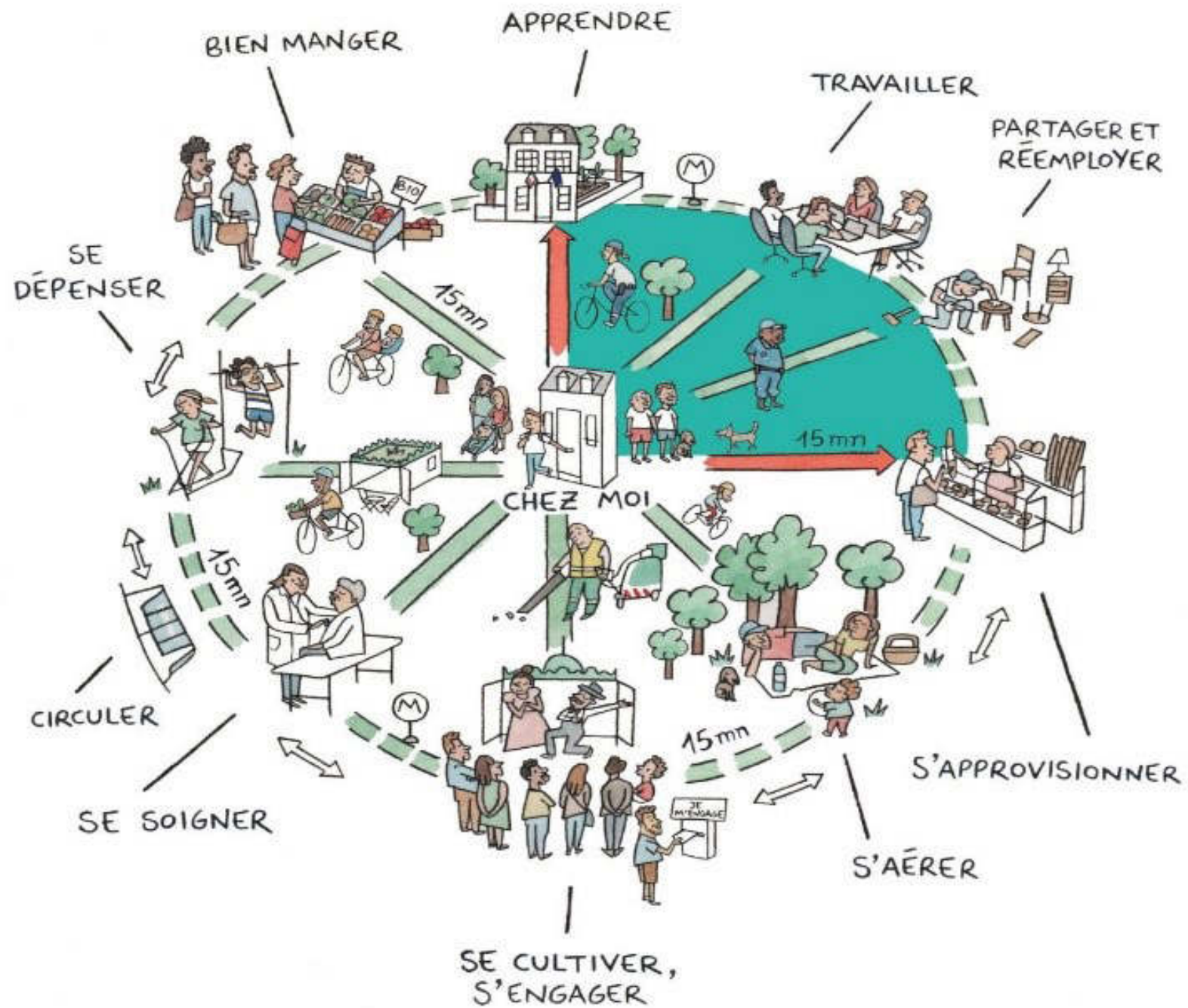


# LE PARIS DU 1/4 HEURE

PARIS EN  
COMMUN



# 15 Minute City Concept. A Glance at the Palermo Case Study

Sezione I – Il tema

Elif Sezer

*Giving people opportunities for green technology and offering them new transportation modes are not sufficient methods for the transition to a sustainable mobility model. With the increasing importance of time, minimizing the daily travel time of people seems to be one of the crucial steps to be taken. 15 Minute City is one of the latest popular concepts assuring to reduce daily travel time and improve quality of life while enhancing environmental conditions. This paper will have a look at the concept regarding the case study of Palermo, one of the cities with the most intense traffic problems in Europe.*

*Keywords: 15 Minute City, proximity, Chrono-urbanism, Palermo, Sustainable Mobility*

## Introduction

As Jane Jacobs mentioned the challenge in 1961 that we still debate today, «How to accommodate city transportation without destroying the related intricate and concentrated land use? – this is the question. Or, going at it the other way, how to accommodate intricate and concentrated city land-use without destroying the related transportation?» [Jacobs, 1961, 356]. Mobility is the complexity of transportation processes derived from the spatial characteristics of human needs and activities [Csiszár et L., 2019]. Apart from creating a balance between land use and transportation system, today the challenge is more complex with the urgent need for action for climate problems, rapid urbanization and urban sprawl, increasing population, increasing inequality and so on.

