

DATA - BIG AND SMALL IN THE GEOGRAPHY CLASSROOM

Elin Charles-Edwards



HELLO!

Senior Lecturer in Human Geography

Based at University of Queensland (School of Earth and Environmental Sciences)

My research:

- Internal and International Migration
- Temporary Mobility and Populations
- Small Area Demographic Change

OUTLINE

09:00 - 10:30

- Thinking about data
- Gapminder and Dollar Street with Anna Rosling
- Using Gapminder

10:30 - 11:00

Morning Tea

11:00 - 13:00

- Beyond Gapminder
- Investigating Global Demographic Change using UN Data

13:00 - 13:45

Lunch

13:45 - 15:00

- Changes in Australia's Cities and Regions: Gaining Insights from the Australian Census of Population and Housing
- Big data

DATA IN GEOGRAPHY: KEY CONCEPTS

Data:

Primary data:

Secondary data:

Quantitative data:

Qualitative data:

Geospatial data:

Big data:

[TOOLS](#)[DOLLAR STREET](#)[VIDEOS](#)[DOWNLOADS](#)[TEACH](#)[IGNORANCE](#)[DATA](#)[Search](#)

Almost nobody knows the basic global facts!

 Take the Gapminder Test

Gapminder and Dollar Street with Anna Rosling



Bubbles

FACTS

TEACH

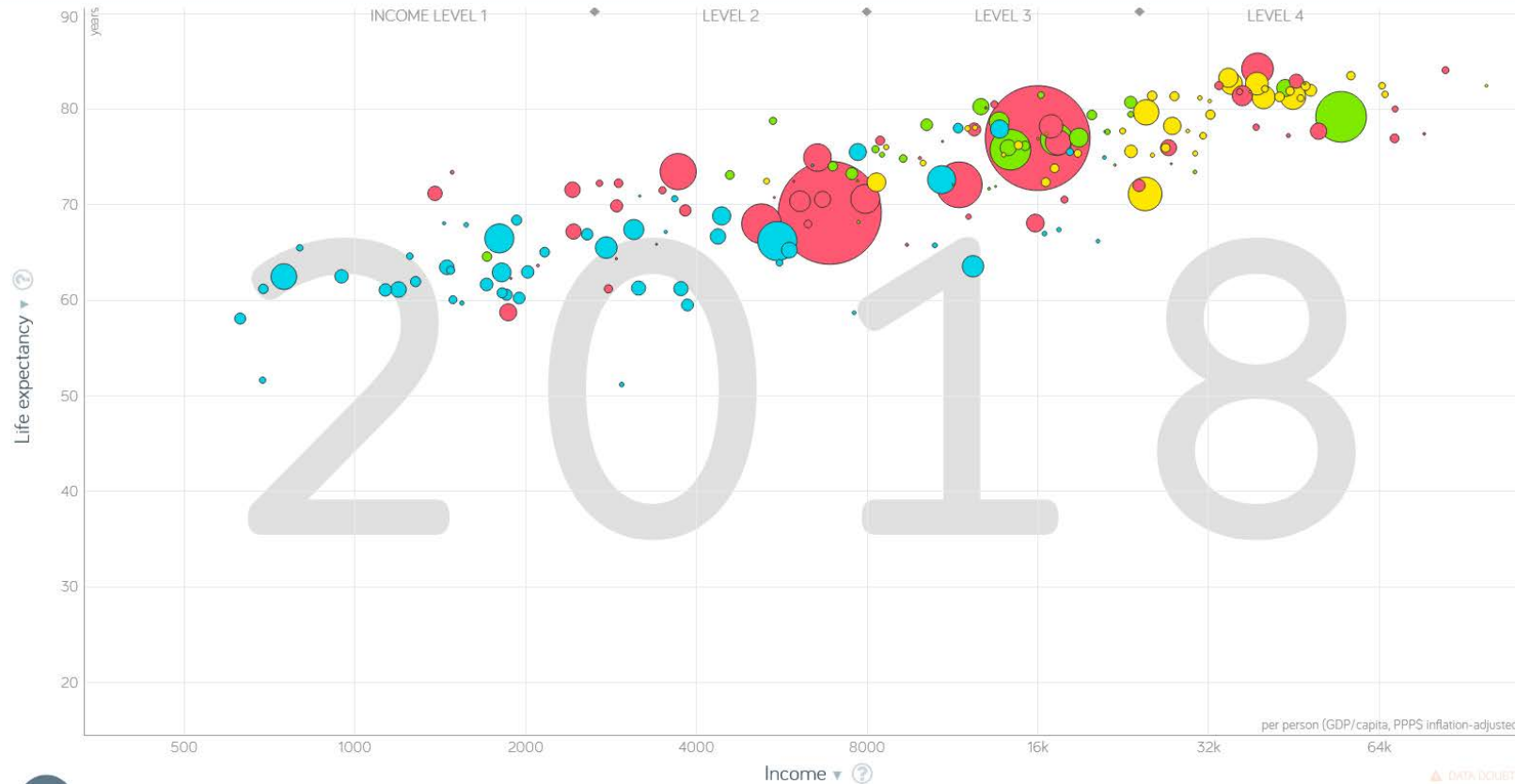
ABOUT

HOW TO USE

Share



English



Color

World Regions



Select

Search...

- ☐ Afghanistan
- ☐ Albania
- ☐ Algeria
- ☐ Andorra
- ☐ Angola
- ☐ Antigua and Barbuda
- ☐ Argentina
- ☐ Armenia
- ☐ Australia
- ☐ Austria
- ☐ Azerbaijan
- ☐ Bahamas
- ☐ Bahrain
- ☐ Bangladesh
- ☐ Barbados
- ☐ Belarus
- ☐ Belgium
- ☐ Belize

Size

Population

Zoom



OPTIONS

PRESENT



EXPAND

Babies per woman

CO2 emissions

Child mortality

Income

Life expectancy

Economy

Education

Energy

Environment

Health

Infrastructure

Population

Society

Work

For advanced users

More data...

GAPMINDER TOOLS GUIDE

www.gapminder.org/tools

Lin / Log scale

X- and y-axis scales can be linear or logarithmic. A log scale can make it easier to see trends.

Y axis

linear log

Search...

Time

Babies per woman

CO2 per capita

Child mortality rate

Income per person

Life expectancy

Economy

Education

Energy

Environment

Name of country

Hover mouse pointer over bubble to reveal the name. Click bubble to select it

Play / Stop

Click to control animation. (How the graph changes over time)

Bubble map

Scroll down to see the map and other tools



y-axis

Click here to select indicator for the y-axis

Sources and info

Click on (?) next to the indicator to view description, sources and additional info

Share graph

Creates a short link to the graph you've created. Share it with friends!

Language

If you're missing your language but want to help with translation let us know: info@gapminder.org

Blue Side panel

Shows up when the screen is large enough. When it's not, you can still reach all the things via buttons

Color

The countries on the graph are color-coded by regions. Click to choose another indicator for color

Search country

Start typing country name to find it in the selection list below

Select country

Click boxes to select specific countries (or click the bubbles)

Deselect

Click here to deselect all the bubbles

opacity slider

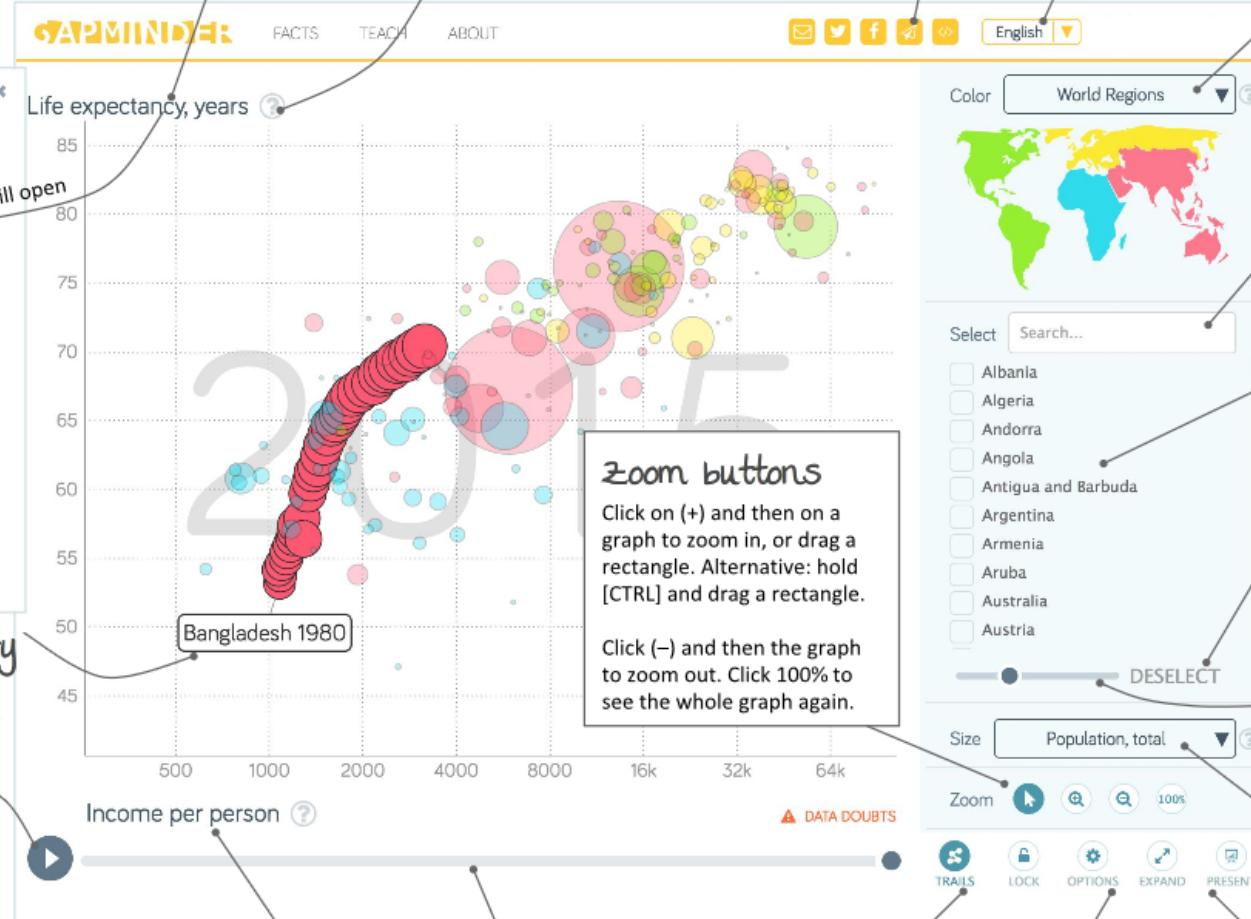
Drag to adjust visibility of non-selected countries

Bubble size

The size of the bubble normally represents the population of the country. Click here to make the size show another indicator

Expand

Toggles full-screen view. You can also increase font size in "Options"



Zoom buttons

Click on (+) and then on a graph to zoom in, or drag a rectangle. Alternative: hold [CTRL] and drag a rectangle.

Click (-) and then the graph to zoom out. Click 100% to see the whole graph again.

X-axis

Click here to select indicators for the x-axis

Time

Drag the handle to change year





























































Trails on/off

Click Trails to follow a selected country while the animation plays

More stuff..

