

Chrono-Suburban Living

Impact of 20-minute vs 10-minute neighborhood on livability in Melbourne's Outer Suburbs

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Abstract

This study examines the impact of the 20-minute and 10-minute neighborhood models on livability in Melbourne's outer suburb like Manor Lakes. Livability is defined as the overall quality of life experienced by residents, encompassing factors such as access to essential services, housing affordability, environmental quality, social inclusion, safety, and opportunities for cultural and recreational activities (Giles-Corti, Ryan, and Foster 2012; Wiryomartono 2020). Chrono-urbanism, emphasizing the temporal dimension of urban living, underpins these models by advocating for urban design strategies that reduce the time residents spend accessing services and engaging with their community (Capasso Da Silva, King, and Lemar 2019). By analyzing quantitative data such as population density, amenity access, and transportation efficiency specific to Manor Lakes, this study evaluates whether the 10-minute neighborhood model could enhance livability more effectively than the 20-minute model. The methodology involves GIS mapping and statistical analysis of data from the Australian Bureau of Statistics, Wyndham City Council, and Public Transport Victoria. Findings suggest that while the 20-minute neighborhood model improves livability by enhancing access to essential services, the 10-minute model offers additional benefits, particularly for vulnerable populations. Implementing the 10-minute model in Manor Lakes would require significant policy changes, including increased housing density, mixed-use developments, and expanded public transportation networks. This research highlights the importance for policymakers to consider more compact and accessible neighborhood designs in suburban development. Adopting the 10-minute neighborhood model could lead to more sustainable suburban growth, improved health outcomes, and stronger community bonds, serving as a blueprint for other outer suburbs facing similar challenges.

Introduction

Officia conietur fugit, nes ut voluptur, tescm solor Melbourne, often celebrated as one of the world's most livable cities (Economist Intelligence, n.d.; Invest Victoria 2023), has experienced significant suburban growth in recent decades (Department of Economic Development, Jobs 2017). Outer suburbs like Manor Lakes have emerged as key areas accommodating this expansion, attracting residents seeking affordable housing and community-oriented lifestyles

(Wyndham City Council 2016). However, this rapid growth presents challenges in urban planning, particularly concerning livability—a multidimensional concept that encompasses the quality of life, accessibility to services, sustainability, and social cohesion within urban environments (Giles-Corti, Rozek, and Gunn 2018; Wiryomartono 2020).

Livability is increasingly prioritized in urban policy, with planners striving to create environments that meet residents' needs while promoting well-being and community engagement (Victorian Competition and Efficiency Commission 2008). In this context, the concept of chrono-urbanism has gained prominence. Chrono-urbanism refers to urban planning strategies that emphasize reducing the time required for residents to access essential services and amenities (Capasso Da Silva, King, and Lemar 2019). The 20-minute and 10-minute neighborhood models are practical applications of chrono-urbanism, aiming to enhance livability by designing neighborhoods where daily needs are within a short walk, cycle, or transit trip.

Suburbs of Manor Lakes
Photographed by Author



While Melbourne has officially adopted the 20-minute neighborhood model as part of its metropolitan planning strategy (Department of Transport and Planning 2024), questions remain about its effectiveness in outer suburbs characterized by lower density and car-dependent infrastructure (Morley and Pafka 2023). This study seeks to address the research question: How does the 20-minute neighborhood model compare to the 10-minute model in terms of impacting livability in Melbourne's outer suburbs?

Through the study of Manor Lakes, this research aims to assess whether a more ambitious chrono-urbanism approach, such as the 10-minute neighborhood model, could enhance livability metrics and better meet the needs of suburban residents. Understanding these dynamics is crucial for informing urban planning policies that strive to balance growth with quality of life, ensuring that suburban development contributes positively to Melbourne's reputation as a livable city.

Methodology and Information Sources

This study employs a quantitative research approach to evaluate the impact of the 20-minute and 10-minute neighborhood models on livability in Manor Lakes. The analysis focuses on statistical data related to population density, amenity access, transportation efficiency, and infrastructure quality, utilizing Geographic Information Systems (GIS) for spatial analysis.

Data Sources

Data collection involves sourcing demographic and urban planning information from reputable institutions to ensure accuracy and reliability. Key data sources include:

- Australian Bureau of Statistics (ABS): Provides comprehensive census data on population and dwelling densities, essential for calculating density metrics and understanding demographic profiles of Manor Lakes (Australian Bureau of Statistics 2021).
- Wyndham City Council Reports: Offer detailed insights into local planning strategies, infrastructure developments, and socioeconomic characteristics of the community, which are crucial for assessing amenity distribution and infrastructure quality (Wyndham City Council 2016; Wyndham City Council 2021).
- Victorian Planning Authority Documents: Supply precinct structure plans, development contributions plans, and native vegetation precinct plans specific to Manor Lakes, providing information on land use, zoning regulations, and future development plans (Growth Areas Authority 2012a; 2012b; 2012c).
- Public Transport Victoria: Details public transportation routes, schedules, and accessibility, enabling an evaluation of transport efficiency

and mobility options within the suburb (Public Transport Victoria 2022).

- VicPlan: Provides mapping tools and planning information for land use analysis, assisting in the visualization of spatial relationships between residential areas, amenities, and transportation networks (Vicplan, n.d.).
- Australian Housing and Urban Research Institute (AHURI): Offers research on housing and urban issues, including demographic data and dwelling distributions, which support the analysis of housing affordability and density metrics (Gurran et al., n.d.).
- Infrastructure Victoria: Presents urban development scenarios and infrastructure strategies that inform the assessment of infrastructure quality and future planning considerations (Infrastructure Victoria 2023).
- Australian Urban Observatory (AUO): Supplies livability indicators and urban metrics, such as the Urban Liveability Index, which are instrumental in quantifying livability aspects relevant to the study (RMIT University Centre for Urban Research, n.d.).

Analysis Method

The analytical framework integrates various quantitative methods to comprehensively assess the impact of neighborhood models on livability:

- GIS Mapping: Employed to map and visualize spatial relationships between residential areas, amenities, and transportation networks. This spatial analysis aids in assessing walkability and accessibility by illustrating the proximity of residents to essential services (Kesarovski and Hernández-Palacio 2023).
- Population Density Assessment: Calculated by determining the number of persons per hectare to evaluate whether current densities support walkable neighborhoods and the viability of local services. This assessment is crucial for understanding the feasibility of implementing higher-density models like the 10-minute neighborhood (Logan et al. 2022).
- Amenity Access Evaluation: Involves assessing the number and distribution of amenities, including schools, healthcare facilities, retail outlets, and green spaces. By measuring the distances residents must travel to access these services, the study evaluates how well the neighborhood models meet the criteria of chrono-urbanism (Higgs et al. 2019).
- Transportation Efficiency Analysis: Examines public transport availability, service frequency, car ownership levels, and average commute times. This analysis helps determine the degree of mobility options available to residents and the level of car dependency, which are significant factors affecting livability and environmental sustainability (Logan et al. 2022).

Edge Case

- **Livability Metrics:** Utilizes established indicators such as the Urban Liveability Index to quantify aspects of livability, including access to services, environmental quality, and social inclusion. These metrics provide a standardized means of comparing the effectiveness of the 20-minute and 10-minute neighborhood models in enhancing residents' quality of life (RMIT University Centre for Urban Research, n.d.).

