

Relations between ground floor activity and the touristification of public spaces in historic port centres: three case studies of the Western Mediterranean Arc

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Abstract

The historic centres of Western Mediterranean port cities are experiencing significant urban transformations driven by touristification. Commercial gentrification and privatisation of public spaces are key processes reshaping urban areas, often displacing local residents and businesses. Existing research typically examines these variables in isolation while overlooking their interconnected and cumulative impacts. This study proposes a comprehensive methodology for identifying gentrified and touristified areas, focusing on ground floor activities in historic port centres. This research analyses ground floor typologies, franchising, and privatisation through a unified indicators system of public space. The methodology was tested in Genoa (Italy), Malaga (Spain), and Nice (France), cities with similar urban morphologies and historic port functions with different tourism pressures: emerging, saturated, and highly saturated. Extensive fieldwork collected data from over 50 public spaces in each city. Results reveal distinct patterns: Genoa has a commercially dominant fabric with signs of gentrification; Malaga features polarised commercial and catering activities, with extreme gentrification and privatisation; Nice is characterised by intense catering activity and high privatisation of public spaces. These patterns highlight how ground floor use has evolved under different tourism pressures, offering insights into urban dynamics. These findings can inform strategies to mitigate gentrification and touristification, promoting more sustainable urban development.

Keywords: touristification; gentrification; indicators; foodification; historic port city

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1. Introduction

The historic centres of the large port cities of the western Mediterranean arc are undergoing urban transformations due to the growth of mass tourism (Fernández Tabales & Santos Pavón, 2018). These cities form part of a profoundly touristic coastal context, where large transport infrastructures make them the main recipients of tourist arrivals. Moreover, urban regeneration projects carried out in historical areas, instead of improving their habitability, are developing processes of gentrification and touristification. Rehabilitation of historic buildings and pedestrianisation of public space, despite their initial objectives of transforming historic centres into tourist attractors for their economic developments (Salas Benítez & López López, 2019) promoting the use of public space and reducing the use of private vehicles (Gehl & Svarre, 2013), contribute exponentially to the loss of population and the touristification of housing, the development of the tourist and accommodation offer, commercial gentrification and the privatisation of public space (Sánchez-Montañés *et al.*, 2023).

Ground floor activity is a key factor in the elements involved in touristification, as it conditions the use of adjacent public spaces and determines visitors' interest in consuming those spaces. The scientific literature differentiates between two phenomena: (1) commercial gentrification and (2) privatisation of public space. Hernández (2016) defined commercial gentrification as the development of shops aimed at the middle and high income sector, which implies the displacement or replacement of the old local shops, a fact that is being consolidated in many tourist cities such as Palma de Mallorca and Seville (Barrero-Rescalvo *et al.*, 2023; Blázquez-Salom *et al.*, 2019). Commercial gentrification is touristic when the activities that occur are specifically touristic (Macías Rodríguez *et al.*, 2021; Santos-Izquierdo *et al.*, 2023). Privatisation of public space involves abusive occupation of public space and is linked to the specialisation of ground floor activity in catering establishments with the installation of terraces, table and bar areas (Ayuntamiento de Málaga; Observatorio de Medio Ambiente Urbano, 2015; Elorrieta Sanz *et al.*, 2021) with municipal permissiveness and the consequent problems of coexistence between residents and tourists (Chamizo-Nieto *et al.*, 2023; Plataforma ciudadana ¡Vivir la ciudad europea!, 2017).

These phenomena have been studied independently, especially from commercial gentrification (Hernández, 2016; Özdemir & Selçuk, 2017), using the neighbourhood, census tract and/or block as the unit of study (Chamizo-Nieto *et al.*, 2023; Marín Cots, 2017). However, there is a need for a holistic study that brings together these variables from the unit of public space and shows the relationship between commercial gentrification and the privatisation of public space in touristification. To this end, this research developed a system that identifies touristified areas according to their ground floor activity. This methodology is based on a set of indicators that analyse in an integrated and detailed way the type of ground floor activity, the number of franchises and the privatisation of public space. The methodology was applied to the historic centres of three historic port cities of the western Mediterranean arc: Genoa (Italian Riviera, Italy), Malaga (Sun Coast, Spain), and Nice (French Riviera, France). These three case studies share certain similarities, such as their location in tourist areas of the western Mediterranean arc, the historic centre-port connection and its urban morphology, the population density and size of the city, and its relevance as a local and territorial tourist destination (with an international airport and cruise port). However, they have different tourism pressures, and their comparison provides data on the different stages of touristification according to ground floor activity. The application has made it possible to identify and analyse a sample of more than 50 public spaces in each case study: 72 in Genoa, 64 in Malaga and 51 in Nice, determining the areas of the city with touristified public spaces according to the different indicators. The results show the existing urban relationships between the predominant type of activity, proliferation of franchises and terraces, distinguishing nodes, axes, and clusters. The detection of these areas and their comparison in the different cases are intended as a tool to facilitate the planning, regulation and management of activities and uses by local administrations, with the ultimate aim of reducing the effects of touristification in historic centres and, specifically, of commercial gentrification and the privatisation of public space.

2. State of the art

The contribution of ground floor activity to the touristification of public spaces is manifested through (1) commercial gentrification-touristification and (2) privatisation of public spaces, as public spaces are the unit where these elements converge (Jover & Barrero-Rescalvo, 2023). This problem of touristification has been widely studied from the perspective of Human Geography, which has tackled territorial studies using indicators in a large number of cities, extracting from its methodology the types of indicators and the units of study. This research approaches the problem from the perspective of urban planning and the specific study of public spaces. This research proposes an approach that uses a unified quantitative method based on existing indicators in the scientific literature.

2.1 Indicators of commercial gentrification

Recent literature has found that commercial gentrification manifests itself through the proliferation of franchises and specialisation in restaurant activities, one of the triggers being urban redevelopment projects such as pedestrianisation. Salas Benítez and López López (2019) indicated in their study of two areas in Mexico City (Mexico) that the proliferation of restaurants was a direct consequence of the pedestrianisation project. On the other hand, Zukin *et al.* (2009) showed the relationship between firms in two gentrified areas of New York (USA), highlighting an increase in franchises from 3% in 1995 to 16% in 2006. With a similar result, Özdemir (2017) provided evidence of the relationship between the proliferation of franchises and the implementation of pedestrianisation projects on 12 streets in Kadıköy (Istanbul), which also constitute areas of tourist attraction.

To quantify these processes, different authors developed indicators on retail typology, as shown in Table 1, with the aim of studying the influence of ground floor activity on the processes of gentrification and touristification. Among the most commonly used, No. of shops (Barrera-Fernández *et al.*, 2019; Salas Benítez & López López, 2019; Bertocchi & Visentin, 2019; Macías Rodríguez *et al.*, 2021; Del Romero Reanu & Lara Martín, 2015), % of No. of shops (Hernández, 2016; Özdemir & Selçuk, 2017; Zukin *et al.*, 2009), No. of shops/100,000 inhab. (Chamizo-Nieto *et al.*, 2022) and % of floor area (Barata-Salgueiro & Guimarães, 2020; Yoon & Park, 2018). In addition to typology, these indicators have been developed to include specific identification of gentrifying and franchised shops. Renau and Lara-Martín (2015) differentiate between gentrifying and traditional businesses in the Assaf neighbourhood of Valencia (Spain), including restaurants as mainly gentrifying premises. Blázquez-Salom *et al.* (2019) identified touristification as the main driver of the transformation of local commerce into franchises in Palma de Mallorca (Spain). Hernández (2016) differentiates between gentrifying businesses and those with a tourist, global-tourist connection in the city of Barcelona (Spain). Santos-Izquierdo *et al.* (2023) included food-related activity (take-away and gourmet) and restaurants as the main tourist businesses. Research findings demonstrate the need to study commercial typology and franchising in a unified way and to determine the maximum desired value to control these processes. In Seoul (South Korea), Yoon and Park (2018) revealed the existence of a relationship between fashion shops with 46.60% and the development of franchises with 72.82%. In Malaga (Spain), in terms of franchises but referring to a block unit, Marín Cots (2017) defined the maximum desirable area to preserve habitable conditions as 25% of the ground floor area.

Table 1. Indicators of commercial gentrification.