Advanced controls, like "Size slider", "Play speed" and more are hiding here

List of indicators in Gapminder World (~~X~~ outdated, scroll down for the new ones)

Show 25 indicators				Search: <input type="text"/>		
Indicator name	Data provider	Category	Subcategory	Download	View	Visualize
Adults with HIV (% age 15-49)	Based on UNAIDS	Health	HIV			
Age at 1st marriage (women)	Various sources	Population				
Aged 15+ employment rate (%)	International Labour Organization	Work	Employment rate			
Aged 15+ labour force participation rate (%)	International Labour Organization	Work	Labour force participation			
Aged 15+ unemployment rate (%)	International Labour Organization	Work	Unemployment			
Aged 15-24 employment rate (%)	International Labour Organization	Work	Employment rate			
Aged 15-24 unemployment rate (%)	International Labour Organization	Work	Unemployment			
Aged 15-64 labour force participation rate (%)	International Labour Organization	Work	Labour force participation			
Aged 25-54 labour force participation rate (%)	International Labour Organization	Work	Labour force participation			
Aged 25-54 unemployment rate (%)	International Labour Organization	Work	Unemployment			
Aged 55+ unemployment rate (%)	International Labour Organization	Work	Unemployment			
Aged 65+ labour force participation rate (%)	International Labour Organization	Work	Labour force participation			
Agricultural land (% of land area)	World Bank	Environment	Geography			
Agricultural water withdrawal (% of total)	FAO aquastat database	Environment	Water			
Agriculture (% of GDP)	World Bank	Economy	Sectors			
Agriculture workers (% of labour force)	International Labour Organization	Work	Employment by sector			
Aid given (% of GNI)	OECD QWIDS	Economy	Aid given			
Aid given (2007 US\$)	OECD QWIDS	Economy	Aid given			
Aid given per person (2007 US\$)	OECD QWIDS	Economy	Aid given			
Aid received (% of GNI)	World Bank	Economy	Aid received			

USING GAPMINDER (1): CHANGES OVER TIME

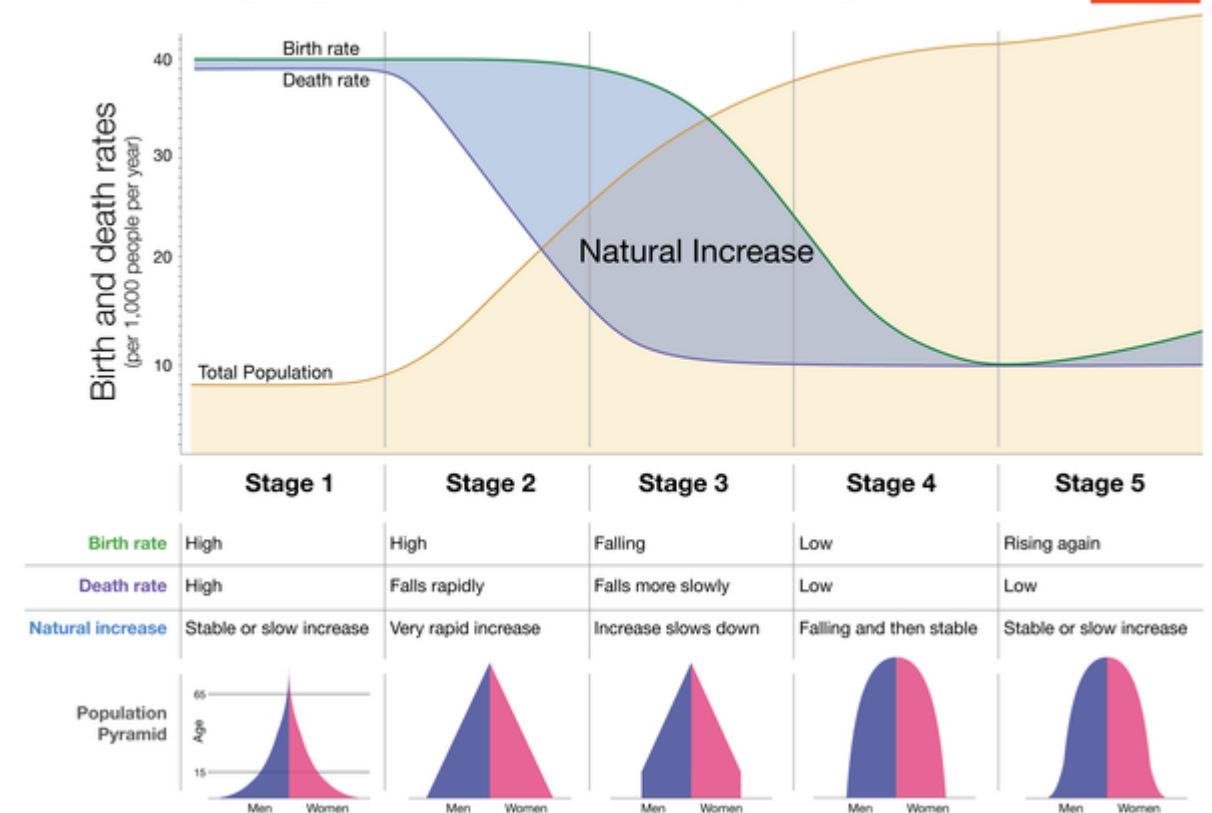
- How has global population changed throughout history?
- How has mortality (Life expectancy) changed over time?
 - In what part of the world did life expectancy first increase?
 - Select Life expectancy for Zimbabwe: What accounts for the decline in the 1990s?
- How has fertility (Babies per women i.e. TFR) changed over time?
 - In which continent did fertility first begin to decline?

USING GAPMINDER (2): RELATIONSHIPS

- How might we use Gapminder to teach the demographic transition?

The demographic transition in 5 stages

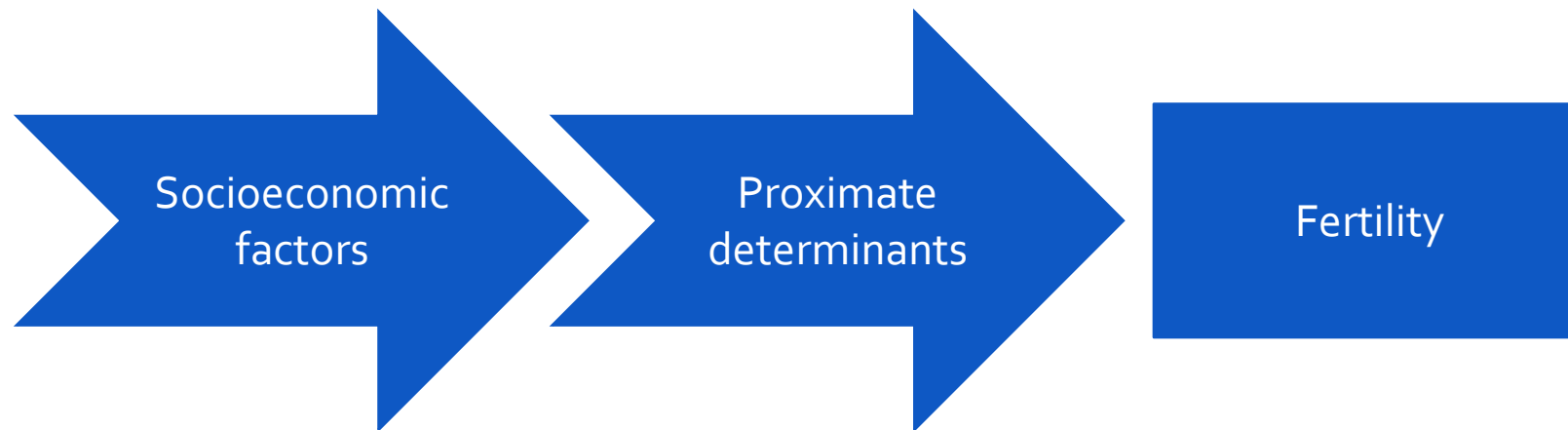
Our World
in Data



The author Max Roser licensed this visualisation under a CC BY-SA license. You find more information at the source: <http://www.OurWorldInData.org/world-population-growth>

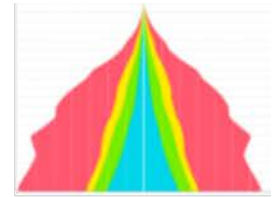
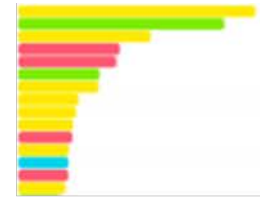
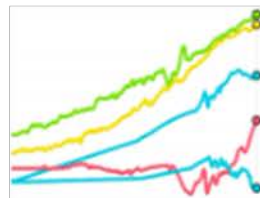
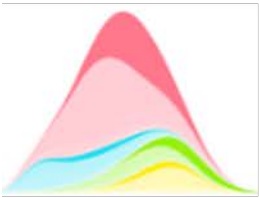
USING GAPMINDER (2): RELATIONSHIPS

- What factors are associated with high/low fertility?



USING GAPMINDER (3): BRINGING IT ALL TOGETHER

- Explore cross-national variations in per capita Carbon Emissions. Which countries are the largest and the smallest emitters? What drives these variations?



- Spend some time exploring Gapminder variables and reflect how these can be used in your teaching.
- NOTE: can also upload data into Gapminder desktop

BEYOND GAPMINDER

GLOBAL DATA REPOSITORIES

General

- Google Public Data: <https://www.google.com/publicdata/directory#!st=DATASET>
- Google DataSet Search <https://toolbox.google.com/datasetsearch>

Economic / Development

- World Bank Open data <https://data.worldbank.org/indicator>

Demography

- UN World Population Prospects <https://population.un.org/wpp/>
- UN World Urbanisation Prospects <https://population.un.org/wup/>

UN WORLD POPULATION PROSPECTS



UNITED NATIONS
DESA / POPULATION DIVISION

World Population Prospects 2019

[WPP Home](#)[Data ▼](#)[Figures ▼](#)[Documentation ▼](#)[World Urbanization Prospects](#)[Population Division](#)[Contact Us](#)

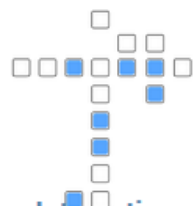
The **2019 Revision of World Population Prospects** is the twenty-sixth round of official United Nations population estimates and projections that have been prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat.

The main results are presented in a [series of Excel files](#) displaying key demographic indicators for each UN development group, *World Bank* income group, geographic region, *Sustainable Development Goals (SDGs)* region, subregion and country or area for selected periods or dates within 1950-2100. For advanced users who need to use these data in a database form or statistical software, we recommend to use the [CSV format](#) for bulk download. Forthcoming special aggregates will also provide additional groupings of countries.

Quick Navigation



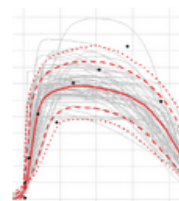
Download
Data Files



Interactive
Data



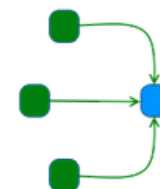
Maps



Graphs



Publications




Data Sources

Disclaimer: This web site contains data tables, figures, maps, analyses and technical notes from the current revision of the World Population Prospects. These documents do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

TASK 1.1

> Select Variable (Total Population by sex (thousands))

**UNITED NATIONS**
DESA / POPULATION DIVISION

World Population Prospects 2019

WPP HomeData ▼Figures ▼Documentation ▼World Urbanization ProspectsPopulation DivisionContact Us

Data Query

Please select the desired indicator:

Population

- Total Population by sex (thousands)
- Average annual rate of population change (percentage)
- Rate of natural increase (per 1,000 population)
- Population density (persons per square km), as of 1 July
- Population by age and sex (thousands)
- Percentage of total population by broad age group, both sexes (per 100 total population)
- Percentage of female population by broad age group (per 100 female total population)
- Percentage of male population by broad age group (per 100 male total population)
- Median age of the total population (years)
- Sex ratio of the total population (males per 100 females)

Fertility

- Crude birth rate (births per 1,000 population)

> Select Countries (Sustainable Development Goal (SDG) Regions)

Data Query

Total Population by sex (thousands)

Please select the desired regions, countries or areas:

Type any part of the name to search...

- ✚ ☐ World
 - ▶ ☐ UN development groups
 - ▶ ☐ World Bank income groups
 - ▶ ☐ Geographic regions
 - ✚ ☒ Sustainable Development Goal (SDG) regions
 - ▶ ☒ Sub-Saharan Africa
 - ▶ ☒ Northern Africa and Western Asia
 - ▶ ☒ Central and Southern Asia
 - ▶ ☒ Eastern and South-Eastern Asia
 - ▶ ☒ Latin America and the Caribbean
 - ▶ ☒ Australia/New Zealand

* **Europe** and **Northern America** appear in both Geographic regions and Sustainable Development Goal (SDG) regions; composition and data are the same across their respective regions.

