

A journey of exploring Australian housing market

...

Alex Chen
15 Sep 2017

Potential audience:

- 180k individuals who immigrated to Australia last year, and
- People who want to immigrate to Australia (myself included)

Know very little about
Australia and Australian real
estate market.

Young people who has little
deposit -- to rent

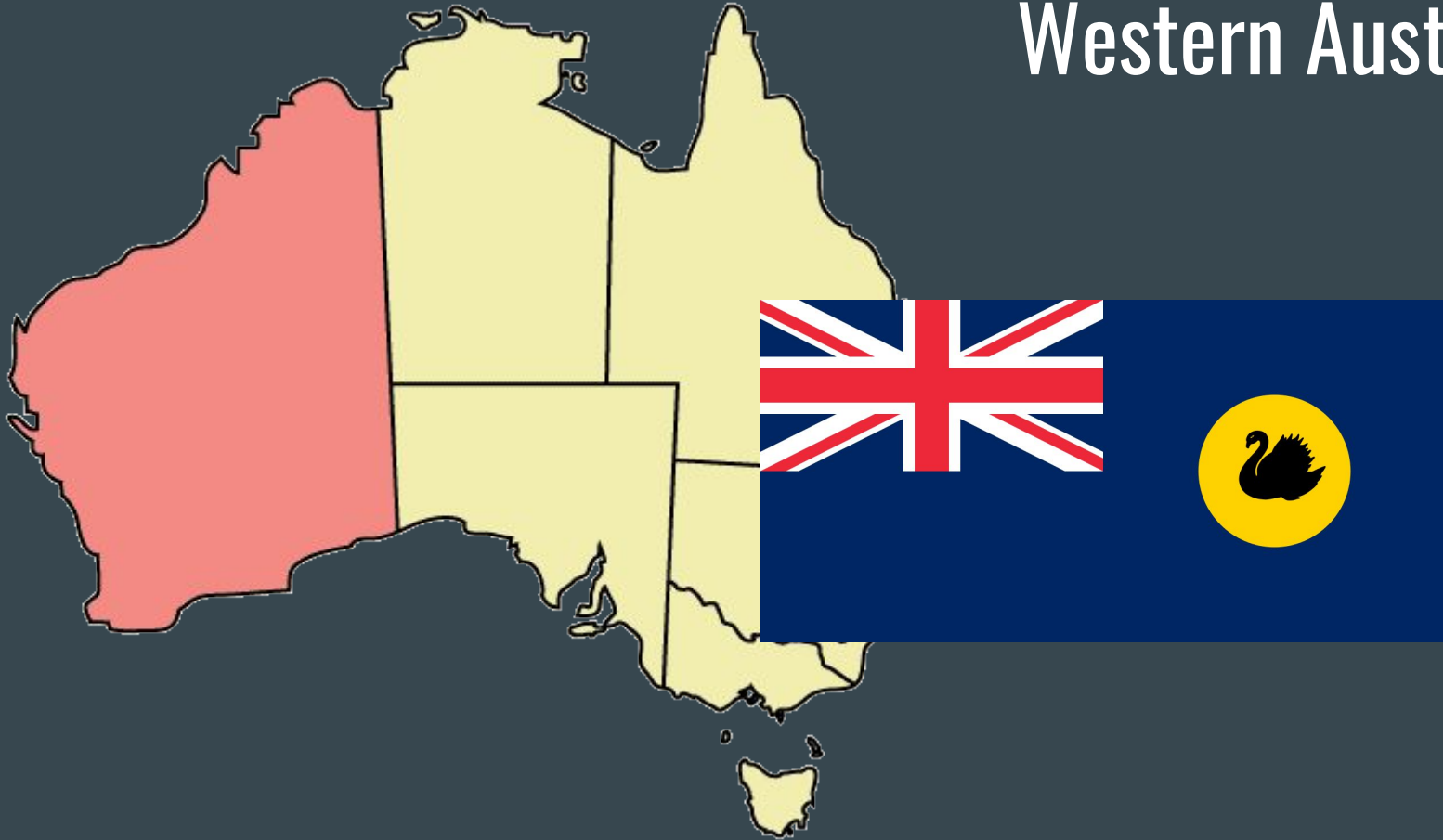
Others who has enough
money -- to buy

Meanwhile want to have their
own property.

