Ageing-in-Place in Singapore: Mapping Vulnerability, Accessibility, and Everyday Mobility

A bivariate and multi-layer spatial analysis of seniors aged 75 and above living in 1–2 room flats, and the accessibility and mobility gaps that shape ageing-in-place.

The focus on 1–2 room flats and seniors aged 75 years and above can actually represent the most vulnerable ageing group in Singapore. Residents living in smaller flat types are statistically more likely to be of lower income, live alone, or have limited family support, which are possible factors that increase reliance on nearby amenities, healthcare services, and safe mobility routes. Seniors aged 75 and above also tend to experience sharper declines in mobility, stamina, and chronic health needs, making walkability, proximity, and barrier-free design essential for daily activities.

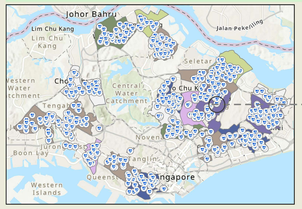
By focusing on where these two indicators overlap, this analysis aims to identify and pinpoint high-risk ageing zones where seniors are most likely to struggle with daily activities, healthcare access, social engagement, and ageing-in-place. This targeted approach allows a clearer comparison of accessibility and mobility gaps across Singapore's towns.

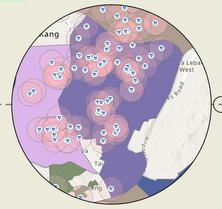
01 Introduction to the Accessibility Maps

The four maps below examine how Singapore's ageing population interacts with key elements of the built environment and accessibility infrastructure. By overlaying **seniors aged 75 and above** living in **1–2 room flats** with walking-distance buffers around each facility, these maps reveal where **ageing, access, and daily support** align and where critical gaps will appear. Each map isolates a core dimension of **ageing-in-place**, showing that challenges arise not simply from estate age, but from spatial placement, walkability, and how well essential amenities are positioned around older residents.

These findings highlight that ageing-in-place is not achieved only by providing amenities alone. It is highly dependent on placing familiar, meaningful anchors close to where seniors actually live, and ensuring that essential services remain genuinely accessible within their daily movement range. Together, these patterns illustrate how accessibility, familiarity, and spatial design shape whether seniors can age confidently within their communities.

Map of CHAS Clinics and Hougang Estate

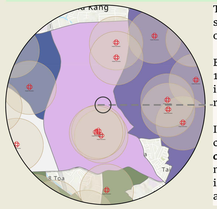




This map examines how ageing correlates with shaping healthcare access for seniors across Singapore. By mapping ***CHAS clinics*** within a ***400m walking buffer*** and overlaying senior density with 1–2 room flats, the analysis highlights where nearby medical services do not support vulnerable ageing clusters.

In towns like Hougang, high concentrations of seniors fall outside clinic catchments. The map also ***reveals the spatial gaps, which risk mobility dependency and limit independent ageing.*** This demonstrates that the presence of facilities alone does not determine ageing-in-place, but by how closely healthcare infrastructure aligns with where seniors actually live.

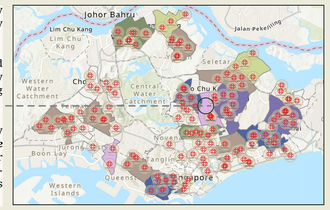
Map of Community Centres and Serangoon Estate



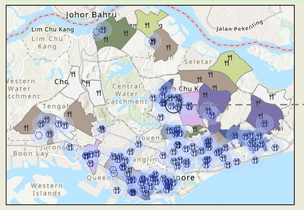
This map highlights the importance of seniors' access to community spaces, which function as neighbourhood-level touchpoints for policy outreach, social resilience, and recreational support.

By overlaying ***700m Community Centre buffers*** with senior density and 1–2 room flat distribution, the map identifies towns where community infrastructure exists but remains physically out of reach for ageing residents.

In Serangoon, a high senior population is not matched by community centres' accessibility, ***leaving large ageing clusters outside walkable coverage.*** This reveals a growing mismatch between emerging senior needs and current facility placement. The findings show that ageing-in-place requires community centres to be located near where seniors actually live, not concentrated in isolated areas.