< Back

Next >

> Select Years (1950; 2015; 2100)

Data Query

Total Population by sex (thousands)

Please select the desired years or periods:

(maximum of 35 selections per query; by default all years multiples of 5 are pre-selected)

Quick selection:

☒ Select only years multiples of 5

From: 1950 ▾

To: Select... ▾

Current selection (click on individual items to select/unselect or [here to clear all selections](#)):

2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
2050	2051	2052	2053	2054	2055	2056	2057	2058	2059
2060	2061	2062	2063	2064	2065	2066	2067	2068	2069
2070	2071	2072	2073	2074	2075	2076	2077	2078	2079
2080	2081	2082	2083	2084	2085	2086	2087	2088	2089
2090	2091	2092	2093	2094	2095	2096	2097	2098	2099

2100

< Back

Next >

> Select Years (1950; 2015; 2100)

Data Query

Total Population by sex (thousands)

Please select the desired years or periods:

(maximum of 35 selections per query; by default all years multiples of 5 are pre-selected)

Quick selection:

☒ Select only years multiples of 5

From: 1950 ▾

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Current selection (click on individual items to select/unselect or [here to clear all selections](#)):

2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
2050	2051	2052	2053	2054	2055	2056	2057	2058	2059
2060	2061	2062	2063	2064	2065	2066	2067	2068	2069
2070	2071	2072	2073	2074	2075	2076	2077	2078	2079
2080	2081	2082	2083	2084	2085	2086	2087	2088	2089
2090	2091	2092	2093	2094	2095	2096	2097	2098	2099

2100

< Back

Next >

> Click through to results and Export to Excel

Data Query

Total Population by sex (thousands)

Please select the desired genders:

Both sexes combined

Male

Female

< Back

Next >

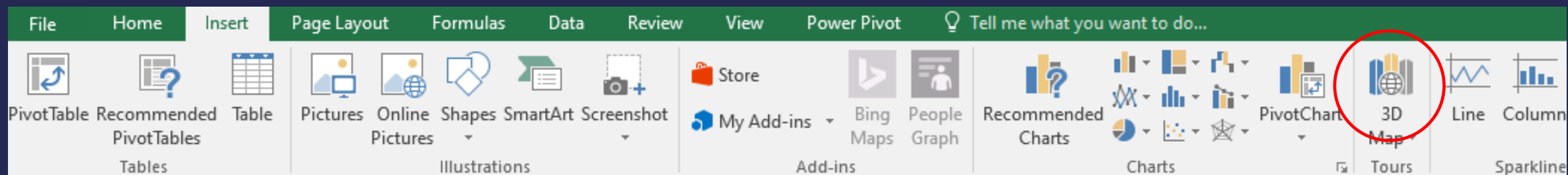
>Data cleaning > Delete rows

Rename:

Congo to Republic of Congo

Dem. People's Republic of Korea to Democratic People's Republic of Korea

	A	B	C	D	E	F	G	H
1	Total Population by sex (thousands)							
2	ISO 3166-1							
3	numeric code	Location	Sex	Note	1950	2015	2100	
4	900	World						
5	1828	Sustainable Development Goal (SDG) regions	Both sexes combined	p				
6	947	Sub-Saharan Africa	Both sexes combined		179 007	958 577	3 775 270	
7	910	Eastern Africa	Both sexes combined		66 145	389 671	1 451 842	
8	108	Burundi	Both sexes combined		2 309	10 160	50 904	
9	174	Comoros	Both sexes combined		159	777	2 187	
10	262	Djibouti	Both sexes combined		62	914	1 332	
11	232	Eritrea	Both sexes combined		822	3 343	9 062	
12	231	Ethiopia	Both sexes combined		18 128	100 835	294 393	
13	404	Kenya	Both sexes combined		6 077	47 878	125 424	
14	450	Madagascar	Both sexes combined		4 084	24 234	99 957	
15	454	Malawi	Both sexes combined		2 954	16 745	66 559	
16	480	Mauritius	Both sexes combined	1	493	1 259	827	
17	175	Mayotte	Both sexes combined	2	15	240	746	
18	508	Mozambique	Both sexes combined		5 959	27 042	123 647	
19	638	Réunion	Both sexes combined	2	248	863	901	
20	646	Rwanda	Both sexes combined		2 186	11 369	33 413	
21	690	Seychelles	Both sexes combined		36	95	88	
22	706	Somalia	Both sexes combined		2 264	13 797	75 716	
23	728	South Sudan	Both sexes combined		2 482	10 716	31 738	
24	800	Uganda	Both sexes combined		5 158	38 225	136 785	
25	834	United Republic of Tanzania	Both sexes combined	3	7 650	51 483	285 652	
26	894	Zambia	Both sexes combined		2 310	15 879	81 546	
27	716	Zimbabwe	Both sexes combined		2 747	13 815	30 965	
28	911	Middle Africa	Both sexes combined		26 454	154 203	746 061	
29	24	Angola	Both sexes combined		4 548	27 884	188 283	

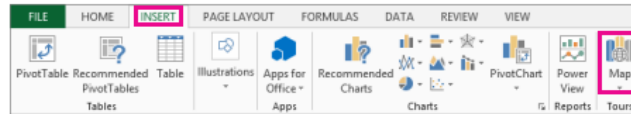


G7							
	A	B	C	D	E	F	G
1	ISO 3166-1 numeric code	Location	Sex	Note	1950	2015	2100
2	947	Sub-Saharan Africa	Both sexes combined		179 007	958 577	3 775 270
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15	638	Réunion	Both sexes combined	2	248	863	901

I don't see the Power Map button in Excel

Excel 2013

If you're looking for the **Map** button, and don't see it in the Tours group on the **Insert** tab, it might be you don't have a [version of Office that comes with Power Map](#), already installed and enabled to show the **Map** button on the **Insert** tab.



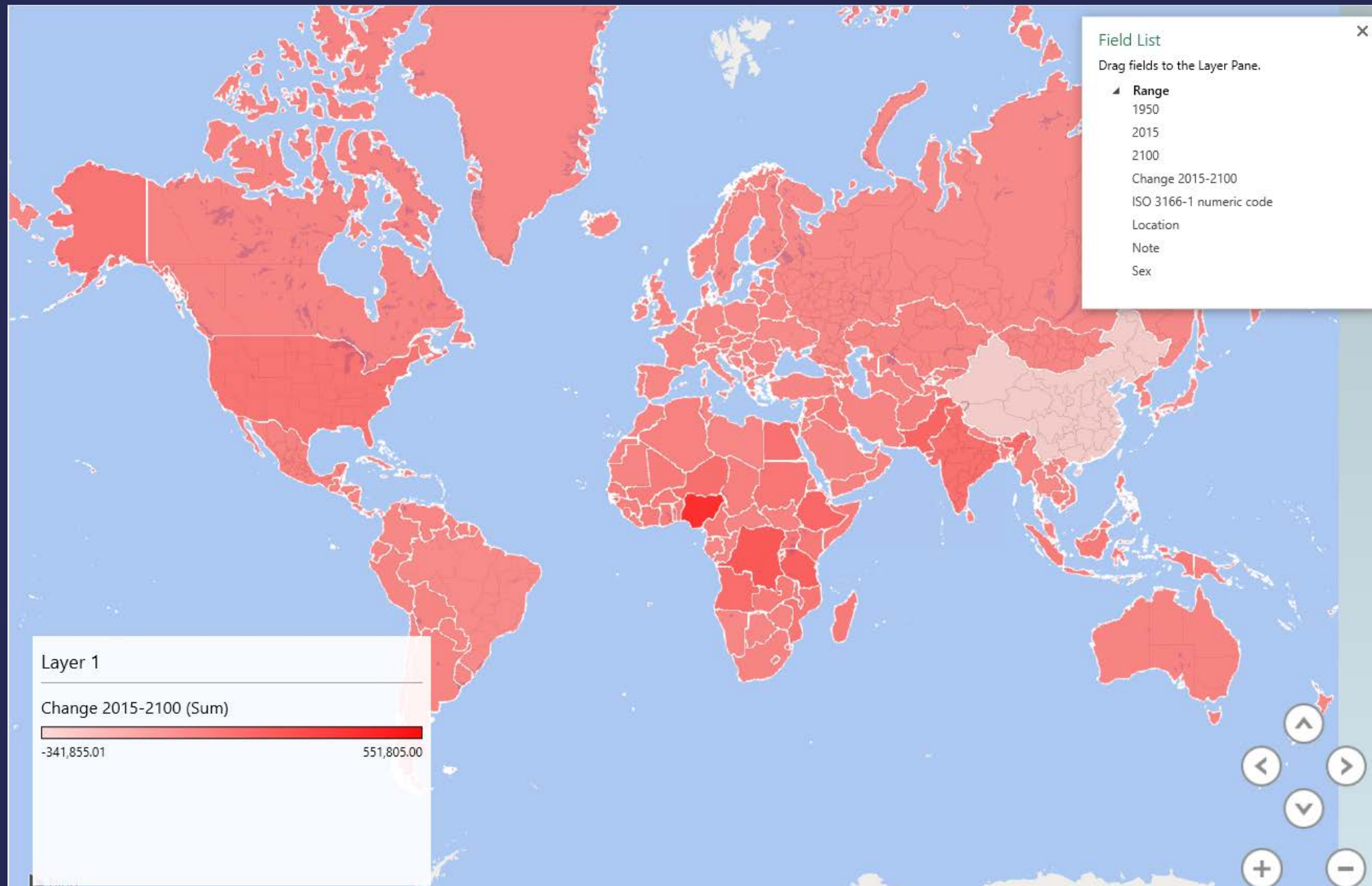
To check the version of Office on your computer, see [What version of Office am I using?](#)

For more information about the available suites of Office applications and services, [try](#) or [buy](#) it at Office.com.

Power Map is installed but not enabled

If Power Map is installed but not shown on the ribbon, try this to make sure the add-in is enabled:

1. Click **File** > **Options**.
2. Click **Add-ins**.
3. In the **Manage** box, pick **COM Add-ins** and click **Go**.
4. Under **Add-ins available**, check the **Microsoft Power Map for Excel** box and click **OK**.



ANALYSING MIGRATION

WHAT DO WE MEAN BY MIGRATION?

- Migration – A permanent or semi-permanent change of usual residence; can be
 - Within a country – internal migration
 - International – immigration/emigration
 - Usually a longer distance move which severs local ties
 - Sometimes distinguished from
- Residential mobility – a local move, that involves a change of usual residence within the same community, and maintains social networks

MIGRATION DATA

Two principal types of migration data:

- Migration *stocks* (number of migrants at a point in time)
- Migration *flows/events* (number of migrations/migrants in an interval)

TASK 1.2

MAPPING MIGRANT STOCKS

- Map the migration stocks for 2010-2015 using Excel Powermap
 - Where are the largest gains / losses?
 - What are the limitations of migrant stock data?
- Migrant stocks in Australia
 - <http://www.sbs.com.au/news/map/where-australias-immigrants-were-born-sydney>

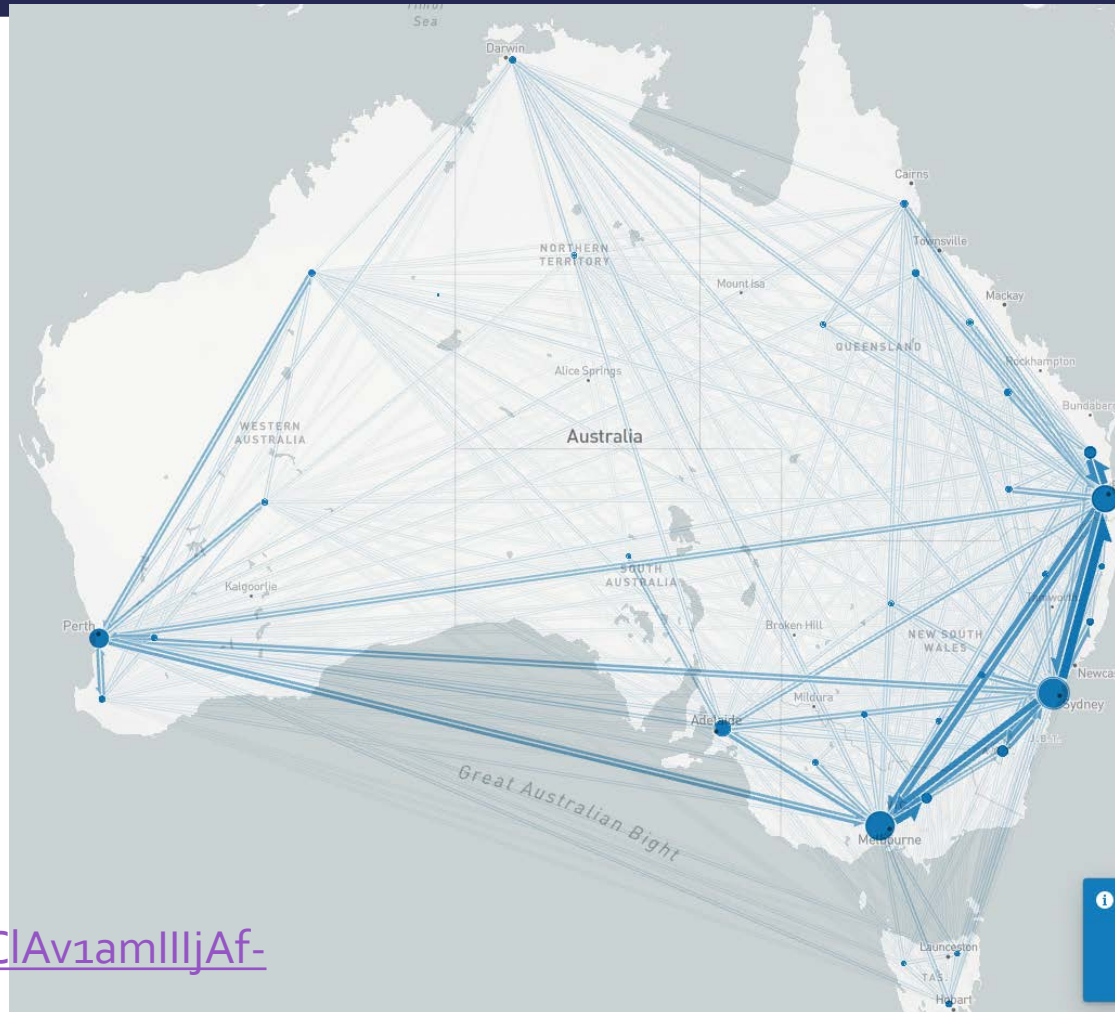
FLOW MATRIX BETWEEN AUSTRALIAN STATES FROM THE 2006 CENSUS

Origins (Res 2001)	Destinations (Residence 2006)							
	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
NSW	5,224,677	53,456	141,266	14,001	18,864	9,468	5,883	24,844
VIC	43,970	3,965,393	52,113	13,995	15,221	8,195	4,973	5,538
QLD	60,133	32,239	2,936,555	9,328	13,762	7,831	8,435	6,162
SA	11,419	16,143	16,407	1,242,213	6,366	2,332	4,457	1,995
WA	13,902	15,351	17,941	5,196	1,512,978	3,175	4,294	2,208
TAS	4,776	8,235	8,786	1,680	3,014	378,811	698	832
NT	5,465	4,814	13,764	5,670	4,714	844	119,849	1,206
ACT	22,711	5,679	9,557	1,649	1,940	895	811	229,100

Individual Cells show flow from origin to destination
 Diagonal shows people who stayed in same state

Task 1.3 Open the Migration Flows sheet and answer the questions.

