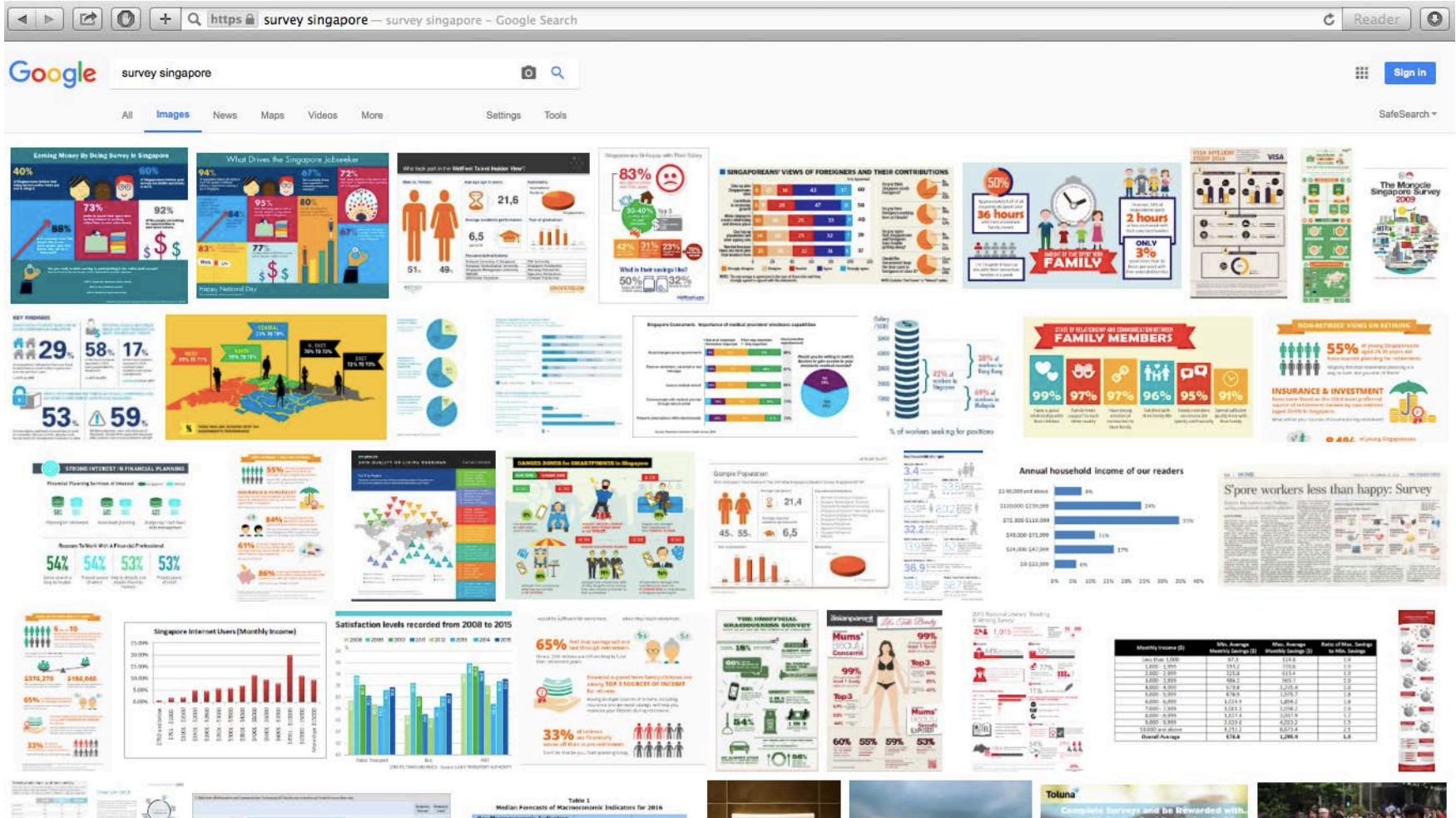# Forging Resilience in the Neighbourhood: Emerging Faultlines and the Policies that Mitigate Them

7 April 2017

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How survey research is done in Singapore

# "No man is an island": Social Embeddedness

- Individuals, family, and the environment are socially embedded in each other. Each layer mutually influences our thoughts, behaviours, and feelings

NEIGHBOURHOOD

FAMILY

INDIVIDUAL
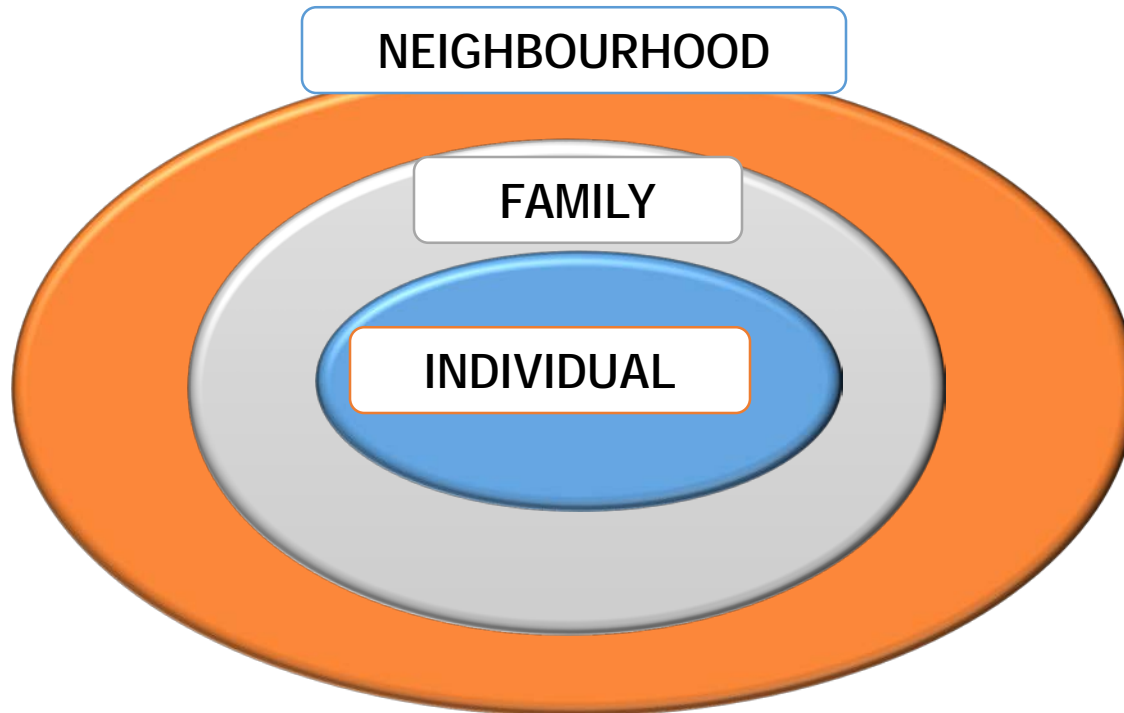
**"No man is an island": Social Environment Matters**

- Profile of residential environment has impact on a wide range of social indicators

- Example: US Opportunity Index.

