

Garbage In – Garbage Out (G.I.G.O.)

The Case for Validation and Accuracy in a Dataset on Public Open Space.

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Overview of the Issues

- Defining the research objectives
- “Garbage In Garbage Out (G.I.G..O)” - datasets characterising public open spaces
- Importance of secondary validation
- Modifiable Areal Unit Problem (MAUP)

Defining Public Open Space



Reserve. (Daker 2017)



Conservation Park.



Space Between Buildings.



Sport/Recreation Area.



Space Left Over



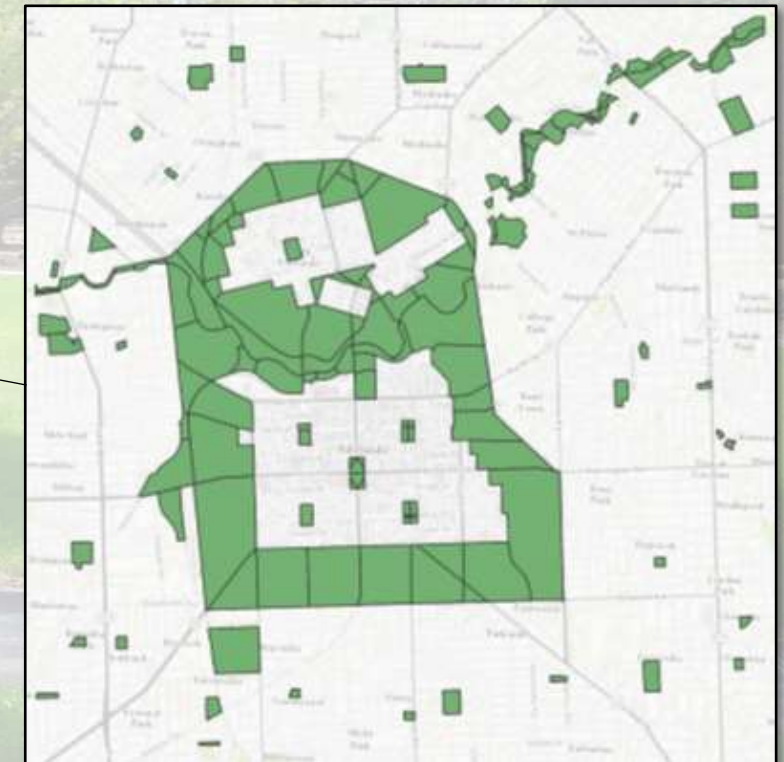
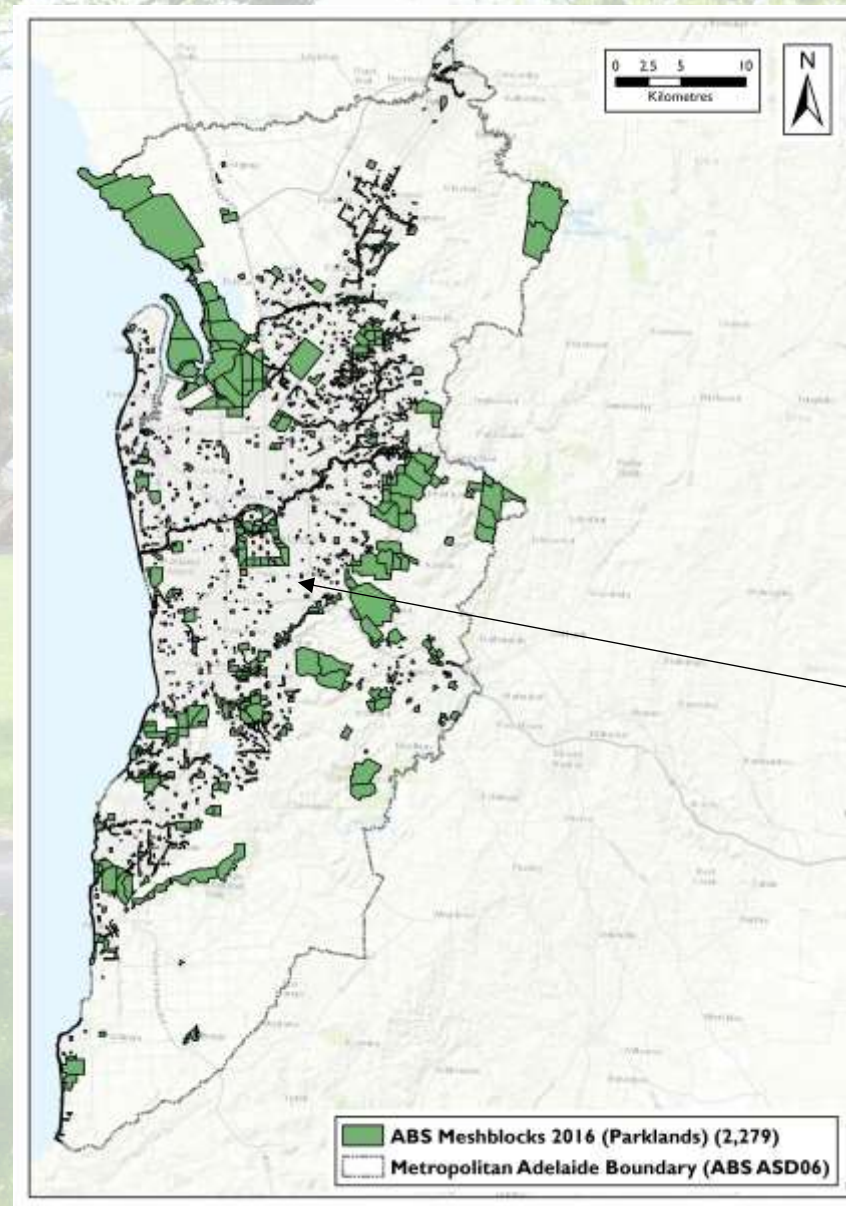
Green Space (Derelict site). (Coffee 2002)

Defining Public Open Space - cont.