States and Capital Cities

6 States and 2 Major Territories in Australia

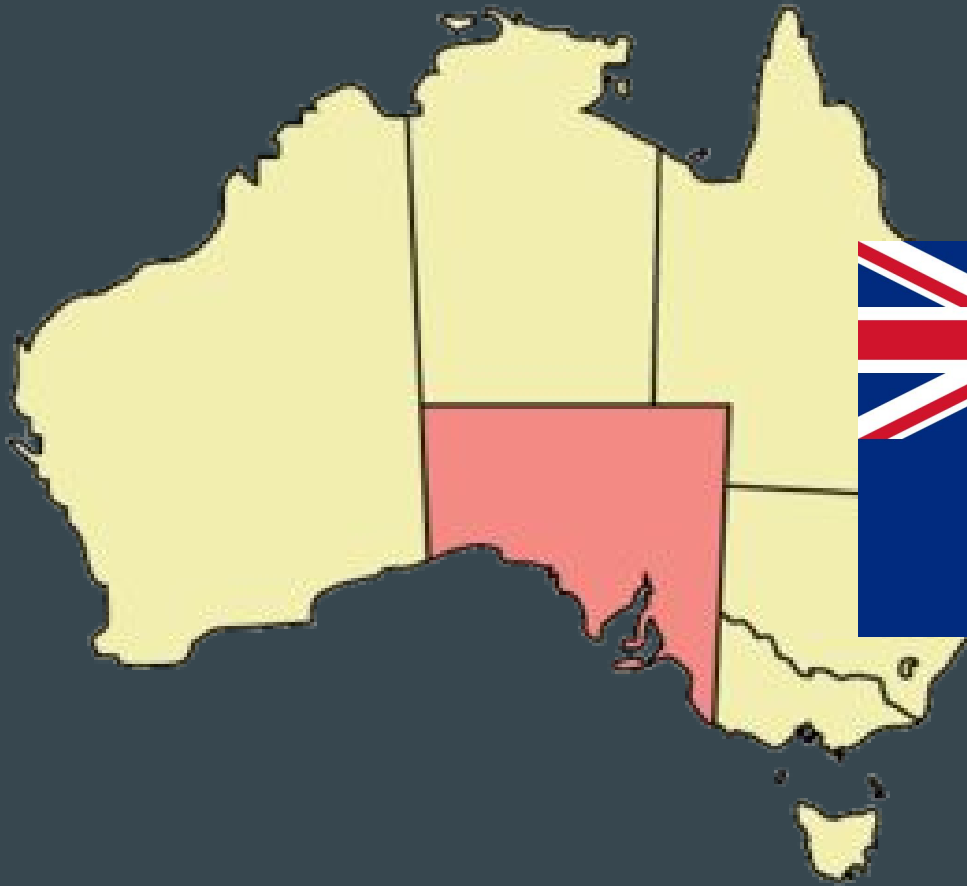
Western Australia



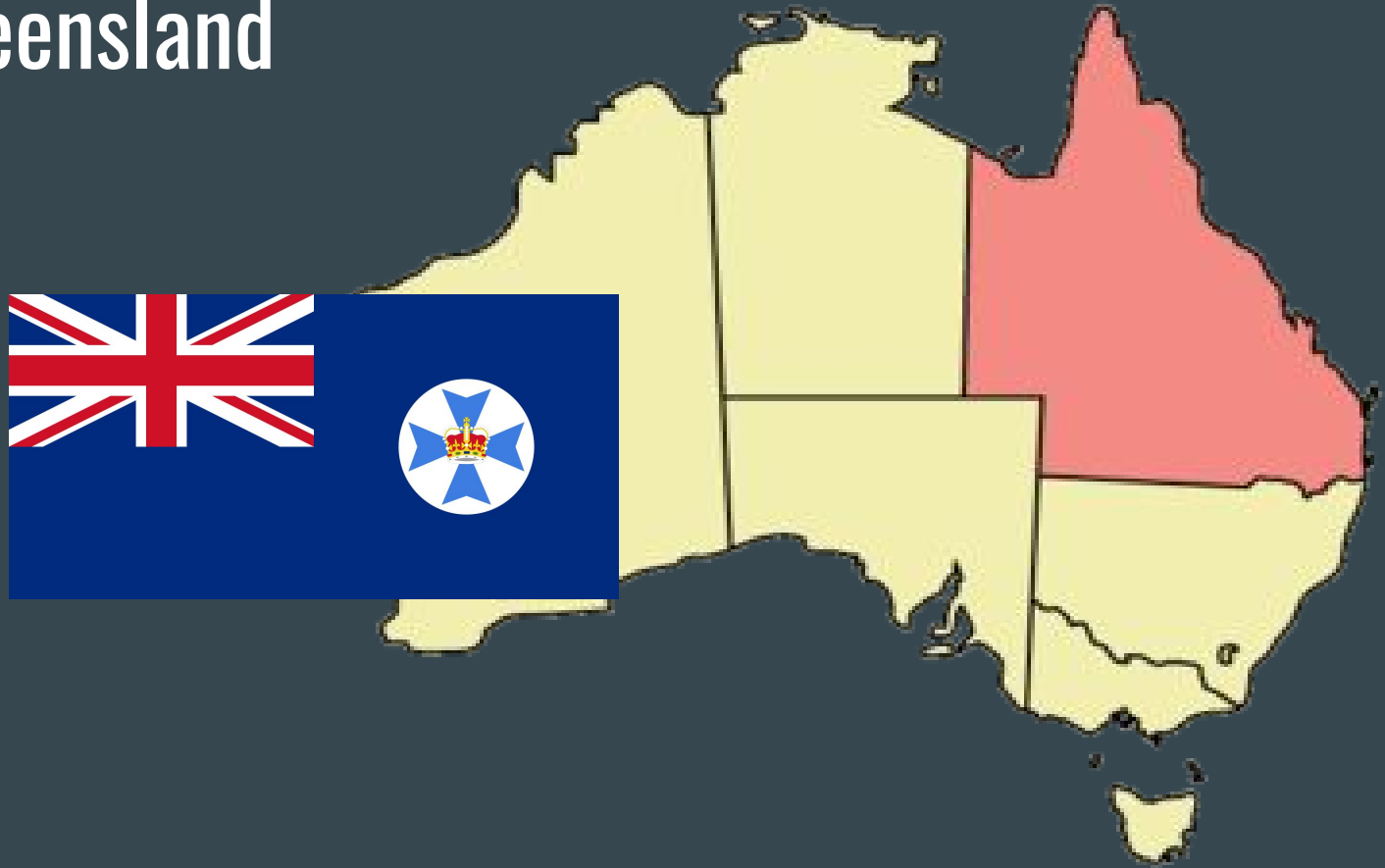
Northern Territory



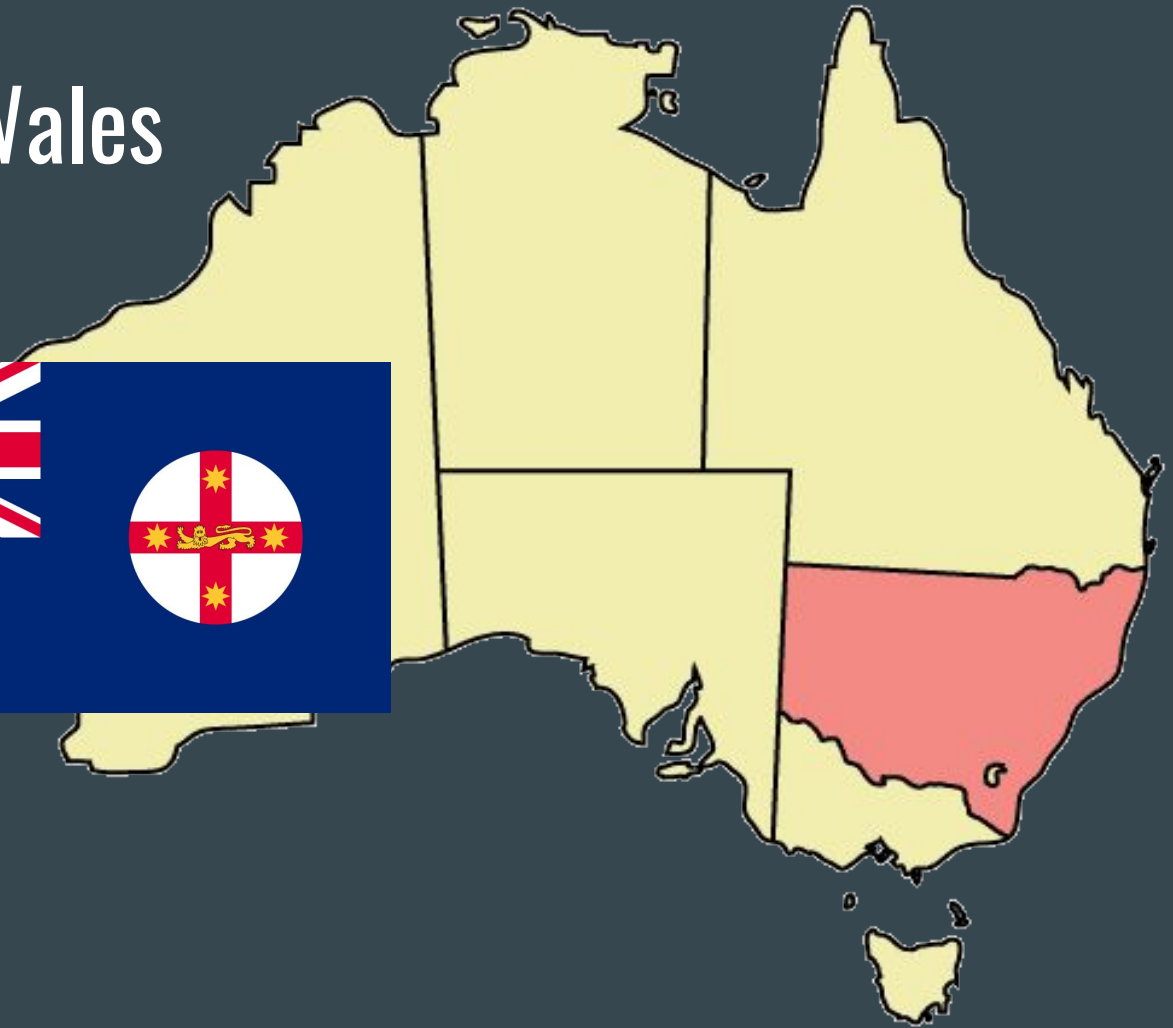
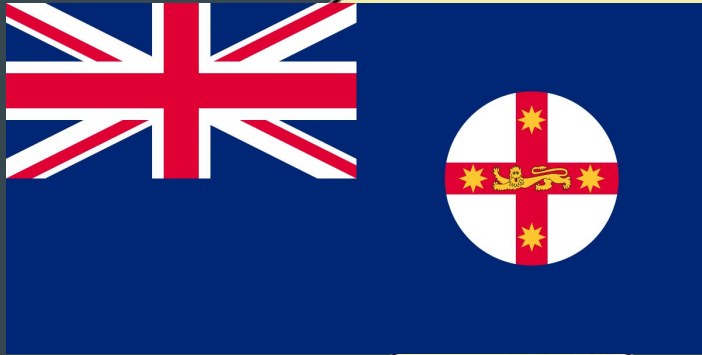
South Australia



Queensland



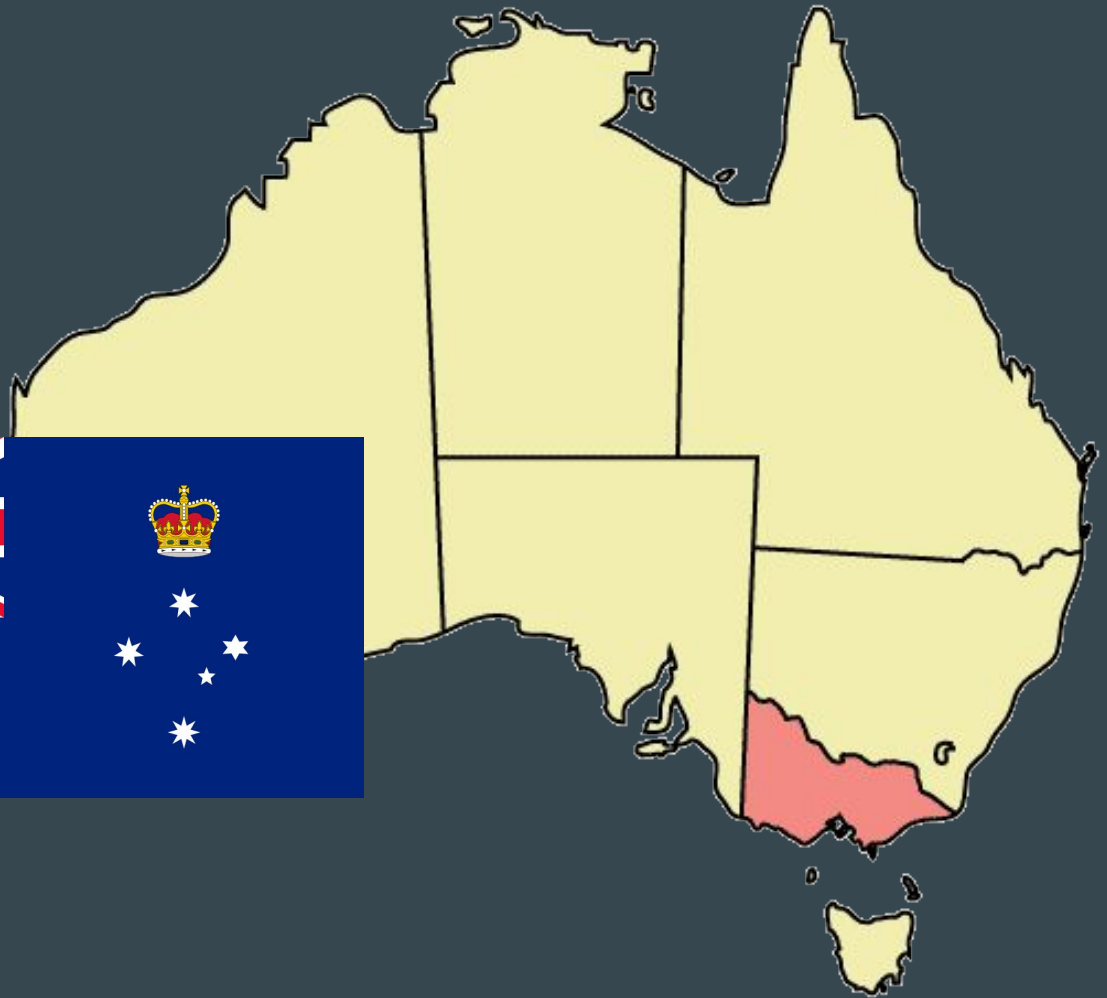
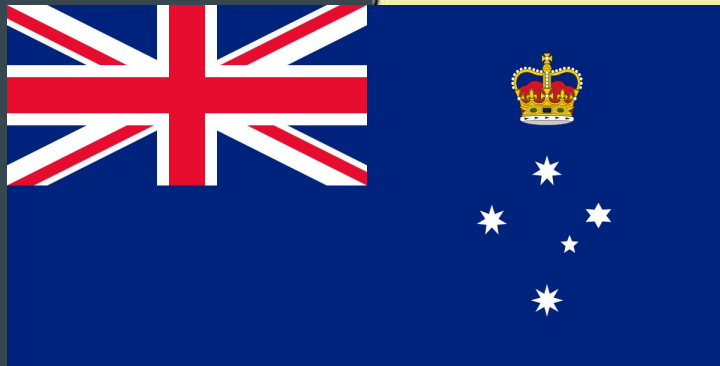
New South Wales



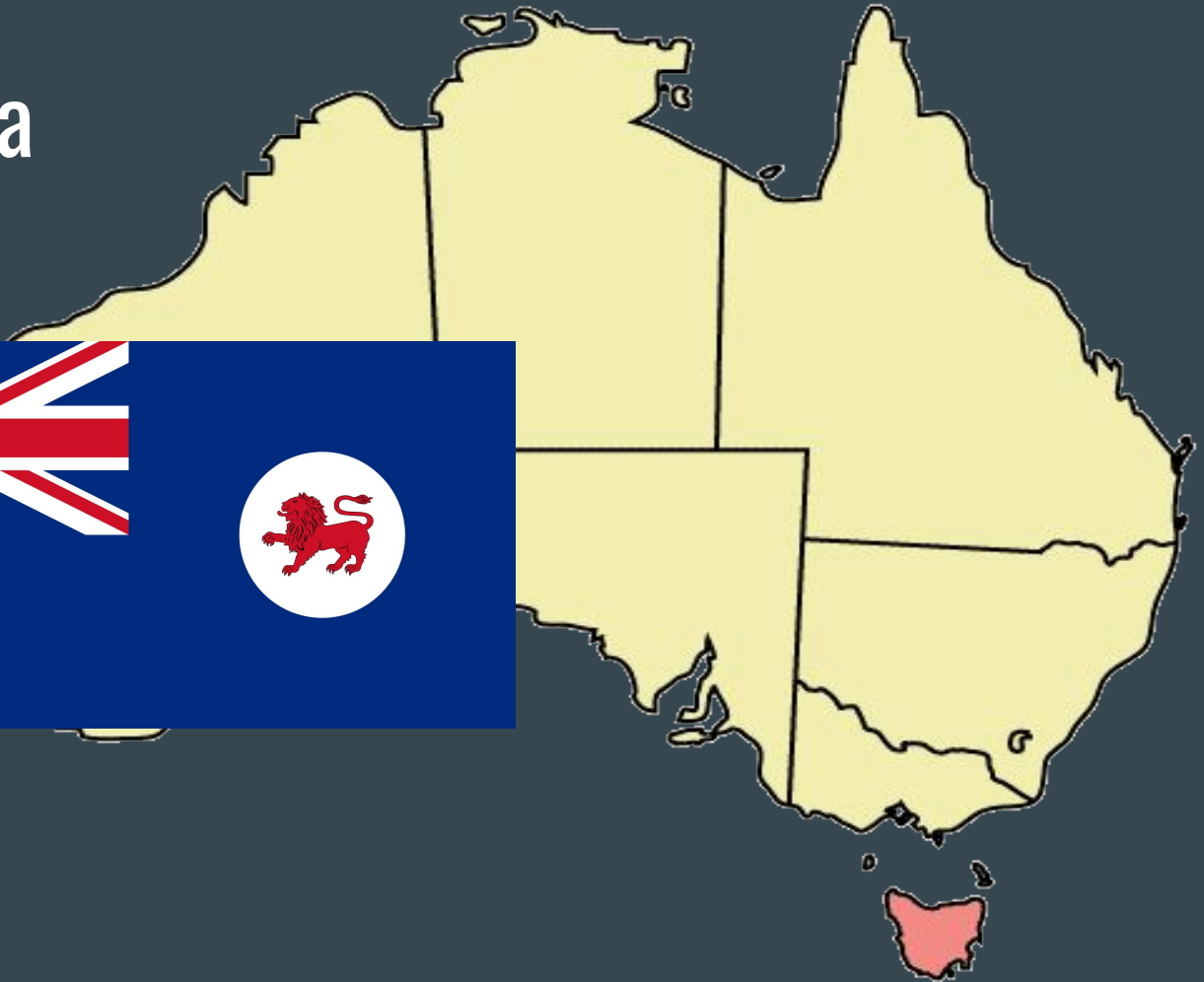
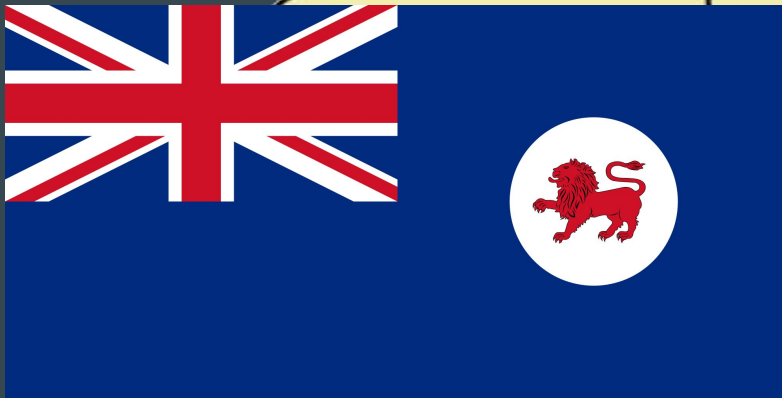


