



Pla Estratègic  
Metropolità  
de Barcelona

Implementing the fifteen  
minute city, forty- five  
minute region, and  
superblock in the  
Barcelona metropolitan  
area

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# PEMB CHALLENGE: ACCESS IN THE BARCELONA METRO AREA

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# INTRODUCTION

In late May of 2022, the PEMB Challenge Team—four interns from Princeton University—was proposed with the task of exploring the ideas of the 15-minute city, the 45-minute region, and the fractal city and how to implement them in the city of Barcelona and its surrounding metropolitan region. Through our research, we set out to explore how these ideas might increase the quality of life for all that call Barcelona home. The 8-week challenge started with extensive research on the three key concepts of the 15-minute city, the 45-minute region, and the fractal city. By reading articles, watching videos from experts, and listening to podcasts and news clips, we began to piece together the meaning of these ideas and how they might function in Barcelona. Once we knew **what** we wanted to implement, the focus of our challenge pivoted to the more important, and more difficult, question of **how** these concepts could be used in harmony to construct the best environment for citizens across all facets of life.

Continuing our challenge, and under the guidance and direction of our supervisor Oriol Estela, we turned to experts in the fields of urban planning, economics, public policy, and more. By interviewing a plethora of established experts, we developed an understanding of the 15-minute city, 45-minute region, fractal city, and how these concepts coalesce into a unified picture of successful, sustainable, and equitable urbanism.

The goals of our research, and subsequently this report, can be broken down into three main categories: (1) What changes will be experienced as the 15-minute city, 45-minute region, and fractal city are implemented (i.e., the current problems and their solutions), (2) How these solutions can be achieved and implemented, and (3) how to engage the community in this project (e.g., instigating grassroots campaigns).

# CONCEPTS

## A. 15-Minute City

The **15-minute city** provides citizens equitable access to all the services they need to live, interact, and thrive within their immediate vicinity: 15 minutes by foot or bike (46). Whether an adult commuting to work or a child taking the bus to school, every citizen carves a different path throughout their day. Through an emphasis on the **polyrhythmic** and **polychronic** paths of urban life, 15-minute cities acknowledge the various paces and itineraries of the individual (32). By providing the most necessary services within a short radius, cities may meet the diverse needs of individuals regardless of their neighborhood or personal status.

The 15-minute city respects a variety of schedules due to its roots in **chrono-urbanism**, which involves city planning that revolves around time. From optimizing traffic schemes to work commutes, the chrono-urban model prioritizes efficiency through **hyper-proximity**, the reduction of the speed and distance needed for a citizen to travel from one point to another (32). By reducing travel duration through robust public transportation, chrono-urbanism values the individual's time and even health. With more efficient transportation, both noise and carbon pollution fall while walkability and micro-mobility potentially increase.

Regarding efficiency in the 15-minute city model, public space is **chronotopic**, serving several purposes depending on the time of day (32). As a result, city squares transform from sites of protests to farmers' markets in hours; public parks may serve as silent refuges or areas to celebrate. This dynamic urban atmosphere ensures equitable access to space across the public. Furthermore, through vibrant public community events, 15-minute cities develop **topophilia** - an attachment to a place rooted in a deep sense of community (32). Citizens, as a result, are then tied to their very neighbors and neighborhoods, more inclined to see them thrive.

# CONCEPTS

## B. 45-Minute Region

Even in compact cities like Barcelona, fifteen minutes is never enough time to travel the length of an entire municipality; ultimately, the 15-minute city prioritizes access to goods and services rather than entire urban environments. To achieve equitable access on a larger scale, cities must practice a similar chrono-urbanism across entire metropolitan regions. The **45-minute region** achieves exactly that, providing efficient public transportation on a wider scale.

The city of Barcelona features a large metropolitan area outside of the compact city streets. To ensure that the communities outside of the city proper have access to the same infrastructure, transportation must reach the outskirts of the region. Beyond developed train networks to rural areas, 45-minute regions may include automobile **micro hubs**—large roundabouts with central parking and other car-related services—on the outskirts of denser urban areas or **dynamic parking**, a digital take on public parking lots (26). Micromobility can also be leveraged to achieve the 45-minute region, connecting those on the outskirts to the main arteries of public transit.

When implemented, 45-minute regions nurture camaraderie across neighborhood lines. Through efficient transportation, residents of urban and rural areas may more easily intermingle. As suggested by Javier Ortigosa, a transportation expert drafting Barcelona's new Metropolitan Master Plan, extending development to rural areas has resulted in local regional farmers selling their produce in Barcelona's city proper (34). By beginning a strong regional transportation network, Barcelona has demonstrated how to effectively bridge populations into one larger regional community through transportation, although more investment and planning are needed to realize the 45-minute region.

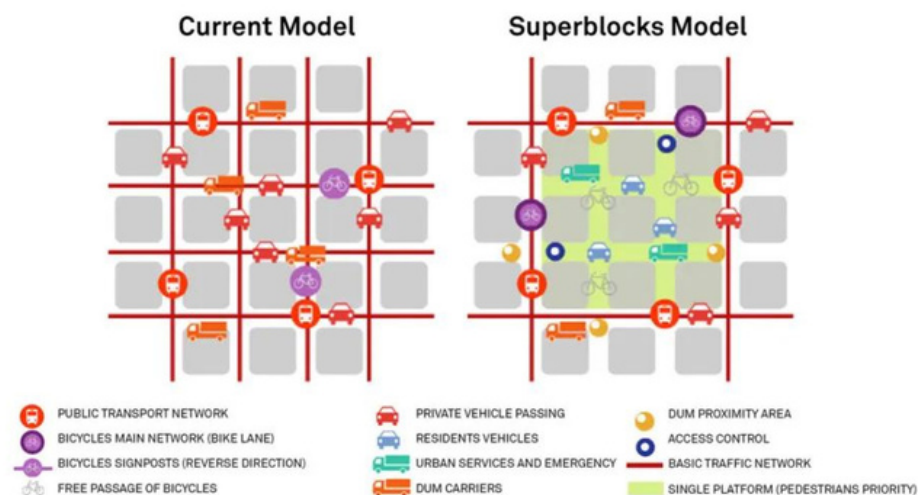
# CONCEPTS

## C. Superblock

The push to implement the 15-minute city and 45-minute region concepts in Barcelona is already underway. As introduced by Salvador Rueda, **superblocks** are groups of three blocks by three blocks that promote many tenets of the 15-minute city. Superblocks restrict most traffic to the four streets surrounding the group of blocks. However, upon entering one of the four streets within the superblock, citizens share tree-lined roads with cars (43). Instead of prioritizing the automobile, these internal streets treat roads as dynamic, public spaces with low speed limits and plenty of foot traffic and recreational or commercial public activity. Flanking each internal street are mixed-use blocks that contain a variety of services from greenspace to rent-controlled housing to retail. Through this diversity of goods and people-first design, the superblock refocuses urbanism on people, thus allowing for more walkability, adaption, and humane urbanism.

In conjunction with the superblock, a focus on an **orthogonal bus network**, new electric bicycle infrastructure, and other green methods of transportation have the potential to reduce Barcelona's air pollution (34). Similarly, reduced speeds and fewer cars resulting from superblocks will decrease the noise pollution that plagues the city. Furthermore, by distributing greenspace and transportation across superblocks, the city of Barcelona provides alternatives to spaces often overrun by tourists.

### SUPERBLOCKS MODEL



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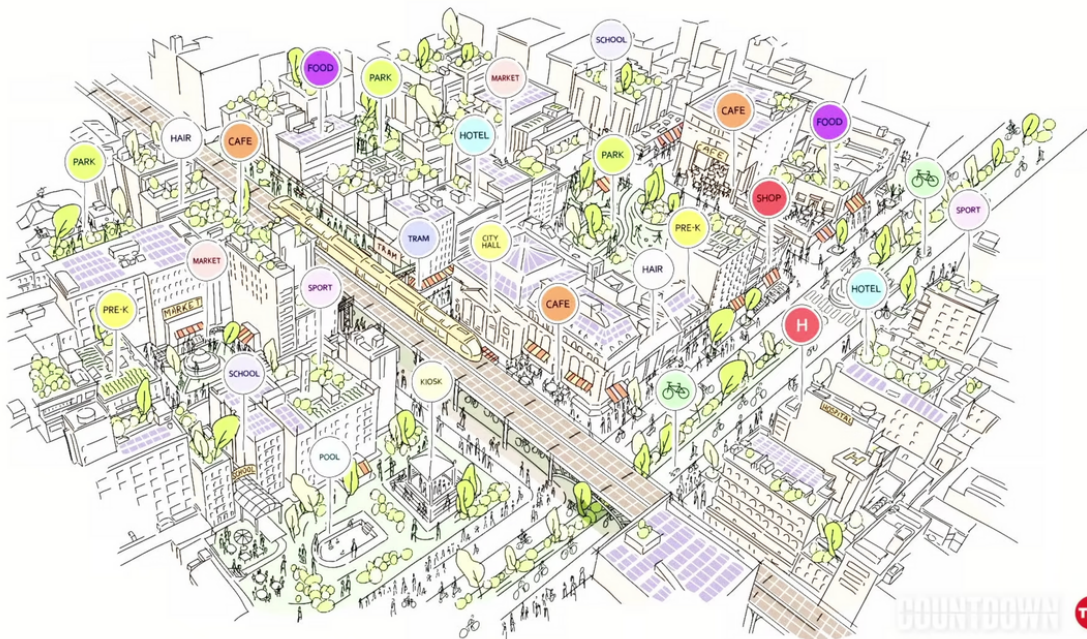


# CONCEPTS

## D. Fractal City

Working in harmony, the superblock-based 15-minute city creates a Russian Doll effect on a city scale. This can then be repeated in an urban grid known as the **fractal city**. Like the 15-minute city and superblock, the fractal city is not homogenous or formulaic. The objective of the fractal city is simply to achieve **poly-centrism**, a repeating network across various communities, allowing for equal access across neighborhoods which can be leveraged to achieve the 45-minute region by connecting all neighborhoods to efficient, multimodal transportation networks (32).