- Accessible and available
- Passive recreation space
- Active recreation space
- Or a narrow linkage, (e.g. River Torrens Linear Park)
- *Excluded*: roadside vegetation, cemeteries and restricted areas

Australian Bureau of Statistics Meshblocks 2016

- **Smallest geographical area defined by ABS**
- **Broadly reflects a defined land use**
 - **Parkland**
- **N = 2279**

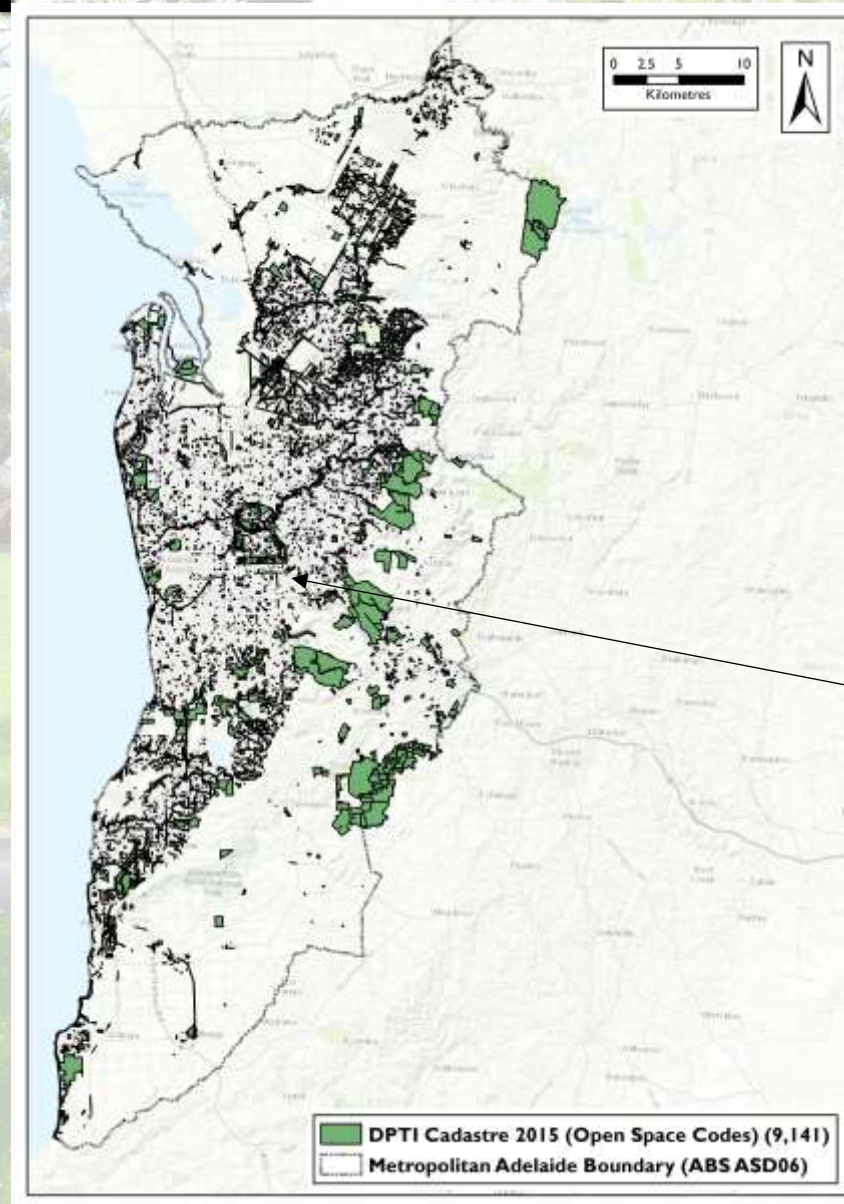


Source: (ABS 2016)

Dept. Planning, Transport & Infrastructure

Cadastral Open Space/Recreation Land Use Codes 2015

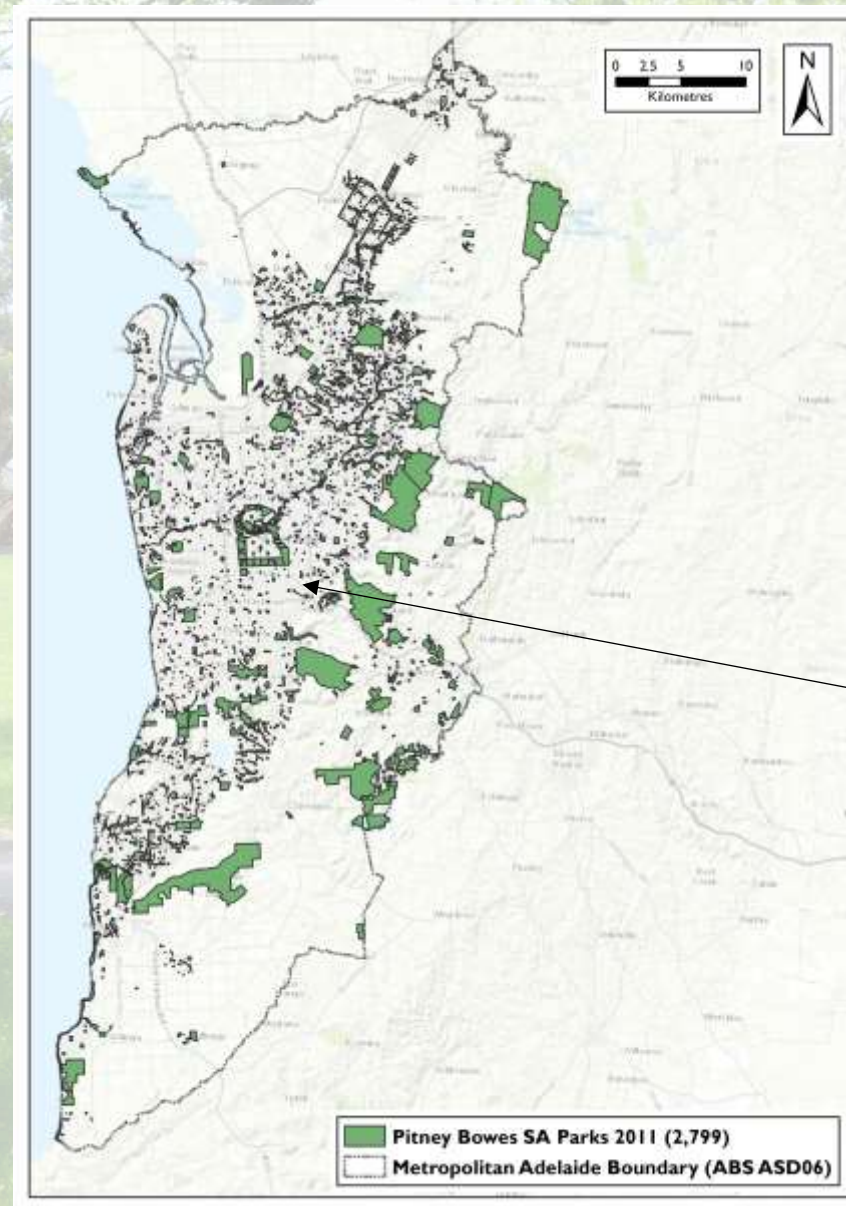
- Open space and recreation activities characterised by 31 land use codes
- N = 9141



