Greater Dandenong: social needs, gaps in transit

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In Victoria, public transport is managed by the state government, although Local Government Authorities (LGAs) may have some influence on service levels through planning processes, advocacy etc. However, not much is known about how much transit is supplied or whether social needs for transport are being met within each LGA's boundaries. This note explores social needs-gaps in the City of Greater Dandenong, using the Currie and Sendbergs (2007) methodology[1]. It is part of a series examining LGAs in Melbourne[2].

Methods

This note maps transport supply and a composite needs indicator based on Australian Bureau of Statistics (ABS) data. The methodology is as per Reynolds, Currie and Qu (in drafting)[3] and uses the *gtfssupplyindex* R package[4] to process the Victoria GTFS feed[5]. It involves calculating scores fir a Transit Supply Index (SI), based on service frequency and how much of an area is within walking distance of stops/stations[6] and a Composite Social Needs Index. Results are shown for ABS' Statistical Area 1s (SA1s), categorized into seven groups based on the average scores for SA1s across the Melbourne Greater Capital City Statistical Area (GCCSA).

Results

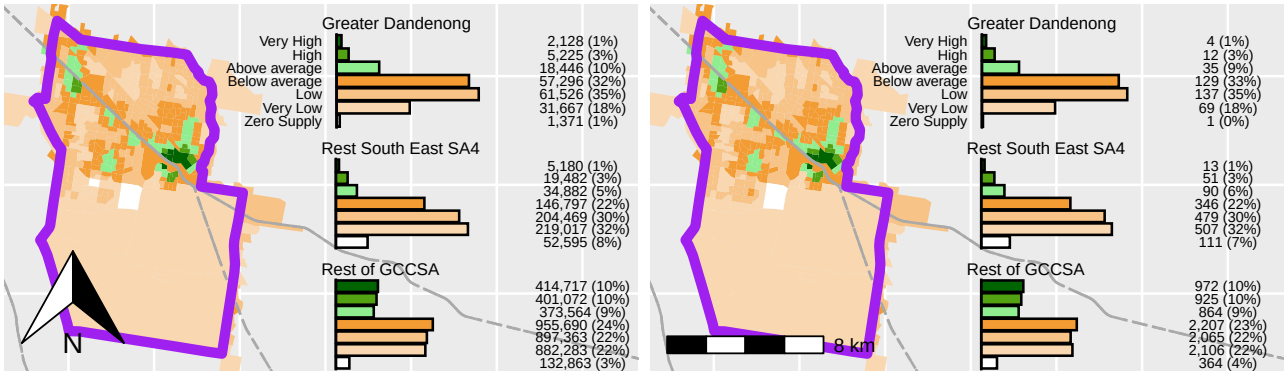

Figure 1: Transport Supply 2021 (left, by population) and 2023 (right, by SA1)

There are significant differences in distribution of SA1s to transit supply categories between the City of Greater Dandenong and the

[1] Graham Currie and Zed Senbergs, "Identifying Spatial Gaps in Public Transport Provision for Socially Disadvantaged Australians: The Melbourne 'Needs Gap' Study," 2007; Graham Currie, "Quantifying Spatial Gaps in Public Transport Supply Based on Social Needs," *Journal of Transport Geography* 18, no. 1 (2010): 31–41.

[2] See `https://github.com/James-Reynolds/gtfssupplyindex_melbounre_LGA_2024` but lookout, I misspelled "Melbourne"

[3] James Reynolds, Graham Currie, and Yanda Qu, "Social Needs for Transport and Gaps in Transit Service: New GTFS Tools," Journal Article, *In Drafting*, 2024.

[4] See `https://github.com/James-Reynolds/gtfssupplyindex`

[5] Note that results represent what is in the GTFS feed for August 2021 and 2023, which may not match services provided.

[6] 400m for tram and bus, 800m for train.

rest of the South East SA4[7] and the rest of Greater Melbourne[8]. In 2021, 86% of the City of Greater Dandenong's population lived in SA1s with less transit than the Melbourne average (Figure 1, left), less than for the rest of the South East SA4 (92%), but more than for the rest of Melbourne (71%).

[7] Covering the City of Monash, Casey, (almost all of) Cardinia and parts of Kingston. 2021: $\chi^2(6) = 78.90$, $p < .001$ and 2023: $\chi^2(6) = 72.07$, $p < .001$

[8] 2021: $\chi^2(6) = 103.41$, $p < .001$, 2023:$\chi^2(6) = 112.46$, $p < .001$.