This article first briefly discusses the problems with urban transportation and mobility in today's conditions. The main core of the article focuses on the 15 Minute City Concept gained popularity in the last years even if the core discussion of the concept can be placed historically in modernist critiques. The idea of the research is to understand the dimensions of the concept and discussing the historical center

of Palermo in terms of those dimensions and the actuality of mobility in Palermo.

In the first part, urban mobility is examined in the case study city Palermo with the analysis made by using online sources Moovit and TomTom Traffic Index and ArcGIS.

Then, the discussion continues with a brief analysis on the effects of Covid-19 on mobility and the different steps taken during the quarantine period in the world. Especially, the local governments have become fundamental actors to manage pandemic conditions and respond to peoples' needs. However, the response of local governments is not balanced among territories at international levels. This is due to the characteristics of the governance system of different countries, territorial features, level of urbanizations and investments levels for enabling local resilience [Co-PLAN, Institute for Habitat Development, 2020].

The last part is dedicated to the 15 Minute City Concept derived from New Urbanism and chrono-urbanism approaches.

The paper ends with the new risen questions to open a debate on practicality of the concept and how Palermo could benefit from it.

## Urban Mobility and Sustainability Actions

Cars have been promoted in peoples' lives in a way that living and moving seemed beyond the realm of possibility without them. The dynamics of urban planning have been changed by the car-centered conception and it opened the door for linear and perpendicular city grids and the destructive results of urban sprawl [Brown et al., 2009]. The car-dependent urban development policies caused deep-rooted inequalities on an economic and social basis apart from the damage given to nature, such as traffic congestion, long daily travels for basic needs which means economic and time loss, increased GHG emission and so forth. Currently, cities are responsible for 70% of global greenhouse gas emissions and this share will increase with the pace of urbanization [OECD, 2020].

To eliminate those inequalities, in some major cities, steps are taken by promoting public transport and decrease private-vehicle dependency [Allan, 2019]. There are many sectors to intervene to transform cities into more sustainable mechanisms and transportation is one of the most important of those sectors as the main GHG emission reason<sup>1</sup>. Besides, with the population increase, from 1990 to 2016, the GHG emission related to transportation increased by 77% [OECD, 2020].

Consequently, there are many international and national steps taken by countries. One of them is C40, the network of mayors of nearly 100 world-leading cities collaborating to deliver the urgent action needed right now to confront the climate crisis since 2005. Even if the case city of Palermo is not a member of this network, their actions during the recovery process of the global pandemic regarding

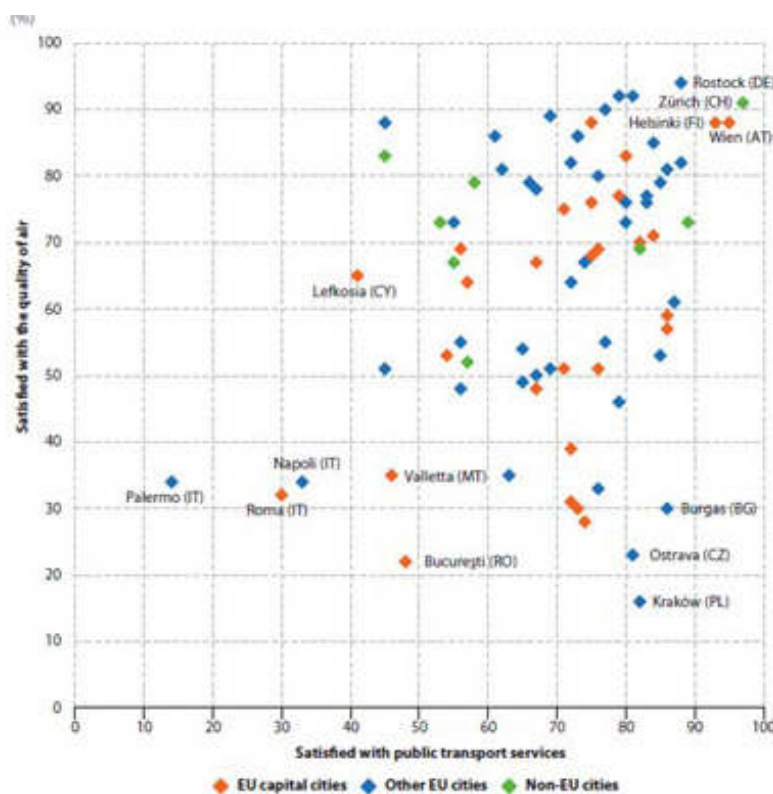


Fig. 1. The proportion of people satisfied with public transport services and the quality of air in their city, 2015 (Eurostat online data code: urb\_percep).

