

Malvern (Southern Metropolitan) State Electoral Division: social needs, gaps in transit

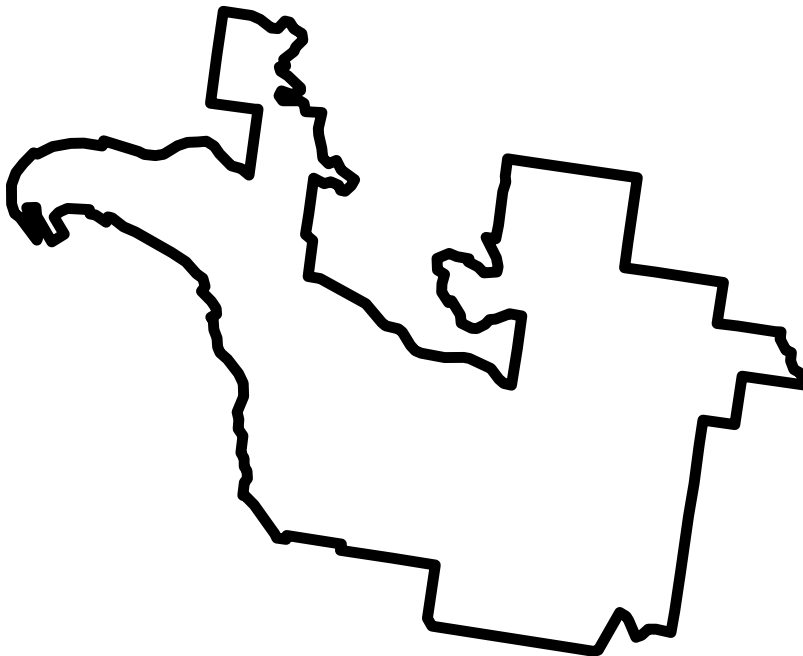
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This note is part of a series examining transit social needs-gaps in Greater Melbourne¹. In Victoria, public transport is the responsibility of the state government, which is formed from among Members of Parliament elected to represent individual State Electoral Divisions (seats). However, it is unclear how much transit is supplied or how well social needs for transport are met within each seat. Using the Currie and Sendbergs (2007) methodology², this note explores social needs for transport, and transit provision in 2021 and 2023, in the Malvern (Southern Metropolitan) State Electoral Division.

METHODS:

Scores for transit supply and transport needs were calculated based on the Victorian GTFS feed³ and Australian Bureau of Statistics (ABS) data using the *gtfssupplyindex* R package⁴ as per Reynolds, Currie and Qu (in drafting)⁵. Results are shown for the ABS' Statistical Area 1s (SA1s), categorized based on averages across the Melbourne Greater Capital City Statistical Area (GCCSA).



RESULTS: Figure 1 compares social needs for similarly located seats⁶, and for the rest of Greater Melbourne with those for the Malvern

¹ See <https://tinyurl.com/4rctaxfc>



² 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.

³ Results are based on GTFS feeds for August 2021 and 2023, so may not match services run.

⁴ See <https://github.com/James-Reynolds/gtfssupplyindex>

⁵ James Reynolds, Graham Currie, and Yanda Qu, "Social Needs for Transport and Gaps in Transit Service: New GTFS Tools," *In Drafting*, 2024.

⁶ Prahran, Albert Park, Brighton, Malvern, Oakleigh, Bentleigh, Clarinda, Sandringham and Mordialloc

(Southern Metropolitan) State Electoral Division.

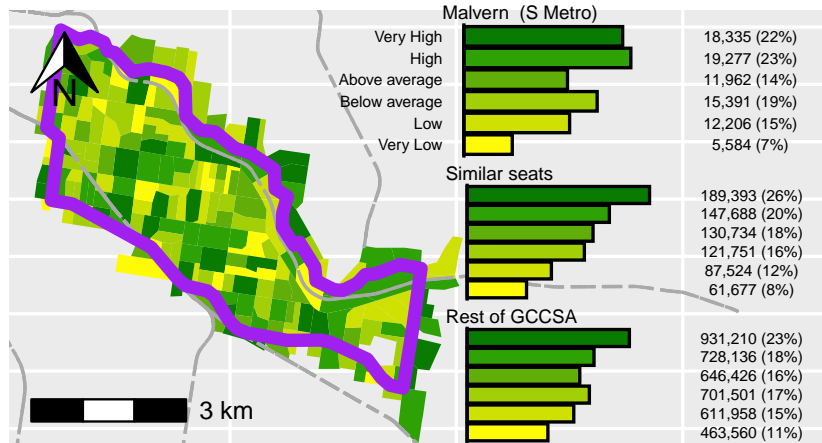


Figure 1: Needs in 2021 by population, with suburban railways shown in grey

Needs were higher than the Melbourne average for 60% of Malvern's population in 2021, which is a higher proportion than for elsewhere in Melbourne, beyond the similarly located seats (56%)⁷.

