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Publication date
2016
Document Version
Final published version
Published in
European Journal of Transport and Infrastructure Research

EJTIR

Issue 16(4), 2016
pp.661-673
ISSN: 1567-7141
tlo.tbm.tudelft.nl/ejtir

Dynamics in car ownership: the role of entry into parenthood

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This study investigates the impact of entry into parenthood on changes in car ownership. If entry into parenthood affects changes in car ownership, then delay or offset of entry into parenthood might also be an important explanation of recent car travel trends of young adults. This study analysed the impact of entry into parenthood on changes in the number of cars per household. Also, attention is given to the role of other related life course changes such as a change in urbanisation level, employment or household income. Using a unique data set, in which register data from 2011 and 2013 on the Dutch population, income and vehicle registration were combined, the study revealed that couples are more likely to enter car ownership and less likely to exit car ownership when they enter into parenthood. This implies that the delay of entry into parenthood might lead to later entry into car ownership and an increase in life time childlessness might lead to an overall decline in car ownership.

Keywords: *demographic transition, millennials, mobility biography, residential relocation, travel behaviour dynamics.*

1. Introduction

Life events such as the birth of a child, a residential move or a change in income or employment trigger changes in travel behaviour (Oakil, 2013, Beige and Axhausen, 2012, Van der Waerden et al., 2003, Chatterjee et al., 2013). Earlier studies showed that the transition into parenthood often influences car acquisition (Beige and Axhausen, 2012, Prillwitz et al., 2006, Oakil et al., 2014b). Recently, researchers have been trying to obtain more insight into the role of life events on car mobility and how the interconnection between these life events affects car mobility. Oakil et al. (Oakil et al., 2014b), for instance, showed that the probability of car acquisition is higher among couples who are preparing for their entry into parenthood, while other life course changes are important factors in both acquisition and disposal of a car. Clark et al. (Clark et al., 2015) showed the importance of different life events for changes in car ownership. Entry into parenthood is often linked with changes in other life domains, such as a change in residential location, employment status or income that influences car ownership also, but not necessarily in the same

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direction In the Netherlands, many women reduce their weekly working hours or leave the labour market after the birth of the first child (Fokkema, 2002). This also affects their household income. A reduction in income or the exit from the labour market is known to discourage car acquisition (Dargay and Hanly, 2007, Dargay, 2001). The implication is that a reduction in income and exit from labour market will discourage car ownership, where entry into parenthood is likely to encourage car ownership. Besides changes in income and employment, entry into parenthood is associated with residential moves. Many couples move from a city to a suburb before or after the birth of a child (Huinink and Wagner, 1989). Compared to cities, suburbs generally have limited access to public transport, and so, the move to a suburban area often increases car dependency (Cervero and Kockelman, 1997, Bhat and Guo, 2007) and, therefore, may encourage the purchase of a (second) car (Scheiner and Holz-Rau, 2013a). Entry into parenthood, therefore, affects car ownership directly, and indirectly via changes in other life domains in different ways. To understand this effect and to disentangle it from other life course changes affecting car ownership, this study analyses the role of entry into parenthood, also paying explicit attention to changes in other life domains.

Previous studies showed how different life events influence car ownership and use (Prillwitz et al., 2007, Oakil et al., 2014b, Beige and Axhausen, 2008, Beige and Axhausen, 2012, Oakil, 2016, Prillwitz et al., 2006), transport mode choices (Chatterjee et al., 2013, Oakil et al., 2016, Oakil et al., 2011, Verhoeven et al., 2007, Scheiner and Holz-Rau, 2013b), or social activity patterns (Sharmeen et al., 2013, Sharmeen and Timmermans, 2014). Except for a few studies (Lanzendorf, 2003, Lanzendorf, 2010, Oakil et al., 2014a), most studies did not give explicit attention to the fact that these events are part of a set of interconnected trajectories. Using a unique data set, in which population, income and vehicle registration data of the Netherlands were combined, this study focuses on the entry into parenthood of stable couples (who did not change partner during study period). Furthermore, we separately investigated car disposal by couples who owned one car and those owning more than one car, and car acquisition by carless households and households owning only one car, similar to Clark et al. (Clark et al., 2015). They showed that influence of life events on car ownership changes varies based on the number of cars household own; the birth of a child encourages car disposal by people owning multiple cars, but not by those owning only one car. Or, put differently, the factors that affect car acquisition are different for household buying a first car from those buying a second car. The same applies to the sale of a first or second car. This study emphasises on the need to analyse the entry into parenthood of stable couples only, in order to disentangle the role of entry into parenthood from those of related life events.

