Unveiling Spatial and Sociodemographic Patterns during the Rise of Solo Living in Spain: a Comparison between the Provinces of Jaen and Barcelona[1]

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Introduction

The increase in the number and proportion of people who live alone is one of the most salient sociodemographic changes across European societies over the last decades, which also applies globally.

At different tempo and pace, virtually all European countries are partaking of this process of living atomization whose underlying mechanisms and implications have attracted the attention of diverse social sciences, sociology and demography in particular. Broadly speaking, the rise of solo living within Western societies may be inserted in the process of diversification of family and living arrangements that characterized the second demographic transition. Specifically, sociology tends to see this process as a reflection of growing individualist attitudes and values in our societies, regardless the interpretation that is given to this (from optimistic views on individual freedom and self-fulfillment to pessimistic ones of dissolution of diverse institutions and the social capital and its negative implications for individuals). Aside of individual choice, it should be said that two more potential determinants interact on the comprehension of this phenomenon: the structural factors which "invite" to solo-living

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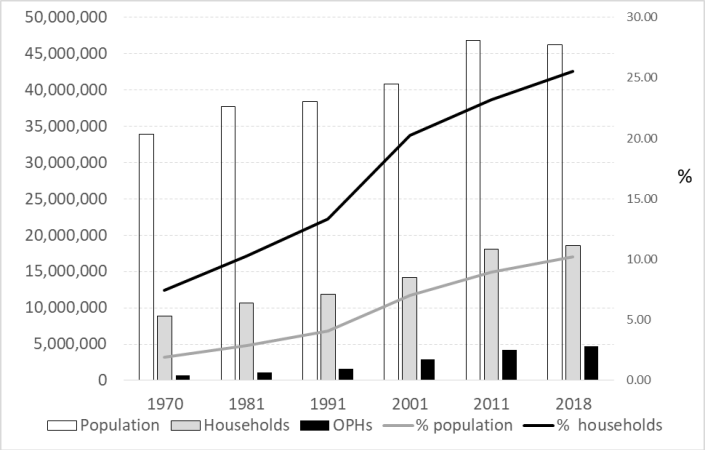
nowadays (e.g. increasing needs of mobility, formation and labor competitiveness, all of which do not often play in favor of cohabitation and family formation) and the actual possibility of living alone which is no doubt partly associated with the level of social provisions that States guarantee (the latter might well be particularly the case among the elderly).

In this work, we cope with the rise of solo living in Spain aiming at uncovering spatial and sociodemographic patterns and/or contrasts. As in other aspects of sociodemographic changes, this Southern European country represents a case of *latecomer* as well as a case of quick and intense *catch-up*. Illustratively, figures of one-person households (OPHs hereafter) have grown dramatically since the last quarter of the 20th century when living alone was practically residual in a strong family-based country. At present, somewhat more than 25% of Spanish households are OPHs being the household typology with the strongest increase since 1991 and the second one in prevalence today (only after nuclear households) (Figure 1).

Figure 1. Evolution of OPHs as a percentage of the total population and the total number of households. Spain, 1970-2018



Source: own calculations on data from INEbase (INE, online)

Although the current figures can be considered as relatively low within the European context (see Table 1), the steepness of the rise of solo-living in Spain is remarkable enough in itself as to be specifically studied. To be noted, according to census data, the percentage of population living alone more than doubled in Spain from 1991 (4.1%) to 2011 (9%). This means that in the space of two decades OPHs have undergone a relative increase of more than 100%[2]. In neighbouring France, a country with average figures for Western Europe in terms of prevalence and tendency, OPHs increased by 88% in 25 years (1975-2000; Ogden and Hall, 2004). In Great Britain, the proportion of people living alone took three decades to double (from 9% in 1973 to 17% in 2004; Roseneil, 2006).

Table 1. Ranking of European countries sorted by prevalence of OPHs

Country	Population	Households	Population living alone	One-person households	% Living alone	% One-person household	Average household size
Finland	5375276	2537197	1040378	1040378	19.4	41.0	2.1
Estonia	1294455	599832	239587	239587	18.5	39.9	2.2
Norway	4979954	2224152	880350	880340	17.7	39.6	2.2
Denmark	5560628	2524001	946098	946098	17.0	37.5	2.2
Germany	79652310	36933038	13478690	13764955	16.9	37.3	2.2
Switzerland	6587556	3485994	1259648	1289012	19.1	37.0	1.9
Netherlands	16655799	7443801	2708251	2708251	16.3	36.4	2.2
Austria	8401940	3649309	1324287	1324287	15.8	36.3	2.3
Sweden	9482855	4002005	1449398	1449398	15.3	36.2	2.4
Latvia	2070371	859823	295909	295909	14.3	34.4	2.4
Liechtenstein	36149	15463	5284	5284	14.6	34.2	2.3
Belgium	11000638	4727831	1607741	1610298	14.6	34.1	2.3
France	64932339	27912554	9432765	9432765	14.5	33.8	2.3
Luxembourg	512353	208565	69529	69529	13.6	33.3	2.5
Slovenia	2050189	813531	266489	266489	13.0	32.8	2.5
Czech Republic	10436560	4372085	1422147	1422147	13.6	32.5	2.4
Hungary	9937628	4105708	1317138	1317138	13.3	32.1	2.4
Lithuania	3043429	1267316	401402	401402	13.2	31.7	2.4
Iceland	315556	118565	36908	36908	11.7	31.1	2.7

[2] Illustratively, the percentage of OPHs in 1991 in Spain was only slightly higher than that of India in 2011, which is one of most traditional Asian countries with the strongest patriarchal family structures (Dommaraju, 2015).

