

# Do the registration numbers on Airbnb listings exist in the official registries?

## Spain and New York around 20 May 2026

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### Abstract

On 20 May 2026 Regulation (EU) 2024/1028 began to apply. In areas with a registration procedure, platforms must make hosts display a registration number and must check those numbers at random. In judgments of 19 May, 21 May and 1 June 2026, Spain's Supreme Court annulled the national registration number, whose provisions had taken effect on 1 July 2025. That left the regional tourist registers as the numbers that can be checked.

We parsed the licence field of 227,224 Airbnb listings in Inside Airbnb snapshots taken just before and just after 20 May. The areas are Barcelona, the Girona area, València, Málaga, Sevilla, Madrid and New York City. We matched every well-formed number against the open registries of Catalonia, the Comunitat Valenciana and Andalucía, and against New York's Local Law 18 registry.

**In June 2026, in the five Spanish areas with an open registry, 2,066 of 31,222 active listings that showed a well-formed tourist-dwelling number (6.6%, 95% CI 6.3–6.9%) showed one we could not trace to any registered dwelling.** A further 557 (1.8%, CI 1.6–1.9%) showed a registered dwelling of their own municipality written in a recognisable wrong form: the Catalan control digit appended, the wrong province code, or an extra digit. About 45 of these would fit such a pattern by chance.

**Under the frozen rules.** We defined the wrong-form category after an independent review, when the classification rules were already frozen. Under the frozen rules, 2,623 of 31,222 (8.4%) were "not found", and in Barcelona 810 of 6,080 (13.3%).

**Barcelona** had the highest share:

- 642 of 6,080 (10.6%, CI 9.8–11.4%) not found;
- 168 (2.8%) in a wrong form.

388 of the 642 are listings for a private room, while Catalan law requires tourist dwellings to be let whole. That is an observation about listing type and licence type, not about any host.

**Little moved across 20 May.** The not-found rates were the same in March and June. Among listings present in both snapshots, 1,579 of the 1,653 whose number was not found in March showed the same number in June.

The labels did move:

- **Annulled national number.** Active listings in the six Spanish areas whose only number was the annulled national tourist number fell from 3.6% to 1.4%.
- **"Exempt" statements.** "Exempt" statements in the regional field rose from 1.5% to 16.6%, almost all of them "Exempt - seasonal rental".
- **Madrid.** No regional registry can be downloaded there, and regional law does not require a number in advertising. 6,634 of 15,782 active listings (42.0%) show a national number of the "non-tourist" category and no regional number. Of these, 4,916 (74.1%, 95% CI 73.0–75.1%) accept stays of 1–4 nights, and 3,561 (53.7%) collected 12 or more reviews in a year.

- **New York.** 1,776 of 4,184 active short-stay listings (42.4%) show "Exempt". Where the city's registry file links a listing to a registration, the listing shows that number (1,866 of 1,871).

**How much a match proves varies.** Take a random number below the highest number each registry has issued. It would be "found" in the listing's city 61% of the time in Sevilla, and 1% of the time in València. A missing number is not proof that a listing is illegal. A wrong form is not either, though it is exactly what a platform's random check would reject.

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## 1. Introduction

A registration number is the hinge of short-term rental regulation in Europe. A public registry issues it. Hosts must display it. Platforms must not publish listings without one, and since 20 May 2026 Regulation (EU) 2024/1028 asks platforms to check at random that the numbers are valid. Spain adds a twist. Its national registration procedure took effect on 1 July 2025 ("desplegando efectos sus disposiciones el 1 de julio de 2025", Royal Decree 1312/2024, final provision four), alongside the regional tourist registers. In May and June 2026 three judgments of the Supreme Court annulled it, together with its number, while the platform data-transmission duties survived.

The question here is simple and, as far as our searches show, unanswered with open data and a published method. When an Airbnb listing displays a registration number, does that number exist in the official registry? And did anything change when the Regulation began to apply and the national number fell?

The answer matters to regulators, who must decide what platform "random checks" should look like. It matters to platforms and property-management software, which carry the numbers. And it matters to anyone who reads a number on a listing as a sign of legality.

We use only open sources:

- Inside Airbnb's public scrapes, under CC BY 4.0;
- the regional registries that Catalonia, the Comunitat Valenciana and Andalucía publish as open data;
- the New York registry file published under Local Law 18.

Madrid has no downloadable registry. There we can only study what listings declare; we focus on the national numbers marked "non-tourist" (NT). New York is the comparison: one registry, one number format and a booking-service verification duty in force since 2023.

The contributions are:

1. Per-city shares of displayed numbers that are in the registry, are registered elsewhere, are a registered dwelling written in a recognisable wrong form, or cannot be traced. Each share has a 95% Wilson interval, before and after 20 May 2026.
2. A measure of how much such a check can say in each city: the chance that a random number below the registry's highest number would be found anyway (the in-range chance match).
3. A description of how Airbnb's licence field changed across 20 May.
4. Signals of tourist use among Madrid's "non-tourist" numbers.
5. An open, tested parser for the formats ( `scripts/stinum.py` ).

We publish aggregates only. No listing, host or individual number appears in this paper or in the data.

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## 2. Legal frame (quoted as in force on the snapshot dates)

All quotations were downloaded and checked literally: EU law from the Publications Office (Cellar), Spanish law from the BOE's consolidated texts with their version history, and regional decrees from the DOGV, BOJA and BOCM. Where a text could not be fetched, we say so (§7).

## 2.1 Regulation (EU) 2024/1028

Article 19: "It shall apply from 20 May 2026."

**Registration (art. 4(3)).** Member States shall ensure that:

- (b) registration procedures "allow for the automatic and immediate issue of a registration number, that shall not include personal data, for a specific unit upon the submission by the host of the information referred to in Article 5(1)";
- (f) "technical means are in place to assess the validity of registration numbers".

Article 4(5): "Member States shall ensure that registration numbers are included in a public and easily accessible registry."

**Platforms (art. 7(1)).** Platforms shall:

- (b) "ensure that hosts have provided a registration number prior to allowing the offering of the short-term accommodation rental services in respect of that unit, and that hosts display that registration number clearly as part of their listing";
- (c) "make reasonable efforts to randomly check on a regular basis, declarations of the hosts concerning the existence or not of a registration procedure [...] and, where such a procedure exists, the validity of the registration number provided by the host, through the use of the functionalities offered by the single digital entry points".

Article 7(1)(a) requires the interface to make hosts "self-declare whether the unit offered for short-term accommodation rental services is located in an area where a registration procedure has been established or applies".

**Single digital entry points (art. 10(3)(b)).** These must provide "a freely accessible and machine-readable online database or online interface for the checks referred to in Article 7(1), point (c)". Article 10(5) lets the Commission adopt "common specifications to establish a standardised structure of registration numbers". On 3 October 2026 we queried the Cellar SPARQL endpoint for acts that implement or are based on the Regulation. It returned no implementing act, only two European Parliament resolutions.

