

Anatomy of the Critical Urban Mixedness: the Barcelona Eixample Grid during the Lockdown 2020

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Abstract

Within the framework of a wide research on urban mixtcity, this paper analyses the image of Barcelona during the 8-week lockdown in Spring 2020, in which only essential movements were allowed. As it happened in many other confined cities, in this dystopian scenario characterized by empty streets, the disposition of activities became as much or even more important than in the active city itself, because it turned the “additional value” that commerce represents into “essential value” in the exceptional context. From this perspective, it’s worth understanding to what extend citizens were able to find minimum services in the immediate vicinity of their place of residence.

The research focuses on comparing the differences in quantity, variety and proximity of essential services present in diverse urban fragments through GIS mapping tools. Series of maps provide overall views on: the intensity of use to which each service is subjected; latent logics of their physical proximity; and alterations in regular urban fabrics due to a combination of activities and population distribution. This investigation aims to contribute to the understanding of the necessity of the urban mixture giving clues about the distribution of services and activities, stressing the importance of urban proximity in the urban agenda for a more liveable city.

The research points, on the one side, the uniqueness of the case of Barcelona for the compactness of the urban fabric and the contiguity of activities; and on the other side, the differences and similarities in the performance of three different fragments of twenty-four blocks in the Eixample grid during the lockdown, evaluating how the urban landscape changed during that time.

Keyword: *Barcelona, Eixample, Urban mixtcity, Activities, Lockdown.*

Introduction

This article presents part of an ongoing research that, from the disciplinary field of urbanism, tries to contribute with new empirical and objective approaches to the non-residential issues of the contemporary city and the combinations between them to form mixtcity (Crosas and Gomez-Escoda, 2020, 2021).

The investigation is based on the hypothesis that urban sustainable mixedness is one of the most essential qualities that nourish the myth of the good compact city. Although paradoxically citizens have not always considered mixed functional use as a panacea, in functional terms, the act of “mixing” facilitates social diversification and spatial contiguity of different functions, while opposition to the mix creates large homogeneous urban areas, which are not therefore exempt from conflicts. According to theoretical approaches to the concept (Grant, 2002), urban mixtcity —and the synonym concepts mixedness, functional mixed-use or mixture— means a responsible and sustainable use of the city as it implies a wider

use of the urban infrastructure combining different time slots; provides an urban setting that substantially increases the level of social interaction; saves energy consumption minimizing everyday movements, increasing soft mobility and pedestrian uses; and activates strong synergies among compatible uses, encouraging new compounds that will be able to provide appropriate responses to forthcoming demands.

Being the formal, functional and social mixture concepts of extraordinary actuality and validity in the discussion of reconfiguration of cities, the research explores empirical and objective approaches to the combinations between non-residential uses in the contemporary urban settings. Although the disciplines of urban planning and urban design have deepened in the field of determining valid formulas for the measurement and evaluation of the eminently residential city, research that makes parallel efforts in the case of non-residential functions is scarce, due to the difficulty of covering the wide range of matters related to activities, whether productive, commercial, or intended for leisure or for creation, to name a few.

From this perspective, Barcelona is presented as a case study, as it is a renowned example of compact city that treasures a good tradition of urban design and urban planning practices. Despite the fact that many sectors of the metropolitan region were born in the twentieth century following monofunctional patterns—residential districts versus productive and leisure areas—a large area in the city centre—encompassing the old city, the large grid of the Eixample and the surrounding old neighbourhoods—is made up of a remarkable mixedness.

A Laboratory made by Fragments of a Grid

The research focuses on the in-depth analysis of the quantitative measurement and the qualitative spatial configuration of representative fragments of the Eixample grid laid by Ildefons Cerdà's in the mid nineteenth century. Areas of approximately forty-two hectares have been selected as a pilot for a wider analysis due to the interesting mix of the grid, composed by high-density housing and commerce, but also by productive and tertiary activities.

A precise analysis of the three pilot fragments offers some clues to understand the distribution of activities and discusses the dialogue between form and function on an urban scale. Furthermore, the research participates in the debate on compatibilities between different programs and flows (residents, workers, visitors, tourists, but also energy, goods, vehicles). In this sense, focusing on the local context, the implementation of the superblock (*superilla*) project based on a new mobility diagram for the whole city—distinguishing in the homogeneous existing layout between primary and secondary roads, giving more space for pedestrians, soft mobility and greenery—will have a notable impact on the distribution of the activities that this research analyses. The approach takes as starting point that the distribution of activities

on the ground floor level in Barcelona responds to some rationale rules of location and relation to population and geography, so critical balances and distances between them can be established.

