

Analyzing the 15-Minute City Concept and Its Applicability in India

Ar. Shruti Hastak¹

Dept. of Architecture,

¹School of Planning & Architecture,
Bhopal, Madhya Pradesh, India

Abstract: The “15-minute city” concept is derived from historical concepts of proximity and walkability. The “15-minute city” may be defined as an ideal geography where most human needs and many desires are located within a travel distance of 15 minutes. While automobiles may be accommodated in the 15-minute city, they cannot determine its scale or urban form. The 15-minute city is defined by its ability to provide access to all human needs by walking or bicycling for a quarter hour or less. Transit should be provided within the 15-minute city, but cannot accurately define its scale.[1] The concept of a 15-minute city is being hailed as a spatial development model to help foster a more local, healthy, equitable and sustainable way of life. The spatial manifestation of this concept could override the need to travel and convert long-distance trips through motorized modes with definite environmental impacts into shorter trips. The concept also humanizes the city scale and gives an opportunity to create public spaces in neighborhoods — sidewalks, parks, squares, traditional markets, and small plazas, etc. It allows for application of other urban design concepts such as ‘eyes-on-street’, ‘build-to-edge’ conditions, etc. to enhance their liveability and human happiness.

Further the applicability of the concept can be studied by taking up by various examples. Cities like Barcelona & Portland have already begun implementing the concept. In the near future to envisage living conditions for e.g. during the Covid-19 pandemic a need to implement this concept will increase; which brought in the need for ‘personal travel space’ which became important, and walking and cycling have emerged as vital forms of mobility for safe and efficient travel.

Keywords: 15min city concept, Walkability, Proximity, Public Spaces, Social impact, Environmental impact, Feasibility.

I. BACKGROUND STUDY

What Is a 15-Minute City?

A 15-minute city aims to provide everything you need within a short 15-minute walk or bike: jobs, schools, food, parks, community, medical, and more.

Building on the principles of New Urbanism and popularized by Parisian Mayor Anne Hidalgo, this urban design concept may be a solution to create more sustainable, equitable, and healthier cities.



Fig. 1. The 15 min City Concept [2]

After looking at the fig. 1 we need to understand the theories of the concept in detail.

A. Understanding the various theories of 15 min City Concept

Moreno and the 15-minute city

Moreno's 2021 article introduced the 15-minute city concept as a way to ensure that urban residents can fulfil six essential functions within a 15-minute walk or bike from their dwellings. These functions include: living, working, commerce, healthcare, education and entertainment. The 15-minute city framework of this model has four components; density, proximity, diversity and digitalization.

Moreno cites the work of Nikos Salingaros, who posits that there exists an optimal density for urban development which would encourage local solutions to local problems. The authors discuss proximity in terms of both space and time and argue that a 15-minute city would decrease both space and time necessary for activity. Diversity in this 15-minute city model refers to mixed-use development and multicultural neighborhoods, both of which Moreno et al. argue would improve the urban experience and increase community participation in the planning process. Digitalization is a key aspect of the 15-minute city derived from smart cities. Moreno

et al. argue that the Fourth Industrial Revolution has reduced the need for commuting because of access to technology like virtual communication and online shopping. Moreno et al. conclude by stating that these four components, when implemented at scale, would form an accessible city with a high quality of life. [3]

Weng and the 15-minute walkable neighborhood

Weng et al., in their 2019 article using Shanghai as a case study, proposed the 15-minute walkable neighborhood with a focus on health, and specifically non-communicable diseases. The authors posit the 15-minute walkable neighborhood as a way to improve the health of residents and documented existing disparities in walkability within Shanghai. The authors found that rural areas on average are significantly less walkable and areas with low walkability tend to have a higher proportion of children. Compared to Moreno et al., the authors focused more on the health benefits of walking and differences in walkability and usage across age groups. [3]

The above stated theories about the 15 min City Concept give us the insight that it is feasible. Along with this the theories also focus on the framework of the concept and its impact to an extent. Further we can understand their applicability in the literature case studies done.

