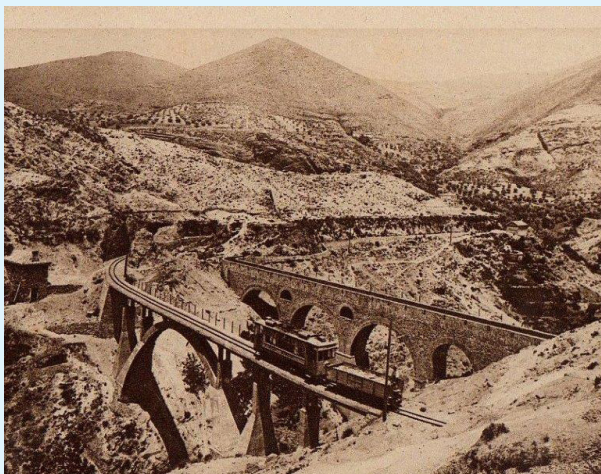


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The impact of short-term rental on housing rents: Evidence from Andalusian provincial capitals

El impacto de la vivienda turística en los alquileres de vivienda: Evidencias desde las capitales de provincia de Andalucía

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ABSTRACT

The proliferation of short-term rentals (STRs), driven by digital platforms such as Airbnb, has generated an intense debate about their effects on urban residential markets. This study empirically analyzes the relationship between the growth of the STRs stock and the evolution of rental prices in Andalusian provincial capitals between 2016 and 2024. Through a logarithmic econometric model, the elasticity of rental prices with respect to the number of registered tourist dwellings is estimated. The results show a strong positive relationship, especially in cities such as Malaga, Granada and Huelva, where high levels of tourist pressure and mismatch between housing supply and demand are observed. The article concludes with pub-

lic policy recommendations aimed at mitigating the negative effects of touristification and guaranteeing equitable access to housing.

RESUMEN

La proliferación de vivienda turística (VUT/VFT), impulsada por plataformas digitales como Airbnb, ha generado un intenso debate sobre sus efectos en los mercados residenciales urbanos. Este estudio analiza empíricamente la relación entre el crecimiento del stock de VFT y la evolución de los precios de alquiler en las capitales de provincia andaluzas entre 2016 y 2024. A través de un modelo econométrico logarítmico, se estima la elasticidad de los precios de alquiler respecto al número de viviendas turísticas registradas. Los resultados muestran una fuerte relación positiva, especialmente en ciudades como Málaga, Granada y Huelva, donde se observan altos niveles de presión turística y desajuste entre oferta y demanda de vivienda. El artículo concluye con recomendaciones de política pública dirigidas a mitigar los efectos negativos de la turistificación y garantizar un acceso equitativo a la vivienda.

1. INTRODUCTION

The phenomenon of short-term tourist rentals (STR), known as accommodation for tourist use or for tourism purposes (VFT in Spanish), especially when carried out through online platforms such as Airbnb, has notably affected the real estate landscape of many established cities and resorts in recent years (García-López et al., 2020). Many studies have confirmed that the growth of these tourist accommodations is closely related to the increase in home purchase and residential rental prices, producing interesting academic and social discussions on the benefits and costs of this phenomenon (Perles-Ribes et al., 2025; García-López et al., 2020; Barron et al., 2020).

In recent years, the debate surrounding the proliferation of short-term rental has intensified, particularly in urban contexts and traditional tourist areas of the Spanish Mediterranean coast (Perles-Ribes et al., 2025; Almeida-García et al., 2025; Barrero-Rescalvo & Díaz-Parra, 2024). Recent studies such as Ayoub et al. (2020), Chica-Olmo et al. (2020), Adamiak (2022) and Almeida-García et al., (2025) have empirically demonstrated that the growth of STR has a large collateral

effect on the residential market and leads to a very significant increase in the purchase and rental price of housing. The study by Cró and Martins (2024), highlights that STR encourages real estate speculation and generates a significant distortion of the housing market. This increase generates significant difficulties in accessing housing for permanent residents and seasonal tourism workers, while also intensifying perceived processes of touristification and social displacement in historic and central urban areas (Rodríguez-Pérez de Arenaza et al., 2022; Almeida-García et al., 2023).

Although a growing number of studies have addressed this issue in urban destinations such as Barcelona, (García-López et al., 2020); New York, (Barron et al., 2020); London, (Benítez-Auriolles and Tussyadiah, 2020); or Sydney, (Gurran and Phibbs, 2017), there is still a notable research gap around the effects of these accommodations in traditional Spanish urban destinations and, especially, in cities with a high economic dependence on tourism, as in the case of Andalusian provincial capitals.

