

Unique times, unequal mobilities: Daily mobility during the de-escalation of the COVID-19 pandemic

Álvaro Padilla-Pozo^{1,2}  | José Manuel Torrado³  | Isabel Palomares-Linares^{3,4}  | Ricardo Duque-Calvache³ 

¹Department of Sociology, Cornell University, Ithaca, New York, USA

²Cornell Population Center, Cornell University, Ithaca, New York, USA

³Department of Sociology, University of Granada, Granada, Spain

⁴Population Research Centre, Faculty of Spatial Sciences, University of Groningen, Groningen, Netherlands

Correspondence

Ricardo Duque-Calvache, Department of Sociology, University of Granada, Granada 18010, Spain.

Email: ricardoduque@ugr.es

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Abstract

Scholars have highlighted drastic reductions in daily mobility during the early stages of the COVID-19 pandemic lockdown. But what happened when restrictions were relaxed though risk remained ubiquitous? How did patterns of mobility change and how were they structured by socioeconomic resources and social roles? We address these questions using a cross-sectional representative sample ($n = 2942$) of the population of Andalusia, Spain, after a month and a half of severe lockdown in 2020. We find that older people were the least mobile group and that people living with children and in extended households were less likely to move to take care of others, unlike before the pandemic. Men were more likely to carry out daily mobilities for which women had been traditionally responsible, such as care mobilities. Women were also more likely to be immobile and less likely to commute. Finally, manual and nonqualified workers were more likely to commute, but they were just as likely as any other group to carry out other types of mobility. These results highlight the social character of mobility in a unique context. We emphasize the need to disaggregate daily mobility based on different purposes as well analysing how these are practised by different sociodemographic groups if we want to provide rigorous descriptions of a core component of individuals' daily life.

KEYWORDS

COVID-19, daily mobility, everyday mobility, immobility, inequality, Spain

1 | INTRODUCTION

Daily mobility is a set of reversible, two-way, frequently performed movements that delimit the space around which people move, and, consequently, the opportunities and resources they can potentially access (Kellerman, 2012). The meaning and implications of being mobile changed drastically with the outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic in late

2019. As the scientific community discovered that coronavirus disease 2019 (COVID-19) was transmitted from human to human, individuals became vectors, and their daily mobility became a source of contagion, a threat to public health (Cresswell, 2021). This led to numerous nonpharmaceutical interventions (NPIs) around the world, including travel bans, lockdowns and curfews (Hale et al., 2022), which significantly reduced mobility levels within and between countries (Askitas et al., 2021; Nouvellet et al., 2021). Using

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aggregated mobility data from January to June 2020, Snoeijs et al. (2021) estimated that, on average, countries saw a 60.6% drop in their mobility.

People restructured their daily lives in light of these policies, showing a tendency to reduce their participation in social activities, a shift from public to private transportation and an increase in active mobilities such as walking and cycling (Kolarova et al., 2021; Strömblad et al., 2021). Over time, compliance with NPIs turned the most basic daily movements into a valuable resource to cope with the feeling of being stuck at home (Arroyo et al., 2021; Kellerman, 2022). Nevertheless, a variety of studies have observed that not everyone had the same capacity to adapt to this new scenario, adding to the body of literature about the heightening of social inequalities during the pandemic (Dobusch & Kreissl, 2020; Huang et al., 2022; Krieger, 2020).

The literature on daily mobility and inequalities in daily mobility during the COVID-19 pandemic has mostly focused on its early stages when movement restrictions tended to be stringent. However, studies about mobility during periods of transition from lockdowns to 'new normality' are scant. This context is of special interest, as individuals faced a situation where even though public health agencies strongly discouraged daily mobility, it was legal and appealing (Mesa-Pedrazas et al., 2021).

This paper analyses the daily mobility patterns of the population of Andalusia after a month-and-a-half-long strict lockdown (March–April 2020) that was followed by a gradual increase in mobility and economic activity. Spain was one of the countries with the largest decreases in mobility with 86% (Snoeijs et al., 2021), reflecting a high stringency of the policies enforced by the national government and an extraordinary compliance by the population. We answer three questions:

1. How did the daily mobility of the Andalusian population evolve throughout the different stages of the de-escalation process?
2. What explains the commuting, self-realization and care mobilities during this period?
3. How did immobility and high mobility vary across sociodemographic groups?

2 | BACKGROUND

2.1 | Daily mobility as a social practice: Triggers and patterns

At first glance, daily life can be seen as a series of repetitive actions. However, underneath its surface lie complex interactions between individuals and social structures that result in conflict, divisions, negotiations and transformations (Jirón, 2008). Consequently, patterns of daily movement—the extent to which individuals move, the reasons for moving and, ultimately, how, when, why and with whom—have an impact on people's lives.

