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Coping with the Costs of Car Dependency: A System of Expedients Used by Low-Income Households on the Outskirts of Dijon and Paris

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Highlights

- Low-income households in urban outskirts use expedients to cope with car dependency
- Social networks, local resources, and reduced travel are the main expedients
- Moving to less car-dependent locations is the expedient of last resort
- Expedients are implemented by individuals but are collectively constructed

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Abstract

Living on low incomes and in a car-dependent area is often interpreted as a double burden for households, even if the two characteristics are often interdependent. While their capacity for mobility is lower, low-income households in outer suburban areas are nonetheless mobile. Their capacities in this domain should not be underestimated or overlooked. They can command a set of alternative practices or expedients to deal with car-related economic stress (CRES) by a set of resources derived essentially from spatial proximity. This article aims to present and analyse the diversity of these expedients for the case of outer suburban areas around Paris and Dijon. The analysis of mobility adjustments by low-income households is based on interviews of 45 households between 2010 and 2011.

Our results show that mobility expedients make it possible for low-income households to continue to reside in car-dependent areas by reducing their trips and by using local resources and networks to lower the costs of their car dependency. The contribution of our work is to show the intensity of these practices, which create a structured and collectively or socially built alternative system to solo car use.

Key words

Car dependency, low-income households, daily mobility, expedients

Acknowledgements

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1. Introduction

Car dependency is high in areas of low population density and so higher in outer suburbs than other residential areas (Dupuy, 1999; Newman and Kenworthy, 1989). Car mobility prevails in these outer suburban areas because resources are remote, destinations dispersed, alternative modes of transport inadequate or absent, and because automobiles provide far greater accessibility than other modes of transport (Handy, 2005; Cervero, 2002). However, the probable increase in the costs of car ownership and use may lead to a potentially problematic reduction in mobility for low-income households who already have difficulty meeting this costs (Low and Mosby, 2016; Delbosc and Currie, 2011; Coutard *et al.*, 2004). This observation is made more acute because some outer suburbs are the preferential places of residence for low-income families who are drawn to them by lower land prices as observed for example in France (Cavailhès and Selod, 2003).

Many research papers point out the marked inequalities that low-income households suffer in terms of mobility and accessibility (Delbosc and Currie, 2012; Lucas, 2012; Currie *et al.*, 2010). These inequalities are especially glaring in low-density areas remote from urban resources. They testify to the discrepancy between the inhabitants of such areas and (high- or low-income) households living in urban centres, which tend to enjoy greater mobility and access (Delbosc and Currie, 2011; Morency *et al.*, 2011). Low-income outer-suburban households are less car-deprived than urban ones but they are more likely to face another car-related transport disadvantage: car-related economic stress (CRES) defined as the “the financial stress associated with owning and operating cars, and its negative consequences” (Mattioli and Colleoni, 2016). Their need for access to cheaper housing (Polacchini and Orfeuill, 1999) means that low-income households are especially exposed when they fail to anticipate the energy costs related to living in the outer suburbs (fuel, heating, etc.) (Ortar, 2016).

Our aim is to better understand how low-income households manage (or fail) to remain in less dense areas where they are more likely exposed to social exclusion via car dependency and CRES. As previously studied, low-income outer-suburban households resort to various means for their daily mobility practices (Lovejoy and Handy, 2011; Hine and Grieco, 2003), residential locations (Currie, 2010; Clifton, 2004), employment locations (Kawabata and Shen, 2007; Chapple, 2001) or exploitation of proximity (Delbosc and Currie, 2011). However, sectorial and specialized approaches generally miss the variety and combination of means used by individuals. We hypothesize that means or “expedients” to cope with car dependency and CRES differ and are variously effective from one situation to another. The term “expedients” here means makeshift or temporary resources for coping with difficulties arising. In this sense, it seems more appropriate than “strategies”, “tactics” (de Certeau, 1990), or “arrangements” (Ortar, 2016; Jouffe *et al.*, 2015) for describing how low-income households manage to cope with car dependency.

Our study seeks first to identify such expedients in the French case on the basis of qualitative surveys conducted among low-income households in the outer suburbs of Dijon and Paris. Then

it shall be seen how (far) these expedients form a system of alternatives to intensive and solo car-based mobility. Lastly, we shall evaluate whether this system is liable to moderate the threat of car dependency or car-related disadvantages for low-income households in outer suburban areas over the longer term.

2. From inequalities and costs of mobility to expedients: a review of the international literature about mobility of low-income (outer suburban) households

2.1. Unequally distributed automobile mobility: more costly automobile dependence for outer suburban low-income households

The share of car use has been constantly increasing in urban travel to the point that our societies are now characterized by their car dependency (Dupuy, 1999; Newman and Kenworthy, 1989). This dependency is manifested by a high level of car ownership and massive use of cars (Collet *et al.*, 2012). The car enjoys a radical monopoly as defined by Illich (1974) by offering greater speed of travel and a higher degree of flexibility than other means of transport. Automobile mobility therefore imposes a standard in travel practices and has become the precondition for “normal” inclusion in social life, especially in low-density areas (Cervero, 2002).