**Corrigendum of 22 September 2026.** It changes the cross-reference in Article 10(1) from "registration procedures pursuant to Article 4(1)" to "pursuant to Article 4(2)". It was published after our snapshots and does not affect the provisions above.

## 2.2 Spain's national registration number and its annulment

Royal Decree 1312/2024 created the *Registro Único de Arrendamientos*. In its original wording, article 9.3 provided that the Land Registrar "procederá a la asignación automática e inmediata de un número de registro, que recogerá la identificación de la categoría y tipo designado por la persona interesada". The categories included "alquiler de corta duración con una finalidad no turística". The decree does not publish the structure of the number. The national numbers displayed on listings are 53 characters long. Their fifth and sixth letters are **TU** or **NT**, as in **ESFCTU...** or **ESFCNT...**. We read them as the category: **TU** tourist, **NT** non-tourist. No source we found defines them. The data support the reading:

- 54,270 of 56,725 active **TU** numbers in the six Spanish areas, both snapshots pooled (95.7%), end with letters, that is, with an embedded regional tourist number;
- 1,070 of 20,212 **NT** numbers (5.3%) do.

The Madrid analysis rests on this reading.

Three judgments of the Supreme Court's Third Chamber annulled the procedure.

**Judgment of 19 May 2026** (appeal of the Generalitat Valenciana; BOE 8 June 2026, BOE-A-2026-12300). The ruling (*fallo*) decides:

"Anular los preceptos del Real Decreto impugnado referidos al procedimiento de registro único de arrendamientos y la obligación de la inscripción en el Registro de la Propiedad o en el de Bienes Muebles para obtener un número de registro que permita ofrecer los servicios de alquiler de alojamientos de corta duración a través de las plataformas en línea. En concreto, se anulan los siguientes preceptos: artículo 1 (en cuanto hace referencia al desarrollo del procedimiento de registro único de arrendamientos) artículo 2 apartados f), i) y j) (este último en lo relativo a los procedimientos de registro), artículo 5, artículo 6 (en lo relativo al procedimiento de registro único), artículo 8, artículo 9, artículo 10, artículo 12.b) y c), disp. adicional segunda, disposición final primera (en relación con los títulos que amparan la competencia para regular el procedimiento de registro único), y cualesquiera otras previsiones o menciones referidas al registro único contenidas en otros apartados de este real decreto. Desestimar el recurso en todo lo demás."

**Judgment of 21 May 2026** (Apartur and ATA; BOE 26 June 2026, BOE-A-2026-13893). The ruling declares null "los artículos 2, apartados f) y i), 5, 6, 8, 9, 10 y 12.b) del citado real decreto, así como los artículos 1, 2.j) y 6, si bien estos tres preceptos únicamente se anulan en lo relativo a las menciones que en ellos se hacen al procedimiento de Registro Único de Arrendamientos y al número de registro".

The **Auto of 11 June 2026**, published with it, rectifies the ruling:

"rectificar el error material advertido en el fundamento jurídico noveno y en la parte dispositiva de la sentencia núm. 629/2026, de 21 de mayo (recurso contencioso-administrativo núm. 1/54/2025) y aclarar dicha sentencia en el sentido de señalar que el artículo 6 del Real Decreto 1312/2024, de 23 de diciembre, no se anula en su integridad sino únicamente en lo relativo a las menciones que en dicho precepto se hacen al procedimiento de Registro Único de Arrendamientos y al número de registro."

**Judgment of 1 June 2026** (Región de Murcia; BOE 18 July 2026, BOE-A-2026-15677). It annuls the same list of provisions as the judgment of 19 May.

The judgment of 19 May orders publication "tal y como dispone el artículo 72.2 de la LJCA". That article reads: "Las sentencias firmes que anulen una disposición general tendrán efectos generales desde el día en que sea publicado su fallo y preceptos anulados en el mismo periódico oficial en que lo hubiera sido la disposición anulada." The BOE's consolidated text of the decree now marks articles 9 and 10 as "(Anulado)". The single digital entry point (article 7) and the monthly transmission of data to statistical offices (article 11) remain. Article 11 still provides that the entry point "transmitirá al Instituto Nacional de Estadística [...] datos relativos a cada unidad y, en particular, los referidos a actividad y números de registro obtenidos".

**Timing against our snapshots.** Our June snapshots fall after the judgments and after the first BOE publication (8 June 2026). The Barcelona (24 June) and Madrid (20 June) snapshots predate the publication of the 21 May judgment (26 June).

## 2.3 Regional rules on showing the number

**Catalonia.** Ley 13/2002 de turismo, art. 73.5, in force since 2020 and unchanged in both windows:

"El número de inscripción de los alojamientos turísticos en el Registro de Turismo de Cataluña debe constar en todo tipo de publicidad, promoción o comercialización."

Article 88 lists as a serious infringement, letter u) *ter*:

"Comercializar, contratar, ofrecer o facilitar alojamientos turísticos, o hacer publicidad de los mismos, sin hacer constar su número de inscripción en el Registro de Turismo de Cataluña o haciendo constar números o expresiones incorrectas"

So showing a wrong number is itself an infringement. But a number absent from an open-data copy of the registry is not by itself a wrong number. As §5.2 shows, many such numbers are a registered number written in a wrong form.

Article 50 bis.1 defines tourist dwellings (*habitatges d'ús turístic*, HUT) and adds: "No se permite la cesión por estancias de las viviendas de uso turístico, que deben cederse enteras." Shared homes (*llars compartides*) are a separate category (art. 50 quáter), with their own register numbers. We quote the BOE's Castilian text: the Catalan originals and Decret 75/2020 are behind robots.txt rules that do not allow our client.

**Comunitat Valenciana.** Ley 15/2018, art. 19.1.b), as worded by Decreto-ley 9/2024 (in force since 8 August 2024), requires owners of tourist dwellings to "hacer constar la exacta localización y el número de inscripción en el Registro de Turismo de la Comunitat Valenciana en todo tipo de publicidad que se realice".

Article 62.2 obliges platforms to "solicitar publicitar al titular de la vivienda turística a ofrecer en alquiler que acredite el número de registro válido". Decreto 10/2021, art. 33.2, in its version in force from 10 December 2024, reads: "La publicidad que se efectúe de las viviendas de uso turístico deberá incluir obligatoriamente su número de registro y su exacta localización."

Two provisions explain why registry entries disappear:

- Article 78.3.g) of the law cancels the entry of a tourist dwelling "cuando no se hubiera comunicado la referencia catastral del inmueble [...] antes del 31 de diciembre de 2024". That deadline predates both snapshots.
- Article 65.4 limits registrations to five years.