But what triggers daily mobility? According to Kellerman (2012), moving is a human need, and so is fixity, the voluntary decision to remain in a given place. Through movement, individuals satisfy their need to interact with other people (proximity), to interact with and explore their surroundings, especially outdoors (locomotion), and to obtain information from their environment (curiosity). In contrast, privacy, shelter and apathy are the needs that individuals satisfy when they remain in a place (Kellerman, 2012). Notably, people's decisions to move are not simply based on personal preferences; structural and cultural factors and individual sociodemographic characteristics also play a role (Hidayati et al., 2021; Kaufmann et al., 2004; Kellerman, 2012).

Studies on the social determinants of everyday mobility before the COVID-19 pandemic have underlined the importance of socio-demographic characteristics and household composition. In the new context set by the disease and the NPIs to counter it, housing characteristics and COVID-19-related variables have also become relevant.

Socioeconomic status (SES) is one of the main determinants of daily mobility. This relationship is heterogeneous due to the specificity of socioeconomic processes and infrastructure of each location regarding the concentration of poorer residents, manual labour and basic services, as well as the availability and accessibility of public and private transportation (Barbosa et al., 2021; Xu et al., 2018). However, there is a general pattern. Affluent residents are able to be selective about where and how to move, while the mobility of poorer inhabitants is constrained by their limited resources (Macedo et al., 2022).

Mobility patterns also differ by gender. Gender roles have traditionally attributed the main function of the public and labour spheres to men and domestic and family spheres to women (Olabarria et al., 2013). Thus, men's mobility tends to prioritize work trips, while women travel more for care and household maintenance tasks (Boarnet & Hsu, 2015; Kaufmann & Widmer, 2006; Miralles-Guasch et al., 2016; Viry et al., 2015). The presence of children in the household is one of the principal drivers of this inequality (Havet et al., 2021; McQuaid & Chen, 2012; Wachter & Holz-Rau, 2021). Other factors like occupational segregation, internalized gendered roles (Torrado et al., 2018), economic disparities within the household composition, and access to private means of transportation (Wachter & Holz-Rau, 2021) are also correlated with mobility inequalities between men and women. Women tend to have more restricted activity spaces than men (Fan, 2017; Torrado et al., 2018).

Furthermore, the reasons for moving and travel time vary across life stages (Maciejewska et al., 2019). As a group, the elderly move the least and are more likely to be immobile than the rest of the population (Schwanen & Páez, 2010). However, although their overall daily mobility decreases, their involvement in activities like leisure trips increases (Choo et al., 2016; Hjorthol et al., 2010). In comparison, movement is the highest among middle-aged individuals, a group that Camarero and Oliva (2008) call the 'support generation', since they must combine their jobs with family responsibilities, such as caring for offspring or older family members. Young people have

the lowest agency over their movement since much of their daily structure is determined by their family (Skelton, 2013), although they spend the largest amount of time on their daily trips (Delclòs-Alió & Miralles-Guasch, 2018; Delclòs-Alió & Miralles-Guasch, 2019).

Differences in mobility by household composition are interconnected with inequalities in task sharing and family support. Single-person households are associated with greater mobility, although a distinction should be made between young adults and the elderly (Olaru et al., 2005). In the case of young adults, mobility is higher and explained by commuting (Olaru et al., 2005) and the search for spaces for interaction with friends and potential partners (Gautier et al., 2010). In contrast, daily mobility may be a pathway for the elderly to avoid or reduce their levels of social isolation and feelings of loneliness by increasing their potential contact with other people and involvement in community activities (Van Den Berg et al., 2016). Living as a couple with children also has an important influence on mobility, but it depends on the age of the children (Buliung & Kanaroglou, 2006). The presence of children means greater mobility in general, and a larger activity space as children grow older (Buliung & Kanaroglou, 2006). Commuting to school, children's extracurricular activities and increasing contacts with relatives (Camarero & Oliva, 2008) explain the greater mobility of couples with children. However, some of these caregiving tasks fall more heavily on women (Fan, 2017). These patterns increase in extended family households, which commonly include elderly family members, especially in Southern European countries.

2.2 | Daily mobility and crises: Changes and continuities during the COVID-19 pandemic

Daily mobility patterns are affected by disruptive phenomena like economic crises (Maciejewska et al., 2019; Marquet & Miralles-Guasch, 2018) and natural disasters (Cook & Butz, 2016). From a psychosocial perspective, an individual's necessity and capacity to adapt to these new scenarios is partly dependent on personality traits. Prospect and risk aversion theory suggest (Campos-Vazquez & Cuijty, 2014) that when individuals consider whether or not to move, they consider the potential losses involved in their potential movement. As an example, the risk of infection by COVID-19 was a special threat to the elderly, those with poorer health status and the chronically ill, which reduced their mobility substantially (Torrado et al., 2022).