Although motorization and automobile mobility are massive in developed countries, they are unequally distributed, especially with respect to income and localizations (Giuliano and Dargay, 2006; Pucher and Renne, 2003). Disparities in mobility by income can be observed in France (Grimal *et al.*, 2013) and more patently in the United States (Renne and Bennett, 2014) or Australia (Delbosc and Currie, 2012). Cars weigh considerably on the budgets of the poorest (Demoli, 2015; Froud *et al.*, 2002) forcing low-income households to make multiple adjustments: lower rates of ownership and multiple vehicle use (Collet *et al.*, 2012), older and second-hand vehicles (Coulangeon and Petev, 2012; Bhat *et al.*, 2009), etc. Inequalities by income also concern the type of insurance (Taylor *et al.*, 2008), or the standard of maintenance and repair (Hivert, 2001). Motorized low-income households are also distinctive because they avoid toll roads and car parking charges (Taylor *et al.*, 2008), which means they must make longer and more restricted trips. Low-income households make extremely sparing use of the car (Orfeuill, 2004) compared with richer households. All told, low-income households are less mobile (Olvera *et al.*, 2004; Pucher and Renne, 2003), which reflects their limited accessibility to essential activities such as work (Kawabata and Shen, 2007), especially for women (Camarero and Oliva, 2008), food shopping (Clifton, 2004) or health care (Syed *et al.*, 2013). Depending on the geographical zones or urban spatial structures, highly auto-oriented areas (Los Angeles or Dallas) vs metropolitan areas with high public transport usages (London, Tokyo or Paris), accessibility made possible by cars varies but remains greater than accessibility by public transport. It is a source of more or less marked inequalities for the least motorized

households (Kawabata and Shen, 2006), which are often the least well-off both in the USA (Blumenberg and Pierce, 2012) and in France (Collet *et al.*, 2012). Constraints and limits on low-income household mobility are particularly marked in outlying spaces, rural areas or outer suburbs, where car dependency is most pronounced (Morency *et al.*, 2011), where public transportation is absent (Glaeser *et al.*, 2008) and where car-less groups are fewer (Hubert *et al.*, 2016; Mattioli, 2013). In France, disparities in access between central areas and urban outskirts are more marked and tend to grow (Caubel, 2006). In Canada, the location of a proportion of social housing on the outskirts explains a very limited level of access to services and facilities for social housing residents (Apparicio and Seguin, 2006). Thus the problems of transport and accessibility are more likely to be sources of social exclusion in rural and outer suburban areas than in central areas (Delbosc and Currie, 2011).

Social and geographical conditions combine to constrain daily mobility and limit the accessibility of low-income households, especially in outer suburbs. This context seems particularly significant because low-income households have a high propensity to settle in outer suburban areas. In most major US cities, the poor population is growing more rapidly in the suburbs than in the inner city (Kneebone and Garr, 2010). In France (Cavailhès and Selod, 2003) and Australia (Currie, 2010), the suburbs are experiencing rapid growth of low-income households, attracted by cheaper housing. This phenomenon is reflected, however, by increased strain on their budget because of costly automobile mobility among other expenses such as housing (Coulombel and Leurent, 2012; Dodson and Sipe, 2007; Polacchini and Orfeuil, 1999). Berri (2007) observes in the Paris Region that car ownership and operation amount to almost 10% of household budgets with big differences between the city centre (6%) and outer suburbs (11–14%) and between low-income (8%) and high-income households (10%). Outer-suburban low-income households spend a larger part of their budget on private transport (9%) than more urban ones (4%) especially because of car-related costs such as fuel expenses. That proportion is much lower proportion than for high-income households living in the same areas (13–17%). Rising spending on transport related to car-dependency and remoteness from the centre are then further sources of car-related economic stress (CRES) for outer-suburban low-income households as indicated by other studies in France (Nicolas *et al.*, 2012). CRES is duplicated by another factor of energy vulnerability: vulnerability related to energy spending on housing such as heating and insulation, which is higher in less dense zones and for poorer households that cannot afford more energy-efficient housing (Maresca and Dujin, 2014). Outer-suburban low-income households therefore juggle with several forms of economic stress that build up, one related to spending on cars and the other to spending on housing (rent, mortgages or energy expenses), that involve making many arrangements to keep them down (Ortar 2016).

2.2. Expedients for coping with automobile dependence: reduced travel, social networks, and staying local

Whatever the residential context, low-income households organize themselves in many ways so as to reduce or at least cope with the high costs of mobility, especially those related to cars. Low-income households manage to reduce CRES in many ways, which they consider far from perfect in that they aspire symbolically to the same automobility as other households (Taylor *et al.*, 2008).

Trips are limited in number and distance according to a criterion of necessity, and precedence is given to the cheapest forms of transport. Car-solo based mobility is reduced and walking, public transport, and car sharing take priority (Blumenberg and Agrawal, 2014). Although they have higher fuel expenses, low-income households buy cheaper cars and use public transport more intensively than high-income households (Berri, 2007). For grocery shopping, the persistence of secondary strategies not involving cars (Clifton, 2004) also shows that owning a car is not enough to meet all the travel needs of a low-income household. Household members share car ownership and use.

Low-income households mobilize their social networks to increase their mobility (Hine and Grieco, 2003), which is reflected by intensive practices of car sharing or borrowing (Lovejoy and Handy, 2011; Charles and Kline, 2006). The spatial proximity of social networks is one of the preconditions for resorting to car sharing or borrowing, which sometimes involves monetary compensation or exchanges of services (Lovejoy and Handy, 2011) and these options need to be carefully “created, arranged, and planned” (Clifton, 2004). Social networks are also mobilized to avoid having to travel without giving up on access to certain activities while ensuring the “well-being” of low-income households (Delbosc and Currie, 2011). Child-minding services are thus sought out within the family entourage, which is a great purveyor of services and mutual support (Barnes, 2003). Generally, French low-income households live close to their families or communities, people they feel close to (Bonvalet *et al.*, 1999). They devote much of their free time to them, especially with regard to the services they mutually render.

