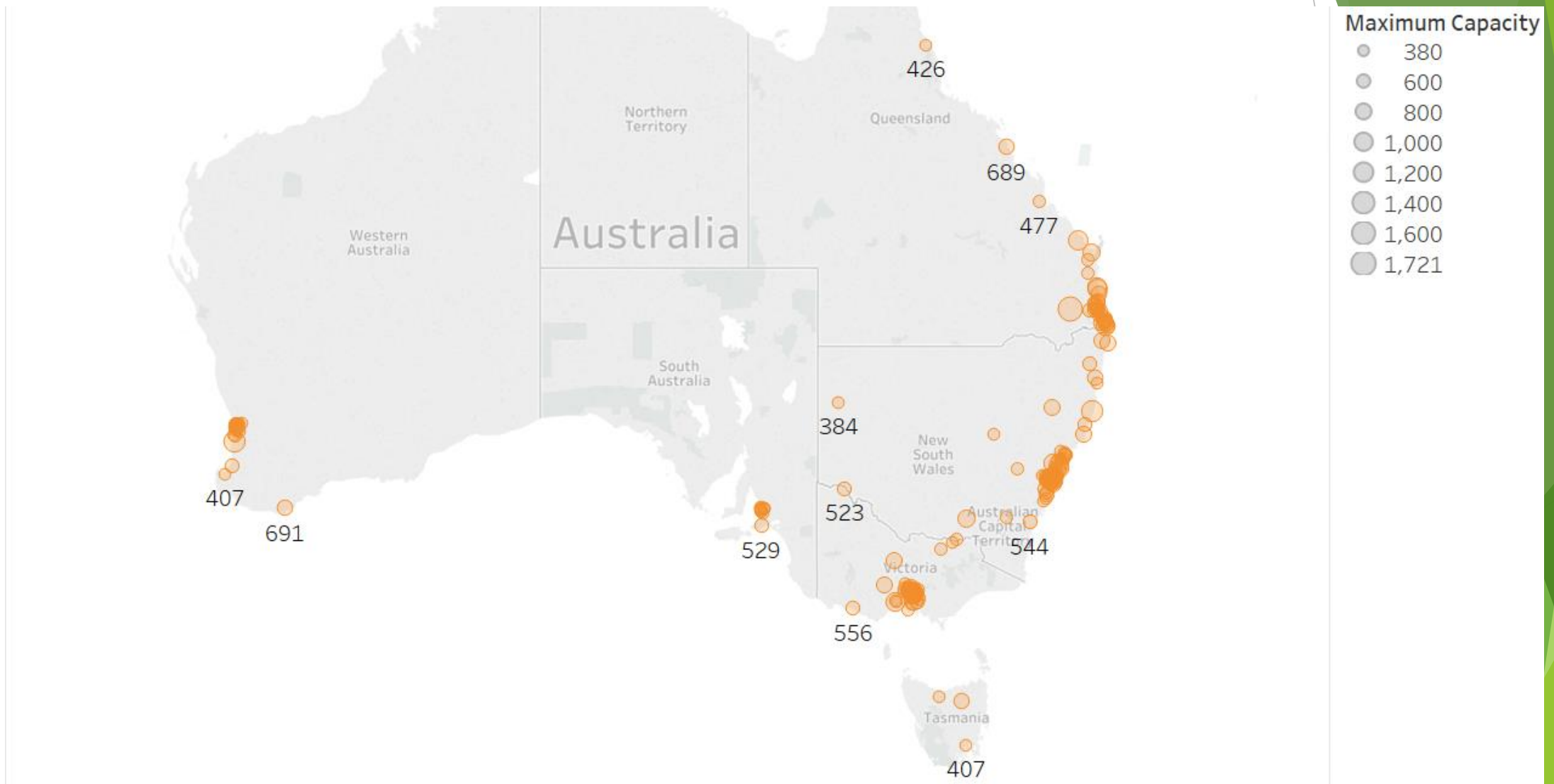


# Best possible geographical location and capacity of their 200 new aged care centres

By Sarith Fernando

# Geographical location and capacity

