Instituto Nacional de Estadística

Press Release

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Experimental

Population mobility study based on mobile phone data (EM-3)
July to December 2020

Daily mobility increased following the finalisation of the state of alarm in June, but it remains below the pre-pandemic level

Movements to vacation destinations in summer 2020 were generally 20.0% lower than in 2019

The population mobility study based on the positioning of mobile phones during the July-December 2020 (EM-3) period analysed the daily mobility of residents in Spain from June 24 through today. This study will continue until December 30, 2020 and a possible expansion is planned during 2021.

Mobility is analysed from two perspectives:

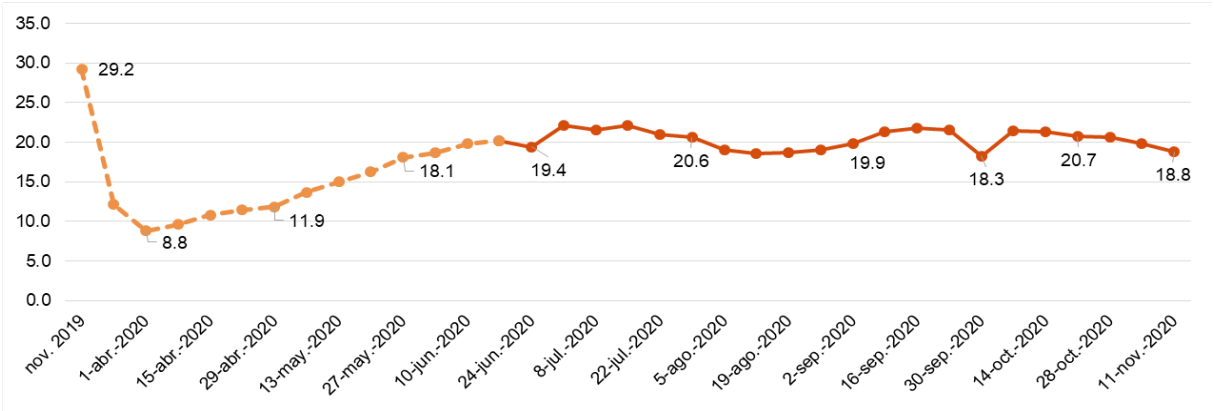
- **Daily mobility:** two days a week, every Wednesday and Sunday from June 24. Data on the number of trips between areas is published (Spain is divided into 3,214 areas).
- **Seasonal mobility** of the resident population in Spain: taking two specific summer days (July 18 and August 15) as reference, which will later be completed with two specific winter days (a weekend in November and Christmas Day). We studied how the resident population was distributed in each of the 3,214 areas on those specific dates.

Daily Mobility

After the end of the first state of alarm, on Wednesday, June 24, 2020 (a normal working day), 19.4% of the population left their area of residence during the central hours of the day -possibly to go to work or study- to a different area. This was almost 10 points less than in November 2019, prior to the pandemic, when this percentage was 29.2%.

Since the end of June of this year, the percentage of the population leaving their area of residence has ranged between 18.3% and 22.2% for a working day (Wednesday) during working hours. It should be noted, however, that the trend has been downward during the last weeks of October and November.

Percentage of the population leaving their area of residence



While in some areas of mobility in November 2019 the percentage of the population leaving their area of residence exceeded 70%, on November 11, 2020 the largest exodus only exceeded 40.0% in some neighbourhoods of Sant Boi de Llobregat (46.8%), Alcoy/Alcoi (44.7%) and Barcelona (43.7%).