Other studies have pointed out that STR generates additional problems. Thus, research by Gil (2024) and Gurran and Phibbs (2017), highlight the impact of "assetization" or "assetization", referring to the process by which housing ceases to be conceived as a good of use (for living) and comes to be treated as a financial asset, offered by the tourist market. The lucrative opportunities presented by the tourist housing market encourage a shift towards its use as a housing stock for tourist accommodation to the detriment of the local housing market, a process particularly visible in Andalusian cities where professional hosts and multi-property investors dominate the short-term rental supply (Barreiro-Rescalvo & Díaz-Parra, 2024).

This is not a straightforward issue, largely due to the difficulty of identifying the various determinants of housing market prices and the wide range of associated impacts. Horn and Merante (2017) and Wachsmuth and Weisler (2018) point out that price impacts are ambiguous and depend on factors such as seasonality, local and national regulation, and market structure.

On the one hand, they identify direct impacts that they identify as factors that have a direct impact on rental and sale prices, in this case induced by competition from STR. Along these lines, several papers have pointed out that the higher the density of tourist accommodation, the lower the supply of residential housing and the higher the price of housing (Barron et al., 2020; García-López et al., 2020; Garha, 2022). On the other hand, the indirect effects can be understood fundamentally in their social and environmental aspects, highlighting problems such as gentrification and social change of the local community, the irruption of large real estate investment groups or the lack of urban control by the local community.

Considering this situation and with the growing academic and social concern about this process, the purpose of this research is to analyze the relationship that currently exists between the expansion of housing for tourist use and the increase in housing rental prices in the Andalusian provincial capitals, as well as the direct influence of the tourist intensity in these increases. The rapid growth of STR directly impacts housing affordability for permanent residents, especially young people, low-income families, and tourism sector workers. These dynamics pose a challenge to social cohesion and urban sustainability by intensifying residential exclusion and altering the composition of neighborhoods.

This research aims to contribute to the debate, through a rigorous empirical analysis of the causal relationship between STRs and housing rental prices in Andalusian provincial capitals. In addition, it analyzes how the intensity of tourism directly affects these relationships, using advanced statistical methods, it is shown that a greater number of STR and higher tourism intensity lead to greater pressure on the residential market and, consequently, a more pronounced price increase. This study is particularly relevant since, until now, few empirical studies are known to have been devoted to the systematic analysis of these relationships when the data are recent in consolidated tourist destinations of the Andalusian coast (Toboso-Gómez et al., 2025).

The expected results will provide guidance for policy design related to this issue and will contribute to the reduction of the negative impacts of the phenomenon, as well as to the promotion of a sustainable

tourism development that balances economic gains with social cohesion in consolidated tourist destinations. Therefore, the results of this research offer valuable guidance for urban planning and public policy design, aiming to promote a balanced and sustainable tourism model that mitigates speculative effects and guarantees the effective right to affordable housing.

This study is structured in four main parts: first, it sets out the theoretical context, detailing the main studies and theories related to the debate on tourist accommodation and its impact on residential accommodation. Second, it outlines the methods of analysis and area of study, which leads to the third section, the results. Finally, we present a discussion and main conclusions, along with practical implications and limitations.

2. THEORETICAL CONTEXT

2.1. Recent development of the rental market in Andalusia

The rental market in Spain has been under pressure in recent years, especially in mature and attractive tourist areas. According to the most recent data from Idealista (2024a) and the Observatorio del Alquiler (Fundación Alquiler Seguro, 2024), figures from the fourth quarter of 2024, the average monthly rent in Spain was 981 euros, increasing by 9.1% compared to the previous year. This increase translates into affordability problems, given that the effort rate, or the percentage of household income spent on rent payments, has exceeded the 30% threshold in 13 provincial capitals, compared to 10 that were above this threshold in 2023.

This imbalance is particularly evident in the case of Andalusia. The capital with the most extreme situation is the city of Malaga, where the effort rate stands at 42.1%, surpassed only by Barcelona and Palma. A two-bedroom single (family) home currently rents for €1,197, while economic theory suggests that a reasonable rent would be €790, resulting in a negative financial difference of more than €400. This structural imbalance results in severe residential exclusion, especially young

people, low-income families and workers in the tourism sector, as well as an increasing perception of touristification and loss of neighborhood identity among long-term residents (Idealista, 2024b; Almeida-García et al., 2023).

Malaga is not an exception; other Andalusian capitals, such as Seville, Cadiz or Granada, also show high rates of effort, around or even above the 30% limit. In these contexts, the sustained growth of rental prices is associated with a combination of factors, among which tourism pressure, the scarce construction of affordable housing and the increasing conversion of residential housing into tourist use housing stand out (Rodríguez-Pérez de Arenaza et al., 2022). Although in capitals such as Cordoba, Jaen, Huelva or Almeria the aggregate figures may seem less alarming, the results of the econometric model used in this study reveal a significant sensitivity of the rental price in relation to the expansion of STRs.

In summary, the examination of the rental context in Andalusia shows how the process of tourist expansion, and the arrival of short-term rental platforms have further strengthened the pressure mechanisms in the residential market. As different research has highlighted (García-López et al., 2020; Barron et al., 2020; Wachsmuth and Weisler, 2018), the coexistence of tourist and residential housing markets in urban areas should lead to active public policies that exert their force to correct these dysfunctions and guarantee the right to effective housing.