- **Statistical Analysis:** Conducted on collected data to identify patterns, correlations, and differences between the two neighborhood models. Statistical tools help quantify the impact of various factors on livability and support evidence-based conclusions.

Limitations

While the study focuses on quantitative data, specific qualitative data about Manor Lakes is beyond the scope of this paper. Future research is recommended to include qualitative insights, such as resident surveys and interviews, to capture personal experiences and perceptions regarding neighborhood design and livability (Idziorek and Zuñiga 2024). Additionally, the reliance on available data sources may limit the granularity of the analysis, and some recent developments may not be fully captured due to data publication timelines.

The Concept of Livability and Chrono-Urbanism

Defining Livability

Livability is a multifaceted concept in urban planning that refers to the overall quality of life experienced by residents within a city or neighborhood (Giles-Corti, Ryan, and Foster 2012; Wiryomartono 2020). It encompasses various dimensions, including access to essential services, housing affordability, environmental quality, social inclusion, safety, and opportunities for cultural and recreational activities. A livable city promotes well-being, health, and prosperity for its inhabitants by providing a supportive environment that meets residents' daily needs efficiently and sustainably.

Key aspects of livability involve the ease with which residents can access amenities such as healthcare, education, retail services, and green spaces (Giles-Corti, Ryan, and Foster 2012). Housing affordability is critical, ensuring that housing costs are reasonable relative to income, enabling residents to maintain a satisfactory standard of living (Gurran et al., n.d.). Environmental quality, including clean air, green spaces, and sustainable practices, contributes significantly to residents' health and well-being (Wiryomartono 2020). Social inclusion is fostered through opportunities for community engagement and social interaction, promoting a sense of belonging (Martino, Girling, and Lu 2021). Safety

and security, characterized by low crime rates and safe public spaces, enhance residents' comfort and confidence in their environment (Higgs et al. 2019).

Transportation plays a crucial role in livability, with efficient public transit and walkable neighborhoods enhancing connectivity and reducing reliance on private vehicles (Gehl 2010). Environmental sustainability, including the promotion of active lifestyles and reduction of carbon emissions, is also integral to livability (Giles-Corti et al. 2016).

Chrono-Urbanism

Chrono-urbanism is an urban planning approach that emphasizes the temporal dimension of urban living, specifically the time residents spend accessing services and engaging with their community (Capasso Da Silva, King, and Lemar 2019). It advocates for the design of urban spaces where essential amenities are within a short travel time, typically by walking, cycling, or public transit. The goal is to create self-contained neighborhoods that facilitate convenient access to daily needs, thereby enhancing livability.

The 20-minute and 10-minute neighborhood models are practical implementations of chrono-urbanism:

- **20-Minute Neighborhood:** Aims to provide residents with access to most daily needs within a 20-minute walk, cycle, or public transit trip (Department of Transport and Planning 2024). This model promotes active transport and reduces car dependency, contributing to environmental sustainability and public health.

- **10-Minute Neighborhood:** Intensifies this goal by reducing the time frame to 10 minutes, bringing essential services even closer to residents (Kesarovski and Hernández-Palacio 2023). By enhancing accessibility, the 10-minute model potentially delivers more significant benefits in terms of health, environmental sustainability, and social cohesion (Idziorek and Zuñiga 2024).

Livability in Suburbs

In Melbourne's outer suburbs, such as Manor Lakes, livability faces unique challenges and priorities. These areas often experience rapid population growth, resulting in pressures on infrastructure and services (Infrastructure Victoria 2023). Lower population densities compared to inner-city areas can lead to dispersed amenities, making it difficult to sustain a range of services within walking distance (Dodson 2010). This dispersion leads to longer travel times to access essential services, impacting residents' quality of life (Giles-Corti et al. 2016).

Reliance on private vehicles is high in these suburbs due to inadequate public transport options (Logan et al. 2022). High car dependency contributes to environmental concerns, including increased greenhouse gas emissions, and can negatively affect social equity, as not all residents have equal access to private transportation (Capasso Da Silva, King, and Lemar 2019). Reduced social cohesion may result from limited community hubs and public spaces, hindering social interactions and a sense of community belonging (Martino, Girling, and Lu 2021).

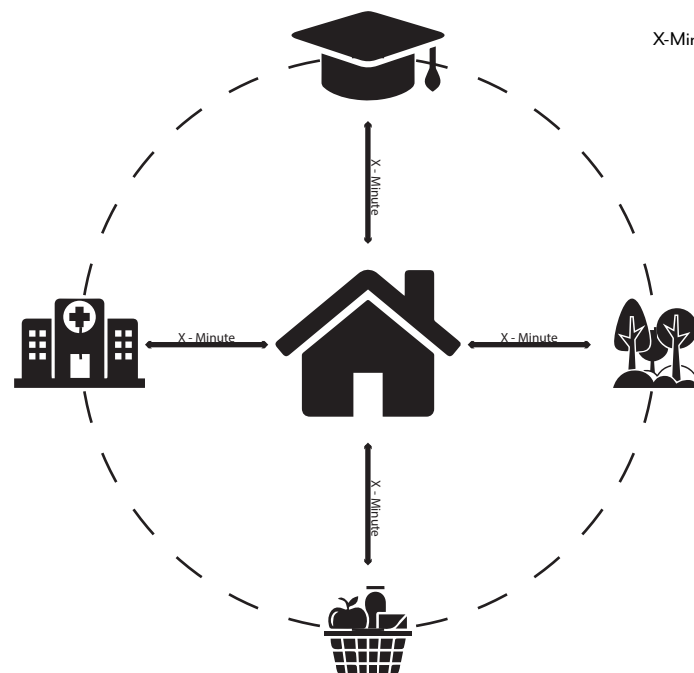
Access to essential services is a significant concern, with residents potentially facing longer travel times to reach healthcare facilities, educational institutions, and employment opportunities (Gurran et al., n.d.). Transportation efficiency is critical, as extended commute times can negatively impact work-life balance and overall satisfaction (Mouratidis 2021). Social cohesion may also be affected in suburban environments where community hubs and public spaces are less accessible or underdeveloped.

Implementing chrono-urbanism principles in these suburban contexts aims to address these challenges by promoting denser, more connected neighborhoods. Enhancing walkability and providing a mix of land uses can improve access to amenities and foster stronger community interactions (Gehl 2010). However, achieving these outcomes requires careful planning and investment in infrastructure to overcome the limitations inherent in low-density suburban development (Hodyl 2017).

Examples of Chrono-Urbanism

Globally, cities are adopting chrono-urbanism concepts to enhance livability. Paris's "15-Minute City" initiative ensures residents can meet essential needs within a 15-minute walk or bike ride, focusing on creating self-sufficient neighborhoods that reduce the need for long commutes (Di Marino et al. 2023). Similarly, cities like Oslo and Lisbon are exploring 15-minute neighborhoods with an emphasis on sustainability and quality of life (Di Marino et al. 2023). These initiatives demonstrate the potential of chrono-urbanism to improve urban living by reducing travel times and fostering community engagement.