Article 65.1, in force since 8 August 2024, defines tourist dwellings as whole properties let "por un tiempo inferior o igual a 10 días, computados de forma continuada a un mismo arrendatario". This is context for the minimum stays in §5.6.

**Andalucía.** Decreto 28/2016, art. 9.4, 2016 wording; the wording in force on the snapshot dates is not verified: "Una vez inscrita la vivienda con fines turísticos, el código de inscripción en el Registro de Turismo de Andalucía habrá de indicarse en toda publicidad o promoción realizada por cualquier medio."

The open registry now labels all such dwellings "Vivienda de uso turístico" with codes `VUT/PP/n`, whereas many listings still show `VFT/PP/n`. We could not locate the amending decree in the BOJA issues we searched, so we treat the equivalence as an empirical question (§5.4). Ley 13/2011, art. 31, requires the elements of the administrative classification in "toda publicidad".

**Comunidad de Madrid.** No regional duty to show a number was in force in either window. The preamble of Decreto 29/2019 records it:

"Mediante Sentencia número 1741/2018, de 10 de diciembre, del Tribunal Supremo [...] se declaró la nulidad del artículo 17.5 del Decreto 79/2014 en virtud del cual se establecía que una vez presentada la declaración responsable de inicio de actividad se efectuaría la inscripción en el Registro de Empresas Turísticas, cuyo número de referencia debía constar en toda forma de publicidad."

Ley 1/1999, art. 23.2, still says that the register "será público y la inscripción en el mismo tendrá carácter voluntario". Decreto 27/2026, in force from 26 April 2026 (between our windows), rewrote article 17 without restoring the advertising duty. This claim rests on the 2019 and 2026 rewrites of article 17 and on a search of the consolidated Decreto 79/2014. In Madrid, then, the legal basis for a number on a listing was the national one, until it was annulled.

None of the regional texts we read defines the format of the number ( `HUTB-nnnnnn` , `CV-VUTnnnnnnn-V` , `VUT/MA/nnnnn` , `VT-nnnn` ). The formats come from the registries themselves.

## 2.4 New York City, Local Law 18 of 2022

The Office of Special Enforcement's rules (43 RCNY ch. 21–22, adopted with effect from 5 March 2023) define the registration number as one "issued by the administering agency in accordance with the registration of a dwelling

unit". § 21-10(4) requires: "A registered host must provide the short-term rental registration number in all advertisements or offers for short-term rental."

Under § 22-02(1), a booking service may not take a fee unless it has verified through the city's system either that the unit is in a Class B multiple dwelling on the city's published list, or that the registration is "currently valid" and tied to the unit, the listing and the host. Stays of 30 days or more are not short-term rentals. Registered hosts may not let the whole unit, under § 21-10(13): "A registered host shall not offer, arrange for, or allow the short-term rental of an entire registered dwelling unit."

"Exempt" is not a category in the rules. It is Airbnb's label. OSE's page states: "Starting September 5, 2023, OSE's initial phase of Local Law 18 enforcement will focus on collaborating with the booking platforms to ensure they are using the city's verification system". We read that page in the Internet Archive's capture of 22 September 2026, because nyc.gov refuses our client. The Administrative Code could not be read (HTTP 403), so this start date rests on OSE's page alone.

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### 3. Prior work

**What we searched.** All searches ran on 3 October 2026 (UTC times in `data/prior_work_search.csv`, 174 rows):

- 26 queries in English, Spanish and Catalan on Crossref (top 20 screened) and OpenAlex (top 25). Examples: "Airbnb registration number", "short-term rental registry validity", "vivienda de uso turístico número de registro Airbnb", "Local Law 18 New York short-term rental", "Regulation (EU) 2024/1028", "fake licence numbers short-term rental listings".
- Semantic Scholar: 20 attempts, 17 of which returned HTTP 429.
- GitHub: `gh search repos` (18 queries) and `gh search code` (9 queries).
- 38 official, press and NGO pages, fetched and grepped.
- arXiv API, after the review: the same 16 queries and 5 broader ones, at one request every three seconds as its API terms ask. The 16 conjunctive queries returned nothing. The broader ones returned one related paper (arXiv 2211.16617), which detects breaches of short-term-let rules in Irish Rent Pressure Zones from listing data, not from registration numbers.

Some pages were behind robots.txt rules that do not allow our client: three CBC articles on Montreal and Vancouver, and article 18573 of *Scripta Nova*. They may be relevant and remain unread. So does a CTV Montreal article on fake permit numbers, whose text is not in the static page.

**Checks of displayed numbers against official records exist.** The idea is not new:

- **Menorca.** Boto-García (2025) checked about 3,800 Airbnb listings of May 2024, one by one, in the island council's lookup tool. He reports 1,696 "LEGAL" (44.6%), 1,401 with no licence (36.9%), 117 duplicates (3.1%), 27 cancelled (0.7%) and 559 that could not be verified (14.7%). It covers one island and one date, uses an interactive tool rather than an open registry, and its purpose is to study host professionalism.
- **Philadelphia.** The City Controller (June 2026) checked the licence numbers in a platform's transaction report against city records: "An analysis of 3,734 licenses associated with STR rental bookings found that 1,327 licenses were inactive, expired, or ineligible license types". The data are not public.
- **Toronto.** A 2021 journalistic analysis found that "only 665, or 3.64 per cent, had a valid license number" and that 97 (0.53%) "had listed an invalid license number".
- **Amsterdam.** NRC (2024, via NL Times) used Inside Airbnb data. It found "at least 142 advertisements with obviously incorrect registration numbers", by format only.
- **Spain, at national scale.** The Ministry of Consumer Affairs ordered Airbnb, in May 2025, to remove 65,935 listings. Among the reasons: "Los anuncios incorporan números de licencia que no corresponden a los expedidos por las autoridades". In December 2025 it fined Airbnb €64,055,311 over 65,122 listings, including for "indicando

un número de licencia o registro que no se corresponde con la numeración utilizada por los registros". The ministry publishes totals, with no denominator, no per-city rates and no method.

- **Spain, the national register.** The Ministry of Housing published figures on the national register, as reported by Europa Press. On 2 September 2025, quoted by Bolsamanía, it said the register "ha revocado 34.529 solicitudes de inmuebles para operar como apartamento turístico de las 68.594 que se intentaron inscribir entre julio y agosto". On 14 September 2025, quoted by Alicante Plaza, it gave per-city counts of revoked applications: "Sevilla lidera la tabla de solicitudes revocadas, con 2.289 en total, seguido de Marbella (Málaga), con 1.802 solicitudes; Barcelona (1.564); Málaga (1.471); Madrid (1.257) [...] Valencia (731)". On Madrid it said: "el 83% de los pisos que han solicitado registrarse lo han hecho como temporales, y solo el 17% como turísticos". These figures count applications to the annulled national register, not listings. They bear on §5.6: Madrid's "non-tourist" numbers were the norm there from the start.
- **Catalonia.** The Generalitat's monitoring contractor is quoted by 3Cat (July 2025): "si el 2016 el 35% dels anuncis turístics presentaven alguna irregularitat legal o administrativa, ara s'ha reduït al 5%". Its definitions and data are not public.

