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Dissertation thesis

Potential and Limitations of the Sharing Economy in the Housing Market

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Potential and Limitations of the Sharing Economy in the Housing Market

Abstract

The main objective of the thesis is to identify the socioeconomic role of short-term rental accommodation (STR) in the EU and propose measures accordingly for different policy levels. Particular attention is given to the Czech Republic and European capitals, with an emphasis on STR externalities.

The first partial objective is to synthesize the extant literature on this sharing economy in the context of regulatory affairs. A systematic review is employed to gather empirical evidence on the circumstances and implications of STR regulations.

The second partial objective is to model a typical STR consumer, using path analysis. Our four structural models estimate that STR usage is shaped by a complex interplay of sociodemographic factors, information-seeking behaviors, price sensitivity, and attitudes toward local experiences and sustainability.

The third partial objective identifies peer countries in the EU according to housing affordability, STR presence, and related perceptions. Our cluster analysis reveals that the relationship between objective housing conditions and subjective perceptions is more complex than previously assumed. While some clusters show a negative association between STR presence and housing perceptions, others demonstrate that high STR numbers do not necessarily correlate with negative perceptions. Moreover, there is virtually no correlation between actual housing affordability and residents' perception of housing issues.

The fourth partial objective estimates STR impact perceptions depending on sociodemographic characteristics in EU capital cities. Logistic regression reveals significant differences by STR user status, occupation, education, age, gender, and municipality.

The fifth partial objective evaluates the impact of STR accommodation on housing prices in Prague. A vector error correction model (VECM) is estimated to quantify the long-run dynamics. Structural shocks during the Covid-19 pandemic led to verification issues, therefore, we start our time series in October 2020, after the market had adjusted to the initial hospitality restrictions. In this period, we estimate that for every additional Airbnb apartment, the average housing price per square meter increases by CZK 9.58.

The sixth partial objective investigates residential attitudes toward STR accommodation in Prague. For this purpose, a questionnaire instrument was adopted and adapted, guided by the literature. The collected data are subject to the Mann-Whitney test. The community's perception of STR services is significantly influenced by the experience (or lack thereof) of staying in an STR accommodation while traveling.

Keywords: Airbnb, short-term rental, urban vacation rental, consumer, sustainable tourism, regulation, municipal governance, real estate market, housing price, triple bottom line.

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1 Introduction

At its core, the sharing economy is a much older concept than it may seem at first glance (Ragatz & Gelb, 1970; Coppock, 1977). However, relatively recent advancements in information technology have granted room to the development of modern internet platforms working on a peer-to-peer basis, thus bringing the sharing marketplace to a whole new level (Zekanović-Korona & Grzunov, 2014). This development gave rise to novel, well-known platforms such as Airbnb and Uber, simplifying the barriers to enter the hospitality market for residents intending to become micro-entrepreneurs (Guttentag, 2019).

The growth of the sharing economy, highlighted by Airbnb's 5.6 million active listings across over 220 countries, sparks a debate on the need for a regulatory approach (iPM, 2022). For example, in the US alone, Airbnb's economic impact pre-COVID-19 was significant, contributing USD 33.8 billion to GDP, or 0.16% in 2018 (Airbnb, 2019). This underscores the importance of conceptualizing regulation for the widespread phenomenon.

Cities worldwide are grappling with the sharing economy's impact in the housing area, as studies highlight challenges like reduced long-term housing (Barron et al., 2020), tax collection issues (Ključnikov et al., 2018), effects on the hotel industry (Zervas et al., 2017), and neighborhood disruptions (Jordan and Moore, 2018), prompting the need for regulation (Avdimiotis and Poulaki, 2019; Gurran et al., 2018; Nieuwland and van Melik, 2020; Vinogradov et al., 2020). Residents complain that short-term rentals (STRs) increase noise and disrupt their lifestyle (Muschter et al., 2021) due to absent owners (Jordan and Moore, 2018). Tax evasion complicates STR tax collection, as many STRs challenge authorities' ability to collect taxes (Agarwal et al., 2018). Additionally, STRs negatively affect traditional hotels by decreasing occupancy rates, revenues, and prices (Casado-Díaz & Rubio, 2020).

Arguably, the most debated impact of STRs has been on housing markets. Research consistently shows that STRs create incentives favoring short-term over long-term rentals, effectively reducing available housing (Zou, 2020). In New York City, for instance, properties with STRs nearby experienced an increase in price by 3.5 percent to more than 65 percent (Sheppard and Udell, 2018). Nationwide in the USA, a 1 percent hike in STR listings increases rents by 0.018 percent and housing prices by 0.026 percent (Barron et al., 2021). Similar patterns emerge in Europe. In Berlin, each nearby STR apartment raises average

monthly rents by at least seven cents per square meter (Duso et al., 2020), Lisbon's housing prices rise by 4.5 percent with each 1 percent STR increase (Franco and Santos, 2021), and Barcelona experienced rent increases of 1.9 percent from 2012 to 2016 (Garcia-López et al., 2020). On the other hand, French cities show mixed effects. STR density affects rents in Paris, Lyon, and Montpellier but not in Marseille, Nice, and Toulouse (Ayouba et al., 2019).

Responding to criticism, many cities have already regulated short-term rentals, while others are contemplating similar measures. For cities considering regulation, synthesizing existing discussions on this topic could clarify the role of regulation within the sharing economy. Furthermore, analyzing socioeconomic aspects is essential because STRs influence housing markets, urban dynamics, and community structures. While the rentals generate economic benefits through tourism and local revenue streams, they also evoke loud criticism from residents. The socioeconomic approach critically evaluates not only financial gains but also broader implications for social equity. Given the diverse regulatory environments and housing needs across EU member states, our research provides insight into who benefits from the sharing economy and who bears its costs. Such insights are important for informing balanced, evidence-based policy responses that align with EU goals for sustainable development and social cohesion.

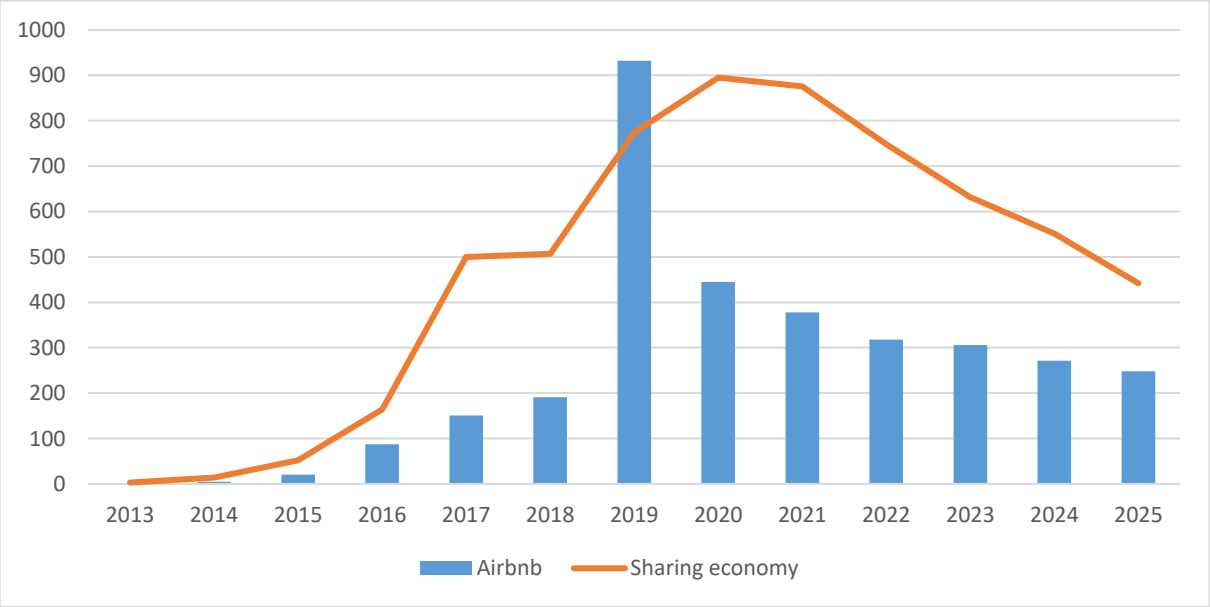


Figure 1 Paper publication trend over time, 2013–2025

Source: Own, based on Web of Science

In Figure 1, we can see how steeply the publication of academic papers mentioning the sharing economy began to grow in the late 2010s. These data are derived from the Web

of Science (WoS) database. The line depicts the total number of papers on the *sharing economy*, while the bars are devoted specifically to *Airbnb*.

Some sources reference the mentioned keywords before this timeline; however, these years acquire only single-digit values. Although the rise of Airbnb is slower at first, it suddenly peaks higher in 2019 than the sharing economy did (which had its peak one year later). However, suppose we focus only on papers that mention these keywords in their topic. In that case, the progress is much smoother, so the jump in 2019 is primarily caused by articles only referencing the phenomenon rather marginally. Subsequently, the slowdown in both charts in the following years might be connected to the Covid-19 pandemic, which impacted the hospitality sector during this time period and might have redirected scholars' attention to other topics.

Apart from the time trend, we can also analyze the publications mentioning the *Airbnb* keyword in their topic based on WoS categories. In Figure 2, we can see into which categories these papers belong (one paper may belong to multiple categories). The category most often publishing papers related to the topic is “Hospitality, leisure, sport, tourism”. The second two categories in which the papers most often get published are “Management” and “Computer science”. However, none of the mentioned categories has a strong predominance. There are six additional categories in which the papers are relatively often published (mostly in fields related to economics). As is evident, the topic of short-term rentals spans diverse research fields and is growing in many directions.

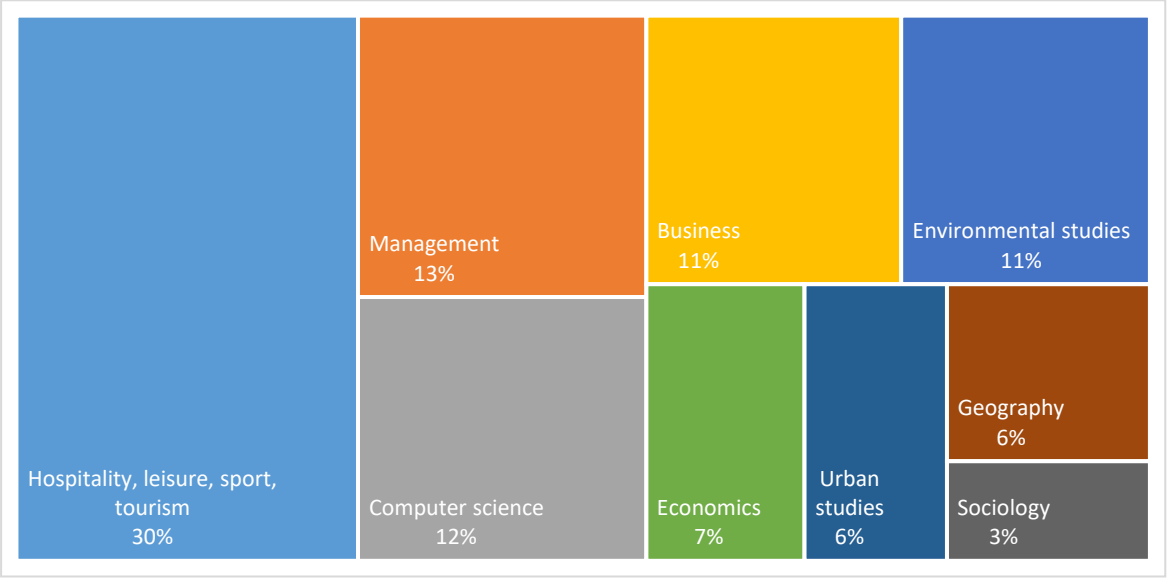


Figure 2 Paper publication by WoS categories (up to 2025)
Source: Own, based on Web of Science

2 Objectives

The following chapter describes the structure of the thesis. Firstly, we present the main objective, which we break down into six partial research questions. Subsequently, we elaborate these research questions and build on them our six partial objectives.

2.1 Main objective

The thesis has one main objective further concretized by six partial objectives. **The main objective of the thesis is to identify the socioeconomic role of short-term rental accommodation in the EU and propose measures accordingly for different policy levels.** Particular attention is given to the Czech Republic and European capitals, with an emphasis on STR externalities. This assessment provides insight into the resources and limitations of the phenomenon, thereby evaluating the situation from both positive and negative perspectives. Policy implications stem from comparisons across the EU member states and other countries. The following partial research questions concretize the main objective:

1. What is the current state of research on the regulation of STR accommodation?
2. Which models of consumer behavior characterize a typical STR consumer?
3. Which are the closest peer countries in the EU according to housing affordability in the context of STRs and related residential perceptions?
4. What is the influence of sociodemographic characteristics and location on the perception of STR impacts in EU capital cities?
5. What is the impact of the STR accommodation on the housing prices in Prague?
6. How do Czech residents perceive the impacts of STR accommodation in Prague?

2.2 Partial objectives

2.2.1 Literature review

The objective of the literature review is to synthesize the extant literature on the short-term rental accommodation in the context of regulatory affairs.

The literature review aims to classify the discourse – firstly, based on the three most common research fields (urban studies, law, and hospitality), and secondly, based on the individual trends in the literature.

From the above-denoted aims, we can derive the following research questions:

- What guidance on policymaking and trends in regulatory design can be found in the reviewed literature?
- How can these findings be categorized based on their research fields?
- How can these findings be further categorized according to the individual areas of impact that the respective discourses focus on?
- Which assertions can be found in the reviewed literature in consensus/dissensus?

2.2.2 STR consumer model

This partial objective tests four hypotheses to build a model of a typical STR consumer. The hypotheses are related to established consumer theories[1], grounding our subsequent modeling in the literature. The theoretical background for the STR consumer is explained in our methodology. Our hypotheses for the models are as follows:

- **H1:** STR consumption is influenced by **sociodemographic characteristics**
- **H2:** STR consumption is influenced by **age** and related **usage of information sources**
- **H3:** STR consumption is influenced by **price sensitivity** and related **sustainable travel habits**
- **H4:** STR consumption is influenced by **local destination aspects** and related **sustainability certification**

Understanding consumer behavior is crucial for market efficiency and policy development. It reveals how different factors (demographics, price, location) interact to drive the demand. This can help businesses target specific market segments and improve pricing strategies. Also, it informs evidence-based policymaking. Policymakers might use this knowledge to balance tourism benefits with local needs and support sustainable urban planning.

2.2.3 Housing issues in the EU context of STRs

This partial objective identifies the closest peer countries in the EU according to housing affordability in the context of STRs and related residential perceptions.

By identifying countries with similar housing market dynamics and STR penetration, we can evaluate the effectiveness of different regulatory approaches and their impacts on housing. This enables policymakers to isolate successful policy interventions while

[1] Including, social class theory (Bourdieu, 2018), age cohort theory (Rentz et al., 1983), technology adoption theory (Gitlow, 2014; Smith, 2014; Wagner et al., 2010), price sensitivity (Marshall, 1920), heuristics theory (Tversky & Kahneman, 1974),

controlling for similar socioeconomic conditions. The implications are particularly relevant for countries struggling to find balance between residential housing and STR accommodation.

2.2.4 Perceptions of STR impacts in the EU capital cities

This partial objective estimates the influence of sociodemographic characteristics and location on the perception of STR disadvantages in EU capital cities.

This might help policymakers develop interventions that address specific concerns of different demographics. Examining perception patterns across population segments helps predict potential resistance to or support for various regulatory measures, enabling more effective policy implementation and decision-making. The estimates for location serve to compare the results among the examined cities. They reveal municipal-level patterns to identify where STR-related tensions are most acute and why. As EU capitals face similar challenges with tourism pressure and housing markets, this objective provides valuable comparative data. Understanding how perceptions vary across different urban contexts while controlling for sociodemographic characteristics helps isolate the role of local policies and market conditions.

2.2.5 STR housing impact in Prague

This partial objective estimates the impact of short-term rental accommodation on housing prices in Prague.

This will add one more (not yet explored) metropolis to the list of already investigated municipalities. There are available studies examining the STR sector in this city (e.g. Ključnikov et al., 2018); however, they do not address the viewpoint of housing prices. This provides a key opportunity, considering the intense debate on housing affordability in Prague. According to housing developers, a new apartment with a 70 m^2 area costs the equivalent of 17.3 average annual gross wages (Central Group, 2022). In addition, Prague also outstripped other European cities in terms of multi-unit STR operators (Coyle and Yu-Cheong Yeung, 2016). Hopefully, accomplishing the stated objective will allow us to better navigate in this unexplored aspect of Prague, which is currently in urgent need of investigation according to the Ministry of Regional Development.

2.2.6 Attitudes toward STR accommodation in Prague

This partial objective investigates ways to alleviate the negative and promote the positive impacts of STRs in Prague by providing insight into residents' preferred ways to regulate the phenomenon and the importance of STR-related information (as perceived by the community itself).

It will engage in the set trend of utilizing residential responses on questions concerning the perceived positive/mixed/negative impacts of the STR accommodation. It is necessary to find out what degree of importance the residents deem relevant in connection to the presumed issues, what kind of information they desire to have about the industry, and what form of regulation they reckon as preferable. Personal perceptions of the community itself can help us navigate in this not yet much explored matter. Muschter et al. (2021) call in their study for a widened scope to confirm data broadly applicable to more local government areas. Replicating their methodology across other cities shall assist in creating a comparable data snapshot and develop a more complex understanding of why different municipalities might need various STR regulations.

3 Regulatory approaches to STR accommodation

This section synthesizes the research literature on how STR accommodation is regulated, identifying what researchers have examined, where and how they have studied it, and what regulatory rationales and tools emerge across fields and regions[2]. The review is structured across three main discourses – urban studies, legal sciences, and hospitality and tourism. Across these strands, attention is given to the geographical distribution, the methodological approaches, and recurring proposals. The section concludes by situating these debates in post-pandemic research trends.

3.1 Urban studies and planning

3.1.1 Geographical distribution and methodological diversity

Urbanist discussions on the sharing economy cover regulatory motives (Chamusca et al., 2019; Gurran and Phibbs, 2017; Zou, 2020), the policymaking process (Aguilera et al., 2019; Artioli, 2018; Ferreri and Sanyal, 2018; Serrano et al., 2020; Wegmann and Jiao, 2017), policy feasibility (Lambea Llop, 2017; Valentin, 2020; van Holm, 2020; Smigiel, 2020), and neighborhood differences (Gurran and Phibbs, 2018; Wachsmuth and Weisler, 2018; Zou, 2020). Research is globally distributed, with a focus on Europe, including studies on Australian cities. Methodologically diverse, the field leans towards quantitative approaches, particularly examining the impacts of either the STRs (Chamusca et al., 2019; Gurran and Phibbs, 2017; Wachsmuth and Weisler, 2018; Wegmann and Jiao, 2017) or their regulations (Valentin, 2020; van Holm, 2020).

3.1.2 Political dynamics and effective regulation

The regulation of STRs is a highly politicized and controversial issue (Aguilera et al., 2019). A central theme is the challenge presented by these platforms to traditional urban regulations. STR listings often operate in regulatory gray areas, evading legal frameworks until neighbor complaints trigger regulatory action (Gurran and Phibbs, 2017; Smigiel, 2020). Consequently, this creates a pressing need for local planners to rethink development controls and recognize the impact of local context. The significance of the local context is also evident in the non-uniformity of regulations and their outcomes, which vary across

[2] This literature review is also published in our article: Guth, K., Aišmannová, T., Benešová, I., & Pártlová, P. (2025). Regulatory Approaches to Short-Term Rental Accommodation: A Systematic Literature Review for Urban Policy. Urban Affairs Review, 62(3). https://doi.org/10.1177/10780874251369729

policy sectors, the governing bodies involved, and the pre-existing policy instruments (Aguilera et al., 2019). In some cases, local-level political opposition can significantly impact the implementation and effectiveness of regulations (Hong and Lee, 2017). This highlights the intricate political dynamics surrounding these exchanges and the diversity of approaches taken by different authorities.

The political dynamics have to coordinate amidst the idea of micro-entrepreneurship on one side and the reality of multi-unit commercialization on the other (Chamusca et al., 2019). Although some studies suggest that STRs may help homeowners mitigate housing costs and maintain property values, the prevailing theme emerging from this review underscores the need for a deeper understanding of the structural influence wielded by these platforms (Gurran and Phibbs, 2017). Current regulations are often impractical and fail to address the institutional settings that enable these platforms to operate (Smigiel, 2020). Instead, existing bureaucratization favors professional operators and pushes out true home-sharers. Either way, authorities lack the data to know where and how to effectively regulate, reflecting their failure of governance (Smigiel, 2020). Effective regulation should consider both the localized effect of STRs and the distinction between different types of STR providers (Wegmann and Jiao, 2017).

For instance, some zoning regulations have yielded mixed outcomes (van Holm, 2020). While they initially reduced the listings in neighborhoods most affected by the ordinances, growth later resumed in adjacent areas, shifting from commercial to residential districts (Valentin, 2020). Apart from that, the case of Barcelona demonstrates that limiting the STR supply does not guarantee a decrease in demand and leads to more intensive use of the available listings (Benítez-Aurioles, 2020). Therefore, a demand-oriented regulation can instead be proposed, limiting the number of tourists that can be hosted according to the capacity of the respective city. At the same time, some municipalities are (or were) reluctant to intervene at all (e.g. Rome, Prague, San Diego, Washington, D.C.). One of the primary reasons might be the lack of accurate, comprehensive data on individual listings and hosts (Colomb and Souza, 2021). This may also lead to insufficient empirical evidence on STR impacts, further restricting policymakers' ability to implement and enforce effective regulation. On this account, the European Union has agreed to establish a digital entry point to receive monthly data about the hosts' activity from STR platforms (European Parliament,

2023). This coordination among the different political bodies in Europe was called for (Smigiel, 2020).

The discourse reflects the need for flexible and tailored regulatory approaches considering the local context (Gurran and Phibbs, 2018). The effectiveness of regulation is intricately linked to political dynamics at various levels, including local, national, and global (Dzigbede, 2016). The political opposition, policy feasibility, and data possession all significantly shape the regulatory landscape.

3.1.3 Guiding principles and policy proposals

As a particularly vital takeaway for our research, we consider the discourse on guiding principles proposed by certain studies (Binzer, 2016; Lee, 2016; Miller, 2015; Ramirez et al., 2016; SELC, 2016; Wegmann and Jiao, 2017). From the perspective of national authorities, the US Federal Trade Commission (FTC) announces its major principles for what STR regulation should strive to achieve (Ramirez et al., 2016). Policymakers should aim to standardize the platform's property listing process and improve the quality of listing properties, for example, by safety requirements, record keeping of guests, and licensing the service (SELC, 2016). To maintain the neighborhood quality of rented properties, the hosts can be required to provide a hotline for neighbors and to notify the guests about local ordinances (Binzer, 2016). Affordable housing can be preserved through caps on the number of rental nights or by requiring the host to occupy the unit (Moylan, 2016). FTC further recommends imposing a lodging tax on the STR providers (Ramirez et al., 2016). The mentioned aim to preserve the housing supply is also further concretized by Lee (2016). He proposes that policymakers' primary concerns should be whether their regulations discourage the conversion of affordable units into STRs, eliminate incentives for “hotelization”, and protect residents from eviction. On the other hand, the policy should be wary of exacerbating socioeconomic disparities while increasing access to Airbnb's benefits.

Further academic studies deal with the means to address the regulatory planning at stake. Wegmann and Jiao (2017) propose guiding principles for the local regulation of STRs by building on prior studies. Their geographical patterns and impact concentration analysis provide a suitable framework for discussing three propositions. The first principle involves web scraping, a technique utilized in many academic papers (including Chamusca et al., 2019; Ioannides et al., 2019; Ključnikov et al., 2018). The authors assert that it is an imperfect but valuable source of STR information for city governments when alternatives

are lacking. One of the most used platforms for web scraping STR patterns is AirDNA, an independent company that generates performance metrics describing Airbnb. However, its use is intricate because its metrics exhibit notable upward biases regarding STRs' metrics (Agarwal et al., 2019). Also, some hosts try to avoid license requirements by listing an incorrect designation in the city-name field (e.g. Chinese characters) (Korstrom, 2018). Therefore, once local governments establish robust regulatory systems that mandate data sharing from major STR platforms, web scraping will hopefully become less important (Miller, 2014).

The second principle claims that limiting STR concentrations within particular districts (and possibly redistributive mechanisms) is worth considering. It is further supported by other authors (Allen, 2017; Davidson and Infranca, 2016), who suggest identifying neighborhoods more vulnerable to the negative impact of STRs based on the number of displacements, homelessness, and inadequate affordable housing. On the contrary, Wills (2017) opposes zoning restrictions, arguing that cities should focus on aspects they can more effectively control (in reference to South Carolina's 2012 ordinance). Further authors have examined the policy's practical implementations with varying results. Retrospective evidence of regulatory impacts in New Orleans shows that although the new ordinances reduced participation in the STR market as intended, STR usage increased in the neighborhoods adjacent to the district affected by the regulation (Valentin, 2020; van Holm, 2020). On the other hand, Lisbon considers its zoning ban on the new STR registry successful (Peralta et al., 2020). Following its implementation, the number of housing sales was 20% lower than in other neighborhoods and the prices decreased by 8% in the historical zone. This discrepancy in the assessments of given municipalities may be caused by a combination of several aspects: the specific designs of the respective zonings, the characteristics of STR demand in each destination, and varying municipal expectations (potentially reflected in differing methodologies). There is likely further research needed in order to determine when this policy is worth implementing and when it is not.

Lastly, the authors divide the STR providers into professional operators and “mom-and-pop” hosts. The former category represents commercially oriented, multi-unit hosts. The latter category they define as “hosts who are present in their housing unit during the guests’ stay (i.e. true ‘home sharing’), and also possibly include those who only rent their entire dwelling to guests for up to a certain number of total nights within a certain time period”

(Wegmann and Jiao, 2017). One of the relevant benefits is that the sharing ownership can shift some burdens off of the host by renting out part of their living space to transient visitors (Jefferson-Jones, 2014). Therefore, regulatory systems may be arranged to displace or severely limit multi-unit hosts while giving more permissive treatment to authentic "mom-and-pop" hosts, as recommended by other authors (Gurran and Phibbs, 2017; Miller, 2015). This could help reposition Airbnb as a 21st-century revival of the once widespread 19th-century US practice of lodging in private dwellings (Jefferson-Jones, 2014).

3.2 Legal sciences

3.2.1 Geographical distribution and methodological diversity

Topics discussed in the legal discourse include regulatory models (Lines, 2015; Miller, 2015; Wilhelm, 2018, Wills, 2017), regulatory level (Hong and Lee, 2017; Wilhelm, 2018, Wills, 2017), housing impact (Allen, 2017; Interian, 2016; Jefferson-Jones, 2015; Lee, 2016), status quo criticism (Allen, 2017; Cao, 2016; Roman, 2019), and approaches to allow STRs' benefits (Edelman and Geradin, 2016; Lines, 2015; Wilhelm, 2018). The studies typically focus on frameworks for understanding the range of laws and regulations that platforms like Airbnb already face or might face.

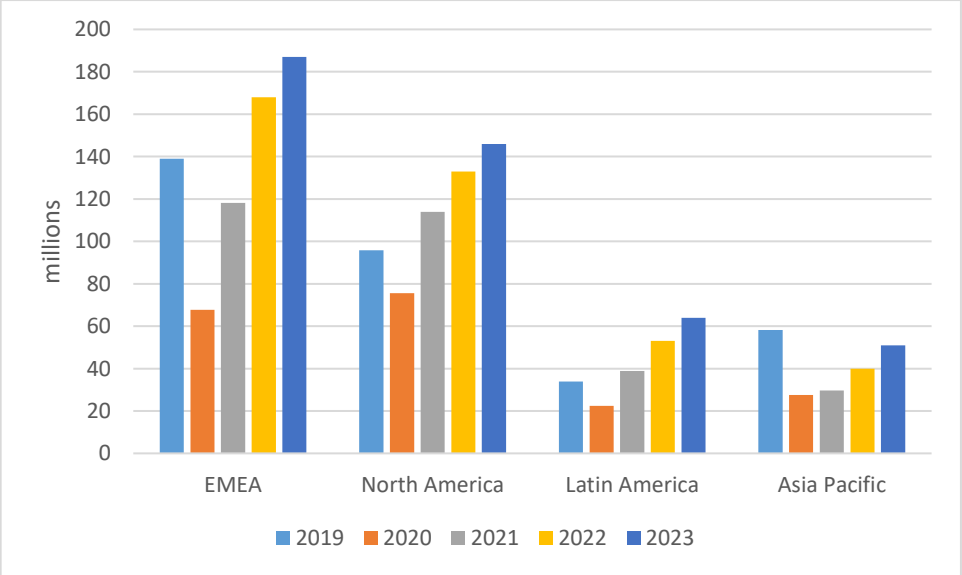


Figure 3 Airbnb nights and experiences booked worldwide 2019-2023, by region
Source: Statista, 2024a

The locations studied in this field are dominantly concentrated in the North American region with a decent coverage also dedicated to general research on the topic (i.e. with no particular study location). Similarly, North America stands out as the continent with the

greatest volume of bookings (Figure 3). Methodologically, the argumentative approach is widely used following this field's paradigm. One recurring conclusion the argumentations reach is the need for a nuanced and adaptable approach to regulation.

3.2.2 The dilemma of regulation and its appropriate level

The legal field clearly concurs that accommodating this industry (rather than outright banning it) can preserve local interests in cities (Lines, 2015; Wilhelm, 2018; Wills, 2017). The phenomenon, however, tends to be in tension with pre-existing regulatory frameworks, which typically require certification, licensing, and insurance. In one view, these requirements may be outdated and benefit incumbents more than consumers, while in the other, they uphold fundamental values and protect both customers and the general public (Edelman and Geradin, 2016). At the core, we can define two fundamental possibilities for regulating STRs: using the current regulations (as for other lodging establishments) or adopting a new scheme. The reviewed literature recognizes creating a new regulatory system as superior (Lines, 2015). Municipalities should not fit STRs into their current regulatory frameworks because such an approach would restrict potential benefits for both municipalities and STR users. Similarly, further removing arbitrary legal interventions can also allow benefits from the efficiencies generated by these platforms (Edelman and Geradin, 2016). The authors are cautious not to nullify Airbnb's appealing traits. The consensus likely emerges because treating STRs the same as other transient lodging establishments may impact their flexibility, simplicity, and ease of use. Nonetheless, a regulation should be maintained (or created) for necessary market failure resolutions (Edelman and Geradin, 2016).

Other authors highlight addressing regulatory matters at the optimal level per the subsidiarity principle (Dredge et al., 2016). The legal discourse is ambiguous about regulating at the state or municipal level, or combination of both (Wilhelm, 2018). Consistent regulation across the entire state can provide higher ease of compliance and prevent unfair competition among municipalities. Furthermore, it is usually more efficient regarding enforcement and administration (Guttentag, 2019). However, there are also drawbacks to STR regulation at the state level. One concern is that state-level regulations may not adequately address individual municipalities' specific needs and characteristics. Different cities and towns may have unique housing markets, tourism dynamics, and community concerns that require tailored regulations (Gurran and Phibbs, 2017).

The appropriate level of regulation appears to depend on the diversity within a given state. Municipal-level regulations can be more flexible and adaptable to each city's specific needs and conditions. This flexibility allows local governments to address local concerns, such as preserving neighborhood character, managing tourism impacts, or protecting affordable housing (Wachsmuth and Weisler, 2018). Therefore, countries with markedly different policy interests and tourism industries among their regions might find preferable implementation on a municipal level. South Carolina is an example suitable for this level of regulation with its distinctly different Midlands and Lowcountry regions (Wills, 2017). Moreover, local governments are more sensitive to democratic influences than central ones (Hong and Lee, 2017). Therefore, decentralization may hinder the process of adaptation if the considered policy embodies entrepreneurial politics (i.e. if the adaptation generates widely distributed benefits but narrowly concentrated costs).

The key points to consider are that state-level regulations can provide consistency and efficiency, but may not adequately address local needs. In contrast, municipal-level regulations can be customized to local conditions but may result in a legal patchwork and require more resources. Ultimately, the choice between state and municipal regulation should consider each jurisdiction's specific context and goals.

3.2.3 Regulatory tools and their implementation

Regarding specific policy approaches, some authors (Gurran et al., 2018; Interian, 2016; Lines, 2015) discuss implementing various regulatory tools. One tool commonly appearing in the literature is a comprehensive registry system of the properties. Such annual registration would not only allow municipal authorities to keep track of the concentration of the listings but would also assist in compliance with applicable local rules. These rules should target aspects authorities can effectively manage, including tax collection, occupancy limits, and addressing nuisance violations, instead of concentrating on zoning regulations (Wills, 2017). Zoning and residential development controls need to distinguish between different forms of STRs and their potential impacts (Gurran and Phibbs, 2017). Such regulatory design can protect the character and integrity of neighborhoods, ensure affordable housing, and simultaneously realize a significant source of revenue. Furthermore, the implementation should include mandatory insurance, precise specifications on what types of rentals are permitted, and accountability for safety compliance (Lines, 2015). Airbnb should

also ensure compliance with local laws, limited to remitting taxes and complying with housing rules (Interian, 2016).

An example of a suggested system can be seen in the flexible approach of San Francisco. Its legislation gives significant flexibility to hosts, which may generate more STR activity, and gives the municipal authorities intelligence and enforcement strength towards such rentals (Lines, 2015). US cities have focused more on mandating insurance coverage and collecting tourist taxes than on redressing the permanent housing loss (Interian, 2016). However, the loss of potential tourist tax revenue due to defaulters prevents governments from supporting affordable housing and municipal improvement projects. Thus, apart from flats being removed from the available housing stock to be used for transient guests, the reduced revenue from tourist taxes further exacerbates the situation in the affected cities. Municipalities may also consider revising the real estate tax to reflect the property appreciation associated with STRs (Vejchodská et al., 2022).

According to the discourse, the phenomenon is here to stay, and an outright prohibition of STRs is not the optimal solution. Ideally, the design of the regulatory scheme would benefit all parties involved, including the property owner, the host, the city, and the guest. Regardless of the specific regulatory approach chosen, some form of implementation is required (Wilhelm, 2018).

3.3 Hospitality and tourism

3.3.1 Geographical distribution and methodological diversity

The topics within the hospitality discourse encompass the context of policy implementation (Avdimiotis and Poulaki, 2019; Furukawa and Onuki; 2019; Grimmer et al., 2019; Nieuwland and van Melik, 2020), the effects of regulatory measures (Benítez-Aurioles, 2020; Vinogradov et al., 2020; Yeon et al., 2020), stakeholders' perceptions (Jordan and Moore, 2018; Suess et al., 2020; Yeager et al., 2019), and municipal differences (Dredge et al., 2016; Furukawa and Onuki; 2019; Nieuwland and van Melik, 2020; von Briel and Dolnicar, 2020).

The literature reveals the complexity and diversity of the STR phenomenon, with studies spread across North America and Europe. Unlike other fields, this area shows a broad blend of methodologies, predominantly quantitative followed by qualitative ones. This field also leads in the number of studies utilizing a review method (Caldicott et al., 2020;

Guttentag, 2019; Hossain, 2020; Prayag and Ozanne, 2018). The quantitative studies mainly evaluate the regulatory effectiveness (Benítez-Aurioles, 2020; Vinogradov et al., 2020; Yeon et al., 2020), while the qualitative ones employ either content analyses of policy documents (Grimmer et al., 2019; Guttentag, 2015; Nieuwland and van Melik, 2020; von Briel and Dolnicar, 2020) or in-depth interviews and questionnaires (Alrawadieh et al., 2020; Jordan and Moore, 2018; Varma et al., 2016). The comparative method tends to set side by side regulatory approaches of respective municipalities (Dredge et al., 2016; Furukawa and Onuki, 2019; Nieuwland and van Melik, 2020; von Briel and Dolnicar, 2020).

3.3.2 Municipal regulatory differences

Municipalities around the world have responded differently to the rise of STR platforms and implemented various regulatory measures to address its impacts. The number of Airbnb listings in selected European cities is displayed in Figure 4. Most destinations use a simple registration system, forcing hosts to declare their activities (Guttentag, 2019). Many regulatory frameworks evolve over time, and some are even modified through collaboration with the platforms themselves (von Briel and Dolnicar, 2020), as previously suggested in the legal discourse (Interian, 2016). The diverse policy responses across cities reflect the complex interplay of political factors in shaping regulatory approaches (Aguilera et al., 2019).

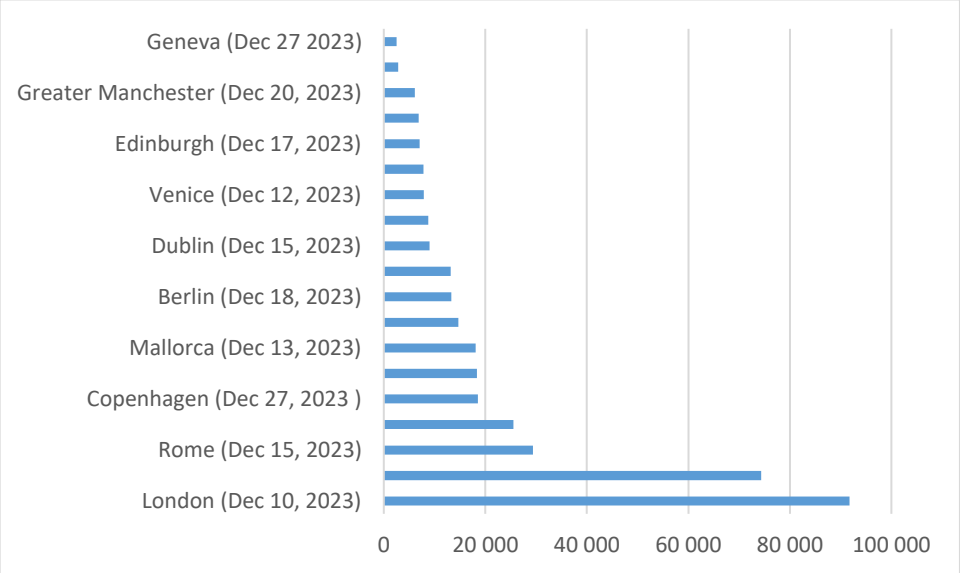


Figure 4 Number of Airbnb listings in selected European cities, 2023

Source: Statista, 2024b

Some municipalities already had strict short-term accommodation regulations in place before the STR platforms entered the market. These cities typically introduce regulations

with a delay and then replace their strict policies with more flexible alternatives, as in the case of San Francisco (Cutler, 2014). These regulatory changes usually emerge from the lobbying activities of the platforms, hosts, and tourists (von Briel and Dolnicar, 2020). In the other municipalities (mostly European), existing legislation did not cover peer-to-peer accommodation beforehand. In this case, regulations are typically motivated by legislators wanting to clarify its legal status, as in Berlin or Barcelona (Espiga, 2015).

The European municipalities are further burdened also by other influences. One of them is rooted in the impact of a related industry. Since the early 2010s, low-cost airlines have contributed to increased demand for lower-priced accommodation in target destinations (Dredge et al., 2016). This leads to increased STR business potential in the respective cities and thus draws the attention of stakeholders, the residents, media, and the government. The differences in the consecutive policy responses then stem from the actors who politicized the matter, available policy instruments, and government-tier competences (Aguilera et al., 2020).

The policymakers also have to contend with a divergence from the intended purpose of the sharing economy. The appealing idea of STR as a supplementary income for local residents does not match European reality. STR hosts are representative of the cosmopolitan consuming class with higher disposable income rather than local communities (Sans and Domínguez, 2016). Expatriates, foreign investors, and other non-residents are significantly overrepresented among multi-unit operators (Dredge et al., 2016). This originates from the nature of how the sharing economy is (or is not) regulated. If policymakers aim to embrace the positives of STR, they can build their regulatory mechanisms around this phenomenon. For instance, limiting the number of units per host can mitigate the negative externalities of STR while still allowing reasonable side income for residents. Municipalities could also adhere to certain restrictions on foreign ownership of property as applied in Singapore (Singapore Land Authority, 2023) or Switzerland (Swiss Authorities, 2023).

European policymakers appear less committed than expected in addressing the externalities of over-tourism and transient lodging. Apart from STRs, investment in new hotels has significantly contributed to the expanded accommodation supply in major cities (Amsterdam, Barcelona, Berlin, Paris) (Dredge et al., 2016). To illustrate this further, in the 5 years from 2017 to 2022, the supply of hotel rooms in Prague increased by 3.4 thousand while the number of commercial STR listings decreased by 1.7 thousand (CZSO, 2023;

Inside Airbnb, 2023). The drop in STRs can be attributed to a difficult recovery from the Covid-19 pandemic; however, the expansion of the hotelier sector (despite the pandemic) demonstrates the attitude of the municipality toward the issues at stake.

The American discourse recognizes that, indeed, European municipalities are more indulgent toward the phenomenon than their US counterparts. However, neither the US ordinances are as strict as previously expected, based on Airbnb's media coverage (Nieuwland and van Melik, 2020). Only a few cities prohibit STRs altogether (e.g. Anaheim and Oakland). Instead, they usually require safety precautions, information provision, or primary residency. Some limit the number of guests, nights, and times a property can be rented. Most municipalities primarily concentrate on mitigating negative impacts in the interest of local residents (shortage of affordable housing and neighborhood transformation). In contrast, the disruptive nature for the traditional lodging industry is regarded as less problematic (Guttentag, 2015).

Nonetheless, the hotelier sector (especially lower-scale hotels) has initiated a big lobby against Airbnb in certain US municipalities (Benner, 2017). Possibly, the competition between STRs and hotels might be influenced by the city's maturity as a tourist destination (Nieuwland and van Melik, 2020). In cities like Denver, where tourism is still in its growth phase, STRs might be seen as complementary to the current supply of hotel rooms. Whereas in destinations with a more abundant travel industry, STRs could be regarded as direct competition. In those cities, we can also anticipate that the traditional hotel industry will continue to coerce local policymakers. That said, there are also indications that hotels are reforming their strategies due to the competition from STRs and in reaction to current tourism trends (Varma et al., 2016).

US policy responses to STR are impacted by several external factors. Increased political competition correlates with a more favorable regulatory response for STR, as it compels governments to prioritize the public interest more (Hong and Lee, 2017). Furthermore, the decisions of policymakers are influenced by their fiscal reliance on income from market incumbents (Hong and Kim, 2017; Hong and Lim, 2016; Schlozman et al., 2012). Therefore, a higher lodging tax rate correlates with a less permissive regulatory outcome (Hong and Lee, 2017). This is further reinforced by the fact that STR regulation tends to be more rigorous in cities where the hotel industry represents more than approximately 1% of the local economy (Furukawa and Onuki, 2019). This might be

connected to the aforementioned hotelier lobby. The effects of lobbying seem negligible as long as the industry constitutes a minor part of the economy. Altogether, the municipality's payroll evidently plays a role in policymaking.