Entry into parenthood has been increasingly postponed in many Western countries. The average mean age of women at first birth rose from 27.5 (1970) via 28.3 (1995) to 30.1 (2012) in OECD countries (Source: OECD family database). Figures for the Netherlands are 28.2, 30.0 and 30.9 years respectively. Also, definitive childlessness (measured in proportions of childlessness among women at the end of the reproductive period) has increased over time in OECD countries. It is one of the highest in the Netherlands with an average of at least 18 %. The proportion of childless women in the Netherlands who were at the end of the reproductive period rose from 14% (women born 1945-49) to 20% (women born in 1960-64) (CBS, 2010). If the entry into parenthood influences car ownership substantially, then changes in timing and frequency of first childbirth might have temporal and structural effects on the level of car ownership. Hence, our focus is not on the impact of other demographic life events (such as cohabitation, separation or death of a spouse) on car ownership changes, but only on entry into parenthood. In this regard, this paper addresses two research questions focusing on stable couples and the levels of car ownership:

> i. To what extent does entry into parenthood influence car acquisition, controlling for interconnected changes in the residential, employment and income situation of stable couples, and what are the differences between the acquisition of a first car and that of additional cars?

ii. To what extent does entry into parenthood influence car disposal, controlling for interconnected changes in the residential, employment and income situation of stable couples, and what are the differences between the disposal of an only car and that of any additional cars?

A description of data and methods is presented in the next section, followed by a presentation of the results from the descriptive analysis and logistic regressions of car acquisition and disposal. The paper concludes with a discussion on the implications of those results.

2. Data and methods

2.1 Data sources:

To perform our analyses, we used a pooled data set, combining vehicle registration data with register data from the Social Statistical Database (SSD) of Statistics Netherlands (Bakker, 2002) (data on population and households, and on employment, income and residential location). Data were pooled using unique person identification numbers created by Statistics Netherlands; mismatches (about 5%) were excluded from the analyses. The SSD data refer to 31 December of 2010 and 2012, and the vehicle registration data to 1 January of 2011 and 2013. These large data sets facilitate the investigation of relatively small subgroups within the population, such as parents moving to areas with high population densities. Ignoring that there is a difference of one day in the data registration, in the rest of the paper, we referred to changes between 2011 and 2013. However, these data include only a limited number of variables, and hence did not allow us to analysis many different factors. One of the limitations of this data set is that events are not registered. Therefore, we used a proxy. A change could only be identified by making a comparison between two points in time: 2011 and 2013.

2.2 Selecting couples:

For the study, we selected couples without children in 2011. Of those, we selected only couples who were still living with the same partner in 2013. By doing so, we explicitly eliminated couples that had separated somewhere between 2011 and 2013 (representing less than 1% of all couples). This was done because our focus was not on the various demographic events that may affect car ownership, but only on how entry into parenthood and interrelated life course events would affect car ownership. Entry into parenthood was defined by comparing couples between 2011 and 2013. Subsequently, we selected only those couples with children born in 2012 and 2013. Because the focus was on entry into parenthood, we selected only couples of whom the reference person[4] was aged 18 to 47 in 2011 (or 20 to 49 in 2013), as people younger than 18 are not yet allowed to drive a car, and the incidence of first childbirth among women over the age of 49 is negligible. Less than 1% of people in our data set had a first child after the age of 47. From these selections, about 424,000 couples remained.