Italy	59433744	24583190	7203539	7641106	12.1	31.1	2.4
Bulgaria	7364570	3005589	925196	925385	12.6	30.8	2.5
United Kingdom	63182180	26442095	8086985	8086990	12.8	30.6	2.4
Romania	20121641	7470429	1941080	1941080	9.6	26.0	2.7
Greece	10816286	4134540	1061547	1061547	9.8	25.7	2.6
Croatia	4284889	1519038	373120	373120	8.7	24.6	2.8
Poland	38044565	13432489	3228750	3228750	8.5	24.0	2.8
Ireland	4574888	1647825	390153	390206	8.5	23.7	2.8
Spain	46815910	18083690	4193320	4193320	9.0	23.2	2.6
Malta	417432	152978	34635	34635	8.3	22.6	2.7
Portugal	10562178	4043726	866827	866827	8.2	21.4	2.6
Cyprus	840407	303242	62962	62962	7.5	20.8	2.8

Source: own calculations on Eurostat data (Census Hub, 2011 round; online-accessed on 08/08/2019)

While the basic characteristics of the rise of solo-living in Spain have been already analyzed in previous works (e.g. Del Campo and Rodríguez-Brioso, 2002; López-Villanueva and Pujades, 2011; Rodríguez-Guzmán et al., 2016), this paper brings the attention to the way the process of residential atomization is taking place in sociodemographic and spatial terms. The interest of this approach is double fold. On one hand, the socioeconomic and demographic implications of the phenomenon are likely to be unevenly spread on the space which not only refers to the most-practiced-known levels of analysis (i.e. cross-regionally or across provinces) but also, we hypothesize, to smaller units (i.e. within provinces and municipalities). On the other, the combination of sociodemographic analysis and spatial analysis at different geographical levels may shed some light on the underlying mechanisms of the rise of solo living as well as on the processes that this phenomenon is likely to trigger (e.g. socioeconomic and/or demographic segregation on the space).

Data and methods

Our work rest on straightforward descriptive techniques (calculation of proportions of OPHs by diverse sociodemographic and geographical variables at two cut-off points: 1991 and 2018). This is done by using microdata files provided by the Spanish National Statistics Office (*Instituto Nacional de Estadística* –INE- hereafter). For 1991 we use the census sample which accounts for 1% of the total population of Spain). For 2018 we use the microdata from the Continuous Household Survey (*Encuesta Continua de Hogares*) which is held on annual basis. In this survey, the data file for a given year is always made of 2yr sample so that the last available microdata released in 2018 include the samples of 2017 and 2018.

The analyses compare two Spanish provinces which largely differ in demographic, socioeconomic and cultural terms. Therefore, any significant contrast existing on 1) the prevalence, 2) the sociodemographic profile and 3) the spatial pattern of OPHs as a function of contextual variables, should clearly emerge through this comparison. Next we proceed to describe our two study cases very briefly.

Jaen is an inner Southern province of Spain which belongs to the administrative region of Andalusia. Its economy largely depends on the agro-industrial sector of olive oil. Its total population is about 650 thousand inhabitants of which the capital town, Jaen, holds about 110 thousand. This province has one of the lowest *per capita* GDP of Spain and it uses to record the highest unemployment rate in the country. Also, coherently, Jaen has historically been an out-migration province which is still the case at present. In concrete, one of the main destinations of its migratory flows over the second half of the 20th century was the province of Barcelona.

Barcelona is a Mediterranean coastal province of Spain located in the administrative region of Catalonia. More than 5.6 million people live in this province

and the city of Barcelona harbors more than 1.6 million which rises to more than 5 million if the metropolitan region of the city is considered. In contrast to Jaen, Barcelona owns a very diversified and dynamic economy which rest on a wide variety of industry and services. This province has historically been an immigration area within Spain and it has traditionally top-ranked in terms of *per capita* GDP and employment rate in the country.

Thus we compare two very different socioeconomic realities which also differ in dwelling terms (e.g. the province of Barcelona is much more urban-life patterned) and demographic terms (e.g. the province of Jaen manifest the signs of population aging to a greater extent than Barcelona). Also, strong cultural contrasts between these two provinces exist which partly respond to the aforementioned factors together with other important historical ones such as the fact that Jaen and the rest of the Andalusian region may be ascribed to the Castilian influence area whereas Barcelona and the rest of Catalonia preserve a noticeable Catalan-culture identity (e.g., Catalan language is broadly used and it is co-official with Spanish).

The crude sample size for the provinces of Jaen and Barcelona is provided in Table 2. The successive analyses in the result section are always based on weighed data through the elevation factors provided by the INE. As the sample criteria mainly rest on geographical and demographic representativeness, and not on other individual characteristics such as marital status, education level or the fact of living alone, the results must be taken with caution in some cases (especially in 1991 and especially for the province of Jaen where solo living was very little prevalent at the time and thus few cases of OPHs partake of the crude sample). With the latter in mind, we have opted to group age and education in broad categories when these variables are crossed with any additional variable. In doing this, it is aimed to prevent or at least to smooth sample-size

related biases of the resulting cross-tabulations. Yet caution must guide the interpretation of some results and thus invite to moderate some conclusions derived from such cross-tabulations all of which is pointed out on our behalf through the result section.

