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Population (30 June 2016): 29,101 people

Estimating temporary populations – the power of aggregated mobile device data

Andrew Howe, Tricia Chester

Australian Coastal Councils Conference
Redcliffe, 5 May 2017



www.abs.gov.au



Official population measure – ERP

- based on usual residence

Is ERP relevant?

- regional populations vary – monthly, weekly, daily, hourly
- numbers *and* characteristics (age/sex) vary

ERP frequency and timeliness

Temporary population estimates

- major data gap

Solution?

- mobile device user data (aggregated & anonymised)



Trial engagement with telco company

Australian Capital Region

- ACT and surrounds

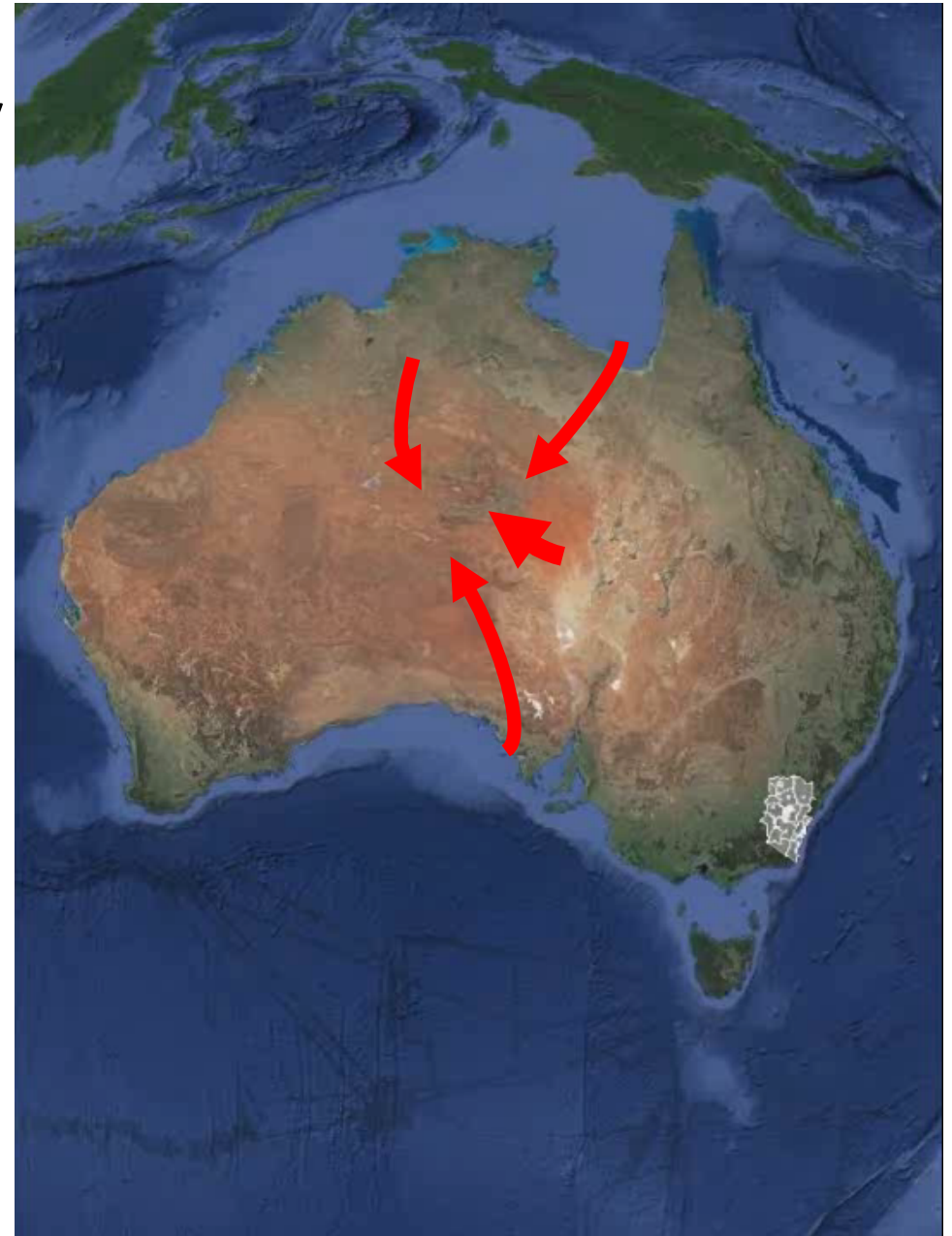
Geography: SA2s

- ACT suburbs, town centres
- NSW towns & regions

Age (18+) and sex breakdown

Hourly – around the clock

18 April to 1 May 2016



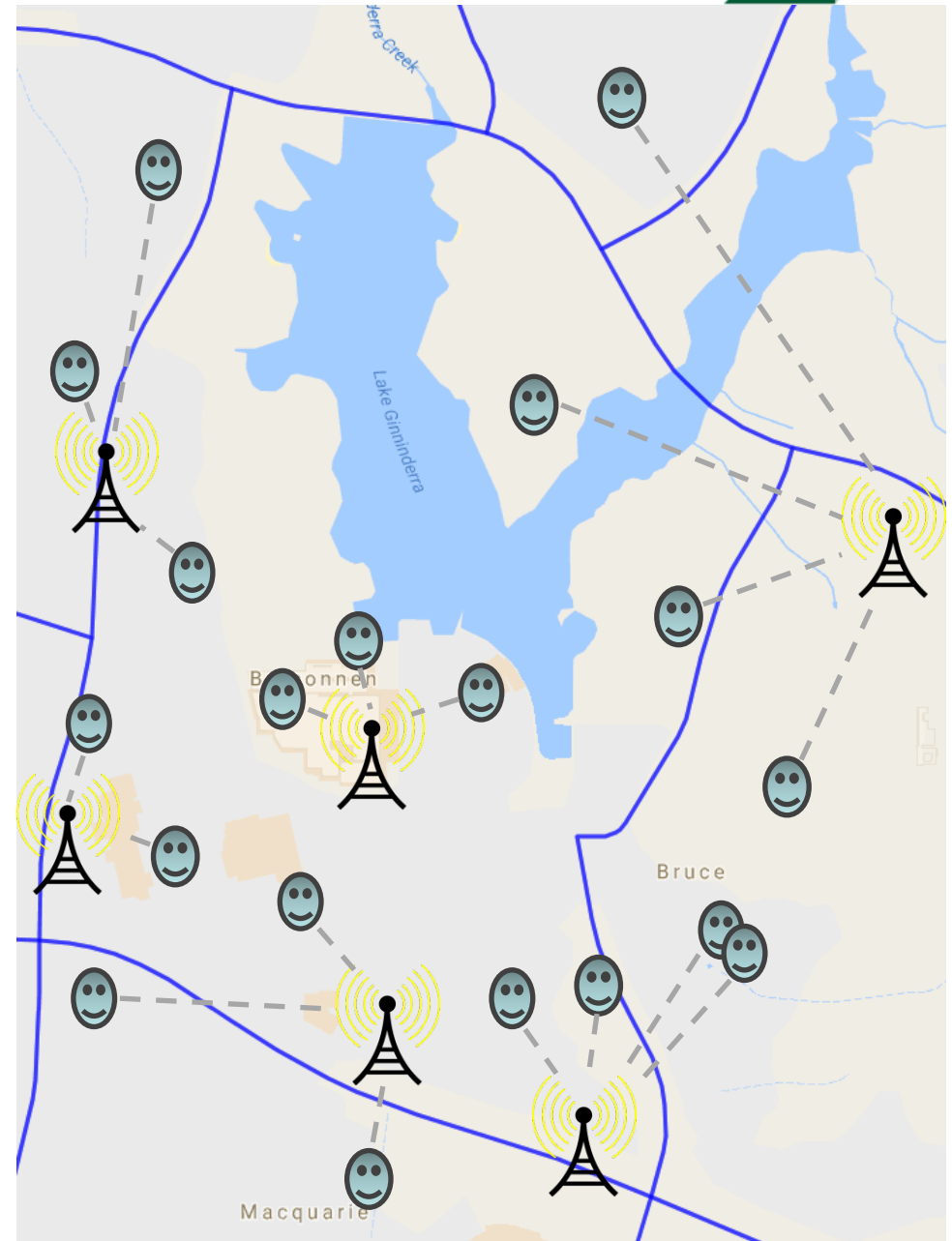
Hourly location data builds as mobile device users connect

Account for:

- multiple connections in hour
- no connection in past hour
- up to 24 hours previous

Users weighted and projected to actual population, based on:

- SA2 of residence
- age (18+)
- sex



Hourly location data builds as mobile device users connect

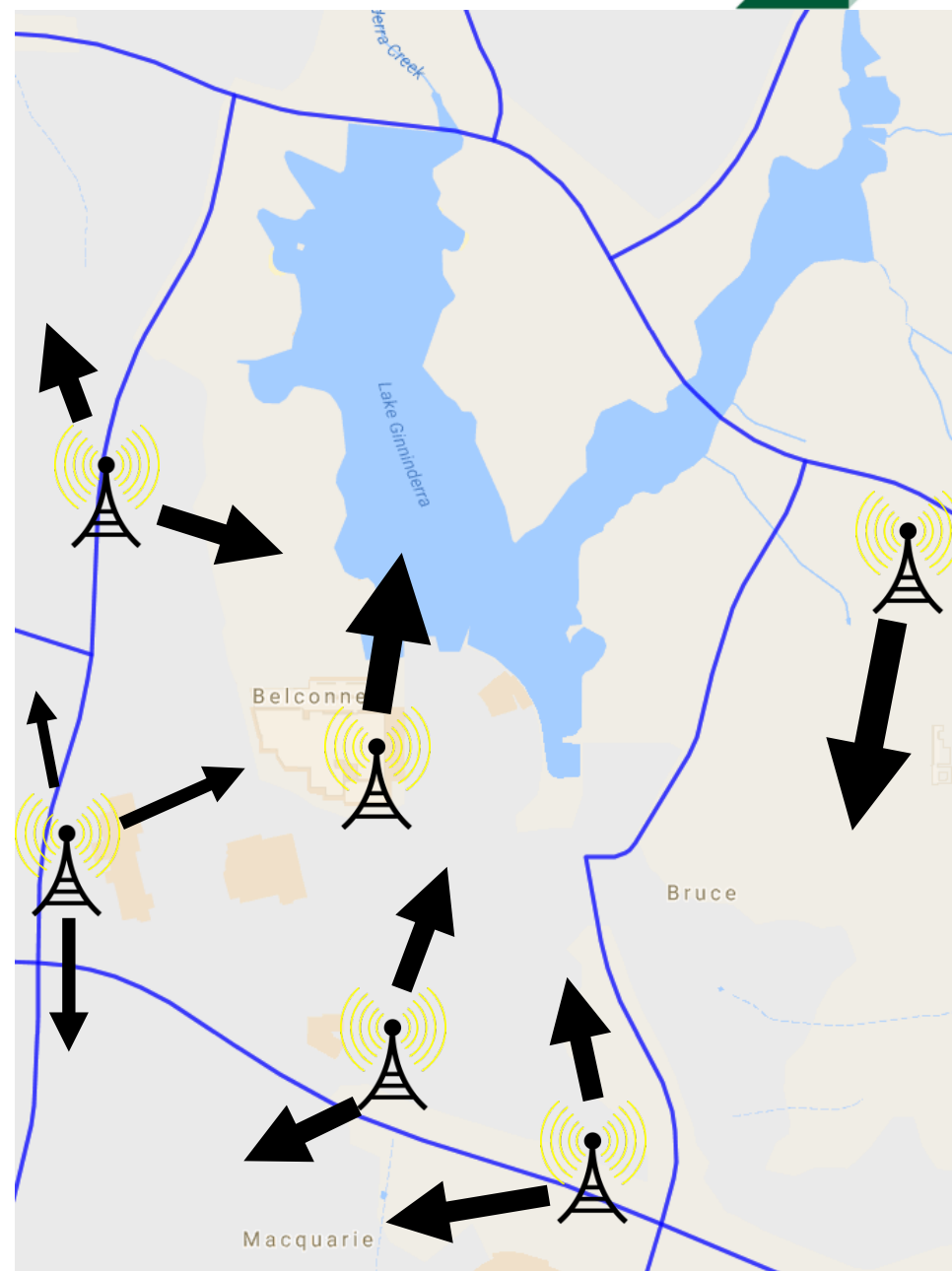
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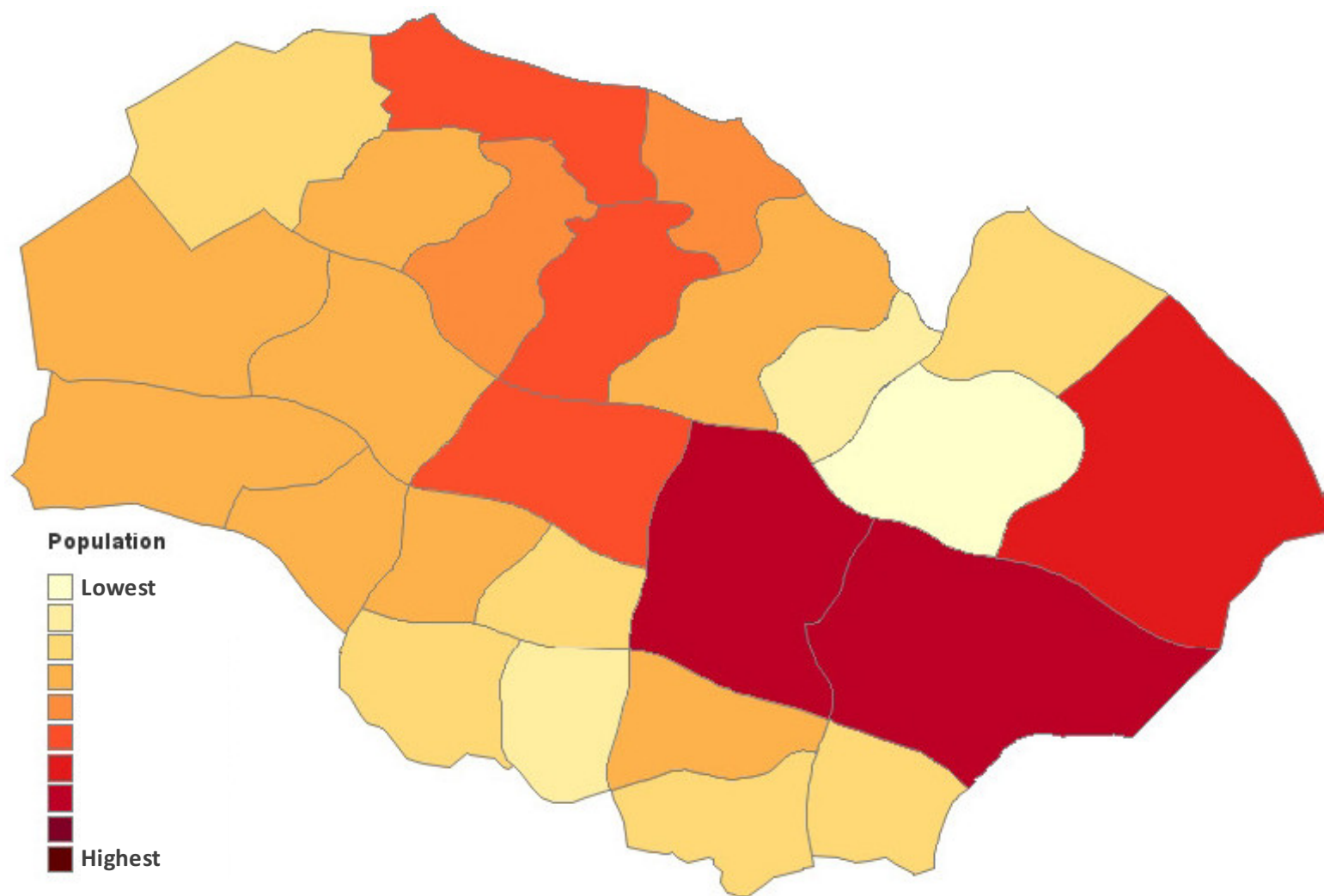
- SA2 of residence
- age (18+)
- sex

Weighted (anonymised) counts allocated to surrounding areas



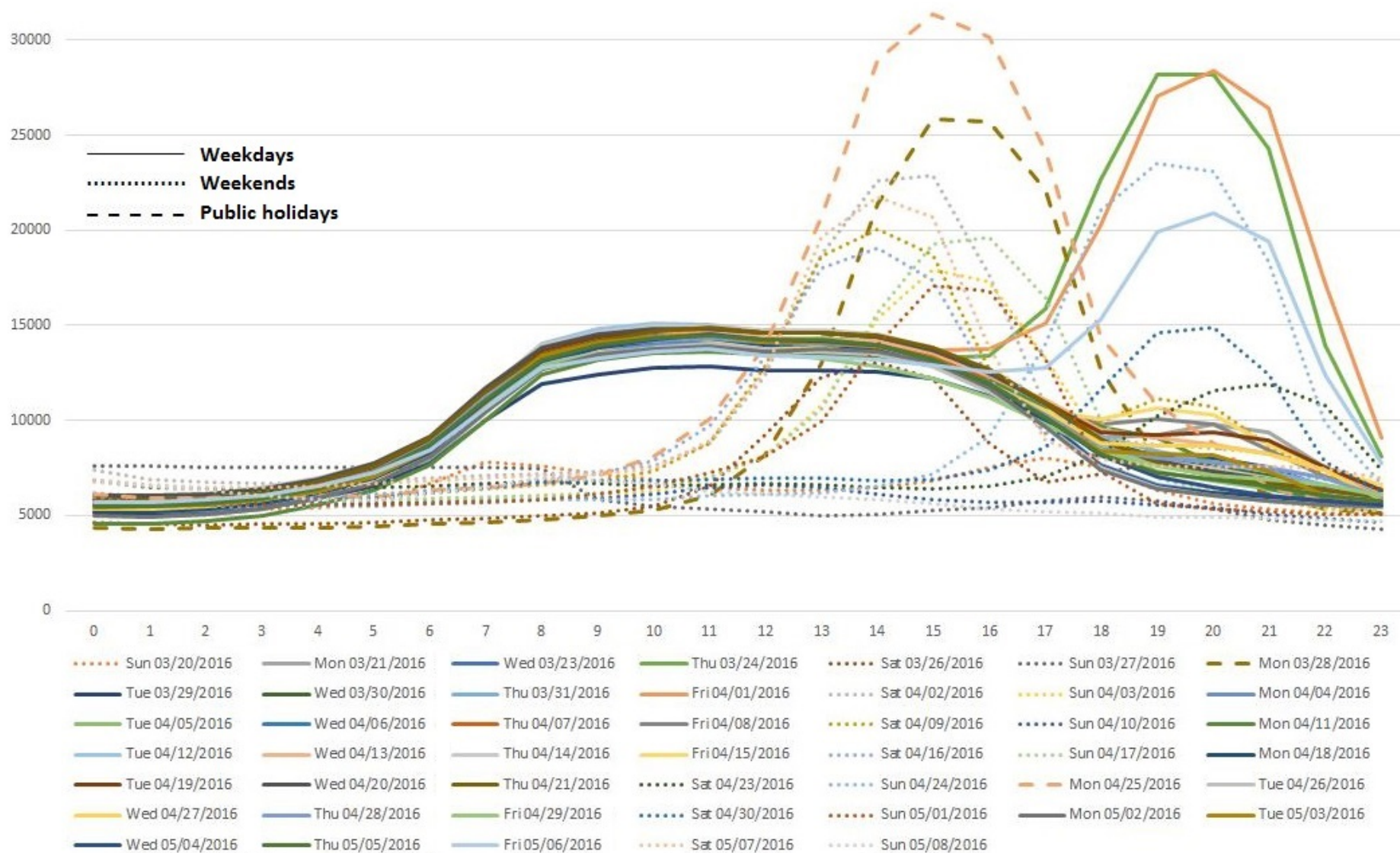


Weighted & projected population, 6pm



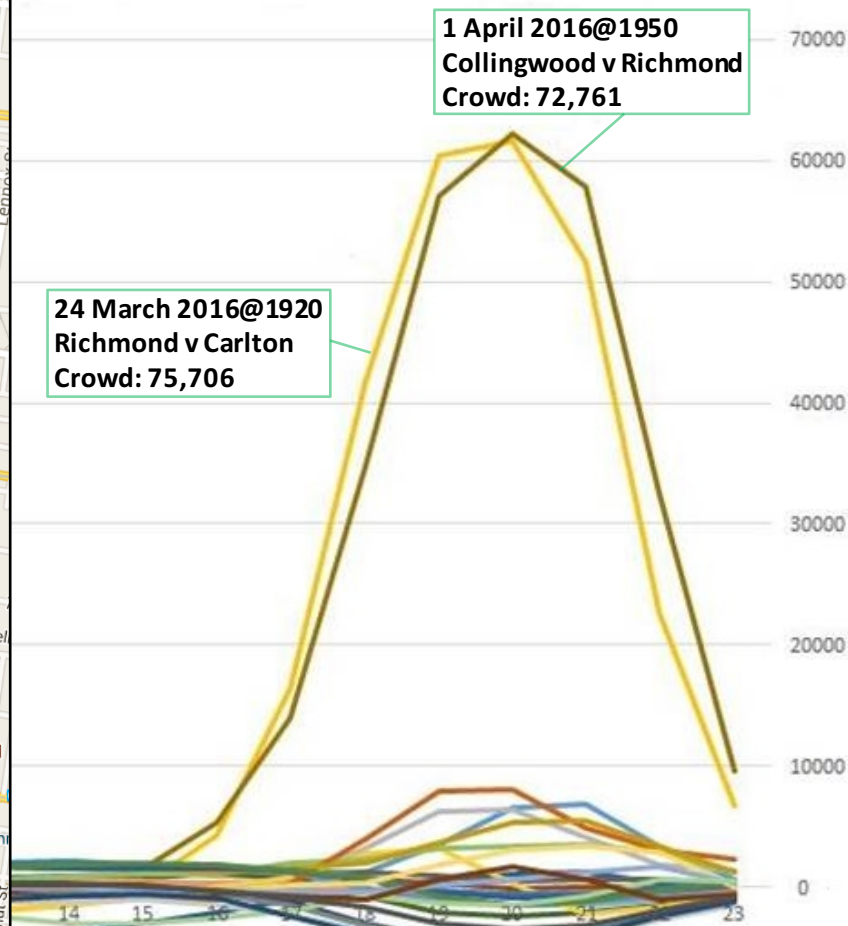
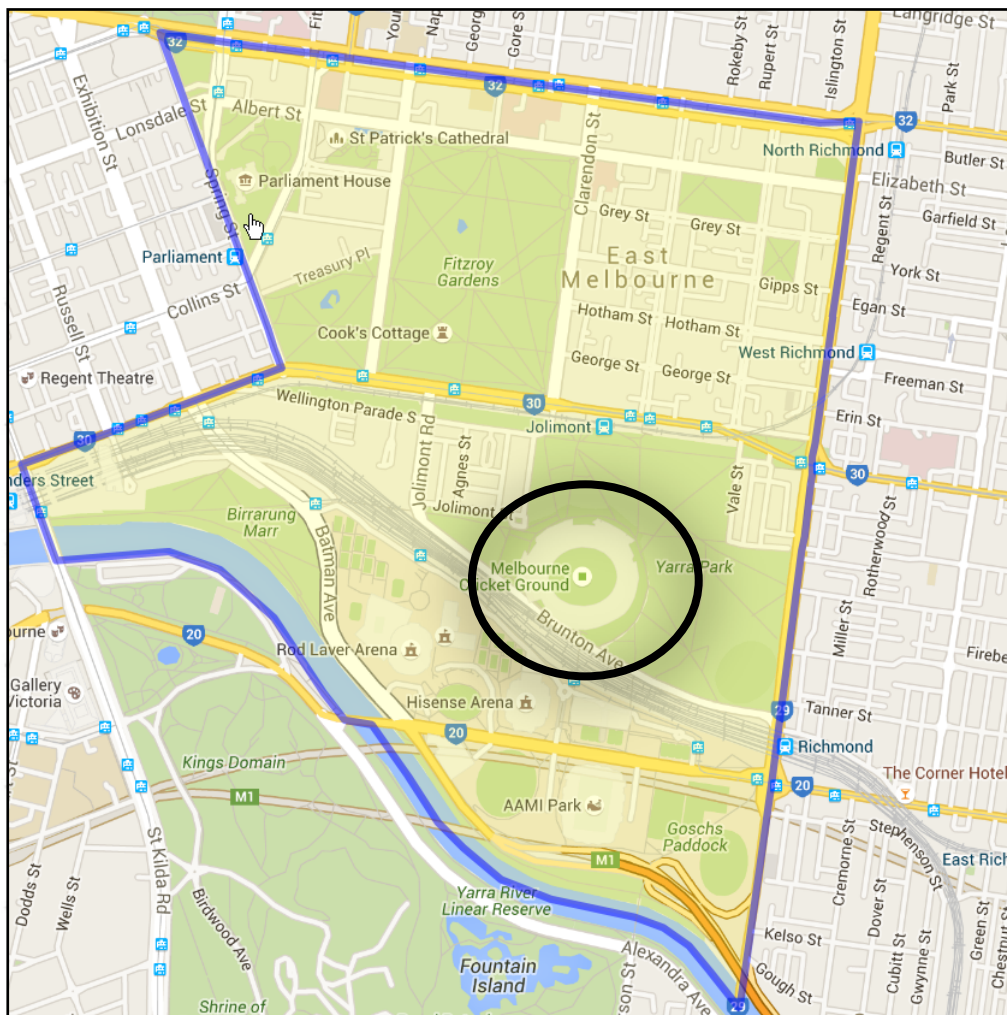


