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Accessibility, Car Dependence and Rural Peripheralization: The Automobility Gap in the Spanish Countryside

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ABSTRACT

Disparities in access to opportunities and services often accumulate in peripheral rural areas, contributing to a sense of being left out of prosperity. To bridge this gap, regular commuting to cities where jobs and resources are concentrated has partly replaced emigration, making the private car the key to settling and living in the countryside. However, car dependency reveals important fractures within the rural population. Our work examines the relationship between mobility capabilities and life opportunities by analysing the Spanish case. The results underscore the link between automobility deficits and the risk of exclusion. In a context where rural depopulation and gentrification, hypermobility and mobility deprivation coexist, car dependency needs to be addressed beyond a transport problem as a variable of social peripheralization. The conclusions highlight the need for rural policies to address the challenges posed by this issue in the current transitions to greener mobility paradigms and ageing societies.

1 | Introduction: The Rural Accessibility Gap

Despite the socio-territorial cohesion policies implemented across Europe, the peripheral status of many rural populations has been reinforced in some countries because of a persistent gap in the accessibility to opportunities that can be traced back to the neoliberal policies of the end of the last century (Shucksmith et al., 1994; Farrington and Farrington 2005; Woods 2005; Fisher-Tahir and Naumann 2013) through to the austerity cutbacks imposed following the 2008 crisis (Milbourne 2016; Martinelli et al. 2017; Camarero and Oliva 2019). An important polarization between cities where the innovation, knowledge and qualified youngsters accumulate versus rural areas neglected by the rationalization of services frequently fuels the feeling among its residents of having to face the future as losers, which has given rise to continuous rural conflicts.

These battles are reflected in the revolts of the *gilets jaunes* (yellow vests) in France triggered by fuel prices; the roads blockaded by European farmers with their tractors that have forced the modification of certain environmental regulations; or the rural populist vote registered in many countries (Walsh 2012; Rodriguez-Pose 2017; Guilluy 2019; Mamonova and Franquesa 2020; Woods 2021). Such conflicts are those of the new post-global context in which the underlying uncertainties of populations are distanced from the processes that structure prosperity, and which differ from those traditionally associated with the 'gentrification' or the symbolic appropriation of the rural (Mormont 1983; Cloke and Little 1997; Kayser 1990; Woods 1998).

Studies on 'interior peripheries' (ESPON 2017), on the 'places that do not matter' (Rodríguez-Pose, 2018), on the 'territories of discontent' (Dijkstra, Poelman, and Rodríguez-Pose 2020), or on

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the marginality of rural interior zones (Brovarone 2022) have identified the remoteness and scarcity of services, selective migration, demographic imbalances, accessibility deficits and regional opportunity structures (Bernard et al. 2023), amongst other causes of rural peripheralization. As the European Commission pointed out, such processes largely foretell depopulation *when coupled with a lack of connectivity, infrastructure and productivity challenges and low access to public services* (2021: 4).

However, some findings from rural studies (Binder & Matern, 2020; Mamonova and Francesca 2020; Pospěch, Klíma and Hubatková, 2024; van Pijkeren et al. 2024) also allow us to glimpse how, underlying the combined effect of the above processes, there is a social peripheralization that has not yet been sufficiently explored or addressed in its policy dimension. For example, when Black, Scott, and Shucksmith (2019) and Binder and Matern (2020) analyse the transport deficits faced by young people in their professional integration trajectories, they elucidate a genuinely social process of peripheralization. As shown in the Flash Eurobarometer 491 'A long term Vision for EU Rural Areas' in 2021, *The key need of rural areas referred to most frequently in this survey is transport infrastructure and connections (mentioned by 44%)* (p. 3).

In a rural context where processes of depopulation and gentrification, hypermobility and mobility poverty coexist, an analysis of car dependency as a factor of social peripheralization and marginalization is required. The private car constitutes the corner stone of rural accessibility to labour markets, training and resources and even for the provision of local services themselves through reverse commuting by urban professionals. This aspect is frequently neglected in rural policies, with barely any understanding of how they are conditioned.

If mobility was, as Urry (2007) recalled, a 'black box' for sociology, the impact of the car system in the transformation of the rural has regularly been hidden under the presupposed statism of these societies and the assumption of the generalization of the car. Despite the ground-breaking work by Moseley (1979) on the problems mobility poses, even the rural studies themselves had until recently failed to address these aspects in depth (Nutley and Thomas 1995; Gray, Shaw, and Farrington 2006; Osti 2010; Oliva 2010; Ahern and Hine 2012; Milbourne and Kitchen 2014).

Even from the 'mobilities paradigm' (Sheller and Urry 2006), the issue of rural mobility has been poorly related with its analysis, examples and conclusions. However, rural studies have revealed the crucial role played by the private car in the strategies of rural populations, fuelling an inviting analysis line which has accumulated significant findings on how it affects quality of life and exclusion (Camarero, Cruz, and Oliva 2016; Brovarone, Cotella & Staricco, 2021; Székely and Novotný 2022; van Dülmen, Šimon, and Klärner 2022). Furthermore, the European Commission has recently reiterated its call to study the relationships between poverty and rural mobility to elaborate more effective policies (European Commission 2021; Kiss 2022; Eurofound 2022).

There is a lack of sociological analysis on how rural societies and spaces are integrated into the automobility system as it shapes the very meaning of modern citizenship. After the Second World War, infrastructures in general and mobility in particular were

conceived as a system for social-spatial cohesion. As Graham and Marvin pointed out, *They are believed to bind cities, regions and nations into functioning geographical or political wholes* (2001: 8). However, the generalization of car dependence as a system that has had a far-reaching disruptive effect in modern societies (Freund and Martin 1993; Beckmann 2001; Urry 2004) and the transformation of that modern infrastructural ideal into a segmented urbanism have given rise to other connections and distances, new ecologies of residential dispersion and more unequal accessibilities.

Our work explores this social polarization that favours the automobility system in the rural population from the analysis of the risk of socio-economic exclusion as the dependent variable in mobility and, more specifically, of the private car. Such a perspective treats the car not as merely a means of transport but also as a political issue key to the social and spatial cohesion of rural areas.

The aim is to provide evidence on how mobility enables the rural residents to multiply their opportunities, whereas the immobilized groups face increasingly limited horizons and possibilities. Additionally, the analysis seeks to provide insight for fair transition towards sustainable rural mobility policies and a rural lens to assess the impact that new mobility paradigms and technologies may have on the rural peripheralization (Cowie, Townsend, and Salemin, 2020) and marginalization of certain groups. As Manderscheid (2014) concluded, *increasing polarisations are to be expected between urban multi-modally connected and rural automobile spaces, between affluent gentrifiers and precariously surviving households (...), [and so] a lot of empirical research is needed on these dark sides of future mobility regimes in order to develop a critical understanding of automobility.* (p. 620).

From the results of a research project undertaken in Spain over a 4-year period, we studied these disparities arising from this accessibility model to provide evidence on how automobility and social peripheralization processes in the rural world are entwined. The case is particularly interesting to illustrate these interrelationships and the coercion that the car exerts. Spain has the most extensive motorway network in Europe (United Nations 2022), and its development in the 1980s following the country's entry into the European Union has had a substantial impact on socio-territorial cohesion and the hybridization of rural areas with urban processes (Volti 2006; Holl 2007; Camarero and Oliva 2024). But the concentration of resources in the cities, cutbacks in rural services in the aftermath of the crisis and the costs of the transition towards sustainable economies have added to the demographic imbalances to further broaden the exclusion of some rural populations.