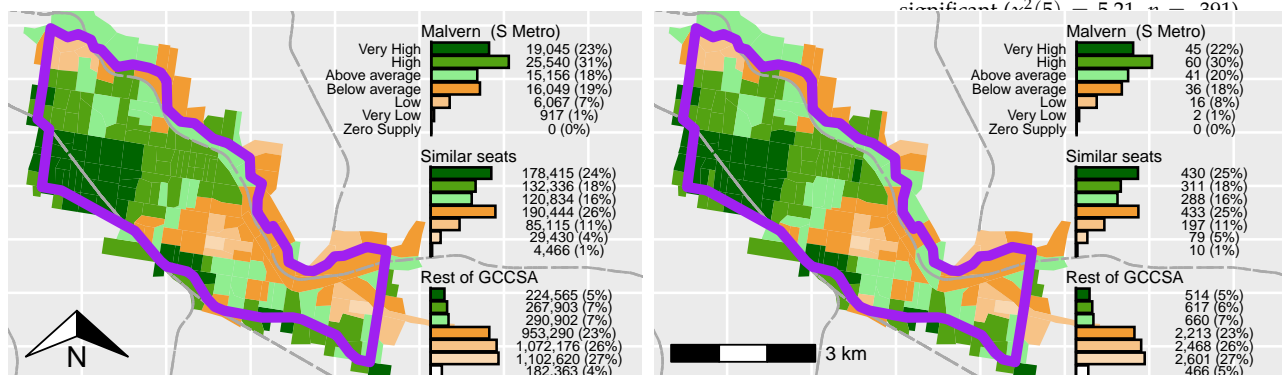


Figure 2: Transport Supply 2021 (left, by population) and 2023 (right, by SA1)

Figure 2 shows the distribution of transit service in 2021 and 2023. Service levels were below the Melbourne average for 28% of Malvern (S Metro) residents in 2021, which is a lower proportion than for the surrounding seats (42%)⁸ or than for the rest of Melbourne (81%)⁹. The distribution of transit supply, categorised with respect to the Melbourne average, appears similar in 2023 (Figure 2, right). Figure 3 directly compares 2021 and 2023 service levels.

Transit levels increased by 1% or more by 2023 in SA1s that were home to 53% of Malvern residents in 2021, which is a lower share than for similarly located seats (46%)¹⁰ or the rest of Melbourne (31%)¹¹. 18% of the Malvern population lived in SA1s with *needs above, but supply below* the Melbourne averages in 2021¹². However,

⁸ Differences were statistically significant ($\chi^2(6) = 27.75, p < .001$)

⁹ Differences were statistically significant ($\chi^2(6) = 392.44, p < .001$).

¹⁰ Differences were statistically significant ($\chi^2(9) = 71.78, p < .001$).

¹¹ Differences were statistically significant ($\chi^2(10) = 256.67, p < .001$).

¹² Shown with black in Figure 3. This compares to 26% of residents of similarly located seats and 45% of those elsewhere in Melbourne.