Source: (DPTI 2015; DTEI 2007)

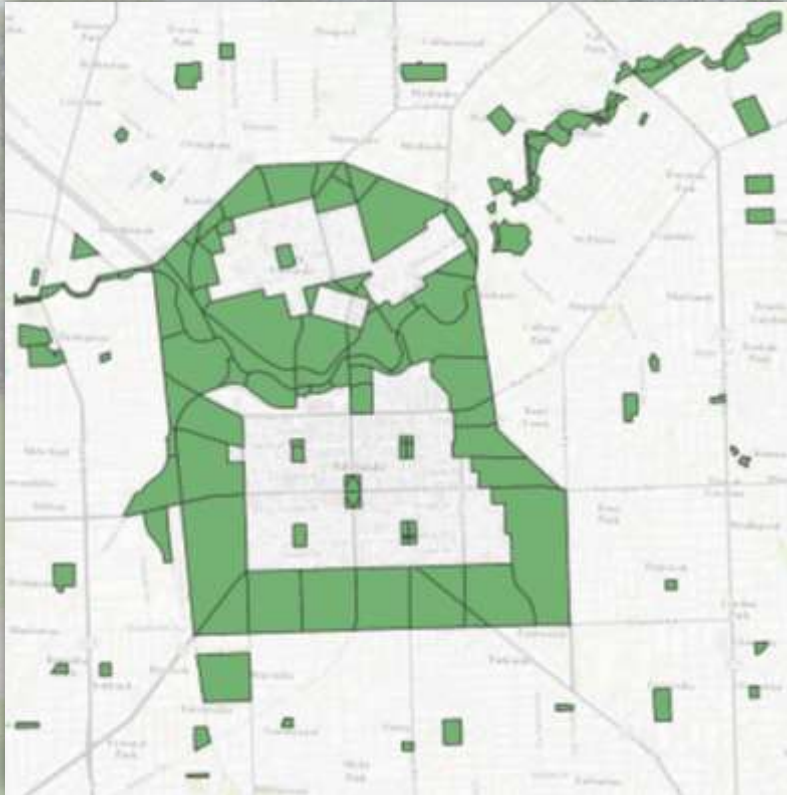
Pitney Bowes SA Parks 2011

- **Commercial dataset (\$\$)**
- **Aligned with Satnav data**
- **Emphasis on larger open spaces**
- **N = 2799**



Source: (Pitney Bowes 2011)

Which is the Best / Most Accurate Dataset?



ABS Meshblocks 2016
Source: (ABS 2016)



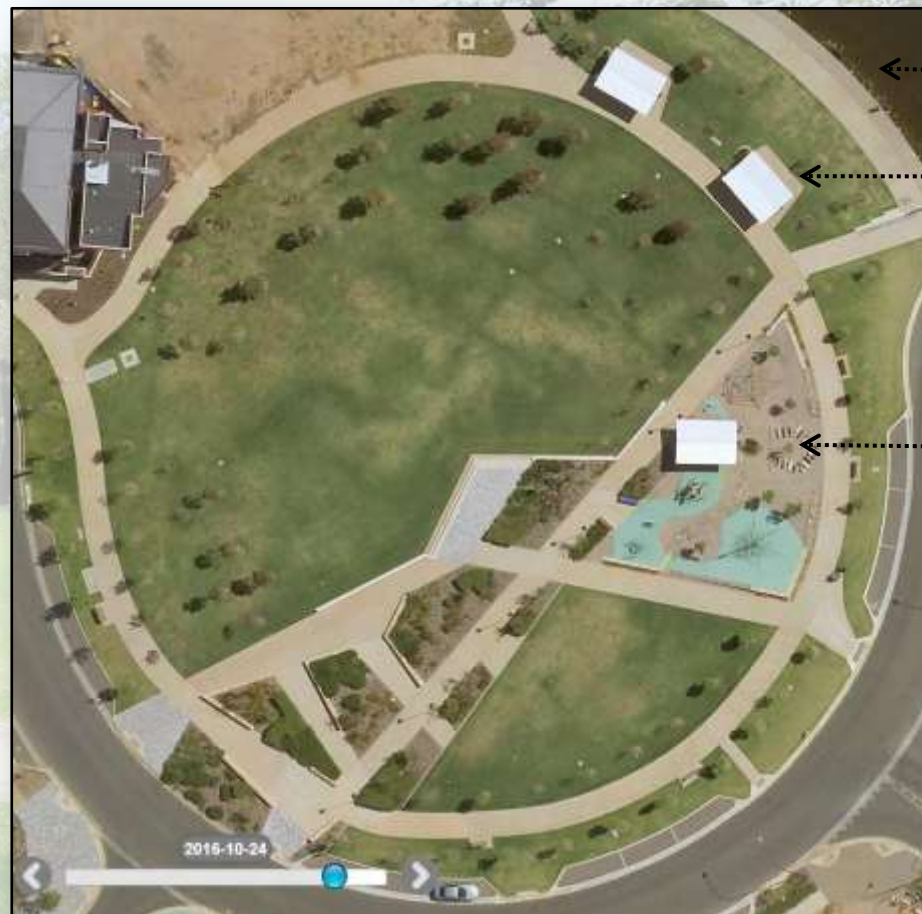
DPTI Property Cadastre 2015
Source: (DPTI 2015)