Another important factor in the regulatory rigor is the criticism of Airbnb on the internet. Policy responses tend to be stricter in cities where criticism of STRs as a driver of gentrification is louder, such as New York and Los Angeles (Furukawa and Onuki, 2019). Nonetheless, the proliferation of STRs in these cities is not notably faster, nor is their STR density greater than in other cities. A significant part of the prevailing trend of gentrification in the post-Great Recession age has likely been driven by circumstances other than STRs (Dredge et al., 2016; Ioannides et al., 2019; Stors and Kagermeier, 2018). This is illustrated by the lack of correlation between the rent growth and Airbnb's popularity (Furukawa and Onuki, 2019). Given that studies highlight that rent growth is largely driven by broader socioeconomic trends, STR regulation is unlikely to be effective (Chapple and Zuk, 2015; Moskowitz, 2017; Stehlin, 2016; Zuk et al., 2015). Unless gentrification is predominantly caused by STRs (which is not supported by evidence), such measures cannot meet the desired outcome. Similarly, in Europe, social media also play a role in propagating and circulating concerns. Issues observed in one city are often projected onto another without research or evidence (Dredge et al., 2016).

In contrast, dealing with the problem of general nuisance in the neighborhood (such as noise) is less complex. Since the regulations have negative effects on STRs' popularity, they can confront the problem of nuisance by slowing down or stopping the proliferation (Furukawa and Onuki, 2019). However, the perceived impact of STRs is more significant than their real, absolute impact (Nieuwland and van Melik, 2020). Therefore, the perceived impact of STRs may quite easily differ from one neighborhood or city to another – and proportionally with this, the rigor of the regulation (Furukawa and Onuki, 2019).

Nonetheless, isolating the effects of STR is also complicated. Neighborhood changes are often intertwined with already existing issues related to tourism and gentrification (Ioannides et al., 2019; Stors and Kagermeier, 2018). Attributing both positive and negative impacts to STR alone would mean ignoring other processes.

3.3.3 Perceptions of the stakeholders

The importance of the actual versus the perceived impact is further examined in this field to inform government responses. While addressing the impacts of this phenomenon, accounting for residents' preferences is important for the local administration (Gannon et al., 2020; Muschter et al., 2021). Moreover, alleviating unjustified fears and a potential moral panic over new developments can support innovative opportunities. However, it is important to note that policymakers cannot address all stakeholders' concerns and likes (Caldicott et al., 2014; Ravenscroft, 2020).

The perceptions of the impacts and potential regulatory routes significantly vary based on several aspects (e.g. location and stakeholder category). Australian residents identify several negative impacts and preferred policies (Muschter et al., 2021). The most pressing impacts are a shortage of affordable housing, increased traffic/parking congestion, and an effect on residents' lifestyle. They wish to mitigate them mainly by reporting avenues for complaints, compulsory public liability insurance, and restrictions on STRs without on-site management. Similar survey was also employed in Central Europe (Vyplnto, 2022), however, Czech respondents perceive the phenomenon more positively than the Australian ones (presumably, because the Australian survey focused solely on residents of the most affected locations). Both mentioned countries view housing affordability as the most pressing impact, while, in contrast, Malaysian residents rank it the lowest (Al Sadat Zyed, 2020).

US residents perceive STRs negatively in connection to their presence in residential zoned areas (Jordan and Moore, 2018). The main complaint is directed at the lack of a proprietor to manage the property (and guests) like a traditional accommodation. Simultaneously, residents who have stayed at STR accommodation have much more emotional solidarity with visitors to their community, as well as more positive attitudes toward STR hosts (Suess et al., 2020). They believe that STR guests have a positive impact on personal quality of life and community well-being when compared to residents who have not stayed at STR accommodation. Overall, the US results call for regulatory procedures that ensure STRs do not interfere with citizens' sense of community (Yeager et al., 2019). STR platforms may reduce the regulatory desirability through fair treatment of the stakeholders (Newlands and Lutz, 2020).

3.3.4 Effects of regulatory measures

While existing research predominantly explores STR regulation legislatively, there is a gap in understanding the impact of policies on STR providers, necessitating further investigation (Chen et al., 2020). Despite the literature suggesting various paths for municipalities to consider (Wilhelm, 2018; Wegman and Jiao, 2017; Lee, 2016; Miller, 2015; Jefferson-Jones, 2015), the effectiveness of these regulatory measures in achieving governments' goals remains underexplored.

Chen et al. (2020) attempt to fill this gap by estimating the impact of individual regulatory measures on the supply side of STR. Three regulatory measures (***cap, standards, and eviction restrictions***) not only inhibit the proliferation of new listings but also compel some incumbent hosts to delist their dwellings from the market. These three regulatory measures, therefore, are successful mechanisms for regulating STR. The other six recurrently used regulatory measures have different impacts on new listings and on delistings. ***License, neighborhood protection, taxation, and conversion restriction*** have eminent effects on restraining the proliferation of new listings but not on delistings. Conversely, ***host stay and record-keeping*** work on governing the number of delistings but not on new listings. As immediate costs and monetary expenses are more noticeable and easily estimated than the implicit and non-monetary costs, individuals are heavily influenced by the upfront costs, thereby decreasing their inducement to enter STR markets.

The effects of these regulatory measures (specifically, cap and taxation) on the number of listings are more in-depth examined by Vinogradov et al. (2020). The cap on the number of nights a property can serve as an STR may potentially amplify the inherent instability of the STR supply. It exhibits much more volatile behavior than an unregulated market. In contrast, STR revenue taxation effectively removes the most unstable listings from the market. Their growth flattens when most of the demand is satisfied. In addition, taxation reduces the concentration of listings in the city center (at 15% tax, the universal distribution between central and peripheral areas is achieved). It can be assumed that a stable supply of STRs is preferable for the tourism industry as compared to the serious periodic fluctuations.

More locally, the topic of regulatory effect is also examined in the specific conditions of the 2016 New York law, the 2017 New Orleans Comprehensive Zoning, and the 2018 Los Angeles Home-Sharing Ordinance. The 2016 New York law prohibited the advertisement of STR for less than 30 days for entire units if the host is absent (Brustein and

Berthelsen, 2016). The monthly revenues of STR listings that were subject to the regulation decreased in the period following the passage, suggesting that the regulation was effective in restricting STR performance (Yeon et al., 2020). In Los Angeles County, the Home-Sharing Ordinance reduced the number of STR listings by 70%. The decrease in STRs caused housing prices to fall by 3% on average and rents by the same amount (Koster et al., 2019). Lastly, the New Orleans Comprehensive Zoning is already discussed in the urbanist section of this review (see Valentin, 2020). At the same time, stricter regulation correlates with higher STR supply across 59 US cities (Uzunca and Borlenghi, 2019).

In Europe, cities are addressing similar concerns through regulations, including ***temporal, zoning, and density restrictions*** (Dredge et al., 2016; Aguilera et al., 2019; Nieuwland and van Melik, 2018). However, these often lack feasibility due to shortage of monitoring staff, insufficiently targeted solutions, and a focus on topics such as tax avoidance and social housing misuse, neglecting the underlying power dynamics (Smigiel, 2020). Additionally, hosts exploit legal gray areas, further hindering effective regulation. For example, in Barcelona, such impractical regulatory approach aimed at limiting existing STR listings (based on three different zone types) led to more intensive use of the remaining options (Benítez-Aurioles, 2020). In contrast, Lisbon's more feasible response involved banning new STR registrations in selected neighborhoods, resulting in 20% lower demand and 8% lower housing prices in the treated area (Peralta et al., 2020).

3.4 Post-pandemic research trends

In addition to the pre-pandemic literature review, we searched the Web of Science for articles published from 2021 to 2025 (up to July). Using the same keywords, we gathered 435 results and screened the 100 most influential (i.e. cited) studies from this period. The following section summarizes their overview.

Despite our key word selection, only nine articles are devoted specifically to STR regulation. Seven other articles explore regulation pertaining to the whole tourism sector or to the sharing economy in general. Bei & Celata (2023) offer an important overview of instruments adopted by European cities, and an assessment of their effectiveness. Their comparison of regulated vs unregulated cities shows that the former obtained a persistent reduction of entire apartments and professional hosts, but no significant impact on the spatial concentration of STRs. Chen et al. (2023) zoom in on the role of these professional hosts.

Their properties are more expensive and have superior characteristics than non-professionals'. The authors also employ a quasi-experiment in which Airbnb capped the number of properties a host can manage in several US cities. The results suggest a dominance of the competition effect over the differentiation effect, meaning that professionals mostly supply similar properties and compete with the non-professionals. In particular, the policy increased the supply from casual hosts, and the price level of their properties went up. The platform was not worse off in attracting reservations or securing revenue after the policy. Other authors focus on topics such as hosts' influence on regulation (Muller et al., 2021), a social licence to operate STRs (Baumber et al., 2021), a novel zoning approach (Yiu & Cheung, 2021), and detection evasion of illegal STRs (Colomb & de Souza, 2024). The discourse tends to collectively agree on the importance of obtaining the cooperation from STR platforms.

As touched upon in the previous paragraph, some elicited articles are about broader topics such as the sharing economy, tourism, or mobility. STR accommodation is researched in 80 out of 100 articles. Among those the most common theme is STR impact (19 articles), primarily on housing and gentrification (13 articles). The issue of housing is further marginally explored in three more studies. The discourse consistently supports the evidence of STR impact on housing affordability (e.g. Shabrina et al., 2022; Liang et al., 2022; Garay-Tamajón, 2022). There is also some evidence for a correlation between STR concentration and crime statistics (Ke et al., 2021). On the other hand, Mody et al. (2021) challenge the narrative of STR impact on quality of life according to a US-wide survey. Other common themes include consumer behavior (11), the pandemic disruption (10), and regulation (9) as described in the paragraph above. Lesser attention attracts topics such as pricing, guests' reviews, spatial distribution, and host experience. These topics have only negligible regulatory implications, however, the search engine has still retrieved them using our key words.

4 Implications from literature for the following empirical sections

The theory-laying foundation for Section 6 is tied simultaneously to consumer theory and factors shaping consumption of technology and associated goods. There are four main dimensions according to which we aggregate factors and construct models of STR consumption: sociodemographic (Bourdieu, 2018; Calero & Choi, 2017; Heisig et al., 2024; Polèse, 1991; Rentz et al., 1983), information sources (Gitlow, 2014; Smith, 2014; Wagner et al., 2010), price-dependent sustainability (Anderson et al., 1997; Marshall, 1920; Palgan et al., 2017; Tversky & Kahneman, 1974), and local experiences (Guttentag et al., 2018; Stors & Kagermeier, 2017). Section 3.2 in the methodology sheds brighter light on the key theoretical sources of differences between STR consumers.

Relationships among variables in Section 7 are assumed based on the discussed influence of STRs on housing affordability (Manganelli et al., 2020; Peralta et al., 2020; Sheppard & Udell, 2016). We also assume that perceptions of certain phenomena should be rooted in objectively measurable circumstances. Therefore, indicators developed to measure the given phenomena are expected to correlate with the surveyed perceptions.

Regression models estimated in Section 8 assume relationships similar to previous studies (Alloh et al., 2025; Garau-Vadell et al., 2023; Lutz et al., 2024; Masoumi Dinan & Lutz, 2025; Mody et al., 2019). Both benefits and costs of STR accommodation are presumably perceived through the lens of the specific residential environment, simultaneously involving sociodemographic influence. However, we consider country-level analysis suboptimal for such investigation, given that entire countries are typically largely heterogenous areas. Our selected cities are the epicenters of the debate on STR impacts as well as the pioneers of the European regulatory landscape for STRs. Analysis on a more micro scale than country-level allows for granular and rigorous results, which is a common trend in STR research (Ayouba et al., 2020; Horn & Merante, 2017; Jordan & Moore, 2018; Yeager et al., 2020). Furthermore, STR participation is regarded as a potential factor in STR perceptions also in other studies (Muschter et al., 2021; Suess et al., 2020).

Section 9 follows a significant body of research examining the influence of STR proliferation on housing prices (Barron et al., 2021; Franco and Santos, 2021; Garcia-López et al., 2019; Duso et al., 2020). Given the absence of spatial data for Prague's housing prices,

we rely on one-dimensional econometric methods conventionally used for modeling price relationships. The relationship between our variables is assumed according to the following formula:

Total housing stock = stock for long-term use + stock for short-term use + vacant stock

therefore

Stock for long-term use = total housing stock - stock for short-term use - vacant stock

The law of supply and demand dictates that the prices of long-term (residential) housing are a function of available housing supply alongside the number of inhabitants seeking housing (or investment). If we assume housing demand is constant, the price decreases with new housing construction (increasing supply) and increases when the stock for long-term use is reduced (decreasing supply). The stock for long-term use might be reduced by conversion to short-term rental (or alternatively into other commercial use) or by being left long-term vacant. The mentioned variables are further related to mortgage rates, as mortgage affordability influences the purchasing power of individuals attempting to finance a dwelling investment with a loan from a financial institution (Krcmar & Rychtarik, 2013; Laurinavičius et al., 2022; Xie, 2024). In other words, a higher mortgage rate makes a housing purchase more expensive for buyers who do not have savings ready for the full price. At the same time, the influence is expected to be bilateral because when fewer dwellings are offered on the residential market, the decline in purchases reduces demand and pushes interest rates downward.

Our analysis in Section 10 follows an approach similar to Section 8, however, focused on Prague. This section replicates a survey conducted by Muschter et al. (2021) in Australia. The survey instrument was adapted to local conditions to test the relationships between STR consumption and attitudes toward STR accommodation, similarly to other studies (Alloh et al., 2025, Suess et al., 2020).

5 Sharing economy of STRs in the EU

The emergence of STR accommodation platforms has fundamentally transformed the hospitality industry, creating new opportunities and challenges for destinations worldwide. This chapter explores the dynamics of the STR sharing economy within the EU, describing usage patterns, consumer preferences, and perceived benefits across member states. Examining survey data, we describe variations in STR adoption and attitudes among EU citizens.

Figure 5 depicts differing STR usage patterns across EU member states. Each country is illustrated by two columns: one column demonstrates what percentage of its residents have ever booked an STR, and the other demonstrates what percentage considers STRs to be their most likely method of traveling (or one of the most likely). There are notable discrepancies in the reported consumption patterns. Particularly, France and Denmark indicate that despite ranking among the most STR experienced countries, only a few of their residents responded that they are likely to use STRs. This suggests that these respondents might have encountered a negative experience when using STRs in the past. In contrast, Germany, Austria, and Slovakia report more residents who are likely to use STRs than how many have ever booked one. A possible explanation might be that respondents in these countries are planning to book an STR but have not done so yet. Other factors skewing the data might be misunderstanding by the respondents or the loss of some meanings in the translations.

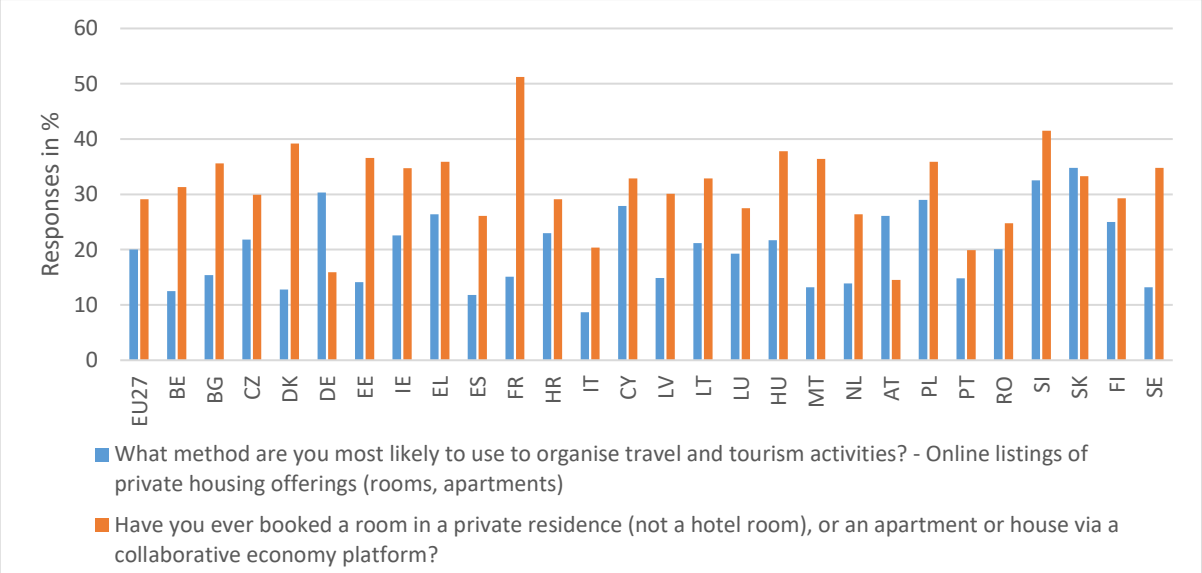


Figure 5 Self-reported STR usage of EU citizens (in %)

Source: Own, based on Eurobarometer ZA7799 and ZA7807

When analyzing the motivations behind choosing STRs over traditional hotel accommodations, several interconnected factors emerge from Figure 6. Price appears to be a dominant factor in the decision-making process. This aligns with the narrative of STRs as a cheaper alternative to hotels, however, this trend is argued to have receded over time (Botsman & Capelin, 2015; So et al., 2018; Webb, 2023). The price advantage may also manifest as a ratio of square footage per euro spent compared to hotel rooms (providing separate bedrooms, living areas, and sometimes outdoor spaces). This additional space contributes to a more comfortable stay. The savings may extend beyond the basic accommodation rate, enhancing the overall trip budget through access to cooking facilities, free parking, and other amenities that typically incur extra charges in hotels. This is further reinforced by respondents' second most frequent response that STRs have better facilities to meet their needs. The facilities also allow them to maintain domestic routines (cooking, laundry, relaxing in a living room), which makes STRs particularly fitting for family vacations, extended stays, or business trips.

The third most common reason for choosing STRs is a better location, revealing insights about modern travel preferences. While hotels traditionally cluster in tourist districts or business centers, STRs offer access to residential neighborhoods. This distribution across different city areas provides travelers with choices that align more closely with their specific needs, whether that's proximity to family members, specific attractions, or the desire to experience a destination from a local's perspective.

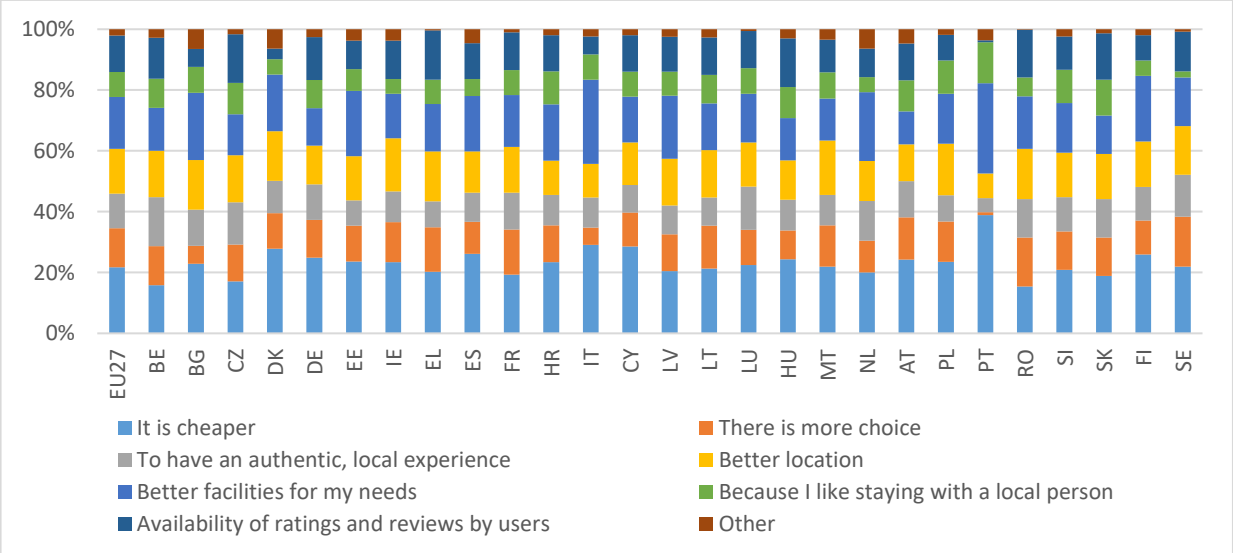


Figure 6 Reasons of EU citizens for choosing an STR as opposed to other type of accommodation
Source: Own, based on Eurobarometer ZA7799

Figure 7 depicts broader public perception of STR advantages, showing how these platforms are viewed also among residents who have never used them. The data show eight distinct categories of advantages, each contributing to the overall impact of STRs on local communities. The EU27 average provides a benchmark against which individual country variations can be measured, revealing different patterns of perception.

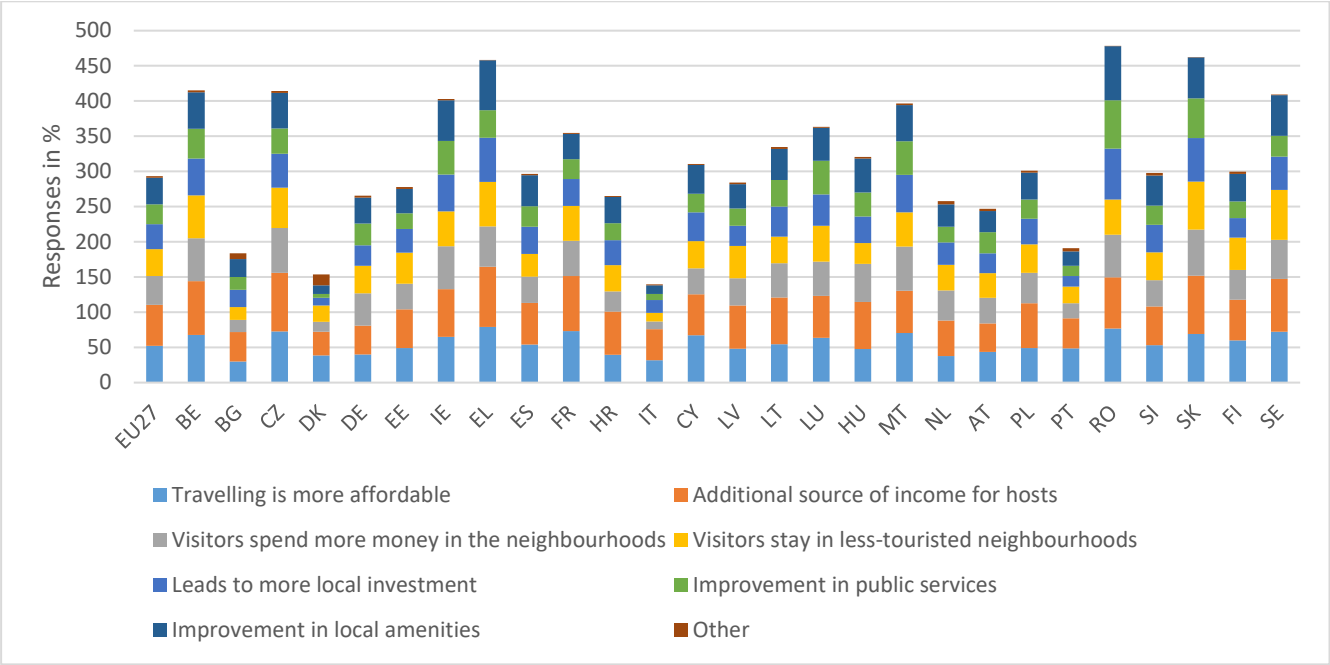


Figure 7 STR advantages as perceived by EU citizens (in % for each advantage)

Note: Respondents could have indicated multiple advantages. The bars reflect the percentages of respondents for each advantage separately. Thus, the potential maximum in the graph could be 800% (100% for each of the eight advantages). For example, in the first bar (EU27), the displayed values are 52%, 58%, 41%, 38% 35%, 28%, 38%, and 2% (from bottom to top).

Source: Own, based on Eurobarometer ZA7799

There are notable variations in how these advantages are perceived across different EU member states. The total height of the stacked bars varies considerably, suggesting different levels of overall perceived advantages across countries. In total, the lowest STR benefit perceptions are in Italy, Denmark, and Bulgaria; while the highest are in Romania, Slovakia, and Greece.

The most prominently cited advantage across the EU is that "travelling is more affordable" which aligns with Figure 6. This is particularly evident in countries such as Greece, Romania, and the Czech Republic, where it forms a substantial portion of the perceived benefits. Another significant theme is economic benefits for local communities, manifested through multiple advantages: *additional source of income for hosts*, *visitors spend more money in the neighborhoods*, and *leads to more local investment*. The survey

also captures the spatial distribution effects of STRs through the advantage "visitors stay in less-touristed neighborhoods." This suggests that STRs contribute to tourism dispersion within destinations, potentially relieving pressure on traditional tourist areas while bringing economic benefits to residential neighborhoods. Infrastructure enhancement is recognized through two related advantages: improvement in public services and in local amenities. These advantages suggest that STR activity might contribute to local development, though their relative importance varies significantly across countries.

6 Methodology

The following chapter describes the methodological procedure of the thesis. Since our main objective is broken down into six partial objectives, the methodology follows the same structure – the featured six subchapters therefore explain the methodological approaches according to each of the partial objectives.

6.1 Literature review

This dissertation employs a systematic review to collect empirical evidence on short-term rental regulations, addressing specific research questions and synthesizing evidence for reliable conclusions (Liberati et al., 2009; Khan et al., 2003). This method allows for consistency assessment, research gap identification, and understanding of study influences, guiding future research (Snyder, 2019; Davis et al., 2014). The process of our systematic search procedure is illustrated in Figure 8.

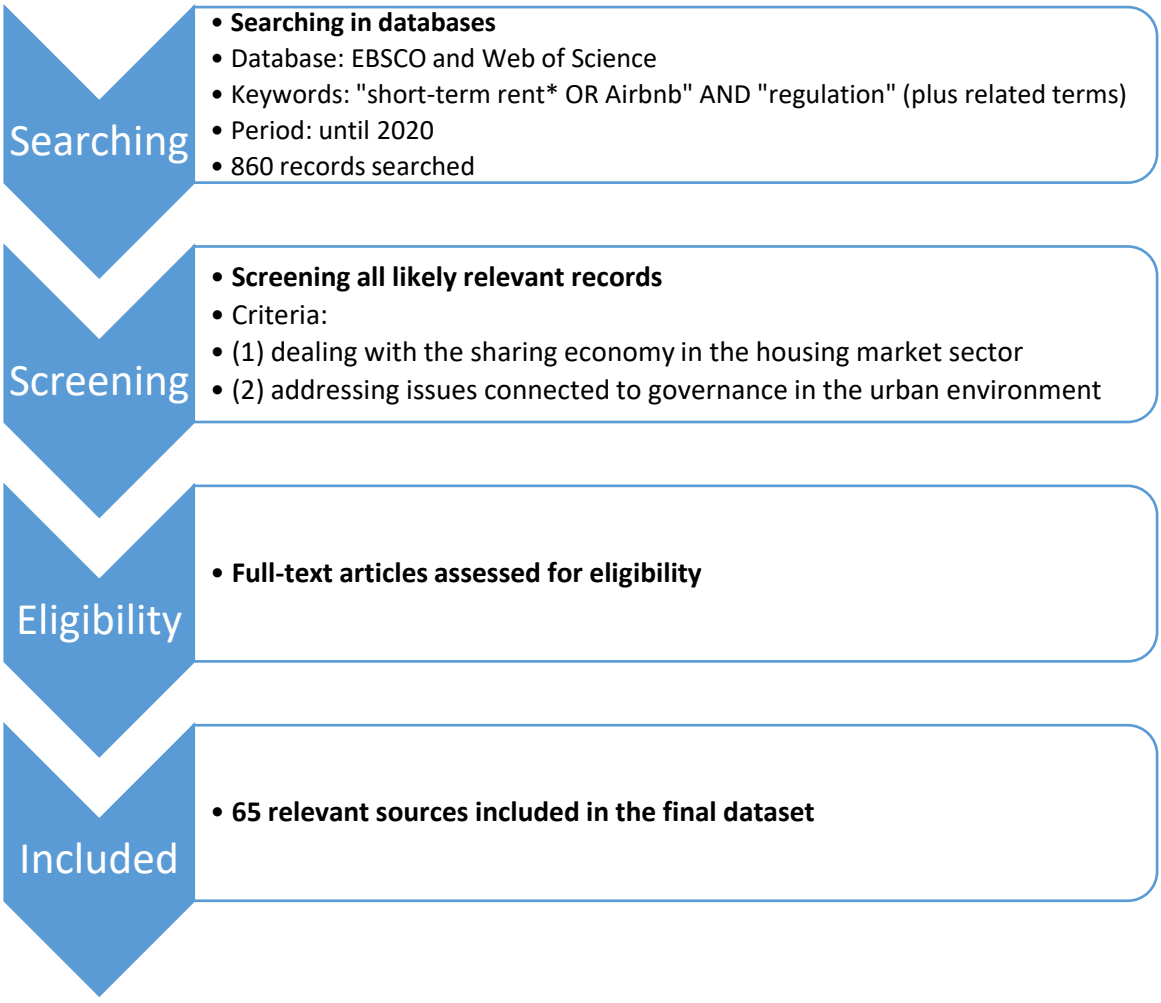


Figure 8 Methodological search procedure

Following Gusenbauer and Haddaway (2020), we used EBSCO and Web of Science databases to find relevant articles, as recommended for systematic literature reviews. We continued according to the guidelines proposed by Snyder (2019). The following keywords were used for article searching: "***short-term rent**** OR ***Airbnb***" AND "***regulat**** OR ***restrict**** OR ***govern**** OR ***policy*** OR ***ordinance*** OR ***plan**** OR ***registr****". The search period was restricted by the upper limit of 2020 to focus on results regarding the era before the Covid-19 pandemic impacted the global hospitality sector. Our search was then limited to searching titles, abstracts, and keywords, arriving at 517 results on EBSCO and 343 results on Web of Science. The articles were further filtered according to the following criteria: (1) dealing with the sharing economy in the housing market sector and (2) addressing governance of the phenomenon in the urban environment (omitting, for example, titles dealing too broadly with the sharing economy or tourism as a whole, as well as titles analyzing an aspect of the phenomenon without drawing broader regulatory conclusions).

After examining portions of each article, we found 45 relevant on EBSCO and 42 relevant on Web of Science. Out of these 87 records, 33 were duplicates, resulting in 54 unique articles. Finally, the number was expanded to 65 studies[3] during the review process by including related sources found in the references of the papers under ongoing review. The final number comprises 60 journal articles, 1 proceedings paper, 1 book chapter, and 3 other reports. Among these studies, 27 are North American, 22 European, 8 Asian, and 8 Australian. They can be mostly categorized into the fields of hospitality studies (23), but also urban studies (16), law (14), economics & business (8), and public policy (4). Nonetheless, some of the papers are on the border between two categories. Urban studies, economics, and law are often partially overlapped, and several fields are sometimes intertwined with geography or information technology. The publication years of the reviewed studies are skewed towards more recent years, with more than 90% coming from 2016 and later. Over half of them were published in 2019–2020, which may indicate a peak in relevant research activity during this period.

Afterwards, the articles were categorized based on our priorly proclaimed objectives. We primarily divided the existing literature based on relevant research fields, and secondly, we categorized the findings according to the most common topics in each of the respective

[3] The same sample is also used in our published article: Guth, K., Aišmannová, T., Benešová, I., & Pártlová, P. (2025). Regulatory Approaches to Short-Term Rental Accommodation: A Systematic Literature Review for Urban Policy. *Urban Affairs Review*, *62*(3). https://doi.org/10.1177/10780874251369729

fields. The given research fields were assigned with respect to the following three aspects: WoS field of the respective journal, academic background of the authors (based on their bios), and overall content of each study. Subsequently, each category's key findings, interconnections, and other trends were summarized.

Lastly, our results were discussed by ordering major assertions found in the reviewed literature. When reviewing the studies, we recorded the occurrences of repetitive statements across different authors. Based on these frequencies, we ordered the statements and present them in the discussion. These elicited statements were divided into categories based on the authors' presence/absence of consensus. With this approach, we assessed two categories: (1) statements in consensus and (2) statements in dissensus. The first category is defined as assertions which repeatedly appear in the literature with multitudinous frequency. The second category is devoted to claims that appear several times in the literature as well; however, unlike the first category, they are not in agreement but in dissent.

6.2 STR consumer model

The archetypical STR consumer is modeled using path analysis – a structural equation model (SEM) with no latent variables, only manifest variables (Wright, 1934). For this purpose, we have built four models, each testing one of the hypotheses proposed in the Objectives section. Data for these models are obtained from a survey conducted by the European Commission under the title Eurobarometer ZA7807 – Attitudes of Europeans towards Tourism (European Commission, 2022a).

The survey was carried out in October 2021 using computer assisted telephone interviews (CATI). It covers all 27 EU countries targeting population of the respective nationalities and other EU nationals residing in the member states aged 15 years and over. The sampling procedure is a simple random probability model with a size of 25,711 respondents. The target sample for an individual country is 1,000 respondents (except Luxembourg, Cyprus, and Malta with 500 respondents).

We subject the data to exploratory analysis to describe the variables and understand their dimensionality. For this purpose, correlation and contingency are employed. We use correlation to uncover relationships between the ways in which Europeans are prepared to change their tourism habits to be more sustainable. This is a key aspect for the STR consumer analysis, due to sharing economy’s association with sustainability (Palgan et al., 2017).

Then, we measure contingency between STR user status (i.e. respondents who indicated they use online listings of private housing) and several variables that can be classified into five groups: 1) sociodemographic characteristics, 2) factors influencing selection of a destination, 3) willingness to be more sustainable, 4) importance of information sources, 5) finding trustworthy information. The mentioned groups of variables are selected based on their relevancy for assessing the profile of an STR consumer.

Significant results from the exploratory analysis serve as a basis for the subsequent STR consumer modeling. Our variables (described in Table A.1 in the Appendix) are set in broader context by relating them to established theories, grounding our structural equations in the literature. The theoretical background for our four path analysis models is explained as follows (and further elaborated in Section 6.2.1):

- **Sociodemographic model:** Consumption patterns are shaped by social class, educational capital, and cultural capital (Bourdieu, 2018). Furthermore, a person's education and place of residence influence their occupation (Calero & Choi, 2017; Heisig et al., 2024; Polèse, 1991). This is further analyzed by age cohorts (estimates included in the Appendix), considering that people born in the same time period share similar consumption patterns (Rentz et al., 1983).
- **Information sources model:** The theoretical basis assumes involvement of age in the adoption of modern technology (Gitlow, 2014; Smith, 2014; Wagner et al., 2010). Also, as already mentioned, age is a common determinant for consumption patterns (Rentz et al., 1983).
- **Price-dependent sustainability model:** Price sensitivity is an essential economic indicator commonly utilized in price elasticity of demand (Anderson et al., 1997; Marshall, 1920). This concept is further related to the narrative of STR traveling as a sustainable alternative to traditional accommodation to test relationships with cost-related sustainable travel habits (Palgan et al., 2017). Alternatively, these relationships can be also attributed to decision-making limited by time and information access (Tversky & Kahneman, 1974).
- **Local experiences model:** Variables included in this model relate to each other based on their common local aspect. Prior evidence suggests that authentic local experience is sought out by STR guests when visiting a location (Guttentag et al., 2018; Stors & Kagermeier, 2017).

Finally, we used IBM SPSS AMOS providing SEM methodology. Structural models better reflect reality with greater precision than standard multidimensional statistical methods, such as factor analysis, correlation analysis, or regression (Vaculíková & Soukup, 2019). Given the nature of our data and objectives, Covariance-based SEM (CB-SEM) is preferrable over Partial Least Squares SEM (PLS-SEM). Our data sample is large, representative, and unskewed, allowing for reliable maximum likelihood estimation, rigorous goodness-of-fit testing, and robust model confirmation (Wright, 1934). Our objective is primarily of confirmatory nature, not predictive – we do not aim to explore new relationships but rather test theoretical structures and compare models. Also, we do not face extremely complex models in which case PLS-SEM might be more suitable.

To evaluate overall model fit, several indices are measured, including the chi-squared statistic (CMIN), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). Additionally, the Akaike information criterion (AIC) and the Browne-Cudeck criterion (BCC) for the default (tested), saturated, and independence models are compared. Finally, IBM SPSS AMOS visualized the relationships with their estimated direct and indirect effects (reported in standardized form).

6.2.1 Foundation for proposed STR consumer models

The theory-laying foundation for the investigation is tied simultaneously to consumer theory and factors shaping consumption of technology and associated goods. There are four main dimensions according to which we aggregate factors and construct models of STR consumption: sociodemographic (Bourdieu, 2018; Calero & Choi, 2017; Heisig et al., 2024; Polèse, 1991; Rentz et al., 1983), information sources (Gitlow, 2014; Smith, 2014; Wagner et al., 2010), price-dependent sustainability (Anderson et al., 1997; Marshall, 1920; Palgan et al., 2017; Tversky & Kahneman, 1974), and local experiences (Guttentag et al., 2018; Stors & Kagermeier, 2017). The following sections shed a brighter light on the key theoretical sources of differences between STR consumers.

Sociodemographic characteristics

Sociodemographic perspective on consumer behavior, with primary contributions from Bourdieu (2018), is centered around the suggestion that consumer patterns are fundamentally shaped by social class and two types of capital – educational and cultural (Bourdieu, 2018). Furthermore, a person's education and place of residence influence their occupation (Calero & Choi, 2017; Heisig et al., 2024; Polèse, 1991). Finally, age is another vital factor (included

as a grouping variable in this model), where the belief that people belonging to the same generation or being born at a similar historical period share similar consumption patterns (Rentz et al., 1983).

Building on Bourdieu (2018), we treat tourism and accommodation choice as forms of cultural consumption in which different configurations of capital and class position are expressed. Education represents institutionalized cultural capital, while occupation captures both economic and cultural capital and thus a person's broader class position. Within this framework, community type (urban vs rural) is part of the structure that shapes consumption. Urban residents tend to have better access to transport infrastructure, tourism services, and digital platforms, and they are more exposed to tourism and to STR supply. As a result, they tend to travel more often and use a wider range of accommodation than rural residents (Zeljkovic, 2022).

Community type alongside education also jointly shapes occupational careers by structuring access to specific labor markets and professional fields (Calero & Choi, 2017; Heisig et al., 2024; Polèse, 1991). These determinants have been shown to influence the frequency of business and leisure travel (Aguiléra & Proulhac, 2015; Berliner et al., 2018; Dargay & Clark, 2012; LaMondia et al., 2014). Travel frequency can thus be seen as a behavioral mediator which translates into concrete tourism practices. People who travel more often accumulate experience with digital booking channels, gain familiarity with different types of accommodation, and become more open to experimenting with alternatives to traditional hotels. In this context, research indicates that younger, more educated, higher-income, and urban individuals are more likely to be STR users (Badulescu et al., 2022; Chiappa et al., 2020; Masoumi & Lutz, 2025).

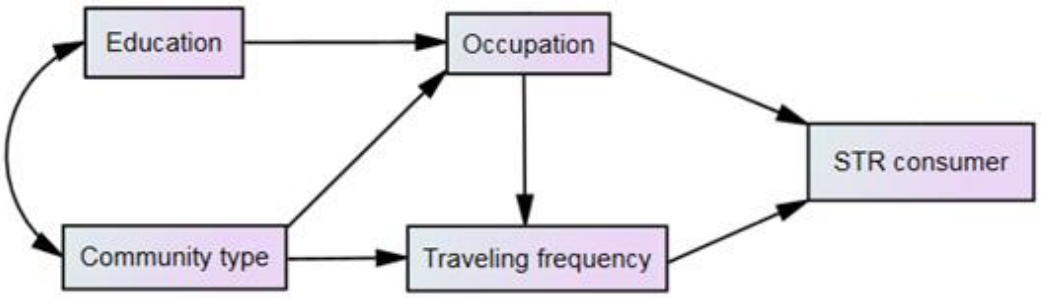


Figure 9 Involvement of sociodemographic characteristics in STR consumption

In Figure 9, we therefore model both occupation and traveling frequency as proximate determinants of being an STR consumer, with traveling frequency capturing accumulated

tourism experience and platform familiarity, and occupation capturing the underlying resource base that makes such consumption possible.

Information sources

The second group of factors concerns information gathering and, more specifically, the role of age in the adoption of modern technology (Gitlow, 2014; Smith, 2014; Wagner et al., 2010). As already mentioned, age is a common determinant for consumption patterns (Rentz et al., 1983). Simultaneously, consumer behavior is increasingly influenced by online content which younger people tend to engage with more (Băltescu & Untaru, 2025; Smith, 2014).

Researchers argue that age is systematically related to access to, skills with, and attitudes towards digital technologies (Schroeder et al., 2023; Smith, 2014). Younger, "digital native" cohorts tend to be earlier adopters of online platforms and social media, while older cohorts are more cautious and often experience greater barriers (Smith, 2014; Wu et al., 2015). Consequently, age not only affects whether consumers use digital technologies, but also which online information channels they privilege when planning their trips (Zarezadeh et al., 2023). Travel websites and booking platforms aggregate user reviews and ratings, serving as heuristics for evaluating new forms of accommodation such as STRs. Service providers' own social media profiles offer visual and often personalized advertisements. Online influencers (Instagram creators, YouTubers, travel bloggers) add another layer by providing parasocial recommendations (Liu et al., 2020; Pop et al., 2022).

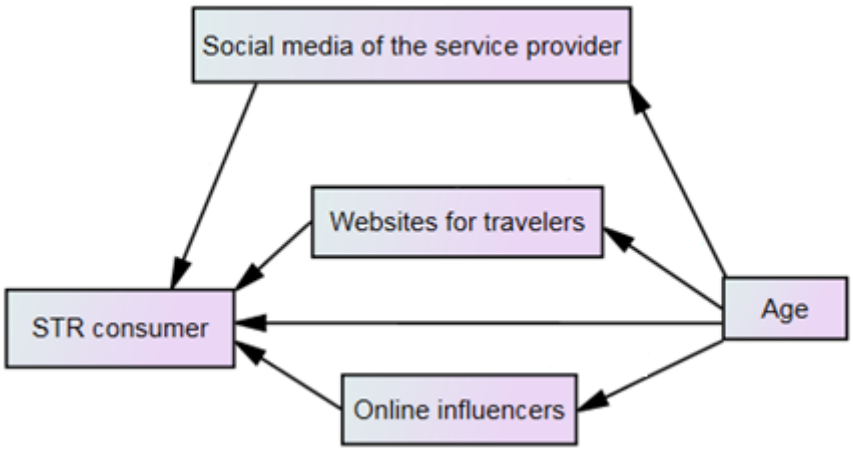


Figure 10 Involvement of information sources in STR consumption

Prior studies in tourism show that younger travelers are more likely to follow influencers on social media and to rely on user-generated content, whereas older travelers tend to depend

more on traditional channels (Băltescu & Untaru, 2025; Magdi, 2022; Mamengko et al., 2024). These patterns suggest that digital information sources mediate part of the relationship between age and STR consumption. Accordingly, in our model (Figure 10), age is specified as both a direct predictor of STR use and an indirect predictor operating through three types of information sources.

Price-dependent sustainability

Price sensitivity is an essential economic indicator commonly utilized in price elasticity of demand (Anderson et al., 1997; Marshall, 1920). This concept is further related to the narrative of STR traveling as a sustainable alternative to traditional accommodation to test relationships with cost-related sustainable travel habits (Garrod et al., 2023; Palgan et al., 2017). From another perspective, according to Tversky & Kahneman (1974), these relationships can also be attributed to decision-making limited by time and information access.