Lockdown 2020: Testing the Mixticity

An Exceptional Urban Performance

Since March 14 2020 and for 6 weeks time, only essential services were allowed to continue operating: food stores, pharmacies and health facilities were, during a period of eight weeks, part of the few blinds that were raised at ground level in the city. Barcelona switched from hosting 2,3M people on March 13, 2020 to 1,6M two days after. The drastic reduction of vehicle movements highlighted the unprecedented quality of air —both in terms of pollution and visibility— and an explosion of greenery in the city. The city went in only few hours from being a hyper-connected metropolis to exclusively depend on proximity services. In this dystopian scenario, the disposition of commerce became as much or even more important than in the active city itself, because it turned the “additional value” that commerce represents into “essential value” in the exceptional context (Figure 1). From this perspective, it’s worth scanning to what extend citizens were able to find minimum services in the immediate vicinity of their place of residence.



Figure 1: *Activities at street level in Barcelona before and after mid-March 2020. Source: Authors’ elaboration.*

Available open data allows comparing the differences in quantity, variety and proximity of the six essential remaining open services during the very first lockdown in Barcelona: market halls, bakeries, supermarkets, grocery stores, pharmacies and healthcare facilities. Series of maps characterize different aspects in overall views: the intensity of use to which each service is subjected; latent logics of their physical proximity; and alterations in regular urban fabrics due to a combination of activities and population distribution. Figure 2 shows in parallel three synthetic maps of this parameterisation of essential services: the strip on the left explains, using Voronoi cells, the theoretical allocation of population to the closest service in each category; the central strip shows the highest quintile for each category, areas around different premises serving a highest number of inhabitants; and finally, the third strip represents the number of services in each category within a radius of 400 meters.