The following section delves deeper into this discussion of the relationships among automobility, accessibility and rural peripheralization processes. Subsequently, the methodological aspects of the analysis performed are detailed, and the appropriateness of the case of Spain for the study's objectives is described. Later sections provide evidence and illustrate the consequences with examples from the fieldwork. Finally, the conclusions synthesize our findings, their importance to conceptualize socio-spatial cohesion through mobility and the

way that they contribute to laying the foundations for fair and socially inclusive accessibility policies.

2 | Rural Peripherization and the Automobility System

The progressive car dependency in rural areas is a complementary process to the continuous intensification of mobility and the distances travelled by its inhabitants (Osti 2010; Ahern and Hine 2012; Milbourne and Kitchen 2014; Brovarone et al. 2021; van Dülmen, Šimon, and Klärner 2022; Camarero and Oliva 2024). However, to the extent that the car as a private resource has become the dominant form of rural accessibility, it both contributes to and protects against social peripheralization, offering the possibility of bridging the rural divide whilst also contributing to the exclusion of certain groups. The structuring of rural accessibility through the ‘automobility system’ (Urry 2004) and the spatial constraints of distance configure a field of action in which those with greater potential for mobility, in the sense of ‘motility’ as defined by Kaufmann, Bergman, and Joye (2004), such as the ex-urban middle classes, coexist with immobilized groups or those forced into car-dependent mobility.

The discussion by Kühn (2015) on the categories of *periphery* and *peripheralization* is particularly interesting when analysing the underlying relationships in rural accessibility. Underscoring the dynamic focus of *peripheralization*, its conceptualization facilitates understanding of mobility poverty as a way of exclusion. By focusing the analysis on automobility, as the dominant system for rural accessibility, it enables the exploration of the sociological profiles of those who are left behind and to delve deeper into peripheralization as a social and political process.

With our approach, the way in which automobility affects socio-spatial cohesion can be further clarified by considering the accessibility models as socio-technical configurations not only of proximities and distances but also of citizenship itself. As shown by Graham and Marvin (2001, 2022), the devaluation of the old universalist ideal of infrastructures has led to increasingly segmented formulas for connections and services, *the construction of spaces of mobility and flow for some, however, always involves the construction of barriers for others* (Graham and Marvin 2001: 11).

It is this perspective that relates the technological, ideological and social processes the city produces that also suggests a way of analysing rural peripheralization. The configuration of the automobility system as the dominant accessibility model converts the car into a basic requirement even for the inclusion of those low-income groups who need to seek employment, go to the hospital, buy healthy food or maintain social aids (Lucas 2011).

But additionally, in the rural areas, automobility presents certain particularities that contrast with urban patterns. For example, in cities, more diversified mobility options highlight a generational difference regarding the car culture that ‘boomers’ grew up and gained personal autonomy with. The new generations who were born in the context of the emergence of global mobility more readily adopt patterns of shared mobility and as a service (Kuhnimhof et al. 2012), meaning driving licenses and car ownership often become optional. However, such patterns cannot be replicated

in the same way in rural areas, where the private car has not lost its functionality and remains an essential resource to access education, the labour market and leisure activities.

In contrast to the cities, a stronger ‘car dependence’ in rural areas is also coupled with a pronounced ‘car deprivation’. It is in such contexts that the idea of ‘forced car ownership’ (Mattioli 2017) manifests itself particularly strongly (van Dülmen et al., 2022). Consequently, the costs of rural accessibility are significantly higher compared to those faced by urban residents (Smith, Hirsch, and Davis 2012; Camarero and Oliva 2024). The socio-demographic composition of carless households in rural areas thus acquires a special particularity, being concentrated among vulnerable groups (Nutley, 1996; Lucas 2011).

The role of automobility in rural areas is also illustrated by the fact that, as Nutley and Thomas (1995) described, even those groups who lack driving skills or do not possess a car frequently organize their accessibility strategies *accommodated not by the bus service but by lifts in other people’s cars. ... [they] have adopted the same values and aspirations as their car-owning neighbours* (1995: 35).

Despite these rural particularities, research into the social and spatial implications of the car, its risks, dependence, as well as solutions has focused almost exclusively on urban contexts. Even when developing the mobility paradigm (Sheller and Urry 2006; Sheller 2021), rural analyses or examples were not considered. Likewise, there is nothing on the future of the car in rural areas nor how the car contributes to their social sustainability. Besides, its implications have yet to be explored regarding the current transition towards other mobility paradigms and the European Green Deal. As Cowie, Townsend, and Saleminck (2020) note, despite the potential of all these innovations to deepen the rural divide, they are being deployed under predominantly urban approaches and *peripherality then becomes a quality, both of rural areas and in rural research* (p. 174).

One cannot delve deeper into the impact of automobility in the rural world without understanding that it responds to a culture that must be organized and cultivated, in the sense that Virilio (2001:145) considers the speed. The expansion of the car not only shapes, as explained by Martin (2009) *social ecologies in unique and powerful ways* (p. 130), but also must ideologically legitimize itself in the spatial planning. As Urry (2007) stated, there is nothing natural or inevitable in urban dispersion based on the private car. Since the middle of the last century, the planners envisage the residential habitats of the ‘city-region’ where the family group members make daily expeditions for shopping, work or school. In these visions, ‘people do not live in “places” anymore -they live in a region’ (Pahl 1968:46) and the rural–urban distinction disappeared in a new motorized scenario (Merriman 2012). Not only does the car system mould the habitats, but also modern life itself.

This leads us to consider how ‘distance frictions’ faced by different rural groups in their accessibility to resources and opportunities are organized politically because, as Cresswell stated, *there is (...) no mobility outside the power* (2001: 20). The social polarization that we find regarding the accessibility that the car brings is revealed by studies that cover the ‘decay of distance’ (Manthorpe and Livsey 2009) or the ‘secondary impact of austerity’ that the

cutbacks in public transport passed on to young rural people through their social class (Black, Scott, and Shucksmith 2019). For example, the 'health poverty' specific to those rural areas where the lack of public transport, local services and health personnel drives people to abandon the search for assistance as the services are perceived as being far away (Manthorpe and Livsey 2009; Douthit et al. 2015; Giarchi, 2018). As Pijkeren et al. (2023) point out, when a rural health service is closed down *people not only have to travel further but also lose a sense of connectivity, which is embedded in feelings of trust and belongings* (p. 77).

As a result, accessibility problems shape marginality and exclusion in rural areas far more significantly than in cities (Clelland 2021). For example, the car has become a determining factor in life transitions, such as for young people entering the job market (Smith, Hirsch, and Davis 2012; Black, Scott, and Shucksmith 2019; Binder and Matern, 2020) or the elderly groups when they must give up driving (Lucas 2011; Ahern and Hine 2015; Hansen et al. 2020; Meijering and Weitkamp 2024).

This essential meaning that the car acquires in rural settings has never been better illustrated than by the frequently mentioned answer given to a USDA inspector in 1920s by a farm woman when asked why her family had bought a Model T before getting indoor plumbing, which gave the title to the analysis by Interrante (1979): *Why you can't go to town in a bathtub!* (p. 151). In this context, the diffusion of the car initially reinforced the concentration of services and residence in the county towns, which developed new specialized services. As Interrante (1979) noted, *Rural space was not so much enlarged with automobile use as it was reshaped into a more centralized and hierarchical form* (p. 157). It was only later in the second half of the last century that the maturity of the automobility system led to residential dispersion and the continual intensification of commuting, *the reorganization of rural space gradually made this movement more possible and more necessary* (p.158), and this feedback between the rural and the car has occurred incessantly. The continuous intensification of rural-urban commuting (Osti 2010; Székely and Novotný 2022; Camarero and Oliva 2024) and the rural *hypermobility* (Milbourne and Kitchen 2014) since the turn of this century are accurate signs of this.

