SARS-CoV-2 PANDEMIC AND THE 15-MINUTE CITY

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Abstract- **Since the beginning of the pandemic, urban planners have turned their attention to the current state of the city and ways to improve the current situation; The chrono-urbanism in the body of the 15-minute city proposal has taken on greater relevance from this, exhibiting a proposal that can help improve cities in the present and provide greater resilience in the face of future similar events.**

*Key Words***: SARS-CoV-2, 15-minute city, Proximity, Density, Digitization, Diversity.**

INTRODUCTION

Since it was first reported, the impacts of the SARS-CoV-2 pandemic are still unfolding, and many countries are dealing with a second wave of the virus outbreak, apparently reported to be more lethal than the first [18]. Because of this, most countries were contemplating reintroducing containment measures to mitigate further spread of the virus. The reintroduction of strict health protocols and lockdown measures is likely to further dent the economic and social dimensions of cities, which were trying to weather the shock of the first wave. The situation could have been complicated by the fact that much of the urban fabric of large cities, although connected, is not easily accessible without heavy reliance on automobiles. This situation has caused bottlenecks in the provision of services and calls for the need for more adequate urban planning mechanisms as a means of responding to a pandemic in different cities.

In the early moments of the pandemic, some cities looked for a way to mitigate the effects of confinement and the agglomeration of users in public transport by implementing temporary urban responses that proved to be efficient in blocked cities, where vehicular use had decreased significantly. , was the inclusion of bicycle lanes to counter the impacts arising from the restrictions on vehicular movement. de Vos [9] mentions that promoting the use of the bicycle during this pandemic has had numerous benefits, including in health and well-being, but also in helping people to maintain social contact while maintaining health protocols and staying connected. adhere to long-term sustainability goals. The influence of bicycles in promoting sustainable mobility and reducing SARS-CoV-2 is evident in cities like Berlin in Germany, where two temporary bicycle lanes were established after the pandemic broke out [7]. The importance of cycling as an essential means of transportation in the pandemic was of great importance in certain cities, for example, in the city of Copenhagen, bike shops were considered essential service providers and never closed, even when other service providers nonessentials were forced to do so [14]. Added to this, other services linked to public spaces, parks, and cultural services and amenities, which were often overlooked in the past, saw increased popularity and demand during the pandemic. This new demand for smooth mobility and urban community services is compelling authorities to facilitate and, where possible, make these temporary urban responses permanent, even after the SARS-CoV-2 pandemic.

Within the complex systems that are cities, it is possible to apply a type of model that through specific interventions, that is to say, solve problems in parts or in stages to guide the city to a successful conclusion, just as these temporary urban responses can generate a new typology in which the city becomes resilient in the face of pandemics and natural disasters, the answer can be found in the concept of a 15-minute City. The success of this concept, as demonstrated in the city of Paris under the tutelage of Mayor Anne Hidalgo, has been pointed out as an urban planning concept that will lead the city to an economic boost, while generating social cohesion and interaction creating sustainable ecosystems in cities, even more so after the experiences of SARS-CoV-2 and their respective containment measures. Although some of the characteristics of the 15-Minute City concept had been temporarily adopted in different cities after the impacts of SARS-CoV-2, its adoption in long-term planning may result in a better quality of life, since Proximity to basic services will help save time lost in traffic, thus promoting sustainable mobility [31]. This will contribute to the efforts to reduce emissions as foreseen in the Paris agreement [35] and will promote greater cultural results, among others. Furthermore, as Reimer [26] mentions, the adoption of the 15-Minute City concept will also open doors for newer digital innovations, such as bike-sharing technologies that would increase the high-livability experiences of urban residents. For example, as established by Ghel [12], the reconsideration of cities to facilitate walkability and cycling would, in turn, inspire the creation of parks, squares and public places within neighborhoods and, by doing so, would help to reduce social inequality in access to such facilities, which are not always available to everyone in a car-dependent city.

THE 15-MINUTE CITY.