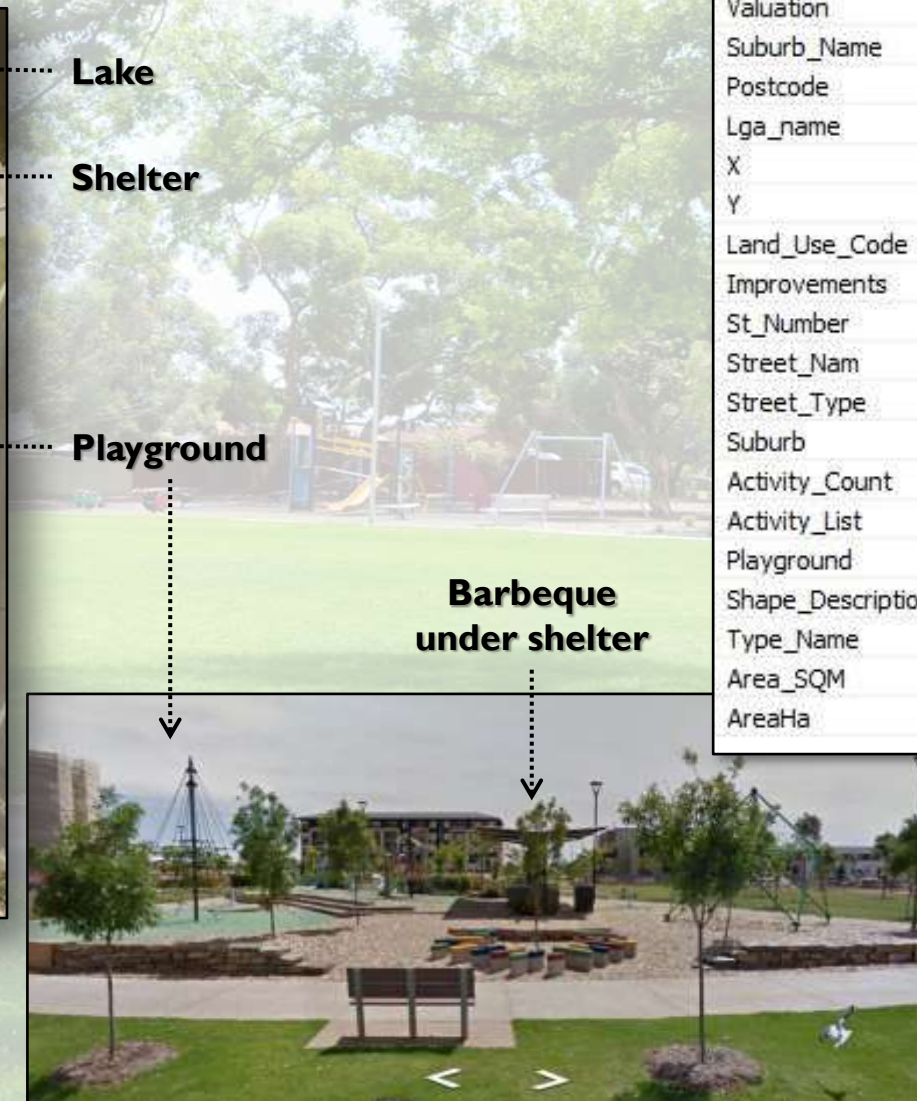
Pitney Bowes SA Parks 2011
Source: (Pitney Bowes 2011)

Desktop Validation

Field	Value
POS_ID	3403
NAME	
Valuation	2504813151
Suburb_Name	St.Clair
Postcode	5011
Lga_name	Charles Sturt
X	138.531801
Y	-34.867663
Land_Use_Code	4,500
Improvements	playground, shelter, bench, table, BBQ, lake, path
St_Number	
Street_Nam	St.Clair
Street_Type	Av
Suburb	St.Clair
Activity_Count	2
Activity_List	passive, playground
Playground	y
Shape_Description	irregular
Type_Name	POS
Area_SQM	25747
AreaHa	2.57



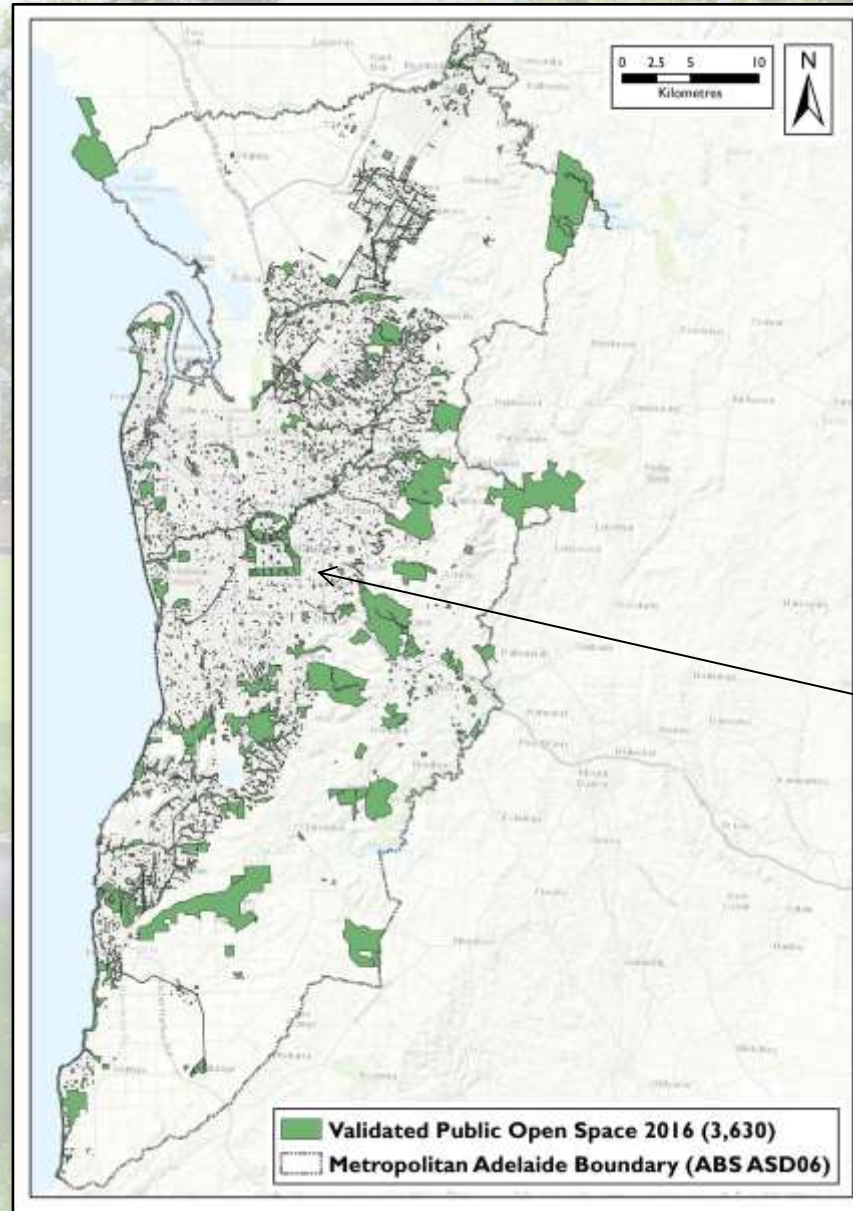
High Resolution Ortho-Photographic Imagery - Metromap (AREOmetrex 2016)