In the context of the pandemic, the law became the principal determinant of daily mobility. To control the spread of the virus, almost every country in the world closed their educational institutions and enforced limitations on international travel, more than 80% closed their workplaces, and around 70% enforced stay-at-home orders. These policies reduced mobility drastically (Hale et al., 2022). They also affected mobility indirectly through the increase in work from home and the temporary shutdown of nonessential activities and services. This led to a scenario of low mobility, which mostly revolved around the neighbourhood (Mesa-Pedrazas et al., 2021).

Scholars have reported inequalities in the ability to comply with NPIs, showing that richer states (M. Lee et al., 2020), regions (Pullano et al., 2020), health areas (Lee et al., 2021), municipalities (Dokhov & Topnikov, 2021), neighbourhoods (Checa et al., 2020) and citizens (Bracarense & Oliveira, 2021) around the world reduced their mobility levels more than their poorer counterparts. In some cases, people with higher SES also started reducing their mobility before the enactment of the NPIs (Checa et al., 2020; Lee et al., 2021; Sun et al., 2022), suggesting not only that they had access to cultural capital that allowed them to recognize the implications of the spread of the pandemic earlier than the rest (Checa et al., 2020) but also that their jobs were more easily adaptable to working from home (Angell & Potoglou, 2022).

Compliance with social distancing measures also differed by gender. Following the enactment of the first stay-at-home orders, women reduced their mobility more than men (Caselli et al., 2022). They also saw larger decreases in their mobility after school closures (Caselli et al., 2022), and regained more mobility after schools reopened (Bulteau et al., 2022). Further, during periods of lockdown, men took more out-of-household trips than women (Bulteau et al., 2022; Mejía-Dorantes et al., 2021; Politis et al., 2021). Similarly, the effect of NPIs on mobility differed across age groups. In many cases, young people decreased their mobility the most (Astroza et al., 2020; Carteni et al., 2020; Caselli et al., 2022; Hu et al., 2021), an expected result given the importance of social and leisure activities in their mobility. The mobility of the elderly was less affected, since they are a group that traditionally moves less and some of their main activities were still legal during severe lockdown periods (e.g., going grocery shopping). The most mobile was the middle-aged group, since they were responsible for most work-related mobility and for the mobility to take care of the most vulnerable family members and acquaintances (Beach et al., 2021).

The pandemic also had an effect on the relationship between household structure and mobility. We could expect single-person households to increase their mobility as soon as the de-escalation measures would allow it, as these were exposed to higher levels of loneliness (Wickens et al., 2021). In addition, the closing of schools and the role of children in the spread of the disease (Godøy et al., 2022) could further reduce the mobility of households with children, especially in households where the elderly were also present.

Housing conditions were not commonly accounted for in the analysis of daily mobility before the pandemic, but they became relevant during periods of lockdown and their subsequent de-escalation. The better the housing conditions, such as access to private outdoor spaces or natural light, the lower the difficulty to stay at home (Sinisterra et al., 2022; Torrado et al., 2022). Differences in mobility were also to be expected depending on the residential environment. Theoretically, mobility would be lower in denser spaces, where the risk of contagion is higher (Florida et al., 2021). Lastly, there is evidence of a surge in residential mobility to prepare for the reduction in daily mobility in Spain. A significant proportion of

the population moved to improve their housing situation or to reunite with their family (Duque-Calvache et al., 2021).

2.3 | The present study: Mobility restrictions and the de-escalation of the COVID-19 pandemic in Spain

In response to the spread of SARS-CoV-2 in Spain, the national government enforced a state of alarm on March 14, 2020, which remained in force until June 21, 2020. The government enacted several measures aimed at controlling this public health crisis, including a strict lockdown. During the lockdown, individuals were only allowed to leave their households to acquire basic goods, go to the doctor, take care of old, young, or other family members in vulnerable situations, go to banks or automated teller machines (ATMs) and insurance facilities, and to return to their main residence. Only essential workers were allowed to commute. This was

accompanied by the closure of educational institutions, all non-essential businesses and public spaces and restaurants, which were only allowed to offer delivery services (Boletín Oficial Del Estado, 2020).

These restrictions were relaxed with the enactment of the Plan for Transition to New Normality on 28 April (Ministerio de Sanidad, 2020), which the government described as a 'de-escalation' process of the previous measures (Table 1). This plan allowed the country's autonomous communities to progressively return to normal as long as they met a series of established public health, mobility, social and economic thresholds. This paper focuses on the region of Andalusia during phases 0, 1 and 2 of the de-escalation process. This autonomous community consists of eight provinces. Two of them, Malaga and Granada, were one phase behind the others during some periods of the data collection, but this did not have a statistically significant impact on the daily mobility of its residents.