mobility make them a topic of this research for a deeper understanding of the latest trends of actions in the world. Their main topic is to fight against climate change, improve equity, build resilience, and create the conditions for everyone, everywhere to thrive. Different groups are working on different aspects of climate action, and one of them is transportation. C40's transport teams work with cities and mayors to implement and scale-up innovative and ambitious transport solutions. There are three main points of their transportation policies which are followed by all the members; making transit, walking and cycling the preferred option for more trips, implementing restrictions on high polluting vehicles in a significant part of a city, signaling the end of petrol and diesel-powered cars and trucks by promoting the use of zero-emission alternatives [Transportation – C40 Cities, n.d.]. In the light of those principles, C40 promotes the concept of “15 Minute City” to its member cities in order to recover from the Covid-19 crisis and as a complementary policy for their climate actions. The name of the concept could be varied as 20 Minute City, ‘human-scale city’, complete neighborhood and so forth, but the main idea is still the same as much as each other [C40 Knowledge Community, 2021].

### *Urban Mobility in Palermo*

Palermo is the capital of the region of Sicily which is located in southern Italy. Although the city has one of the highest populations in Italy and is the most important economic hub of the region, Palermo has been facing underdeveloped transportation system problems and a chronic lack of investments in necessary infrastructures [Vinci et al., 2014]. In terms of public transportation, Palermo does not provide many options to its people. There is the bus system operated by AMAT which covers a net area of 340 km and with 90 different routes, reaches every part of the city [AMAT, Municipal company for public transport of Palermo, n.d.]. From the same company, there is also the tram system of Palermo with 4 lines which was finalized in 2015. Lastly, there is the train system that connects Palermo with its suburban areas and also with other cities in Sicily which are operated by Trenitalia.

The city center of Palermo has been facing a decrease in the population over the last three decades by the suburbanization process [Lotta et al., 2017]. Between 1981 and 2011, the core city lost 6% of its residents because of suburbanization and urban sprawl which are especially located around the coastal areas of

the city [Vinci et al., 2016]. As a consequence of dense amenities and functions, the core city is the destination of thousands of commuters every day. The lack of an efficient public transport system causes congestion in this scenario for Palermo. According to the TomTom Traffic Index [2021], Palermo has the highest congestion of traffic in Italy and it is followed by the capital city, Rome. Every year, approximately 82 hours are lost in traffic in Palermo (TomTom Traffic Index of Palermo). Even if there is a small decrease (2 minutes) due to the pandemic and smart-working trend, there is still an average of 16-18 minutes lost for a 30-minute journey during rush hour daily [Palermo Traffic Report: Tomtom traffic index 2022]. Hence, citizens are highly unsatisfied with the public transportation service and the air quality in Palermo as revealed in the EUROSTAT [2016] which can be seen below in Figure 1.

In 2002, with the approval of the “Integrated Plan for Mass Public Transport”, the local authorities started the period of change in mobility in Palermo. The plan integrated four pre-existing projects which are promoted by different actors such as the province of Palermo, the municipality and the national railway system (Rete Ferrovia Italiana).

Even the projects included the redevelopment of railways with new stations, a new subway line serving the city center and so on, the only project had been completed in the expected time is the tram system which also has faced several problems with financing before its implementation started in 2007 [Vinci and Di Dio, 2014].

In 2013, the first General Urban Traffic Plan (PGTU) and the Sustainable Energy Action Plan (SEAP) were approved as a step toward more sustainable mobility in Palermo. The main strategic objectives of those plans were improving the traffic conditions, street safety, reduction of GHG emissions and energy saving. The PGTU also defined four action plans which are related to sustainable mobility. Those actions are:

- improving the pedestrian mobility with defined squares, pedestrian areas and traffic limitations;
- improving urban and suburban local public transport;
- re-organizing urban and suburban private transport circulation;
- rationalizing the parking areas with a fare system [Vinci & Di Dio, 2016].

Apart from all those actions taken in public transportation and mobility in Palermo, there has been also an attempt of reducing the private car access to the central areas of the city to lower the

level of congestion, noise and air pollution and to increase the walkability. Therefore, the plan suggested limited traffic zones (ZTL), Low Emission Zones and pedestrian areas within the historical center [Cavalcante Schussel, 2019].

### Public Transport Analysis in Palermo

To better understand how public transportation functions in Palermo, it was consulted to Moovit Public Transit Index<sup>2</sup> and TomTom Traffic Index<sup>3</sup>.

The first examination made with Moovit is based on five data which are commute time, waiting time, trip distance, number of transfers and walking distance of people in Palermo. To better understand the data, there will be a comparison between other Italian cities and is based on two different days of the last two years concerning the period of Covid-19 precautions and 2021 when life started to go back to normal quietly. The other part of the analysis is made on TomTom Traffic Index for having a more general glance at the situation of the public transport and traffic condition in Palermo. Here next side, the graphs are showing the efficiency of public transport in Palermo based on commuting time, waiting time, trip distance and walking distance [Fig. 2].

