

Bus Data

And how to use it

Bus data in Victoria

**Bus data in Victoria is
generally inconsistent,
disparate and poorly
utilised**

How can we bring data into transport planning & advocacy?



What do we
want to
know?

What
information
do we need?

Where can
we find the
information?

How can we
analyse and
calculate?

How can we
use the
results for
our work?

some key stats



Metropolitan bus
patronage **down** by
7.5% from 2012 to 2017

(PTV annual reports, 2012 – 2017)



Regional coach
patronage **down** by
8.6% from 2012 to 2017

(PTV annual reports, 2012 – 2017)



12% of all bus passengers are
carried by three Smartbus
routes (**901, 902, 903**)

(PTV route patronage data, 2008 – 2017)

Current data

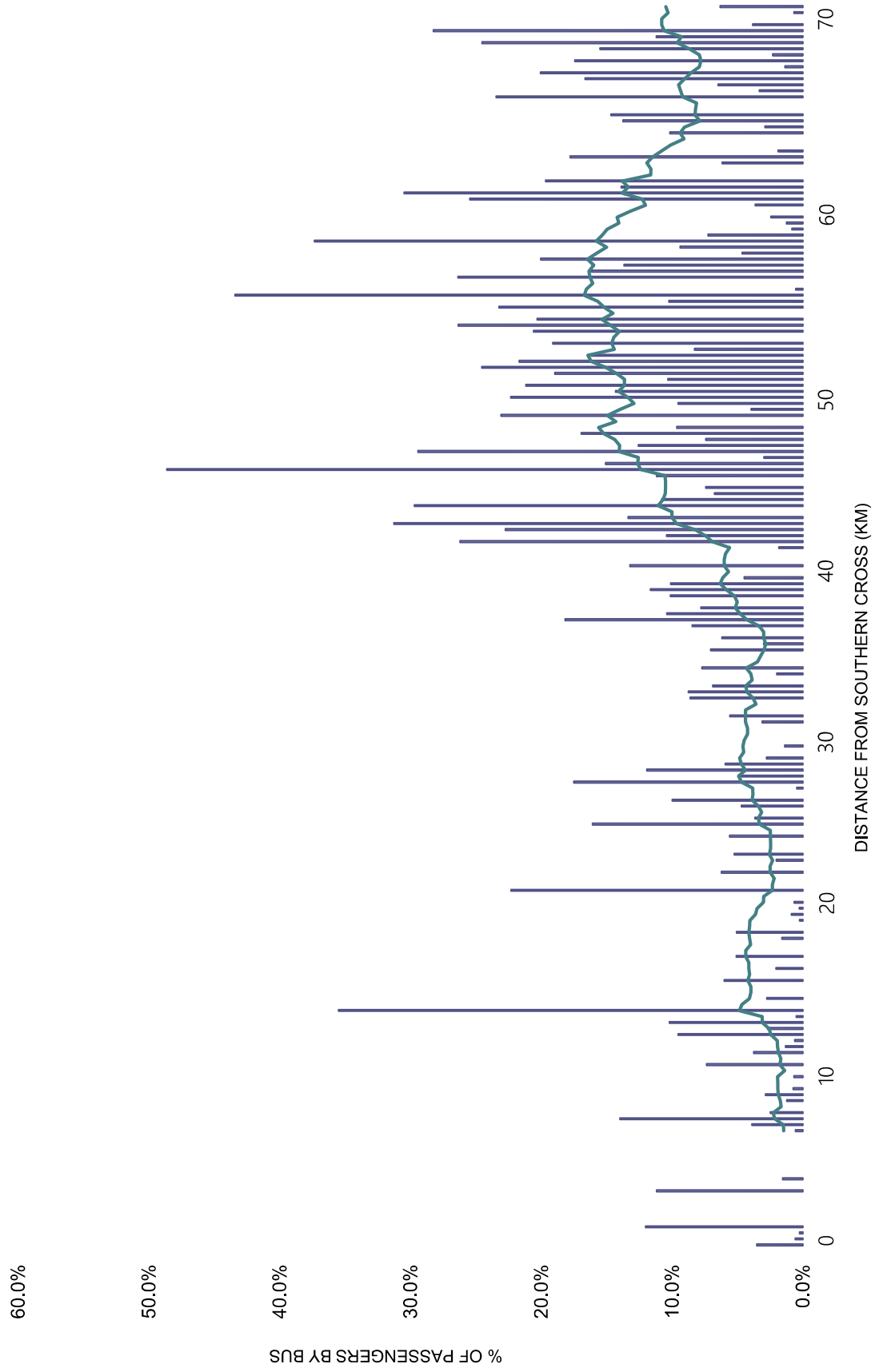
What is currently available?