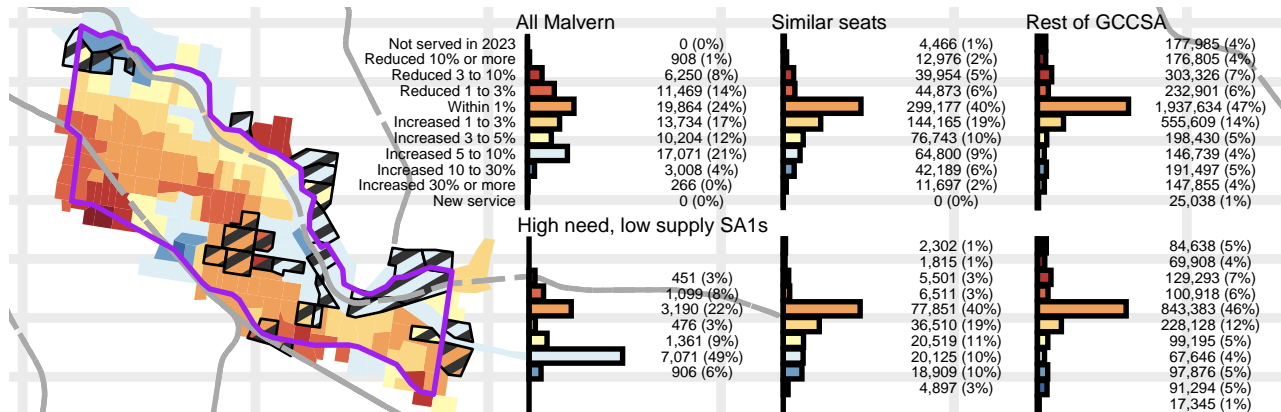


Figure 3: Transit service change 2021 to 2023 by population. SA1s with need above but supply below average (orange) were not statistically significant with the similar cohorts across similarly located seats (Fisher test $p = 0.39$) or the rest of Greater Melbourne (Fisher test $p = 0.069$).

for 55% of this cohort service levels increased 1% or more by 2023¹³.

Overall, residents of the seat of Malvern appear to have been less likely to have less transit supply than Melbourne's average than elsewhere, but also less likely to have seen service increases between 2021 and 2023.

##	ratio_binned	population	perc
## 1	New service	0	0.000000000
## 2	Increased 30% or more	266	0.003213569
## 3	Increased 10 to 30%	3008	0.036339913
## 4	Increased 5 to 10%	17071	0.206236258
## 5	Increased 3 to 5%	10204	0.123275425
## 6	Increased 1 to 3%	13734	0.165921666
## 7	Within 1%	19864	0.239978737
## 8	Reduced 1 to 3%	11469	0.138558001
## 9	Reduced 3 to 10%	6250	0.075506802
## 10	Reduced 10% or more	908	0.010969628
## 11	Not served in 2023	0	0.000000000

##	ratio_binned	population	perc
## 1	New service	0	0.000000000
## 2	Increased 30% or more	11697	0.015784573
## 3	Increased 10 to 30%	42189	0.056932149
## 4	Increased 5 to 10%	64800	0.087444672
## 5	Increased 3 to 5%	76743	0.103561211
## 6	Increased 1 to 3%	144165	0.194544154
## 7	Within 1%	299177	0.403725845
## 8	Reduced 1 to 3%	44873	0.060554086
## 9	Reduced 3 to 10%	39954	0.053916118
## 10	Reduced 10% or more	12976	0.017510526
## 11	Not served in 2023	4466	0.006026665

##	ratio_binned	population	perc
## 1	New service	25038	0.00611605
## 2	Increased 30% or more	147855	0.03611664
## 3	Increased 10 to 30%	191497	0.04677710
## 4	Increased 5 to 10%	146739	0.03584404
## 5	Increased 3 to 5%	198430	0.04847063
## 6	Increased 1 to 3%	555609	0.13571899
## 7	Within 1%	1937634	0.47330720
## 8	Reduced 1 to 3%	232901	0.05689089
## 9	Reduced 3 to 10%	303326	0.07409365
## 10	Reduced 10% or more	176805	0.04318828
## 11	Not served in 2023	177985	0.04347652

##	ratio_binned_less	population	ratio_binned	perc
## 1	Increased 10 to 30%	906	Increased 10 to 30%	0.06225093
## 2	Increased 5 to 10%	7071	Increased 5 to 10%	0.48584582
## 3	Increased 3 to 5%	1361	Increased 3 to 5%	0.09351381
## 4	Increased 1 to 3%	476	Increased 1 to 3%	0.03270579
## 5	Within 1%	3190	Within 1%	0.21918373
## 6	Reduced 1 to 3%	1099	Reduced 1 to 3%	0.07551189
## 7	Reduced 3 to 10%	451	Reduced 3 to 10%	0.03098804

##	ratio_binned_less	population	ratio_binned	perc
## 1	Increased 30% or more	4897	Increased 30% or more	0.025120550
## 2	Increased 10 to 30%	18909	Increased 10 to 30%	0.096999077
## 3	Increased 5 to 10%	20125	Increased 5 to 10%	0.103236893
## 4	Increased 3 to 5%	20519	Increased 3 to 5%	0.105258028
## 5	Increased 1 to 3%	36510	Increased 1 to 3%	0.187288396
## 6	Within 1%	77851	Within 1%	0.399358777
## 7	Reduced 1 to 3%	6511	Reduced 1 to 3%	0.033400021
## 8	Reduced 3 to 10%	5501	Reduced 3 to 10%	0.028218939
## 9	Reduced 10% or more	1815	Reduced 10% or more	0.009310557
## 10	Not served in 2023	2302	Not served in 2023	0.011808762