The automobility system must also be analysed in the cultural and spatial contexts in which the practices of social groups are integrated. Unequal car access, as Manderscheid (2014) clarifies, *does not by itself imply unequal social chances, but only within the context of geographically dispersed significant places and lacking alternative means of transportation* (p. 607). To illustrate this lack of public transport, it should be noted that between 52% and 59% of those people living in remote rural areas in Europe comment that it is difficult, or is not possible, to travel by public transport from their locality (Flash Eurobarometer 491, Ipsos European Public Affairs). In short, a dichotomy has been established in terms of social structure between those who can and have the capacity for automobility, and thus better access to welfare standards and opportunities for life development, as opposed to those who are immobilized and are progressively excluded from, or with far more limited access to, different opportunities.

The discussion above makes it clear that the relationship between the car and the rural world warrants further attention.

Moreover, it presents challenges that will have a major impact in the medium term, such as the transition to increasingly elderly societies (European Commission 2008; Hansen et al. 2020; Meijering and Weitkamp 2024). As Ahern and Hine (2015) explain, travel movements by the elderly groups in rural areas *have changed significantly (...) to travel patterns that are now more dispersed and car dependent* (p. 389). When they must give up driving, they face enormous uncertainty regarding their way of life. As one interviewee anticipated in Lucas (2011), *when I get to the stage where I'm not driving, my whole existence will collapse* (p. 219).

Our analysis seeks to show the relationship that exists among mobility capacity, life chances and the risk of exclusion, expressed as socio-economic deprivation, unemployment and low income. The starting point considers that mobility segments economic, educational and labour capacities, as well as care and, in the long run, acts as a constraint on capabilities for life development. The matter we address is the influence exerted by mobility on living conditions, from the fracture between mobile and immobile groups.

3 | Methodological Approach

The study explores the relationship between automobility and the risk of exclusion as an essential dimension of rural peripheralization through analysis of the case of Spain, which represents a particularly interesting example for more in-depth study of this issue. The country has the longest motorway network in Europe, with a total of over 15,000 km (United Nations 2022) that strengthened territorial cohesion and the sustainability of rural areas. Despite this, Spain is also a country facing one of the most acute rural depopulation and ageing processes. Furthermore, the average distance to be covered to access basic services in Spanish rural areas presents far higher ratios than in other European countries (Posada 2021; Alloza et al. 2021). Finally, the policies of cutbacks since 2008 have led to an important reduction in rural services (banks, schools, health centres and shops) and unconventional transport introduced by local governments (adapted taxis, community buses, etc.).

The maturity of the automobility system in the 1980s (Volti 2006; Holl 2007; Camarero and Oliva 2024) enabled the new rural generations to settle by long-distance commuting to the cities and facilitated the ex-urban residential dispersion into periurban villages. This system also made it possible to maintain the provision of essential rural welfare services (education, health, social services, etc.), by means of reverse commuting by urban professionals. According to the 2021 Spanish Census, two out of every three rural workers who lived in municipalities with fewer than 5000 inhabitants commuted beyond their municipality daily. The proportion of movements among the youngest adults is far greater, with 70% of those aged 18–20 years old commuting either to college or to work (Camarero and Oliva 2024).

Our methodological approach is based on the statistical exploitation of a rural Spain representative survey to determine the effects of automobility on socio-economic deprivation, unemployment and low income conducted 'ad hoc' for our analysis. Additionally, qualitative field work was carried out in a rural district of

Navarre to ascertain the social conditions of highly mobilized and immobilized groups.

The statistical analysis is based on the RuralAccess 2022 survey. It is made up of a broad sample ($n = 2500$) that is representative of the entire Spanish population over 18 years old residing in municipalities with populations below 10,000 inhabitants. Municipalities were randomly chosen from four habitat strata by means of proportional allocation (<500 inhabitants, 501–2000 inhabitants, 2001–5000 inhabitants and 5001–10,000 inhabitants). The final selection of the interviewees was carried out by age and sex quotas, giving priority to young people over the elderly. The population weightings of the age groups were subsequently returned using weighting coefficients. The sample errors for estimating the proportions in the simple random sampling assumption and in the worst case ($P = Q = 0.5$), at the 95.5% confidence level for the whole sample, were $\pm 1.95\%$. The interviews were computer-assisted web-based telephone interviews (CAWI) and were carried out in October and November 2022.

The qualitative fieldwork carried out in the middle zone region of Navarre opens the analysis into the case of the peri-urban rurality, continually remodelled by the economies and ecologies of the ‘city-region’ (Bossuet 2006; Hoggart 2005; Champion and Hugo 2014), which classical planning sought to order as anomalies of the differentiation between the countryside and the city (Gallent 2006; Ravetz, Piore, and Tossic). Privileged accessibilities in these areas due to motorways and toll roads coexist with disconnected interstices where the private car is the only viable option. The study area has a population density of 27 inhabitants per km², includes a population of over 26,000 inhabitants and consists of 19 municipalities to the south of Pamplona, the regional capital, which has a population of over 350,000. Only 4 villages have populations that exceed 1000 inhabitants, and in 2019, over 25% of the population was at risk of poverty in 10 of its municipalities (Government of Navarra, 2022).

Twenty-eight interviews were conducted with key experts and informants between 2021 and 2023 (school headteachers, employment technicians, mayors and caregivers) as well as sociological profiles chosen based on their family and mobility situation. The strategic sampling included families from the Maghreb, Eastern Europe and Latin America and intentionally considered habitat criteria, with interviews being conducted in 22 different municipalities and rural dispersed districts (see all the details in the Annex included as the [Supporting Information](#) section).

The semi-structured interviews were conducted in the interviewees’ homes and workplaces, in local community facilities and at the Public University of Navarre. The interviews were open-ended and lasted between 50 and 90 min. The analysis was inspired by the ethnomethodological approach, in which the field research builds an interpretive model of the observed phenomena in a combined elaboration of hypotheses and concepts (Bertaux 1997). Using a coding procedure that combines inductive and deductive operations, the information provided by experts and key informants enabled us to identify dependency profiles and immobilized groups, mobility poverty and exclusion. We sought to verify such situations through fieldwork visits and selected interviewees. The latter included older people, women who do

not drive, poor ethnic groups, young people who cannot afford a car and car deficit households. Their narratives detail how families move around, how newcomers to the area adapt to car dependency and how life stages affect motorization strategies. All these preliminary themes and experiences were traced and recoded in a second analysis of the interviews, looking for significant expressions, ‘emic’ conceptualizations and anecdotes that could be examined in greater depth as illustrative analytical devices. Through successive readings, a more selective final recoding was organized to make visible sociological patterns and categories of interpretation related to rural peripheralization as a process linked to the automobility system.

4 | The Effects of Automobility in Social Exclusion

To test our hypothesis on mobility and social exclusion in rural populations, we have taken the frequency of car use as the independent variable. That is to say that we have used automobility, as mobility with a much broader capacity, as it enables greater freedom to manage destinations, routes and timetables. Thus, those who drive daily or at least once per week have been considered being mobile, whereas those who do not drive or do so less frequently than 1 day per week make up the group of more reduced or limited mobility. The analysis was limited to persons under 70 years old to avoid the distortion that the very elderly population would suppose. According to the survey conducted, 84.9% of those under the age of 70 years declared that they drove regularly.