According to Moreno [20], "the 15-minute City" is based on the concept of chrono-urbanism, in which the quality of urban life is inversely proportional to the amount of time invested in transportation, even more so through the use Of automobiles. This concept, perhaps not identical but elaborated under similar parameters, is mentioned by Mulíček, Osman & Seidenglanz [21], this city model advocates an urban configuration where locals can access all their basic elements at distances that would not take them more than 15

minutes on foot or by bike. For the current concept of "15 minutes", Moreno [20] establishes that residents will be able to enjoy a better quality of life where it will be possible to effectively fulfill six essential urban social functions to sustain a dignified urban life, these being: life, work, commerce, health care, education and entertainment. In order to carry out these functions efficiently, it is necessary for the built urban landscape to be restructured to ensure that it complies with components such as proximity, diversity and density, and digitization. These components can occur mainly in cities that seek to offer urban life categorized as high-end. worth.

A case in which this concept has been put to the test is in Paris, where Hidalgo [13], through the "Paris en Commun" program at the beginning of 2020, was based on the concept of "La Ville du 1/4 d'Heure". The acceptance of this new program for the city of Paris can be seen as quite a remarkable achievement, considering that the citizens of a global city ravaged by a pandemic opted for a program that emphasizes resilience and livability over the interest of economic growth. pure. Since its application in Paris, this concept has spread to various cities around the world and has aroused the interest of international organizations, including the C40 Knowledge Hub [5], and UN-Habitat [34], among others. in order to improve the quality of life in the context of SARS-COV-2 and beyond.

While struggling to satisfy the aforementioned components, the six social functions are required to be achieved, thus making the urban social fabric more cohesive and with the inhabitants interacting and participating more in activities that reinforce social ties and build trust than in the past. Dessert will lead to building healthy urban landscapes.

In the current era, when the world is experiencing the fourth industrial revolution characterized by the ubiquitous deployment of information and communication technologies, the concept of a 15-Minute City is considered relevant. This is true as information and communication technologies are now considered to offer a number of solutions to numerous urban challenges, especially through the smart city concept [2]. With these technologies, it has been shown that cities could improve and enhance service delivery, as well as promote increasingly sustainable practices. The prompt delivery of services is also at the core of the 15-Minute City concept with the ultimate goal of ensuring that urban dwellers have maximum time to fulfill the aforementioned basic social functions.

Regarding the components of the 15 Minute City of Moreno density, proximity, diversity and digitization, it is important to note that these have been identified as challenges faced by different cities around the world during the height of widespread SARS-COV cases. -2 and the subsequent health measures and protocols that followed to mitigate the spread. Inhabitants of urban environments faced a myriad of challenges, especially in access to basic essentials which, in most cities, have been sparsely distributed [3], whereas if those cities had prioritized the four identified components here within a comprehensive and flexible framework, the effects of the pandemic would probably have been mitigated. For example, a neighborhood planned so that all basic services can be reached in 15 minutes or less and has public spaces that allow people to maintain decent health standards and practices, such as exercising by walking and reducing social contact, would be relevant at the time of the current pandemic. Despite this, in the future, as urban areas embrace the "new normal", the proposed planning model that emphasizes all four components offers a realistic alternative. Below are descriptions of these urban components and how they could be applied from the perspective of the 15-minute city.

DESNITY
Density is a crucial dimension of the city and its built environment, many researchers [6] have pointed out that this has a direct link to travel and diversity. In traditional planning, density is seen in terms of ultra-high-density buildings, but in the 15-Minute City concept, density is seen in terms of people per square kilometer. That is, when planning a city that is sustainable, it is established that it is essential to consider the optimal number of people that a given area can comfortably support in terms of urban service provision and resource consumption. In previous planning models, where the emphasis was on creating high-rise buildings and offices, challenges arose, including increasing excessive consumption of resources and excessive reliance on fossil fuel energy to run buildings. As such, the emphasis here is on the optimal density that will ultimately allow sustainability objectives to be achieved with respect to economic, social and environmental areas.

Salingaros [29] mentions that with optimal density it is possible to effectively plan the available space so that all essentials can be accessible to residents without the need for time and energy consuming cars. In the same way, Lehmann [17] establishes that an optimal density allows the creation of locally based solutions in areas such as energy generation, food supply, as well as the multiple use of available spaces, where, for example, the school playgrounds could be used as parks [25].

