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Broadening the Perspective of Urban Cultural Policy: Mapping the Agglomeration of Creative Industries in Istanbul

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Abstract
The creative industry in Istanbul has long been closely associated with the city's central urban areas. However, the urban periphery has its own, highly localized, creative industry profiles that often go overlooked in urban cultural policy. This paper aims to chart the local specializations in creative industry agglomerations, and in doing so to uncover patterns in the coexistence of certain creative industry subsectors in particular neighborhoods. By focusing on copresences rather than volume of activity, the paper shows that while Istanbul's creative industry may be concentrated in established inner-city locations, various subsectors deviate from this. Certain neighborhoods in the middle and outer urban areas have distinct creative industry agglomeration profiles, and this show potential to develop into their own creative habitats through the copresence dynamic. The paper's descriptive and analytical approach to the spatial organization of the creative industry promises to expand Istanbul's current urban cultural policy approach, which fails to fully acknowledge the diversity and interconnectedness of creative industry activities in the city's periphery.

Keywords: urban cultural policy, creative industry, agglomeration, neighborhoods, cluster analysis, urban periphery

Kentsel Kültür Politikası Perspektifini Genişletmek: İstanbul'da Yaratıcı Endüstrilerin Yığılımının Haritalandırılması

Özet
İstanbul'da yaratıcı endüstrinin mekânsal organizasyonu genellikle merkezi şehir alanlarıyla ilişkilendirilmiştir. Ancak, yaratıcı endüstrinin daha az bilinen boyutu, yerel ancak önemli yaratıcı endüstri profilleriyle öne çıkan kentin çeper bölgeleridir. Mevcut kentsel kültür politikaları, genellikle kent çeperinin çeşitli altyapı ve endüstri bağlamlarını göz ardı etmektedir. Bu çalışma, yaratıcı endüstrinin mekânsal organizasyonunu kartografik bir yaklaşım kullanarak ele alır ve yaratıcı endüstri yığılmasında yerel farklılaşmaları belirler. Şehir ortalamasına göre yaratıcı endüstri alt sektörlerinin daha yüksek yığılma oranlarında bir arada konumlandığı mahalle gruplarındaki kalıpları ortaya koyar. Böylelikle odağı kentsel faaliyetlerin hacminden, faaliyetlerin kombinasyonlarına çevirerek orta ve dış şehir bölgelerindeki mahallelerin belirgin yaratıcı endüstri yığılma profillerini görünür kılar. İstanbul'da merkezi alanlar yaratıcı endüstrinin yoğunlaştığı yerler olmayı sürdürse de alt sektörlerin bir arada konumlanışı, bu yığılmanın en fazla olduğu merkezi kent alanları dışına çıktığını göstermektedir. Bu alanlar, çeşitli alt sektörlerin durmadan evrilen birlikteliği sayesinde başka yaratıcı habitatlar geliştirme potansiyeline sahiptir. Makalenin yaratıcı endüstrinin mekânsal organizasyonuna dair sunduğu bu betimleyici ve analitik bakış açısı, İstanbul'un mevcut kentsel kültür politikası programlarının ve uygulamalarının çeşitliliği ve farklı faaliyetlerin etkileşimini kapsayacak şekilde genişletilmesine katkı sağlar.

Anahtar kelimeler: kentsel kültür politikası, yaratıcı endüstri, yığılma, mahalleler, kümeleme analizi, kentsel çeper

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The business address data was manually collected and geo-referenced by the author. The analysis utilized Jacques Bertin's relational approach, implemented through a STRATA user interface developed by Murat Güvenç and Savaş Yıldırım (2009) for sectoral profile analysis. ESRI® ArcGIS® 10.8 was employed to convert the geo-referenced data into Shapefile, perform data cleaning, and prepare the data for visualization.

The raw address data of registered companies was obtained from the Istanbul Chamber of Commerce's online archive between 2018-2019. This data was used to create a dataset of companies, which was then linked to Istanbul neighborhood codes. The administrative units, as defined by the Istanbul Metropolitan Municipality Planning Department, were used as the base shapefile.

Approaches to creative industry (CI) businesses and related consumer amenities in urban cultural policy tend to be narrowly focused on city centers, thus missing the diversity of creative and cultural activities and actors in urban peripheries and their role in cities' wider creative landscapes.[1] In the case of Istanbul, this leads to urban cultural policy approaches that privilege centrally located districts for economic development through city marketing and real-estate initiatives. This paper calls attention to these oversights by mapping the agglomeration of CI businesses in Istanbul via an extended and detailed CI business taxonomy and data classification methods for identifying local specialization in peripheral neighborhoods' CI agglomeration profiles.

Methodologically, the paper examines CI agglomeration by performing a quantitative stratification of Istanbul's neighborhoods based on the geo-coded location data of CI companies and similarity and difference recognition models. This makes it possible to analyze both the agglomeration volumes of CI companies in different parts of Istanbul and the CI agglomeration profiles of the city's neighborhoods. It also makes it possible to visualize these in a cartographic environment and thereby to analyze the spatial organization of CI agglomerations and the dispersion and concentration of their activities across neighborhoods, thus rendering specialized localities in CI agglomeration profiles visible in the city's middle and outer peripheries.

This output will help transform the current urban cultural policy setting, making possible the development of policy mechanisms capable of recognizing urban peripheries' distinct and often underappreciated infrastructural endowments and industrial legacies. The predominant urban cultural policy settings across cities in the Global North overlook these peripheries and the integral role they play in supporting cities' artistic and cultural ecosystems.[2] The geographical scope of these ecosystems is generally viewed as restricted to inner-urban consumption spaces with clusters of a limited set of creative services. This results in urban planning and polices focused on urban renewal in the city center, the upscaling of the existing cityscape, and the displacement of existing low-income residences and businesses.[3] Similar industrial and geographic oversights and truncated cultural visions characterize Istanbul's urban cultural policy setting. As revealed in a recent report on local cultural ecosystems in Turkey, the concrete outputs of cultural policies target only narrow geographical areas in most cities of Turkey, and they are limited in scope to organizing cultural events or providing space for cultural activities.[4] In contrast to this limited focus, this paper takes a first step toward uncovering the geography of an expanded urban creative sector by identifying the copresences of CI-related activities in the neighborhoods of Istanbul's urban periphery and their locational patterns in the city's urban centers.

(Re)Thinking the Geographical Scope of Istanbul's Creative Landscape

Existing research on CI's developmental trajectory in Istanbul associates CI with central urban areas.[5] As a highly decentralized city, these span a large inland metropolitan zone from the districts of Avcılar in the west to Sarıyer in the north and Kartal in the east, which was described as İstanbul's central triangle.[6] Even though the bulk of Istanbul's population increase since the 1990s has taken place outside this urban triangle, most of Istanbul's business districts and office spaces remain within it. Descriptions of creative clusters within the city similarly focus on this same highly urbanized zone. Yet, as this paper will show, an

1 Declan Martin and Carl Grodach, "Placing Production in Urban Cultural Policy: The Locational Patterns of Cultural Industries and Related Manufacturing," *Journal of Urban Affairs* 44, nos. 4–5 (2022).
2 Carl Grodach, "Urban Cultural Policy and Creative City Making," *Cities 68* (2017).
3 Galina Gornostaeva and Noel Campbell, "The Creative Underclass in the Production of Place: Example of Camden Town in London," *Journal of Urban Affairs* 34, no. 2 (2016).
4 Ulaş Bayraktar, *Türkiye'de Yerel Kültür Ekosistemleri* (Istanbul: İstanbul Kültür Sanat Vakfı, 2024), 25–33.
5 Feral Geçer, Adile Avar, Koray Velibeyoğlu, and Ömür Saygın, "Spatial Transformation of Istanbul CBD," in *Creative Urban Regions: Harnessing Urban Technologies to Support Knowledge City Initiatives*, ed. Tan Yigitcanlar, Koray Velibeyoğlu, and Scott Baum (Hershey, PA: Information Science Reference, 2008); Zeynep Merel Enlil, Yiğit Evren, and İclal Dinçer, "Cultural Triangle and Beyond: A Spatial Analysis of Cultural Industries in Istanbul," *Planning Practice & Research* 26, no. 2 (2011).
6 Murat Güvenç, "Population Density in the Istanbul Region," in *Mapping Istanbul*, ed. Pelin Derviş and Meriç Öner (Istanbul: Garanti Gallery Press, 2009), 69.

exclusive focus on this traditional triangle is a poor basis for understanding the relationships between the city's spatial organization and the dynamics of its CI sector.

Over the past decade, the aging stock of the city's office buildings, most of which were built in the 1980s, has created demand for new office space. Simultaneously, the city's expanding population has led to demand for new residential areas in the periphery. Since 2006, these two factors have led to land use changes and increasing suburbanization in the city, resulting in the conversion of rural facilities in the city's periphery into urban facilities. New neighborhoods in the periphery and in redeveloped squatter areas have become fashionable for residents seeking modern housing.[7] Further contributing to urban sprawl has been the decentralization of offices and the establishment of new educational, recreational, and commercial facilities in peripheral areas to cater to these new housing developments. As Gülsen Yılmaz and Şule Karaarslan have shown,[8] even by 2010, although the majority of office spaces were still located in downtown Istanbul, there were a significant number of offices in peripheral locations. Some of these transformation zones have attracted people of diverse origins, occupancy patterns, and incomes. Thus, Istanbul's office spaces and residential areas have become increasingly decentralized over the last two decades, tilting toward the periphery and enhancing the mixed character of Istanbul's neighborhoods.[9]

Despite these developments, this geographic spread in businesses and residential areas and changing neighborhood diversity at the metropolitan scale are not well integrated into the city's current urban cultural policy approaches, which continue to be based on a narrow view of creative services that privileges densely concentrated central city locations. There is thus a need for a novel taxonomy capable of representing the city's creative landscape and its spatial organizational structures, especially in light of the significant connections between the diversity of activities that contribute to the city's creative ecology. Existing mapping initiatives have taken into account only a portion of CI activity groups, neglecting others. Activities on the practical side of the creative sector, such as architecture, design, media, advertising, and photography, have not yet been mapped in a way that connects them to cultural and artistic activities, ranging from traditional arts and crafts to publishing, music, and performing arts. There is a lack of empirical evidence about co-location trends among this industry subset. This lack of attention has resulted in geographical oversights in urban cultural policy programming and in an over-centralized and incremental cultural policy perspective.

This seemed about to change with Istanbul's entry into the 2010 European Culture of Capital Program, an initiative of the European Union. With this program, between 2006 and 2010, Istanbul prepared to broaden the cultural offerings it extended to its citizens. Some culture-led urban regeneration projects were initiated, and many renovations of museums and historical sites took place with the support of this initiative. The renewal projects have resulted in the upscaling of existing museums and cultural heritage sites in central urban areas and the repurposing of inner-urban industrial areas for a set of creative services and art-based consumption amenities. The program was a significant milestone for the city to integrate its urban regeneration strategies with EU cultural policies. However, the actions taken within this framework typically focused on the city's central flagship districts, thus reproducing a focus on central city locations for tourists and creative classes rather than adopting a more decentralized approach to urban development that might have helped ameliorate the socio-economic inequalities between the urban center and urban periphery.

