Variables

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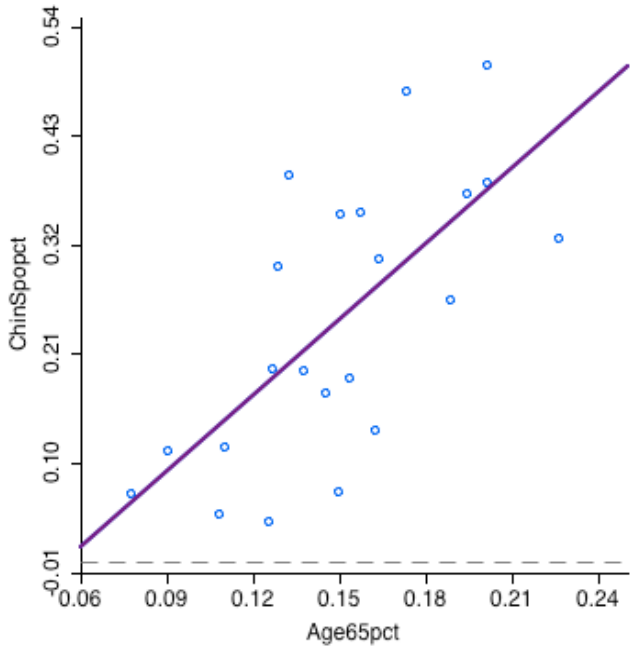
This main purpose of this report is to illustrate several features of geographic distribution of Chinese who live in the city of Vancouver, Canada. The city of Vancouver is divided into 22 communities, and the data used here includes three variables of interest for each community: a) the percentage of people specifying Chinese as their mother tongue, b) the mobility index and c) the percentage of old people(65+). We want to examine the relationship among these three variables at community level geographically.

First of all, we take a look at the correlation between the percentage of old people and the percentage of Chinese. As the graph below shows, there is a positive correlation between them with the R square 0.468 and the slope 2.55, meaning that Chinese are more likely to live in neighborhoods with higher number of old people in Vancouver where the population density is also high. One reason may be that Chinese culture favors that household with old family member resembles a perfect union.

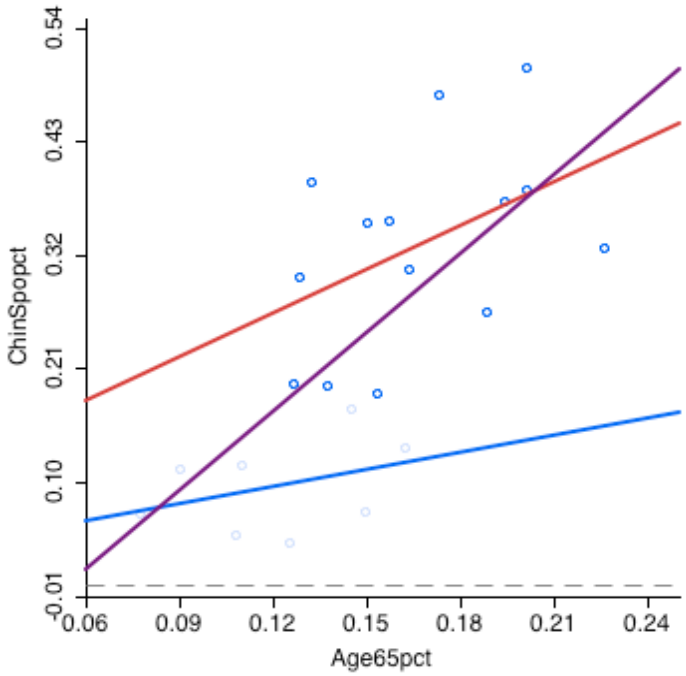


#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
22	0.468	-0.138	0.094	-1.467	0.158	2.550	0.608	4.191	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
22	0.468	-0.138	0.094	-1.467	0.158	2.550	0.608	4.191	0.000

Chow test for sel/unsel regression subsets: can't compute

Now let us check if there is any spatial heterogeneity by splitting the data into two parts based on the percent of Chinese. We can see from the scatterplot below that in communities with higher number of Chinese, the correlation between the two variables are stronger than

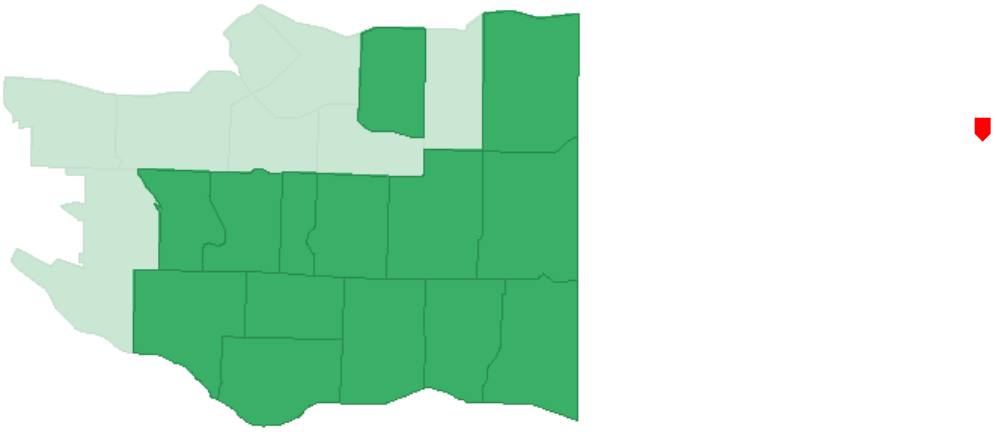
that of communities with lower number of Chinese.