Google Streetview (Google Earth© 2016)

Validated Public Open Space Dataset 2016 (VPOS 2016)

Validated Public Open Space Dataset (VPOS 2016) (N = 3630)	
	Hectares
Minimum	0.008
Maximum	1577.89
Median	0.52
Mode	0.13
Sum	23086.44
Standard Deviation	58.02
POS area = 12.66 percent of total metropolitan Adelaide area	



Source: (Daker 2016)

Public ?? Open Spaces 2016

**Northern Expressway
(Roadside vegetation)
(DPTI)**

**Torrens Island
(DPTI, ABS & Pitney Bowes)**

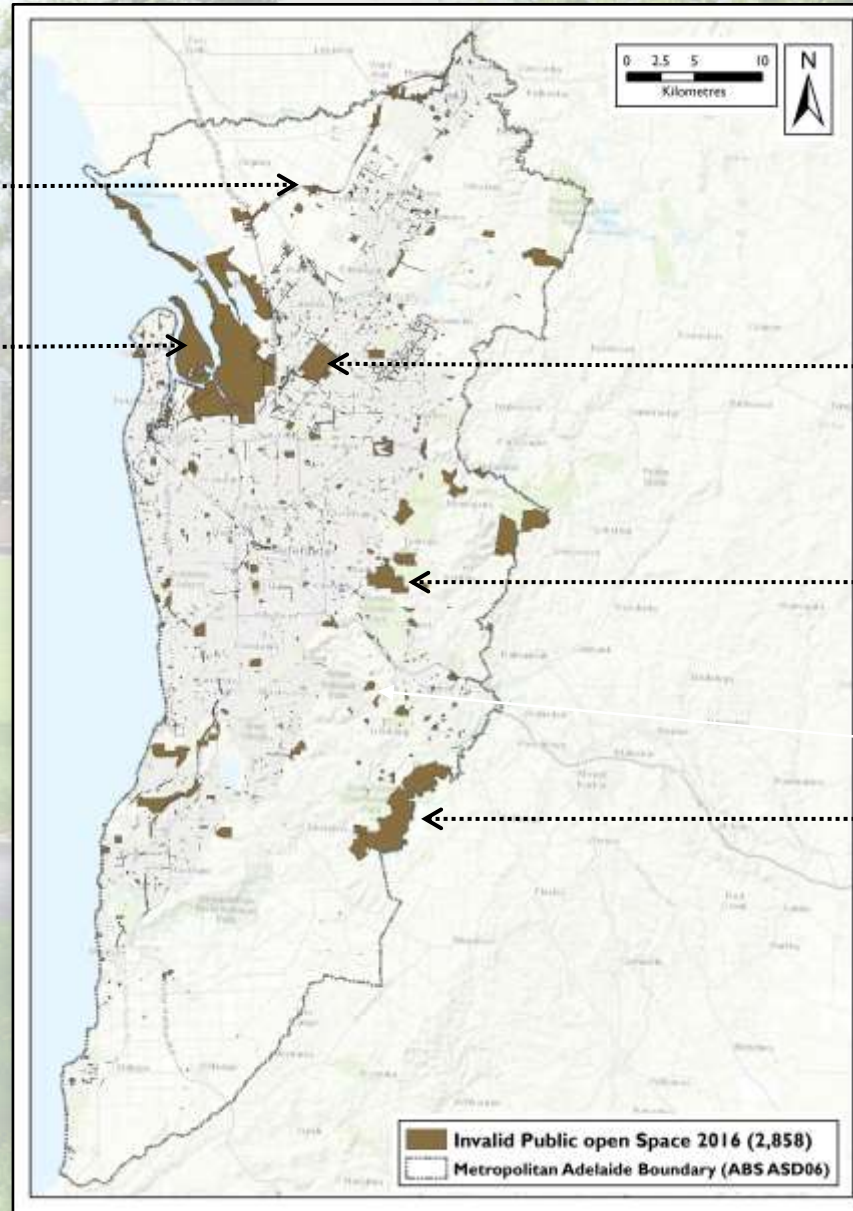
**Parafield Airport
(ABS)**

**Stonyfell Quarry
(ABS)**

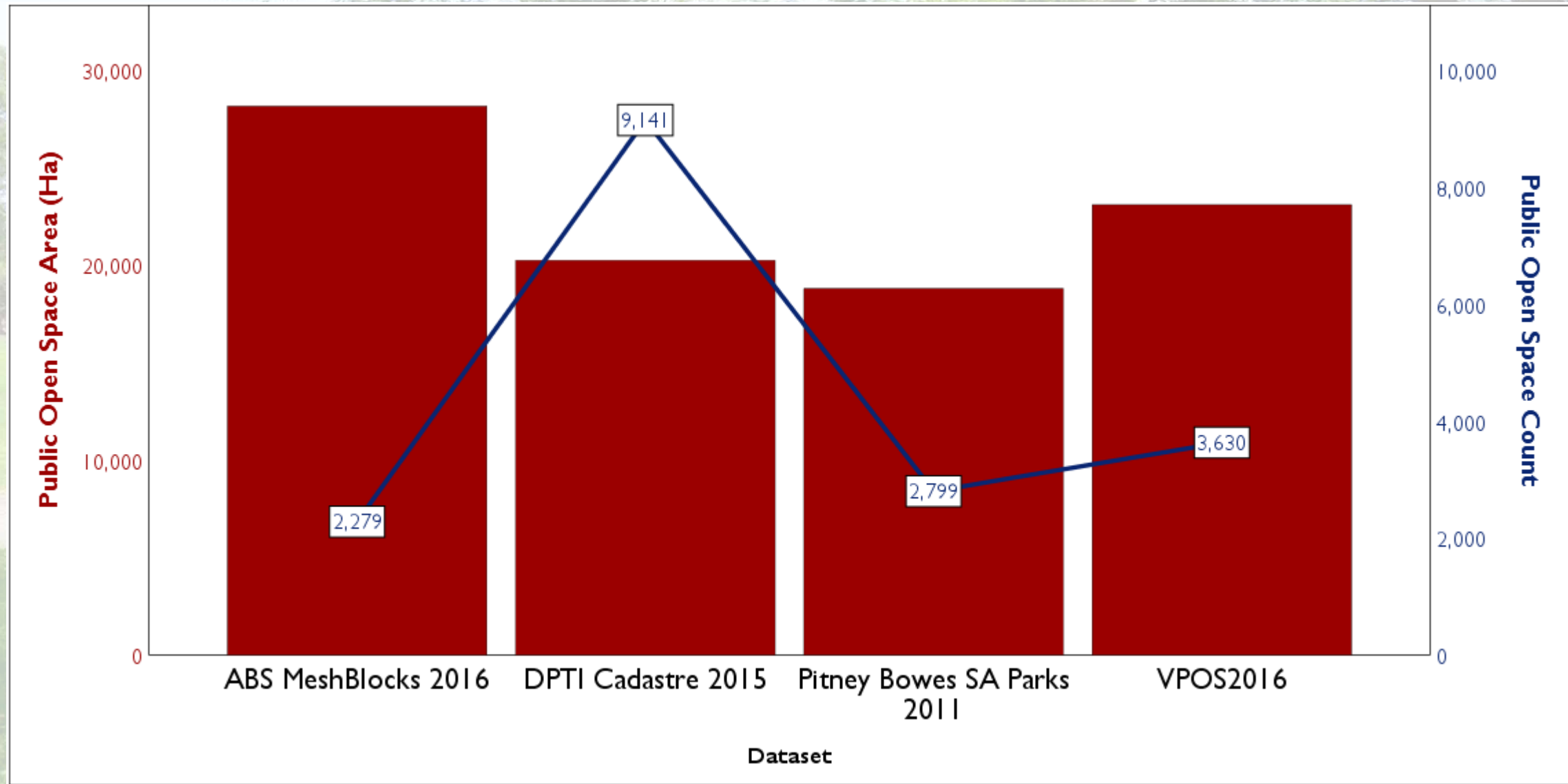
**Mt Bold Reservoir
(DPTI & Pitney Bowes)**

Invalidated Public Open Space 2016

Hectares:	N =	Invalid Total of VPOS16
12,613.4	2858	21%



Dataset Results



So What....?

- **Does the selection of appropriate public open space (POS) dataset affect subsequent analysis / decisions?**
 - **Selection of appropriate public open space**
 - **Selection of spatial units**
- **12.5 percent metric of public open space within residential developments (*Planning, Development and Infrastructure Act 2016 SA*)**

Local Government Areas (LGA)