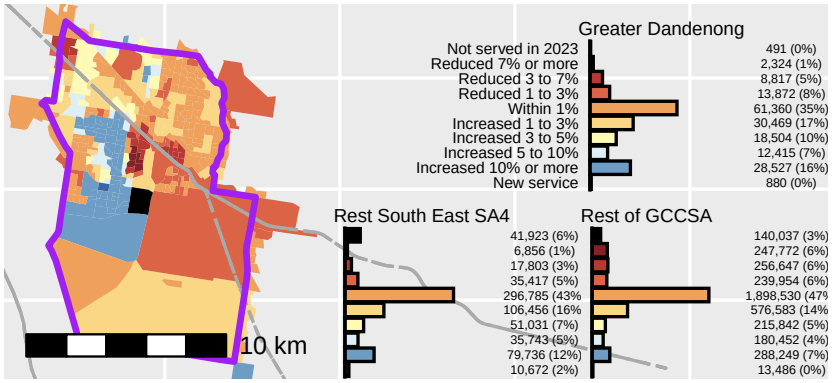

Figure 2: Change in SI score between 2021 and 2023 by SA1 and population

Transit coverage and frequency increased by 1% or more by 2023 for more of those in Dandenong (50%)[9] than the Rest of the South East SA4 (42%) or the Rest of the GCCSA (30%)(Figure 2).

[9] Statistically significant: $\chi^2(9) = 54.40$, $p < .001$ and $\chi^2(9) = 96.52$, $p < .001$, respectively

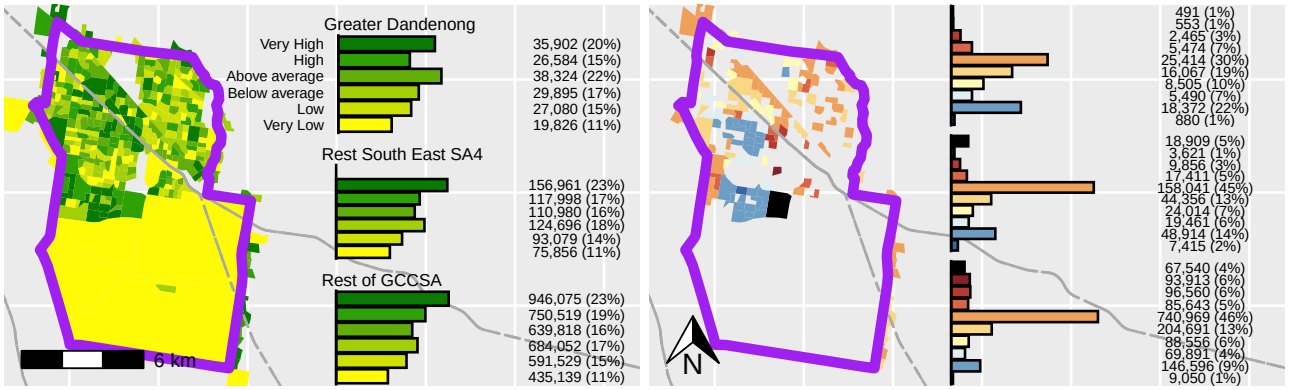

Figure 3: Needs in 2021 (left) and change in SI to 2023 for those SA1s with needs above average, but below average supply (right), by 2021 population

Social needs for transport in 2021 (Figure 3, left) were higher than the Melbourne average for 57% of the City of Greater Dandenong's residents, and similar to elsewhere[10]. Figure 3, right, shows how transit service levels changed between 2021 and 2023 for those living in SA1s with needs above, but supply below, Melbourne's average[11].

Overall, Greater Dandenong appears to have less of a gap between need and supply than the rest of the South East SA4, but more than the rest of Melbourne[12]. Transit improved to 2023 for a greater proportion of those with above average needs, but below average supply in the City of Greater Dandenong than elsewhere.

[10] Differences were not statistically significant with the rest of the South East SA4 ($\chi^2(5) = 5.68$, $p = .338$) the or rest of Greater Melbourne ($\chi^2(5) = 8.41$, $p = .135$).

[11] There are significant differences between the City of Greater Dandenong and the rest of the South East SA4 (p = 0.00488) and the Rest of the GCCSA (p = 1.2e-08).

[12] 47.1% of City of Greater Dandenong residents had above average social needs for transport but below average transit supply in 2021, compared with 51.6% in the rest of the South East SA4 and 39.5% across the rest of Melbourne.