In Australia, efforts to promote livability through chrono-urbanism have seen varying success. While inner-city areas have benefited from higher densities and better public transport, outer suburbs like Manor Lakes continue to face challenges in implementing these models effectively (Gurran et al., n.d.). Understanding the interplay between livability and chrono-urbanism in Manor Lakes provides insights into how suburban areas can evolve to meet the needs of their growing populations. By evaluating the effectiveness of the 20-minute and 10-minute neighborhood models, planners can identify strategies to enhance livability and sustainability in Melbourne's outer suburbs.



X-Minute City of Chrono-Urbanism
Diagram by Author

Metrics for Evaluating Livability

Assessing livability requires quantitative indicators capturing various aspects of residents’ quality of life. The following metrics are instrumental in evaluating the effectiveness of urban planning models like the 20-minute and 10-minute neighborhoods.

Density Metrics

- Population Density: Manor Lakes has approximately 13 persons per hectare, below the city target of 16 dwellings per hectare (Australian Bureau of Statistics 2021; Growth Areas Authority 2012a). Higher densities are often necessary to support amenities within walking distance and to make public transport viable (Dodson 2010).
- Dwelling Density: Adequate dwelling density supports mixed-use neighborhoods and efficient land use, promoting sustainability and livability (Victoria State Government 2015).
- Residential Distribution: The spatial arrangement of housing affects access to amenities and community interaction.

Amnity Assess Metrics

- Proximity to Essential Services: In Manor Lakes, amenities are concentrated in the town center, leading to longer travel times for peripheral residents (Wyndham City Council 2021). The average distance to schools, healthcare facilities, grocery stores, and other daily needs impacts residents’ ability to access essential services conveniently.
- Walkability Index: Manor Lakes has a low walkability score due to dispersed amenities and car-oriented infrastructure (Higgs et al. 2019). Factors like sidewalk presence, street connectivity, and land-use mix are considered in this measure.
- Green Space Access: Parks are present but not within a 10-minute walk for all residents, affecting recreational opportunities and overall well-being (Logan et al. 2022).

Transport Efficiency Metrics

- Public Transport Availability: Limited bus routes and a single train station on the suburb’s periphery result in inadequate access to public transportation (Public Transport Victoria 2022). Coverage and frequency of public transit options are crucial for reducing car dependency.
- Average Commute Time: Residents face average commute times of approximately 60 minutes to the central business district, with about 67.8% relying on private vehicles (Resilient Wyndham 2021-2025, n.d.). Longer commute times influence life satisfaction and stress levels.
- Car Dependency Levels: High car dependency increases environmental impacts and reduces accessibility for those without private transport options (Capasso Da Silva, King, and Lemar 2019).

Infrastructure Quality Metrics

- Transport Systems Efficiency: The efficiency of transport systems is hindered by limited connectivity and infrequent services, affecting mobility options and contributing to congestion (SGS Economics and Planning 2016).
- Public Services Distribution: Uneven distribution leads to unequal access to amenities and services across the suburb (Martino, Girling, and Lu 2021).
- Environmental Sustainability: High car dependency increases greenhouse gas emissions, negatively impacting environmental sustainability (Logan et al. 2022).

These metrics provide a comprehensive framework for evaluating how neighborhood design influences livability. By analyzing these indicators, we can compare the performance of the 20-minute and 10-minute neighborhood models in Manor Lakes, identifying areas of strength and opportunities for improvement.

Figure 1. Key determinants of urban amenity and livability

Image sourced from Australian Transport Assessment and Planning Guidelines

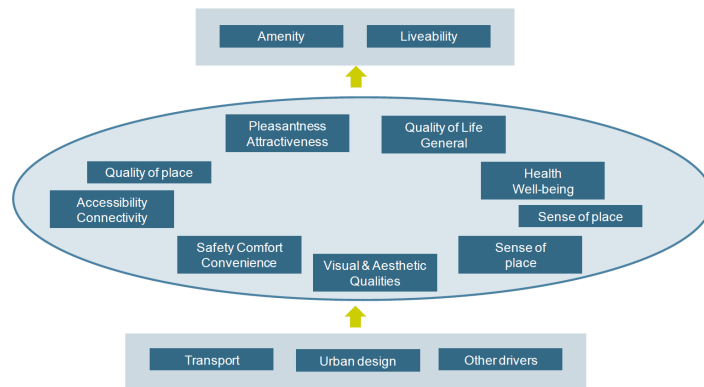
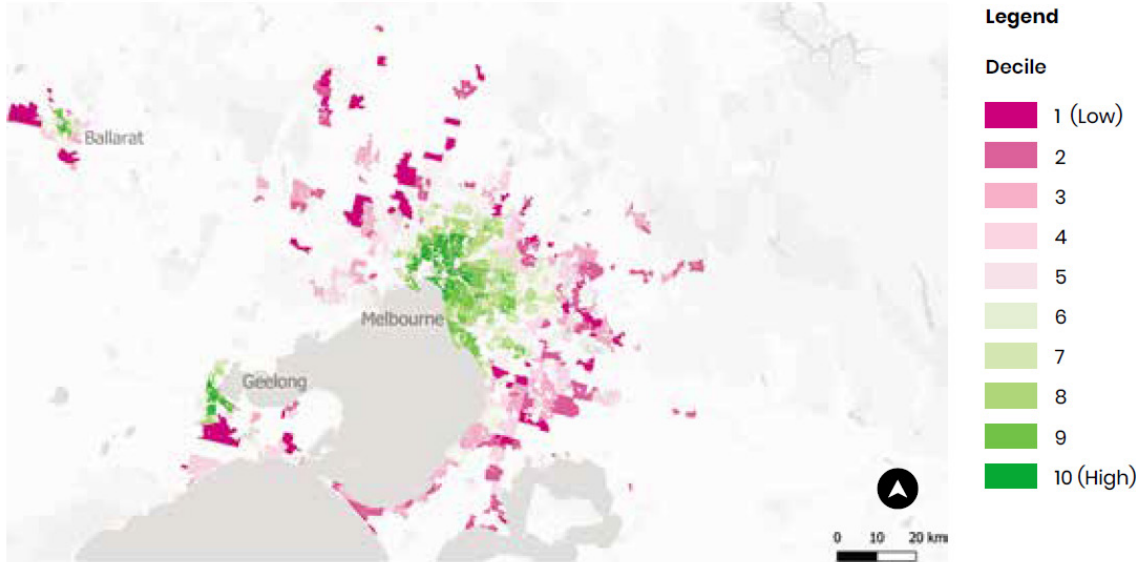