Table 2. Crude samples by sex and age-group. Population aged 18+

			1991			
			Age			
			18-39	40-64	65+	Total
OPHs	Men	Barcelona	209	249	168	626
		Jaen	8	36	26	70
		Total	217	285	194	696
	Women	Barcelona	159	341	867	1367
		Jaen	3	39	108	150
		Total	162	380	975	1517
	Total	**Barcelona**	**368**	**590**	**1035**	**1993**
		Jaen	**11**	**75**	**134**	**220**
		Total	**379**	**665**	**1169**	**2213**
Total	Men	Barcelona	7919	6871	2547	17337
		Jaen	1075	805	347	2227
		Total	8994	7676	2894	19564
	Women	Barcelona	7804	7162	3857	18823
		Jaen	1029	839	445	2313
		Total	8833	8001	4302	21136
	Total	**Barcelona**	**15723**	**14033**	**6404**	**36160**
		Jaen	**2104**	**1644**	**792**	**4540**
		Total	**17827**	**15677**	**7196**	**40700**
			2018			
			Age			
			18-39	**40-64**	**65+**	**Total**
OPHs	Men	Barcelona	140	280	179	599
		Jaen	35	55	31	121
		Total	175	335	210	720
	Women	Barcelona	113	282	602	997
		Jaen	22	52	106	180
		Total	135	334	708	1177
	Total	**Barcelona**	**253**	**562**	**781**	**1596**
		Jaen	**57**	**107**	**137**	**301**
		Total	**310**	**669**	**918**	**1897**
Total	Men	Barcelona	2082	3072	2914	8068
		Jaen	444	627	282	1353
		Total	2526	3699	3196	9421
	Women	Barcelona	2144	3345	3236	8725
		Jaen	390	632	359	1381
		Total	2534	3977	3595	10106
	Total	**Barcelona**	**4226**	**6417**	**6150**	**16793**
		Jaen	**834**	**1259**	**641**	**2734**
		Total	**5060**	**7676**	**6791**	**19527**

In 2011 the INE released supplementary files with census aggregate data which were supported with digital cartography that allowed for district-level analysis across all Spanish municipalities. Thus all mapping and sub-province analysis displayed in this work refers to the year 2011. To be noted, in this case no population sample but the full census figures as provided and aggregated by the INE are used.

The next section of this paper is made of preliminary results which are addressed to illustrate the analyses which are being carried out in this research. We briefly comment on each level of analysis in order to provide the root arguments which will endorse the discussion and conclusions in the final version of our paper. Intuitively, the analyses are run and commented on a descending level in spatial terms: province, population size strata within the province, municipality and intra-municipal (i.e. on census districts and sections within a given municipality).

Sample of preliminary results

Figure 2 shows the proportion of OPHs by age-group in the provinces of Jaen and Barcelona between 1991 and 2018. In terms of age, the only significant contrast between both provinces in 1991 took place among young solo-dwellers whose percentage, though low, was much more significant in Barcelona. Actually, virtually nobody lived alone in the province of Jaen before age 40. The change observed in 2018 within this age segment is just dramatic in relative terms in both cases but especially noticeable in the province of Jaen. Both provinces sum up about 8% of the population under age 40 living alone at present.

A second finding regarding the prevalence of solo living among the elderly is worth commenting. While the prevalence was very similar in both provinces in 1991, its rise has been accompanied by a clear divergence which has provoked solo-living to be significantly more prevalent in Jaen than in Barcelona in 2018.

Figure 2. Prevalence of OPHs by age-group in the provinces of Jaen and Barcelona. 1991 and 2018

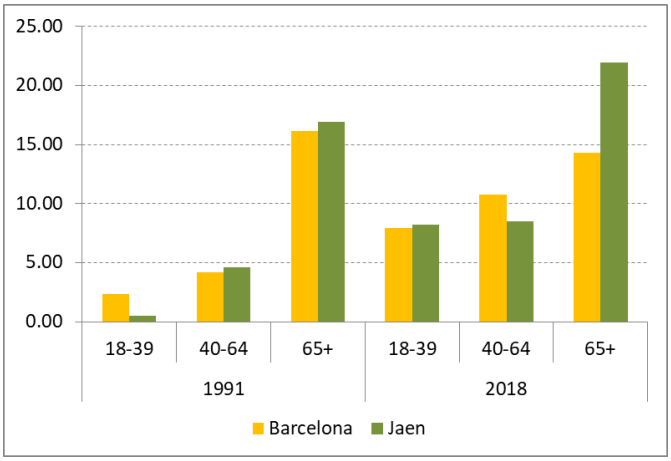


Figure 3 displays the demographic profile of OPHs in Jaen and Barcelona in 1991 and 2018 which permits to compare both the magnitude and the direction of the transfers of solo-dwellers across age-sex groups. And to this regard the contrast between both provinces is quite apparent. Departing from the common fact of the loss of relative weight of elderly women (this has largely to be with the increase in life expectancy and the postponement of widowhood) in Barcelona the transfer (gain) to the segment of men aged 40-64 is almost proportional whereas in Jaen, the most relevant change in the inner distribution of one-person households occurred towards young ages. It is also remarkable that the latter is observed among men and women although women experienced the higher increase in relative terms (the proportion increased from 1.35% to 9.92% among women whereas it did between 3.61% and 14.68% among men within this age segment 18-39 in Jaen).