**Studies of registration rules mostly measure effects, not validity.** Examples:

- San Francisco: Bibler, Teltser and Tremblay (2025) find that the registration requirement "reduced Airbnb availability by 20%–27%";
- Ireland: arXiv 2211.16617 detects breaches of short-term-let rules from listing data;
- Paris: Boto-García et al. (2023);
- France: Déjean, Robertson and Suire (2025);
- Vienna: Banabak and Sielker (2026);
- New York after Local Law 18: Marsella (2026); Diaz (2026).

Inside Airbnb's 2026 report counts how many listings show a licence or registration number at all, as a proxy for regulation, not whether the numbers are valid. In New York, the OSE dataset itself links registrations to listing numbers. A registry-side count of New York's legal market therefore needs no scraping, and our New York arm is a comparison, not a contribution.

On GitHub, no repository computes a validity rate for displayed numbers against a registry for our cities. The nearest ones scrape platforms (Granada, Mallorca), which we do not, or flag New York listings by rules unrelated to the registry.

**What is new here, narrowly.** We found no published study that does all of the following:

- uses open listing data and open registries with a released parser, and rules frozen before matching;
- reports per city the share of displayed numbers that are in the registry, in another municipality, a registered number written wrongly, or absent, with intervals and with the chance of an accidental match;
- covers Barcelona, the Girona area, València, Málaga, Sevilla and Madrid's "non-tourist" numbers;
- does this just before and just after 20 May 2026, when Regulation 2024/1028 began to apply and the Spanish national number was annulled.

That measurement is our contribution. The finding that some listings show numbers that do not exist is not.

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## 4. Data and method

`METHOD.md` gives every rule; this is a summary.

## 4.1 Data

**Listings.** Fourteen Inside Airbnb snapshots: for each area, the last scrape before 20 May 2026 (16–31 March) and the first after it (14–30 June). They contain 227,224 listings, 133,505 of them active (at least one review in the previous twelve months). The `license` field holds what Airbnb displays.

**Spanish registries**, downloaded on 3 October 2026:

| REGISTRY                                              | ROWS                   | STATE OF THE COPY                                                              | LICENCE OR TERMS                                                                 |
|-------------------------------------------------------|------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Registre de Turisme de Catalunya (RTC)                | 112,714 establishments | rows last updated 31 July 2026; the publisher lists only establishments "Alta" | "See Terms of Use"; licence not verified (the licence page is behind robots.txt) |
| Viviendas turísticas de la Comunitat Valenciana (GVA) | 90,097                 | daily file                                                                     | CC BY                                                                            |
| OpenRTA, Andalucía                                    | 175,432                | updated 3 October 2026                                                         | CC BY 4.0                                                                        |

**New York registry.** We used the 25 June 2025 dataset: 3,136 registrations, 2,910 of them linked to Airbnb listing numbers. nyc.gov answered HTTP 403 to every request from our client, for robots.txt and for content alike. We therefore read the file from the Internet Archive's capture of 8 November 2025. That copy is acceptable here: the dataset is published under Local Law 18, it carries no names, and we redistribute only counts.

The file is seven to twelve months older than our listings. OSE's page, captured on 9 May 2026, already offered a dataset of 7 January 2026, but the Internet Archive holds no copy of it.

Two registries were not used because their robots.txt does not allow downloads: Barcelona City Council's quarterly list of tourist dwellings and the Comunidad de Madrid's open-data portal.

## 4.2 Parsing and matching

`scripts/stinum.py` splits Airbnb's labelled blocks ("Spain - National registration number", "<Region> - Regional registration number") and parses each value into a status: ok, placeholder, malformed or unrecognised, exempt, or empty. For well-formed numbers it builds a canonical key:

- `HUTB-nnnnnn` (Catalonia);
- `CV-VUTnnnnnnn-V` (Comunitat Valenciana; the older `VT-nnnnn-V` is zero-padded to this form);
- `VUT/MA/nnnnn` (Andalucía; VFT and VUT are one series);
- `OSE-STRREG-nnnnnnn` (New York).

A key is **in registry** if the registry has it in the listing's municipality, and **in another municipality** if it has it elsewhere. Every listing gets one primary category (§1.5 of `METHOD.md`).

We wrote these rules down and recorded their SHA-256 before matching any listing against a registry. The rates were not unknown at that point, though. The preliminary scouting that proposed this study had already estimated two of them: 13.6% of Barcelona's HUT numbers missing from both registries, and 77% of Madrid's "non-tourist" listings accepting 1–4 nights.

Five later changes are listed as deviations, with the numbers before and after (`METHOD.md` §9). Three matter:

- an alias table for six Girona-area municipalities whose official names changed;

- moving Andalusian apartments and rural houses to "no usable registry", because OpenRTA lists only 178 apartment establishments in the whole region;
- **the wrong-form category**, added after the independent review (§9).

**The wrong-form rules.** The reviewer found that about one in five "not found" numbers is a registered dwelling of the listing's own municipality written in a recognisable wrong form. We turned the three patterns into rules. Each one applies only to a number that is not in the registry as written:

- **R1, Catalonia: control digit appended.** The leading zeros are dropped and the RTC's two-digit control digit is appended: HUTB-00abcd with control digit ef is shown as HUTB-abcdef. The rule requires that abcd is a registered number in the listing's municipality and that ef is that entry's control digit.
- **R2, Catalonia: wrong province code.** The HUT prefix carries the wrong province code, for example HUTB-n on a Girona-area listing where HUTG-n is registered in the same municipality.
- **R3, Málaga: an extra digit.** A six-digit VUT/MA number above the series maximum whose first five digits are registered in the municipality.

R3 is not applied in Sevilla. Its series maximum is 15,585, and 61% of the numbers below it are registered in the city, so whether a match there is evidence depends on the null (METHOD.md §4). Applying it would move 21 listings, 0.4 points, from "not found" to "wrong form".

**Chance.** For every number eligible for a rule, we computed the probability that it would satisfy the rule by chance:

- R1: the chance of hitting the entry's control digit, about 1%;
- R2: the share of the other province series registered in the municipality;
- R3: the share of five-digit numbers registered in Málaga, 12.9%.

We report the expected count next to every observed count. A wrong form is a result in itself: it is the kind of entry a random check against the registry (Regulation 2024/1028, art. 7(1)(c)) would reject.