The average commuting time in public transit has decreased sharply after the pandemic in all examples cities including Palermo. Also, it should be kept in mind that the date October 25, 2019 is the last working day of the week, so the movements could be higher than the other days [Fig. 3]. There are no big differences in the waiting time interval at a stop/station before and after the pandemic. Besides, it is seen that, in Palermo, the waiting time at a station is higher than in other cities [Fig. 4].

When it's compared with other Italian cities, the trip distance that people usually ride in a single trip by public transport is shorter in Palermo, which is also caused by the concentrated urban development of the city [Fig. 5].

Lastly, it is seen that on average, people need to walk more than in other cities to reach a public transit on daily basis and this could be a reason not to choose a means of public transport if it's considered also the frequency of the services.

According to TomTom Traffic Index comparing the last 3 years (2019-2020-2021), it is seen that during 2020 with the pandemic precautions, the traffic congestion decreased by 7% percent compared to 2019 and 2021. People have been forced to alter and adapt the ways they approach work, socializing, shopping and



Fig. 2. The average amount of time people spends commuting with public transit, for example to and from work, on a weekday (made by the author based on Moovit Traffic Index).



Fig. 3. The average amount of time people waits at a stop or station for their light rail, train & bus line on a weekday (made by the author based on Moovit Traffic Index).



Fig. 4. The average distance people usually ride in a single trip, for example, to or from work, with public transit including light rail, train & bus (made by the author based on Moovit Traffic Index).



Fig. 5. The percentage of people who walk for over 1 km each day to reach a specific destination, for example to or from work (made by the author based on Moovit Traffic Index).

transport, which affected the traffic conditions directly in cities. This effect can give an idea for shaping future mobility policies, especially for cities such as Palermo with a high congestion problem.

Apart from the traffic analyses above, several spatial analyses were made on ArcGIS such as the dispersion of the amenities in Palermo city scale, basic urban form, public transport and their catchment area. These analyses are still in the process, therefore they are given just to have a general idea of the city currently [Fig. 6-7].

The figures show that the amenities including restaurants, bars, ATMs and so on are mostly located in the historic center while the outer residence areas have no sufficient services. The residents are dispersed in outer parts of the city which are not served efficiently in terms of public transport. Broadly, the centeric parts of the city are easily accessible where the services are agglomerated [Fig. 8].

Basic urban form is made to understand the general land use in Palermo and its relation with the public transport system. The figure demonstrates that green areas and outer part of the city, especially North West is not easily accessible. However, the new tram lines which are still in the process, are a step taken to increase proximity in these areas [Fig. 9-10].

Finally, as seen from the analyses above, the service area of tram and train lines are differentiated. Tram lines seem like serving to the outer residential areas.

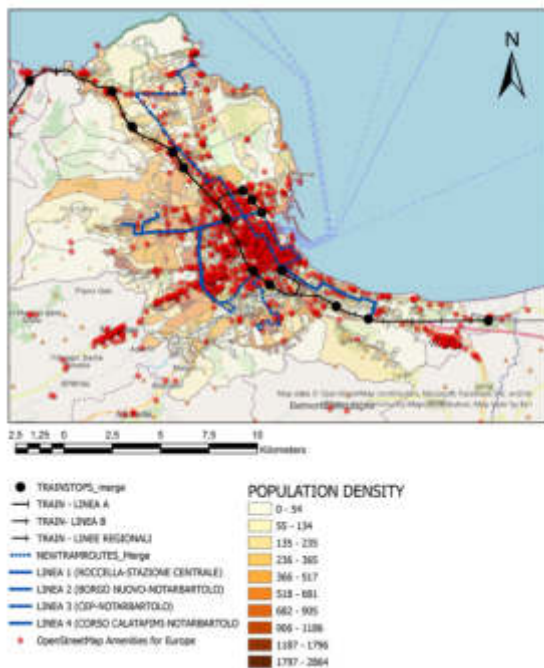


Figure 6. Amenities, population density and rail and tram transport including the projected lines in Palermo (made by the author on ArcGIS).

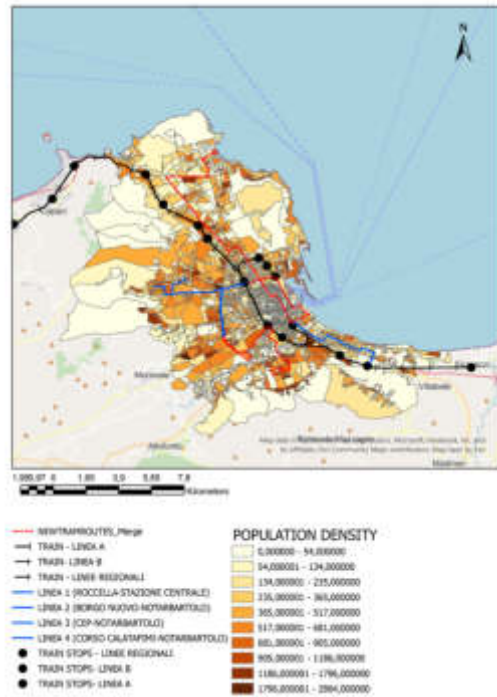


Fig. 7. Population density and the rail/tram system (made by the author on ArcGIS).