Figure 3. Age-sex distribution of OPHs in Jaen and Barcelona. 1991 and 2018

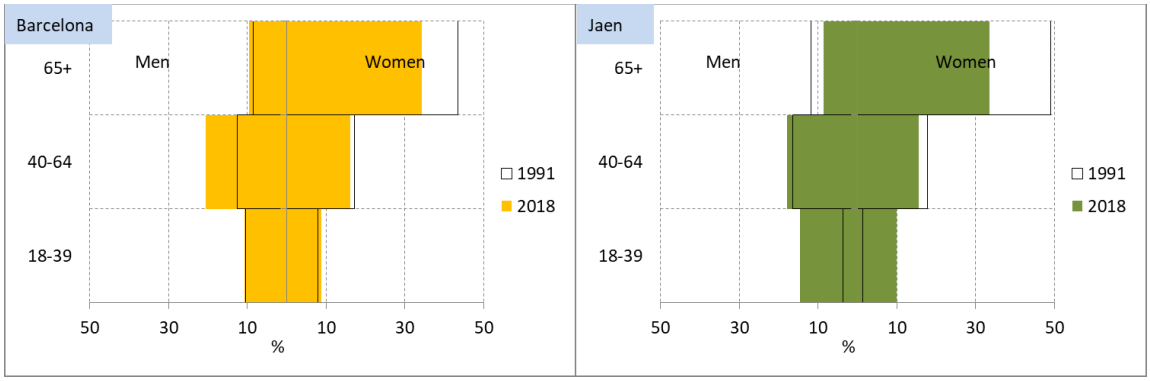
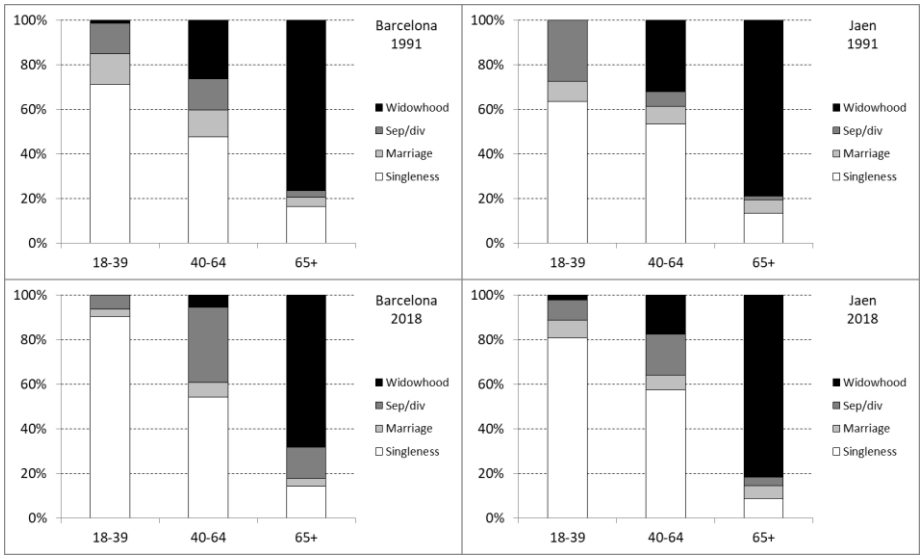


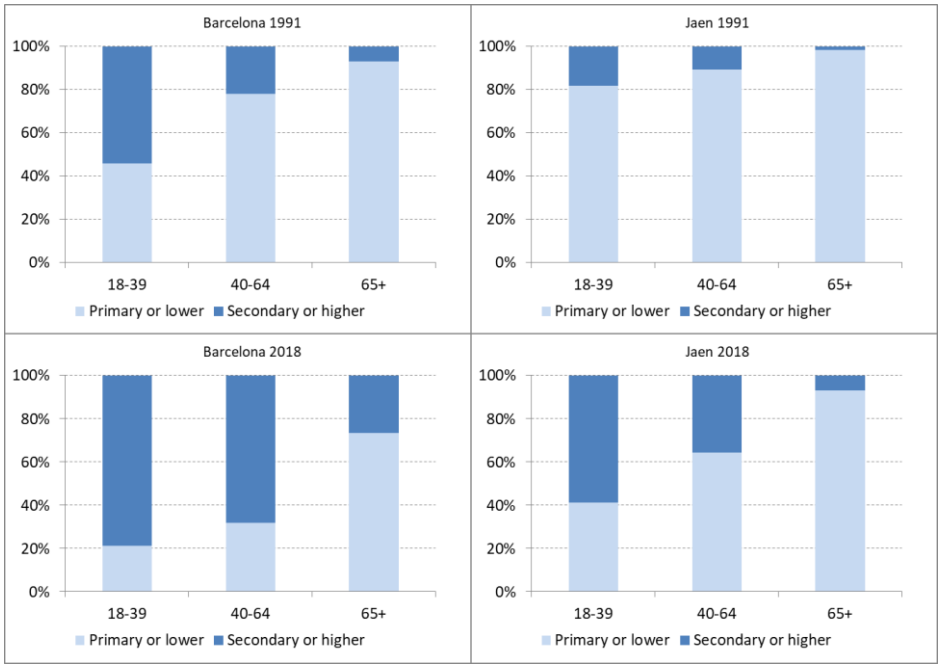
Figure 4 displays a comparison based on the marital status recorded by OPHs. We prevent ourselves from interpreting the results for the younger group (18-39) given that the total number of OPHs in that group was quite low (e.g. only 11 cases for the crude sample of Jaen in 1991). It can be observed that the elderly hardly differ between both provinces in 1991 being the distribution by marital status virtually the same. Among younger ages, the differences were as expected: higher prevalence of separated/divorced people in Barcelona within the age group 40-64. This difference stands for 2018 and, it must be added, a strong contrast in early widowhood states with Jaen clearly surpassing the percentage of Barcelona emerged. Again, the relative weight of statuses other than widowhood among the elderly living alone in Jaen is residual if compared to Barcelona.

