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Negative Envy or Positive Amenity Effects? A Neighbourhood Study of Aucklanders' Residential Satisfaction.

Eilya Torshizian
Arthur Grimes

28th November 2014

THE UNIVERSITY
OF AUCKLAND
BUSINESS SCHOOL

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Brian Rudman 's Opinion

Brian Rudman is a NZ Herald feature writer and columnist.

✉ Email Brian

Brian Rudman: 500 homes? P-P-P-praise the lord

5:30 AM Monday Dec 9, 2013

💬 53 comments

Brian Rudman on Auckland   Local Government   …

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Auckland's housing crisis.

They are to fast-track the

> In the original plans drawn up by the previous Labour Government, state rental properties were to be pepper-potted throughout the development. But local MP John Key campaigned against that in the 2006 general election, saying it was "economic vandalism".

Social deprivation

| Dimension of deprivation	Description
Income	People aged 18-64 receiving a means tested benefit
Income	People living in equivalised households with income below an income threshold
Owned home	People not living in own home
Support	People aged <65 living in a single parent family
Employment	People aged 18-64 unemployed
Qualifications	People aged 18-64 without any qualifications
Living space	People living in equivalised households below a bedroom occupancy threshold
Communication	People with no access to a telephone
Transport	People with no access to a car

The impact of social deprivation

Living in areas of geographically concentrated poverty is associated with additional problems for residents (Atkinson and Kintrea, 2001).

People living in deprived areas that are approximate to more affluent areas may suffer from mental health issues (Pearson, Griffin, Davies, & Kingham, 2012).

Elderlies and most deprived social groups enjoy the highest access to public green spaces (Barbosa et al. 2007).

The variation of deprivation levels across neighbourhoods may lead to community fragmentation, which is associated with less socialising and less volunteering. Conversely, residents in deprived areas may benefit from higher amenities in nearby affluent areas.
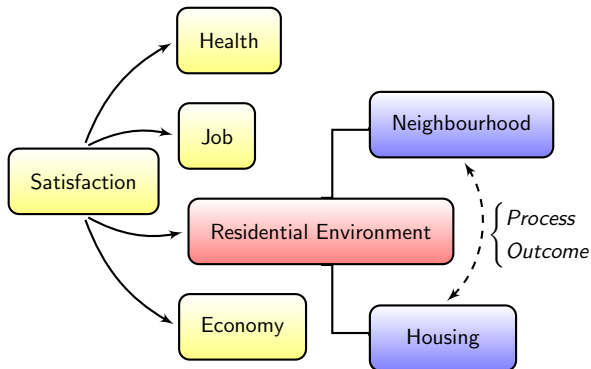
Residential Satisfaction
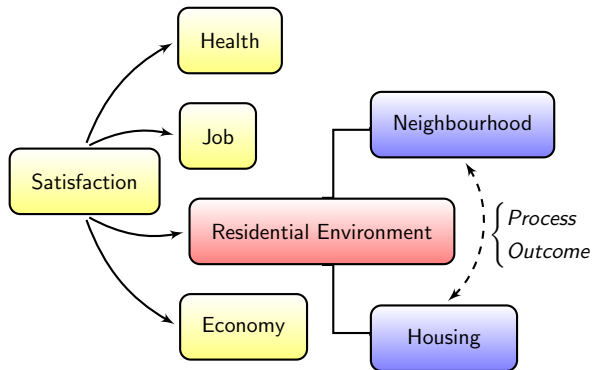
Residential satisfaction (RS)

- 'How do you feel about where you are currently living?' answer is Likert scale based.

- No misunderstanding.

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Residential Satisfaction

Residential satisfaction (RS)

- 'How do you feel about where you are currently living?' answer is Likert scale based.
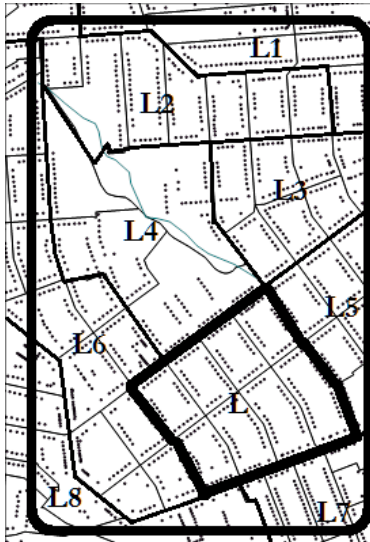
- No misunderstanding.

Neighbourhood definition

Geographic units

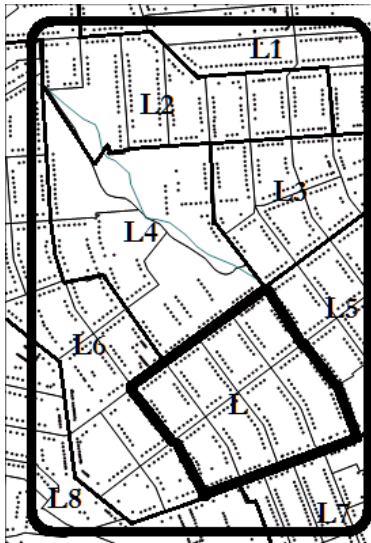- Mesh-block (MB): Very small neighbourhood.