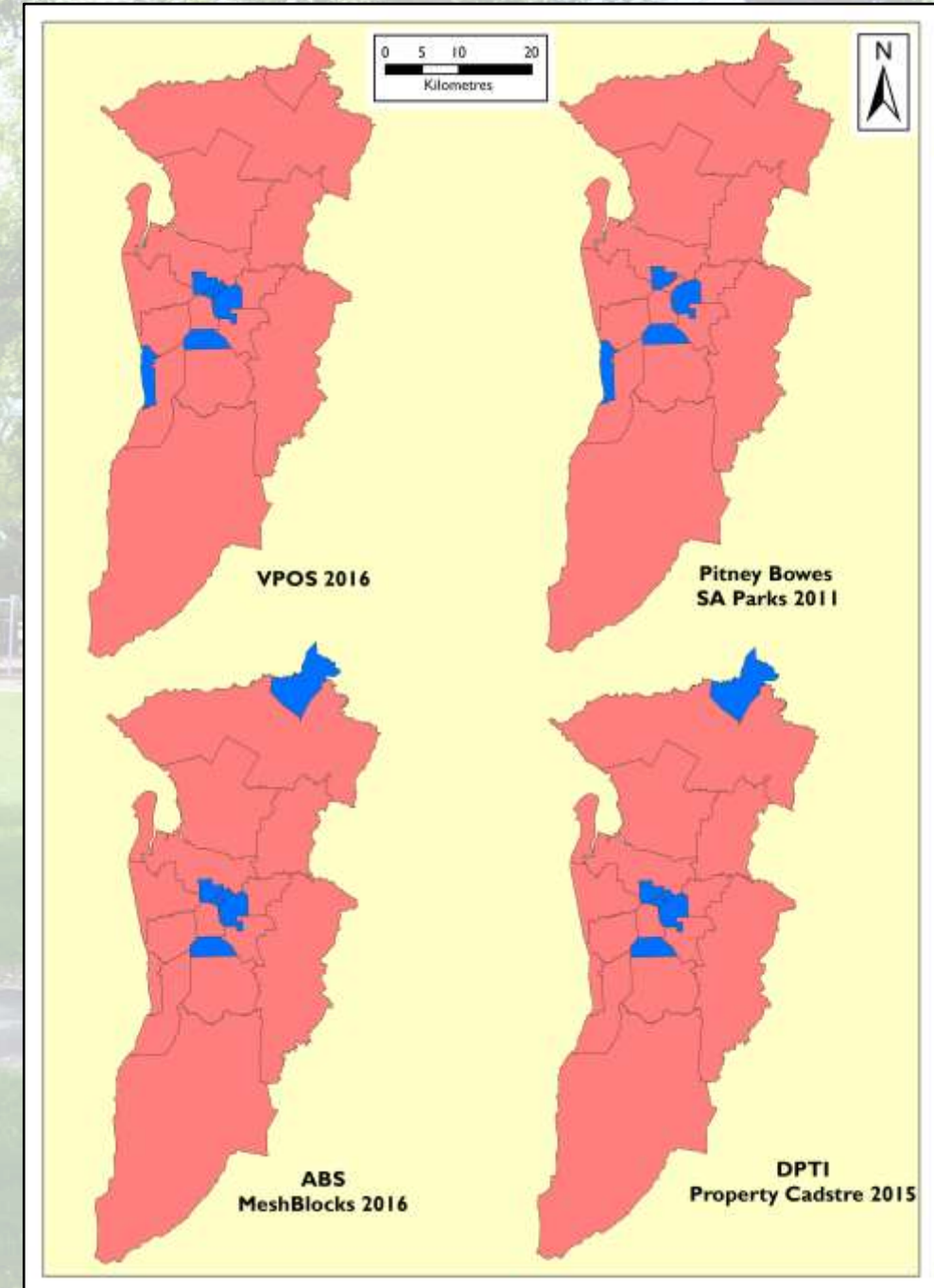
Local Government Area N=19	No Public Open Space		Below Guideline		Above Guideline	
	N	%	N	%	N	%
VPOS	0	0	5	26.32	14	73.68
Meshblock	0	0	5	26.32	14	73.68
SA Parks	0	0	4	21.05	15	78.95
Cadastre	0	0	5	26.32	14	73.68

12.5 percent POS within Residential Area

No Public Open Space