Mobility practices, which are the indicator that we have utilized, show the demands, not so much the capacity, of mobility. There may be immobile people with a high mobility capacity. However, if the results between mobility and the risk of exclusion were significant, it would denote that mobility—as a requirement—reduces exclusion, and in that sense, it could be strongly interpreted that the lack of mobility capacity causes inequality.

To approach the living conditions as a dependent variable, we have defined a synthetic indicator, reduced, of the socio-economic deprivation adapted to the SMSD (*severe material and social deprivation rate*) indicator that Eurostat uses. In building it, the economic, material and social bonding conditions are considered. In our operationalization¹ the indicator ranges from 0 to 5, with 0 being the value representing optimal conditions, with no material nor economic shortcomings. On the contrary, the value of 5 indicates the most extreme situations of the greatest deprivation and social isolation. Overall, 59.8% of the sample presented a value of 0, the absence of risk of exclusion, whereas 40.2% presented differing levels of socio-economic deprivation.

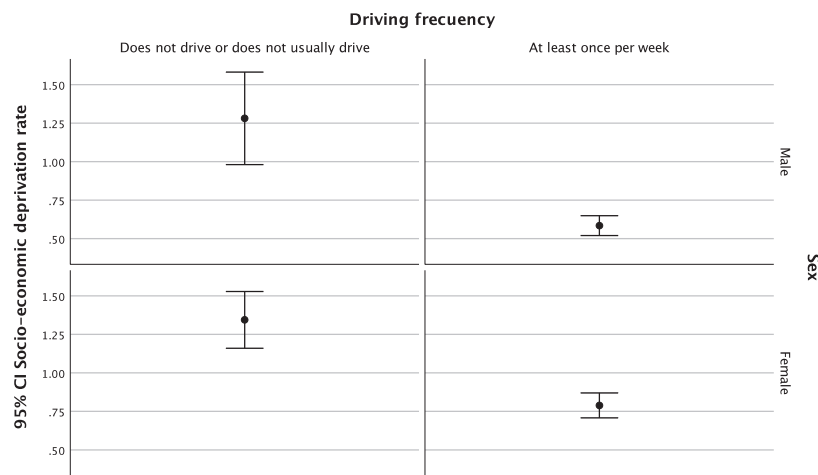
Table 1 shows the distribution of the mean values for socio-economic deprivation by different social categories. The data show certain interesting differences. The results indicate that women and those with a lower educational level experience a greater risk of socio-economic exclusion. Working conditions also suggest, as would be expected, an effect on socio-economic deprivation: greater job instability and insecurity increase the index value. However, variables such as the major age groups or habitat size would not appear to represent a significant impact. In addition, these profiles of greater deprivation are

TABLE 1 | Socio-economic deprivation index and confidence interval for different variables (under 70 years of age).

		Vulnerability index		
		Mean	Lower 95.0% CL for mean	Upper 95.0% CL for mean
Sex	Total	0.77	0.72	0.82
	Man	0.64	0.57	0.70
	Woman	0.92	0.84	0.99
Age	18–34	0.86	0.76	0.96
	35–49	0.72	0.63	0.80
	50–64	0.79	0.70	0.89
	65–69	0.68	0.54	0.82
Settlement size	Up to 500 inhabitants	0.77	0.72	0.82
	From 501 to 2000 inhabitants	0.64	0.57	0.70
	From 2001 to 5000 inhabitants	0.92	0.84	0.99
	From 5001 to 10,000 inhabitants	0.86	0.76	0.96
Drives usually	Does not drive or does not usually drive	1.33	1.17	1.48
	Drives at least once per week	0.67	0.62	0.72
Education level	Primary or lower	1.05	0.96	1.15
	Medium	0.79	0.70	0.88
	University	0.45	0.38	0.51
Relationship with activity	Works	0.62	0.56	0.67
	Retired or pensioner	0.81	0.67	0.96
	Unemployed	1.45	1.24	1.67
	Studying	0.92	0.67	1.18
	Only dedicated to family care and housework	1.15	0.94	1.37
	Other situation	0.78	0.31	1.25
	No answer	1.00	1.00	1.00
Working day	Part-time	0.76	0.62	0.90
	Full-time	0.57	0.51	0.63
	By hours (**)	1.10	0.88	1.32
Contributing to social security	Does not know/No answer	0.61	0.35	0.87
	Yes, for all the time worked	0.61	0.55	0.66
	Yes, but not for all the time worked	1.15	0.62	1.68
Contract type	No	0.87	0.67	1.06
	Does not know/no answer	1.19	0.40	1.99
	Open-ended	0.53	0.47	0.60
	Fixed term/temporary (*)	1.03	0.84	1.22
	Does not know/no answer	1.30	0.56	2.05

* Significant variable $p < 0.01$.** Significant category at $p < 0.01$.

Source: RuralAccess 2022. Own elaboration.



GRAPH 1 | Confidence intervals for the vulnerability index by sex and automobility. Note: population under 70 years of age. Source: RuralAccess 2022. Own elaboration.

those persons who are not habitual car users—index 1.33—showing clear differences about those who do use a car (0.67). In fact, the vulnerability index of those who do not drive is only exceeded by the population group of the unemployed. Therefore, our hypothesis on the relationship between mobility and socio-economic exclusion makes sense and is, as can be seen by examining the confidence interval, clearly significant. Graph 1 shows that the combined effect between automobility and gender in the exclusion rate is relevant and significant for non-mobile women. The next step will involve isolating the effect that other variables may have on said relationship.

A simple model has been built to compare the effect caused by automobility practice on socio-economic deprivation. The model includes the most significant variables, such as sex and education level on deprivation, and also age in order to control the effect of the socio-demographic structure on automobility. The risk of socioeconomic deprivation has been defined, transforming the index of deprivation into a dichotomic variable. Thus, those that have the value of 0 in the indicator have been considered the non-deprived group, as opposed to the group who have obtained a score of less than one in the items that indicate the probability of risk of socio-economic exclusion—see Note 1—which constitutes the potentially excluded group. The results of the logistic regression analysis are shown in Table 2.

It can be observed that all the independent variables are significant at the 99.9% confidence level. In the way that the indicator has been built, negative— b —coefficients reduce the risk of socio-economic exclusion. Being a woman increases the likelihood of exclusion, whereas education and driving reduce it. Age exerts a very limited effect, and the e^b is almost one, although age would reduce the risk.

Once the model had been adjusted, the probability of suffering socio-economic deprivation was calculated for each combination of variables controlled by age for the central age point of 40 years (see Table 3).

From the data, we can observe the difference that is established between two extreme groups. On the one hand, the group

TABLE 2 | Logit fit for risk of socio-economic exclusion (under 70 years of age).

		<i>b</i>	Sig.	e^b
Sex	Man			
	Woman	0.487	<0.001	1.627
Education level	Basic		<0.001	
	Medium	−0.407	<0.001	0.666
	Higher	−1.124	<0.001	0.325
Habitual driver	No			
	Yes	−0.783	<0.001	0.457
Age		−0.021	<0.001	0.979
Constant		1.457	<0.001	4.293

Note: Cox and Snell $R^2 = 0.09$; Nagelkerke $R^2 = 0.122$.
Source: RuralAccess 2022. Own elaboration.

TABLE 3 | Probability of risk of exclusion for different groups at 40 years of age.