II. LITERATURE STUDY: CASE STUDIES

A. Paris, France

The Mayor of Paris Anne Hidalgo aimed to decarbonize the city. This inspired the launch of Flexible City Programme in which the ultimate aim was to build communities where all the essential needs of Parisians were met within 15 minutes of their homes on foot, or by bicycle or public transport. The priority areas included easy access to workplaces, stores, schools, clinics and cultural activities. This ecological transformation was based on four pillars: proximity, diversity, density, and ubiquity – aiming to fulfil the basic social functions of living, working, supplying, caring, learning and enjoying [4].

The City adopted an approach of ‘hyper-proximity’ and ‘multipurpose localities’: which can be identified from the “Fig. 2” & “Fig. 3” that sought to reduce the number of car lanes drastically to free up road space for pedestrians and bikes, and to utilize public spaces for purposes such as daytime schools serving as sports facilities and places for night-time leisure activities. Plans also include the creation of ‘children streets’ near schools. As a part of transportation planning, the mayor had announced EUR 350 million of funding for pedestrianisation that would focus on creating a cycle lane in every street in the region by 2024 and removing 60,000 parking spaces for private cars. Successful execution of this transformational work was evident in a new public garden replacing a parking lot in the Minimes barracks. As a part of the same initiative, the surrounding buildings were renovated into 70 public housing apartments at a cost of EUR 12.3 million [4]. During the entire process Mayor Anne Hidalgo was assisted by professor & academician Carlos Moreno the one who laid out the major framework of 15 minute City Concept.



Fig. 2. The 15 min City Concept, Paris [5]

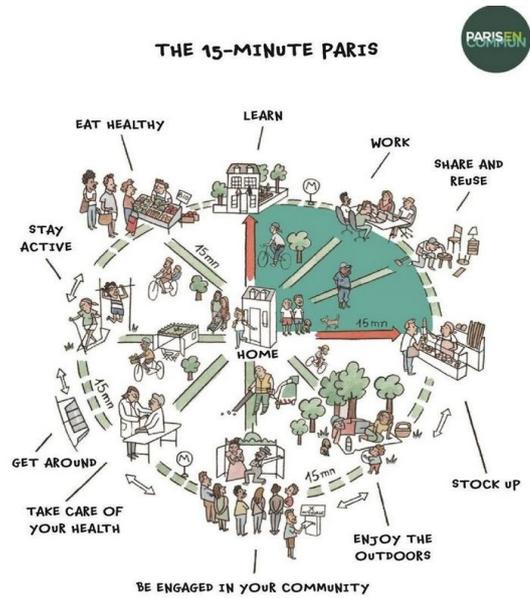


Fig. 3. The 15 min City, Paris [5]

B. Portland, USA

In Portland the focus was on developing long term strategies related to land use in an urban environment, targeting affordable housing, public transport, income inequality, city walkability, social/community-based engagement, and inclusion. Hence in 2015, Portland Climate Action Plan set a 2030 Complete Neighborhoods goal for 80% of residents to be easily able to access all their basic daily non-work needs by foot or bike, and to have safe pedestrian or bicycle access to transit [6] with this they prioritized the undeserved low income neighborhoods for a complete improvements. The “Fig. 4” & “Fig. 5” explain the concept planning & analysis.