- Composite measure of 16 indicators at the state and county levels of economic, educational and civic factors that expand opportunities http://opportunityindex.org/methods-sources/

- Economic (jobs, wages, poverty, inequality, access to banking, affordable housing, internet access), educational (preschool enrolment, high school graduation, post-sec completion), civic (group membership, volunteerism, youth econ and academic inclusion, community safety, access to healthcare and healthy food)

Example: USA - Opportunity Index and Geographic Distribution
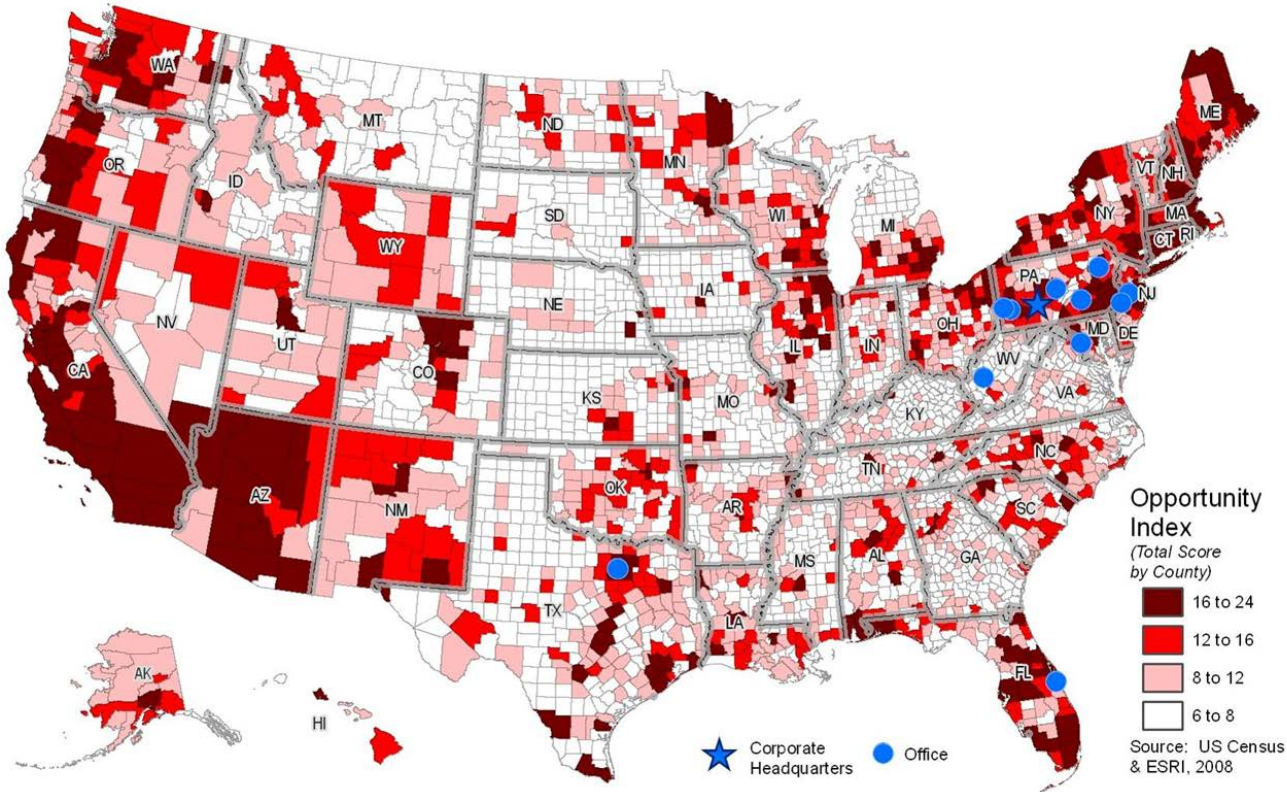
Source: Optimization Group.
Retrieved: http://www.optimizationgroup.com/methods/gis/

Multi-level data and analyses in social sciences
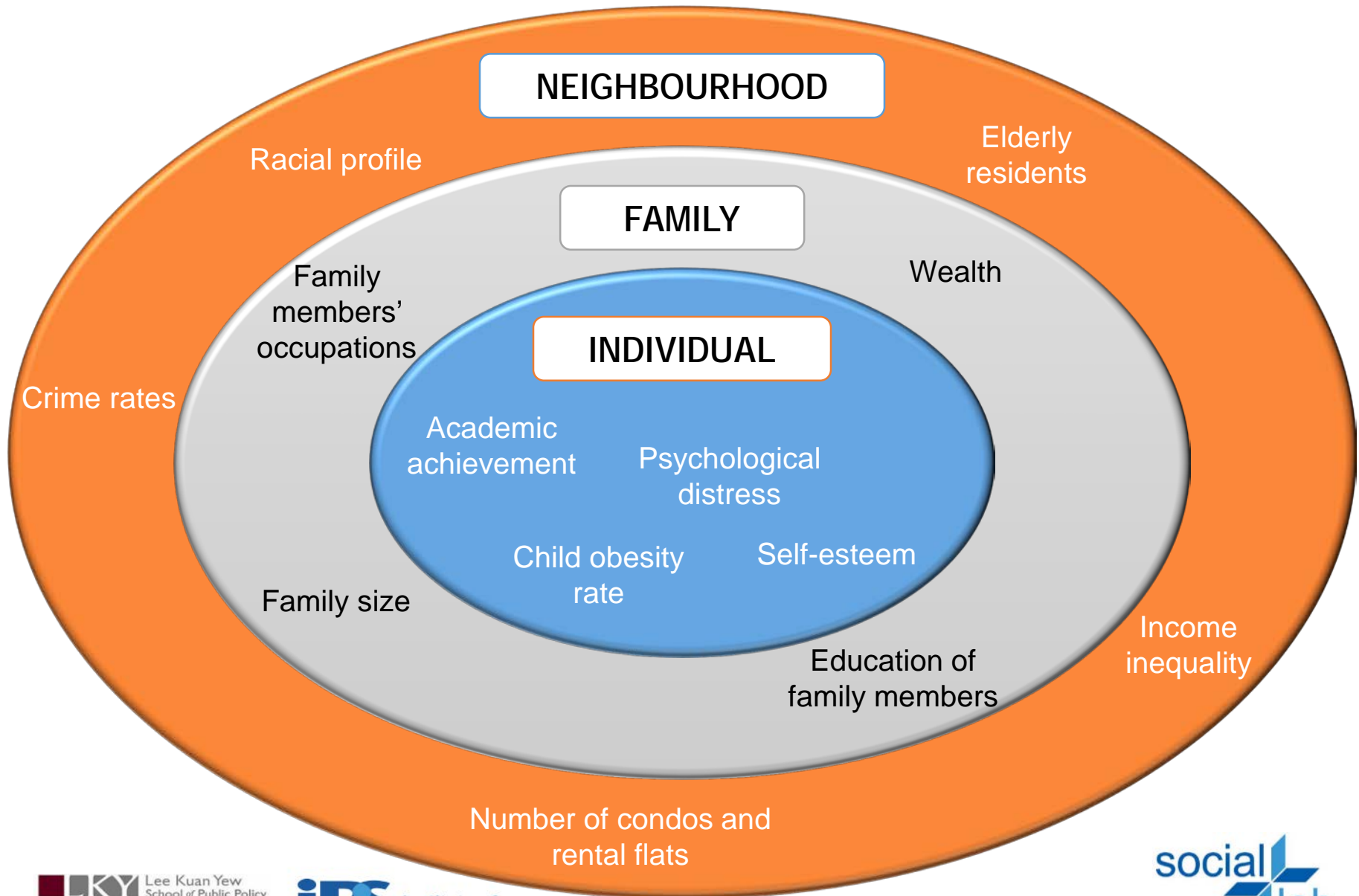
Impact of neighbourhood differences

Case study:
Community ties, smoking and drug abuse in NZ

- Local neighbourhoods high in community ties have less people who abuse drugs

- Smokers living in neighbourhoods with high community ties smoke more cigarettes per day

- Smoking is seen as a social activity in New Zealand

Lin, E.Y., Witten, K., Casswell, S., & You, R. Q. (2012). Neighbourhood matters: Perceptions of neighbourhood cohesiveness and associations with alcohol, cannabis and tobacco use. *Drug and Alcohol Review, 31*, 402–412.

Case study:
Neighbourhoods in America and Health

- Living in poor neighbourhoods during childhood leads to ill-health for longer periods of time in adulthood

- Living in rich neighbourhoods during childhood leads to better health for whites but not for non-whites in adulthood

Johnson, R. C., Schoeni, R. F., & Rogowski, J. A. (2012). Health disparities in mid-to-late life: The role of earlier life family and neighborhood socioeconomic conditions. *Social Science & Medicine, 74*, 625-636.