Below 12.5 Percent

Above 12.5 Percent



ABS Postal Areas (POA)

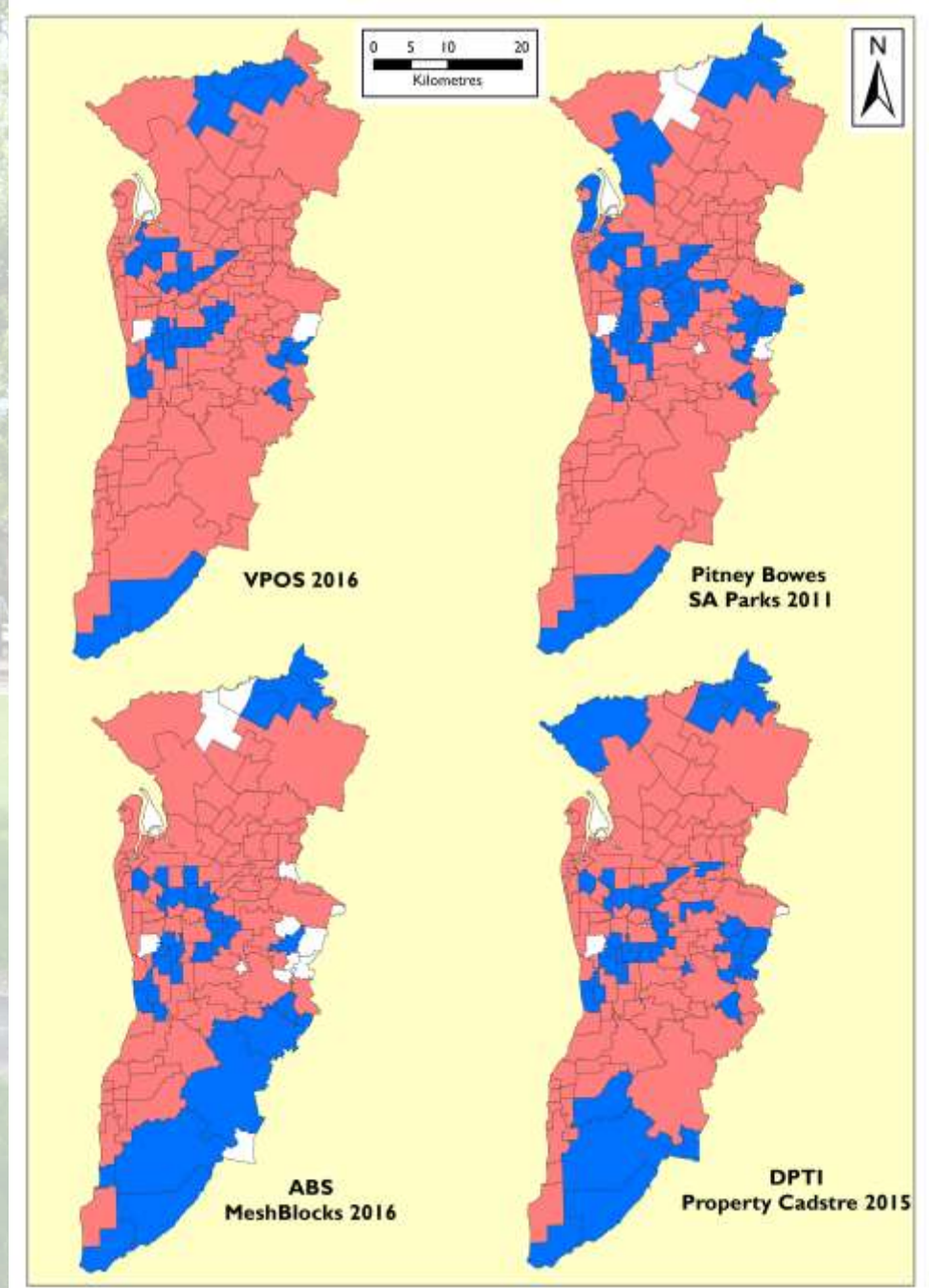
Postcode N=134	No Public Open Space		Below Guideline		Above Guideline	
	N	%	N	%	N	%
VPOS	5	3.73	32	23.88	97	72.39
Meshblock	15	11.19	34	25.37	85	63.43
SA Parks	8	5.97	48	35.82	78	58.21
Cadastre	5	3.73	41	30.60	88	65.67