Since cities form organically, it must be noted that each city has its own needs and unique urban landscape. Therefore, the chrono-urbanism concepts are meant to be tailored to the specific metropolitan area. 15-minute cities and 45-minute regions provide a goal—a framework of beliefs to prioritize for the good of people. Ultimately, achieving access, equity, and efficiency across the metro is the fractal city model's objective.



(46)

# VIGNETTES

**On supervisor Oriol Estela's recommendation, the PEMB Challenge Team visited two municipalities in the Barcelona metropolitan area. To experience two extremes, we visited Sant Cugat, one of the wealthiest municipalities, and Badalona, one of the poorest. As first time visitors to the city, acquainting ourselves with the wider region through firsthand experience was crucial.**

**Observing the municipalities helped us develop a sense of the distribution of resources in the city as well as the range in character and landscape that any metropolitan plan must accommodate. This in-person experience provided much-needed context to our desktop research and interviews, helped us understand the relationship between metro hotspots and the Barcelona city center, and provided insight into steps that would need to be taken to realize the 15-minute city and 45-minute region.**



## VIGNETTES

nos educació

### Badalona

The PEMB Challenge Team visited the third most populated city in the metropolitan area (48), Badalona, on June 30, 2022. The intention was to observe the differences between Badalona and the city of Sant Cugat in terms of demographics, wealth distribution, city planning, land use, social justice, infrastructure, and green spaces. On the day we visited, protestors were gathered in the city square calling for adequate **pensions**. Graffiti provided evidence of other **political movements** in the city that opposed private sanitation and championed social justice movements. The city has a modest center that is walkable and mixed-use. Residents seemed to have relative dominance in the streets and access to necessities within fifteen minutes of walking. We observed numerous health centers, churches, supermarkets, schools, libraries, and several forms of accessible public transportation near the city center. There were public parks with **playgrounds and benches**, but fewer true green spaces. However, as we walked away from the city center, the streets and infrastructure became car-scaled. This made the streets less walkable and signaled that residents must rely on buses and forms of personal transportation to traverse the city. The intercity transportation system appeared well constructed and was easy to access from Barcelona. The interregional train system to other parts of the municipality from Badalona was less connected than to the center of Barcelona.

Compared to the other area of the municipality we visited, Sant Cugat, Badalona's need for improvement became apparent. Sant Cugat was far more spacious and commercial. There was a metro line that ran from the city center to Sant Cugat, whereas the Renfe is necessary when traveling to Badalona. There were obvious differences in income, access to the city center, public services, and interconnectedness between the two cities. Neither of these cities are as equipped as the city of Barcelona for the fifteen-minute city. Badalona could be a **potential candidate for a superblock** because it would enable citizens to gain public space, which could be a serious asset in Badalona.



# VIGNETTES

## Sant Cugat del Vallés

The PEMB Challenge Team traveled to the city of Sant Cugat on June 1, 2022. The town sits north of the Barcelona city center in the mountains, and the household **income is more than double that of Badalona** (27), despite their similar size, population, and global location. Fewer obvious examples of political advocacy were observed in Sant Cugat, even though they are primarily a town of conservative Catalan nationalists (27). There were a plethora of rich greenspaces primarily occupied by younger families with children. While the town had a **walkable, mixed-use town center**, the residents appeared to rely on personal forms of transportation to and from their homes to complete their commutes. Unlike the city of Badalona, residents can ride the S6 from Sant Cugat directly to the Barcelona city center, exponentially increasing the mobility of the citizens of Sant Cugat and decreasing travel costs. This is one of the wealthiest areas in the metropolitan of Barcelona, which was made obvious by the quality of facilities, level of tourism with the presence of the ancient monastery, the **ubiquity of greenspaces**, types of commerce, and **accessibility of transportation** apparent in the city. We observed a sophisticated sports facility, several libraries, churches, multilingual schools, health facilities, VR driving schools, and large retail locations.

Sant Cugat could benefit from the implementation of the 15/45 minute city, superblock, and fractal city models. The 45-minute region could connect Sant Cugat to other cities of the metropolitan area outside the city center and better connect it with the city of Barcelona, beyond the light rail line that currently runs to Sant Cugat. The fifteen-minute city could decrease residents' reliance on personal transportation, like cars, to carry out everyday mobility. A superblock would further enrich urban life in Sant Cugat. However, with a strong greenspace presence, interspersed plazas in the city center, and minimal levels of high-density traffic, the city should not be the first candidate for a superblock to increase public space or reduce traffic congestion—places that suffer from disinvestment, lack of amenities, and poverty should take priority.



## INTERNATIONAL EXAMPLES

**Since the 15-minute city, 45-minute region, and fractal city are concepts that have been widely researched and discussed in recent years, they have influenced the development, design, and initiatives of several cities. We chose to spotlight Bogotá, Stockholm, Maastricht, and Paris because they represent a range of explicit engagement with the concepts but are all centers of innovation in urbanism and planning.**

# INTERNATIONAL EXAMPLES

## Bogotá, Colombia

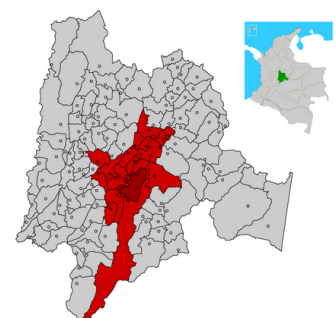
In September 2020, Mayor Claudia López of Bogotá, Colombia presented her new vision for Bogotá's urban landscape. During the meeting 'The New Carbon-Zero Normal for Cities,' López proposed her plan to transform Bogotá into a 30-minute city, citing heavy traffic, unsustainability, and an excessive number of roads as significant obstacles for the city to overcome. According to López, the people of Bogotá spent an average of two hours commuting to work. These excessive commutes only exacerbated financial inequities, cause families to spend "...almost 30% of their income on transportation, which in turn is very unequal and unfair for poor families", she said." Furthermore, López stressed the need to transition from an automobile-centric urban plan, stating that 84% of the space in Bogotá was dedicated to cars (25).

Today, thanks to López's efforts, Bogotá boasts a renovated public transportation system. In 2020, "...Bogotá introduced 52 miles of temporary bicycle lane..." and "...experts consider the bus system, Bus Rapid Transit, 'one of the best in the world...'" These efforts to improve transportation even address financial inequities: "...the Colombian government funds part of these bus ticket costs for impoverished people. The city also offers vehicle rides for people who live in neighborhoods that the Bus Rapid Transit system does not cover" (22). Due to Colombia's 30-minute city endeavor, citizens in Bogotá can now access affordable, sustainable transportation that reduces traffic congestion, thus improving the residents' quality of life on a smaller scale, similar to the 15-minute city projects found in other cities around the world.

Nonetheless, Bogotá fails to meet the needs of its larger metropolitan region. Although only 1637 km<sup>2</sup> large (50) - smaller than Barcelona's roughly 2464 km<sup>2</sup> region (11) - Bogotá's developed infrastructure lies mainly within the city itself. Few major highways extend to the rural southern parts of the region, thus signaling a significant need to continue infrastructure development to meet the needs of Bogotá's 7.7 million residents (50).

Ultimately, thanks to the efforts of politicians like Mayor Claudia López, Bogotá's implementation of sustainable public transit serves as an effective solution to aspects of pollution, financial inequity, and automobile-centric urban plans. Despite not having addressed Bogotá's metropolitan region yet, López has created momentum to further improve the region's infrastructure and access.

Considering Bogotá's progress over the last two years, López's policies may achieve similar results in Barcelona. Due to the city's small size, implementing more bike lanes and electric bike-share programs could replace automobiles, especially across the safe inner streets of superblocks. With electric bikes in place, citizens would be able to climb the city's sloped terrain without emitting harmful air pollutants.