Figure 4. Marital status of OPHs by age. Barcelona and Jaen, 1991 and 2018



As for educational attainment (Figure 5) again it must be noted that the results for younger ages in 1991 are little robust for Jaen in particular. Yet it is apparent a literacy gap in favor of Barcelona which broadens with age as a result of the underlying generational effect. In relative terms, we can observe that such gap only diminishes among younger OPHs (ages 18-39) in 2018. In words, 1) although the relative weight of some OPHs typologies (such as those single) is similar within the whole segment of solo-dwellers, its sociological profile (as approached by educational attainment) may differ substantially; and 2) it seems that the generational replacement of OPHs contributes to a relative homogenization of their educational profile among younger cohorts between both provinces. Of course, strictly speaking, the latter may or may not have to do with sociological homogenization as upper levels of education have been increasingly accessible for broader segments of the Spanish population.

Figure 5. OPHs educational attainment by age. Barcelona and Jaen, 1991 and 2018



Now we proceed to introduce a first and basic geographical approach through the segmentation of the former analyses by population-size strata at a municipal level. We present the analysis for all OPHs together with for some specific sociodemographic profiles: 1) solo dwellers aged 64+ at widowhood, 2) solo dwellers who are separated or divorced and finally 3) those at singleness which in addition attained a high level of education, thus being representative of the classical profile known as *singles*. Regarding this analysis, on one hand and given the uniqueness of the city of Barcelona and the town of Jaen within their respective pop-strata in each province (i.e. more than one million for Barcelona and more than one hundred thousand inhabitants for Jaen), these cities can be and have been conveniently identified. On the other hand, we have grouped the municipalities that own less than five thousand inhabitants as representative of a non-urban lifestyle or at least as a representative contrast with the cities broadly speaking. These restrictions are needed as it must be noted that a given population stratum is not equivalent in functional terms between these two provinces (e.g., towns

of 10-20 thousand inhabitants in the province of Jaen can be considered as medium-size or even large-size ones whereas this is not the case in the province of Barcelona). Also, we are aware that the more or less urban lifestyle of a given municipality encompasses determinants other than its population size. Yet in the main this segmentation is useful for the purpose of approaching urban vs. non-urban realities in both provinces. The following set of tables (Tables 3 to 6) displays the figures obtained in detail and a summary of those figures is presented in Figure 6.

Table 3 results useful in order to make sense of successive results. A first differential trait between the provinces of Jaen and Barcelona must be pointed out which is the much higher importance of the largest city in articulating the spatial distribution of the population. The city of Barcelona accounted for more than 37% of the total adult population of the province in 1991 in front of 15.4% of the town of Jaen. Expectedly, small-size municipalities contained a substantial part of the population in the latter province (22.8%) vs. only 6% in the province of Barcelona. In 2018 these differences substantially remained although with some changes in the distribution which likely have to do with the internal socioeconomic dynamics as well as with the effect of migratory flows in both provinces. Now focusing on OPHs, the main finding obtained is its very urban characterization in Barcelona contrasting with the province of Jaen. The city of Barcelona harbored more than half of all OPHs in this province in 1991 and almost 40% in 2018 whereas the city of Jaen hosted a share of OPHs which was very proportional to its weight on the total adult population of the province (that is around 15% in both 1991 and 2018). Therefore the higher proportion of OPHs in the province of Barcelona is fully connected to the primacy of the city of Barcelona as a large enclave of solo-living within the province. The opposite can be observed in Jaen where

around one third of OPHs were located in small municipalities in 1991 and 2018 which actually doubles the share of OPHs taken by the town of Jaen within the province.

As for the specific prevalence of OPHs within each population stratum analyzed, this residence form increased its importance very noticeably and very similarly in all four strata between 1991 and 2018. It can be said that such prevalence doubled and it did in the city of Barcelona, the town of Jaen and their respective small/rural municipalities. As a consequence, the differences between provinces remained constant, with the small municipalities resembling and the city of Barcelona having a higher prevalence of solo living than the town of Jaen.

Table 3. Location and share of OPHs in the provinces of Barcelona and Jaen. 1991 and 2018.

Stratum	**1991**			**2018**		
Province of Barcelona	**% population 18+**	**% of total OPHs**	**% of OPHs within stratum**	**% population 18+**	**% of total OPHs**	**% of OPHs within stratum**
Up to 5,000 inhabitants	6.0	5.6	5.1	4.9	4.9	10.6
City of Barcelona	37.2	52.0	7.7	29.1	39.6	14.5
Province of Jaen	**% population 18+**	**% of total OPHs**	**% of OPHs within stratum**	**% population 18+**	**% of total OPHs**	**% of OPHs within stratum**
Up to 5,000 inhabitants	22.8	30.7	6.5	29.6	29.2	11.2
Town of Jaen	15.4	15.5	4.9	17.0	15.5	10.3

Table 4. Location and share of OPHs (**aged 64+ at widowhood**) in the provinces of Barcelona and Jaen. 1991 and 2018.