2.3 Description of the dependent and independent variables:

Car acquisition and car disposal were determined by comparing the situation of 2011 to that of 2013. Three categories were defined: carless households, households with one car and households with more than one car. We distinguished between the acquisition of first cars and subsequent cars, similar to Clark et al. (Clark et al., 2015). We assumed that the choice of buying a first car differs from that of buying a subsequent car and that different determinants may vary in impact according to the number of cars. Similarly, the choice of selling a first car was assumed to

[4] Explanation of the reference person:
- In couples with or without children: the male partner
- Between same sex partners: the oldest partner
- In single-parent households: the single parent
- In other type of households: the oldest male member (if unknown, the oldest female member)

be determined by other factors than those involved in selling a second car. Thus, we analysed four different situations: i) the acquisition of a first car (i.e. by couples who did not own a car in 2011); ii) the acquisition of any additional cars (i.e. by the couples who already owned one car in 2011); iii) disposal of the only car (i.e. by the couples who owned only one car in 2011; and iv) disposal of any additional cars (i.e. by the couples who already owned at least two cars in 2011).

Several independent variables were considered. A static variable indicates the situation in 2011, and a dynamic variable indicates the difference between the situation in 2011 and 2013. For instance, a static variable refers to the urbanisation level in 2011, whereas the dynamic variable indicates a decrease or increase in the level of urbanisation between 2011 and 2013. In our analyses, static variables are urbanisation level, household employment status, disposable income, and the age of the household's reference person (2011). Urbanisation level was defined by the number of addresses per km^2 in the 4-digit postcode area of the household's address. Following Statistics Netherlands, five urbanisation levels were distinguished: i) very high density areas with ≥ 2500 addresses per km^2; ii) high density areas with 1500–2500 addresses per km^2; iii) moderately high density areas with 1000–1500 addresses per km^2; iv) low density areas with 500–1000 addresses per km^2; and v) very low density areas with < 500 addresses per km^2.

Employment status was measured by the number of partners in the household with a job (for instance, (Bhat and Pulugurta, 1998)). We used three categories: i) none of the partners had a job; ii) one of the partners had a job and iii) both partners had a job in 2011. The data did not allow us to differentiate between part-time and full-time employment and excludes self-employment. Studies on car ownership use various ways of measuring household income (Nolan, 2010, Dargay, 2002, Potoglou and Kanaroglou, 2008). We preferred to categorise household disposable income in quartiles, corresponding to < 30,000 euros/year, 30,000–37,000 euros/year, 37,000–47,000 euros/year and > 47,000 euros/year, respectively. In this way, we were able to determine the differences in the change in car ownership between households with various income levels. The age of the household's reference person was calculated by subtracting 2012 from the year of birth of the reference person; three age categories were considered (18–27, 28–37 and 38–47) in order to distinguish between age groups for which entry into parenthood is either common (28-37) or less common.

Three dynamic variables were defined. A residential move was defined by a move to a different postcode area with a different level of urbanisation, between 2011 and 2013. An increase or decrease in urban density was determined by comparing urbanisation levels of the postcode areas in 2011 with 2013. As a proxy for changes in employment status, a comparison was made between the number of partners with a job in 2011 and 2013. An increase or a decrease in household disposable income was measured by comparing household income levels of 2011 and 2013. Thus, a change in income indicates a change from one income quartile to another. These dynamic variables have three categories: no change, decrease and increase.

2.4 Statistical analysis:

First, we conducted a descriptive analysis of the data set, followed by various logistic regression analyses to assess the effect of entry into parenthood on car acquisition and disposal among stable couples, controlling for static and dynamic variables.

