

# 3 data science ideas

Biodiversity

Food

People

Lightning Talk

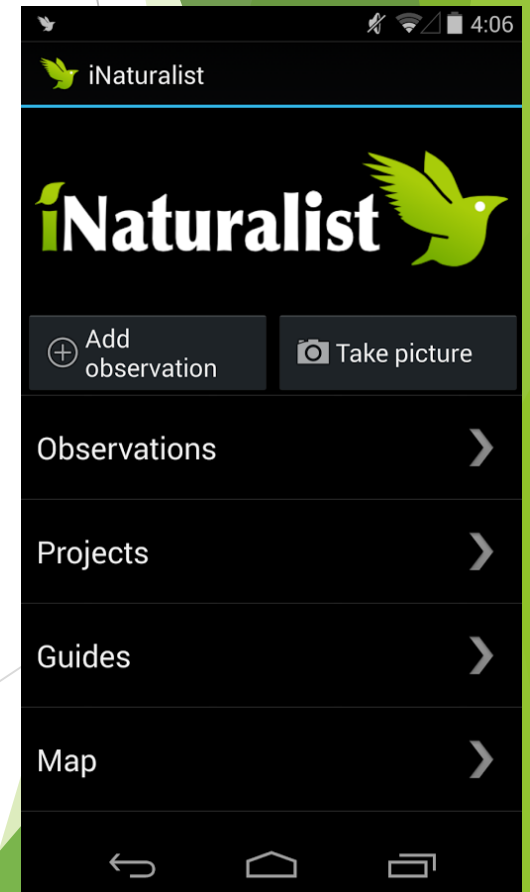
8 Jul 2017

## Thought 1

Singapore's urban biodiversity has been in the news, are citizen postings useful for planning & conservation decisions?

## Question

Are “Research Grade” sightings posted on iNaturalist accurate enough to be used to inform planning of landuse and conservation prioritisation, especially for the threatened and cryptic species?

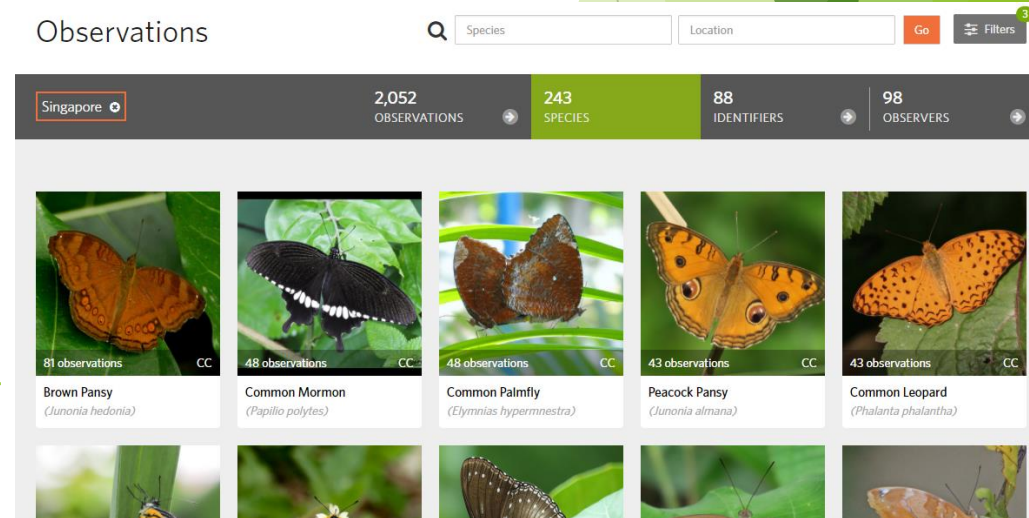
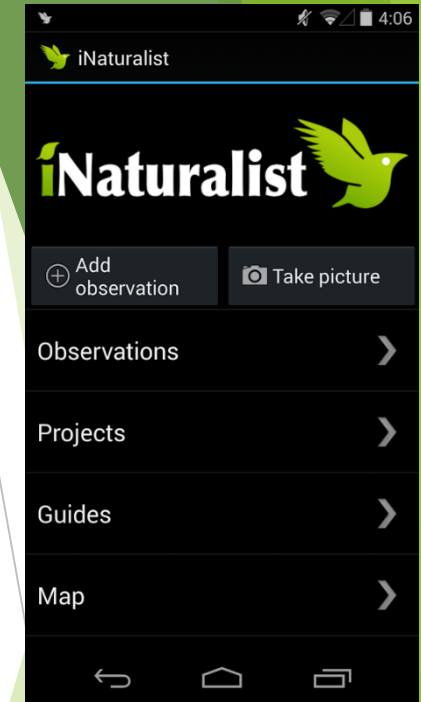


## Null hypothesis:

“Research Grade” data submitted by citizens is not accurate enough to inform landuse and conservation prioritisation decisions.