Customer counts by hour, East Melbourne, March–May 2016





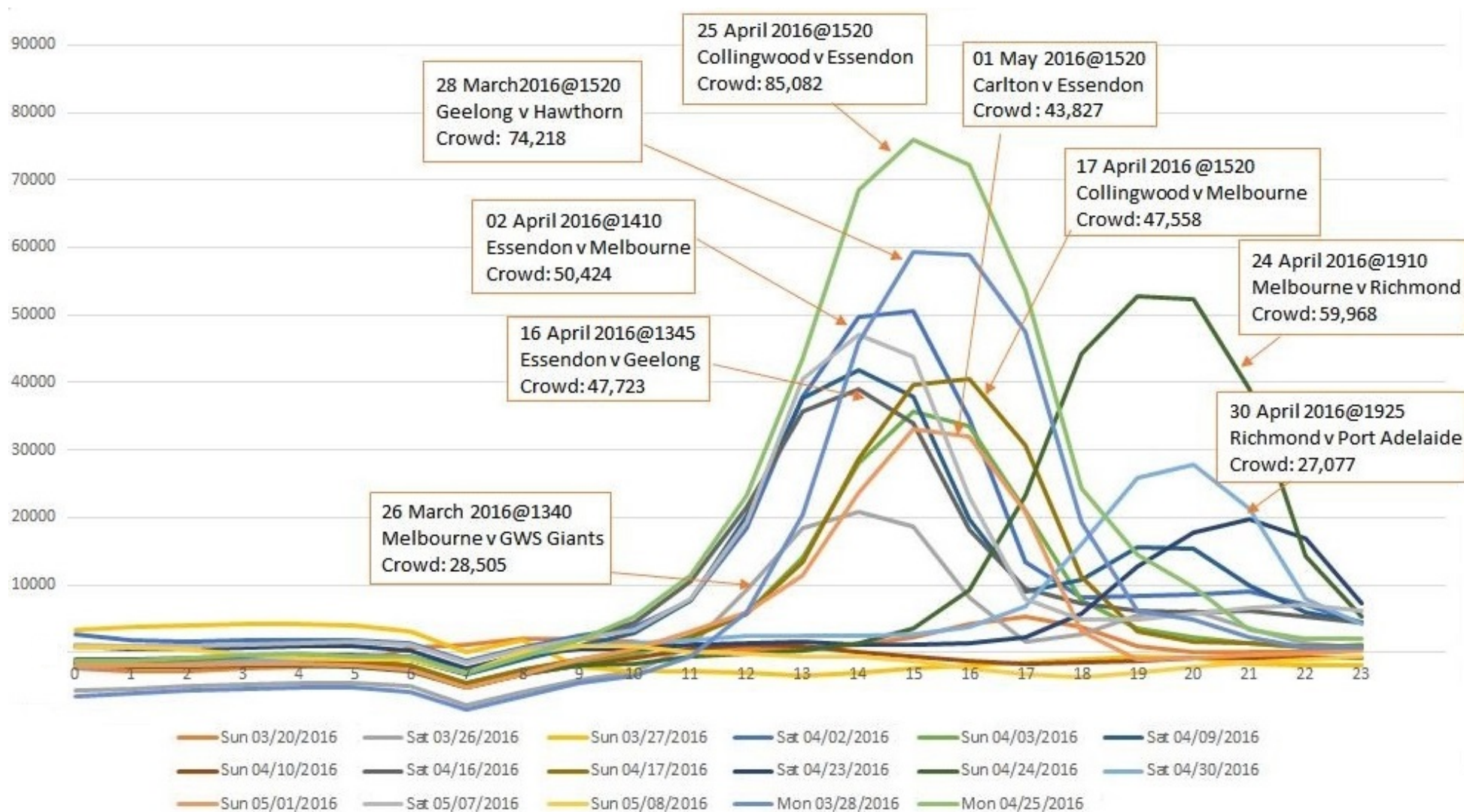
Weighted and projected counts by hour, East Melbourne, weekdays



Mon 03/21/2016 Wed 03/23/2016 Thu 03/24/2016 Tue 03/29/2016 Wed 03/30/2016 Thu 03/31/2016 Fri 04/01/2016
 Mon 04/04/2016 Tue 04/05/2016 Wed 04/06/2016 Thu 04/07/2016 Fri 04/08/2016 Mon 04/11/2016 Tue 04/12/2016
 Wed 04/13/2016 Thu 04/14/2016 Fri 04/15/2016 Mon 04/18/2016 Tue 04/19/2016 Wed 04/20/2016 Thu 04/21/2016
 Tue 04/26/2016 Wed 04/27/2016 Thu 04/28/2016 Fri 04/29/2016 Mon 05/02/2016 Tue 05/03/2016 Wed 05/04/2016



Weighted and projected counts by hour, East Melbourne, weekends

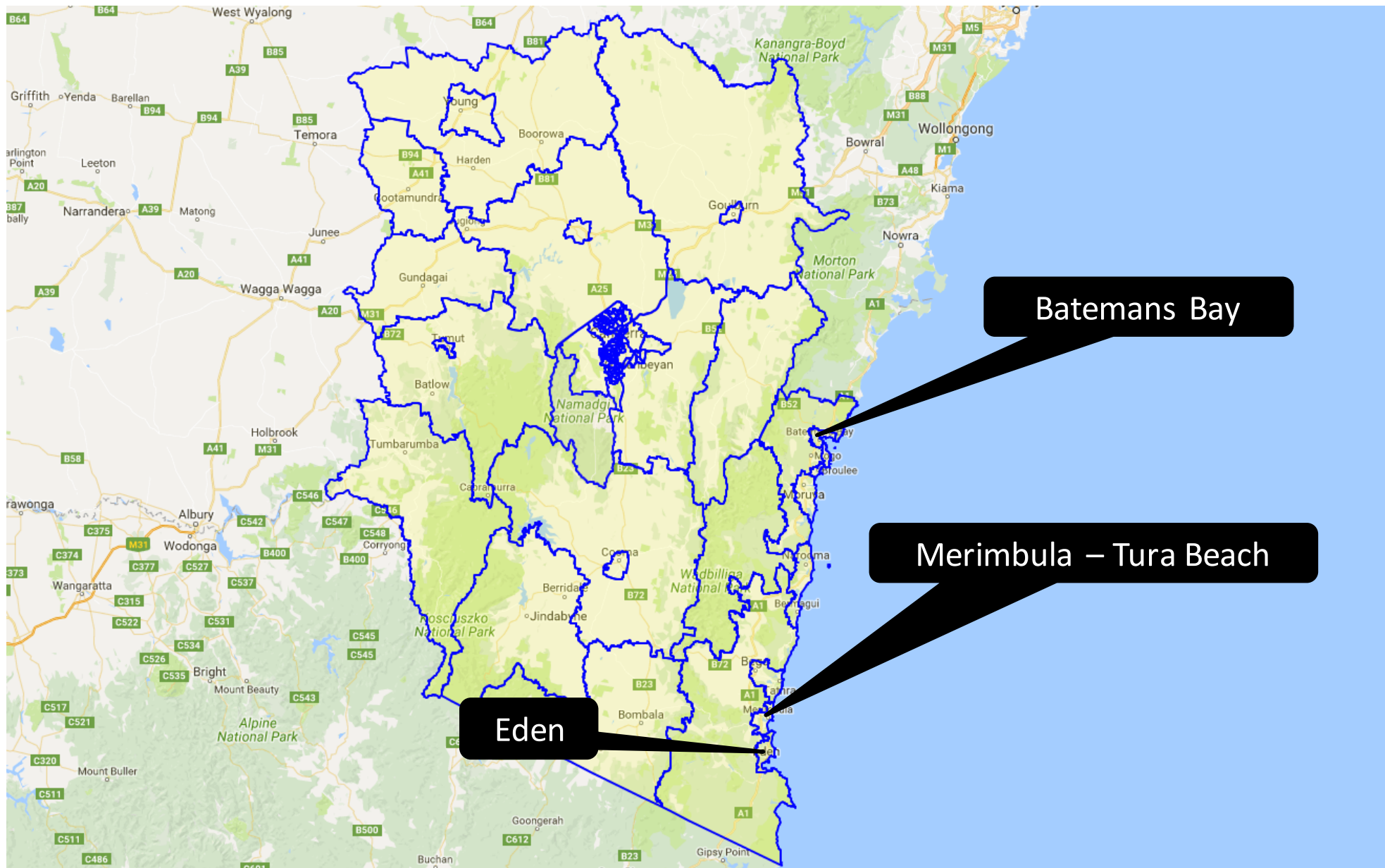


April 2016 (Pilot study period)