3. Descriptive analysis

Table 1 shows the descriptive statistics of the three data subsets. The first subset contains carless households, the second contains households with one car, and the third contains households with more than one car. In 2011, of the stable couples aged 18 to 47, about 59,000 (14%) did not own a car, 217,000 (51%) owned one car, and 148,000 (35%) owned more than one car. About 17% of the carless couples, 26% of the couples with one car and 27% of those with more than one car had entered parenthood by 2013. In general, car acquisition appeared more frequent among carless

couples (38%) than among those already owning one car (17%). Car disposal is more frequent among couples owning more than one car (16%) than single car owners (3%). Couples were also found to be more likely to acquire a car than dispose of one. Also, in all subsets, couples were found to be twice as likely to relocate to lower density areas (6%, 5% and 5%) than to move to higher density areas (3%, 2% and 2%). A decrease in the number of partners with a job or in the level of household income is more likely than an increase, in most cases.

Table 1. Descriptive statistics of couples with no, one and more than one car

	0 car		1 car		> 1 car	
	Frequency * 1000	%	Frequency * 1000	%	Frequency * 1000	%
Car acquisition between 2011 and 2013						
No	37	62	180	83		
Yes	22	38	37	17		
Car disposal between 2011 and 2013						
No			210	97	125	84
Yes			7	3	23	16
Age of reference person in 2011						
18-27	20	34	50	23	26	18
28-37	24	41	101	46	70	47
38-47	15	26	66	31	52	35
Transition to parenthood						
No	49	83	161	74	107	73
Yes	10	17	56	26	40	27
Level of urbanisation in 2011						
Very high density areas (> 2500 addresses/km2)	29	50	59	27	20	13
High density areas (1500–2500 addresses/km2)	14	24	58	27	34	23
Moderately high density areas(1000–1500 addresses/km2)	7	12	40	19	32	21
Low density areas (500–1000 addresses/km2)	5	8	34	16	33	22
Very low density areas (< 500 addresses/km2)	3	6	26	12	29	20
Number of partners with a job in 2011						
None of the partners had a job	9	15	10	4	4	2
One of the partners had a job	20	34	53	24	25	17
Both partners had a job	30	51	154	71	120	81

Household disposable income in 2011 (euros/year)						
1st quartile (<30,000)	32	54	56	26	19	13
2nd quartile (30,000–37,000)	12	20	59	27	35	24
3rd quartile (37,000–47,000)	8	14	54	25	44	30
4th quartile (> 47,000)	7	12	48	22	50	34
Changes in the level of urbanisation						
No change	54	92	201	93	138	93
Decrease in the level of urbanisation	3	6	12	5	7	5
Increase in the level of urbanisation	2	3	4	2	3	2
Changes in the number of partners with a job						
No change	42	71	174	80	125	85
Decrease in the number of partners with a job	8	15	27	12	16	11
Increase in the number of partners with a job	8	14	16	7	7	5
Changes in the level of income						
No change	39	66	139	64	99	67
Decrease in the level of income	8	13	39	18	28	19
Increase in the level of income	12	21	39	18	21	14
Number of observations	**59**	**100**	**217**	**100**	**148**	**100**

4. Logistic regression analyses

4.1 The role of entry into parenthood in buying a car or an additional car:

Our first research question is to what extent entry into parenthood influences car acquisition, controlling for interconnected changes in the residential, employment and income situation of stable couples and what the differences are between the acquisition of a first car and that of additional cars. To answer this, we estimated two separate logistic regression models. One in which the acquisition of a first car was the dependent variable and another in which this was the acquisition of an additional car (Table 2).

The results in Table 2 show, first of all, that car acquisition varied with the age of the reference person (the older age categories were less likely to buy a first car or an additional car than the youngest group), the number of partners with a job (the higher this number, the more likely the car acquisition), income level (the higher the income, the more likely the car acquisition) and urbanisation level (the higher the density, the less likely the car acquisition). These relationships were visible in both models, suggesting that the impacts of these determinants are very similar between the acquisition of first and subsequent cars. However, the impact of entry into parenthood on car acquisition was found to vary between carless couples and couples who already owned a car. In both cases, couples were found to be more likely to acquire a car when they entered into parenthood. Couples who did not already own a car were 2.0 times more likely to acquire one or more cars upon entry into parenthood than those who did not enter into parenthood. However, the impact was much lower among couples who already owned a car;