## Alternative Hypothesis:

- Community-rated “Research Grade” data are accurate enough to be used to inform planning of landuse and conservation prioritisation. These are likely information are submitted by individuals with most submitted observations, and are in the right locations and seasons



<http://www.inaturalist.org/observations>

## Largest occurrence datasets about Singapore

- EOD - eBird Observation Dataset  
42,454 occurrences in Singapore out of 275,718,645 (0.02%).
- iNaturalist Research-grade Observations  
5,261 occurrences in Singapore out of 2,419,512 (0.22%).



GBIF.org Occurrence Download <http://doi.org/10.15468/dl.okztbv>  
44 columns, some with missing data

Focus areas:

Birds

Butterflies

Otters

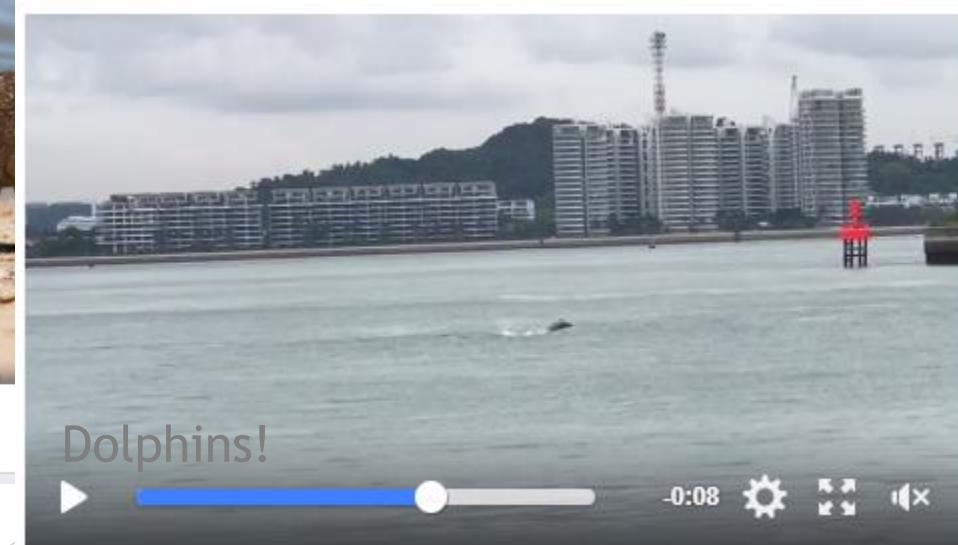
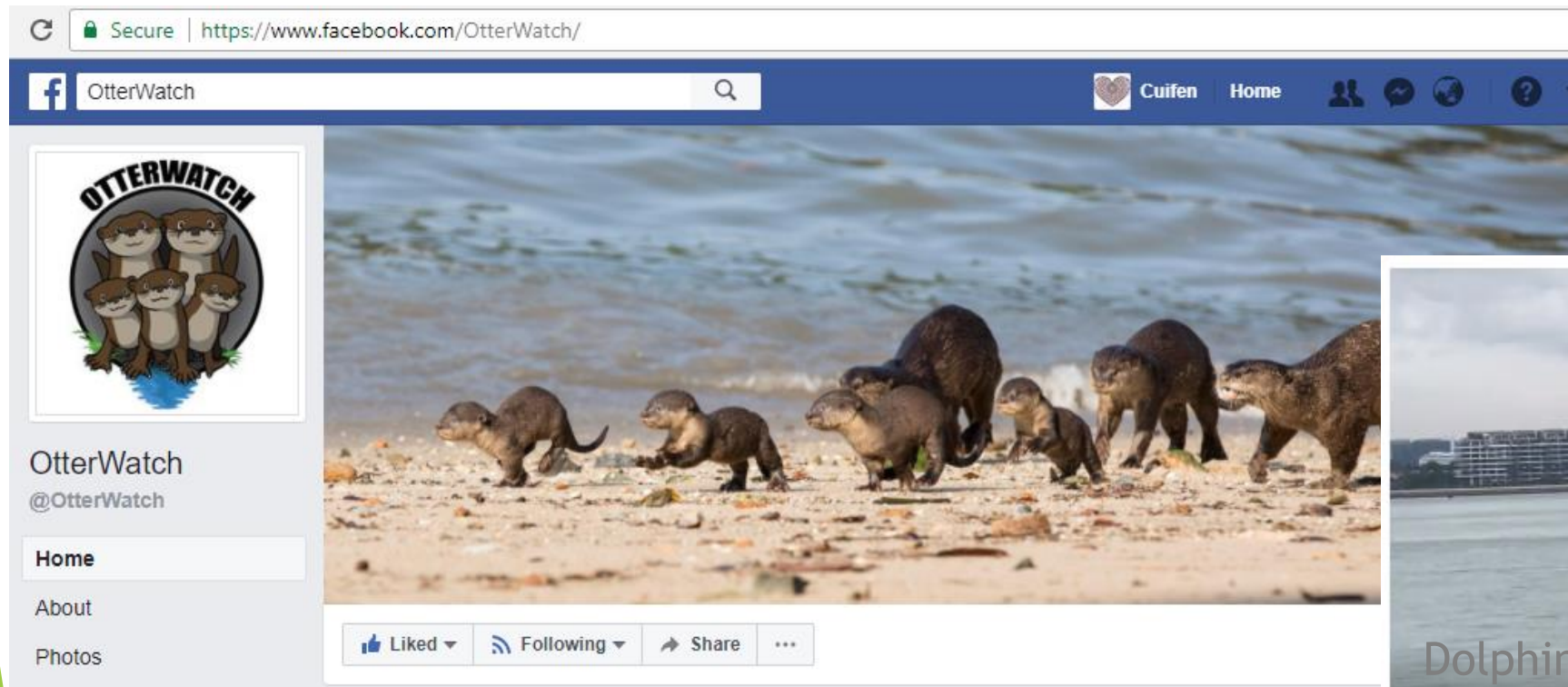
Dolphins