Most discussions of CI are connected to its contribution to city competitiveness, economic growth, and the prosperity of urban areas.[10] The consensus is that if cities want to succeed in

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7 Demet G. Oruç, Özhan Ertekin, and Vedia Dökmeci, "Neighbourhood Patterns in Istanbul: From Historical Form to Manhattanization," *International Journal of Architecture and Planning* 5, no. 2 (2017).
8 Gülsen Yılmaz and Şule Karaarslan, "İstanbul Metropoliten Alanında Hizmet Faaliyetlerinin Mekânsal Dağılımı Üzerine Analitik Çalışmalar," *Gazi* Üniversitesi *Mimarlık ve Mühendislik Fakültesi Dergisi* 25, no. 3 (2010).
9 Ayda Eraydın, "The Impact of Globalisation on Different Social Groups: Competitiveness, Social Cohesion and Spatial Segregation in Istanbul," *Urban Studies* 45, no. 8 (2008).
10 Charles Landry, The Creative City: A toolkit for Urban Innovators (London: Earthscan Publications, 2000); Richard L. Florida, *The Rise of the Creative Class: And How It's Transforming Work, Leisure and Everyday Life* (New York: Basic Books, 2002).

creativity, they need to think about providing lifestyle and consumption advantages to their residents, chiefly through central urban areas of mixed character with vibrant quality of place. The literature on the current state and strength of Istanbul's creative economy has examined the large concentration of particular CI subsectors with a dense and diverse mix of business profiles in the city's central areas, including the film industry, fashion design, and cultural heritage and tourism.[11] Given the key interest in quality of place for the creative economy in these studies, it is not surprising that much of the research on CI has tended to focus on urban centers.[12] The dominant assumption in CI mapping efforts is that the creative class—whose economic function is to generate new ideas, new technologies, and creative outputs—is attracted to places that offer diversity, tolerance, and a wide range of natural, cultural, and recreational amenities.[13] These observations highlight the connections between neighborhood diversity, creativity, and the increase in the different types of creative activities. Different forms of diversity—in a neighborhood's population, workforce, customers, and built environment—are important for the coexistence of creativity and entrepreneurship in a neighborhood.[14]

Another growing discussion centers on the clustering of talent and economic assets in a few elite neighborhoods and how this contributes to the generation of new ideas and a city's economic growth. These elite neighborhoods are places where local communities cultivate their own skills, creating new jobs and income, and they accommodate safe, better-maintained, and more generously supplied restaurants, cafes, and stores. But increasingly, discussion of such elite neighborhoods has moved beyond traditional city centers. In North American cities, there is discussion of "edge cities," clusters of businesses, entertainment venues, and shops that lie outside conventional urban areas. A growing number of peripheral locations in European cities display similarly dynamic urban attributes. The same holds true in cities in the Global South.[15]

A parallel dynamic is visible in Istanbul, where new mobility patterns and domestic and international immigration have begun to transform the diversity profile of the city's neighborhoods. Some neighborhoods in the urban periphery have become destinations for domestic and international immigrants and new development and urban infrastructure projects. According to Ayda Eraydın, the transformation of Istanbul's urban outskirts since the 1980s has attracted people of different origins, occupations, and income groups, bringing them together as residents of the same neighborhoods.[16] In a similar vein, large initiatives like organized industrial districts, small-industry sites, and techno-parks have enriched the diverse character of nearby neighborhoods.[17] However, existing studies do not provide adequate insight into the changing profiles of the city's neighborhoods. Due to a lack of empirical study, the peripheral and more distant locations from the urban core remain under the shadow of central neighborhoods.[18] As a result, little is known about peripheral neighborhoods and their highly localized CI profiles.

There are several important gaps in existing CI and urban-periphery policies. The 2009 Istanbul Master Plan proposed to reorient the city's economic activity away from manufacturing

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11 Bahar Durmaz, Stephen Platt and Tan Yiğitcanlar, "Creative, Culture Tourism and Place-Making: Istanbul and London Film Industries," *International Journal of Culture, Tourism and Hospitality Research* 4, no. 3 (2010); Asu Aksoy and Zeynep Enlil, *Kültür Ekonomisi Envanteri: İstanbul 2010* (Istanbul: İstanbul Bilgi University Press, 2011); Eda Ünlü Yücesoy, İstanbul'da *Medya, Coğrafi Dağıtım ve* Üretim (Istanbul: İstanbul Bilgi University Press, 2011).

12 Erik Stam, Jeroen P. J. de Jong, and Gerard Marlet, "Creative Industries in the Netherlands: Structure, Development, Innovativeness and Effects on Urban Growth," *Geografiska Annaler: Series B, Human Geography* 90, no. 2 (2008).

13 Richard L. Florida, *The Rise of the Creative Class: And How It's Transforming Work, Leisure and Everyday Life* (New York: Basic Books, 2002).

14 Ayda Eraydın, İsmail Demirdağ, Feriha N. Güngördü, and Özge Y. Yenigün, *DIVERCITIES: Dealing With Urban Diversity – The Case of Istanbul* (Ankara: Middle East Technical University, 2017).

15 Joel Garreau, *Edge City: Life on the New Frontier* (New York: Anchor Books, 1991); Tommy Firman, "New Town Development in Jakarta Metropolitan Region: A Perspective of Spatial Segregation," *Habitat International* 28, no. 3 (2004); Keith Hoggart, ed., *The City Hinterland: Dynamism and Divergence in Europe's Peri-urban Territories* (London: Routledge, 2005).

16 Ayda Eraydın, İsmail Demirdağ, Feriha N. Güngördü, and Özge Y. Yenigün, *DIVERCITIES: Dealing With Urban Diversity – The Case of Istanbul* (Ankara: Middle East Technical University, 2017), 34.

17 Ayda Eraydın, "The Impact of Globalisation on Different Social Groups: Completeness, Social Cohesion and Spatial Segregation in Istanbul," Urban Studies 45, no.8 (2008) 1663-1691

18 Seija Virkkala, "Innovation and Networking in Peripheral Areas: A Case Study of Emergence and Change in Rural Manufacturing," *European Planning Studies* 15, no. 4 (2007).

and towards the service, finance, information technology, and cultural industries.[19] The cultural activities, amenities, and services envisioned in the plan were oriented toward tourism, the re-purposing of industrial sites, the revitalization of historical neighborhoods in the city center, and the encouragement of small-scale cultural industries, all predominantly within the limited geographic focus of the city's central urban areas. The Istanbul Vision 2050 Strategy Document prepared by the Istanbul Planning Agency lists promoting creativity as one of the main goals of its strategic plan and cites participation, civic initiatives, and cultural diversity as means to this end.[20] However, mobilizing inclusive and equally accessible creative development requires an urban policy mechanism capable of minimizing socio-economic disparities between the urban center and the periphery and of recognizing the vastly different infrastructural endowments and industrial legacies of the latter.[21]

Innovative approaches to mapping creative activities have highlighted the importance of documenting the locational attributes of the creative ecosystem for urban cultural policy and planning. The Istanbul Creative Platforms Network Map was prepared in 2017 in cooperation with the British Council Turkey and the creative platform Atölye to describe the design spaces, incubation centers, co-working spaces, research centers, and virtual platforms operating within the city's creative industries.[22] In this map, Istanbul's inner-city districts of Beşiktaş, Kadıköy, and Beyoğlu stand out with their new forms of creative platforms that respond to the contemporary era's creative needs.[23] In 2019, the Istanbul Development Agency (ISTKA) developed and released the Istanbul Creativity Network, a web-based network map of Istanbul's creative ecosystem that displays creative-economy actors according to their categories, sectors, spatial distribution, and funding.[24] Even though the database offered by this platform provides details and locational references on project-based collaborations among a diverse set of actors, the map cannot be used to understand the current geographical scope of business-driven CI in the city.

Effective urban cultural policy strategy requires addressing the CI businesses concentrated in Istanbul's middle and outer urban zones. A balanced and equitable policy for CI development in the city must consider the presence of creative services within the dynamically changing zones of the urban periphery. To that end, this paper aims to provide a basis for examining the spatial organization of CI agglomerations dispersed across Istanbul's neighborhoods, including in the periphery, thereby shedding light on and turning our focus toward the CI agglomerations that have emerged in the outer urban zones of Istanbul outside the city's traditional urban centers.

Methodological Approach

Mathematical models based on agglomeration volumes provide a useful framework for analyzing urban activities, particularly for general evaluations and functional categorizations of urban space. Yet they provide little insight into the complicated spatial structures and high level of internal functional differentiation cities display at the neighborhood level. Addressing this complexity requires the ability to represent functionally distinct groups of neighborhoods at the micro scale, and the ability to sub-categorize these groups so as to avoid the twin perils of overgeneralization and myopia in conceptualizing the complexity of cities' spatial organization.[25]

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19 Istanbul Metropolitan Municipality (İBB), "1:100,000 Istanbul Master Plan Report" (Istanbul, 2009).
20 İstanbul Planlama Ajansı, "İstanbul Vizyon 2050 Strateji Belgesi," 5 July 2022, https://ipa.istanbul/wp-content/uploads/2022/07/ISTANBULVIZYON2050_Kitap.pdf.
21 Alison L. Bain, *Creative Margins: Cultural Production in Canadian Suburbs* (Toronto: University of Toronto Press, 2023).
22 Engin Ayaz, "Creative Hubs: The Maps and The Territory," British Council Turkey, 2017, accessed 30 May 2024, https://www.britishcouncil.org.tr/sites/default/files/creative_hubs_the_map_and_the_territory.pdf
23 Meltem Parlak and Tüzin Baycan, "The Rise of Creative Hubs in Istanbul," *European Spatial Research and Policy* 27, no. 1 (2020).
24 Istanbul Development Agency (ISTKA), "Istanbul Creativity Network," 2019, accessed 30 May 2024, https://creativity.istanbul/istanbul-yaraticilik-agi.
25 Murat Güvenç, "Veri Temelli Kent Yonetişimi İçin Niteliksel Sentez Haritalar: Yöntembilimsel Bir Değerlendirme," Tesev Değerlendirme Notları, 7 November 2022, https://www.tesev.org.tr/wp-content/uploads/rapor_veri_-temelli_kent_yonetisimi_icin_niteliksel_sentez_haritalari_yontembilimsel_bir_degerlendirme.pdf.

Investigating the spatial pattern of urban activities within a city's metropolitan areas requires creating explanatory representations about different types of agglomerations at the neighborhood scale. Data management systems and statistical methods are useful means to this end, but they alone do not suffice, for the opportunities afforded by GIS for data management and spatial analysis are limited when it comes to evaluating urban spatial structures. This study therefore pairs GIS with data mining and pattern recognition tools in order to identify more nuanced sub-categories and thereby to better depict and represent the agglomeration of urban activities in Istanbul. In his famous book *A Semiology of Graphics*, Jacques Bertin writes, "The discovery of an ordered concept appears as the ultimate point in logical simplification since it permits reducing to a single instant the assimilation of series which previously required many instants of study."[26] This quote highlights that creating a framework for arranging data visually are crucial to reflect the observable effect in graspable format.

Maps' potential as a representational tool for conveying spatial knowledge is a vital aspect of this study. Representing quantitative data in a concise, reliable way and communicating and visualizing these findings effectively in the form of maps requires methods that are resistant to the problems caused by the high level of resolution demanded here; it also requires the use of classification techniques to minimize spatial errors.

Methods

This paper explores Istanbul's metropolitan landscape through using a dataset of CI activities and their geo-referenced locations. This dataset is created from businesses registered with the Istanbul Chamber of Commerce (ICC) for the period of 2018 and 2019, including their addresses and industry classifications. The businesses are classified by using NACE codes based on their self-reported primarily activity. However, these businesses are not pre-classified as CI sectors, requiring additional categorization. Defining CI activities presents a common challenge due to the absence of agreed-upon definition. In this study, the selection of NACE-coded businesses under the CI umbrella was guided by economic activity groups with those recognized for their reliance on cultural content within European standards. The economic activity groups prioritizing the production and dissemination of symbolic goods, such as programming and broadcasting, motions picture, video and television program production, sound recording and music publishing, creative and performing arts, along with related practical fields like publishing, advertising, photography, architecture, and design are included, as they depend heavily on cultural and creative input for their final products. This approach reflects a reconciliation between the Istanbul Chamber of Commerce (ICC) classification and the European Standard Classification of Productive Economic Activities, ensuring the inclusion of businesses that correspond to the CI scope defined in this study. It is important to note that inaccuracies in the dataset depending on misclassifications, incomplete or outdated self-reported information, and inconsistencies between the ICC and European classification may result in exclusion of some businesses that should otherwise fall under the umbrella of CI. These limitations are acknowledged and considered when interpreting the results.

The study benefits from the graphical user interface Strata 7.3 developed by Murat Güvenç and Savaş Yıldırım, a computer adaptation of Ludovic Lebart's model for data analysis and visualization. The model helps in evaluating geo-spatial data related to CI agglomeration. The model combines an unsupervised classification technique for pattern recognition in collected data with correspondence analysis, which derives the relative positions of row and column points on their importance. These points are then grouped to determine the stratification pattern of large data matrices.[27] The resulting groups suggest meaningful areal associations and affinities among different CI business agglomerations scattered across the Istanbul metropolitan area. Arc-GIS software is used to prepare a map of the neighborhoods overlaid with the measures of economic activity agglomeration. Together, these methods provide an improved quantitative representation model capable of revealing unusual quantitative observations in CI business

26 Jacques Bertin, *Semiology of Graphics: Diagrams, Networks, Maps,* translated by William J. Berg, (Redlands CA: ESRI Press, 2011).

27 Ludovic Lebart, "Complementary Use of Correspondence Analysis and Cluster Analysis," in *Correspondence Analysis in the Social Sciences: Recent Developments and Applications*, ed. M. J. Greenacre and J. Blasius (London: Academic Press, 1994).

agglomerations in the Istanbul metropolitan area. The paper asks if these observations can direct the focus on CI agglomeration in Istanbul's central urban areas toward groups of neighborhoods with distinct CI profiles in the city's middle and outer urban areas.