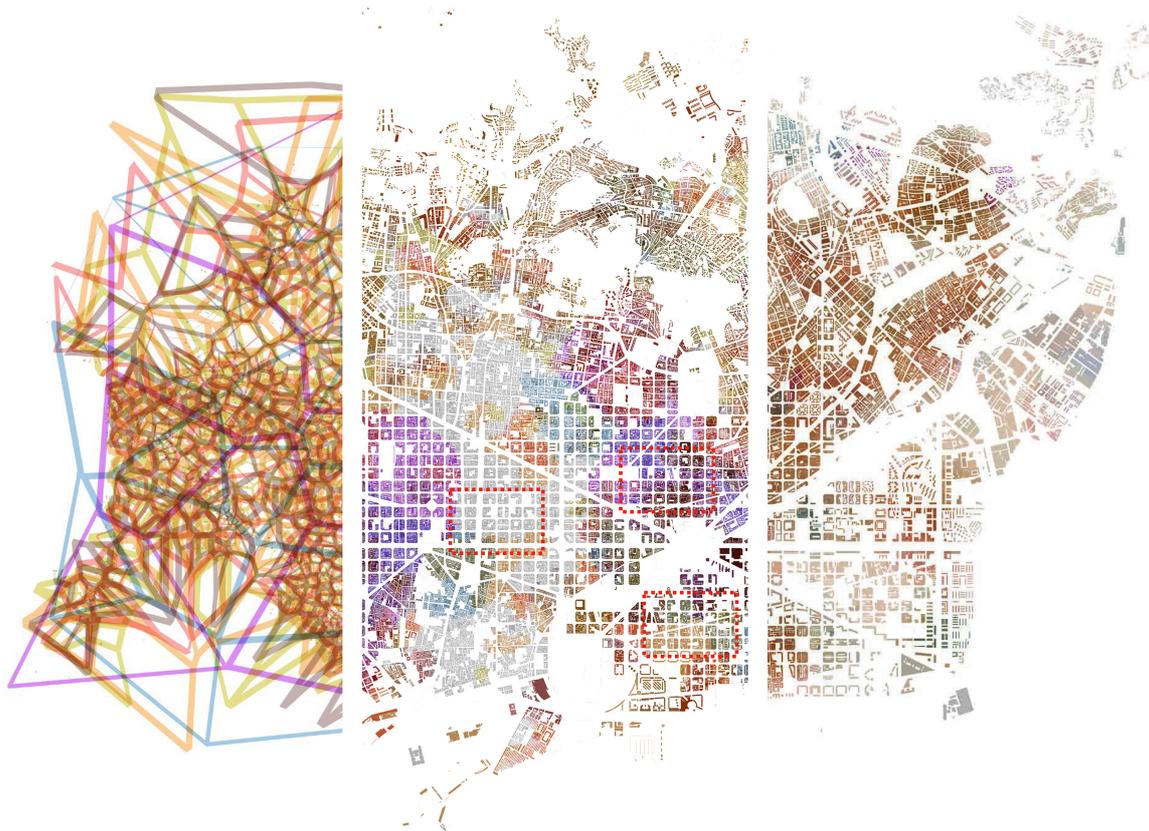


Figure 2: Fragments of three synthetic maps. Allocation of population to the closest service in each category (left); Areas with the highest allocation of population (centre); and Minimum number of services (right). Source: Authors' elaboration.

Besides the graphic illustration, GIS tools also provide certain standards in relation with different premises. First of all, in terms of quantification, each supermarket is used by more than 700 inhabitants while market halls, whose exceptional character is based nowadays on their ability to bring together local centralities rather than exclusively supplying food, have an intensity of use more than 60 times greater. Each grocery store—in a theoretical exercise that does not take into account what type of product each specializes in and, therefore, ignores the necessary complementariness between establishments of this category—serves more than 800 inhabitants while each bakery serves more than 1000 Barcelonans. Each pharmacy serves more than 1,500 inhabitants and health care facilities provide an ideal balanced distribution of more than 30,000 Barcelonans per centre.

In second place, regarding the location of those urban fragments in which each activity is subject to a greater demand, the threshold for maximum demand values is set to 2,035 to 5,044 Inhabitants for pharmacies, 1,221 to 5,892 for groceries, 1,001 to 3,712 for supermarkets, 1,582 to 7,502 for bakeries, 54,470 to 104,345 for market halls, and 28,323 to 50,275 inhabitants for healthcare centres.

And finally, the number of premises dedicated to the analysed activities within a 400-metre radius provides a reference to understand further partial data: excluding facilities, industrial buildings, and infrastructure

services, each plot in the city has, in average, in 400 meters around, almost 25 supermarkets and quite the same amount of grocery stores, more than 17 bakeries, and more than 10 pharmacies. With the lens of urban daily services, all the plots in the city have 75 of these basic activities within a five-minutes' walking distance (Crosas and Gomez-Escoda, 2020).

Laboratory 'Eixample' Mixedness (1): Similarities and Differences over the Grid

The analysis during confinement is an opportunity to examine critical urban mixedness, and to re-look at the laboratory through three fragments equal in size but that appear as heterogeneous in the analyzes synthesized in the visualizations presented in Figure 2. The in-depth approach to three selected fragments offers an interesting view on the variation on the activities performance on neighbouring areas with identical urban geometry.

The first fragment is located around Passeig de Gràcia, where tertiary activities extend up north the centre of Barcelona, configuring a business district area in the geographical and symbolic core of the city. The second fragment represents the residential and mixed tissue in Barcelona's grid, with high density of inhabitants and activities, with the singularity of hosting the world-famous architectural monument Sagrada Família by Antoni Gaudí; and finally, the third area corresponds to a fragment of 22@ district, that occupies the eastern side of the grid, which is the most dynamic transformation sector in Barcelona, switching from the former landscape of industrial factories to an innovative district. Among the three, Sagrada Família has the highest residential density, and despite the effects of tourism, it is representative of many other areas in the Eixample grid; Passeig de Gràcia has the highest concentration of tertiary activities and commercial establishments; and finally, the 22@ district is the area that concentrates the highest number of workplaces and the lowest number of households.

The graphic intensity of lines and hatches in the series of detailed crops (Figure 3) clearly shows their very different nature and it is indicative of the density of services. Paradoxically the so-named "central district" (Passeig de Gràcia) doesn't seem to be the most intense, that is undoubtedly Sagrada Família.

The first column of the matrix shows both the distribution of essential services (the more services, the smaller the voronoi cells) and the density of population associated with each cell (the thicker the line, the more population). Except in the case of big facilities, more equidistributed (markets and Health Centres), the quantity of services is the highest in Sagrada Família, medium in Passeig de Gràcia and the lowest in 22@ district.

The second column depicts the areas around different types of premises serving a major number of inhabitants, where the grey colour means "no service" and the rest of the tones are the result of overlapping different best service areas for the 6 categories (being the darkest, the most well served). There is a lot of divergence among the three: Sagrada Família keeps being in the pole position, 22@ district

in the second, Passeig de Gràcia, in the third. The reasoning is quite clear: although there's a major number of premises in Passeig de Gràcia, the population density is, proportionally, even lower than 22@ District, that being an industrial sector, had always had a certain mix-use character for hosting some working-class housing.