## 4.3 Measures

**H1.** We take active listings whose regional field shows a well-formed tourist-dwelling number with an open registry (HUT\\*, CV-VUT, VFT/VUT). H1 is the share of them that falls into each of four groups:

- in registry;
- in another municipality;
- registered dwelling in a wrong form;
- not found, the residual.

The frozen rules had only "not found" for the last two groups combined. We report that figure too.

**In-range chance match.** For each such listing, the share of the numbers below the highest number the registry has issued in its series that are registered in the listing's municipality, averaged over listings. It is the probability that a random number *below the registry's highest number* would be "found". We also give the same share over the whole range the format allows (all six-digit numbers for HUT, for instance), which is much lower.

**Signals of tourist use** for "non-tourist" and "exempt" listings, reported as signals, not proof:

- minimum stay  $\leq 4$  nights;
- minimum stay  $\leq 31$  nights;
- 12 or more reviews in the last twelve months.

All proportions carry Wilson 95% intervals. They treat listings as independent, which they are not quite: a host's listings, and listings sharing a number, are correlated. The intervals are therefore somewhat too narrow; §5.1 gives a sensitivity check on distinct numbers. Pooled figures add counts across areas.

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## 5. Results

### 5.1 Spain: are the tourist-dwelling numbers in the registry?

**Table 1.** Active listings showing a well-formed tourist-dwelling number, by registry match.

| AREA           | SNAPSHOT   | SHOWN  | IN<br>REGISTRY    | OTHER<br>MUNICIPALITY | REGISTERED,<br>WRONG FORM<br>(BY CHANCE) | NOT<br>FOUND<br>(95%<br>CI) | NOT<br>FOUND,<br>FROZEN<br>RULES |
|----------------|------------|--------|-------------------|-----------------------|------------------------------------------|-----------------------------|----------------------------------|
| Barcelona      | 2026-03-21 | 5,370  | 4,607<br>(85.8%)  | 48 (0.9%)             | 157 (2.9%; ≈ 6)                          | 558<br>(10.4%,<br>9.6–11.2) | 715<br>(13.3%)                   |
| Barcelona      | 2026-06-24 | 6,080  | 5,217<br>(85.8%)  | 53 (0.9%)             | 168 (2.8%; ≈ 7)                          | 642<br>(10.6%,<br>9.8–11.4) | 810<br>(13.3%)                   |
| Girona<br>area | 2026-03-31 | 9,832  | 8,982<br>(91.4%)  | 259 (2.6%)            | 171 (1.7%; ≈ 8)                          | 420<br>(4.3%,<br>3.9–4.7)   | 591<br>(6.0%)                    |
| Girona<br>area | 2026-06-30 | 11,597 | 10,564<br>(91.1%) | 313 (2.7%)            | 184 (1.6%; ≈ 9)                          | 536<br>(4.6%,<br>4.3–5.0)   | 720<br>(6.2%)                    |
| València       | 2026-03-28 | 2,567  | 2,308<br>(89.9%)  | 41 (1.6%)             | —                                        | 218<br>(8.5%,<br>7.5–9.6)   | 218<br>(8.5%)                    |
| València       | 2026-06-26 | 3,117  | 2,762<br>(88.6%)  | 61 (2.0%)             | —                                        | 294<br>(9.4%,<br>8.5–10.5)  | 294<br>(9.4%)                    |
| Málaga         | 2026-03-31 | 5,041  | 4,585<br>(91.0%)  | 84 (1.7%)             | 147 (2.9%; ≈ 21)                         | 225<br>(4.5%,<br>3.9–5.1)   | 372<br>(7.4%)                    |
| Málaga         | 2026-06-30 | 5,651  | 5,103<br>(90.3%)  | 104 (1.8%)            | 205 (3.6%; ≈ 29)                         | 239<br>(4.2%,<br>3.7–4.8)   | 444<br>(7.9%)                    |
| Sevilla        | 2026-03-31 | 4,420  | 4,094<br>(92.6%)  | 11 (0.2%)             | —                                        | 315<br>(7.1%,<br>6.4–7.9)   | 315<br>(7.1%)                    |
|                |            |        |                   |                       |                                          |                             |                                  |

| AREA    | SNAPSHOT       | SHOWN | IN<br>REGISTRY   | OTHER<br>MUNICIPALITY | REGISTERED,<br>WRONG FORM<br>(BY CHANCE) | NOT<br>FOUND<br>(95%<br>CI)   | NOT<br>FOUND,<br>FROZEN<br>RULES |
|---------|----------------|-------|------------------|-----------------------|------------------------------------------|-------------------------------|----------------------------------|
| Sevilla | 2026-<br>06-30 | 4,777 | 4,415<br>(92.4%) | 7 (0.1%)              | —                                        | 355<br>(7.4%,<br>6.7–<br>8.2) | 355<br>(7.4%)                    |

"—": no wrong-form rule applies.

#### Pooled over the five areas.

|                         | JUNE                                                 | MARCH                            |
|-------------------------|------------------------------------------------------|----------------------------------|
| in another municipality | 538 (1.7%)                                           | 443 (1.6%)                       |
| registered, wrong form  | 557 (1.8%, CI 1.6–1.9%); about 45 expected by chance | 475 (1.7%)                       |
| not found (residual)    | 2,066 of 31,222 (6.6%, 95% CI 6.3–6.9%)              | 1,736 of 27,230 (6.4%, 6.1–6.7%) |
| not found, frozen rules | 2,623 of 31,222 (8.4%)                               | 2,211 of 27,230 (8.1%)           |

No area's interval moved meaningfully between March and June.

**Distinct numbers.** Counting distinct numbers instead of listings gives similar shares. In Barcelona in June, 571 of 5,670 distinct numbers (10.1%) are not found, against 10.6% of listings.

## 5.2 What the missing numbers look like

**Wrong forms (June).** In Barcelona, 645 of the missing numbers have first four digits that are a registered Barcelona HUT number. 168 of them end with that entry's own control digit, where about 7 would by chance. In the Girona area:

- 155 numbers carry the HUTB prefix where the same number is registered as HUTG in the listing's municipality, against about 9 by chance;
- 29 more are control-digit concatenations.

In Málaga, 222 missing numbers have six digits and lie above the series maximum. 205 of them become a registered Málaga dwelling once the last digit is dropped, against about 29 by chance. In 183 of those 205, the listing's national number ends with the same six digits, so the extra digit was already there when the national number was requested.

