City of Monash: social needs, gaps in transit

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This note explores gaps between social needs for transport and the amount of transit using the Currie and Sendbergs (2007) methodology[1]. 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 met within each LGA. This note examines the City of Monash in 2021 and 2023, and is part of a series examining each LGA in Greater Melbourne[2].

Methods: Transport supply and a composite needs indicator based on Australian Bureau of Statistics (ABS) data, as per Reynolds, Currie and Qu (in drafting)[3] using the *gtfssupplyindex* R package[4] to process the Victorian GTFS feed[5]. Scores are calculated for 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 the 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: In 2021 almost three-quarters (73%) of the City of Monash's population lived in SA1s with service levels below average (Figure 1, left).

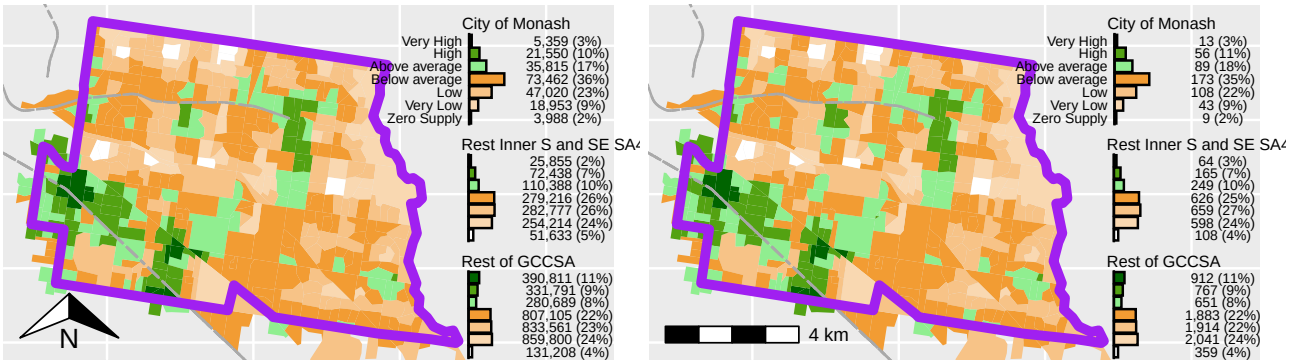

Figure 1: Transport Supply 2021 (left, by population) and 2023 (right, by SA1)

Differences by share of SA1s with the Rest of the Inner South and South East SA4s[7] were statistically significant in 2021[8] and 2023 [9], with service levels generally higher in Monash. Differences with the rest of Melbourne are also statistically significant[10], with .

[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.

[7] Covering the City of Glen Eira, Bayside, Greater Dandenong, City of Monash, Kingston, Casey, (almost all of) Cardinia and parts of Stonnington

[8] $\chi^2(6) = 95.10$, $p < .001$)

[9] ($\chi^2(6) = 105.63$, $p < .001$)

[10] 2021: $\chi^2(6) = 163.83$, $p < .001$, 2023:$\chi^2(6) = 182.52$, $p < .001$.