Finally, the third column shows the level of essential services in a radius of 400 meters from any point in each fragment. It offers a more synthetic expression than the first column and also a contrasting result from the second. In this case, it is possible to observe some nuances within the different areas. In the Passeig de Gràcia sector, the average medium service grows as far as we move away from the main artery since the tertiary specialization (offices and hotels) is very concentrated along the two vertical axes (Rambla Catalunya as well). In Sagrada Família neighbourhood, despite the good service, the highest standards are concentrated in the central upper part, what means in the area that is not so close to the tourist attractions; and finally in 22@ district, the low average service grows in the southern part of the Pere IV (diagonal), mainly for the influence of the old neighbourhood of Poblenou (east) and also the contact with the residential traditional Eixample grid (west).

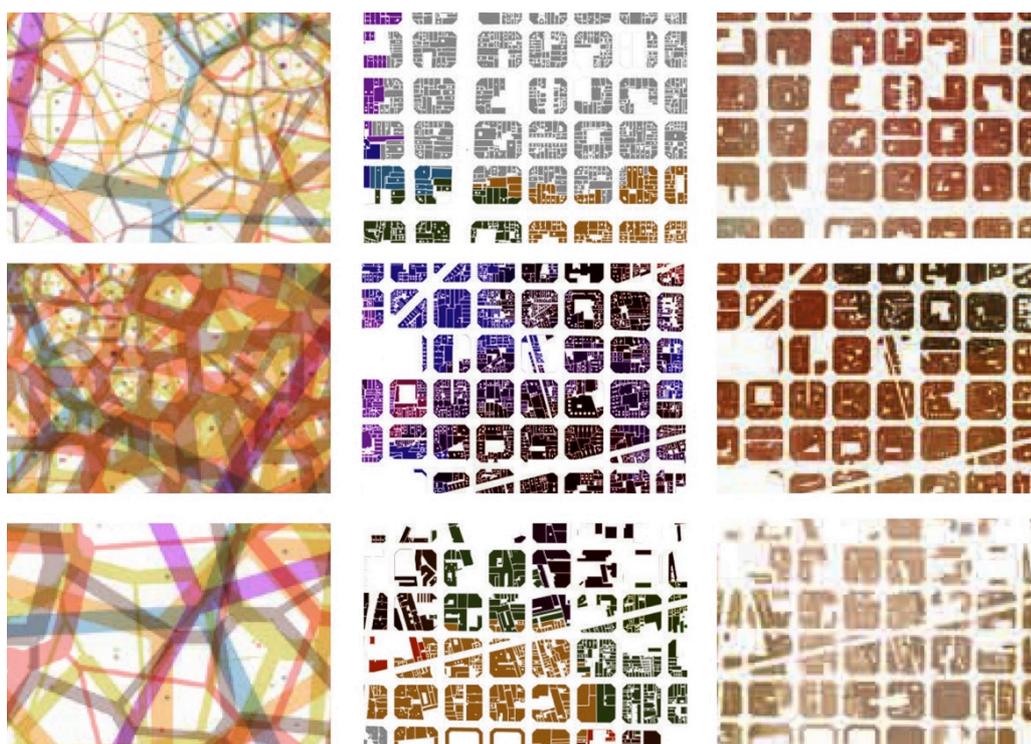


Figure 3: Three Eixample fragments. Allocation of population to the closest service in each category (left), Areas with the highest allocation of population (centre), and Minimum number of services (right). Source: Authors' elaboration.

Laboratory 'Eixample' Mixedness (2): On Blocks and Streets

Due to the geometric homogeneity of the grid, it is also possible to evaluate the real impact of essential activities on the configuration of blocks and street frontages. Focusing on the three same fragments, Figure 4 measures, on the one hand, the mix-use character of the three fabrics regarding the number of

establishments on the ground floor of each block (in colours, on the left); and on the other hand, the proportion of essential services in the composition of each block that remained open during the lockdown (black and grey, on the central column). From this perspective, the first and second grid fragments are relatively similar and host a substantially higher number of activities than the third: although this proportion is rarely higher than 25% (except in blocks with market halls), the highest percentages are seen in the Sagrada Família District, whereas proportions around Passeig de Gràcia main axis are minimum and tend towards zero in many blocks of the 22@. Finally, the right side column depicts the effect of the lockdown: the sidewalks with at least one essential commercial establishment (in red) versus the ones with no establishment operating (blue) are represented. It is interesting to see a desert of activity around Passeig de Gràcia comparing with various vertical axis in Sagrada Família, that kept a minimum activity, still signalling the characteristic, robust continuity of the Cerdà grid.