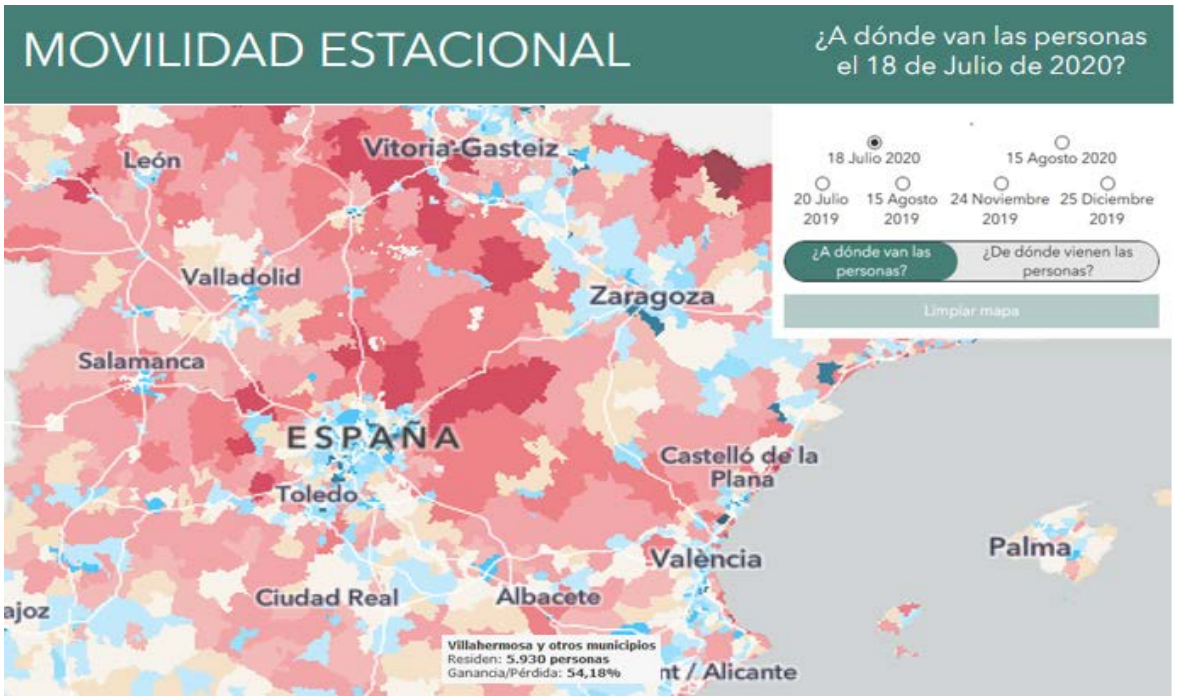
The two areas that received the most population daily in November 2019 (Alcobendas, with more than 60,000, and Ciudad Universitaria de Madrid, with 49,000) are no longer the main recipients of population in Spain (they now receive 24,000 and 22,000 people, respectively). This is possibly due to the promotion of teleworking in one case and *online* training in the other.

The areas that received the most population on a daily basis in November 2020 were in Elche, Madrid and Barcelona. In all of them the inflows exceeded 23,000 people. These figures were, however, around 36% lower than those from November 2019.

Where were we in the summer of 2020?

In the data and maps released today allows us to see how the resident population in Spain was distributed -by 3,214 areas into which the entire territory is divided- on two specific days in the summer of 2020, and compare that distribution with the same dates in 2019.

It should be noted that this data reflects only the mobility of the population residing in Spain, since the original source are national dialing codes. The movements of telephones with foreign numbers, which operate on roaming in Spain, are not reflected. These phones are normally in the hands of foreign tourists.



On July 18, 2020 (the night of Friday 17 to Saturday 18) the area of Noja, in Cantabria, experienced the greatest population gain in all of Spain (against the numbers on file in the municipal registrar), as was the case in 2019. It went from 6,407 residents to 36,663 people staying overnight. This meant that the population that usually stays overnight in this area was multiplied by nearly six. It is 3.3% higher than that registered on the same day in 2019.

The population of Sallent de Gállego, in the Huesca Pyrenees, multiplied by more than four. However, the population that spent the night that day was 24.7% lower than a year earlier.

In areas such as El Puerto de Santa María, Peñíscola, Oropesa del Mar, Gandía and Punta Umbría, the population that stayed overnight on July 18, 2020 was still very high (between two and three times higher than the registered population). But it was, on average, 26.7% lower than that registered the same day the previous year.

On August 15, 2020 (the night of Friday 14 to Saturday 15) the pattern was very similar, but in general terms with a greater amount of population displaced from their usual place of residence. As a result, 450% more population was concentrated in Noja than usual (in 2019 it was 549% more).

Many more people than those registered were also detected in mountainous (such as Sallent de Gállego, Alp or Valle de Hecho), coastal (such as Oropesa del Mar, Castell-Platja d'Aro or Peñiscola) and inland (such as Casalarreina or Valle de Valdebezana) areas. All these destinations were also among the most frequented on August 15, 2019. However, in that year the percentage of the total population spending the night in these areas was, on average, 19.8% higher than that registered in 2020.

In Oropesa del Mar and Peñíscola, the declines in the population that spent the night on August 15, 2020 exceeded 30% compared to the same day in 2019.