In tourism economics, price sensitivity is a key determinant of destination and accommodation choice (Konovalova & Vidishcheva, 2013; Pérez-Ricardo & Garcia-Mestanza 2025). This applies to STRs as well, where dynamic pricing directly affects occupancy rates and booking intentions (Leoni & Nilsson, 2021). In our model (Figure 11), price is therefore conceptualized as the immediate economic filter through which travelers evaluate STRs against competing accommodation options. At the same time, research emphasizes that many travelers do not optimize on price alone but increasingly integrate sustainable travel practices into their decisions (Dolnicar, 2020; Han et al., 2010; Terrier & Marfaing, 2015). Sustainable tourism frameworks highlight strategies such as travelling outside the high season to mitigate seasonality and overtourism, choosing less-visited destinations to spread impacts spatially, and reducing resource and food waste during trips. These practices often have an economic dimension. Off-season travel can lower costs, while visiting peripheral or emerging destinations may reduce prices depending on local supply conditions. In our model, these variables are therefore treated as cost-related sustainable behaviors that shape how travelers attend to and interpret the price of their accommodation. Other research focuses on tourists' willingness to pay (WTP) for sustainability, showing that some travelers are prepared to pay a premium to support environmental conservation, local communities, or certified "green" accommodation (Durán-Román et al., 2021; Nelson et al., 2021; Pulido-Fernández & López-Sánchez, 2016). This evidence underpins the path from

the variable “pay more to benefit the locals/nature” to price. For these travelers, price is not merely a constraint but also a signal of contribution to local and environmental benefits.

STRs are sometimes promoted as part of a more sustainable sharing economy that makes better use of under-utilized housing assets, distributes tourism income to residents, and can alleviate pressure on saturated hotel zones (Voytenko et al., 2017). This narrative aligns well with the above cost-related behaviors. Travelers who deliberately avoid peak seasons and overcrowded destinations, strive to reduce waste, and are willing to pay more to benefit locals may be more receptive to STRs, which are often framed as local, authentic, and embedded in neighborhood life. Price thus serves as the mediating mechanism linking sustainable travel habits with the choice to book an STR.

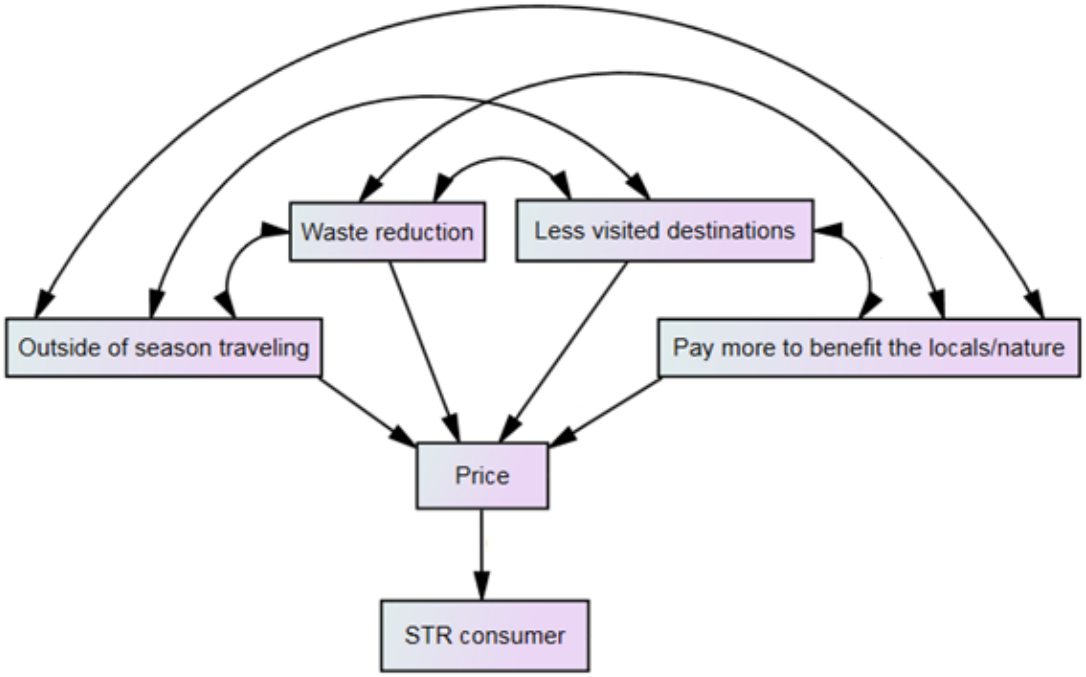


Figure 11 Involvement of price and related sustainable behavior in STR consumption

Local experiences

The fourth and final theoretical insight into the potential factors shaping STR consumption concerns local experience. Earlier studies indicate that STR guests seek authentic local experiences when visiting a location (Guttentag et al., 2018; Stors & Kagermeier, 2017). Guttentag et al. (2018) highlighted that the pursuit of a transformative experience is one of the main drivers of people keen on booking STRs. As such, STR consumption is expected to be a function of local destination factors.

This focus on “living like a local” is consistent with the broader literature on authenticity and experiential tourism, which shows that many travelers deliberately seek everyday neighborhoods, host-guest interaction, and participation in local life rather than standardized tourist settings (Lin et al., 2019; Özen et al., 2023; Paulauskaite et al., 2017). STR platforms explicitly build their value proposition around the promise of more authentic local experiences. In this perspective, the involvement of locals (e.g. engaging with local hosts and using small local businesses) becomes a core attribute of the product, and STRs are seen as settings where such experiences can be co-created between guests and hosts. A parallel strand of research emphasizes the role of local products, especially food and handicrafts, in shaping destination image, authentic experience, and regional development (Birch & Memery, 2020; Stalmirska, 2024). Tourists tend to travel to destinations known for distinctive local products, and consumption of local food is closely linked to perceptions of authenticity and engagement with local culture (Björk & Kauppinen-Räisänen, 2016; Sims, 2009). Local products thereby connect visitors to local producers, reinforcing the idea that tourism spending can benefit local economies and support environmentally aware production practices. These local aspects are increasingly being codified and communicated through sustainability certifications and eco-labels (Arbelo et al., 2025; Bianco et al., 2023; Buckley, 2002). Tourism eco-labels set criteria not only for environmental performance but often also for local sourcing, community involvement, and protection of cultural heritage.

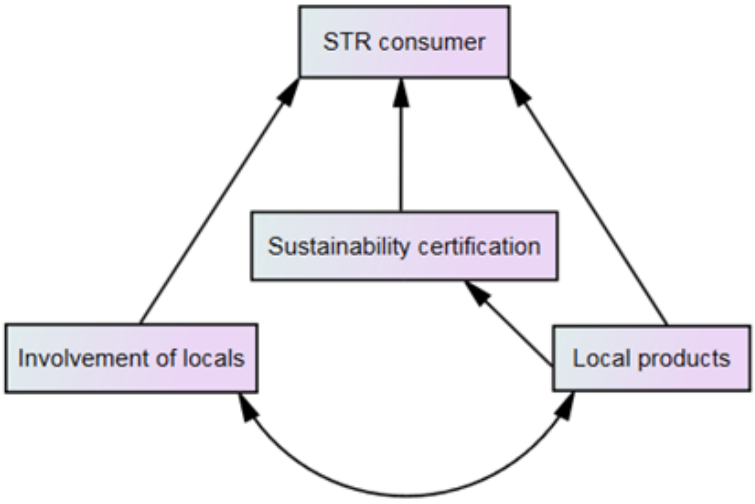


Figure 12 Involvement of local aspects and related certification in STR consumption

In our model (Figure 12), involvement of locals and local products are treated as observable expressions of a broader orientation towards locally embedded tourism. By testing both direct and indirect effects of local aspects on STR consumption, the model

evaluates whether and how the pursuit of local experiences translates into concrete booking behavior.

6.3 Housing issues in the EU context of STRs

We identify peer countries in the EU using Ward's (also known as minimum variance) agglomerative hierarchical clustering method. The clusters are measured in terms of housing affordability in the context of STRs and related residential perceptions. For this purpose, we employ the housing to disposable income ratio (Eurostat, 2023) and the number of STR listings per inhabitant (AirDNA, 2024). Both indicators are set in the context of related perceptions among EU residents – the perceptions of housing as an issue and STRs' impact on housing. Data for the perceptions are obtained from two surveys conducted by the European Commission: Eurobarometer ZA8815 – Public Opinion in the EU (European Commission, 2024) and Eurobarometer ZA7799 – Short-term Rentals in the EU (European Commission, 2022b).

The Public Opinion in the EU survey was conducted from January to February 2024 and the Short-term Rentals in the EU survey in September 2021, using computer assisted telephone interviews (CATI). Both cover all 27 EU countries targeting population of the respective nationalities and other EU nationals residing in the member states aged 15 years and over. Their sample sizes are 62,043 respondents and 25,696 respondents, respectively. The sampling procedure is a probability model (simple random in the case of Short-term Rentals in the EU survey).

We subject the data to exploratory analysis to describe the variables and understand their relationships. For this purpose, contingency, correlation, and regression analysis are employed. We use correlation to observe relationships between the most important issues Europeans believe their region is facing (including housing) and between the dimensions Europeans consider the most important for the future of Europe. Going forward, we focus on the respondents who indicated that they consider housing to be the most important issue their region is facing. We measure contingency between this housing perception and several variables that can be classified into three categories: 1) sociodemographic characteristics, 2) life satisfaction, and 3) political attitudes.

Particular attention is given to the relationship between housing perception and country of residence, setting groundwork for the following cluster analysis. First, we identify the

most housing-concerned[4] and the most housing-satisfied countries[5]. Then, we set the contingency results in the context of housing affordability indices, contrasting subjective perceptions (gamma coefficient) with objective metrics (housing to disposable income ratio). We subject this relationship to visual analysis using regression and correlation in a scatter plot.

Similarly, we explore the relationship between the number of STR listings (per 1,000 inhabitants) and the perceptions of STRs' housing impact in each country. These perceptions are derived from respondents indicating that they consider "negative effect on price and availability of housing" to be one of the disadvantages posed by STR presence. Scatter plots help us identify potential inconsistencies in European attitudes toward housing and related STR impact. Subsequently, we strive to explain the inconsistencies observed in selected countries by relating them to the concentration of STR listings, life satisfaction, and economic reliance on tourism.

Following this, we apply cluster analysis to the four variables explored through scatter plots (i.e. housing affordability and its perception; and STR numbers with the perception of their housing impact). Given the differing units of these variables, we utilize Z-score to standardize them. Next, Ward's method (Ward, 1963) was selected for its tendency to produce clusters of relatively equal size and compactness, resulting in a clear structure for dendrogram visualization. For example, the average linkage method was also explored, however, it was susceptible to chaining effects where distant points got linked into one cluster through series of close points.

Ward's method measures the similarities among the countries as follows. First, Euclidean distances (Tabak, 2014) are calculated between all pairs of countries. Then, the algorithm starts with *n* clusters (one per country). At each step, the two clusters that minimize the increase in total within-cluster variance are merged. The hierarchical structure is visualized using a dendrogram, representing the distances at which clusters merge. Finally, the robustness of the clusters is validated through ANOVA, testing for significant differences between clusters across the variables (F-statistics and p-values are reported).

[4] Countries that **tend to** report housing as the most important issue in their region
[5] Countries that **do not tend to** report housing as the most important issue in their region

6.4 Perceptions of STR impacts in the EU capital cities

The perception of STR disadvantages in EU capital cities is evaluated using logistic regression (Berkson, 1944). For this purpose, we employ five sociodemographic variables alongside one variable distinguishing the analyzed cities. Data for this analysis are obtained from a survey conducted by the European Commission under the title Eurobarometer ZA7799 – Short-term Rentals in the EU (European Commission, 2022b).

The survey was carried out in September 2021 using computer assisted telephone interviews (CATI). It covers all 27 EU countries, targeting the population of the respective nationalities and other EU nationals residing in the member states aged 15 years and over. The sampling procedure is a simple random probability sample of 25,696 respondents. The target sample for each country is 1,000 respondents (except Luxembourg, Cyprus, and Malta, which each have 500 respondents).

Table 1 STR disadvantages perceived in the EU capital cities

STR disadvantage	**Relative frequency**
Increase in nuisance by tourists (noise, congestion, waste)	45%
Pressure on public services (public transport, waste management)	24%
Negative effect on price and availability of housing	44%
Decrease in personal safety and security	30%
Concentration of tourists in certain neighborhoods	32%
Loss of amenities for residents due to tourist shops and facilities	24%
Other	4%
No disadvantages at all	9%
Don’t know	7%

Source: Own calculation based on Eurobarometer ZA7799

We subject the data to descriptive analysis to explore surface-level relationships between the variables. For this purpose, contingency analysis is employed, focusing on eight perceptions of STR disadvantages. The respondents were asked “What are, in your view, the disadvantages of short-term rentals offered via collaborative economy platforms?” and offered six options with multiple answers possible (responses “other” and “none” were spontaneous). Table 1 presents the responses with their relative frequencies. We identify eight sociodemographic variables significantly related to at least three perceived STR

disadvantages. Six of them are further included in the logistic regression (STR host status[6] and type of community[7] were excluded due to their negligible significance).

Our primary objective is to create descriptive models by identifying statistically significant independent variables and their parameters. We do not expect to build predictive models with high predictive success; however, model quality statistics are included in the Appendix to explore this potential. To test the reliability and validity of the generated findings, we rely on a series of verification techniques commonly used in logistic regression. We report verification metrics automatically provided by SPSS Statistics, including Nagelkerke R-square and Cox & Snell R-square (Table A.8 in the Appendix). At the same time, given the inferiority of conventional R-square metrics and their analogues (Hosmer et al., 2013), we equally focus on receiver operating characteristic (ROC) curves and area under the curve (AUC) derived from it (Figures A.7–A.14), which is a standard verification tool within the aforementioned setting (Hosmer et al., 2013). The models are estimated according to the following formulas:

$$Logit\ (Increase\ in\ nuisance\ by\ tourists) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

$$Logit\ (Pressure\ on\ public\ services) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

$$Logit\ (Negative\ effect\ on\ housing) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

$$Logit\ (Decrease\ in\ personal\ safety) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

$$Logit\ (Concentration\ of\ tourists\ in\ certain\ neighborhoods) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

$$Logit\ (Loss\ of\ amenities\ for\ residents) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

[6] A variable indicating whether the respondent has ever offered an STR accommodation (No, never; No, but I did consider doing so; Yes, but I no longer do so; Yes, I do so very sporadically; Yes, once every few months; Yes, once a month or more often)

[7] A variable indicating the size and character of the respondent‘s place of residence (Large town/city; Small/medium-sized town; Rural area/village)

$$Logit\ (Other) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

$$Logit\ (No\ disadvantages\ at\ all) = a_0 + a_1\ STR\ user\ status + a_2\ Gender + a_3\ Age + a_{4\text{-}6}\ Occupation + a_{7\text{-}8}\ Education + a_{9\text{-}34}\ City + e$$

Where

- **STR user status** – One estimated category indicating whether the respondent has ever booked an STR accommodation
    - Reference category: No, never
    - Estimated category: 1) Yes[8]
- **Gender** – One estimated category indicating gender of the respondent
    - Reference category: Male
    - Estimated category: 1) Female
- **Age** – Scale variable indicating the exact age of the respondent
- **Occupation** – Three estimated categories indicating the professional activity of the respondent
    - Reference category: Self-employed
    - Estimated categories: 1) Employee, 2) Manual worker, 3) No professional activity
- **Education** – Two estimated categories indicating how old was the respondent when they stopped full-time education
    - Reference category: Up to 15 years
    - Estimated categories: 1) 16–19 years[9], 2) 20 years and older[7]
- **City** – Twenty-six estimated categories indicating the capital city where the respondent lives
    - Reference category: Prague[10]

[8] Including categories: Yes, but I no longer do so / Yes, sporadically / Yes, once every few months / Yes, once a month or more often
[9] Including category "Still in full-time education" according to the respondent's current age
[10] Included without agglomeration according to NUTS 2 classification

- Estimated categories: 1) Brussels[8], 2) Amsterdam[11], 3) Berlin[8], 4) Rome[9], 5) Luxembourg[9], 6) Copenhagen[9], 7) Dublin[8], 8) Athens[9], 9) Madrid[8], 10) Lisbon[8], 11) Helsinki[9], 12) Stockholm[8], 13) Vienna[8], 14) Nicosia[8], 15) Paris[9], 16) Tallinn[9], 17) Budapest[8], 18) Riga[8], 19) Vilnius[9], 20) Valletta[9], 21) Warsaw[9], 22) Bratislava[8], 23) Ljubljana[9], 24) Sofia[9], 25) Bucharest[9], 26) Zagreb[8]

6.5 STR housing impact in Prague

6.5.1 Data description

In this section, we introduce the data used for modeling seven chosen variables. The first two variables described are the essence of this subchapter – housing prices and Airbnb listings serve as the basis for fulfilling the specified objective of evaluating the impact of STR accommodation on housing prices in Prague. In this case study, we will explore the viability of the vector error correction model (VECM) for this research topic. The remaining five variables are designated to explain the residual component in the modeling of housing prices.

Airbnb listings

The Airbnb dataset was obtained from Inside Airbnb[12], a watchdog website selling data scraped during past years directly from Airbnb's website. Our dataset regarding Prague ranges from December 2017 up to June 2025. The files contain monthly information on the location, property type, price, host, and review history of all listings. Particularly, the review history data was an important determinant for filtering, as demonstrated in the following bullet points. Since Inside Airbnb is not able to web scrap[13] data specifically about reservation history, the review history is the second-best tool. It can be used fairly reliably because, according to Brian Chesky (2013), 72% of Airbnb guests leave a review for their visited property after their stay.

It should also be noted that five time periods were missing from this time series. The obstacle had to be solved by applying interpolation of moving averages (Chou, 1975).

Properties listed in the dataset were then filtered based on five criteria:

[11] Included with agglomeration according to NUTS 2 classification
[12] https://insideairbnb.com/
[13] Technique where a computer program extracts data from human-readable output coming from websites

- **Location** – To filter out listings based on their city district location when modeling prices specifically for the city center.
- **Property type** – To filter out private, shared, and hotel rooms. Only entire apartments were left to be included in our analysis.
- **Number of reviews** – To filter out listings with historically zero reviews. Listings which were just listed on the platform without ever being rented out were excluded.
- **Last review** – To filter out listings which received their last review more than 3 months ago. Listings which were undoubtedly rented at least once in the last 3 months remained for our modeling, while inactive ones were left out.
- **Reviews per month** – To filter out listings that received less than 0.5 reviews per month in the past. This criterion may be up for debate regarding its optimal value. However, it has to be set to filter out dwellings that are not rented through Airbnb regularly and, therefore, most likely do not affect the long-term rental market the same way as purely commercial properties. Guided by the information that 72% of guests leave a review, we can determine that a listing with 0.5 reviews per month hosted, on average, 8.3 guests per year. Assuming these guests were tourists, we can consider that the property was most likely used in other ways for most of the year since tourists stay in Prague for 2.3 days on average (CZSO, 2022a).

In our modeling, a variable representing the number of Airbnb listings in Prague is named *Airbnb*. It is included in the analysis because our research examines the impact of STR accommodation on the housing prices in this city. Apart from this, the influence should be bilateral because we can consider that an increase in housing prices may be reflected by a decrease in Airbnb rentals, since it becomes a more costly investment.

Average housing price per square meter

The housing prices dataset was obtained from RealityMIX[14], a real estate platform where real estate agencies, developers, and other users can advertise their properties for sale or rent. After being contacted by email, the company agreed to provide its private data on

[14] We are sincerely grateful to RealityMIX for sharing their private data for research purposes.

housing prices across all districts of Prague for research purposes. The dataset consists of monthly periods from January 2016 to June 2025.

In our modeling, a variable representing the average housing price per square meter in Prague is named *Price*. It is included in the analysis because our paper examines the impact of STR accommodation on housing prices in this city. We follow examples from the literature, employing STR data to model nominal housing prices, to subsequently compare our results (Barron et al., 2021; Garcia-López et al., 2020; Horn & Merante, 2017). At the same time, the influence should be bilateral, meaning that while the number of STR properties is expected to impact housing prices, simultaneously, rising housing prices should also affect the willingness of investors to finance investments with potentially lower return. We chose the purchase price instead of rent because, in the Czech Republic, there is a significant predominance of home ownership over rented housing. Specifically, 78.3% of the population lives in a household owning their home, while the remaining 21.7% lives in rented housing (Eurostat, 2021). This trend of home ownership is reflected in the preferences of Czech citizens, although current low housing affordability undermines their aspirations. While in 2020, 92.9% preferred home ownership over rented housing, in 2021, the preference decreased to 90.4% due to the rising housing prices (Generali Investments, 2021).

Housing-related interest rates

Information on the historical average rates for mortgages newly issued by financial institutions was accessed through Kurzy.cz, a website periodically publishing news, reports, and data on various topics, especially finance, investment, and business. Alongside the mortgage rates, we downloaded several related interest rate datasets. Mortgage accessibility should be one of the most relevant determinants for housing prices, however, the rates might be stationary during some periods, which hinders the viability of VECM. Since this is the case for the post-pandemic era, we substituted the mortgage rate with the PRIBOR rate (Prague Inter Bank Offered Rate) as a proxy for the housing-related interest rate. This can be justified by the spillover effect from PRIBOR into other interest rates including the mortgage rate. PRIBOR's influence on housing prices is therefore mediated through mortgage rates into the housing market. The dataset consists of monthly periods from January 1993 to June 2025.

In our modeling, a variable representing the housing-related interest rate is named *Interest rate*. It was included in the analysis because the affordability of mortgages

influences the purchasing power of individuals attempting to finance a dwelling investment with a loan from a financial institution. In other words, a higher mortgage rate makes a housing purchase more expensive for buyers who do not have savings ready for the full price. At the same time, the influence is expected to be bilateral because when fewer dwellings are offered on the residential market, the decline in purchases leads to a decline in the demand for mortgages and pushes interest rates downward.

Completed construction of new housing

The dataset on how many new dwellings were constructed in which month was downloaded from the Czech Statistical Office. It consists of monthly periods from January 2016 to December 2021.

In our modeling, a variable representing the number of newly constructed dwellings in Prague is named *Construction*. The housing supply available for sale is expected to influence the price at which it is sold. At the same time, the influence should be bilateral, meaning that higher demand for housing should result in more construction being developed.

The number of inhabitants

The dataset evaluating how many residents were inhabiting a given district of Prague was downloaded from the Czech Statistical Office. It consists of quarterly periods from the first quarter of 2011 to the third quarter of 2021.

In our modeling, a variable representing the numbers of residents inhabiting Prague is named *Inhabitants*. It is included in the analysis because a higher number of inhabitants is expected to increase demand for housing and, therefore, housing prices. At the same time, the influence should be bilateral, meaning that higher housing prices should result in fewer newcomers interested in moving to the city district.

The number of hotel rooms

The dataset with numbers of hotel rooms operating across all districts of Prague was downloaded from the Czech Statistical Office. Unfortunately, it consists of merely yearly periods from 2012 to 2021.

In our modeling, a variable representing the number of hotel rooms in Prague is named *Hotel rooms*. It is included in the analysis for the same reason as the Airbnb properties. If Airbnb and hotels are substitutes, it is fair to assume that similarly, as the impact of STRs

on housing prices is being researched, the impact of hotel rooms on housing prices represents an equal potential for analogous results. At the same time, the influence should be bilateral for the same reasons as already stated with Airbnb listings.

Covid-19 pandemic

This dummy variable reflects the imposed restrictions and overall situation surrounding the Covid-19 pandemic. The periods with a value of 1 indicate the presence of Covid-19, while a value of 0 indicates its absence. We tried to perform different variations in the period length indication, however, in the end, we settled on setting the beginning of the period in March 2020 and the end in November 2021 since, at this time, the imposed restrictions in the Czech Republic began to ease perennially.

In our modeling, a variable representing the Covid-19 pandemic is named *Covid*. It was chosen for the analysis because it severely influenced the whole hospitality sector and, therefore, also the housing prices. In the case of this variable, a bilateral influence cannot be assumed.

6.5.2 Methodological framework

In the ensuing subchapter, we introduce the empirical techniques applied in our subsequent modeling of the average residential housing price per square meter in Prague.

Firstly, we use the Johansen test for linear cointegration to examine cointegrating relationships and, thus, the existence of long-run equilibrium (Johansen, 1988). This approach applies two tests to identify the number of cointegrating vectors: the Trace test and the Maximum Eigenvalue test. The Maximum Eigenvalue statistic investigates the null hypothesis of r cointegrating relations against the alternative of r+1 cointegrating relations for r = 0, 1, 2,…n-1. Its equation is calculated according to the following formula:

$$LR_{max}\left(\frac{r}{n+1}\right) = -T * \log(1 - \hat{\lambda}) \quad (1)$$

Where T is the sample size and λ is the Maximum Eigenvalue. Trace statistic tests the null hypothesis of r cointegrating relations against the alternative of n cointegrating relations, where n is the number of variables in the system for r = 0, 1, 2,…n-1. This test statistic is computed as follows:

$$LR_{tr}\left(\frac{r}{n}\right) = -T * \sum_{i=r+1}^{n} \log(1 - \hat{\lambda}_i) \quad (2)$$

Trace and Maximum Eigenvalue statistics sometimes yield different results. In such a case, the Trace test result should be followed.

If the time series are linearly cointegrated, then a vector error correction model (VECM) developed by Johansen (1988) is estimated to quantify the long-run dynamics. Dynamic VECM offers to measure the speed at which variables converge back to long-run equilibrium. Otherwise, if the cointegration tests do not lead us towards the application of a VECM, alternatively, a vector autoregression (VAR) model can be estimated as the second choice. VAR is a multi-factor model without the error correction features that are additionally included in VECM. The regression equation for VECM is as follows:

$$\Delta X_t = \eta + \Pi X_{t-1} + \sum_{s=1}^{p} C_s \Delta X_{t-s} + u_t \tag{3}$$

The cointegration rank in VECM indicates the number of cointegrating vectors. For instance, a rank value of two demonstrates that two linearly independent combinations of non-stationary variables will be stationary. A negative and significant VECM coefficient suggests that any short-term fluctuations between the independent variables and the dependent variable will result in a stable long-run relationship between the variables.

This procedure is repeated multiple times for different combinations of variables. The variables *Price* and *Airbnb* have to be used in every equation as they are the basis for fulfilling our preestablished objective – to explore our model's viability in explaining housing prices via STR data. The remaining five variables are designated to help us explain the residual component in the *Price* modeling.

Several alternative modeling approaches are worth mentioning, such as ARIMAX, ARDL, or regime change models (e.g. TVAR or TVECM). Benefits of our selected approach stem from long-run dynamics, multivariate system, impulse response, forecasting error variance decomposition, and not assuming stationarity. Simultaneously, VECM allows for simpler estimation and interpretation than more complex regime change models. Also, it does not require as large datasets or threshold value estimation.

6.6 Attitudes toward STR accommodation in Prague

Guided by the literature (Muschter et al., 2021; Caldicott et al., 2020), an informed survey instrument was adopted, which contained questions relating to the following:

- ***Respondent status*** - STR user and STR non-user ("STR user" = respondent who has stayed in an STR in the past; "STR non-user" = respondent who has never stayed in an STR in the past)
- ***Perceived positive and negative social, economic, and environmental impacts*** of STR properties, i.e. on housing and accommodation, tax revenues, local businesses, visitor numbers, infrastructure, and neighborhoods across Prague
- ***Perceived importance of information needs*** about various aspects related to STR
- ***Preferences for measures to improve regulation*** of the STR sector
- ***Preferences for rental caps*** (day limits per year) on STR accommodation

All perceptions and preferences were measured using a five-point **Likert-type scale** (1 = strongly disagree to 5 = strongly agree) (Likert, 1932). The survey focused on the entire adult Czech population and was openly accessible on the website Vyplnto.cz in both Czech and English language.

The primary engine of the utilized website for its respondent acquisition is sharing of its respondents across various questionnaires. In other words, if each questionnaire submitter sends their questionnaire to several people (or gathers them in any similar direct way), then these respondents, after filling out the initial survey, will be presented with a short list of other potential questionnaires which they might like to fill out. This way, the submitters share their respondents and increase each other's reach. Apart from that, the survey link was publicized in multiple Facebook groups with their theme related to community life in Prague. Czech and English literacy, access to the internet, and prepossession against/in favor of STRs are recognized as potential bias enablers (Andringa & Godfroid 2020). Regarding the means of the survey distribution, the issue of obtaining a substantial and representative sample of the population can be seen as the most significant limitation of the research.

The data are then subject to the following analyses: descriptive analysis of respondents' place of residence and STR user/non-user status; cross-tabulations to explore the dimensionality of perceived STR impacts; and differential analysis utilizing the Mann-Whitney test. The latter seeks to explore how respondents' place of residence and user/non-user status are associated with the perceived impacts of STRs, with the preferred maximum STR cap, and preferences to regulate STR accommodation. The null hypothesis is that each respondent's opinion is independent of the person's place of residence or user/non-user status. We reject the null hypothesis if the p-value is lower than the 5% level of significance.

7 STR consumer model

This chapter presents an analysis of European travelers' behavior and preferences regarding STR services. It examines how various factors influence Europeans' propensity to use STRs by analyzing survey data. The analysis is structured in two complementary methodological approaches: First, an exploratory analysis using correlation and contingency to identify key relationships between STR usage and variables such as age, occupation, travel habits, and information sources. Second, a path analysis via structural equation models to determine direct and indirect effects between the variables, grounded in established theories about consumer behavior.

7.1 Exploratory analysis

The ways in which Europeans are prepared to change their tourism habits to be more sustainable are presented in Table 2. The strongest correlation is between the willingness to pay more to benefit the local community and to protect the natural environment. It shows that Europeans who prefer increasing their sustainability through financial means are likely to do so across various aspects. Those who wish the locals to benefit also tend to travel to less visited destinations and contribute to carbon-offsetting activities (e.g. planting trees). The former hints at which specific local communities the respondents might intend to benefit, while the latter shows that they might be willing to contribute to these communities also in other ways.

Respondents aiming for reduction-based travel are prepared to reduce both waste and water usage while on holiday. Similarly, respondents wanting to decrease overtourism strive to do so in two ways: by traveling to less visited destinations and taking holidays outside of the high tourist season.

Table 3 demonstrates the contingency between the respondents' STR user status and their sociodemographic characteristics. STR usage primarily correlates with respondents' age, nationality, and occupation. Europeans between 25 and 34 years are the most likely to participate in STR, while the likelihood decreases with age. It is a common trend that with higher age, adaptability to modern technology declines, since people tend to stick with technology they are familiar with (Gitlow, 2014). Furthermore, STR is particularly prominent among Slovaks, Slovenians, and Germans, and the least prominent among Italians and Spaniards. The influence of nationality might be worth further investigation.

Table 2 Correlation between the ways in which Europeans are prepared to change their tourism habits to be more sustainable

		Pay more to protect nature	Pay more to the benefit of locals	Outside season traveling	Travel to less visited destinations	Carbon-offsetting activities	Consume locally sourced products	Transport based on ecological impact	Reduce waste while on holidays	Reduce water usage
Pay more to protect nature	Pearson correlation	--								
	p-value									
Pay more to the benefit of locals	Pearson correlation	.493	--							
	p-value	<.001								
Outside season traveling	Pearson correlation	.333	.329	--						
	p-value	<.001	<.001							
Travel to less visited destinations	Pearson correlation	.372	.370	.397	--					
	p-value	<.001	<.001	<.001						
Carbon-offsetting activities	Pearson correlation	.457	.395	.336	.369	--				
	p-value	<.001	<.001	<.001	<.001					
Consume locally sourced products	Pearson correlation	.382	.392	.393	.396	.395	--			
	p-value	<.001	<.001	<.001	<.001	<.001				
Transport based on ecological impact	Pearson correlation	.371	.326	.267	.300	.383	.315	--		
	p-value	<.001	<.001	<.001	<.001	<.001	<.001			
Reduce waste while on holidays	Pearson correlation	.416	.384	.368	.386	.441	.464	.338	--	
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001		
Reduce water usage	Pearson correlation	.384	.360	.300	.333	.387	.371	.332	.468	--
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	

Source: Own calculation based on Eurobarometer ZA7807

Regarding occupation, manual workers and respondents without a professional activity (especially retired) are less likely to use STRs. In contrast, office clerks, middle management, and professionals (doctors, lawyers, architects, etc.) use STRs the most.

Table 3 Contingency between STR usage and sociodemographic characteristics

		STR usage	
		Contingency coeff.	Gamma
Age (4 categories)	Coefficients	0.092	-0.152
	Sig. (2-tailed)	<.001	
Occupation	Coefficients	0.082	-0.148
	Sig. (2-tailed)	<.001	
Country of residence	Coefficients	0.183	/
	Sig. (2-tailed)	<.001	
Age of finishing education (5 categories)	Coefficients	0.06	0.093
	Sig. (2-tailed)	<.001	
Type of community	Coefficients	0.029	0.043
	Sig. (2-tailed)	<.001	
Household size	Coefficients	0.039	0.063
	Sig. (2-tailed)	<.001	
Travel frequency	Coefficients	0.072	-0.152
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA7807

The STR usage is further related to the respondents' frequency of traveling (gamma = -.152; cont. coef. = .072). Frequent travelers are more likely to use STRs than those who travel less often. However, this may also be related to the fact that respondents could have listed up to three travel methods they use[15]. People who travel more often are therefore likely to list multiple methods (including STRs), leading to several other methods with a similarly increasing trend of travel frequency. In comparison, several other travel methods are related to more frequent usage than STRs. The only methods related to less frequent usage than STRs are over the phone, over the counter, through someone you know, and on-site (at the destination).

Other variables exhibit just rather weaker relationships with STR usage. For instance, respondents who finished education at a later age and those who live in larger households are more likely to participate in STR. The household size may be connected to family traveling, finding STRs more suitable for their needs. Lastly, Europeans from larger cities also tend to use STRs slightly more often than those from smaller towns and villages. This

[15] Respondents were asked: "What method are you most likely to use to organise travel and tourism activities?"

might be connected to a more conservative lifestyle in rural areas (Weckroth & Kemppainen, 2023).

Table 4 depicts the contingency between the respondents' STR user status and the factors influencing their selection of a destination to visit. The most important for STR users is the natural environment at the destination (gamma = .164; cont. coef. = .067). This is a common answer of Europeans regardless of their preferred travel method. STR guests are also likely to choose a destination based on its price. This might be related to the original primary enticement of STRs, which used to be a lower price than at traditional accommodations. However, this benefit has mostly receded with time (Botsman & Capelin, 2015; So et al., 2018; Webb, 2023).

Lower price is only one of the incentives for a consumer to purchase a service, therefore, the supply may shift its focus from affordability to other incentives (e.g. higher value represented by luxury accommodation). This is likely what happened to this sector along with its growing commercialization. Furthermore, STR users tend to care about activities available at the destination and the local population involved in tourism activities. One of the enticements of STRs is also the closer connection to the locals, since factors such as staying in a non-touristic neighborhood, at a typical local dwelling, and getting in touch with the host may increase the sense of living an authentic experience of the destination (Guttentag et al., 2018; Stors & Kagermeier, 2017).

Table 4 Contingency between STR usage and factors influencing selection of a destination

The most important when I choose a destination to visit are…		STR usage	
		Contingency coeff.	Gamma
Natural environment in the destination	Coefficients	0.067	0.164
	Sig. (2-tailed)	<.001	
The price of the overall trip	Coefficients	0.054	0.132
	Sig. (2-tailed)	<.001	
Activities available in the destination	Coefficients	0.052	0.133
	Sig. (2-tailed)	<.001	
Local population involved in tourism activities	Coefficients	0.035	0.124
	Sig. (2-tailed)	<.001	
Sustainability certification of accommodation and attractions	Coefficients	0.03	0.121
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA7807

Although all results are statistically significant, their strength indicates only a weak level of association between the variables (cont. coef. = .03–.067). Therefore, factors for choosing a destination are not strong determinants. On the other hand, the gamma coefficient reaches higher values (gamma = .121–.164), meaning that measuring the variables as ordinal leads to a stronger relationship. This indicates that their categories exhibit a direction according to their ranking.

Table 5 presents the contingency between the respondents' STR user status and their willingness to change travel habits to be more sustainable. STR users are prepared the most to consume locally sourced products on holidays. This notion goes hand in hand with one of the STR enticements mentioned in the previous paragraph, namely the sense of authenticity. Since living an authentic experience of the destination is one of the attractions of STRs, it may also involve consumption of locally sourced products. Other sustainability goals pursued by STR users are traveling to less visited destinations and taking holidays outside of the high tourist season. Both of these ways of sustainability have in common the aim to reduce overtourism, suggesting that STR guests prefer to enjoy their travels in less crowded environments. It may also have its roots in our finding that price is one of the most important factors when choosing a destination which reinforces the incentive to travel when and where the demand is lower. Simultaneously, this eases overburdened infrastructures and supports destinations when their touristic revenues are lower. The mentioned price sensitivity may also play a role in the last sustainable travel habit which is reducing waste while on holidays. A waste reduction is both means to travel more sustainably and also frugally.

Table 5 Contingency between STR usage and willingness to be more sustainable

I am prepared to change my travel habits to be more sustainable by…		STR usage	
		Contingency coeff.	Gamma
Consuming locally sourced products on holidays	Coefficients	0.091	0.226
	Sig. (2-tailed)	<.001	
Traveling to less visited destinations	Coefficients	0.083	0.204
	Sig. (2-tailed)	<.001	
Reducing waste while on holidays	Coefficients	0.077	0.189
	Sig. (2-tailed)	<.001	
Taking holidays outside of the high tourist season	Coefficients	0.071	0.174
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA7807

A sustainability goal that STR users tend to coincide with less is the willingness to pay more to benefit the local community. Since the primary purpose of STRs is to facilitate accommodation sharing between locals and tourists, a higher affinity of the guests towards their hosts might have been expected. On the other hand, one of our previous findings has revealed that travel costs are among the most important factors for STR users when planning their trip. This kind of behavior can also be explained by the theory of heuristics. Heuristics are mental shortcuts for quick decision-making that deliver a result sufficient enough to be useful within given time constraints (Tversky & Kahneman, 1974). Consumers are inclined to behave in ways with results that are immediately visible and accessible for them.

Therefore, when a tourist sees a local meal, they are inclined to the imminent benefit. Similarly, they are inclined to travel outside of the high tourist season, since the benefit is still directly comprehensible. These decisions provide tourists with a tangible feeling of sustainable behavior. On the other hand, when they are met with paying more to the benefit of the local communities, the result is less tangible and not as imminent which outweighs their final decision.

Table 6 Contingency between STR usage and the importance of information sources

The most important information sources when I make travel plans are…		STR usage	
		Contingency coeff.	Gamma
Online influencers and blogs	Coefficients	0.077	0.276
	Sig. (2-tailed)	<.001	
Websites collecting reviews and ratings from travelers	Coefficients	0.1	0.244
	Sig. (2-tailed)	<.001	
Website or social media page of the service provider	Coefficients	0.066	0.18
	Sig. (2-tailed)	<.001	
Information from travel agencies	Coefficients	0.042	-0.162
	Sig. (2-tailed)	<.001	
Recommendations from friends, colleagues or relatives	Coefficients	0.05	0.125
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA7807

Table 6 demonstrates the contingency between the respondents' STR user status and the information sources they use when planning a trip. Online influencers and blogs are the most important sources for STR users (gamma = .276; cont. coef. = .077) while travel agencies are the least important (gamma = -.162; cont. coef. = .042). This concurs with the previous finding that Europeans between 25 to 34 years are the most likely to participate in STR while increasing age decreases the likelihood. Moreover, travel agencies are not even a viable

means for booking STR accommodation, so only respondents who use also other types of accommodations might have listed this option.

The following information sources important for STR users are somewhat similar to the first one. Especially, websites collecting reviews from travelers have a nature similar to online influencers and blogs, since both are internet sources with a P2P (peer-to-peer) aspect. The main difference here is that the information is drawn from various anonymous people while an influencer is a publicly known person. The next is website or social media page of the service provider, in this case hinting at the website of Airbnb or another STR platform. Their websites can be used in a similar way to the websites collecting reviews from travelers, since listings on STR platforms are rated by their previous guests who also tend to comment what they were satisfied/unsatisfied with during their stay. Lastly, STR users tend to listen to the recommendations from friends, colleagues, and relatives.

Table 7 Contingency between STR usage and finding trustworthy information

How easy/difficult is it for you to find trustworthy information for your travel planning on the following aspects?		STR usage	
		Contingency coeff.	Gamma
Sustainability commitments of destinations	Coefficients	0.055	-0.013
	Sig. (2-tailed)	<.001	
Local sourcing of food in restaurants	Coefficients	0.059	-0.042
	Sig. (2-tailed)	<.001	
How to engage in authentic local activities	Coefficients	0.055	-0.059
	Sig. (2-tailed)	<.001	
Appropriateness of destinations/attractions for children	Coefficients	0.062	-0.106
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA7807

Table 7 demonstrates the contingency between the respondents' STR user status and their perceived difficulty of finding trustworthy information for travel planning. The STR users tend to find all of the information more easily. Searching for appropriateness of destinations for children, STR users find the easiest (gamma = -.106; cont. coef. = .062) and searching for sustainability commitments of destinations, they find the most difficult (gamma = -.013; cont. coef. = .055). They also find it easy to look up local sourcing of food in restaurants and how to engage in authentic local activities. As already mentioned in the previous findings, living an authentic experience of the destination is one of the allurements of STRs which may also involve consumption of locally sourced products.

7.2 Path analysis

This chapter describes the results of four path analysis models that test how different sets of independent variables influence the STR usage in the EU (as well as the interconnections among those independent variables). These variables are included in the structural equations based on the methodology and the preceding exploratory analysis. The exploratory results are set in a broader context by relating them to established theories (explained in the Methodology section), grounding our structural equations in the literature (Bourdieu, 2018; Calero & Choi, 2017; Gitlow, 2014; Guttentag et al., 2018; Heisig et al., 2024; Palgan et al., 2017; Polèse, 1991; Rentz et al., 1983; Smith, 2014; Wagner et al., 2010).

In the figures used throughout this subsection, each diagram visually demonstrates a set of regression equations. Graphical elements included in these diagrams have the following meanings. Boxes represent the observed (manifest) variables. Path analysis does not estimate any latent variables, so only observed ones are included in our models. Circles/ovals represent error terms (residuals) for endogenous variables predicted by other variables in the model. Single-headed arrows pointing from one box to another represent hypothesized directional effects accompanied by regression coefficients next to them. Double-headed arrows between two boxes represent a correlation (covariance), the values alongside are correlation coefficients. This is typical for background characteristics that may be related, but where we do not impose a causal order.

We rely on several model fit indices to evaluate how well proposed models represent our data according to Bhale & Bedi (2023). Tables A.2–A.5 (in the Appendix) present our results for CMIN, CFI, TLI, RMSEA, AIC, and BCC. The results indicate acceptable fits for the first two models (*sociodemographic* and *information sources*) and excellent fits for the latter two models (*price-dependent sustainability* and *local experiences*). The CFI indices range from 0.93 to 0.99, mostly exceeding the ideal threshold of 0.95 (or at least 0.90), suggesting strong fits relative to null models. The TLI indices range from 0.76 to 0.96. The lower TLI for the first two models might be hinting at complexity or overfitting; however, the models remain acceptable given their CFI results. Additionally, RMSEA indices range from 0.01 to 0.05, indicating close approximations of our models to the data, as values below 0.05 (or at least 0.10) are considered indicative of good fit. Finally, comparison of AIC and BCC values between the tested and saturated models suggests a low loss of fit relative to fully specified models.