# INTERNATIONAL EXAMPLES

## Stockholm, Sweden

Stockholm is implementing a variation of the fifteen-minute city concept. Like the fifteen-minute city, Stockholm emphasizes the importance of scaling down to hyper-locality when city planning. Taking chrono-urbanism to the extreme, Stockholm has piloted the concept of the “one-minute city”, called “Street Moves” (45), which allows neighborhoods and even streets to self-determine the use of the public space/streets outside their homes. Like the superblock plan in Barcelona, this has the potential to turn the street into public space for myriad uses designated by the residents. This plan is taking effect in four regions, and if successful, will be implemented in the remainder of the country.



(45)

The “one-minute city” scale solicits a blend of the fifteen-minute city and superblock plans in Barcelona, including schools, places to eat and work, and community greenspaces. The city advertises three scales of city planning: the largest region containing public transport, universities, ports, and hospitals. This scale maps well onto the forty-five-minute region which should connect the regions of the municipality to services that function further than fifteen minutes. The second scale is the fifteen-minute scale including access to libraries, parks, and supermarkets all within fifteen minutes walking, which directly parallels Barcelona. Finally, the one-minute city of Stockholm connects to the superblock plan of Barcelona including community engagement hubs, increased public space determined by the local residents, benches, and local green spaces. “Street Moves” enables the residents of the “one minute city” to decide the use of the street and the street furniture (45).

# INTERNATIONAL EXAMPLES

## Maastricht, The Netherlands

Maastricht is a city of approximately 120,000 people in the South Limburg province of The Netherlands (31). Although its planners have not pursued the concepts of the 15-minute city, 45-minute region, and fractal cities directly, it has implemented a mobility plan that echoes many ideas proposed by 15-minute city/45-minute region advocates. From 2012-2017, Maastricht Bereikbaar (Accessible Maastricht), the centralized mobility agency under the Beter Benutten (Optimizing Use) national program, targeted Maastricht/South Limburg commuters, students, visitors, and logistics companies. New mobility solutions were marketed with clear, central communication and financial incentives designed based on behavioral science.



(31)

Programs and mobility were monitored and evaluated continuously so solutions could adapt to real conditions and responses. Effective solutions included transportation cards that include multiple modes of transport, city partnerships with employers, park-and-ride sites, and a reward system for off-peak trips. After five years of targeted implementation and continuous adaptation, 42,000 employees working for 50 employers are involved in the mobility program, and an average of 3,800 cars are diverted from rush hour each morning, mostly rerouted to cycling. The employer-focused approach drove 81% of the shift. Overall, Maastricht Bereikbaar reduced carbon dioxide emissions by five million tonnes (31). Communication remains essential to the success of Maastricht's mobility program today. The easily navigable, intuitive Maastricht Bereikbaar website assists with route planning and shows live parking availability, traffic updates, and events, which connects residents and tourists alike to the resources they want and need in as little time as possible (31).



# INTERNATIONAL EXAMPLES

## Paris, France

The most famous example of the 15-minute city concept in recent years, Paris, promotes balanced lifestyles and multi-use public space. Due to the efforts of mayor Anne Hidalgo and urban planner Carlos Moreno, Paris embodies Moreno's city plan and six key pillars of city life: living, working, supplying, caring, learning, and enjoying. Sparked by apprehensions about the spread of COVID-19, the people of Paris avoided crowded buses and trains thus opting to utilize the temporary bike lanes constructed during the pandemic. Continuing to bike after the pandemic, many lanes became permanent (39). Also during the pandemic, public attention shifted to mixed-use space in the city, a concept central to the 15-minute city plan. During the COVID-ridden months of 2020, many of Paris's squares and plazas transformed into gathering places for the public, with playgrounds even turning into parks after hours (37). The transformation of and reliance on public space soon revealed its value, creating a sense that every square meter had multiple uses. As a result, restoration projects began to pop up throughout the city as people repurposed otherwise unused spaces creating event spaces on the banks of the Seine River and beautifying streets, plazas, and gardens in order to create high-quality, safe, and clean spaces for all citizens to enjoy (16). Though there are some discrepancies in terms of population and density between Paris and Barcelona, there is still a lot of overlap that can be used to tailor to the urban planning of Barcelona and the metropolitan area.



(37)



(37)

# PROBLEMS AND SOLUTIONS

**As the PEMB Challenge team met with experts, conducted field work, and researched the city, the interconnectedness between all industries, governmental processes, and the environment became apparent. We identified some major problems and our proposed solutions below. These represent our final recommendations, and they can all be leveraged directly or indirectly to achieve the 15-minute city and 45-minute region.**

# PROBLEMS AND SOLUTIONS

## Problem: Tourism

- Foreign investment in the tourism industry is increasing real estate prices
- Tourist-centric commerce is inaccessible to locals
  - La Rambla, La Boqueria, Plaza Catalunya, and La Barceloneta have turned tourist-centric since 1992, pushing out local commerce
- Economic dependency on tourism
  - The tourism sector is responsible for 7.3 percent of the city's GDP (35).
- Over-use and loss of public spaces
- Pollution and crowding (without much economic stimulus) from cruise ships
  - The Barcelona metropolitan area is the second highest contributor of plastic waste to the Mediterranean and the most polluted port in Europe in 2019 (18).

## Solutions:

- Further limiting Airbnb and other short term rental services and reaching an understanding between the city council and those who would like to rent out their homes to ensure the best possible situation for all residents and the local economy
  - Currently, Airbnb rentals are unrestricted besides the requirement that hosts apply for a license from the government, which may reject applications for tourist-saturated areas
  - The association of people affected by the conflict between Airbnb and the Barcelona city council (ACABA) demand clearer, less restrictive regulations publicized by Airbnb and the city
- Increase tax for cruise ships upon port entry
  - New tax as of summer 2022, climate related (one euro for a stay of 12 hours and 1.75 euro daily) (12).
- Disinvestment in tourist-centric industries like mass private events, luxury hotels that are inaccessible to residents
  - Music festivals like Primavera Sound inhibit residents' daily lives, attract visitors from across Europe, contribute to pollution and waste. Although they offer valuable economic activity and access to the arts, it may be prudent to limit them
- Local/city-wide ordinances that protect informal green spaces (community gardens, parks) from tourists



Photo by Anne Grindler

# PROBLEMS AND SOLUTIONS

## Problem: Food

- 23 percent of the population deals with food insecurity ([7](#))
- Ten food traders manage 90% of world transport, 90% of food processing and 30% of sales (distribution)
- 65.2% of Barcelona's low-income population is overweight
- Decreasing genetic diversity and pollution/carbon emissions from the agriculture industry are contributing to the climate crisis.

## Solutions:

- Local growing networks within the metro (Maresme and El Llobregat) that can deliver fresh produce in a network rather than all routes leading to the city center
- Car/van share services to bring fresh produce into the city
- Build a direct line from grower to grocer to ensure by incentivizing grocers to source local produce.
- Tax incentives for growers to vertically integrate and grow in season
- Continued subsidies of fresh produce and precedence given to local growers



# PROBLEMS AND SOLUTIONS

## Problem: Mobility

- Air pollution from commuter traffic
  - 60 percent nitric dioxide air pollution comes from traffic (4)
- Lack of connection between nodes in the metropolitan area
  - Instead, transportation networks are concentrated to the city center
- Lack of human-scale infrastructure makes walking near city outskirts difficult
  - Safety is also a concern on some footpaths (poor lighting, physical obstacles)
- Prioritizes commuting traffic over everyday mobility (mostly done by women and mostly accomplished through public transportation) (21)
- Cars rights supersede rights of pedestrians
- Travel times across the metro can be very long without a car

## Solutions:

- Scaling down infrastructure to accommodate walking
- Closing off roads to allow everyday mobility (walking to schools (Bicibús Barcelona), supermarkets, jobs)
- Reclaiming the streets as public space (pedestrians rights and the superblock)
- Expanding bike lanes
- Expanding sidewalks
- Future caps on autonomous vehicles to prevent excess traffic
- Urban tolls, parking reduction, parking fees to deter personal mobility within the city
- Construct smaller scale offices and co-working spaces within the fifteen-minute radius to reduce necessary commute times
- Making walking paths feel safer with lighting, improving railing, etc.
- Improve train network throughout the metro (especially Renfe) to decrease travel times
- Transportation hubs (park and ride) that would allow commuters to enter the city using a car and then use public transportation once inside the city limits, to decrease traffic congestion/improve air quality/enable the city of Barcelona to shift toward public transportation without disenfranchising commuters from the greater metropolitan area

# PROBLEMS AND SOLUTIONS

## Problem: Housing

- Foreign buyers causing rent hikes and gentrification
  - Foreign remote workers drive up rent prices by purchasing luxury homes in the city (23)
- Sale of public housing has led to increased rent prices
- Increase in renting and decrease in home ownership