Adopting this model for explanatory data analysis and adapting it to cartography makes it possible to create useful maps. The categories of spatial datasets are first structured and then represented in the form of geographical maps. The maps depict the metropolitan landscape through meaningful relationships found among the dataset, displaying the agglomeration of entities in urban space with their distinguishing features. Different methods of classification have substantial effects on the resulting indicators, their representations, and their interpretations, especially if the collected data is spatially diverse and at a fine granularity. A classification based on the quantitative agglomeration of activities makes it possible to identify the share of CI businesses in neighborhood groups within Istanbul's overall CI agglomeration. This approach allows the paper to portray the agglomeration of entities that are interwoven in space. Going a step further, the paper also explores the relational aspects of CI business agglomeration profiles at the neighborhood scale that can be found in the spatial datasets, classifying and grouping neighborhoods that are similar in terms of the structure of their CI business agglomeration profiles.

The paper stratifies neighborhoods based on their CI sectoral profiles, meaning that neighborhoods with similar profiles are placed in the same group even if they are geographically distant from one another. Exploring distinctions in the neighborhoods' CI agglomeration characteristics is an essential step for developing versatile categories for the city's neighborhoods. The focus employed here is on spatial variations in the agglomerations of the three principal CI economic sectors and their various subsectors. Based on this perspective, grouping neighborhoods together with regard to their agglomerated CI business quantifications and sectoral profiles makes it possible to represent emergent city spaces through a range of different groups of neighborhoods in the metropolitan landscape.

Data Collection and Data Building Methods

Different studies have conceived of CI in different ways, resulting in the use of multiple different indicators for profiling it.[28] The paper adopts a focus on the cultural side of CI and the production and circulation of symbolic goods in such industries as film, television, and radio program production, music, performative arts, literature, and publishing, as well as such related practical sectors as advertising, photography, and architecture and design, all of which rely on cultural input for their final output.

In this context, this paper examines CI using the NACE codes under the ICC classification. Eight subsectors identified within fifteen different NACE codes differ in terms of their inputs, outputs, and production-consumption processes. They align with the European standard classification of economic activities for productive economic activities,[29] under three principal economic sectors (see table 1): Sector J – Information and Communication; Sector R – Arts, Entertainment, and Recreation; and Sector M – Professional, Scientific, and Technical Activities. As shown in table 1, the third sector here, Sector M, which includes advertising (73.1), photography (74.2), design (74.1), and architecture (71.11), is the most active. Meanwhile, Sector R, which includes performing arts (90.0.1, 90.0.2), artistic creation (90.0.3), and the operation of arts facilities (90.0.4), is the least active. Falling in the middle are activities under Sector J, which includes motion picture, video, and television program production, sound recording, and music publishing (59.1, 59.2); programming and broadcasting (60.1, 60.2, 63.1, 63.9); and print, software, and other publishing (58.1, 58.2). Table 1 also shows the corresponding occupation classification codes used by the Istanbul Chamber of Commerce.[30]

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28 David Throsby, *Economics and Culture* (Cambridge: Cambridge University Press, 2001); John Holden, *Publicly Funded Culture and the Creative Industries* (London: Demos, 2007); Justin O'Connor, *The Cultural and Creative Industries: A Literature Review* (London: Creative Partnerships, Arts Council England, 2010); Hasan Bakhshi, Alan Freeman, and Peter Higgs, *A Dynamic Mapping of the UK's Creative Industries* (London: Nesta, 2013).
29 https://ec.europa.eu/competition/mergers/cases/index/nace_all.html
30 https://www.ito.org.tr/documents/Uye_Sicil/Dokumanlar/meslek-gruplari.pdf

Table 1. The Groups of Economic Activity in the CI and The Number of Registered Companies

Economic Activity Classification *	Istanbul Chamber of Commerce Classification of Occupations**	Economic Activity Group	Economic Activity Codes	Number of Registered Business (2018-2019)	Number Of Registered Business (2018-2019)	Total
J. Information & Communication	30. Information Communication and Media	J.59.Motion picture, video and television programme production, sound recording and music publishing activities	59.1 Motion picture, video and television programme production and publishing activities	2121	2558	6130
	30. Information Communication and Media		59.2 Sound recording and music publishing activities	437		
	30. Information Communication and Media	J.60.Programmig and broadcasting activities	60.1 / 60.2 Radio and TV programming and broadcasting	703	1572	
	30. Information Communication and Media		63.1 / 63.9 Information service activities	1127		
	32. Press & Publish	J.58.Publishing Activities	58.1 Publishing of books, periodicals and other publishing activities	1766	2000	
			58.2 Software Publishing activities	234		
R - Arts, entertainment and recreation	30. Information Communication and Media	R.90.Creative, arts and entertainment activities	90.0.1. Performing arts 90.0.2. Support activities to performing arts 218 90.0.3. Artistic creation 90.0.4. Operation of arts facilities	759	759	759
M. Professional, Scientific and Technical Activities	30. Information Communication and Media		73.1Advertising**	5877	5877	14236
	79. Photography		74.2. Photographic activities **	1318	1318	
	30. Information Communication and Media	74.1. Specialized design activities	74.1. Specialized design activities (including textile, arts and crafts, graphical design activities)	Interior design 1193 //Graphic design 426 // Other Design Activities 810	2428	
	29. Architecture & Engineering		71.11. Architectural activities	Architectural Activities 4230 // Landscape Architecture 186 // City Planning 197	4613	

*The division is made based on the group of economic activities that are presented under the principal economic activity units, Section J Information and Communication, Section R Arts, entertainment and recreation and Section M Professional, Scientific and Technical Activities of NACE –the European standard classification of productive economic activities. The economic activity group divisions presented under the statistical classification of economic activities in the European Union (NACE) are retrieved from: https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA_07-015_EN.PDF

**The division is made based on the group of economic activities that are presented under the principal economic activity units of the Istanbul Chamber of Commerce Classification of Occupations. The economic activity group divisions presented under the the Istanbul Chamber of Commerce Classification of Occupations are retrieved from: https://ito.org.tr/documents/Uye_Sicil/Dokumanlar/meslek-gruplari-ve-nace-kodlari.pdf

The registered company addresses, which were current as of 2018 and 2019 were retrieved from the Istanbul Chamber of Commerce Database.[31] The collected addresses of business were first geo-coded, and then each neighborhood in the city—as administrative units defined by the Istanbul Metropolitan Municipality Planning Department—was assigned with fields consisting of the numbers and rates of CI business agglomerations. This process resulted in a dataset of geo-coded business that are active in 2018 and 2019. The results section below displays the results on the map of Istanbul.

The companies within the eight economic activity groups across three principal CI sectors were treated as the agents of CI agglomeration, which was then calculated at the neighborhood scale. Using these calculations, different combinations of CI business agglomeration structures were applied to define groups of similar neighborhoods in the city. This approach allowed for the stratification of Istanbul's neighborhoods based on concentrations of CI sector economic activities in each neighborhood. The paper applies two different calculation method to identify the groups of neighborhoods that are similar in the structure of their CI businesses agglomerations, mining the spatial data sets to do so. In doing so, the paper explores the spatial effects and ramifications resulting from the choice of one clustering method over the other.

In the first step, data clustering based on k-means, a multi-variate statistical method, was performed to group neighborhoods with similar total agglomeration rates across CI principal sectors. Using the k-means algorithm ensures maximum similarity within clusters and minimum similarity between different clusters,[32] making it possible to display similar copresences of the three principal sectors of CI activities in the structure of agglomerations of companies at the neighborhood scale. The groups of neighborhoods found through the k-means algorithm are grouped into one of three categories as shown in the legend—highest range, high to medium range, and medium to low range—based on the total number of CI companies per neighborhood (see the map in Appendix A).

In the second step, relational stratification was performed using Strata 7.3 to create hybrid legends. This made it possible to reassemble the neighborhoods of Istanbul according to their distinctive CI agglomeration profiles, in which some subsectors are copresent with higher agglomeration rates than the city average. It also made it possible to group the neighborhoods using the central value in the dataset rather than the sum of CI activities, thereby revealing the copresence patterns of businesses. The resulting categorization provides a basis for deciphering the distinctive CI agglomerations of the city's middle and outer urban areas. (see the maps from Appendix B to Appendix N)

Results

Grouping Neighborhoods with the K-means Algorithm

In the first step, the k-means data clustering method was applied to delineate Istanbul's functional urban areas according to their levels of CI activity at a neighborhood scale. The neighborhoods are stratified according to the agglomeration volumes of the three principal CI sectors (Sector J – Information and Communication; Sector R – Arts, Entertainment, and Recreation; and Sector M – Professional, Scientific, and Technical Activities.[33] This clustering method makes it possible to group neighborhoods of different CI agglomerations and to distinguish them from one another in terms of their total number of CI companies.

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31 https://bilgibankasi.ito.org.tr/tr/bilgi-bankasi/firma-bilgileri

32 James MacQueen, "Some Methods for Classification and Analysis of Multivariate Observations," in *Proceeding of 5th Berkeley Symposium on Mathematical Statistics and Probability*, vol. 1, *Statistics*, ed. Lucien M. Le Cam and Jerzy Neyman.

33 The different color groups on the map of Istanbul in Appendix A are the groups produced by k-means clustering. The orange neighborhood groups are those with the highest total number of companies in the three principal CI sectors. The purple ones are those whose total number of companies in the three sectors falls in the middle to high range, while the grey ones are those in the middle to low range. According to the results of the k-means clustering, Istanbul's peripherical neighborhoods all fall into the group in the lowest range.

The resulting structure of the agglomeration of CI companies indicates that the neighborhoods with the highest volumes of CI activity are all located within Istanbul's inner metropolitan area. This inner area corresponds to the concentrated urban zone running from the districts of Avcılar in the west to Sarıyer in the north and Kartal in the east, a zone that urbanized in the 1990s and has formed the city's core urban triangle ever since.[34] Specifically, CI companies are concentrated in neighborhoods near the Bosporus Bridge exit on the city's inner ring highway (the E-5 motorway and the Bosporus Bridge) and extending out toward the second ring highway (the Trans-European Motorway/TEM and the Fatih Sultan Mehmet Bridge) and the Mecidiyeköy-Maslak area in the north, which is closest in function to a concentrated central businesses district (CBD) on the city's European side.

The neighborhoods in European Istanbul's CBD figure prominently among those with the highest agglomeration volumes of businesses listed under Sector J – Information and Communication. Most of these neighborhoods are adjacent to one another. The old city center of Beyoğlu is not ranked among them because of its relatively lower numbers of businesses. The most prominent other neighborhoods are located along the shores of the district of Kadıköy and at the intersection points of the main transportation axes. The agglomeration volumes show that Sector J agglomerations lie in close proximity to the major east–west transportation axes.

There is relatively more dispersion across the city's urban space in the companies listed under Sector M – Professional, Scientific, and Technical Activities. These, too, display high numbers in European Istanbul's CBD, with other noteworthy agglomerations in individual neighborhoods along both the eastern coastal axis in Anatolian Istanbul running from Kadıköy to Kartal and the western axis in European Istanbul running from the Bosporus Bridge to Avcılar. The notable rates of agglomeration in these areas represent emerging sub-centers of companies in the northeast and northwest parts of the Anatolian side and in areas along the city's second ring highway. Overall, the neighborhoods that figure most prominently among Sector M businesses lie largely within Istanbul's triangular inner metropolitan area.

Compared to the two other principal CI economic sectors, businesses in Sector R – Arts, Entertainment, and Recreation fall predominantly in a few inner-city neighborhoods in the districts of Şişli and Kadıköy. While this sector has fewer businesses than the other sectors discussed above, its activities are significantly more concentrated, with more than half of the activities in this sector based in these two districts. The sector's smaller number of activities yields fewer collocations the further away one gets from the main transportation axes. Although Sectors M and J have significant agglomerations in the neighborhoods of new service centers within Istanbul's triangular inner metropolitan area, Sector R does not.