Sex	Education	Automobility	P (age = 40)
Man	Higher	Drives	0.217
Woman	Higher	Drives	0.310
Man	Medium	Drives	0.361
Man	Higher	Does not drive	0.377
Man	Basic	Drives	0.459
Woman	Medium	Drives	0.479
Woman	Higher	Does not drive	0.496
Man	Medium	Does not drive	0.553
Woman	Basic	Drives	0.580
Man	Basic	Does not drive	0.650
Woman	Medium	Does not drive	0.668
Woman	Basic	Does not drive	0.752

Source: RuralAccess 2022. Own elaboration.

composed of non-driver women with low educational levels, whose risk of exclusion is very high and reaches 75.2%, whereas conversely there is the group of men with higher educational level who drive daily, whose likelihood of exclusion is just 21.7%. The ratio between both categories $0.752/0.217 = 3.5$ indicates the advantageous relationship to avoid exclusion that men drivers with a high educational level have over non-driver women with basic education.

The results indicate that automobility produces improvements in terms of avoiding exclusion, or, in other words, that immobility is strongly associated with the risk of exclusion. In relative terms, we can state that automobility produces greater improvements when the initial situations are better. Thus, we see that the improvements are greatest for those who have higher educational levels compared to their less educated peers. The levels in men are also higher—generally in a better situation—in comparison to the women. In this sense, automobility has a multiplier effect on the advantages. However, and this is a particularly relevant important aspect, automobility does not produce the same improvements for men as for women. The effort of mobility rewards men more strongly than it does women. For the latter, the differences produced by mobility, despite being significant, are more limited, although the differences between men and women disappear when seen from the situation of the lack of means for mobility.

5 | Immobility and Motorization in Peri-Urban Rurality

The qualitative research carried out in the middle zone region of Navarre clearly illustrates the panorama of immobilities and exclusions derived from the automobility system and the private car as the dominant means of rural accessibility. The information and narratives provided by the experts, key informants and selected sociological profiles interviewed in the area show how class, gender and generational inequalities are reinforced as a result of this. Those excluded from the system are principally women who do not drive, elderly persons, poor ethnic groups and those who cannot afford to run a car. In these situations, there is a mobility poverty that even impedes access to certain welfare programmes, *if you don't have a car, it's like you have no possibility of mobility, no legs, because it is for anything you need to do, the most basic thing you think of, you need it* (ZM05, social services technician). Furthermore, these mobility deficits put considerable pressure on public services in the area, which seek to compensate them by means of reverse commuting, *We try to have appointments in every village, well, er, (...) but because they are small villages, there are no means of transport, there are a lot of people who can't come ...* (ZM05, social services technician).

A representative case of this immobilized rural society that the experts identified there is the issue of women who do not drive. Their dependency and isolation are exacerbated if they are older and live in scattered districts. But this may also be compounded by other factors of exclusion, such as the case of migrant women who do not drive and thus cannot opt for the social employment programmes as itinerant caregivers, or factory work in other municipalities. For instance, many women from

Maghreb countries, *this makes them, above all, dependent on their husbands (...) to be able to take their children to the pediatrician, to go shopping* (N25, woman, social services technician).

Another typical situation is the isolation of the elderly. For example, the case of an interviewee living in a family group of four siblings all aged over 70 years and who did not have a driving license. They lived in a village of just over 200 inhabitants about 40 km from the capital city. They have always lived there, and although they look after each other, they present extreme vulnerability. A relative occasionally helps them out with shopping and giving them a lift, but very often their only option is to book a taxi from the main town, which entails a considerable expense for these pensioners.

The immobilized groups in these rural scenarios can be seen particularly clearly from the perspective of caregiving. For example, it is well illustrated by the typical working day of a worker in these social programmes. First, due to the need to have her own car to carry out her work, which requires her to continually drive from village to village, but also because of the range of situations she refers to in the area: *I take the car and, (...) first I go the village of [anonymized]. There I attend a relative who the user has, er, er, limited mobility. (...) From there I go to [anonymized village]. To another home, (...) it is a very elderly woman, who lives with two handicapped children (...) From there I go to [anonymized village]. There I work with a boy who has mental illness (...) From there, I go back to (anonymized village) I am with a woman who suffers from Alzheimer's disease (...) And then, I go to [anonymized village] (...) and there we work with a person who is a deaf-mute ...* (N18, woman, 55 years old, caregiver). These same immobilized profiles are recognized by the interviewees in their relatives and in their own social media, *my grandmother for example does not leave [anonymized village], in the whole week (...) she would have to leave with my mother, with my aunt or with me in my car* (E24, man, 28 years old, councillor).

In the same line, the narratives of young interviewees emphasize the change involved in having access to a car, which then enables them to settle and commute to the jobs beyond the village and to university degrees in the city, in contrast with the previous period as a teenager when the village *was a bit like a prison, in the sense of saying, damn, I can't do anything...* (E26, man, 23 years old, worker for an agricultural cooperative). The availability of cars and other family resources determines notably their professional opportunities and life chances in the area. For example, limiting their educational options is restricted to the reduced regional offer, which is focused on manufacturing and agro-industrial jobs, as opposed to the diversity of training options and degrees offered by the city.

The concentration of jobs and services in the city and the peri-urban towns makes this personal motorization the essential key to living in the rural setting. For example, an interviewee from Latin America who is established in the local area after some time living in the capital remembers the 'shock' that car dependence in the area caused her: *the fact that everything is further away, that you need a car (...) And not being able to get around easily like you can do in Pamplona and that is a bit hard* (E21, woman, 40 years old). Likewise, another woman from an Eastern European capital described the same feeling and the initial difficulties until

she homologated her driving license and purchased her own car, as she and her partner work in different places, and her husband driving her to work and home, only to leave an hour later, and the problems of coordinating the return home: *we work shifts and (...) without the car you can't do anything* (ZME19, woman, 34 years old).

The need to adapt to this private car-based accessibility and the required motorization can be seen in the strategies developed to manage a rurality that demands increasing car use. For instance, they are well described by another young woman from Eastern Europe living in a village more than 40 km from the regional capital, who stresses the difficulties she found until she had a driving license and was able to equip herself with an 'oldish' car, as well as covering the running costs (petrol, insurance, taxes, services). She describes this change as a process of freedom and broadening of her opportunities. *For example, the job interview I had yesterday [in the city] (...) as I had a car, well I got up at 8, as I had the interview at 10, then I calmly got ready and went* (E18, woman, 25 years old). But her case also showed how female automobility may reinforce gender roles and the burden that motorization deficits entail for those family groups with economic limitations and a lack of cars, *we were really cut off because I needed the car to go to work, (...) But my father, well he has, he must go to the doctor a lot (...) Then, I had to be continually going to fetch him from [anonymized village] to take him to Pamplona to the doctor, but, at the same time, I had to hold on to the car* (E18, woman, 25 years old).

The case of another Latin American family, reunited and settling in the area, clearly illustrates the initial difficulties for adapting to an environment of scattered work and housing opportunities that only can be managed through an intensive motorisation of the whole group, *I've experienced it in my own family, (...) before we [the children] came they [the parents] had their job in [another town] they had to do it the way they could, either walking or depending on someone to take them (...) and I remember when [the mother] had to work in [another town] we had to go and pick her up at ten o'clock at night, because there was not public transport* (E14, woman 23 years old). Finally, the seven members of the family became drivers, and the household had the same number of cars.

These strategies are even more acute in local middle class groups, where all or most of the family members commute on a daily basis and the smaller the settlement is: *We have one for each person nowadays because we really need them, because my mother has her work timetables, my sister has her university timetables and I have my work timetables in another place* (E26, man, 23 years old, worker for an agricultural cooperative). Another couple, living in a small village located 36 km from the capital in a valley with mountain roads, both travelled to different places and took three youngsters from the village who studied at a secondary school in the city. In their narrative, they underscore the normalization that automobility acquires as the rural way of life. *it's like automatic, right? (...) living in a village, you know what you have, I mean, you take the car, and even more so if you have children, right? (... .) Well, after school activities and classes with one, with the other (...) I have to take the car to do whatever (...) you value it differently. I think it becomes more normal* (E03, man, 45 years old).