Case study:
Neighbourhoods in USA & High School Graduation

- Growing up in disadvantaged neighbourhoods for long periods of time lowers the likelihood to graduate from high school

- Growing up in the bottom 20% of neighbourhoods lowers the likelihood of high school graduation for black children more so than non-black children

Wodtke, G. T., Harding, D. J., & Elwert, F. (2011). Neighborhood effects in temporal perspective: The impact of long-term exposure to concentrated disadvantage on high school graduation. *American Sociological Review, 76*, 716-736.

Case study:
Neighbourhood amenities, design, and elderly mobility (S'pore)

Greater diversity of land use mix, easier access to a range of services and amenities destinations, connected street networks, and an aesthetically-pleasant neighbourhood environment associated with a higher frequency of walking for transportation purposes among the elderly.

Nyunt, M.S.Z., Shuvo, F.K., Eng, J.Y., Yap, K.B., Scherer, S., Hee, L.M., Chan, S.P., & Ng, T.P. (2015). Objective and subjective measures of neighborhood environment (NE): relationships with transportation physical activity among older persons, *International Journal of Behavioral Nutrition and Physical Activity, 12,* 108.

Geographical differences in Singapore

Neighbourhood profile not commonly incorporated into social science research in Singapore. Why?

Perceived as geographically homogenous:

- SG land area 720 km-sq. USA land area 9.8 mil km-sq

- SG Population: 5.5 mil. USA Population: 320mil

- Urban planning ensures mixture of low and high end housing types in each neighbourhood (e.g., 1-2 rm, 3, 4, 5 rm, exec. apartment, condo, landed) i.e., mixture of SES (assume neighbourhoods are comparable)

Neighbourhood profile not commonly incorporated in social science research in Singapore. Why? (cont')

- Ethnic Integration Programme (EIP) – Public housing policy ensures (or at least attempts to ensure) that ethnic groups are spread out across island, i.e., mixture of races (assume racial enclaves not an issue)

- Few national policies are bounded by geographical location:
  - (1) Home Improvement Programme
  - (2) City For All Ages
  - (3) Enhancement for Active Seniors (EASE)
  - (4) other social services, depending on needs

What data to use? Where to find them?

Open-source data

(e.g., Singapore Dept of Statistics; Census data; HDB; URA; OneMap; Google)

- Demographic profiles (e.g., age of residents, income)
- Clustering of ethnic groups

  http://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/resale/ethnic-integration-policy-and-spr-quota

- Crime rate

  https://data.gov.sg/dataset/five-preventable-crime-cases-recorded-by-npcs

Observation data

- Cost of Living (food)? (IPS Social Lab fieldwork)
- Help seeking behaviours?
- Locations of Family Service Centres, Community Clubs, etc

How neighbourhood boundaries are drawn? What are the different profiles between neighbourhoods?

URA Planning Areas (2014) – for Census & Urban Planning

https://www.ura.gov.sg/uol/master-plan/Contacts/View-Planning-Boundaries

% of Affluent Households (at least monthly household income of S$10,000) by Planning Area

Planning Area	%	Planning Area	%
Outram	10.0	Sengkang	21.5
Woodlands	14.3	Bukit Panjang	21.6
Yishun	14.4	Choa Chu Kang	22.0
Jurong West	15.4	Punggol	22.7
Rochor	16.1	Clementi	23.9
Bukit Merah	16.2	Bedok	25.0
Geylang	16.7	Bukit Batok	25.5
Toa Payoh	17.1	Pasir Ris	29.2
Ang Mo Kio	17.2	Serangoon	31.3
Kallang/Whampoa	17.4	Novena	32.8
Jurong East	19.3	Bishan	32.9
Queenstown	20.1	Marine Parade	33.8
Sembawang	20.5	Newton	52.3
Tampines	20.7	Bukit Timah	59.7
Hougang	20.7		

How does a poor man feel living in poor neighbourhood as opposed to an affluent one?

% of Elderly (at least 65 years old) as a proportion of Planning Area's population

Planning Area	%	Planning Area	%
Punggol	4.9	Bedok	10.7
Woodlands	5.1	Bukit Timah	10.8
Sembawang	5.2	Newton	11.3
Sengkang	5.3	Clementi	11.5
Choa Chu Kang	5.4	Ang Mo Kio	11.9
Jurong West	5.6	Geylang	12.3
Pasir Ris	5.8	Novena	13.1
Bukit Panjang	6.4	Marine Parade	14.0
Bukit Batok	6.6	Kallang/Whampoa	14.4
Yishun	6.9	Toa Payoh	14.8
Tampines	6.9	Bukit Merah	15.3
Jurong East	8.4	Rochor	15.3
Hougang	9.0	Queenstown	15.3
Bishan	9.6	Outram	19.1
Serangoon	10.1		

Would the elderly residents living "young" estates get the help they need? (e.g., HIP, CFAA, & other age related programmes)

% Households that stay in rented HDB flats by Planning Area

Planning Area	%	Planning Area	%
Choa Chu Kang	3.04	Bedok	9.44
Sengkang	3.56	Clementi	9.67
Sembawang	3.90	Queenstown	10.11
Punggol	3.92	Bukit Timah	10.83
Tampines	4.38	Ang Mo Kio	12.32
Bukit Panjang	4.60	Geylang	14.13
Jurong East	4.71	Toa Payoh	14.15
Yishun	4.93	Novena	15.92
Pasir Ris	4.94	Marine Parade	17.11
Hougang	5.29	Kallang	18.96
Bukit Batok	5.67	Bukit Merah	19.38
Serangoon	5.90	Tanglin	27.14
Jurong West	6.25	Outram	30.95
Woodlands	6.25		
Bishan	8.27		

Source: Singapore Household Survey 2015

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% of Residents aged 15 and above and are divorced or separated by Planning Area

Planning Area	%	Planning Area	%
Bukit Timah	1.86	Clementi	3.71
Bukit Panjang	2.42	Woodlands	3.82
Choa Chu Kang	2.75	Bedok	3.86
Pasir Ris	3.02	Punggol	4.23
Jurong West	3.15	Ang Mo Kio	4.51
Sengkang	3.15	Toa Payoh	4.82
Serangoon	3.20	Kallang	4.84
Novena	3.23	Yishun	4.87
Sembawang	3.24	Queenstown	5.02
Bishan	3.27	Marine Parade	5.03
Hougang	3.41	Bukit Merah	5.28
Bukit Batok	3.49	Geylang	5.62
Tanglin	3.50	Outram	5.75
Tampines	3.54		
Jurong East	3.68		

Source: Singapore Household Survey 2015

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% Households with >= 3 generations living in the same household by Planning Area

Planning Area	%	Planning Area	%
Outram	2.38	Jurong West	5.76
Kallang	3.56	Tampines	5.89
Bukit Timah	3.78	Yishun	6.05
Marine Parade	3.95	Serangoon	6.15
Tanglin	4.35	Jurong East	6.27
Novena	4.46	Bukit Batok	6.35
Bukit Merah	4.54	Sengkang	6.36
Ang Mo Kio	4.79	Bedok	6.62
Queenstown	4.79	Woodlands	6.68
Toa Payoh	4.87	Bukit Panjang	7.02
Clementi	4.98	Bishan	7.91
Hougang	5.29	Choa Chu Kang	7.93
Geylang	5.33	Pasir Ris	8.11
Punggol	5.42		
Sembawang	5.63		

Source: Singapore Household Survey 2015

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% Households without family nucleus* by Planning Area