MAPPING MIGRATION FLOWS



<https://flowmap.blue/15kPAcd1ClAv1amIIIjAf-EtxassuObCu14hOlRJ4Dy4>

TASK 1.4: CREATE A MIGRATION FLOW MAP

Go to Flow Map Blue <https://flowmap.blue/> and follow the instructions using the data provided.

<https://flowmap.blue/1ioeMbQ82-KNzTrogeArapFJRXMIjflOzKRe1H1Tqx9M>

- Where are the largest exchanges occurring?
- What networks can you observe?
- How does Australia's migration system compare with the rest of the world?

OPEN SESSION 1

2. AUSTRALIAN DEMOGRAPHY

WHAT DO WE NEED TO MEASURE?

- Population Size
Past, Current, Future
- Population Characteristics
Age, sex, occupation, birthplace
- Living arrangements
Type of family, household, type of housing
- Vital Events
Births, Deaths, Marriages
- Migration
Arrivals/departures – domestic/international
- Geographic location
Position in space or origin/destination

ERPs and Census

Census

Census

Births &, Deaths publications

Migration publications, Census

SOURCES OF POPULATION DATA

- Censuses : a complete enumeration of the population of a country, region or group
 - began around late C18,
 - Some quinquennial, some irregular
- Population Registers : continuous roll, regularly updated
 - Generally includes 'all' residents or citizens
 - Widely used in Europe, but also Australia
- Sample Surveys
 - Sample basis – focus on aspects of demographic behaviour
 - Demographic and Health Surveys
- Registers of vital events
 - births, marriages, deaths, immigration

AUSTRALIAN CENSUS OF POPULATION & HOUSING

- First simultaneous Census in 1881 of the British Empire
- First National Census under *Census and Statistics Act in 1911*
- Required for electoral purposes and revenue sharing, as well as planning
- Objective: 'to measure the number and characteristics of people and the dwellings in which they live'
- Three areas of inquiry individual/family/dwelling
- Variation in topics over time
- Latest Census 9th August 2016

Year	Date	Years since previous Census
1901	4-Apr	10
1911	4-Apr	10
1921	4-Apr	10
1933	30-Jun	12
1947	30-Jun	14
1954	30-Jun	7
1961	30-Jun	7
1966	30-Jun	5
1971	30-Jun	5
1976	30-Jun	5
1981	30-Jun	5
1986	30-Jun	5
1991	6-Aug	5
1996	6-Aug	5
2001	7-Aug	5
2006	8-Aug	5
2011	9-Aug	5

TYPES OF DATA COLLECTED AT THE CENSUS

60 Substantive Questions covering 3 types of data

1. Persons : demographic, social and economic questions
2. Families and households (derived from question on relationships)
3. Dwellings

Date of birth	Citizenship	Occupation (2)
Sex	ABTSI	Industry(6)
Marital Status	Language	Domestic durties
Relationship to P1	Ancesntry	Voluntary work
Usual residence	Religion	Child care
Previous residence	Disability (4)	Housing tenure
Birthplace	Education (7)	Rental paid
Date of arrival	Children ever born	N of bedrooms
Birthplace of father	Income	N of Motor Vehicles
Birthplace of mother	Labour Force Status (4)	Internet Access

THREE DIFFERENT COUNTS OF POPULATION IN AUSTRALIA

- 1. Census Count (*de facto*)** 9th of August 2016
 - Count of all people in an area or region
 - Includes visitors from elsewhere in Australia
 - Includes overseas visitors, but separately identified
 - Excludes 1 million people (5%) away from home on census night
- 2. Usual Residents (*de jure*)** 9th of August 2016
 - Excludes visitors from overseas
 - Excludes visitors from elsewhere in Australia
 - Includes residents temporarily away from home
- 3. Estimated Resident Population** 30th of June 2016
 - Australia's official population estimate
 - Builds on Usual Residents
 - Adds an adjustment for undercount at the Census (people missed)
 - Adds an estimate of residents temporarily overseas
 - Forms the basis for annual inter-censal estimates

COMPARING POPULATION COUNTS

SELECTED AREAS, 2011

Surfers Paradise	
Census Count	28,560
- Overseas Visitors	- 6,140
- Domestic Visitors	- 3,743
Counted at home	18,677
+ Residents	+ 991
Temporarily Absent	
Usual Residents	19,668
ERP	21,095

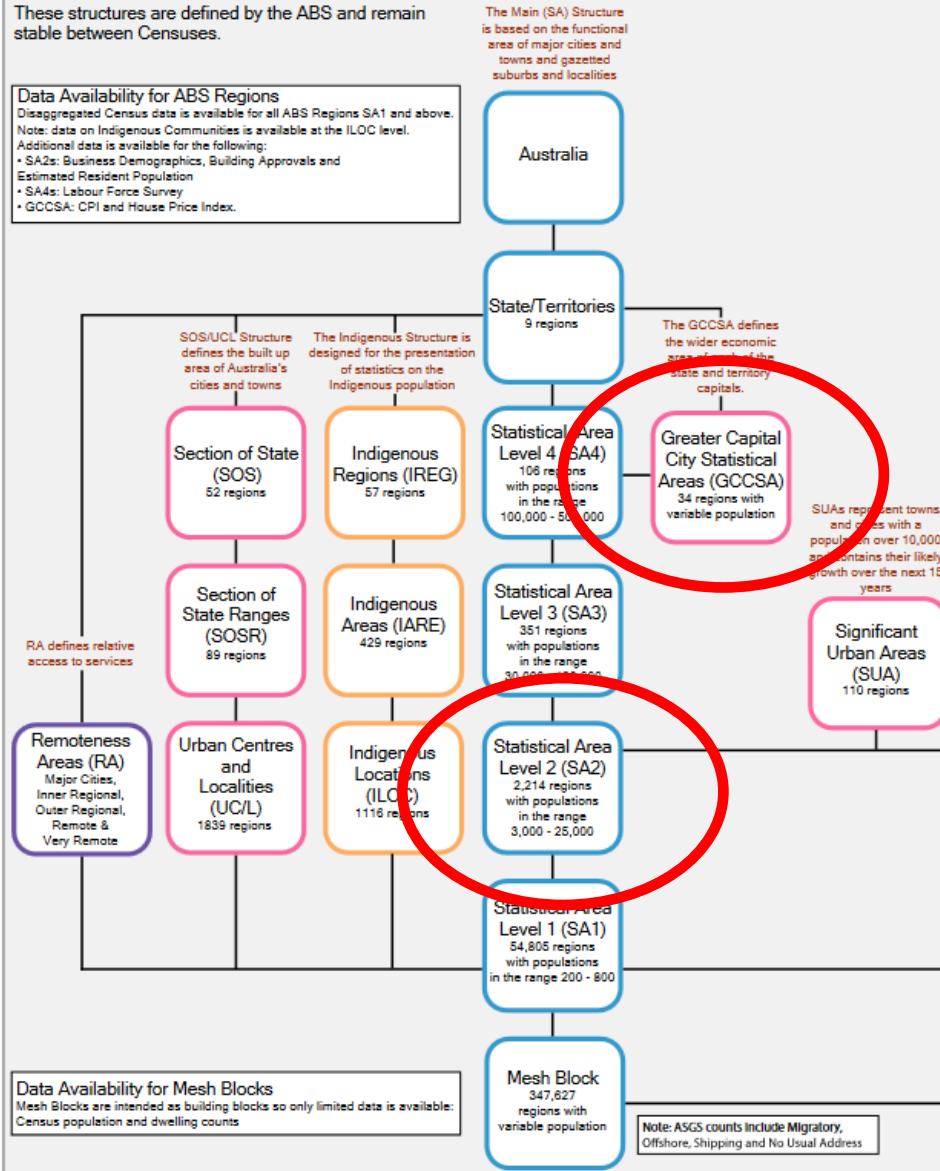
The Australian Statistical Geography Standard (ASGS) 2011 Structure and Summary

ABS Structures

These structures are defined by the ABS and remain stable between Censuses.

Data Availability for ABS Regions

Disaggregated Census data is available for all ABS Regions SA1 and above.
Note: data on Indigenous Communities is available at the ILOC level.
Additional data is available for the following:
• SA2s: Business Demographics, Building Approvals and Estimated Resident Population
• SA4s: Labour Force Survey
• GCCSA: CPI and House Price Index.



Data Availability for Mesh Blocks

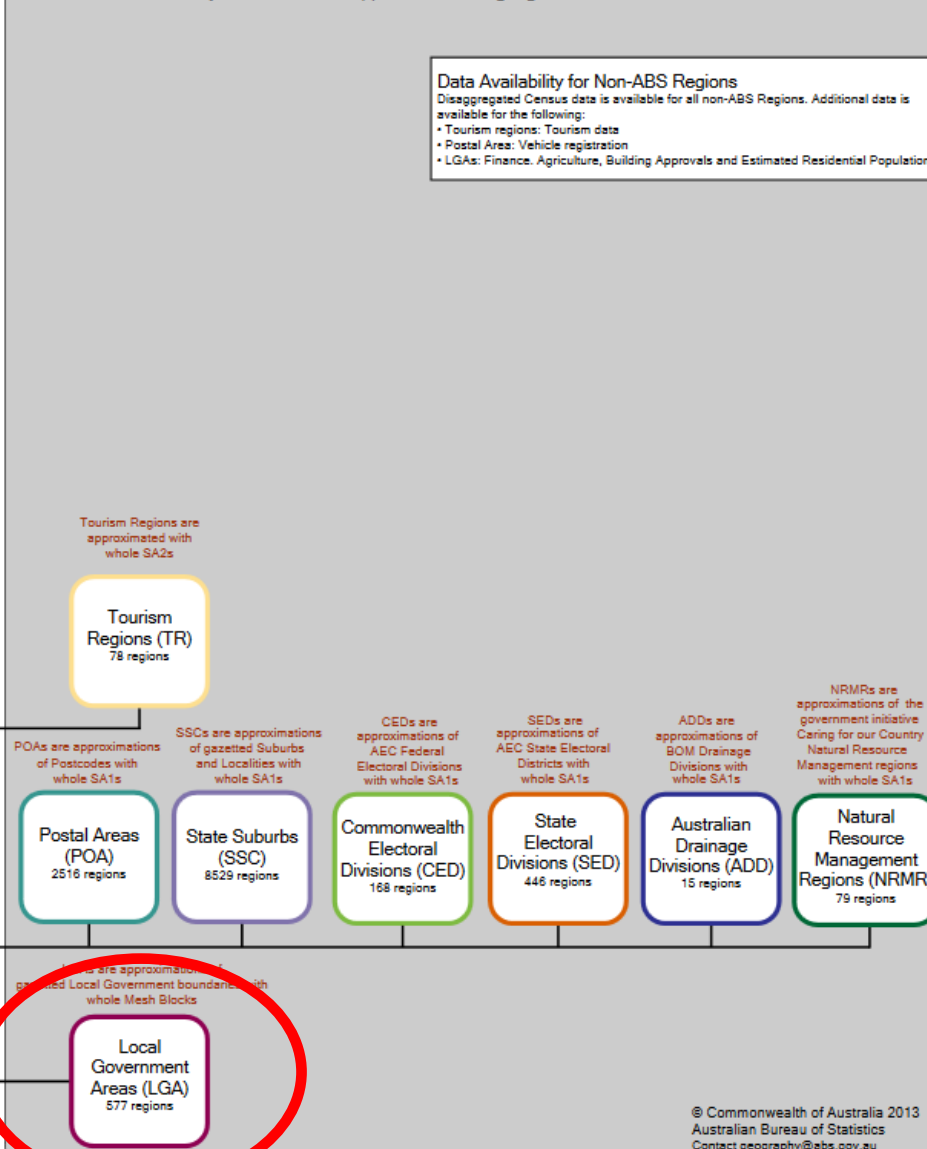
Mesh Blocks are intended as building blocks so only limited data is available:
Census population and dwelling counts

Non - ABS Structures

Structures not defined by the ABS but are approximated using regions from the ABS Main Structure.