However, life cycles do determine these automobility strategies and continual commuting requires certain skills and stamina that are eroded over time, reducing accessibility potential. In this way, rural accessibility based on the private car is becoming one of the greatest challenges for rural sustainability in the current context of an increasingly ageing population. The mayor of a village with fewer than 500 inhabitants that is 50 km from the capital and which has become a village of commuters, a dormitory village due to its motorway connection, with an economy of *getting out* because there is no work locally expressed his concern about the future, recalling that *coming here from Pamplona takes 40 minutes. But, despite that, the older you are, the more difficult it is to get in the car and do so* (E09, man 56 years old, mayor).

These cases and narratives show the correlation between the motorization capacity of households and the risk of exclusion in rural areas. This is evident in those who have to cope with the running costs of several cars, those who suffer from mobility deprivation due to a lack of sufficient cars and finally those households who are severely excluded from social participation due to the lack of a car. From children's extracurricular activities, to caring for the elderly and educational opportunities for the young, all aspects of the quality of life appear to be undermined for the carless group. The experiences of the sociological profiles analysed show how car dependency in rural areas cuts across all social relations, often reinforcing inequalities. Far from being a neutral technology that can be gradually replaced by a new sustainable mobility, socio-technical accessibility based on the private car has become a challenge for rural areas that conditions which life projects could find a future in such areas.

6 | Conclusions

We have explored rurality as a reality built and produced by unequal mobilities. Our approach pays attention to the production of rural peripheries (Mamonova and Francesca 2020; Pospěch, Klíma and Hubatková, 2024; van Pijkeren et al. 2024), focusing on the division created by the configuration of the rural accessibility as a system sustained by the private car.

The limitations of the study are twofold. First, the analysis is limited to the Spanish case study, so some of the findings should be confirmed in other contexts. Second, the survey does not allow for the verification of causal relationships but highlights the links between immobility and social exclusion. Nevertheless, both the sociological profiles and the panorama of associations that are shown are consistent with the findings of other rural studies. For instance, with regard to the groups and profiles in which 'mobility deprived' and 'poverty of access' accumulate (Gray, Shaw, and Farrington 2006; Velaga et al. 2012; Shergold and Parkhurst 2012; Ahern and Hine 2012; Camarero, Cruz, and Oliva 2016).

Further in-depth research is needed into the complexity that accessibility acquires in the rural world due to the generalization of the car. The automobility system must be analysed as a true 'regime' (Maderscheid 2014) and from a perspective that explores the ideology that legitimizes its socio-technical model of rural accessibilities, collaborating in building social order and inequality (Urry 2016). This knowledge is key to improving new

rural policies, research and narratives of mobility that facilitate a fair transition (Cowie, Townsend, and Saleminck 2020; Sheller 2021) to modes of mobility that avoid reinforcing polarization and rural peripheralization processes.

Our analysis reveals how the automobility system has caused a disruptive process in rural society, transforming socio-spatial ecologies, imposing the requirements for its own reproduction (Walks 2015) and *reembedding of its users (and nonusers) into another, highly mobile, way of life* (Beckmann 2001: 601). Furthermore, our findings stress the fact that the car cannot be interpreted merely as a simple means of transport but rather as a variable that configures the social participation and exclusion in rural areas. In these contexts, it constitutes a dependency for the equalization of opportunities and requires policies that deal with automobility as a public good. An understanding of socio-spatial cohesion needs to look beyond the traditional objectives of equalizing agricultural incomes to consider how these accessibility gaps affect depopulation, young people's skills, unemployment and low incomes.

The analysis shows how a second-class society to the system arises indirectly as it is unable to provide the resources or skills needed to adapt (Cass, Shove, and Urry 2005). As the participants in the workshops of the Special Eurobarometer survey 491 (2020) report recognized, *life in rural areas is becoming more and more difficult for those without access to private cars*. Putting the focus on accessibility and rural car dependence allows our analysis of peripheralization to look beyond a spatial orientation, and more as a social and political process (Kühn 2015), thus taking the population that is getting left behind into consideration.

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Ethics Statement

All participants in the study provided informed consent, and their confidentiality and anonymity were maintained throughout the research process.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request.

Endnotes

¹The concrete items used:—Go away from home for holidays, at least 1 week per year.—Pay an unexpected expense of 750 € with your own resources.—In the last 12 months, have you had a delay in paying your mortgage, rent, bills, deferred payments and so forth?—Buy new clothes and shoes when they wear out.—Meet up with friends and/or relatives to dine or have a drink out at least once per month.

References

- Ahern, A., and J. Hine. 2012. "Rural Transport—Valuing the Mobility of Older People." *Research in Transportation Economics* 34: 27–34.
- Ahern, A., and J. Hine. 2015. "Accessibility of Health Services for Aged People in Rural Ireland." *International Journal of Sustainable Transportation* 9, no. 5: 389–395. <https://doi.org/10.1080/15568318.2013.800926>.
- Alloza, M., V. González-Díez, E. Moral-Benito, and P. Tello-Casas. 2021. *El Acceso a Servicios en la España Rural*. Madrid: Banco de España.
- Beckmann, J. 2001. "Automobility—A Social Problem and Theoretical Concept." *Environment and Planning D: Society and Space* 19, no. 5: 593–607.
- Bernard, J., A. Steinführer, A. Klärner, and S. Keim-Klärner. 2023. "Regional Opportunity Structures: A Research Agenda to Link Spatial and Social Inequalities in Rural Areas." *Progress in Human Geography* 47, no. 1: 103–123. <https://doi.org/10.1177/03091325221139980>.
- Bertaux, D. 1997. *Les récits de vie: perspective ethnosociologique*. Nathan-Université.
- Binder, J., and A. Matern. 2020. "Mobility and Social Exclusion in Peripheral Regions." *European Planning Studies* 28, no. 6: 1049–1067. <https://doi.org/10.1080/09654313.2019.1689926>.
- Black, N., K. Scott, and M. Shucksmith. 2019. "Social Inequalities in Rural England: Impacts on Young People Post-2008." *Journal of Rural Studies* 68: 264–275. <https://doi.org/10.1016/j.jrurstud.2018.09.008>.
- Bossuet, L. 2006. "Peri-Urban Populations in Search of Territory." *Sociologia Ruralis* 46, no. 3: 214–218. <https://doi.org/10.1111/j.1467-9523.2006.00410.x>.
- Brovarone E., Cotella G., and Staricco L., eds. 2021. *Rural Accessibility in European Regions*. London: Routledge.
- Brovarone, E. 2022. "Accessibility and Mobility in Peripheral Areas: A National Place-Based Policy." *European Planning Studies* 30, no. 8: 1444–1463.
- Camarero, L., and Jesús Oliva. 2019. "Thinking in Rural Gap: Mobility and Social Inequalities." *Palgrave Communications* 5, no. 1: 1–7. <https://doi.org/10.1057/s41599-019-0306-x>.
- Camarero, L., F. Cruz, and J. Oliva. 2016. "Rural Sustainability, Inter-Generational Support and Mobility." *European Urban and Regional Studies* 23, no. 4: 734–749.
- Camarero, L., and J. Oliva. 2024. "Mobility and Territorial Cohesion. The Shaping of the Rural–Urban Mobility System." *Revista Española de Investigaciones Sociológicas (REIS)* 185, no. 185: 23–42.
- Cass, N., E. Shove, and J. Urry. 2005. "Social Exclusion, Mobility and Access." *Sociological Review* 53, no. 3: 539–555. <https://doi.org/10.1111/%2Fj.1467-954X.2005.00565.x>.
- Champion T. and Hugo G., eds. 2014. *New Forms of Urbanization: Beyond the Urban/Rural Dichotomy*. Derbyshire, UK: Asghate.
- Clelland, D. 2021. "In a Straightjacket? Targeting Deprivation in Rural Scotland in the Context of Localism and Austerity." *Journal of Rural Studies* 83: 155–164. <https://doi.org/10.1016/j.jrurstud.2021.02.008>.
- Cloke, P., and J. Little. 1997. *Contested Countryside Cultures*. London: Routledge.
- Cowie, P., L. Townsend, and K. Saleminck 2020. "Smart Rural Futures: Will Rural Areas be Left Behind in the 4th Industrial Revolution?" *Journal of Rural Studies* 79: 169–176.
- Cresswell, T. 2001. "The Production of Mobilities." *Mobilities* 43: 11–25.
- Dijkstra, L., H. Poelman, and A. Rodríguez-Pose. 2020. "The Geography of EU Discontent." *Regional Studies* 54, no. 6: 737–753.
- Douthit, N., S. Kiv, T. Dwolatzky, and S. Biswas. 2015. "Exposing Some Important Barriers to Health Care Access in the Rural USA." *Public Health* 129, no. 6: 611–620. <https://doi.org/10.1016/j.puhe.2015.04.001>.