The mobility study allowed us to track, with great precision, population movements between origin and destination for each of the selected dates. If we focus on some of the busiest

destinations, the specific areas from which vacationers arrive can be determined (even at the district level):

Most frequent places of origin for visitors to some of the main vacation destinations (July 18 and August 15, 2020)

	July 18, 2020		August 15, 2020	
Destinations	Areas of origin	No. of people	Areas of origin	No. of people
Gandía	Dénia	270	Dénia	405
	Getafe (distrito 03)	266	Getafe (distrito 03)	274
	Alcorcón (distrito 02)	189	Arganda del Rey	232
	Arganda del Rey	177	Alcobendas (sección 027 y otras secciones del distrito 01)	196
	Cuenca (distrito 04)	173	Alcorcón (distrito 02)	189
Chiclana de la Frontera	Sevilla (SCD Número 10-B)	262	Pozuelo de Alarcón (distrito 01)	465
	Sevilla (SCD Número 3-A)	260	Majadahonda (distrito 02)	411
	Dos Hermanas (distrito 05)	251	Madrid (SCD Aravaca-Plantio-Valdemarin)	362
	Sevilla (SCD Número 11)	218	Madrid (SCD Mirasierra)	323
	Majadahonda (distrito 02)	217	Pozuelo de Alarcón (distrito 02)	313
Benidorm	Vitoria-Gasteiz (distrito 02)	134	Vitoria-Gasteiz (distrito 02)	606
	Albacete (distrito 01)	124	Vitoria-Gasteiz (distrito 05)	353
	Albacete (distrito 05)	109	Yecla	271
	Getafe (distrito 03)	104	Vitoria-Gasteiz (distrito 03)	186
	Tomelloso	99	Arganda del Rey	185
Torrevieja	Alcorcón (distrito 04)	270	Getafe (distrito 03)	454
	Murcia (SCD Número 1-B)	259	Alcorcón (distrito 04)	387
	Murcia (SCD Número 2-B)	241	Arganda del Rey	339
	Murcia (SCD Número 2-A)	239	Murcia (SCD Número 1-A)	308
	Getafe (distrito 03)	224	Getafe (distrito 04)	304
Santander	Burgos (distrito 05)	366	Burgos (distrito 05)	317
	Pozuelo de Alarcón (distrito 01)	150	Pozuelo de Alarcón (distrito 01)	211
	Palencia (distrito 07)	146	Palencia (distrito 07)	195
	Valladolid (SCD Parquesol - Arturo Eyries)	123	Pozuelo de Alarcón (distrito 02)	180
	Valladolid (SCD La Rubia - Covaresa - Puente Duero)	110	Madrid (SCD Aravaca-Plantio-Valdemarin)	170

The summer exodus from the big cities

Taking as a reference areas with more than 10,000 inhabitants, on August 15, 2020, less than 25% of the resident population was located in some areas of Salamanca, Zaragoza, Valencia and León and in the provinces of Barcelona and Madrid.

For the largest cities in Spain, the main summer destinations for people from Madrid were on the Levantine coast (Gandía and Denia), in Cádiz (Chiclana) and in Malaga (Marbella).

In the case of Barcelona, the most frequent destinations were places on the Catalan coast and the Pyrenees, such as Palafrugell, Calafell, and Platja d'Aro.

Residents of Valencia primarily chose destinations on the Levantine coast (especially Denia and Jávea); those in Seville opted for coastal areas in Cádiz and Huelva (such as Chipiona, Rota and Almonte); and those in Zaragoza headed for mountainous areas (such as Sallent de Gállego and Jaca) and the Catalan coast (Salou).

The situation in 2020 is analogous to what happened in the summer of 2019. However, in 2019 the flows of people were higher by 30.6%, on average, than those registered this year.

The five most frequent destinations for residents in the principal cities (July 18 and August 15, 2020)

	July 18, 2020		August 15, 2020	
Main cities of origin	Main destinations	No. of people	Main destinations	Nº de personas
Madrid	Dénia	5,158	Dénia	7,810
	Espinar, El	4,887	Chiclana de la Frontera (distrito 05)	6,044
	Gandia (distrito 04)	4,781	Gandia (distrito 04)	5,286
	Boceguillas y otros municipios	3,851	Marbella (distrito 03)	4,480
	Jávea/Xàbia	3,444	Sanxenxo	4,201
Barcelona	Palafrugell	6,681	Palafrugell	7,994
	Calafell	6,008	Calafell	6,343
	Castell-Platja d'Aro	4,632	Alp y otros municipios	6,118
	Begur y otros municipios	4,266	Castell-Platja d'Aro	5,888
	Alp y otros municipios	3,999	Begur y otros municipios	5,577
Valencia	Jávea/Xàbia	5,288	Jávea/Xàbia	6,349
	Dénia	3,802	Dénia	4,998
	Moncofa y Chilches/Xilxes	2,131	Viver y otros municipios	3,078
	Viver y otros municipios	2,079	Landete y otros municipios	1,738
	Benicasim/Benicàssim	1,389	Moncofa y Chilches/Xilxes	1,653
Sevilla	Chipiona	10,066	Chipiona	9,617
	Almonte	9,817	Rota	9,415
	Rota	9,794	Almonte	8,351
	Lepe	7,645	Isla Cristina	6,812
	Isla Cristina	7,047	Lepe	6,628
Zaragoza	Sallent de Gállego y otros municipios	4,501	Sallent de Gállego y otros municipios	6,937
	Salou	3,452	Jaca	5,688
	Peníscola/Peñíscola	3,388	Salou	5,049
	Jaca	3,333	Valle de Hecho y otros municipios	4,174
	Cambrils y Vinyols i els Arcs	2,903	Cambrils y Vinyols i els Arcs	4,115