Although the mobility of low-income households is limited, this does not preclude intensive frequentation of the local area. These households have relational networks based on proximity, which promotes much stronger local anchoring¹ than is found among other social categories (Fol, 2009). This locally and mobilizable form of social capital (as defined by Wellman and Franck, 2001) has the effect of reducing the residential mobility of low-income households (Kan 2007; Dawkins, 2006). These networks can also offset the lack of public services due to their residential location or expensive services they cannot afford, especially when they have children, as seen in the USA (Dawkins, 2006). Effects of anchoring within the local community on social mobility (such as change of social status) may be negative depending on the social network of individuals

¹ Anchoring is the translation of the French metaphorical term “*ancrage*”. It is often used by French geographers as a subtle variation of embeddedness, attachment or rootedness by focusing on mobility, on the plurality of spaces that defines people or which are defined by them as central. See Debarbieux, 2014.

(Pinkster, 2007) and nearby resources (Curley, 2010). People are encouraged to foster their integration within the community because it is such an effective way of offsetting difficulties of access. In particular, in low-density areas such as the urban fringes, well-being is not connected to transport (dis)advantages but arises more from social inclusion such as close ties established in the neighbourhood (Delbosc and Currie, 2011). Exploiting local anchoring appears to be a form of expedient for overcoming inequalities in mobility, inasmuch as it may release the inhabitants from the requirement of mobility.

Low-income households also seek proximity when it comes to employment. They look mostly for jobs located near home. Immergluck (1998) shows that the existence of neighbourhood job offers has a decisive impact on the process by which poor or low-income households escape from unemployment. The local area is given precedence in looking for employment because of the (small) gains and (high) costs they can expect from geographical mobility, given their level of qualification, in the United States (Chapple, 2001) and in France (Sigaud, 2015; Vignal, 2005). Such expedients are characterized by a voluntary limitation of the radius within which to look for work and the remoteness of jobs that they might accept (Fol, 2009; Vignal, 2005; Chapple, 2001).

Low-income households thus make residential choices that allow them to balance their mobility and accessibility given their limited budgets (Currie *et al.*, 2010). Of course, these residential choices are made under constraints of cost, type of neighbourhood, location of affordable housing, or accessibility to work. In France, where spatial segregation is less pronounced than in the US (Quillian and Lagrange, 2013) and where there is provision of social housing (Scanlon *et al.*, 2015), the universe of choice for low-income households remains large. In certain locations, especially in the outer suburbs, low-income households can sometimes afford private-sector rental housing or can even buy their own house.

But, as seen, this residential choice and opting for the outer suburbs expose low-income households to CRES. How do they cope with it? How are the strategies or resources to reduce CRES as examined above (fewer trips, using social networks, and staying local) implemented in a context where cars prevail and there are few if any other forms of transport? The combination of an economic situation and a geographical location lead outer-suburban low-income households to set up expedients for travel, getting to work, shops, and services. Finally, remaining in the outer suburbs is not always possible and beyond the expedients described previously another more radical form is to be contemplated: relocating to more urban areas (Motte-Baumvol *et al.*, 2010).

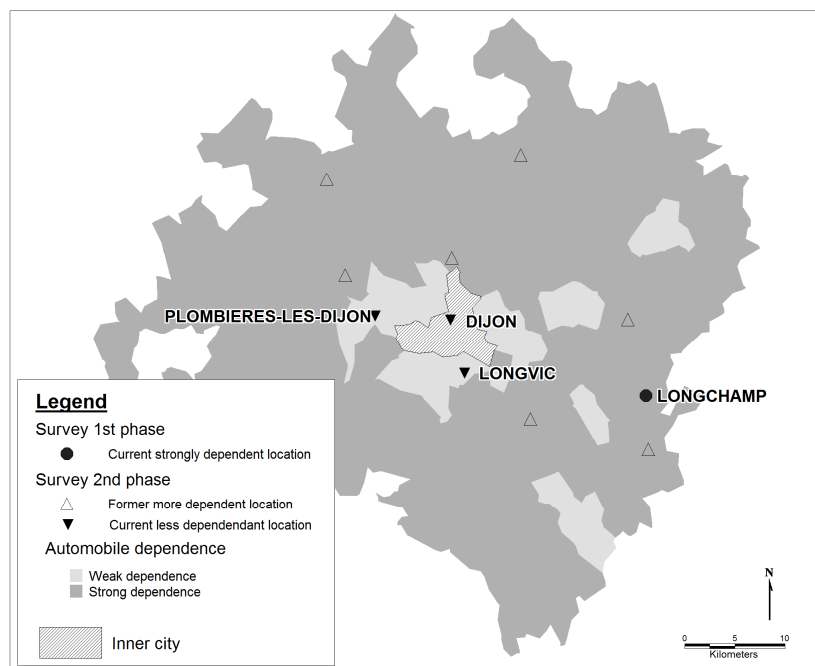
3. Material and Method: An interview-based survey in Paris and Dijon

The findings presented in this paper are from an interview-based survey conducted in 2011 in two urban areas of different sizes, Dijon and Paris. The objective was to understand how low-income households deal with car dependency and how they manage to cut the costs of it, to deal with CRES. We questioned two types of low-income households: those currently living in outer

suburban areas (wave 1, 22 households) and those that had formerly lived in outer suburbs but had relocated to areas where they were less reliant on cars (wave 2, 23 households). This part of the survey was designed to test the generally accepted hypothesis that, given their level of income and their place of residence, low-income households have greater difficulty travelling and are isolated in outer suburban areas and may be prompted to leave them (Motte-Baumvol *et al.*, 2010). For the households who left these areas, their departure was more or less recent ranging from one to more than 10 years before the interview, with an average duration of 4 1/2 years.