Data Availability for Non-ABS Regions

Disaggregated Census data is available for all non-ABS Regions. Additional data is available for the following:
• Tourism regions: Tourism data
• Postal Area: Vehicle registration
• LGAs: Finance, Agriculture, Building Approvals and Estimated Residential Population.



ABS Maps

<https://itt.abs.gov.au/itt/r.jsp?ABSMaps>

Search by Region

<https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20search%20by%20geography>

ACCESSING CENSUS DATA

The screenshot displays the Australian Bureau of Statistics (ABS) website. At the top, there is a header with the ABS logo and a search bar. Below the header is a navigation bar with links to Statistics, Census, Complete your survey, and About us. The main content area is titled "Census" and is divided into three columns: DATA BY GEOGRAPHY, DATA BY PRODUCTS, and UNDERSTANDING THE CENSUS. The DATA BY GEOGRAPHY column includes links for QuickStats Search, Advanced Search by Geography, and CENSUS STORIES. The DATA BY PRODUCTS column includes links for Which Census Product is Best for You?, QuickStats, Community Profiles, DataPacks, TableBuilder, Customised Data Services, and More Census Products. The UNDERSTANDING THE CENSUS column includes links for Understanding Census Data, 2016 Census Overview, Privacy, Confidentiality & Security, 2016 Census Dictionary, and Historical Census Data.

Australian Bureau of Statistics

Search

Statistics Census Complete your survey About us

[ABS Home](#)

Census

DATA BY GEOGRAPHY

QuickStats Search 2016
Enter a location

Advanced Search by Geography
State Suburbs, Postal Areas, Electoral Divisions, Indigenous Geographies etc

CENSUS STORIES

Data in Pictures
Overview of Australia, States, Territories and Capital Cities

Stories from the 2016 Census
Articles on a wide range of topics using 2016 Census data

Australia Revealed
Who we are, how we live and where we come from

The 'Typical' Australian
The first insights from the 2016 Census

Census Data in Use
How others use Census data

DATA BY PRODUCTS

Which Census Product is Best for You?
Comparison table of a selection of available products

QuickStats
Three search options providing summary Census data for a selected area

Community Profiles
Provides an Excel spread sheet of detailed Census data for a selected area

DataPacks
Allows you to manipulate Census data in your own systems

TableBuilder
Enables you to create tables, graphs and maps of Census data

Customised Data Services
Let us customise data to meet your specific needs

More Census Products
Socio-Economic Indexes for Areas, Census Sample Files, Longitudinal Dataset, Mesh Block Counts

UNDERSTANDING THE CENSUS

Understanding Census Data
How we collect, store and quality assure your data

2016 Census Overview
What happened, What's next

Privacy, Confidentiality & Security
How we uphold our legal obligations

2016 Census Dictionary
Glossary terms, Classifications

Historical Census Data
2011, 2006, 2001, 1996, 1991 and beyond

<https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/Census?OpenDocument&ref=topBar>

ACCESSING CENSUS DATA

Which Census Product is Best for You?



Data in Pictures



QuickStats



Community Profiles



DataPacks




TableBuilder

User level	Introductory	Introductory	Intermediate	Advanced	Intermediate - Advanced
Geographies available	Australia, States and Territories, Greater Capital Cities	To the Statistical Area Level 1, including Indigenous geographies	To the Statistical Area Level 2, including Indigenous geographies	All geographies	All geographies
Features	Delivers eye catching infographics that are shareable, easily digestible and provides a good starting point for viewing high level data for States, Territories and Capital Cities of Australia	Three search tools. Enables quick access to summary information about people, families and dwellings based on place of usual residence and compares it to state and national data. At the state and national level, QuickStats highlights key differences between 2011 and 2016 Census data	Pre populated data. Community Profiles provides a comprehensive statistical picture of an area, about the people, families and dwellings based on place of usual residence. Compare characteristics of different areas based on General Community, Aboriginal and Torres Strait Islander Peoples and Time Series Profiles	Pre populated data. Designed for clients who have their own database or analysis systems. Compare characteristics of different areas based on General Community, Aboriginal and Torres Strait Islander Peoples and Time Series Profiles plus Place of Enumeration and Working Population	Is designed for advanced Census data users who want the freedom to create their own tables at any geographic area level. It provides access to nearly all variables available in Census data
Format	Image	Webpage	Excel	CSV	Basic and complex tables

EXAMPLE 2: URBAN ANALYTICS

QUICKSTATS



[Statistics](#) | [Census](#) | [Complete your survey](#) | [About us](#)

[ABS Home](#) > [Census](#) > [Quickstats](#)


2016 Census QuickStats

Australia | Queensland | Greater Capital City Statistical Areas

Greater Brisbane

Code 3GBRI (GCCSA)

[Search for a Community Profile](#)




People

2,270,800

Male 49.2%

Female 50.8%

Median age 35




Families

591,505

Average children per family for families with children 1.9

for all families 0.8



All private dwellings

901,797

Average people per household 2.7


Median weekly household income \$1,562

Median monthly mortgage repayments \$1,861

Median weekly rent \$355

Average motor vehicles per dwelling 1.8

QuickStats Search



© 2017 MapData Services Pt... esri

People

includes demographics & education | cultural & language diversity | employment

COMMUNITY PROFILES

2016 Census Community Profiles

Australia | Queensland | Greater Capital City Statistical Areas

Greater Brisbane

Code 3GBRI (GCCSA)

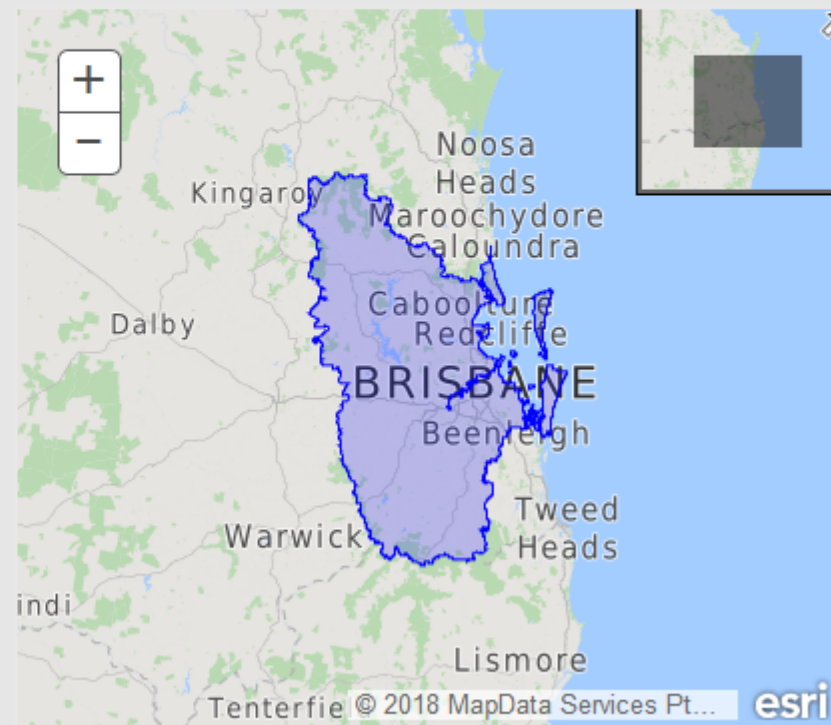
[View the Quickstat for Greater Brisbane](#)

To download a **compressed Excel Community Profile** spreadsheet of this area, select one of the following profile types. **Median and average values may be affected by confidentiality in small areas.**

	General Community Profile	507KB
	Aboriginal and Torres Strait Islander Peoples Profile	274KB
	Time Series Profile	316KB
	Working Population Profile	819KB

CommunityProfile Search

GO



DATA PACKS

DataPacks

[Open DataPacks](#)

[Open GeoPackages](#)

DataPacks

DataPacks is suitable for experienced Census data users who have their own database or analysis systems. They contain data for all Census geographies from Australia down to Statistical Area Level 1.

The data items in DataPacks are contained in CSV files which can be imported into existing systems and are ready for immediate manipulation or merging with digital boundaries.

There is a total of five DataPacks, based on Community Profiles with one additional profile:

- General Community
- Aboriginal and Torres Strait Islander People
- Time Series
- Place of Enumeration (additional)
- Working Population

Details on Place of Enumeration and Working Population Profiles can be found in [Census of Population and Housing - Products and Services, 2016 \(cat no. 2011.0.55.001\)](#).

For more detail on which geographies will be available, view the [DataPacks geography table](#).

To find the latest changes to 2016 data, view the [Corrections to 2016 Data](#).

TABLE BUILDER

TableBuilder

The ABS has updated some SEIFA data in Census TableBuilder Pro. These adjustments are mainly minor, but are more significant for Population-based indices for Dwellings and Families datasets. If you have undertaken data analysis on SEIFA variables, we recommend you revisit your analysis to confirm your findings have not been affected by this update.

[Open TableBuilder Basic or Pro](#)

[Open TableBuilder Guest](#)


Census TableBuilder is an online data tool in which you can create tables, graphs and maps of Census data. It is designed to help you produce data specific to your needs.

You can:


- construct tables of Census data for a range of geographic areas, including small area geographies like Postcodes
- display data by counts or percentages
- view and export data as graphs and thematic maps in a variety of formats, including PDF and KMZ files
- create and save customised geographic areas and data items (recodes).

For information on data items available for the 2016 Census, see the [2016 Census TableBuilder Guest, Basic and Pro Data item list](#) (cat. no. 2079.0)

ABS.STAT




ABS.Stat^{BETA}



ABS.Stat beta is continuing to be developed. Data will be updated as soon as possible following its 11:30am release on the ABS website

Data by theme

Find in Themes  Reset

All Themes

- ECONOMY
- HEALTH
- INDUSTRY
- LABOUR
- PEOPLE
- CENSUS
- SNAPSHOTS OF AUSTRALIA

Welcome to ABS.Stat

About the beta release

This beta release allows you to preview ABS.Stat before it is released in its final form and gives you the opportunity to provide the ABS with feedback as we work to enhance the tool.

We will continue to load new datasets and update existing datasets in ABS.Stat as soon as possible after embargo on the data is lifted. However, data in this ABS.Stat beta release may **not necessarily be the most up to date**. You are advised to check the ABS website (abs.gov.au) for the latest data.

We have created an [ABS.Stat release calendar](#) which will give you an indication of what is available in ABS.Stat and when datasets are expected to be updated. It will also provide you with information on new datasets we plan to include in the future.

We recognise that there are still some issues in the beta release. We have compiled a [list of issues](#) identified so far and are currently working to rectify these. If further issues are discovered please let us know using the "Contact us" link at the top of the page. The [ABS privacy policy](#) outlines how the ABS handles any personal information that you provide to us.

About ABS.Stat

ABS.Stat Beta is an interactive free online tool that presents data in a searchable, flexible and dynamic way.

ABS.Stat provides users with two options:

- a web browser interface where you can view, query and download data;

and

- a web services interface described in a machine-processable format using the Statistical Data and Metadata Standard (SDMX) allowing machine-to-machine mechanisms for accessing and sharing ABS data

The ABS.Stat web interface allows you to:

- search and discover ABS statistics
- query, view and download data - choose pre-packaged data or customise data to your own requirements
- view valuable metadata alongside the data
- export data in a range of formats such as Excel and CSV as well as SDMX.

The ABS.Stat web services allow the exchange of data between computer systems, or machine-to-machine services. The web services allow the ABS to share data through a programmatic interface across the internet.

Full User Assistance for both options is available from the top right hand navigation bar.