In the current urban planning, this dimension allows the creation of public infrastructures such as bicycle paths and passable trails that minimize the demand for cars, thus promoting the achievement of the social functions proposed by Moreno. It should also be noted that in this same regard Sisson [32] points out that this dimension also allows for equity by addressing the specific needs of different areas, including communities of different socioeconomic status, while particularly favoring lower-income inhabitants especially through the equitable distribution of services and in the deployment of services at a reduced cost for cities, which generates greater value for both investors and governments. Through this approach, density is a key component that favors the social sustainability dimension of cities [11] and when integrated with the other three components (proximity, diversity and digitization), the "15 Minute City" does not It will not only help improve service provision and habitability, but will also benefit from state-of-the-art technological advances.

PROXIMITY

This component is not only addressed spatially but also temporally, that is, within 15-minute access radial nodes, residents of a given neighborhood can easily access basic services. This dimension is essential not only to help cities reduce the amount of time lost in commuting, but also to reduce the environmental and economic impacts of such activity [19]. This also helps to determine the social indicators that affect urban residents, especially in an attempt to promote social interactions, as advocated by urban theorists such as Jacobs [15].

On this, Moreno, anticipates that this dimension is critical since it allows residents to make the transition from residential, work, commercial areas, educational centers, health establishments and other basic institutions in a short period of time. In short, the proximity of essential services allows residents to enjoy a better provision of services both in commercial and public establishments, since the urban model allows the multimodal use of basic infrastructures. For example, in Paris, where Mayor Hidalgo has embraced this new concept, it is becoming the norm that school playgrounds are transformed into parks that the public has free access to after school hours [25]. Pursuing the advanced proximity dimension is critical, as it allows local residents to maximize their local public spaces, green spaces, and other public infrastructure. It also allows them to maximize the exploitation of their available resources, such as heritage, for social, economic and environmental benefits. This premise is important since it allows a glimpse of a city from a different perspective, more adapted to the human scale and adaptable to the use of its inhabitants.

DIVERSITY

The diversity in the context of the above framework and within the idea of the 15 Minute City is twofold, first, the need for mixed-use neighborhoods as primary elements to provide a healthy mix of residential, commercial, and retail components; entertainment and secondly the diversity of cultures and people.

Having mixed-use neighborhoods is key to maintaining economically vibrant urban fabrics according to Sinxadi, Awuzie & Haupt [30], guaranteeing sufficient housing for all urban residents [5] promoting inclusion and promoting sustainable practices. In the pursuit of a model 15-Minute City, the adoption of mixed-use neighborhoods is paramount to ensure optimal density and proximity of essential amenities are achieved, while also providing for the development of walkable streets and lanes for bikes. This approach ensures that residents can benefit from basic essentials within their residential areas, thus reducing the need to travel to access them. This dimension would also help to ensure that the use of available public spaces is preserved and maintained and, where possible, that opportunities to create more public areas are enjoyed, as mentioned by Whyte [37]. This dimension is aligned with that of urban density and proximity, helping to enrich the experiences of the inhabitants within the 15-Minute City.

Brookfield [4] expresses that adopting this form of diversity in a neighborhood provides opportunities for city governments to focus on improving the provision of services to the users of said areas and, in turn, promotes the state of livability, maintaining property value and improving community participation and interaction. This is particularly important to promote an urban environment that adapts to different cultures and people, promotes social cohesion helping to create greater social capital [22].

Having a multicultural dimension in a city has positive aspects in terms of the economic sector, as users would also enjoy a wide variety of products such as cultural products and cultural heritage. This would also create an attractive urban landscape for visitors, thus promoting tourism and other related enterprises that are essential for creating new businesses and promoting economic vitality, leading to the creation of increased employment opportunities [28]. To maximize those benefits, this dimension requires deployment at different scales in a city. Not only on an urban scale within a 15-minute radius, but beyond scales of more minutes.