Table 2. Relationship between car acquisition and entry into parenthood, residential relocation and changes in employment status and income

	The acquisition of a first car			The acquisition of an additional car		
	β	**or**	**P>z**	**β**	**Or**	**P>z**
Age of reference person in 2011						
18-27 (ref.)						
28-37	-0.43	0.65	**	-0.28	0.76	**
38-47	-1.03	0.36	**	-0.57	0.57	**
Number of working partners in 2011						
None of the partners is working (ref.)						
One of the partners is working	0.39	1.48	**	0.12	1.13	**
Both of the partners are working	0.73	2.08	**	0.47	1.60	**
Household disposable income in 2011						
1st quartile (ref.)						
2nd quartile	0.37	1.45	**	0.23	1.26	**
3rd quartile	0.54	1.72	**	0.43	1.54	**
4th quartile	0.76	2.14	**	0.78	2.18	**
Level of urbanisation in 2011						
Very high density areas (ref.)						
High density areas	0.52	1.68	**	0.44	1.55	**
Moderately high density areas	0.68	1.97	**	0.63	1.88	**
Low density areas	0.86	2.36	**	0.77	2.16	**
Very low density areas	0.96	2.61	**	0.90	2.46	**
Constant	-1.54	0.21	**	-2.70	0.07	**
Transition to parenthood						
No (ref.)						
Yes	0.71	2.03	**	0.12	1.13	**
Changes in the level of urbanization						
No change (ref.)						
Decrease in the level of urbanization	0.62	1.86	**	0.60	1.82	**
Increase in the level of urbanization	-0.14	0.87	*	-0.12	0.89	**
Changes in the number of working partners						
No change (ref.)						
Decrease in the number of working partners	-0.21	0.81	**	-0.19	0.83	**
Increase in the number of working partners	0.54	1.72	**	0.52	1.68	**

Changes in the level of income						
No change (ref.)						
Decrease in the level of income	-0.13	0.88	**	-0.20	0.82	**
Increase in the level of income	0.70	2.01	**	0.52	1.68	**
Pseudo Rho squared	**0.09**			**0.04**		

** significant at 99%
* significant at 95%

they were only 1.1 times more likely to acquire a car upon entry into parenthood, relative to those who did not enter into parenthood. This indicates that childbirth is a greater factor in car acquisition among carless couples than among those already owning a car. This is in line with results from other studies, such as by Clark et al. (Clark et al., 2015). However, the impact of changes in urbanisation level, numbers of partners with a job or income did not vary much between carless couples and couples owning a car. Both groups were equally (about 1.8 times) more likely to acquire a car or additional car when they moved to a lower density area.

Also, the influence of relocation to a higher density area is more or less the same in both models, in which it coincided with a lower likelihood of car acquisition. The results show that couples were about 0.9 times less likely to acquire a first or subsequent car. Couples were also less likely to do so if one or both partners had left the labour market. The effects once again were similar (odd ratio about 0.8) for both first and subsequent car acquisition. A decrease in the level of income also reduced the likelihood of car acquisition of the first car (odd ratio=0.9) and any additional cars (odd ratio=0.8).

In addition, our results show that transition into parenthood was more important than residential, employment and income changes for the acquisition of a first car, but that such a transition had only limited influence on the acquisition of an additional car. Couples who already owned a car were only 1.1 times more likely to acquire an additional car, compared to carless couples who were 2.0 times more likely to acquire a car. All in all, entry into parenthood was especially important among carless couples. The implication is that the delay in entry into parenthood might lead to a delay in entry into car ownership among young adults. For households already owning a car, entry into parenthood was found to play a smaller role in car acquisition than changes in professional career or residential location.

4.2 The role of entry into parenthood in disposing of the only car or any additional cars:

Our second question is to what extent entry into parenthood influences car disposal, controlling for interconnected changes in the residential, employment and income situation of stable couples and what the differences are between the disposal of an only car and that of any additional cars. Two models were estimated. In the first model, the dependent variable was the disposal of the only car couples owned and, in the second model, the dependent variable was the disposal of an additional car (Table 3).