2.2. *Evolution of short-term rental*

Short-term rentals (STR) or *Tourist accommodation units* (accommodation for tourism purpose, VFT or VUT in initials in Spanish, the first acronym is the legal term used by the regional government of Andalusia), are residential accommodations intended for tourist use rented for short stays, generally through internet platforms (Perles-Ribes et al., 2025).

The official definition can be found in Decree 28/2016 of February 2, issued by the Regional Government of Andalusia, specifically in Article 3, which defines them as follows:

- 1. Tourist accommodation is defined as dwellings located in buildings situated on land zoned for residential use, where accommo-

dation services are offered for a fee within the Autonomous Community of Andalusia, on a regular basis and for tourist purposes.

- 2. Regular use and a tourist purpose will be presumed when the dwelling is marketed or promoted through tourist channels.

These accommodations are complete dwellings or rooms in inhabited houses or those belonging to the host. Their global expansion is related to the emergence of the collaborative economy and the new digital tools that allow intermediation between individuals without intermediary tourist agencies (Botsman & Rogers, 2011; Gutiérrez et al., 2017).

The impact of STRs on the tourism market has been especially notable since the arrival and growth of tourist housing booking platforms, especially the platform that has most popularized and globalized the model: Airbnb.

Airbnb was born in 2007 in San Francisco (USA), when Brian Chesky and Joe Gebbia, two young industrial designers, decided to rent space in their apartment during a design congress that had filled local hotels. They bought three inflatable mattresses and offered "bed and breakfast" to the event's attendees. This first experience inspired the initial idea for what would later become a global technology platform (Gallagher, 2017; Zervas et al., 2017). In 2008, they officially founded AirBed & Breakfast, soon renamed Airbnb, since that date, Airbnb has grown exponentially. In 2011, it began its international expansion and, in less than a decade, it went from being an informal project, to becoming one of the most valuable companies in the tourism sector, with a global market presence in more than 190 countries and with more than 7 million advertised accommodations (Adamiak, 2022; Guttentag, 2015). Its novel model has been criticized for the lack of regulatory standards similar to traditional hotel accommodation applied to STR (Nieuwland and Van Melik, 2018; Kaniadakis and Farmaki, 2024).

2.2.1. Airbnb and the transformation of urban and residential tourism.

Numerous researches have shown that the growth of Airbnb has intensely transformed urban and real estate markets, redefining tourism supply and real estate market dynamics. The study by Zervas, Pros-

erio, and Byers (2017) shows that Airbnb's expansion has led to a decline in hotel occupancy and revenue in the U.S., especially for those with less product differentiation.

In urban environments, research such as those conducted by Barron et al. (2020) and García-López et al. (2020) in cities such as New York or Barcelona observed that Airbnb densification is directly related to the increase in rental and home purchase prices, as well as to processes of touristification, gentrification and nuisance to residents.

Furthermore, Gurran and Phibbs (2017) propose that platforms such as Airbnb have changed the classical role of urban land use following a strategy of "neoliberal reconfiguration" of residential space in cities, allowing private dwellings to be transformed into commercial products according to the logic of tourism.

Airbnb's trajectory is emblematic of how tourism has changed profoundly in the digital age. What began as an informal experiment in a San Francisco apartment has become a transformative agent in tourism, urban planning, and residential life around the world. This framework is crucial to shed light on the extent to which, in well-established tourist destinations such as Andalusia, the expansion of STRs has changed the residential-tourist balance of housing occupancy, and with it the economic and social effects that this article aims to measure.

Previous research on the influence of STRs has focused predominantly on urban settings. Some recent studies have also investigated conventional sun and beach tourist areas. Perles-Ribes et al. (2025), for example, studied tourist areas on the Spanish Mediterranean coast and found that the massive introduction of STRs leads to the appearance of very significant increases in the acquisition price, especially due to speculative pressure from investors who see tourist rental as a more profitable alternative to conventional residential rental.

Rodríguez-Pérez de Arenaza et al. (2022) point out that, in coastal destinations, the increase in long-term rental prices is influenced by the strong expansion of the tourist market and the high potential profitability during peaks in tourist demand. This trend leads many landlords to favor their properties being used for tourist rentals, decreasing those available for long-term residential rentals and subsequently increasing monthly prices.

2.2.2. Airbnb's evolution from collaborative economy to regulation.

Although Airbnb began by being publicized as a form of collaborative economy for the use of underutilized resources, more recent research has addressed trends toward professionalization and commercialization of the service. Authors such as Tom Slee (2017) have questioned this idealized narrative, pointing to the drawbacks of lack of regulation and lack of social benefits, and as Sutherland and Jarrahi (2018) argue, digital platforms, far from being limited to collaborative idealism, act as agents of economic transformation under logics characteristic of "platform capitalism."