Indicator	Case study	Data
Equation	No. of Sample Unit of Sample	City (Country) Year of research Reference
No. of premises according to typology	6 District	Venice (Italy) 2019 (Bertocchi & Visentin, 2019)
	1 Neighbourhood	Valencia (Spain) 2014 (Del Romero Reanu & Lara Martín, 2015)
	2 Public space	Mexico City (Mexico) 2010 (Salas Benítez & López López, 2019)
No. of premises by type (difference franchises)	1 Area	Malaga (Spain) 2017 (Barrera-Fernández <i>et al.</i> , 2019)
	1 Area	Seville (Spain) 2020 (Macías Rodríguez <i>et al.</i> , 2021)
No. of premises / 100,000 inhab.	417 Neighbourhood	Malaga (Spain) 2019 (Chamizo-Nieto <i>et al.</i> , 2022)
	88 Neighbourhood	Valencia (Spain) 2019 (Chamizo-Nieto <i>et al.</i> , 2022)
% No. of premises by typology	12 Public space	Kadıköy (Istanbul) 2014 (Özdemir & Selçuk, 2017)
% No. of premises by typology (difference franchises)	2 Neighbourhood	New York (USA) 2006 (Zukin <i>et al.</i> , 2009)
	7 Public space	Barcelona (Spain) 2013 (Hernández, 2016)
% Area of premises by type (difference franchises)	2 Neighbourhood	Lisbon (Portugal) 2020 (Barata-Salgueiro & Guimarães, 2020)
	16 Public space	Seoul (South Korea) 2014 (Yoon & Park, 2018)

2.2 Indicators of privatisation of public space

The privatisation of public space is another characteristic of the touristification of public space and one of the main impacts of mass tourism (Fernández Tabales & Santos Pavón, 2018; Sánchez-Montañés *et al.*, 2023). Although directly linked to the type of ground floor activity, the relationship between the two has not been studied in a unified way. The specialisation of ground floor activity in catering premises and the pedestrianisation of the adjacent public space are the key elements for the development of the restaurant and bar terraces (Salas Benítez & López López, 2019; Comendador-Sánchez *et al.*, 2024; Jover & Barrero-Rescalvo, 2023). The installation of terraces requires a series of elements that colonise the public space with awnings, tables, chairs, etc., without there being any real control over how these elements colonise the space, despite the existence of regulatory ordinances (Nebot-Gómez de Salazar *et al.*, 2024). In recent years, there has been an increase not only in the number of terraces, but also in the number of establishments, which makes it difficult for different activities to coexist in public spaces (Comendador-Sánchez *et al.*, 2024). In addition, there is an increase in the number of terraces that is affecting many cities across the board; O'connell, Gomez-Escoda and Uceda (2022) have determined growth of 23% and 50% in the cases of Barcelona (Spain) and Milan (Italy), respectively, between 2020 and 2022. Note that during these years, many cities temporarily increased the area of public space occupation due to the incidence of the SARS-CoV-2 pandemic. However, in most cases, most cities returned to the usual regulation when the limitation on indoor capacity ceased at the end of 2021 and the beginning of 2022.

Different authors developed indicators on the privatisation of public spaces, as shown in Table 2. The most important are the occupancy rate (Elorrieta Sanz *et al.*, 2021; Praena Bohórquez & García Martín, 2018), occupancy surface (O'connell *et al.*, 2022), % occupancy surface (Ayuntamiento de Málaga;

Observatorio de Medio Ambiente Urbano, 2015; Huerga-Contreras & Martínez-Fernández, 2022), and No. of terraces/100,000 inhab. (Chamizo-Nieto *et al.*, 2023).

Elorrieta *et al.* (2021) set maximum values of 0.2 and 0.3 respectively for the cases of Seville and Barcelona (Spain). In Málaga (Spain), Marín Cots (2017) defined 25% as the maximum value to avoid tourist overload, compared to the existing values in the city, which are around 50% (Ayuntamiento de Málaga; Observatorio de Medio Ambiente Urbano, 2015).

Table 2. Indicators of privatisation of public space.

Indicator	Case study	Data
Equation	No. of Sample Unit of Sample	City (Country) Year of research Reference
Occupancy rate	6 Public space	Seville (Spain) 2018 (Elorrieta Sanz <i>et al.</i> , 2021)
	5 Public space	Barcelona (Spain) 2018 (Elorrieta Sanz <i>et al.</i> , 2021)
	6 Public space	Seville (Spain) 2017 (Praena Bohórquez & García Martín, 2018)
% Occupied area	4 Public space	Malaga (Spain) 2015 (Ayuntamiento de Málaga; Observatorio de Medio Ambiente Urbano, 2015)
	1 Public space	Valladolid (Spain) 2016 (Huerga-Contreras & Martínez-Fernández, 2022)
Terrace area	2 City	Barcelona (Spain) 2019-2022 (O'connell <i>et al.</i> , 2022)
	2 City	Milan (Italy) 2019-2022 (O'connell <i>et al.</i> , 2022)
No. of terraces / 100,000 inhab.	434 Census Section Level	Malaga (Spain) 2019-2020 (Chamizo-Nieto <i>et al.</i> , 2023)
	1068 Census Section Level	Barcelona (Spain) 2019-2020 (Chamizo-Nieto <i>et al.</i> , 2023)

3. Materials and methods

3.1 Objectives and methodology

The main aim of this methodology is to identify touristified public spaces based on ground floor activity in historic port centres and to compare these spaces with one another. This research is grounded in the hypothesis that the activities of adjacent buildings influence the use of public space and objectives the following objectives:

Identify the characteristics of ground floor activity in historic centres.

Account for the privatisation of public spaces as a result of ground floor activity.

Determine similar patterns to propose corrective and adaptation strategies to curb touristification.

Accordingly, this study introduces an analytical methodology for detecting touristified areas using the public space unit as the basis. The analysis encompasses the identification of the predominant type of ground floor use, the presence of franchises and the privatisation of public space through commercial displays and restaurant terraces. The quantitative analysis was complemented by a qualitative analysis derived from fieldwork, including direct observation and mapping of the various elements. To establish the relationship between ground floor activity and public space touristification, the following phased methodology was applied:

Phase 1. Determination of the study area. A sample of public spaces and their spheres of influence has been selected. The sample comprises pedestrian or pedestrian-dominated public spaces characterised by terrace/exhibitor occupation and a high level of ground floor commercial activity. The scope of influence includes all buildings adjacent to each public space.

Phase 2. Analysis of ground floor activity. The indicators of commercial gentrification and the privatisation of public space, along with their valuation system, have been established based on scientific literature. Moreover, these indicators were adapted to the unit of public space. To this end, extensive fieldwork has been conducted to map the typology of predominant activities, the surface area occupied by existing franchises and the presence of restaurant terraces and commercial displays. The fieldwork involved distinguishing between workdays and weekends in each public space. Moreover, they were conducted at two different times of day, during the morning (from 10:00 to 13:00), especially on workdays, and during the afternoon on weekends (from 17:00 to 20:00), as each type of premises had different opening characteristics. The fieldwork was carried out using previously prepared maps, in order to check in situ and verify the current premises and occupation of the terraces and commercial displays. The fieldwork, carried out over several days, makes it possible to identify the maximum occupation of public space because it is a volatile indicator because of its temporary nature.

Phase 3. Determination of touristified public spaces areas. Based on the evaluation of the indicators, the principal public spaces touristified by their ground floor activity have been identified. This identification aligns with the boundaries defined in the scientific literature, distinguishing between nodes, axes, and clusters.

Phase 4. Comparison of touristified areas across the case studies. The different phases of touristification were identified based on ground floor activity through the analysis of the touristified areas in each case. This approach allows a differentiated characterisation of public spaces.

3.2 Data analysis

Five main indicators of the touristification of public space according to ground floor activity were extracted from the scientific literature, as shown in Table 3. (A_{TYP} based on A_{COM} and A_{CAT} , A_{FRA} and S_{OCC}):

A_{TYP} | Type of ground floor activity. This indicator defines the predominance of the type of ground floor activity with respect to the total surface area of active premises, and its unit of measurement is the percentage of surface area. This indicator is taken from references in previous studies (Ayuntamiento de Málaga & Observatorio de Medio Ambiente Urbano, 2019; Barata-Salgueiro & Guimarães, 2020; Yoon & Park, 2018). This indicator is specifically limited to ground floor commercial offerings, excluding other public and private uses and services. Its function is to identify commercial and restaurant areas, as well as those where both activities coexist in a balanced way, so A_{TYP} distinguishes between three main types of activities: Commercial, Catering and Mixed, according to A_{COM} and A_{CAT} .