Exploring Distinctions in the CI Sectoral Profiles of Neighborhoods

The k-means algorithm identified clusters in which the three CI sectors are particularly active, thereby making it possible to analyze the city's CI development trajectory through total volumes of CI business agglomerations at a neighborhood scale. However, this algorithm also produced a lopsided representation of the city's CI sectors that rendered many neighborhoods, particularly those outside the metropolitan center, invisible. To rectify this, it was necessary to employ a finer approach to emerging CI agglomerations in the metropolitan area, in particular those in the city's periphery. The clustering method performed in this section does just that, revealing diverse copresences in the agglomerations of CI activities beyond the city's metropolitan center.[35] These are neighborhoods in which particular CI subsectors are co-present in a proportion higher than the city's average agglomeration volumes. This means

34 Güvenç, "Population Density in the Istanbul Region," 68–75.

35 The maps spanning from Appendix B to Appendix M are built using legends that highlight unusual quantitative observations in CI business agglomerations and the copresence of different CI activity groups in a neighborhood. They allow identifying the distinct local CI profiles of neighborhoods that differ from the CI agglomeration profiles of central urban zones. The neighborhoods are grouped based on their similar CI subsector profiles, and the maps depict the reliance of neighborhoods on particular CI subsectors.

that some specific CI activities rely on groups of neighborhoods other than those depicted in the section above, the central ones with highest CI agglomeration volumes.

The stratification of neighborhoods with respect to the copresences of architectural and design activities at rates higher than the city average (Cluster 3, see Appendix B) points to certain peripheral neighborhoods on both Istanbul's Anatolian and its European sides. In Anatolian Istanbul, these are groups of neighborhoods lying just close to the main transportation routes along the Marmara shoreline and the E-5 and TEM highways. Meanwhile, on the European side, these are individual inner-city neighborhoods, some close to the CBD, while others are near the now-closed Atatürk International Airport. Regarding architectural activities specifically (Cluster 8, see Appendix C), particular outer-periphery neighborhoods on both the Anatolian and European sides have higher representations in the subsector than the city average. Remarkably, these are emerging peripheral residential areas in which a huge increase in housing supply over the last twenty years and a large number of housing projects seem to have created opportunities for architectural activities. However, the pattern shifts when considering the neighborhoods with above-average copresent agglomerations of both architectural and design activities as well as creative arts and entertainment activities (Cluster 2, see Appendix D). In this case, the clusters are limited to a few central neighborhoods on the Anatolian side near the Marmara shoreline highway and certain newly centralized neighborhoods on the European Marmara shoreline.

The stratification of neighborhoods with respect to the copresence of publishing and photography activities (Cluster 5, see Appendix E) at rates higher than the city average points to certain neighborhoods in old city center of Eminönü and the districts of Beyoğlu and Kadıköy. While neighborhoods with relatively high copresent agglomerations of publishing, photography, architecture and design activities (Cluster 4: see Appendix F) are distributed around the fringes of the European side's central areas, this is not the case on the Anatolian side. The neighborhoods with remarkably strong agglomerations in publishing activities than the city average (Cluster 11, see Appendix G) represent the spatial footprints of the city's pre-industrial, industrial, and post-industrial publishing and printing life.

The stratification of neighborhoods with respect to copresence of programming and broadcasting, design, architecture, and advertising activities (Cluster 6, see Appendix H) at rates higher than city average points to particular groups of such neighborhoods that are located near the European and Anatolian exits of the Bosporus Bridge, overlapping with the strategic inner zones of the metropolitan area on the European and Anatolian sides. A distributed pattern of neighborhoods across the city is identified within the stratification of neighborhoods with respect to higher copresent agglomeration levels of programming and broadcasting activities than the city average (Cluster 10, see Appendix I). Neighborhoods on the fringes of the Historical Peninsula, despite their relatively low CI agglomeration, accommodate higher copresent agglomeration levels of programming and broadcasting activities than the city average. Including one of the inner-city neighborhoods in the district of Beşiktaş, as well as neighborhoods in the districts of Bakırköy and Bahçeşehir located near a roundabout connecting the two main east–west transportation axes of the city associate with higher copresent agglomeration of programming and broadcasting activities than the city average. Some specific neighborhoods, overlapping inner-city CBD of the city correspond higher rates in copresent agglomerations of programming and broadcasting, advertising, motion picture, video, and television program production, sound recording, and music publishing activities than the city average (Cluster 7, see Appendix J).

The stratification of neighborhoods with respect to the copresence of motion picture, video, and television program production, sound recording, and music publishing, creative arts and entertainment activities, photography, and advertising activities, at agglomeration rates higher than the city average (Cluster 9, see Appendix K), tends to be spatially close to the city's CI-dense central areas in European and Anatolian sides, with little representation in the periphery and outer city locations. The copresence of activities in programming and broadcasting, advertising, design and architectural activities (Cluster 12, see Appendix L) at agglomeration rates higher than city average extends along the concentrated CBD neighborhoods with proximate inner-city locations in the districts of Şişli and Beyoğlu in the city's European side. Copresence of motion picture, video, and television program production, sound recording, and music publishing activities whose agglomeration rates is higher

than the city average (Cluster 1, see Appendix M) presents some particular sectoral concentrations in Fatih and Kadıköy.

The stratifications of neighborhoods with respect to different copresence profiles highlight how CI activities can drive new dynamics in peripheral neighborhoods outside traditional city centers. However, there are notable exceptions to this pattern. The different copresence dynamics driven by specific CI subsectors—such as arts and entertainment activities, motion picture, video, and television production, as well as sound recording and music publishing—lead us to encounter city-center neighborhoods instead of peripheral ones.

Discussion: Representing the City with Wider Dispersal Pattern of CI Businesses

Representing Istanbul's metropolitan landscape through two sorts of categorizations of neighborhoods—through quantitative indicators of CI businesses' agglomeration volumes and their sectoral profiles—results in some nuanced differences. A commonly used and intuitive method performed through a k-means algorithm makes the spatial distribution of the total volume of CI companies immediately apparent, but it fails to capture the structural characteristics of agglomerations. Using a clustering method to distinguish among the structural characteristics of these agglomerations gives new perspectives on the city's CI landscapes.

High volumes of CI business are located in the neighborhoods of the strongest CBD area of Istanbul, but a substantial number of CI businesses are also found in the metropolitan periphery, in parallel with the city's urban development trends. A common inference from these patterns is that the hype and investments from the sector's big players in neighborhoods in CBD areas that are perceived as CI hubs pushes smaller CI actors to locate to cheaper neighboring locations. This creates a continuous pattern of agglomerations across inner-city neighborhoods proximate to one another. These inner-city agglomerations constitute the underlying dynamic of the city's creative energy.

Additionally, peripheral urbanization stimulates further demand and economic activity, providing vital services that support communities. This is another significant factor in the agglomerated copresences of CI activities in the neighborhoods of the middle and outer urban metropolitan area. In particular, some of the unplanned and uncontrolled housing developments around the industrial areas of the periphery have caused business and economic activities to aggregate in these neighborhoods. In these middle and outer city areas, businesses in various CI subsectors seem to occupy their own local niches. These businesses fall mostly within the more practical CI subsectors, such as architecture and design, publishing, and photography, and within the newer forms of symbol-intensive production activities, such as activities related to video and computer games, the internet industry, software publishing, and information services.

The copresences of these CI subsectors in peripheral neighborhoods differ from those in the city's concentrated CBD areas, in which all CI services are present in close proximity in a single urban area. Some CI subsectors seem concentrated in particular peripheral neighborhoods, where they meet the specific creative needs of their localities, whereas others are spread across groups of proximate neighborhoods, often close to key transportation routes, where they collectively cater to larger urban areas. The dispersion of CI copresences toward new residential areas, as elements of the city's population relocate away from the city center, leads to the emergence of secondary CI urban localities in neighborhoods that are becoming more diverse, dense, and economically important.

The copresences of particular groups of CI subsectors in areas of the metropolitan periphery should encourage efforts to bridge the activities of different sectors to facilitate creation processes. The examples of such copresences identified here—peripheral neighborhoods in which architecture is copresent with design, publishing with photography and design, and programming with design, architecture, and advertising—suggest that these subsectors and the neighborhoods in which they are established function in a complementary way, forming copresences at a neighborhood scale that cultivate creativity in outer urban areas. Yet, as the findings demonstrate, this is not the case for the more cultural and artistic side of the CI continuum. Inner-city locations are still the focus for the copresences of motion picture,

video, and television programming, sound recording, and arts and entertainment activities. Although these subsectors demonstrate some internal variations, their limited dispersion toward new business locations suggests that the opposing archetypes of urban center and periphery still have an impact on art- and culture-based production facilities, which continue to gravitate toward inner-city locations.

Conclusion: Implications for Urban Cultural Policy

A community's urban cultural policy system is based on that community's cultural resources and their strategic integration into a wide range of local government planning activities. Culture and creativity touch people's lives in diverse ways, including through for-profit CI businesses. Yet many common ways of framing cultural and creative activities—the cultural and creative economy, cultural and creative clusters, cultural and creative industries—separate for-profit activities from the cultural domain, with the study of the former limited to CI business activities and the latter to the non-for-profit artistic sectors. However, recent cultural policy literature has begun to break away from this model, employing more inclusive and interrelated concepts to examine cultural and creative activity from a broader perspective.[36] This paper's descriptive and analytical perspective on the spatial organization of CI businesses will hopefully contribute to expanding Istanbul's current urban cultural policy programs and practices, which currently cannot fully address the full plurality and interconnectivity of the city's cultural and creative sectors.

As this paper has shown, the notion of a stark geographic contrast between creatively rich inner-urban neighborhoods and creatively poor neighborhoods in the periphery is no longer tenable. Peripheral neighborhoods are today a constitutive part of the CI landscape. Changing the focus from the volume of urban activities towards the meaningful copresences in these agglomerations makes it possible to see neighborhoods with similar CI agglomeration profiles in the middle- and outer-urban areas on the map, and exploring such copresences of complementary CI activities reveals that the neighborhoods of middle- and outer-urban areas constitute their own creative business habitat.

Considering that copresence variety is a quality, not a maximum number of activities, the neighborhoods identified here raise questions about the organizational and social dynamics behind these copresences. Neighborhoods often have their own distinctive character, particularly in terms of their social diversity, and their own distinct social dynamics, especially the inner-city and peripheral neighborhoods that host creative businesses. Cultural policy programming should take this character and these social dynamics into account in a way that promotes more equitable and inclusive cultural and creative urban environments. That said, outer-urban zones typically accommodate a wide range of neighborhoods with very different potentials for sizeable copresences to evolve, and the agglomeration profiles of CI businesses cannot alone explain the variations between the social and organizational dynamics of different neighborhoods.

Even so, the findings of the present study suggest that creative activities are gravitating toward peripheral locations. The varying local conditions of Istanbul's peripheral neighborhoods, in terms of production, entrepreneurship, and innovation, illustrate the growing importance of such places beyond the existing boundaries of inner-city CI agglomerations. Hence, it is important to assess the copresence of CI companies in the peri-urban and peripheral areas with regard to the dynamics driving Istanbul's transition as a growing metropolis. The drivers for change at a regional scale push the dynamics of CI toward new neighborhoods in peri-urban areas that are more open to autonomous spatial development. This ought to be recognized as part of Istanbul's CI development trajectory.

As Istanbul's urbanization process matures, new questions will appear. For instance, it is essential to track whether the dispersed pattern of CI agglomerations identified here is

36 Manfredi de Bernand, Roberta Comunian, and Jonathan Gross, "Cultural and Creative Ecosystems: A Review of Theories and Methods, towards a New Research Agenda," *Cultural Trends* 31, no. 4 (2022): 332–353.

merging into a coherent structure of urban expansion. Will the city's existing CI agglomerations begin to disperse from the city's inner urban areas to its growing periphery? And if so, what opportunities might this hold for establishing a more balanced and distributed pattern of CI development at the metropolitan scale? In tackling these questions, decision makers in the fields of cultural policy and urban development will need to adapt their goals and their geographical scale depending on the CI mechanisms at work.