Australian Capital Territory

Victoria



Tasmania



How to choose a better place
to live
or to buy a house

- Real estate value
- Affordability
- Crime rate
- Proximity to family and friends
- Climate
- Employment opportunities
- Education system
- Food options
- City size
- Healthcare facilities
- Culture

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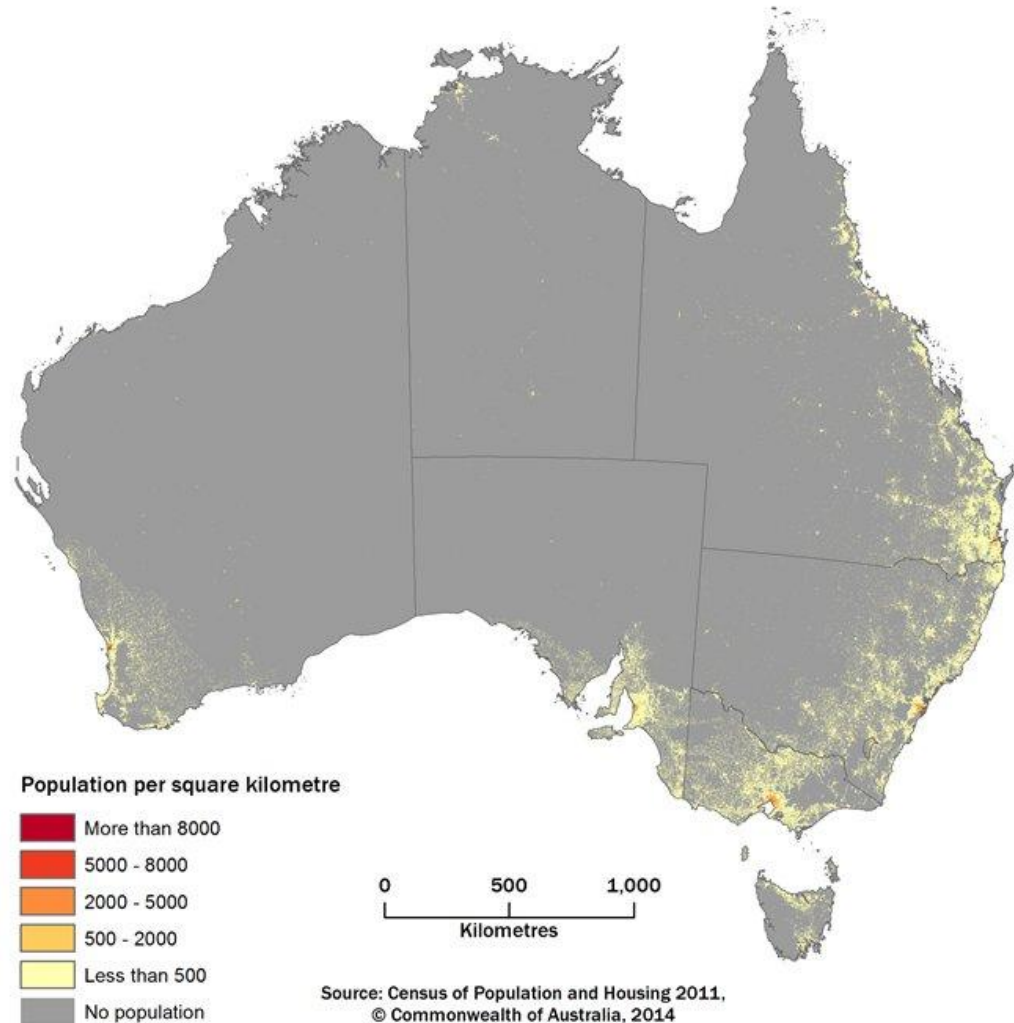


Big city with large
population

1. Real estate value
2. Big city with large population
3. Affordability

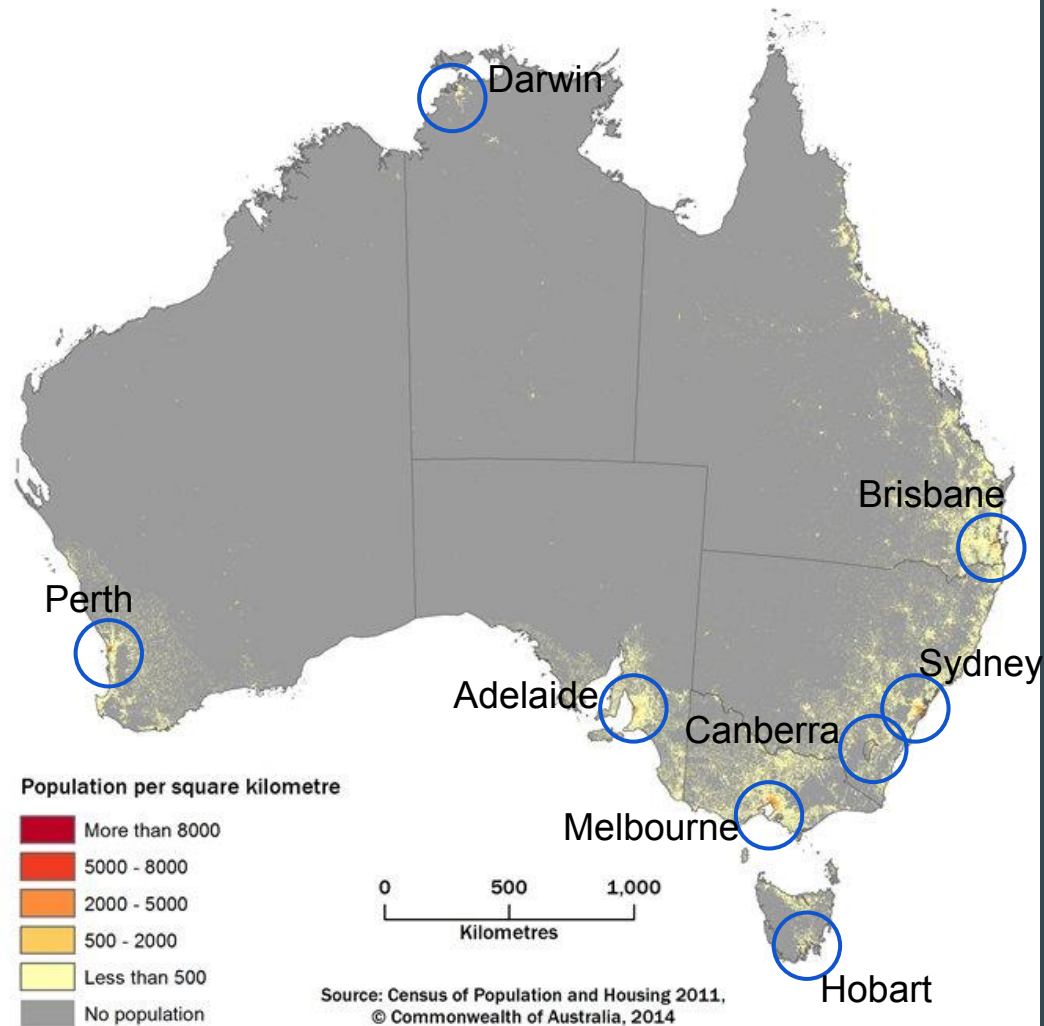
1. Real estate value
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Australia Population Density Map