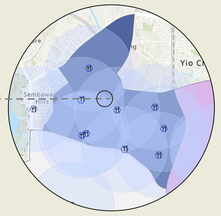
Map of Wet Markets & Hawker Centres and Ang Mo Kio Estate



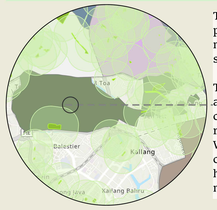
This map highlights how ***wet markets and hawker centres*** act as everyday social anchors for seniors, supporting ageing-in-place through routine interaction, familiarity, and sensory connection to local culture.

By mapping ***1km buffers*** around these food and social nodes over senior density and 1–2 room flat distribution, the map identifies estates where traditional social infrastructure remains embedded within walking distance.

In Ang Mo Kio, where senior concentration and 1–2 room flats are both high, highlights market coverage aligns closely with ageing clusters. This shows how ***mature estates inherently support social resilience***, enabling seniors to maintain daily rhythms, informal conversations, and a sense of belonging, which are crucial to an inclusive ageing environment.



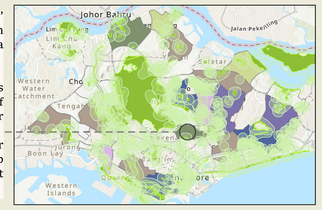
Map of Green Spaces and Toa Payoh Estate



This map highlights how access to nearby green spaces influences seniors' physical, mental, and social well-being. In Toa Payoh, an ageing town with many 1–2 room flats, the map shows limited ***500m green buffers***, leading to a significant proportion of seniors lacking walkable access to parks.

This limits opportunities for horti-therapy, which is known to reduce stress and improve cognitive and emotional health. It also restricts the feasibility of conducting small horticulture workshops, an activity many seniors enjoy for routine, purpose, and social interaction.

With fewer neighbourhood community gardening nodes, opportunities for community bonding and ageing-in-place are also reduced. Overall, the map highlights a critical gap: ***ageing cores require intentional greening*** to support meaningful, restorative outdoor activities for seniors.



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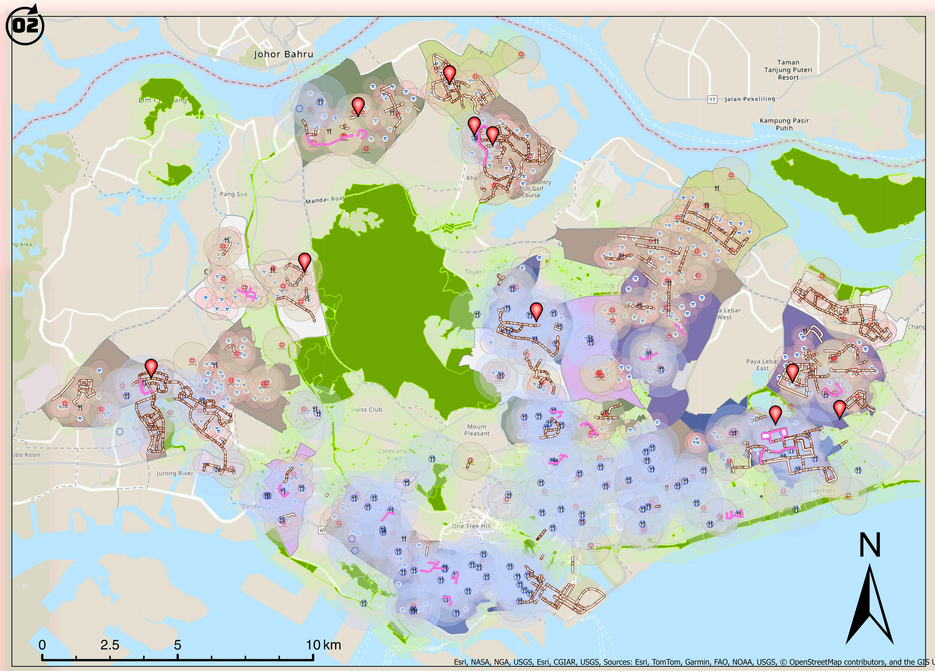