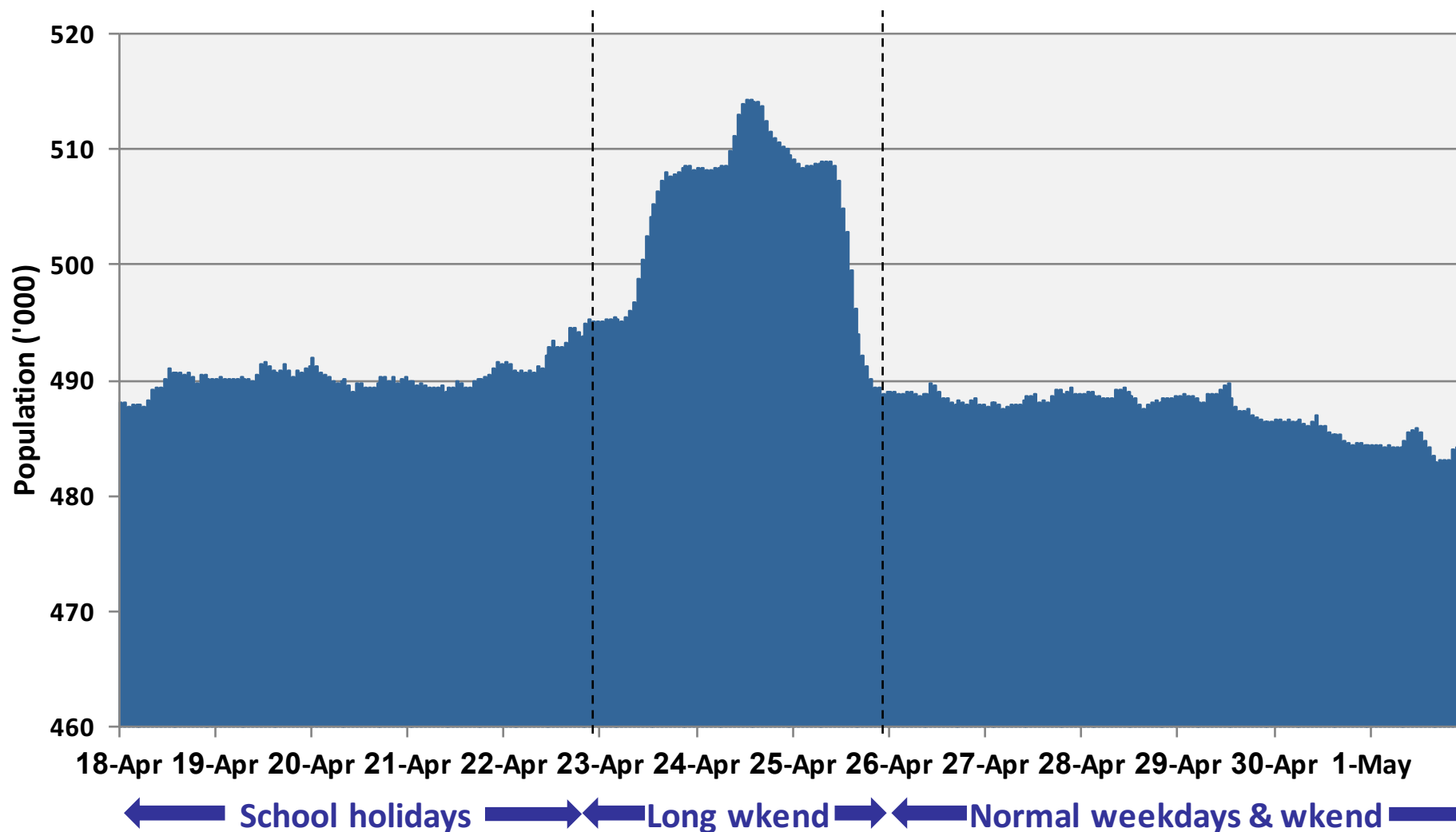
| Mon | Tues | Wed | Thu | Fri | Sat | Sun |
|-----------------|---------------------|-----|-----|-----|----------------|-----|
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| School holidays | | | | | Long weekend - | |
| 25 | 26 | 27 | 28 | 29 | 30 | 1 |
| ANZAC day | Normal working days | | | | Normal weekend | |

Australian Capital Region (Pilot study area)