## Solutions:

- Limiting Airbnb and foreign investment
- Expanding public housing
- Rent controlling (particularly in areas with recent investment like the Superillas)
- Change regulations/zoning to achieve mixed use and a 60% residential and 40% commercial ideal balance (according to Javier Ortigosa)
- Limit the sale of real estate to foreign buyers in sections of the city center
- Preventing foreign buyers from out-competing residents for real estate near new city investment (superblocks and features of the fifteen-minute city)

## Problem: Care

- Older residents can be overlooked in a walking city model
- Accessibility is missing for disabled and older citizens (uncut curbs, crosswalk timings, stairs, wheelchair friendly restaurants/grocery stores)

## Solutions:

- Cutting all curbs in the city
- Making crosswalk timings longer
- Creating a 5-minute city in terms of grocery stores and health care centers
- Encourage community engagement forums to be widely and readily accessible through either a physical meeting or Facebook/WhatsApp group



# PROBLEMS AND SOLUTIONS

## Problem: Health

- PM10 and nitrogen dioxide NO<sub>2</sub> (non-WHO complying pollutants) are exposed to 98 and 68 percent of the population, respectively ([3](#))
- High SO<sub>x</sub> emissions from cruise ships ([15](#))

## Solutions:

- Continued effort to reduce traffic congestion
- Increased accessibility for public transport
- Incentives to opt for public transportation over cars like tolls on major roads, longer red light wait times, and free public transport if you scrap an older car
  - Expand T Verda program that grants citizens three years of free public transportation for scrapping a car that does not comply with environmental regulations
- Tax and limit cruise ships

## Problem: Greenspaces

- Greenspaces are more accessible in wealthier neighborhoods
- New greening projects spur gentrification and citizen displacement
- Green spaces can open parts of the city to tourist exploitation

## Solutions:

- Neighborhood ordinances that protect informal green spaces
- Rent capping in neighborhoods with recent greening projects
- Investment in low-income neighborhoods
- Creating an axis with the superblock as a node on existing public transportation networks so that the surrounding community gains access to the new public space

# FAQ

**The "frequently asked questions" (FAQ) section addresses questions citizens might have regarding the 15-minute city, 45-minute region, and superblocks. As the most citizen-directed content in the report, the FAQ seek to explain practicalities, assuage fears, and describe planned outcomes.**

### 1. Will the superblock plan lead to gentrification?

- a. It shouldn't. The expert planners who have crafted the superblock model, led by Salvador Rueda, are acutely aware of the risk of gentrification and actively work to avoid it (43). Since superblocks are supposed to be implemented quickly and concurrently, no single area will attract all the investment. Instead, everywhere will be exciting and in demand! The pilot superblocks—such as Sant Antoni and Poblenou—are exceptions because they were created earlier on as proof of concept (43).
- b. Although the reality of political gridlock could stall the mass superblock transformation, Salvador Rueda fervently believes a network of 500 superblocks could be built in 5-6 years. (43). The physical changes to neighborhoods are minimal—reorganizing bus routes and updating regulations for street and building use are the main changes to be made—so the quick transformation is feasible.

### 2. Is there going to be a lot of construction?

- a. No. Superblocks are more of a reorganization than a construction project. Changes to traffic laws and occupancy regulations are just as important as alterations to the built environment if not more in realizing the superblock plan.

### 3. Won't the road closures increase traffic?

- a. It is important to consider that increasing the amount of public space dedicated to cars (i.e., building or expanding roads) does not necessarily reduce traffic. Larger roads can induce demand, resulting in more noise and air pollution without an appreciable improvement in mobility (34).
- b. Weaning Barcelonans off of automobile dependence will also make the city more resilient when self-driving cars arrive en masse. Autonomous vehicles are predicted to induce significant demand for roads as people are willing to ride in the car longer (34), but having a 15-minute neighborhood that is more friendly to active mobility than cars could curb the future induced demand for car trips.

### 4. What if I like moving around to lots of other parts of the city for my everyday needs? I don't want to live in my neighborhood "bubble."

- a. We understand. There are cultural assets around the city you may want to enjoy, and a degree of spontaneity results from the random, extended paths people choose as they go about their day in the city. However, the superblocks are a true network and do not isolate residents from one another (38). They are open air and meant to be inviting. Additionally, just because you can access goods and services in 15 minutes does not mean you must, or that you must every single day. But, neighborhood access to schools, medical services, grocery stores, and more is convenient and will reduce noise and air pollution by decreasing car trips (43). It is also worth considering that a new kind of spontaneity will emerge as more people use the (now quieter) streets to walk, bike, and play rather than take trips isolated in their cars.

## FAQ

### 5. Is my job supposed to be included in my 15-minute radius?

a. Ideally, yes. Increasing mixed-use zoning will make this more feasible as specialized industries disperse throughout the city. However, it is impossible to ignore that some jobs are too unique to be a guaranteed 15 minutes away. For example, there cannot be a university, art museum, or major hospital every 15 minutes. This is where the 45-minute region comes in—improved public transportation will also help with any work commutes longer than 15 minutes by foot.

### 6. Some people can walk or bike farther than others in 15 minutes. How does this plan accommodate everyone?

a. Rest assured that planners recognize that not everyone has the same capacity for active mobility (30). The 15-minute metric is an average, ranging from healthy adults to slow-moving youngsters. The 15-minute city can also mean a service, such as grocery delivery, can come to you in 15 minutes. Children, the elderly, and those with disabilities are a priority in the new, revitalized city. Traffic reduction and reduced speeds will make crossings safer for those who move more slowly.

### 7. How will officials know if the superblock plan does not work for residents?

a. In 2022, digital monitoring is very advanced and the city plans to take advantage of the modeling and reporting tools available. Traffic, resident satisfaction, greenspace use, and more can be tracked and analyzed in real time.

### 8. Does everyone in city government and planning endorse the 15-minute city, 45-minute region, and superblock plan?

a. In a sense, yes. There is a consensus that accessing the necessary goods and services in 15 minutes is desirable, as is the ability to travel anywhere in the metropolitan area in 45 minutes. The theoretical superblock has lots of endorsement from government and planning authorities (34, 30) although—as with any innovative idea—there is some debate about implementation.

### 9. Isn't Barcelona already a 15-minute city?

a. Mostly, yes. However, this is not the case for all neighborhoods and all services. In addition, the improved city network, in tandem with public transportation investments in the metro area, will help make the 45-minute region a reality. Because the city already primarily follows the fifteen minute city concept, there will not be much change to daily life. The most notable changes will make daily life more convenient, rather than require sacrifices. This includes access to healthcare, schools, and supermarkets close to your home.

## SPREAD THE MESSAGE

The city center of Barcelona could already boast its status as a 15-minute city. With wide, walkable streets in the city center, a burgeoning biking network, accessible public transportation, well-maintained greenspaces, and ubiquitous grocery stores, there appear to be few changes necessary to implement the model. However, in neighborhoods outside the city center, lower-income neighborhoods, and for citizens that cannot easily utilize current public transportation modes, the fifteen-minute city model is vital. To address these needs, transformation of the metro area will occur on three different scales: the forty-five-minute region, the fifteen-minute city, and the superblock. The forty-five-minute region model applies to the entirety of the metropolitan area. In the city of Barcelona, the changes will work to interconnect regions of the metropolitan area with the Barcelona city center and each other. This could include human-scale avenues, commerce networks within the metro area (especially local produce), and access to transportation that connects citizens to resources outside the fifteen-minute radius like ports, universities, larger hospitals, airports, and major greenspaces.

The fifteen-minute city, on the other hand, requires no acceleration of physical mobility. Features of the fifteen-minute city—accessible health centers, supermarkets, schools, libraries, local commerce, and greenspaces—should all be walkable in fifteen minutes. Parallel implementation of fifteen-minute cities through the metro area is imperative to maintain equity between regions and prevent gentrification.

The smallest scale, the superblock, should connect citizens with the communities in which they live and the goods and services they need in physical proximity. The superblocks enable the community to determine how they use the public space of streets, disincentivize personal automobile transportation within the city center, and help mitigate air pollution and automobile dangers. Working on these three scales will transform the city and metropolitan landscape, improve health, mobility, and equity.

## INTERVIEWS

**The PEMB Challenge Team conducted interviews with multiple urban planning experts, many of whom have extensive knowledge of and experience working in Barcelona. Since the interviewees hail from a variety of academic, professional, and personal backgrounds, they were able to enhance both the breadth and depth of our research. All interviewees spent generous amounts of time with us describing their work, research, knowledge, experience, ideas, and advice, and we are incredibly grateful.**



# INTERVIEWS

## **Isabelle Anguelovski, Director of Barcelona Laboratory for Urban Environmental Justice and Sustainability**

The PEMB Challenge Team met Isabelle Anguelovski via Zoom on June 3rd, 2022, the first interview in the series. Anguelovski studies city politics, environmental justice, and urban planning for health equity, and she currently leads an organization dedicated to analyzing the social, racial, and environmental impacts of greening projects. Avoiding “green gentrification,” the process whereby residents are priced out of their neighborhoods once greening projects improve the area, is of the utmost importance to her.