DIGITIZATION

This concept is relevant to the 15 Minute City, especially ensuring the updating of the other three dimensions. Specifically, this concept aligns closely with the idea of the Smart City from which the notion of the 15-Minute City can be argued to have been inspired in part. For example, within the Smart City concept, factors such as inclusion, resident participation and the provision of services in real time are promoted through various platforms, including digital [10]. Achieving these factors in the smart city concept relies on the effective deployment of different technologies, and this would have similar far-reaching impacts on the 15-Minute City. That is, through digital tools and solutions, it would be possible to ensure that cycling experiences are improved by emphasizing solutions such as shared bikes and the deployment of sensors to ensure the safety of cyclists [5].

Regarding the concepts of proximity, digitization has been effective, as highlighted by the Digital City, where services such as online shopping [27], cashless transactions and virtual communications and interactions, among others, are implemented and encouraged. Similar availability of such services within 15-minute cities would reduce the need for commuting, as some services could be provided from the comfort of homes or offices. Combining these with technologies like smart contracts through cryptocurrency financial services technology like Blockchain would help alleviate security concerns, especially with regards to virtual payments. Digitization, especially during this period of the SARS-COV-2 pandemic, has made it possible for people to work from home and communicate virtually, and this has also been instrumental in reducing social contact and reducing the need to travel from home. to offices and other workplaces. This dimension of proximity-based planning is already emerging from the pandemic and is expected to remain in the post-pandemic urban fabric.

In addition, the deployment of digital solutions would go a long way to even exceed the expectations of the 15 Minute City, in particular to ensure that cities are more resilient in areas such as climate change through lower emissions, linked to a reduction in car use. This could be feasible when mixed energy options are adopted [23], which help reduce excessive dependence on non-renewable

energy sources. In addition, digitization is essential to facilitate optimal consumption of resources [2]. It is expected that all elements of the 15 Minute City will benefit from the advent of digitization, which has been seen as a cross-cutting element.

CRITIQUE TO THE CITY OF 15 MINUTES

In the search for the transformation of urban areas seeking to improve their state of habitability and resilience, promote sustainability, as well as social and economic aspects, countless planning models have been proposed over the years, consequently evolving as a result. its application in different contexts. One of the most current city transformation concepts is the Smart City, which, although it has been progressive in attacking the various problems cities face, has had its shortcomings. It is possible to mention this transformation model that theoretically has the potential to help cities achieve the balance between proximity, density, diversity and digitization mentioned in the 15-minute city, however this potential has not been achieved due to that has been taken by the information and communication technology or ICT providers, developing a worldview of what the Smart City should be, seeking only economic interest and exacerbating the problems it intends to solve. Pandey [24], mentions that urban areas that have been transformed and marketed as "smart" have a high cost in contrast to what most urban residents can afford, also establishing that this phenomenon is influenced by the emphasis on smart technology instead of the social and economic aspect that such technologies are supposed to address, thus deviating from the dictates of the SDGs, especially SDG 11 [33],[1], points out that the Smart City concept has acted as a a promoter of growing inequality in the real estate sector, where it is considered to grow at a rate disproportionate to the growth of residents' income. (Dempsey, Brown & Bramley [11], present a similar argument, where they point out that modern urban planning concepts need to be re-examined, since they have led to unsustainable urban trends, including urban sprawl, they also advocate the implementation of urban planning concepts. planning that reorients urban development focused on both environmental and equitable paths; the principles on which the 15-Minute City is based can be inserted as an adequate model to achieve the aforementioned.

The planning gaps and weaknesses of most urban planning models, including the smart city concept, were exposed by the emergence of the SARS-CoV-2 pandemic, which required the introduction of strict health protocols and realignment economic agendas in view of the growing socio-economic problems they pose. by the pandemic [3]. With the need to observe lockdown measures, social distancing, curfews, and other health protocols, it becomes clear that the need for proximity to most basic services in most cities has been insufficient. Hence, most urban residents have had to face innumerable challenges both economically and socially due to the inaccessibility of most basic items despite the availability of advanced technologies. With these challenges, most cities, as they are currently planned and constituted, will have to be restructured to ensure that, in the future, basic services are available at accessible distances, that social interaction is not interrupted, and that communication is facilitated. use of bicycles and pedestrians ensuring that said healthy protocols are maintained.