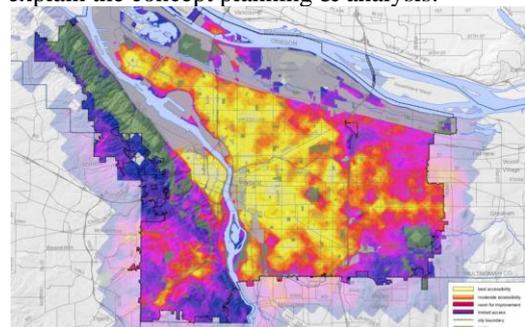


Fig. 4. 20 min Neighborhood Analysis, Portland [7]



Fig. 5. Portland's Complete Neighborhood Concept [7]



Fig. 7. 800m Walkable Catchment [8]

C. Melbourne, Australia

Plan Melbourne 2017–2050 is a long-term strategy that seeks to accommodate the challenges posed by an ever-growing population and employment. These include providing affordable and accessible housing, ensuring adequate number and diversity of jobs, containment of urban sprawl, accessibility and adequacy of transport, mitigation of greenhouse emissions, and adaptation to climate change [7].

The plan is guided by the principle of '20-minute neighborhoods', which are all about 'living locally' and creating inclusive, vibrant and healthy communities. In Melbourne, this is defined as giving people the ability to meet most of their daily needs as show in "Fig. 6" within a 20-minute return walk from home (an 800m walkable catchment) as depicted in the "Fig.7", with safe cycling and transport options. In 2018, Melbourne successfully piloted a program to test 20-minute neighborhoods in different local contexts and identify best-practice approaches to building community partnerships and strategies for delivery.



Fig. 8. 20 min Walkable Neighborhood, Melbourne [9]



Fig. 6. Features of 20 min Neighborhood, Melbourne [8]

D. Barcelona, Spain

The city has a superblocks system example shown in "Fig. 9" that modifies road networks within 400x400 meter blocks to improve the availability and quality of public space for leisure and community activities and for pedestrians and cyclists. Learning from the successes of Barcelona and Vitoria-Gasteiz, which has also implemented superblocks, in June 2020 Madrid announced plans to pilot the superblock approach as part of its transition to a 'city of 15-minutes' to support the city's revival following the pandemic. The superblock measures are cheap and reversible and will be designed and implemented in collaboration with residents [10].

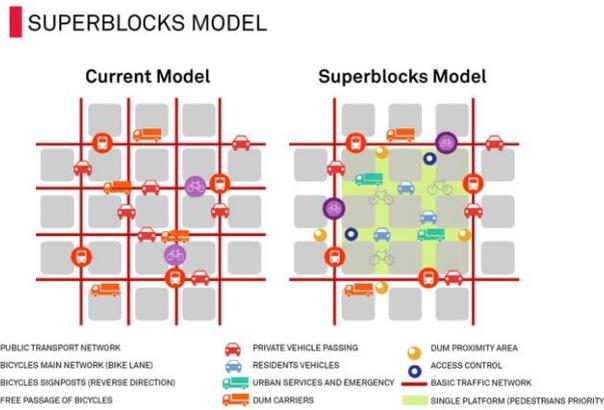


Fig. 9. Superblocks Model, Barcelona, Spain [10]

This aspect would likewise help with guaranteeing that the sacredness of accessible public spaces is saved and maintained and, where conceivable, that chances for making more open regions are relished.

D. Safety

Today safety is not only related to protection from crime or violence it is also about mobility & socialization due to Covid-19 pandemic. Proximity/walkability being the major & important pillar of the framework it has to be done keeping in mind the safety of pedestrians, safety of cyclists, safety of drivers of public/private transport and lastly social distancing again due to the outbreak of the pandemic. Therefore health has become a mandatory part of safety today. With this a mix of land uses that favors the continuous use of space at different times of the day, the increase of visibility during the night with the use of good lighting etc. will contribute towards achieving the sense of a safe urban environment. This is aligned with Jane Jacobs’ idea that “there must be eyes upon the street, eyes belonging to those we might call the natural proprietors of the street” [7].

E. Digitalization

This factor also perfectly fits with the Smart City idea from which the 15-Minute City idea can be contended to have, to some degree, drawn its motivation. For example, inside the Smart City idea, factors like inclusivity, inhabitant cooperation and constant conveyance of administrations are supported through differing stages incorporating computerization similarly as for the situation in Moreno Theory.