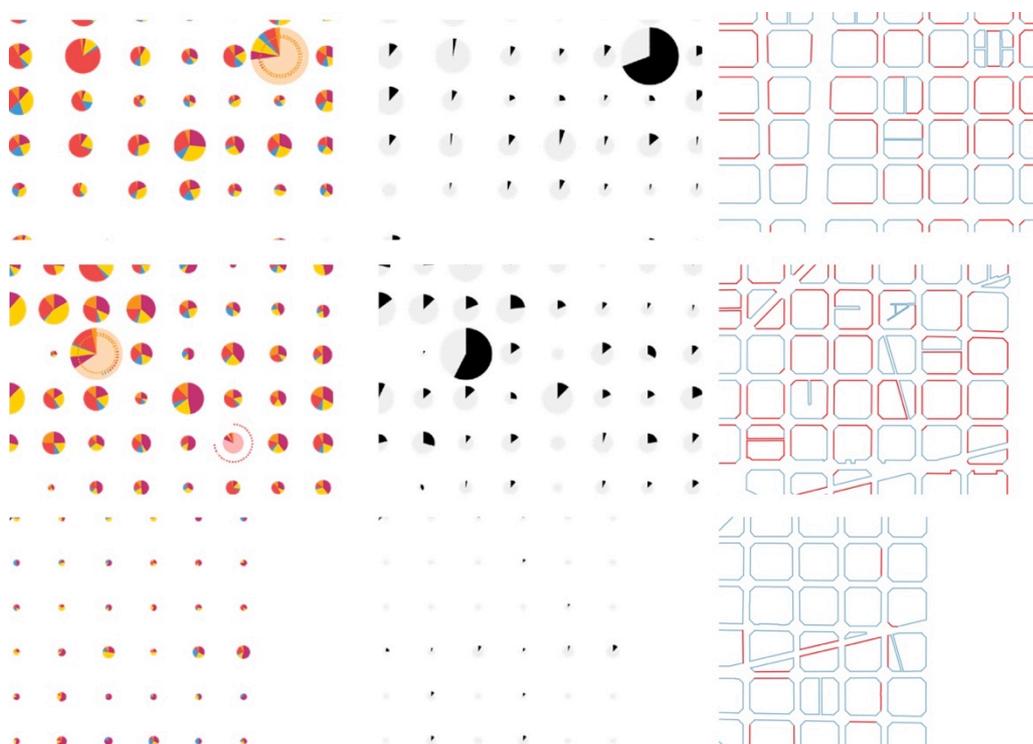


Figure 4: Three Example fragments. Activities mixture by blocks (left), Proportion of essential services in relation to the total number of activities (centre) and Streets with essential services (right). Source: Authors' elaboration.

Conclusion

Regardless of the exceptionality of the moment, looking at the confined city allows us to glimpse the potential of research on the mixedness of urban activities, an investigation based on the hypothesis that urban sustainable mixedness is one of the most essential qualities that nourish the good compact city.

Mixticity has increasingly become one of the essential positive qualities in compact cities. The more mixed urban fabrics are, the more sustainable the city they compose. In functional terms, the act of “mixing” means a responsible use of the city; it provides an urban environment that substantially increases the level

of social interaction; saves energy consumption by minimizing everyday movements, increasing soft mobility and pedestrian uses; and activates strong synergies between compatible uses, stimulating new compounds capable to provide appropriate responses to future demands.

The look at a homogeneous tissue in which the number of variables that make up the mixture is limited allows testing representation and measurement tools that can, from here, become more complex to adapt to the analysis of diverse tissues and that integrate a greater number of activities.

Acknowledgements

The investigation is linked with the Competitive Project founded in the «R&D Projects» 2020 - Modalities «Research Challenges» on the National Plan of the National Plan for Scientific, Technological and Innovative Research, 2017-2020, Government of Spain, entitled “[METRO·MIX] Proximity and Mixedness for Healthier Cities. Criteria and Tools for the Assessment and Promotion of Mixed-use Activities in Compact Metropolitan Areas”. This research has been carried out with the collaboration of the architect and student of the MBArch-ETSAB Mikel Berra-Sandín.

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