First, we use sociodemographic characteristics of the respondents to estimate how variables such as education and occupation determine which groups of Europeans tend to use STRs when traveling. Then, we examine the influence of various information sources for travel planning in relation to age of the respondents. The next model examines the impact of pricing, which also mediates the indirect effect of sustainable travel habits. Lastly, we assess the relationship between STR usage and the enticement of local aspects together with the effect of related sustainability certifications.

Figure 13 demonstrates direct and indirect regressions between **sociodemographic characteristics explaining the propensity of respondents to use STRs when traveling**. The model assumes that a person's place of residence and education influence their occupation (Calero & Choi, 2017; Heisig et al., 2024; Polèse, 1991). The direct effects of occupation and traveling frequency are similarly strong. In total, occupation has a stronger effect (0.07) due to the indirect regression passing through traveling frequency. Education and community type have only indirect effects, with the education's effect being stronger despite community type having two regression linkages. This result reinforces the hypothesis that typical STR consumers are self-employed or office workers who frequently travel. This is further indirectly influenced by their education level and living in urban areas.

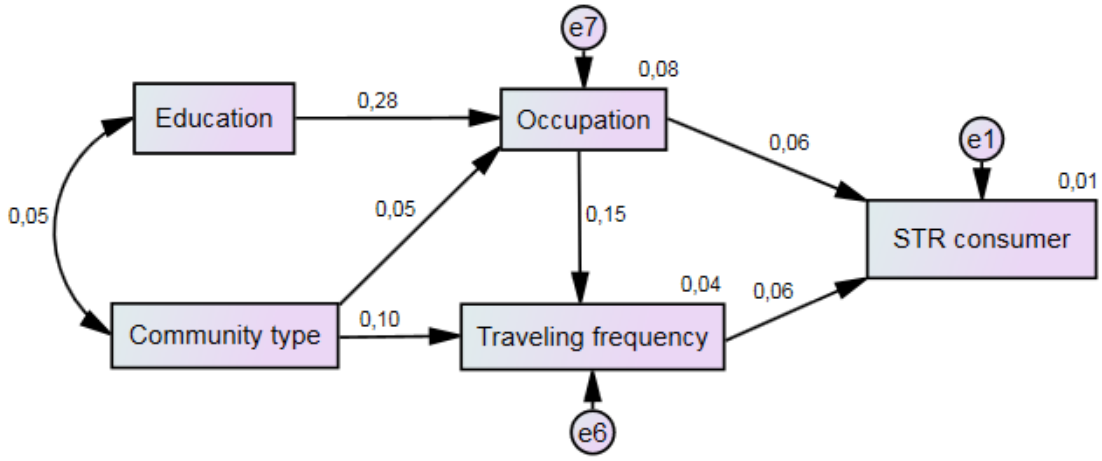


Figure 13 STR consumer model influenced by sociodemographic characteristics
Source: Own calculation based on Eurobarometer ZA7807

These sociodemographic characteristics are further analyzed by generation. Figures A.1–A.4 (included in the Appendix) denote the sociodemographic effects for each generation individually (i.e. generations Z, Y, X, and baby boomers; according to USC, 2024). It shows that the effect of occupation is particularly pronounced among older generations. This is partially caused by the retirement age, since economic inactivity is

linked to lower STR consumption. Meanwhile, there are milder differences in the effects of traveling frequency across generations. It has the strongest effect for Gen Y and weakest for Gen Z. This shows that for millennials, traveling frequency is a particularly important predictor of STR usage. Gen Z tends to book STRs relatively the same notwithstanding their travel frequency. The effects of occupation and community type on traveling frequency are mostly consistent across generations. Only among Gen Z is traveling frequency less influenced by both occupation and community type. This result is similar to the mentioned negligible effect of traveling frequency on STR usage of Gen Z. Their travel habits are the most consistent compared to older generations.

Another **sociodemographic characteristic represented by age** of the respondent is examined in Figure 14, along with related **usage of information sources for travel planning**. The model's theoretical basis supposes involvement of age in the adoption of modern technology (Gitlow, 2014). STR user status is influenced by age both directly and indirectly via the information sources. Websites for travelers (for collecting their reviews and ratings) have the strongest direct effect on STR usage. Online influencers and social media of the service provider are similarly strong. Since STRs are usually booked via online platforms, there is a connection with the usage of web and social media as all of those are internet-based. It may also imply that some STR users might draw inspiration for their bookings from the mentioned sources.

Age has the only negative direct effect alongside three negative indirect effects (one via each information source). These direct and indirect effects of age in total account for a stronger coefficient (-0.09) than the effects of online influencers and social media of the service provider. These results demonstrate that STR consumers tend to be younger citizens who plan their travels with modern information sources. This both confirms and extends previous research (Gitlow, 2014), which suggests that older citizens tend to use ICT devices primarily for more conventional functions (e.g. a mobile phone for calling, a computer for emailing). Our results demonstrate a similar attitude toward STR platforms and modern information sources.

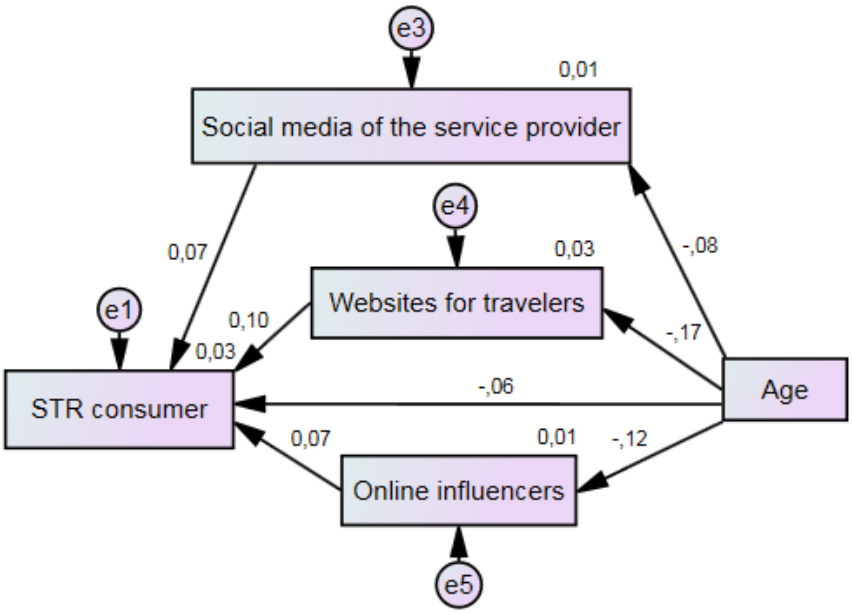


Figure 14 STR consumer model influenced by age and related information sources
Source: Own calculation based on Eurobarometer ZA7807

Figure 15 shows how STR usage is influenced by **price**[16] across four **sustainable travel habits related to price perception**. Three of these travel habits have positive effects on the perception of price importance, while the fourth one has a negative effect. The strongest positive effect is estimated for waste reduction, suggesting price-sensitivity among Europeans who strive not to waste on vacations. This demonstrates sustainability going hand in hand with frugality. Similar cases with weaker regression can be presented on traveling outside season and traveling to less visited destinations. In contrast, some travel habits that contribute to sustainability have the opposite relation to price perception. Respondents who are willing to travel sustainably by paying more to benefit the local communities or to protect the natural environment tend to perceive price as a less important factor when selecting a destination and therefore, are less likely to book STRs. STR users being price-sensitive tend not to contribute financially to sustainability. This aversion could be further amplified by typical consumer behavior of withholding from decisions without immediately visible benefits (Tversky & Kahneman, 1974). Overall, each mentioned variable indirectly influences the STR user status via price perception.

This illustrates how STR consumers are inclined to price-sensitivity, which further entails implications also for sustainable tourism. Some sustainable habits tend to be reinforced by this, while other sustainability goals are suppressed. STR consumers are more

[16] The perceived importance of price for choosing a travel destination

likely to contribute to sustainability in those ways which also financially benefit them, and less likely to contribute in ways that would increase their travel costs. STR usage is a function of both the price perception and the approach to sustainability.

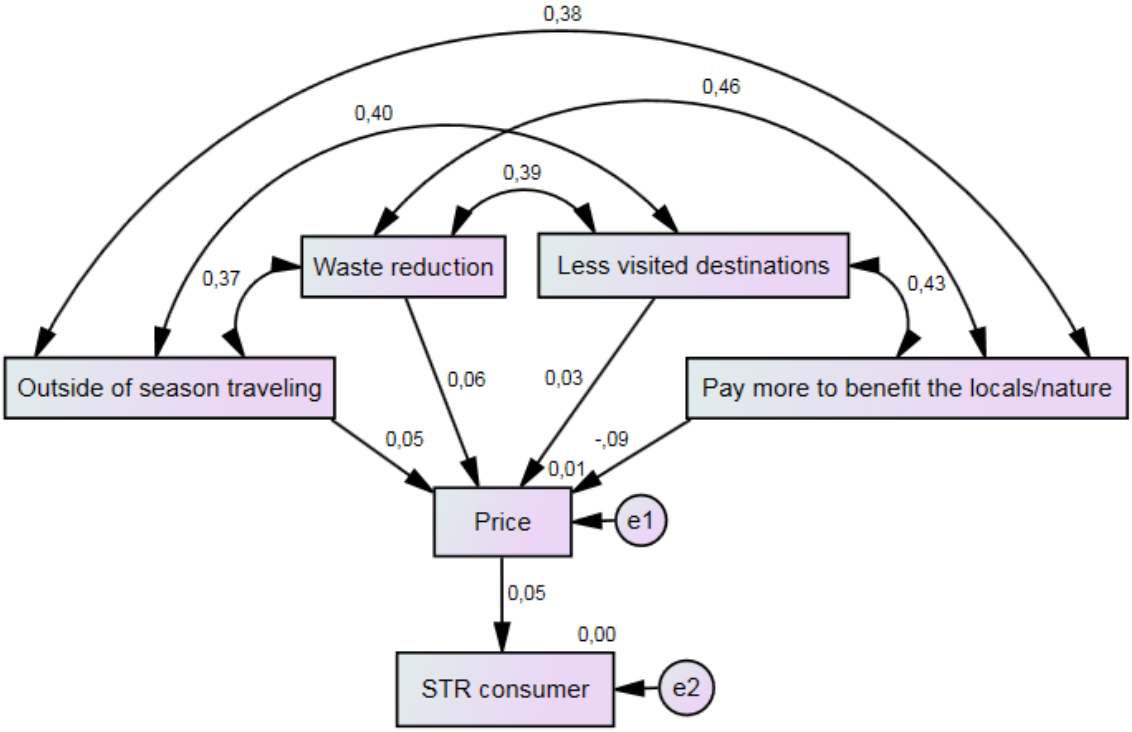


Figure 15 STR consumer model influenced by price and related sustainable behavior
Source: Own calculation based on Eurobarometer ZA7807

In Figure 16, we estimate our last STR consumer model, evaluating the influence of further **sustainable behaviors** (following the previous model) together with related **factors involved in the selection of a destination**. These variables relate to each other based on their common local aspect. Prior evidence suggests that authentic local aspect is sought out by STR guests when visiting a location (Guttentag et al., 2018; Stors & Kagermeier, 2017).

Our estimates show that consuming locally sourced products is more important for STR users than the involvement of the local population in tourism activities. The total effect of local product consumption is further slightly amplified by the indirect linkage via the sustainability certification. This exemplifies that sustainability certifications bear importance particularly for tourists interested in local products (the certification's linkage with the involvement of locals is not included in the model for its insignificance).

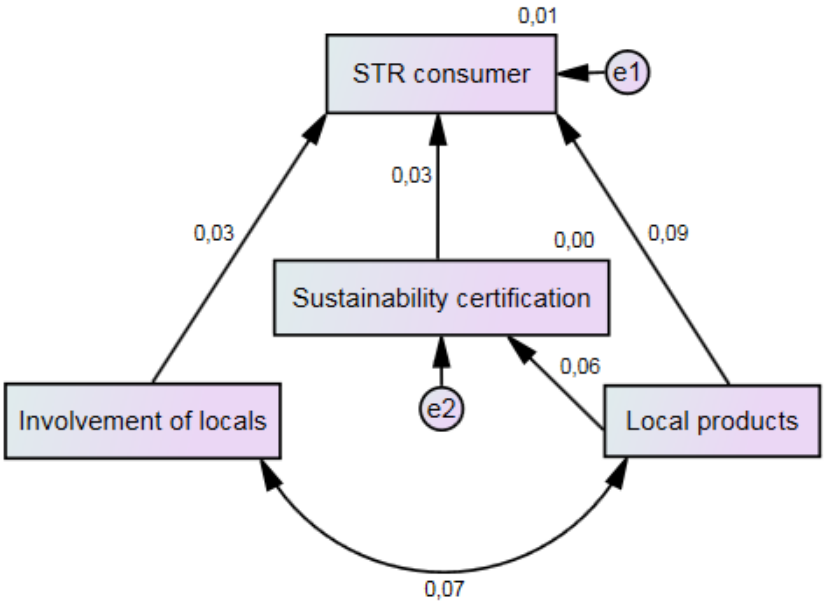
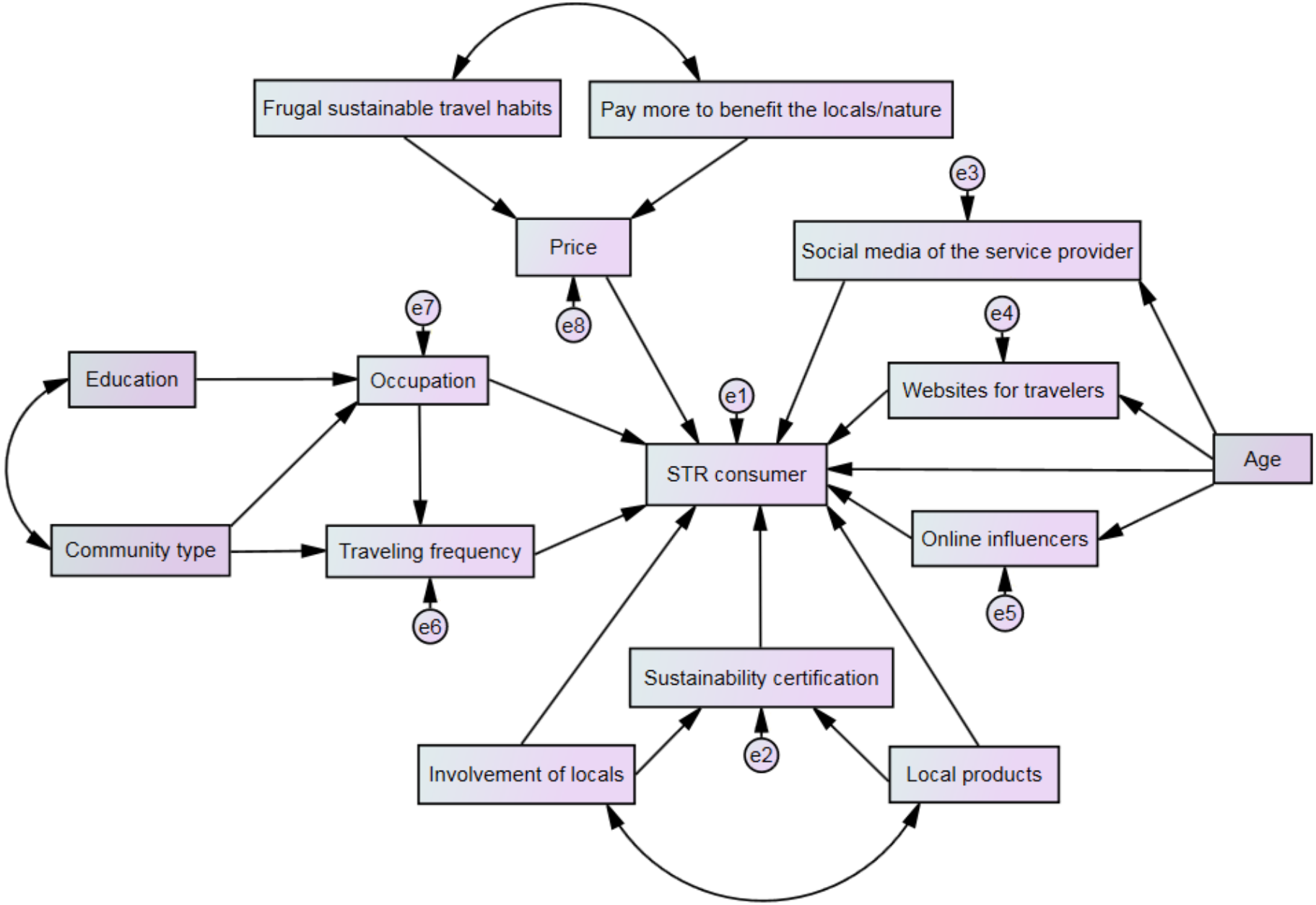


Figure 16 STR consumer model influenced by local aspects and related certification
Source: Own calculation based on Eurobarometer ZA7807

The regression result for locals' involvement is weaker (0.03) despite its essential role in the traditional sharing economy. In qualitative research, some STR users express an intention to interact with their STR hosts (Stors & Kagermeier, 2017). Nonetheless, our model demonstrates that the interest of an average STR consumer leans toward local products rather than the local community. This is further reinforced by the result of our previous model, which depicts how paying more for the locals' benefit decreases the likelihood of STR usage.

Finally, Figure 17 combines all four previous STR consumer models. This comprehensive model is included for illustrative purposes. We do not estimate the coefficients and indices for the combined model due to its extensiveness. SEM methodology requires all correlated variables to be interconnected, which would lead to an over-saturated model with difficult-to-interpret results.

Figure 17 Combined STR consumer model



8 Housing issues in the EU context of STRs

The EU faces growing challenges in housing affordability, with STRs often argued as a potential factor in the complex landscape. This chapter examines the multifaceted relationship between housing issues and STRs across EU member states, analyzing both objective housing market indicators and citizens' subjective perceptions. Utilizing survey data combined with affordability metrics and STR numbers, we investigate how different European nations experience and respond to housing challenges.

The analysis is structured into two subchapters: first, an exploratory analysis examining correlations between housing concerns and related socioeconomic issues; and second, a cluster analysis that identifies distinct patterns in how EU countries experience the intersection of STRs and housing markets. This dual approach allows us to not only understand the current state of housing issues across the EU but also to identify groups of countries facing similar challenges, potentially facilitating more targeted policy responses and cross-national learning opportunities. Particular attention is given to disparities between objective metrics and residents' subjective perceptions, as well as the varying STR impact perceived across different national contexts.

8.1 Exploratory analysis

The relationships between issues that Europeans perceive as the most pressing in their countries are presented in Table 8 (the respondents could have listed up to two different issues). The correlation coefficients tend to yield negative values, meaning the larger the value, the less likely the respondents are to list these two issues together. This might be caused by the wide selection of ten various issues, while the respondents were allowed to choose only two of those.

Those citizens who view "housing" as one of the most important problems are less likely to list "economic situation and unemployment" or "health" as the other issue. The weakest negative correlation "housing" has with "cost of living", which can be explained by housing costs being a subcategory of living costs. Rent and utilities are significant factors in the cost of living (Albouy et al., 2014; Roback, 1982). Although the respondents do not associate their economic situation as part of this issue. This might suggest that Europeans tend to see other causes reducing housing affordability (or living affordability in general) than their economic situation.

Table 8 Correlation between the most important issues Europeans think their region is facing

		Immigration	Crime	Economic situation	People and businesses leaving	Education	Environment	Health	Cost of living	Housing	Transportation
Immigration	Pearson correlation	--									
	p-value										
Crime	Pearson correlation	.021	--								
	p-value	<.001									
Economic situation	Pearson correlation	-.094	-.088	--							
	p-value	<.001	<.001								
People and businesses leaving	Pearson correlation	-.073	-.072	-.023	--						
	p-value	<.001	<.001	<.001							
Education	Pearson correlation	-.089	-.086	-.130	-.080	--					
	p-value	<.001	<.001	<.001	<.001						
Environment	Pearson correlation	-.103	-.089	-.143	-.087	-.063	--				
	p-value	<.001	<.001	<.001	<.001	<.001					
Health	Pearson correlation	-.135	-.116	-.148	-.103	-.033	-.098	--			
	p-value	<.001	<.001	<.001	<.001	<.001	<.001				
Cost of living	Pearson correlation	-.112	-.118	-.126	-.098	-.149	-.134	-.160	--		
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001			
Housing	Pearson correlation	-.095	-.078	-.163	-.100	-.106	-.066	-.146	-.053	--	
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001		
Transportation	Pearson correlation	-.086	-.089	-.118	-.056	-.072	-.069	-.082	-.125	-.060	--
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	

Source: Own calculation based on Eurobarometer ZA8815

Since the questionnaire links “economic situation” with “unemployment”, a possible explanation is also that citizens who do not encounter problems on the job market nevertheless struggle with housing and living costs. Another factor involved in living costs is transportation (Glaeser et al., 2008; Haas et al., 2006), however, the respondents do not seem to associate these together.

Apart from “housing”, the citizens responding with “economic situation and unemployment” are also unlikely to view “environment”, “health”, and “education” as important issues. This applies to a lesser extent regarding “people and/or businesses going away from the region”. On the other hand, one of the more common pairs of responses is “health” and “education”. The recent Covid-19 pandemic could be one of the issues meant by the respondents when listing “health”. The connection between Covid-19 and education as interlinked problems may stem from the impression that insufficient education leads to citizens underestimating the threat posed by a pandemic.

Table 9 demonstrates bilateral correlations between dimensions that Europeans deem to be the most important for the future of Europe (the respondents could have listed up to two different dimensions). All correlation coefficients in the matrix are negative, meaning the larger the value, the less likely the respondents are to list these two issues together. Again, this is likely due to the rather wide selection of ten dimensions, while respondents were allowed to pick only two.

The least common pair is between “migration” and “education, culture, youth, and sport”, meaning that Europeans who deem one of these two important do not see the value in the other one. Following is the pair between “economy, social justice, and jobs” and “climate change and the environment”. Similarly, these respondents listing economy also tend to avoid selecting “EU’s security and defence”. Both of these occurrences might be linked to the concern that environmental policy and military investment might be costly for the European economy. On the other hand, the most common pairings are “digital transformation of the economy and of society” with “EU’s influence in the world” and further between “health” and “education, culture, youth, and sport”.

Table 9 Correlation between the dimensions Europeans think are the most important for the future of Europe

		EU's global influence	Economy, soc. justice and jobs	Environment and climate change	Migration	Digital transformation	Health	Democracy, values, rights and law	EU's security	Fight against crime	Education, culture, youth
EU's global influence	Pearson correlation	--									
	p-value										
Economy, soc. justice and jobs	Pearson correlation	-.062	--								
	p-value	<.001									
Environment and climate change	Pearson correlation	-.047	-.156	--							
	p-value	<.001	<.001								
Migration	Pearson correlation	-.055	-.139	-.104	--						
	p-value	<.001	<.001	<.001							
Digital transformation	Pearson correlation	-.031	-.075	-.048	-.061	--					
	p-value	<.001	<.001	<.001	<.001						
Health	Pearson correlation	-.080	-.113	-.138	-.133	-.075	--				
	p-value	<.001	<.001	<.001	<.001	<.001					
Democracy, values, rights and law	Pearson correlation	-.059	-.130	-.077	-.135	-.064	-.151	--			
	p-value	<.001	<.001	<.001	<.001	<.001	<.001				
EU's security	Pearson correlation	-.045	-.045	-.120	-.059	-.055	-.142	-.093	--		
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001			
Fight against crime	Pearson correlation	-.058	-.093	-.104	-.046	-.059	-.058	-.112	-.105	--	
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001		
Education, culture, youth	Pearson correlation	-.090	-.123	-.119	-.159	-.052	-.031	-.109	-.150	-.092	--
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	

Source: Own calculation based on Eurobarometer ZA8815

Table 10 depicts the contingency between the respondents' housing perception[17] and dimensions that Europeans deem to be the most important for the future of Europe. Most of the coefficients exhibit rather weak relationships.

Table 10 Contingency between the perception of housing and the importance of dimensions for the future of Europe

The most important dimension for the future of Europe is…		Housing is the most important issue facing our region	
		Contingency coeff.	Gamma
EU's influence in the world	Coefficients	0.000	-0.002
	Sig. (2-tailed)	0.932	
Economy, social justice and jobs	Coefficients	0.008	0.022
	Sig. (2-tailed)	0.057	
Climate change and the environment	Coefficients	0.016	0.049
	Sig. (2-tailed)	<.001	
Migration	Coefficients	0.023	0.073
	Sig. (2-tailed)	<.001	
Digital transformation of the economy and of society	Coefficients	0.011	0.056
	Sig. (2-tailed)	0.006	
Health	Coefficients	0.019	-0.062
	Sig. (2-tailed)	<.001	
Democracy, values and rights, rule of law	Coefficients	0.017	0.052
	Sig. (2-tailed)	<.001	
EU's security and defence	Coefficients	0.005	0.016
	Sig. (2-tailed)	0.207	
Fight against crime	Coefficients	0.019	-0.08
	Sig. (2-tailed)	<.001	
Education, culture, youth and sport	Coefficients	0.013	-0.041
	Sig. (2-tailed)	0.001	
Other	Coefficients	0.007	-0.116
	Sig. (2-tailed)	0.066	
None	Coefficients	0.008	-0.12
	Sig. (2-tailed)	0.043	
Don't know	Coefficients	0.021	-0.324
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA8815

The only stronger contingency is in the case of the respondents replying that they do not know which dimensions are the most important for the future of Europe (gamma = -.324; cont. coef. = .021). The gamma coefficient is negative, which suggests that housing-concerned[18] Europeans tend to have an opinion about the future of Europe. Moreover, they

[17] For the purpose of this research, "housing perception" refers to whether or not respondents think that housing is one of the two most important issues their region is facing

[18] As "housing-concerned", we define those who indicated housing as one of the two most important issues their region is facing

tend to specify the important dimension rather than express an opinion that there is nothing important for the future of Europe.

Examining the results of the dimensions themselves, the housing perception is weakly related to "migration" and "health". In the case of "migration", we observe a positive relationship, suggesting that housing-concerned citizens tend to think that migration is one of the most important dimensions for the future of Europe (gamma = .073; cont. coef. = .023). However, since the survey does not specify this dimension further, it makes it difficult to assess what the respondents might mean. One possible explanation is that housing-concerned Europeans are afraid of increased housing demand driven by the immigrants, further exacerbating housing availability. On the other hand, the dimension can also be interpreted in the opposite way, meaning that the respondents might be implying that migration is important for the future of Europe because the immigrants can participate in the economy, for example, by performing jobs the locals are not interested in or by balancing the demographic curve.

In the case of "health", we observe a negative association vis-à-vis the housing perception (gamma = -.062; cont. coef. = .019). This means that housing-concerned Europeans tend not to consider health an important dimension for the future of Europe. Since correlation can capture various forms of causal relationships, this case may represent a situation in which two variables share a common denominator (leading to correlation between the variables despite no direct relationship between them). This denominator seems to be the respondents' age, meaning that with increasing age, people tend to be more concerned about their health and less concerned about housing issues, as they usually have their housing situation already secured. These two variables exhibit the mentioned trends with some differences in their patterns. Housing concern tends to be prominent until 40 years and then declines, while health importance has the most significant growth after 72 years. Since certain public policies affect varying age groups differently, this finding has implications for their implementation according to the given policy targeting.

Table 11 demonstrates contingency between the respondents' housing perception and overall assessment of their personal/regional situation (including sociodemographic characteristics). Respondents' nationality strongly influences perceiving housing as an important issue (cont. coef. = .286). This is further elaborated in Table 12, depicting the contingency between each nationality and the importance they attribute to housing. Later in

this chapter, we also elaborate the correlation between the mentioned contingency and the measured housing affordability in each of these countries.

Table 11 Contingency between the housing perception and sociodemographic characteristics

		Housing is the most important issue facing our region	
		Contingency coeff.	Gamma
Country of residence	Coefficients	0.286	/
	Sig. (2-tailed)	<.001	
Age (4 categories)	Coefficients	0.085	-0.157
	Sig. (2-tailed)	<.001	
How would you judge the quality of life in your region?	Coefficients	0.097	-0.221
	Sig. (2-tailed)	<.001	
How would you judge the economic situation of your region?	Coefficients	0.103	-0.229
	Sig. (2-tailed)	<.001	
Do you tend to trust or tend not to trust your national government?	Coefficients	0.043	-0.109
	Sig. (2-tailed)	<.001	
Do you tend to trust or tend not to trust your regional or local authorities?	Coefficients	0.034	-0.091
	Sig. (2-tailed)	<.001	
How optimistic/pessimistic are you regarding the future of your region?	Coefficients	0.071	-0.140
	Sig. (2-tailed)	<.001	
How satisfied are you with the life you lead?	Coefficients	0.031	-0.064
	Sig. (2-tailed)	<.001	
Are things going in the right direction or in the wrong direction in your region?	Coefficients	0.066	-0.176
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA8815

The housing perception is further related to the respondents' assessment of the current situation regarding the quality of life and economy in their country, however, in the opposite direction than might be expected. Europeans satisfied with their regional situation tend to view housing negatively more often than the dissatisfied Europeans (both when it comes to quality of life and the economic situation in their country).

The housing-concerned Europeans also tend to think that things are going in the right direction and feel more optimistic about the future of their region. It might be worthwhile to further inspect how this differs in the case of housing compared to the cases of other issues examined in the survey. While these regional situation assessments have the strongest gamma coefficients, the personal situation assessment has the weakest one. This suggests that although housing-concerned Europeans tend to rate the regional situation rather positively, they do so to a lesser extent regarding their personal life satisfaction. A possible explanation might be that citizens with housing problems do not view their situation as a universal case around the country but as a rather unique situation concerning themselves.

Table 12 Contingency between the housing perception and the country of residence

		Housing is the most important issue facing our region	
		Contingency coeff.	Gamma
Belgium	Coefficients	0.013	0.111
	Sig. (2-tailed)	0.001	
Denmark	Coefficients	0.034	-0.339
	Sig. (2-tailed)	<.001	
Germany	Coefficients	0.005	-0.024
	Sig. (2-tailed)	0.176	
Greece	Coefficients	0.02	-0.171
	Sig. (2-tailed)	<.001	
Spain	Coefficients	0.058	0.232
	Sig. (2-tailed)	<.001	
Finland	Coefficients	0.04	-0.434
	Sig. (2-tailed)	<.001	
France	Coefficients	0.002	0.007
	Sig. (2-tailed)	0.658	
Ireland	Coefficients	0.075	0.557
	Sig. (2-tailed)	<.001	
Italy	Coefficients	0.116	-0.644
	Sig. (2-tailed)	<.001	
Luxembourg	Coefficients	0.006	0.101
	Sig. (2-tailed)	0.106	
The Netherlands	Coefficients	0.179	0.628
	Sig. (2-tailed)	<.001	
Austria	Coefficients	0.000	0.001
	Sig. (2-tailed)	0.978	
Portugal	Coefficients	0.112	0.535
	Sig. (2-tailed)	<.001	
Sweden	Coefficients	0.023	-0.17
	Sig. (2-tailed)	<.001	
Bulgaria	Coefficients	0.065	-0.639
	Sig. (2-tailed)	<.001	
Cyprus	Coefficients	0.008	0.111
	Sig. (2-tailed)	0.048	
The Czech Republic	Coefficients	0.042	0.24
	Sig. (2-tailed)	<.001	
Estonia	Coefficients	0.036	-0.753
	Sig. (2-tailed)	<.001	
Hungary	Coefficients	0.047	-0.361
	Sig. (2-tailed)	<.001	
Latvia	Coefficients	0.022	-0.401
	Sig. (2-tailed)	<.001	
Lithuania	Coefficients	0.003	-0.045
	Sig. (2-tailed)	0.400	
Malta	Coefficients	0.014	-0.231
	Sig. (2-tailed)	<.001	
Poland	Coefficients	0.01	0.047
	Sig. (2-tailed)	0.010	
Romania	Coefficients	0.062	-0.525
	Sig. (2-tailed)	<.001	

Slovakia	Coefficients	0.024	-0.258
	Sig. (2-tailed)	<.001	
Slovenia	Coefficients	0.015	0.179
	Sig. (2-tailed)	<.001	
Croatia	Coefficients	0.035	-0.389
	Sig. (2-tailed)	<.001	

Source: Own calculation based on Eurobarometer ZA8815

Regarding demographic influences, we can observe a pattern associated with age, although its direction is not strictly constant. Housing concern tends to rise between 25 and 39 years and then gradually fall off during the 40s and further down in the 50s. This pattern is to be expected given the general life period in which people tend to become self-reliant in terms of housing.

Table 12 depicts the contingency between the respondents' nationality and whether they consider housing to be one of the most important issues in their country. The strongest positive contingency for the importance of housing is in the Netherlands and Ireland, while the strongest negative contingency is in Estonia and Italy. The Italian result proves to be mostly consistent with available data on housing affordability in this region, however, this may vary slightly based on the specific understanding of "housing" and the means to measure its affordability. On average, Italian citizens need 5.3 annual gross salaries to purchase a 70 m^2 dwelling, which is the third lowest[19] in a sample of 18 countries (Deloitte, 2024) or the fourth lowest[20] in a sample of 28 countries (Statista, 2024c). Contrastingly, Estonian housing affordability is outperformed by 18 out of those 28 countries, despite the fact that Estonian respondents are even less likely than Italians to regard housing as an issue.

Our strongest positive contingency result in the case of the Netherlands is reflected in certain available housing datasets but not in others. The Dutch need 7.2 annual gross salaries to purchase a 70 m^2 dwelling, which is the eighth lowest in the sample of 18 countries (Deloitte, 2024). At the same time, the Netherlands' house price to income ratio ranks the third most unaffordable[21] in the sample of 28 countries (Statista, 2024c). Portuguese house price to income ratio (highest in the sample) aligns with our contingency results, as the Portuguese respondents rank third behind the Dutch and Irish in their housing-concerned perception. On the other hand, the house price to income ratio is more favorable in Ireland

[19] Behind Denmark and Norway
[20] Behind Romania, Bulgaria, and Finland
[21] Behind Portugal and Luxembourg

than in 10 other countries from the sample, including Estonia (the most housing-satisfied country).

Housing affordability can be also measured by the housing cost overburden rate, which is the share of the population living in a household where total housing costs represent more than 40% of disposable income. In the EU, 10.6% of the population in cities lives in such a household, while the corresponding rate for rural areas is 6.6%, as shown in Figure 18 (Eurostat, 2023).

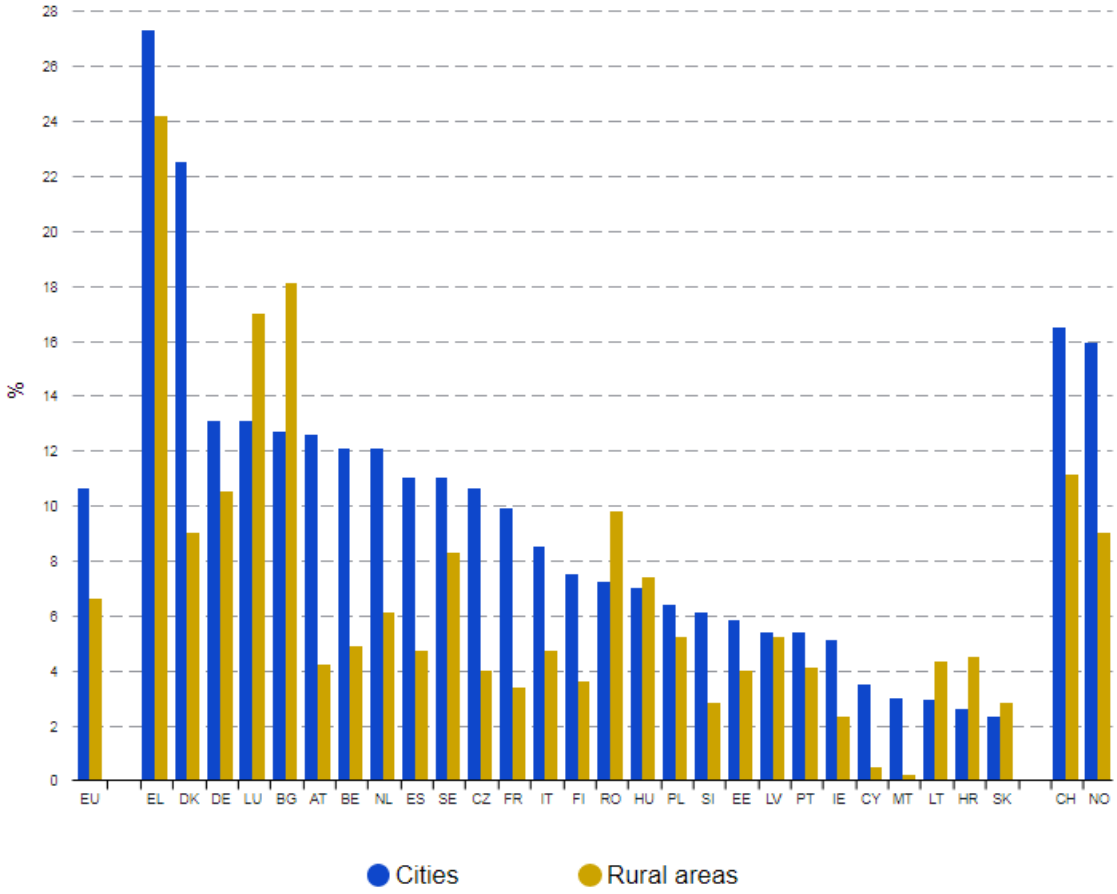


Figure 18 Housing cost overburden rate in cities and rural areas in EU countries

Source: Eurostat, 2023

The housing cost overburden is higher in cities than in rural areas in twenty countries and lower in seven. The extremes in this difference are Denmark (with cities being less affordable) and Bulgaria (with villages being less affordable due to lower income in rural areas). This specific Bulgarian situation is consistent with urban–rural income statistics (Eurostat, 2024a). Bulgaria is singled out as one of the few countries (second after Romania) where rural median income is markedly lower relative to cities (67% of the median income

in cities). The highest housing cost overburden rates in cities are observed in Greece and Denmark, while the Netherlands ranks eighth, Ireland eighteenth, and Portugal seventeenth. In rural areas, they are highest in Greece and Bulgaria, while the Netherlands ranks ninth, Ireland twenty-fifth, and Portugal eighteenth.

Neither the urban nor the rural housing cost overburden reflects our results for the most housing-concerned nationalities. While 46.9% of the Dutch see housing as an issue, only 12.1% and 6.1% are overburdened in urban and rural areas, respectively. Similarly, in Ireland, 5.1% are overburdened (2.3% for rural areas), and in Portugal, 5.4% are overburdened (4.1% for rural areas), despite reporting housing as one of their primary issues (43.8% of Irish respondents and 41.5% of Portuguese respondents).

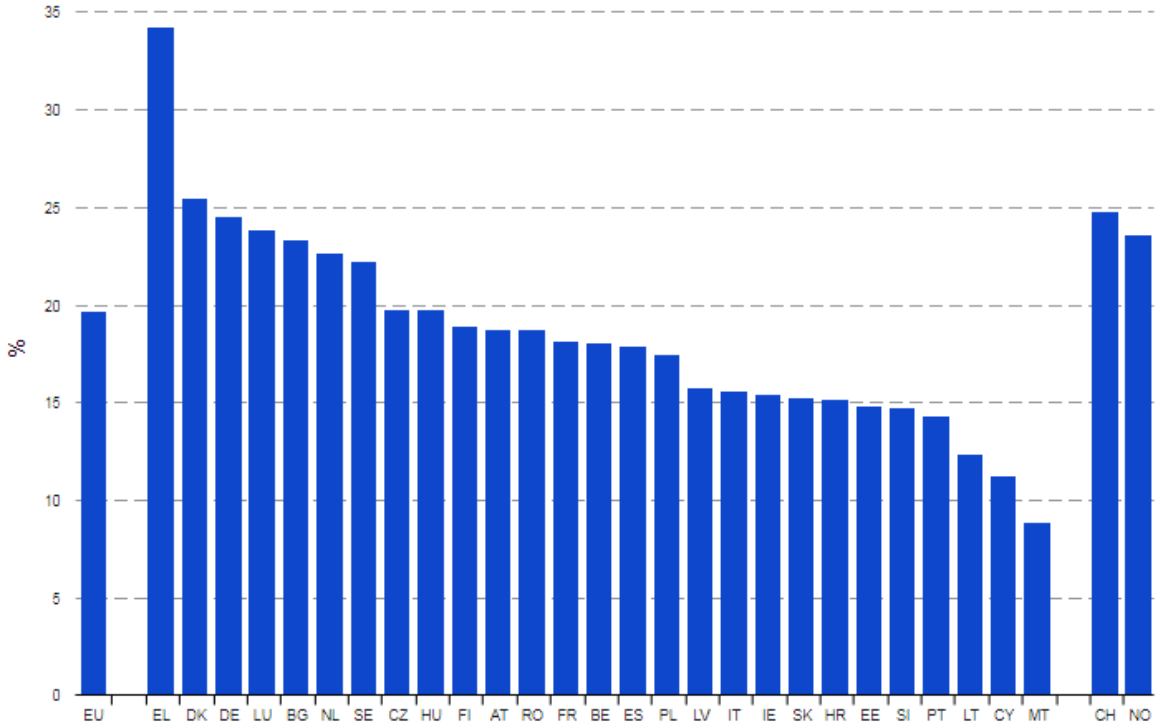


Figure 19 Housing cost to disposable income ratio in EU countries

Source: Eurostat, 2023

Another way to measure whether housing is affordable is the share of housing cost in total disposable income. On average, in the EU, 19.6% of disposable income is dedicated to housing costs, as shown in Figure 19 (Eurostat, 2023). This differs among the countries. The highest shares are in Greece, Denmark, and Germany. The Netherlands ranks sixth, Ireland

nineteenth, and Portugal twenty-fourth. Among those with a disposable income below 60% of the national median[22], the average share of housing in disposable income is 37.9%.

Figure 20 shows how the **influence of nationality on housing perception correlates with actual housing affordability** in each country (denoted by the housing costs to disposable income ratio). In the bottom-left quadrant, we see nations that accurately assess the housing situation in their countries as favorable (e.g. Estonia and Italy) in comparison to their other EU counterparts. Conversely, in the top-left quadrant, we see nations that assess their situation inaccurately as their housing affordability is actually less adverse than their self-rating (e.g. Portugal and Ireland). In the top-right quadrant are countries that discern their relatively unaffordable housing, while the bottom-right countries tend to overstate their housing affordability.