F. Social & Environmental Impact

All these factors together have a greater impact on the Society & Environment. According to the 15 min city concept proximity of everything will come closer which will reduce the use of vehicles which in turn helps reduce carbon emissions and pollution. Secondly, increase in number of open spaces, reduction in travel time gives people more time to socialize, which helps in bringing the community closer. Overall the entire concept of 15 min City improves encourages community living and healthy lifestyle.

III. UNDERSTANDING THE FRAMEWORK OF THE 15 MIN CITY CONCEPT

Summing up all the case studies the following pillars formed the major framework:

Proximity/Walkability, Density, Diversity, Safety, Digitalization, Social & Environmental Impact.

A. Proximity/Walkability

In each case study this was the prime factor and the major aim of implementing the 15min city concept. As the concept says that bringing all the necessities from work to daily needs were brought within the limit of 15min or 20min walk. This helps reduce the travel stress & time to work and also for other allied needs. This in turn affects the health of the people/the density that is looked at. Therefore people are now forced to walk or cycle or use public transport if required to reach any place in the neighborhood.

B. Density

In the 15min City concept, Density is seen as far as individuals per kilometer square. At neighborhood level and then at city level this factor plays an important role in terms of managing the resources and support systems. Also optimum utilization of these resources has to be considered. There has to be a balance in consumption & demand. For this certain centralized policies need to be implemented by maintaining the density in the particular area.

C. Diversity

Diversity with regards to the above outline and in the progression of the 15-Minute City idea is twofold: (i) the requirement for blended use of neighborhoods which is essential for effective functioning of residential, commercial and recreational zones (ii) variety in culture and individuals. Chasing after a 15-Minute City model, the reception of blended use areas is fundamental in guaranteeing that an ideal thickness and nearness of fundamental conveniences are accomplished, while additionally accommodating improvement of walkable roads and bike paths. This methodology guarantees that occupants can profit from fundamentals inside their neighborhoods, accordingly diminishing the requirement for them to venture out to get to them.

IV. APPLICABILITY OF THE FRAMEWORK ON AN INDIAN CITY

To check the applicability let’s take an example of Chandigarh city. This is city being a Union Territory also has the legacy of being planned by a famous Architect Le Corbusier in Grid Iron pattern. The city has 56 sectors, each 800 by 1200 meters.

It has intensive Grid Plan divided in sectors therefore picking up one sector and applying the concept to check its applicability. Also, the city being divided in sectors each sector looks the same therefore the 15 min concept will bring in the diversity in planning.