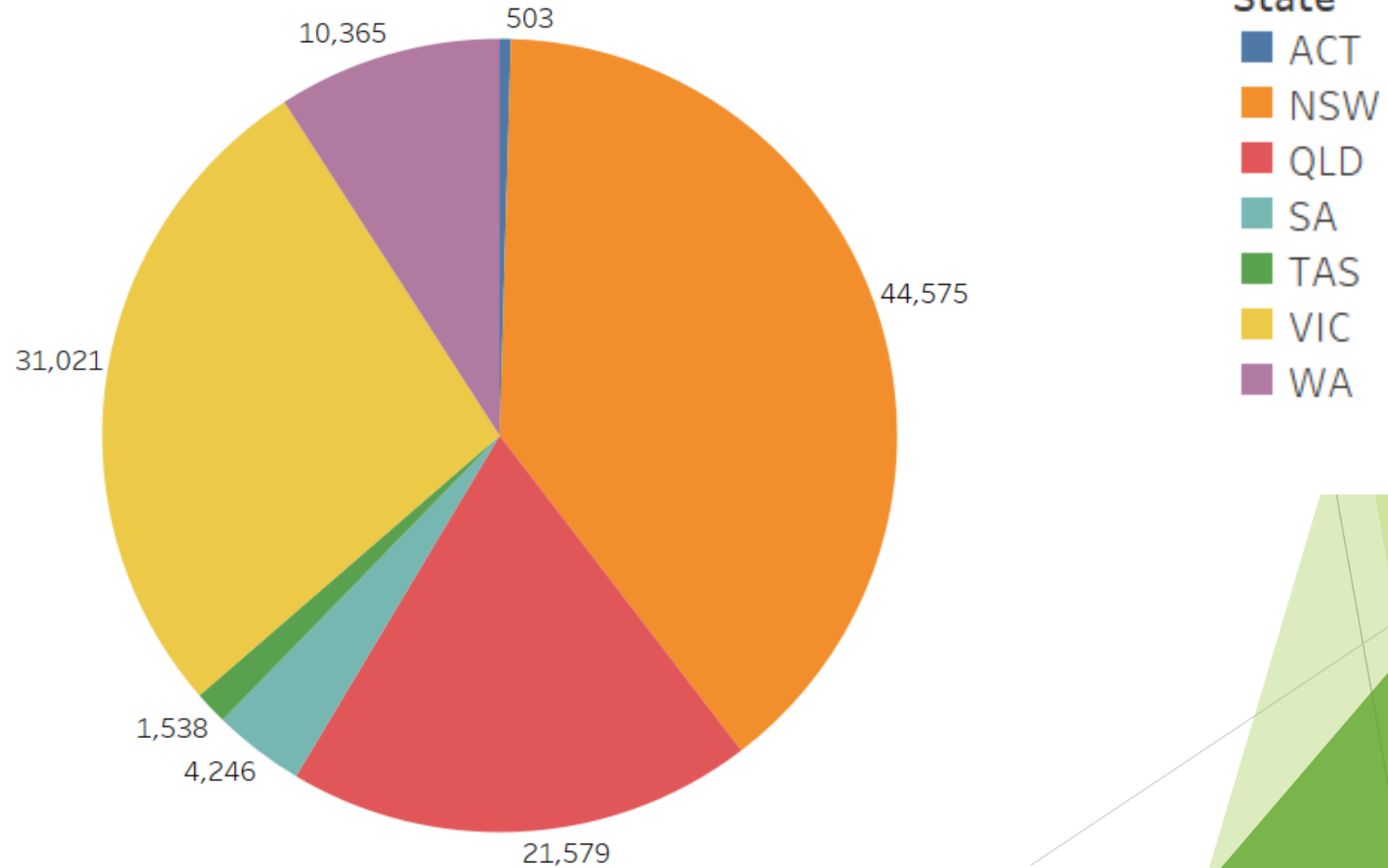


Map based on Longitude (generated) and Latitude (generated). Size shows sum of Maximum Capacity. Details are shown for State and Suburb.