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Legend

SILVER ZONES/ CYCLING ZONES/ ACCIDENT POINTS
- 10 PMA AND PMD ACCIDENTS (2019-2025)
- SILVER ZONES CYCLING & ACTIVE MOBILITY PATHWAYS

WET MARKETS & HAWKER CENTRES WITH BUFFER 1KM
- WET MARKET
- HAWKER CENTRE
- BUFFER 1KM

COMMUNITY CENTRES WITH BUFFER 700M
- COMMUNITY CENTRES
- BUFFER 700M

CHAS CLINIC WITH BUFFER 400M
- CHAS CLINICS WITHIN HDB ESTATE
- BUFFER 400M

GREEN SPACES 500M
- NPARKS PARKS
- BUFFER 500M

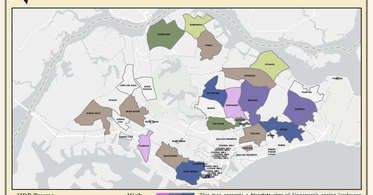
This map consolidates **Singapore's ageing, accessibility, and mobility layers** into a single composite view. The bivariate base map identifies towns where seniors aged 75 and above living in 1–2 room flats are concentrated, highlighting estates that face both demographic and socioeconomic ageing pressure.

Building on this foundation, realistic walking-distance buffers around CHAS clinics (400m), community centres (700m), wet markets and food hawker centres (1km), and key green spaces (500m) can reveal whether essential services fall within seniors' daily movement range or falls beyond it. These catchments expose clear contrasts between towns with well-integrated amenities and those with noticeable gaps in healthcare, social support, food access, or restorative outdoor spaces.

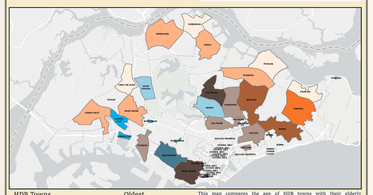
Mobility conditions are layered on through cycling paths, Silver Zones, and 10 sample PMA/PMD accident points, showing where senior movement intersects with shared-path corridors and faster mobility modes. The CBD is deliberately excluded from the analysis as it functions primarily as a commercial district, not a residential ageing environment.

Viewed together, these layers reveal where **ageing clusters coincide with weak accessibility and higher mobility risks**. This map serves as a diagnostic overview of how well different HDB towns support ageing-in-place today, and where spatial or mobility design may need strengthening as Singapore's population continues to age.

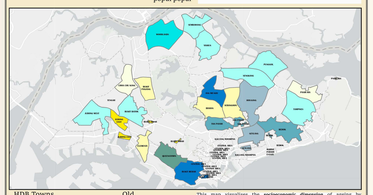
Analysis of Ageing and Socioeconomic Factors in HDB Towns



This map presents a ***bivariate view*** of Singapore's ageing landscape by combining the proportions of seniors aged 75 and above with the proportions of residents living in 1–2 room flats. Towns with more saturated colours (those in the extreme top-right of the legend), such as Bukit Merah, Ang Mo Kio and Bedok, represent high-ageing pressure zones where a large senior population overlaps with higher concentrations of smaller flats. These areas are more likely to face ***mobility constraints, limited caregiving support, and barriers for healthcare access, and a larger share of seniors living alone or independently.*** This map establishes the demographic foundation for identifying areas where ageing-in-place may be most vulnerable, before subsequent maps explore accessibility and mobility risks.



This map compares the age of HDB towns with their elderly population distribution, highlighting how older estates tend to accumulate larger senior communities over time. Towns shaded in darker colours (those in the extreme top-right of the legend), such as Bukit Merah and Ang Mo Kio, represent zone of Singapore's earliest mature estates, where long-term ageing has accumulated both ***housing and house older residents.*** These mature estates carry a heavier "ageing load", with ***long-term residents choosing to age in familiar neighbourhoods rather than relocate.*** This map reinforces Singapore's broader ageing trend, where estate maturity strongly correlates with the concentration of seniors and shapes future planning priorities.