Data	Scope	Year(s)
Bus stop patronage	Metropolitan buses Regional town buses	2015-16
Bus route patronage	Metropolitan buses	2008 to 2017 (gap in 2012 – 2014)
Metro-wide bus network patronage (Melbourne)	Metropolitan buses	1947 to 2019
Overall bus network patronage (Regional)	Regional town buses Regional coaches	2012 to 2017
Railway station access	Metro railway stations	2013-14
GTFS	Everything!	Current only

Bus access to stations (as %)

Rank	Station	2013-14% total pax	Council
1	Huntingdale	48.6%	Monash
2	Springvale	43.4%	Greater Dandenong
3	Hoppers Crossing	37.4%	Wyndham
4	Essendon	35.5%	Moonee Valley
5	Broadmeadows	31.3%	Hume
6	Dandenong	30.5%	Greater Dandenong
7	Keon Park	29.7%	Whittlesea
8	Blackburn	29.4%	Whitehorse
9	Cranbourne	28.3%	Casey
10	Ringwood	26.4%	Maroondah

% of Passengers Accessing Stations By Bus (PTV, 2013-14)



Busiest bus routes

(by total passengers)

Rank	Route	2016-17 pass.	Council(s)
1	903 Altona - Mordialloc	5,060,524	Lots
2	901 Melb Airport - Frankston	3,735,028	Lots
3	902 Airport West - Chelsea	3,706,920	Lots
4	703 Blackburn - Middle Brighton	2,145,975	Bayside, Glen Eira, Monash, Whitehorse
5	900 Rowville - Caulfield	1,926,988	Glen Eira, Knox, Monash
6	907 - Mitcham	1,791,774	Manningham, Melbourne, Whitehorse, Yarra
7	220 Sunshine – – Gardenvale	1,416,255	Bayside, Brimbank, Glen Eira, Maribyrnong, Melbourne, Stonnington,
8	246 Elsternwick – Clifton Hill	1,344,909	Bayside, Glen Eira, Port Phillip, Yarra
9	513 Eltham – Glenroy	1,289,097	Banyule, Darebin, Moonee Valley, Moreland, Nillumbik
10	828 Hampton - Berwick	1,283,117	Bayside, Casey, Dandenong, Kingston

Least used bus routes

(by total passengers) – excluding Night Buses

Rank	Route	2016-17 pass.	Council(s)
1	886 Rosebud – Chisholm TAFE	641	Mornington Peninsula
2	777 Karingal Hub SC – McClelland Drive	1,251	Frankston
3	687 Chum Creek – Healesville	1,860	Yarra Ranges
4	706 Mordialloc – Chelsea	1,933	Kingston
5	696 Olinda – Monbulk	2,571	Yarra Ranges
6	745 Knox – Bayswater	2,710	Knox
7	786 Rye – St Andrews	3,286	Mornington Peninsula
8	673 Lilydale – Lillydale Lake	4,270	Yarra Ranges
9	842 Fountain Gate SC – Endeavour Hills SC	5,424	Casey
10	384 Kinglake - Whittlesea	6,107	Whittlesea

GTFS

Worldwide data format for organising PT information

Includes stops, routes, trips, etc.

The most comprehensive but also the most inaccessible to humans

**Ask not what data
can do for you...**

Example: how many people catch buses in each LGA?