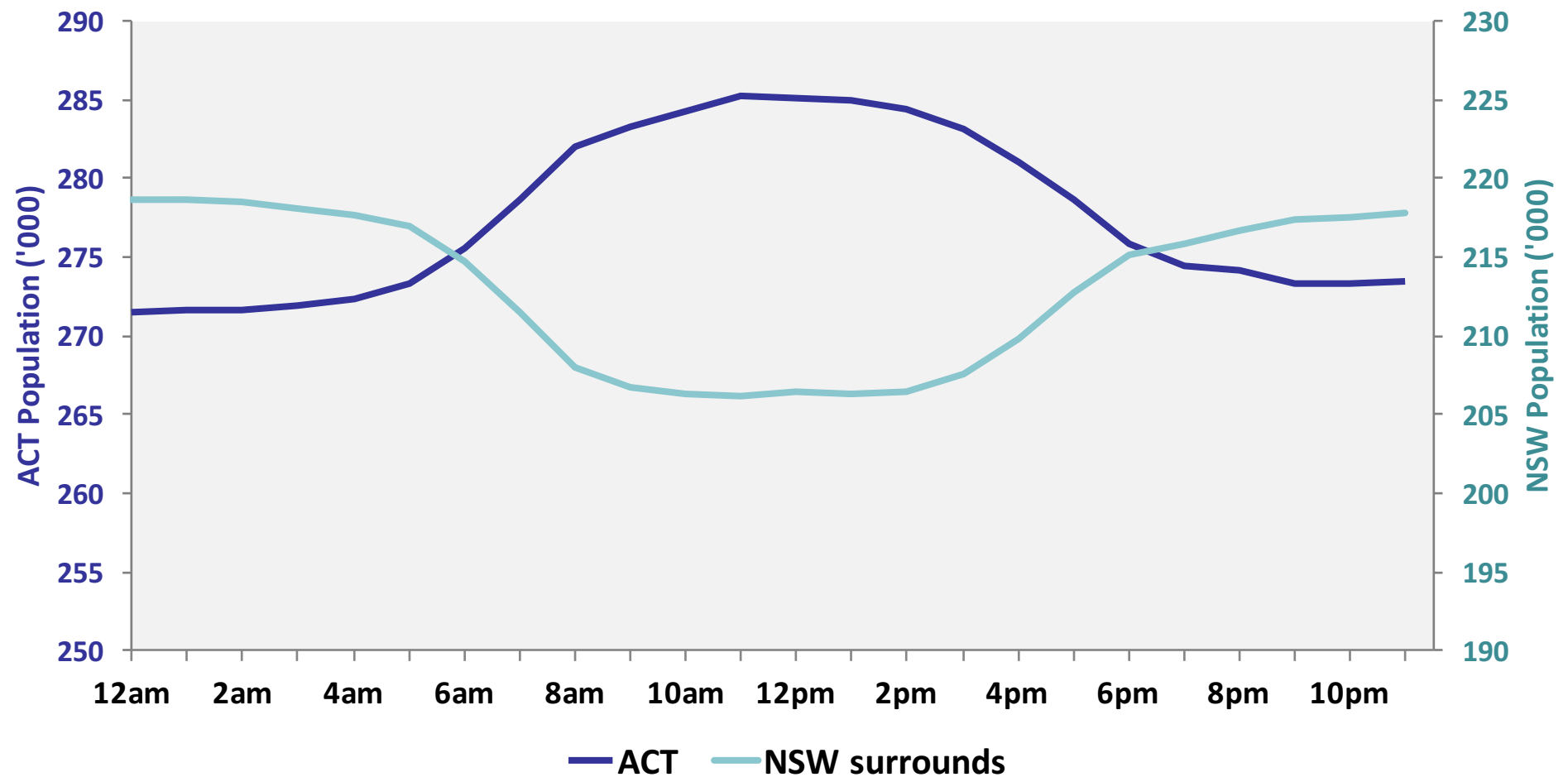


Hourly Population Estimates, Australian Capital Region Mon 18 April - Sun 1 May

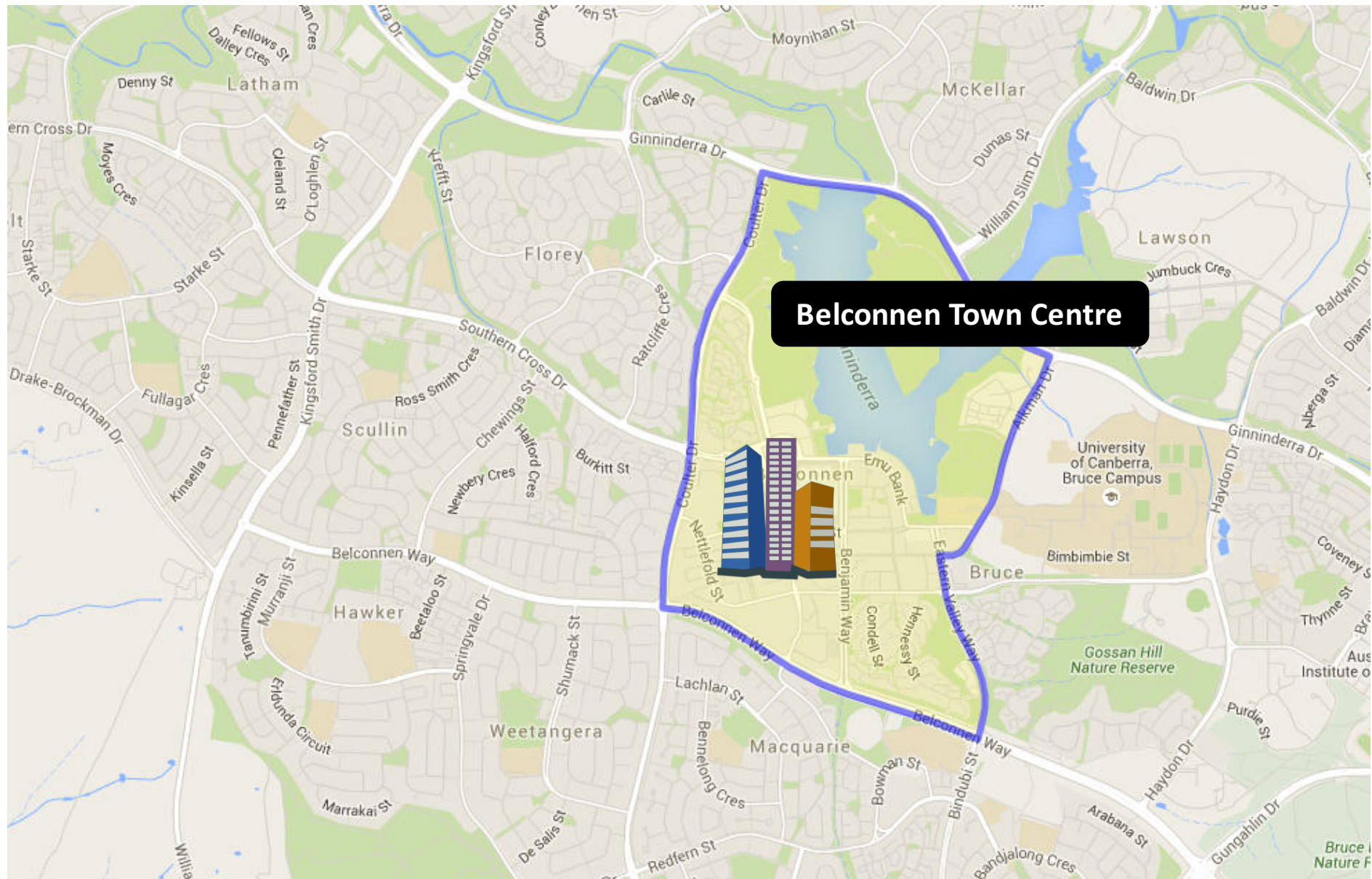




Hourly Population Estimates, ACT vs NSW surrounds Tuesday 19 April

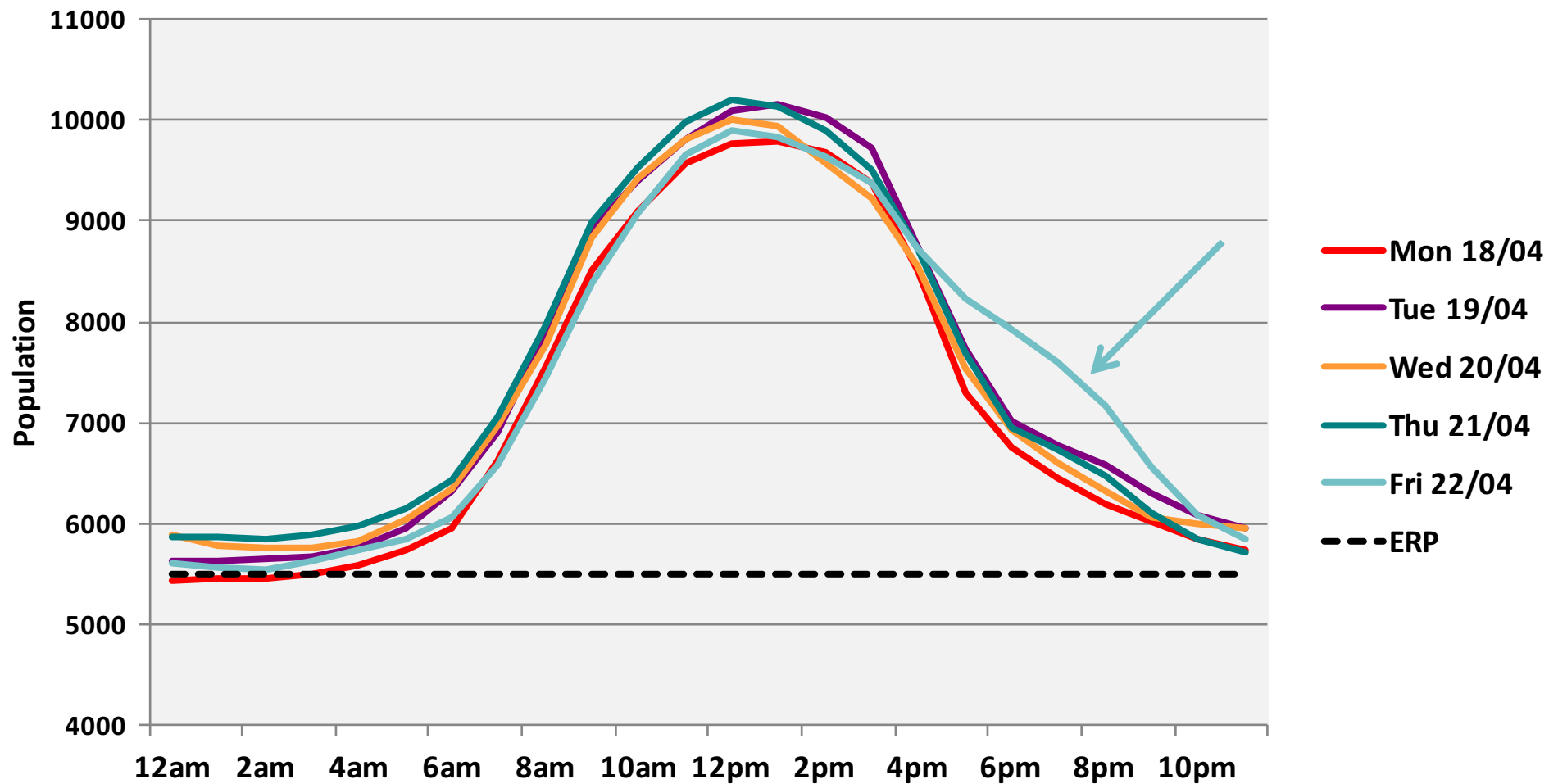


Weekday populations

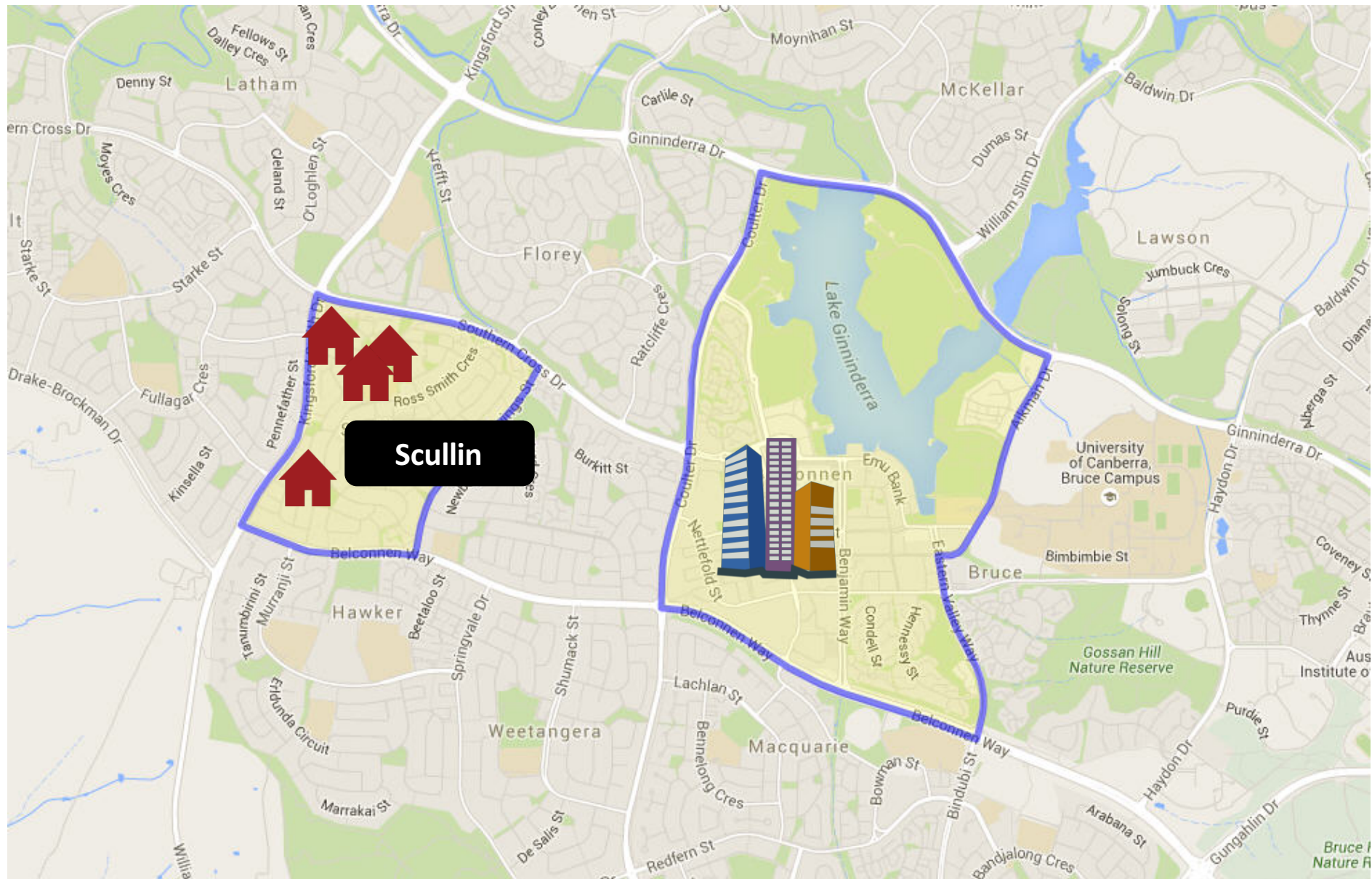




Hourly Population Estimates, Belconnen Town Centre Mon 18 April – Fri 22 April



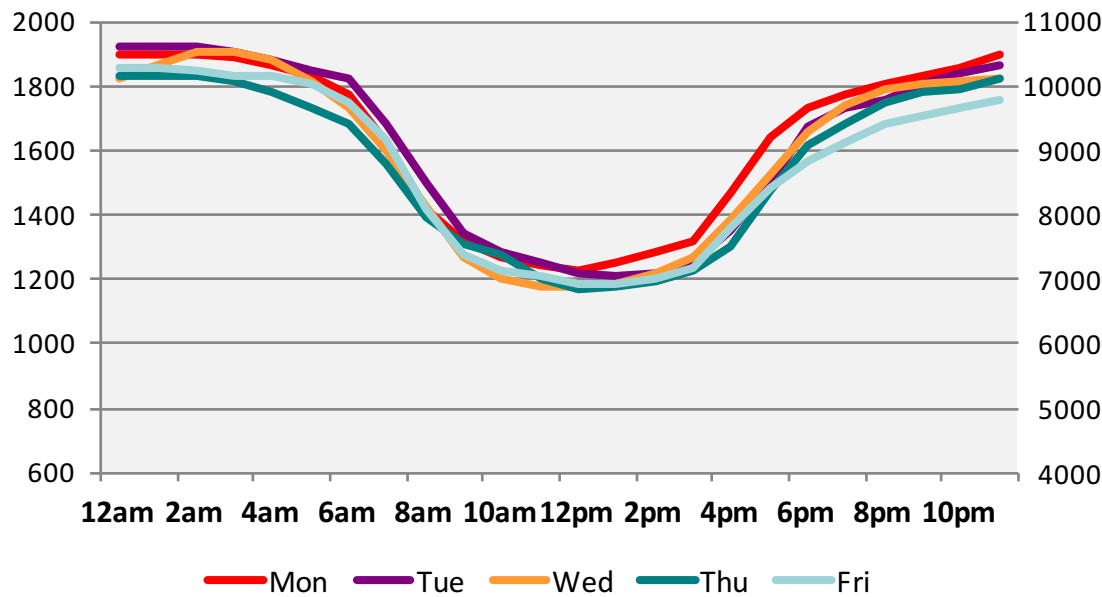