This critique is supported by empirical research, such as the study by Wachsmuth and Weisler (2018) that revealed that a significant portion of Airbnb listings in cities such as Montreal and New York are controlled by multiple hosts motivated by purely profit-driven intentions. Thus, the logic of the collaborative economy in many cases has been displaced by a logic of speculation and maximization of real estate profitability.

The rapid rise of Airbnb has overwhelmed the regulatory resources of many localities. In response, many cities have adopted different types of regulations: time limits for renting to tourists, mandatory registration, and quotas for districts or areas of cities. Such is the case of Barcelona, Paris, Berlin, Amsterdam, San Francisco (Gutierrez et al., 2017; Robertson et al., 2022).

In the Spanish context, regularization has been decentralized through regional governments. Andalusia, for example, passed Decree 28/2016 and an amendment in 2024, to regulate STRs (VFTs), in an attempt to curb the phenomenon and considering the impact experienced by cities such as Malaga, Seville or Cadiz.

Several empirical studies have confirmed that the expansion of STRs has significantly influenced residential home purchase and rental prices. For example, Barron et al. (2020) have shown that a 1% growth in the number of Airbnb listings leads to an average increase of 0.018% in long-term rental prices in cities such as New York. In Europe, studies in cities such as Barcelona (Garcia-Lopez et al., 2020), Lisbon (Amore,

De Bernardi & Arvanitis, 2022) or London (Benitez-Aurioles & Tussyadi-ah, 2020) show the same pattern: a direct relationship between the intensity of STR and booming house prices, leading to gentrification and population displacement.

In addition, new work, including Adamiak (2022) and Ayoub et al. (2020) have measured the influence of Airbnb on the residential market and found that this phenomenon is particularly evident in places with strong tourist demand, causing tensions in the availability of accommodation for irregular citizens and employees of the tourist industry. The latter authors emphasize that cities with higher tourist intensity have a more extreme increase in prices, which accentuates socioeconomic inequalities.

While there is consensus that STRs have a direct effect on real estate prices, the academic debate also contains contradictory or nuanced results. Horn and Merante (2017) and Wachsmuth and Weisler (2018) argue that, depending on the configuration of the local market and the regulatory measures in place, the growth relationship of STRs and rents can be ambiguous or negative. In very competitive or highly regulated markets, some landlords may withdraw their homes from residential rental to expect higher profits from tourist rentals even in a short period of time (Gil, 2024; Gurran & Phibbs, 2017), stabilizing or decreasing residential rental prices.

These two studies are indicative of the fact that the effect of STRs cannot be attributed solely to a tourism demand phenomenon, but as part of a deliberate strategy by owners with rational economic expectations. Therefore, the increase in value can be both cause and effect of the growth of the residential tourism market (Cró & Martins, 2024).

In reaction to the negative externalities produced by the expansion of STRs, several tourist destinations have introduced regulatory measures. Herrero Ballesta (2024) and Seiler et al. (2024) point out that these regulations can be very effective on rental price containment, especially when strict restrictions on marketing and duration of tourist rentals are applied. However, Robertson et al. (2022) caution that such regulations may not have a significant impact without the support of broader and stricter regulations, while Gurran and Phibbs (2017) explain that

isolated regulations may be ineffective if they are not accompanied by broader controls and structural public housing policies

2.3. The regulation of short-term rentals (STRs) in Andalusia

One of the Spanish autonomous communities with the greatest presence of the short-term rental phenomenon is Andalusia. This growth, mainly under the influence of digital platforms such as Airbnb, prompted local authorities to create specific regulations to order and control the expansion of this type of housing and its adverse effects on real estate markets and coexistence in neighborhoods,

The first regulation for tourism accommodations in Andalusia was provided by the regional government Decree 28/2016 of February 2. This regulation explicitly characterizes VFTs (STRs) as dwellings in residential buildings that provide accommodation on a regular basis for tourist purposes in exchange for remuneration, being predominantly marketed through tourist channels (BOJA, 2016).

The following main requirements for the operation of STRs are set out in the Decree (Junta de Andalucía, 2016):

- Obligation for accommodations to be registered in the Andalusian Tourism Registry (RTA).
- Stipulation of a maximum accommodation capacity.
- Compliance with essential requirements for the accommodations to be habitable, safe and comfortable.
- Requirement to have a first occupancy license for the dwelling.
- Maintenance of an updated registry of housed users.

The purpose of the mandatory registration and licensing is to be able to limit the number of accommodations and avoid the emergence of informal rentals that could lead to distortions in the residential and hotel markets.

In 2024, in order to increase regulatory measures and take into account the rapidly growing and evolving industry, the regional government of Andalusia passed the Decree 31/2024 of January 29, which annuls the previous decree and establishes new conditions to improve

the control and quality of tourism accommodation units. Some of the new features include:

- Increased administrative requirements for registration and authorization.
- Reinforcement of the technical conditions of the accommodation.
- Greater control over digital platforms to ensure transparency in marketing and avoid fraudulent or unauthorized offers.
- Strengthened responsibility for the visual identification of tourist accommodations with official signs to improve monitoring and control by the administration.