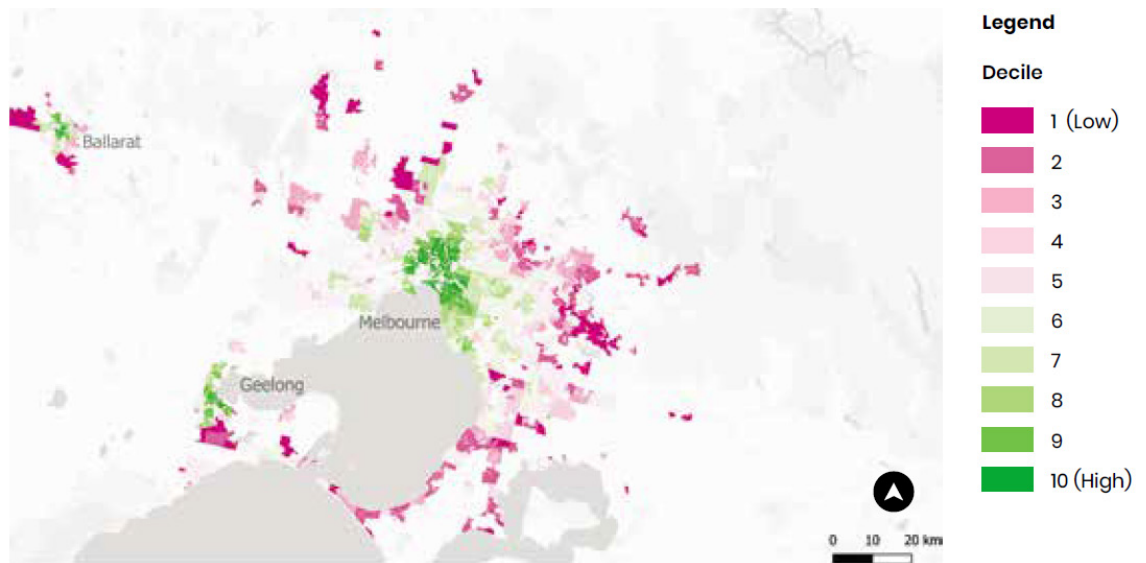
Figure 2. Liveability Index for Melbourne.
 Image sourced from Australian Urban Observatory



2019 CC BY-NC-ND 4.0
 Data: Australian Bureau of Statistics (ABS), 2016 under CC by 4.0; OpenStreetMap, 2018 under ODbL; Australian Children's Education & Care Quality Authority, 2018; Australian Curriculum, Assessment and Reporting Authority, 2018; Healthdirect Australia National Health Services Directory, 2017, via AURIN Portal, 2019; ActionBuses, Canberra Metro, MetroTas, NT Department of Infrastructure, Planning & Logistics, Public Transport Victoria, Transport for NSW, TransLink and Transperth, under CC by 4.0
 Map tiles: CartoDB, under CC BY 3.0, featuring data by OpenStreetMap, under ODbL.



Figure 3. Walkability Index for Melbourne.
 Image sourced from Australian Urban Observatory



2019 CC BY-NC-ND 4.0
 Data: Australian Bureau of Statistics (ABS), 2016 under CC by 4.0; OpenStreetMap, 2018 under ODbL; ActionBuses, Canberra Metro, MetroTas, NT Department of Infrastructure, Planning & Logistics, Public Transport Victoria, Transport for NSW, TransLink and Transperth, under CC by 4.0
 Map tiles: CartoDB, under CC BY 3.0, featuring data by OpenStreetMap, under ODbL.



Edge Case

Figure 4. Social Infrastructure Index for Melbourne.
Image sourced from Australian Urban Observatory

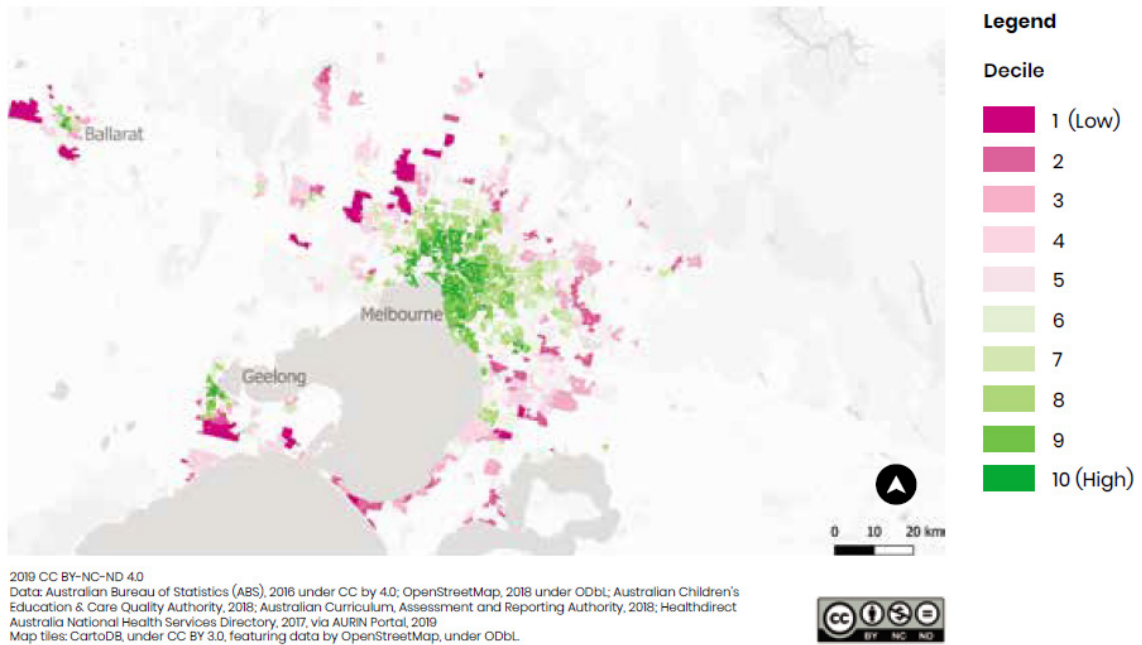


Figure 5. Percentage of residences with proximate access to regular public transport for Melbourne.
Image sourced from Australian Urban Observatory

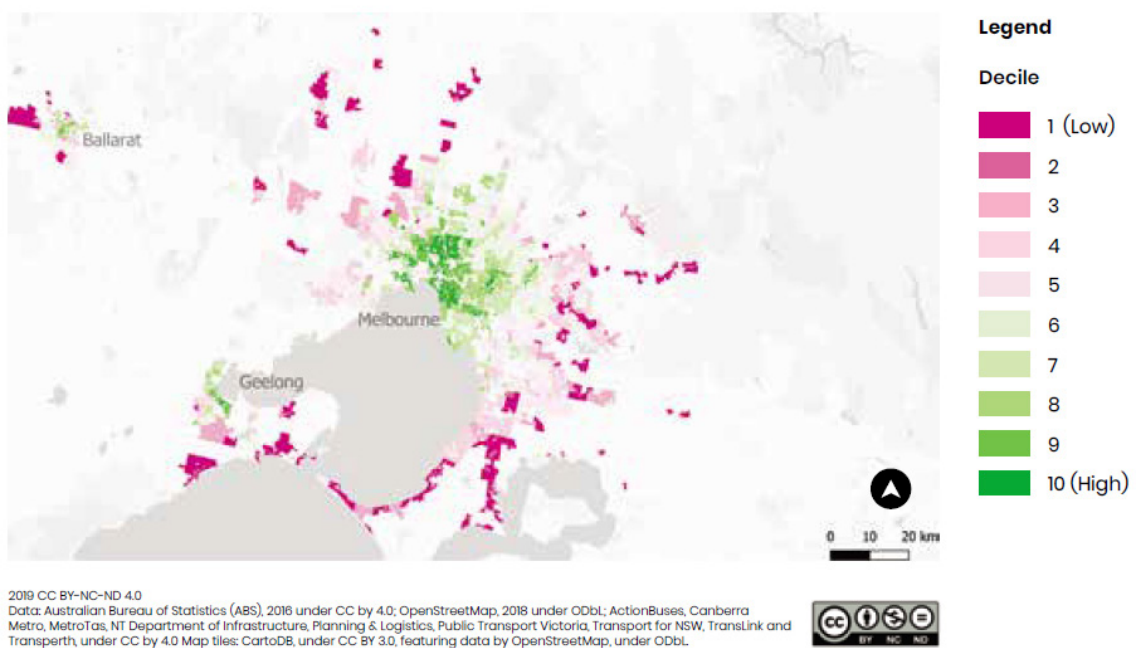


Figure 6. Average distances in metres to supermarkets for Melbourne.
Image sourced from Australian Urban Observatory