- ESPON 2017. *Policy Brief: Shrinking Rural Regions in Europe. Towards Smart and Innovative Approaches to Regional Development Challenges in Depopulating Rural Regions*. Accessed June 20, 2019. <https://www.espon.eu/sites/default/files/attachments/ESPON%20Policy%20Brief%20on%20Shrinking%20Rural%20Regions.pdf>.
- Eurofound 2022. *Access to Essential Services for People on Low Incomes: Energy, Public Transport and Digital Communications*. Dublin: Eurofound.
- European Commission. 2008. *Poverty and Social Exclusion in Rural Areas*. Final Study Report. Brussels: European Commission.
- European Commission. 2021. *Flash Eurobarometer 491 Report A Long-Term Vision for the EU's Rural Areas*. Brussels: Directorate-General for Agriculture and Rural Development. <https://europa.eu/eurobarometer/surveys/detail/2278>.
- Farrington, J., and C. Farrington. 2005. "Rural Accessibility, Social Inclusion and Social Justice: Towards Conceptualization." *Journal of Transport Geography* 13: 1–12. <https://doi.org/10.1016/j.jtrangeo.2004.10.002>.
- Fischer-Tahir A. and Naumann M., eds. 2013. *Peripheralization: The Making of Spatial Dependencies and Social Injustice*, 9–26. Wiesbaden: Springer.
- Freund, P. E., and G. T. Martin. 1993. *The Ecology of the Automobile*. Montreal: Black Rose Books.
- Gallent, N. 2006. "The Rural–Urban Fringe: A New Priority for Planning Policy." *Planning, Practice & Research* 21, no. 3: 383–393. <https://doi.org/10.1080/02697450601090872>.
- Giarchi, G. G. 2018. "Distance Decay and Information Deprivation: Health Implications for People in Rural isolation." In *New Directions in the Sociology of Health*, 57–69. London: Routledge.
- Government of Navarre (Gobierno de Navarra). 2022. VI Informe sobre la pobreza y la desigualdad social en Navarra (6th Report on Poverty and Social Inequality in Navarra). Pamplona.
- Graham, S., and S. Marvin. 2001. *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*. London: Routledge. <https://doi.org/10.4324/9780203452202>.
- Graham, S., and S. Marvin. 2022. "Splintering Urbanism at 20 and the "Infrastructural Turn"." *Journal of Urban Technology* 29, no. 1: 169–175.
- Gray, D., J. Shaw, and J. Farrington. 2006. "Community Transport, Social Capital and Social Exclusion in Rural Areas." *Area* 38, no. 1: 89–98. <https://doi.org/10.1111/j.1475-4762.2006.00662.x>.
- Guilluy, C. 2019. *Twilight of the Elites: Prosperity, the Periphery, and the Future of France*. New Haven, CT: Yale University Press.
- Hansen, S., B. Newbold, D. M. Scott, B. Vrkljan, and A. Grenier. 2020. "To Drive or Not to Drive: Driving Cessation Amongst Older Adults in Rural and Small Towns in Canada." *Journal of Transport Geography* 86: 102773 <https://doi.org/10.1016/j.jtrangeo.2020.102773>.
- Hoggart K., ed. 2005. *The City's Hinterland Dynamism and Divergence in Europe's Periurban territories*. Derbyshire, UK: Ashgate.
- Holl, A. 2007. "Twenty Years of Accessibility Improvements. The Case of the Spanish Motorway Building Programme." *Journal of Transport Geography* 15, no. 4: 286–297. <https://doi.org/10.1016/j.jtrangeo.2006.09.003>.
- Interrante, J. 1979. "You Can't Go to Town in a Bathtub: Automobile Movement and the Reorganization of Rural American Space, 1900–1930." *Radical History Review* 1979, no. 21: 151–168.
- Kaufmann, V., M. & Bergman, and D. Joye. 2004. "Motility: Mobility as Capital." *International Journal of Urban and Regional Research* 4: 745–756. <https://doi.org/10.1111/j.0309-1317.2004.00549.x>.
- Kayser, B. 1990. *La renaissance Rurale. Sociologie Des Campagnes Du Monde Occidental*. Paris: Armand Colin.
- Kiss, M. 2022. *Understanding Transport Poverty*. European Parliamentary Research Service. PE 738.181. Accessed January 2, 2025. [https://www.europarl.eu/RegData/etudes/ATAG/2022/738181/EPRS_ATA\(2022\)738181_EN.pdf](https://www.europarl.eu/RegData/etudes/ATAG/2022/738181/EPRS_ATA(2022)738181_EN.pdf).
- Kühn, M. 2015. "Peripheralization: Theoretical Concepts Explaining Socio-Spatial Inequalities." *European Planning Studies* 23, no. 2: 367–378. <https://doi.org/10.1080/09654313.2013.862518>.
- Kuhnimhof, T., J. Armoogum, R. Buehler, J. Dargay, J. M. Denstadli, and T. Yamamoto. 2012. "Men Shape a Downward Trend in Car Use Among Young Adults—Evidence From Six Industrialized Countries." *Transport Reviews* 32, no. 6: 761–779.
- Lucas, K. 2011. "Driving to the Breadline." In *Auto Motives*, 209–224. Bingley, UK: Emerald Group Publishing Limited.
- Mamonova, N., and J. Franquesa. 2020. "Populism, Neoliberalism and Agrarian Movements in Europe. Understanding Rural Support for Right-Wing Politics and Looking for Progressive Solutions." *Sociologia Ruralis* 60, no. 4: 710–731. <https://doi.org/10.1111/sonu12505.12291>.
- Manderscheid, K. 2014. "The Movement Problem, the Car and Future Mobility Regimes: Automobility as Dispositif and Mode of Regulation." *Mobilities* 9, no. 4: 604–626.
- Manthorpe, J., and L. Livsey. 2009. "European Challenges in Delivering Social Services in Rural Regions: A Scoping Review." *European Journal of Social Work* 12, no. 1: 5–24. <https://doi.org/10.1080/13691450802567440>.
- Martin, G. 2009. "The Global Intensification of Motorization and Its Impacts on Urban Social Ecologies." In *Car Troubles. Critical Studies of Automobility and Auto-Mobility*, edited by J. Conley and A. McLaren, 219–235. London: Routledge.
- Martinelli F., Anttonen A., and Mätzke M. Eds. 2017. *Social Services Disrupted: Changes, Challenges and Policy Implications for Europe in Times of Austerity*. Cheltenham, UK: Elgar.
- Mattioli, G. 2017. "'Forced Car Ownership' in the UK and Germany: Socio-Spatial Patterns and Potential Economic Stress Impacts." *Social Inclusion* 5, no. 4: 147–160. <https://doi.org/10.17645/si.v5i4.1081>.
- Meijering, L., and G. Weitkamp. 2024. "'I Choose the Quiet Roads': Everyday Mobility in Later Life on the Urban–Rural Continuum of the Northern Netherlands." *Journal of Transport Geography* 114: 103762.
- Merriman, P. 2012. *Mobility, Space and Culture*. London: Routledge.
- Milbourne, P. 2016. "Poverty and Welfare in Rural Places." In *Routledge International Handbook of Rural Studies*, edited by M. Shucksmith and D. L. Brown, 480–491. London: Routledge.
- Milbourne, P., and L. Kitchen 2014. "Rural Mobilities: Connecting Movement and Fixity in Rural Places." *Journal of Rural Studies* 34: 326–336. <https://doi.org/10.1016/j.jrurstud.2014.01.004>.
- Mormont, M. 1983. "The Emergence of Rural Struggles and Their Ideological Effect." *International Journal of Urban and Regional Research* 7: 559–575.
- Moseley, M. 1979. *Accessibility: The Rural Challenge*. London: Methuen.
- Nutley, S. 1996. "Rural Transport Problems and Non-Car Populations in the USA." *Journal of Transport Geography* 4, no. 2: 93–106.
- Nutley, S., and C. Thomas. 1995. "Spatial Mobility and Social Change: The Mobile and the Immobility." *Sociologia Ruralis* 35, no. 1: 24–39.
- Oliva, J. 2010. "Rural Melting-Pots, Mobilities and Fragilities: Reflections on the Spanish Case." *Sociologia Ruralis* 50, no. 3: 277–295. <https://doi.org/10.1111/j.1467-9523.2010.00516.x>.
- Osti, G. 2010. "Mobility Demands and Participation in Remote Rural Areas." *Sociologia Ruralis* 50, no. 3: 296–310. <https://doi.org/10.1111/j.1467-9523.2010.00517.x>.
- Pahl, R. 1968. "Is the Mobile Society a Myth?." *New Society* 11: 46–68.
- Posada, D. 2021. *Infraestructura del efectivo y vulnerabilidad en el acceso al efectivo en España. Boletín económico/Banco de España [Artículos]*, (3). Accessed January 2, 2025. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/InformesBoletinesRevistas/ArticulosAnaliticos/21/T3/Fich/be2103-art23.pdf>.