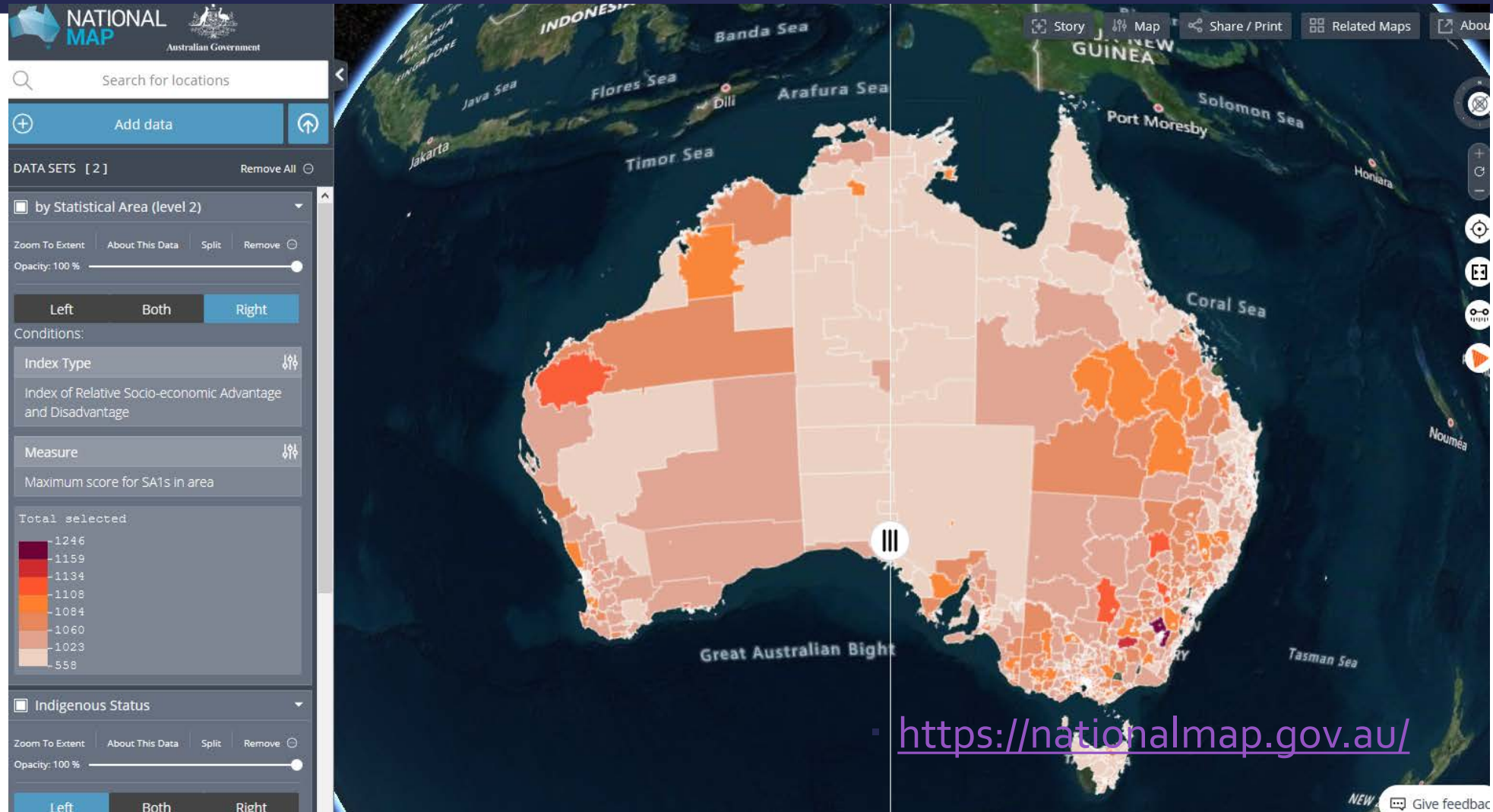
TASK 2.1

UNDERSTANDING AGE-SEX STRUCTURE

- <http://www.abs.gov.au/websitedbs/d3310114.nsf/home/Population%20Pyramid%20-%20Australia>
- Why is it important?

TASK 2.2

VISUALISING CENSUS AND OTHER DATA USING NATIONAL MAP



OPEN SESSION 2



NAVIGATING THE DATA

What is big data?

<https://www.youtube.com/watch?v=QpDfLoUHqE4>

5 Vs: **Volume; Velocity; Variety; Veracity; Value**

Too big to fit into an excel spread sheet

.... Also open data and digital repositories

EXAMPLE 1: CHARTING CULTURE

This animation distils hundreds of years of culture into just five minutes. A team of historians and scientists wanted to map cultural mobility, so they tracked the births and deaths of notable individuals like David, King of Israel, and Leonardo da Vinci, from 600 BC to the present day. Using them as a proxy for skills and ideas, their map reveals intellectual hotspots and tracks how empires rise and crumble. The information comes from Freebase, a Google-owned database of well-known people and places, and other catalogues of notable individuals

[https://www.youtube.com/watch?v=4gIhRkCcD4](https://www.youtube.com/watch?v=4gIhRkCcD4U)

U

EXAMPLE 2: URBAN ANALYTICS

London transport: Oyster Cards

https://www.youtube.com/watch?v=QQV3UHsZ_u4

- Go Card records: 500K records per day
- Examining travel behaviour and impact of weather events etc.

Tao, S., Rohde, D., & Corcoran, J. (2014). Examining the spatial-temporal dynamics of bus passenger travel behaviour using smart card data and the flow-comap. *Journal of Transport Geography*, 41, 21-36. doi:<http://dx.doi.org/10.1016/j.jtrangeo.2014.08.006>

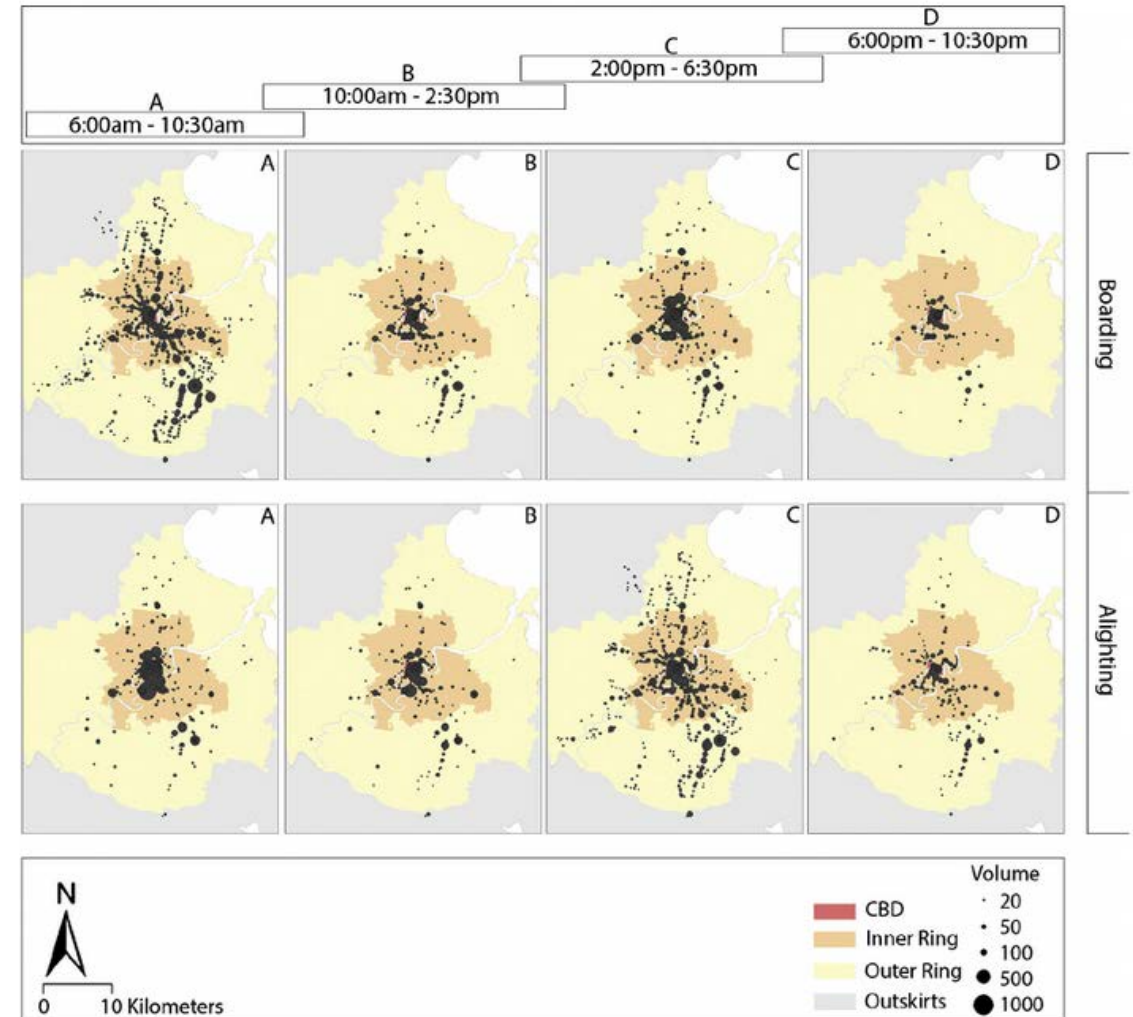
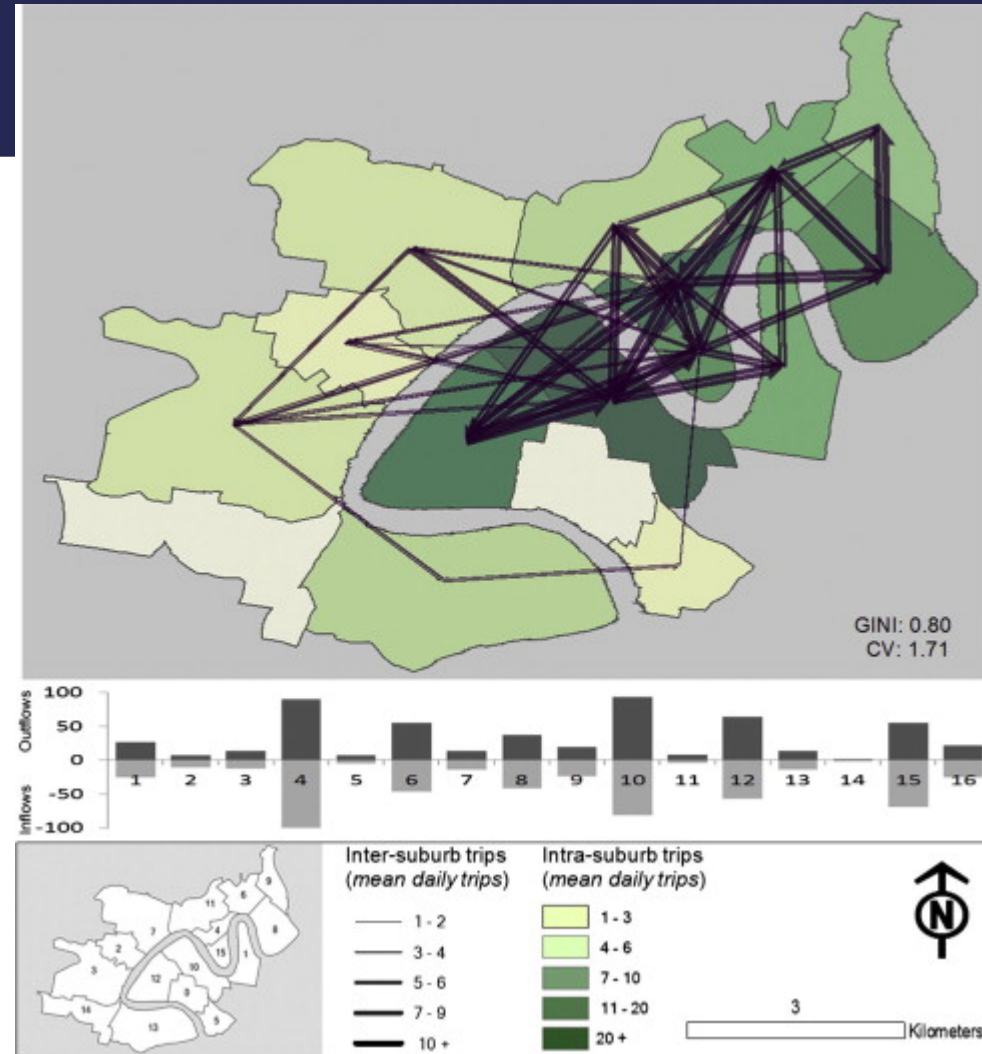


Fig. 10. Comparison of bus boarding and alighting (by time of day).