These analyses will continue with the more specific catchment area with the population details and urban forms.

### New Urban Development Concepts Regarding the Pandemic & 15 Minute City

Cities that have no backup plan, sufficient incentives for sustainable transformation in many sectors, or that face the lack of efficient mobility opportunities to offer to people have suffered more in the delivery of public services during the pandemic. But several development concepts have reached wide attention and been interpreted in many different cities especially during the pandemic to offer more sustainable and human-centered solutions. Many of those concepts are focusing on decreasing the daily time travel of people to increase the life quality, decrease emissions caused by traffic and create more human-friendly neighborhoods. One of those concepts is 15 Minute City which is discussed in the rest of the article to start a new discussion and bring a new approach to the future mobility policies of Palermo.

15 Minute City could be defined as ideal geography where most human needs and amenities are located within a travel distance of 15 minutes. This concept is also known as complete neighborhoods which describes the aim to create infrastructure in

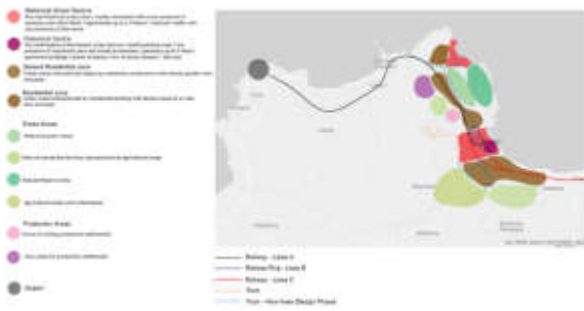


Fig. 8. Basic Urban Form (made by the author based on PRG Palermo).

such a way that all city residents can meet most of their needs within a short walk or bicycle from their homes [Times of India, 2020]. The creator of the idea, Carlos Moreno, a Colombian-French Scientist and the advisor to the Mayor of Paris, wants to change the perception of the cities which means accepting a certain level of dysfunction: long commutes, noisy streets, underutilized spaces. Moreno was inspired by the humanist view of Jane Jacobs. He believes that «(...) the city is alive (...) if we want to solve problems in cities the most important point to consider is humans, people, at the center of activities (...)» [Reimer, 2020]. In other words, the concept rides on the idea of chrono-urbanism which suggests that the quality of urban life is inversely proportional to the amount of time invested in transportation, especially

through the use of cars [Moreno et al., 2021]. Moreno believes that residents would enjoy a higher quality of life where they effectively access living, working, commerce, healthcare, education and entertainment functions without spending long daily trips. To attain those functions, the urban built landscape must be restructured with 4 main components such as proximity, diversity, density and digitalization.

Proximity is explained by temporal and spatial aspects which allow people to maximize their access to public spaces, green spaces and other infrastructures within 15 minutes. Diversity has two phases which are mixed-use neighborhoods to create an economically vibrant urban fabric and the other is the diversity in culture and people which allows an attractive urban landscape for visitors and tourism. Density is addressed differently in this concept from the general aspect of urban planning. Density in this concept does not mean the high density of high-rise buildings but the people per kilometer square. The optimal number of people that a given area can comfortably sustain in terms of urban service delivery and resource consumption. It minimizes the necessity for cars, hence promoting the achievement of the social functions imagined by Moreno.

Lastly, digitalization is relevant to the modified 15-Min City concept, especially in guaranteeing the actualization of the other three-dimension. Digitalization is related to the Smart City concept, which the 15-Min City concept was inspired by, thanks to the factors such as inclusivity, resident participation and real-time delivery of services encouraged through varying platforms including digital as Moreno's proposed concept [McKinsey & Company, 2018].

Considering the benefits of the human-scaled approach mentioned above, 15 Minute City offers to deliver many advantages in the recovery processes of cities after the Covid-19 crisis. First of all, it boosts the local economy by creating more footfall for local streets which means more local and diverse employment opportunities and more productive use of buildings and street space. Oklahoma City's former mayor Mick Cornett [2013] talks about how the investments in better streetscapes and human-scaled streets helped to transform the economy in Oklahoma City and to tackle its obesity problem. Secondly, equity and inclusivity are other important benefits that come from the core idea of the concept which suggests prioritizing the most underserved areas to designing streets and active travel schemes for the most vulnerable users. Besides, collaboration with local people is a constituent of the concept and creates more public spaces in which to play, mix and