Bus stop patronage:

<https://philam.github.io/victoriapatronagebusstops/vicbusstopboardings.html>

LGA boundaries (VicMap admin):

<https://discover.data.vic.gov.au/dataset/vicmap-admin>

Total weekday bus passengers per LGA (2015-16)

1	MONASH	62566
2	WHITEHORSE	42175
3	MELBOURNE	41986
4	GREATER DANDENONG	30480
5	MANNINGHAM	27007
6	BRIMBANK	26542
7	CASEY	25644
8	DAREBIN	25529
9	WYNDHAM	24442
10	MARIBYRNONG	22496
11	KINGSTON	20871
12	KNOX	19323
13	HUME	18997
14	MAROONDAH	18570
15	BANYULE	17246
16	WHITTLESEA	16700
17	FRANKSTON	16680
18	BOROONDARA	16239
19	MOONEE VALLEY	16021
20	GLEN EIRA	15177
21	MORELAND	14695
22	YARRA RANGES	13601
23	STONNINGTON	11267
24	HOBSONS BAY	10710
25	YARRA	10145
26	BAYSIDE	3612
27	MELTON	2820
28	PORT PHILLIP	3703
29	MORNINGTON PENINSULA	3597
30	NILLUMBIK	4249
31	CARDINIA	3070

Weekday bus passengers per stop by LGA (2015-16)

1	MELBOURNE	132.45
2	YARRA	74.05
3	MONASH	70.46
4	MARIBYRNONG	55.27
5	STONNINGTON	50.75
6	WHITEHORSE	49.16
7	GREATER DANDENONG	42.39
8	MANNINGHAM	41.42
9	MOONEE VALLEY	33.87
10	DAREBIN	33.03
11	MAROONDAH	32.75
12	BOROONDARA	32.16
13	PORT PHILLIP	32.00
14	BRIMBANK	30.86
15	BANYULE	29.08
16	GLEN EIRA	29.07
17	WYNDHAM	27.56
18	FRANKSTON	26.23
19	KINGSTON	25.61
20	HOBSONS BAY	23.64
21	KNOX	22.92
22	CASEY	21.77
23	HUME	21.18
24	MORELAND	20.73
25	BAYSIDE	20.18
26	WHITTLESEA	19.24
27	NILLUMBIK	17.06
28	MELTON	16.81
29	YARRA RANGES	15.56
30	CARDINIA	10.55
31	MORNINGTON PENINSULA	8.29

**Good things happen
when you combine data**

Example: which is the most efficient bus route in Melbourne?

- Number of trips?
- Route length?
- Population serviced?
- Passengers per trip?

Boardings per service km

$$B \div S = Y$$

B = Daily boardings

S = Service kilometres (total route length x trips)

Y = Boardings per service kilometre

Example (route 150)

$$651 \div (19.37 \times 104 = 1148.16) = 0.57$$

$$B \div S \text{ (route length} \times \text{trips)} = Y$$

B = Daily boardings

S = Service kilometres (route length \times trips)

Y = Boardings per service kilometre

Results

Route	Boardings per service km
902	3.75
901	3.41
703	2.60
318	2.50
903	2.41
303	2.26
828	2.21
733	2.06
900	2.03
767	1.92
737	1.91

Route	Boardings per service km
384	0.02
886	0.03
687	0.03
786	0.04
696	0.05
543	0.07
777	0.08
706	0.08
863	0.09
899	0.09
441	0.10

Limitations

Express and peak-only buses are advantaged

Doesn't take into account service span or stop efficiency

Exact route length is complex due to loops, deviations, etc.

Connecting data to advocacy

Issue	Ask	Data
Overcrowded bus stops	Better facilities	Bus stop patronage
Poor frequency, high demand	Review of bus route	Route patronage per stop
High frequency, low demand	Review of bus route, reallocate resources?	Route patronage per stop
Indirect bus route	Make route more direct	GTFS
Low bus usage per person	Increased investment in buses in LGA	GTFS, bus route patronage

Challenges

Contradictory data

Inconsistent sharing

Erratic updates

Lack of clarity about data collection and calculations

Data gaps

Data custodianship

Future possibilities

Forecast demand based on land use change

Determine detailed population catchments

Summary

Data is limited, but what we have is underutilised

Specify what you want to find before going digging

Visualise and simplify data for advocacy



philip.mallis@darebin.vic.gov.au

Resources

<https://data.vic.gov.au/>

<https://philipmallis.com/blog/2019/04/05/melbourne-bus-patronage-data-2008-2017/>

<https://transport.vic.gov.au/about/data-and-research/patronage>