Younger couples were more likely than older couples to dispose of their first or second car. Changes in car ownership were mainly related to changes in other life domains. Since these changes are generally more frequent at younger than older ages, car disposal may occur more often at a younger age. This implies that changes other than those already controlled for in these models (i.e. in income, urbanisation level, employment and childbirth) were important, too. If both partners had a job, the likelihood of them selling the only car or the additional car was lower than when both partners were unemployed. This is in line with other studies. Owning a car is not cheap and a steady job helps to afford one. Moreover, car dependency is generally higher among

Table 3. Relationship between car disposal and entry into parenthood, residential relocation and changes in employment status and income

	Disposal of the only car			Disposal of an extra car		
	β	**or**	**P>z**	**β**	**or**	**P>z**
Age of the reference person in 2010						
18–27 (ref.)						
28–37	-0.09	0.91	**	-0.27	0.76	**
38–47	-0.28	0.76	**	-0.56	0.57	**
Number of working partners in 2010						
None of the partners is working (ref.)						
One of the partners is working	-0.99	0.37	**	-0.26	0.77	**
Both of the partners are working	-1.77	0.17	**	-0.59	0.55	**
Household disposable income in 2010						
1st quartile (ref.)						
2nd quartile	-0.55	0.58	**	-0.37	0.69	**
3rd quartile	-0.71	0.49	**	-0.66	0.52	**
4th quartile	-0.70	0.50	**	-0.90	0.41	**
Level of urbanisation in 2010						
Very high density areas (ref.)						
High density areas	-0.51	0.60	**	-0.46	0.63	**
Moderately high density areas	-0.73	0.48	**	-0.62	0.54	**
Low density areas	-0.81	0.44	**	-0.77	0.46	**
Very low density areas	-0.89	0.41	**	-0.87	0.42	**
Constant	-1.11	0.33	**	0.05	1.05	
Transition to parenthood						
No (ref.)						
Yes	-0.48	0.62	**	0.09	1.09	**
Changes in the level of urbanisation						
No change (ref.)						
Decrease in the level of urbanisation	-0.30	0.74	**	-0.13	0.88	**
Increase in the level of urbanisation	0.67	1.95	**	0.58	1.79	**
Changes in the number of working partners						
No change (ref.)						
Decrease in the number of working partners	1.13	3.10	**	0.83	2.29	**
Increase in the number of working partners	-0.51	0.60	**	-0.15	0.86	**

Changes in the level of income						
No change (ref.)						
Decrease in the level of income	0.38	1.46	**	0.42	1.52	**
Increase in the level of income	-0.22	0.80	**	-0.15	0.86	**
Pseudo Rho squared	**0.08**			**0.05**		

** significant at 99%
* significant at 95%

employed people. Results are similar to those from other studies, in that couples were less likely to dispose of a car if they lived in lower density areas or if they had a higher income. Again, these factors affected the disposal of the only car or any additional car in more or less the same way. The employment situation had a slightly larger impact on households that owned only one car than on those owning more than one car.

In addition, car disposal was influenced by changes in residential and professional situation, as well as by entry into parenthood. The most important factor was that of a decrease in the number of partners with a job. In such a case, couples were 3.1 times more likely to sell their only car and 2.3 times more likely to sell any additional cars. A move to a more urbanised area led to a higher likelihood of car disposal and a move to a less urbanised area had the opposite effect. Effects for both car disposal situations were similar. Car disposal was also more likely if income decreased and less likely if income increased; this also applied to both single and multiple car ownership. Furthermore, the impact of entry into parenthood was found to differ from that of changes in income, urbanisation level and employment. We would expect couples entering parenthood to be less likely to dispose of their car, if this was their only car. Couples who owned only one car were found to be less likely (or=0.6) to dispose of their only car during their transition into parenthood. However, in contrast to our expectations, couples who owned more than one car were found to be more likely (odd ratio=1.1) to dispose of the additional car or cars following the birth of their first child. These results support findings by Clark et al. (Clark et al., 2015). This influence of entry into parenthood was clearly visible, even after we controlled for changes in income and employment status. This could be due to the fact that we could not control for changes from full-time to part-time employment, or because the additional financial resources needed to raise a child led couples to dispose of their additional cars more often, rather than if they only owned one car.