**Out of the registry's range.** In the frozen analysis, 688 of Barcelona's 810 missing numbers were higher than 79,999, the highest HUTB number in the registry. That says less than it seems. A four-digit registered number with a two-digit control digit appended also lands above 79,999, and 162 of the 688 are exactly that. The Catalan HUT numbering is also block-structured rather than sequential: the registry has no HUTB numbers between 20,000 and 29,999. After the wrong-form rules, 526 of the residual 642 are still above the registry's highest number. We do not interpret that further. The national numbers of residual listings point the same way:

- in Barcelona, 123 of the 205 residual not-found listings whose national tourist number ends with a cleanly readable Catalan number embed a *different* number registered in Barcelona;
- among listings whose number is found, 251 of 4,176 do ( `data/diagnostics.json` ).

So the residual is an upper bound on numbers that belong to no registered dwelling.

**Private rooms.** In Barcelona, 388 of the 642 listings with a residual missing number offer a private room. Among the 5,217 whose number is in the registry, only 63 do, and none of the 168 wrong-form listings does. Catalan law says tourist dwellings "deben cederse enteras" (art. 50 bis), and shared homes, which may let rooms, have their own LL numbers. This is an observation about listing type and licence type, not a finding about any host. The room type is the host's own description, the number may belong to a whole dwelling the same host also lets, and a shared-home host may have typed an HUT-style number. In the Girona area, private rooms are 35 of the 536 residual missing numbers.

**València.** Most missing numbers fall inside the registry's range (278 of 294). That fits cancelled entries or typing errors. Cancellation, though, would have to postdate the scrape (§7).

**The same listings, both times.** 68,174 Spanish listings appear in both snapshots. 1,653 of them showed a tourist-dwelling number not found in March. In June, 1,579 of those (95.5%) showed the same number, still not found. A wrong number tends to stay on its listing.

**Shared numbers.** In June, 423 of the 5,860 distinct numbers shown by active Barcelona listings appear on two or more listings (1,276 listings); 161 of them on listings of different hosts (433 listings). A licence can legitimately appear on more than one listing of the same dwelling. Across hosts that is less likely, but not impossible: management companies operate under several host accounts. We report these counts without judging them.

### 5.3 Placeholders and malformed values

Placeholders (number part zero) are rare. In June there were 23 active Barcelona listings with `HUTB-000000` and 60 active Madrid listings with `VT-0` , plus 42 with `TR-0` .

In June, malformed or unrecognised regional values are at most 1.7% of active listings in any area:

- València: 103, including register series we do not parse;
- Madrid: 137, for example "En proceso", file numbers and tax ids.

### 5.4 How much a match can prove

**In-range chance match (June).** Take a random number below the highest number the registry has issued in the series. It would be registered in the listing's municipality with probability:

- Barcelona 13.3%;
- Girona area 2.7%;
- València 1.1%;
- Málaga 12.3%;
- Sevilla 61%.

Over the whole range the format allows, the same shares are much lower: Barcelona 1.1%, Sevilla 9.5%, València 0.1%.

**Sevilla.** The `VUT/SE` series is dense: 9,549 of the 15,585 numbers in its range belong to dwellings in the city. Most wrong Sevilla numbers below the maximum would therefore be "found". Numbers above the maximum are always caught, and 134 of Sevilla's 355 missing numbers are such. Assume wrong numbers fell uniformly below the maximum. Then the 221 missing in-range numbers would stand for about 570 wrong ones, and the true share would

be about 15%, twice the 7.4% measured. The wrong-form patterns show that real errors are not uniform, so take this only as an order of magnitude. Elsewhere a match is strong evidence.

**Format checks.** Three checks support the parser and the mappings:

- **Catalan control digit.** In the Girona area, 853 of 865 numbers written with a two-digit suffix and found in the registry carry the registry's own control digit. A coincidence would occur about 1% of the time.
- **Valencian old format.** 2,132 of 2,405 old-format València numbers ( VT-... ), mapped to CV-VUT... , are in the registry, against a 1.1% chance rate. For current-format numbers the figure is 531 of 545. The mapping is right for most old numbers. The gap (88.6% against 97.4%) is consistent with old registrations cancelled since 2024.
- **Andalusian VFT/VUT.** VFT codes match as often as VUT codes. In Málaga, 3,164 of 3,433 VFT codes (92.2%) are found against 2,043 of 2,218 VUT codes (92.1%). In Sevilla the figures are 91.6% and 93.6%.

5.5 All active listings, by category

**Table 2.** Active listings by primary category, June 2026 (% of active listings in the area).

| CATEGORY                                                | BARCELONA | GIRONA<br>AREA | VALÈNCIA | MÁLAGA | SEVILLA | MADRID |
|---------------------------------------------------------|-----------|----------------|----------|--------|---------|--------|
| active listings                                         | 9,666     | 13,481         | 6,219    | 7,541  | 6,706   | 15,782 |
| in registry, same municipality                          | 58.3      | 85.8           | 44.4     | 68.6   | 67.5    | —      |
| in registry, other municipality                         | 0.6       | 2.4            | 1.0      | 1.4    | 0.1     | —      |
| registered, wrong form                                  | 2.2       | 1.6            | 0.0      | 2.7    | 0.0     | —      |
| not found                                               | 6.8       | 4.2            | 4.7      | 3.3    | 5.7     | —      |
| number of a series without<br>usable registry           | 1.5       | 0.0            | 9.2      | 16.0   | 19.4    | 21.0   |
| placeholder                                             | 0.2       | 0.1            | 0.1      | 0.0    | 0.0     | 0.6    |
| malformed or unrecognised                               | 0.0       | 0.1            | 1.7      | 0.5    | 0.5     | 0.9    |
| national tourist (TU) number<br>only                    | 1.3       | 1.2            | 1.2      | 0.3    | 0.3     | 2.8    |
| national non-tourist (NT)<br>number, no regional number | 19.0      | 0.5            | 22.4     | 0.8    | 0.5     | 42.0   |
| national number, other prefix                           | 0.1       | 0.0            | 0.3      | 0.0    | 0.0     | 0.6    |
| "Exempt" only                                           | 1.5       | 0.2            | 1.5      | 0.5    | 1.0     | 7.7    |
| empty                                                   | 8.4       | 3.9            | 13.6     | 5.8    | 5.1     | 24.5   |

Counts, intervals, the March figures and shares over all listings are in `data/categories.csv` . "Wrong form" and "not found" here include every series with an open registry, such as hotels. Table 1 covers tourist dwellings only.

5.6 National numbers and the "non-tourist" route

- six areas: from 1,897 of 52,938 (3.6%) in March to 840 of 59,395 (1.4%) in June;
- Barcelona: from 668 to 125 listings.

Among listings present in both snapshots that showed only a national tourist number in March, 1,105 of 2,213 showed a regional number found in the registry in June.