A_{COM} | Ground floor commercial activity. This indicator measures the percentage of commercial premises as a percentage of the total number of active ground floor premises. This category includes shops selling goods, services and offices.

A_{CAT} | Ground floor catering activity. This indicator measures the percentage of restaurant premises as a percentage of the total number of active ground floor premises. This category includes bars, restaurants, takeaways and nightlife premises.

AFRA | Franchises. Measures the percentage of ground floor franchises adjacent to public spaces. The indicator is taken from previous studies (Ayuntamiento de Málaga & Observatorio de Medio Ambiente Urbano, 2019; Marín Cots, 2017) and adapted to the projection of public space. The unit of measurement is the percentage of the surface area. The indicator considers franchises and chain stores (both local and international) because the research assumes the importance of local neighbourhood businesses in the city's livability compared to other types.

SOCC | Occupation of public space. Measures the percentage of public space occupied by restaurant terraces and commercial displays. This is taken from previous studies (Elorrieta Sanz *et al.*, 2021), although adding the areas of privatisation by commercial exhibitors as Huerga-Contreras and Martínez-Fernández (2022) did. The unit of measurement is the percentage of the area. The temporality of the occupation of public space is a factor that can limit the data for this indicator.

Table 3. Indicators system of ground floor activity.

Cod.	Name of indicator	Equation	Source
A _{TYP}	Type of ground floor activity	It is measured on the basis of A _{COM} and A _{RES}	
A _{COM}	Ground floor commercial activity	Area of commercial premises x 100 / Area of active premises	Fieldwork (Genoa: October 2023 Málaga: April 2022 Nice: July 2024)
A _{CAT}	Ground floor catering activity	Area of catering premises x 100 / Area of active premises	
A _{FRA}	Franchises	Franchise Area x 100 / Ground floor area	
S _{OCC}	Occupation of public space	Area of terraces and exhibitors x 100 / Area of the public space	

3.3 Case studies

The methodology was tested in the historic centres of Genoa (Italian Riviera, Italy), Málaga (Sun Coast, Spain), and Nice (French Riviera, France). These cases share common characteristics, including their location in tourist regions of the western Mediterranean arc, the historic centre-port connection, urban morphology, population density, city size, and significance as tourist destinations (featuring international airports and cruise ports), as illustrated in Figure 1 and Table 4.

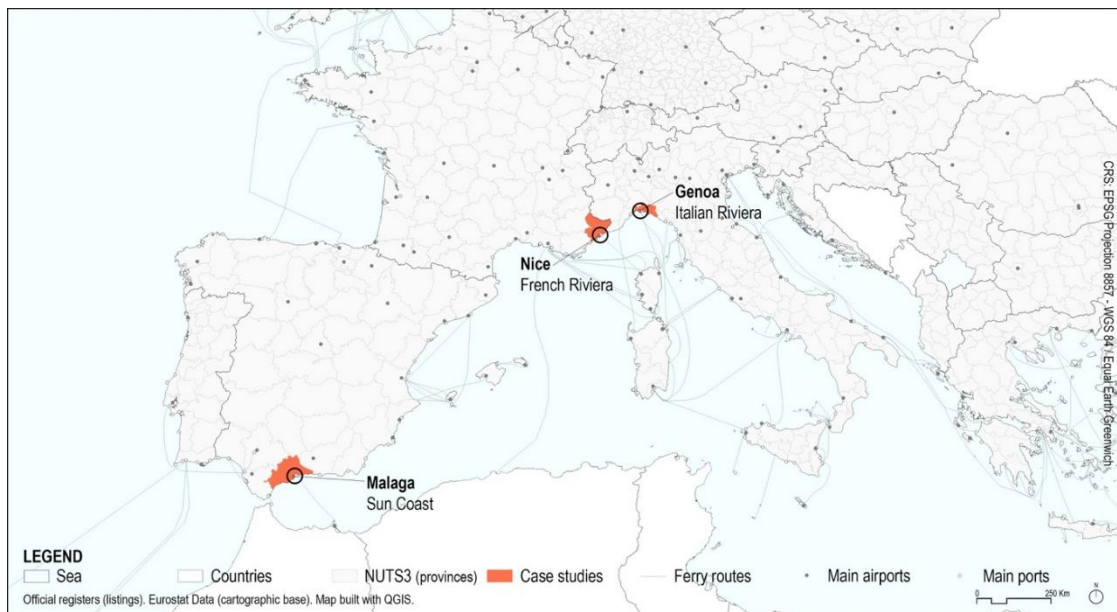


Figure 1. Localisation of case studies: Genoa, Malaga and Nice.

Table 4. Characterisation of case studies: Genoa, Malaga and Nice.

Characteristics	Case study	2006	2014	2020*	2022	Δ06-22
No. of inhab. historic centre	Genoa	23.334	22.826	22.631	22.383	-4,07%
	Malaga	5.456	4.862	4.344	4.625	-15,23%
	Nice	5.747	4.664	4.187	4.381	-23,77%
Airline visitors (No. in M.)	Genoa	1,07	1,26	0,39	1,22	+14,02%
	Malaga	13,08	13,75	5,16	18,46	+41,13%
	Nice	10,00	11,66	4,58	12,12	+21,20%
Cruise visitors (No. in M.)	Genoa	0,48	0,82	0,13	1,08	+125%
	Malaga	0,22	0,41	0,04	0,34	+54,54%
	Nice	0,47	0,34	0,06	0,25	-46,81%

*SARS-CoV-2 pandemic situation

Source: Own elaboration based on different databases: Population (Agence Nationale de la Cohésion des Territoires, 2006; Ayuntamiento de Málaga, 2013; Comune di Genova, 2011).

Furthermore, these cities experience varying levels of tourism pressure, making their comparison valuable for analysing the relationships between ground floor activity and phased tourism. Figure 2 illustrates differentiation by tourism pressure. On the one hand, it highlights the loss of population in central districts and its direct relationship with the concentration of accommodation supply: Genoa is subject to emerging tourism pressure, Málaga is experiencing saturation, particularly in the Historic Centre, while Nice faces a state of saturation that affects the city as a whole.

Genoa is the principal city in the Italian Riviera (Italy). This territory has had a strong tourist vocation since the late 19th century, influenced by its proximity to the French Riviera in France (Mangano, 2005). During the 20th century, the main tourist destinations were dispersed across the region, with the western coast characterised by wide, sandy beaches (facilitating prolonged stays under the so-called sun-and-beach tourism), and the eastern coast defined by steep, rugged cliffs and a tourist offer focused on natural, scenic and cultural interest (with shorter stays). This dynamic led to the transformation of small towns, including the remodelling of fishing ports into marinas (Brandolini *et al.*, 2017; Candia *et al.*, 2019). In this context, Genoa is situated between the two coasts, and its tourist offerings are aligned with the characteristics of the eastern coastline. The city is divided into nine municipal districts, among which the Centro Est and Centro Storico districts are located. This district includes a substantial portion of Genoa's intramural city, historically enclosed by the Barbarossa wall since the 11th century, significant remains of which persist today (Cagnana, 2005). Since the 1990s, Genoa has undergone a series of significant historical milestones that have influenced the prominence of its historical city and tourism, although this evolution has occurred much later than in its broader territorial context. The first milestone was the Esposizione Internazionale Specializzata Genova '92-Colombo in 1992, which spurred the renovation of the waterfront, integrating it into the city, along with the construction of museums and the rehabilitation of industrial buildings (Gastaldi & Camerin, 2017). Subsequent milestones included the G8 Summit in 2001 and the designation of Genoa as the European Capital of Culture in 2004 (Piatti, 2017). In 2006, the Strade Nuove and the Palazzi dei Rolli system within the historic centre were declared UNESCO World Heritage Sites (UNESCO, 2006). A significant proportion of visitors to Genoa are attributed to cruise tourism, making the city an emerging tourist destination

(Candia *et al.*, 2019). However, the consequences of this growth are becoming evident, particularly in terms of changes to land use and the development of new activities (Gastaldi & Camerin, 2015).