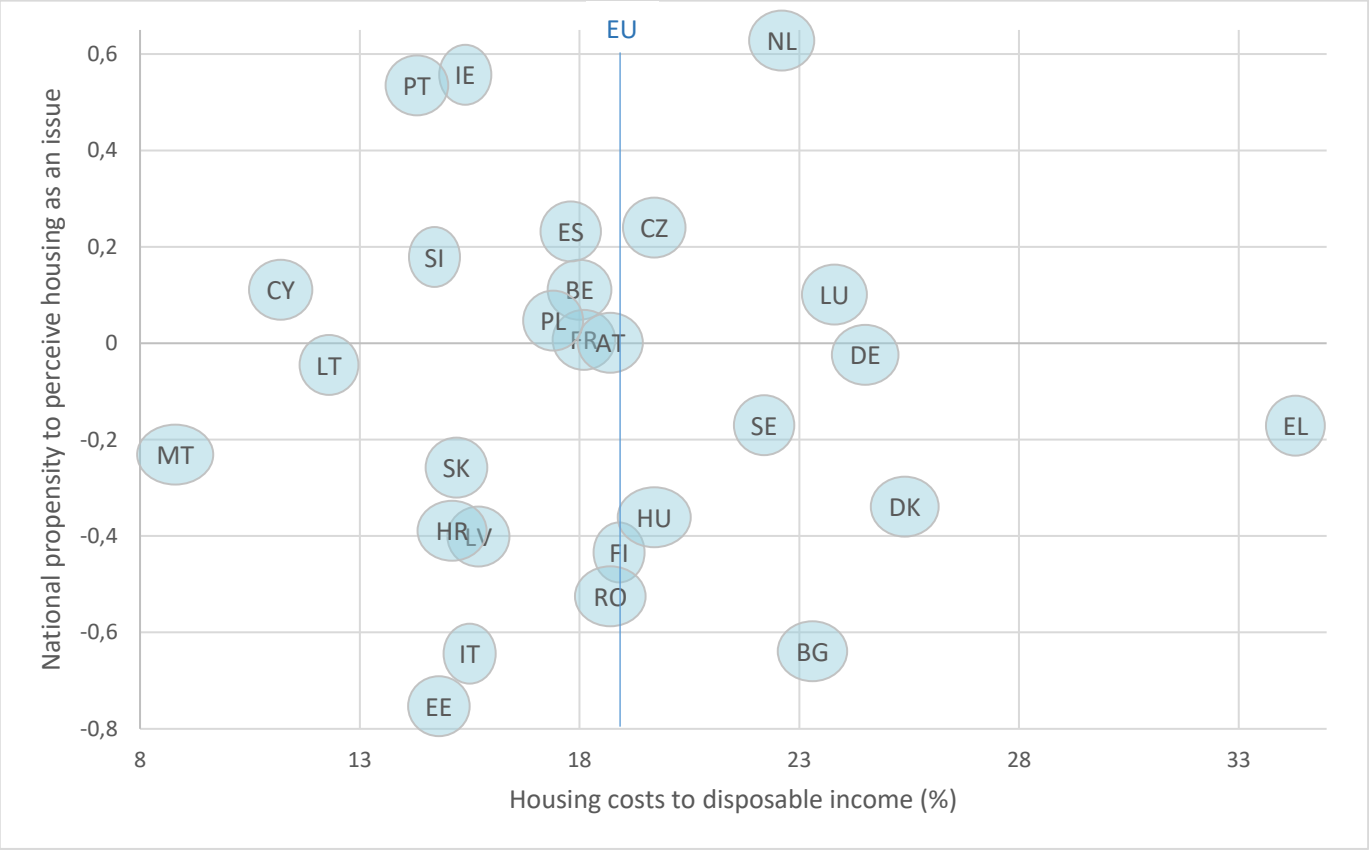


Figure 20 Relation between housing affordability and housing perception in the EU
Source: Own based on Eurobarometer ZA8815 and Eurostat (2023)

Notably, Greece has a disproportionally favorable housing perception despite having the least affordable housing in the EU. A possible explanation might be that even though housing is an issue for Greeks, they just do not perceive it as one of the most important ones, given

[22] Meaning households that could be considered at risk of poverty

all the other issues the country may be facing. Greek respondents most often listed issues such as "cost of living" and "economic situation and unemployment", hence more general issues that may also encompass the housing situation. Since the Covid-19 pandemic and the invasion of Ukraine, Greece has been among countries with severe inflation growth, and its unemployment rate is still among the highest in the EU despite its successful reduction since the European debt crisis (EURES, 2023; Hazakis, 2022).

The portrayed situation is further illustrated by a lack of correlation and a declining regression, hinting at the inaccuracy of national assessments (assessments in alignment with the affordability ratio would lead to upward regression).

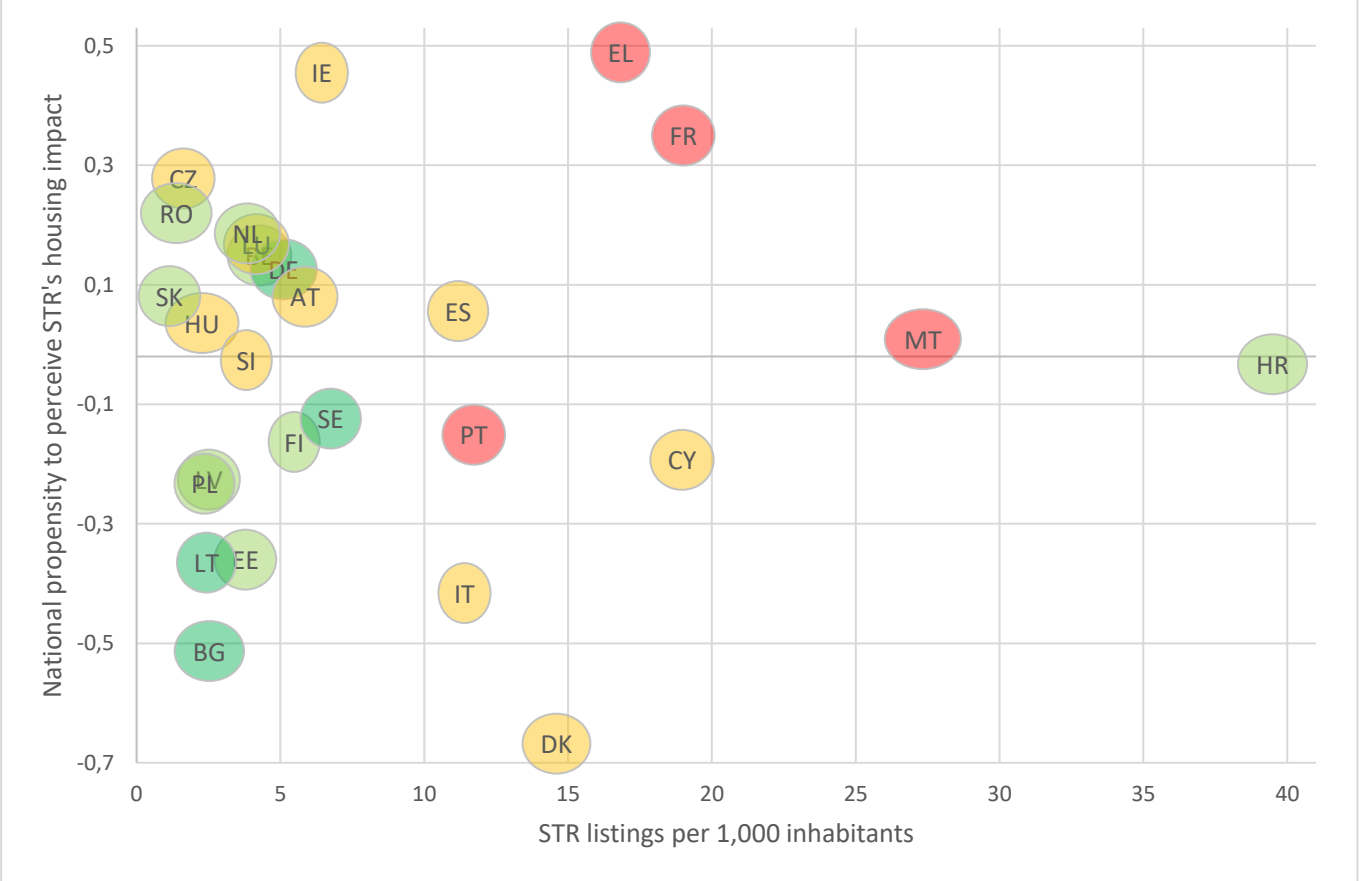


Figure 21 Relation between the number of STRs and their housing impact perception in the EU
(Green = less STRs in the capital, Red = more STRs in the capital)
Source: Own based on Eurobarometer ZA8815 and AirDNA (2024)

Figure 21 and 22 present variables with a relationship similar to Figure 20, however, in this case capturing the housing perception in the context of the STR phenomenon. Both figures depict how the influence of nationality on perceiving STR's housing impact correlates with the number of STR listings (per 1,000 inhabitants) in each of the countries. Figure 21 further differentiates the countries based on the concentration of their listings,

while Figure 22 extends the perspective by including the housing affordability aspect previously shown in Figure 20.

In relation to the disproportions mentioned, we hypothesize there might be several other factors involved, leading to some countries evaluating their STR impacts as more positive or more negative. Therefore, we further explore the following four factors: STR concentration (Figure 21), housing affordability (Figure 22), life satisfaction (Figure A.5), and share of tourism in GDP (Figure A.6). STR concentration and housing affordability can explain most of the disproportions while life satisfaction and tourism's GDP share each explain one remaining (thus, Figures A.5 and A.6 are included only in the Appendix but briefly commented at Figure 22).

Figure 21 classifies the above-explored results according to the number of STRs concentrated in each of the capital cities. Since the overall number of STR listings does not convey the information about how and where the listings are concentrated, it may lack the capacity to adequately explain some of the housing impact perceptions. Countries with evenly distributed STRs may be less impacted (or feel less impacted) than countries where the listings are primarily concentrated at a single (or a couple) socioeconomically significant location. Therefore, we employ the STR numbers concentrated in the capital cities. The described assumption is reflected especially in Greece (Athens), France (Paris), Ireland (Dublin), and the Czech Republic (Prague). On the other hand, it does not explain the Romanian and the Dutch adverse perceptions as well as Denmark's favorable perception of STRs (however, it might partially explain the favorable perception in Croatia where most STRs are dispersed along its long coastline).

In Figure 22, we explore again the same variables, this time expanding the perspective with the inclusion of housing affordability. The degree of housing affordability itself could be expected as a vital factor in the perception of STRs' involvement in the local housing situation. Despite that housing is affected by various complex factors, there is prior evidence that residents tend to attribute the situation to more discernible elements such as STRs (Dredge et al., 2016; Furukawa and Onuki, 2019; Nieuwland and van Melik, 2020). Moreover, our Figure 20 further reinforces this evidence by demonstrating how unreliable respondents' assessment of local housing situation is. Therefore, while the variable may explain some of the perceptions, its capacity to explain other ones is limited, especially those

influenced by behavioral or cultural factors (perhaps in the case of Ireland which is not complexly explained by any utilized variable).

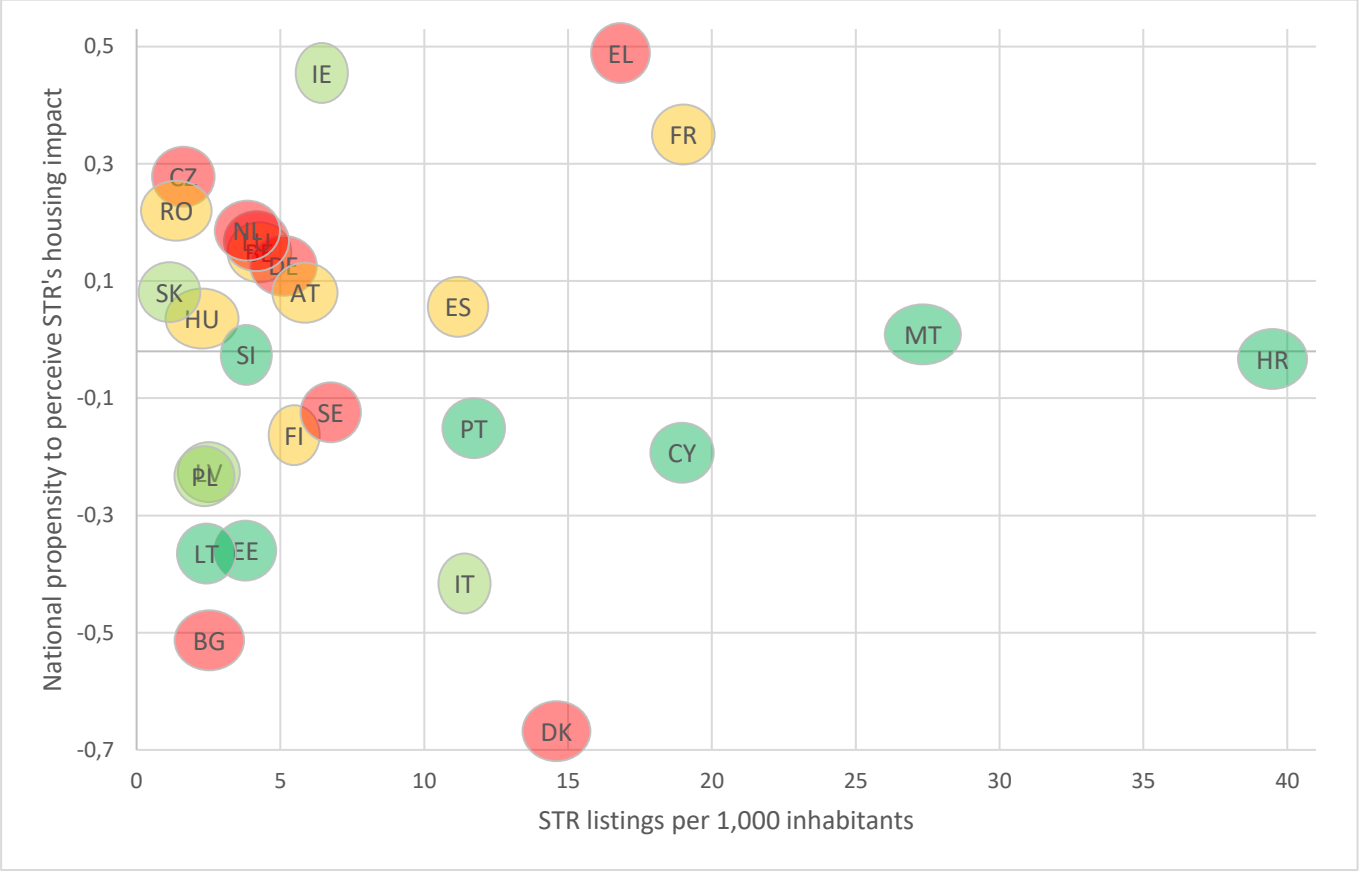


Figure 22 Relation between the number of STRs and their housing impact perception in the EU
(Green = more affordable housing, Red = less affordable housing)
Source: Own based on Eurobarometer ZA8815, AirDNA (2024), Eurostat (2023)

In particular, unaffordable housing aligns with adverse STR perception in Greece, the Czech Republic, and the Netherlands. However, even this variable struggles to explain the Danish favorable perception. For this purpose, we employ the life satisfaction variable (Figure A.5 in the Appendix) where Denmark leads the ranking at the top. This suggests that the Danish tend to perceive STRs favorably due to their overall life satisfaction, despite low housing affordability and relatively high STR numbers in the capital as well as in the rest of the country. Furthermore, low life satisfaction possibly also contributes to the adverse STR perceptions in Greece and France.

Conversely, high housing affordability can potentially explain the comparably favorable perceptions in Malta and Croatia. Particularly for Croatia, we also supplement our last variable in the form of tourism share in GDP (Figure A.6 in the Appendix). Croatia has the highest share of tourism in GDP across the EU, indicating high economic reliance on revenue

generated from tourists. We hypothesize that this may be another factor involved in the STR impact assessment among Croats. Since many Croats earn their living from tourism, it likely influences their attitudes towards tourists and by extension towards STRs. Nevertheless, this attitude might be to an extent cultural, since Greece's economic reliance on tourism does not seem to influence their perceptions.

8.2 Cluster analysis

This subchapter employs cluster analysis to identify distinct patterns in how EU member states experience and manage the intersection of STRs and housing markets. By applying Ward's method, we aim to group EU countries based on four key variables: housing affordability[23], citizens' perception of housing as a critical issue, the density of STR listings per capita, and residents' perception of STR impact on housing. This methodological approach enables the identification of countries facing similar challenges and opportunities in their housing markets, while simultaneously revealing broader regional patterns across the EU. Understanding these patterns and country groupings is particularly valuable for policymakers, as it highlights which member states might serve as relevant peers for policy learning and transfer. The analysis first presents a dendrogram to visualize the hierarchical relationships between countries, followed by a comparative analysis of the resulting clusters using standardized scores. The chapter concludes with a statistical validation of the clustering solution through analysis of variance (ANOVA), ensuring the identified groups represent meaningfully distinct patterns in the data.

Figure 23 illustrates a dendrogram clustering EU countries based on four previously introduced variables related to STR and housing situation: housing affordability, housing issue perception, STR listings per 1,000 inhabitants, and STR housing impact perception. The dendrogram can be read either from left to right or from right to left. The first denoted readability is used to recognize closest peers to individual countries, while the latter is used to find into what groups are the countries gradually divided.

When we have a look for example at the Czech Republic, the dendrogram's left side suggests its most similar countries based on their housing affordability, number of STR listings, and the related perceptions. Czechia's closest peers, in this regard, are Belgium, Austria, and Spain. They have medium housing affordability alongside lower STR numbers

[23] Measured as housing costs to disposable income

with rather adverse perceptions. The next step complements Germany and Luxembourg with France close behind. By gradually adding further countries to the cluster, Ward's method subsequently interlinks the entire Western Europe (since there is no geographical or geopolitical variable included, this connection is coincidental). The last country to join this group is Greece with certain values quite distinct from the rest of the cluster (primarily its housing affordability – the lowest by a wide margin). It may be noted here that Greece is also sometimes regarded as part of Western Europe for various reasons (Millas, 2021; Patrikarakos, 2015). Greece has been considered a geopolitical part of the "West" since joining NATO in 1952 and further consolidated its position in the second enlargement of the European Economic Community in 1981.

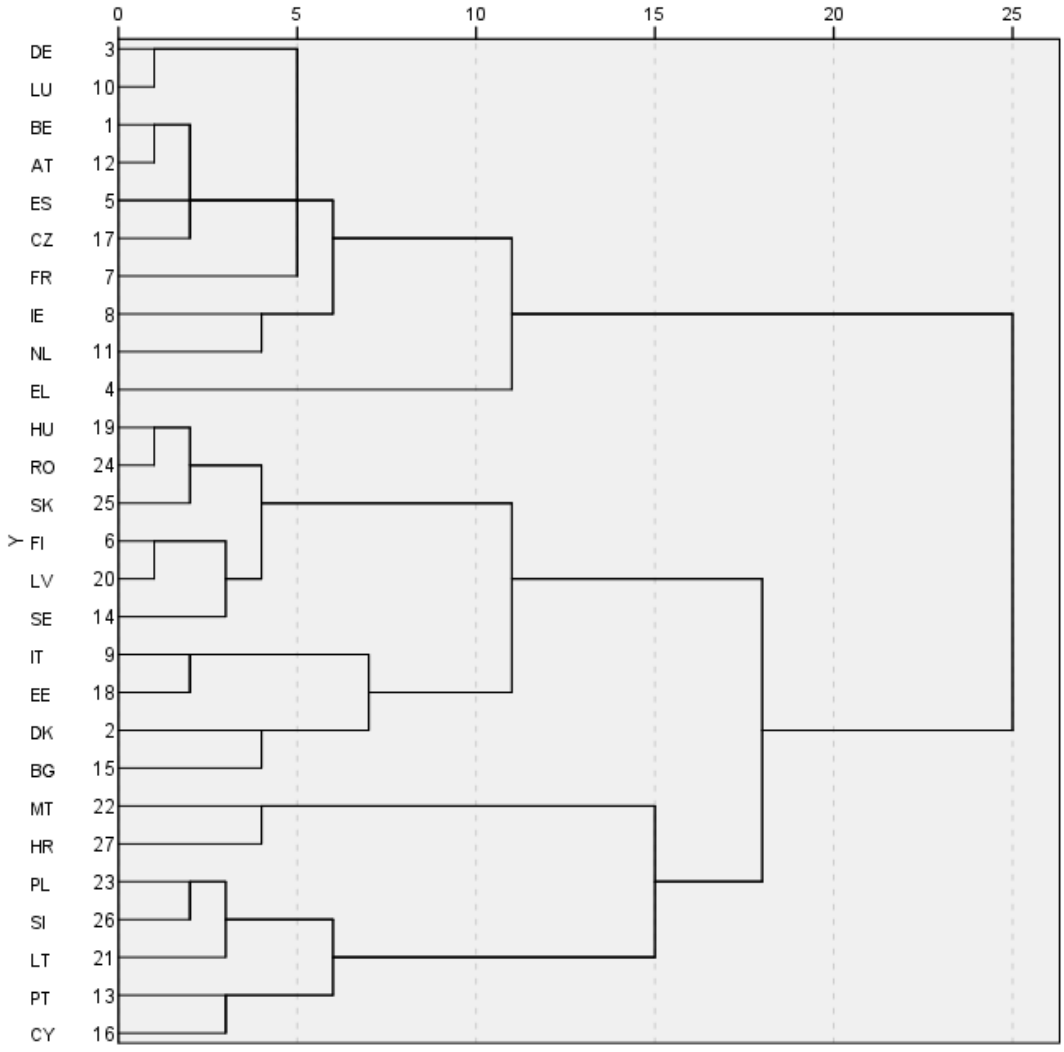


Figure 23 Dendrogram clustering EU countries based on STR and housing situation

Source: Own based on Eurobarometer ZA8815, ZA7799, Eurostat (2023), AirDNA (2024)

The described results regarding the closest peers may have implications for policymaking. The Czech Republic might pay particular attention to Belgium, Austria, and

Spain to monitor development in their housing situation. Primarily, Belgium and Austria have a similar STR situation to Czechia, also taking into account a similar STR concentration in their capital cities (which is not included among the cluster variables). On the other hand, there is a significant disparity in GDP per capita (IMF, 2024), so the Czech Republic may not have the same financial capability as these countries. Spain is a much closer peer in terms of economic performance. The Czech Republic shall observe developments among its peers to gain insights, adopting effective policies when outcomes improve and learning from mistakes when they worsen.

Examining the dendrogram from its right-hand side, we see that at first the EU splits into two groups. One is the Western cluster described above, and the other is a mixture of Eastern, Southern, and Northern countries. This cluster is characterized by more favorable perceptions, especially regarding the housing impact of STRs. They also tend to have more affordable housing than Western countries, and the number of STR listings largely varies. The next step divides Eastern Europe into two clusters – one including wealthier and the other including less wealthy ones. The wealthier Eastern Europe is grouped with Mediterranean countries, while the less wealthy is grouped with Scandinavian countries. This results in two groups with very distinct economic variability in terms of GDP per capita (PPP) (IMF, 2024). While the South-Eastern cluster is economically very consistent[24], the North-Eastern cluster links countries with the highest and lowest economic performance in the EU[25]. Following this, Croatia and Malta split off from the South-Eastern group, forming the smallest cluster (and with the largest in-group distances) in our analysis. These four clusters are further explored in Figure 24.

Figure 24 further illustrates the STR and housing situation across the four clusters mentioned above, depicting Z-scores of the four variables that led to these clusters. The West is characterized by less affordable housing, connected with adverse perceptions of the housing issue as well as the associated STR impact. The number of STR listings varies across Western countries. The cluster of East and Scandinavia features mostly favorable perceptions, despite similarly unaffordable housing as in Western Europe. Perhaps the perceptions might be partially attributed to their low numbers of STR listings. The South and wealthier East represent more affordable housing, however, perceived negatively

[24] Mostly 50-60 thousand USD per capita
[25] 39-48 thousand USD per capita for the Eastern European countries, 65-84 thousand USD per capita for Scandinavian countries

nonetheless. Their adverse perceptions are focused directly on the housing itself, not attributed to STRs (despite similar STR presence as in the Western countries). Lastly, Croatia and Malta are quite distinct from other clusters. They are inundated with STR listings, albeit with favorable housing affordability, and tend not to complain in either respect.

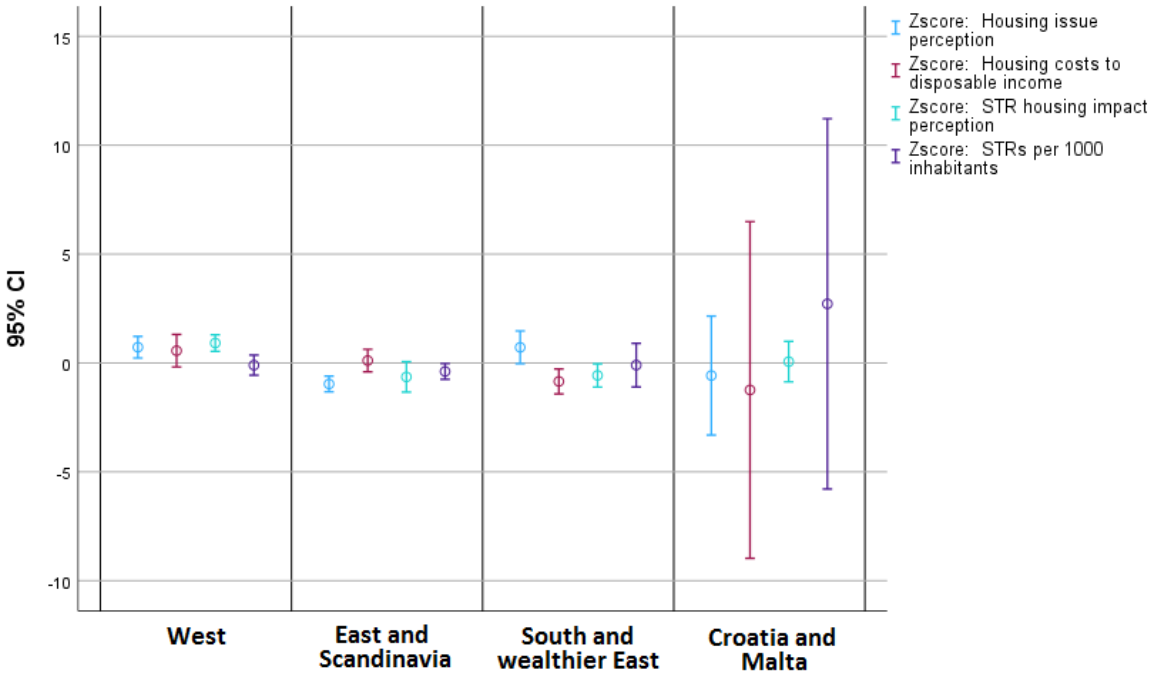


Figure 24 Z-score comparison of EU countries clustered based on STR and housing
Source: Own based on Eurobarometer ZA8815, ZA7799, Eurostat (2023), AirDNA (2024)

The ANOVA results presented in Table 13 provide a statistical validation for the four-cluster solution identified in the hierarchical cluster analysis. The results demonstrate significant differences across all four variables between clusters, supporting the robustness of the identified groupings. All variables show statistically significant differences between clusters at the 1% significance level. These results strongly indicate that the clusters are meaningfully distinct from each other across all dimensions considered in the analysis, both in objective measures (STR numbers, housing affordability) and subjective perceptions (housing issues, STR impact).

The housing perception variable shows the highest F-statistic, indicating the strongest contribution to cluster differentiation. This aligns with the perceptual differences observed in Figure 20 and Figure 24, particularly between the West and North-Eastern clusters. STR presence demonstrates the second highest F-statistic, indicating very strong differentiation between clusters. This is particularly evident in the distinct position of Croatia and Malta,

which showed notably higher STR density. STR perception's lower F-statistic compared to previous variables suggests more within-cluster variation. Housing affordability shows the lowest F-statistic – while still significant, it suggests more overlap between clusters.

Table 13 ANOVA validation for the four-cluster solution

	F-statistic	Sig.	Welch	Sig.	Brown-Forsythe	Sig.
Housing issue perception	16.66	<.001	5.02	.066	5.32	.036
Housing costs to disposable income	4.75	.010	14.77	.004	20.98	<.001
STR housing impact perception	9.14	<.001	12.38	<.001	15.08	<.001
STRs per 1,000 inhabitants	13.14	<.001	5.19	.070	9.20	.027

Source: Own based on Eurobarometer ZA8815, ZA7799, Eurostat (2023), AirDNA (2024)

To test the robustness of this validation, we apply Welch's test and the Brown-Forsythe test in addition. These tests are relevant when the data do not meet the assumption of homoscedasticity. Our variables predominantly meet the assumption according to the Levene's statistic (based on both mean and median). Only STR perception yields mixed results, with values ranging from 2.66 to 3.10 (p-value = 0.47–0.70), ambiguous about rejecting the null hypothesis of equal variances. Nevertheless, Brown-Forsythe supports the conclusion of the F-statistic. Welch's test is less conclusive, however, on a 10% significance level, it still rejects the null hypothesis of equal means across the clusters.

9 Perceptions of STR impacts in the EU capital cities

The growing presence of STRs in European capital cities has sparked considerable debate about their socioeconomic impacts on urban communities. While these accommodations have become an integral part of the tourism ecosystem, their effects on local residents and urban dynamics remain complex and often contentious. This chapter examines how residents of EU capital cities perceive various STR-related challenges, from housing market pressure to changes in neighborhood character. First, through exploratory analysis, then with logistic regression, we investigate how these perceptions vary across different sociodemographic groups and geographic locations. This investigation is particularly relevant as cities continue to grapple with balancing the economic opportunities presented by the sharing economy with the need to maintain liveable, affordable urban environments for their residents.

9.1 Exploratory analysis

The exploratory analysis reveals several significant relationships between perceived disadvantages of STRs and various sociodemographic characteristics, providing valuable insights into how different population segments view the impacts of STRs on their communities.

Table 14 demonstrates that a country of residence is consistently the strongest predictor of perceived STR disadvantages, with contingency coefficients ranging from 0.15 to 0.30 and significant p-values across all disadvantage variables. This suggests that national context, (including local housing markets, tourism intensity, regulatory frameworks, and cultural attitudes) plays a crucial role in shaping residents' perceptions of STR impacts. STR user status demonstrates the strongest relationship with safety and security concerns (gamma = -0.21; cont. coef. = 0.09). The negative gamma coefficient suggests that STR users are less likely to perceive safety issues as a significant concern, potentially due to their firsthand experience with the service. Gender also shows a significant relationship with safety perceptions, with a positive gamma coefficient (0.09) indicating that women are more likely to express security concerns.

Table 14 Contingency between perceived disadvantages of STRs and sociodemographic characteristics

		STR user status	STR host status	Gender	Age	Occupation [26]	Education	Country[26]
Increase in nuisance by tourists (noise, congestion, waste)	p-value	0.04	0.00	0.63	0.06	0.47	0.03	0.00
	contingency coefficient	0.03	0.03	0.01	0.03	0.02	0.03	0.26
	gamma	-0.05	-0.19	0.01	-0.02	-	0.04	-
Pressure on public services (public transport, waste management)	p-value	0.00	0.05	0.71	0.01	0.00	0.22	0.00
	contingency coefficient	0.07	0.02	0.00	0.04	0.05	0.02	0.23
	gamma	-0.17	-0.15	-0.01	0.01	-	-0.05	-
Negative effect on price and availability of housing	p-value	0.06	0.54	0.00	0.00	0.00	0.00	0.00
	contingency coefficient	0.02	0.01	0.05	0.10	0.05	0.07	0.30
	gamma	0.05	-0.04	-0.09	-0.15	-	0.15	-
Decrease in personal safety and security	p-value	0.00	0.00	0.00	0.05	0.00	0.78	0.00
	contingency coefficient	0.09	0.04	0.04	0.03	0.06	0.01	0.16
	gamma	-0.21	-0.28	0.09	0.05	-	-0.01	-
Concentration of tourists in certain neighborhoods	p-value	0.15	0.77	0.47	0.11	0.79	0.30	0.00
	contingency coefficient	0.02	0.00	0.01	0.03	0.01	0.02	0.27
	gamma	-0.04	-0.02	-0.02	-0.02	-	0.01	-
Loss of amenities for residents due to tourist shops and facilities	p-value	0.73	0.31	0.12	0.00	0.34	0.03	0.00
	contingency coefficient	0.00	0.01	0.02	0.05	0.02	0.03	0.22
	gamma	-0.01	-0.08	0.04	-0.09	-	0.04	-
Other	p-value	0.00	0.80	0.64	0.23	0.42	0.19	0.00
	contingency coefficient	0.04	0.00	0.01	0.02	0.02	0.02	0.23
	gamma	0.19	-0.04	-0.03	0.00	-	0.06	-
No disadvantages at all	p-value	0.00	0.03	0.06	0.01	0.10	0.95	0.00
	contingency coefficient	0.05	0.03	0.02	0.04	0.03	0.00	0.15
	gamma	0.16	0.20	-0.08	0.10	-	0.01	-

Source: Own calculation based on Eurobarometer ZA7799

[26] Fields are dashed when certain coefficient is not applicable to the variable's level of measurement.

The housing impact perception shows particularly strong relationships with sociodemographic factors. The highest contingency coefficient (0.10) among non-country variables is observed with age, followed by education (0.07). The positive gamma coefficient for education (0.15) indicates that higher-educated respondents are more likely to perceive housing market pressures as a significant disadvantage, possibly due to greater awareness of housing market dynamics or personal exposure to competitive housing markets. Pressure on public services shows significant relationships across most variables. STR user status again emerges as an important factor (gamma = -0.17; cont. coef. = 0.07), with users being less likely to perceive this as a problem. Occupation also shows a notable relationship, suggesting that socioeconomic status influences perceptions of public service impacts.

While tourist concentration shows relatively weaker relationships, nuisance issues (noise, congestion, waste) demonstrate significant associations across multiple characteristics. The negative gamma coefficients for both STR user status and host status suggest that direct involvement with STRs correlates with lower perception of nuisance problems. This STR user/host pattern (consistent across multiple disadvantages) indicates that direct participation in the STR market – either as users or hosts – correlates with more favorable views of STR impacts. It might suggest either an experiential effect (i.e. direct engagement with STRs mitigates negative perceptions) or a potential self-selection bias (i.e. people who choose STRs might already have positive attitudes toward them before any engagement).

9.2 Logistic regression

Results of the logistic regression, modeling the perceptions of STR disadvantages in the EU capital cities, are depicted in Table 15 (containing odds ratios; full results are included in the Appendix in Table A.11). Variables employed in the model are STR participation[27], sociodemographic characteristics, and capital city affiliations. The sociodemographic factors reach varying degrees of influence across the perceived disadvantages. Occupation and user status have the strongest effects, followed by education and age.

Occupation is a significant predictor for four disadvantages examined. This variable measures to what extent entrepreneurs perceive STR less negatively than individuals with other occupations. Given that STR hosts tend to be entrepreneurs (or micro-entrepreneurs) themselves, it may encourage other self-employed individuals to perceive this income source more positively. Employees have a higher probability of perceiving STR disadvantages, and this is even more pronounced in the case of manual workers and individuals without economic activity. One of the strongest effects manifests itself in the perceived pressure on public services (e.g. public transport and waste management). For example, manual workers have 1.43 times higher odds of perceiving this disadvantage compared to self-employed individuals. This may relate to the income effect on public transport reliance (Anderson, 2016). They are also more likely to identify excessive concentration of tourists in certain neighborhoods. This may stem from on-street labor of certain workers in those locations. There is a similar case with "decrease of personal safety" where unemployed individuals have 1.5 times higher odds of perception. Moreover, these respondents also have a significantly higher chance of indicating that STRs turn residential amenities into tourist shops.

Similarly, STR user status has a significant impact on six perceptions. In this case, the variable's influence is in the opposite direction. STR users tend to perceive STR disadvantages less critically than non-users[28]. This is consistent with previous research (Albuquerque et al., 2024; Miguel et al., 2022; Yeager et al., 2020). Researchers in Australia also identified a relationship between STR perception and STR host status (Muschter et al., 2020). This relationship, however, is not statistically significant in the case of EU capitals (but it is significant for some disadvantages in the EU as a whole, as shown in Table A.7 in the Appendix).

[27] Only the user status (the host status was omitted for its insignificance)
[28] Individuals who have never stayed at STR accommodation

Table 15 Odds ratios for perceived STR disadvantages in EU capital cities

	Increase in nuisance by tourists	Pressure on public services	Negative effect on housing	Decrease in personal safety	Concentration of tourists	Loss of amenities for residents
STR user status (Yes)	0.84**	0.70**	0.98	0.64**	0.89*	0.95
Gender (Female)	1.06	0.97	0.89*	1.17**	1.01	1.15*
Age (scale)	0.997*	0.998	0.987**	1.001	0.998	0.994**
Occupation (Self-employed)	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Occupation (Employee)	1.17*	1.17	1.11	1.36**	1.09	1.17
Occupation (Manual worker)	1.14	1.43*	1.00	1.35*	1.27	1.35
Occupation (No activity)	1.26**	1.44**	1.02	1.50**	1.13	1.29**
Education (Up to 15 years)	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Education (16-19 years)	1.26	0.96	1.10	1.01	1.35	1.71**
Education (20 years and older)	1.33	0.97	1.43*	1.04	1.37*	1.76**
City (CZ – Prague)	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
City (BE – Brussels)	0.36**	0.82	0.66	0.55*	0.65	0.90
City (BG – Sofia)	0.14**	0.16**	0.12**	0.50**	0.10**	0.22**
City (DK – Copenhagen)	0.05**	0.09**	0.07**	0.84	0.07**	0.11**
City (DE – Berlin)	0.21**	0.37**	0.43**	0.49*	0.35**	1.01
City (EE – Tallinn)	0.13**	0.34**	0.16**	0.75	0.13**	0.23**
City (IE – Dublin)	0.21**	0.55**	0.90	0.93	0.42**	0.71
City (EL – Athens)	0.32**	0.57**	1.01	0.92	0.43**	0.88
City (ES – Madrid)	0.35**	0.49**	0.36**	0.62*	0.37**	0.45**
City (FR – Paris)	0.39**	0.59**	0.75	0.41**	0.57**	0.93
City (HR – Zagreb)	0.16**	0.53**	0.32**	0.39**	0.23**	0.42**
City (IT – Rome)	0.07**	0.28**	0.16**	0.35**	0.10**	0.19**
City (CY – Nicosia)	0.13**	0.25**	0.23**	1.05	0.17**	0.36**
City (LV – Riga)	0.12**	0.22**	0.21**	0.63*	0.14**	0.19**
City (LT – Vilnius)	0.16**	0.36**	0.15**	0.51**	0.24**	0.39**
City (LU – Luxembourg)	0.26**	0.56**	0.46**	0.54**	0.62**	0.65*
City (HU – Budapest)	0.32**	0.61**	0.52**	0.48**	0.32**	0.56**
City (MT – Valletta)	0.26**	0.70	0.28**	0.78	0.42**	0.69
City (NL – Amsterdam)	0.25**	0.53**	0.72	0.55**	0.38**	0.54**
City (AT – Vienna)	0.13**	0.32**	0.58**	0.34**	0.24**	0.68
City (PL – Warsaw)	0.20**	0.30**	0.22**	0.36**	0.24**	0.23**
City (PT – Lisbon)	0.11**	0.19**	0.27**	0.31**	0.17**	0.37**
City (RO – Bucharest)	0.52**	1.17	0.48**	1.16	0.44**	1.02
City (SI – Ljubljana)	0.17**	0.32**	0.35**	0.33**	0.30**	0.50**
City (SK – Bratislava)	0.35**	1.10	0.48**	0.90	0.55**	0.87
City (FI – Helsinki)	0.23**	0.23**	0.31**	0.48**	0.12**	0.28**
City (SE – Stockholm)	0.19**	0.38**	0.35**	0.69*	0.14**	0.32**
Constant	3.47**	0.84	3.21**	0.55*	1.45	0.42**

Note: "Ref." stands for reference category.
Source: Own calculation based on Eurobarometer ZA7799

In EU capitals, the strongest influence of STR user status is on perception of decreased safety and security (0.64 times the odds for STR users). Part of this may be a personal projection supported by **Social Identity Theory,** which leads to positive perceptions among in-group members (Tajfel & Turner, 1979). Given that most STR users (like the general population) avoid threatening the safety of others, they also tend not to associate such behavior with STR usage (and perhaps tourism in general). In comparison, the regression result of *"increase in nuisance from tourists"* is weaker because some STR users are potentially aware that they may also contribute to this externality when traveling, which prompts them to acknowledge this. The opposite of this may be pronounced in the loss of amenities and housing. Those two are the only statistically insignificant cases of the user status. These two externalities share the commonality that they are not directly associated with the guest. There is little incentive for the STR user to disregard these externalities, since they likely attribute them to service providers rather than themselves. Such a phenomenon is called a self-serving bias, which suggests that people attribute negative outcomes to external factors when possible (Miller & Ross, 1975).

In EU surveys, education is measured by the age at which people have finished school. Across STR disadvantages, a later age of completing education is associated with a more critical perception. This is statistically significant for three examined disadvantages. This variable seems to have a complementary effect to the user status – where user status has a favorable effect, education has no effect; and where user status has no effect, education has an adverse effect. This is especially pronounced in the previously mentioned loss of housing and amenities. Higher education leads to more adverse perception of amenity loss (1.71–1.76 times higher odds). Furthermore, respondents with a tertiary education have 1.43 times higher odds of perceiving a decline in housing affordability. This finding might be related to **Cognitive Mobilization Theory**, which argues that higher levels of education lead to greater political sophistication and increased engagement with political information through media consumption (Inglehart, 1970).

The respondent's age is not included in the model as a categorical variable but as a scale. Therefore, the resulting estimates represent the probabilities and chances of perceiving disadvantages when the age increases by one year. To make its interpretation more digestible, we will convert the measured chances to represent the difference in perception between generations (specifically, 25 years are used to evaluate a generational difference).

The results show that with higher age, the probability of perceiving STR disadvantages decreases (statistically significant in four cases). This is most visible in the perception of the negative effect on housing. On average, each additional generation has 0.72 times the odds of perceiving this aspect, which translates into 0.51 times the odds if we estimate the effect of two generations (meaning 50 years older). The older generations are more likely to perceive no STR disadvantage at all. With each successive generation, the odds of identifying no disadvantages increase 1.36 times, which translates into 1.86 times if we estimate the effect over two generations.

Gender is also significant in measuring four perceptions, but it has the weakest effects overall. The strongest results are for the perceptions of *"decrease in personal safety and security"* and *"loss of amenities for residents due to tourist shops and facilities."* The reference category is *"male"*; thus, the parameters represent differences in female perception compared to male perception. Specifically, female respondents have 1.17 times higher odds of feeling a decrease in personal safety and 1.15 times higher odds of perceiving amenity loss. The former may relate to a greater sense of threat (Johansson & Haandrikman, 2021; Sypion et al., 2024), while the latter is associated with a higher utilization of these services (Ellis et al., 2012).

Table 16 illustrates the disadvantages of STRs as perceived in each EU capital city (14 of which are included with agglomeration). The indicated plus signs are based on the results of the logistic regression from Table 15 (statistically insignificant parameters are left blank). For the reference category, we use Prague (the capital of the Czech Republic) as it exhibits the most adverse perceptions overall. Accordingly, each cell shows the extent to which a given city perceives a disadvantage more favorably than Prague. The cities are ordered by their overall perception from most favorable to most adverse (based on an average z-score after standardizing the *City* parameters for each model).