BIKE SHARING

- PBSPs can be found in five continents and include in excess of 200 schemes
- <http://bikes.oobrien.com/global.php#zoom=3&lon=-150.0000&lat=30.0000>
- Disaggregate CityCycle trip data was drawn upon for a period covering 20 months (November 2010 to July 2012) and comprised a total of 285,714 trips



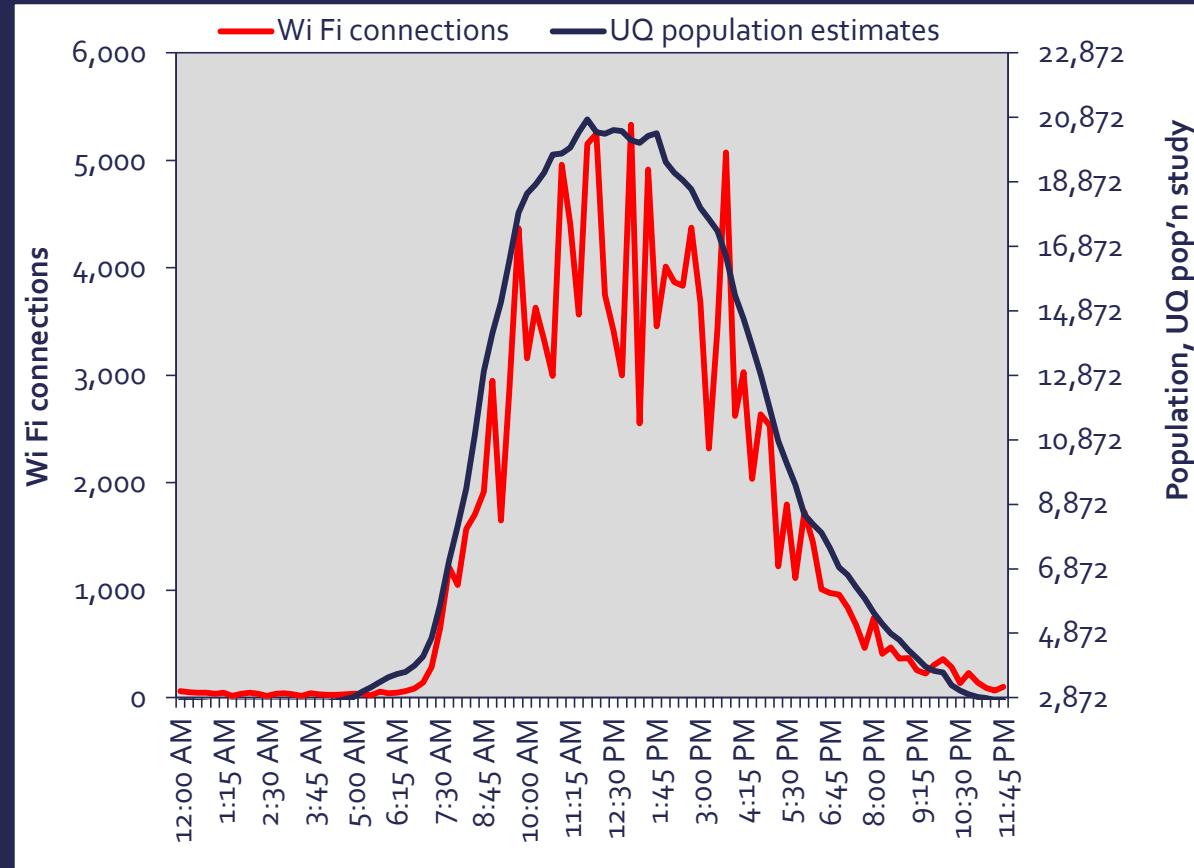
Corcoran, J., Li, T., Rohde, D., Charles-Edwards, E., & Mateo-Babiano, D. (2014). Spatio-temporal patterns of a Public Bicycle Sharing Program: the effect of weather and calendar events. *Journal of Transport Geography*, 41, 292-305. doi:<http://dx.doi.org/10.1016/j.jtrangeo.2014.09.003>

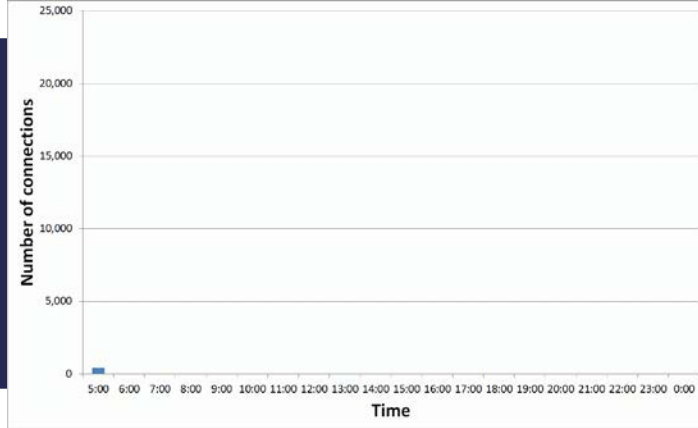
TEMPORARY POPULATIONS

- Estimates of populations in an area rather than resident populations
- Web-based data e.g. Twitter, Facebook
 - Sims *et al* (2017) – *Application of Social Media Data to High-Resolution Mapping of a Special Event Population*
 - Blanford *et al* (2015) – *Geo-Located Tweets: Enhancing Mobility Maps and Capturing Cross-Border Movement*
- Mobile phones e.g. Call, GPS
 - Ahas *et al* (2007) – *Seasonal tourism spaces in Estonia: Case study with mobile positioning data*
 - Deville *et al* (2014) – *Dynamic population mapping using mobile phone data*

UQ ST LUCIA

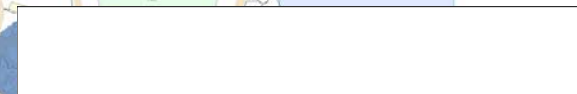
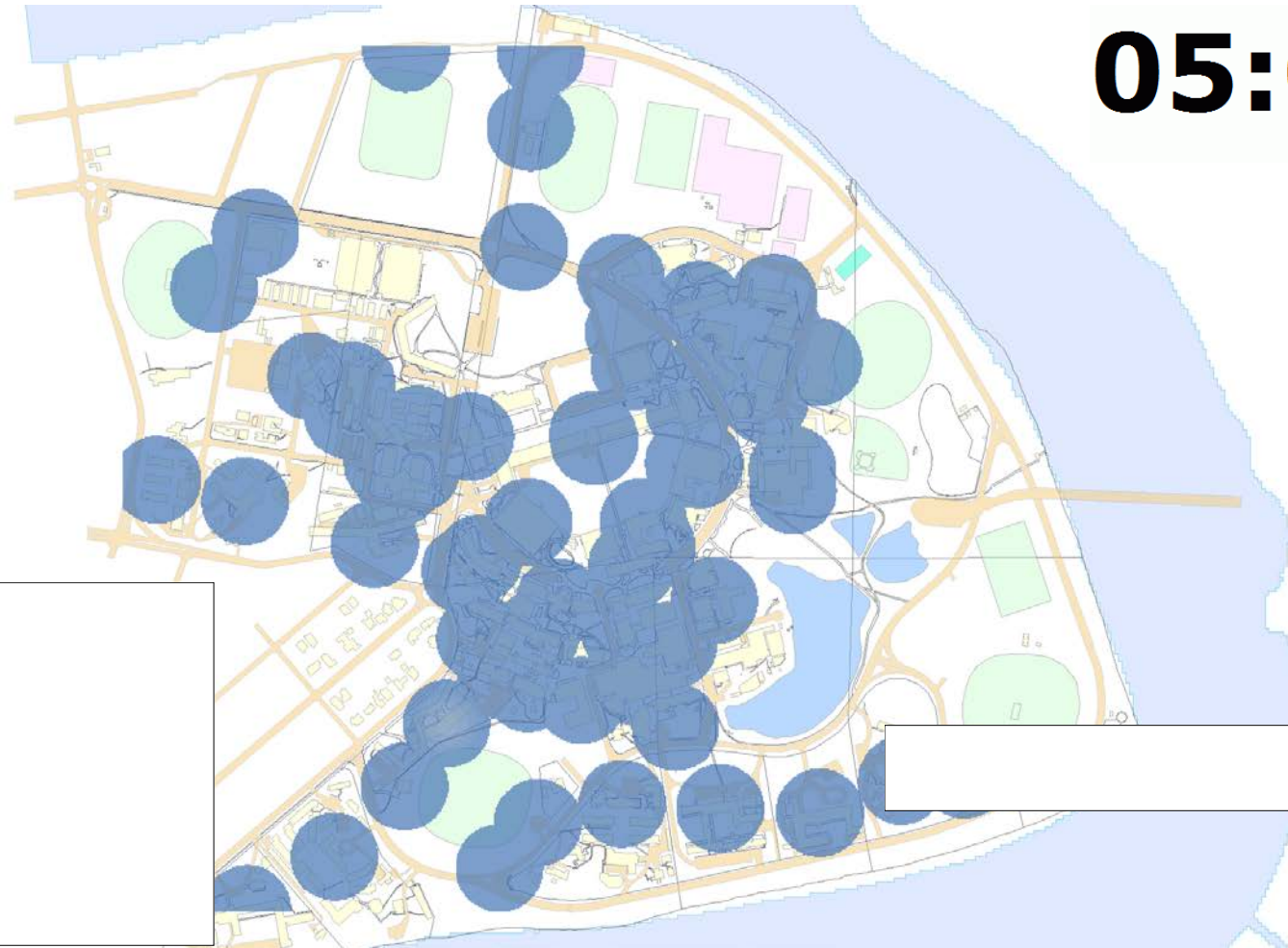
- De-identified Wi-Fi connections from UQ Eduroam network
- 3,300+ wireless access points across St Lucia campus
- ~ 5 million connections per month