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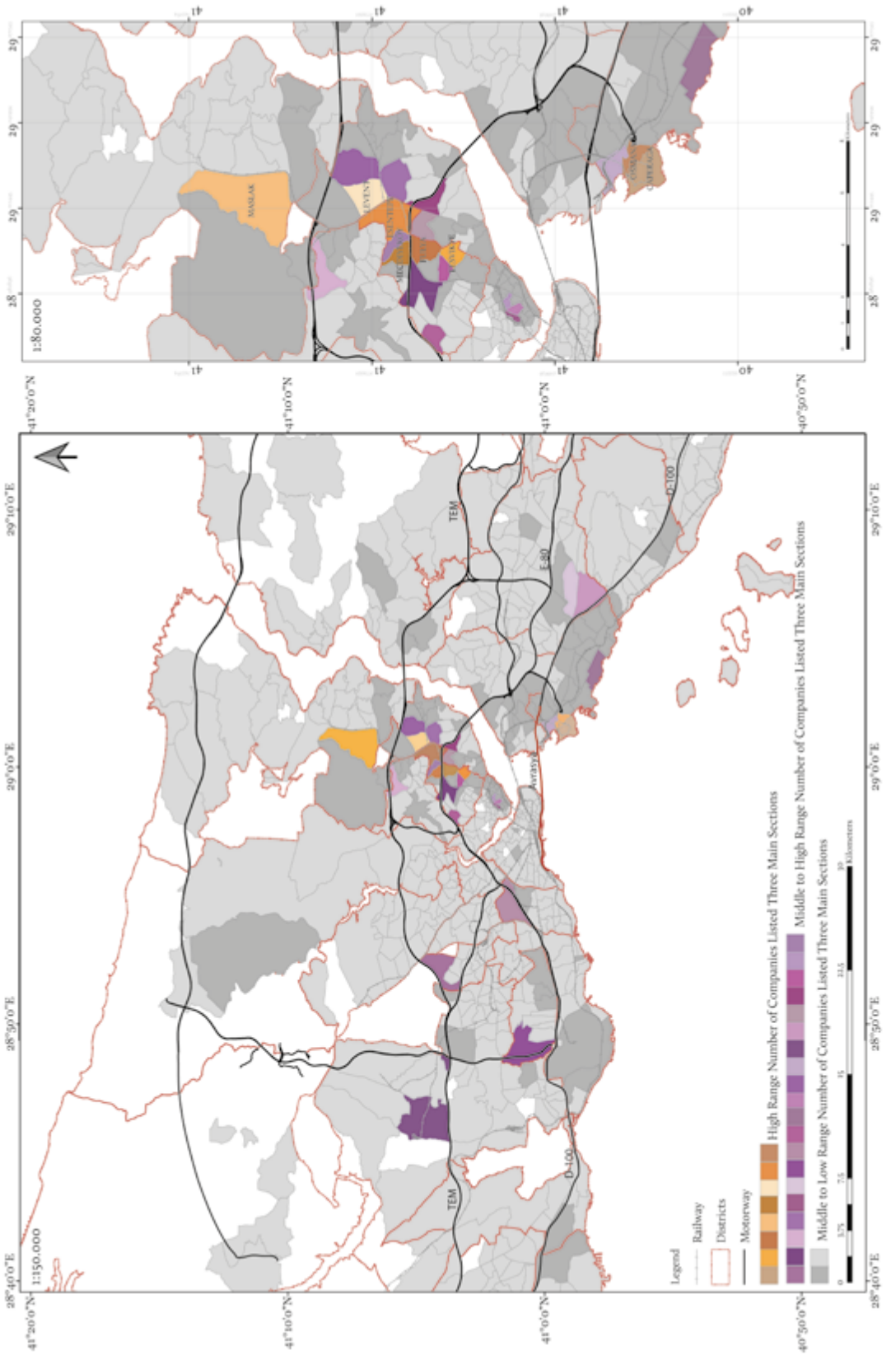
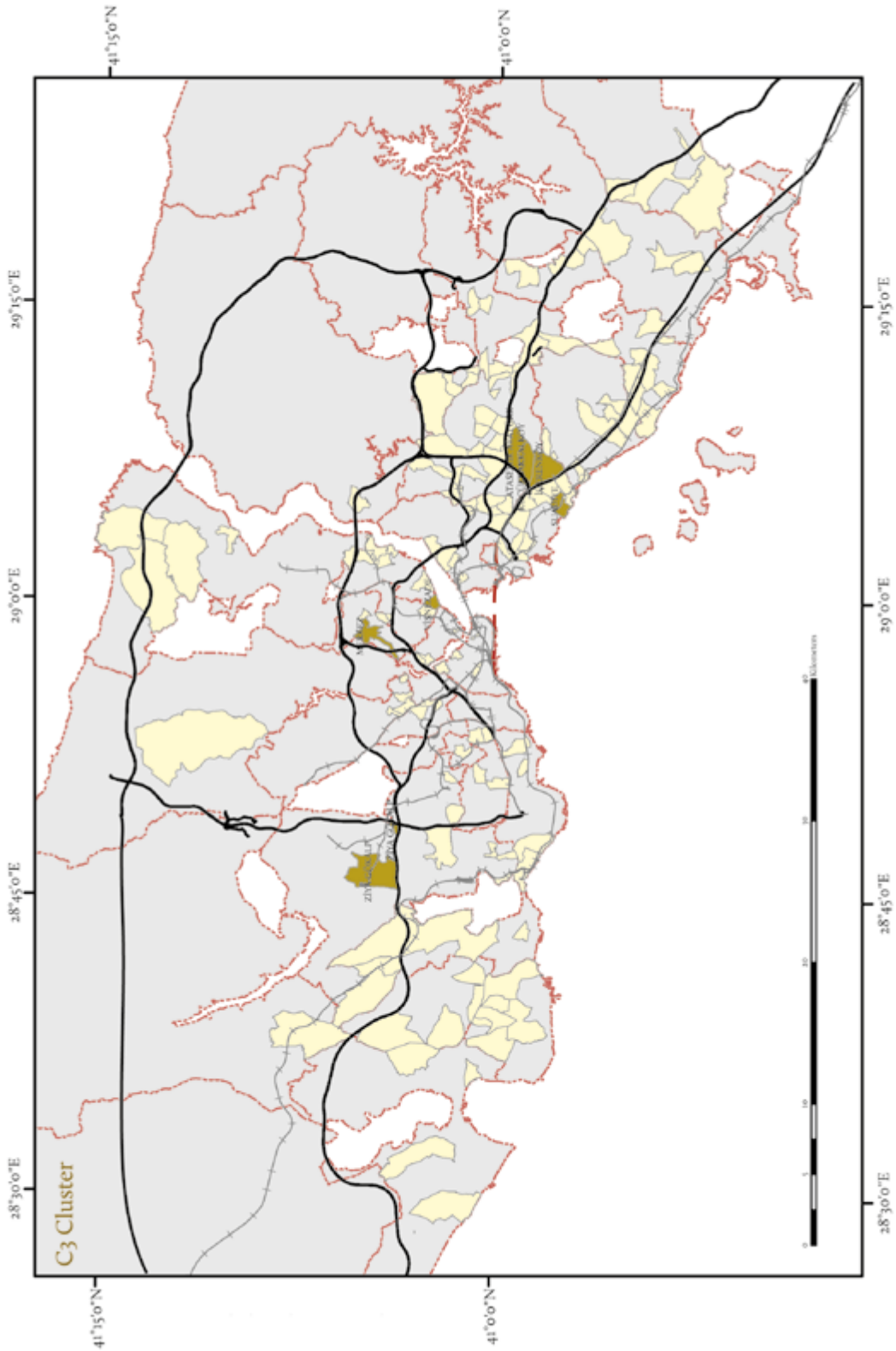
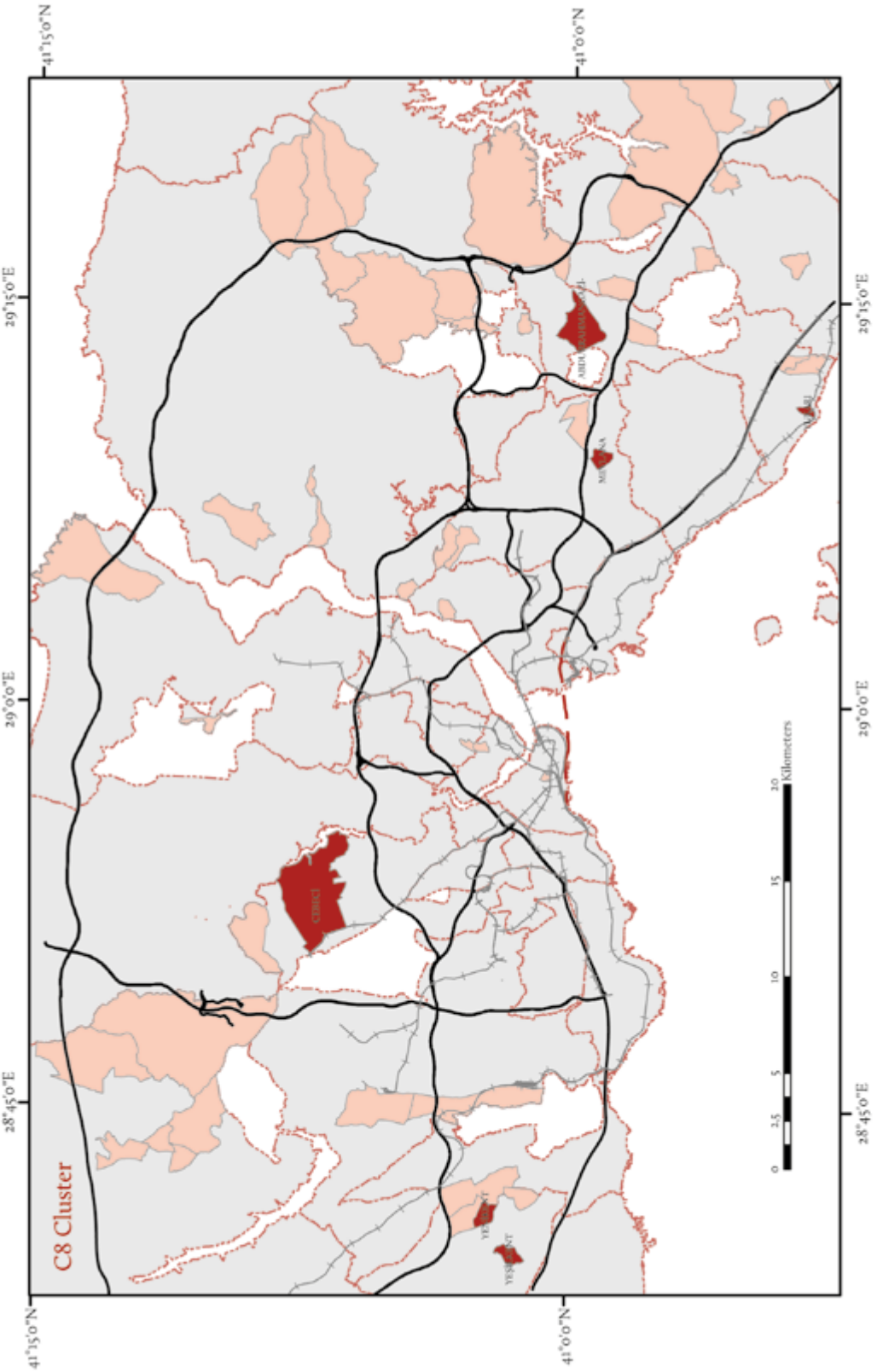


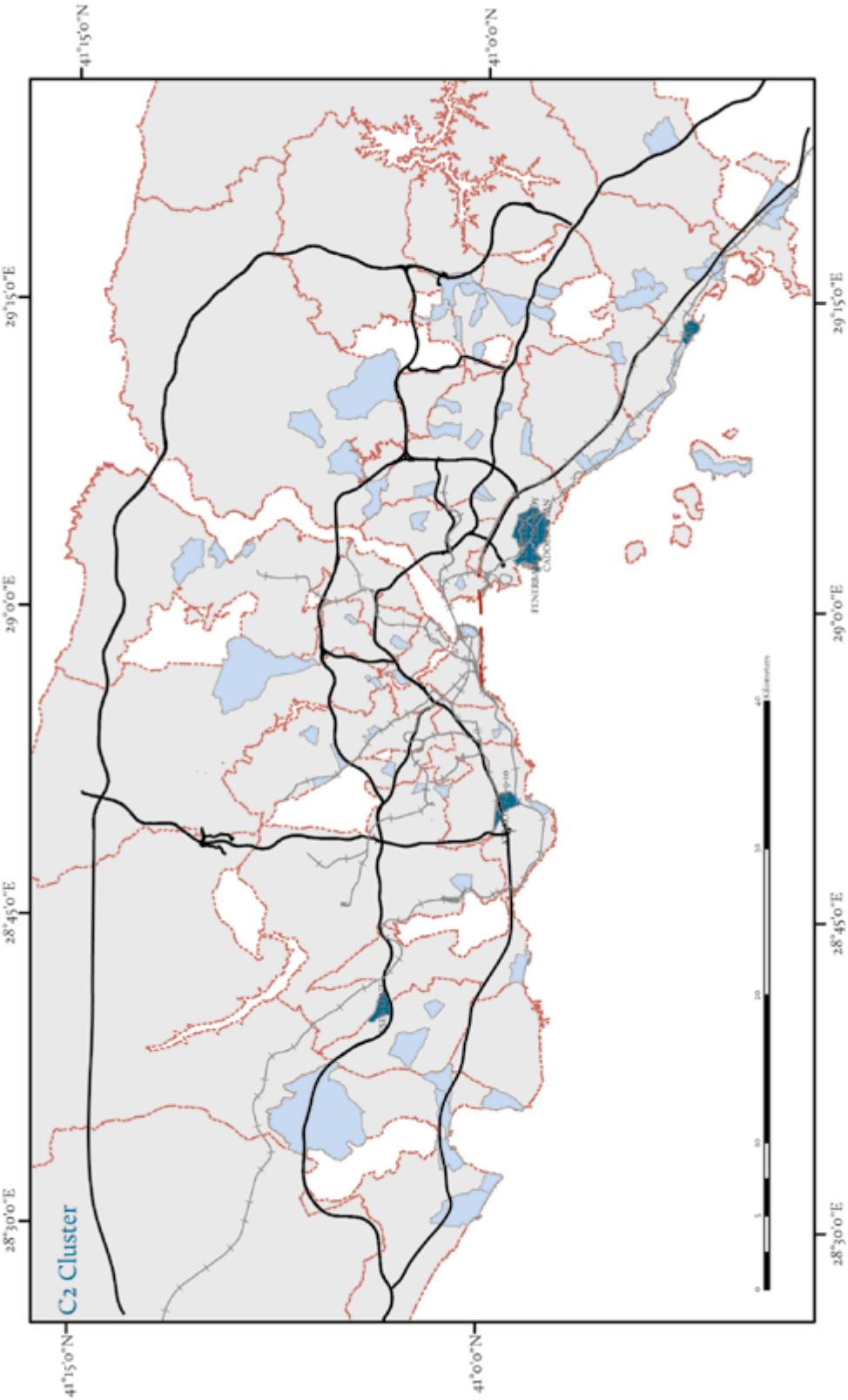
Appendix A: Stratification of neighborhoods with respect to three principal groups of economic activity agglomeration volumes (Section J Information and Communication; Section R Arts Entertainment and Recreation; Section M Professional, Scientific and Technical Activities)