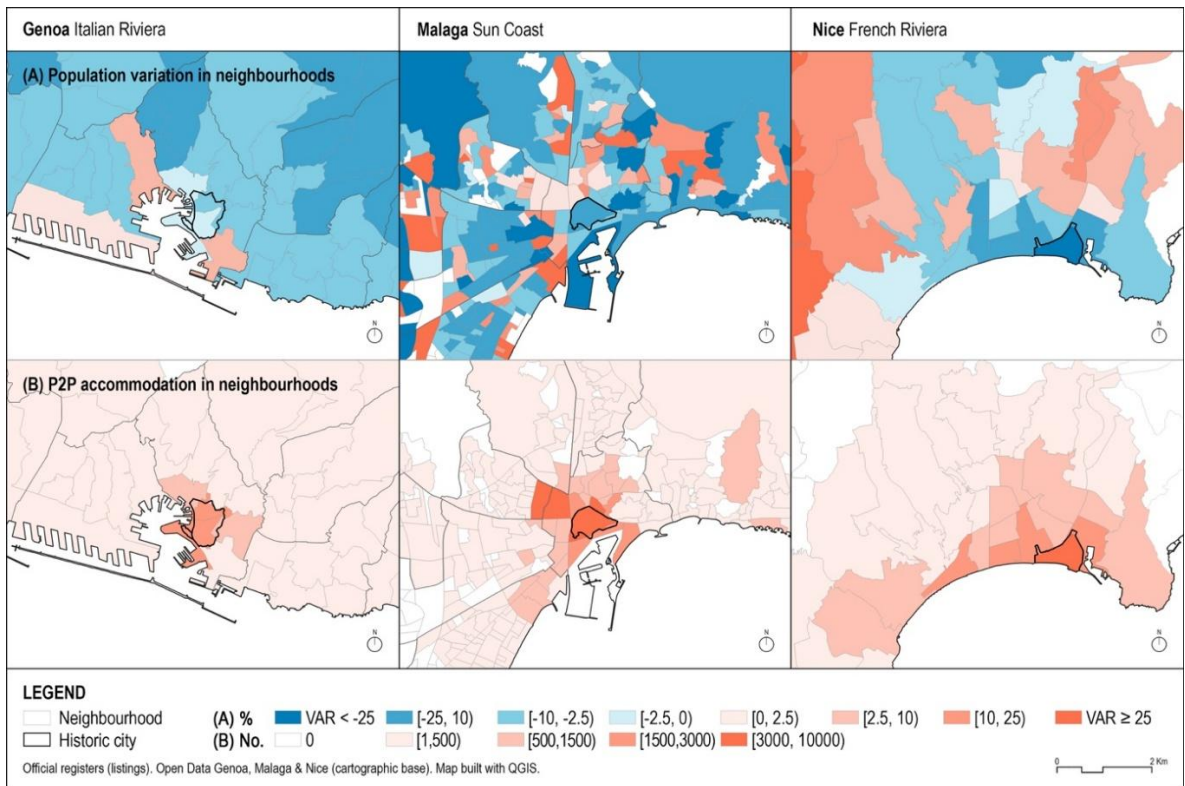


Figure 2. Comparison between the variation in population (2006 - 2020) and the number of P2P accommodation places in the neighbourhoods of the case studies: Genoa, Malaga and Nice.

Source: Own elaboration based on different databases: Population (Agence Nationale de la Cohésion des Territoires, 2006; Ayuntamiento de Málaga, 2013; Comune di Genova, 2011) and Tourism accommodation (AIRDNA & LLC, 2015; Comune di Genova, 2018; Junta de Andalucía, 2024).

Málaga is the principal city of the Sun Coast (Spain). However, its designation as a tourist city emerged much later than in its surrounding territorial context, as seen in the case of Genoa. The Costa del Sol developed into a tourist destination during the first half of the 20th century (Galacho Jiménez & Luque-Gil, 2000). Over the following decades, the tourism boom coincided with opportunities for real estate development on a formerly agrarian coastline and the growing influx of visitors attracted by the climate and the international airport (Pérez *et al.*, 2015). Tourist specialisation led to the transformation of the coastline, characterised by intense urbanisation processes (Pié I Ninot & Rosa Jiménez, 2014), construction of golf courses (Villar Lama, 2013) and marinas. By the late 20th century, the city of Málaga had begun its transformation with a focus on tourism. The city is divided into 11 municipal districts, with District 1, Centro, containing the Historic Centre's historic-artistic ensemble. Within this district, the Historic Centre encompasses the central area historically enclosed by the city walls, and significant remains of which, including the Islamic wall, are still preserved (Íñiguez Sánchez, 1995). From 1990 to the present, the city has undergone various urban transformation processes, culminating in the complete pedestrianisation of the Historic Centre. This initiative aimed to revitalise public spaces, restore historic buildings, and recover the residents' population (Asenjo Díaz & Sánchez, 2010). However, these projects have triggered diverse socio-urban challenges that diverge from their original

objectives. These include a dense proliferation of accommodation, residential decline, and the development of a cultural offering, mainly museum-oriented, designed to attract foreign visitors. This has led to significant gentrification and touristification of central neighbourhoods (Rosa-Jiménez & España, 2022). In 2011, the situation was further exacerbated by the Muelle Uno project, which integrated the port with the city centre (Andrade *et al.*, 2021; Barrera-Fernández *et al.*, 2020). This added cruise tourism to the ongoing processes, further intensifying their impact.

Nice is the most influential town in the French Riviera. Since the late 18th century, the entire coastline has been shaped, like many other areas of the Mediterranean basin, by the development of sun-and-beach tourism (Christoffe & Héliot, 2018). Unlike previous case studies, the tourist development of Nice and the French Riviera occurred simultaneously. This has led to territorial challenges that directly affect the habitability of municipalities, including a high proportion of second homes within the housing stock (Gripsiou, 2024). Additionally, at the socioeconomic level, this territory has been characterised by low-skilled or seasonal employment, alongside significant percentages of social housing and immigrant populations (Dumont & Chalard, 2010). By the late 20th century, delays in the development of motorways contributed to the success of the Nice Côte d'Azur Airport and the consolidation of its ports as tourist attractions. These ports were expanded and modernised to accommodate the boom in cruise tourism along the French Riviera. In this context, the city of Nice is divided into six territories, one of which, Niche Historique, contains the Vieux-Nice district, where the Historic City is located. Between the 16th and 18th centuries, the city walls were demolished, enabling the city centre to expand southwards. Various urban projects have since been developed as tourist-consumer products, promoting a landscape shaped by speculative urbanism. At the beginning of the 19th century, the Promenade des Anglais was created (Debie, 1993), transforming the city's waterfront into a major infrastructure that connected various buildings designated for hotel and recreational use. By the mid-19th century, Place Masséna and Avenue Jean Médecin had been designed as a central square and a key artery connecting the northern districts with the city centre. These two spaces were rehabilitated between 2000 and 2007 to provide an accessible, pedestrian-prioritised environment, facilitated by the development of a tramway system. However, this rehabilitation also triggered a process of gentrification, which impacted both the resident population and the local commercial fabric through the arrival of international retail brands. In 2013, the Coulée Verte linear park was inaugurated over the Paillon River deck (Perini & Sabbion, 2016; Sabbion, 2017), creating a large green space that significantly increased the real estate value of the surrounding areas.

4. Results

4.1 Indicators for each case study

The first phase of the methodology enabled the identification of public spaces prone to touristification in each case study, as illustrated in Figure 3. The sample comprises more than 50 spaces in each city: 72 in Genoa, 64 in Malaga, and 51 in Nice. Subsequently, the set of buildings adjacent to each space was delineated as the study area.

For the analysis conducted in the second phase, the system of indicators for commercial gentrification and the privatisation of public space was applied and quantitatively assessed in the sample from the three case studies, based on the ranges observed in the scientific literature. Extensive fieldwork was carried out to collect data and map ground floor activity over a three-year period (2022–2024), as illustrated in Figure 3. The results characterise ground floor activity in a historic city for each case study. For the indicator regarding the typology of premises (A_{TYP}), the values of A_{COM} and A_{CAT} were considered within a range of 0% to 60%, with any value exceeding this percentage identified as a specificity of the activity. For the franchising indicator (A_{FRA}), a threshold value of 20% was established based on the findings of Marín Cots (2017). Regarding the occupation of public space, the limit value has also been set at 20%, in line with the approximations of Elorrieta Sanz *et al.* (2021) and Marín Cots (2017).



Figure 3. Analysed sample and scope for the case studies: Genoa, Malaga and Nice.

Table 5. Regulation of public space occupation in the study cities: Genoa, Malaga and Nice.