TABLE 1 Summary of the plan for transition to new normality measures related to daily mobility.

Phase	Enactment ^a	Main features
0	28 April 2020	Out-of-household mobility restricted to age-specific time intervals Contact is restricted to individuals in the same household Essential businesses remain open, but with capacity restrictions
1	9 May 2020	Mobility is still restricted to age-specific time intervals Reopening of small businesses with limited capacity Individuals are required to schedule an appointment in advance to use services Reopening of hotels, restaurants and coffee shops, limited to 30% capacity
2	18 May 2020	Free mobility at the provincial level Possibility of moving any time except for 10:00 AM–12:00 PM and 7:00–10:00 PM, time slots reserved for those older than 70 Social gatherings of up to 15 people Opening of beaches and public pools, limited to 30% capacity Small businesses, restaurants and coffee shops increase their capacity to 40% Reopening of public spaces such as libraries, with limited capacity Nonprofessional sports activities allowed
3	6 June 2020	Removal of age-specific intervals for mobility General increase in business capacity
'New normality'	21 June 2020	Free movement around the country Compulsory use of masks and social distancing Improvement of contact tracing systems

^aDates represent the time at which the first regions and provinces entered each phase.

Source: Boletín Oficial del Estado (2020) and Ministerio de Sanidad (2020).

3 | DATA AND METHODS

3.1 | Data and sample

We use data from the 2020 Andalusian Social Survey: habits and living conditions of the Andalusian population during the State of Alarm, conducted by the Institute of Statistics and Cartography of Andalusia (IECA). This cross-sectional survey collected data from 2950 individuals living in Andalusia aged 16 or older from 15 April to 29 May 2020, hence including phases 0 (71% of the sample), 1 (27%) and 2 (2%) of the de-escalation process. Given the mobility restrictions in place during the period of data collection, all interviews were carried out by phone. The sample is representative of the Andalusian population (IECA, 2020). We exclude four individuals with military occupations (as their mobility behaviour is conditioned by specific factors) and four cases with no information about the variables being studied. The final sample consisted of 2942 individuals.

3.2 | Variables

Dependent variables are derived from a survey item that asked about the frequency at which individuals left their households for each of the following activities: commute; use public transportation; go grocery shopping; buy medicine; take out their dogs; bring food or medicine to family members, neighbours or friends; take out the trash; exercise; go or accompany someone to the doctor; visit family, friends or neighbours; perform maintenance activities at rural properties; or buy or use nonessential goods and services (e.g., ATM or gas station). Respondents could pick between five answers: daily, a few days a week, once a week, less than once a week, never or hardly ever. We excluded the use of public transportation because it is not a daily mobility purpose per se, but a mode of transportation. Walking the dog and performing maintenance activities at rural properties were also excluded, as it was impossible to distinguish between the respondents who chose not to leave their house to perform these activities and those who did not perform them because they had no pets or agricultural duties. Lastly, we excluded visiting or accompanying someone to the doctor since we could not control whether the respondents or any of their peers or family members were sick.

We consider the role of four categories of independent variables: COVID-19-related factors; sociodemographic characteristics; household composition; and housing characteristics (see Table 2). We also included a variable asking if the respondent had COVID-19, but we eventually excluded it because only 0.55% of our sample displayed this characteristic.

3.3 | Data analysis

To describe the evolution of the daily mobility of the Andalusian population across the different stages of the de-escalation (first

TABLE 2 Descriptive statistics of independent variables.

Variable	Proportion/mean ^a
COVID-19 related factors	
Lockdown phase	
0	71.2%
1	26.6%
2	2.2%
Acquaintance or kin's exposure to COVID (yes)	81.2%
Poor or very poor self-rated health (vs. good)	17.5%
Sociodemographic variables	
Female (vs. male)	57.4%
Age	49.1 (19.8)
Foreign nationality (vs. Spanish)	9.1%
Socioeconomic position	
Professional	15.2%
Clerks	2.8%
Service workers	7.9%
Manual workers	8.8%
Nonqualified workers	5.6%
Unemployed	15.8%
Inactive	43.68%
Household composition	
Household structure	
One-person household	9.2%
Single-parent	8.5%
Couple without kids	21.9%
Couple with kids	45%
Extended households	15.4%
Main responsible for housework	30%
Housing characteristics	
Flat or other (vs. house)	49.5%
Availability of outdoor space (terraces, balconies or patios)	88.3%
Residential environment	
Urban	49.8%
Rural	14.1%
Medium density	36%
Room stress (residents per square metre)	41.8 (25.7)

^aStandard deviation is given within parentheses.

research question), we generated pseudocontinuous variables that represented the number of times an individual left their home for each mobility purpose. The answer 'never or hardly ever' was given a value of zero trips; 'less than once a week', zero point five trips; 'once

a week', one trip; 'a few times a week', three trips; and 'every day' seven trips. Additionally, we added the values of each mobility indicator to grasp the overall number of 'trips' away from homemade in the week before completing the survey. Although it is not possible to differentiate between chain trips and single-purpose trips, the indicator does reflect individual levels of activity outside the household.