Planning Area	%	Planning Area	%
Sengkang	6.51	Jurong East	18.04
Punggol	7.53	Bedok	19.31
Sembawang	7.79	Novena	19.75
Choa Chu Kang	9.15	Marine Parade	21.05
Bukit Panjang	10.17	Ang Mo Kio	22.68
Pasir Ris	10.32	Tanglin	23.19
Jurong West	11.64	Clementi	23.26
Woodlands	12.36	Toa Payoh	25.75
Bukit Timah	13.03	Geylang	25.87
Hougang	13.22	Bukit Merah	27.77
Bishan	14.39	Kallang	29.32
Tampines	14.66	Queenstown	29.86
Yishun	15.61	Outram	39.29
Serangoon	15.64		
Bukit Batok	16.78		

Source: Singapore Household Survey 2015

*Family nucleus consist of a married head and spouse, living with parents or children in the same house

Racial Profiles (CMIO) by URA Planning Area

Planning Area	% C	% M	% IO	Planning Area	% C	% M	% IO
Ang Mo Kio	81.99	7.47	10.54	Orchard	67.39	1.09	31.52
Bedok	72.09	15.18	12.74	Outram	81.61	8.74	9.65
Bishan	85.14	4.15	10.72	Pasir Ris	67.13	20.32	12.55
Bukit Batok	73.29	14.05	12.66	Punggol	77.34	13.19	9.46
Bukit Merah	78.68	8.60	12.72	Queenstown	78.92	8.89	12.19
Bukit Panjang	74.29	15.99	9.72	River Valley	70.00	0.98	29.02
Bukit Timah	86.14	1.02	12.84	Rochor	71.71	4.38	23.9
Changi	47.43	28.46	24.11	Seletar	62.96	0.00	37.03
Choa Chu Kang	70.81	17.00	12.2	Sembawang	72.77	13.48	13.75
Clementi	77.15	10.86	11.99	Sengkang	77.70	10.93	11.38
Downtown Core	79.84	1.08	19.08	Serangoon	84.07	4.28	11.64
Geylang	75.28	13.06	11.65	Singapore River	68.75	0.37	30.88
Hougang	81.73	7.94	10.33	Southern Islands	54.73	1.35	43.92
Jurong East	70.75	16.17	13.09	Sungei Kadut	83.53	0.00	16.47
Jurong West	69.77	17.83	12.4	Tampines	67.17	21.44	11.39
Kallang	74.89	7.88	17.22	Tanglin	74.53	1.00	24.48
Mandai	80.28	5.16	14.56	Toa Payoh	81.82	7.94	10.24
Marine Parade	75.15	7.20	17.65	Western Water Catchment	82.02	0.00	17.98
Museum	59.46	0.00	40.54	Woodlands	61.44	24.90	13.66
Newton	70.38	0.87	28.76	Yishun	70.45	16.80	12.75
Novena	80.93	4.40	14.67				

Source: Singapore General Household Survey 2015

% Residents working as legislators, senior officials, manager, professionals, associate professionals or technicians (PMETs) by Planning Area

Planning Area	%	Planning Area	%
Woodlands	44.73	Bukit Batok	55.94
Yishun	45.13	Bedok	56.75
Jurong West	48.17	Sengkang	56.80
Ang Mo Kio	48.77	Pasir Ris	57.87
Jurong East	49.57	Queenstown	58.74
Bukit Merah	49.70	Clementi	62.47
Geylang	50.98	Serangoon	62.76
Tampines	51.54	Punggol	63.14
Hougang	51.86	Novena	64.85
Bukit Panjang	52.43	Bishan	67.00
Outram	52.99	Marine Parade	71.63
Choa Chu Kang	53.03	Bukit Timah	86.45
Toa Payoh	53.78	Tanglin	93.33
Kallang	54.14		
Sembawang	54.22		

Source: Singapore Household Survey 2015

Where are the potential fractures?

Reported 2015 Crime Cases by URA Planning Area

Planning Area	Cases	%	Planning Area	Cases	%
Ang Mo Kio	70	3.4	Marina Bay	112	5.5
Bedok	103	5.0	Marine Parade	47	2.3
Bishan	29	1.4	Orchard	108	5.3
Bukit Batok	54	2.6	Pasir Ris	33	1.6
Bukit Merah	131	6.4	Punggol	25	1.2
Bukit Panjang	47	2.3	Queenstown	52	2.5
Bukit Timah	29	1.4	Rochor	109	5.3
Changi	36	1.8	Sembawang	17	0.8
Choa Chu Kang	80	3.9	Sengkang	51	2.5
Clementi	54	2.6	Serangoon	34	1.7
Geylang	143	7.0	Tampines	76	3.7
Hougang	95	4.7	Toa Payoh	51	2.5
Jurong East	52	2.5	Woodlands	132	6.5
Jurong West	142	6.9	Yishun	88	4.3
Kallang	43	2.1			

Five preventable crimes: robbery, housebreaking, snatch theft, theft of motorcycle/vehicle and outrage of modesty

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Reported 2015 Crime Rate (per 100 pax) by Planning Area

Planning Area	%	Planning Area	%
Sembawang	0.022	Yishun	0.044
Punggol	0.023	Choa Chu Kang	0.046
Pasir Ris	0.024	Jurong West	0.052
Sengkang	0.025	Woodlands	0.053
Serangoon	0.028	Queenstown	0.053
Tampines	0.029	Clementi	0.059
Bishan	0.032	Jurong East	0.061
Bukit Panjang	0.034	Bukit Merah	0.084
Bedok	0.036	Marine Parade	0.096
Bukit Batok	0.039	Geylang	0.122
Bukit Timah	0.039	Rochor	0.747
Ang Mo Kio	0.040	Changi	1.423
Toa Payoh	0.041	Orchard	11.739
Kallang	0.042		
Hougang	0.043		

Note: Marina Bay area excluded as there was few if any residents

Income Inequality (Est.Gini Coeff. using 2010 Census Data) by Planning Areas

Planning Areas	Gini Coefficient (Estimates)	Planning Areas	Gini Coefficient (Estimates)
Bukit Timah	0.302	Jurong East	0.452
Punggol	0.375	Yishun	0.453
Pasir Ris	0.377	Novena	0.471
Newton	0.377	Bedok	0.481
Sengkang	0.382	Marine Parade	0.482
Sembawang	0.388	Clementi	0.489
Choa Chu Kang	0.398	Ang Mo Kio	0.516
Bishan	0.409	Rochor	0.518
Bukit Panjang	0.425	Geylang	0.528
Woodlands	0.428	Toa Payoh	0.536
Serangoon	0.428	Queenstown	0.540
Tampines	0.428	Kallang/Whampoa	0.551
Jurong West	0.431	Bukit Merah	0.551
Bukit Batok	0.435	Outram	0.657
Hougang	0.452		

DOS Gini Coefficient : 0.464 (before accounting for Government transfers and taxes)

: 0.412 (after accounting for Government transfers and taxes)