In summary, the impact of entry into parenthood varies with respect to couples buying or rather disposing of a first and/or additional car. All other factors do not vary much between the different models. Overall results are in line with those from other studies, in that an increase in income and/or employment, or a move to a lower density area increases the likelihood of couples buying a car (both the first or an additional car) and decreases the likelihood of them disposing of one (both the only or an additional car). The impact of entry into parenthood, however, differs between the various car ownership transitions. It stimulates carless couples to buy a car and discourages couples to dispose of a car, but it has much less influence on the likelihood of acquisition or disposal of any additional cars.

5. Conclusion

This paper investigated the influence of life course changes on car ownership for stable couples aged 18 to 47. We found that these couples are more likely to buy their first car during their transition into parenthood and are less likely to sell their car if it is only one they own. Couples are less influenced by the birth of their first child, however, when it comes to either the

acquisition or disposal of an additional car. In the Netherlands as in many other countries, entry into parenthood is increasingly delayed. Also, the proportion of men and women who never become parents has risen over the years. Given the fact that entry into parenthood stimulated entry into car ownership, this study indicates that postponement of parenthood might influence entry into car ownership. Simply put, a delay of entry into parenthood would lead to a delay in car ownership. Moreover, the increasing number of childless couples might lead to more couples who will never buy a car. And so, this might be an explanation for a structural decline in car ownership. Therefore, it implies that not only the delay of entry into parenthood but also the overall increase in childlessness might have contributed to the overall decline or stagnation of car use among younger adults in many developed nations. Transition into parenthood does not really influence the acquisition or disposal of any additional cars. The choice of reducing or increasing the number of cars per household is driven rather by residential relocation and changes in employment and income.

From a spatial policy and planning point of view, the influence of a move to an area with a different level of urbanisation is imperative. We found that couples are less likely to buy an additional car if they move to a higher density area, and are more likely to do in the opposite case. As such, this study confirms the results from earlier studies indicating that increasing urbanisation goes together with a decline in car ownership. Couples are also more likely to dispose of any additional cars if they move to an area with a higher density, relative to couples who do not move. This implies that the current policy to build houses in and nearby cities instead of suburbs far away might also lead to a structural decline in car ownership.

Recently, there has been increasing attention for the role of life events in car mobility. Life events are often interconnected. Entry into parenthood is also associated with several changes in the life course. Many couples move from one place to another and experience a change in employment status during their transition to parenthood, and this is generally accompanied by a change in household income. Entry into parenthood brings about changes in daily mobility patterns, household expenditures, and so on. It is a trigger to change daily mobility. This study shows that car dependency is higher among those who have become parents, stimulating carless couples to buy a car and reducing the number of couples who own a car to dispose of it. Even after controlling for other relevant changes in the professional, income or residential career of stable couples, this impact remains. However, we could not analyse the impact of anticipation of entry into parenthood on changes in car ownership. But from another study (Oakil et al., 2014b), we think that we could have found even stronger relationship between entry into parenthood and car ownership changes in that case. Moreover, entry into parenthood sometimes matters more than a change in income, density of the residential area or employment. The need to understand the impact of life events such as entry into parenthood is essential. First of all, the postponement of entry into parenthood, which is visible in many countries, might be a contributing factor to our understanding of trends in car decline, especially among young adults. Secondly, if more and more couples do not enter parenthood at all, which is visible in many European countries, this might eventually lead to a structural decline in car ownership. All in all, this study suggests that studying car ownership from a life course perspective will provide new insight into trends in car ownership.

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