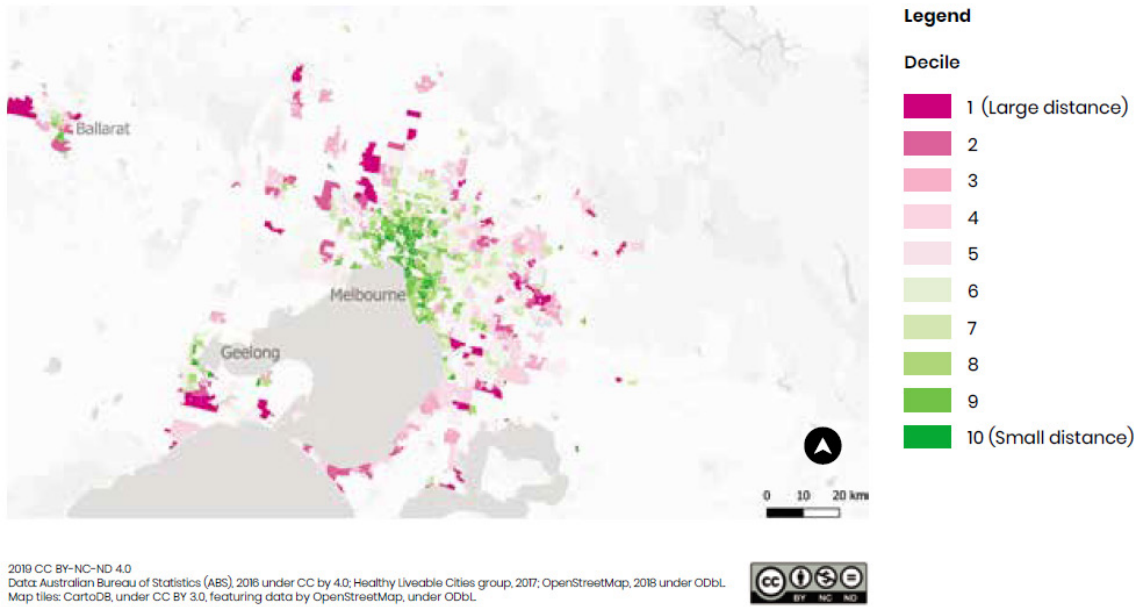
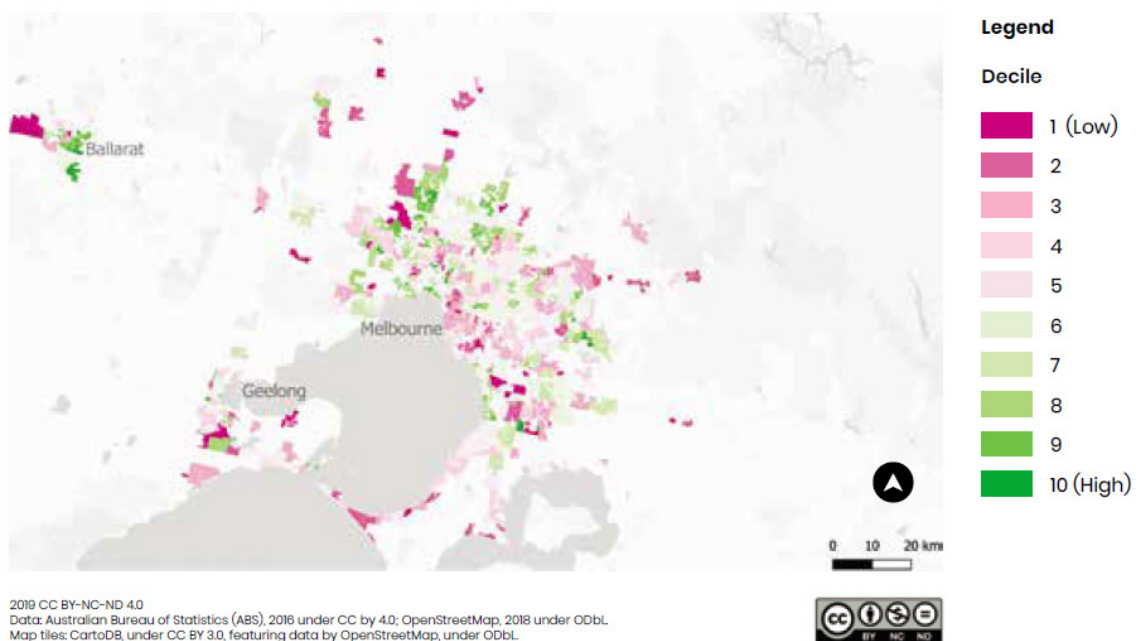


Figure 7. Percentage of residences living within 400m of large public open space for Melbourne.
Image sourced from Australian Urban Observatory



20-Minute vs 10-Minute Neighborhood

20-Minute Neighborhood Model

The 20-minute neighborhood model aims to provide residents access to most daily needs within a 20-minute walk, cycle, or public transit trip (Department of Transport and Planning 2024). This model emphasizes local living, reducing the need for long commutes and fostering sustainable, connected communities. Benefits include:

- **Improved Health Outcomes:** Encourages active transport, reducing obesity and related diseases (Giles-Corti et al. 2016).
- **Environmental Benefits:** Decreases car usage, lowering emissions and promoting sustainability (Capasso Da Silva, King, and Lemar 2019).
- **Economic Vitality:** Supports local businesses through increased foot traffic, benefiting local economies and fostering community engagement (Morley and Pafka 2023).

10-Minute Neighborhood Model

Quantitative data suggests that the 10-minute model can significantly improve accessibility metrics compared to the 20-minute model:

- **Accessibility:** The 10-minute model reduces average distances to amenities, leading to higher satisfaction levels among residents (Mouratidis 2021).
- **Community Cohesion:** Increased local interactions foster more robust social networks, enhancing social capital (Gehl 2010).
- **Resource Use:** Shorter travel distances can lead to decreased energy consumption and lower carbon emissions, contributing to environmental sustainability (Capasso Da Silva, King, and Lemar 2019).

Challenges for Outer Suburbs

Implementing these models in outer suburbs like Manor Lakes faces several challenges:

- **Infrastructure Limitations:** Existing infrastructure may not support the higher densities required for the 10-minute model, necessitating significant investment in new developments and upgrades (Dodson 2010).
- **Economic Feasibility:** The cost of developing compact, mixed-use areas and enhancing public transport networks can be prohibitive, especially in areas with lower property values and limited municipal budgets (Gurran et al., n.d.).
- **Community Resistance:** Residents may oppose higher-density developments due to concerns about overcrowding, loss of neighborhood character, and potential impacts on property values (Trounstine 2023).
- **Regulatory Constraints:** Zoning laws and planning regulations may restrict the types of developments necessary for implementing the 10-minute neighborhood model, requiring policy reforms and governmental support (Victoria State Government 2024a).