Another emerging problem about the Smart Cities model, evidenced in the SARS-CoV-2 pandemic, is that most technologies support an increasing amount of urban data and its analysis, in which, however, it has not led directly to more social interactions, which are now a critical aspect of planning, especially to help residents overcome the social and psychological challenges caused by the SARS-CoV-2 pandemic.

In light of this, some aspects advocated in the "15-Minute City" concept gained strength during the pandemic, despite the fact that this model had already been proposed in 2016 by Reid [25]. The selling point of this concept is its emphasis on proximity-based planning, where an urban neighborhood is planned to accommodate an optimal density that would have access to basic essential services within a 15-minute walk or bike ride. Moreno [20] estimates that, within that 15-minute radius, residents will be able to experience a better quality of life, since they will have to travel less to access basic facilities such as public spaces, with more time and opportunities to interact with other members of the community. the community and fulfill other social functions, which are increasingly important but which have been lacking as a central function of contemporary urban models.

The emphasis on accessibility and proximity advanced in the 15-minute concept, especially on foot or by bike, is paramount, as this mode of close mobility has been shown to have numerous benefits on a social, economic and environmental scale. For example, cities benefit from reduced congestion, reduced pollution (noise, emissions among others) and benefit from green spaces and well thought out and orderly structures. Similarly, urban residents reap economic and health benefits. They also benefit from increased time and opportunities to exercise and gain social interactions. On the economic side, this model has the potential to unlock numerous potential positive outcomes such as employment, new innovations, and the possible creation of unique urban landmarks, as well as help reduce overhead incurred for fuel costs, road maintenance, pollution and other related

It should be noted that while the concept of chrono-urbanism may seem arbitrary, for example why 15 minutes and not 17 minutes? this concept is not rigid in nature and is intended to be tailored to individual cities both by its morphology as well as their specific needs and characteristics. It should be noted that within a 15-minute radius, a cyclist would cover a substantial distance compared to residents who may choose to walk, therefore the proximity dimension for cyclists would be defined differently than for commuters. walking. On this subject, there have been other concepts such as 20-minute cities [8] and 30-minute cities [36], but the end result of all of them is the need to underline that proximity-based planning is key in maintaining quality of life and provision of basic urban functions. In this regard, Moreno's current concept is based on the understanding that, within a 15-min radius, it is possible for a city to incorporate all the basics, including pedestrian and bike lanes, while incorporating digital solutions for enhance the reach of residents by improving habitability. This allows works that support the spatiotemporal dimension of cities to understand and improve the quality of life of urban dwellers [31].

As this concept is analyzed and accepted for development in different global cities, more research is now warranted to show how the idea and its elements can be replicated in cities within the global south and those that may have economic constraints to carry out. the extensive exercise of urban regeneration that this type of planning model requires. The research gains in importance, pointing out that some cities can transform and renew existing infrastructure (without major restructuring) to benefit from bike lanes, parks and greener spaces to fit the proposed model and align with the vision of urbanists such as Whyte [37] and [15]. This is important as those cities have also experienced similar challenges instigated by SARS-COV-2, leading to economic responses that can leave long-term fragments in both the social and economic fabric, impacting the urban landscape. The pandemic will see long-term changes in cities, will cause the emergence of new socio-economic structures and will force new models of urban planning that must adapt to such trends in order to guarantee a safe and sustainable urban future.

Finally, the 15 Minute City is aligned with the concepts that promote dimensions of proximity, pointing out mobility and social interactions within cities. Lee [16] and Cervero & Kockelman, [6] help to reinforce this point through their treatises on urban design on a human scale, however, despite the fact that the concept has gained rapid adoption by different cities, the operationalization of the 15 Minute City requires additional studies. Therefore, the theoretical appeal of the 15 Minute City can open the way as a base model on which research can be developed focused on the generation of various scenarios in which different versions adapted to specific realities can be proposed, incorporating into the path elements that contribute to the vision of a resilient, healthy and socially cohesive city, obtaining expected results.

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