gbifid	datasetkey	occurrenceid	kingdom	phylum	class	order	family	genus
1571202029	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/907752">http://www.inaturalist.org/observations/907752</a>	Animalia	Chordata	Aves	Piciformes	Ramphastidae	Megalaima
1571202020	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/904595">http://www.inaturalist.org/observations/904595</a>	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Gallinago
1571202017	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/904467">http://www.inaturalist.org/observations/904467</a>	Animalia	Chordata	Aves	Passeriformes	Dicaeidae	Dicaeum
1571202016	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/904471">http://www.inaturalist.org/observations/904471</a>	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Pernis
1571202015	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/904472">http://www.inaturalist.org/observations/904472</a>	Animalia	Chordata	Aves	Passeriformes	Dicruridae	Dicrurus
1571202004	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/898948">http://www.inaturalist.org/observations/898948</a>	Animalia	Chordata	Aves	Pelecaniformes	Ardeidae	Egretta
1571202003	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/898946">http://www.inaturalist.org/observations/898946</a>	Animalia	Chordata	Aves	Passeriformes	Muscicapidae	Muscicapa
1571202002	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/898957">http://www.inaturalist.org/observations/898957</a>	Animalia	Chordata	Aves	Passeriformes	Pycnonotidae	Pycnonotus
1571202001	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/898942">http://www.inaturalist.org/observations/898942</a>	Animalia	Chordata	Aves	Gruiformes	Rallidae	Amauornis
1571202000	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/898952">http://www.inaturalist.org/observations/898952</a>	Animalia	Chordata	Aves	Accipitriformes	Accipitridae	Circus
1571201998	50c9509d-22c7-4a22-a47d-8c48425ef4a7	<a href="http://www.inaturalist.org/observations/898933">http://www.inaturalist.org/observations/898933</a>	Animalia	Chordata	Aves	Cuculiformes	Cuculidae	Centropus

# Other useful datasets

Individual / organisation postings on Facebook.