##	ratio_binned_less	population	ratio_binned	perc
## 1	New service	17345	New service	0.00948009
## 2	Increased 30% or more	91294	Increased 30% or more	0.04989768
## 3	Increased 10 to 30%	97876	Increased 10 to 30%	0.05349514
## 4	Increased 5 to 10%	67646	Increased 5 to 10%	0.03697262
## 5	Increased 3 to 5%	99195	Increased 3 to 5%	0.05421606
## 6	Increased 1 to 3%	228128	Increased 1 to 3%	0.12468573
## 7	Within 1%	843383	Within 1%	0.46095974
## 8	Reduced 1 to 3%	100918	Reduced 1 to 3%	0.05515778
## 9	Reduced 3 to 10%	129293	Reduced 3 to 10%	0.07066643
## 10	Reduced 10% or more	69908	Reduced 10% or more	0.03820894
## 11	Not served in 2023	84638	Not served in 2023	0.04625978

[1] 1

## transit_supply Malvern (S Metro) Similar seats		
## Zero Supply	0	10
## Very Low	2	82
## Low	15	206
## Below average	40	446
## Above average	37	276
## High	61	309
## Very High	45	419

[1] 2

## transit_supply Malvern (S Metro) Similar seats		
## Zero Supply	1.026694	8.973306
## Very Low	8.624230	75.375770
## Low	22.689938	198.310062
## Below average	49.897331	436.102669
## Above average	32.135524	280.864476
## High	37.987680	332.012320
## Very High	47.638604	416.361396

[1] 3

## transit_supply Malvern (S Metro) Rest of Greater Melbourne		
## Zero Supply	0	479
## Very Low	2	2608
## Low	15	2470
## Below average	40	2205
## Above average	37	662
## High	61	604
## Very High	45	511

[1] 4

## transit_supply Malvern (S Metro) Rest of Greater Melbourne		
## Zero Supply	9.836739	469.1633
## Very Low	53.598932	2556.4011
## Low	51.031933	2433.9681
## Below average	46.103296	2198.8967
## Above average	14.354657	684.6453
## High	13.656433	651.3436
## Very High	11.418010	544.5820

[1] 5

## transit_supply Malvern (S Metro) Similar seats		
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##	Zero Supply	0	10
##	Very Low	2	79
##	Low	16	197
##	Below average	36	433
##	Above average	41	288
##	High	60	311
##	Very High	45	430

[1] 6

##	transit_supply Malvern (S Metro) Similar seats		
##	Zero Supply	1.026694	8.973306
##	Very Low	8.316222	72.683778
##	Low	21.868583	191.131417
##	Below average	48.151951	420.848049
##	Above average	33.778234	295.221766
##	High	38.090349	332.909651
##	Very High	48.767967	426.232033

[1] 7

##	transit_supply Malvern (S Metro) Rest of Greater Melbourne		
##	Zero Supply	0	466
##	Very Low	2	2601
##	Low	16	2468
##	Below average	36	2213
##	Above average	41	660
##	High	60	617
##	Very High	45	514

[1] 8

##	transit_supply Malvern (S Metro) Rest of Greater Melbourne		
##	Zero Supply	9.569771	456.4302
##	Very Low	53.455180	2549.5448
##	Low	51.011397	2432.9886
##	Below average	46.185440	2202.8146
##	Above average	14.395729	686.6043
##	High	13.902865	663.0971
##	Very High	11.479618	547.5204

[1] 9

##	ratio_binned Malvern (S Metro) Similar seats		
##	Increased 30% or more	1	30
##	Increased 10 to 30%	8	95
##	Increased 5 to 10%	45	147

##	Increased 3 to 5%	21	181
##	Increased 1 to 3%	35	334
##	Within 1%	45	715
##	Reduced 1 to 3%	27	104
##	Reduced 3 to 10%	15	100
##	Reduced 10% or more	3	32
##	Not served in 2023	0	10

[1] 10

##	ratio_binned Malvern	(S Metro)	Similar seats
##	Increased 30% or more	3.182752	27.817248
##	Increased 10 to 30%	10.574949	92.425051
##	Increased 5 to 10%	19.712526	172.287474
##	Increased 3 to 5%	20.739220	181.260780
##	Increased 1 to 3%	37.885010	331.114990
##	Within 1%	78.028747	681.971253
##	Reduced 1 to 3%	13.449692	117.550308
##	Reduced 3 to 10%	11.806982	103.193018
##	Reduced 10% or more	3.593429	31.406571
##	Not served in 2023	1.026694	8.973306