Values in the columns show that Prague is one of the most STR-averse cities at each STR disadvantage. The finding stems from not even a single statistically significant positive parameter, indicating that every city has either a comparatively favorable perception or the difference is insignificant. The most distinct differences are in the case of nuisance and tourist concentration. Another severely perceived disadvantage is the negative effect on housing. Affording the average flat in Prague requires 25.3 annual salaries (as of 2024), ranking it the most unaffordable city in Europe (Iolov, 2024). However, out of 21 capitals

with more favorable housing impact perception only a little less than half have a lower number of STR listings[29] than Prague (see Figure A.15 in the Appendix). This hints at the complexity of factors involved in the housing market mechanism. On the other hand, there are nine cities with similarly adverse perceptions as Prague in the case of personal safety. This hints at the relatively low crime rate in this city (Numbeo, 2024), however, despite that there are 17 cities with more favorable perceptions. A similar trend is also in Bucharest and Nicosia, which are concerned about their safety the most. These cities have relatively low crime statistics too, suggesting that they might associate crime specifically with tourism.

The most favorable perceptions overall are in Copenhagen, Rome, Sofia, Riga, and Lisbon. Specifically, Copenhagen tops the board in five out of six disadvantages. These highly positive perceptions together outweigh even one statistically insignificant in the case of personal safety. These results might reflect that Denmark is at the top of EU's life satisfaction (Eurostat, 2024b). Sofia comes second after Copenhagen in two of the disadvantages (public services, housing) and third in one of them (concentration). This may be also attributed to Romania's life satisfaction (Eurostat, 2024b). Despite the economic disparity between these two countries, their citizens live contentedly. When it comes to nuisance from tourists, Rome and Lisbon are the next in perceiving this disadvantage most positively. This might be either related to more restrained behavior of tourists in these locations, or conversely, to the local accustomedness to boisterous activities. According to Mediterranean culture, it may be the case that Italians and Portuguese are just more accommodated to such habits (Lewis, 2010; Meyer, 2016). Furthermore, Rome and Lisbon also tend to be more permissive concerning personal safety, tourist concentration, and pressure on public services.

[29] Per inhabitant

Table 16 Regression directions of STR perceptions in EU capitals compared to Prague

	Increase in nuisance by tourists (e.g. noise, waste)	Pressure on public services (e.g. public transport)	Negative effect on housing (e.g. price, availability)	Decrease in personal safety and security	Concentration of tourists in certain neighborhoods	Loss of amenities for residents due to tourist shops and facilities
DK - Copenhagen	+ + +	+ + +	+ + +		+ + +	+ + +
IT - Rome	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
BG - Sofia	+ + +	+ + +	+ + +	+ +	+ + +	+ + +
PT - Lisbon	+ + +	+ + +	+ +	+ + +	+ + +	+ +
LV - Riga	+ + +	+ + +	+ + +	+	+ + +	+ + +
EE - Tallinn	+ + +	+ +	+ + +		+ + +	+ + +
PL - Warsaw	+ +	+ +	+ + +	+ + +	+ +	+ + +
FI - Helsinki	+ +	+ + +	+ +	+ +	+ + +	+ +
LT - Vilnius	+ +	+ +	+ + +	+ +	+ +	+ +
SI - Ljubljana	+ +	+ +	+ +	+ + +	+ +	+
CY - Nicosia	+ + +	+ + +	+ +		+ + +	+ +
HR - Zagreb	+ +	+	+ +	+ + +	+ +	+
SE - Stockholm	+ +	+ +	+ +		+ + +	+ +
AT - Vienna	+ + +	+ +	+	+ + +	+ +	
DE - Berlin	+ +	+ +	+	+ +	+ +	
ES - Madrid	+	+	+	+	+ +	+
HU - Budapest	+	+	+	+ +	+ +	+
NL - Amsterdam	+ +	+		+	+	+
MT - Valletta	+		+ +		+	
LU - Luxembourg	+	+	+	+	+	+
FR - Paris	+	+		+ +	+	
IE - Dublin	+ +	+			+	
BE - Brussels	+			+		
EL - Athens	+	+			+	
SK - Bratislava	+		+		+	
RO - Bucharest	+		+		+	

Source: Own calculation based on Eurobarometer ZA7799

10 STR housing impact in Prague

The following chapter presents the results of econometric modeling. Due to the Covid-19-related distortions in tourism, we had to truncate the sample period to avoid unusually large shocks in the STR market. These structural breaks led to verification issues[30], therefore, we start our time series in October 2020, after the market has adjusted to the initial hospitality restrictions. We ran 260 different modeling scenarios, each with a different combination of variables or a different lag order. The most statistically significant result was observed upon including *Price*, *Airbnb*, and *Interest rate* with a lag order of 11 from October 2020 to June 2025.

10.1 Vector error correction model

Firstly, we subjected the model to lag selection for *Price*, *Airbnb*, and *Interest rate* applying Akaike information criterion, Bayesian information criterion, and Hannan-Quin information criterion. The three criteria estimated two different lag orders as plausible ones – 1 lag or 13 lags. Both of the lag orders were subsequently dismissed due to adverse results of econometric verification tests (autocorrelation, heteroscedasticity, and normality of residuals). In the end, we resorted to lag order 11 since, although, none of the information criteria recommended it, it possesses more desirable characteristics (shown in Table 18 and Table A.10 in the Appendix) than other lag orders, primarily in terms of autocorrelation. The Johansen test (Table 17) suggests rank 2 for this lag order, indicating a cointegrating relationship among all included variables and the presence of two cointegrating vectors with one common stochastic trend. Therefore, we assume the time series are jointly cointegrated with two linearly independent long-run relations among them.

Table 17 Cointegration test

	Lmax p-value		Trace p-value (corr. for size)	
Johansen test	**Rank 0**	0.00	**Rank 0**	0.00
	Rank 1	0.01	**Rank 1**	0.02
	Rank 2	0.06	**Rank 2**	0.10

[30] During the pandemic, the number of Airbnb listings was not primarily driven by ordinary market mechanisms, but by an external shock to tourism (travel restrictions, a collapse of demand, uncertainty, and temporary changes in host behavior). As a result, Airbnb listings declined sharply, although housing prices continued to rise (driven by other forces, such as low interest rates, strong residential demand, accumulated savings, limited housing supply, and broader inflationary pressures). This resulted in an abnormal negative co-movement between the two variables: fewer Airbnb listings coincided with higher housing prices.

With the Johansen test settled, we can estimate the Vector Error Correction Model (VECM). The resulting model has 16 statistically significant parameters – seven at 1% level, seven at 5% level, and two at 10% level. Specifically, the model has three significant lagged *Price* parameters, four significant lagged *Airbnb* parameters, and six significant lagged *Interest rate* parameters (along with statistically significant constant). The most essential is the significance of the two EC (error correction) parameters for which we reject the null hypotheses with 99% confidence, indicating that deviations from the long-run equilibrium system significantly affect changes in *Price*.

Table 18 Specifications of the VECM model

R-squared	0.90	Autocorrelation test p-value	0.26
Adjusted R-squared	0.66	Heteroscedasticity test p-value	0.79
Error correction 1 p-value	0.002	Normality test p-value	0.01
Error correction 2 p-value	0.002	Durbin-Watson	2.38

Both the coefficient of determination and its adjusted form indicate satisfactory in-sample fit (see Table 18). Diagnostic tests on the vector of residuals show no evidence of autocorrelation or heteroscedasticity. Although residuals reject normality on 5% level, we proceed with the modeling for two reasons. First, residual analysis only in the *Price* equation suggests normal distribution (Shapiro-Wilk: $p = 0.17$; Anderson–Darling: $p = 0.51$), and second, given the central limit theorem, non-normal distribution does not necessarily invalidate statistical inference, particularly as sample size increases. Economic verification of the cointegrating vector for *Price* is sound (see Table 19).

Table 19 Cointegrating vectors of the VECM

	Price	*Airbnb*	*Interest rate*
Price	1	-0.11	0.0001
Airbnb	-9.58	1	-0.0019
Interest rate	5592.10	-238.68	1

The β value for *Airbnb* in the first cointegrating vector is negative, meaning that upon an increase in STR listings, the housing prices will increase as well (and vice versa, a decrease in STR listings will result in a decrease in housing prices). This is consistent with the assumption that the number of STR listings has a positive causal relation to the housing prices. Accordingly, the *Airbnb* value in the first vector indicates that when STR listings increase by one Airbnb apartment, the average housing price per square meter will increase by 9.58 CZK. Relating this finding to the end of our time series, we estimate that an increase in STR listings by 1% leads to an increase in prices by 0.38%. Similarly, the β value for

Interest rate in the same vector is also consistent with theoretical assumptions from the literature, asserting that higher interest rates decrease the purchasing power of consumers, and therefore, with lower demand, the price level shall decrease too (Bernanke & Gertler, 1995; Di Maggio et al., 2017; Flodén et al., 2021).

According to the first cointegrating relation in Table 19, an increase in Airbnb reduces the EC term ($\beta_{Price,Airbnb}$ has a negative value). Since the adjustment coefficient for Price in the first equation (Table A.9 in the Appendix) also has a negative value, the contribution of this EC channel to the change in Price is a positive number. This indicates that an increase in Airbnb creates a negative deviation from the long-run equilibrium, and the subsequent response of Price is positive, moving the system back toward equilibrium.

10.2 Forecast and impulse response

Based on the model, we plot a forecast chart for the following 12 months (Figure 25). It is visible that the shape of this prediction resembles, to a certain degree, the movement of *Price* in three previous periods: from mid-2021 to mid-2022, from mid-2023 to mid-2024, and from early 2024 to early 2025. The growth in these years ranged approximately between CZK 12,000 and 15,000.

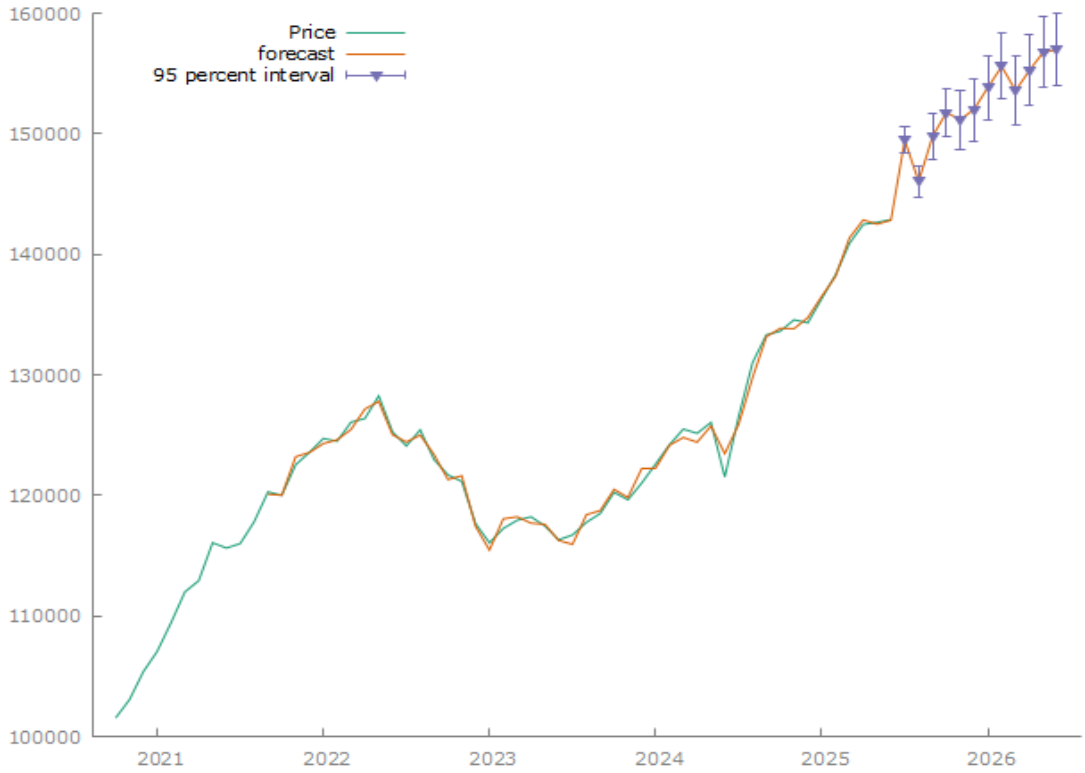


Figure 25 Forecast for Price from the VECM

Source: Own calculation based on Inside Airbnb (2025)

We can assess the accuracy of the forecast for the first few predicted months. In a 2-month horizon, our predicted value is less than CZK 1,000 far from the price observed in August 2025. Currently, there are no more observations for a longer horizon comparison, however, given the confidence interval, a lesser accuracy is to be expected in the long run.

Next, we plot impulse response functions (IRF) for *Price*, illustrating the responses of the average housing price per square meter to shocks in interest rates and in the number of STR listings. Figure 26 depicts the dynamic responses over a 12-month period following one standard deviation shocks in the mentioned variables.

The center panel indicates that a shock in *Airbnb* is followed by a positive (and comparatively large) rise in *Price*. The response builds quickly, peaking around months 4–5, and then decays gradually from the 6th month on. An unanticipated increase in STR penetration, therefore, appears to raise housing prices primarily over the next half-year. This finding is consistent with the dwellings being reduced from the long-term market, which tightens the available housing supply. The STR profitability may also attract potential investors, further pressuring the market by increased demand. The subsequent fade may hint at partial reallocation (hosts delisting in response to the competition), and with expectations adjusting as the shock is absorbed. The magnitude of this response (peaks near 700 in the plotted units) is visibly larger than the responses to interest rate shocks, highlighting the role of STRs in price dynamics.



Figure 26 Impulse response functions for Price in the VECM

Source: Own calculation based on Inside Airbnb (2025)

The right panel shows the effect of an *Interest rate* shock on *Price*. The response alternates between positive and negative directions: a sharp decline around month 2, a rebound peaking near month 4, another negative phase around month 8, and a recovery closer to the equilibrium thereafter. This oscillation suggests multiple offsetting channels. Primarily, a higher interest rate raises costs and tightens credit, leading to lower affordability

and reduced demand. However, increased rates may also arrive as a policy reaction to overheating demand and create expectations of further hikes, which incentivizes the potential lenders to lock in the current rate. This pattern suggests that the market overshoots initially and then goes through a period of correction as it seeks a new equilibrium. The response appears to be moving back toward zero by the end of the observation period, suggesting a tendency toward long-run market equilibrium. Overall, the amplitude is smaller than the response to Airbnb, implying that (within the identified sample) the price sensitivity to interest rate fluctuations is modest and more transient.

In the left panel, a positive shock in *Price* generates a large jump that dissipates quickly and falls into negative values after about 2–3 months, followed by oscillation around the equilibrium. This demonstrates the typical error correction pattern – prices are persistent but mean-reverting toward their cointegrating path. The brief dip suggests that when prices rise unexpectedly, subsequent adjustments (via demand pullback, supply reaction, or tighter credit) tame them back below trend before the market stabilizes. This pattern could be attributed to participants adjusting their expectations and the lag in supply-side responses. The initial shock likely deters marginal buyers from their intended purchases, thus demand decreases, bargaining power shifts, and sellers may have to accept lower offers. Simultaneously, the price increase may incentivize additional owners to offer their properties, increasing marketed supply and adding downward pressure. These adjustments may also be reinforced by tighter credit conditions, which further reduce effective demand. The amplitude of the initial response is notably larger than the later movements, implying that most of the persistence is short-lived. This suggests that interventions should account for this adjustment period and the market's tendency to oscillate before reaching equilibrium.

The overall insight from this impulse response analysis is that Prague housing prices show short-run mean reversion after their own shocks, a sizable and positive medium-run response to unexpected increases in STR listings, and a smaller oscillatory response to interest rate changes.

11 Attitudes toward STR accommodation in Prague

The following chapter analyzes the results of our survey with a data sample of 447 responses, including views of both STR users and non-users (see Table A.6 in the Appendix for demographics). In this sample, 9% of respondents lived in Prague's central districts (i.e. Prague 1, 2, 3 and 7), 27% lived in the other districts of Prague, and 65% lived outside of Prague. Their experience (or lack thereof) of staying in an STR accommodation in the past further divides them into 50% STR users and 50% non-STR users. Apart from that, 10% of the respondents also checked that they are/were renting their own (or someone else's) property to tourists on a short-term basis.

11.1 Perceived impacts of STRs

The apparent impacts of STR identified by the survey respondents fall into three groups: (1) those that are beneficial for the respondents' community, (2) those that are negative for the community, and (3) those that have mixed relationships throughout the neighborhood. The latter addition to the impact categories may be positive for certain community stakeholders while having a negligible effect or possibly an adverse effect on other community members. For instance, increasing number of tourists to a council area is generally beneficial for short-term rental (STR) hosts and business/tourism operators. It most likely has little influence on individuals who live outside of the tourist area. Nonetheless, it may be negative for some nearby residents who are concerned about a loss of amenities or a shift in their neighborhood's culture.

Overall, we measured four positive effects on the Prague community, eight negative externalities, and the mixed effects fall under seven indicators. The ensuing discussion dilates each category with the extent of respondents' agreement on the Likert-type scale to various statements grouped as follows: "Disagree" covers the categories "Strongly Disagree" and "Disagree"; "Neither" contains "Neither Agree nor Disagree"; and "Agree" includes the groups "Agree" and "Strongly Agree" (Likert 1932).

11.2 Positive impacts of STRs

	Mean			Overall agreement		
STRs lead to …	Overall	User	Non-user	Disagree	Neither	Agree
1. Increased revenues for local businesses	3.35	3.62	3.08	24%	27%	49%
2. Greater variety of retail & leisure services	2.78	2.97	2.58	42%	26%	31%
3. Increased local tax revenue	2.54	2.68	2.40	53%	22%	25%
4. Increased employment opportunities for locals	2.54	2.67	2.40	52%	26%	22%

Table 20 Positive impacts for the community

Table 20 illustrates four positive impacts of STRs on the community, as regarded by both STR users and non-users alike. They are, in order of "overall agreement", as follows: enhances business revenue; encourages a larger range of retail; increases local tax revenues; and increases employment. Positive impacts are perceived more favorably by STR users than by non-users. The impact "leads to increased revenues for local businesses" sparked the most heated debate. STR users were more likely to agree (mean 3.62), whereas non-users were more likely to be neutral (neither agree nor disagree) (mean 3.08).

11.3 Negative impacts of STRs

	Mean			Overall agreement		
STRs …	Overall	User	Non-user	Disagree	Neither	Agree
1. Reduce the availability of affordable housing for residents	3.77	3.60	3.93	22%	13%	66%
2. Lead to increased noise levels	3.56	3.41	3.71	23%	21%	56%
3. Adversely affect the lifestyle of neighborhood residents	3.53	3.32	3.75	23%	21%	56%
4. Lead to increased waste management problems	3.36	3.12	3.60	28%	22%	50%
5. Increase traffic and parking congestion	3.21	3.01	3.42	30%	27%	43%
6. Lead to extra costs to ratepayers to provide infrastructure	3.19	2.99	3.39	29%	32%	39%
7. Lead to increased anti-social behavior	2.96	2.59	3.33	35%	31%	33%
8. Lead to the overuse of public facilities (e.g. toilets)	2.62	2.32	2.91	47%	32%	21%

Table 21 Negative impacts for the community

Table 21 illustrates eight negative impacts of STRs on the neighborhood, as experienced by both STR users and non-users. Over half of respondents agreed on the top

three negative externalities of STRs: a decrease in affordable accommodation for residents, increased noise levels, and an adverse influence on the lifestyle of neighborhood residents. Almost half of the respondents also believed that STRs have a detrimental influence on waste management. STR users tend to perceive all negative externalities less negatively than non-users. The views are the most sharply divided for the impact "leads to anti-social behavior". STR users were more likely to disagree (mean 2.59) with this statement, while non-users were more likely to agree (mean 3.33).

11.4 Mixed impacts (or broad consequences) of STRs

	Mean			Overall agreement		
STRs ...	Overall	User	Non-user	Disagree	Neither	Agree
1. Provide income for STR hosts	4.51	4.68	4.35	5%	7%	87%
2. Offer more variety in accommodation for tourists	4.00	4.34	3.65	12%	15%	73%
3. Lead to an increased number of visitors into Prague	3.86	3.98	3.75	12%	22%	66%
4. Increase the property prices	3.81	3.81	3.80	16%	22%	62%
5. Lead to an increased number of property investors	3.58	3.71	3.44	18%	25%	57%
6. Make Prague a more affordable tourist destination	3.17	3.46	2.89	27%	32%	41%
7. Enable STR hosts to stay in their homes	3.00	3.18	2.82	30%	39%	31%

Table 22 Mixed impacts of STRs

STRs have a positive impact on certain stakeholders but may have a negligible or even negative impact on other community members. Table 22 displays respondents' impressions of seven mixed impacts of STRs (ranked by overall agreement). Most respondents believed that STRs have positive associations for the following specific stakeholders:

- For STR hosts in terms of income generation (87% agreed) and enabling STR hosts to stay in their homes (31% agreed).
- For STR hosts, other accommodation providers and other business operators in terms of attracting more visitors to the area (66% agreed).
- For tourists in terms of providing a wider range of accommodation (73% agreed) and making the tourist destination more affordable (41% agreed).
- For real estate investors in terms of expanding the number of investable properties (57% agreed).

- For general property owners in terms of increasing real estate price (62%).

Despite these beneficial broad-stakeholder implications, it is essential to recognize that other stakeholders (e.g. non-host residents) may experience a disadvantage from the same indicators. Therefore, policymakers should take into consideration various points of view.

11.5 Perceptions of a daily rental cap

Table 23 summarizes the duration for their preferred rental cap (day limits) across two categories of STR property: (a) permanently non-hosted investment properties without on-site management; and (b) primary residence with on-site management.

Properties without on-site management

Within all groups, 11% of respondents desired 0 days rental (full restrictions = no STR) for accommodations without on-site management. Even 2% of STR users desired complete restrictions (0 days) for such rentals, although this is significantly fewer than the 21% of non-users.

Properties with on-site management

Across all groups, 61% of respondents believed that there should be no limits on accommodations with on-site management, indicating that these properties are available for rent 365 days a year. Notably, 75% of STR users desired no restrictions on such properties, compared to 48% of non-users. Most non-users favored a day limit (or prohibition) for on-site managed properties, with 17% preferring a maximum cap of 180 days on such STR accommodations, while 22% preferred a cap of less than 90 days.

	365 days (No restriction)	Max. 180 days per year	31 - 90 days per year	Less than 31 days per year	0 days (Not allowed)
Without on-site management					
STR users	58%	13%	16%	11%	2%
Non-users	40%	13%	14%	13%	21%
All respondents	49%	13%	15%	12%	11%
With on-site management					
STR users	75%	11%	7%	6%	2%
Non-users	48%	17%	15%	7%	14%
All respondents	61%	14%	11%	7%	8%

Table 23 Differences regarding yearly rental caps on STRs

11.6 Perceptions of STR regulation in Prague

Our survey provides nine options for governing STRs, i.e. Airbnb and other accommodation platforms. Most respondents supported five ways of regulating STRs (see Table 24). Respondents strongly requested proper enforcement of non-compliance as well as mandatory public liability insurance to cover STR guests and third parties for damage or harm. They also supported the lodging tax policy, which concurs with Prague's current status quo. Since 2022, the lodging tax rate has been raised to the flat amount of CZK 50 per person for each day of their stay (MHMP 2021).

Overall, STR users seemed to demand less STR regulation. The opinions on restrictions on STR properties without on-site management were the most divisive. STR users tend to disagree with this policy (mean 2.49), while non-users agree with it (mean 3.29).

	Mean			Overall agreement		
STR needs regulating in the following ways …	Overall	User	Non-user	Disagree	Neither	Agree
1. Adequate enforcement of non-compliance	4.10	4.08	4.11	9%	17%	74%
2. Compulsory public liability insurance to cover STR guests and third parties for injury or damage	3.82	3.59	4.04	17%	18%	65%
3. A lodging tax for any tourist accommodation (irrespective of the accommodation type)	3.86	3.77	3.95	14%	23%	63%
4. Adequate reporting avenues to lodge complaints of misconduct	3.71	3.66	3.77	15%	25%	60%
5. Implementation of a registration & permit system for STRs	3.51	3.23	3.78	23%	21%	55%
6. Adequate provision of fair trade within the accommodation provider sector	3.53	3.38	3.68	19%	31%	51%
7. Zoning restrictions for STRs in residential areas	2.96	2.73	3.18	39%	23%	37%
9. Council-supported community advisory panel regarding STRs	2.90	2.76	3.04	35%	36%	29%
8. Restrictions on STR properties without on-site management	2.89	2.49	3.29	38%	34%	28%

Table 24 Ways to regulate STRs in Prague

11.7 Preferences for further information needs on STRs

As shown in Table 25, most respondents agreed with seven needs for improved public information on STR-related concerns, primarily the extent of hosts' compliance with current regulations and the impact on the residential rental accommodation. The information

importance about Prague's businesses and STR participants' rights (and responsibilities) are rated as more important by STR users than non-users.

	Mean			Of importance		
Important to have information about…	Overall	User	Non-user	Not important	Average important	Very important
1. The extent of compliance with existing short-term rental regulations	4.01	3.96	4.07	9%	19%	72%
2. Regulations regarding STRs (host responsibilities, guest rights)	3.97	4.05	3.90	11%	18%	70%
3. Long-term impacts on residential rental accommodation	3.93	3.91	3.95	13%	19%	68%
4. Long-term impacts of STRs on the community	3.89	3.80	3.98	12%	21%	67%
5. Long-term impacts on infrastructure (e.g. roads. waste management facilities)	3.80	3.77	3.83	13%	23%	64%
6. The location and type of STR properties	3.66	3.56	3.75	18%	22%	60%
7. Long-term impacts on approved accommodation providers	3.51	3.40	3.61	19%	30%	51%
8. Long-term impacts on businesses in town	3.40	3.43	3.37	22%	33%	45%

Table 25 Importance of information about STR-related aspects

11.8 Statistical hypothesis testing

Cross-tabulations and the Mann-Whitney (M-W) test were used to examine differences in respondents' STR user/non-user status and place of residence in perceived STR impacts and their desired regulation. We used the cross-tabulations to explore the dimensionality of the results and to categorize them into the following tables based on which status category tends to agree with a given statement. According to the status category, the M-W results are reported in these tables on either the left or right side.

Table 26 Mann-Whitney test for STR perceptions depending on STR user status

STR users tend to agree with…	**U-stat.**	**Sig.**	**STR non-users tend to agree with…**	**U-stat.**	**Sig.**
1. STRs offer more variety in accommodation for tourists	16,312	<.001	1. Rental caps on STRs with on-site management	13,661	<.001
2. STRs make Prague a more affordable tourist destination	18,051	<.001	2. Restrictions on STR properties without on-site management	15,961	<.001
3. STRs increase revenues for local businesses	18,855	<.001	3. STRs lead to increased anti-social behavior	16,926	<.001
4. Provide income for STR hosts	20,910	<.001	4. Rental caps on STRs without on-site management	16,300	<.001

Source: Calculation based on own survey

The most statistically significant results for STR user/non-user status are indicated in Table 26. The left-hand side demonstrates which statements users agree with more than non-users, and the opposite applies for the right-hand side. These questions sparked the strongest disagreement among respondents, depending on their STR user experience.

Overall, STR users perceived all negative externalities of STRs less negatively and all positive implications more positively than non-users. Furthermore, users appear to view the need for STR regulation and information as less essential than non-user respondents.

Table 27 Mann-Whitney test for STR perceptions depending on residential status

Prague residents tend to agree with…	U-stat.	Sig.	Non-residents tend to agree with…	U-stat.	Sig.
1. Lead to increased noise levels	16,391	<.001	1. Greater variety of retail & leisure services	18,814	0.002
2. Adversely affect the lifestyle of neighborhood residents	17,891	<.001	2. Increase local tax revenue	19,280	0.013
3. Increase the property prices	18,688	0.002	3. Increase employment opportunities for locals	19,901	0.024
4. Adequate enforcement of non-compliance	18,941	0.013	4. Enable STR hosts to stay in their homes	20,544	0.112

Source: Calculation based on own survey

The most statistically significant results for Prague resident/non-Prague resident status are indicated in Table 27. The left-hand side demonstrates which statements residents agree with more than non-residents, and the opposite applies for the right-hand side. Czech attitudes toward STRs thus depend on Prague residential status across the statements recorded in this table.

Non-Prague residents tend to disagree (or agree less) with the left-hand assertions compared to Prague residents, who tend to agree more. These include primarily negative impacts of STRs. In contrast, the right-hand assertions indicate that people living outside Prague attribute more positive aspects to STRs than locals.

Table 28 Mann-Whitney test for STR perceptions depending on central Prague residence

Central Prague residents agree with…	U-stat.	Sig.	Non-central residents agree with…	U-stat.	Sig.
1. Increase local tax revenue	2,041	0.306	1. Provide income for STR hosts	1,743	0.001
2. Increase employment opportunities for locals	2,118	0.397	2. Adequate reporting avenues to lodge complaints of misconduct	1,614	0.006
3. Lead to an increased number of property investors	2,119	0.491	3. Information about the compliance with STR regulations is important	1,627	0.008
4. Enable STR hosts to stay in their homes	2,266	0.821	4. Information about the location and type of STR properties is important	1,772	0.036

Source: Calculation based on own survey

The most statistically significant results for central/non-central Prague residential status are indicated in Table 28. The left-hand side demonstrates which statements central

residents agree with more than residents living outside the downtown, and the opposite applies for the right-hand side. Significant agreements are measured only for the non-central residents; statements agreed by central residents are statistically insignificant on conventional levels.

Non-central residents tend to agree (or disagree less) with the right-hand assertions compared to central residents. These include primarily ways to regulate STRs and information importance about STR-related aspects. In contrast, residents living in central Prague tend to perceive increased tax revenue and employment opportunities, however, these perceptions do not significantly differ from the non-central residents.

12 Discussion and critical evaluation

12.1 Literature review

From the literature, we identified 14 repetitive statements that define the current STR regulation paradigm. These statements fall into two categories: (1) consensus statements and (2) dissenting statements. The first category comprises assertions that frequently recur in the literature, while the second category includes claims that also appear repeatedly but do not align in consensus; instead, they express several dissents. Using this approach, we have gathered nine statements in the first category (see Figure 27) and five in the second.

12.1.1 Consensus in the reviewed literature

The strongest consensus emerged regarding the root causes of gentrification. Multiple studies (Dredge et al., 2016; Furukawa and Onuki, 2019; Ioannides et al., 2019; Stors and Kagermeier, 2018) suggest that post-Great Recession socioeconomic trends have predominantly driven gentrification, making STRs a relatively minor factor in this complex phenomenon. Authors such as Zuk et al. (2015) and Stehlin (2016) argue that factors beyond STRs primarily drive increases in rent and occupancy rate. Policymakers may find it more effective to address gentrification through broader strategies to achieve meaningful results.

There is a consensus against outright banning STRs, with authors such as Wilhelm (2018) and Wills (2017) proposing that adopting the STR industry better serves local interests. Policymakers should address externalities without resorting to prohibitions.

Local government's dependence on hotel industry revenue influences regulatory decisions (Hong and Kim, 2017; Hong and Lim, 2016). Cities where hotels contribute over 1% to the economy have stricter regulations (Furukawa and Onuki, 2019), and higher lodging taxes lead to less permissive policies (Hong and Lee, 2017), revealing motives behind policymaking rather than suggesting specific actions.

Limiting commercial operators by differentiating informal and professional hosts (Wegmann and Jiao, 2017) is a common policy suggestion aimed at restricting or significantly limiting multiunit operators (Miller, 2015). This approach might restore STRs as a modern equivalent of the once-common 19th-century American tradition of lodging and boarding in private homes, which declined in the latter half of the 20th century (Jefferson-Jones, 2014).

The authors agree that residents often overestimate the impacts of STRs relative to the measured ones (Nieuwland and van Melik, 2020). Perceived impacts of STRs vary by location, affecting the strictness of regulation, with identical increases seen as more contentious in the residential neighborhoods than in those more accustomed to tourist accommodations (Furukawa and Onuki, 2019). Destinations with high tourism levels focus on issues such as overcrowding and housing affordability, whereas other cities highlight the benefits of STRs and aim to mitigate their negative effects.

The research consistently recommends tailored regulatory approaches (Ayouba et al., 2019; Serrano et al., 2020) and annual host registration (Gurran et al., 2018; Interian, 2016). It acknowledges that STRs often operate in legal gray areas (Cao, 2016; Lambea Llop, 2017) and that externalities stem from both STRs and pre-existing issues (Furukawa and Onuki, 2019; Ioannides et al., 2019; Stors and Kagermeier, 2018).

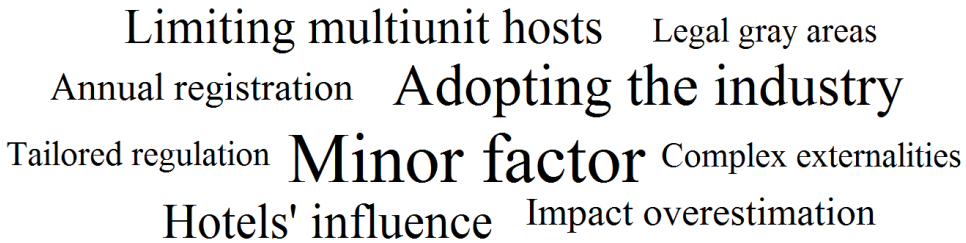


Figure 27 Word cloud depicting the assertions in consensus
Note: The word cloud is illustrative. The text sizes do not represent accurately proportional depiction.

12.1.2 Dissensus in the reviewed literature

There is a significant debate on zoning regulations. Some authors (Allen, 2017; Davidson and Infranca, 2016; Wegmann and Jiao, 2017) favor limiting STR concentrations in specific areas, while Wills (2017) suggests focusing on more manageable aspects such as taxation, occupancy limits, and nuisance violations. Certain empirical studies (Valentin, 2020; Van Holm, 2020) support Wills's doubt, noting that in New Orleans, STR usage rose in neighborhoods next to the areas affected by zoning regulations. An Australian residential survey found that “zoning restrictions in residential areas” was the least preferred method for regulating STRs among nine options (Muschter et al., 2021).

The authors' opinions vary on web scraping: Wegmann and Jiao (2017) see it as a valuable data source for city governments. Agarwal et al. (2019) note that AirDNA's metrics are often biased upward, while Korstrom (2018) adds that some hosts avoid licensing requirements by using misleading city names in their listings. Miller (2014) suggests that the

importance of web scraping might decrease as mandated data sharing from major STR platforms become more widespread. Nonetheless, it remains a common research tool in the field (e.g. Thackway et al., 2022; Shabrina et al., 2022; Todd et al., 2022).

Wills (2017) recommends municipal-level STR regulation in countries with diverse regional policies, while Wilhelm (2018) considers the effectiveness of state, municipal, or combined regulation levels. State-level regulations can provide consistency and efficiency but may not adequately address local needs (Guttentag, 2019). In contrast, municipal-level regulations can be customized to local conditions but may result in a legal patchwork and require more resources (Wachsmuth and Weisler, 2018). Additionally, local governments are more sensitive to democratic influences than central ones (Hong and Lee, 2017).

There are varying viewpoints on implementing taxation policy and the night number cap. The cap inhibits the proliferation of new listings and compels incumbent hosts to delist (Chen et al., 2020) while exhibiting volatile behavior (Vinogradov et al., 2020). In contrast, the tax removes the unstable listings, so the remaining supply smoothly follows the average demand (Vinogradov et al., 2020); however, it does not restrain new market entrants (Chen et al., 2020).

Some destinations experienced STR deregulation with differing results. Grimmer et al. (2019) view Tasmania's deregulation as beneficial for empowering tourism, addressing accommodation shortages, and boosting the local economy. Ferreri and Sanyal (2018) are more critical, they highlight the challenges of London's deregulation, including potential inequalities and the reshaping of urban space.

12.2 STR consumer model

Our four structural models reveal several important patterns in STR consumption behavior that both confirm and extend previous theoretical frameworks. Each model tested one hypothesis – none of our four hypotheses was rejected. The findings demonstrate that STR usage is shaped by a complex interplay of sociodemographic factors, information-seeking behaviors, price sensitivity, and attitudes toward local experiences and sustainability.

The sociodemographic model confirms that occupation and travel frequency are determinants of STR usage, with education and urban residence serving as important indirect influences. This aligns with previous research (Bourdieu, 2018; Calero & Choi, 2017; Heisig

et al., 2024; Polèse, 1991; Rentz et al., 1983) but provides additional nuance through generational analysis. The particularly strong effect of occupation among older generations, coupled with the relative independence of Gen Z's STR usage, suggests a fundamental shift in how different age cohorts approach alternative accommodation options. This generational variation may indicate that **younger consumers view STR platforms not as an alternative but as a default accommodation choice**, representing an evolution in travel patterns.

The information sources model underscores the critical role of digital literacy and online engagement in STR consumption, building on technology adoption theory (Gitlow, 2014; Rentz et al., 1983; Smith, 2014; Wagner et al., 2010). The effects of social media and travel review websites highlight the importance of P2P content in STR decision-making. The negative relationship between age and both STR usage and digital information source utilization indicates that the digital nature of STR platforms may create barriers for older consumers. As previously reported, older citizens tend to use ICT devices primarily for conventional functions rather than advanced ones (Gitlow, 2014). Our results demonstrate a similar attitude toward STR platforms and, by extension, travel planning.

Our analysis of price sensitivity and sustainability reveals an important tension in STR consumer behavior. While STR users demonstrate some sustainable travel habits (particularly those that align with cost savings), they exhibit aversion toward sustainable behaviors that increase costs. This may be further compounded by typical consumer behavior of withholding from decisions without immediately visible benefits (Tversky & Kahneman, 1974). **This finding challenges the narrative of STR traveling as a sustainable alternative to traditional accommodation** (Palgan et al., 2017). Instead, it suggests that the benefits to sustainability may be incidental rather than intentional outcomes of STR usage, driven primarily by price considerations rather than social or environmental consciousness. This aligns with the results of another EU survey, indicating that the most common reason STR users choose STRs is lower price (European Commission, 2022b).

The model of local experiences provides particular insight into the evolution of STR platforms from their origins in the sharing economy. **The stronger preference for local products over local community engagement demonstrates a commercialization of the STR experience**, where authentic local connections (originally central to the sharing economy concept, as argued by Guttentag et al., 2018; Stors & Kagermeier, 2017) have become secondary to more conventional tourism consumption patterns.

Overall, a typical STR consumer tends to be **self-employed** or **office employee** who **travels often**. This is further indirectly influenced by their **education** level and living in **urban areas**. They tend to be **younger** citizens who plan their travels with **modern information sources**. Their **price sensitivity** compels them not to contribute financially toward sustainability, leading instead to indirect contributions through cost-saving practices (such as waste reduction). The interest of an average STR consumer leans toward **local products rather than the local community**. This is further reinforced by the fact that paying more for the locals' benefit decreases the likelihood of STR usage. Finally, STR usage is particularly high among **Central Europeans**.

These findings have several important implications for theory and practice. First, they suggest that the traditional conceptualization of sharing economy participants as strongly motivated by local engagement may need revision. Our results indicate that **economic considerations remain essential, with sustainability features serving as secondary benefits rather than primary motivators**. Second, the generational differences in STR usage demonstrate that STR platforms may need to develop age-specific marketing and engagement strategies to address varying levels of digital comfort and travel preferences.

The apparent disconnect between guests' interest in local products and their limited engagement with local communities also raises questions about the future of STR accommodation. As the phenomenon continues to mature, it may need to balance its commercial success with its original sharing economy ethos, particularly by fostering meaningful host-guest interactions and supporting local communities.

One of our identified limitations is the focus on European consumers, which may limit generalizability to other cultural contexts. Also, we rely on predetermined variables and categories from a survey inquiring about general attitudes toward tourism. Future research could develop a questionnaire dedicated specifically to this topic. Alternatively, consumer characteristics along with booking patterns could be analyzed on data directly from STR platforms, if access is obtained. Furthermore, while our path analysis models are robust, they cannot fully capture the dynamic nature of consumer decision-making in the rapidly evolving STR market. Future research could benefit from studies examining how STR consumption patterns change over time, particularly as younger generations gain greater economic influence and the STR phenomenon continues to evolve.

12.3 Housing issues in the EU context of STRs

Our findings reveal several notable patterns in how EU countries cluster by housing affordability, STR presence, and related perceptions. The analysis demonstrates that the relationship between objective housing conditions and subjective perceptions is more complex than previously assumed, with significant variations across EU regions. This was previously asserted in the USA (Furukawa & Onuki, 2019; Nieuwland & van Melik, 2020), arguing that the perceived impact of STRs is more significant than their actual, absolute impact.

The exploratory analysis yielded an important initial insight – there is virtually **no correlation between actual housing affordability and residents' perceptions of housing issues**. The case of Greece particularly exemplifies this disconnect, where despite having the EU's least affordable housing, residents demonstrate relatively favorable housing perceptions. This paradox can be attributed to the broader economic context, where more immediate concerns such as inflation (Hazakis, 2022) and unemployment (EURES, 2023) may overshadow housing issues in public consciousness.

The cluster analysis revealed four distinct groups of countries (geographically visualized in Figure 28), each with unique characteristics necessitating individualized interpretations:

- **Western cluster:** Characterized by relatively unaffordable housing and negative perceptions of both housing conditions and STR impact, this group demonstrates a coherent pattern of housing market stress. The alignment between objective conditions and subjective perceptions in this cluster suggests that most Western residents are attuned to housing market dynamics. On the other hand, most of them seem to overestimate their STR presence, similarly to US cities (Nieuwland & van Melik, 2020). This STR impact perception might be skewed by other fundamentals tightening housing markets (e.g. low supply elasticity in cities with high housing demand even before STRs).
- **North-Eastern cluster:** This group presents an intriguing paradox of favorable perceptions despite housing issues comparable to Western Europe. The lower STR presence in these countries might partially explain this phenomenon, suggesting that when STR proliferation remains limited, residents may be less likely to attribute housing challenges to this factor. Their favorable perceptions may be also related to

the trend of living in owner-occupied dwellings (sometimes multi-generational households) rather than rented dwellings as in the West. The economic disparity within this cluster (GDP per capita ranging from USD 39,000 to 84,000) indicates that perception patterns can transcend economic development levels (IMF, 2024).

- **South-Eastern cluster:** The combination of more affordable housing with negative housing perceptions, but favorable STR impact perceptions, suggests a nuanced relationship between housing markets and tourism economies. This pattern might reflect these countries' long-term experience with tourism development and its integration into local economic structures (Statista, 2024d). The negative housing perception might be related to the recent price growth – although local affordability might be comparatively higher than elsewhere, inflation still puts the South-Eastern citizens under higher pressure than in the past.
- **Croatia-Malta cluster:** These countries' distinct profile – high STR presence coupled with favorable perceptions and housing affordability – potentially represents a successful model of tourism-housing market integration. Their experience might offer valuable insights for other EU countries struggling to balance tourism accommodation with residential accommodation. Most STRs are likely dispersed across these countries, so their housing pressure is not as concentrated.