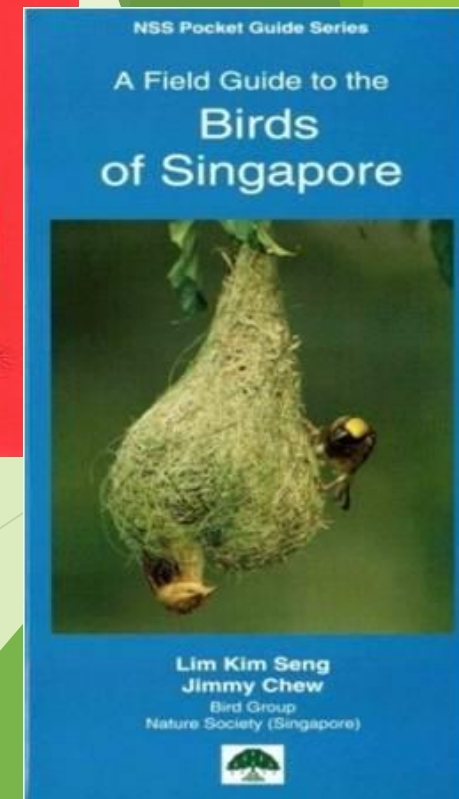
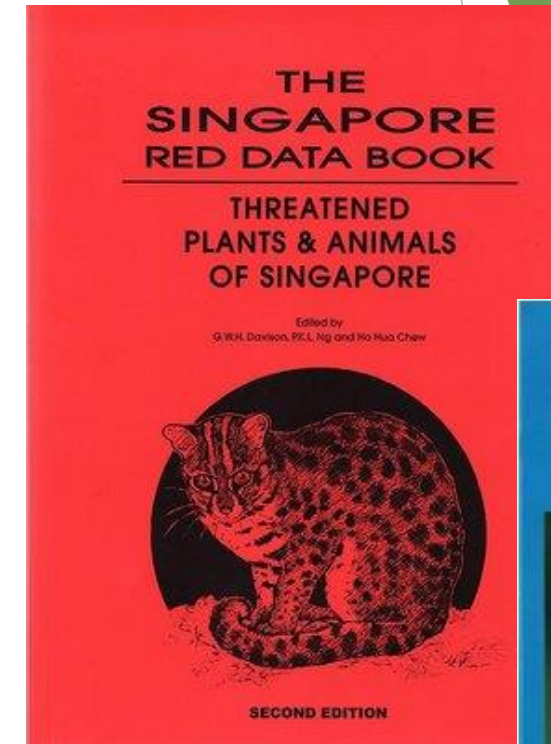
Call data by Facebook's Official API (or the old fashioned way, search + download)





# Other useful data sources

Built-up areas, parks, etc based on Singapore Map (JSON) available from OneMap



## Thought 2

People have always been sharing, collaborating, lending, gifting. It is a mechanism that helps build friendship and family relations.

People are increasingly sharing across their immediate communities - where is this happening, what is being shared, and how is it happening?



# Question

What are the trends already emerging in ShareCity database? How does Singapore compare with other cities / countries?

4010 FOOD SHARING ACTIVITIES ON MAP				
ROWS PER PAGE 10 1 2 3 4 5				
NAME	CITY	WHAT IS SHARED	HOW IT IS SHARED	SHARING ORGANISATION
<a href="#">Adelaide Central Market Community Kitchen</a>	Adelaide			
<a href="#">Adelaide Hills Produce Swap</a>	Adelaide			
<a href="#">Adelaide Kitchen Gardeners</a>	Adelaide			
<a href="#">Adelaide Local Exchange Trading System</a>	Adelaide			
<a href="#">Australian City Farms and Community Gardens Network</a>	Adelaide			
<a href="#">Blackwood Urban Orchard</a>	Adelaide			
<a href="#">Brompton Bowden Food Swap</a>	Adelaide			

## Null hypothesis:

There are no useful trends.