**Madrid's "non-tourist" numbers (frozen measure H3).** In June, 6,634 of 15,782 active listings (42.0%) showed a national number of the "non-tourist" (NT) category and no regional number. In March it was 5,619 of 15,238 (36.9%). Of the 6,634:

- 4,916 (74.1%, 95% CI 73.0–75.1%) accept a minimum stay of 1–4 nights;
- 98.6% accept 31 nights or fewer;
- 3,561 (53.7%) collected 12 or more reviews in the previous twelve months;
- the median is 13 reviews.

Spanish tenancy law sets no minimum length for a seasonal let. A one-night minimum is therefore not proof of tourist use. But over half of these listings had at least one stay a month on average. This fits the Ministry of Housing's report that 83% of Madrid applications to the national register were for seasonal lets (§3).

**Secondary measure, added after the freeze.** The frozen measure leaves out listings that show an NT number *and* a regional number, usually a VT one. We added a row for every listing showing an NT number, whatever its regional field. It covers 7,659 of 15,782 active listings (48.5%); 5,872 of them (76.7%) accept 1–4 nights. It is reported in `data/signals.csv` as `shows_NT_number`. It is not the headline, because a listing that also displays a tourist registration has a better claim to be a tourist let, and counting it under "non-tourist" would inflate the signal.

**Barcelona is different.** Of 1,952 active listings with an NT number, only 107 (5.5%) accept 4 nights or fewer, and the median is 2 reviews a year.

**València's NT listings are mostly new.** Active listings showing an NT number rose from 351 to 1,649. Those accepting 1–4 nights fell from 94.0% to 21.0%. But 1,271 of the 1,649 are not in the March file at all, and only 74 of these new listings accept 4 nights or fewer. Of the 378 that were already there in March, 273 still do. So the change is mostly new listings (possibly a change in Inside Airbnb's coverage, possibly mid-term lets), not relabelling. Valencian law defines a tourist dwelling as a let of up to 10 days (art. 65.1), which is context for minimum stays of 5–31 nights.

## 5.7 What changed across 20 May: the labels

The not-found rates did not change; Airbnb's licence field did.

**"Exempt" statements.** In March, "Exempt" statements in the regional field carried no reason. In June they carried one:

- "Exempt" statements in the regional field of the six Spanish areas rose from 797 (1.5%) to 9,848 (16.6%) of active listings;
- 9,601 of the June ones read "Exempt - seasonal rental";
- in Madrid they appear on 6,677 of 15,782 active listings (42.3%), against none worded that way in March;
- in the national field, the reasons now include "hotel", "hostel" and "tourist apartment".

This looks like the self-declaration of Article 7(1)(a): whether the unit is in an area with a registration procedure. We cannot see how Airbnb fills the field, only what it displays.

**Paired listings.** The labels changed on the same listings, not only through new ones. Among the 48,299 Spanish listings active in both snapshots, regional "Exempt" statements went from 699 (1.4%) to 7,230 (15.0%). The paired

table ( `data/transitions.csv` ) shows few other category changes: 9,049 of 9,367 Spanish listings in the non-tourist category in March were still there in June.

## 5.8 New York

In June, 2,149 of 4,184 active short-stay listings (minimum stay under 30 nights) showed an `OSE-STRREG` number. 1,776 of 4,184 active short-stay listings (42.4%) showed "Exempt", and 259 showed nothing.

**Numbers within the registry's range.** 1,931 numbers are at or below 3,137, the highest number in the 25 June 2025 registry file. All 1,931 are in the file:

- 1,927 with status "Registered" and 4 "Expired";
- 1,928 in the same borough.

**Numbers above the range.** The other 218 numbers were issued after the file's date and could not be checked.

**Why the range check proves little.** The numbering is dense (3,136 registrations among numbers 1–3,137), so being found there means little. The stronger check is the city's own link between registrations and listings. OSE's file associates 1,871 of the June listings that show a number with a registration, and 1,866 of 1,871 show exactly that registration's number.

**Room type.** 502 of the 2,149 listings showing a number are entire homes. Under § 21-10(13) a registered host "shall not offer, arrange for, or allow the short-term rental of an entire registered dwelling unit". But Airbnb's room type is the host's own description.

**"Exempt".** These signals use all 1,784 active listings with "Exempt", including the 8 with a minimum stay of 30 nights or more; the 1,776 above are the short-stay ones. Of the 1,784, 94.1% accept stays of 4 nights or fewer and 60.8% had 12 or more reviews in a year. The rules allow two cases without a number: Class B buildings on the city's list (hotels and similar) and stays of 30 days or more. A Class B listing would also show short stays and many reviews, so these signals cannot separate legitimate from improper "Exempt" claims.

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## 6. Discussion

**Most numbers check out.** Where a regional registry is open, nine in ten displayed tourist-dwelling numbers are in it, in the right municipality. The rest splits in two:

- **Registered numbers written wrongly**, about one in fifty: a control digit glued on, the wrong province code, or an extra digit.
- **Numbers we could not trace**, one in fifteen pooled and one in ten in Barcelona.

Our first, frozen analysis lumped the two together. An independent review showed that much of what looked like out-of-range numbers in Barcelona was the first pattern. The residual is an upper bound: some residual listings carry a different registered number inside their national number. This does not identify any listing as illegal.

**What a random check would find.** A wrong form is the kind of entry a platform's random check against the registry would reject, and could be the object of such a check if the regional registers are treated as the Regulation's registration procedure (art. 7(1)(c)). It would also be easy to correct. Barcelona's residual shows a different pattern: missing numbers that are often on room listings. It deserves a closer look by those who hold the full registry, not a reading from open data.

**The checks need a registry they can read.** Article 10(3)(b) asks for "a freely accessible and machine-readable" interface for such checks. Of our six Spanish areas, three regional registries are open data, but with gaps:

- Catalonia publishes only active entries, and its licence could not be verified;
- OpenRTA's CSV mixes two layouts and covers few apartments;

- Barcelona's municipal list exists but its robots.txt forbids downloading it;
- Madrid's portal forbids all automated access.

**A check's power depends on the numbering.** Where numbers are dense, as in Sevilla, almost any number is "valid". A check that only asks "does this number exist?" then proves little. It must also test the municipality and, ideally, the unit. The Regulation's standardised number structure (art. 10(5)) has not been adopted. The registries' numbers are plain sequences. Catalonia's control digit could serve as a check digit, but few hosts write it, and we found no check digit in the other formats.

**The labels changed, the numbers did not.** The 20 May date and the annulment changed what Airbnb's field says. The annulled national-only numbers mostly gave way to regional numbers, and "Exempt – seasonal rental" statements spread, on the same listings as well as on new ones. Whether a number is right did not change, and wrong numbers stayed on their listings.

**Madrid.** Regional law requires no number in advertising. The national number now in listings is one the Supreme Court annulled. Two in five of Madrid's active listings show only a non-tourist national number, and three quarters of those accept 1–4 night stays. Without an open register and with "seasonal" self-declarations, the Regulation's random checks have nothing to check against in Madrid.