# Top 10 Geographical location and capacity

#	State	Postal Code	Maximum Capacity
1	QLD	4350	1721
2	WA	6210	1315
3	NSW	2444	1305
4	QLD	4670	1235
5	NSW	2261	1188
6	QLD	4551	1175
7	VIC	3073	1117
8	VIC	3150	1105
9	QLD	4556	1067
10	NSW	2250	1063

# Maximum Capacity against State



# Key characteristics of people using aged care

- ▶ The three biggest aged care programs have different age profiles among their users

- ▶ Home Support
- ▶ Home Care
- ▶ Residential Care



Age Care Centres

- ▶ Age care centres should focus on residential care program
- ▶ A higher proportion of people using residential care were aged 85 years and over (47% of men and 65% of women)
- ▶ Home support had the lowest proportion of people aged 85 and over (29%), rising to 42% in home care and 59% in permanent residential aged care

# Key characteristics of people using aged care

- ▶ Men and women using aged care have different age profiles. This is particularly pronounced in residential care
- ▶ A higher proportion of women in residential care were in older age groups compared with men
  - ▶ For example, 1 in 10 women in residential care on 30 June 2017 were aged 95-99, compared with 1 in 20 men
- ▶ There were more men in younger age groups than there were women;
  - ▶ For example, the 60-64 age group represented 3% of men using residential aged care, compared with 1% of women

