

STUDENT AWARDS



RESIDENTIAL URBANISM AND AGING

Student information

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Graduation year: 2022

The impact of residential urbanism and aging of young adults on car travel demand in the Netherlands

Travel demand in the Netherlands has been decreasing over the past two decades. This applies particularly to car travel by young adults and urban residents. Despite this, over 50% of all trips in the Netherlands are still made by car. The impact of urbanisation on car travel demand and the development of car travel by young adults in the longer term is still not clear.

This research examines the role of residential urbanism in car travel behaviour for different types of household composition in the Netherlands. It also explores the development of car travel behaviour among young adults.

Two waves of data from the Dutch Mobility Panel, from 2013 and 2019, were selected. Participants from waves, aged 18 and over, were asked to complete a three-day trip diary. This enabled changes in demographic characteristics together with changes in car travel behaviour within this group to be analysed.

The analysis revealed that residential urbanism is an important factor for determining car travel behaviour. However, residential urbanism does not affect all household types in the same way. It's clear that households with children travel by car more frequently whereas singles, especially in cities, are more inclined not to travel by car.

The results imply that urbanisation has the potential to decrease car travel demand among single person households and couples. However, as young adults age, they exhibit similar car travel behaviour to older adults.

	Residents of the most urban areas (2500 or more inhabitants/km ²)			Residents of the least urban areas (1000 or less inhabitants/km ²)		
Household type	Singles, N = 251	Couple, N = 154	Couple + children, N = 57	Singles, N = 123	Couple, N = 303	Couple + children, N = 202
License holding	205 (82%)	134 (87%)	53 (93%)	109 (89%)	276 (91%)	195 (97%)
Car ownership	122 (49%)	133 (86%)	53 (93%)	93 (76%)	288 (95%)	190 (94%)
Preferred transport mode to work						
Bike	73 (29%)	38 (25%)	12 (21%)	21 (17%)	46 (15%)	39 (19%)
Car	50 (20%)	36 (23%)	30 (53%)	38 (31%)	88 (29%)	122 (60%)
Not applicable	75 (30%)	48 (31%)	9 (16%)	43 (35%)	157 (52%)	26 (13%)
Public transport	19 (7.6%)	12 (7.8%)	2 (3.5%)	5 (4.1%)	1 (0.3%)	3 (1.5%)
Walking	6 (2.4%)	0 (0%)	0 (0%)	0 (0%)	1 (0.3%)	0 (0%)
Preferred transport for groceries						
Bike	73 (29%)	38 (25%)	8 (14%)	44 (36%)	103 (34%)	41 (20%)
Car	41 (16%)	42 (27%)	26 (46%)	32 (26%)	108 (36%)	109 (54%)
Not applicable	29 (12%)	20 (13%)	4 (7.0%)	11 (8.9%)	21 (6.9%)	11 (5.4%)
Public transport	1 (0.4%)	0 (0%)	0 (0%)	0 (0%)	1 (0.3%)	0 (0%)
Walking	52 (21%)	19 (12%)	4 (7.0%)	7 (5.7%)	16 (5.3%)	5 (2.5%)
Home to work travel by car	64 (25%)	43 (28%)	31 (54%)	45 (37%)	93 (31%)	129 (64%)
Average number of trips	13.0 (7.1)	12.2 (7.1)	11.9 (6.2)	10.7 (5.6)	10.1 (4.8)	11.2 (5.2)
Average distance travelled (km)	229.8 (346.2)	149.8 (248.4)	217.1 (282.9)	142.2 (211.3)	107.1 (144.1)	147.6 (172.8)
Average number of trips by car	3.1 (3.9)	4.4 (4.1)	6.9 (5.4)	4.8 (3.9)	5.2 (4.0)	6.8 (4.8)
Average number of PT trips	3.9 (6.8)	3.0 (7.1)	1.4 (4.0)	1.2 (3.4)	0.2 (1.3)	0.1 (0.8)

INTENTION TO USE MAAS

Student information

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Vehicle-owners' intention to use Mobility-as-a-Service

A latent class cluster analysis identifying factors behind the intention to use MaaS in the Netherlands

Increasing urbanisation and challenges regarding global sustainability mean that restructuring of current mobility and transportation systems is inescapable. One concept regarded as an answer to the changes needed is Mobility-as-a-Service (MaaS): an online platform which enables users to put together their optimal trip from a variety of transport modes, conventional and shared. MaaS only requires a single payment and provides up-to-date information about the desired trip. MaaS increases flexibility and ease of travelling, which is expected to have a positive effect on contemporary (urban) mobility.

As a relatively novel concept, MaaS has received considerable attention in academia as well as policy-making. In this body of literature, on the one hand MaaS is expected to improve the transport system, combat negative externalities of transportation, and positively impact social equity. On the other, the smart mobility solution is speculated to potentially be counterproductive by mostly replacing trips made by public transport and active transport modes. In this case, MaaS does not provide a solution to the changes needed in the current mobility and transportation systems, but contributes to the increasing number of vehicles on the road and related negative externalities.

Previous studies on the adoption potential of MaaS in the Netherlands have identified private vehicle owners as unlikely to adopt MaaS while individuals using

environmentally-friendly transport modes are likely to adopt. In that case, MaaS might be more likely to negatively affect the Dutch transport system and society. Despite the discussions on the expected potential impacts of MaaS, uncertainties still remain about the impact on the transport sector and on the potential for individuals to adopt MaaS.

Successful implementation of MaaS, where the concept positively impacts the transport system and society as a whole, relies on public acceptance. As vehicle owners are currently identified as unlikely to use MaaS, insight into their motives which could influence their intention to use MaaS and contribute to its successful implementation were examined.

For this, a conceptual model was created in this research to provide an overview of potentially influential factors. Data was collected using a self-administered questionnaire which was distributed among individuals living in the Netherlands and owning or jointly owning a car. The constructs and relationships of the conceptual model were analysed and resulted in five factors, plus a sixth factor representing the vehicle owners' willingness to use MaaS.

The research findings indicate that the overall willingness to use MaaS among vehicle owners is relatively low. The factor scores per cluster (see figure) show that clusters with a higher Willingness value also have a higher perceived utility and effort expectancy of MaaS. These clusters are consequently identified as intending to use MaaS. The perceived benefits in terms of convenience, travel time and travel costs of MaaS over current modes of travelling, similarities between MaaS and individuals' habits as well as the perceived ease of using MaaS thus indeed influence the intention to use MaaS.

The results also show that vehicle owners intending to use MaaS have a higher concern about potential risks and more scepticism of external evaluations.