During the interview, Anguelovski described the development boom that surrounded the 1992 Olympics, which led to investment in public spaces but also less social cohesion and community building. When asked to evaluate Barcelona's performance as a 15-minute city and 45-minute region, Anguelovski posited that green corridors, pilot superblocks, density, mixed-use presence, bike infrastructure, and public transportation mean Barcelona could be transformed into a true 15-minute city (including greenspace access) with just a few strategic changes, such as an improved shuttle system in Nou Barris. However, lack of investment in regional trains—worsened by disinvestment from Madrid (42)—has stunted Barcelona's progress towards becoming a 45-minute region. Beyond investment in RENFE, Anguelovski also discussed Barcelona's potential to be a 45-minute region in terms of food and sustainable agriculture if the pipeline between city dwellers and farmers in areas like El Llobregat or Maresme were strengthened. Ride sharing for produce, improved neighborhood markets, stronger market-grower ties, and food cooperatives could help achieve this and could encourage regional mayors to protect their rich farmland from real estate developers. The prolific micro-markets could be leveraged to sell more local produce rather than the snacks and beverages they currently stock.

When discussing public space, Anguelovski focused on the need to improve safety, greenspace access, and micro-mobility. She cited grassroots efforts, such as Bicibus—the parent-founded organization that reclaims the street for children on their way to school—as highly effective and important to support. Grassroots organizations such as these improve safety, integrate micro-mobility into more formal daily patterns, and encourage movement in children and parents. Similarly, Anguelovski explained that she is a huge advocate for implementing play spaces and preserving informal spaces for all ages to achieve “Ciutat Jugable,” or the “playable city.” Although Anguelovski does not focus on superblocks in her work, she is generally supportive of road closures, especially if they are accompanied by art and/or sponsored activities.

Keeping attractive, safe, fun, and green spaces primarily local is a challenge, so Anguelovski has developed a green gentrification prevention toolkit (33) to ensure that the intended users are not displaced by wealthier residents or tourists. Some of the measures include protective zoning measures, affordable housing requirements for developers, and tax policies that protect homeowners and other local residents. Anguelovski also discussed issuing ordinances that protect urban agriculture and informal gardens, barring tourists from certain areas at certain times of day or year, limiting tourist shops and bars, and increasing taxes on cruise ships. Managing tourism keeps the city livable and helps retain and attract human capital and creative industries.

# INTERVIEWS

## Maria Buhigas, CEO of Urban Facts

June 7th, 2022, marked the PEMB Challenge Team's first in-person interview: Maria Buhigas. Buhigas is an architect by training and has extensive experience both with urban planning and Barcelona—she is a native of the city and has served on the city council. Before answering questions regarding the 15-minute city and 45-minute region, Buhigas provided context for Barcelona's current urban landscape and planning status. She shared that the current legally binding metropolitan plan is from 1976 and consequently does not address the challenges of urban life in 2022—it was not informed by the wealth of environmental science available today and does not include all 36 municipalities that make up the metro at present. Her work is data-driven, and she believes in the power of thoughtfully collected, up-to-date data to objectivize discussions.

As for the 15-minute city concept, Buhigas disagrees with Carlos Moreno and considers the idea—an easy leitmotif to sell and market—poorly suited for Barcelona because it is a slightly smaller city by land area and much smaller by population. The potential for 15-minute “bubbles” to develop and segregate citizens, decrease spontaneous urban interactions and experiences, and create a boring, homogeneous city is of great concern to Buhigas. She proposed that class-inclusive service coverage rather than citizen access be at the center of the model. Although coverage and access are two sides of the same coin, a service-centric approach puts the onus on the public and private sectors rather than individuals and may result in better outcomes for those with lower capacities for physical mobility, such as children, the elderly, and those with disabilities. Service radius may also be easier to implement and study and could send the message that 15-minute access is desirable and available but need not be the typical habit—potentially preventing neighborhood bubbles from forming.

Another criticism Buhigas had of the 15-minute city is the obvious problem that major city assets, such as universities or hospitals, cannot exist every fifteen minutes. The ability to find a job within fifteen minutes of the home is the 15-minute city's highest hurdle, and other 15-minute city advocates interviewed described it as an exception that can be made somewhat rarer by mixed-use. Despite the work-residence commute challenge, Buhigas explained that Barcelona is otherwise prepared to be a 15-minute city because of its density, bike infrastructure, and ownership-driven residential real estate market—even in the face of encroachers such as Airbnb. However, she noted that metropolitan politics hinder progress because of a lack of collaboration. For instance, she is concerned that metropolitan bike-sharing programs will not be compatible with those in the city, creating a barrier to realizing the 45-minute region. Buhigas deems the current planning process too functionally segregated and devoid of the elements necessary for creating urban richness.

While it is important to ensure metro-city center synergy, Buhigas also emphasized the importance of increasing complexity in metropolitan hubs to decrease dependence on the center. Brooklyn in New York, NY, where Buhigas worked earlier in her career, is a promising example. Each town should be studied, asking the question, “What is my 45-minute experience from (Sant Cugat, Badalona, etc.)?” GIS mapping could be used to create these maps, and Buhigas and her team have mapped basic public facilities, although she could not share the files with us at the time as they are part of an unreleased project. In this work, she engaged in fierce debate about which goods and services should be included in the map, and from her experience, she shared that defining the 15-minute city and what it should include, if it should differ by age, ability, or gender of resident, etc. will be time-intensive and contentious yet paramount. Once changes are implemented, Buhigas argues that real-time monitoring is crucial to understand if new programs and landscapes are functioning as intended and provides justification if plans need to be reworked.

# INTERVIEWS

## Salvador Rueda, Director of the Urban Ecology Agency of Barcelona

On June 8th, 2022, the PEMB Challenge Team had the opportunity to meet the father of the superblock plan and current director of the Urban Ecology Agency of Barcelona (Agència d'Ecologia Urbana de Barcelona). Rueda has worked on superblock design and implementation for 35 years and fervently believes the plan will enrich urban life and improve the physical environment according to the fifteen principles of urbanism. To decrease noise pollution, car use must be significantly reduced. Access derives from linking economic activities with the residents on a 300-square-meter basis. These are only guarantees in Rueda's mind if the superblock is implemented according to his vision. He feels the pilot superblock in Sant Antoni could benefit from further development.

When prompted, Rueda addressed Maria Buhigas's criticisms of the model. He maintained that urban quality increased as evidenced in part by a 15% increase in economic activity where superblocks are present, such as in El Born. The superblock is designed to increase association and organization amongst neighbors of all kinds: humans, businesses, plants, and more. Another concern of Buhigas and others is the gentrification that can and has resulted from superblock implementation. Rueda's solution is to implement the superblock very quickly so that no single neighborhood is more attractive just because it has a superblock structure. According to Rueda, 500 superblocks could be completed in 5-6 years for approximately 300 million euros, a reasonable sum and timeline for a city like Barcelona, which had a municipal budget of 3.4 billion euros in 2022 (5). Additional infrastructure that could help achieve the 45-minute city and increase mobility would come at a cost of 200 million euros more.

Rueda emphasizes the importance of addressing environmental concerns in the face of impending climate change effects, harsh noise levels, and dangerous air pollution, all of which the superblock would address through reduction of car use, accidents, and energy consumption. With environmental mitigation in place, the superblock then puts people at the center, where social cohesion and enjoyment of nature develops in public space. According to Rueda's vision, citizens should have the highest priority in public space use, superseding all movers—cars, buses, bikes, and even pedestrians. However, he still supports a strong public transportation network with orthogonal bus routes that provide service every two minutes at stops that are 400 meters apart. Buses and bikes should be permitted inside the superblock but at pedestrian speeds while cars are relegated to the peripheral streets. Three changes must be made to the urban mobility plan to prime Barcelona for superblocks: non-car transportation networks redesign, street surface area reduction, and parking tax increase. Rueda explained the huge potential micro-mobility has to ease this transition, especially given that an electric bike can arrive before a car does if the distance is less than eleven kilometers.

Rueda sees politics as the biggest obstacle to realizing the superblock because the plan has now become politicized and the message regarding the true nature of the superblock plan has been distorted. Resistance does not come from those already enjoying the pilot superblocks, which were opposed by 30% of residents initially but are now almost universally supported according to Rueda. Digital tools can verify increases in urban quality. Like Maria Buhigas, Rueda finds digital monitoring critical for superblock implementation, objective discussion, and political persuasion.