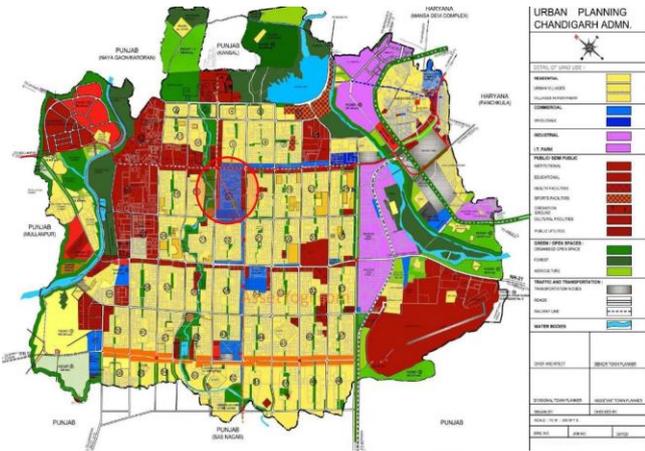


Fig. 10. Chandigarh Master Plan

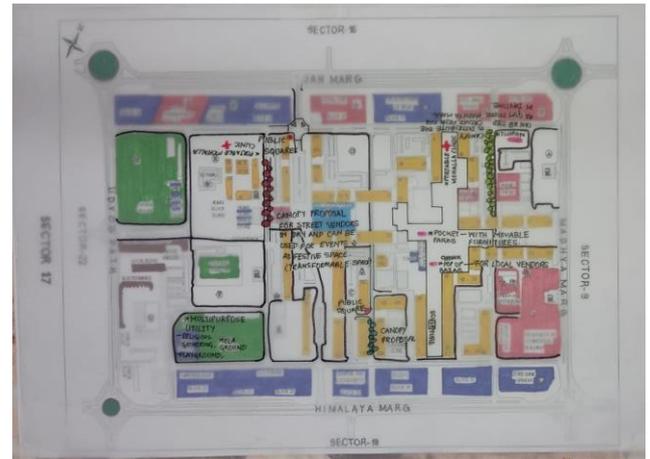


Fig. 13. Zoning & Proposal Plan for Sector 17

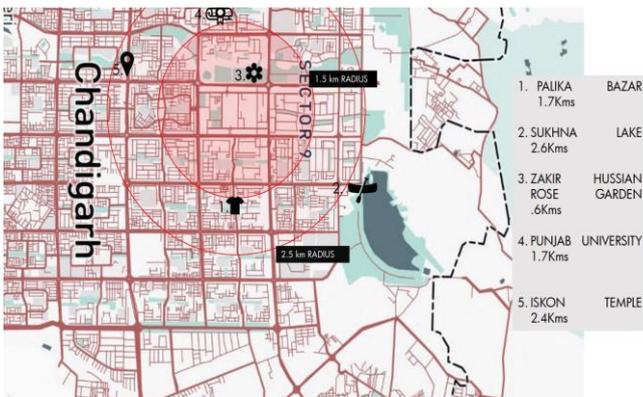


Fig. 11. Chandigarh Sector Plan

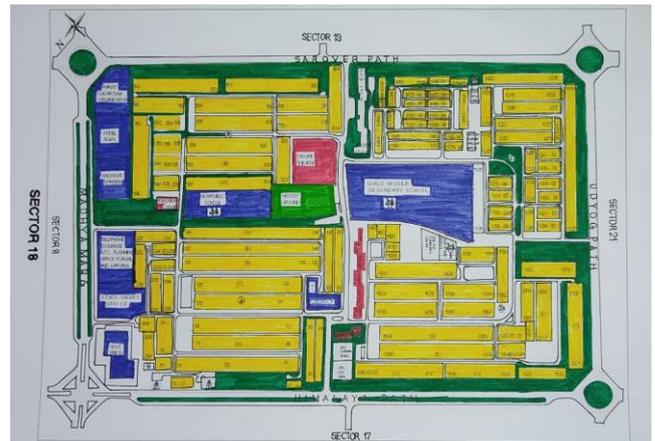


Fig. 14. Land Use Plan of Sector 18

Further the study area will be sectors 17, 18, 21 & 22. In these sectors we can overlay the 15min city concept and check its feasibility using the Six Pillars of Framework discussed earlier in the paper.