This regulatory update is the result of the negative consequences observed in the real estate market, including the increase in rental and purchase prices, particularly in consolidated tourist areas (Rodríguez-Pérez de Arenaza et al., 2022). Since the implementation of Decree 28/2016, reinforced by the regulatory adjustment in 2024, different analyses have highlighted the impact of the regulation on the real estate landscape in Andalusia. A more detailed analysis highlights that Andalusian destinations such as Malaga, Seville or Cadiz show that the 2016 decree has barely mitigated the negative externalities of short-term rental properties and has not helped to reduce rental prices (Garha, 2022; Rodríguez-Pérez de Arenaza et al., 2022). However, there is a stabilization in the increase in the number of officially registered tourist accommodations, as well as a trend towards greater professionalization and formalization of the activity as a direct result of the reforms introduced with the new regulation of 2024 (Perles-Ribes et al., 2025).

The success of the enacted legislation has been a topic of interest in academic studies. Some research even suggests that autonomous legislation, despite its good intentions, may generate undesirable outcomes that drive the tourism market towards informality or irregular commercial activity on less regulated digital platforms (Robertson et al., 2022; Gurran and Phibbs, 2017). Furthermore, it has been argued that these regulations, because they are based solely on supply and not so much on demand or complementary measures (such as increasing public housing for residents), may not fully address the problem of rising prices in the local residential market (Cró & Martins, 2024).

Regarding the theoretical aspects outlined above, two hypotheses are proposed in this research:

- H1. The supply of short-term rentals directly affects the rental price of housing.
- H2. Andalusian provincial capitals have different residential rent price behavior depending on the intensity of the tourism supply.

3. METHODOLOGY

3.1. *Data and instruments*

In order to analyze the impact of housing for tourist purposes on the evolution of the price per square meter of rental housing, there were two sources of information: the Andalusian Tourism Registry (RTA) and the Idealista.es portal.

The main database related to the STRs was obtained from the Tourism Registry of Andalusia (RTA). All the records of the different Andalusian capitals corresponding to the period between 2016 and 2024 were obtained.

The analysis period begins in 2016 because that year the Regional Government of Andalusia launched the Andalusian Tourism Registry (RTA) under Decree 28/2016 of February 2, which regulates Tourist Accommodation (VFT). In May of that year, this decree marked a turning point in the management and control of this type of accommodation, due to its expanded requirement for prior registration in the regional registry to operate under regulatory conditions. 2016 is the first year that official, standardized, and verifiable data on the number of registered VFTs in Andalusia is available, allowing for the development of systematic, comparable, and monitorable statistics across provinces over time. On the other hand, before 2016, although tourist accommodations, including VFTs, were already quite visible in multiple areas of the Andalusian coast and urban areas, there were no formal records or official sources to quantify the volume and seasonality of all the provinces.

The data on housing rental prices came from sources published by the real estate portal company Idealista.es. The statistical analyses have been carried out with the STATA software. The analysis that has been carried out is an econometric model of the logarithmic type (log-log) to measure the relationships between the price of the rental meter and housing for tourist purposes. In this sense, the coefficients provided by the model are interpreted as elasticities.

3.2. *Location of the area of analysis*

The area of analysis focuses on the eight provincial capitals of Andalusia (Almeria, Cadiz, Cordoba, Granada, Huelva, Jaen, Malaga and Seville), with a population of 2,403,606, 27.8% of the population of Andalusia (INE, 2024a). The city with the smallest population is Jaen, with 112,074 inhabitants, and Seville has the largest population, with 687,488 inhabitants. The total average number of hotel beds in the eight cities was 72,202 in 2024 (Table 1).

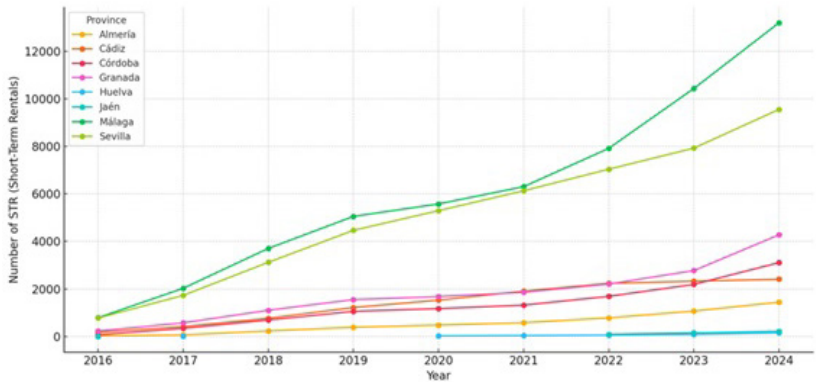
TABLE 1
**AVERAGE HOTEL VACANCIES
IN THE ANDALUSIAN CAPITALS IN 2024**

City	Bed places	City	Bed places
Almeria	4,079	Huelva	1,420
Cadiz	3,608	Jaen	1,314
Cordoba	7,458	Málaga	13,627
Granada	14,663	Seville	26,038
Total			72,207