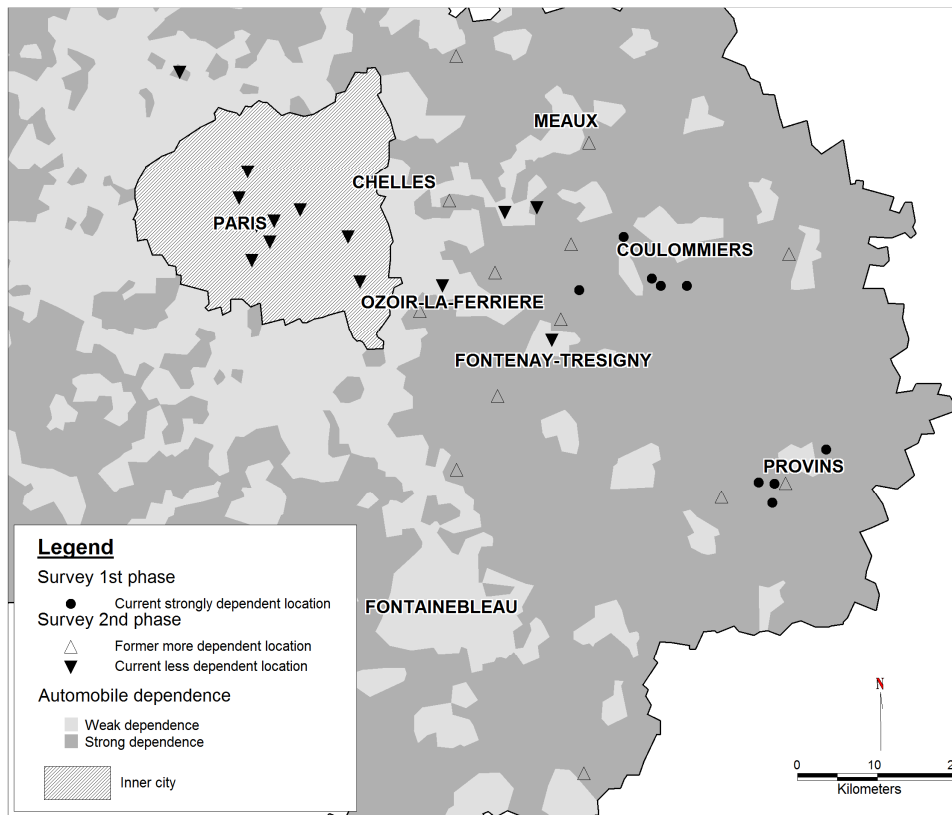
Semi-directive face-to-face interviews were conducted by a principle of narration of the lives of the individuals and their households. An important part of the interview was designed to gain insight into daily mobility through an account of a typical week for the respondent and all the household members. For respondents who had left these types of area (wave 2), this part was centred on the description of their former travel practices and comparison with their new practices.

Figure 1 : Car-dependent areas surveyed in the Dijon area



Source: Cartography by the authors from the qualitative survey (2011)

Figure 2 : Car-dependent areas surveyed in Île-de-France



Source: Cartography by the authors from the qualitative survey (2011)

In both waves, the areas of residence (current for the first wave and former for the second) were chosen for their car dependency, because of the poor local supply of services (especially public transport), shops, facilities, and employment, and their low-density and significant remoteness from urban centres. Of the 35 car-dependent areas we investigated, three have a train stop (15 trains per day max – none after 8 pm) and six have a bus stop (six buses per day maximum at peak times). Although car-dependent areas around Paris are further from the urban centre than those around Dijon, the public transport system is more widely developed and used around Paris. While motorization and multimotorization rates are higher around Paris (85.6% and 38.6% in Seine-et-Marne) than in Dijon (81.4% and 33.8%), only 63.2% of workers around Paris use their car as their main means of transport for getting to work versus 70.8% in Dijon (INSEE, 2013).

In order to facilitate the recruitment of low-income individuals, the districts investigated were those whose median incomes were the lowest in the selected zones. Several recruitment methods were combined: previous questionnaires with agreement to participate in an in-depth interview, mayors or social workers who helped to identify several households, snowball effect (one interviewee introduces one relevant relative, etc.) and recruitment agencies. The combined methods enabled us to study a diverse but illustrative sample of 45 low-income households (Table 1).

Apart from slight differences in sex and age, the two waves differed in their income levels which were slightly higher in the second because households were on low-incomes when they lived in outer suburbs. Insofar as their access to (better) employment was among the factors that prompted them to leave, their incomes were potentially higher after relocation. Also, only incomes at the time of the interviews are specified. For wave 1, two previously low-income households but that are now better-off were maintained for the purpose of the analysis. Without them, the maximum income of wave 1 would be lower, €1385 per month and per consumption unit instead of €2000. The two waves also differ by the motorization rates of households and by their residential status. Urban households of wave 2 are less motorized than the outer suburban households of wave 1. Except for two households in wave 2 (mostly students who left the parental home without having passed their driving test), there is at least one person with a driving licence in each household surveyed. A large majority of wave 2 households are tenants and more especially socially subsidized ones. Wave-1 households mainly own their homes. This difference is partly because wave-2 households are often younger and so at early stages of their life cycle. Only six of them owned their house when they were in the outskirts. The others were tenants.

Table 1 : Description of households interviewed in the two waves of the qualitative survey (2011)

Variable	Modality	Wave 1	Wave 2	All (%)
City	Paris	13	15	28 (62)
	Dijon	9	8	17 (38)
Sex	Male	9	4	13 (29)
	Female	13	19	32 (71)
Age	Under 40 years	11	15	26 (58)
	Over 40 years	11	8	19 (42)
Household type	Single	6	5	11 (24)
	One of couple works	6	0	6 (16)
	Both work	8	10	18 (40)
	Single-parent family	2	8	9 (20)
Current residential status	Owner	15	3	18 (40)
	Tenant	4	8	14 (31)
	Subsidized housing tenant	2	11	11 (24)
	Rent free tenant	1	1	2 (5)
Children	No children	9	9	18 (40)
	1 child	5	8	13 (29)
	2 children and more	8	6	14 (31)
Income per consumption unit	Minimum	480	645	480
	Median	1 230	1 300	1 260
	Maximum	2 000	2 400	2 400
Motorization rate per adult	0	2	9	11 (24)
	Between 0 and 1	10	7	17 (38)
	1	10	7	17 (38)

4. Results

4.1. A reduced programme of activity concentrated in the “local” area

The car-dependent location of the households studied here results from many factors: this is the place where they or their partners grew up, they want to live in a house on countryside, they want to own their home/house, etc. Among the reasons they choose to live in a car-dependent area, mobility and its costs are never taken into account. Although the households surveyed are not poor and can (could) afford a vehicle when they live(d) in the outskirts, their low incomes lead them to implement several expedients to reduce the costs associated with car travel.