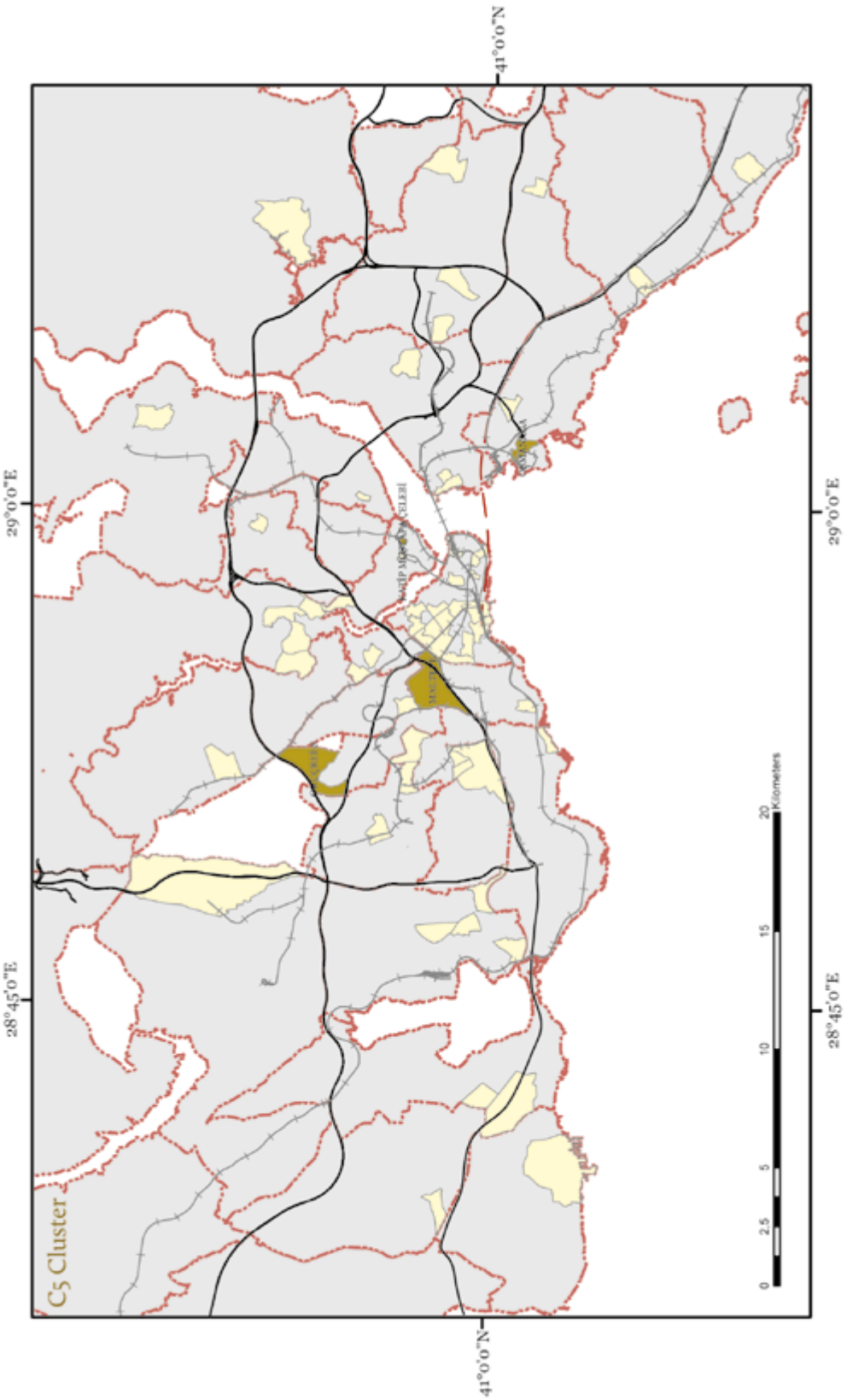
Appendix B: Neighborhoods with copresent agglomerations of architectural and design activities at rates higher than the city average – Cluster 3



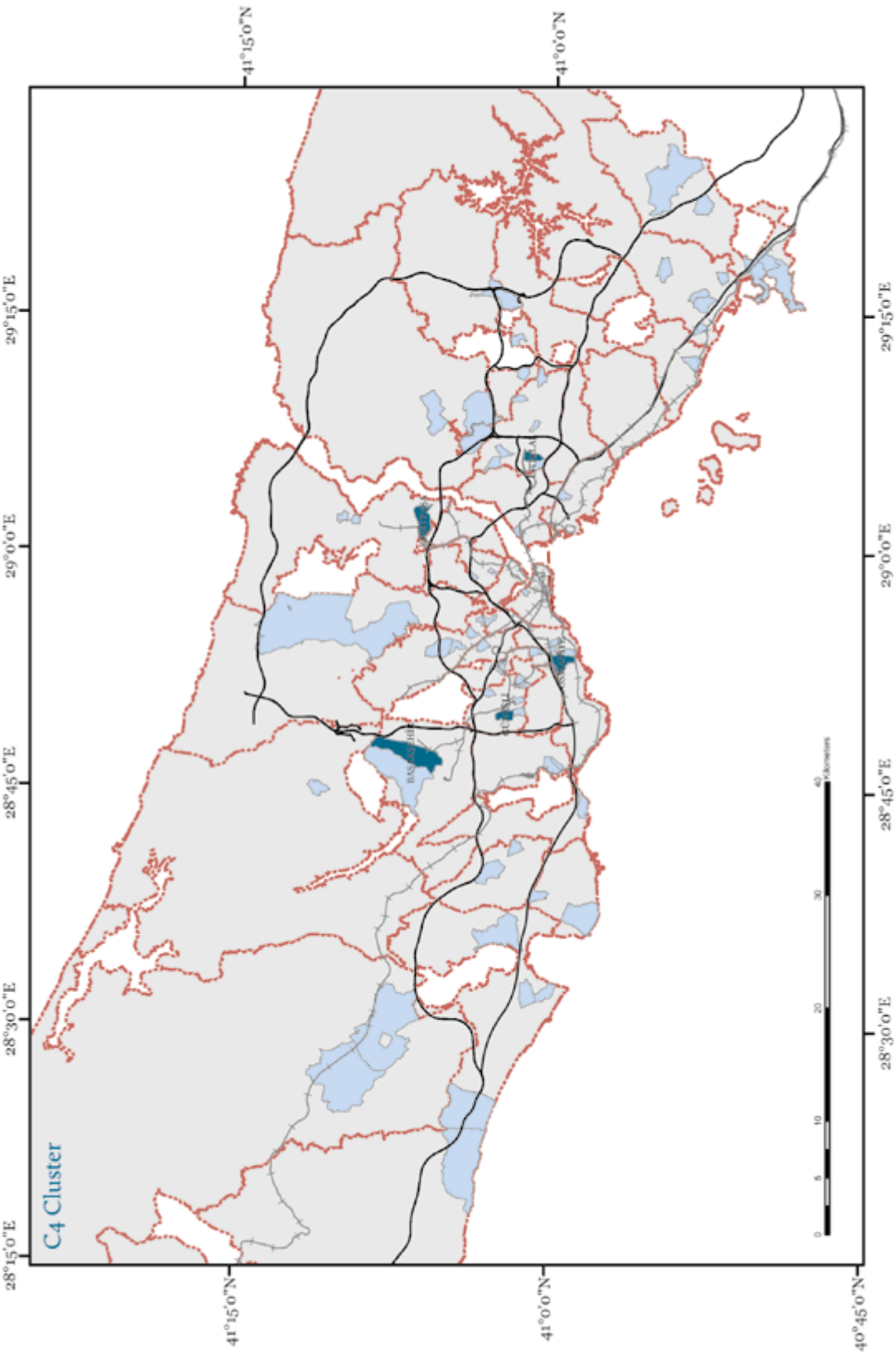
Appendix C: Neighborhoods with agglomerations of architectural activities at rates higher than the city average – Cluster 8



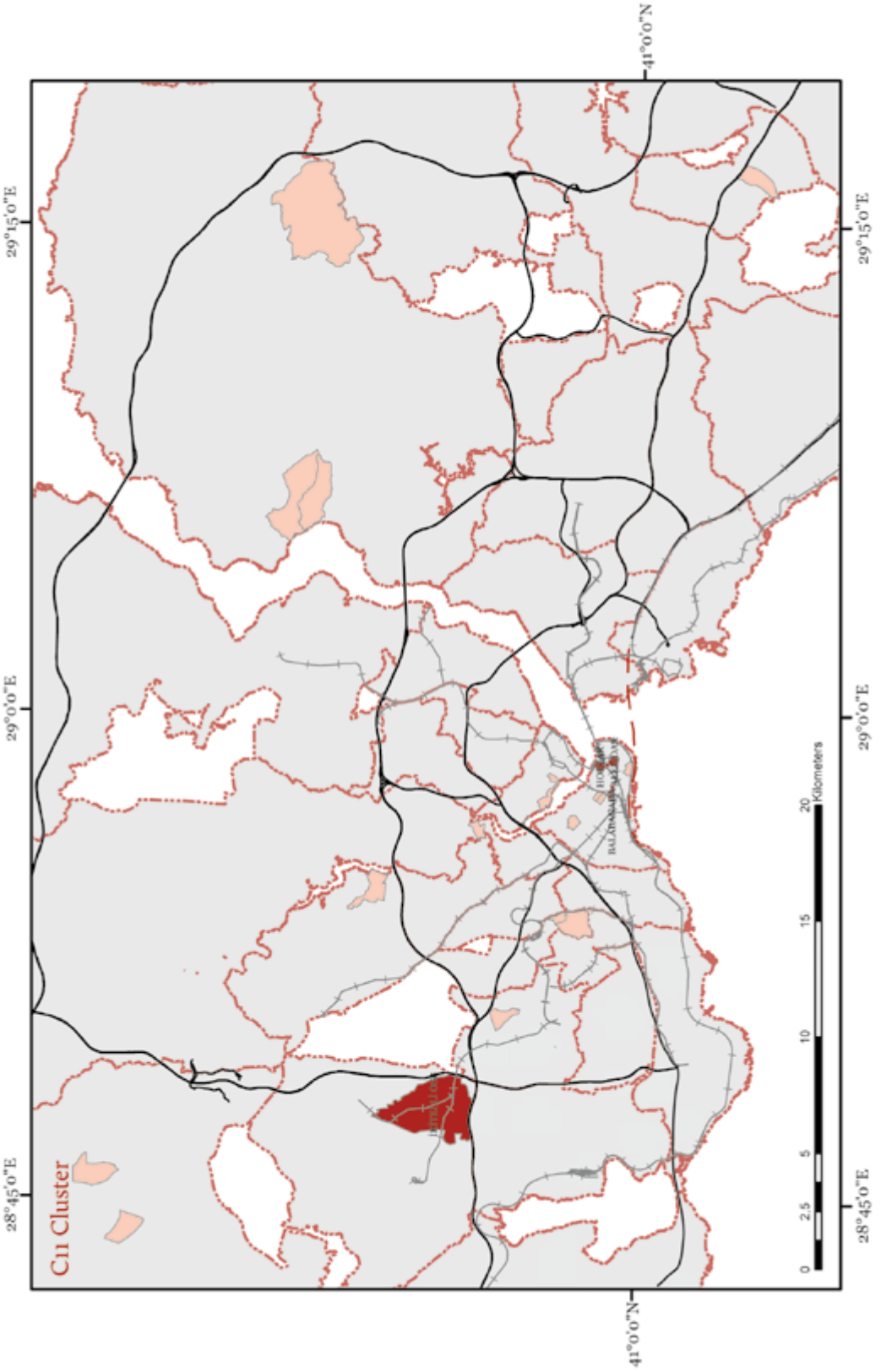
Appendix D: Neighborhoods with copresent agglomerations both of architectural and design activities and of creative arts and entertainment activities at rates higher than the city average – Cluster 2