**New York, for comparison.** The city links each registration to its listings and the platform must verify through the city's system. There, the numbers shown match. The open question moves to "Exempt", which 42% of active short-stay listings claim and which the data cannot test.

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## 7. Limitations

- **A missing number is not proof of an illegal listing.** It may be:
  - a registered number written in a form our rules do not recognise (the wrong-form rules cover three patterns; §5.2 suggests others remain);
  - an entry cancelled between the scrape and our registry copy. The copies were taken on 31 July (RTC) and 3 October 2026 (GVA, OpenRTA), after both snapshots, and the RTC and GVA files list only current entries. "Not yet registered" is therefore unlikely; "since cancelled" is possible, and affects March more than June;
  - a typo;
  - a series we treat as without registry;
  - in the Girona area only, a listing placed in the wrong municipality by Inside Airbnb's approximate coordinates. The four city areas use the city as the municipality, which is correct for their districts.

We do not check that a number belongs to the dwelling advertised; we match numbers and municipalities, not addresses. A licence covering several units explains shared numbers (§5.2), not missing ones.

- **The wrong-form rules came after the review.** They were defined after the rules were frozen and after the reviewer had seen the data. Each has a chance baseline, and the figures under the frozen rules are given next to them (Table 1; `METHOD.md` §9). They should be read as a post-hoc but tested correction, not as a pre-registered measure.
- **Independence.** Wilson intervals treat listings as independent. Listings of the same host, and listings sharing a number, are not. The intervals are therefore too narrow. Counting distinct numbers gives similar shares (§5.1).
- **One registry copy for both snapshots.** An entry valid in March and cancelled before July or October counts as "not found" in March. The window is shorter for June. A stable rate is therefore compatible with a small real increase.
- **A found number is not proof of a legal listing.** Where numbering is dense, wrong numbers are found by chance (§5.4). A real number may also be used by someone else.

- **Inside Airbnb** scrapes are partial and approximate. "Active" relies on reviews, which under-counts listings that are booked but rarely reviewed. The "Girona" area is Inside Airbnb's, not the province.
  - **Registry snapshots.** New York's copy is a year older than the June listings, so 218 numbers could not be tested. Madrid could not be tested at all.
  - **Parser.** The rules for each region come from the registries' own data. No regional text we read defines the format. The Valencian old-to-new mapping and the Andalusian VFT/VUT equivalence are supported by the data (§5.4), not by a norm.
  - **Legal reading.**
    - The Catalan decree and the Catalan originals were behind robots.txt; we quote the BOE's Castilian text of the law.
    - The Andalusian amending decree that renamed tourist dwellings was not found.
    - The NYC Administrative Code returned HTTP 403, so we quote OSE's rules as adopted in 2023.
  - **Prior-work search.** arXiv was searched only after the review, through its API. Semantic Scholar was mostly rate-limited. The novelty claim rests on Crossref, OpenAlex, arXiv, GitHub and the pages listed.
  - **Scope.** Our claims cover these areas on these dates. Two snapshots are not a time series.
- 

## 8. Data, code and licences

The package contains:

- the parser and its tests;
- the scripts that download, extract and match;
- every aggregate table in `data/` ;
- `scripts/check_headlines.py` , which recomputes each headline number from `data/` and checks it appears in this paper and the README.

Code is under Apache-2.0; our data and text under CC BY 4.0.

**Listings.** The listing data are © Inside Airbnb, under the "Creative Commons Attribution 4.0 International License". We redistribute only counts.

**Registries.** We do not redistribute them. `scripts/run.sh fetch` downloads them again, and `data/sources.json` records the SHA-256 of the extracts we used:

- Registre de Turisme de Catalunya (Generalitat de Catalunya; licence not verified, see `METHOD.md` §2.2);
- Viviendas turísticas de la Comunitat Valenciana (Generalitat Valenciana, CC BY);
- OpenRTA (Junta de Andalucía, CC BY 4.0);
- the NYC OSE dataset.

**Private material.** Row-level extracts, raw files and logs are kept out of the package.

The reviewer suggested publishing the Valencian, Andalusian and New York registry extracts, which would make the figures exactly reproducible after the sources change. We have not done so. This study publishes aggregates only, and the New York extract links registrations to Airbnb listing numbers, a row-level join we will not publish.

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## 9. Automation and review

AI agents (Claude models) did the work:

- found and downloaded the sources, under the robots.txt and rate rules above;

- read and quoted the legal texts, and verified each quotation against the downloaded file;
- wrote and tested the parser, froze the classification rules before matching, ran the matching and the statistics;
- searched for prior work and drafted the text.

Three agents worked in parallel on 3 October 2026. The main agent built the data, the analysis and the paper. One agent compiled the regional legal baseline. One ran the prior-work searches.

Every number in the README and the paper's headline sentences is checked against `data/` by `scripts/check_headlines.py`.

An independent AI agent then reviewed the study adversarially. It recomputed every figure with its own parser, re-fetched the legal texts, audited the matching on a random sample and audited robots.txt compliance on every logged request. Its main finding was that about one in five "not found" numbers is a registered dwelling written in a recognisable wrong form. That finding is now a result category (§4.2, §5.2). Its other findings were also applied:

- the Madrid headline now uses the frozen measure;
- the chance-match rate is described as an in-range rate;
- the direction of "registry lag" is corrected;
- `METHOD.md` §3 now lists each source's access method, User-Agent, rate and licence.

The reviewer has not yet re-read this corrected version.

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## 10. Competing interests

EasyByte Hub S. Coop. Mad., which runs EasyxLab, could build a validator for these numbers. The parser published here is a first step. No such EasyByte product exists today, and EasyByte has no commercial relationship with Airbnb, Inside Airbnb, any platform or any of the administrations whose registries we used.

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## 11. Ethics

We never accessed Airbnb or any platform; the listing data are Inside Airbnb's public scrapes. We downloaded registries only from open-data portals, and only where robots.txt allowed it.

We kept only the registry columns needed to match a number. For the Spanish registries, names, e-mails, phones and addresses were discarded while streaming and never written to disk. The New York xlsx, which has street addresses and units but no names, was written to a temporary file in the git-ignored working folder and deleted after filtering.

Our log shows 17 pairs of consecutive requests to the same host within the same second, and 4 pairs to bocm.es closer than its declared `Crawl-delay: 10`. We publish no listing, host or number, nor any list of non-matching listings, and nothing here points to an individual. We contacted no one.

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## How to cite

EasyxLab (2026). Do the registration numbers on Airbnb listings exist in the official registries? Spain and New York around 20 May 2026. Study S11. EasyByte Hub S. Coop. Mad. <https://github.com/easybytehub/easyxlab>

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## References

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## Cite this study

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