These findings have several important implications for policy development. First, they indicate that governments must account not only for objective market conditions but also for cultural contexts. How to address these subjective contexts is not as clear. In some cities, there is evidence of regulations calibrated to local attitudes rather than to measurable conditions (Furukawa & Onuki, 2019). Other policymakers may observe those cities to determine whether they aim to follow a similar path. Similarly, the case of the Czech Republic and its closest peers (Belgium, Austria, and Spain) illustrates how **countries with comparable housing market characteristics might benefit from policy learning networks**, possibly bridging differences in economic capacity.

However, our analysis also reveals limitations in current approaches to housing market assessment. The disconnect between objective affordability metrics and subjective perceptions suggests that traditional housing affordability measures might not capture all relevant aspects of housing market dynamics. This is particularly evident in cases such as Ireland and Portugal, where relatively affordable housing does not seem to influence their

attitudes. Conversely, in Denmark and Bulgaria, housing challenges coexist with relatively benign public perceptions.

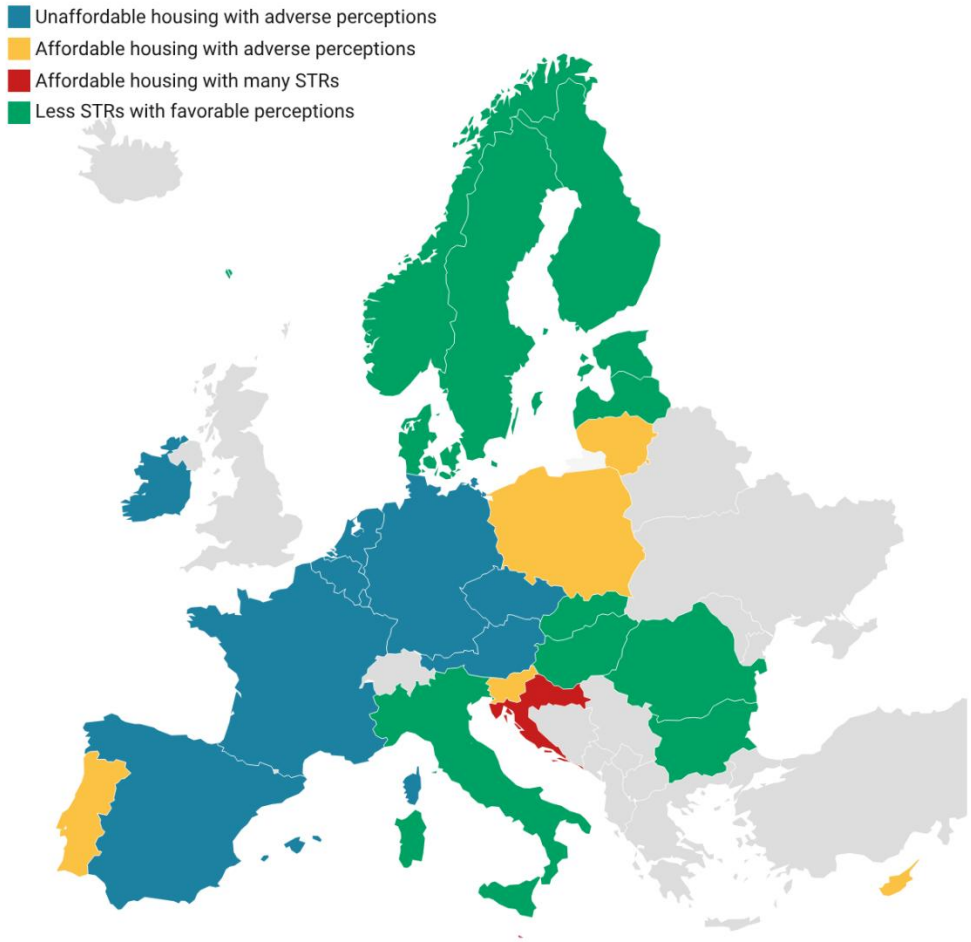


Figure 28 Geographical visualization of clustered EU countries

Source: Author

The role of STRs in housing markets appears more nuanced than often portrayed in public discourse (Nieuwland & van Melik, 2020). While some clusters show negative associations between STR presence and housing perceptions (notably in Western Europe), others demonstrate that high STR numbers do not necessarily correlate with negative perceptions (as in Croatia and Malta). This suggests that **STR impact perceptions may be influenced by other factors, including tourism dependency, spatial distribution of STR units, and broader socioeconomic conditions**. This is supported by Furukawa & Onuki (2019), highlighting psychological aspects in responses toward STRs.

Future research might benefit from incorporating fixed effects and instrumental variables to help explain these regional variations. Moreover, longitudinal studies could help

establish whether these clusters remain stable over time or evolve with changing economic conditions and policy interventions.

12.4 Perceptions of STR impacts in the EU capital cities

Our analysis reveals several important patterns in how different sociodemographic groups perceive STR disadvantages across EU capital cities, with notable variations based on STR user status, occupation, education, age, and gender. STR host status was found to be statistically insignificant and was therefore omitted from the model (further discussed among our proposals for future research). A possible interpretation of this insignificance is that the effect of host status was largely absorbed by the effect of user status, given that the vast majority of hosts are also users on the guest side. These findings contribute to our understanding of the social dynamics surrounding the sharing economy in urban environments.

The strong relationship between occupation and STR perception aligns with the traditional concept of economic self-interest (Smith, 1776). Self-employed individuals, who may see themselves as potential micro-entrepreneurs in the sharing economy, demonstrate more favorable views toward STRs compared to other occupational groups. More negative perceptions among manual workers and individuals without professional activity indicate a socioeconomic dimension to STR impacts. Their concern regarding public services could reflect a greater reliance on public infrastructure (Anderson, 2016; Glaeser et al., 2008). The results indicate that STR-related urban changes may disproportionately affect certain occupational groups.

The significant influence of STR user status provides empirical support for Social Identity Theory (Tajfel & Turner, 1979) in the context of the sharing economy. The lower likelihood that STR users perceive negative externalities suggests that direct experience with the service creates an "in-group" mentality that shapes perception formation. This aligns with previous research on STR perceptions (Albuquerque et al., 2024; Miguel et al., 2022; Yeager et al., 2020). However, the absence of a significant effect on the perceptions of housing and amenity loss reveals an important nuance in this relationship. The self-serving bias (Miller & Ross, 1975) appears to operate in varying degrees – **the users tend to disregard externalities directly attributed to guests (such as noise), but not structural impacts (such as loss of housing and amenities)**. Furthermore, education correlates with a more

critical perception of these structural impacts, which may be related to **Cognitive Mobilization Theory** (Inglehart, 1970), proposing that education leads to increased engagement with political information through media consumption.

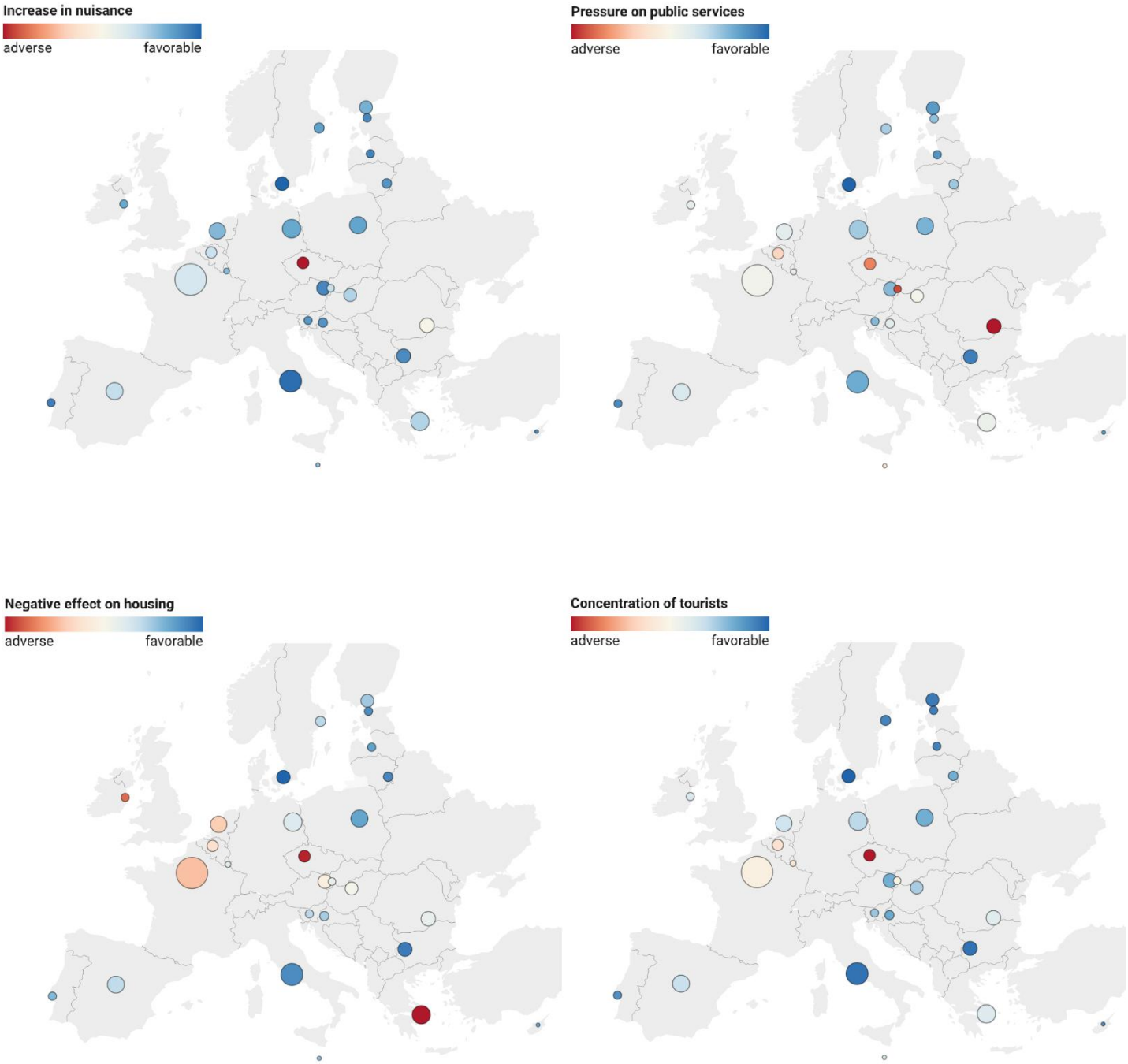


Figure 29 Perceptions of STR disadvantages across EU capitals

Source: Author

The varying perceptions across capital cities (particularly exemplified by Prague's position as one of the most STR-opposed cities) highlight the importance of local context. These results are visualized on a map of Europe (see Figure 29 for the most statistically

significant models), where the color scale of circles represents by how many percentage points are the odds of perceiving a disadvantage lower/higher for each municipality compared to Prague. **The disconnect between objective measures (such as STR density) and perceived impacts suggests that local cultural and socioeconomic factors play crucial roles in shaping public opinion.** This supports previous research emphasizing the importance of destination-specific analysis in understanding STR impacts (Ayouba et al., 2019; Serrano et al., 2020). Moreover, the finding that housing affordability concerns do not consistently correlate with STR density across cities underscores that **housing market pressures are perceived through the lens of pre-existing housing system challenges**. This supports research indicating that STR impacts are amplified in cities with already stressed housing markets (Cocola-Gant & Gago, 2019; Yrigoy, 2019).

The presence of Scandinavian capitals among cities with more favorable STR perceptions points to potential institutional and cultural influences. These cities share robust social welfare systems and high levels of social trust (Rothstein & Stolle, 2003), which may buffer perceived negative impacts of tourism-related changes. This aligns with research suggesting that strong institutional frameworks can help cities better absorb disruptions from the sharing economy (Aguilera et al., 2021; Zvolska et al., 2020). The Mediterranean cities' more permissive attitudes toward tourist-generated nuisances reveal how cultural norms can shape local STR adoption (Lewis, 2010; Meyer, 2016), also highlighting that long-term adaptation to tourism may create different baseline expectations for urban life.

These findings have several implications for urban policy and STR regulation. First, differing perceptions across occupations may indicate a need to compromise on policy approaches to address the concerns of varying residential groups. It is up to policymakers to determine which groups' concerns are more pressing and proceed accordingly. However, policymakers should simultaneously account for results from Chapter 6, illustrating examples where subjective perceptions have virtually no correlation with objective measures. Those results indicate that **residential perceptions can be misleading and thus should be interpreted with caution**. To verify residents' concerns, we suggest that policymakers collect available hard data and subject the evidence to empirical analysis (similar to our approach in Chapter 8). Such approach provides the government with additional intelligence to facilitate informed policy while preventing a potentially populist response. A potential dilemma may arise when a residents' concern does not reflect the

empirical evidence. In such a case, the government is faced with the decision of whether to follow a populist course of action or choose to explain the misconception to the public based on relevant studies.

Since statistical results do not imply causal direction (nor causality as a whole), this multi-fold interpretative scope may be bent to support diverse approaches toward STRs. As an alternative approach supported by our results, we discern extending positive STR perceptions by promoting STR traveling. Given that STR users' perceptions tend to be more favorable, this result can be interpreted as a potential way to improve the attitude toward STRs by spreading the STR guest experience. This approach, however, would directly contradict the current attempts of many destinations to curb their over-tourism issues (Dodds & Butler, 2019). Furthermore, our education-related findings suggest that media coverage and campaigns about STR impacts tend to reach and engage citizens at varying scales depending on their educational background. Relevant stakeholders may consider this when tailoring their communication to the public. Finally, the geographic variations in perception highlight that one-size-fits-all approaches may be insufficient, supporting the case for locally adapted policy solutions, as also suggested by the literature (Ayouba et al., 2019; Serrano et al., 2020).

Lastly, several limitations should be acknowledged. Our research relies on predetermined categories of STR disadvantages (and dichotomic scale of their measurement) from the Eurobarometer survey. Future research could employ open-ended methodologies to identify additional perceived disadvantages that might not be captured in standardized surveys. This has potential primarily in cities like Copenhagen, where respondents tend to give answers beyond those offered. The future questionnaires could also employ a Liker-type scale (similar to our Chapter 9) to better capture the influence of variables (primarily the host status, which we found to be insignificant). While our regression analysis identifies significant relationships, it cannot fully explain the underlying causal mechanisms. Qualitative research could help unpack the complex interplay between education and user experience in shaping perceptions. Furthermore, this analysis does not fully capture the potential influence of local regulatory frameworks on perception formation. Future studies could explicitly examine how different regulatory approaches affect public perceptions.

12.5 STR housing impact in Prague

Our results reveal several phenomena opposing previous expectations. Firstly, we hypothesized five auxiliary variables to have a potential for inclusion in our modeling. These variables are *Interest rate*, *Inhabitants*, *Construction*, *Hotel rooms*, and *Covid*. The only one of them that proved to enhance our model's explanatory value was *Interest rate*.

The number of *Inhabitants* is a delicate variable that, although it can partially represent the demand for housing, could be specified more optimally. This variable might better reflect the intended aspect if, instead of tracking the overall number, it focused solely on migration and omitted the contributions from natural causes. Apart from this, it is worth noting that the official data from the Czech Statistical Office misrepresents the actual number of residents inhabiting the capital city. According to the data from telecommunication carriers, there are, in fact, 240,000 more people living long-term in Prague than the CZSO reports (Kopecký, 2021). This demonstrates that there might be other preferable ways to plot this variable.

The insignificance of the *Construction* in the context of the central district is not surprising. Considering the character of the investigated district, we may remind that it is unsuitable (nearly impossible) for extensive construction of new housing. During the investigated period, only 125 dwellings were completed, 95 of which were built in 2021. When modeling for the entire city, the insignificance persists, although the influence of construction was hypothesized to be an important predictor. This finding provides room for follow-up research that could subject this aspect to a more detailed investigation of causes and context.

Another challenge was the inclusion of the *Hotel rooms* variable, mostly because no more detailed data was available than yearly periods. Therefore, the whole time series comprised only a handful of values. On the other hand, exploring its influence might be compelling. In two years, from 2018 to 2020, the number of hotel rooms in the central district increased from 13,207 to 14,752, i.e. by 1,545 rooms (or 12%). Meanwhile, the number of commercial STR listings increased in the same period (before the pandemic) from 1,922 to 2,213, i.e. by 291 apartments (or 15%). In other words, the magnitude of the hotelier sector alongside its onward growth is so substantial that it should not be overlooked in the framework of housing supply research. Furthermore, providing context for the entire city (also before the pandemic), there were 40,515 hotel rooms and 6,331 commercial STR listings. Considering this, it might be interesting to obtain more detailed information on the

rise in hotel rooms if we would like to cover the impact on housing prices from the tourist accommodation sector as a whole.

Aside from housing stock utilized as tourist accommodation, housing affordability is influenced by dwellings that are just left vacant (e.g. Segú, 2020; Hoekstra and Vakili-Zad, 2011). The quantity of these dwellings cannot be employed in our modeling because the exact numbers are not reliably recorded in the context of Prague. The latest Census of Population, Houses, and Dwellings reports 93,627 unoccupied dwellings out of 721,332 total dwellings in Prague and 5,760 unoccupied dwellings out of 18,543 total dwellings in the central district (plus another 120,215 unoccupied dwellings in the Central Bohemian Region, i.e. in the radius of 30–50 km around Prague) (CZSO, 2022b).

However, it is not possible to determine how many of them are indeed long-term vacant and how many are just transferring ownership or under reconstruction. The estimates for these numbers vary. On one hand, the Czech Social Democratic Party estimates that approximately 70 thousand dwellings are long-term vacant (based on publications from construction companies), while on the other hand, Pavel Kliment from KPMG estimates that approximately 10 to 15 thousand dwellings are held merely as an investment with no further utility (Srnka, 2021). Local scholars also tend to emphasize the financialisation of housing (that real estate becomes primarily an investment instrument) as the primary cause of the current housing crisis (Černá et al., 2020). There was a proposal in Prague City Council to obtain data on the number of long-term vacant dwellings by checking electricity meters (following the example of certain western cities), however, the coalition partners labelled the proposal as an attack on the basic rights of citizens (Menzelová, 2019). Moreover, the municipality itself also has an underutilized housing capacity in its ownership. There are 2,567 long-term uninhabitable municipal dwellings (out of 30,345 in total) waiting to be funded for reconstruction (Brabec, 2021).

The dummy variable *Covid* also did not prove to be statistically significant. We performed a variety of different variations in the period length indication to find the most suitable one for treatment of the unconventional situation inflicted by the pandemic restrictions imposed on the hospitality sector. Nevertheless, in the end, none of the variations achieved statistical significance. Needless to say, this variable in the post-pandemic modeling could not be employed at all due to the time series omission of the Covid-19 era, which is an inherent essence of the variable's indication.

The results of our model can be discussed with several preceding studies (although their comparative value might be compromised due to different methodologies, study periods, and inflationary pressures). In comparison with the dataset from cities across the entire USA (Barron et al., 2021), the STR-induced increase in Prague's housing prices is significantly higher. The authors find that a 1% increase in STR listings raises housing prices by 0.026%, while in Prague, the same increase raises prices by 0.38%. This is likely because Barron et al. include in their evaluation data from 40 cities with varying levels of touristification, while we focus only on one of the most visited cities in Europe.

We can further examine our results in relation to concrete US cities, namely, Washington, D.C. and New York City. Sheppard and Udell (2016) estimate that Airbnb's entry into the NYC market increased housing prices by 3.5% in less touristic areas and by 65% in highly touristic areas. In Washington, D.C., Zou (2020) finds a 0.78% increase in property prices for each additional STR listing within 200 feet distance. To compare these results with Prague, we would need to obtain spatial data on sold properties which we currently do not have access to.

In contrast to the US results, Portuguese cities attain a significantly higher housing price increase in association with STRs than Prague. In Lisbon and Porto, a 1% increase in Airbnb listings raises housing prices by 3.2% (Franco and Santos, 2021), while in Prague it does so by 0.38%. On the other hand, Garcia-López et al.'s (2020) results from Barcelona are closer to the results of Barron et al. (2020) from the US than to ours. They find that a 1% increase in STR listings increases housing prices by 0.031%.

Finally, in Asia, Chang (2020) estimates that an increase of one hundred in the total number of STR listings raises Taiwanese sales price of properties by 0.47% which is lower than Prague's increase by 0.67%.

12.6 Attitudes toward STR accommodation in Prague

In the following subsection, we discuss the attitudes of Czech residents (and Prague residents in particular) toward the positive, negative, and mixed triple bottom line impacts of STR accommodation in Prague.

Our results highlight that most respondents perceive the positive effects of STRs on the community as negligible. Even the case of STRs boosting revenues for local businesses was regarded with agreement only by 49% of respondents, compared to the 64% agreement of

the Byron Shire inhabitants in Australia (Muschter et al., 2021). Overall, Czech respondents apprehend every aspect as more negative (or rather less positive) than the Australian ones. The opinions about the role of STRs further vary among the Czech population according to their user status. Users view STRs' role more favorably than non-users (particularly, increased revenues for local businesses and the greater variety of retail services). There is an even stronger divide for the mixed impacts, which have positive implications only for specific rather minor parts of the community. This indicates that these community members might be disproportionally represented among STR users.

The least number of respondents (22%) agreed with STRs' positive impact on increasing employment opportunities for locals. Scepticism about the role played by STRs in labor markets is also apparent in the literature. Although, the platform economy opens new opportunities, it may exacerbate wage inequality (Ekmekçi, 2024; Gil, 2024). Sundararajan (2016) claims that the rise of crowd-based capitalism will primarily profit the platforms, while the labor (e.g. Airbnb hosts or Uber drivers) will earn very little. However, specifically in the case of the Byron Shire study, STR hosts were rather optimistic about their income-earning capacity (Muschter et. al, 2021).

Regarding the negative impacts, most respondents were concerned about three of them. Specifically, non-users were more disturbed by each issue than STR users. Identically to the Byron Shire, the most severely perceived negative impact in Prague is the socioeconomic issue of reduced housing affordability, which is reflected in the findings of several papers (Sheppard & Udell, 2016; Garcia-López et al., 2020; Peralta et al., 2020). Studies show that the affordable housing stock decreases with a higher tourist flow in the destination. Similarly, this research trend has lately begun to show up as well in the Czech context (Bešťáková, 2019; Guth et al., 2023; Schwarzová, 2019). Nonetheless, the views on the discussed issue tend to differ among the authors. Some argue that the process transforms the neighborhoods into tourism bubbles creating a new form of rent gap (Ioannides et al., 2019; Wachsmuth & Weisler, 2018), while others claim that the phenomenon provides an opportunity to reap enhanced economic benefits (Jefferson-Jones, 2015a). It provides income to homeowners that can be used to offset mortgage and maintenance costs, while the guests disperse their spending in neighborhoods that do not typically receive much tourist expenditure (Guttentag, 2015).

Three further perceived negative impacts are related to neighborhood nuisance. These concerns are increased noise levels and waste management problems that adversely affect the community lifestyle. Shortly before the COVID-19 pandemic, the city council discussed the noise levels in the center of Prague. The councillors designated a so-called "night mayor" to handle the nightlife problems in Prague (ČTK, 2019a). The night mayor has launched a campaign to instruct foreign tourists how to behave at night in the city center (for example, inform the tourists that residents live in the center, that it is not allowed to drink alcohol on the street, that the night-time peace is from 10 p.m., etc.). Additionally, the council surveyed the tourists to explore what types of visitors tend to drink in the bars, often violating the ban on street drinking and night-time peace (ČTK, 2019b). For example, Amsterdam has tried similar means in fighting its problems with tourist-induced noise and is on its way to implement more (Holligan, 2021). Overall, every adverse impact of STRs was apprehended as more negative by the Australian respondents than the Czech ones. This can be attributed to the high proportion of STR properties within the Byron Shire – approximately 62% of total properties (Muschter et. al, 2021).

In terms of preferred rental caps to regulate STRs, our findings are quite divided, both for properties with and without on-site management. Whilst only 29% of STR users prefer a day limit of 90 days (or less) per year on properties without on-site management, amongst non-users it is 48% (of which 21% voted for a complete prohibition). In the case of properties with on-site management, the respondents were less strict, however, still 36% of non-users and 15% of users preferred the 90-day cap. In fact, the respondents' preferences across the properties with and without on-site management differ less than expected. Considering the differing characters of these listing types, the STRs without a host present were perceived quite benevolently, while STRs with a host present were perceived rather harshly. This finding contravenes the currently established consensus of the academic community (e.g. Ševcová et al., 2019; Wegmann & Jiao, 2017; Miller, 2015; Jefferson-Jones, 2015b). Moreover, our results are strictly different from the Australian results, where 45% (compared to our 11%) of non-host respondents voted for a complete prohibition on properties without on-site management and only 11% (compared to our 49%) of the respondents preferred no restriction at all (Muschter et al., 2021). Nevertheless, M-W test has shown no significant differences between respondents from Prague and other regions. The actual approaches to STRs differ around the world, particularly in the USA (permits), in Europe (day limits, zone

restrictions, and taxes), and in Australia (laissez-faire), which offers practical scenarios for further education regarding regulatory responses to the phenomenon.

The governance over STRs can be classified into three regulatory categories – self-regulation, co-regulation (semi-interventionist), and government regulation (Nieuwland & van Melik, 2020). Regarding self-regulation (e.g. raising awareness via communication campaigns), our respondents demand information on compliance with existing regulations, impacts on residential accommodation, and the current regulations regarding STRs (e.g. host responsibilities). In terms of co-regulation, our respondents collectively support avenues to lodge misconduct complaints but differ significantly in their views on restrictions for STR properties without on-site management. While non-users tend to agree (but often are neutral), STR users outright disagree with this type of co-regulation. Finally, on government regulation, our results show a strong desire for enforcement of non-compliance, regardless of STR user status. There is also support for the lodging tax and compulsory liability insurance, but the results for zoning restrictions are split.

13 Conclusion

In this thesis, we examined the socioeconomic role of short-term rental accommodation in the EU. Particular attention was given to the Czech Republic and European capital cities, with an emphasis on STR externalities. First, we assessed the current state of research on STR regulation. Subsequently, we modeled a typical STR consumer, identified peer countries in the EU, and assessed the influences on STR perceptions in EU capitals. Next, we focused on the Czech Republic, estimating STR impact on housing prices, and exploring residential perceptions of STR impacts. Our contribution is not intended only for the academic community, but also for the relevant public authorities and their policymakers who currently find themselves in need of unraveling the highly debated situation concerning this phenomenon. This research provides one of the first broader analyses of STRs in Central and Eastern Europe, connects macro and micro perspectives (from the European context to the situation in Prague), and utilizes a multi-method approach that combines different analytical techniques.

The **first research objective** sets the groundwork for the following chapters. Our literature review thematically synthesized academic findings on STR regulation using a systematic approach to identify key regulatory principles. We categorize the findings into two: those with consensus and those without. The consensus indicates that to govern STRs and address gentrification effectively, municipalities must consider their complexity rather than solely focus on restrictions. Instead, policy measures should be broadened. Our analysis also shows that external factors such as residential criticism, political competition, touristification, and the hotel industry affect policymaking. Overall, our review encourages city governments to develop strategies to mitigate STR-related disadvantages without resorting to blunt and simplistic solutions such as outright bans.

In the **second research objective**, our four consumer models reveal that STR usage is shaped by a complex interplay of sociodemographic factors, information-seeking behaviors, price sensitivity, and attitudes toward local experiences and sustainability. A typical STR consumer is self-employed or an office employee who travels often. They tend to be younger citizens who plan their travels with modern information sources. Their price sensitivity compels them not to contribute financially toward sustainability, leading instead to indirect contributions through cost-saving practices (such as waste reduction). This indicates that economic considerations remain essential, with sustainability features serving as secondary

benefits rather than primary motivators. Finally, the interests of an average STR consumer lean toward local products over the local community. We suggest that the conceptualization of sharing economy participants as strongly motivated by local engagement may need revision.

In the **third research objective**, we identified significant patterns in how EU countries cluster by housing affordability, STR presence, and related perceptions. Our results demonstrate that the relationship between objective housing conditions and subjective perceptions is more complex than previously assumed. While some clusters show negative associations between STR presence and housing perceptions (notably in Western Europe), others demonstrate that high STR numbers do not necessarily correlate with negative perceptions (as in Croatia and Malta). This highlights that residential perceptions may be influenced by other factors. Moreover, there is virtually no correlation between actual housing affordability and residents' perception of housing issues. This could imply limitations in current approaches to housing market assessment. The disconnect suggests that traditional housing affordability metrics might not capture all relevant aspects of housing market dynamics.

In the **fourth research objective**, we determined patterns in how different sociodemographic groups perceive STR disadvantages across EU capital cities. The strong relationship with occupation aligns with the concept of economic self-interest. Meanwhile, the significant influence of STR user status provides empirical support for Social Identity Theory. Notably, the self-serving bias of STR users appears to operate in varying degrees – disregarding externalities that guests may directly contribute to (such as noise), but not the structural impacts (such as loss of housing and amenities). Education correlates with a more critical perception of these structural impacts, which may relate to Cognitive Mobilization Theory.

Narrowing our focus to the Czech Republic, we estimated the impact of STR accommodation on average housing prices in Prague and explored the viability of the VECM in this context. This **fifth research objective** presents a perspective on the STR phenomenon through an econometric analysis of time series following a previously established research design (Guth et al., 2023). Due to the COVID-19-related distortions in tourism, we had to truncate the sample period to avoid unusually large shocks in the STR market. These structural breaks led to verification issues (see Footnote 30 in Section 10), therefore, we start

our time series in October 2020, after the market had adjusted to the initial hospitality restrictions. In this period, we estimate that for every additional Airbnb apartment, the average housing price per square meter increases by CZK 9.58.

Lastly, we explored ways to alleviate the negative and promote the positive impacts of STR accommodation in Prague. The **sixth research objective** investigates STRs operating under our metropolitan conditions as a phenomenon providing both opportunities and challenges for the community across the triple bottom line dimensions. It presents a perspective on the regulation of STRs from the residential debate. The survey provides insight into residents' preferred ways to regulate the phenomenon and, similarly, into the importance of STR-related information to the community itself. Subsequently, we present a notion that the community's perception of STR services is significantly influenced by the experience (or the lack of) of staying in an STR accommodation themselves while traveling abroad.

Practical implications include a call to compromise policy approaches to address the concerns of varying residential groups. It is up to policymakers to determine which groups' concerns are more pressing and proceed accordingly. Relevant stakeholders may consider tailoring their communication to the public, given the possibility that STR coverage reaches (or engages) citizens at varying scales depending on their educational background.

The geographically varied perceptions underscore that one-size-fits-all approaches may be insufficient, supporting the case for locally tailored policy solutions, as the literature suggests. The Czech Republic might benefit from a policy learning network with its closest peers (Belgium, Austria, and Spain), given their comparable housing market characteristics. Municipalities should also note that cultural norms and long-term adaptation to tourism may create different baseline expectations for urban life, as demonstrated by the more permissive Mediterranean attitudes toward tourist-generated nuisance. Below, we outline recommendations for policymakers at different levels (municipal, national, and European) and propose steps for implementing our results in practice:

- *At the Prague city level*. Introducing tiered regulatory frameworks that differentiate casual hosts from commercial operators (with stricter controls toward multi-unit and non-resident investors), limiting number of rental units per host to restrict market concentration (which is the highest in Europe), creating a local STR tax framework whose revenue would support affordable housing (may

extend to vacant dwellings as well), and establishing effective monitoring mechanisms (additionally, zoning of STRs based on their concentration in each neighborhood might be worth considering, however, foreign municipalities warn about spillover effects).

- *At the national level*. Creating a legislative framework allowing municipalities more flexibility in regulating STRs, coordinating tax policy between STRs and traditional forms of accommodation, and mandatory sharing of data from platforms (if not mandated by the EU).
- *At the European level*. Standardizing cross-border STR data sharing, formulating recommendations based on comparative analysis of policy effectiveness, and linking STR regulation to the wider EU digital agenda.

STR platforms themselves might also take inspiration from the results. The generational differences in STR usage suggest that providers may need to develop age-specific marketing and engagement strategies to address varying levels of digital comfort and travel preferences. Also, as the phenomenon continues to mature, it may need to balance its commercial success with its original sharing economy ethos, particularly by fostering meaningful host-guest interactions and supporting local communities.

Theoretical implications are explored primarily in relation to consumer behavior and several disciplines of psychology (social, cognitive, and perceptual). First and foremost, theoretical assumptions about sustainability and local experiences as core values in STR behavior appear to be overstated. This contradicts the idea of STR users as ethically conscious consumers and aligns more with theories of bounded rationality and utility maximization. Our results also support constructivist policy theory, emphasizing that public attitudes are shaped by narratives and broader social anxieties rather than solely by material conditions. These results suggest urban governance theorists consider subjective, affective, and identity-related dimensions of housing politics. Our findings further emphasize the role of contextual variables (e.g. Nordic trust models vs. Mediterranean indulgence) in shaping collective responses to urban tourism. Cross-national tourism theories might therefore benefit from accounting for cultural-institutional moderators when explaining perception gaps. Meanwhile, self-serving bias and social identity theory help explain asymmetric perception patterns and reveal that identification with a group (e.g. STR users) shapes policy attitudes and social evaluations. This encourages the utility of social psychological

frameworks for explaining stakeholder divergence in urban policy research. Lastly, we incentivize tourist consumer theorists to consider generational digital behavior and shifting norms around platform use.

Limitations of this research stem from regional focus, preset survey designs, and quantitative approaches. Our findings may not apply to non-European markets with different infrastructures, cultures, and regulatory environments. The use of pre-conducted surveys may have restricted our research scope or excluded relevant factors. Moreover, some questions' dichotomous format limits their depth and nuance. The role of hosts in particular appears underexplored due to this survey design limitation. Cross-sectional analyses cannot observe temporal evolution or regulatory effects over time. STR research in general is limited by the nature of platform-level data, which is often overcome through web scraping or surveying. These approaches, however, may limit granularity and real-time accuracy. Additionally, quantitative results may lack explanatory depth, offering potential for qualitative follow-up.

Future research could build on our results by scientifically verifying established residential concerns to determine to what extent they are based on empirical evidence and to what extent they might be preconceived biases. Alternatively, it might benefit from incorporating fixed effects and instrumental variables to better explain regional variations encountered. Additionally, there is a potential not only for a questionnaire survey but also for in-depth interviews with various stakeholders.

While our analysis identifies significant relationships, it cannot fully explain the underlying causal mechanisms. Therefore, qualitative research could help unpack the complex interplay in shaping perceptions. Apart from that, future research on STR consumption could implement a questionnaire specifically designed to investigate this particular topic. Alternatively, consumer characteristics along with booking patterns could be analyzed on data directly from STR platforms, if access is obtained. Finally, longitudinal studies could examine how STR consumption patterns change over time, particularly as younger generations gain greater economic influence and the STR phenomenon continues to evolve.

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15.3 List of abbreviations

CZK – Czech Koruna
EMEA – Europe, the Middle East, and Africa
EC – Error correction
FTC – Federal Trade Commission
NYC – New York City
SELC – Sustainable Economies Law Centre
STR – Short-term rental
USD – United States Dollar
VAR – Vector autoregression
VECM – Vector error correction model
WoS – Web of Science

Appendix

Table A.1 Description of variables employed in the STR consumer modeling

Variable name	**Question**	**Answer (categories)**
STR consumer	What method are you most likely to use to organise travel and tourism activities?	Online listings of private housing offerings (rooms, apartments)
Traveling frequency	Before the COVID-19 pandemic, how frequently did you travel for leisure or work?	1) Never 2) Once every few years 3) Once or twice a year 4) Several times a year
Occupation	As far as your current occupation is concerned, would you say you are…?	1) Without a professional activity 2) Manual worker 3) Employee 4) Self-employed
Education	How old were you when you stopped full-time education?	
Community type	Would you say you live in…?	1) A rural area or village 2) Small or medium-sized town 3) Large town/city
Age	How old are you?	
Online influencers	Which of the following information sources are most important when you make travel plans?	Online influencers and blogs
Websites for travelers	Which of the following information sources are most important when you make travel plans?	Websites collecting reviews and ratings from travellers

Social media of the service provider	Which of the following information sources are most important when you make travel plans?	Website or social media page of the service provider
Price	When you choose a destination to visit, which of the following are most important?	The price of the overall trip
Outside of season traveling	Are you prepared to change your travel and tourism habits to be more sustainable? If so, in which of the following ways?	Take holidays outside of the high tourist season
Waste reduction	Are you prepared to change your travel and tourism habits to be more sustainable? If so, in which of the following ways?	Reduce waste while on holiday
Less visited destinations	Are you prepared to change your travel and tourism habits to be more sustainable? If so, in which of the following ways?	Travel to less visited destinations
Pay more to benefit the locals/nature	Are you prepared to change your travel and tourism habits to be more sustainable? If so, in which of the following ways?	Pay more to the benefit of the local community + Pay more to protect the natural environment
Involvement of locals	When you choose a destination to visit, which of the following are most important?	Local population involved in tourism activities
Local products	Are you prepared to change your travel and tourism habits to be more sustainable? If so, in which of the following ways?	Consume locally sourced products on holiday
Sustainability certification	When you choose a destination to visit, which of the following are most important?	Sustainability certification of accommodation and attractions

Table A.2 Model fit indices for the sociodemographic model of an STR consumer

CMIN	161,231	**AIC** (tested)	195,231
CFI	0,956	**AIC** (saturated)	40
TLI	0,779	**BCC** (tested)	195,239
RMSEA	0,045	**BCC** (saturated)	40,009

Source: Own based on Eurobarometer ZA7807

Table A.3 Model fit indices for the information sources model of an STR consumer

CMIN	153,611	**AIC** (tested)	187,611
CFI	0,928	**AIC** (saturated)	40
TLI	0,76	**BCC** (tested)	187,619
RMSEA	0,044	**BCC** (saturated)	40,009

Source: Own based on Eurobarometer ZA7807

Table A.4 Model fit indices for the price-dependent sustainability model of an STR consumer

CMIN	255,333	**AIC** (tested)	301,333
CFI	0,988	**AIC** (saturated)	54
TLI	0,954	**BCC** (tested)	301,345
RMSEA	0,049	**BCC** (saturated)	54,015

Source: Own based on Eurobarometer ZA7807

Table A.5 Model fit indices for the local experiences model of an STR consumer

CMIN	4,339	**AIC** (tested)	30,339
CFI	0,993	**AIC** (saturated)	28
TLI	0,955	**BCC** (tested)	30,344
RMSEA	0,011	**BCC** (saturated)	28,005

Source: Own based on Eurobarometer ZA7807

Table A.6 Sociodemograhic descriptives for the survey on Czech attitudes toward STRs in Prague

	Male	**Female**			
Gender (survey)	43%	57%			
Gender (CZSO, 2023)	49%	51%			
	Up to 18	**19 to 30**	**31 to 40**	**41 to 50**	**51 and over**
Age (survey)	1%	31%	30%	15%	23%
Age (CZSO, 2023)	20%	12%	14%	16%	38%
	Primary	**Secondary**	**Sec. with diploma**	**Post-sec.**	**Tertiary**
Education (survey)	4%	7%	28%	7%	55%
Education (CZSO, 2024)	13%	33%	33%	2%	19%