Australia Population Density Map

8 capital cities in each state and major territory

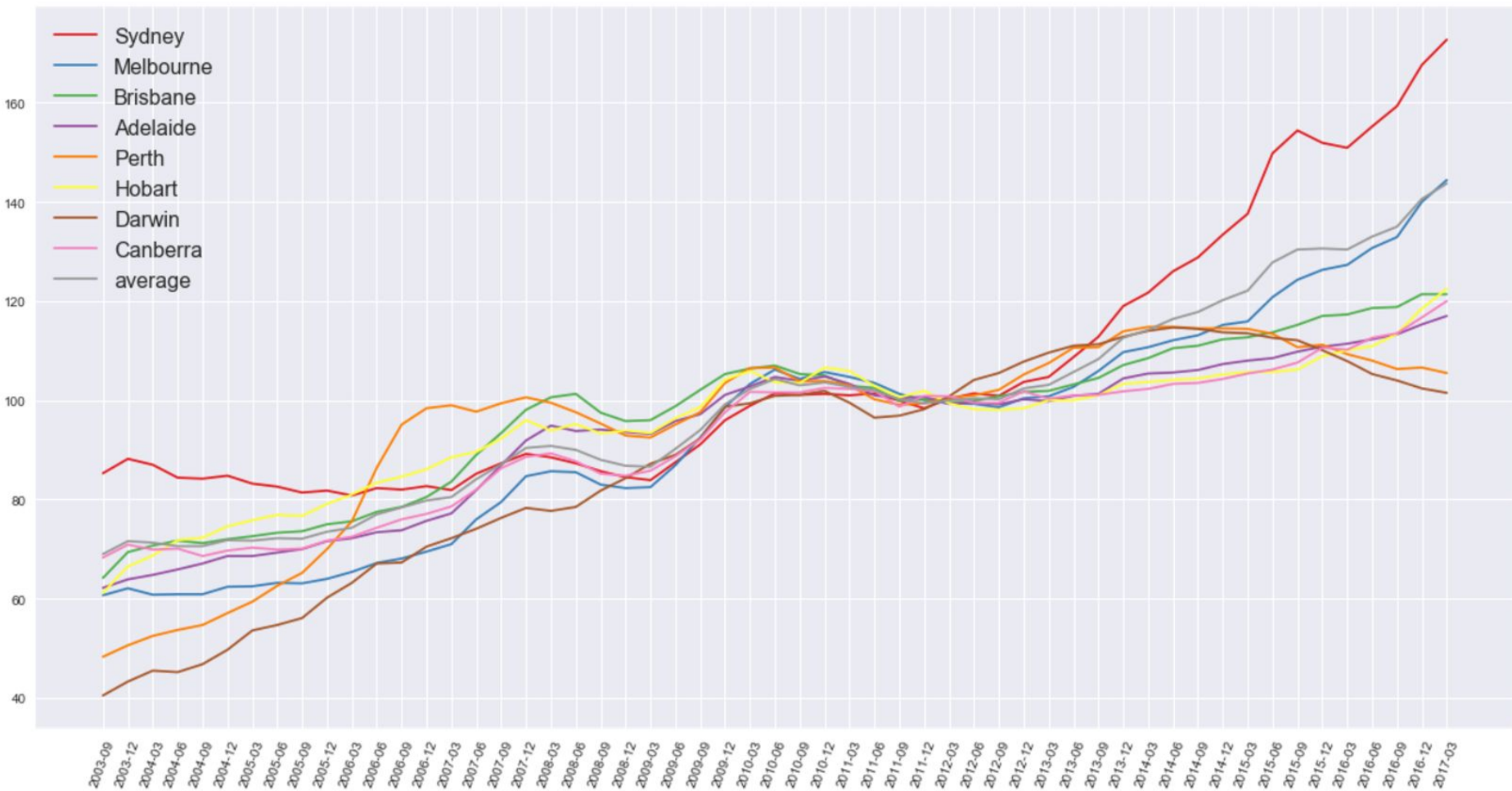


Australian Housing Market RPPI

Residential Property Price Indexes:

- Measures the price changes in all residential dwellings within the eight capital cities over time.
- Sydney, Melbourne, Brisbane, Adelaide, Perth, Hobart, Darwin, Canberra, and weighted average of the eight capital cities.

(Source: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/6416.0Main+Features1Mar%202017?OpenDocument>)



Mining industry slump House oversupply

— Sydney
— Melbourne
— Brisbane
— Adelaide
— Perth
— Hobart
— Darwin
— Canberra
— average

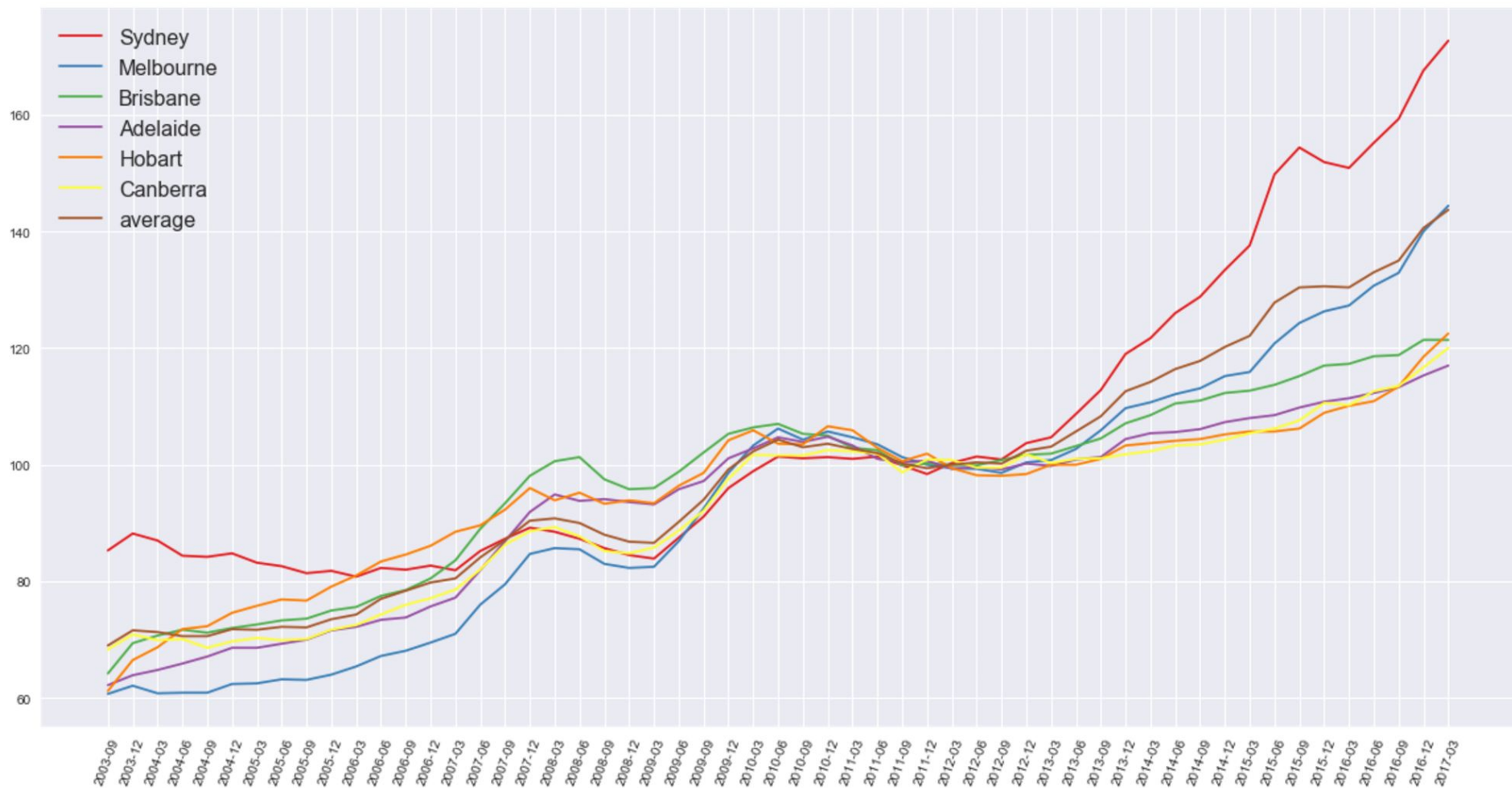
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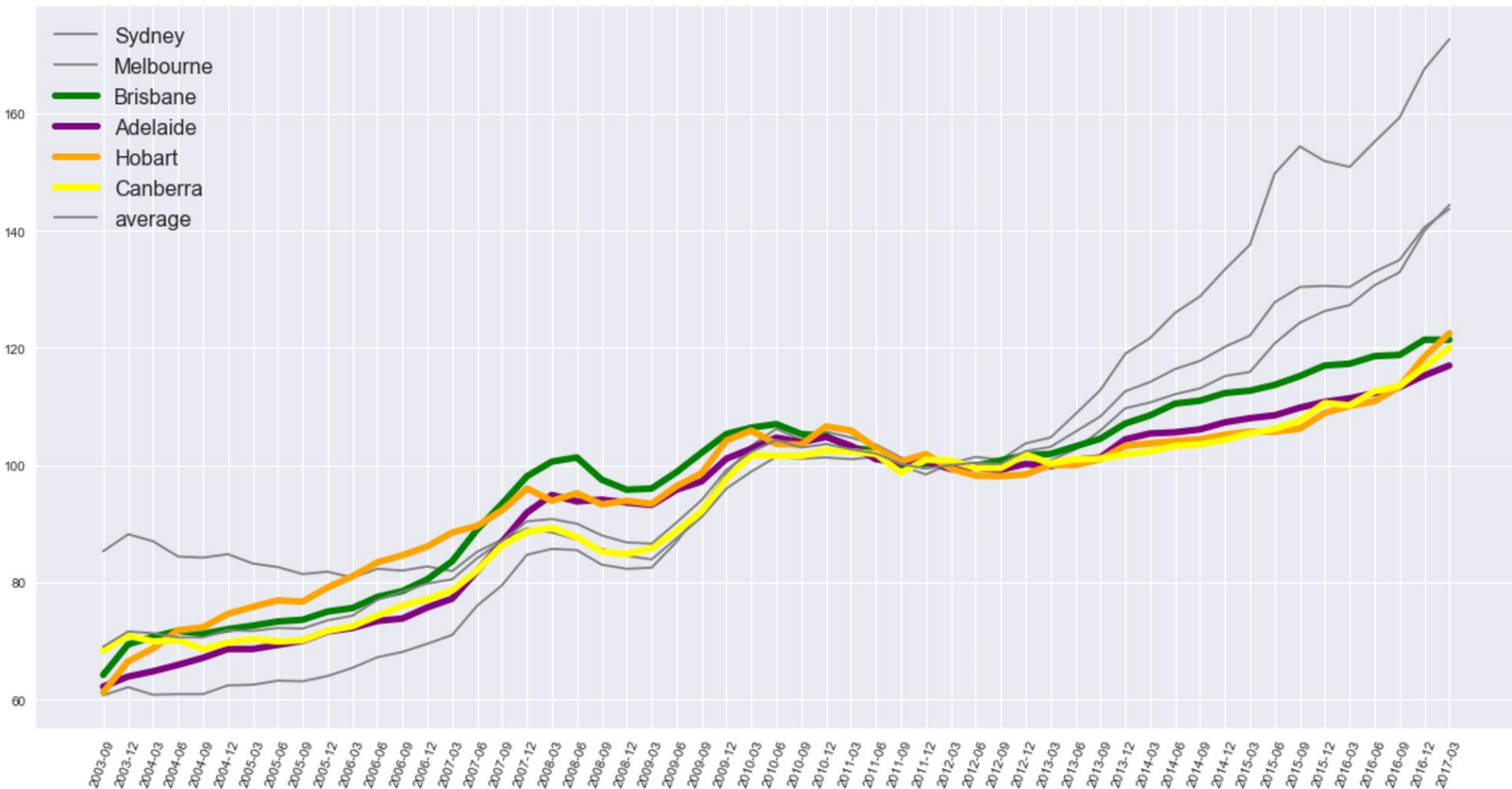
Crashed

Sydney
Melbourne
Brisbane
Adelaide
Perth
Hobart
Darwin
Canberra
average

2003-09 2003-12 2004-03 2004-06 2004-09 2004-12 2005-03 2005-06 2005-09 2005-12 2006-03 2006-06 2006-09 2006-12 2007-03 2007-06 2007-09 2007-12 2008-03 2008-06 2008-09 2008-12 2009-03 2009-06 2009-09 2009-12 2010-03 2010-06 2010-09 2010-12 2011-03 2011-06 2011-09 2011-12 2012-03 2012-06 2012-09 2012-12 2013-03 2013-06 2013-09 2013-12 2014-03 2014-06 2014-09 2014-12 2015-03 2015-06 2015-09 2015-12 2016-03 2016-06 2016-09 2016-12 2017-03

1. Real estate value
2. Big city with large population
3. Affordability





Australia - Largest Cities

	Name	Population
1	Sydney , New South Wales	4,627,345
2	Melbourne , Victoria	4,246,375
3	Brisbane , Queensland	2,189,878
4	Perth , Western Australia	1,896,548