To answer the second research question (What explains commuting, self-realization, and care mobilities during this period?), we grouped the reasons for leaving one's home into three sets: commuting, self-realization (visiting friends, family or neighbours and exercise) and care purposes (going grocery shopping, buying medicine, bringing food or medicine to family members, neighbours or friends and buying or using nonessential goods). Commuting is a unique activity, which is compulsory for most of the employed population. Care purposes mobility is partially elective, as people will eventually have to leave their house to cover some of their basic needs or may be forced to leave their home to take care of others. Self-realization mobility can be considered elective. Since the distribution of trips had a large proportion of zeroes and was positively skewed (see Appendix 1), we continued our analysis transforming our variables to binary. We fitted three logistic regression models to explain whether an individual participated in each type of daily mobility (commuting, care purposes and self-realization). In the case of commuting, we limited our sample to the employed population ($n = 1316$). We added our covariates in four steps, one for each thematic block. To ensure the comparability of the models we calculated and compared their average marginal effects.

For the third research question, we identified the immobile population—those who did not leave their house for any of the motives included in the survey—as well as those in the fourth mobility quartile, the most mobile and estimated logistic regression models for the probability of belonging to each group. The models for the highest mobility group excluded the immobile population, resulting in a sample size of 2455.

We tested other models, namely, ordinal regression and Poisson regression, but the large presence of zeroes and low frequencies of some response cells made our analysis difficult. Ultimately, we chose logistic regression models to maximize the reliability of our results. The cross-tabulations of each specific mobility type with all our covariates, their associations and correlations are presented as Supporting Information: Material (Appendix 2). We also tested whether the relationships held at the multivariate level through logistic regression models for each mobility type (Appendix 3).

4 | RESULTS

4.1 | Daily mobility during de-escalation in Andalusia

The mobility of the Andalusian population showed a consistent pattern across the three different phases of the de-escalation process (Table 3). Individuals rarely left their houses to carry out any daily activities, except for going to work and grocery shopping, the most

TABLE 3 Mean number of trips outside (standard deviation).

	Phase 0	Phase 1	Phase 2
Commuting	3.1 (3.2)	3.8 (3.2)	5 (2.8)
Grocery shopping	1.2 (1.6)	1.4 (1.5)	1.6 (1.6)
Buying medicine	0.4 (0.7)	0.4 (0.6)	0.5 (0.8)
Bringing food or medicine to others	0.4 (1.1)	0.3 (1.1)	0.3 (0.9)
Exercising	0.2 (1.11)	0.9 (1.9)	1.1 (2.2)
Going to the doctor	0.2 (0.2)	0.4 (0.3)	0.5 (0.3)
Visiting family, neighbours or friends	0 (0.4)	0 (0.4)	0.1 (0.5)
Taking out the trash	0.6 (1.6)	1.2 (2.2)	1.4 (2.2)
Buying or using nonessential goods or services	0 (0.4)	0 (0.2)	0.1 (0.4)
Overall trips	5.6 (4.8)	7 (5.8)	9 (6.8)

Source: 2020 Andalusian Social Survey.

essential tasks. Phase 1 came with a limited increase in economic activity and a relaxation of the lockdown. Individuals increased their trips out of their households to exercise and slightly decreased the number of times they went out to bring food or medicine to friends, family or neighbours. The increase in daily mobility continued in phase 2.

Overall, the population became increasingly mobile as restrictions got laxer. With each new phase of the de-escalation, the mean activities (movements per person), increased by around 1.5 (Table 3). Similarly, 24% of the sample reported not leaving their household for any reason during phase 0, this percentage dropped to 14 in phase 1 and to 11 in phase 2.

4.2 | Commuting, care and self-realization mobilities

Self-realization activities were only associated with the legal restrictions in force; meanwhile, commuting and care tasks were also associated with some sociodemographic variables. Individuals had a higher probability of leaving their homes under laxer restrictions, with the largest increase in the probability of commuting after the implementation of the second phase (Table 4). Exposure to COVID-19 among acquaintances and family members only had a positive association with commuting, which could reflect the fact that individuals who commuted during this period were in contact with more people, increasing their chance of knowing a person exposed to COVID-19. However, knowing someone who had or had had COVID-19 was not associated with care mobilities.

Women and individuals who rated their health as poor were less likely to commute and perform care mobilities but were as likely to engage in self-realization mobility as their counterparts. Age had an inverted U-shape relationship with care mobilities (lowest mobility

TABLE 4 Average marginal effects of logistic regression models for commuting, self-realization and care mobilities.