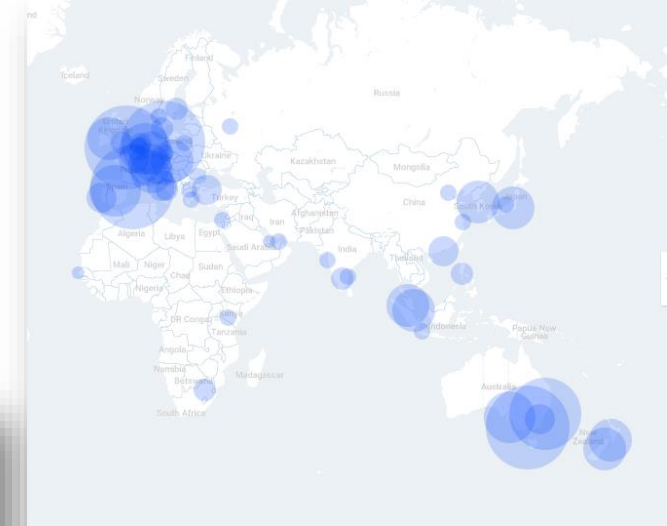
## Alternative Hypothesis:

- ▶ The database already provides insights to trends, from which we can compare how Singapore is doing relative to others.

4010 FOOD SHARING ACTIVITIES ON MAP				
ROWS PER PAGE 10 1 2 3 4 5 ⏮ ⏭				
NAME	CITY	WHAT IS SHARED	HOW IT IS SHARED	SHARING ORGANISATION
<a href="#">Adelaide Central Market Community Kitchen</a> 🌐 f 🐦	Adelaide	🍴	💵	💰
<a href="#">Adelaide Hills Produce Swap</a> 🌐	Adelaide	🍏 🥬 🍴 🗨️	↔️	👤
<a href="#">Adelaide Kitchen Gardeners</a> 🌐	Adelaide	🗨️	📺	👤
<a href="#">Adelaide Local Exchange Trading System</a> 🌐 f	Adelaide	🍏 🍴	↔️	👤
<a href="#">Australian City Farms and Community Gardens Network</a> 🌐 f 🐦	Adelaide	🥬 🗨️	📺	👤
<a href="#">Blackwood Urban Orchard</a> 🌐	Adelaide	🍏 🗨️	↔️	👤
<a href="#">Brompton Bowden Food Swap</a> 🌐	Adelaide	🌱 🍏 🗨️	↔️	👤

# ShareCity database

Ongoing data collection for research, updated 2x year till 2020

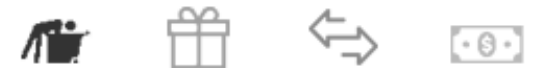


4010 FOOD SHARING ACTIVITIES ON MAP				
ROWS PER PAGE 10 ▾ 1 2 3 4 5 ⏪ ⏩				
NAME	CITY	WHAT IS SHARED	HOW IT IS SHARED	SHARING ORGANISATION
<a href="#">Adelaide Central Market Community Kitchen</a> 🌐 f 🐦	Adelaide			
<a href="#">Adelaide Hills Produce Swap</a> 🌐	Adelaide			
<a href="#">Adelaide Kitchen Gardeners</a> 🌐	Adelaide			
<a href="#">Adelaide Local Exchange Trading System</a> 🌐 f	Adelaide			
<a href="#">Australian City Farms and Community Gardens Network</a> 🌐 f 🐦	Adelaide			
<a href="#">Blackwood Urban Orchard</a> 🌐	Adelaide			
<a href="#">Brompton Bowden Food Swap</a> 🌐	Adelaide			

## WHAT IS SHARED



## HOW IT IS SHARED



## SHARING ORGANIZATION



Davies, A.R. et al. (2016) SHARECITY100 Database, Trinity College Dublin, Ireland.  
<http://sharecity.ie/research/sharecity100-database>

## Thought 3

There is a growing movement on food issues in Singapore. Where is this happening, what is being done, and where are the gaps?

## Question

Anecdotal, there has been a surge in the “grow your own food movement”. Is this true? What is being grown, where and why? Is food grown enough for own use, or even to share? Is food grown where it is needed?



# Crowdsourcing our really local edible gardens & farms

Hello!