Current Condition of Manor Lakes and Its Impact on Livability

Re Melbourne has officially adopted the 20-minute neighborhood model as part of its metropolitan planning strategy to enhance livability and sustainability across the city (Melbourne Planning Authority, 2021). In Manor Lakes, the implementation of this model faces unique challenges due to existing conditions related to population density, amenity distribution, transportation, and infrastructure quality.

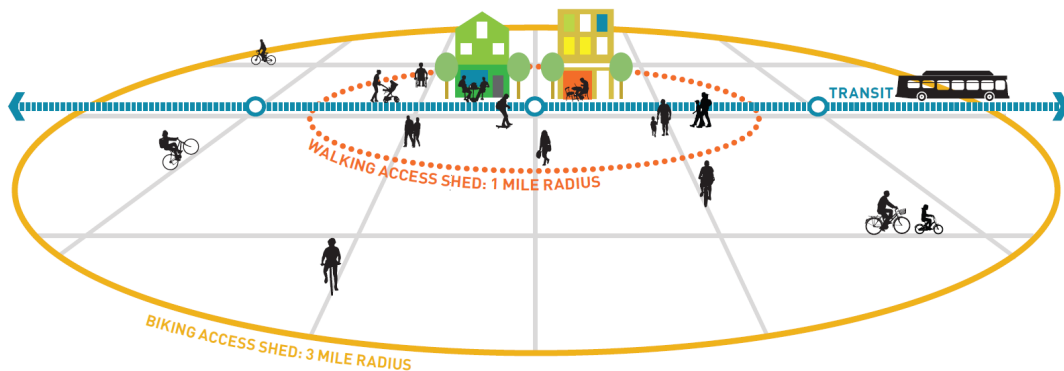


Figure 8. Travel Sheds:
An Organizing Principle
Image sourced from Atlanta Regional Commission

Population Density

Manor Lakes' low population density of approximately 13 persons per hectare (Australian Bureau of Statistics 2021) affects the viability of local services and public transport. This density is below the city target of 16 dwellings per hectare (Growth Areas Authority 2012a). The suburb's dispersed residential developments, characterized by single-family homes on sizable lots, undermine efforts to create walkable neighborhoods and increase reliance on private vehicles (Dodson 2010; Wyndham City Council 2016).

Access to Amenities

Amenities in Manor Lakes are predominantly concentrated in the town center, including retail outlets, a community center, schools, and healthcare facilities (Growth Areas Authority 2012c). This centralization poses accessibility challenges for residents living on the outskirts, who may be beyond a comfortable walking distance. For example, residents on the suburb's edge may need to travel over 2 kilometers to reach the nearest supermarket, impacting their ability to meet daily needs efficiently (Wyndham City Council 2021). The lack of dispersed amenities throughout the neighborhood reduces the effectiveness of the 20-minute model, as not all residents can access daily needs within the desired travel time.

Transport Efficiency

Mano Transportation in Manor Lakes is characterized by high car dependency and limited public transport options:

- **Public Transport Limitations:** The primary train station, Wyndham Vale Station, is located adjacent to Manor Lakes but not within walking distance for many residents (Public Transport

Victoria 2022). Bus services include routes 191, 192, 166, and 190, with only Route 191 penetrating Manor Lakes. Infrequent bus schedules and limited coverage contribute to a high reliance on private vehicles among residents, leading to increased commute times and congestion (Department of Transport Victoria 2023).

- **Commute Times:** Average commute times for residents traveling to Melbourne's central business district exceed 60 minutes, negatively impacting work-life balance and contributing to lower levels of commute satisfaction (Mouratidis 2021). The dependence on cars also raises environmental concerns due to higher carbon emissions and energy consumption.

Infrastructure Quality

The efficiency and sustainability of transport systems in Manor Lakes are constrained by inadequate infrastructure:

- **Transport Systems:** Limited connectivity and infrequent services hinder mobility options, especially for residents without private vehicles, including the elderly and low-income households (Idziorek and Zuñiga 2024; SGS Economics and Planning 2016).

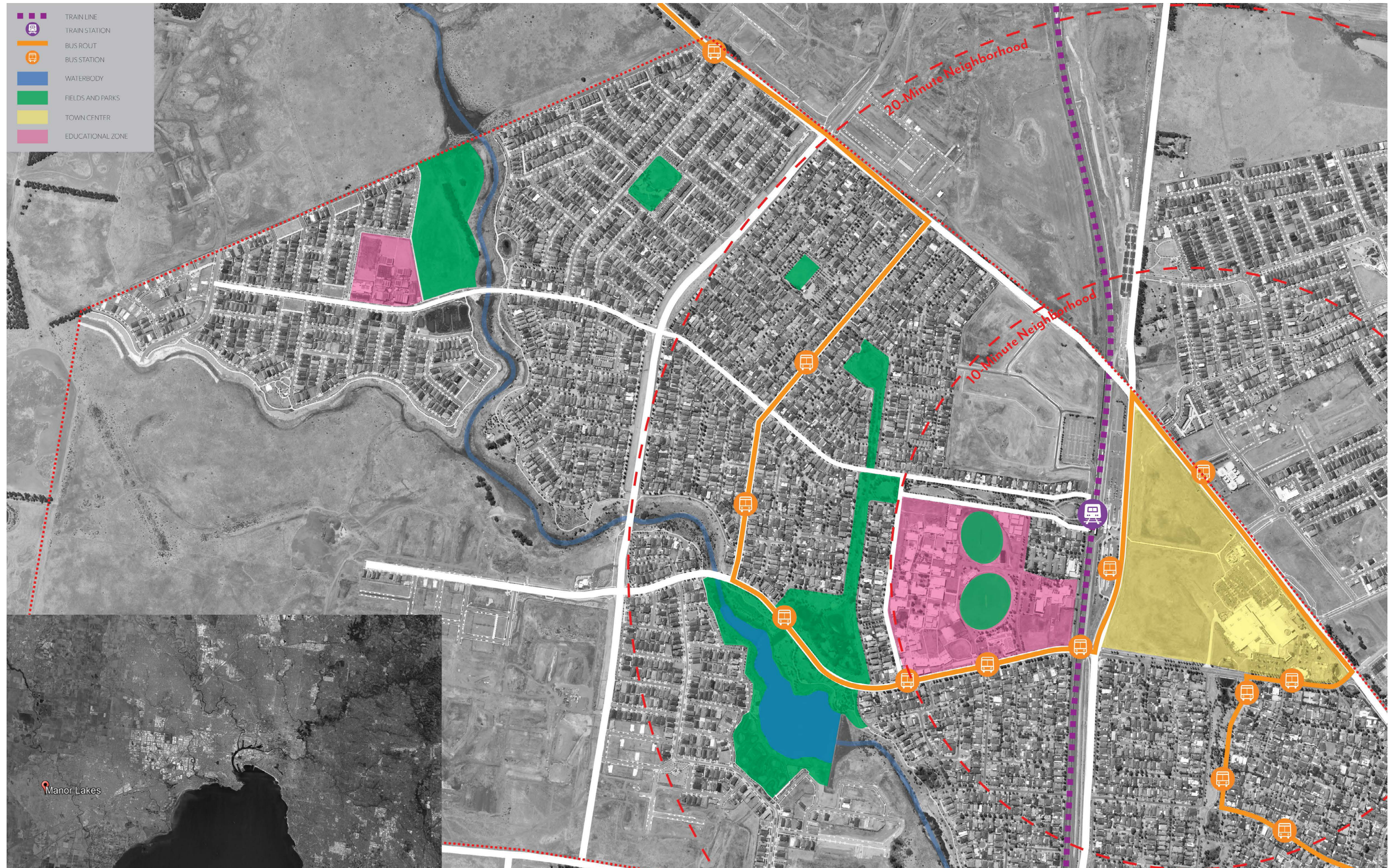
- **Public Services Distribution:** Public services and utilities are concentrated in the town center, with peripheral areas experiencing lower service levels. This uneven distribution affects accessibility and contributes to social isolation (Martino, Girling, and Lu 2021).