Case study	Ordinance (Year)	Maximum occupancy value
Genoa	Linee di indirizzo alla progettazione dei dehors nel Comune di Genova (2025 - in progress)	100% of the premises surface
Malaga	Ordenanza reguladora de la ocupación de la vía pública (2018)	75% of the premises surface 50% of the pavement
Nice	Portant reglement d'occupation du domaine public de la Ville de Nice (2022)	Variable depending on the passage of security, fire, and rescue service flows

The maximum value considered in the research contrasts with those found in the ordinances of the case studies, as seen in Table 5, where only the Málaga ordinance sets the maximum value with respect to public space (50% of the sidewalk). However, this value is extremely high in pedestrianised spaces. This situation, particularly in historic centres, requires a detailed review that addresses more exhaustive controls such as special zoning, which is being implemented in the Genoa and Nice cases, although actual surface area control does not exist on a day-to-day basis.

As illustrated in Figure 4, the A_{TYP} indicator (type of activity on the ground floor) provides an overview of the ground floor fabric across the three case studies. In terms of commercial fabric, Genoa accounted for 57% of the public spaces in the sample, compared to 27% in Malaga and 16% in Nice. Conversely, for catering fabric, the results are reversed: Genoa comprises 26%, Malaga 50%, and Nice 55%. At an intermediate level, featuring activities of both typologies, Genoa records 12%, while Malaga and Nice each account for 15%. These data reveal that ground floor activity exhibits a pattern of specialisation corresponding to the tourist intensity of each city. In Genoa, where tourism has remained in its early stages, commercial activity predominates within the sample, in contrast to the comparatively low

proportion of spaces dedicated exclusively to restaurants. This progression is evident across the case studies. In Malaga, the commercial fabric is smaller, but catering activities exert a greater influence. Malaga represents a city approaching saturation at the boundaries of its historic centre. In contrast, Nice, a city experiencing tourist saturation in both its centre and along its coastline, exhibits a predominance of catering activities in its historic core, with only a minor presence of commercial offerings. This trend is further reflected in the *A_{FRA}* indicator (franchises), which identifies public spaces with the highest concentration of franchises. The results demonstrate a clear correlation with the specific commercial typology, as Yoon and Park (2018) highlighted. Genoa emerges as the case with the greatest number of high *A_{FRA}* values, followed by Malaga and, finally, Nice. Conversely, the *S_{occ}* indicator (occupation of public space) reveals elevated values in many streets dominated by catering activities. The presence of such activities in historic centres follows an inverse pattern to the *A_{FRA}* indicator: Nice exhibits the highest levels of public space occupation, followed by Malaga and, finally, Genoa.

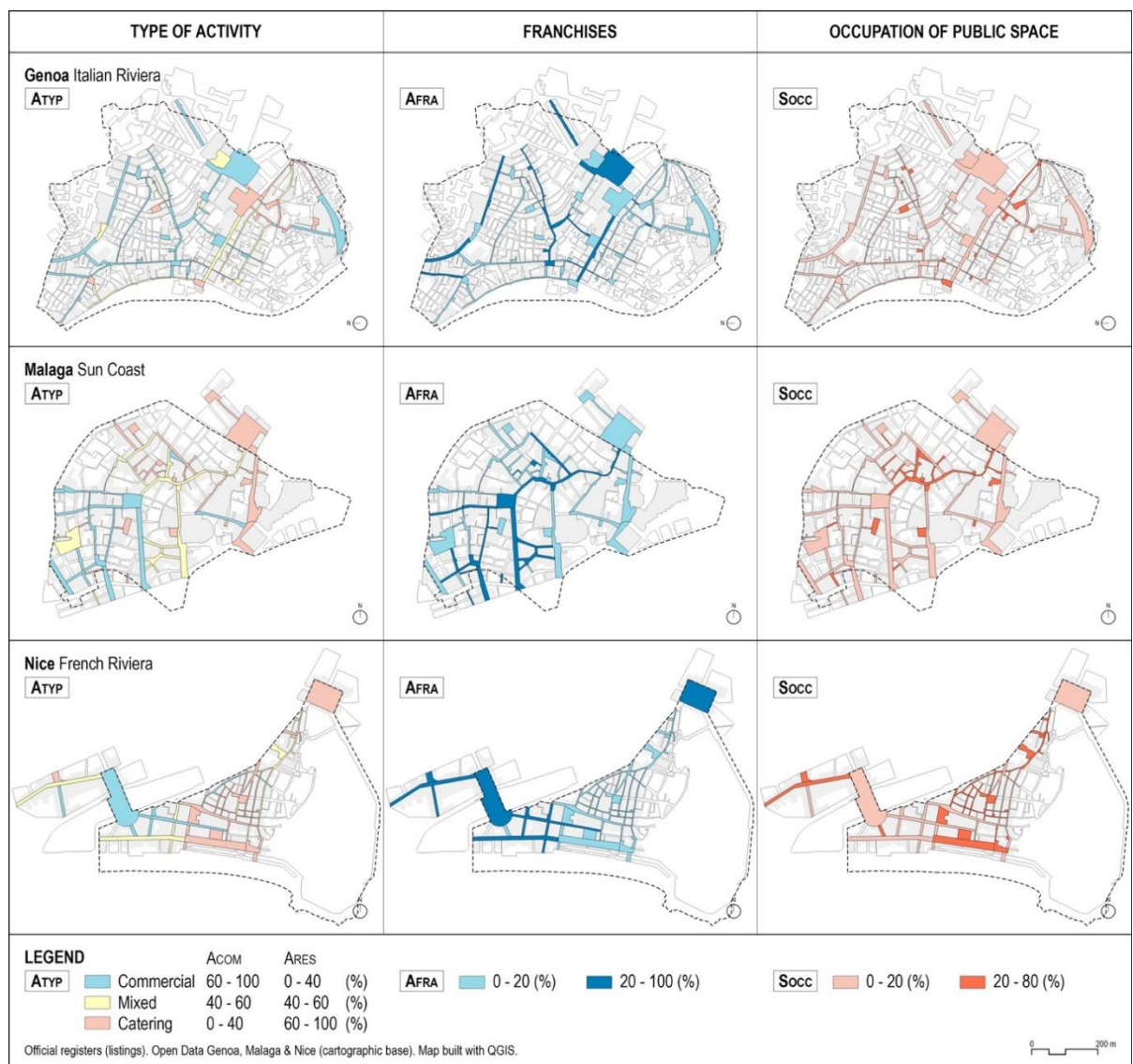


Figure 4. Indicators system and evaluation in the case studies: Genoa, Malaga, and Nice.

4.2 Touristified Areas in historic port cities

The results of the indicators and their superimposition make it possible to detect the areas that are specifically touristified by ground floor activity in the sample analysed. This makes it possible to distinguish the characteristics of each public space and categorise them according to their activity, as shown in figures 5, 6, and 7. These areas have been identified according to their extension and connection with other public spaces, distinguishing, in addition to the type of activity, three different forms: node (the area is focused on a specific space without expanding to other streets or squares), axis (the area connects with other public spaces in a linear fashion) and cluster (the area constitutes a network of public spaces connected in the form of a grid). The detection of these three types of areas offers a more precise localisation that allows to complement the studies with other geographical units such as the grid (Santos-Izquierdo *et al.*, 2023) or the district (Bertocchi & Visentin, 2019). Moreover, this can be a tool to study the repercussions of urban development projects as gentrification/touristification focal points (Frago & Graziano, 2021).