1. Real estate value
2. Big city with large population
3. Affordability

Sydney
Melbourne
average

160

140

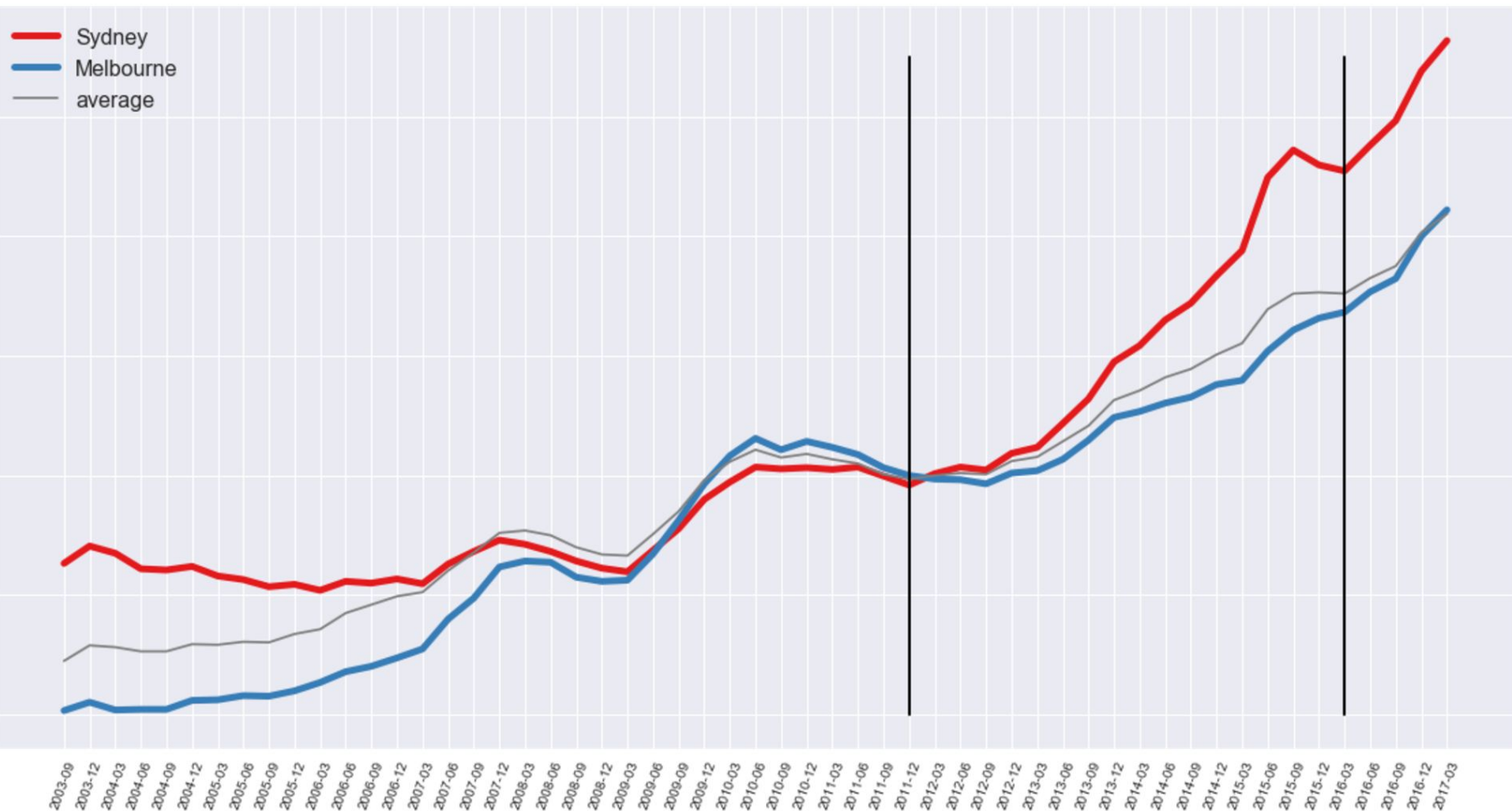
120

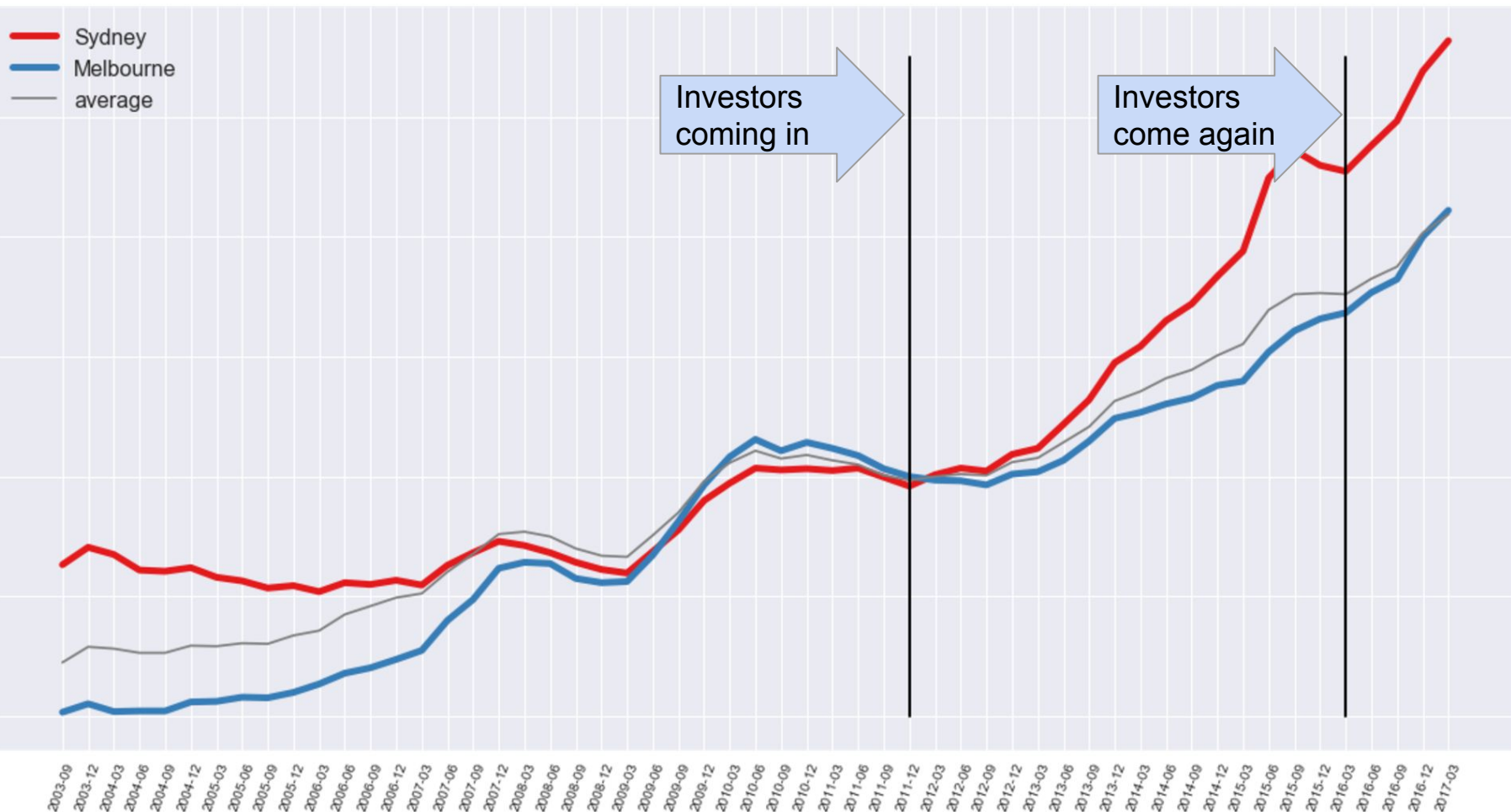
100

80

60

2003-09 2003-12 2004-03 2004-06 2004-09 2004-12 2005-03 2005-06 2005-09 2005-12 2006-03 2006-06 2006-09 2006-12 2007-03 2007-06 2007-09 2007-12 2008-03 2008-06 2008-09 2008-12 2009-03 2009-06 2009-09 2009-12 2010-03 2010-06 2010-09 2010-12 2011-03 2011-06 2011-09 2011-12 2012-03 2012-06 2012-09 2012-12 2013-03 2013-06 2013-09 2013-12 2014-03 2014-06 2014-09 2014-12 2015-03 2015-06 2015-09 2015-12 2016-03 2016-06 2016-09 2016-12 2017-03





Sydney
Melbourne
average

Investors
coming in

Investors
come again

Bubbles?
Will Sydney crash like Perth?

2003-09 2003-12 2004-03 2004-06 2004-09 2004-12 2005-03 2005-06 2005-09 2005-12 2006-03 2006-06 2006-09 2006-12 2007-03 2007-06 2007-09 2007-12 2008-03 2008-06 2008-09 2008-12 2009-03 2009-06 2009-09 2009-12 2010-03 2010-06 2010-09 2010-12 2011-03 2011-06 2011-09 2011-12 2012-03 2012-06 2012-09 2012-12 2013-03 2013-06 2013-09 2013-12 2014-03 2014-06 2014-09 2014-12 2015-03 2015-06 2015-09 2015-12 2016-03 2016-06 2016-09 2016-12 2017-03

WINNER GOES TO

12:00pm

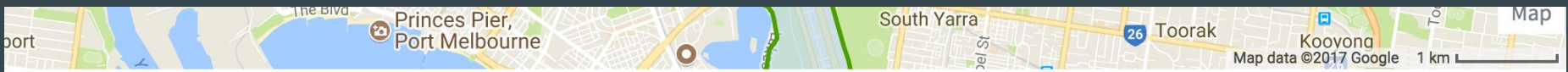


Welcome to Melbourne

12:30pm



Suburbs

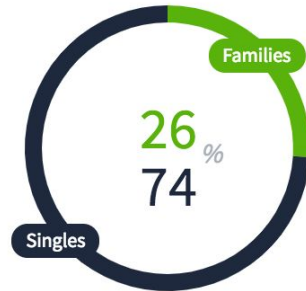


Demographics

AVERAGE AGE

20 - 39

DEPENDENCY



OCCUPATION



OWNERSHIP



(Source: <https://www.domain.com.au/suburb-profile/melbourne-vic-3000>)

Local school catchments

ALL

PRIMARY

SECONDARY

OTHER



New Generation College

Co-ed

Private



Ozford College

Co-ed

Private



Stott's Secondary College

Co-ed

Private



(Source: <https://www.domain.com.au/suburb-profile/melbourne-vic-3000>)

Market Data

BUYING

TRENDS

Buying a in Melbourne

MEDIAN PRICE

\$555k

DAYS ON MARKET

109

AUCTION CLEARANCES

43%

SOLD THIS YEAR

585

(Source: <https://www.domain.com.au/suburb-profile/melbourne-vic-3000>)

Features of suburb

Suburb basic info

- Name and post of suburb
- Time traveling to CBD using public transport

Graphs

- Age, dependency, occupation
- Ownership

Local school

- Primary
- Other school

Market data

- Unit (1, 2, 3 beds), House (2, 3, 4 beds)
- Price, auction clearance, No. sold this year