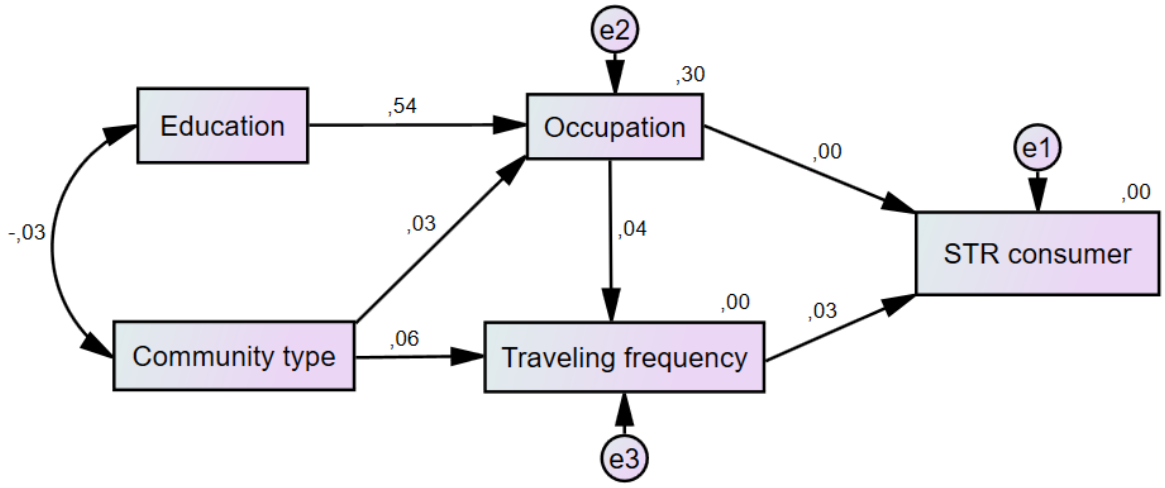

Figure A.1 Sociodemographic model of an STR consumer for Generation Z

Source: Own based on Eurobarometer ZA7807

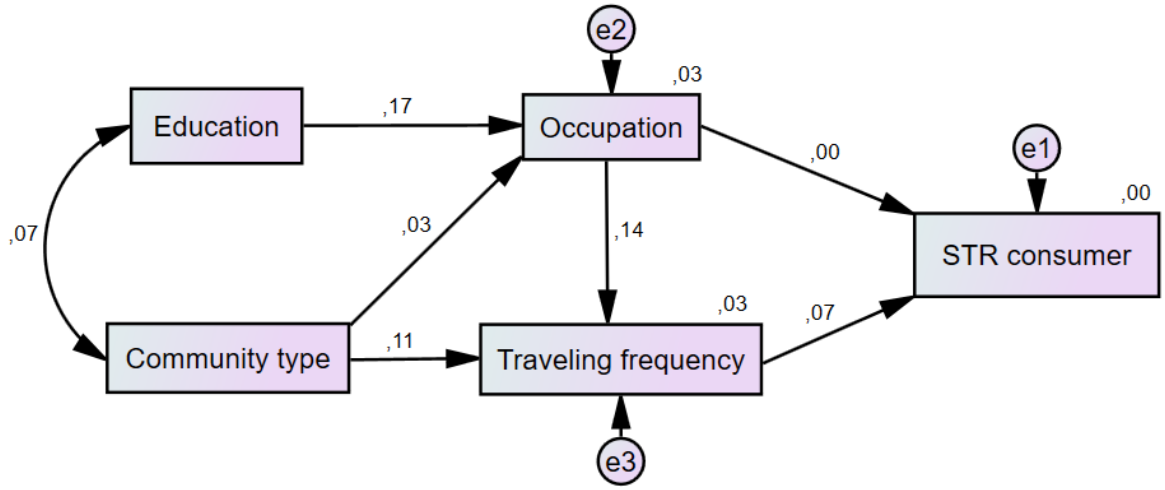

Figure A.2 Sociodemographic model of an STR consumer for Generation Y

Source: Own based on Eurobarometer ZA7807

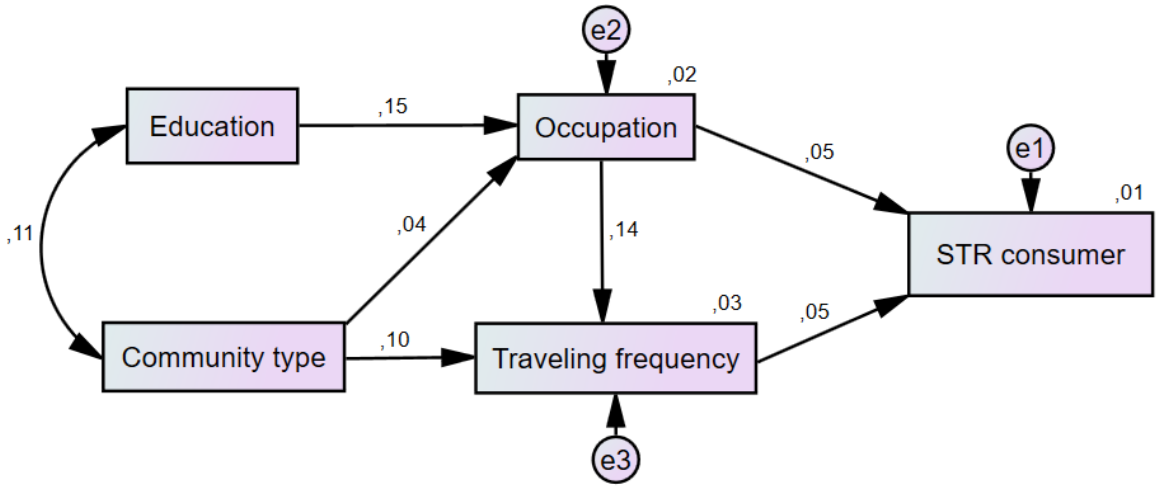

Figure A.3 Sociodemographic model of an STR consumer for Generation X

Source: Own based on Eurobarometer ZA7807

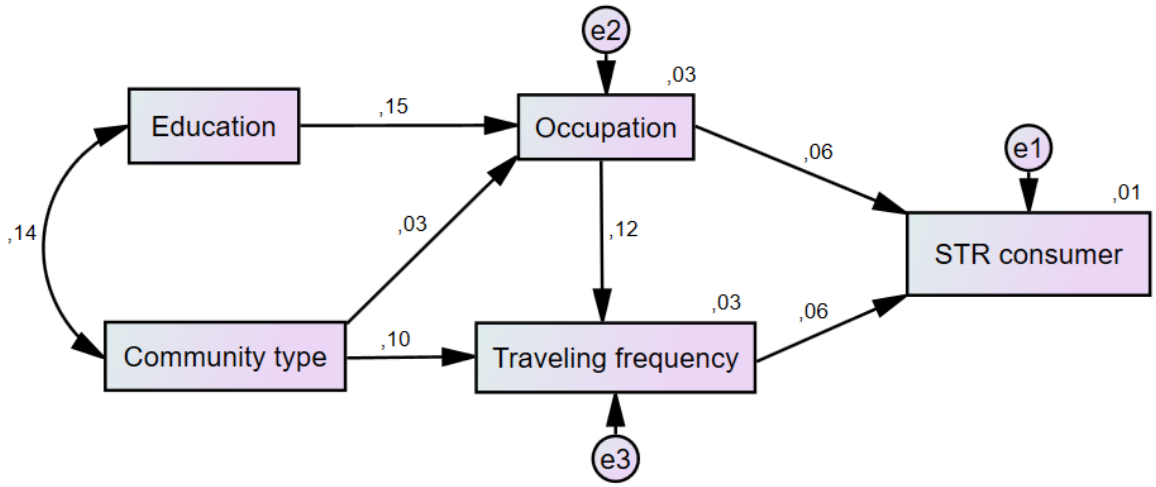

Figure A.4 Sociodemographic model of an STR consumer for Baby Boom Generation

Source: Own based on Eurobarometer ZA7807

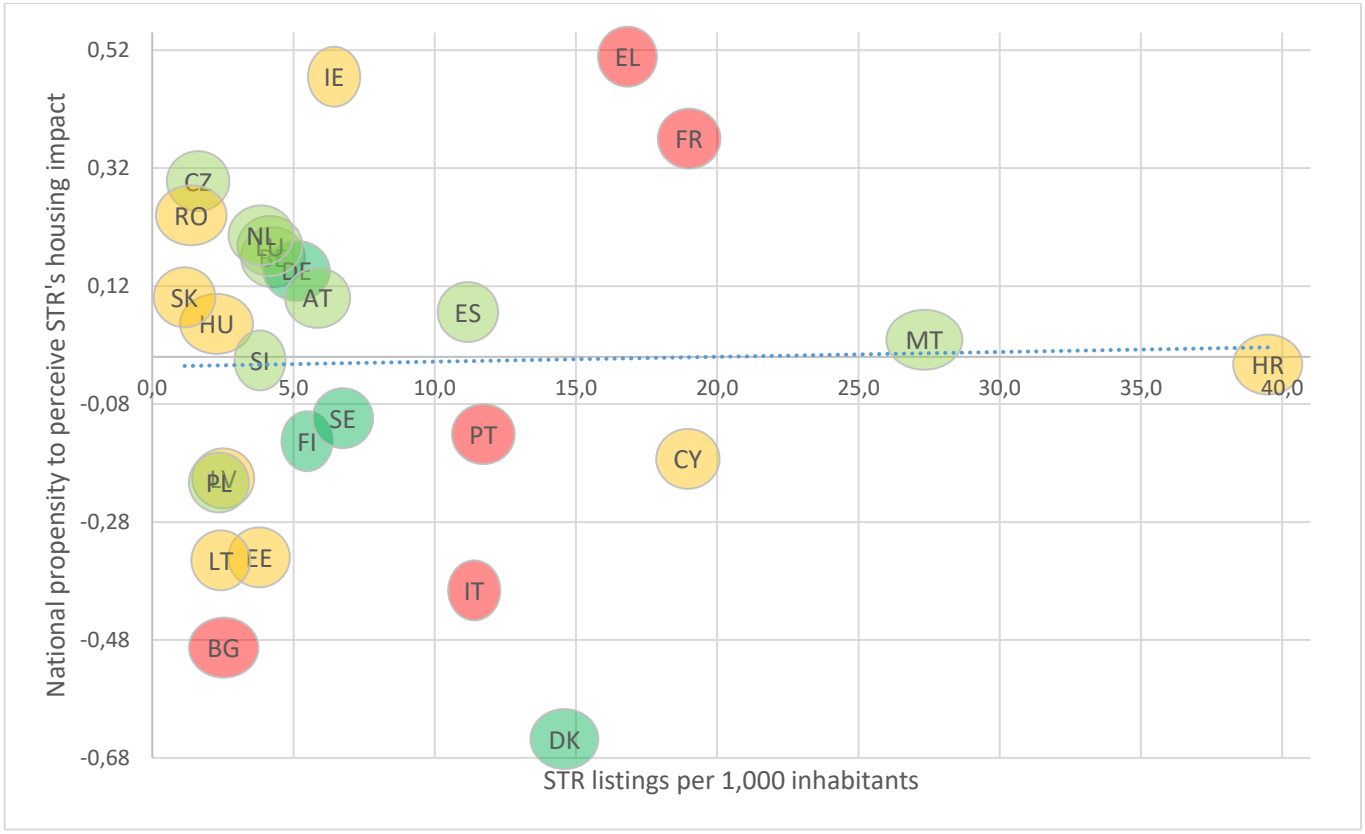

Figure A.5 STRs and housing impact perception *(Green = higher life satisfaction)*

Source: Own based on Eurobarometer ZA8815 and AirDNA (2024)

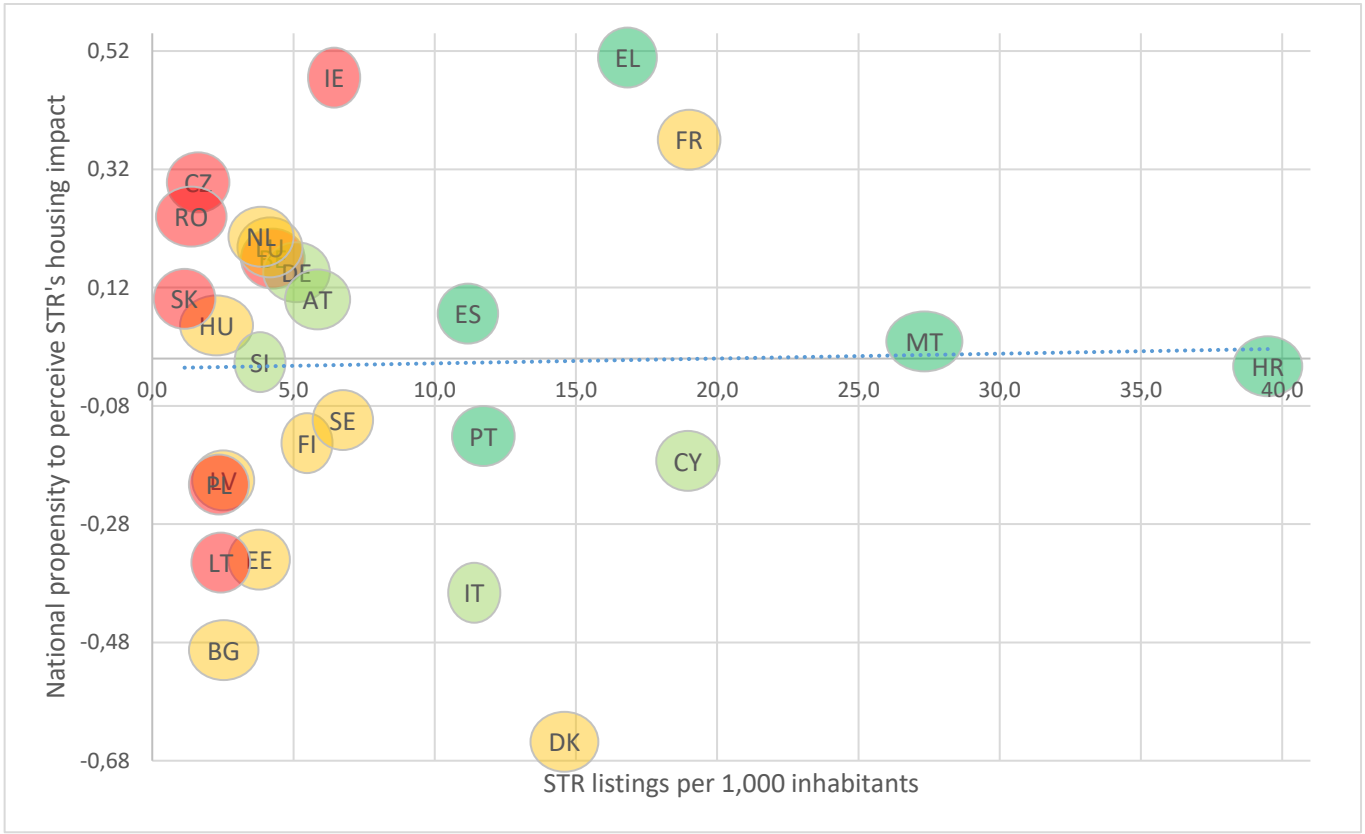

Figure A.6 STRs and housing impact perception *(Green = higher share of tourism in GDP)*

Source: Own based on Eurobarometer ZA8815, AirDNA (2024), Statista (2024d)

Table A.7 Regression results for perceived STR disadvantages in the EU

	Increase in nuisance by tourists (e.g. noise, waste)			Pressure on public services (e.g. public transport)			Negative effect on housing (e.g. price, availability)		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)	B	Sig.	Exp(B)
STR user status (Yes)	-0,07	0,02	0,93	-0,24	0,00	0,79	-0,01	0,81	0,99
STR host status (Yes)	-0,24	0,00	0,79	-0,15	0,02	0,86	-0,01	0,83	0,99
Gender (Female)	0,05	0,07	1,05	0,02	0,61	1,02	-0,12	0,00	0,88
Age (15 - 24 years)		0,00			0,00			0,00	
Age (25 - 39 years)	-0,10	0,08	0,90	-0,18	0,00	0,83	0,05	0,36	1,05
Age (40 - 54 years)	-0,10	0,07	0,90	-0,14	0,03	0,87	-0,12	0,05	0,89
Age (55 years and older)	-0,24	0,00	0,78	-0,23	0,00	0,80	-0,32	0,00	0,73
Community type (Large town)	-0,02	0,43	0,98	-0,09	0,00	0,91	0,07	0,01	1,07
Occupation (Self-employed)		0,02			0,00			0,00	
Occupation (Employee)	0,08	0,05	1,08	0,01	0,88	1,01	0,03	0,38	1,03
Occupation (Manual worker)	-0,04	0,55	0,96	0,09	0,20	1,09	-0,20	0,00	0,82
Occupation (No activity)	0,10	0,02	1,11	0,14	0,01	1,16	-0,02	0,66	0,98
Education (Up to 15 years)		0,00			0,00			0,00	
Education (16-19 years)	0,28	0,00	1,32	0,26	0,00	1,30	0,02	0,75	1,02
Education (20 years and older)	0,29	0,00	1,34	0,17	0,02	1,19	0,18	0,00	1,20
Education (Still in education)	0,33	0,00	1,38	0,23	0,02	1,26	0,23	0,01	1,25
Constant	-0,34	0,00	0,71	-1,05	0,00	0,35	-0,31	0,00	0,74

	Decrease in personal safety and security			Concentration of tourists in certain neighborhoods			Loss of amenities for residents due to tourist shops and facilities		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)	B	Sig.	Exp(B)
STR user status (Yes)	-0,36	0,00	0,70	0,01	0,66	1,01	-0,01	0,72	0,99
STR host status (Yes)	-0,23	0,00	0,80	-0,19	0,00	0,83	-0,12	0,07	0,89
Gender (Female)	0,11	0,00	1,12	0,03	0,26	1,03	0,05	0,13	1,05
Age (15 - 24 years)		0,24			0,08			0,00	
Age (25 - 39 years)	-0,07	0,29	0,94	-0,06	0,29	0,94	-0,15	0,02	0,86
Age (40 - 54 years)	-0,12	0,07	0,89	-0,06	0,31	0,94	-0,27	0,00	0,76
Age (55 years and older)	-0,10	0,10	0,90	-0,14	0,03	0,87	-0,37	0,00	0,69
Community type (Large town)	0,09	0,00	1,09	-0,05	0,10	0,95	0,02	0,50	1,02
Occupation (Self-employed)		0,02			0,00			0,12	
Occupation (Employee)	0,09	0,03	1,10	0,05	0,26	1,05	0,06	0,19	1,06
Occupation (Manual worker)	0,09	0,17	1,10	-0,11	0,10	0,90	-0,06	0,44	0,94
Occupation (No activity)	0,15	0,00	1,17	0,11	0,03	1,11	0,08	0,11	1,09
Education (Up to 15 years)		0,11			0,00			0,36	
Education (16-19 years)	0,13	0,06	1,14	0,29	0,00	1,34	0,13	0,10	1,14
Education (20 years and older)	0,06	0,37	1,06	0,25	0,00	1,29	0,11	0,14	1,12
Education (Still in education)	0,08	0,39	1,08	0,20	0,03	1,23	0,16	0,11	1,17
Constant	-0,90	0,00	0,41	-0,89	0,00	0,41	-1,08	0,00	0,34

	Other			No disadvantages at all		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)
STR user status (Yes)	0,34	0,00	1,40	0,33	0,00	1,39
STR host status (Yes)	0,20	0,14	1,22	0,21	0,01	1,24
Gender (Female)	-0,06	0,36	0,94	-0,10	0,02	0,90
Age (15 - 24 years)		0,13			0,00	
Age (25 - 39 years)	0,16	0,35	1,18	0,29	0,01	1,34
Age (40 - 54 years)	0,25	0,16	1,28	0,50	0,00	1,65
Age (55 years and older)	0,35	0,05	1,42	0,71	0,00	2,03
Community type (Large town)	0,06	0,40	1,06	-0,05	0,25	0,95
Occupation (Self-employed)		0,74			0,04	
Occupation (Employee)	-0,07	0,48	0,93	-0,04	0,49	0,96
Occupation (Manual worker)	-0,19	0,30	0,83	0,15	0,13	1,16
Occupation (No activity)	-0,09	0,45	0,91	-0,12	0,10	0,89
Education (Up to 15 years)		0,31			0,72	
Education (16-19 years)	-0,19	0,27	0,83	-0,04	0,73	0,96
Education (20 years and older)	-0,04	0,83	0,96	0,00	0,98	1,00
Education (Still in education)	-0,08	0,76	0,93	-0,13	0,40	0,87
Constant	-3,58	0,00	0,03	-2,69	0,00	0,07

Source: Own calculation based on Eurobarometer ZA7799

Table A.8 Logistic regression models summary

	AUC (ROC)	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Increase in nuisance by tourists (e.g. noise, waste)	0.65	8,885.74	0.07	0.10
Pressure on public services (e.g. public transport)	0.66	7,092.42	0.06	0.09
Negative effect on housing (e.g. price, availability)	0.70	8,545.54	0.11	0.15
Decrease in personal safety and security	0.63	8,087.21	0.04	0.06
Concentration of tourists in certain neighborhoods	0.67	8,055.86	0.08	0.11
Loss of amenities for residents due to tourist shops	0.66	7,095.21	0.06	0.09
Other	0.75	2,020.85	0.04	0.13
No disadvantages at all	0.67	4,023.61	0.03	0.07

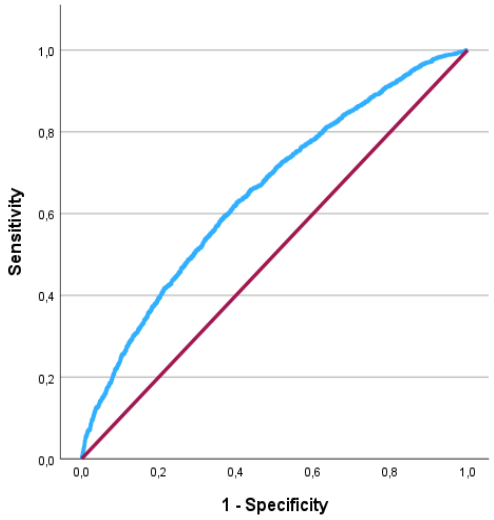

Figure A.7 ROC curve for "Increase in nuisance by tourists"

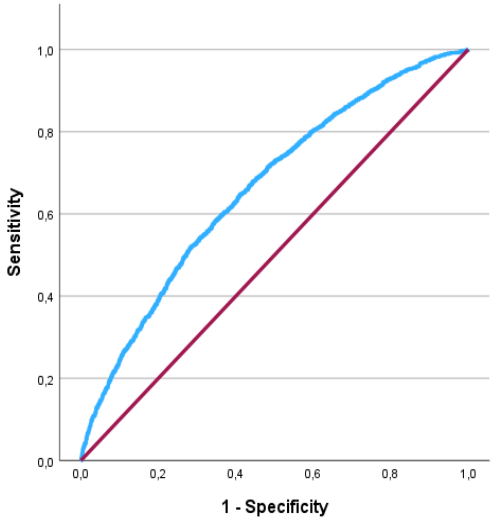

Figure A.8 ROC curve for "Pressure on public services"

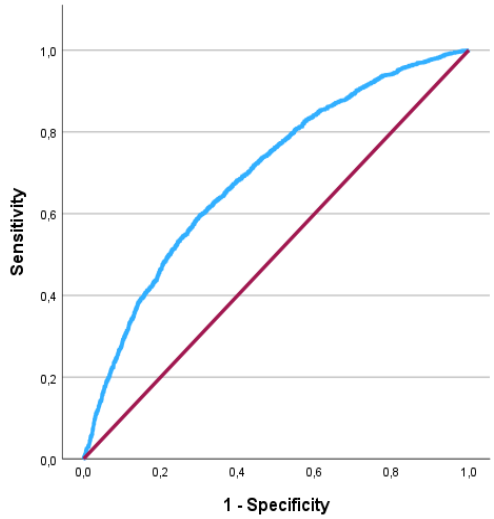

Figure A.9 ROC curve for "Negative effect on housing"

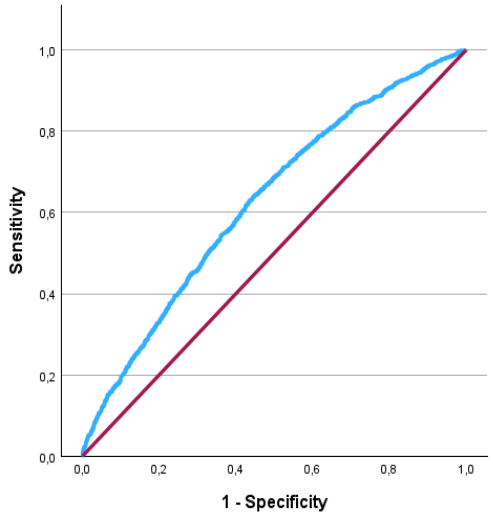

Figure A.10 ROC curve for "Decrease in personal safety and security"

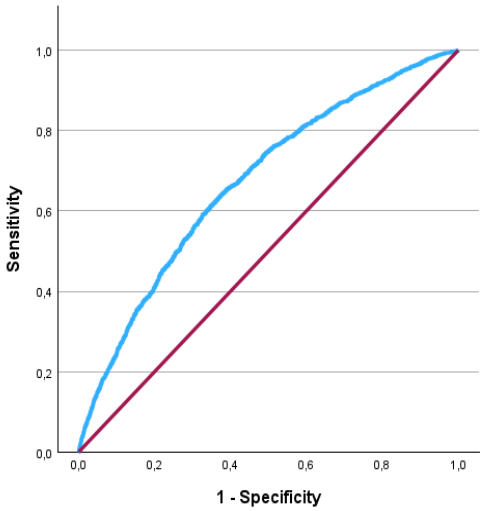

Figure A.11 ROC curve for "Concentration of tourists in certain neighborhoods"

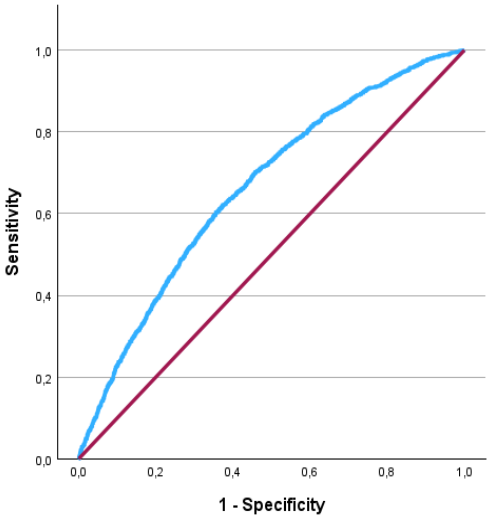

Figure A.12 ROC curve for "Loss of amenities for residents"

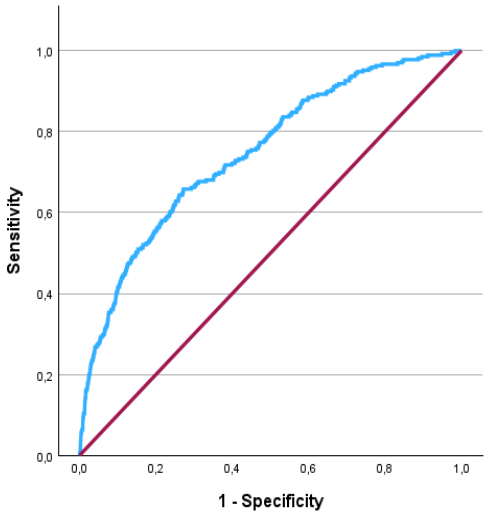

Figure A.13 ROC curve for "Other"

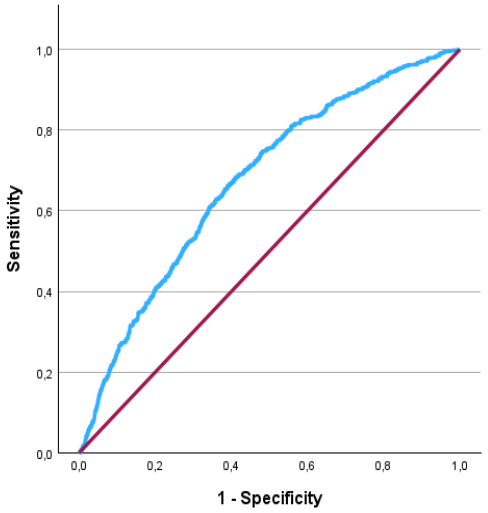

Figure A.14 ROC curve for "No disadvantages at all"

Table A.9 Adjustment coefficients of the VECM

	Price	*Airbnb*	*Interest rate*
Price	-1.31	2.38	0.72
Airbnb	0.013	-0.012	71.12
Interest rate	-0.00001	-0.0005	0.022

Table A.10 VECM equation modeling housing prices in Prague

Equation: Price				
	coefficient	std. error	t-ratio	p-value
Const	183210	47260,2	3,877	0,0019 ***
d_Price_1	0.941678	0,275427	3,419	0,0046 ***
d_Price_2	0.454400	0,365657	1,243	0,2359
d_Price_3	0.492468	0,244492	2,014	0,0652 *
d_Price_4	0.0273525	0,213483	0,1281	0,9000
d_Price_5	−0.340769	0,232877	−1,463	0,1671
d_Price_6	−0.290425	0,245287	−1,184	0,2576
d_Price_7	−0.630408	0,226671	−2,781	0,0156 **
d_Price_8	−0.320133	0,356179	−0,8988	0,3851
d_Price_9	−0.280441	0,238968	−1,174	0,2616
d_Price_10	−0.198492	0,206404	−0,9617	0,3538
d_Airbnb_1	−10.9258	4,50043	−2,428	0,0305 **
d_Airbnb_2	−5.24728	3,16438	−1,658	0,1212
d_Airbnb_3	−12.3054	2,42978	−5,064	0,0002 ***
d_Airbnb_4	0.267661	3,53475	0,07572	0,9408
d_Airbnb_5	−6.71108	3,01114	−2,229	0,0441 **
d_Airbnb_6	−8.62645	2,91483	−2,960	0,0111 **
d_Airbnb_7	0.575069	3,55692	0,1617	0,8740
d_Airbnb_8	−2.24370	3,66423	−0,6123	0,5509
d_Airbnb_9	0.0676194	2,13426	0,03168	0,9752
d_Airbnb_10	2.91573	1,95831	1,489	0,1604
d_Interest_rate_1	7384.99	2004,05	3,685	0,0027 ***
d_Interest_rate_2	2129.13	3055,69	0,6968	0,4982
d_Interest_rate_3	9538.74	2548,19	3,743	0,0025 ***
d_Interest_rate_4	6825.48	4021,66	1,697	0,1135
d_Interest_rate_5	6965.18	2752,38	2,531	0,0251 **
d_Interest_rate_6	6733.70	2993,78	2,249	0,0425 **
d_Interest_rate_7	5249.45	2720,03	1,930	0,0757 *
d_Interest_rate_8	3040.53	2408,97	1,262	0,2291
d_Interest_rate_9	5981.64	2053,86	2,912	0,0121 **
d_Interest_rate_10	2133.56	1884,42	1,132	0,2780
EC1	−1.57989	0,405906	−3,892	0,0019 ***
EC2	14.9468	3,85345	3,879	0,0019 ***

Table A.11 Regression results for perceived STR disadvantages in EU capital cities

	Increase in nuisance by tourists (e.g. noise, waste)			Pressure on public services (e.g. public transport)			Negative effect on housing (e.g. price, availability)		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)	B	Sig.	Exp(B)
STR user status (Yes)	-0.17	0.00	0.84	-0.35	0.00	0.70	-0.02	0.68	0.98
Gender (Female)	0.05	0.29	1.06	-0.03	0.61	0.97	-0.11	0.03	0.89
Age (scale)	-0.003	0.04	0.997	-0.002	0.19	0.998	-0.013	0.00	0.987
Occupation (Self-employed)		0.06			0.00			0.41	
Occupation (Employee)	0.16	0.04	1.17	0.16	0.08	1.17	0.10	0.19	1.11
Occupation (Manual worker)	0.13	0.34	1.14	0.36	0.03	1.43	0.00	1.00	1.00
Occupation (No activity)	0.23	0.01	1.26	0.36	0.00	1.44	0.02	0.86	1.02
Education (Up to 15 years)		0.14			0.97			0.00	
Education (16-19 years)	0.23	0.14	1.26	-0.04	0.81	0.96	0.09	0.56	1.10
Education (20 years and older)	0.28	0.06	1.33	-0.03	0.84	0.97	0.36	0.02	1.43
City (CZ – Prague)		0.00			0.00			0.00	
City (BE – Brussels)	-1.01	0.00	0.36	-0.20	0.47	0.82	-0.41	0.14	0.66
City (BG – Sofia)	-1.99	0.00	0.14	-1.84	0.00	0.16	-2.11	0.00	0.12
City (DK – Copenhagen)	-3.09	0.00	0.05	-2.40	0.00	0.09	-2.64	0.00	0.07
City (DE – Berlin)	-1.56	0.00	0.21	-0.99	0.01	0.37	-0.84	0.01	0.43
City (EE – Tallinn)	-2.01	0.00	0.13	-1.09	0.00	0.34	-1.80	0.00	0.16
City (IE – Dublin)	-1.56	0.00	0.21	-0.59	0.00	0.55	-0.10	0.60	0.90
City (EL – Athens)	-1.15	0.00	0.32	-0.56	0.00	0.57	0.01	0.96	1.01
City (ES – Madrid)	-1.06	0.00	0.35	-0.72	0.00	0.49	-1.02	0.00	0.36
City (FR – Paris)	-0.94	0.00	0.39	-0.53	0.01	0.59	-0.29	0.18	0.75
City (HR – Zagreb)	-1.86	0.00	0.16	-0.64	0.00	0.53	-1.13	0.00	0.32
City (IT – Rome)	-2.70	0.00	0.07	-1.26	0.00	0.28	-1.81	0.00	0.16
City (CY – Nicosia)	-2.04	0.00	0.13	-1.39	0.00	0.25	-1.45	0.00	0.23
City (LV – Riga)	-2.10	0.00	0.12	-1.52	0.00	0.22	-1.56	0.00	0.21
City (LT – Vilnius)	-1.85	0.00	0.16	-1.01	0.00	0.36	-1.88	0.00	0.15
City (LU – Luxembourg)	-1.35	0.00	0.26	-0.58	0.01	0.56	-0.77	0.00	0.46
City (HU – Budapest)	-1.13	0.00	0.32	-0.50	0.01	0.61	-0.66	0.00	0.52
City (MT – Valletta)	-1.37	0.00	0.26	-0.36	0.17	0.70	-1.28	0.00	0.28
City (NL – Amsterdam)	-1.38	0.00	0.25	-0.63	0.01	0.53	-0.33	0.16	0.72
City (AT – Vienna)	-2.01	0.00	0.13	-1.13	0.00	0.32	-0.54	0.01	0.58
City (PL – Warsaw)	-1.62	0.00	0.20	-1.19	0.00	0.30	-1.50	0.00	0.22
City (PT – Lisbon)	-2.21	0.00	0.11	-1.69	0.00	0.19	-1.30	0.00	0.27
City (RO – Bucharest)	-0.66	0.01	0.52	0.16	0.47	1.17	-0.73	0.00	0.48
City (SI – Ljubljana)	-1.78	0.00	0.17	-1.14	0.00	0.32	-1.06	0.00	0.35
City (SK – Bratislava)	-1.04	0.00	0.35	0.10	0.61	1.10	-0.74	0.00	0.48
City (FI – Helsinki)	-1.46	0.00	0.23	-1.47	0.00	0.23	-1.18	0.00	0.31
City (SE – Stockholm)	-1.68	0.00	0.19	-0.98	0.00	0.38	-1.04	0.00	0.35
Constant	1.24	0.00	3.47	-0.17	0.50	0.84	1.16	0.00	3.21

	Decrease in personal safety and security			Concentration of tourists in certain neighborhoods			Loss of amenities for residents due to tourist shops and facilities		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)	B	Sig.	Exp(B)
STR user status (Yes)	-0.44	0.00	0.64	-0.12	0.04	0.89	-0.05	0.43	0.95
Gender (Female)	0.16	0.00	1.17	0.01	0.87	1.01	0.14	0.02	1.15
Age (scale)	0.001	0.76	1.001	-0.002	0.27	0.998	-0.006	0.00	0.994
Occupation (Self-employed)		0.00			0.37			0.06	
Occupation (Employee)	0.31	0.00	1.36	0.09	0.26	1.09	0.16	0.07	1.17
Occupation (Manual worker)	0.30	0.05	1.35	0.24	0.12	1.27	0.30	0.07	1.35
Occupation (No activity)	0.41	0.00	1.50	0.12	0.18	1.13	0.25	0.01	1.29
Education (Up to 15 years)		0.89			0.16			0.01	
Education (16-19 years)	0.01	0.95	1.01	0.30	0.07	1.35	0.54	0.01	1.71
Education (20 years and older)	0.04	0.80	1.04	0.31	0.05	1.37	0.56	0.00	1.76
City (CZ – Prague)		0.00			0.00			0.00	
City (BE – Brussels)	-0.61	0.04	0.55	-0.43	0.11	0.65	-0.11	0.69	0.90
City (BG – Sofia)	-0.70	0.00	0.50	-2.26	0.00	0.10	-1.51	0.00	0.22
City (DK – Copenhagen)	-0.18	0.36	0.84	-2.70	0.00	0.07	-2.22	0.00	0.11
City (DE – Berlin)	-0.72	0.04	0.49	-1.04	0.00	0.35	0.01	0.97	1.01
City (EE – Tallinn)	-0.28	0.10	0.75	-2.04	0.00	0.13	-1.48	0.00	0.23
City (IE – Dublin)	-0.08	0.69	0.93	-0.88	0.00	0.42	-0.35	0.07	0.71
City (EL – Athens)	-0.08	0.63	0.92	-0.85	0.00	0.43	-0.13	0.47	0.88
City (ES – Madrid)	-0.48	0.03	0.62	-1.00	0.00	0.37	-0.80	0.00	0.45
City (FR – Paris)	-0.89	0.00	0.41	-0.57	0.01	0.57	-0.08	0.71	0.93
City (HR – Zagreb)	-0.95	0.00	0.39	-1.48	0.00	0.23	-0.86	0.00	0.42
City (IT – Rome)	-1.06	0.00	0.35	-2.29	0.00	0.10	-1.65	0.00	0.19
City (CY – Nicosia)	0.05	0.81	1.05	-1.77	0.00	0.17	-1.01	0.00	0.36
City (LV – Riga)	-0.46	0.02	0.63	-1.95	0.00	0.14	-1.67	0.00	0.19
City (LT – Vilnius)	-0.68	0.00	0.51	-1.44	0.00	0.24	-0.95	0.00	0.39
City (LU – Luxembourg)	-0.61	0.01	0.54	-0.47	0.03	0.62	-0.43	0.05	0.65
City (HU – Budapest)	-0.74	0.00	0.48	-1.14	0.00	0.32	-0.57	0.00	0.56
City (MT – Valletta)	-0.25	0.34	0.78	-0.86	0.00	0.42	-0.37	0.16	0.69
City (NL – Amsterdam)	-0.60	0.01	0.55	-0.96	0.00	0.38	-0.62	0.01	0.54
City (AT – Vienna)	-1.08	0.00	0.34	-1.44	0.00	0.24	-0.38	0.06	0.68
City (PL – Warsaw)	-1.02	0.00	0.36	-1.42	0.00	0.24	-1.49	0.00	0.23
City (PT – Lisbon)	-1.16	0.00	0.31	-1.77	0.00	0.17	-0.99	0.00	0.37
City (RO – Bucharest)	0.15	0.49	1.16	-0.81	0.00	0.44	0.02	0.94	1.02
City (SI – Ljubljana)	-1.11	0.00	0.33	-1.20	0.00	0.30	-0.69	0.00	0.50
City (SK – Bratislava)	-0.11	0.57	0.90	-0.59	0.00	0.55	-0.13	0.48	0.87
City (FI – Helsinki)	-0.74	0.00	0.48	-2.08	0.00	0.12	-1.26	0.00	0.28
City (SE – Stockholm)	-0.37	0.05	0.69	-1.95	0.00	0.14	-1.13	0.00	0.32
Constant	-0.60	0.02	0.55	0.37	0.13	1.45	-0.87	0.00	0.42

	Other			No disadvantages at all		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)
STR user status (Yes)	0.33	0.02	1.39	0.37	0.00	1.45
Gender (Female)	-0.05	0.69	0.95	-0.20	0.02	0.82
Age (scale)	0.000	0.96	1.000	0.012	0.00	1.012
Occupation (Self-employed)		0.30			0.33	
Occupation (Employee)	-0.23	0.20	0.80	-0.10	0.41	0.90
Occupation (Manual worker)	-0.62	0.12	0.54	0.00	1.00	1.00
Occupation (No professional activity)	-0.32	0.13	0.73	-0.25	0.08	0.78
Education (Up to 15 years)		0.29			0.24	
Education (16-19 years)	-0.51	0.14	0.60	-0.28	0.27	0.75
Education (20 years and older)	-0.51	0.12	0.60	-0.38	0.13	0.68
City (CZ – Prague)		0.00			0.00	
City (BE – Brussels)	1.30	0.16	3.66	0.75	0.14	2.12
City (BG – Sofia)	2.30	0.00	9.96	1.26	0.00	3.52
City (DK – Copenhagen)	3.26	0.00	26.12	1.07	0.01	2.93
City (DE – Berlin)	1.81	0.05	6.12	1.17	0.03	3.24
City (EE – Tallinn)	0.81	0.29	2.24	1.11	0.00	3.02
City (IE – Dublin)	1.12	0.15	3.07	-0.97	0.07	0.38
City (EL – Athens)	-0.34	0.70	0.72	-0.18	0.67	0.84
City (ES – Madrid)	-0.64	0.60	0.53	0.44	0.32	1.56
City (FR – Paris)	-0.13	0.90	0.88	-0.14	0.76	0.87
City (HR – Zagreb)	0.98	0.22	2.67	0.31	0.45	1.37
City (IT – Rome)	0.93	0.36	2.54	1.10	0.02	3.00
City (CY – Nicosia)	1.48	0.06	4.41	0.64	0.12	1.89
City (LV – Riga)	1.36	0.08	3.90	1.17	0.00	3.23
City (LT – Vilnius)	0.94	0.23	2.57	1.38	0.00	3.97
City (LU – Luxembourg)	0.82	0.35	2.26	0.19	0.69	1.21
City (HU – Budapest)	0.63	0.44	1.88	0.50	0.22	1.64
City (MT – Valletta)	1.04	0.26	2.83	-0.24	0.70	0.79
City (NL – Amsterdam)	2.09	0.01	8.08	0.42	0.37	1.52
City (AT – Vienna)	0.85	0.30	2.35	0.14	0.75	1.15
City (PL – Warsaw)	0.29	0.82	1.33	0.95	0.06	2.59
City (PT – Lisbon)	1.70	0.03	5.50	0.42	0.32	1.52
City (RO – Bucharest)	0.64	0.49	1.89	-0.36	0.52	0.69
City (SI – Ljubljana)	1.84	0.01	6.27	0.59	0.14	1.80
City (SK – Bratislava)	-0.48	0.63	0.62	0.38	0.36	1.46
City (FI – Helsinki)	1.17	0.13	3.23	1.09	0.00	2.97
City (SE – Stockholm)	1.13	0.15	3.10	1.41	0.00	4.11
Constant	-3.97	0.00	0.02	-3.17	0.00	0.04

Source: Own calculation based on Eurobarometer ZA7799

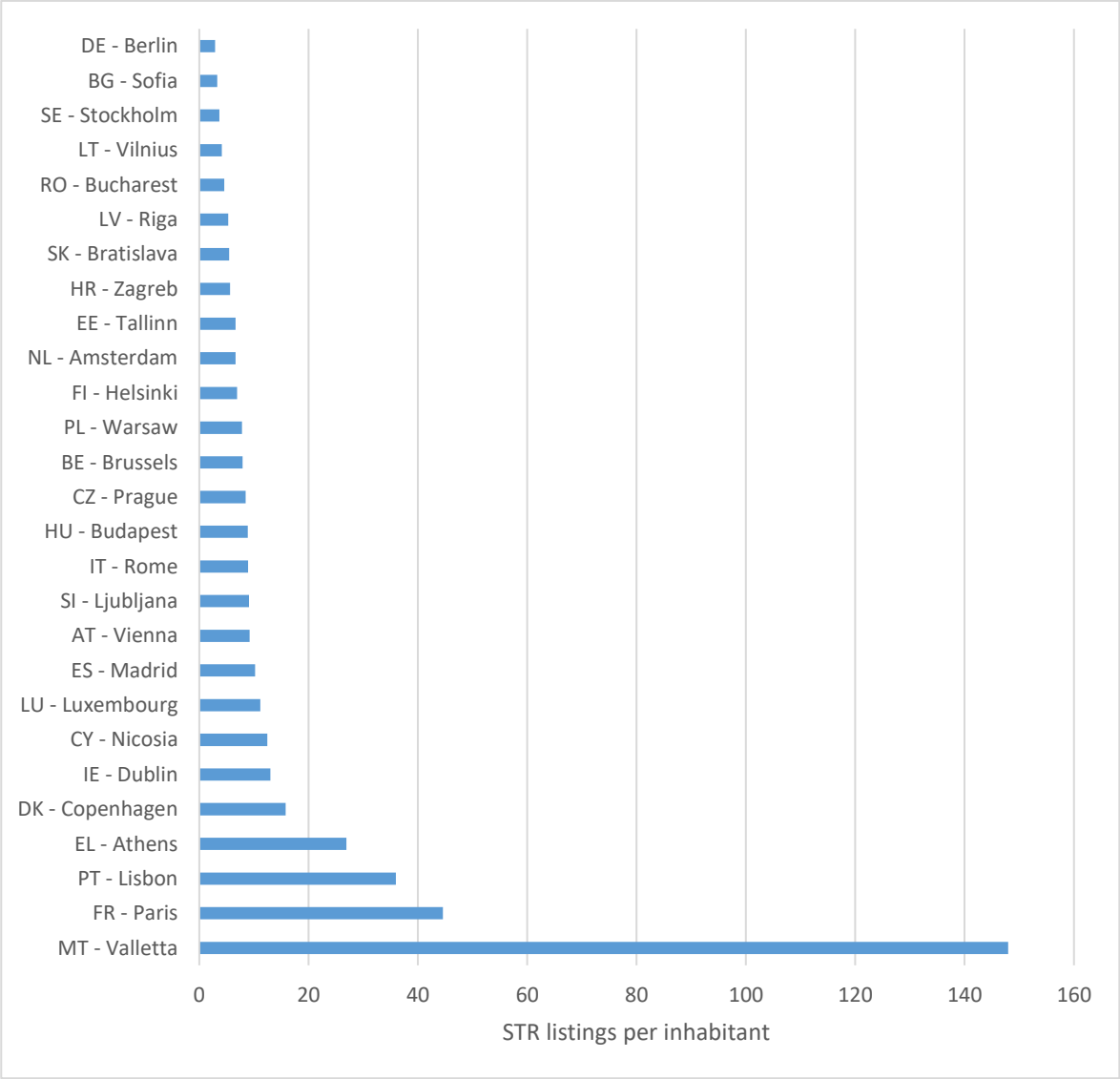

Figure A.15 Total STR listings per inhabitant across EU capital cities

Source: Own calculation based on AirDNA (2024)