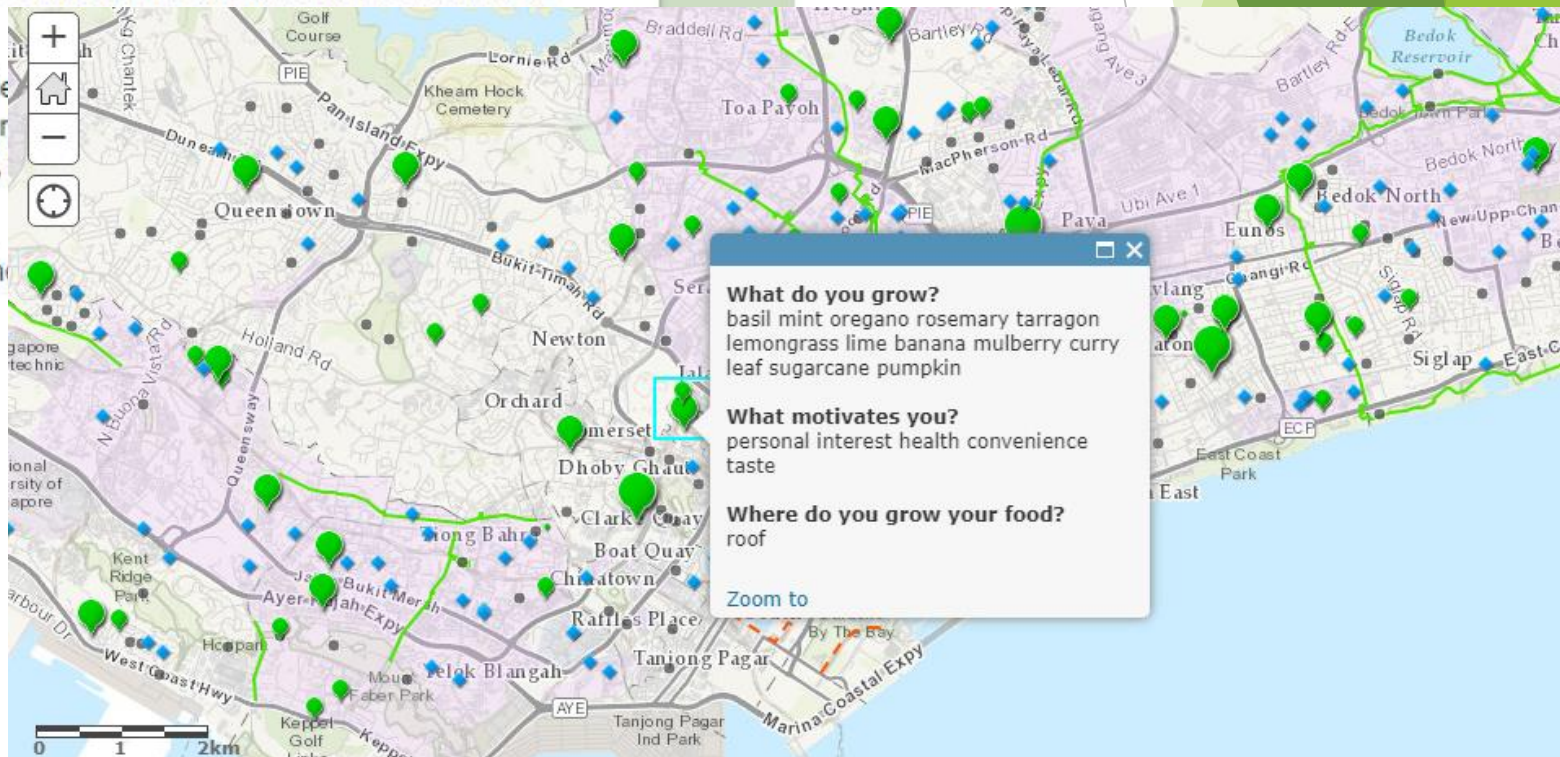
Foodscape Collective is a community of part-time food growers and people who care about eating local food for different reasons. Each of us has grown, or attempted to grow, some food plants in our homes or community spaces before.

We realised it would be interesting to map where people grow the where and why. We intend to regularly map the information and are experimenting how to also overlay this information, where people need / want locally grown food.