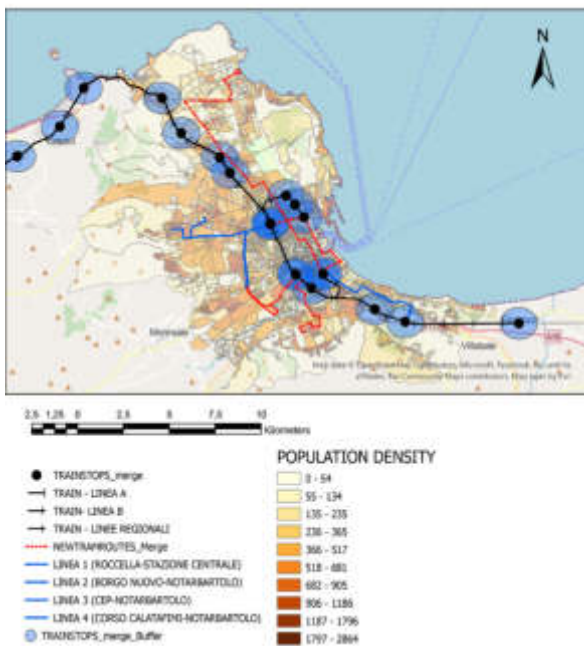


Fig. 9. 800 mt buffer (walking distance) from train stops (made by the author on ArcGIS).

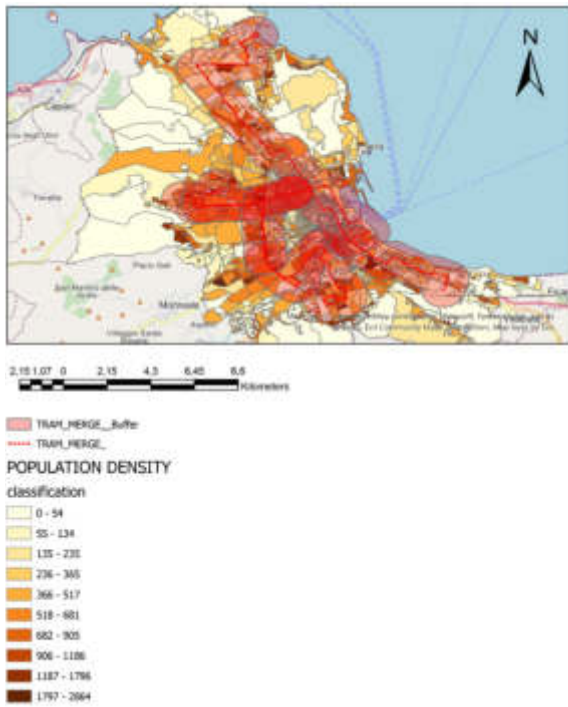


Fig. 10. 800 mt buffer (walking distance) from tram lines (made by the author on ArcGIS).

socialize. Thirdly, it is easy to associate the healthy lifestyle and the 15 Minute City concept due to the space for movement and opportunities it provides to people. It is not only the physical movement and well-being but also mental health benefits that come from socializing, collaborating and so on [C40 Knowledge Community, 2021].

#### How to establish 15 Minute City Concept and Examples

Many of the aspects of this concept have already been applied by many city authorities as climate actions and sustainable urban development policies such as increasing pedestrian paths, bike lanes, and high accessibility. For those who want to transform an urban area into a 15 Minute City, it all starts by setting a future vision. In this future vision, which of the problems should be solved or avoided are determined and the concept is tailored according to the local needs. The next step is data collection and seeking participatory input from people across the city to map out the presence and absence at the neighborhood level of the amenities, businesses, job types, public spaces and other elements that have been identified as core to the city's 15-minute city vision. Thus, with the vision and plan for each neighborhood, an overall plan for the city would be generated.

The critical point is to start from low-income and underserved neighborhoods for the improvement and

creation of equity. That is one of the important topics of the concept which helps for social inclusion and community development.

There are some established examples of the 15 Minute City concept from different major cities in the world. The first and most important example is Paris, also because its the born-place of the idea with the collaboration of Mayor Anne Hidalgo and her consultant Carlos Moreno. She announced a permanent pedestrianization of the Seine riverfront which is seen as a revolutionary step for Paris. The aim is to extend the concept to other parts of the city for making more car-free spaces. 'Hyper-proximity' and the 15-minute city were key pillars of Mayor Anne Hidalgo's successful 2020 re-election campaign [C40, 2021]. The main approach is to cut air pollution and decrease the daily travel to increase the life quality of Parisians and to help the city achieve its plan to become carbon neutral by 2050.

Mayor's plans include installing bike lanes on every street and bridge, which helped to transform 70% of on-street car parking space into other uses, encouraging people to use their local shops and creating more playgrounds that allow people to spend more time in their neighborhood and fight against the city's lack of public green space, especially in low-income neighborhoods [O'Sullivan, 2020].

Another example is Barcelona's 'superblock' which modifies the road networks within 400 mt2 blocks to improve the public space for leisure activities for pedestrians and cyclists.

The idea is the creation of a network of green hubs and squares where pedestrians have priority. It is implemented by including residents, associations and organizations [Postaria, 2021].