12.5 percent POS within Residential Area

 No Public Open Space

 Below 12.5 Percent

 Above 12.5 Percent



ABS State Suburbs (SSC)

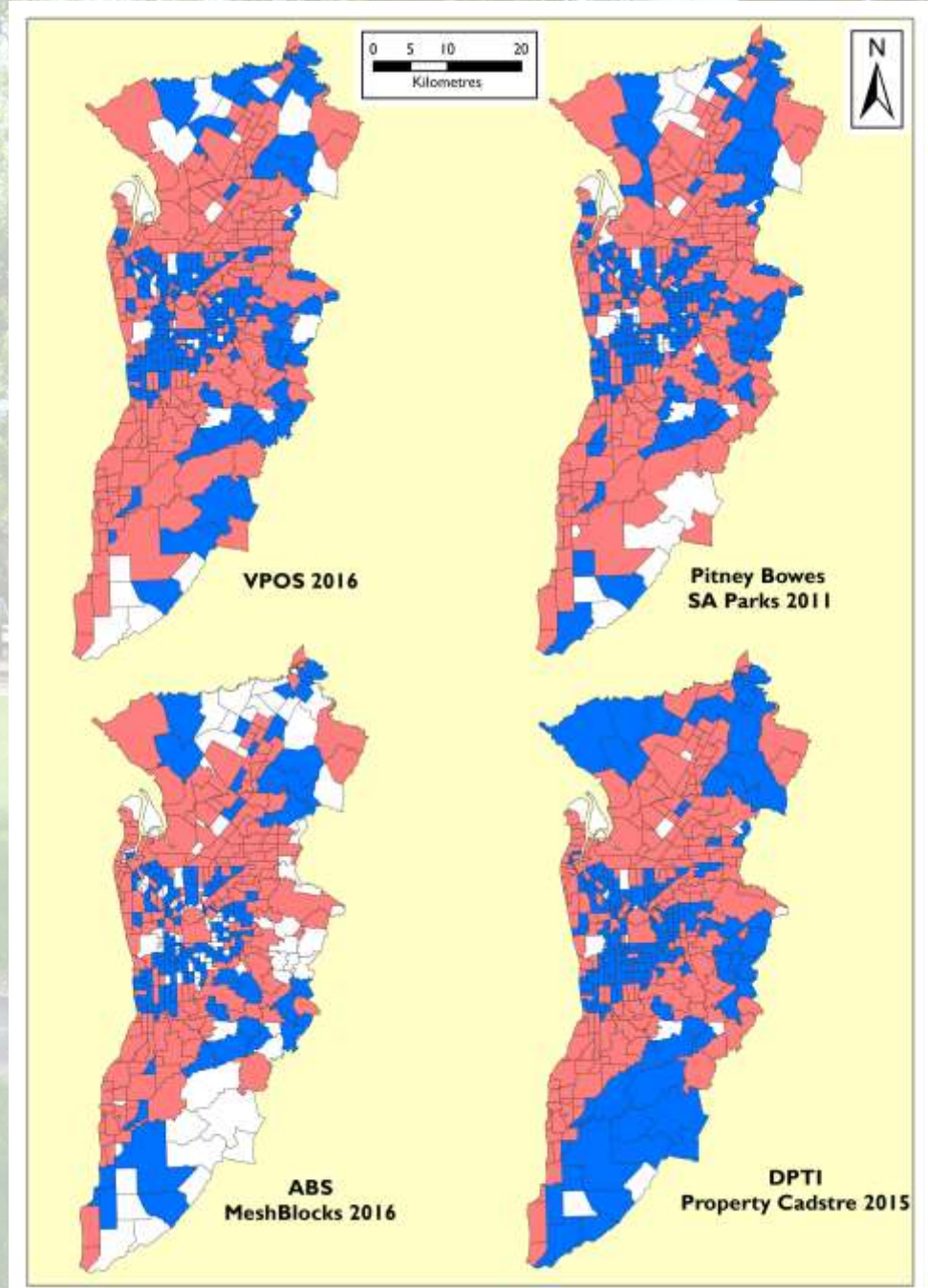
Suburb N=432	No Public Open Space		Below Guideline		Above Guideline	
	N	%	N	%	N	%
VPOS	39	9.03	185	42.82	208	48.15
Meshblock	107	24.77	134	31.02	191	44.21
SA Parks	48	11.11	195	45.14	189	43.75
Cadastre	18	4.17	206	47.69	208	48.15

12.5 percent POS within Residential Area

 No Public Open Space

 Below 12.5 Percent

 Above 12.5 Percent



Conclusion

- Importance of defining the aims for the use of the data
- Value of undertaking secondary validations
 - Desktop
 - Field Validations
- One should not assume government and industry datasets are the “Gold Standard” for data representation
- Modifiable Areal Unit Problem (MAUP)

Future Research

- The validated public open space dataset 2016 is the foundation for my PhD. Involves an investigation into statistical associations with public open space data in-conjunction with population health data and ABS census variables.

A large, leafy tree in a park setting with a bench and a playground in the background.

Thank you for listening

Questions?

References

- ABS 2016, *South Australia Mesh Blocks ASGS Ed 2016 Digital Boundaries in ESRI Shapefile Format* Australian Bureau of Statistics, Canberra (ACT), Retrieved from <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1270.0.55.001July%202016?OpenDocument>
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- Pitney Bowes 2011, *SA Parks*, Pitney Bowes Pty Ltd, Sydney (NSW), Retrieved
- *Planning, Development and Infrastructure Act 2016 (SA)*.