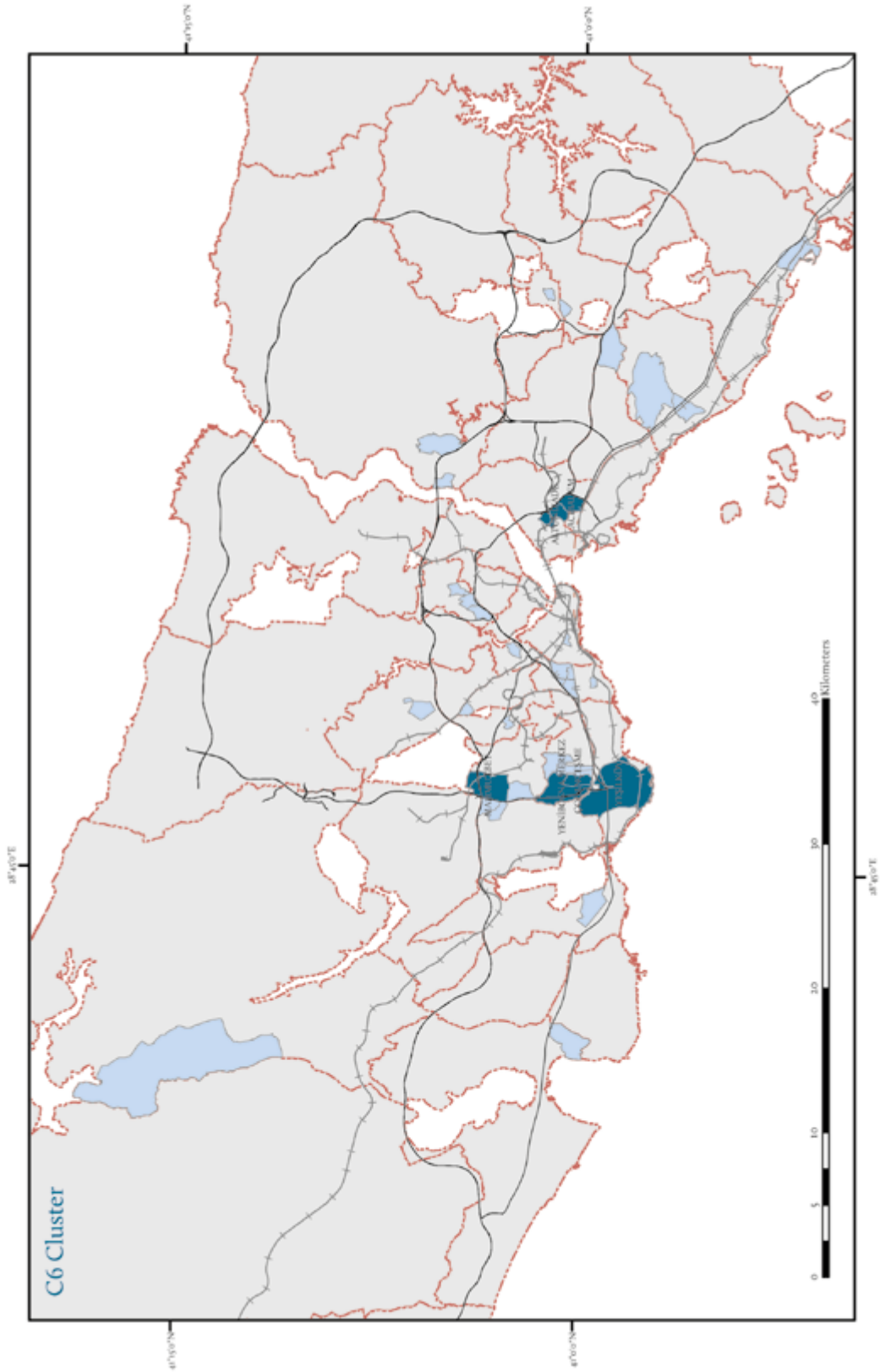
Appendix E: Neighborhoods with copresent agglomerations of publishing and photography activities at rates higher than the city average – Cluster 5



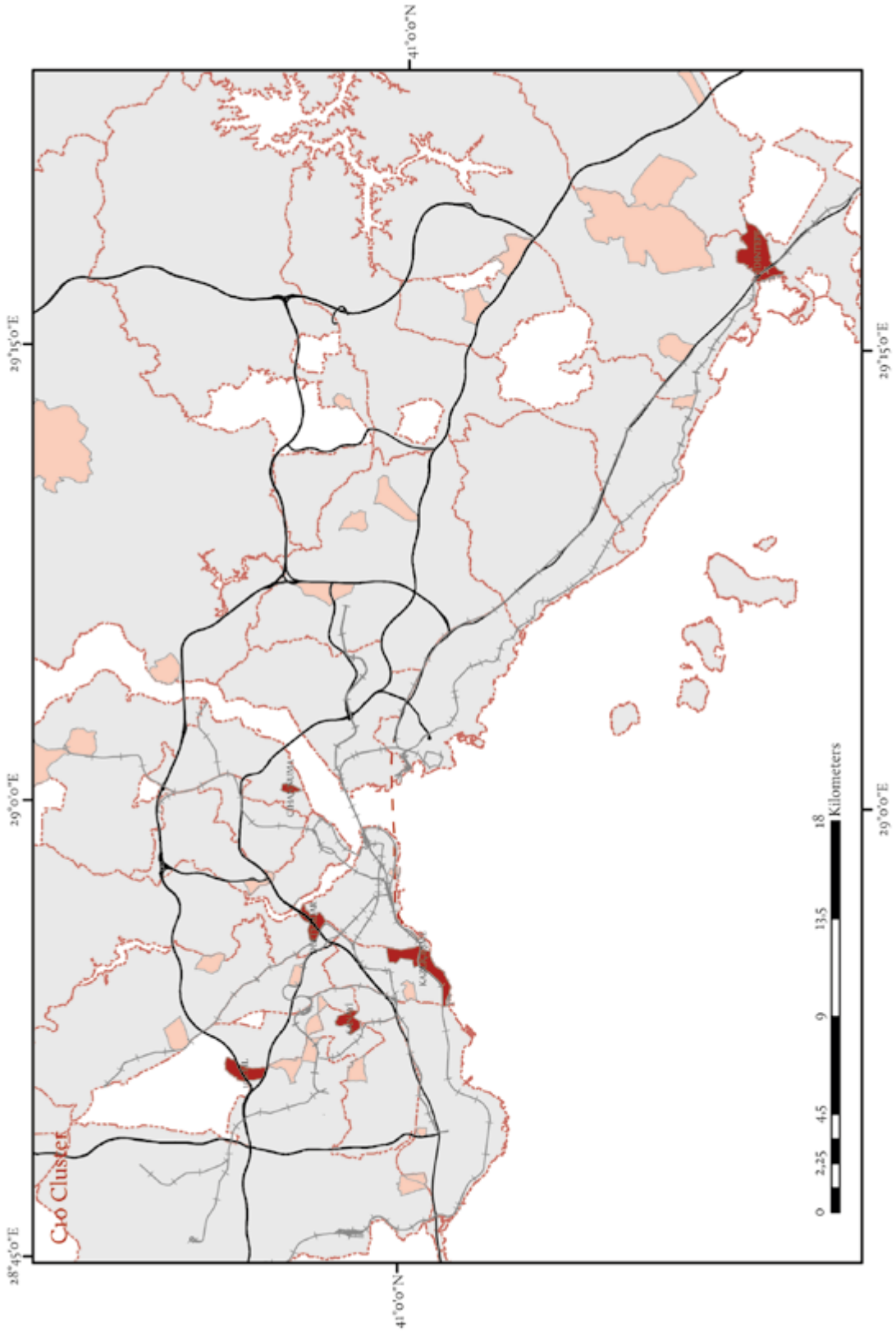
Appendix F: Neighborhoods with copresent agglomerations of publishing, photography, architecture, and design activities at rates higher than the city average – Cluster 4



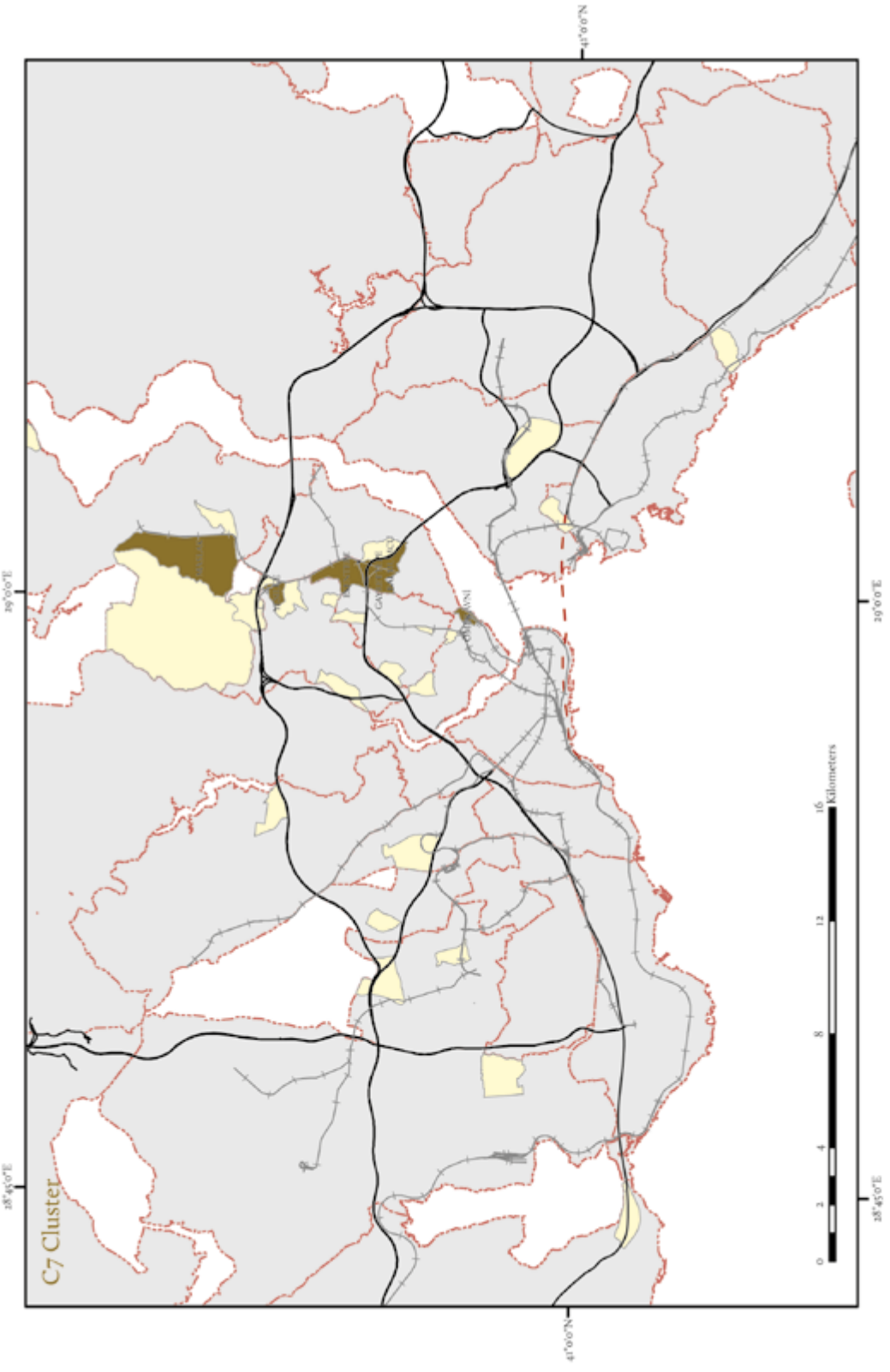
Appendix G: Neighborhoods with agglomerations of publishing activities at rates higher than the city average – Cluster 11