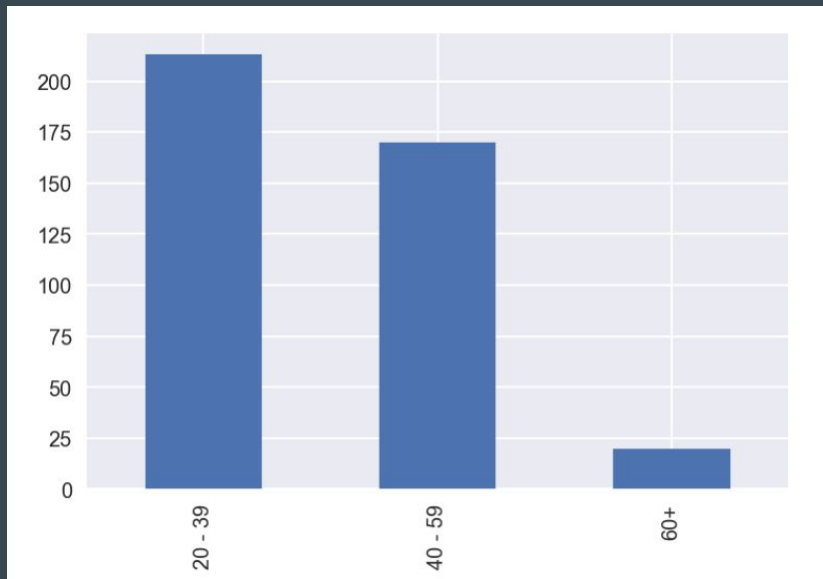
Feature engineering

- **Name** and **post** of suburb
- Average **age** of people in a suburb (20-39, 40-59, 60+)
- **Time** traveling to CBD by public transport
- **Family** owned house percentage (drop single statistics)
- Ownership: **fully owned** and **renting** (drop purchasing)
- **Occupation**
- Amount of primary **school** in a suburb
- Focusing on **2 and 3 bedroom** house data (2\3 bedroom unit and 2\3 bedroom house; drop 1 and 4 bedroom house info)