If you have not seen our crowd-sourced maps, check them out

125 points after 4 days  
Would like to tweak form to include quantity of harvest, ownership, etc  
And to spread the form to more people over 1-2 weeks

<http://arcg.is/1y3C17B>

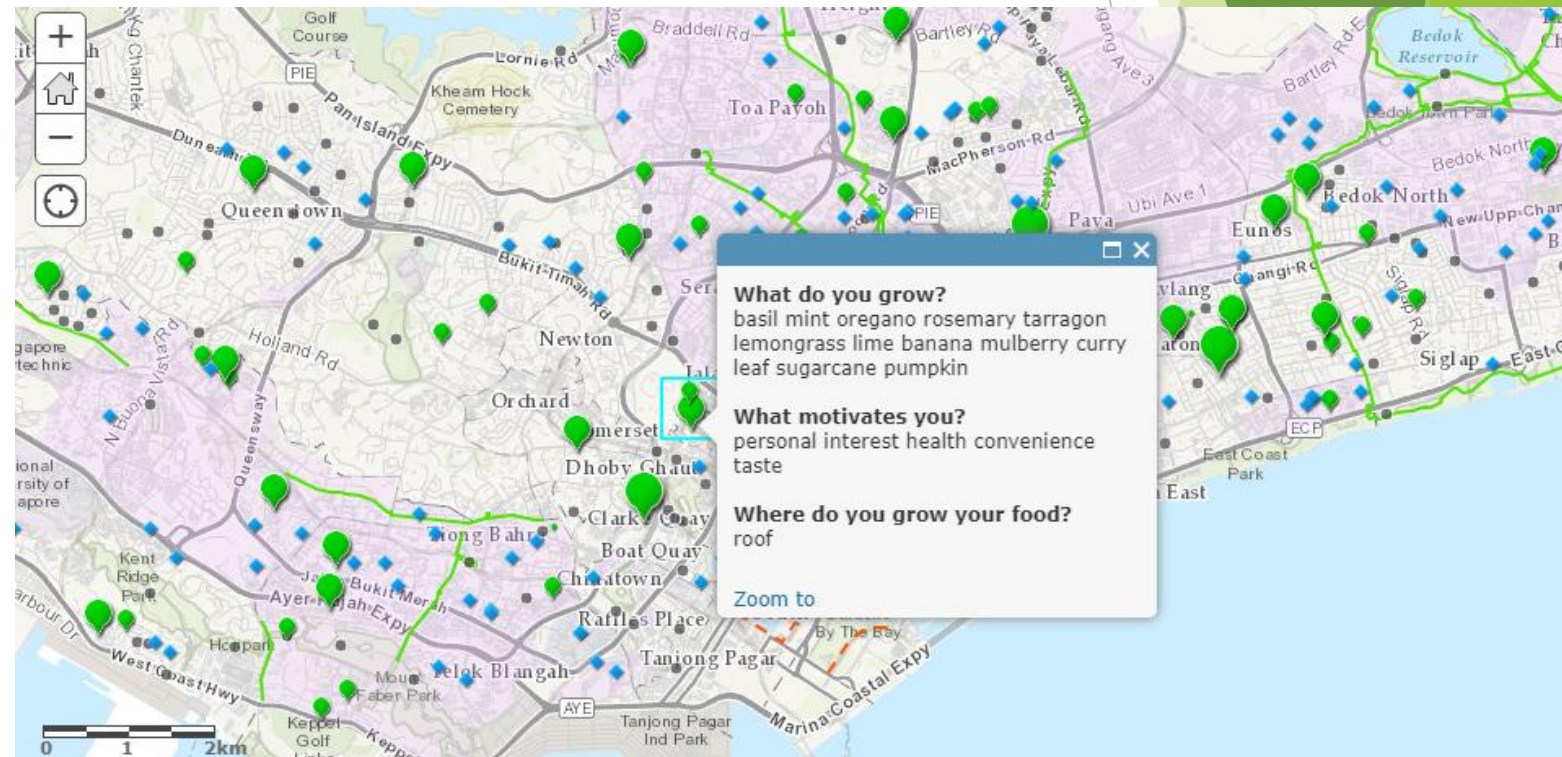


## Null hypothesis:

There are no useful trends.

## Alternative Hypothesis:

- Crowd-sourcing and public data can provide us a reliable basis for extracting meaningful insights.





# Some geospatial information which I already have from Data.Gov.sg or self-collected

- ▶ Ground verification
- ▶ Town
- ▶ HDB
- ▶ Parks
- ▶ Park connector
- ▶ Community gardens
- ▶ Community spaces