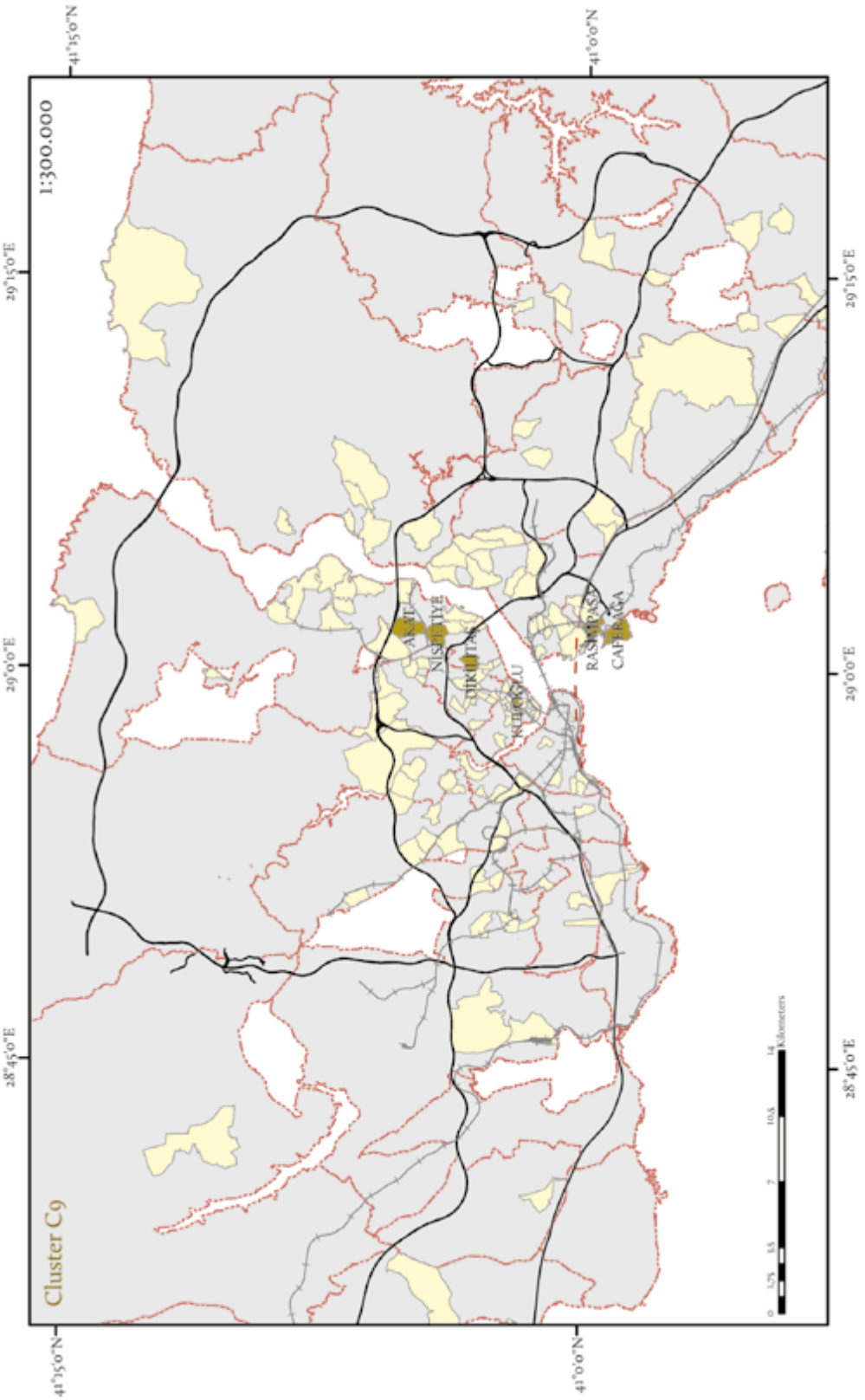
Appendix H: Neighborhoods with copresent agglomerations of programming and broadcasting, advertising, and architecture and design activities at rates higher than the city average – Cluster 6



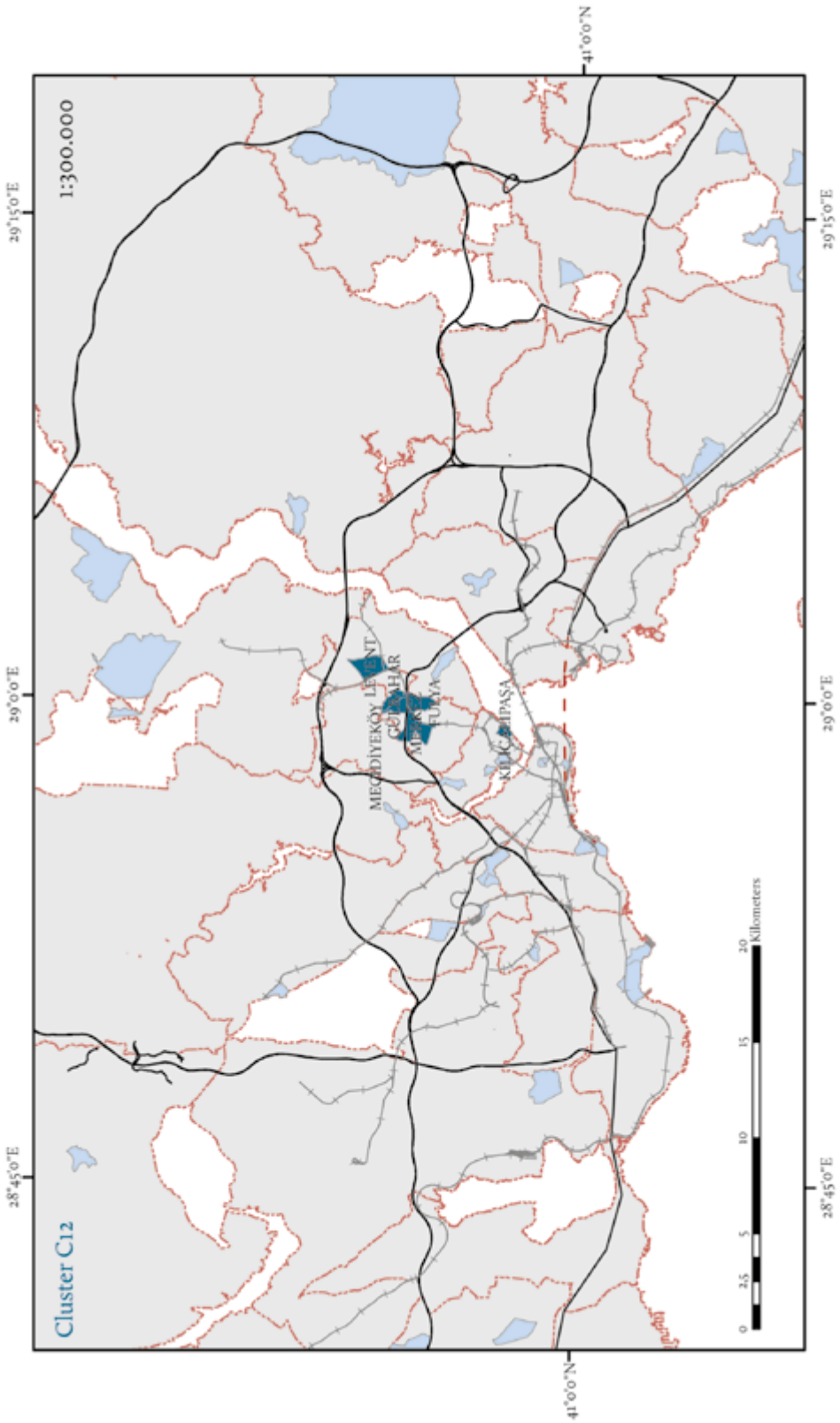
Appendix I: Neighborhoods with agglomerations of programming and broadcasting activities at rates higher than the city average – Cluster 10



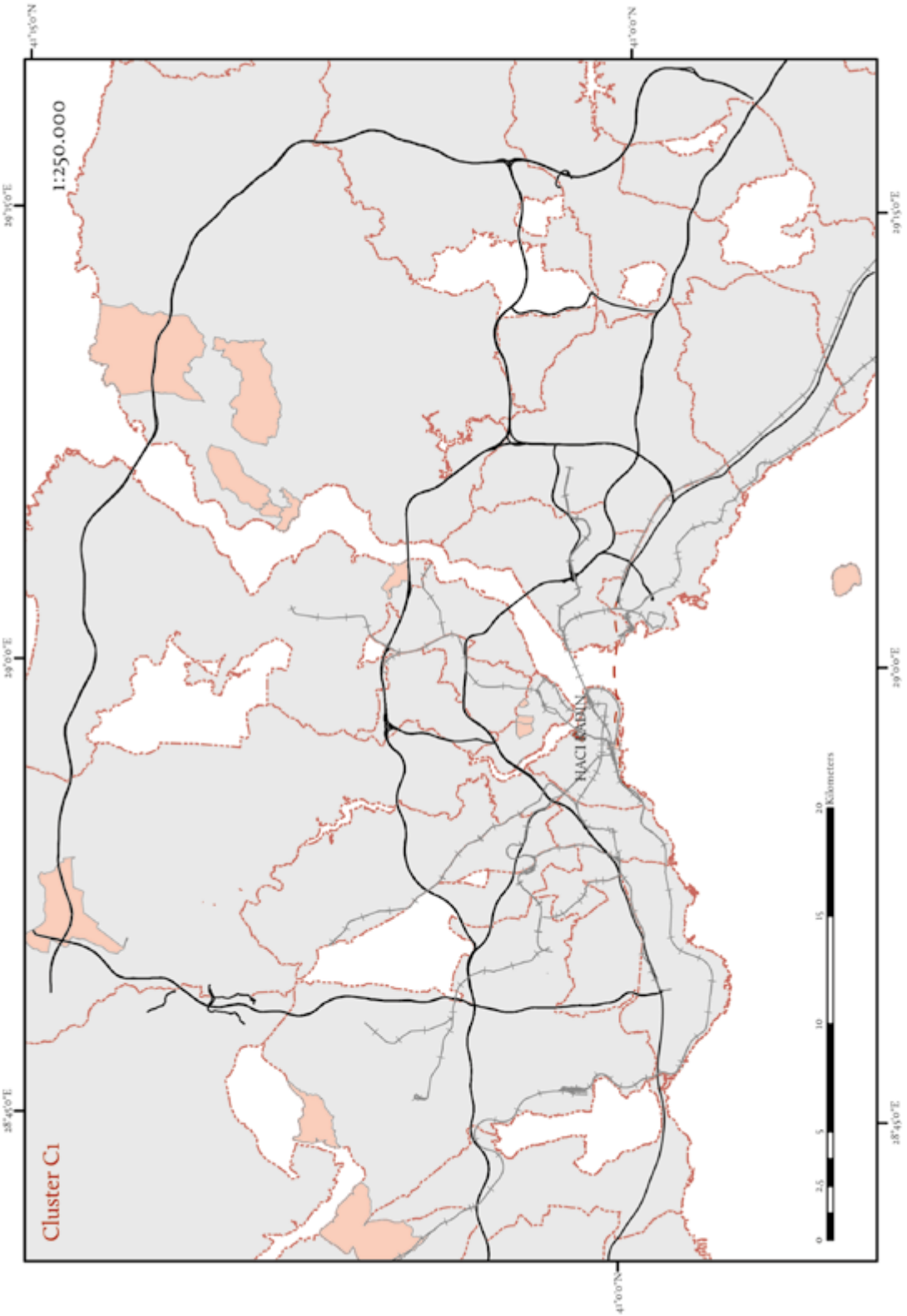
Appendix J: Neighborhoods with copresent agglomerations of programming and broadcasting, advertising, motion picture, video, and television program production, sound recording, and music publishing activities at rates higher than the city average – Cluster 7



Appendix K: Neighborhoods with copresent agglomerations of motion picture, video, and television program production, sound recording, and music publishing activities, creative arts and entertainment activates, and photography and advertising activities at rates higher than the city average – Cluster 9



Appendix L: Neighborhoods with copresent agglomerations of programming and broadcasting, advertising, design and architectural activities at rates higher than city average – Cluster 12



Appendix M: Neighborhoods with copresent agglomerations of motion picture, video, and television program production, sound recording, and music publishing activities at rates higher than the city average – Cluster 1