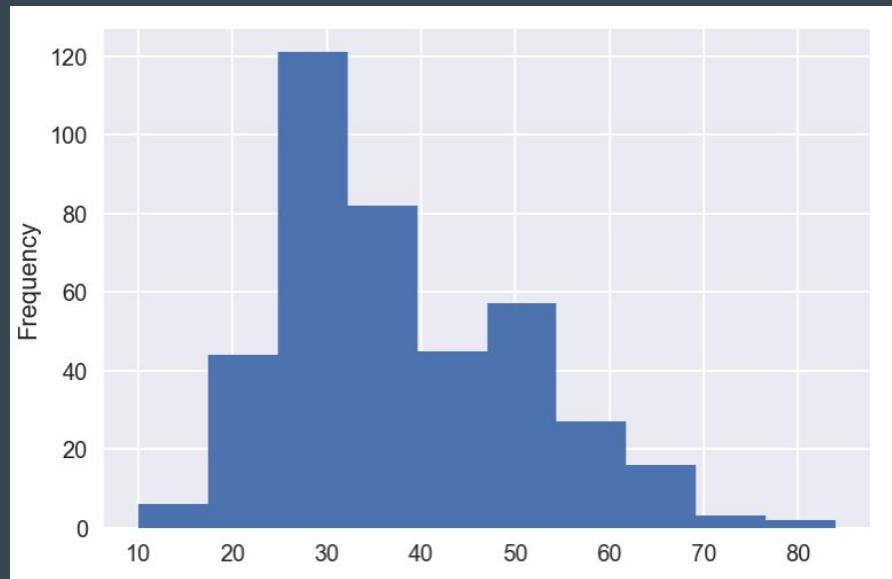
⇒ 403 validate instance

Market trends

Suburb average age



Percentage of purchasing

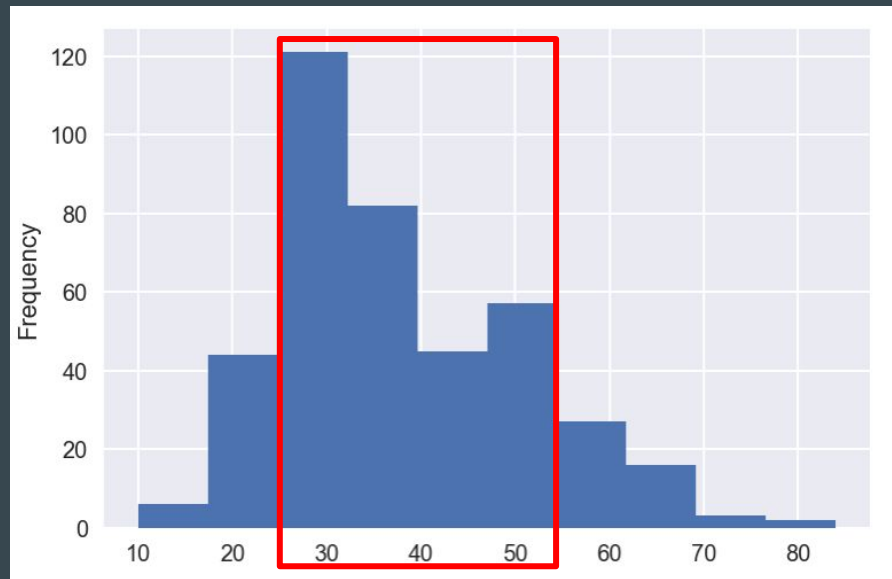


Market trends

Suburb average age

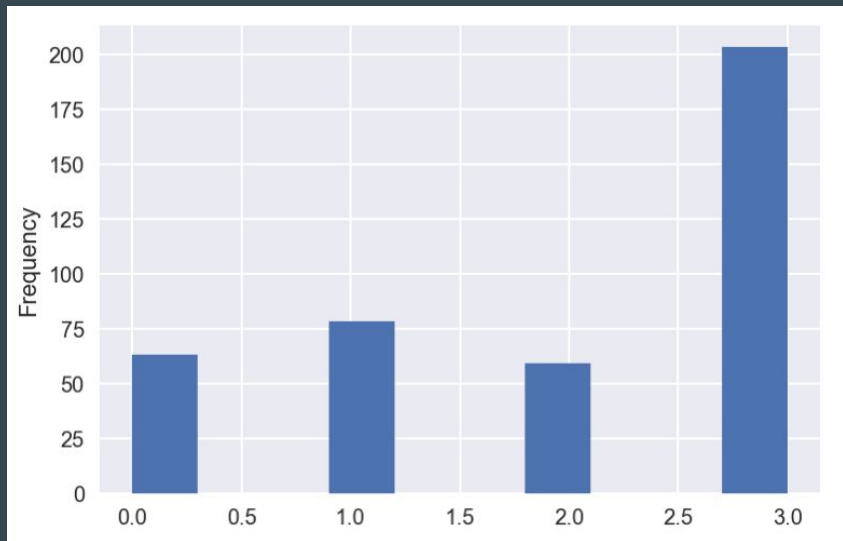


Percentage of purchasing

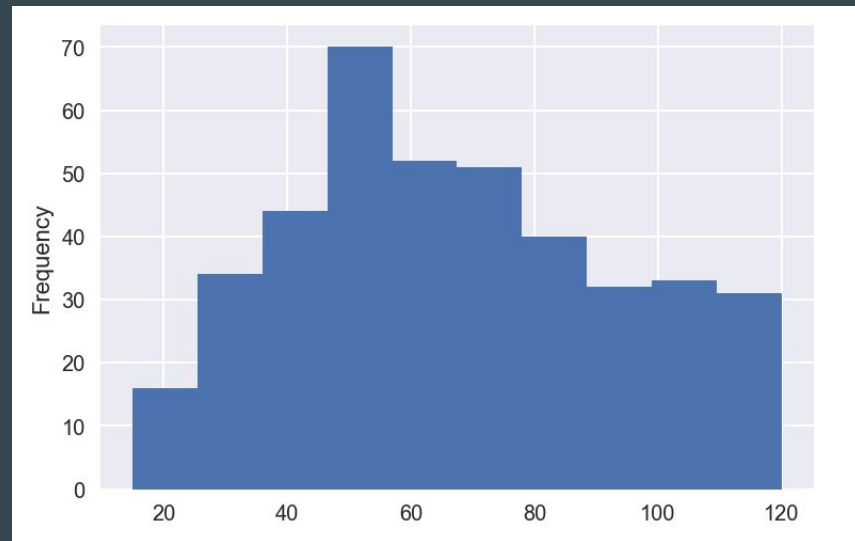


Market trends

Amount of school

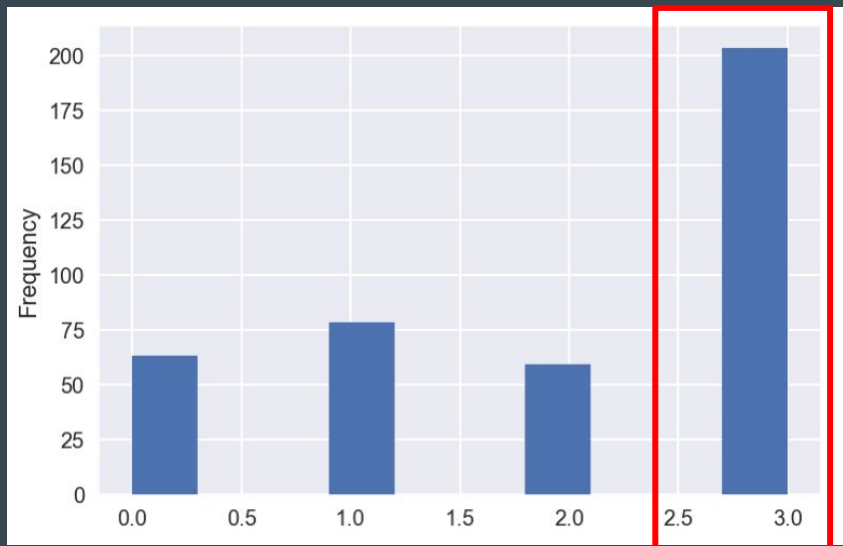


Time traveling to CBD

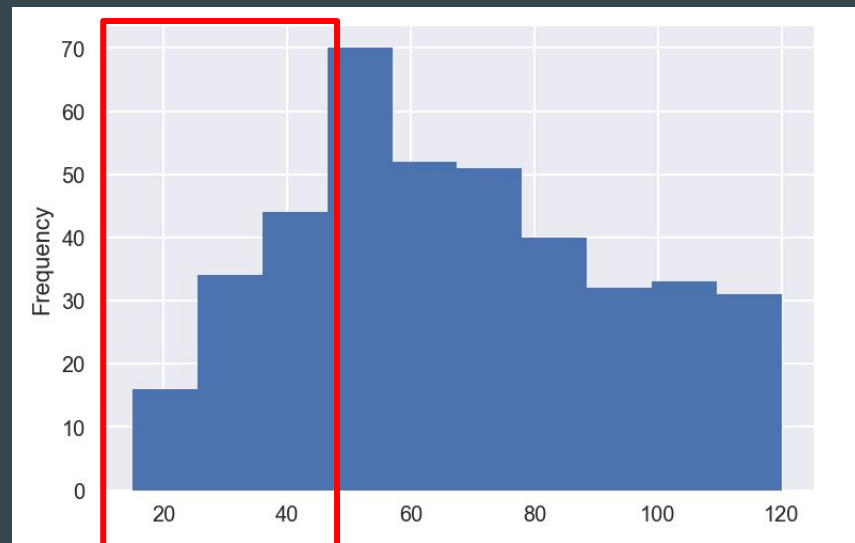


Market trends

Amount of school



Time traveling to CBD



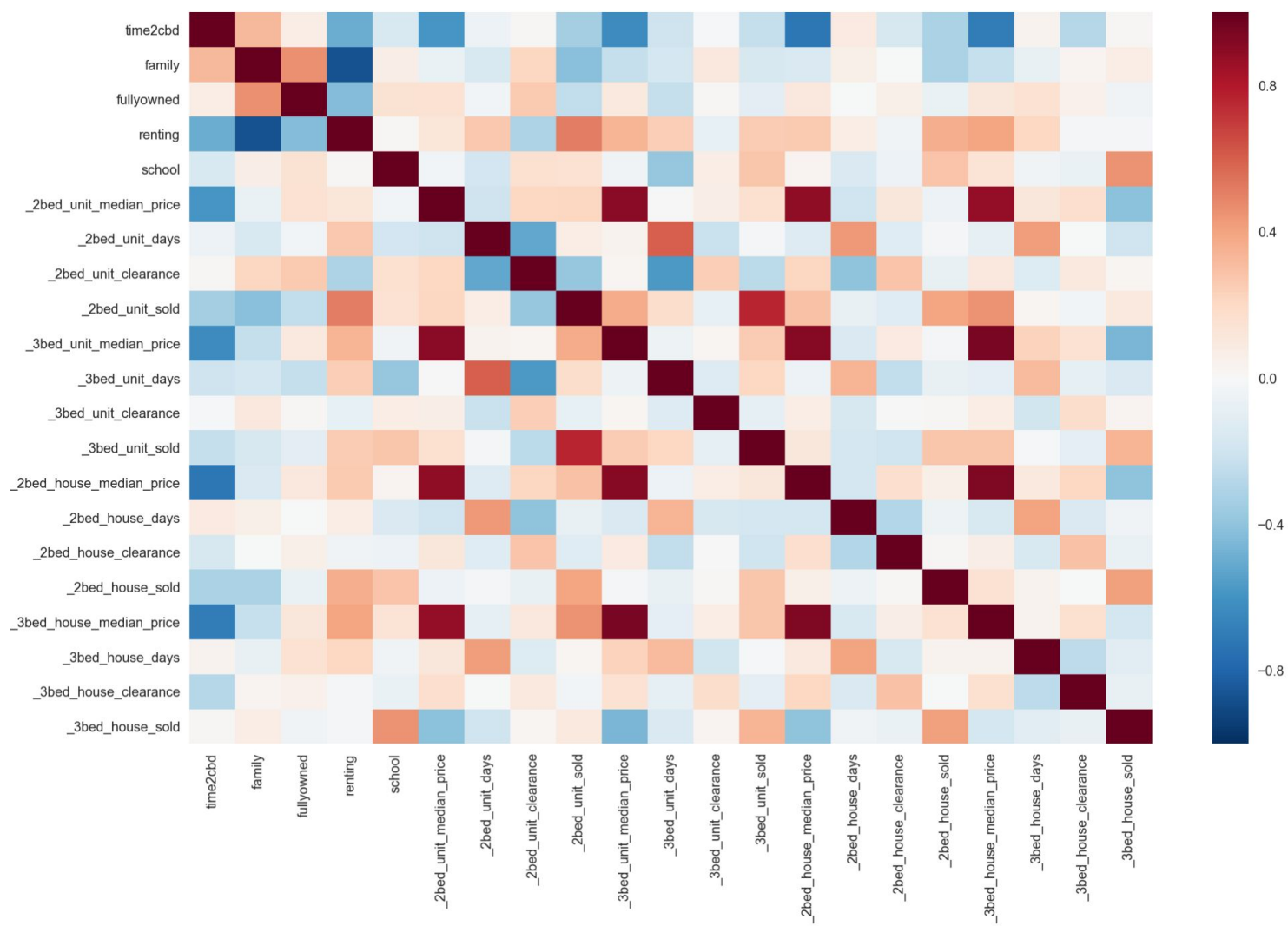
Filtering suburbs

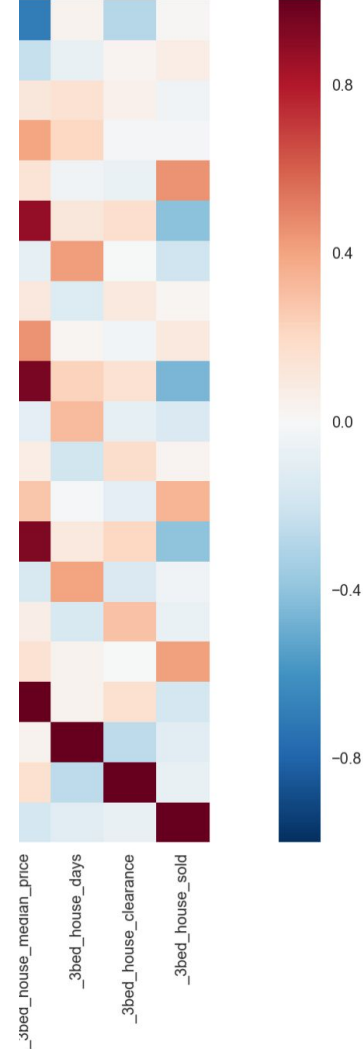
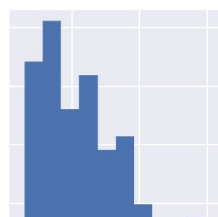
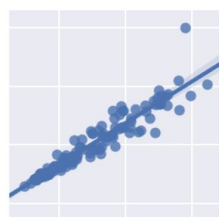
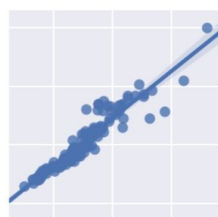
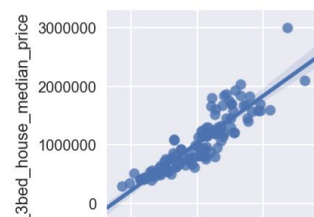
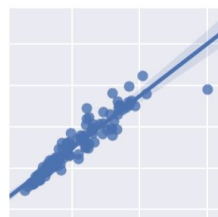
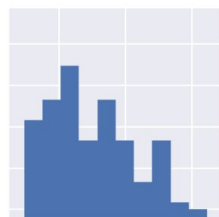
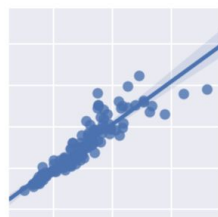
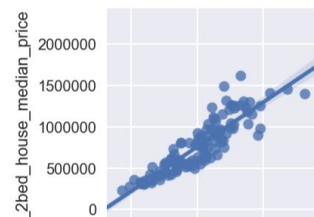
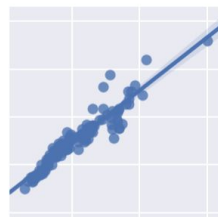
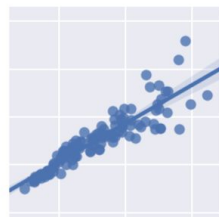
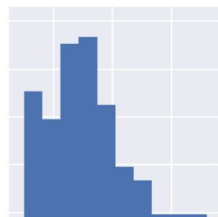
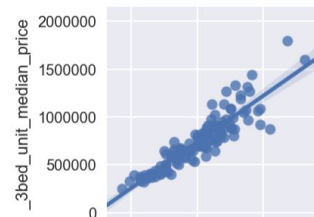
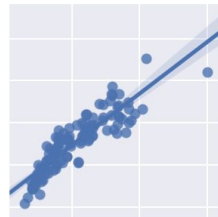
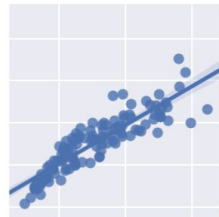
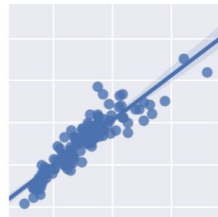
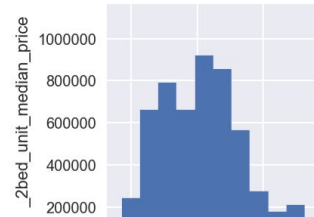
- Average between 20 - 39
- Percentage of purchasing between 30 -50
- At least 3 schools
- Time traveling to CDB less than 45 min