Source: INE, 2024

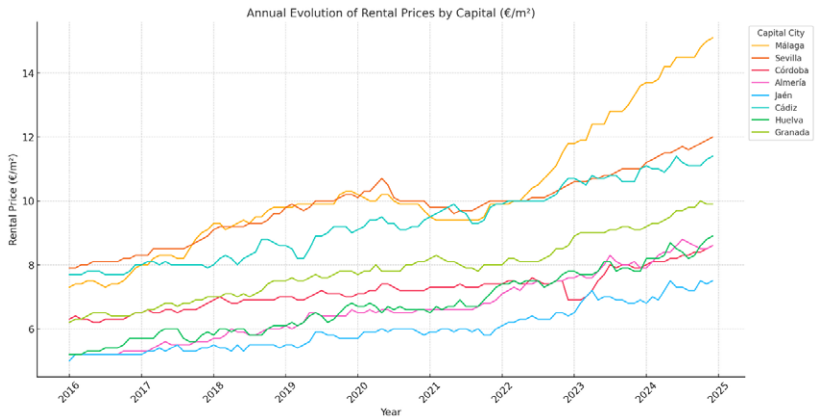
Regarding the supply of STR, the capital with the most housing for tourist purposes is Malaga, followed by Seville, with the city of Huelva having the lowest supply. The capital of Malaga is the one that has registered the highest increase in STR between the end of 2016 and 2024, with a percentage of 1,574%, followed by Seville with 1,129%, with the provinces of Jaen and Huelva showing the lowest increases (Figure 1).

FIGURE 1
EVOLUTION OF SHORT-TERM RENTALS BY ANDALUSIAN CAPITALS



Source: Andalusian Tourism Registry (RTA), 2016-2024.

FIGURE 2
EVOLUTION OF THE PRICE OF THE RESIDENTIAL RENT METER IN ANDALUSIAN CAPITALS



Source: Idealista, 2024

In the case of Malaga, as early as 2018, the wide range of accommodation offered by Airbnb was highlighted, generating a large supply of accommodation and economic activity, with a strong concentration in the historic centre. Fernández and Mayorga (2018) highlight the high level of professionalism of the properties managed by Airbnb, above the figures identified in Madrid and Barcelona, demonstrating a model that is far removed from the spirit of a collaborative platform. A small number of hosts manage a large number of properties.

Regarding the behavior of the evolution of residential rental housing prices in the Andalusian capitals, the differentiated behavior of the cities should be highlighted. On the one hand, it is observed how Malaga is the city that has experienced the greatest increase in the rental price reaching 14.37 €/m2 in 2024, followed by Seville 11.6; Cordoba 8.26; Almeria 8.45; Jaen 7.23; Cadiz 11.14; Huelva 8.44 and finally Granada 9.62 €/m2 (Figure 2).

The following table shows the prices of the square meter of rent as well as the number of dwellings for tourist purposes at the beginning and at the end of the period under study.

TABLE 2
AVERAGE PRICE PER SQUARE METER OF RESIDENTIAL RENT (€) AND NUMBER OF STRS

City	2016	2024	Var % (Rent)	2016	2024	Absolute difference STRs
	Res. Rent	Res. Rent		STRs	STRs	
Malaga	7.48	14.38	92.3	788	13,194	12,406
Seville	8.08	11.60	43.5	777	9,552	8,775
Córdoba	6.32	8.27	30.9	71	3,106	3,035
Almeria	5.23	8.45	61.7	24	1,442	1,418
Jaén	5.18	7.23	39.5	4	219	215
Cadiz	7.76	11.14	43.6	175	2,408	2,233
Huelva	5.38	8.44	56.8	4	152	148
Granada	6.40	9.63	50.4	231	4,277	4,046

Source: Own elaboration based on RTA and Idealista

4. RESULTS

First, an analysis of correlations between the rental price and the number of STRs was carried out, to see if there is a direct relationship between the price per square meter and housing for tourist purposes. The closer the correlations are to one, it means that the relationship between these two variables is very strong.

TABLE 3
PEARSON'S CORRELATION BETWEEN THE VARIABLES OF THE ANALYSIS

City	Corr. Rent-STRs	City	Corr. Rent-STRs
Malaga	0.976	Jaen	0.976
Seville	0.924	Cadiz	0.844
Cordoba	0.979	Huelva	0.958
Almeria	0.970	Granada	0.977

Source: Own elaboration

These correlations suggest a close relationship between STR and the residential market, clearly showing a strong tourist pressure on the rental market, equally important in all the Andalusian capitals, presenting values very close to one, with Cordoba, Granada and Malaga being the cities with the strongest relationship.