# People using Residential aged care, age, and sex, 30 June 2017

Age group

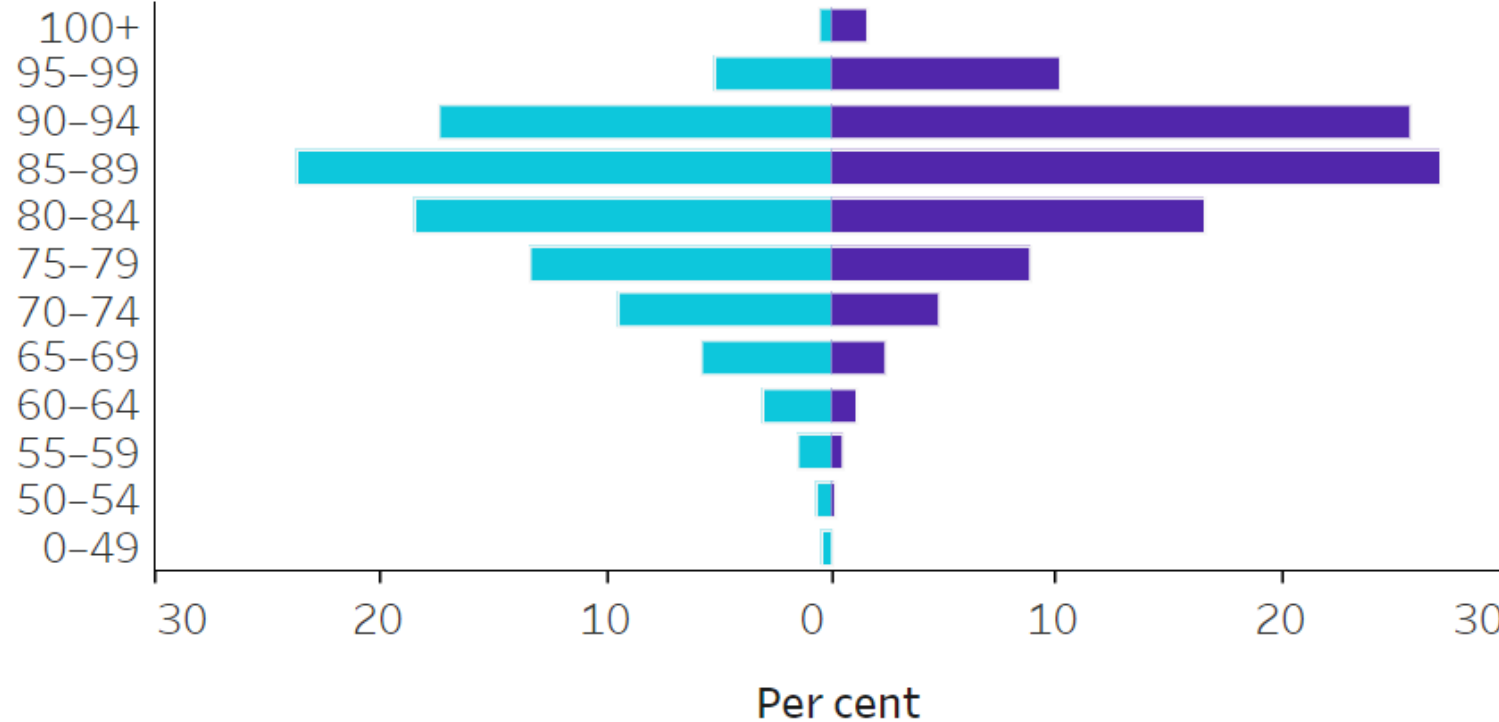
Care type

Residential care

Sex

Males

Females



# Publicly available data sources

- ▶ Australia Service List 2017 (ASL)
  - ▶ Information on available residential places against geographical location
  - ▶ [https://www.gen-agedcaredata.gov.au/Resources/Access-data/2017/October/2017\\_Aged\\_Care\\_Services\\_List](https://www.gen-agedcaredata.gov.au/Resources/Access-data/2017/October/2017_Aged_Care_Services_List)
- ▶ Australian Bureau of Statistics 2016 (ABS)
  - ▶ Population with age-group and geographical location
  - ▶ <http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20TableBuilder>
- ▶ Accessible fields and data structure
  - ▶ **Geographical location**
    - ▶ **State**
    - ▶ **Postal code**
  - ▶ **Age group**
  - ▶ **Sex**
  - ▶ Residential care percentage against age
  - ▶ Residential care percentage against sex



# Australia Service List 2017 (ASL)

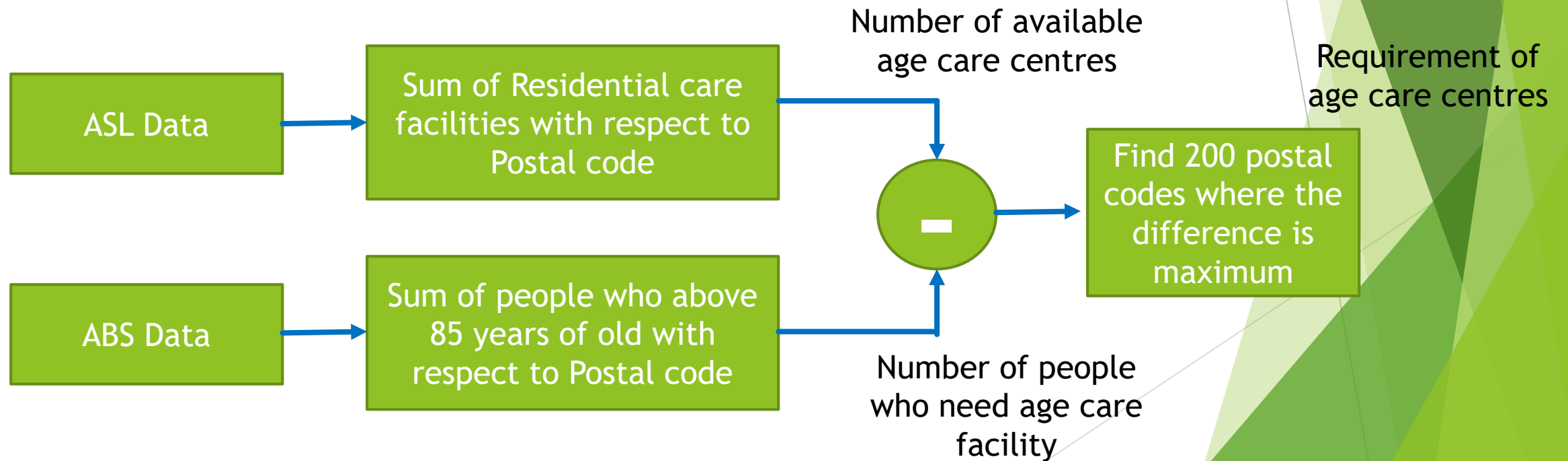
Australia Service List 2017 (ASL)		
Service name	2015 Aged Care Planning Region (ACPR)	Organisation Type
Physical Address Line 1	Care Type	ABS Remoteness
Physical Address Line 2	Residential Places	Latitude
Physical Address Suburb	Home Care Places	Longitude
Physical Address State	Restorative Care Places	2016-17 Australian Government Funding
Physical Address Post Code	Provider Name	