Stratum	**1991**			**2018**		
Province of Barcelona	**% population segment**	**% of total OPHs**	**% of OPHs within stratum**	**% population 18+**	**% of total OPHs**	**% of OPHs within stratum**
Up to 5,000 inhabitants	5.6	4.5	29.7	4.7	4.4	56.8
City of Barcelona	45.6	51.2	41.7	38.7	41.7	65.3
Province of Jaen	**% population segment**	**% of total OPHs**	**% of OPHs within stratum**	**% population 18+**	**% of total OPHs**	**% of OPHs within stratum**
Up to 5,000 inhabitants	29.4	33.8	47.4	29.2	32.8	65.8
Town of Jaen	10.9	10.8	40.7	10.1	11.5	66.9

Table 5. Location and share of OPHs (aged 18+ separated/divorced) in the provinces of Barcelona and Jaen. 1991 and 2018

Stratum	**1991**			**2018**		
Province of Barcelona	**% population segment**	**% of total OPHs**	**% of OPHs within stratum**	**% population**	**% of total OPHs**	**% of OPHs within stratum**

				18+		
Up to 5,000 inhabitants	4.3	6.2	26.3	4.9	7.9	50.4
City of Barcelona	47.7	56.4	21.4	32.2	33.0	32.2
Province of Jaen	**% population segment**	**% of total OPHs**	**% of OPHs over stratum**	**% population 18+**	**% of total OPHs**	**% of OPHs over stratum**
Up to 5,000 inhabitants	9.0	19.9	100.0	19.0	19.7	28.2
Town of Jaen	37.3	20.7	25.0	26.3	27.1	28.0

Table 6. Location and share of OPHs (aged 18+ at singleness and higher education) in the provinces of Barcelona and Jaen. 1991 and 2018.

Stratum	**1991**			**2018**		
Province of Barcelona	**% population segment**	**% of total OPHs**	**% of OPHs within stratum**	**% population 18+**	**% of total OPHs**	**% of OPHs within stratum**
Up to 5,000 inhabitants	4.2	3.2	5.0	4.0	3.2	14.2
City of Barcelona	51.7	66.1	8.3	38.9	49.4	22.0
Province of Jaen	**% population segment**	**% of total OPHs**	**% of OPHs over stratum**	**% population 18+**	**% of total OPHs**	**% of OPHs over stratum**
Up to 5,000 inhabitants	16.6	20.0	1.8	21.4	13.6	8.9
Town of Jaen	19.8	0.0	0.0	22.7	20.8	12.9

Figure 6. Spatial distribution and prevalence of OPHs. Capital cities vs. non-urban municipalities. Provinces of Barcelona and Jaen, 1991 and 2018

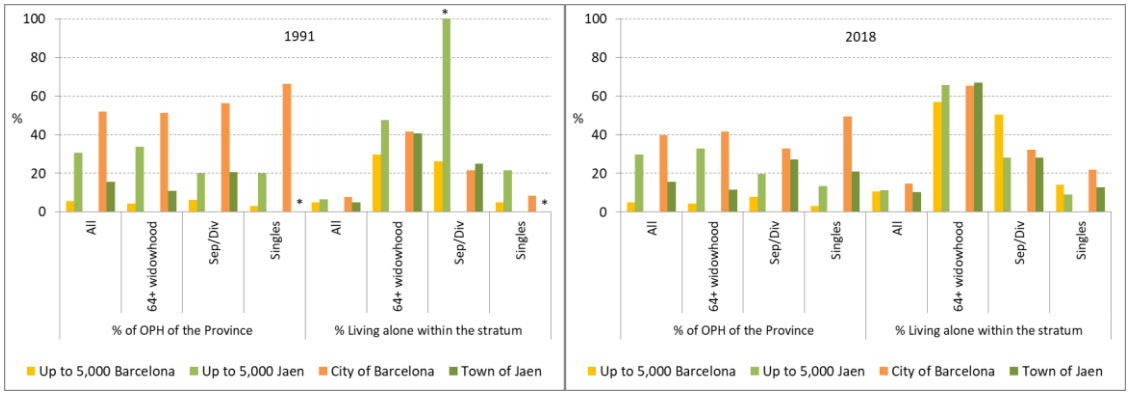
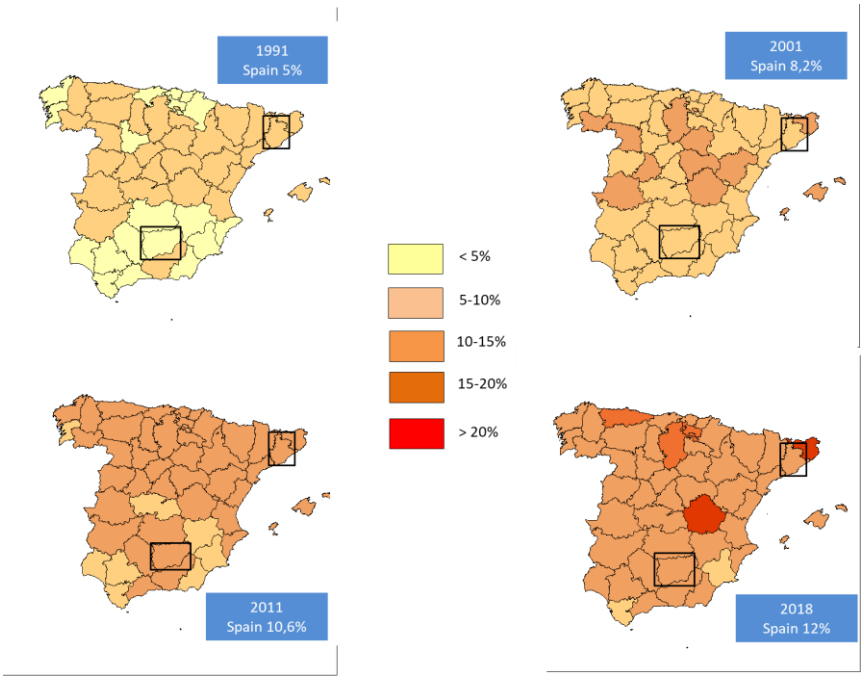