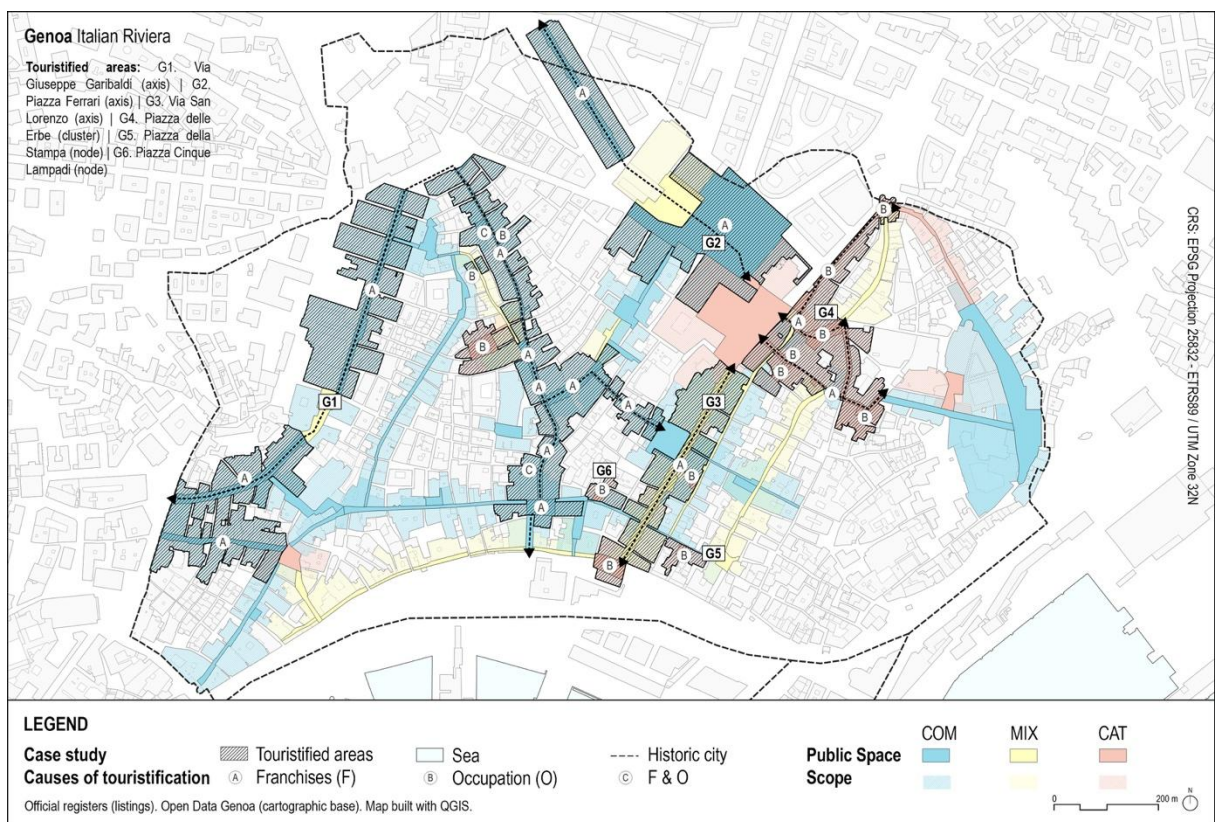


Figure 5. Categorisation of touristified areas in the Historic Centre of Genoa by ground floor activity.

The centre of Genoa (G) is composed of different touristic areas according to ground floor activity, as shown in Figure 5, 2 commercial axes, 1 mixed, 1 cluster and several catering nodes can be distinguished:

- **Commercial:** The G1 axis extends from Piazza Banchi to Via Giuseppe Garibaldi. Conversely, the G2 axis stretches from Piazza Ferrari to Galleria Giuseppe Mazzini. Both areas exhibit high franchise values.
- **Mixed:** The G3 axis corresponds to Via San Lorenzo, forming the connection between commercial and gastronomic districts. It is characterised by high franchise value.

- **Catering:** Cluster G4 includes Piazza Sant'Andrea, Via Pollaiuoli, and Piazza delle Erbe, among others. Additionally, several isolated nodes, such as G5 and G6, correspond to the Piazza della Stampa and Piazza Cinque Lampadi, respectively. These areas are marked by significant public space occupation.

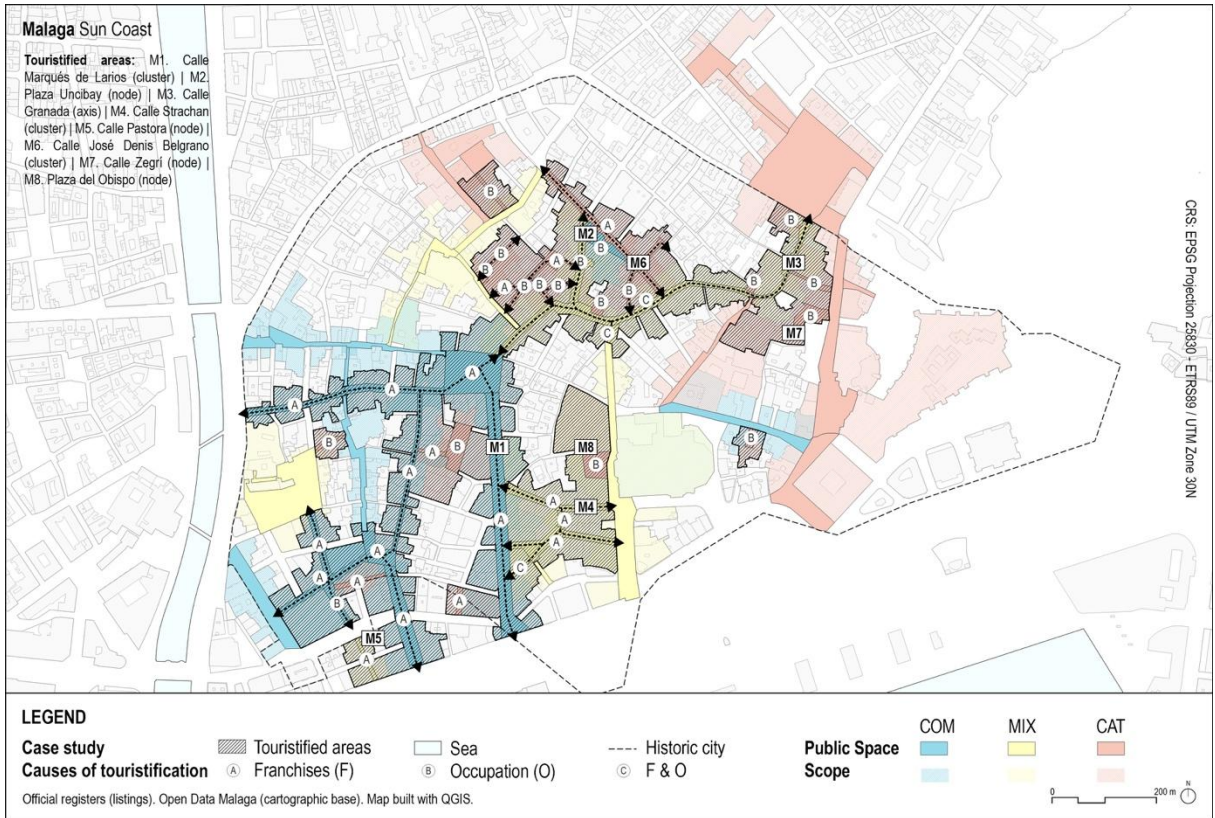


Figure 6. Categorisation of touristified areas in the Historic Centre of Malaga by ground floor activity.

The case of Malaga (M) is shown in Figure 6, illustrating the following distribution of tourist areas: one cluster and one commercial node, one cluster, axis, and mixed node, and one cluster with several catering nodes.

- **Commercial:** Cluster M1 is formed by Plaza de la Constitución and its extension to Marqués de Larios, Guillén de Castro, Puerta del Mar, and Martínez streets. This area is characterised by high franchise values. Node M2 represents a public space influenced by the surrounding commercial buildings but characterised by a high level of public space occupation.
- **Mixed:** The M3 axis corresponds to Calle Granada, characterised by high franchise values and significant public space occupation. Conversely, the M4 cluster is formed by the intersection of Calle Strachan and Bolsa, and the M5 node corresponds to Calle Pastora. Both M4 and M5 are characterised by high franchise values.
- **Catering:** Cluster M6 includes Calle Méndez Núñez, Calle Ángel, Calle Luís de Velázquez, and Calle Azucena. Additionally, several isolated nodes were scattered throughout the sample area, such as M6 and M7, corresponding to Calle Zegrí and Plaza Obispo, respectively. In this section, all areas are marked by significant public space occupation.