Weekday populations



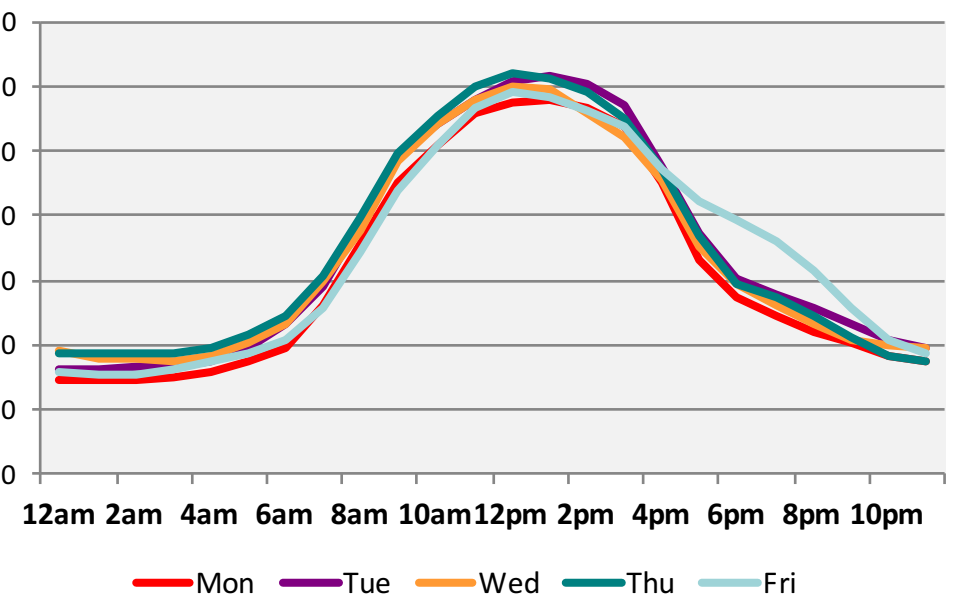
Weekday populations



Scullin, Mon to Fri



Belconnen Town Centre, Mon to Fri



Weekday populations



Belconnen Region, 12 am

Scullin

Belconnen Region, 12 pm

Bruce

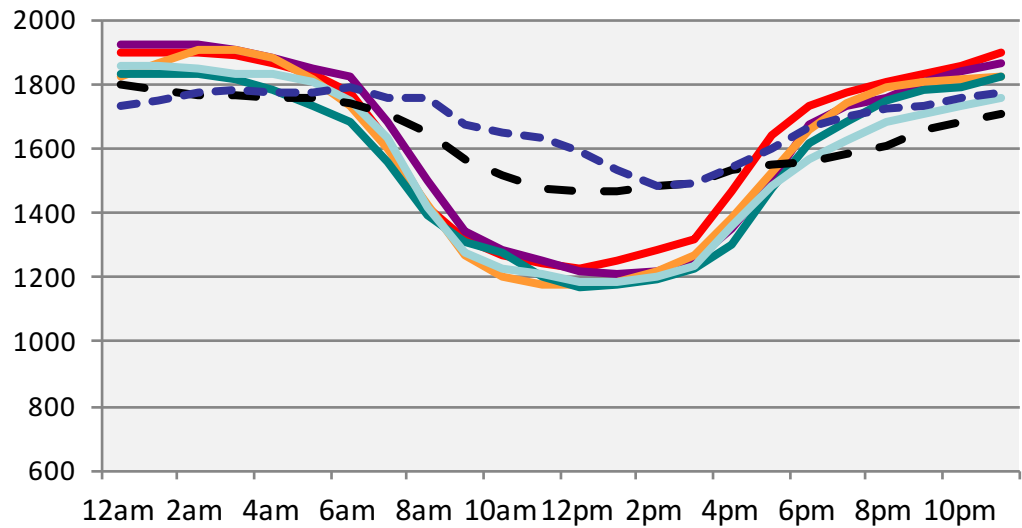
Belconnen Town Centre



Weekend populations

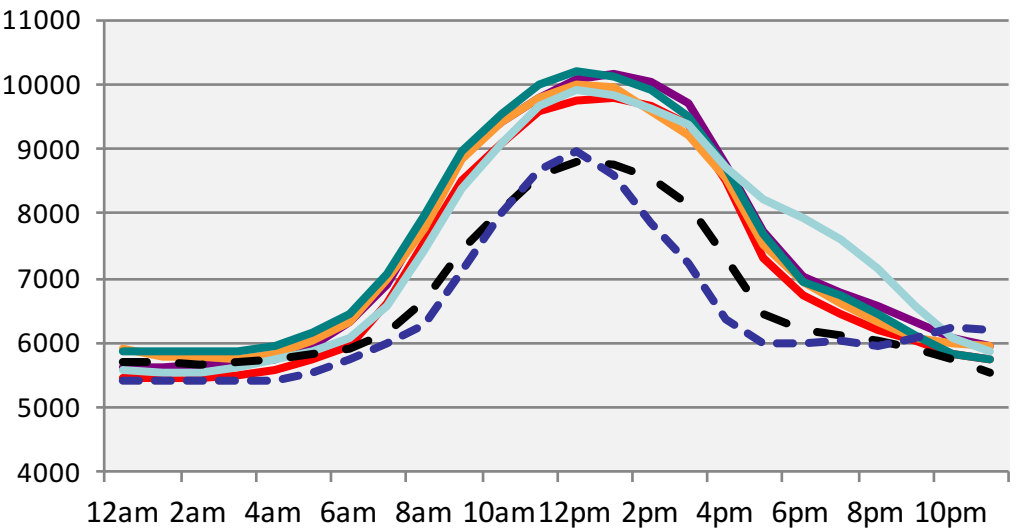


Scullin, Monday - Sunday



Mon Tue Wed Thu Fri Sat Sun

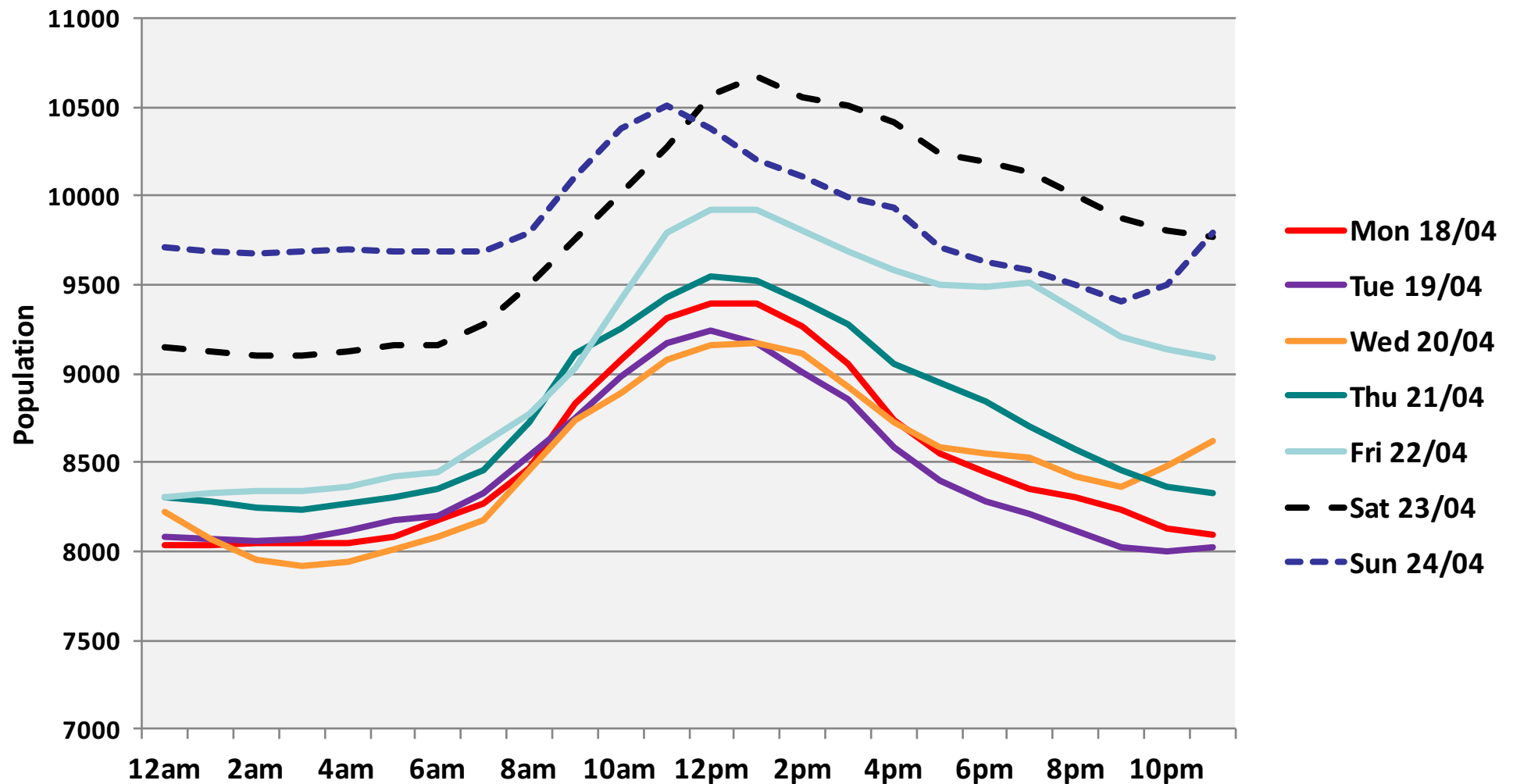