Gini Coeff. Est.: https://www.youtube.com/watch?v=0Vv930-sDTI

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Where are there ethnic enclaves in Singapore, if any?
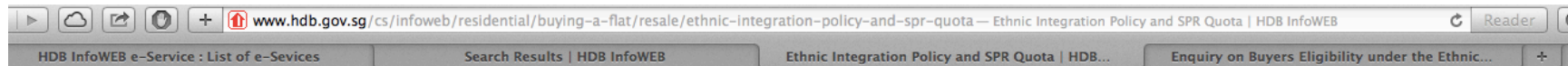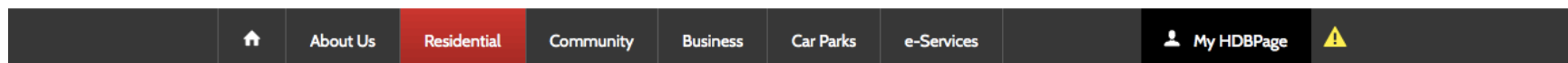
Ethnic Integration Policy (EIP) – Does the racial profile of HDB estate matter in social resilience?
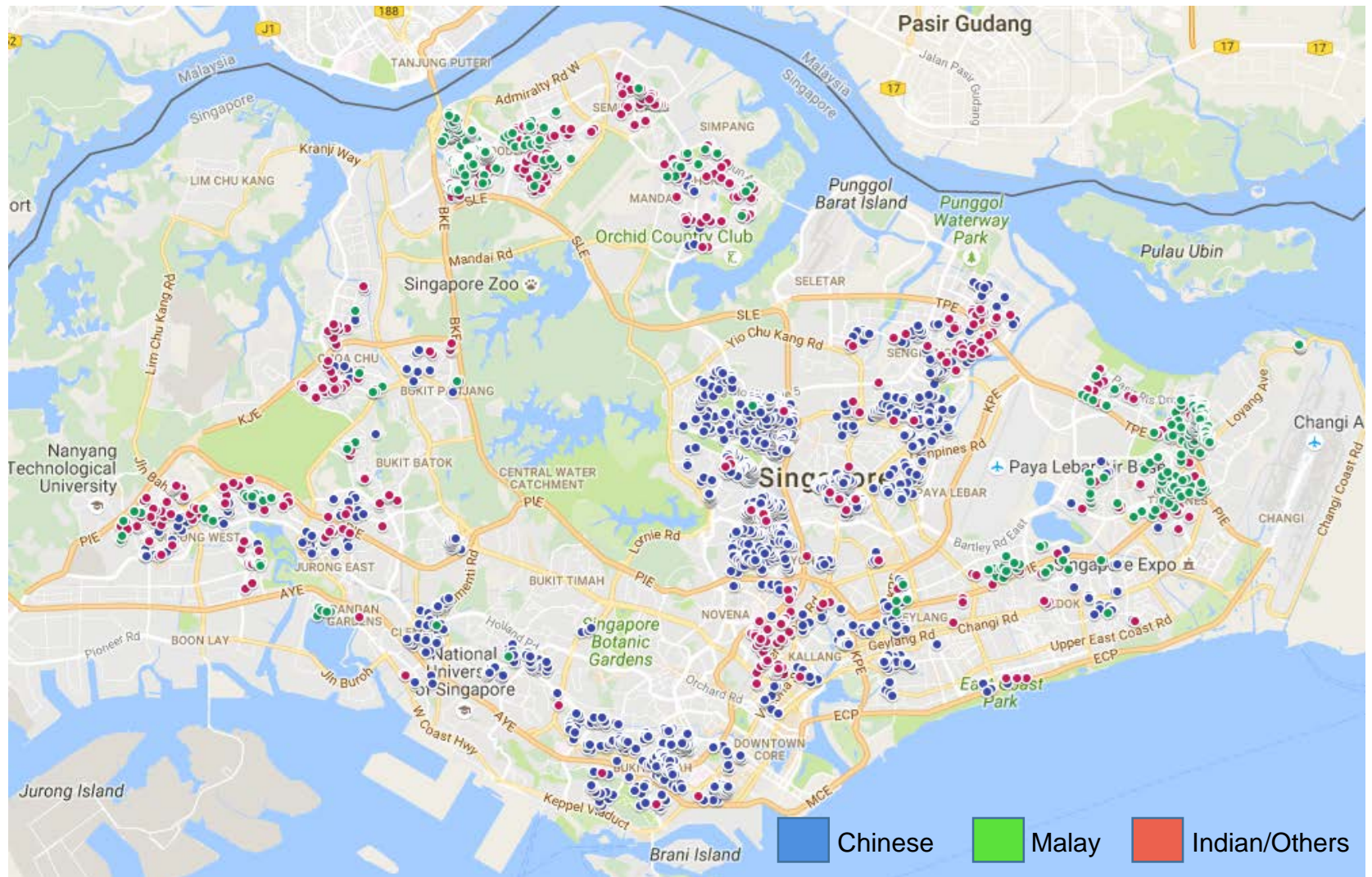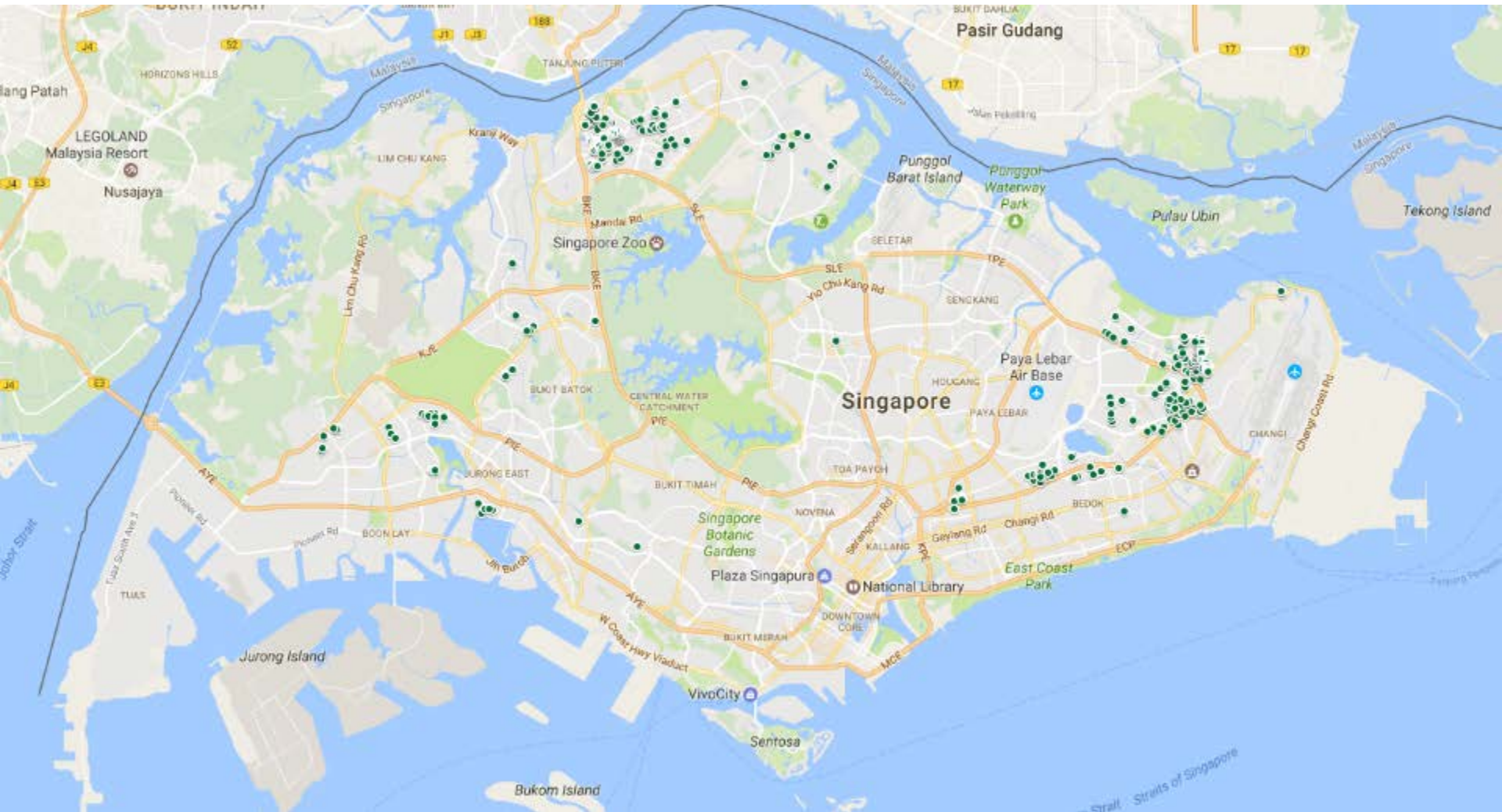