This map visualises the ***socioeconomic dimension*** of ageing by comparing the age of HDB estates with the concentration of 1-2 room flats. Towns shaded in darker colours (those in the extreme top-right of the legend), such as Bukit Merah, Ang Mo Kio, and Queenstown, display higher proportions of smaller flats, signalling greater socioeconomic vulnerability alongside demographic ageing. ***These towns not only house older residents but also a larger share of seniors living in smaller, lower-income households, compounding mobility, healthcare, and daily living challenges.*** This map complements the previous one by highlighting how ageing intersects with socioeconomic conditions they age within, which are crucial for identifying where ageing-in-place pressures may be the most acute.

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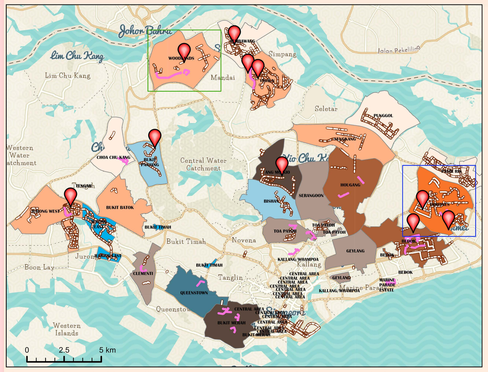
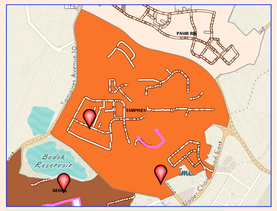


The ***mobility*** layers in this map illustrate how seniors move through their towns and where movement may become dangerous or constrained. ***Cycling paths*** are used as a proxy for ***shared-path exposure***, as these routes frequently overlap with walkways that seniors rely on for daily activities. In areas where dense cycling networks cut through ageing clusters, seniors are more likely to encounter fast moving cyclists and PMA/PMD users, especially where shared pathways are narrow and lacking clear separation.

Estates with long, continuous ***Silver zones*** show stronger protective design, while those with short or scattered segments suggest uneven safety coverage across the town.
Ten ***PMA/PMD accident points*** geocoded from news sources serve as indicators of locations where mobility conflicts have occurred in real settings. Although it is not comprehensive, they can draw attention to ***intersections, shared-path stretches, and transitional spaces where seniors may be at greater risk under the current mobility patterns.***

Together, these mobility layers reveal how street layout, shared-path design, and traffic-calming measures intersect with ageing clusters. They highlight clear differences between estates where movement is guided and protected, and those where seniors must navigate longer or more exposed corridors that increases physical strain and accident risk. These insights reinforce that ***ageing-in-place*** depends not only on the presence of nearby amenities, but also on the safety and predictability of the routes seniors use to reach them.



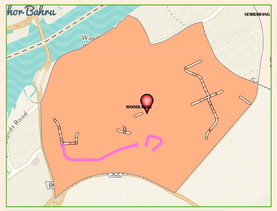
Tampines — Dense Cycling Network, Short Silver Zones

Tampines contains one of the ***densest cycling-path networks*** in the area, with ***shared corridors*** running directly through its residential clusters. These routes frequently ***overlap with walking paths*** used by older residents for daily activities. Because many of these shared paths lack clear separation or defined right-of-way, seniors are more likely to encounter faster-moving cyclists and PMA/PMD users at close range.

The estate also has ***shorter and more fragmented silver zones***, meaning safer, traffic-calmed conditions only appear in isolated segments rather than forming a continuous protective route between key amenities. This increases both physical and cognitive demand on seniors on the road. The ***PMA/PMD accident points*** mapped in Tampines further illustrate where mobility conflicts have already occurred.

Taken together, Tampines reflects a mobility environment where shared-path activity is high but protective features are limited. The estate demonstrates how dense cycling infrastructure, when not paired with continuous safety design, can unintentionally heighten risk exposure for older residents.

Map of Tampines Estate



Woodlands — Longer Silver Zones, Fewer Cycling Paths

Woodland has fewer cycling paths cutting directly through areas with older residents, which reduces the number of continuous high-speed shared corridors. At the same time, Woodlands also has ***longer and more connected silver zones***, offering clearer and more predictable slow traffic stretches where seniors can travel at ease.