Belconnen, Monday - Sunday



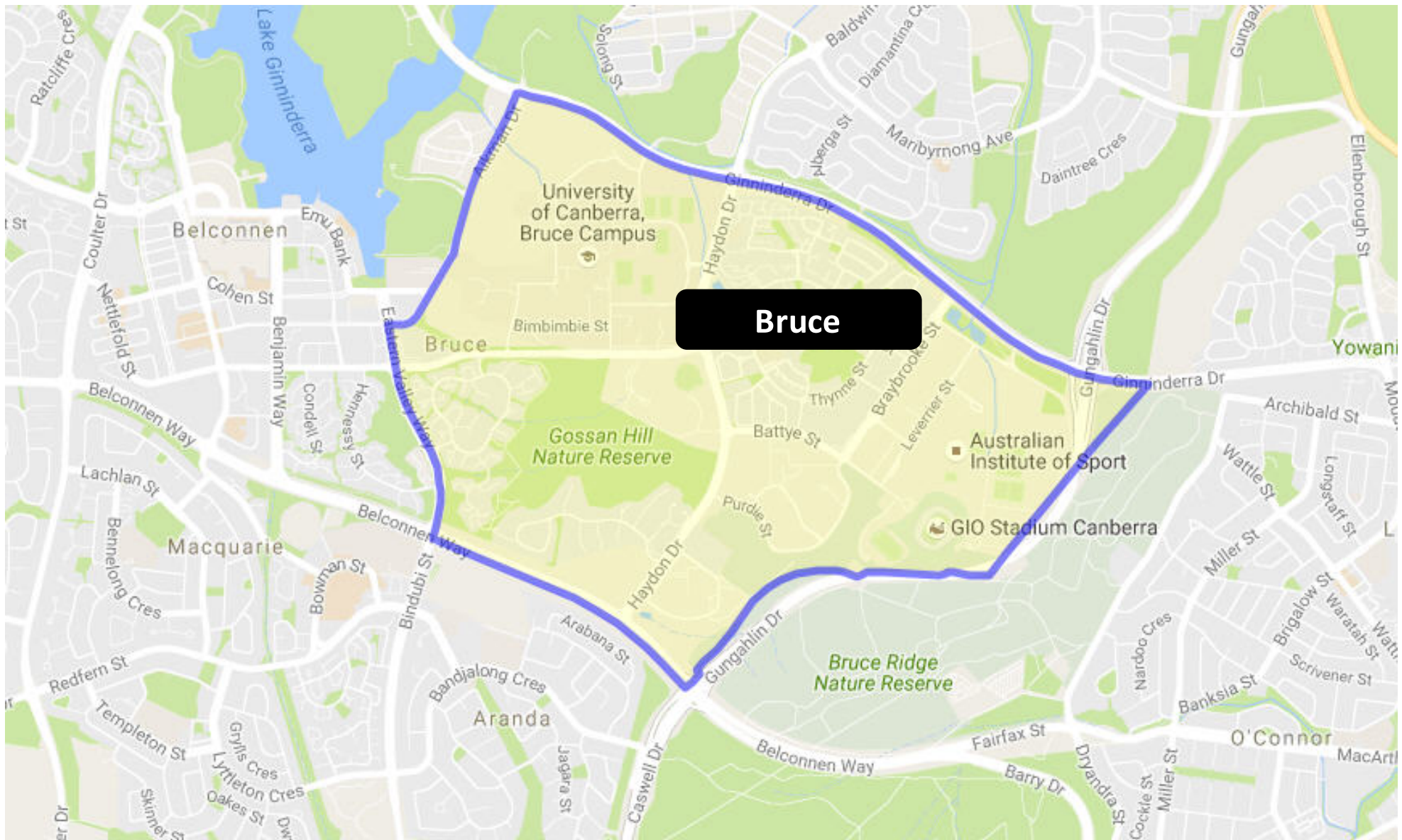
Mon Tue Wed Thu Fri Sat Sun



Hourly Population Estimates, Batemans Bay Mon 18 April – Sun 24 April



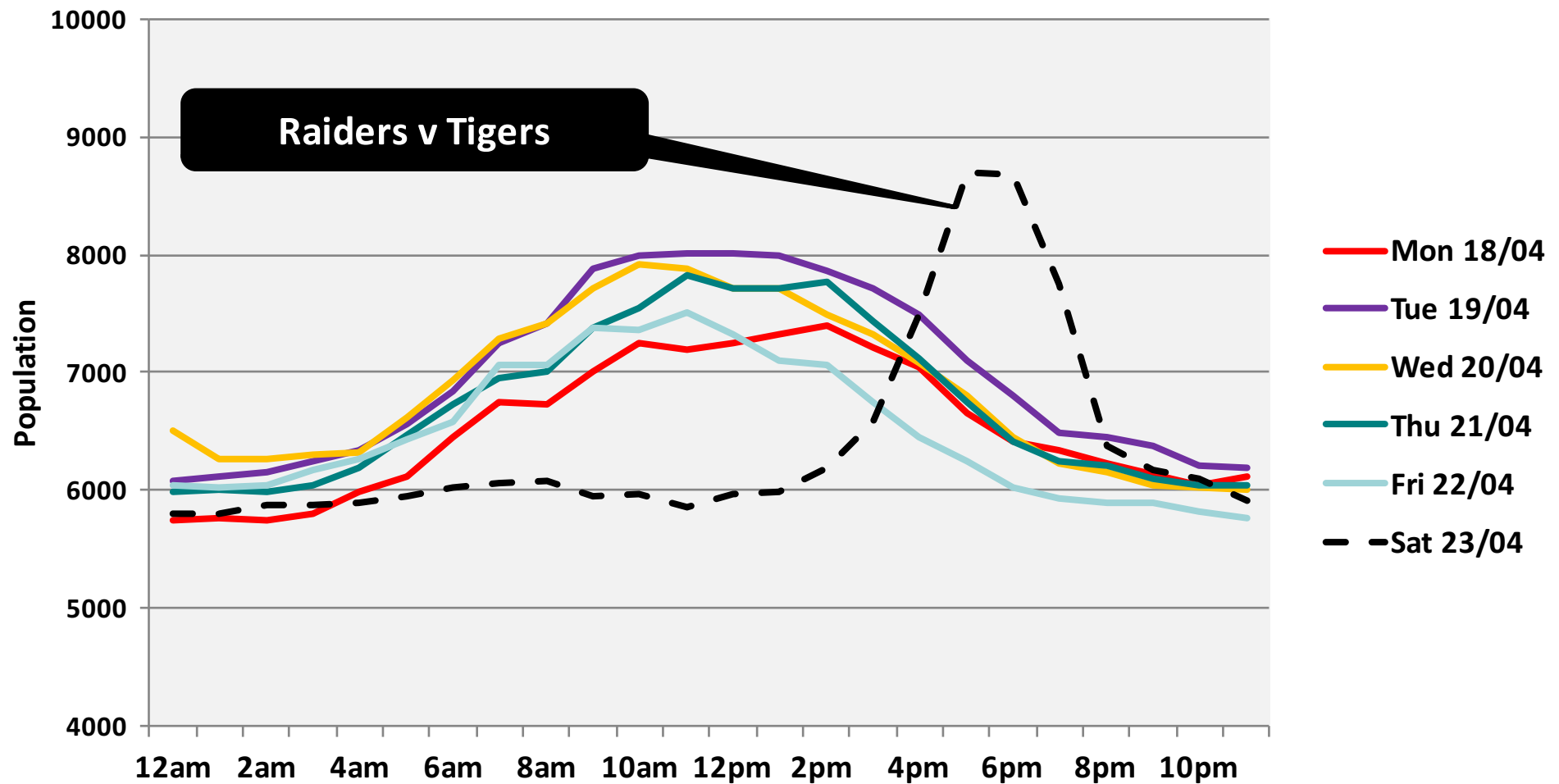
Event populations



Event populations - Bruce

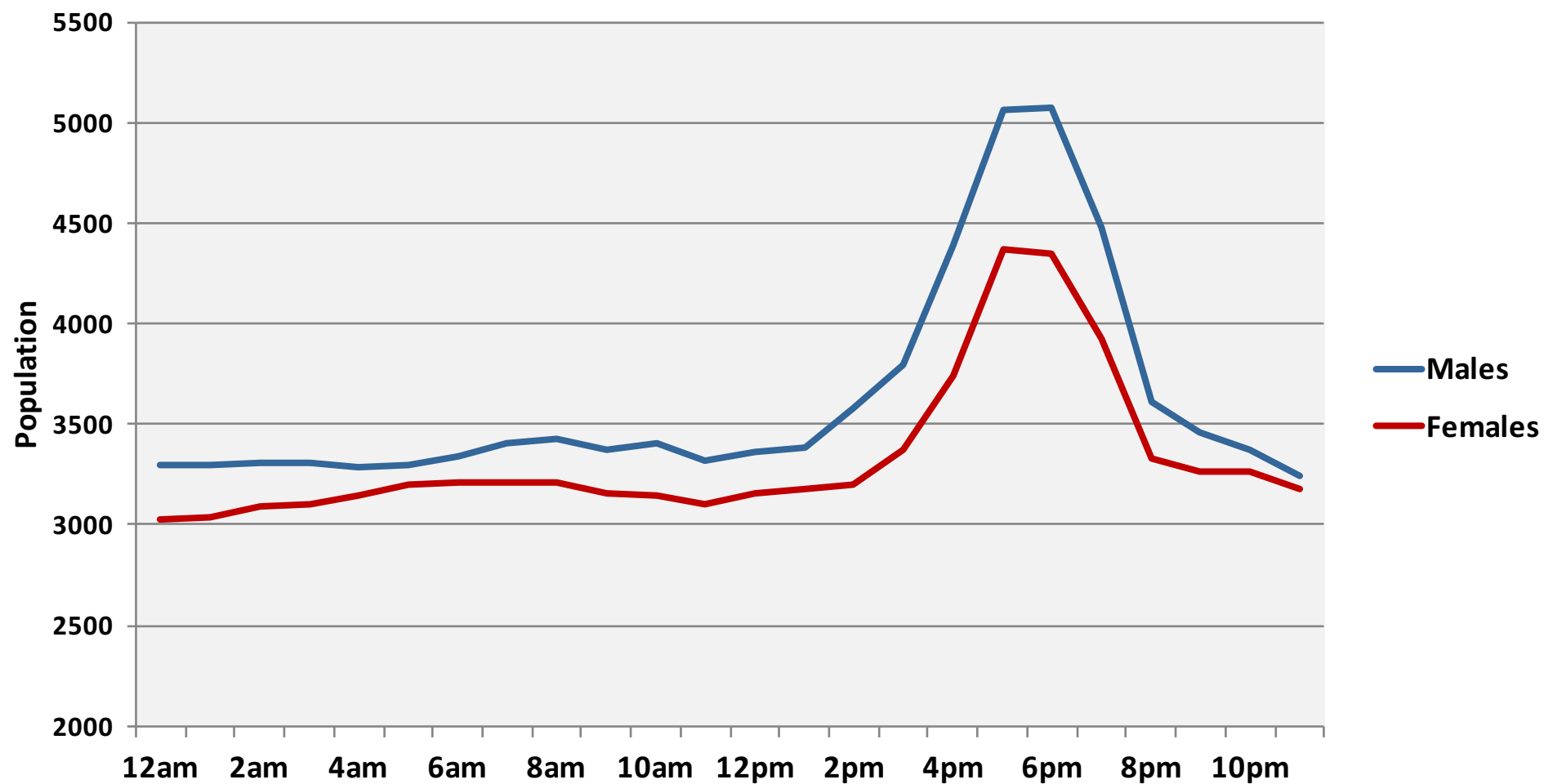


Hourly Population Estimates, Bruce SA2 Mon 18 – Sat 23 April





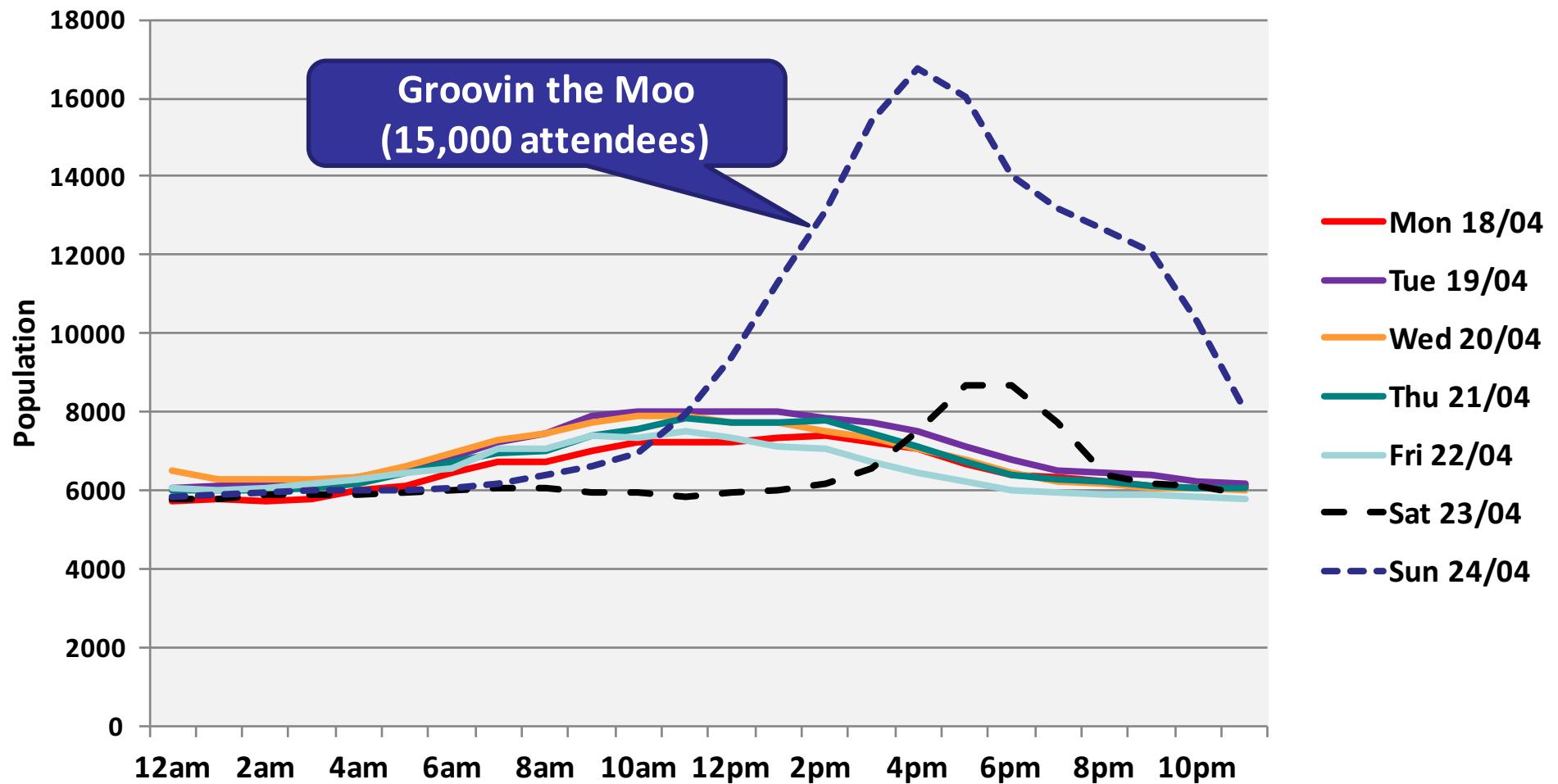
Hourly Population Estimates, Bruce SA2 Sat 23 April, by Sex