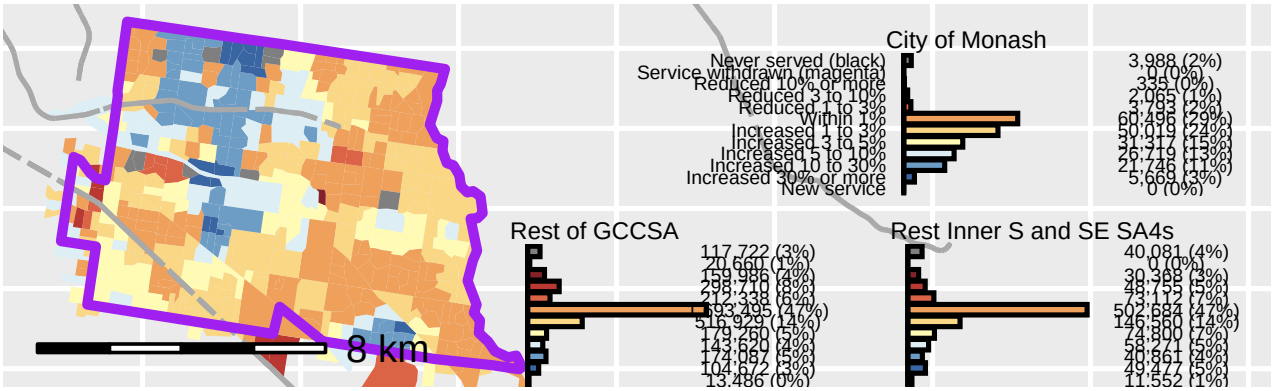

Figure 2: Change in SI score between 2021 and 2023 by SA1 and population

However, coverage and frequency of transit appears to have decreased by 2023 for more of those in the City of Monash[11] than in other parts of Melbourne, as shown in Figure 2.

[11] Differences are statistically significant with the South East SA4 ($\chi^2(10) = 221.10$, $p < .001$) and the rest of Melbourne ($\chi^2(11) = 343.26$, $p < .001$)

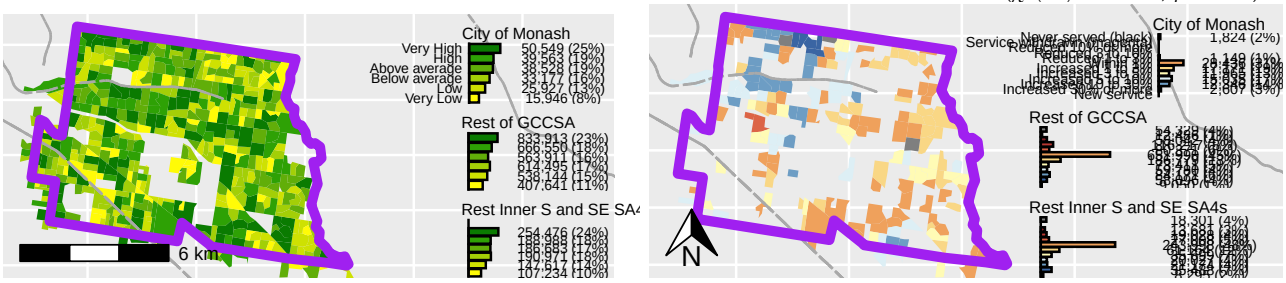

Figure 3: Needs by 2021 population (left) and change in SI to 2023 for those SA1s with needs above average, but below average supply (by 2021 populations right)

Social needs for transport in the City of Monash in 2021 (Figure 3, left) were Very High or High for 46% of the population. This is similar to those of the rest of the South East SA4, but higher than elsewhere in Greater Melbourne[12]. Figure 3, right, shows how transit service levels changed between 2021 and 2023 for those who were living in SA1s with needs above, but supply below, the Greater Melbourne averageThere are significant differences between the City of Monash and the rest of the South East SA4[13] and the Rest of the GCCSA[14] in how much transit changed for those people with needs above, but supply below, average. 42% of those in Casey saw increases by 2023 of 1% or more, compared to 47% and 33% for the rest of South East SA4 and Greater Melbourne respectively.

Overall, residents of the City of Monash appear less likely than those elsewhere in Greater Melbourne to have transit service levels that are below the average. They are also less likely to have above average needs, but supply below average, than those in the rest of the South East SA4 or other parts of Greater Melbourne[15], and if they

[12] Differences with the rest of the South East SA4 were not statistically significant ($\chi^2(5) = 5.15$, $p = .397$). Differences with the rest of Greater Melbourne were statistically significant ($\chi^2(5) = 13.22$, $p = .021$).

[13] $\chi^2(10) = 104.91$, $p < .001$

[14] $\chi^2(11) = 126.60$, $p < .001$

[15] 43.9% of City of Monash residents had above average social needs for transport but below average transit supply, compared with 46.8% in the rest of the South East SA4 and 39.7% across the rest of Melbourne.

did appear to be more likely to have seen service levels increase by 2023 than those in a similar situation elsewhere.