Figure 7 shows the evolution of the prevalence of solo-living in Spanish provinces. Save for 1991 Barcelona and Jaen have ranked within the same interval and quite close to the country average.

Figure 7. Prevalence of solo-living in Spain by province. 1991-2018.



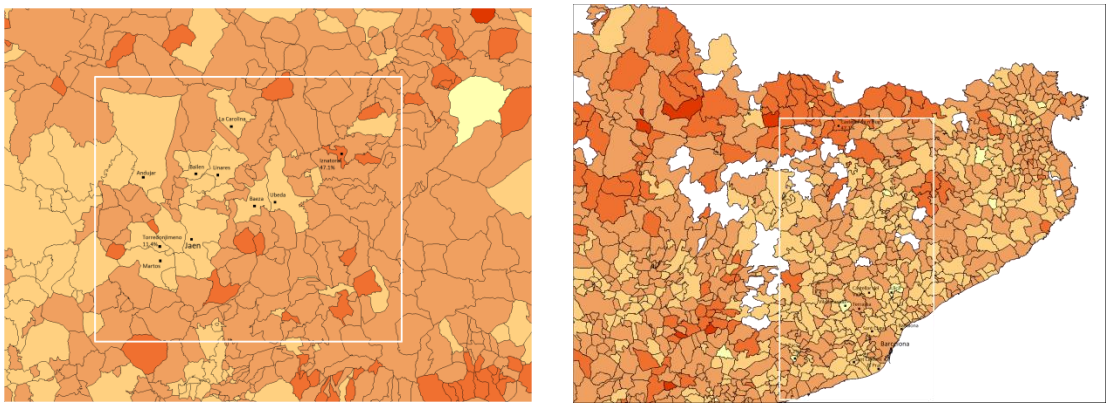
In Figure 8 we have proceeded by mapping the prevalence of OPHs in 2011 in both provinces by municipality in order to obtain a first visual approximation to (if any) the spatial pattern of solo-living. In this case, the calculations take the total number of households as the denominator instead of the total population. The picture obtained deserves several comments.

In the province of Jaen, the prevalence of OPHs clearly correlates and it does negatively with the degree of urbanization. Thus, the surroundings of the town of Jaen where several mid-size towns are located together with other important urban or semi-urban centers in the province systematically display lower proportions of solo-living (the lowest proportion is recorded in the town of Torredonjimeno which belong to the

functional area of the town of Jaen, 15km away from the capital town). By contrast, the highest proportions of OPHs matches with rural areas in which small towns and villages are mostly located. In the main, the described pattern is also one very much connected with economic activity and demographic aging, the most 'aged' and less economically dynamic areas being those with a higher prevalence of solo-living.

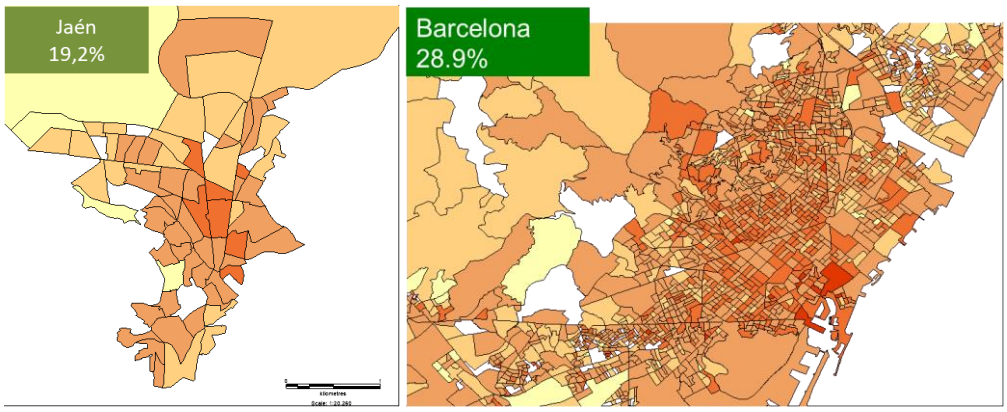
The province of Barcelona partly shares what has been said for Jaen in that its rural areas located in the periphery of the province and thus more distant from the city of Barcelona are those with a higher prevalence of OPHs and, to be sure, those with a higher degree of population aging. However, the metropolitan region of Barcelona displays the opposite pattern to that found in Jaen, this is to say, the city of Barcelona displays a relatively high proportion of OPHs compared to its surrounding municipalities. This contrast is coherent with what is known about large urban areas: cities and/or centers tend to house diverse segments of the population that are prone to live alone which is less the case of smaller towns and/or suburbs. As a result of the huge size and influence of the city of Barcelona, as well as of the higher spatial integration of the municipalities in this urban province, the association between population aging, socioeconomic development and the prevalence of solo-living is vague or at least it is only applying to more peripheral areas of the province.