- **Sustainability Measures:** High car dependency results in increased greenhouse gas emissions and environmental impacts, negatively affecting environmental sustainability (Logan et al. 2022).

Manor Lakes: 2004 vs 2024

Image sourced from Google Earth

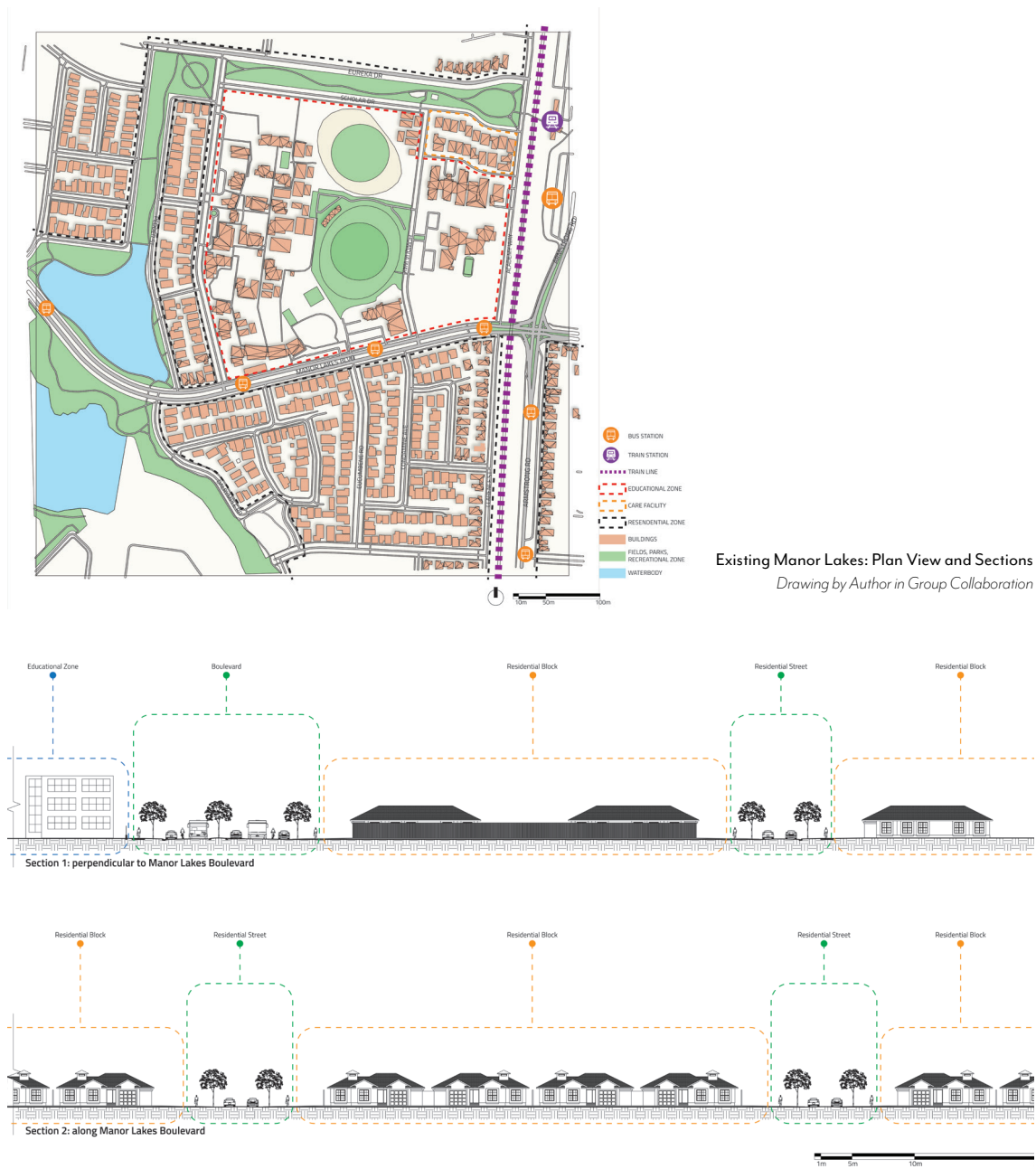




Edge Case

Efforts to improve infrastructure quality have been outlined in the Manor Lakes Development Contributions Plan (Growth Areas Authority 2012a), which includes funding for future transport and community infrastructure projects. However, progress has been slow, and residents continue to face challenges related to limited service availability and infrastructure deficits (Infrastructure Victoria 2023). Overall, the current conditions in Manor Lakes limit the effectiveness of the 20-minute

neighborhood model in enhancing livability. The concentration of amenities, low population density, and insufficient transport options hinder residents' ability to access services conveniently and sustainably. Addressing these issues requires targeted interventions to improve infrastructure, diversify amenity locations, and increase residential densities in line with city planning targets.



Counterfactuals

Envisioning Manor Lakes as a 10-minute neighborhood presents an opportunity to explore potential enhancements in livability resulting from adopting a more ambitious chrono-urbanism model. Implementing the 10-minute neighborhood would necessitate significant changes in urban planning and infrastructure development, focusing on creating a more compact and connected community (Capasso Da Silva, King, and Lemar 2019).

Necessary Changes

To achieve the 10-minute neighborhood model, Manor Lakes would require increased residential density by developing higher-density housing such as townhouses and low-rise apartments. This densification supports a population that can sustain a variety of amenities within close proximity, making it economically viable to establish additional services dispersed throughout the suburb rather than concentrated in the town center (Dodson 2010; Infrastructure Victoria 2023).

Introducing mixed-use developments that combine residential, commercial, and recreational spaces would reduce the need for long commutes and enhance convenience, allowing residents to live, work, and socialize within the same vicinity (Gurran et al., n.d.; Logan et al. 2022). Establishing additional schools, healthcare facilities, retail outlets, and green spaces throughout Manor Lakes would ensure all residents are within a 10-minute walk of essential services, thereby improving accessibility and promoting equity (Kesarovski and Hernández-Palacio 2023).

Enhancing public transport is critical for reducing car dependency and improving mobility options. Expanding bus routes to cover more areas within Manor Lakes, increasing service frequency, and potentially adding new train stations or light rail options would integrate services with the broader metropolitan transport network (Public Transport Victoria 2022; Idziorek and Zuñiga 2024). Improving pedestrian infrastructure by building sidewalks, crosswalks, and bike lanes would encourage active transport and enhance safety, contributing to better health outcomes and environmental sustainability (Higgs et al. 2019; Giles-Corti et al. 2016).