In June 2020, also Madrid announced a pilot superblock approach as a part of its transition to a "15 Min City" to support the recovery process from the pandemic [Montejo, 2020] [Fig. 11].

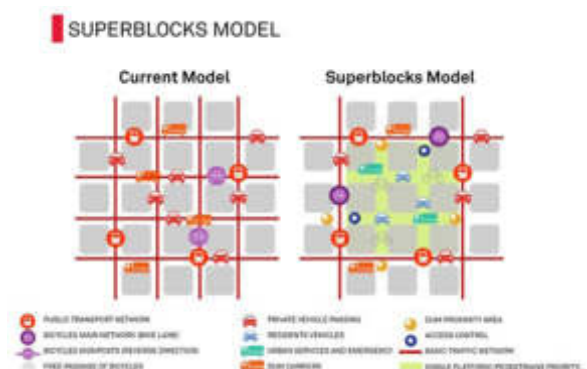


Fig. 11. Superblock Models of Barcelona (City of Barcelona Urban Mobility Plan of Barcelona 2013-2016. Barcelona, Spain).



### *How Palermo May Benefit From 15 Minute City Concept*

When the traffic congestion and long daily trip of people in Palermo are considered, a concept as 15 Minute city which aims to decrease the daily travel and increase the quality of life, could be beneficial for the future mobility policies of the city. Especially, by taking into account the structural features of historic center of Palermo such as concentrated services, ease of accessibility and proximity, walkability, and narrow streets giving people the street enclosure sense, the concept may be applied easily without altering many physical conditions. There are several benefits mentioned above such as socioeconomic equity, high accessibility, and increased life quality coming with the concept, but there are also other advantages concerning the urban planning and environment. For instance, the 15 minute City concept deals with a neglected scale of planning that is larger than neighborhood but smaller than metropolitan region. This shows planners where to locate facilities that serve multiple neighborhoods which able to meet all of the people's daily/weekly needs. Besides, the historic centers as Palermo's, which are built before the devastating proliferation of cars, have the conveniently built structure of a 15 Minute City which means restoring the goal may be relatively easy, depending on how much damage was done due to urban renewal, loss of population and so on. Finally, by reducing car use, the concept helps to reduce fuel use and promotes mitigation of climate change [Steuteville et al., 2021].

For the application process, as suggested by the founder of the concept, the first step must be setting a future scenario for the city. Since 2013 with PGTU, Palermo has started to take steps toward sustainable mobility which gives a hint about the intended future scenario. Those ideas could be transferred into more tangible policies and actions to apply in a long and a short term plans. Later, the data collection must be done to understand which amenities and functions are missing for the future scenario and which neighborhoods should be priorities. These steps resemble the analyses made for Transit-Oriented Development (TOD) which is another concept born with New Urbanism. Both concepts focus on density, diversity and design aspects of the urban land to analyze potentialities and constraints in the implementation of the concepts and they both underline the importance of proximity. Some examples of the analysis that should be done in Palermo city center and the surrounding for the comparison, regarding the implementation of the concept, could be urban density, population density, land-use diversity and design in terms of walkability and cycling infrastructures. To increase the success

rate of the implementation, the quality of the pedestrian experience is really important.

Architect Steve Mouzon [2012]. refers to the quality of pedestrian experience with "Walk Appeal" which promises to be a major new tool for understanding and building walkable places, and it explains several things that were heretofore either contradictory or mysterious. He mentioned that several measurable things can tell us which standard of Walk Appeal the street provides such as view changes, street enclosure, window of view, shelter and goals in the middle distance. Consequently, considering the traffic problem of Palermo and the time lost in daily travels, the mentioned concept has a high potential for Palermo city center, where steps are taken to transition to a more sustainable transportation model and pedestrianization studies are carried out.

It should be kept in mind that even if the 15 Minute City concept gained popularity with the pandemic last years, actually the roots of the principles directly refers to several similar planning theories have been developed between nineteenth and twentieth centuries as a reaction to modernist urbanism theories. This reality makes the roots of the concept open to debate. The threat here is the that of overshadowing the complex characteristics of cities' space syntaxes while the contemporary call to integrate many urban components and multiscale processes [Marchigiani et al., 2022].

*Elif Sezer, Ph.D Student  
Department of Architecture  
University of Palermo  
elif.sezer@unipa.it*

## Notes

1. In about one-third of the cities, more than 30% of total GHG emissions were from on-road transportation [Wei et al., 2021]
2. Moovit is an Israel-based MaaS provider and journey planner app. The company uses both crowdsourced and official public transit data for their service and so, it is able to provide transit information for areas where no data is officially available [Moovit, n.d.].
3. TomTom Traffic Index gives everyone free access to traffic statistics in 403 cities in 56 countries around the world – the highest coverage for a report of its kind. It provides industry and policymakers with reliable information about congestion levels in urban areas, therefore enabling them to make better mobility decisions for themselves and their citizens [Cohn, 2019].