# INTERVIEWS

## **Carles Llop, Head of the Urbanism Department at ETSAB**

Architect, professor, and head of the urbanism department at the Barcelona School of Architecture (ETSAB) Carles Llop met the PEMB Challenge Team on June 8th, 2022 in person. He is an advocate for the initiatives "barrio para los peatones" and "Zonas de Bajas Emisiones," which seek to increase the city's walkability and air quality, and he concurs nearly all other experts interviewed that creating safe public space for children is a priority. Although Llop is a personal friend of Salvador Rueda, he disagrees professionally with the superblock beyond the conceptual level. From his perspective, the superblock would be beneficial because it would reduce automobile traffic and single-use transportation and would return the right to space. However, he sees the necessary reduction in cars too unrealistic and finds that the political realities make proper implementation of the plan (quick and all at once) impossible. He does not believe in the 15-minute city "brand" or "formula" and would instead prefer to focus on improving habitability, activity, and mobility (HAM) of neighborhoods through governance and organization (GO). Since Llop finds the reduction in cars far less realistic than Rueda does, he proposed more car-centric urban solutions. For instance, roundabout hubs could decrease demand for parking as well as automobile crowding in the city center, although dynamic parking that can be digitally monitored for availability needs to be present in the city.

## **Beatriz Ramirez and Flora Cerda, Foro NESI**

Our June 9, 2022 interview was with Beatriz Ramirez and Flora Cerda of the Forum for New Economy and Social Innovation (NESI), who work to co-create a more sustainable, fair, and collaborative economy while providing solutions to social and environmental problems Ramirez has written many articles on urban planning, especially in the scope of the 15-minute city and 45-minute region, and Cerda, who is interning at NESI and working on Team Urbanism for Life developing reports on the 15-minute city and 45-minute territory. Last year they created an ideological guide for the 15-minute city and the 45-minute region called the Declaration. Their current strategy, Plan A, was recently presented in Madrid and lays out steps for building the 15-minute city and 45-minute region. The first step in drafting the report was to activate collective intelligence. Simply put, start with the knowledge and assets the city already has and work from there to make it more citizen-centric. Next, Ramirez and Cerda shared the importance of community awareness and support, explaining that step two was to collaborate with the media to create and disseminate a guide. Ramirez and Cerda explained how superblocks were never marketed well enough to the city and how citizen participation from the beginning is one of the most important parts as change is scary, and open dialogues can assuage fears. In Plan A, Ramirez and Cerda diffuse confusion surrounding superblocks in their three essential steps for implementing 15-minute cities and 45-minute regions. First, Ramirez and Cerda advocate for political compromise and consensus, recognizing the need for patience and collaboration between parties. After gaining political support, Ramirez and Cerda state that the second necessary step is to gain traction territorially and then collectively between communities. By prioritizing neighborhoods across the city, the city government may implement a polycentric, equitable urban plan. On the other hand, Ramirez and Cerda's last suggestion entails another approach; instead of implementing a large, multi-community plan, smaller, low-cost, and intervention-based projects may achieve initial progress promptly while allowing for testing changes before applying them to the larger city. In the end, Ramirez and Cerda present a plan that may implement 15-minute cities and 45-minute regions, featuring multiple approaches in case problems arise.

# INTERVIEWS

## Javier Ortigosa, Planner at the Metropolitan Area of Barcelona

On June 14th, 2022, the PEMB Challenge Team met Javier Ortigosa, mobility-urban planner for the Barcelona metropolitan urban master plan at the Metropolitan Area of Barcelona (AMB) in his office. Ortigosa explained that the AMB is the only metropolitan administration in Spain, and it has authority over transport, waste management, open space preservation, maintenance of mountains and beaches, and urban planning. The mayor of Barcelona's "urban letter" is the main non-AMB influence over regional planning, making the organization one of the most important allies in achieving any urban development goals. The administration is highly controlling, rigid, and deliberate, so plans take time to draft and approve.

According to Ortigosa, the 15-minute city idea already underpins Barcelona's urban system, and richness, density, and access are important in neighborhoods, rebelling against the shift towards specialization and segregation in the 20th century. Housing and commercial uses should be balanced, and although mixed-use is generally preferable, some industries, such as maritime trading, require specialized infrastructure that should be shared, and some neighborhoods have assets that attract specific industries, such as the two-nanosecond Internet advantage that attracts trading companies to Zona Franca. He mentioned that researchers at the University of California, Berkeley found that dense, grid-like neighborhoods with mixed-use can cope better with issues such as traffic, lack of greenspace, and impaired walkability, so he is optimistic about Barcelona's resilience and supports the general philosophy of the superblock and 15-minute city, except for 15-minute access to work and school. However, he maintained that it is not as clear as Salvador Rueda claims that the superblock will reduce traffic, and he is concerned about regulating with time and congestion, which produce many negative externalities, rather than regulating with cost. His perspective is that congestion, if necessary, must be relegated to the city periphery to ensure a level of service for all movers and residents—not just cars—in the city proper, such as in Zurich. Another means of reducing traffic could be increasing taxes on logistics and delivery companies like Amazon. Currently, though, he sees housing as the biggest challenge—it is not affordable as a result of past missteps, where public housing was sold to residents who then resold it at market price, an issue Maria Buhigas also mentioned. Housing is also a priority now because, without mixed-income neighborhoods, he considers the 15-minute city compromised.

Given his doctorate in traffic engineering and transport research, mobility interests Ortigosa. In particular, he highlighted that work mobility accounts for 30% of trips, while everyday mobility accounts for the remaining 70%. Work mobility favors men slightly, but women are largely responsible for everyday mobility, which is harder to model and more polygonal. The everyday mobility burden is especially troublesome given that micro-mobility solutions and public transportation are less suited to address it. In addition, Ortigosa was one of few male interviewees who specifically noted the challenge of safety. Although many neighborhoods are compact and physically small enough to be walkable, the infrastructure, especially in the car-centric periphery, does not always support it. He and his team are concerned about areas that are not safely walkable because of disconnected paths or poorly lit underpasses, such as in the region between the airport and L'Hospitalet de Llobregat.

Part of Ortigosa's plan to realize improved mobility in the metropolitan region is building large metropolitan avenues that facilitate walking and micro-mobility, which would be compatible with superblocks given their layout. However, he considers superblocks an inadequate solution and objects to the feasibility of the traffic consolidation that they require. To improve mobility, Ortigosa argues that many forms of transportation are needed to address the challenge (taxis, minibuses, electric bikes, etc.), and technology should be used to assist, but Barcelona must be careful to avoid dependence on tech corporations such as Google and Tesla, especially as autonomous vehicles rise to prominence and induce demand. Fast-moving, private-sector technological developments will likely continue to clash with the slow-moving regulatory process, and AVs will change demand, which is of great concern to Ortigosa because he fears that urban planners assume demand is fixed too often. He sees investment in public transportation as the key to the 45-minute city, especially including better metro line access to the airport.

When asked about the political obstacles specific to Barcelona, Ortigosa explained that there are many lobby groups that oppose superblocks and perceived "anti-car" plans. These include associations of classic cars and motorbikes, infrastructure contractors, the automobile industry, private companies offering mobility as a service, and citizens who perceive the measures as anti-freedom and cannot understand the big picture or do not care to because the new plans create inconveniences for them.



# INTERVIEWS

## Ramon Gras, Aretian

On June 14, 2022, we interviewed Ramon Gras, the co-founder and CEO of Aretian, an urban design and analytics research firm that develops cutting-edge methods for thinking about urban and economic development. Gras was able to give much-needed insight into the importance of technical and data-driven analytics and the severe lack of their uses in urban planning now. He explained to us that terms like the 15-minute city or the 45-minute region are great ways of summarizing a proximity city, but a more analytical approach is required. Gras shared the three buckets of data that he found were needed to actually employ these concepts in a way that affects real change. The knowledge economy bucket measures the extent to which proximity propels the economy; the access to services and amenities bucket looked at access to services (food, healthcare, education, commercial and retail spaces, green spaces) by walking, and finally, the urban development efficiency bucket explores the efficiency and environmental impact of different urbanization patterns. From his data and analysis, he noted policy changes that he believes could be beneficial, such as requiring a thorough and rigorous scientific approach to evaluate problems, rather than the current reliance on intuition, which can be misleading. Also, he suggested that older areas that are difficult to remodel should be rezoned, and sustainable investment incentives should be created with data and analysis provided to the private sector so they can make better-informed decisions. Mature areas should be kept as they are and reinforce the weakness, and localized design interventions and zoning changes should be emphasized in peripheral and/or underdeveloped areas.

## Ramon Marrades, Placemaking Europe

Our second interview on June 14, 2022, was with Ramon Marrades, the Director of Placemaking Europe, a non-profit that develops and shares knowledge of urban planning and creates the space to facilitate idea exchange and actively advocate for better public space policies. Marrades was able to give us valuable insight into the true impact of tourism on the urban landscape as well as on the citizens that have permanent residency in the area. In Barcelona, he pointed out, there is a lack of cohesion between people-focused places. For example, in Barceloneta, there are some areas for people but also the presence of the cranes in the harbor sends a message more so for a focus on commerce and productivity. There is a lack of social proximity. He noted that when you build only for tourists, you only get tourists but when you invest for locals, you get both. He drove this point home with an anecdote about his home of Sevilla, talking about how after large investments for Formula One and the America's Cup, these facilities are barely used by the locals now that tourists have left, therefore foreign and/or tourist-focused investment is less beneficial to the city. In the case of Barcelona, specifically in places like Las Ramblas, citizens gave up on an area because of the tourism of the area, i.e. food prices increase while the quality decreases. He also emphasized the importance of mixed use urban planning for the 15-minute city, as building for the sole purpose of tourists leads to one dimensional areas that provide little for the residents.