Fig. 12. Land Use Plan of Sector 17



Fig. 15. Zoning & Proposal Plan for Sector 18



Fig. 16. Land Use of Sector 21



Fig. 19. Zoning & Proposal Plan for Sector 22

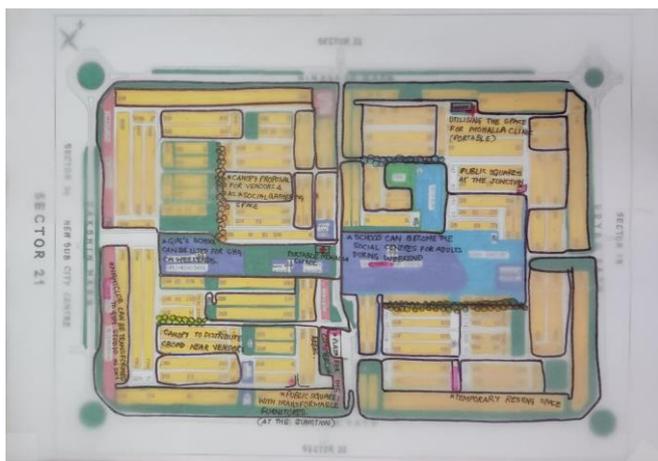


Fig. 17. Zoning & Proposal Plan for Sector 21



Fig. 18. Land Use Plan of Sector 22

In the above proposal plans figures “Fig. 13, Fig. 15, Fig. 17 & Fig. 19”, new community spaces by reorganizing the existing is suggested keeping the residential areas the same. The proposals have been suggested taking into account the current Land Use pattern of these adjoining sectors. For every sector these considerations will have to be made to implement the 15 minute City Concept.

Considering the overall environmental and social impact for the sectors above the proposals made will definitely change the current situations. It will improve the community interaction and at same time help reduce stress levels. For the environmental impact, it will reduce the traffic and use of private vehicles that in turn reduces pollution and carbon emissions. The architectural and social fabric of the sectors will start changing giving it a new character. Although, there would be certain limitations in implementing these proposals.

V. INFERENCES

Therefore here are some observations & findings from the above figures (“Fig. 12 to Fig. 19”) which can be tabularized as below in the form of Issues and Proposals.

TABLE I. ISSUES & PROPOSAL FOR THE SECTORS 17,18, 21 & 22 IN CHANDIGARH

Summarizing the Proposal for Sectors 17, 18, 21, 22		
Issues & Proposals		
Sr. No.	Issues	Proposals
1	Inappropriate utilization of public structures and regions that show up as areas regarding their area in the metropolitan texture.	Openings for the reuse of unused public spaces by imparting socio-sporting and sports offices to the nearby local area.
2	Little knowledge of unused public and private heritage	Presence of a significant naturalistic region in the city of Chandigarh as a chance to ponder the production of a biological organization
3	City/suburb awkwardness in the city region and metropolitan fracture.	The presence of a huge, neglected legacy addresses a significant asset for reacting to social, financial, and ecological requirements (first to battle land use).
4	Absence of incorporated	By working on the

Summarizing the Proposal for Sectors 17, 18, 21, 22		
Issues & Proposals		
	administration important to manage issues identifying with deserted and unused resources.	presentation of districts and the city as far as inward and outer regulatory straightforwardness
5	Absence of neighborhood scenic routes and city passageways.	Sufficient admittance to key metropolitan capacities and vicinity to significant vehicle centers is guaranteed through an organization of "neighborhood scenic routes" that incorporates walkways, bikeways, scenic route trails and bicycle well-disposed green roads.
6	No particular tourist spots because of turf arranging of the city.	Arrangements for elective vehicle choices that debilitate vehicle utilization adds to the decrease of carbon dioxide outflows and in this manner respiratory infections.
7	Every one of the streets seem to be comparable which makes it disarray.	Joining miniature versatility decisions with public vehicle plans to give admittance to other action and business focuses citywide.

VI. CONCLUSION

The investigation of the review setting, from the assessments of the issues which are there in the drafting plans of areas, Chandigarh permitted us to extend the job of the neglected public properties toward the ideal "15-minute city". The arrangement of the neglected structures considered as likely possibilities for reuse will be likewise expanded to cover a more extensive augmentation of the metropolitan texture for a more extensive social incorporation. One more bearing of examination will manage the utilization of such techniques to other previously existing and working public structures and regions in a similar city, to think about the capability of the reusable structures and regions to play another focal, metropolitan job. From the above contextual investigations and the examination of the review it's about time to put an accentuation on decreasing vehicle

predominance, recovering space from vehicles, expanding tree covering, and improving passerby versatility. The vision of the creator of this paper is to make progress toward a carbon economy and a sound life for the residents.

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