Number of blocks affected by at least 1 EIP restriction: ~ 31%

Ethnic Integration Policy (EIP) –
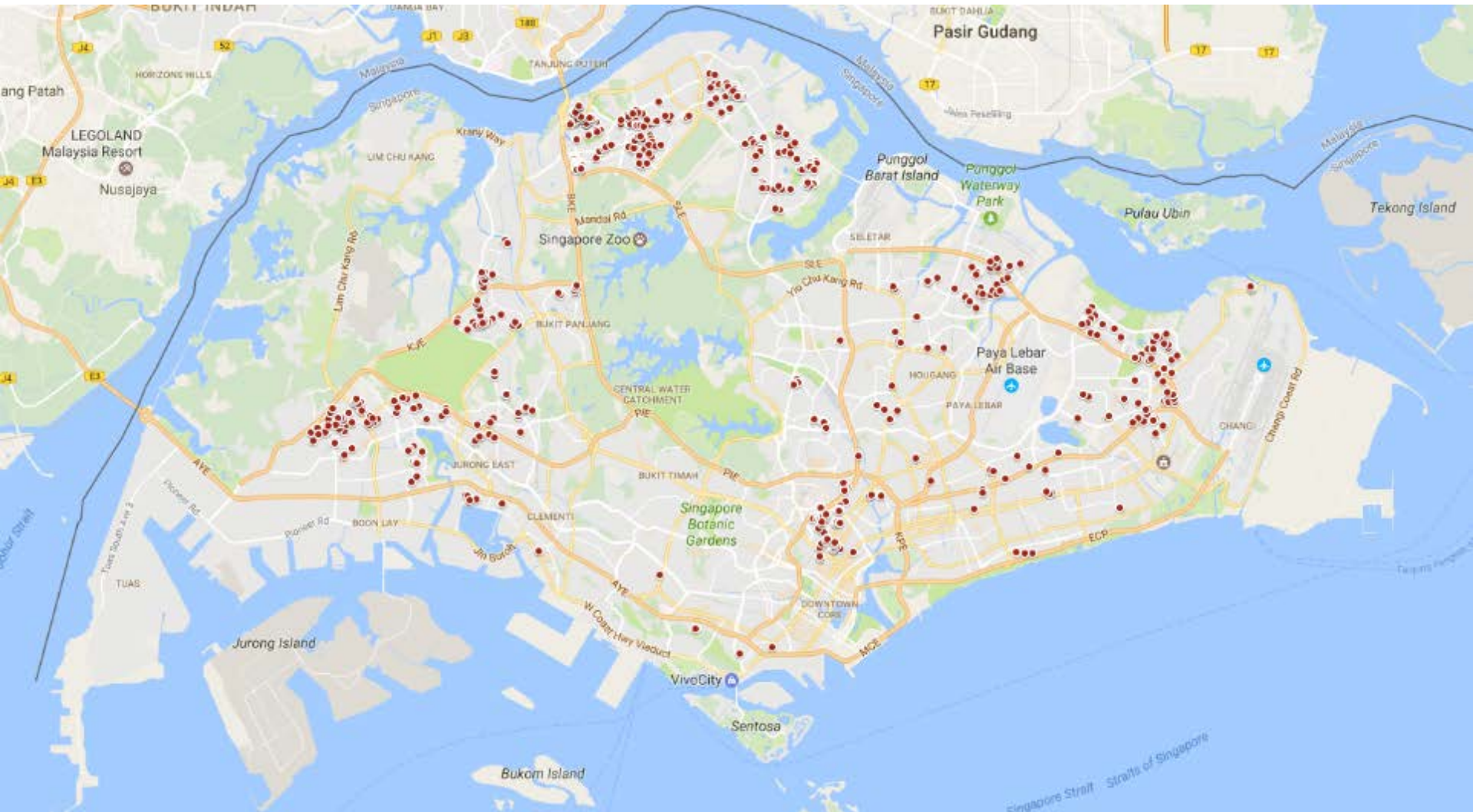# HDB flats where Chinese Households have reached its quota
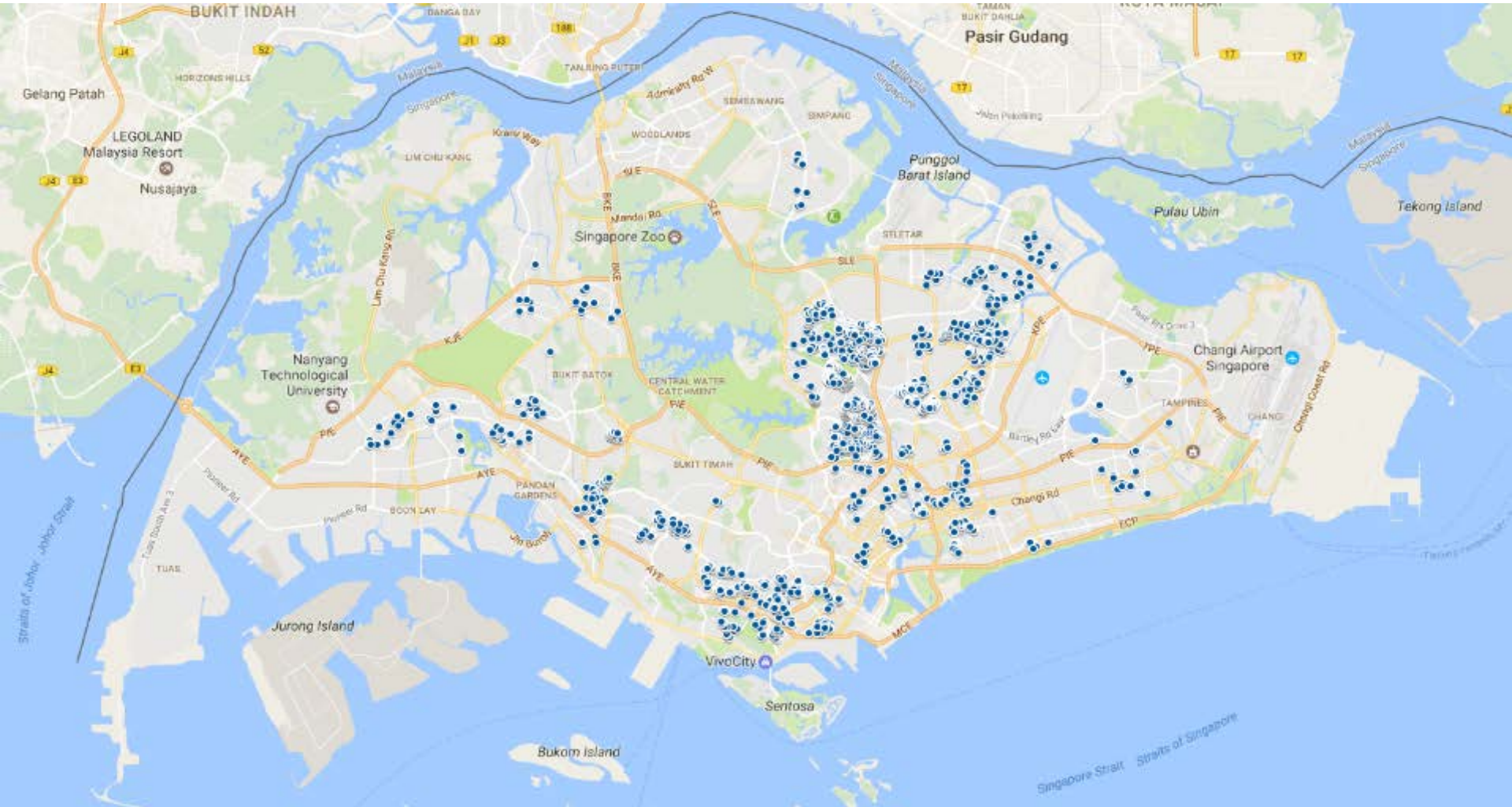
Ethnic Integration Policy (EIP) –
# HDB flats where Malay Households have reached its quota

Ethnic Integration Policy (EIP) –
HDB flats where Indian Households have reached its quota