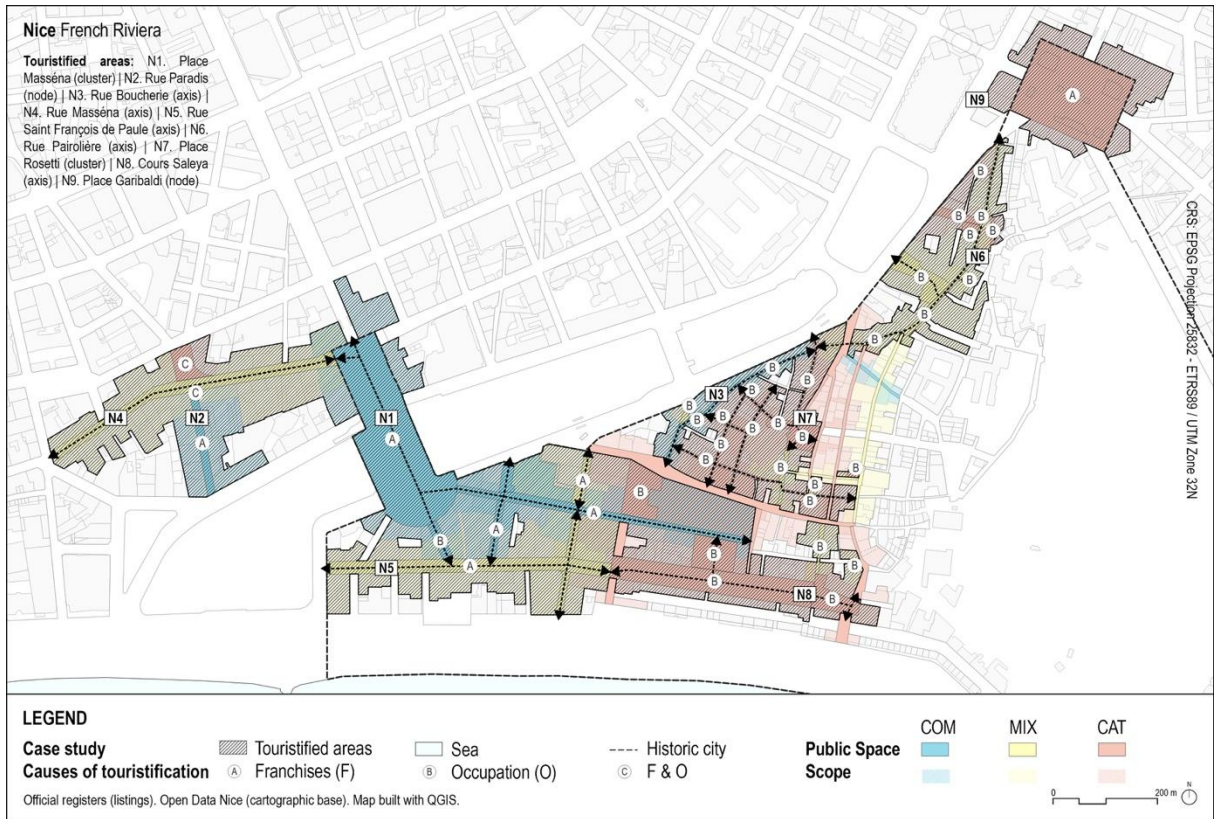


Figure 7. Categorisation of touristified areas in the Historic Centre of Nice by ground floor activity.

Finally, the case of Nice (N) is shown in Figure 7, where the following areas have been distinguished: two axes and a commercial node, three mixed axes, one cluster, one axis, and several catering nodes.

- **Commercial:** Cluster N1 includes Place Masséna and Rue Alexandro Mari. The node N2 corresponds to Rue Paradis. In both cases, these areas are characterised by high franchise values. The N3 axis consists of Rue Boucherie and Rue Marche and is marked by significant public space occupation.
- **Mixed:** The N4 axis corresponds to Rue Masséna and is characterised by high franchise values and significant public space occupation. The N5 axis corresponds to Rue Saint François de Paule and Rue Raul Bosio and exhibits high franchise values. Finally, the N6 axis extends from Rue Collet to Rue Pairolière, with a high level of public space occupation.
- **Catering:** Cluster N7, located around Place Rosetti, includes the entire adjoining street network. The N8 axis is formed by Cours Saleya and Place Pierre Gautier. Node N9 is located in Place Garibaldi. While both N7 and N8 exhibit significant public space occupation, N5 is characterised by high franchise values.

5. Discussion

The case studies of Genoa (G), Malaga (M), and Nice (N) reveal distinct patterns of public spaces touristified by ground floor activity. This is directly linked to the level of tourist saturation in each case study, as shown in Figure 8 and Table 6: nearly 80% is touristified in Nice (specifically 14% commercial, 24% mixed and 41% catering), over 60% in Malaga (specifically 18% commercial, 12% mixed and 34% catering), and less than 40% in Genoa (specifically 22% commercial, 1% mixed and 17% catering). It is therefore evident that the degree of tourist saturation in each city (incipient, saturated, and highly

saturated) influences the development of the touristification process experienced by the historic city. The results highlight the existence of three distinct stages in the touristification process driven by ground floor activity. In addition, the detection of areas as the sum of public spaces requires the localisation and articulation of touristification in historic centres. This can complement the geographical approximations made from other units, such as the census section such as the research of Castro Noblejas *et al.* (2023).

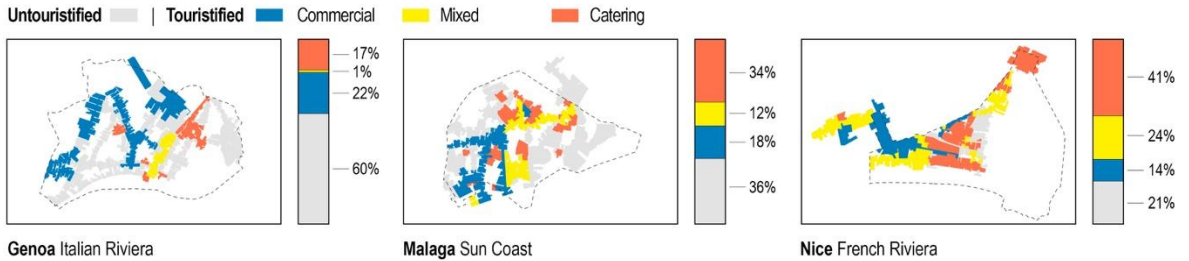


Figure 8. Touristified areas by the ground floor activity in the case studies: Genoa, Malaga and Nice.

Table 6. Categorisation of the sample by type of public space and ground floor activity: Genoa, Malaga and Nice. Source: Authors (2025).

Case study (Sample)	Type	Untouristified No. (%)			Touristified No. (%)		
		Commercial	Mixed	Catering	Commercial	Mixed	Catering
Genoa (72)	Street (St.)	16 (22%)	7 (10%)	3 (4%)	8 (11%)	1 (1%)	4 (6%)
	Square (Sq.)	10 (14%)	3 (4%)	4 (6%)	8 (11%)	0 (0%)	8 (11%)
	Total St. + Sq.	26 (36%)	10 (24%)	7 (10%)	16 (22%)	1 (1%)	12 (17%)
Malaga (64)	Street (St.)	6 (9%)	5 (8%)	5 (8%)	8 (13%)	7 (11%)	15 (23%)
	Square (Sq.)	0 (0%)	2 (3%)	5 (8%)	3 (5%)	1 (1%)	7 (11%)
	Total St. + Sq.	6 (9%)	7 (11%)	10 (16%)	11 (18%)	8 (12%)	22 (34%)
Nice (51)	Street (St.)	1 (2%)	2 (4%)	8 (15%)	6 (12%)	10 (20%)	10 (20%)
	Square (Sq.)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	2 (4%)	11 (21%)
	Total St. + Sq.	1 (2%)	2 (4%)	8 (15%)	7 (14%)	12 (24%)	21 (41%)

In relation to the urban configuration of the identified patterns, the case studies of Genoa, Malaga, and Nice exhibit several general similarities in the identified areas: (1) All commercial areas share high franchise values as the primary driver of touristification, as several studies have shown (Blázquez-Salom *et al.*, 2019; Hernández, 2016; Özdemir & Selçuk, 2017), with the exception of M2 and N2. (2) All catering areas share public space occupation as a primary consequence of touristification, a fact that is part of the growing foodification of historic cities (Comendador-Sánchez *et al.*, 2024), with the exception of N9. This is also observed in the mixed areas of M4, N4, and N6. (3) At the spatial level, all three case studies present a common pattern of two main activities, commercial and catering, of varying sizes depending on the case, interconnected through mixed public spaces. Figures 9, 10, and 11 provide a detailed view of the different public spaces within the tourist areas in the three case studies.

As shown in Figure 9, the public spaces with a commercial predominance, G1, G2, M1, N1, and N2, are representative of the city, as conceived by Cueva Ortiz (2010). These spaces are characterised by their large surface area and cross-section, featuring monumental elements such as sculptures, fountains, and other architectural features, which facilitate pedestrian movement to the establishments, typically located in rehabilitated historic buildings. Although other studies have made a detailed analysis of specific typologies of shops such as Özdemir and Selçuk, (2017), identifying fashion premises, bookshops, and antique shops, or the research of Ruiz Romera *et al.*, (2023) following the Spanish

National Classification of Economic Activities, the analysis by groups allows for the analysis of the commercial trends of entire public spaces. There is a distinction in terms of the type of area, as Genoa has two main axes that span the sample area, Malaga has a compact cluster, and Nice has two axes in the peripheral zone of the city centre. N3, on the other hand, represents a different case, where public spaces are smaller in section and commercial activity is predominantly tourist-oriented. This is evident in the extensive occupation of public spaces by souvenir displays and other items, such as awnings, which impede pedestrian flow.