Event populations - Bruce



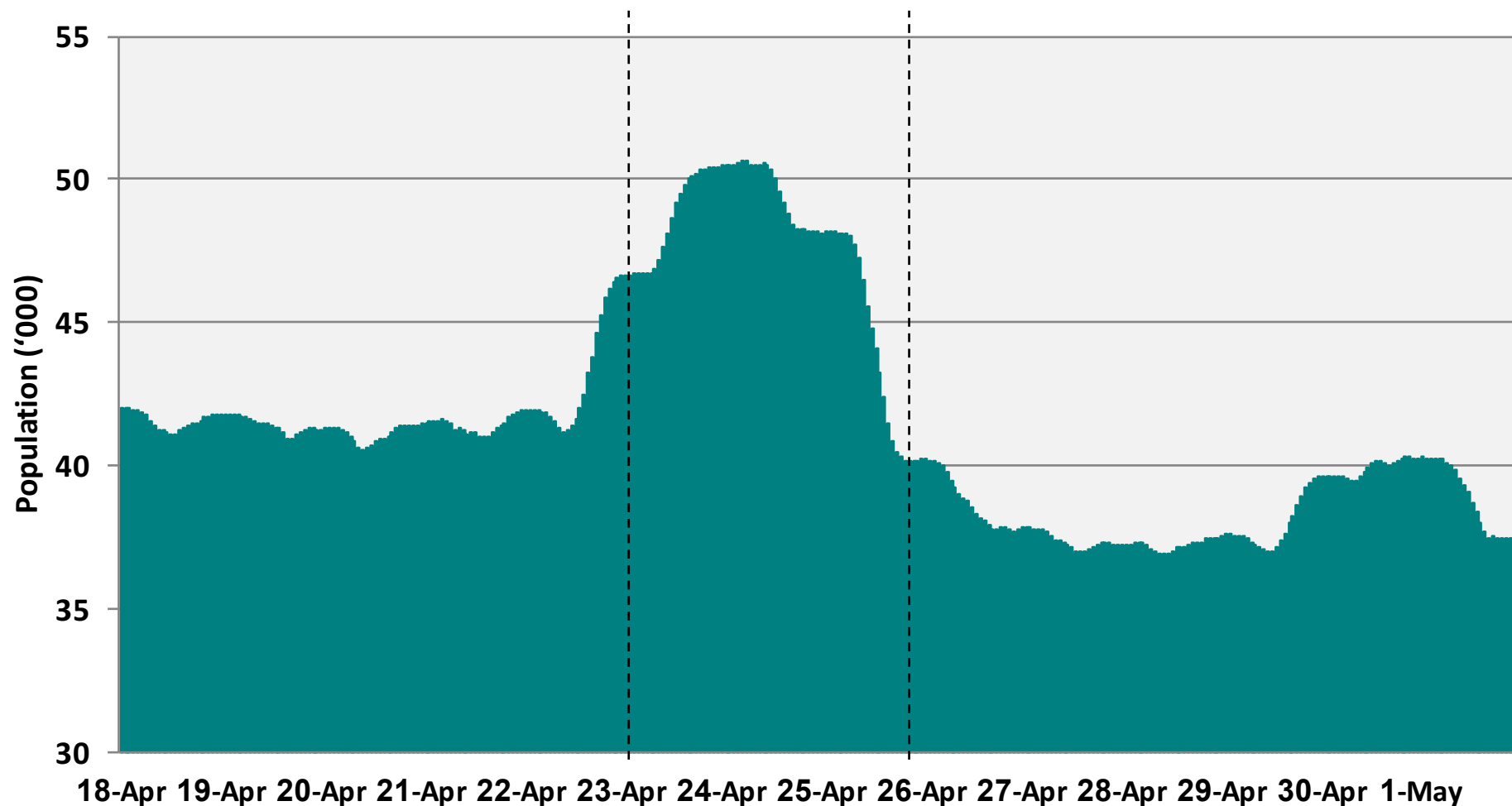
Hourly Population Estimates, Bruce Mon 18 – Sun 24 April



Seachange area populations



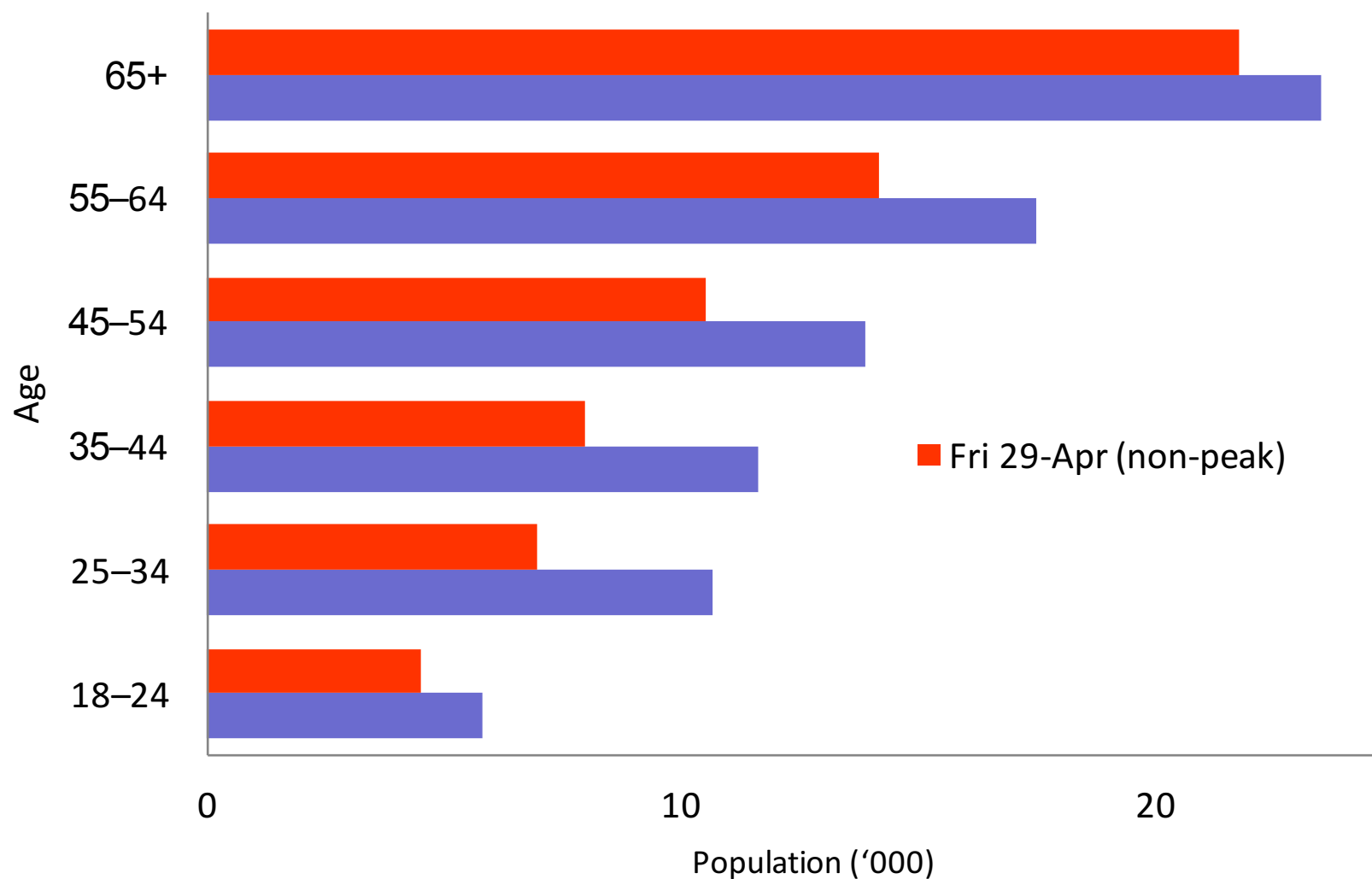
Hourly Population Estimates, NSW Coast Mon 18 April – Sun 1 May



← School holidays → ← Long wkend → ← Normal weekdays & wkend →



Midday population, NSW Coast By age, peak v non-peak times





Very promising results from pilot study

- Estimates based on this anonymised and aggregated data look good demographically
- Could fill the temporary population data gap

Uses for these hourly population estimates – lots!

- Planning and service provision
- CBDs, mining regions, tourist destinations
- Disaster preparedness
- Funding models etc



Short term

- ABS Information paper, released in 2017
- Peer review and promote internationally

Long term

- Continuing discussions around future plans







2016 CENSUS OF POPULATION AND HOUSING



Census release schedule 2017

11 April 2017

April

Typical Australian profiles –
national and state/territory

2016 CENSUS OF POPULATION AND HOUSING



2011 Census QuickStats

All people - usual residents



Australia | Queensland | State Suburbs

Redcliffe (QLD)

Code SSC31386 (SSC)



| | |
|---------------|-------|
| People | 9,201 |
| Male | 4,413 |
| Female | 4,788 |
| Median age | 44 |



| | |
|-----------------------------|-------|
| Families | 2,425 |
| Average children per family | 1.7 |



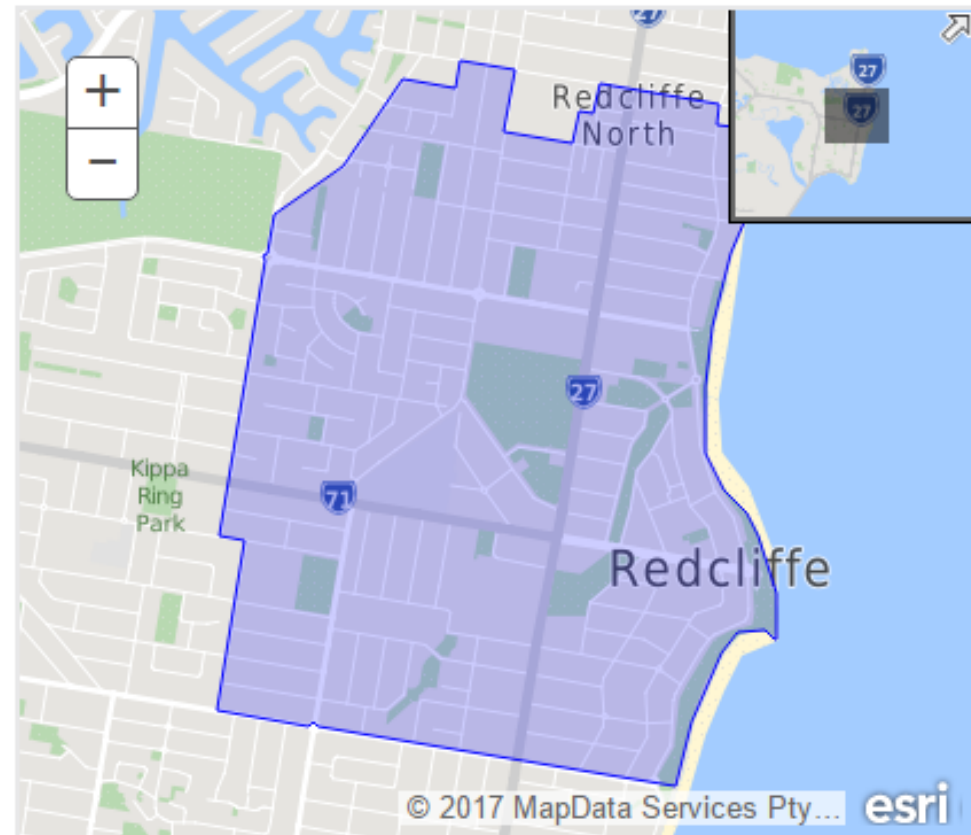
| | |
|-------------------------------------|---------|
| All private dwellings | 4,976 |
| Average people per household | 2.1 |
| Median weekly household income | \$882 |
| Median monthly mortgage repayments | \$1,733 |
| Median weekly rent | \$270 |
| Average motor vehicles per dwelling | 1.4 |

Community
profile

QuickStatsSearch

Enter a location

GO



People

includes demographics & education | cultural & language diversity | employment



Families

includes family composition | weekly incomes | employment status of couple families



Dwellings

includes dwelling structure | household composition | mortgage & rent | number of motor vehicles



Aboriginal and Torres Strait Islander people

includes selected people & dwelling characteristics





CENSUS DATA SEMINARS

From July 2017

Each capital city + regional locations

Content:

- key census results & region-specific data
- data quality information
- census data products and training

Data specialists available

Selected seminars webcast live, recording available later

Further info available soon www.abs.gov.au/census
registration essential!

Census release schedule 2017