Where are the non-Singaporean enclaves?
Ethnic Integration Policy (EIP) –
HDB flats where the PR Households have reached its quota*
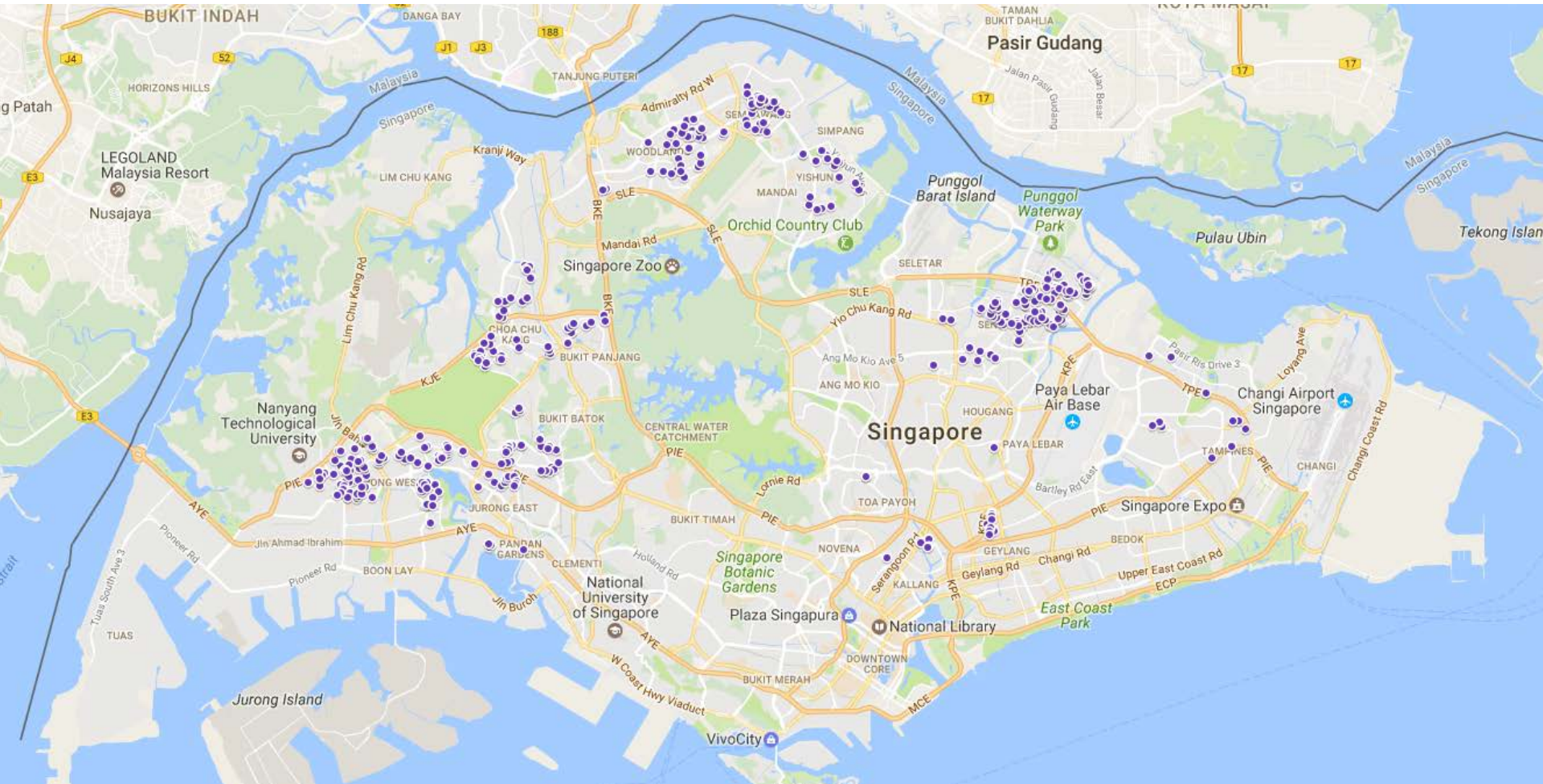
* Note: excludes Malaysian SPR; quota can be broken down by ethnic groups

Distribution of Neighbourhood and Elite Schools
(based on 2016 PSLE T-scores, Express stream)

Legend:
- 188-206 (1Q)
- 207-244 (2-3Q)
- 245-264 (4Q)
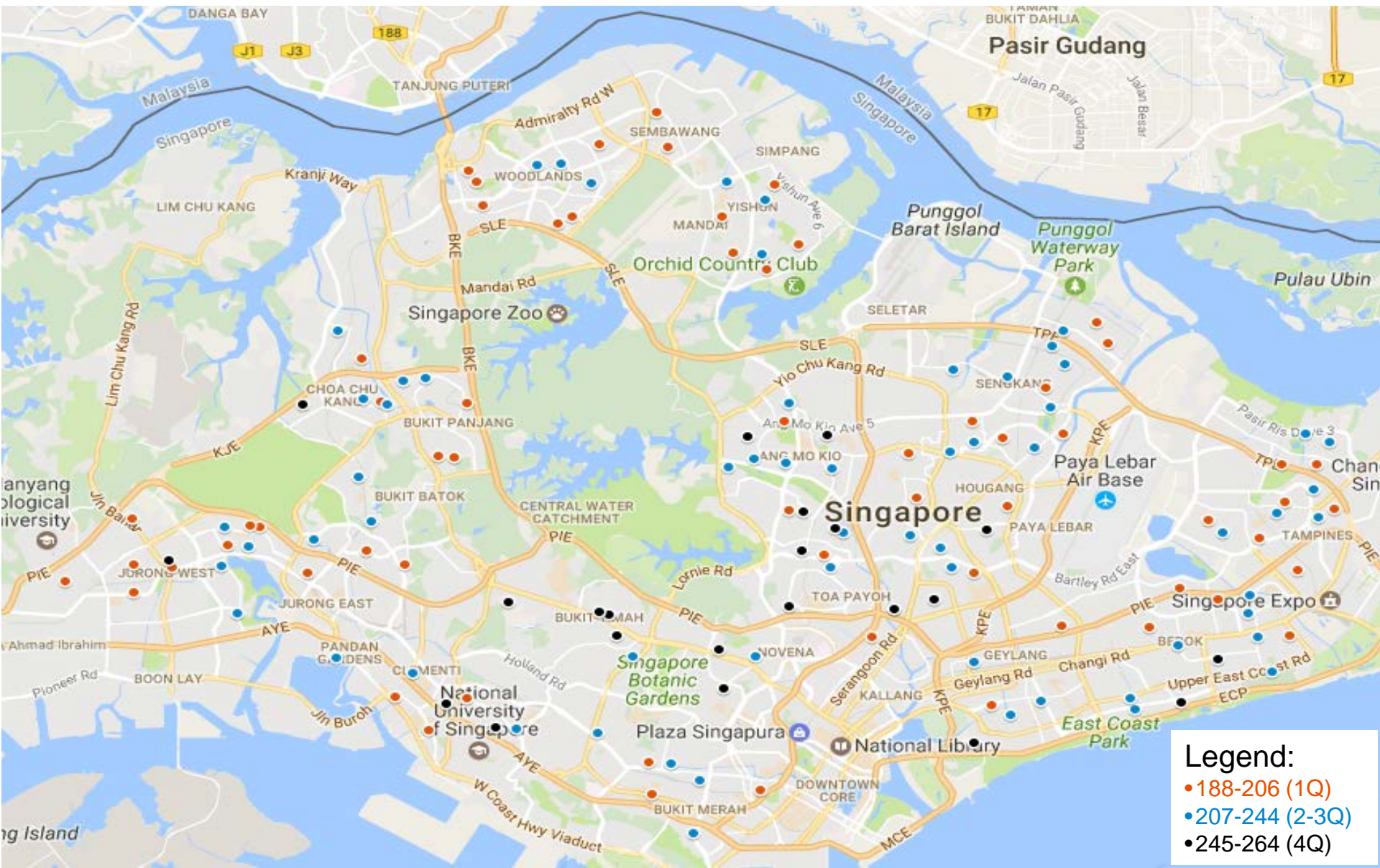
Cost of living: food prices in hawker centres/coffee shop, ranking from cheapest to most expensive