# INTERVIEWS

## Blanca Valdivia, Punt 6

On June 16, 2022, our interview was with Blanca Valdivia of Punt 6, a cooperative of feminist architects, sociologists, and urban planners from diverse backgrounds with more than 10 years of local, state, and international experience who work to rethink domestic, community and public spaces in order to promote social diversity and without discrimination. Speaking with Valdivia, who is a feminist urban planner, provided great insight into a sub-sect of urban planning we had not yet explored. We had the opportunity to explore the social side of urban planning, taking a more human-oriented approach. She shed light on the fact that the time frame of models is not the same for everyone: 15 minutes for a 20-year-old is not the same radius as 15 minutes for the elderly or the disabled, so this needs to be taken into account. She shared the idea of “planning from below,” in which there is an emphasis on those who are the most vulnerable in our society: women, children, the elderly, and the disabled, and a focus on how to distribute services and resources in an equitable manner to create the best quality of life. Another novel point was that urban planning has been primarily viewed from an anthropocentric point of view, where productivity is prioritized over care, thus putting an emphasis on work rather than the citizen. She proposed prioritizing care, followed by safety since public spaces often are not safe for women, and finally participation as the majority of neighborhood spokespeople are men, so bringing in more diversity and perspective is key. The importance of grassroots efforts in resistance was also brought up, as there is often heavy influence from lobbies that benefit from the current urban design, such as the automobile lobby.

## Carlos Moreno, University of Paris I – Pantheon Sorbonne

On June 18th, we had the incredible opportunity to talk to the biggest proponent of the 15-minute city and the leader of the movement in the modern era: Carlos Moreno. Moreno, an associate professor and scientific director of the ETI (Entrepreneurship Territory Innovation) chair at the University of Paris I – Pantheon Sorbonne, and a scientific advisor to national and international personalities—including the mayor of Paris, Anne Hidalgo—, provided many insights as he helped transform Paris in the structure. Moreno encouraged us to shift from looking at the city as superblocks to areas of 100x100 meters (or some other area of this factor) thus giving us a better idea of what services are present and missing, how these gaps can be filled, and also getting a better sense of how these areas can truly become multi-purpose regions for citizens to enjoy and use in diverse ways. In order to foster the fifteen minute city in which citizens do not have to travel unnecessarily and can maintain a high quality of life, Moreno suggests six elements: living, working, supplying, caring, learning, enjoying, that need to be present in these 100x100 spaces.

# INTERVIEWS

## Ariadna Miquel Amengual, Office of the Chief Architect of Barcelona

Our final interview on June 29th, 2022, was with Ariadna Miquel Amengual, who is the Urban Strategy Director of the Office of the Chief Architect of Barcelona. It was invaluable to hear from a voice inside the city government. This interview led to dialogue not so much about what new change needs to be made, but how the next steps should be taken for the current infrastructure of the city and how the current layout can be reworked in accordance with the 15-minute city and 45-minute region goals. Some initial observations and necessary solutions that Miquel mentioned included making public spaces more comfortable and accessible for all citizens, making public spaces out of easy-to-maintain materials since these spaces are so permeable and crowded, creating public spaces to protect pedestrians from the dangers of cars, and transitioning to using the streets for activities besides transportation. It was in this interview we learned the pivotal role that streets play in the new vision for Barcelona: since the city is so compact and there is little extra space, reusing the streets for more than just transportation is critical. Inclusivity and access were also large components of this interview as the idea of working on an axis was introduced by Miquel. Essentially, Miquel explained how rather than having the superblock be the only center of green space, and only those who happen to live in the superblock have access, there must be planning on the areas or axes around the superblock to have greenspaces accessible to all. Miquel also touched on the importance of citizen participation and how to increase citizen engagement and activity around urban planning, as the success of any urban planning venture relies heavily on the citizens. It is important to keep the city vision and community groups inside superblocks very much in mind while making changes and it's also important that the community feels heard while changes and decisions are made. Working within the scale of the neighborhood rather than the scale of the superblock is also key, as the whole point of the 15-minute city is to become more citizen-centric and thus the environment of the citizen is a key scale.

# CONCLUSION

At the conclusion of the PEMB Challenge Team's research and interview sessions, many insights were generated. One of the most apparent observations was how the current culture and structure of Barcelona has the skeleton for the 15-minute city, but as one moves into the periphery, this diminishes. For example, Barcelona proper is on the cusp of being a 15-minute city, but the broader metropolitan region needs much overhaul to reach this. Thus, the Problems and Solutions dive deeper into these issues and provide our recommendations. Another recurring theme throughout the challenge was the wide range of issues and organizations that are involved in planning Barcelona. The issues at hand are not purely political, environmental, commercial, social, or industrial, but rather are problems that encompass all aspects of the city and will take a multilateral approach across many offices to solve. And, while it may be true that these labels of the 15-minute city or the 45-minute region are slogans for proximity city models, they can still hold a lot of value for the city and the people who call it home. Similar to the public opinion on the superblock system, which was originally met with 30% opposition and has now almost unanimous support, from our research and interviews these two structures also have great support across the region, when it is broken down into the specifics of what their implementation truly means to the daily lives of the citizens (43).

We acknowledge that, as four American undergraduate students who had never visited Barcelona prior to 2022, there is so much we do not understand and can never understand about the intricacies of Barcelona and greater Catalunya. Therefore, we relied heavily on expert testimony to supplement site visits and desktop research. As newcomers to the beautiful city of Barcelona, we hope to have provided a fresh, youthful perspective that can contribute to the urbanism debate and greater work of PEMB.

# SOURCES

1. "ACABA: Associó d'afectats pel conflicte entre l'Ajuntament de Barcelona i Airbnb." Associó Acaba. <https://www.associacioacaba.org/en.html>.
2. Afprelaxnews. "What is the one-minute city concept Sweden is experimenting with?" Forbes India, 31 July 2021. <https://www.forbesindia.com/article/forbes-lives/what-is-the-oneminute-city-concept-that-sweden-is-experimenting-with/69501/1#:~:text=The%20one%2Dminute%20city,the%20citizen%20in%20their%20environment.>
3. "Air Quality." Ajuntament de Barcelona, <https://ajuntament.barcelona.cat/qualitataire/en>
4. "Air Quality: Traffic the Main Cause of Pollution in the City." Ajuntament de Barcelona, [https://ajuntament.barcelona.cat/qualitataire/en/noticia/traffic-the-main-cause-of-pollution-in-the-city\\_886306](https://ajuntament.barcelona.cat/qualitataire/en/noticia/traffic-the-main-cause-of-pollution-in-the-city_886306).
5. Ajuntament de Barcelona. "A Record Budget of 3,400 Million Euros to Boost the City." Info Barcelona, 23 December 2021. [https://www.barcelona.cat/infobarcelona/en/tema/city-council/a-record-budget-of-3400-million-euros-to-boost-the-city\\_1132221.html#:~:text=A%20record%20budget%20of%203%2C400,Info%20Barcelona%20%7C%20Barcelona%20City%20Council.](https://www.barcelona.cat/infobarcelona/en/tema/city-council/a-record-budget-of-3400-million-euros-to-boost-the-city_1132221.html#:~:text=A%20record%20budget%20of%203%2C400,Info%20Barcelona%20%7C%20Barcelona%20City%20Council.)
6. "Ajuntament de Barcelona." European Climate Pact, European Union, 27 July 2021, [https://europa.eu/climate-pact/pledges/organisation-and-group-pledging/local-and-regional-government-authority-pledges/ajuntament-de-barcelona\\_en](https://europa.eu/climate-pact/pledges/organisation-and-group-pledging/local-and-regional-government-authority-pledges/ajuntament-de-barcelona_en)
7. Ajuntament de Barcelona. "Food for a Good Life." Barcelona Metropolis, September 2021, <https://www.barcelona.cat/metropolis/en/contents/food-good-life>
8. Ajuntament de Barcelona. "Tourism, between wealth and residents' complaints." Barcelona Metropolis, July 2019, <https://www.barcelona.cat/metropolis/en/contents/tourism-between-wealth-and-residents-complaints#:~:text=The%20tourism%20sector%20generates%208.6,jobs%20in%20just%20six%20years.>
9. Anguelovski, Isabelle. Virtual Interview. 3 June 2022.
10. "Barcelona: a City Exploited by Tourism and Air Traffic." Stay Grounded, <https://stay-grounded.org/barcelona-a-city-exploited-by-tourism>.
11. "Barcelona Data Sheet 2020: Main Economic Indicators for the Barcelona Area." Ajuntament de Barcelona, 2020, [https://www.barcelona.cat/internationalwelcome/sites/default/files/datasheet2020\\_web\\_eng\\_0\\_5.pdf](https://www.barcelona.cat/internationalwelcome/sites/default/files/datasheet2020_web_eng_0_5.pdf).
12. "Barcelona to have a cruise ship pollution tax." Majorca Daily Bulletin, 3 June 2022, <https://www.majorcadailybulletin.com/news/local/2022/06/03/102027/cruise-ships-barcelona-have-cruise-ship-pollution-tax.html>
13. Beasley, Judy J. "Vacation Rentals: Barcelona Hosts Take Airbnb to Court." Apartments Apart, 18 January 2022. <https://apartmentsapart.com/vacation-rentals-barcelona-hosts-take-airbnb-to-court-news/>.
14. Buhigas San José, Maria. Personal Interview. 7 June 2022.
15. "Cruise ships poisoning city air with sulfur as much as cars—new data reveals." Transport and Environment, 7 June 2019, <https://www.transportenvironment.org/discover/cruise-ships-poisoning-city-air-sulphur-much-cars-new-data-reveals/#:~:text=June%207%2C%202019-,Cruise%20ships%20poisoning%20city%20air%20with%20sulphur%20as%20much%20as,million%20cars%2C%20new%20research%20shows.>
16. Cullen, Ross. "The Plan to Transform Paris into a '15-Minute City'." CGTN, 8 November 2021, <https://newseu.cgtn.com/news/2021-11-08/The-plan-to-transform-Paris-into-a-15-minute-city-150iEWb5Hu8/index.html>.
17. Dickson, Ian. "Sweden's One-Minute City Success Story." Here, 29 March 2021, <https://www.here.com/company/blog/one-minute-city-sweden>.