However, the ***mobility risks*** in Woodlands remain significant. Seniors often rely on ***extended movement corridors*** to reach key services, and many of these routes still intersect with shared paths or transition points where visibility, right-of-way and path separation become ambiguous. The presence of ***PMA/PMD accident points*** in and around the estate further shows that conflicts do emerge, probably at road junctions or stretches where protective measures taper off.

All in all, this conditions suggest that Woodlands benefits from stronger protective design in certain segments, yet seniors remain exposed over longer distances. The estate therefore demonstrates a mobility pattern where risk is not eliminated, but redistributed, as it is presented across extended travel routes that older residents must navigate daily.

Map of Woodlands Estate

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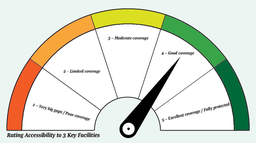
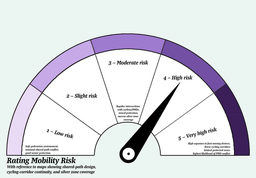
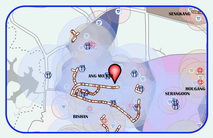
Gauge Charts



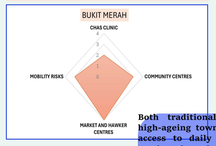


All scores shown in the radar chart (on the right) are derived from my interpretation of the mapped layers. Each factor was evaluated using the gauge chart above, and the map layers were toggled on and off to visually compare coverage and ensure consistency in the scoring.

Comparing Traditional vs Modern Ageing Towns (Access to Amenities)



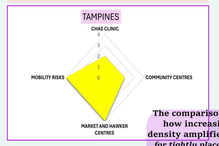
Radar Charts

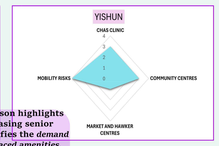


Both traditional and modern high-ageing towns show strong access to daily amenities, but consistently elevated mobility risks, underscoring that the routes seniors must navigate to reach these amenities remain the core *vulnerability* across all estates.

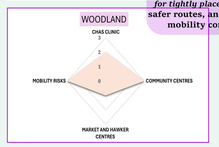
Comparing Density vs Accessibility Towns

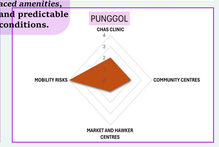
Radar Charts





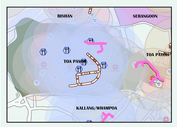
The comparison highlights how increasing senior density amplifies the *demand for tightly placed amenities*, safer routes, and predictable mobility conditions.





Toa Payoh: Well-Supported Ageing-in-Place Town

Compared to other towns, Toa Payoh shows a balanced radar chart, indicating a more integrated and consistent ageing-in-place support system, making it a useful reference model for future development.



While strong accessibility supports independent living, mobility remains the limiting factor, highlighting that effective ageing-in-place depends not just on proximity, but on how well seniors can navigate their environment.

Across all the maps above, a clearer picture of Singapore's ageing landscape can be seen. Towns with higher concentrations of seniors and 1–2 room flats show varied patterns; some towns enjoy strong walkable access to important amenities, while others reveal ***noticeable gaps in access to social infrastructure and safer mobility routes.***

These differences highlight that ageing-in-place is shaped not just by age or estate maturity, but by how well our ***built environment aligns with the daily routines and familiar anchors that seniors rely on***. The maps emphasise that seniors tend to remain rooted in environments they know, underscoring that ageing-in-place is fundamentally about ***continuity, familiarity, and belonging***, not just relocating to new senior-centric districts. Looking ahead, the ageing profile will be very different, as seniors 5–10 years from now will be more educated, digitally connected, and socially aware, bringing a new set of expectations and challenges.

To conclude, the ***spatial patterns*** across all layers show how demographic characteristics, estate structure, and environmental design converge to shape the lived experience of ageing across Singapore's towns, offering insight into where our urban landscape is working hard to ***support senior independence***, while also highlighting the areas that require further improvements.

SCAN HERE FOR GLOSSARY OF KEY TERMS ON THIS MAP

Kum Jia Yi Jolene
BSc'27, GIScience Student