

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

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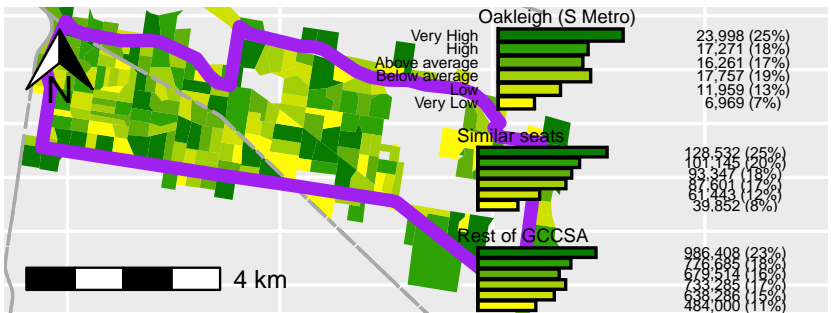
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This note is part of a series examining transit social needs-gaps in Greater Melbourne¹. In Victoria, public transport is the responsibility of the state government, which is formed from among Members of Parliament elected to represent individual State 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 Oakleigh (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 Oakleigh (Southern Metropolitan) State Electoral Division.



Needs were higher than the Melbourne average for 61.1% of the seat of Oakleigh's population⁷.

Figure 2 shows the distribution of transit service in 2021 and 2023. Service levels were below the Melbourne average for 40.5% of Oakleigh (S Metro) residents in 2021. There was no statistically significant

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 Burwood, Mount Waverley, Clarinda, Mulgrave, Keysborough, Bentleigh, Malvern and Caulfield

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

⁷ Differences between the seat of Oakleigh and similarly located seats, or with the rest of Greater Melbourne were not statistically significant ($\chi^2(5) = 0.74, p = .981$)(56.8%)

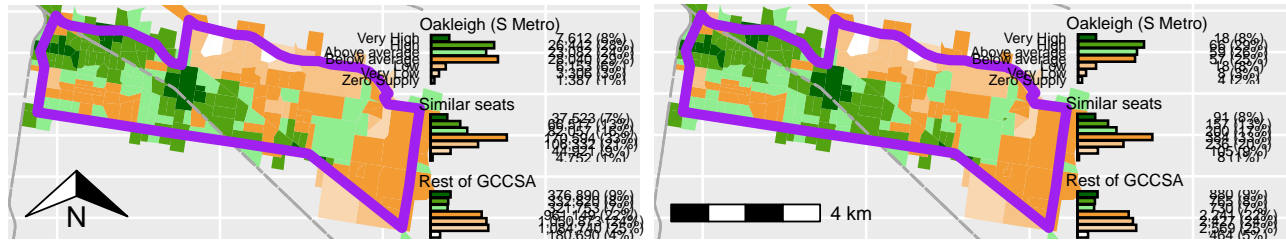


Figure 2: Transport Supply 2021 (left, by population) and 2023 (right, by SA1)

difference between the shares of supply in Oakleigh and surrounding seats⁸ but the share was less than that for the rest of Melbourne (76.1%)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.

$$^8 \chi^2(6) = 65.95, p < .001$$

⁹ Differences were statistically significant ($\chi^2(6) = 262.10, p < .001$).



Figure 3: Transit service change 2021 to 2023. SA1s with needs above, but supply below, average highlighted in black.

Transit levels increased by 1% or more by 2023 in SA1s that were home to 54.9% of Oakleigh (S Metro) residents in 2021, which is a larger share than for similarly located seats (49.7%)¹⁰ or the rest of Greater Melbourne (31.1%)¹¹. 26.4% of the Oakleigh (S Metro) population lived in SA1s with *needs above, but supply below* the Melbourne averages in 2021¹². However, for 54.3% of this cohort service levels increased 1% or more, a higher proportion than for the similar cohort living in similarly located seats (59.2%)¹³.

Overall, Oakleigh (S Metro) residents appear to have had similar transit service levels to those in similarly located seats, but were less likely to have less than Melbourne's average than the rest of Melbourne. They were also more likely to have seen service increases between 2021 and 2023 than those in nearby seats or the rest of Melbourne.

¹⁰ Differences were statistically significant ($\chi^2(10) = 24.26, p = .007$).

¹¹ Differences were statistically significant ($\chi^2(10) = 127.66, p < .001$).

¹² Shown with black in Figure 3. This compares to 40.3% of residents of similarly located seats and 41.9% of those elsewhere in Melbourne.