They repair their vehicles themselves or ask friends and relatives to do so. They also choose and regularly maintain their car so that it lasts as long as possible. While 20 households who still live in an outer suburb have at least one car, seven of them have work vehicles so they do not need to own a (second) car or use their own vehicle. Another expedient is to minimize the number and range of trips by car. Thus the low-income households interviewed favour shops and services close to their home. They do not make much use of the major shopping centres but prefer instead smaller ones that have fewer shops and services but are closer. Apart from costs, households also seek to minimize the exhausting character of travel. For several households, the exertion involved was the main reason for giving up several types of activity. In the case of households with children, arduous effort is a central argument in the decision for one of the parents, generally the woman, to stop working. It is associated with the high costs related to holding down a job (fuel costs and child care expenses), which low-paying jobs cannot easily offset:

“That’s when I realized I had to move closer, I had to find work nearby. [...] For my young daughter, she has to be taken really early on to the child-minder’s, and it’s not so handy. [...] For my young daughter, it [childcare] comes to about €850 about every month, plus €300 in fuel [to go to work], that’s €1150, [...] I earn €1300, and my whole wage goes on these [childcare and fuel].”
Tiphaine, 34 years, married, two children, nursery help in the Paris area, owner-occupier 70 kilometres away in the outer suburb of Île-de-France.

Another respondent without a driving licence, Sandra, used to get the bus to work or was dropped off by her husband, depending on his working hours. The demands made by her working conditions compounded with all sorts of other constraints prompted her to leave a poorly paid job:

“I took the lot [3 years maternity leave]. [...] You see, you’re better off staying at home [earnings are down sharply but savings on childcare and transport]. [...] And you get to spend time with your children. [...] It’s true that working as a supermarket cashier is no job. When you have children, you can’t. [...] Because of the hours and then their overtime policy, and when you have an appointment to pick the children up from school. If you don’t agree, you get a letter [warning or redundancy].” Sandra, 28 years, married, two children aged 6 years and 9 months, check-out assistant on maternity leave, owner-occupier in the outskirts of Île-de-France.

The respondents give priority to activities that minimize or avoid travel. Many households interviewed eat home-grown products from their own or a friend or relative's kitchen garden. For the poorest, the kitchen garden is an important source of supply. This activity is made possible by the room households have to grow and store food in the garden, freezer, and storehouse.

“I have three freezers in the house. [...] Plus everything I do in the garden, I freeze it. Beans and what have you, I freeze for winter. We couldn't make do otherwise. If we had to buy our vegetables all the time, we couldn't afford it. It's virtually just fruit we buy.” Floriane, 37 years, married, one daughter aged 11 years, starting back to work, owner-occupier in the outer suburb of Dijon.

Several households make use of the resources in their environment beyond the house and garden such as the forest for picking mushrooms or bringing in wood for the winter. This activity may represent a large proportion of the heating fuel supply for these households.

4.2. Social networks as travel-resource providers

Another trend observed is the frequent and deep-rooted practice of sharing when it comes to travel. Carpooling, chauffeuring each other's children, hitchhiking, and delegation to others are often mentioned in interviews. Age plays a structuring role in these practices.

For younger people, especially teenagers or young adults for whom the driving licence is a big investment that is put off until later, many alternatives to driving alone or even to the car are mobilized: walking, cycling, motorcycles, public transport, hitchhiking, being chauffeured by parents, and so on.

“When I was at my parents' in Savins, it was limited. For example, in the morning I caught the bus at 6 o'clock, [...] When I was at uni, one of my friends drove me in [...] I didn't have a car at the time. In the mornings, she drove me in and then in the evenings it was a bind, because at uni, in the mornings we always began at 8 o'clock, but in the evening, it depended. From Longueville [station] to Savins I had to wait there for my parents to come and get me or walk home, [...] in the middle of the countryside, [...] 45 minutes.” Estelle, 24 years old, single, administrative clerk in a cooperative, tenant to private landlord in the outer suburb of Île-de-France (where she grew up).

Teenage travel practices cover a wide range of ways to get about. However, this range tends to narrow drastically with adulthood. Either youngsters pass the driving test, get a vehicle, and drive or they leave the outer suburbs and move to urban areas closer to their place of study or work, with the help of welfare support. It is more frequent in Dijon than in Paris where social or student housing is much less readily available. In the Paris Region the waiting time to access social housing can be longer.

“[Of his eldest daughter, on a student grant] Public transport seemed quite complicated to us. [...] It's not far to drive to university, it takes 25 minutes. By train or bus, it takes nearly an hour and a half. It was common sense for her to have a room there [on campus with her grant]. Christophe, 49 years, married, 2 daughters aged 19 and 15 years, technician, owner-occupier in the outer suburban area of Dijon.