# SOURCES

18. Earth 5R. "Environmental Impacts of Tourism in Barcelona: Can a Circular Economy Make the City Sustainable." *Sustainable Development Goals*, 29 August 2020, <https://earth5r.org/barcelona-spain-circular-economy/>
19. F3rn4nd0. "Metropolitan Area of Bogota." *Wikipedia*, 28 May 2007, [https://es.m.wikipedia.org/wiki/Archivo:Metropolitan\\_Area\\_of\\_Bogota.png](https://es.m.wikipedia.org/wiki/Archivo:Metropolitan_Area_of_Bogota.png).
20. Gras Alomà, Ramon. Virtual Interview. 14 June 2022.
21. "Gender Equity: Mobility." *Ajuntament de Barcelona*. <https://ajuntament.barcelona.cat/dones/en/gender-equity/gender-numbers/mobility>.
22. Hendricks, Jennifer. "The 15-Minute City Addresses Poverty." *The Borgen Project*, 1 Mar. 2022, <https://borgenproject.org/the-15-minute-city/>
23. "How a dearth of tourists have transformed Barcelona's property market." *Financial Times*, 13 May 2021 <https://www.ft.com/content/db40e9a0-f043-4200-ae74-a3fc7b800f74>
24. Isabel La Moneda, Diego, Ramirez Fernández, Beatriz, y Flora Cerda. "Guía Metodológica: Ciudades de 15 Minutos y Territorios de 45 Minutos." Foro NESI, 23 June 2022. <https://nesi.es/guia-espana-ciudades-15-minutos/>.
25. Laverde, Gabriela. "Mayor Claudia López spoke about her plan to build a 30 minute city." *Bogota*, 23 Sep. 2020, <https://bogota.gov.co/en/international/mayor-claudia-lopez-spoke-about-her-plan-build-30-minute-city>.
26. Llop Torné, Carles. Personal Interview. 8 June 2022.
27. "Map of income per person in Barcelona, street by street (2016)." *Barcelona Field Studies Centre*, 7 July 2022 <https://geographyfieldwork.com/Barcelona-Map-Income-per-Street-2016.htm#:~:text=Here%20the%20residents%20enjoy%20an,the%20richest%20neighbourhood%20of%20Barcelona>
28. Marrades, Ramon. Virtual Interview. 14 June 2022.
29. McLanahan, Paige. "Barcelona Takes on Airbnb." *New York Times*, 26 September 2021. <https://www.nytimes.com/2021/09/22/travel/barcelona-airbnb.html>.
30. Miquel Amengual, Ariadna. Virtual Interview. 29 June 2022.
31. Modijefsky, Michiel. "Maastricht Bereikbaar: integrated mobility management targeting employers and commuters." *Eltis*, 27 August 2019. <https://www.eltis.org/discover/case-studies/maastricht-bereikbaar-integrated-mobility-management-targeting-employers-and>
32. Moreno, Carlos. "Living in proximity, the 15-minute city." *Barcelona Metropolis*, 20 Dec. 2020, <https://www.barcelona.cat/metropolis/en/contents/living-proximity-the-15-minute-city>.
33. Oscilowicz, Emilia. "Policy and Planning Tools for Urban Green Justice." *Barcelona Lab for Environmental Justice and Sustainability*, April 2021. <http://www.bcnuej.org/2021/04/08/policy-and-planning-toolkit-for-urban-green-justice/>.
34. Ortigosa Marín, Javier. Personal Interview. 14 June 2022.
35. Ortiz, Astrid and Marga Pont Algeró. "Tourism, between Wealth and Residents' Complaints." *Barcelona Metropolis*, 19 July 2021, <https://www.barcelona.cat/metropolis/en/contents/tourism-between-wealth-and-residents-complaints#:~:text=The%20tourism%20sector%20generates%208.6,jobs%20in%20just%20six%20years>.

# SOURCES

36. O'Sullivan, Feargus. "Barcelona Finds a Way to Control Its Airbnb Market." *Bloomberg*, 6 June 2018, <https://www.bloomberg.com/news/articles/2018-06-06/how-barcelona-is-limiting-airbnb-rentals>.
37. O'Sullivan, Feargus and Laura Bliss. "The 15-Minute City—No Cars Required—Is Urban Planning's New Utopia." *Bloomberg*, 12 November 2020, <https://www.bloomberg.com/news/features/2020-11-12/paris-s-15-minute-city-could-be-coming-to-an-urban-area-near-you>.
38. "Pass the salt, not the politics: Catalan families split over independence." *Reuters*, 9 November 2014 <https://www.reuters.com/article/us-catalan-insight-idUKKBN0IT0B220141109>
39. Postaria, Ronika. "'15-Minute City'—How do we get there?" *Cities Forum*, 5 November 2021, <https://www.citiesforum.org/news/15-minute-city/>.
40. Peiró Compains, Irene. "The Housing Crisis in Cities: Causes, Effects, and Responses: Summary of the Talks Given at the Barcelona Housing and Renovation Forum." *Barcelona Municipal Institute of Housing and Renovation*, 1 October 2019. [https://www.habitatge.barcelona/sites/default/files/dialegs\\_habitatge-en-gb\\_web2.pdf](https://www.habitatge.barcelona/sites/default/files/dialegs_habitatge-en-gb_web2.pdf).
41. Ramirez Fernández, Beatriz and Flora Cerda. Virtual Interview. 9 June 2022.
42. Rovira, Adrià. "Spanish State Carried Out Only a Third of Planned 2021 Investment in Catalonia." *El Nacional*, 1 June 2022. [https://www.elnacional.cat/en/business/spanish-state-third-2021-investment-catalonia\\_765387\\_102.html](https://www.elnacional.cat/en/business/spanish-state-third-2021-investment-catalonia_765387_102.html).
43. Rueda, Salvador. Personal Interview. 8 June 2022.
44. "Rules: Cataluña/Barcelona." *Airbnb*, <https://www.airbnb.com/help/article/862/catalu%C3%B1a-barcelona>.
45. "Street Moves: Sweden's 'One-Minute City' Promotes Hyper-Local Culture." *Globetrender*, 21 January 2021, <https://globetrender.com/2021/01/21/street-moves-sweden-one-minute-city/>.
46. TED. "The 15-minute city | Carlos Moreno." YouTube, uploaded by TED, 25 Jan. 2021, <https://www.youtube.com/watch?v=TQ2f4sJVXAI>.
47. Transports Metropolitans de Barcelona. "T-verda" <https://www.tmb.cat/en/barcelona-fares-metro-bus/single-and-integrated/t-verda>
48. Urbact. "Badalona." *European Union Regional Development Fund* <https://urbact.eu/badalona>
49. "Urban Mobility Plan of Barcelona PMU 2013-2018." Ajuntament of Barcelona, Oct. 2014, [https://prod-mobilitat.s3.amazonaws.com/PMU\\_Sintesi\\_Angles.pdf](https://prod-mobilitat.s3.amazonaws.com/PMU_Sintesi_Angles.pdf)
50. U.S. Commercial Service. "Bogota Profile." *International Trade Administration*, <https://www.trade.gov/sites/default/files/2021-03/Bogota%20Profile.pdf>
51. Valdivia Gutiérrez, Blanca. Personal Interview. 16 June 2022.