	Commuting			Self-realization			Care tasks		
	dy/dx	Sig.	SE	dy/dx	Sig.	SE	dy/dx	Sig.	SE
Lockdown phase (reference: phase 0)									
Phase 1	9%	**	0.03	13%	***	0.13	12%	***	0.02
Phase 2	34%	***	0.10	17%	***	0.03	13%	**	0.06
Acquaintance or family member exposure to COVID (reference: no)									
Yes	9%	*	0.04	0%		0.16	4%		0.02
Self-perceived health (reference: good)									
Bad	-12%	*	0.06	0%		0.20	-5%	**	0.02
Sex (reference: man)									
Woman	-11%	**	0.04	0%		0.16	-12%	***	0.02
Age	1%		0.01	0%		0.00	2%	***	0.00
Age squared	0%		0.00	0%		0.00	0%	***	0.00
Nationality (reference: Spaniard)									
Foreign	7%		0.06	0%		0.03	-3%		0.04
Socioeconomic position (reference: administrative workers)									
Professionals	-7%		0.06	0%		0.04	-4%		0.60
Other service workers	11%		0.06	0%		0.05	-9%		0.06
Manual workers	25%	***	0.06	0%		0.04	-4%		0.07
Nonqualified workers	27%	***	0.07	0%		0.05	-2%		0.07
Unemployed				0%		0.04	-6%		0.06
Inactive				0%		0.04	-14%	**	0.06
Household structure (reference: one-person household)									
Single parent	-17%		0.1	-1%		0.04	-4%		0.05
Couple without children	-9%		0.09	0%		0.03	-7%		0.04
Couple with children	-11%		0.09	0%		0.04	-12%	**	0.05
Other households	-14%		0.1	-1%		0.04	-13%	**	0.05
Responsible for housework (reference: no)									
Yes	-13%	**	0.04	0%		0.02	10%	***	0.02
Housing type (reference: flat or other)									
Detached or semidetached	2%		0.04	0%		0.01	-2%		0.02
Availability of outdoor space (reference: no)									
Yes	1%		0.05	0%		0.02	-4%		0.03
Residential environment (reference: medium density)									
Urban	-4%		0.03	0%		0.01	1%		0.02
Rural	7%		0.05	0%		0.03	-3%		0.03

(Continues)

TABLE 4 (Continued)

	Commuting			Self-realization			Care tasks		
	dy/dx	Sig.	SE	dy/dx	Sig.	SE	dy/dx	Sig.	SE
Room stress	0%		0.00	0%		0.00	0%	**	0.00
<i>n</i>	1316			2942			2942		
Log-likelihood empty model	-209.281			-258.577			-417.247		
Log-likelihood full model	-182.727			-229.182			-331.625		
Pseudo- <i>R</i> ²	0.13			0.11			0.20		

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Source: 2020 Andalusian Social Survey.

among the youngest and oldest, highest among the middle aged) but had no statistically significant association with commuting or self-realization mobilities. Social class was only a significant predictor of commuting. Manual and nonqualified workers were more likely to leave their homes to go to work than others, which makes sense since their work was more likely to be considered 'essential', hence their economic activity was not interrupted.

Individuals living in households with a partner and children as well as other types of households had a lower probability of leaving their homes to perform care mobilities, suggesting a tendency to abstain from tasks that were not strictly necessary or replaceable (e.g., avoiding social gatherings, ordering groceries online rather than buying them in person). Being responsible for housework decreased the probability of commuting but increased the probability of care mobilities. Lastly, room stress was positively associated with a higher probability of leaving one's home for care mobilities, although the effect was not substantive.

4.3 | Explaining (im)mobility in the context of restrictions

Responses to the NPIs differed significantly across social groups. Some of the respondents opted for complete seclusion (17% of the sample did not move for any reason), while others (27%) carried out more than one activity out of their homes per day (Appendix 1).

Table 5 shows the results of the logistic regression models for high mobility and immobility. Sociodemographic characteristics are the most important determinants in both models. The effects of housing and household conditions are marginal. Household and housing variables are significant at the bivariate level (see Appendix 2), but they lose most (or even all) of their significance in the logit models. Thus, the association of household and housing conditions with mobility is mostly explained away by individual characteristics.

Lockdown-related factors have a significant association, but their explanatory power is not as important as one would expect (Table 5). The presence of COVID-19 in the social environment reduced the probability of immobility. People reporting bad health were more

prone to be immobile, a basic precaution in such circumstances. However, neither having friends nor family who had gone or were going through the disease nor reporting bad health affected high mobility.

Gender and age stand out as very important variables. The association between age and mobility is consistent across our models. The middle-aged population was more likely to move and less likely to be immobile. Older people were prone to immobility and less likely to be in the top quartile of mobility. Additionally, women had a lower probability of being highly mobile and a greater likelihood of remaining immobile.