¹³ Differences were statistically significant (Fisher test $p = 0.981$). Differences with the rest of Greater Melbourne were not statistically significant (Fisher test $p = 0.324$).

##	ratio_binned	population	perc
## 1	New service	0	0.00000000
## 2	Increased 30% or more	2313	0.02408823
## 3	Increased 10 to 30%	3782	0.03938681
## 4	Increased 5 to 10%	12165	0.12668972
## 5	Increased 3 to 5%	12984	0.13521901

## 6	Increased 1 to 3%	21467	0.22356335
## 7	Within 1%	32688	0.34042199
## 8	Reduced 1 to 3%	6762	0.07042136
## 9	Reduced 3 to 10%	2474	0.02576493
## 10	Reduced 10% or more	0	0.00000000
## 11	Not served in 2023	1387	0.01444461

##		ratio_binned	population	perc
## 1	New service	880	0.001716417	
## 2	Increased 30% or more	21709	0.042342831	
## 3	Increased 10 to 30%	44923	0.087621124	
## 4	Increased 5 to 10%	58695	0.114483046	
## 5	Increased 3 to 5%	51616	0.100675644	
## 6	Increased 1 to 3%	77171	0.150519996	
## 7	Within 1%	188371	0.367412658	
## 8	Reduced 1 to 3%	32583	0.063552280	
## 9	Reduced 3 to 10%	26639	0.051958666	
## 10	Reduced 10% or more	6237	0.012165104	
## 11	Not served in 2023	3872	0.007552234	

##		ratio_binned	population	perc
## 1	New service	24158	0.005606516	
## 2	Increased 30% or more	135796	0.031515126	
## 3	Increased 10 to 30%	187989	0.043627920	
## 4	Increased 5 to 10%	157750	0.036610144	
## 5	Increased 3 to 5%	220777	0.051237260	
## 6	Increased 1 to 3%	614870	0.142697176	
## 7	Within 1%	2035616	0.472419623	
## 8	Reduced 1 to 3%	249898	0.057995574	
## 9	Reduced 3 to 10%	320417	0.074361411	
## 10	Reduced 10% or more	184452	0.042807064	
## 11	Not served in 2023	177192	0.041122185	

##		ratio_binned_less	population	ratio_binned	perc
## 1	Increased 10 to 30%	1691	Increased 10 to 30%	0.06666141	
## 2	Increased 5 to 10%	4328	Increased 5 to 10%	0.17061537	
## 3	Increased 3 to 5%	4121	Increased 3 to 5%	0.16245516	
## 4	Increased 1 to 3%	3631	Increased 1 to 3%	0.14313872	
## 5	Within 1%	9840	Within 1%	0.38790555	
## 6	Reduced 1 to 3%	1756	Reduced 1 to 3%	0.06922379	

##		ratio_binned_less	population	ratio_binned	perc
## 1	Not served in 2023	2793	Not served in 2023	0.013528503	
## 2	New service	880	New service	0.004262471	
## 3	Increased 30% or more	15869	Increased 30% or more	0.076864952	
## 4	Increased 10 to 30%	24626	Increased 10 to 30%	0.119281386	

## 5	Increased 5 to 10%	26896	Increased 5 to 10%	0.130276625
## 6	Increased 3 to 5%	20683	Increased 3 to 5%	0.100182608
## 7	Increased 1 to 3%	33166	Increased 1 to 3%	0.160646733
## 8	Within 1%	66451	Within 1%	0.321869869
## 9	Reduced 1 to 3%	5925	Reduced 1 to 3%	0.028699026
## 10	Reduced 3 to 10%	6830	Reduced 3 to 10%	0.033082590
## 11	Reduced 10% or more	2334	Reduced 10% or more	0.011305237

##	ratio_binned_less population	ratio_binned	perc
## 1	Not served in 2023	84147	Not served in 2023 0.046559560
## 2	New service	16465	New service 0.009110285
## 3	Increased 30% or more	80322	Increased 30% or more 0.044443141
## 4	Increased 10 to 30%	91374	Increased 10 to 30% 0.050558347
## 5	Increased 5 to 10%	63618	Increased 5 to 10% 0.035200614
## 6	Increased 3 to 5%	96271	Increased 3 to 5% 0.053267917
## 7	Increased 1 to 3%	228317	Increased 1 to 3% 0.126330577
## 8	Within 1%	848133	Within 1% 0.469282321
## 9	Reduced 1 to 3%	100847	Reduced 1 to 3% 0.055799874
## 10	Reduced 3 to 10%	128415	Reduced 3 to 10% 0.071053584
## 11	Reduced 10% or more	69389	Reduced 10% or more 0.038393779