Pospěch, P., O. Klíma, and B. Hubatková. 2024. "Loss and Autonomy: Making Sense of Rural Life at the Inner Periphery" *Sociologia Ruralis*. 64: 709–724. <https://doi.org/10.1111/soru.12505>

Rodríguez-Pose, A. 2017. "The Revenge of the Places That Don't Matter (and What to Do About It)." *Cambridge Journal of Regions. Economy and Society* 11, no. 1: 189–209. <https://doi.org/10.1093/cjres/rsx024>.

Sheller, M. 2021. *Advanced Introduction to Mobilities*. Cheltenham, UK: Edward Elgar Publishing.

Sheller, M., and J. Urry. 2006. "The New Mobilities Paradigm." *Environment and Planning A* 38, no. 2: 207–226.

Shergold, I., and G. Parkhurst. 2012. "Transport-Related Social Exclusion Amongst People in Rural Southwest England and Wales." *Journal of Rural Studies* 28: 412–421.

Shucksmith, M., P. Chapman, G. Clark, and S. Black. 1994. "Social Welfare in Rural Europe." *Journal of Rural Studies* 10, no. 4: 343–356. [https://doi.org/10.1016/0743-0167\(94\)90044-2](https://doi.org/10.1016/0743-0167(94)90044-2).

Smith, N., D. Hirsch, and A. Davis. 2012. "Accessibility and Capability: the Minimum Transport Needs and Costs of Rural Households." *Journal of Transport Geography* 21: 93–101. <https://doi.org/10.1016/j.jtrangeo.2012.01.004>.

Székely, L., and J. Novotný. 2022. "Public Transport-Disadvantaged Rural Areas in Relation to Daily Accessibility of Regional Centre: Case Study From Slovakia." *Journal of Rural Studies* 92: 1–16.

United Nations 2022. *United Nations Economic Commission for Europe Transport Statistics Database*. United Nations Economic Commission for Europe. Accessed January 2, 2025. <https://w3.unece.org/PXWeb/en/Table?IndicatorCode=50>.

Urry, J. 2004. "The 'System' of Automobility." *Theory, Culture & Society* 21, 25–39. <https://doi.org/10.1177/%2F0263276404046059>.

Urry, J. 2007. *Mobilities*. Cambridge: Cambridge Polity Press.

Urry, J. 2016. *What Is the Future?*. London: John Wiley & Sons.

van Dülmen, C., M. Šimon, and A. Klärner. 2022. "Transport Poverty Meets Car Dependency: A GPS Tracking Study of Socially Disadvantaged Groups in European Rural Peripheries." *Journal of Transport Geography* 101: 103351. <https://doi.org/10.1016/j.jtrangeo.2022.103351>.

van Pijkeren, N., I. Wallenburg, H. van de Bovenkamp, S. Wiig, and R. Bal. 2024. "Caring Peripheries: How Care Practitioners Respond to Processes of Peripheralisation." *Sociologia Ruralis* 64, no. 1: 64–81. <https://doi.org/10.1111/soru.12459>.

Velaga, N., M. Beecroft, J. Nelson, D. Corsar, and P. Edwards. 2012. "Transport Poverty Meets the Digital Divide: Accessibility and Connectivity in Rural Communities." *Journal of Transport Geography* 21: 102–112.

Virilio, P. 2001. *Virilio Live. Selected Interviews*. London: Sage.

Volti, R. 2006. "Mass Motorisation in Spain." *Journal of Transport History* 27, no. 2: 116–124. <https://doi.org/10.7227/%2FTJTH.27.2.10>.

Walks, A. ed. 2015. *The Urban Political Economy and Ecology of Automobility. Driving Cities, Driven Inequality, Driving Politics*. London: Routledge.

Walsh, K. 2012. "Putting Inequality in Its Place: Rural Consciousness and the Power of Perspective." *American Political Science Review* 106, no. 3: 517–532. <https://doi.org/10.1017/S0003055412000305>.

Woods, M. 1998. "Researching Rural Conflicts: Hunting, Local Politics and Actor-Networks." *Journal of Rural Studies* 14, no. 3: 321–340.

Woods, M. 2005. *Rural Geography. Processes, Responses and Experiences in Rural Restructuring*. London: Sage. <https://doi.org/10.4135/9781446216415>.

Woods, M. 2020. "Revisiting the Politics of the Rural and the Brexit vote." In *Politics and Policies of Rural Authenticity*, edited by P. Pospěch, E. Magnus, and E. Figueiredo, 2021, 27–41. London: Routledge.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.