For the older generation, the onset of dependency is a factor in being chauffeured and also in delegating trips, especially to offspring. Several respondents explained they helped their elderly parents or neighbours by taking them to the doctor's or by doing their shopping. In addition to home help, the elderly make up for the shortage of shops and services nearby without giving up on their home. In some cases, for the less dependent and not so elderly, such accompaniment is in exchange for other help (such as childcare, for example):

“But I go shopping a lot with my son and my daughter. [...] And my son, he comes round ten times a day, he comes to eat at lunchtime, with me because he doesn't want to eat alone [...]. We fork out enough, so when I need to go shopping, even if he doesn't agree, he goes shopping.” Annette, 56 years, family assistant and looks after her grandchildren (former manual worker), married, three children aged 38 to 29 years, owner-occupier in the outer suburban area of Dijon.

For the working population, carpooling for commuting is common practice, especially in Côte-d'Or. This is because the households interviewed were mainly manual workers with fixed working hours, shared by their workmates living in the same areas. Carpooling is a long-standing practice and part of the practices of local firms:

“I shared the driving for a very long time. [...] For at least 15 years, several of us drove together. We shared the driving until the last one I used to take left for Chevigny before me. He changed shifts.” Vincent, 58 years, married, foreman, two children aged 28 and 26 years who no longer live at home, owner-occupier in the outer suburbs of Dijon.

Resort to carpooling explains in particular why several working women in Dijon never take the driving test, having always found someone to accompany them. Firm closures left a number of these workers unemployed. The jobs offered to them, mostly in home help services, require a driving licence. They often try to get *Pôle Emploi* (the Job Centre) to pay for it:

“I asked and they told me they didn't do it anymore. The lady told me I had to buy a car you can drive without a licence.” Corinne, 38 years, married, three children, manual worker unemployed for 6 months, in social housing in the outer suburb of Dijon.

Thus, depending on the strength of ties and the frequency of exchanges, the possibility of getting a lift varies from one person to another, according to their proximity to their social network and their social anchoring (Lovejoy & Handy, 2011). Accordingly, carpooling seems far less developed in Île-de-France than in the Dijon area. For Parisian households, the family network is more remote, travel distances and times are longer, working hours less synchronized or workplaces more dispersed than in Dijon. In fact, in the Paris region, carpooling appears to be more for non-professional motives such as periodic sports activities or escorting children (to/from school, sport, etc.). Here too, carpooling is possible because of shared departure points and destinations. But it is also rarer when it involves non-family ties such as neighbours, who are called on in exceptional circumstances:

“AND IF YOU HAVE A PROBLEM, FOR EXAMPLE A CAR BREAKDOWN, WOULD YOU CALL YOUR NEIGHBORS FOR HELP?”

No. I don't think so. I don't think I would have. Because I would have been embarrassed, I guess. We had a good relationships but nothing more. I was working at home. So I could take care of sick children. Or pick them up after school in case of strikes or snow during winter [days when there is no school bus]" Soraya, 42 years, living as a couple, two daughters aged 19 and 14 years, previously an owner-occupier with her former husband in the outer suburb of Seine-et-Marne.

Although social networks are less readily available among households in Île-de-France, households there can more easily use the better-developed public transport network. For instance, many individuals use public transport in multimodal journeys as a way to reach Paris (for work or other purposes) due to distance, time, and congestion issues. Although they mainly take the train, they reach outlying train stations mostly by car. In Dijon, where the congestion is lower but also the distance to reach the urban centre is shorter, outer suburban households use public transport less.

4.3. Escaping car dependency as a radical expedient: when other expedients are not/no longer possible

Moving out of the parents' home, moving in together as a couple, divorce or widowhood are examples of life-cycle events that bring about a change in residential location. Other changes or events are to be taken into account too: unemployment, transfer, change of line of work, paying off the mortgage, inheritance, etc. In the context of our survey, these grounds have been factors for moving and relocating. The reduction of financial resources makes it difficult to pay the mortgage, to cover high costs for heating and travel. In fact, although people never take into account mobility costs when they settle in car-dependent area, these costs are often mentioned as a reason for leaving it. Impoverishment also facilitates access to more affordable (social or private) housing in urban areas. In fact, among the 23 households that chose to relocate, 12 did so because they were assigned social housing in more urban or densely-populated locations.² The absence of nearby shops and services has a repellent effect, insofar as it makes car travel more of a strain, especially for those widowed or divorced who can no longer share trips related to children or the home with the other member of the couple. Households that relocate to more urban areas do not necessarily give up on car travel. However, they use public transport or walk more on a daily basis, while the car is used less and kept for less frequent or longer journeys. Those who keep their cars are those whose financial circumstances "improve" after (not necessarily because of) their move: finding a new partner, access to employment, etc. In any event, the costs related to running a car fall for these households that are no longer car-dependent even if they do not necessarily give up using it completely.

² Social housing stock in France is located above all in urban areas and more rarely in car-dependent districts. Only districts of more than 3500 inhabitants (1500 in Île-de-France) are compelled to abide by the 25% level of social housing laid down by statute. The districts surveyed in the outer suburbs were all below these levels. In Île-de-France, none had social housing. On the outskirts of Dijon, several people living in the outer suburbs were in social housing that they did not wish to leave. Nonetheless, Dijon households that moved to more urban areas knowingly sought to relocate in their application for social housing.

Although the presence of a nearby social network is one form of anchoring in outer suburbs, such presence is sometimes lacking, especially if the person interviewed is not originally from such an area. For households whose network is in a densely populated city, moving there facilitates everyday life and materializes a return to more familiar urban practices:

“[After the birth of her two daughters] We moved flats but stayed in the same district, Champs-sur-Marne. Then I moved to Favières. We bought a house around Favières. [...] After two years I set to thinking. I thought ‘If ever the car breaks down, I’m cut off from everything’. [...] So I said, ‘No, I really have to move out’. I applied for social housing, in the district [Serris], because I already had two sisters here, in the district.” Soraya, 42 years, living as a couple (divorced), two daughters aged 19 and 14 years, in social housing in the urban area of Seine-et-Marne, previously an owner-occupier with her former husband in the outer suburb of Seine-et-Marne.