[1] 1

##	transit_supply Oakleigh (S Metro) Similar seats
##	Zero Supply 4 9
##	Very Low 9 109
##	Low 19 239
##	Below average 63 395
##	Above average 54 183
##	High 63 158
##	Very High 18 88

[1] 2

##	transit_supply Oakleigh (S Metro) Similar seats
##	Zero Supply 2.119064 10.88094
##	Very Low 19.234585 98.76541
##	Low 42.055280 215.94472
##	Below average 74.656272 383.34373
##	Above average 38.632176 198.36782
##	High 36.024096 184.97590
##	Very High 17.278526 88.72147

[1] 3

transit_supply Oakleigh (S Metro) Rest of Greater Melbourne

##	Zero Supply	4	476
##	Very Low	9	2574
##	Low	19	2433
##	Below average	63	2233
##	Above average	54	738
##	High	63	753
##	Very High	18	869

[1] 4

##	transit_supply Oakleigh (S Metro) Rest of Greater Melbourne		
##	Zero Supply	10.71221	469.2878
##	Very Low	57.64506	2525.3549
##	Low	54.72152	2397.2785
##	Below average	51.24005	2244.7599
##	Above average	17.67514	774.3249
##	High	18.21075	797.7892
##	Very High	19.79526	867.2047

[1] 5

##	transit_supply Oakleigh (S Metro) Similar seats		
##	Zero Supply	4	8
##	Very Low	8	105
##	Low	18	236
##	Below average	57	384
##	Above average	59	200
##	High	66	157
##	Very High	18	91

[1] 6

##	transit_supply Oakleigh (S Metro) Similar seats		
##	Zero Supply	1.95606	10.04394
##	Very Low	18.41956	94.58044
##	Low	41.40326	212.59674
##	Below average	71.88519	369.11481
##	Above average	42.21828	216.78172
##	High	36.35011	186.64989
##	Very High	17.76754	91.23246

[1] 7

##	transit_supply Oakleigh (S Metro) Rest of Greater Melbourne		
##	Zero Supply	4	464
##	Very Low	8	2569
##	Low	18	2427

##	Below average	57	2241
##	Above average	59	730
##	High	66	765
##	Very High	18	880

[1] 8

##	transit_supply Oakleigh (S Metro) Rest of Greater Melbourne	
##	Zero Supply	10.44440 457.5556
##	Very Low	57.51116 2519.4888
##	Low	54.56530 2390.4347
##	Below average	51.28469 2246.7153
##	Above average	17.60819 771.3918
##	High	18.54551 812.4545
##	Very High	20.04075 877.9592

[1] 9

##	ratio_binned Oakleigh (S Metro) Similar seats	
##	New service	0 1
##	Increased 30% or more	7 42
##	Increased 10 to 30%	10 101
##	Increased 5 to 10%	30 136
##	Increased 3 to 5%	32 111
##	Increased 1 to 3%	50 180
##	Within 1%	77 446
##	Reduced 1 to 3%	15 79
##	Reduced 3 to 10%	5 60
##	Reduced 10% or more	0 17
##	Not served in 2023	4 8

[1] 10

##	ratio_binned Oakleigh (S Metro) Similar seats	
##	New service	0.163005 0.836995
##	Increased 30% or more	7.987243 41.012757
##	Increased 10 to 30%	18.093551 92.906449
##	Increased 5 to 10%	27.058824 138.941176
##	Increased 3 to 5%	23.309709 119.690291
##	Increased 1 to 3%	37.491141 192.508859
##	Within 1%	85.251595 437.748405
##	Reduced 1 to 3%	15.322466 78.677534
##	Reduced 3 to 10%	10.595322 54.404678
##	Reduced 10% or more	2.771084 14.228916
##	Not served in 2023	1.956060 10.043940

[1] 11

##	ratio_binned Oakleigh (S Metro) Rest of Greater Melbourne	
##	New service	0 58
##	Increased 30% or more	7 302
##	Increased 10 to 30%	10 426
##	Increased 5 to 10%	30 372
##	Increased 3 to 5%	32 498
##	Increased 1 to 3%	50 1429
##	Within 1%	77 4769
##	Reduced 1 to 3%	15 580
##	Reduced 3 to 10%	5 745
##	Reduced 10% or more	0 433
##	Not served in 2023	4 464