Figure 9. Commercial touristified areas in the case studies: Genoa, Malaga, and Nice.

With regard to mixed activity, there are three main groups according to the cause of touristification, as shown in Figure 10: G3, M4, M5, and N5 constitute public spaces with a proliferation of franchises. All of these share the characteristics of being rehabilitated spaces, spacious and connected to the representative areas of the city: G3 with Piazza Raffaele de Ferrari, M4 and M5 with Plaza de la Constitución and Calle Marqués de Larios, and N5 with Place Masséna. Based on their characteristics, M3 and N4 are public spaces that share high values of public space occupation and franchises. In both cases, the axes connect large squares, characterised by large surface areas and sections. On the other hand, N6 is marked by high values only in public space occupation, as it is a narrow axis that impedes pedestrian flow. Mixed areas are areas that, in many cases, are in transition to specialising in catering, which follows the logic of previous studies such as Salas Benítez and López López (2019).



Figure 10. Mixed touristified areas in the case studies: Genoa, Malaga, and Nice.

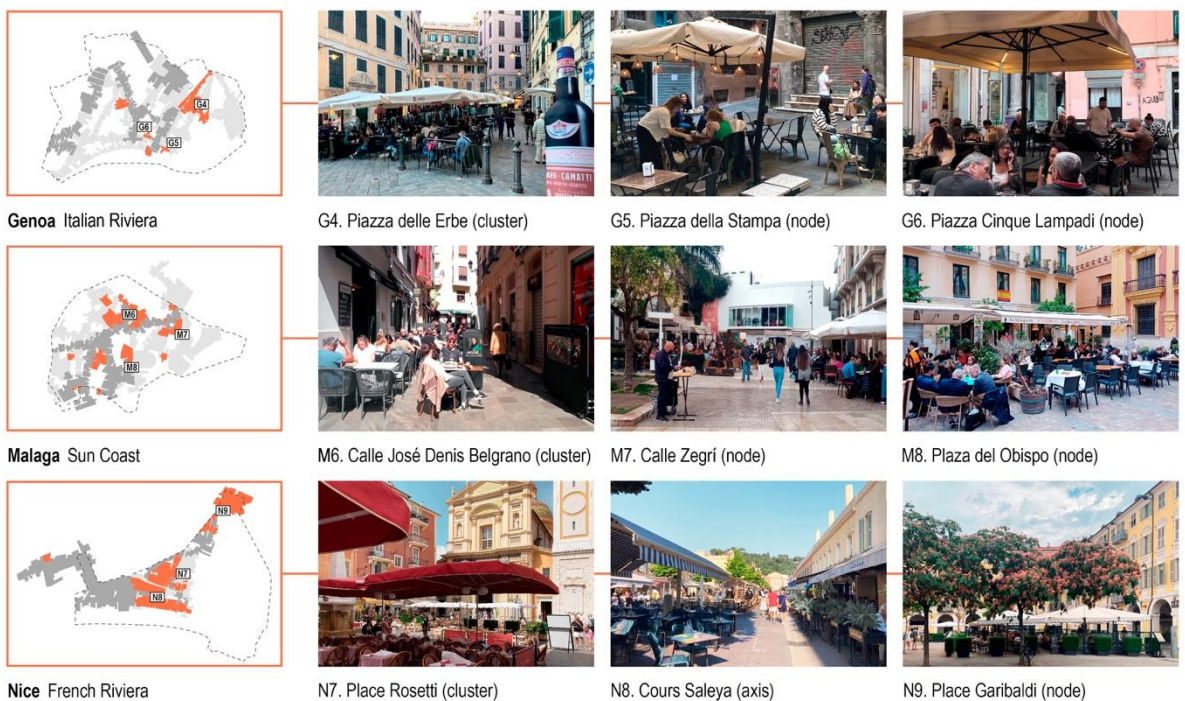


Figure 11. Catering touristified areas in the case studies: Genoa, Malaga, and Nice.

Figure 11 illustrates the areas identified with a predominance of catering activity, where all share the characteristic of high public space occupation, except for N9. In most cases, these are small public spaces; however, there is always a larger core around which the rest is centred, such as Piazza Erbe in Genoa (G4), Plaza Marqués Vado del Maestre in Malaga (G6) and Place Rosetti in Nice (N7). Another notable characteristic in the comparison of the three cases is the dispersion: isolated cases in Genoa, larger but unconnected areas in Malaga, and large contiguous areas in Nice, occupying almost the entire historic city. The relationship between the catering offerings and the terraces allowed us to detect these areas in the three cases compared to previous studies that specifically developed each typology, on the one hand the terraces (Ayuntamiento de Málaga & Observatorio de Medio Ambiente Urbano, 2015; Elorrieta Sanz *et al.*, 2021), and on the other hand the type of businesses (Barrera-Fernández *et al.*, 2019; Macías Rodríguez *et al.*, 2021)

Significant differences between patterns can help clarify how the touristification process of historic centres is driven by ground floor activity. The analysis of areas by activity type and the number of touristified public spaces can serve as diagnostic tools to detect the general phase in which a city is situated. The ground floor activity in each case study reflects the level of tourist saturation in the city, ranging from the displacement or expulsion of commercial activity in favour of leisure and catering establishments, as observed in other studies (Salas Benítez & López López, 2019; Del Romero Reanu & Lara Martín, 2015; Santos-Izquierdo *et al.*, 2023). The three case studies enable a comparative understanding of the impact of the tourism process in different phases, with Genoa representing an initial state, Malaga a saturated state, and Nice a supersaturated state. The relationship between the case studies can contribute to predicting or thinking about future scenarios in each city. Although the corrective measures may be similar in all of them, the proportion of streets affected may be different, thus opening up the need to think about flexible urban policies that can be modified according to the public spaces affected by real time touristification.

6. Conclusions

This research presents a methodology for identifying tourist-oriented public spaces in historic centres based on ground floor activity. It allows the identification and characterisation of areas of interest where franchises are located and where there is high occupancy of public spaces. These areas serve as focal points for local authorities to implement specific policies and regulations regarding the type of ground floor activity and restrictions on public space occupation. Furthermore, a comparison of the case studies shows how the activity and number of touristified spaces differ according to the level of tourist saturation of the city. This differentiation can help identify future scenarios and anticipate such processes. For this reason, this research may have different implications for urban policies. On the one hand, it can complement existing ones, as the regulation of activities should be carried out on a census tract or neighbourhood scale, but also from a public perspective, as the location, distribution, and density of activities within this unit are characteristics that must be taken into account. The identification of such areas is intended to serve as a tool for improving measures for the regulation and management of activities and land uses by local administrations, by limiting the privatisation of public space and ensuring its compliance. This includes, among other measures, limiting franchise areas and promoting local businesses. Additionally, it aims to inform decision-making in the design and implementation of urban policies and measures, such as future pedestrianisation projects in historic centres. On the other hand, untouristified areas have the same sample characteristics as the rest of the areas, so attention and control must be paid to changes in ground floor activity in order to avoid an increase in nodes, axes, and clusters.

The research has several limitations that have been identified during its course and could be addressed in future studies: (1) Data on terraces and commercial display areas obtained through fieldwork (Socc) may vary depending on the day and time of data collection. In this case, data corresponding to the

periods of highest occupancy within the weekly frequency were considered. However, it is a highly volatile indicator due to its temporary nature. Additionally, the occurrence of events (ranging from weekly markets to occasional demonstrations) in public spaces should be considered in future developments, as they have a direct impact on the occupancy of spaces, both physically and in terms of crowding capacity. (2) The identification of tourist areas can serve as a tool for predicting their future expansion into new public spaces with pedestrian zones or those planned for pedestrianisation. Therefore, a larger sample of public spaces susceptible to transformation would be necessary. (3) The sample was selected according to the criteria described in the methodology, taking into account the delimitation of the historic city, as these areas concentrate most of the tourist offer. However, in the cases of Genoa and Nice, the areas connecting the historic city with the central railway stations are of interest, as they share characteristics similar to those in the sample. These areas should be included in future studies.

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