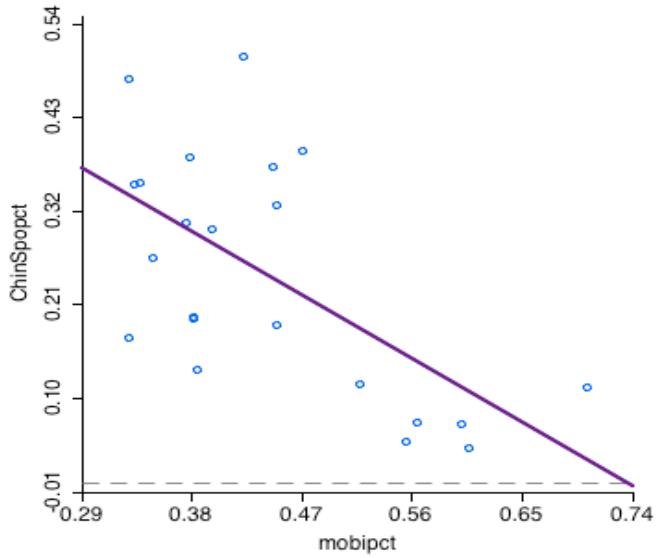
#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
22	0.468	-0.138	0.094	-1.467	0.158	2.550	0.608	4.191	0.000
14	0.211	0.093	0.134	0.692	0.502	1.419	0.793	1.790	0.099
8	0.135	0.029	0.071	0.407	0.698	0.556	0.575	0.967	0.371

Chow test for sel/unsel regression subsets: distrib=F(2,18), ratio=9.0493, p-val=0.0019

The map below illustrates the spatial feature of this division, which also shows that there are more Chinese living in the southeast area of Vancouver.



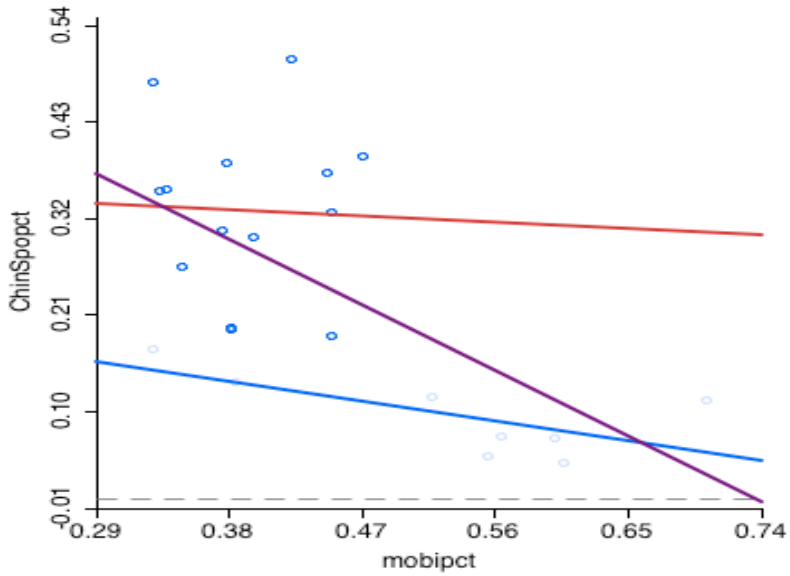
Next, we turn to relationship between the percentage of Chinese and the mobility index. As the graph below shows, the negative correlation implies that Chinese are reluctant to live in areas of high mobility. One reason may be a traditional belief that Chinese hold: once they settle down, frequent moving would be unnecessary unless they have to move.



#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
22	0.390	0.612	0.106	5.790	0.000	-0.831	0.233	-3.572	0.002
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
22	0.390	0.612	0.106	5.790	0.000	-0.831	0.233	-3.572	0.002

Chow test for sel/unsel regression subsets: can't compute

A closer examination of the possible spatial heterogeneity is shown below. We can see that after the splitting base on the percentage of Chinese, the two correlations between mobility and the percentage Chinese both become weaker, which indicates that we may draw different conclusions about the correlation based on different target population.



#obs	R^2	const a	std-err a	t-stat a	p-value a	slope b	std-err b	t-stat b	p-value b
22	0.390	0.612	0.106	5.790	0.000	-0.831	0.233	-3.572	0.002
14	0.001	0.359	0.232	1.550	0.147	-0.078	0.588	-0.132	0.897
8	0.451	0.229	0.061	3.748	0.010	-0.249	0.112	-2.221	0.068

Chow test for sel/unsel regression subsets: distrib=F(2,18), ratio=8.3298, p-val=0.0027

Finally, the bubble chart below shows the relationship among the three variables. From the graph we can see the similar correlation as the previous graphs show: more Chinese can be found in communities with higher percentage of old people and lower mobility level.