[1] 11

##	ratio_binned Malvern	(S Metro)	Rest of Greater Melbourne
##	New service	0	59
##	Increased 30% or more	1	320
##	Increased 10 to 30%	8	434
##	Increased 5 to 10%	45	346
##	Increased 3 to 5%	21	439
##	Increased 1 to 3%	35	1290
##	Within 1%	45	4532
##	Reduced 1 to 3%	27	543
##	Reduced 3 to 10%	15	695
##	Reduced 10% or more	3	415
##	Not served in 2023	0	466

[1] 12

##	ratio_binned Malvern	(S Metro)	Rest of Greater Melbourne
##	New service	1.211623	57.78838
##	Increased 30% or more	6.592053	314.40795
##	Increased 10 to 30%	9.076907	432.92309
##	Increased 5 to 10%	8.029572	382.97043
##	Increased 3 to 5%	9.446555	450.55344
##	Increased 1 to 3%	27.210186	1297.78981

##	Within 1%	93.993223	4483.00678
##	Reduced 1 to 3%	11.705514	558.29449
##	Reduced 3 to 10%	14.580552	695.41945
##	Reduced 10% or more	8.584044	409.41596
##	Not served in 2023	9.569771	456.43023

[1] 13

##	composite_needs Malvern (S Metro) Similar seats		
##	Very Low	22	243
##	Low	38	265
##	Below average	41	312
##	Above average	28	292
##	High	38	291
##	Very High	30	296
##	NA	3	49

[1] 14

##	Malvern (S Metro) Similar seats		
## 1	27.53428	237.4657	
## 2	31.48259	271.5174	
## 3	36.67774	316.3223	
## 4	33.24895	286.7511	
## 5	34.18407	294.8159	
## 6	33.87236	292.1276	

[1] 15

##	composite_needs Malvern (S Metro) Rest of Greater Melbourne		
##	Very Low	22	1771
##	Low	38	1732
##	Below average	41	1682
##	Above average	28	1358
##	High	38	1348
##	Very High	30	1351
##	NA	3	297

[1] 16

##	Malvern (S Metro) Rest of Greater Melbourne		
## 1	37.42144	1755.579	
## 2	36.94141	1733.059	
## 3	35.96048	1687.040	
## 4	28.92700	1357.073	
## 5	28.92700	1357.073	
## 6	28.82265	1352.177	

##	ratio_binned_less Malvern (S Metro) Similar seats	
##	Not served in 2023	0 4
##	Increased 30% or more	0 9
##	Increased 10 to 30%	2 35
##	Increased 5 to 10%	14 37
##	Increased 3 to 5%	3 39
##	Increased 1 to 3%	1 67
##	Within 1%	6 150
##	Reduced 1 to 3%	2 13
##	Reduced 3 to 10%	1 11
##	Reduced 10% or more	0 4

##	ratio_binned_less Malvern (S Metro) Similar seats	
##	Not served in 2023	0.2914573 3.708543
##	Increased 30% or more	0.6557789 8.344221
##	Increased 10 to 30%	2.6959799 34.304020
##	Increased 5 to 10%	3.7160804 47.283920
##	Increased 3 to 5%	3.0603015 38.939698
##	Increased 1 to 3%	4.9547739 63.045226
##	Within 1%	11.3668342 144.633166
##	Reduced 1 to 3%	1.0929648 13.907035
##	Reduced 3 to 10%	0.8743719 11.125628
##	Reduced 10% or more	0.2914573 3.708543

##	ratio_binned_less Malvern (S Metro) Rest of Greater Melbourne	
##	Not served in 2023	0 149
##	New service	0 30
##	Increased 30% or more	0 149
##	Increased 10 to 30%	2 168
##	Increased 5 to 10%	14 118
##	Increased 3 to 5%	3 174
##	Increased 1 to 3%	1 403
##	Within 1%	6 1487
##	Reduced 1 to 3%	2 176
##	Reduced 3 to 10%	1 230
##	Reduced 10% or more	0 124

##	ratio_binned_less Malvern (S Metro) Rest of Greater Melbourne	
##	Not served in 2023	1.3348780 147.66512
##	New service	0.2687674 29.73123
##	Increased 30% or more	1.3348780 147.66512
##	Increased 10 to 30%	1.5230151 168.47698
##	Increased 5 to 10%	1.1825765 130.81742
##	Increased 3 to 5%	1.5857275 175.41427
##	Increased 1 to 3%	3.6194007 400.38060

##	Within 1%	13.3756565	1479.62434
##	Reduced 1 to 3%	1.5946864	176.40531
##	Reduced 3 to 10%	2.0695088	228.93049
##	Reduced 10% or more	1.1109052	122.88909