# Australian Bureau of Statistics 2016 (ABS)

Australian Bureau of Statistics 2016 (ABS)		
Age groups	Indigenous Status	Significant urban areas
Sex	Marital Status	Birth of person
State	Religious Affection	Proficiency of spoken English
Postal Code	Electoral Divisions	Total person income
Suburb	Natural Resource management regions	Year of arrival in Australia
Employment	Remoteness areas	etc

# Methodology

- ▶ Hypothesis: All the people above 85 years or over need a residential care
- ▶ How to analyse the hypothesis



# Appendix I

## Primary keys

# Table 1

## ASL

ASL	State	Postal Code	No of available age care centres

## Group by State, Postal Code

## Table 2

### ABS

ABS	State	Postal Code	0-4y	5-9y	10-14y	15-19y	20-24y	25-29y

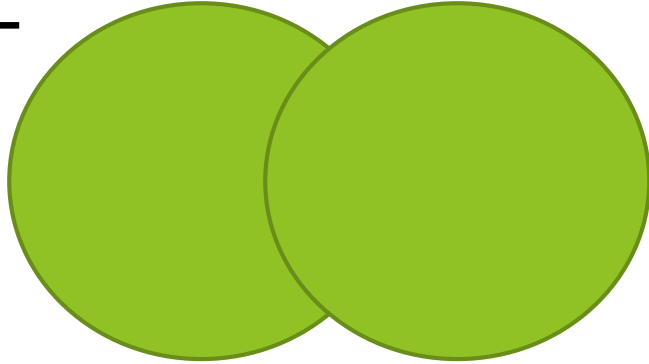
## Group by State, Postal Code

[illegible]

# Appendix I

Table 1  
ASL

Table 2  
ABS



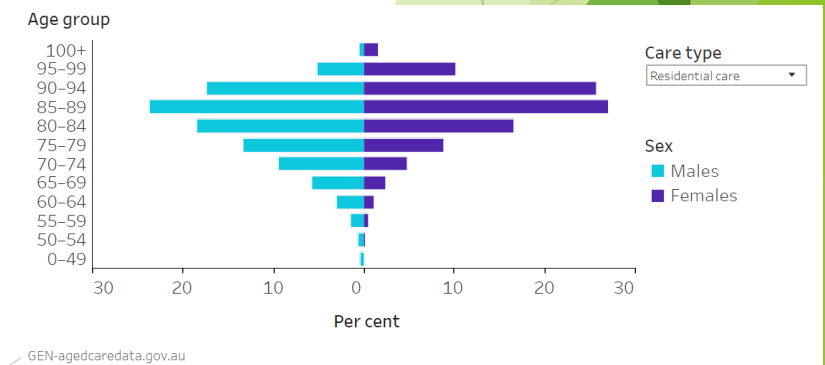
Right Join with Primary keys of  
**State & Postal Code**

