earth should I  
fill the inner city with my car?

# Travel mode choice **rationales** and their implications

Rationales for travel mode choice	Travel modes encouraged for employees at inner-city workplaces	Travel modes encouraged for employees at suburban workplaces
Time-saving (12)	Transit and non-motorized	Car
Convenience (5)	Transit and non-motorized	Car
Limiting travel expenses (5)	Transit and non-motorized	Car
Flexibility (4)	Transit and non-motorized	Car
Avoidance of stress and frustration (3)	Transit and non-motorized	Car
Predictability and control (1)	Transit and non-motorized	Car
Physical exercise (5)	Non-motorized	Non-motorized
Environmental concerns (4)	Transit and non-motorized	Transit and non-motorized
Affective dislike (3)	Varying	Varying
Social contact/communication (2)	Car	Car
Safety (2)	Motorized	Motorized
Caretaking (2)	Car	Car
Obligation (1)	Car	Car

# Why is polycentric workplace location within a metropolitan area unlikely to reduce commuting distances?

- People do not necessarily choose the **closest** jobs, but rather they travel a bit further if they can then find a **better** job.
- In addition, the job applicant must be **selected by the employer** in competition with other applicants
- The likelihood for a suburbanite to be employed at a local suburban workplace is therefore not very high
- Commuting distances therefore depend more on the location of the workplace relative to **large concentrations** of dwellings than on the distance to the closest residential neighborhood
- Workplaces **close to the city center** have a large number of potential employees within a short distance from the workplace and are therefore **more likely to recruit workers locally**



# Conclusions

- Employees at **centrally** located workplaces commute by **car much less frequently** and **by transit much more often** than employees at suburban and exurban workplaces do
- Polycentric workplace location in compact, transit-oriented suburban sub-centers does perform better, judged from a sustainable mobility perspective, than ordinary suburban and exurban employment growth does
- **Polycentric** workplace development is still **far less favorable than densification close to the main city center** if the aim is to reduce commuting distances, discourage car driving and promote public and non-motorized travel
- Local facilities such as schools, kindergarten and grocery stores should of course not be centralized to the inner city, nor should workplaces that are area demanding and/or generate much goods transport
- For most other workplaces, however, central locations contribute to shorter commuting distances and lower shares of car commuting than for suburban job locations, even if the latter are located in compact sub-centers.