Benefits of the 10-Minute Neighborhood Over the 20-Minute Model

Adopting the 10-minute neighborhood model could yield several benefits:

- **Improved Accessibility:** Residents, especially vulnerable populations, would have easier access to essential services, enhancing quality of life and promoting equity (Idziorek and

Zuñiga 2024).

- **Reduced Car Dependency:** With amenities closer and better transport options, reliance on private vehicles would decrease, leading to environmental benefits through lower emissions and reduced congestion (Logan et al. 2022).

- **Enhanced Community Cohesion:** More local amenities and public spaces would foster social interactions, strengthen community bonds, and increase participation in local activities (Di Marino et al. 2023).

- **Economic Opportunities:** Local businesses could thrive with increased foot traffic and local patronage, stimulating economic growth and job creation within the community (Morley and Pafka 2023).

Challenges and Feasibility

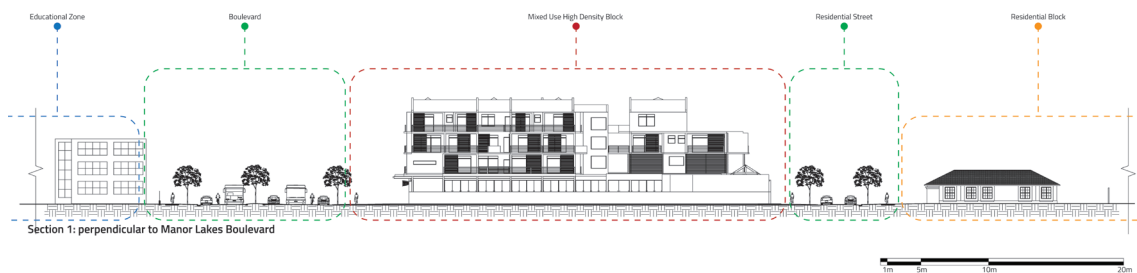
However, several challenges must be addressed. Economic costs are significant, as substantial investment is needed for infrastructure development, incentivizing mixed-use projects, and upgrading public transport systems (Infrastructure Victoria 2023). Regulatory changes are necessary; zoning laws would require adjustments to allow for higher densities and mixed-use developments, necessitating policy reforms and potential political support (Victoria State Government 2024a).

Community acceptance is crucial. Overcoming resistance to higher-density developments involves effective community engagement, education about the benefits, and addressing concerns about neighborhood character and quality of life (Trounstine 2023; Dockery et al. 2022). Market dynamics also present challenges, as developers may be hesitant to invest without assurances of demand and profitability. Incentives or partnerships may be needed to encourage development aligned with the 10-minute neighborhood model (Gurran et al., n.d.).

Implementing the 10-minute neighborhood model in Manor Lakes could address limitations of the current 20-minute model by making essential services genuinely accessible to all residents. While challenges related to densification, infrastructure investment, and community acceptance are significant, the potential improvements in livability suggest that pursuing the 10-minute neighborhood is a worthwhile endeavor. By fostering a more compact, connected, and inclusive community, Manor Lakes could enhance residents' quality of life and serve as a blueprint for sustainable suburban development.

Edge Case

Proposed Manor Lakes: Master Plan View and Section
Drawing by Author



Conclusion

This study has examined the impact of the 20-minute and 10-minute neighborhood models on livability in Melbourne's outer suburb of Manor Lakes. The analysis reveals that while the 20-minute model offers improvements over traditional suburban planning by promoting accessibility and sustainability, its effectiveness in Manor Lakes is limited by factors such as low population density, concentrated amenities, and inadequate public transport infrastructure (Australian Bureau of Statistics 2021; Wyndham City Council 2021; Public Transport Victoria 2022).

Comparatively, the 10-minute neighborhood model presents an opportunity to enhance livability further by addressing these limitations. By advocating for higher residential densities, dispersed amenities, and expanded public transit options, the 10-minute model could significantly improve accessibility, reduce car dependency, and foster stronger community cohesion (Capasso Da Silva, King, and Lemar 2019; Logan et al. 2022; Idziorek and Zuñiga 2024). Quantitative data on density metrics, amenity access, and transportation efficiency support the potential benefits of adopting a more ambitious chrono-urbanism approach in outer suburbs.

The significance of quantitative data in this context cannot be overstated. Metrics such as population density, walkability indices, and commute times provide objective measures to evaluate and compare the effectiveness of different urban planning models (Higgs et al. 2019; Kesarovski and Hernández-Palacio 2023). For suburbs like Manor Lakes, where rapid growth and changing demographics present complex challenges, data-driven planning is essential to make informed decisions that enhance livability.

To enhance livability in Manor Lakes, policymakers should consider adjusting zoning regulations to permit higher-density and mixed-use developments necessary for implementing the 10-minute neighborhood model. Investing in infrastructure that supports higher density and improved accessibility, such as funding for public transport enhancements, pedestrian infrastructure, and the development of distributed amenities, can lead to more sustainable and livable communities (Infrastructure Victoria 2023). Involving residents in the planning process is crucial to build support, address concerns about density and neighborhood character, and foster a sense of ownership over community developments (Morley and Pafka 2023). Implementing policies that encourage environmentally sustainable practices, such as green building standards, renewable energy use, and water conservation measures, can contribute to environmental quality and livability (Logan et al. 2022).

Adopting the 10-minute neighborhood model could lead to more sustainable suburban growth, improved health outcomes through increased physical activity, and stronger community bonds from enhanced social interactions (Giles-Corti et al. 2016; Di Marino et al. 2023). It could also serve as a blueprint for other outer suburbs facing similar challenges, contributing to Melbourne's overall livability and sustainability goals. Ultimately, the success of implementing the 10-minute neighborhood model depends on collaborative efforts between government agencies, urban planners, developers, and the community. By prioritizing accessibility and sustainability, Melbourne can continue to enhance its reputation as one of the world's most livable cities (Economist Intelligence, n.d.; Invest Victoria 2023).

Further Work

While this study provides valuable quantitative insights into the impact of neighborhood models on livability, there is a need for qualitative research to complement these findings. Conducting resident surveys and interviews in Manor Lakes could offer a more profound understanding of community preferences, perceptions of accessibility, and specific challenges faced by

different demographic groups (Idziorek and Zuñiga 2024). Such qualitative data would enrich the analysis and help tailor urban planning strategies to the unique needs of the community.

Further studies are necessary to identify specific policies and regulatory changes that support chrono-suburban living. This includes analyzing the effectiveness of zoning reforms, incentives for mixed-use developments, and investment strategies for public transport infrastructure (Gurran et al., n.d.; Victoria State Government 2024a). Evaluating funding mechanisms, such as development contributions and public-private partnerships, could identify sustainable ways to finance necessary infrastructure improvements (Infrastructure Victoria 2023).

Extending this research to other Melbourne suburbs would assess the broader applicability of the 10-minute neighborhood model. Comparative studies could highlight common challenges and facilitate the development of unified strategies for enhancing livability across the metropolitan area (Morley and Pafka 2023). Exploring the role of technological innovations, such as smart city initiatives and mobility-as-a-service platforms, could provide additional avenues for enhancing accessibility and reducing travel times (Infrastructure Victoria 2023).

Conducting longitudinal studies to monitor the impact of implemented changes over time would help assess the effectiveness of policies and interventions aimed at improving livability through chrono-urbanism (Higgs et al. 2019). Such efforts would support the development of scalable solutions to enhance livability across the metropolitan region.

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