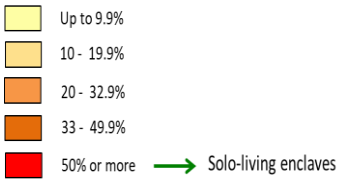
Figure 8. Prevalence of OPHs by municipality (over total number of households). Provinces of Jaen (left panel) and Barcelona (right panel), 2011.



The existence of common spatial patterns as well as some contrasts also features the intra-municipal level of analysis. Figure 9 shows the proportion of solo-dwellers in the town of Jaen and the city of Barcelona whereby the latter not only outstands in terms of prevalence but also, and expectedly, in stronger inner contrasts (i.e. the level of spatial segregation between urban districts). It can be seen that no solo-enclave (this is defined on our behalf as an urban section with at least 50% of its population living alone) is found in Jaen whereas these enclaves are not uncommon in the central area (not exclusively) of Barcelona. For illustrative purposes it must be said that the city center of Barcelona encompassing the old town center spread on a similar space that the whole town of Jaen.

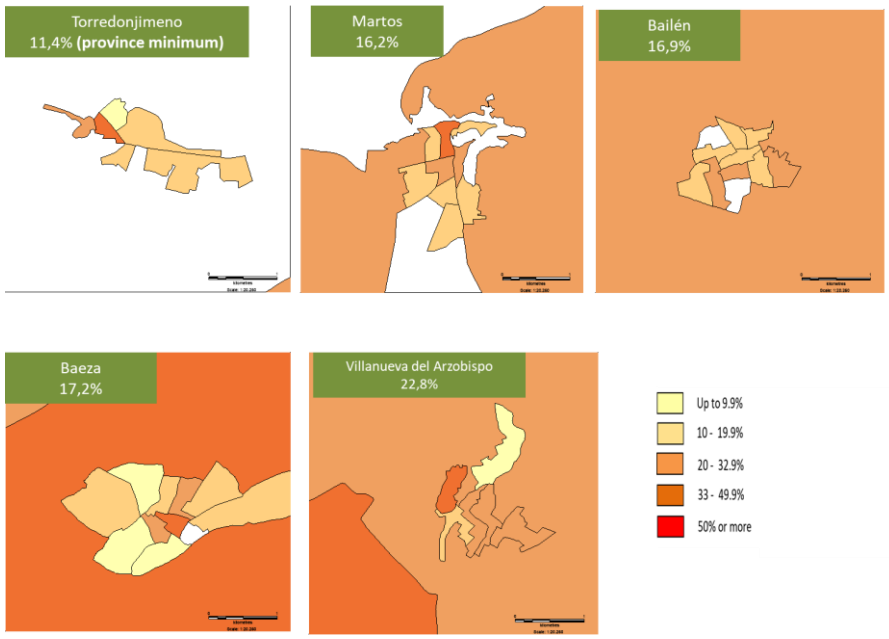
Figure 9 Prevalence of OPHs in the town of Jaen (left panel) and the city of Barcelona (right panel) (over total number of households) by census sections, 2011





This said, we must refer to the fact that spatial segregation (of OPHs) also takes place in small-size towns in both provinces. The group of Figures 10 replicates de former analyses for a selection of small-size towns of the province of Jaen (population between 10 thousand and 20 thousand inhabitants). We have scaled these figures in order to illustrate the main finding emerging from this analysis (i.e. the spatial concentration of OPHs and, in some cases, the center-periphery pattern that follows even in these small towns).

Group of Figures 10. Prevalence of OPHs in a selection of towns of the province of Jaen (over total number of households) by census sections, 2011



One more evidence of the fact that the distribution of OPHs on the space is patterned by diverse factors entailed to population and space is provided in the analysis that closes this paper. In this analysis we have focused on two equivalent demographic

and functional cases between the provinces of Jaen and Barcelona: on one hand, the capital cities; on the other, the towns of Terrassa and Torredonjimeno which population ratios to their respective capital cities are similar as well as their distance from the cities and their contextual role in the respective urban areas. At the time reference (2011), the data involved in the analysis were as displayed in Table 7. Several interesting results are worth commenting. Firstly, the percentage of solo-dwellers over the total population is noticeably higher in the two capital cities as is the variation across districts. Secondly, the proportion of solo dwellers is clearly ranked across towns, being such proportion three times higher in the largest city (Barcelona) with respect to the smallest (Torredonjimeno). Also, the proportions found across census sections may differ quite a lot even within the same district (not shown) which applies to all four towns no matter their size and population size. Finally, and more importantly, we find that although solo-living is systematically more prevalent in the urban areas of the province of Barcelona, the differences between the cities and their respective functional areas appear to parallel in both provinces (i.e. population ratios very much correspond to the ratios in the prevalence of solo-living).

Table 7. Proportions of solo-dwellers in relation with population size and urban functionality in Jaen and Barcelona, 2011

	District										
City/town (pop size)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
Barcelona (1.6 million)	15.36	14.15	12.21	10.06	10.98	15.41	11.58	10.83	11.47	11.37	12.35
Terrassa (213 thousand)	6.00	9.40	7.99	7.93	5.25	7.09	10.83	8.35	5.75	7.14	
Jaen (116 thousand)	9.74	7.91	8.59	9.48	9.49	8.53	9.08				
Torredonjimeno (14 thousand)	5.54	5.03	4.35	3.12	4.19						

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