Source: https://lkyspp.nus.edu.sg/ips/wp-content/uploads/sites/2/2017/01/Report_Makan-Index-2nd-ed-final.pdf

Rank	Planning Zone	Makan Index	Rank	Planning Zone	Makan Index
1.	Bukit Merah	1.000	14.	Sengkang	1.094
2.	Queenstown	1.000	15.	Jurong East	1.098
3.	Toa Payoh	1.027	16.	Bukit Panjang	1.101
4.	Novena	1.029	17.	Clementi	1.115
5.	Kallang	1.035	18.	Geylang	1.118
6.	Punggol	1.046	19.	Bukit Batok	1.133
7.	Bedok	1.049	20.	Choa Chu Kang	1.137
8.	Yishun	1.067	21.	Pasir Ris	1.138
9.	Bukit Timah	1.069	22.	Jurong West	1.142
10.	Ang Mo Kio	1.081	23.	Woodlands	1.142
11.	Serangoon	1.086	24.	Sembawang	1.155
12.	Tampines	1.094	25.	Marine Parade	1.164
13.	Hougang	1.094	26.	Bishan	1.185

19% more expensive than Bukit Merah!

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Food prices correlated with the following …

Variable	Correlation (r)
% households with monthly income between $0 to $2,000	-.495
% living with 3 generation nucleus family	.386
% living without family nucleus	-.444
Estate's Gini Coefficient (i.e., social inequality)	-.388
% no household income	-.347
% people divorced or separated	-.330
% aged 65 and above	-.375

Note: all coefficients at $p = < .05$, grey scale $p < .10$

Estates with cheaper food:
- Greater income inequality
- Higher % of low income
- Higher % of elderly, divorcee, no family nucleus or support

Good for needy residents living in vulnerable neighbourhood; but needy residents living in economically affluent estates pay more for food

Reported crime rate (robbery, housebreaking, snatch theft, theft of motorcycle/vehicle and outrage of modesty)

Variable	Correlation (r)
% households with monthly income below $2,000	0.588
% Rental flat	0.601
% living without family nucleus	0.568
% people divorced or separated	0.609
% aged 65 and above	0.388
% 1 family nucleus, 3 generations and above	-0.373
% households with monthly income above $10,000	-0.356

Note: all coefficients at p=<.05, grey scale p<.10

Estates that more reported crime:
- Lower socio-economic status (e.g., lower income, vulnerable households)
- More vulnerable households
- Greater social inequality

Consistent with overseas findings

Gini coefficient of the planning zone in 2010

Variable	Correlation (r)
% Rental flat	.793
% households with monthly income above $10,000	-.733
% Monthly household income between $0 to $2,000	.901
% 1 family nucleus, 3 generations and above	-.580
% living without family nucleus	.926
% aged 65 and above	.755
% people divorced or separated	.836
Cost of Food prices	-.388

Note: all coefficients at $p =< .05$

Estates with greater social inequality:
- More vulnerable groups
- More affordable food prices

Results seemingly suggest that inequality stems mainly from the contrast between low and middle income groups

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MediaCorp Current Affairs Survey (2015)

"Concern on dependency on foreign workers to continue Singapore's economic advancement" (MediaCorp Survey, 2015)

Variable	Correlation (r)
% living without family nucleus	-.489
% No household income	-.518
% aged 65 and above	-.429

Note: all coefficients at p<.05, grey scale p<.10

Estates that are <u>more concerned</u> of foreign workers dependence:
- Lower % of households with no income
- Lower % of elderly
- Lower % without family nucleus

In general, estates with <u>fewer vulnerable</u> households are <u>more concerned</u> about foreign workers dependency.

"Optimistic of the education system, affordable healthcare, public housing, national security, and reliable transportation" (MediaCorp Survey, 2015)

Variable	Correlation (r)
% Rental flat	.483
% people divorced or separated	.532
% reported crime cases	.573
% households with monthly income above $10,000	-.606
% Monthly household income between $0 to $2,000	.428
% 1 family nucleus, 3 generations and above	-.470
Estate's Gini coefficient (i.e., social inequality)	.445

Note: all coefficients at $p<.05$, grey scale $p<.10$

Estates with <u>higher</u> optimism:
- Higher % of vulnerable individuals & households
- Greater income inequality
- Large families, and middle income households

Surprisingly, vulnerable estates are more optimistic.

"Important to embrace all nationality, race, language and religion"
(MediaCorp Survey, 2015)

Variable	Correlation (r)
% households with monthly income above $10,000	-.530
% people divorced or separated	.496
% Reached max EIP quota for Malay households (2016)	.514
% Reached max EIP quota for non-Chinese households (2016)	.465
% Secondary schools in 1st quantile (T-score:188 to 206)	.430
% PMETs	-.457

Note: all coefficients at $p<.05$, grey scale $p<.10$

Estates that embraced diversity:
- More vulnerable groups
- More minority groups
- Fewer professionals, lower income

Vulnerable estates embrace greater social diversity

Conclusion

- New fractures at the neighborhood level? Ethnic enclaves, income divide, social inequality, social disenchantment

- Middle class anxiety. "Vulnerable" neighbourhoods seemingly more resilient, optimistic

- Cannot do much about income divide but we can ensure low income from all housing estates have access to support and resources ("vulnerables in vulnerable neighbourhoods" vs "vulnerables in resourceful neighbourhoods")

Recalibrate our sense-making strategies? Re-define neigbourhood "boundaries"?

- Incorporate Multi-level Modelling and GIS data in survey research

- What are the residential characteristics for each respondent?

- How does it influence the individual's well being and attitudes?
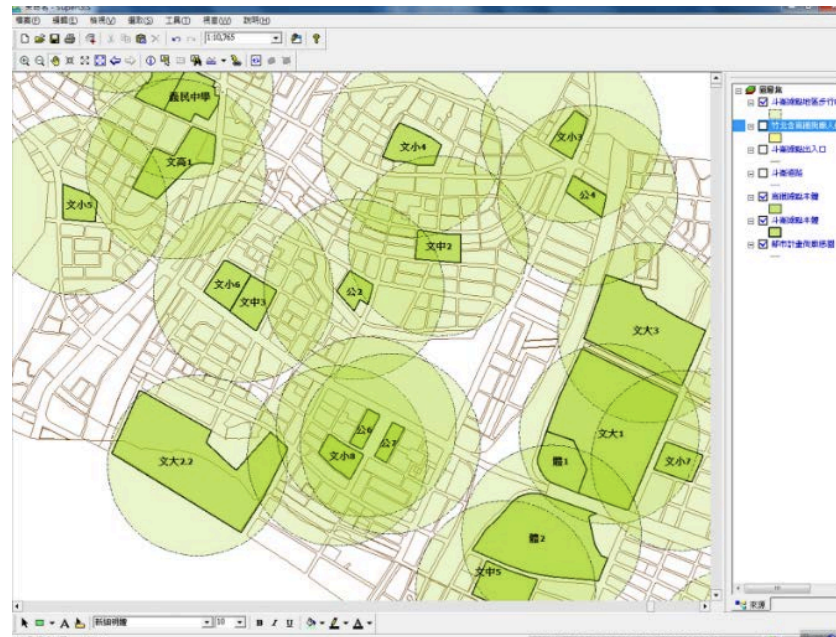
Recalibrate our sense-making strategies? Re-define neigbourhood "boundaries"?

Examples of residential characteristics:

- Help-seeking behaviours/ Social service agencies
- Clustering of schools (neighbourbood vs elite)
- Transport infrastructure
- Hawker centres/Coffeeshops/Community Centres
- Shopping malls
- Healthcare agencies
- Residential density
- Integrate <u>survey</u> data and <u>open-source</u> GIS data with neighbourhood characteristics

Thank you