Full and empty provinces and areas

While no tourist destination stood out much more than any other, the province of Ávila had the highest growth in population for July 18, 2020, with an increase of 27.2% (with the increases in Navaluenga and Sanchidrián being of particular note). The same thing happened in July 2019, except that then the population gain was 33.4% higher.

The second province with the highest population growth on July 18 was Segovia, with an increase of 25.4%. Next came Cantabria, with a of 23.0% increase in persons.

On the other hand, some provinces had much less population than that registered this summer. On July 18, 2020, only 78.0% of the population in the Community of Madrid were habitual residents. In Vizcaya, 82.5% and in the province of Zaragoza, 84.8%.

Some urban areas were practically empty. In the Canyelles neighborhood, in the city of Barcelona, Alcoy and Sant Boi de Llobregat, some areas had less than 15% of their population.

Some cities with more than 50,000 inhabitants also emptied out. On August 15, 2020, Alcalá de Henares and Pozuelo de Alarcón (both in the province of Madrid), had less than 41% of the usual overnight population. In Elda (Alicante) less than 45% of its population spent the night that day.

INE Mobility Projects

All this data are extracted from the mobility measurement project based on mobile phone positioning data during the second half of 2020. The INE launched this project following finalisation of the first state of alarm.

The work is based on aggregated data (total counts of origin-destination flows) and is fully anonymised from the country's three primary mobile phone operators.

At the end of 2019, with the aim of measuring daily (residence-work) and seasonal (residence-overnight stay) mobility on four specific dates, the INE launched a mobility study based on mobile telephony (called EM-1).

The original project was adapted during the state of alarm to measure population mobility and confinement (study EM-2), and it thus take advantage of data from mobile phone operators to obtain approximate indicators on the population that remained in their area of residence. Both studies (EM-1 and EM-2) are available on the INE website.

After the first state of alarm, the INE launched a third study to measure mobility during the second half of 2020 (called EM-3), which is published today. Daily mobility data will be offered for every Wednesday and Sunday from June 24 to December 30, 2020, as well as for four other selected dates for the year 2020 (July 18, August 15, November 22 and December 25), thus providing a panorama of how population is distributed on different dates. All study information is available at: https://www.ine.es/experimental/movilidad/experimental_em3.htm

This information will be continually updated on the web page, as data for each new day observed becomes available from the operators.

Methodological note

The main objective of this statistic is to monitor daily mobility during the second half of 2020 and to provide data on seasonal mobility for that year.

Results are obtained from a positioning analysis of more than 80% of mobile phones throughout Spain, prepared in close collaboration with the three main mobile phone operators (Orange, Telefónica and Vodafone).

Statistic type: Experimental, sporadic.

Population scope: The population scope consists of the mobile phones of the resident population in Spain with service from one of three above-mentioned operators; that is, mobile phones with national dialling codes. **Foreign-numbered telephones on roaming -normally used by tourists- are excluded.** The information requested refers only to mobile phones, not to all devices that may have a SIM card. This data is later extended to population totals; we can therefore implicitly affirm that the population scope reflected is that of the population residing in Spain.

Geographical scope: the entire national territory. The national territory is divided into 3,214 specific "mobility areas" for the project, each consisting of a minimum of 5,000 inhabitants and an average of nearly 15,000 inhabitants.

The "mobility area" is a more homogeneous unit than the municipality, but less detailed than each antenna's coverage area. The complete list of mobility areas and their geographical delimitation is published together with the technical project.

Reference period: For daily mobility data, the most frequent position of mobile phones is analysed from 10:00 to 16:00. For the seasonal mobility data for July 18 and August 15, 2020, the most frequent position of a mobile phone between the hours of 10pm and 6am is analysed. In the case of August 15, the area where the mobile phone is most frequently located from 10pm at night on day 14 to 6am in the morning on day 15 is taken as reference.

For more information the methodology can be accessed at:

https://www.ine.es/experimental/movilidad/exp_em3_proyecto.pdf