An econometric model was used to analyze the relationship between the price per meter of rent and the number of short-term rentals. This model is of the logarithmic (log-log) type, since it allows the estimated coefficients to be interpreted as elasticities, which is particularly useful for evaluating proportional relationships in urban studies (Glaeser et al., 2008; García-López et al., 2022). This formulation is particularly appropriate when it is suspected that the marginal effects of STR are not constant over their range, thus allowing to capture possible non-linear relationships in the explained variable, in this case the rental price. The proposed model is as follows:

$$\ln(Rent_m^2) = \beta_0 + \beta_1 \cdot \ln(STRs) + \varepsilon$$

where:

- $\ln(Rent_m2)$: natural logarithm of the rental price per square meter.
- $\ln(STRs)$: Natural logarithm of the number of registered dwellings for tourist use.
- β_1 : Elasticity of the rental price with respect to the number of short-term rentals
- ε : Random error term.

The coefficients of the regression of the logarithmic model that correspond to the elasticities are in the Table 4.

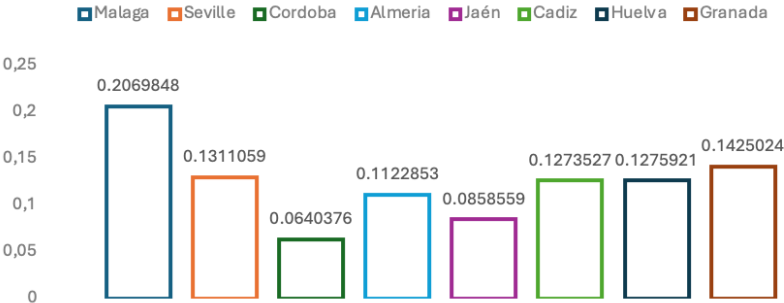
TABLE 4
**ECONOMETRIC MODEL OF THE RESIDENTIAL RENT PRICE
AND ITS RELATIONSHIP WITH STRS**

City	Estimated elasticity (β)	Standard error	Adjusted R ²	Interpretation
Malaga	0.207000	0.034	0.841	$\Delta 10\%$ in STRs $\Delta 2,07\%$ in Rental Price
Seville	0.1311059	0.015	0.909	$\Delta 10\%$ in STRs $\Delta 1,31\%$ in Rental Price
Cordoba	0.0640376	0.009	0.855	$\Delta 10\%$ in STRs $\Delta 0,64\%$ in Rental Price
Almeria	0.1122853	0.016	0.868	$\Delta 10\%$ in STRs $\Delta 1,12\%$ in Rental Price
Jaen	0.0858559	0.012	0.862	$\Delta 10\%$ in STRs $\Delta 0,85\%$ in Rental Price
Cadiz	0.1273527	0.022	0.820	$\Delta 10\%$ in STRs $\Delta 1,273\%$ in Rental Price
Huelva	0.1275921	0.008	0.972	$\Delta 10\%$ in STRs $\Delta 1,275\%$ in Rental Price
Grenada	0.1425024	0.017	0.904	$\Delta 10\%$ in STRs $\Delta 1,42\%$ in Rental Price

Source: Own elaboration

Figure 3 graphically represents the elasticities of the applied model:

FIGURE 3
ELASTICITIES OF THE ANDALUSIAN CITIES (LOG-LOG MODEL)



Source: Own elaboration

Therefore, a 10% increase in the number of STRs would imply, for example, in Malaga, an approximate increase of 2.07% in the price per square meter of rent. In provinces such as Cordoba, the effect would be less, with an increase of 0.64%. Therefore, the supply of STR directly affects the rental price of residential housing, thus approving the first hypothesis put forward in this research.

These values reflect the differential sensitivity of residential real estate markets to the pressure exerted by increasing of STR; and the existence of a differentiated behavior of rental prices depending on the intensity of the tourism supply, thus accepting the second hypothesis. Therefore, cities with more tourist accommodation places (Table 1) have a higher proportion of STRs and an increase in residential rental prices.

The standard errors, relatively low in all provinces, suggest that the estimated elasticities are statistically significant. The robustness of the estimates allows us to state with a high degree of confidence that the expansion of STR influences the increase in residential rent prices. The adjusted coefficients of determination (R^2) above 0.80 in all cities reflect a good fit of the models, indicating that the number of STR explains a large part of the variability observed in rental prices.

The higher elasticity in Malaga, the epicenter of urban tourism in Andalusia, points to a more intense pressure on the residential rent-

al market derived from the STR boom. In cities with lower elasticities, such as Cordoba or Jaen, the effect is less pronounced, possibly due to less tourist presence or different characteristics of the real estate market.