[1] 12

##	ratio_binned Oakleigh (S Metro) Rest of Greater Melbourne	
##	New service	1.294392 56.70561
##	Increased 30% or more	6.895983 302.10402
##	Increased 10 to 30%	9.730254 426.26975
##	Increased 5 to 10%	8.971473 393.02853
##	Increased 3 to 5%	11.828061 518.17194
##	Increased 1 to 3%	33.006986 1445.99301
##	Within 1%	108.148651 4737.85135
##	Reduced 1 to 3%	13.278673 581.72133
##	Reduced 3 to 10%	16.737823 733.26218
##	Reduced 10% or more	9.663303 423.33670
##	Not served in 2023	10.444401 457.55560

[1] 13

##	composite_needs Oakleigh (S Metro) Similar seats	
##	Very Low	29 156
##	Low	36 183
##	Below average	45 222
##	Above average	36 202
##	High	33 196
##	Very High	36 200
##	NA	15 22

[1] 14

##	Oakleigh (S Metro) Similar seats	
## 1	28.94833 156.0517	
## 2	34.26856 184.7314	
## 3	41.77948 225.2205	
## 4	37.24163 200.7584	

```
## 5          35.83333      193.1667
## 6          36.92868      199.0713
```

```
## [1] 15
```

```
## composite_needs Oakleigh (S Metro) Rest of Greater Melbourne
```

```
##      Very Low          29          1851
##      Low          36          1816
##      Below average    45          1768
##      Above average    36          1440
##      High          33          1448
##      Very High        36          1441
##      NA             15          312
```

```
## [1] 16
```

```
## Oakleigh (S Metro) Rest of Greater Melbourne
```

```
## 1          40.50506      1839.495
## 2          39.90179      1812.098
## 3          39.06153      1773.938
## 4          31.80078      1444.199
## 5          31.90851      1449.091
## 6          31.82233      1445.178
```

```
## ratio_binned_less Oakleigh (S Metro) Similar seats
```

```
##      Not served in 2023      0      5
##      New service            0      1
##      Increased 30% or more    0     27
##      Increased 10 to 30%     3     45
##      Increased 5 to 10%      8     50
##      Increased 3 to 5%       8     38
##      Increased 1 to 3%       5     63
##      Within 1%              18    124
##      Reduced 1 to 3%         3     11
##      Reduced 3 to 10%        0     13
##      Reduced 10% or more     0      5
```

```
## ratio_binned_less Oakleigh (S Metro) Similar seats
```

```
##      Not served in 2023    0.5269321    4.4730679
##      New service          0.1053864    0.8946136
##      Increased 30% or more  2.8454333    24.1545667
##      Increased 10 to 30%   5.0585480    42.9414520
##      Increased 5 to 10%    6.1124122    51.8875878
##      Increased 3 to 5%     4.8477752    41.1522248
##      Increased 1 to 3%     7.1662763    60.8337237
##      Within 1%            14.9648712   127.0351288
```


##	Reduced 1 to 3%	1.4754098	12.5245902
##	Reduced 3 to 10%	1.3700234	11.6299766
##	Reduced 10% or more	0.5269321	4.4730679

##	ratio_binned_less	Oakleigh (S Metro)	Rest of Greater Melbourne
##	Not served in 2023	0	148
##	New service	0	29
##	Increased 30% or more	0	131
##	Increased 10 to 30%	3	157
##	Increased 5 to 10%	8	111
##	Increased 3 to 5%	8	170
##	Increased 1 to 3%	5	403
##	Within 1%	18	1501
##	Reduced 1 to 3%	3	177
##	Reduced 3 to 10%	0	229
##	Reduced 10% or more	0	123

##	ratio_binned_less	Oakleigh (S Metro)	Rest of Greater Melbourne
##	Not served in 2023	2.0657568	145.93424
##	New service	0.4047767	28.59522
##	Increased 30% or more	1.8284739	129.17153
##	Increased 10 to 30%	2.2332506	157.76675
##	Increased 5 to 10%	1.6609801	117.33902
##	Increased 3 to 5%	2.4844913	175.51551
##	Increased 1 to 3%	5.6947891	402.30521
##	Within 1%	21.2019231	1497.79808
##	Reduced 1 to 3%	2.5124069	177.48759
##	Reduced 3 to 10%	3.1963400	225.80366
##	Reduced 10% or more	1.7168114	121.28319