“As a couple, a house was fine, we had a small garden. But when the father of my son left, me on my own in a big house, more housework, mowing the lawn, it’s not my thing. And I was a long way from Dijon, 30 km away, my son was young at the time, he went to the day-care centre after school, so I always had to have my eye on the clock. Plus petrol costs, no public transport so if I hadn’t had a car, I would have been in trouble. All that meant I wanted to move closer to Dijon.” Sophie, 45 years, separated, one son aged 14 years, social housing tenant in Dijon near suburbs, previously social housing tenant in an outer suburban district of the Dijon area.

Living in outer suburbs has not always been a free choice for respondents. Some wanted to own their own homes, or they moved for their work, or the other member of the couple, or they inherited a house. When the locational constraint vanished, several moved back to a more urban location. However, for divorcee families with children, such a return to the urban areas is not always possible. Parents having opted for shared custody are tied to a residential location close to the previous one. They end up moving to urban districts or districts with more facilities when the alternate custody constraints are relaxed. In France, social housing, which is more likely located in big cities and in urban locations, is a facilitator of residential mobility for low-income households. In addition, the low prices on the housing market in Dijon leave a large range of affordable housing for low-income households. In the Paris region, low-income households tend to move to peripheral urban areas where housing prices remain affordable.

For households whose family network is in some other region, because of a transfer for work, for example, the choice of an outer suburban area can be explained by the search for similar geographical characteristics. Having lived in outer suburbs where they were dependent on cars, households make the same choice of geographical area for their new place to live. This choice motivated by likeness is not *a priori* always synonymous with success as evidenced by several accounts in Île-de-France and the Dijon area:

“I stuck it out for a year and a half [at Quemigny-Poissot near Dijon]. I don’t have a driving licence. I found myself at home on maternity leave with my eldest who was 18 months and the youngest who was 6 months old. In the middle of the countryside, no crèche, nothing nearby, and

our landlord as next-door neighbour. We got in touch with the housing office OPAC, [...] and we moved to a flat [...] a very big one, and great for me, in the city centre with two bus routes. So that I moved from having no life of my own and no contacts. I found myself free to go out in the middle of the day if I wanted to. [...]

IF I UNDERSTAND RIGHTLY, WHEN YOU LIVED AT THORIGNY NEAR NIORT, NOT HAVING A DRIVING LICENCE AND NOT BEING ABLE TO GET ABOUT WAS NOT TOO MUCH OF A PROBLEM FOR YOU.

No, because I had people around, I had neighbours who were in. If I needed, I always had one or two neighbours who could either bring me a bit of shopping back if ever I had a problem or take me shopping without trouble.” Justine, 33 years, married, two children aged 9 and 8 years, desktop publishing operative, social housing tenant in Dijon, was tenant to private landlord in the outer suburban area of Dijon and before that in the outer suburban area of Niort.

It is important to specify that residential relocation into a more urban area (dense urban to better equipped outer suburban) remains an expedient insofar as households take it as a failure in their attempt to settle in, their life plan, social trajectory, etc. Moreover, moving house is not necessarily sufficient to solve the lack of financial resources of households whose needs change with the stages in the family and working life cycles. Likewise, residential relocation is often not suitable to address alone, accessibility and transport problems of low-income households, as shown by studies on housing voucher recipients in the United States (Pendall *et al.*, 2014).

5. Discussion

5.1. Supplementary and collectively constructed expedients

The three types of expedients presented concerning local activity programmes, social networks, and residential location, are highly interdependent. Thus, it is possible to limit mobility, cut back on travel in terms of frequency, time, and range because of the presence or spatial proximity of local resources, be they shops, services, or social networks (Jouffe *et al.*, 2015). Compared with outer suburban middle classes, low-income households have highly rationalized travel practices because of the constraint of revenue. The most stable situations observed for low-income households living in the same district for more than 20 years compound the first two types of expedients observed in our survey. These expedients have been highlighted in the literature, but generally independently: limiting of travel (Blumenberg and Agrawal, 2014; Coutard *et al.*, 2004; Motte-Baumvol *et al.*, 2010); resort to social networks (Fol, 2009; Hine and Grieco, 2003; Lovejoy and Handy, 2011); choice of residential location aimed at maximizing access to urban resources (Clifton, 2004; Currie *et al.*, 2010). As a result of our research, the accumulation of expedients put in place by respondents leads us to emphasize the importance of their collective and social construction, on the scale both of the household and of interpersonal social networks.

On the household scale, many expedients are discussed within the couple. Temporary abandonment of an occupational activity (especially for women), taking on house and car

maintenance work (more for men), not going on holiday, chauffeuring the children, are all factors that show the negotiated or shared dimensions of expedients related to mobility. Outer suburban mothers may have opted to give up or change their job to avoid exacting and costly commutes (Ortar, 2008). But they also do so in order to take care of their children and escort them. However, this choice makes it possible for the other member of the couple to keep their job just as much as it makes it necessary to do so. The interdependence of expedients on the scale of the household is also observed between parents and children. The activities of the children like their proximity to the home shape the parents' travel patterns. Interdependence extends to all social ties maintained by the various household members outside the home. Travel practices depend on the social network and its proximity (Gardenhire, 2000; Clifton, 2004) and are also determined by indirect expedients that mobilize activities other than travel: childcare in exchange for escorting, gardening help in exchange for an oil change, etc. These expedients may be found in other areas and are related above all to the social characteristics of individuals, their degree of autonomy, and their age. Even so, car dependency in outer suburbs, that weighs more heavily on low-income households, brings such expedients to the forefront insofar as car travel remains inescapable and more than elsewhere presupposes something in exchange. It is worth pointing out that the something in exchange for a trip does not necessarily take the form of another trip.