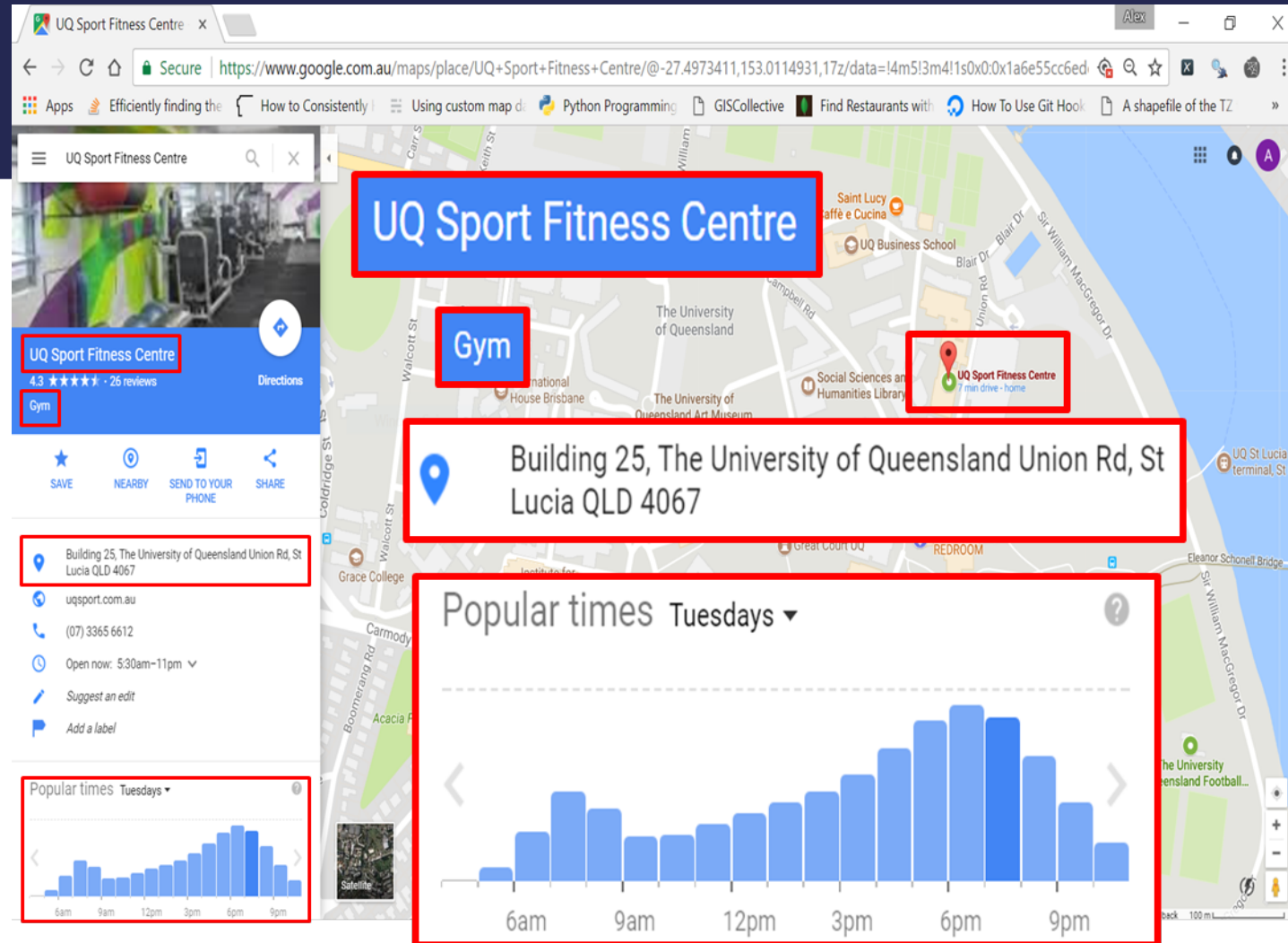


DISTRIBUTION OF POPULATION ON CAMPUS

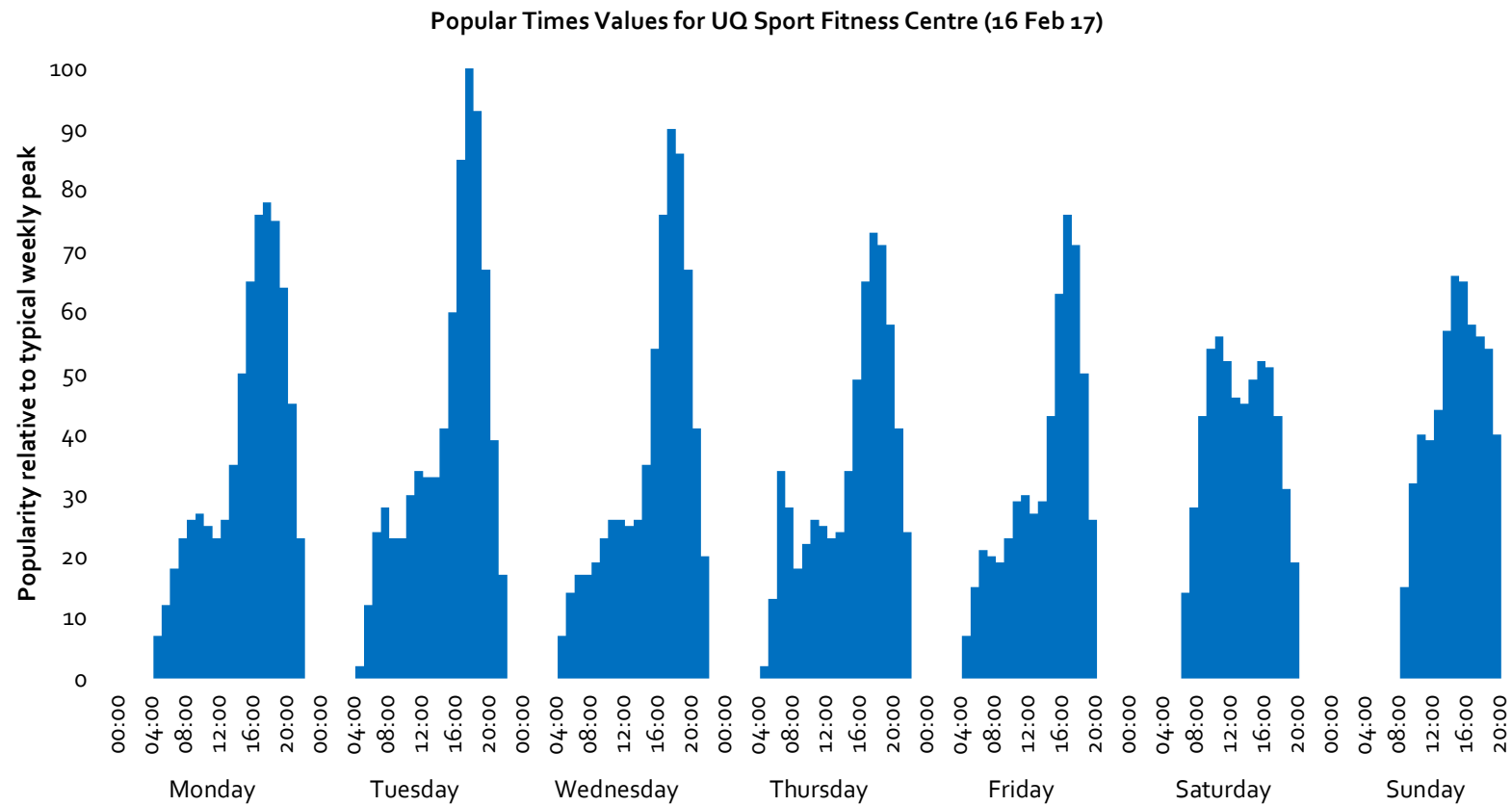
05:00



GOOGLE PLACES



POPULAR TIMES

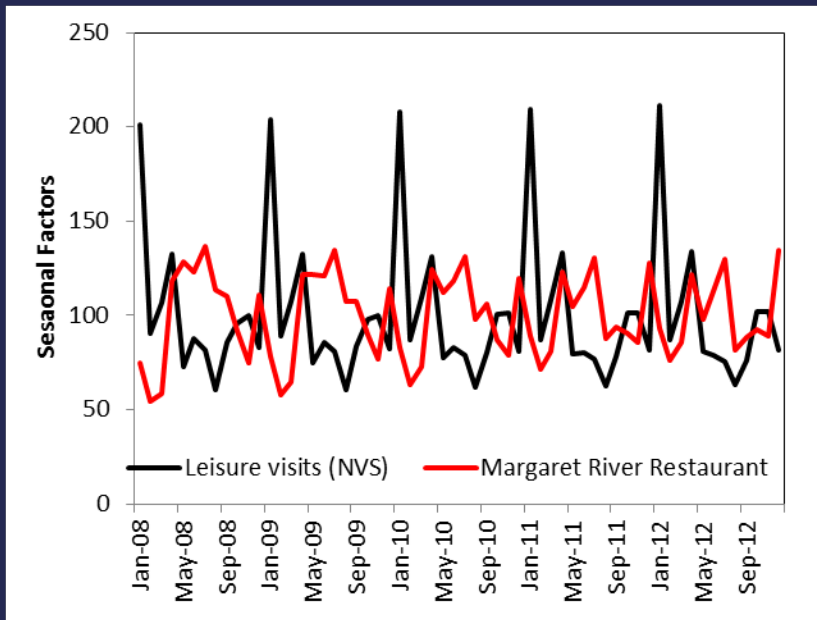
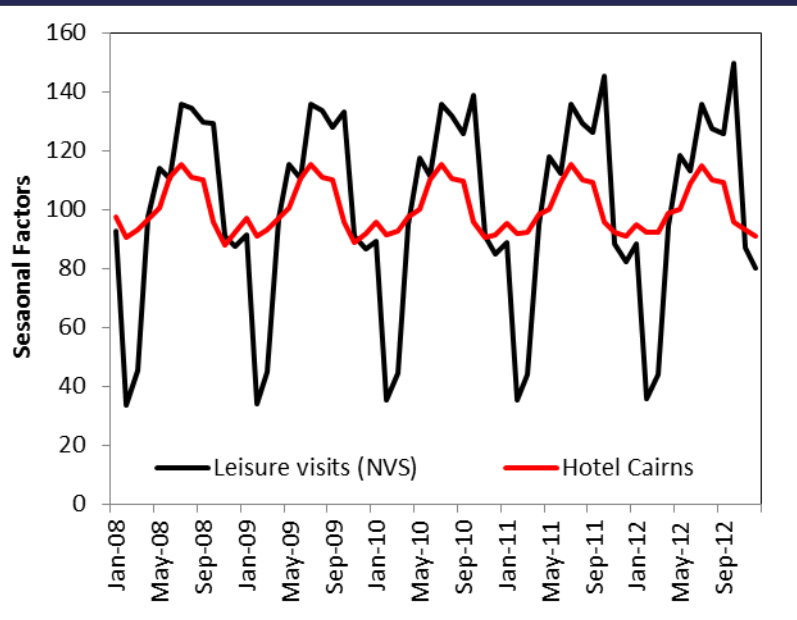
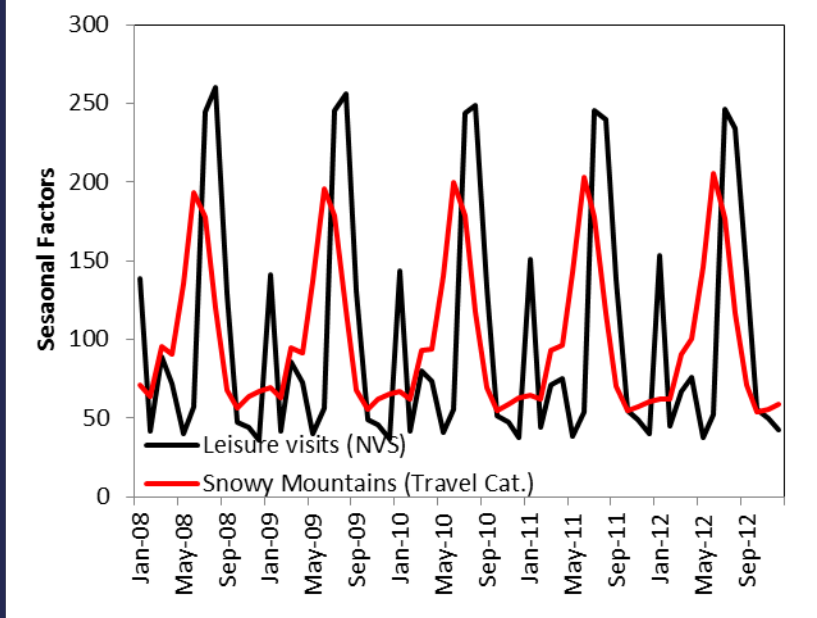
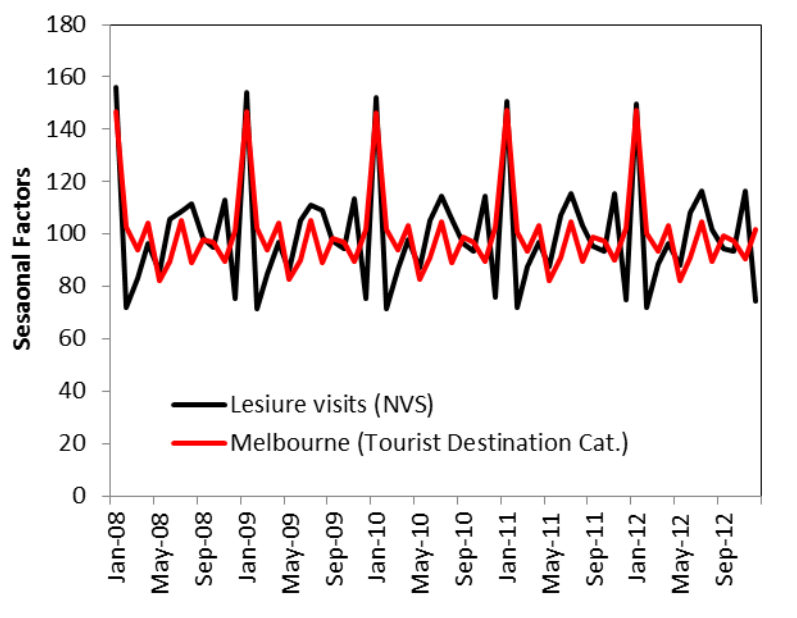


GOOGLE TRENDS

(WWW.GOOGLE.COM/TRENDS)

- The Google search engine processes ~ 30 billion searches a week (Batty 2013)
- Time series index of the number of searches for a particular term relative to the total number of searches done on Google (since 01/2004)
- Data are available in “real-time”
- Data are available at a country level but also at lower levels for a number of countries (e.g. metro regions in US, States in Australia)
- Search terms are automatically classified into 27 categories > 241 sub-categories
- Google Trends does not report raw numbers of queries
 - Data are normalised by total Google search traffic in a location at a specific point in time
 - Data are then scaled by dividing by the maximum value and *100
 - Google set a threshold so low volume searches do not appear
 - Eliminates repeat searches by a single user over a short period of times
 - Further detail can be found at www.google.com/trends

SELECTED RESULTS



SOME READILY ACCESSIBLE DATA

- Google trends

<https://trends.google.com.au/trends/explore?q=%2Fm%2Fo3hg0x>

- Twitter Maps

<http://onemilliontweetmap.com/>

TOPICS

- Geography of the superrich
- Risk and resilience to natural hazards
- Drought
- Air pollution
- Other?

OPEN SESSION 3