## References

- Allan A. (2019). “Resilient cities: Overcoming Fossil Fuel Dependence”, *Urban Policy and Research*, 38 (1), pp. 74-79.
- Brown J., Morris E., Taylor B. (2009). “Planning for Cars in Cities: Planners, Engineers, and Freeways in the 20th Century”, *Journal of the American Planning Association*, 75 (2), pp.161-177.
- Schussel J. C. (2019). *Experimenting in Palermo: The pedestrianisation of its historical centre*, Faculty of Engineering of The University of Porto, Porto.
- Co-PLAN (2020). “The response of local governments during covid-19 emergency in Albania: January 2020 -April 2020”, *Policy Report - Resilience Series*, Institute for Habitat Development.
- Csiszár C., Földes D., He Y. (2019). “Reshaped Urban Mobility”, in Almusaed A., Almssad A., Hong L. T. (eds.), *Sustainability in Urban Planning and Design*.
- EUROSTAT (2016). *Urban Europe. Statistics on Cities, Towns and Suburbs*, European Union, Luxembourg.
- Jacobs J. (1961). *The death and life of great american cities*, Vintage Books, New York.
- McKinsey & Company (2018). *Smart City Solutions: What Drives Citizen Adoption around the Globe?*, Mckinsey Center for Government, Singapore, pp. 1-60.
- Marchigiani E., Bonfantini B., (2022). “Urban Transition and the Return of Neighbourhood Planning. Questioning the Proximity Syndrome and the 15-Minute City”, *Sustainability*, 14, 5468.
- Moreno C., Allam Z., Chabaud D., Gall C., Pratlong F. (2021). “Introducing the “15-Minute City”: Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities”, *Smart Cities*, 4 (1), 93-111.
- OECD (2020). *Decarbonising Urban Mobility with Land Use and Transport Policies: The Case of Auckland*, OECD Publishing, Paris.
- Vinci, Ignazio & Di Dio, Salvatore. (2014). “Designing Mobility in a City in Transition. Challenges from the Case of Palermo”, *TeMA. Journal of Land Use, Mobility and Environment*, pp. 977-988.
- Vinci I., Di Dio S. (2016). “Reshaping the urban environment through mobility projects and practices: lessons from the case of Palermo”, in Papa R., Fistola R. (eds) *Smart Energy in the Smart City. Green Energy and Technology*, Springer, Cham, pp. 291-305.

## Web references

- <https://360.here.com/15-minute-cities-infrastructure> (last accessed 12/01/2022).
- <https://timesofindia.indiatimes.com/india/coronavirus-recovery-plan-what-is-15-minute-city-concept/articleshow/76991001.cms> (last accessed 15/01/2022).
- <https://www.c40.org/networks/mass-transit-network/> (last accessed 17/01/ 2022).
- [https://www.c40knowledgehub.org/s/article/Why-every-city-can-benefit-from-a-15-minute-city-vision?language=en\\_US](https://www.c40knowledgehub.org/s/article/Why-every-city-can-benefit-from-a-15-minute-city-vision?language=en_US) (last accessed 17/01/2022).
- <https://www.tedmed.com/speakers/show?id=54384> (last accessed 17/01/2022).
- [https://www.c40knowledgehub.org/s/article/How-to-build-back-better-with-a-15-minute-city?language=en\\_US](https://www.c40knowledgehub.org/s/article/How-to-build-back-better-with-a-15-minute-city?language=en_US) (last accessed 18/01/2022).
- [https://www.eldiario.es/ballenablanca/365\\_dias/madrid-plantea-supermanzanas-limitar-traffic\\_1\\_6049347.html](https://www.eldiario.es/ballenablanca/365_dias/madrid-plantea-supermanzanas-limitar-traffic_1_6049347.html) (last accessed 18/01/2022).
- <https://moovitapp.com/palermo-2804/poi/en> (last accessed 19/01/2022).
- <https://www.bloomberg.com/news/articles/2020-02-18/paris-mayor-pledges-a-greener-15-minute-city> (last accessed 20/01/2022).
- [https://web.archive.org/web/20120807221659/http://www.amat.pa.it/index.php?option=com\\_content&view=article&id=76&Itemid=88](https://web.archive.org/web/20120807221659/http://www.amat.pa.it/index.php?option=com_content&view=article&id=76&Itemid=88) (last accessed 20/02/2022).
- [https://www.tomtom.com/en\\_gb/trafficindex/palermo-traffic/](https://www.tomtom.com/en_gb/trafficindex/palermo-traffic/) (last accessed 20/03/2022).
- <https://www.cnu.org/publicsquare/2021/02/08/defining-15-minute-city> (last accessed 04/04/2022).
- <https://originalgreen.org/blog/2012/walk-appeal.html> (last accessed 08/04/2022).
- <https://originalgreen.org/blog/2012/walk-appeal-measurables.html> (last accessed 09/04/2022).
- <https://www.citiesforum.org/news/superblock-superilla-barcelona-a-city-redefined/> (last accessed 13/04/2022).