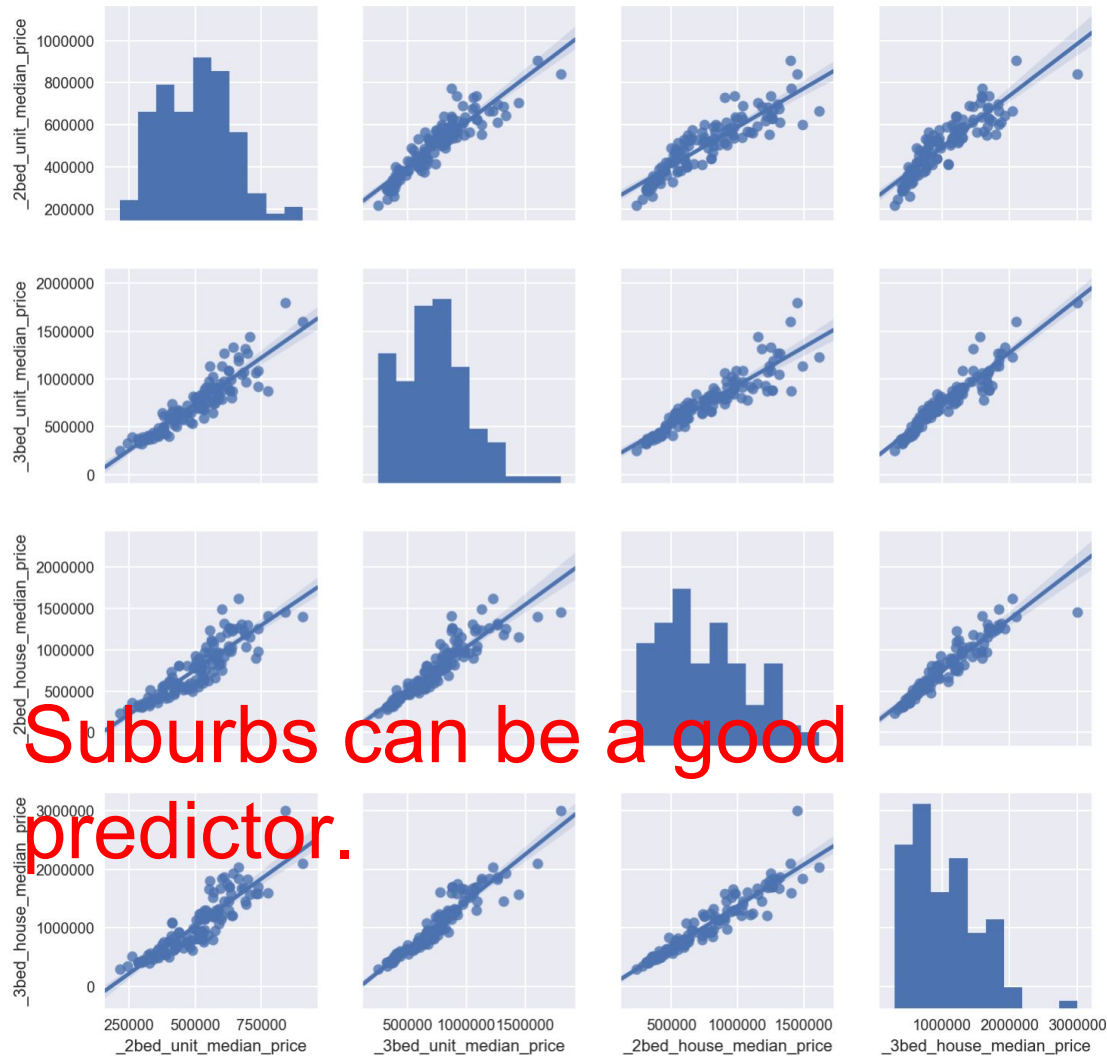
Filtering suburbs

- Average between 20 - 39
- Percentage of purchasing between 30 -50
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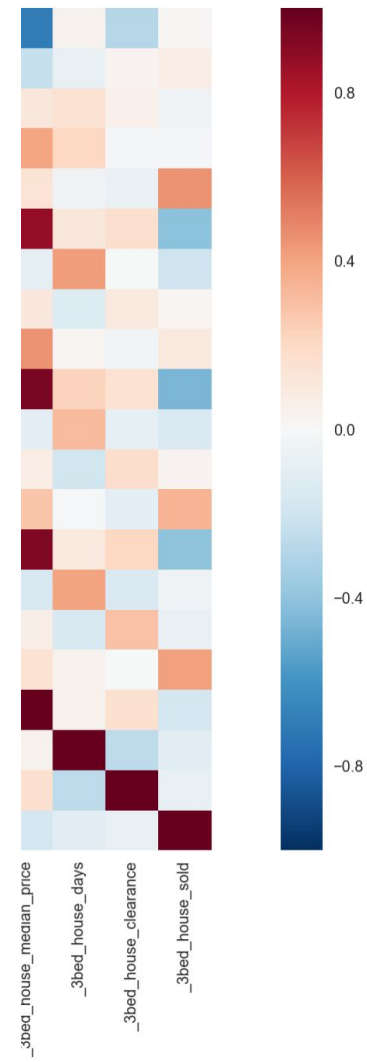
	suburb	post
13	Yarraville	3013
14	Newport	3015
16	Spotswood	3015
130	Kensington	3031
131	Ascot Vale	3032
144	Moonee Ponds	3039
177	Coburg	3058
192	Clifton Hill	3068
194	Northcote	3070
306	Malvern East	3145
308	Glen Iris	3146
374	Elsternwick	3185
406	Ormond	3204







Suburbs can be a good predictor.



Houses

**I know where I want to live.
Now I want to know the price.
Even predict the house price.**

It may be one of the biggest investments in my life.

What factors decide house value

Location

- Suburb, address
- Distance to CBD

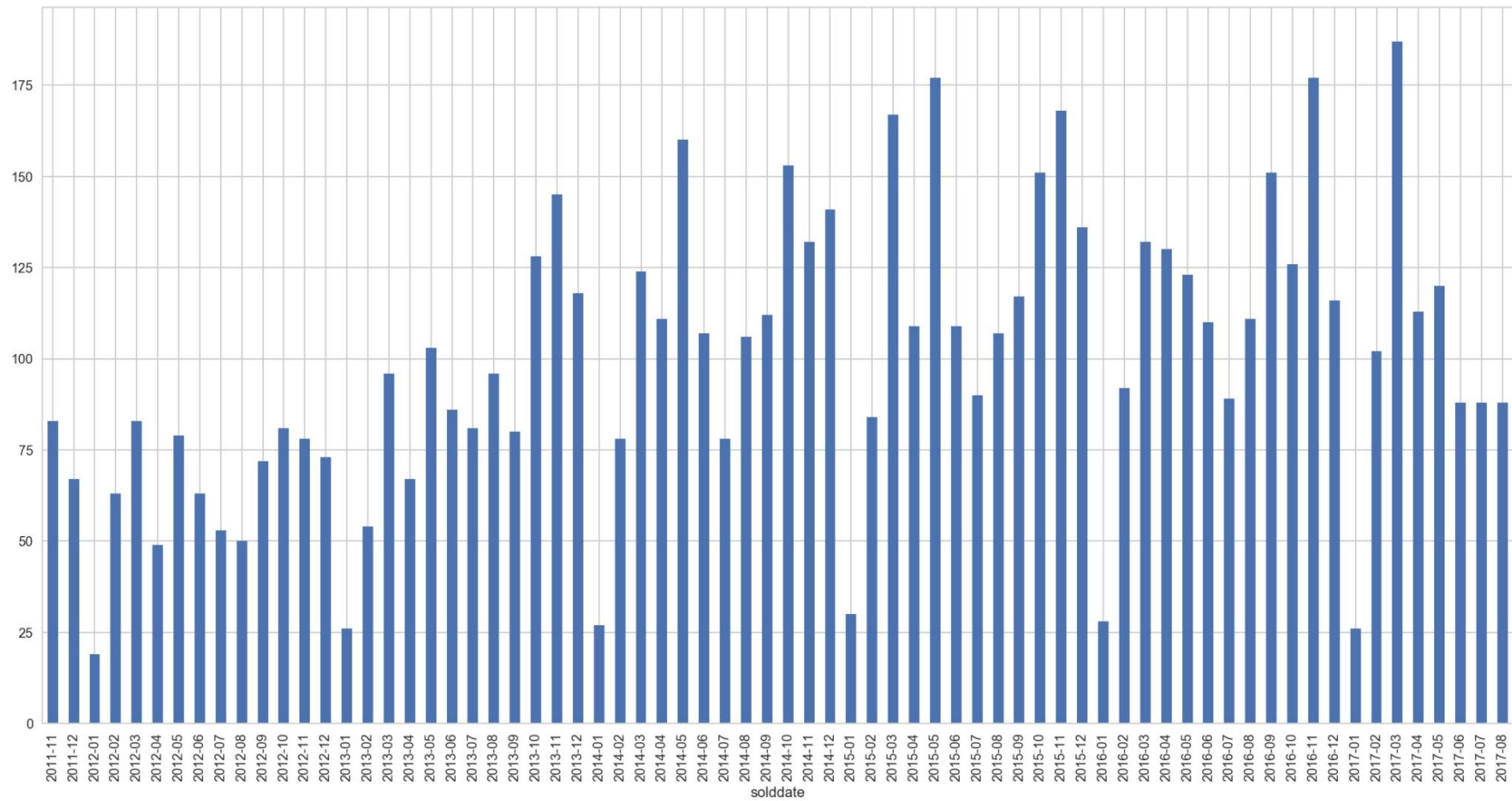
Size

Bedrooms, bathrooms, car parking spots

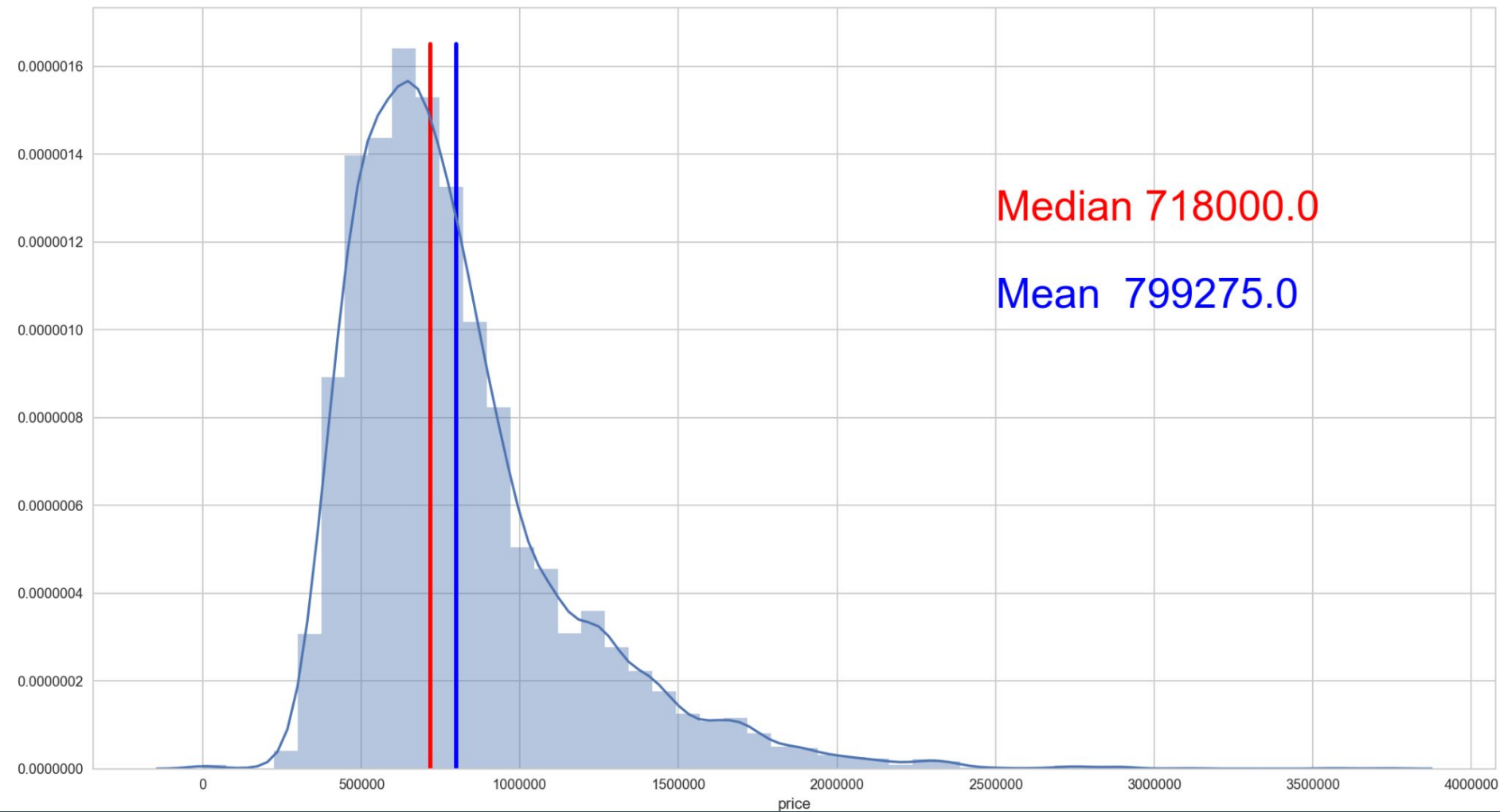
House data

- 8790 instance of validate sold house data from domain.com.au with chosen suburb.
- Features including: sold date, address, suburb, number of bedrooms, number of bathroom, number of car parking spot, agent brand name and distance to Melbourne CBD.

Sold date



Sold price



Top 10 agent (number of house sale)

agentbrand

Nelson Alexander Northcote	440
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Jas Stephens Real Estate	413
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Rendina Real Estate	392
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Barry Plant Coburg	347
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Biggin & Scott Elsternwick	252
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Barry Plant Northcote	208
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Jellis Craig Kensington	196
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Sweeney Estate Agents Williamstown	179
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Noel Jones Glen Iris	161
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Sweeney Yarraville	154
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Fitting into a model

Next presentation

Thanks for watching