Mobility also differed by socioeconomic groups. Since the inactive population did not have to commute, their probability of being immobile was higher than the employed and their probability of being highly mobile was lower. In comparison to administrative workers, nonqualified workers and those with manual occupations were more likely to be highly mobile. These differences in exposure to risk are a clear sign of inequality, as managers and white-collar workers had easier access to telework and could work from home.

Living with a partner and children or living in other households increased the probability of remaining immobile. This could indicate greater precautions from families to avoid infecting their vulnerable relatives (a large portion of the households in the 'other households' category consisted of extended families with elderly relatives). Lastly, being responsible for the housework during lockdown reduced immobility, which may seem counterintuitive but could be due to the tasks generally performed by these people including activities outside the home, such as buying groceries and other products.

5 | DISCUSSION AND CONCLUSION

This paper analyses the daily mobility patterns of the Andalusian population in the context of severe movement restrictions. Despite the low levels of mobility reported by the respondents, we found consistent differences across sociodemographic groups.

Our results bring nuance to the concept of support generation by Camarero and Oliva (2008) in times of a public health emergency.

TABLE 5 Average marginal effects of logistic regression models for immobility and high mobility.

	Immobility			High mobility		
	dy/dx	Sig.	SE	dy/dx	Sig.	SE
Lockdown phase (reference: phase 0)						
Phase 1	-11%	**	0.02	12%	***	0.02
Phase 2	-14%	*	0.06	21%	***	0.05
Acquaintance or family member had COVID (reference: no)						
Yes	-5%	*	0.02	4%		0.03
Self-perceived health (reference: good)						
Bad	5%	*	0.02	-5%		0.03
Sex (reference: man)						
Woman	13%	***	0.02	-7%	**	0.02
Age	-2%	***	0.00	1%	*	0.00
Age squared	0%	***	0.00	0%	*	0.00
Nationality (reference: Spaniard)						
Foreign	5%		0.03	2%		0.04
Socioeconomic position (reference: administrative workers)						
Professionals	1%		0.06	2%		0.05
Other service workers	-1%		0.06	7%		0.06
Manual workers	-8%		0.07	20%	***	0.05
Nonqualified workers	-7%		0.08	20%	**	0.06
Unemployed	8%		0.05	-13%	*	0.05
Inactive	14%	**	0.05	-13%	*	0.06
Household structure (reference: One-person household)						
Single parent	3%		0.05	-5%		0.06
Couple without children	5%		0.04	-2%		0.06
Couple with children	9%	*	0.04	-3%		0.06
Other households	11%	*	0.04	-6%		0.07
Responsible for housework (reference: no)						
Yes	-8%	***	0.02	0%		0.03
Housing type (reference: flat or other)						
Detached or semidetached	3%		0.02	1%		0.02
Availability of outdoor space (reference: no)						
Yes	4%		0.03	-1%		0.03
Residential environment (reference: medium density)						
Urban	-1%		0.02	-3%		0.02
Rural	2%		0.02	5%		0.04

(Continues)

TABLE 5 (Continued)

	Immobility			High mobility		
	dy/dx	Sig.	SE	dy/dx	Sig.	SE
Room stress	0%		0.00	0%		0.00
<i>n</i>	2942			2455		
Log-likelihood empty model	- 395,491			- 377,063		
Log-likelihood full model	- 290,686			- 324,194		
Pseudo-R ²	0.27			0.14		

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Source: 2020 Andalusian Social Survey.

During the de-escalation of the pandemic in Andalusia, the middle aged were more likely to leave their house to carry out care mobilities, similar to what has been found in other studies (e.g., Beach et al., 2021). However, those living with their children or living in extended households were less likely to leave their homes to care for others. This could reflect a decision to avoid the risk of contagion, but it could also reflect that those respondents were living with the people they were already taking care of. While in prepandemic times the middle aged tended to combine their care mobilities within their household with other external ones, this may not have been the case during the de-escalation process in Andalusia. Future studies should explore this issue, as the absence of support from the middle-aged to other groups, especially the elderly, in times of crises could have deleterious consequences for the health of the latter. Further, the elderly had the highest tendency to stay at home, which may have had a harmful impact on their health, and it may continue to do so if this behaviour has persisted over time. Future research should explore whether the mobility levels of the elderly have returned to prepandemic times.

