

A Provincial Housing Panel for Spain and a Shift-Share Instrument for Immigration

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SUMMARY. This note documents the data and code released with Working Paper 1. The package contains a balanced panel of Spain's 50 provinces for 2002–2026 with population by place of birth, house prices, rents, the dwelling stock and households; the settlement shares and national shifts needed to build a leave-one-out shift-share instrument for foreign-born inflows from 1998, 2001 or 2011 settlement patterns; geographic and planning measures of supply constraints; the stock of unsold new housing by province for 2015–2024, assembled from the Ministry of Housing's annual reports; and persons per household rebuilt from about 36,000 census sections of the population register for 2015–2023. Every series is public and every step is scripted. Data are released under CC BY 4.0 and code under the MIT licence.

1 Why a package

Spanish provincial housing and migration data are public but scattered across INE, the Ministry of Housing (MIVAU) and the Catastro, published in formats that change between editions, and in several cases available only as PDF tables. Two series in the package did not exist as machine-readable provincial panels: the stock of unsold new dwellings, which the Ministry publishes one edition at a time, and household size from the population register, which INE publishes only by census section, rounded to one decimal. The instrument requires settlement shares by country of birth for 59 origin categories and three base years, and national flows by origin from a different statistic. Assembling these took most of the time behind Working Paper 1; releasing them should save it for others.

2 Contents

The instrument. For province i and year t , $Z_{it} = \sum_n \lambda_{ni} \Delta M_{nt} (1 - \lambda_{ni}) / N_{it}$, where λ_{ni} is the province's share of Spain's residents born in origin n in the base year, ΔM_{nt} the national change in residents born in n during year t , and the factor $(1 - \lambda_{ni})$ removes the province's own expected contribution. Country of birth is used rather than nationality, so naturalisations do not reduce measured inflows. Users who prefer exact leave-one-out shifts, or a different set of origins, can rebuild Z from the shares and shifts files.

Timing. Stocks refer to 1 January of year t and flows to the calendar year t , so a wave labelled 2015–2024 runs from 1 January 2015 to 1 January 2025. The Atlas household-size indicator for year t refers to the register of 1 January $t + 1$.

TABLE 1. Files

File	Unit	Content
panel.csv	province $\times$ year	Population by birth, inflows, instruments, prices, rents, stock, households
shares_{1998,2001,2011}.csv	province $\times$ origin	Settlement shares λ_{ni} (Padrón, 1 January)
shifts_national.csv	year $\times$ origin	National change in residents born in each origin (ECP)
geography.csv	province	Unavailable land within 25 km of the capital (EU-DEM)
vacant_land.csv	province $\times$ year	Built and vacant urban land (Catastro), 46 provinces
unsold_stock.csv	province $\times$ year	Unsold new dwellings, 2015–2024 (MIVAU)
household_size.csv	province $\times$ year	Persons per household, register, 2015–2023 (INE ADRH)

3 Summary statistics

TABLE 2. Province-year observations, 2003–2024 unless stated

	Obs.	Mean	S.d.	Min	Max
Population (thousands)	1,100	918	1,143	88	7,009
Foreign-born inflow, % of population	1,100	0.56	0.72	-1.21	3.41
Instrument, 2001 shares, %	1,100	0.46	0.59	-1.00	3.81
Instrument, 2011 shares, %	1,100	0.51	0.63	-0.71	2.77
House price, €/m ²	1,006	1,346	478	635	3,167
House price growth, %	1,001	1.69	6.87	-18.66	25.42
Rent growth, %	598	1.00	1.85	-5.18	5.28
Dwelling-stock growth, %	1,100	1.12	0.96	-0.03	7.16
Principal-dwelling growth, %	1,100	1.14	2.19	-7.39	14.00
Spain-born 20–64 flow, % of population	1,100	-0.20	0.45	-1.27	2.37
Unavailable land (share)	50	0.34	0.26	0.01	0.92
Unsold new dwellings, % of stock	500	1.76	1.25	0.00	6.15
Persons per household (register)	450	2.48	0.15	2.14	2.85

Notes: Unweighted across provinces. Flows and growth rates in percent of the initial level (log points for growth rates). Unsold stock 2015–2024; household size 2015–2023.

4 Caveats

The dwelling-stock and household series are the Ministry’s estimates, partly model-based; the register-based household size is the direct alternative for recent years. The Ministry reports appraisal values it suppresses for lack of observations as zeros; the panel treats them as missing and drops years with fewer than three valid quarters. Unsold new housing is measured as the increase over 1 January 2004, so provinces whose stock has not grown since then record zero. The rental index excludes the Basque Country and Navarre, and the Catastro measure excludes them too. With 2001 shares, the instrument predicts price growth before the 2003–2008 wave, so first-wave price responses should not be read causally.

5 Use and citation

The raw files (about 1.1 GB) are not redistributed; the scripts document every table and download what can be downloaded programmatically. The estimation scripts reproduce the results of Working Paper 1, including shift-share-robust inference. Please cite the package as: Menéndez-Pidal, J. (2026), *Project Frontier Spanish Provincial Housing Panel and Shift-Share Instrument*, PF-DATA-001, v1.0, together with the original sources: INE (Padrón, Estadística Continua de Población, IPVA, Atlas de Distribución de Renta de los Hogares, ECV), MIVAU, the Dirección General del Catastro and the European Environment Agency.