Age care centre requirement =  $\Sigma$  (population above 85 years) -  
Available age care centres

Top 200 locations = `select(maximum(Age care centre requirement),200)`

# Limitations and possible improvements

- ▶ Requirement is depend on
  - ▶ Population rise: Prediction for future age gaps, death rates
  - ▶ Sex : Men and women using aged care have different age profiles
  - ▶ Migration : Around one-third of people using each aged care program were born overseas. This reflects migration to Australia over past decades—37% of Australians aged 65 years and over were born overseas
  - ▶ Other development projects for age care facilities
  - ▶ Size of the suburb and nearest suburbs: Residential care services are concentrated in more densely populated urban areas, with around 3 in 5 (62%) of facilities located in Major cities
- ▶ How to improve
  - ▶ Consider requirement base on sex and different age groups
  - ▶ Model sequential predictions to cover above facts



# Appendix II

## Preprocessing Table 1: ASC

```
1# -*- coding: utf-8 -*-
2"""
3Created on Sat Feb 16 12:52:11 2019
4
5@author: Sarith Fernando
6"""
7
8import pandas as pd
9
10# Preprocessing for Existing services: Data 1, ASC
11dat1 = pd.read_excel('Australia_Service_List_2017.xlsx', sheet_name='Australia', header=None)
12
13# Getting the columns of subub, postal_code and number of age care centers
14# Then group by state and suburb
15df1=dat1.iloc[:, [4,5,8]]
16df1=df1.fillna(0)
17df1=df1.groupby([df1[4],df1[5]]).sum()
18
19# Reset index and renaming
20df1.reset_index(inplace=True)
21df1.rename(columns={4: 'State', 5: 'Suburb', 8:'No_of_AGEC'}, inplace=True)
22
```

# Appendix II

## Preprocessing Table 2: ABS

```
22
23 # Preprocessing for population: Data 2, ABS
24 dat2 = pd.read_excel('age_postalcode.xlsx', sheet_name='Data Sheet 0', header=None)
25 df2=dat2.iloc[10:2660, 1:23]
26
27 # Split State and Suburb into two columns
28 new = df2[1].str.split(" ", n = 1, expand = True)
29 df2[24]=new[0]
30 df2[25]=new[1]
31 df2.drop(columns =[1], inplace = True)
32
33 # Reset index and renaming
34 df2.reset_index(inplace=True)
35 df2.drop(columns =['index'], inplace = True)
36 df2.rename(columns={2: '0-4y', 3: '5-9y', 4: '10-14y',5: '15-19y',6: '20-44y',
37                      7: '25-29y',8: '30-34y',9: '35-39y',10: '40-44y',11: '45-49y',
38                      12: '50-54y',13: '55-59y',14: '60-64y',15: '65-69y',16: '70-74y',
39                      17: '75-79y',18: '80-84y',19: '85-89y',20: '90-94y',21: '95-99y',
40                      22:'100y over',24:'Suburb',25:'State'}, inplace=True)
41
42
```



# Appendix II

## Table Joining and Computation

```
42
43 # Join two tables together base on common key State and Suburb
44 result = pd.merge(df1, df2, how='right', on=['State', 'Suburb'])
45 result=result.fillna(0)
46
47 # Culculate Age Care Centre requirement in 2017 for each suburb in each state
48 # Requirement = Total population obove 85 - Available Age care centre
49 req_2017 = result['85-89y']+result['90-94y']+result['95-99y']+result['100y over']-result['No_of_AGEC']
50 req_2017 = pd.concat([req_2017, result['State'],result['Suburb']], axis=1)
51 req_2017.rename(columns={0: 'Req'}, inplace=True)
52
53 # Finding top 200 suburs which require age care centres including maximum requirement
54 top_200=req_2017.nlargest(200,'Req')
55 # Save findings as a csv
56 top_200.to_excel('output.xlsx',index=False)
```

# Thank you

Github: <https://github.com/Rithmax/Annalect>