Our results shed light on the relationship between social class and daily mobility during the pandemic. Manual and nonqualified workers were the most mobile, thus having a higher level of exposure to the virus. Yet, their mobility was mainly the result of commuting, and they were equally likely to leave their homes for care and self-realization as the rest of the population. This detail is important, yet it is missing in studies that use aggregated mobility data or big data and do not account for different mobility types (Lee et al., 2020, 2021; Sun et al., 2022). We cannot state that people with higher SES complied with NPIs more or less than others, as we found no significant differences across SES groups with the exception of commuting, which was allowed by the law. Given the strictness of the movement restrictions in Spain, it would be useful to compare whether these differences in compulsory and noncompulsory trips occurred in other countries or time periods where the approach to control the spread of COVID-19 was based on recommendations, rather than laws with punitive consequences.

Gender also played an important role in our models. The daily movement of women was significantly different from that of men in all types of mobility except for self-realization. In general, women tended to

move less and to stay at home more than men, similar to what has been previously described by Bulteau et al. (2022), Mejía-Dorantes et al. (2021) and Politis et al. (2021). These decisions were not based on rational logic as the direct risks of the disease were greater for male patients (Peckham et al., 2020). Instead, psychosocial factors like risk aversion (Galasso et al., 2020) may have played a major role. Being in charge of the housework, which was highly correlated with being in charge of child and/or elderly care work in the home, did not explain away the gender differences, and, in some cases, implied higher mobility—the opposite to what Caselli et al. (2022) found in Spain, Italy and Portugal at the beginning of the lockdown. This differs from traditional literature on the impact of gender and household structure on daily mobility and activity spaces (Buliung & Kanaroglou, 2006; Fan, 2017; Olabarria et al., 2013). In Spain, previous crises like the Great Recession also resulted in inequalities in daily mobility by gender. At that time, immobility increased more for women than men. Although the gender gap related to shopping and care trips decreased, it grew when it came to leisure and social trips, with men being generally more mobile than women in all areas (Maciejewska et al., 2019). Similarly, men were also more likely to engage in care mobilities during the de-escalation of the COVID-19 pandemic in Spain. This may indicate that men tend to take on gendered activities when their work-related mobility is taken away from them or is severely constrained. The most remarkable difference is that employed women were less likely to commute than men, an inequality that was not present in Andalusia before the pandemic (data from the 2009 Andalusian Social Survey show that women and men were equally likely to commute). Part of this change may be attributable to a significant increase in remote work among teachers and administrative workers (two traditionally gender-segregated sectors) during 2020, as men were more likely to work remotely than women in 2019 (Anghel et al., 2020).

This study has four limitations. First, our differentiation between mobility behaviours by care purposes and self-realization is based on our assessment of the degree to which individuals could avoid carrying out each mobility. Some of our classifications may be open to debate, for instance, activities such as visiting friends, family or neighbours could be classified as a care purpose mobility and not a self-realization one—which we tested and did not alter our results. Other scholars may think about grouping daily mobilities based on other factors. The purpose of this paper, however, is not to establish

a typology of daily mobilities but to emphasize the utility and importance of disaggregating daily mobility to study social reality. Second, the external validity of the study is bounded to the region of Andalusia during the first three phases of the de-escalation. It is possible that mobility patterns were different in other areas of Spain during the same time or that the situation in Andalusia changed in the following phases of the de-escalation. Third, our models are missing some key determinants of daily mobility such as car availability, access to remote work and personality traits such as risk aversion. These variables were not available in our data set, but we acknowledge their relevance to the topic. Fourth, given the cross-sectional nature of our data, we cannot compare mobility levels before and during the pandemic. This limits the extent to which we can attribute these changes just to the pandemic. Future research should analyse the sociodemographic differences in daily mobility purposes from a longitudinal perspective including post-lockdown data to see if these differences persisted over time.

Many studies have analysed everyday mobility in the context of severe movement restrictions during the early stages of the COVID-19 pandemic, others have focused on mobility 'post-Covid' (e.g., Nikolaeva et al., 2022), but very few studies have analysed the de-escalation period: a time when moving was allowed but strongly discouraged from a political, social and public health perspective.

Looking at overall levels of mobility, one may jump to the conclusion that what happened during the pandemic was just a generalized reduction of movement. However, once we separate trips by their nature—in our case, by the degree of electivity—we can see more complex patterns where different sociodemographic axes intersect. Commuting was the most compulsory type of mobility and it reflected the highest differences across SES, while self-realization and care mobility revealed the existence of gender and age patterns, all of which are relevant for the field of population studies. In a period of change and uncertainty, these core features still structured our everyday behaviour. How you move is an essential part of who you are, and who you are also strongly limits and directs your mobility.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available on Github at https://github.com/alvaro-pp/dailymobility_2022.

ORCID

Álvaro Padilla-Pozo  <http://orcid.org/0000-0002-2110-5309>

José Manuel Torrado  <http://orcid.org/0000-0003-2597-4699>

Isabel Palomares-Linares  <http://orcid.org/0000-0001-6795-2987>

Ricardo Duque-Calvache  <http://orcid.org/0000-0002-6356-5071>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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