The social network is also a vector for more or less intense socialization based on car dependency. For individuals having (had) a more urban network, automobile mobility is considered more easily avoidable. For people with a more outer suburban network, such socialization is stronger and structures mobility behaviour more lastingly. When settling in outer suburbs, the different degree of involvement in social networks may introduce a divide between members of the couple or neighbours depending on their forms of socialization and their respective backgrounds. In the most extreme cases, this divide leads to one of the protagonists leaving and a separation or a divorce. In other cases, socialization around car dependency partly contributes to socialization around the expedients that make it bearable.

5.2. Are low-income households more vulnerable to (collective) instability of mobility expedients?

The collective and social dimension of expedients implemented by low-income households has a direct effect on their capacity to lastingly cope with the car dependency of the areas they live in, present or past.

Changes in the household thus contribute to redefining expedients that may favour their staying in the outer suburb as much as their leaving it. For example, when children leave home, their parents' activity schedules tend to be facilitated. Children then become part of a family network and participate in reciprocal exchanges with their parents. Conversely, less expected life changes such as divorce or widowhood tend to make these expedients more complex, especially when there are dependent children or when the remaining member of the couple does not have a driving licence (Coutard *et al.*, 2004).

In addition to the composition of the household, which obviously influences how effectively alternative arrangements perform, the wider social network is variable too and also impacts those arrangements. Family disputes, deaths, changes of job and so workmates, moving house, changes of neighbours, are all examples of developments that mean friends and family are less present and not so readily available to be mobilized for travel. Several Île-de-France families were able to call on their parents' help. But when they retired, some parents moved and were no longer mobility resources for the households under study. Several respondents whose social network was more urban were thus prompted to relocate to more densely populated areas, often taking advantage of the availability of social housing.

Our survey brings out the marked collective dimension of the expedients implemented by low-income households. This collective dimension means they must adapt their practices to a broad spectrum of changes as and when they arise and not just to their own individual circumstances. Such expedients may equally well either help them to stay on in outer suburbs despite the tight constraints for households with limited financial resources or alternatively prompt them to change their residential location. Even so, being a low-income household living in car-dependent areas tends to make households more vulnerable to changes over which they do not necessarily have any control. First of all, this vulnerability is the outcome of often strained financial circumstances. Because low-income households have no surplus income and so no margin for manoeuvre, changes cannot be offset by paying for services to make up for the lack of alternative arrangements. Moreover, such alternative arrangements are the result of various types of socialization involving being dependent on cars and living in outer suburban areas. All the respondents are or used to be members of low-income households and so benefitted from these types of socialization to varying extents, depending on their backgrounds. They were more or less well equipped to set up alternative arrangements to cope with car dependency and its costs.

6. Conclusions

In order to cope with Car-Related Economic Stress (CRES) of an outer-suburban car-dependent environment, the low-income households surveyed implement expedients of various kinds. We have identified three types of expedients: limitation of travel and its concentration on the local area; intensive resort to social networks; and residential relocation. The contribution from our work is to have shown that such expedients hinge together to form a system of alternative practices to reduce CRES. Those alternative practices are constructed collectively and on different scales: the scale of the couple, household, and social network. The collective character of the expedients enables low-income households to withstand the particularly strong constraints of an environment dominated by automobility by allowing them access to resources. At the same time it renders this alternative fragile insofar as calling into question any one of the components of the system is liable to disrupt the complex equilibrium of interactions on which the system

rests. The expedients studied are alternatives to the high costs of car mobility rather than alternatives to car.

These results are an invitation to question the role of urban policies that might acknowledge the utility of the expedients low-income outer-suburban households put in place and might also support them. While efforts to integrate the entire population into the automobile norm (support for passing the driving test, car rental, etc.) are very costly and can only be limited (Fol *et al.*, 2007), a primary goal of public action might be to support, reinforce, and reproduce the resources already used by low-income households. Such support includes public transport, car sharing, and vehicle borrowing schemes. Similarly, the extensive use of carpooling by low-income households might be encouraged by public policies targeted at supporting such spontaneous practices. Among all policies to reduce transport disadvantages (Mattioli and Coleoni, 2016), several are possible, such as the improvement of modal alternatives or education and training to available travel options. Secondly, the provision of local amenities is crucial for those households in order to limit car use and maximize proximity practices. A third objective would be to accompany residential relocation or to influence residential location choices (Mattioli and Coleoni, 2016). Housing support could allow these households to move to places which they could not otherwise afford where car use is less necessary. Therefore, public action has a role to play by promoting the relocation of households to more densely populated areas through support to tenants and home buyers.

Above all, one lesson from the alternative mobility system devised by low-income households is the need to think of various public arrangements in a joint and complementary manner. In particular, support for residential relocation requires the provision of social or affordable housing in secondary centres that are amenable to mobility adjustments: they need to be served by public transport, organized into local systems of shared car mobility, and equipped with essential services and shops. Thus by identifying the role of neighbourhood resources for low-income households, actions can be designed to bolster market-town centres and their facilities, shops, and basic services, including mobility services (car sharing, carpooling, etc.). Steering new building projects towards small towns that are only weakly car-dependent is indeed a policy option. By promoting secondary centres, a better balance can be struck between fulfilling aspirations to a life in the “countryside” and ensuring a level of amenities and services that meets the needs of households with little access to cars. Moreover, the cost of building social housing is lower in these second-rank centres than in more densely populated areas due to the availability of land and its lower price.

Finally it is important to underline that the issue of mobility for low-income households living in outer suburbs cannot be addressed through transport policy responses alone. Public policies should adopt a systemic approach based on the articulation between mobility options and urban planning measures. It is only by integrating housing policies, mobility schemes, and improved access to urban resources that mobility inequalities can be overcome.

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