5. DISCUSSION AND CONCLUSIONS

5.1. *Discussion*

The results obtained in this study are in line with the literature that has analyzed the connection between the expansion of STR and the increase in rental prices and residential housing sales. Specifically, the results are in line with research conducted in urban contexts such as Barcelona (García-López et al. 2020) or New York (Barron et al. 2020), where a significant relationship was found between the number of tourism accommodations and the increase in rental prices. In addition, the tourism pressure and lack of housing that occur in coastal areas and amplify the effect on prices are in line with the research of Perles-Ribes et al. (2025) and Rodríguez-Pérez de Arezana et al. (2022). Likewise, the increase in the density of STR is a clear indicator of increased housing prices (Barron et al., 2020; García-López et al., 2020; Garha, 2022), at the same time tourist housing raises the price and hinders the availability of housing for residents and workers (Cró and Martins, 2024).

However, the findings of this study partially differ from research such as Horn and Merante (2017) or Wachsmuth and Weisler (2018), which identify highly variable effects of tourist housing in regulated and/or saturated markets. The effects of controlling or reducing housing prices are not very clearly connected to regulatory measures on tourist housing. Gurran and Phibbs (2017) highlight that isolated regulatory measures and actions are ineffective and drive the market towards informality (Robertson et al., 2022). Cró Martins (2024) emphasizes the importance of creating public housing supply as an element to reduce the price of renting and selling housing.

In the specific case of Andalusia, the regulations governing tourist housing and housing policy do not suggest concrete attenuating effects on housing rental and sales in the cities analyzed; even in cities with low elasticities (Córdoba, Jaen) the relationship remains positive and significant between STRs and the price of housing rental.

5.2. *Conclusions*

The main contribution of this paper lies in offering a systematic and updated analysis of the impact of STRs on the rental market in Andalusian capitals, combining price elasticity estimates with housing stock indicators. A logarithmic model has been used to obtain the elasticities, i.e., to test how a percentage increase in tourist housing affects the growth of the price per square meter of rental housing.

In our study, the city with the highest elasticity is Malaga, with a 10% increase in the number of dwellings for tourist purposes, with a 2.07% increase in the price per square meter of rent; followed by Granada with a growth of 1.42% and Seville with a growth of 1.31%. The cities with the lowest elasticity are Cordoba and Jaen, where in the face of a 10% growth of STR in the residential rent price growth is 0.64% and 0.85%, respectively.

The analysis of the estimated elasticities reveals a positive and statistically significant relationship between the number of short-term rentals units (STRs) and the price per square meter of residential rental in the Andalusian cities studied. This finding evidences that the expansion of the residential tourist supply exerts inflationary pressure on the rental market, affecting the accessibility and stability of the real estate market for local residents.

A relevant territorial heterogeneity is observed: cities with higher tourist concentration such as Malaga and Granada present higher elasticities, translating a more intense impact of the tourist phenomenon on the increase of rental prices. In contrast, cities with less tourist presence, such as Cordoba and Jaen, show a less pronounced response, indicating that the effect of tourist housing on the residential market is sensitive to the specific characteristics of the local context.

The high coefficients of determination ($R^2 > 0.80$) suggest that the number of tourist dwellings is a fundamental explanatory factor for rental price variability, highlighting the need to incorporate this dimension in the design of public housing and tourism policies.

Consequently, the results underscore the importance of implementing regulatory and urban planning strategies that moderate the proliferation of tourist housing in order to avoid excessive increases in rental prices and preserve accessibility for permanent residents. These policies should be adapted to territorial particularities in order to maximize their effectiveness and promote sustainable and equitable tourism development.

5.3. Practical implications

Considering the specific challenges identified in this paper and the existing regulatory environment, the need to develop comprehensive regulatory models oriented to the study of local conditions at each tourism site is emphasized. The existing set of regulations can be complemented with specific public policies aimed at:

- Urging the production of affordable housing for residents and workers in the tourism industry.
- Encouraging sustainable alternatives to tourism that alleviate pressure on the residential market.
- Strengthening control and surveillance in digital platforms to guarantee the regulatory framework and avoid informal parallel markets.

The regulatory framework in Andalusia sets an interesting benchmark as an adequate dimension of the supply of tourism accommodations but requires continuous adjustment and complementation with additional tools aimed at finding ways to harmonize the economic benefits of tourism with the social and urban sustainability of the destinations covered.

5.4. Limitations

This study is limited to the provincial capitals of Andalusia, as it is an autonomous community where Tourist Accommodation (VFT) is homogeneous and unified according to Decree 28/2016, and, as a re-

sult, is managed in the Andalusian Tourism Registry (RTA). In the other autonomous communities, the records have different formats, creation dates, and levels of updating, which makes comparison and the establishment of equivalent time series difficult. Therefore, developing this model in other regions would require a prior methodological harmonization process and data cleaning, which is again one of the main limitations of this work.

This study could be complemented with other qualitative studies such as interviews with tourist housing managers, hotel managers, and political and citizen representatives. This is intended to be done later as part of the authors' research.

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