- Area unit (AU): Aggregates of MBs. Non-administrative.

- Territorial authority (TA)

Neighbourhood definition

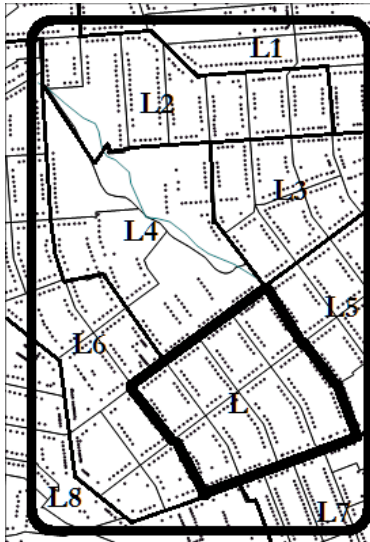$$MD_i = \begin{cases} 1 \ i \ lives \ in \ area \ j \\ 0 \ otherwise \end{cases}$$

$$DEP_i = MD_i'MDEP$$

Relative Measurement (RDEP)

- Ratio: $\frac{DEP_i}{ADEP_i}$
- Variation:

$$RDEP_i = DEP_i - ADEP_i$$

$$ADEP_i = MD_i'.W.MDEP$$

Neighbourhood definition

Spatial weight matrix construction:
Stata package -spwt-

- spwt using "MB _ coord",
  id(_ ID) x(_ X) y(_ Y) k(1)
  clip("MBs2") norm

SPWT: A Stata Command for Creating Spatial Weight Matrices ☆

Eilya Torshizian[a,1]

[a] *Department of Economics, The University of Auckland.*

Abstract

Creating spatial weights for spatial analysis takes an enormous memory space. To overcome the Stata's matrix size limitations, the analysis should be done by using the Mata language. This lets researchers to create large matrices more efficient, in terms of processing time. The weighting options of **spwt** include the contiguity weights based on the k-nearest neighbour and the walking distance from the areas' centroids methods.

Keywords: spwt, spatial weight matrix, walking distance weights, k-nearest neighbour weights, spatial distance weighting matrix, spatial econometrics.

JEL codes: C21; R12.

- K-nearest neighbour approach.
- Walking distance from the area's centroid approach.
- Written in Mata: Able to process large matrices. Efficient in terms of processing time.

Data

New Zealand General Social Survey (2008, 2010, and 2012)	New Zealand Census 2006
Individuals' characteristics	Mesh-blocks' average
Individual's room density	deprivation level
Mesh-block ID	Mesh-block ID

Research design

1st model specification:

$$y_i = \alpha_0 + \alpha_1.x_i + \alpha_2.x_i^2 + \alpha_3.ControlVariables_i + \epsilon_i$$

y_i: individual i's residential satisfaction (RS).
x_i includes the measures of households' absolute position, including our variables of interest, which are RDEP and DEP, and also a number of variables related to the density of area, namely household's crowding (RD), area density (DENS), and the average crowding level of individual i's neighbourhood (RDM).
21 control variables are served to control for the effect of:
Demographics (Age, Ethnicity, Income, Education),
Perceptions (Health status, Satisfaction with abilities),
Residential problems (Housing and Neighbourhood problems),
Social involvement (Local election),
Amenities and facilities conditions (Coastlines' access and quality),
Regions and Tenure status.

Poverty trap

Social deprivation of neighbourhoods may affect their residents persistently.

This situation affects the next generation's earnings opportunities, which may lead to a perpetuation of similar living condition to the parents.

The persistence of poor conditions can lead to the stratification of neighbourhoods.

Studying the effect of neighbourhoods on their residents

Poverty traps $\begin{cases} \textit{Psychological factor}. \\ \textit{Dependence of behavioural costs on others}. \\ \textit{The information derived from peers' past behaviours}. \end{cases}$

Variables	Categories	Mean	Excess concentration			
			10%	15%	20%	25%
ETHNICITY	European	0.64	0.4	0.33	0.26	0.21
	European-Maori	0.08	0.13	0.11	0.07	0.05
	Pacific	0.08	0.16	0.14	0.12	0.1
	Asian	0.15	0.26	0.19	0.13	0.09
	Other	0.05	0.07	0.04	0.02	0.01
	Total		1.03	0.81	0.59	0.45
# People who raised	None	0.44	0.34	0.23	0.17	0.1
the individual who	One	0.14	0.12	0.05	0	0
were born in	Two	0.37	0.25	0.14	0.09	0.06
New Zealand	More than two	0.04	0.07	0.03	0.02	0
	Total		0.81	0.46	0.29	0.17
# Generations in NZ	Total		0.77	0.48	0.33	0.19
Identity expression	Total		0.71	0.4	0.25	0.16
Length of stay in NZ	Total		0.65	0.38	0.26	0.14

Model specification II: 2SLS

$1^{st} stage :$

$$x_i = \theta_0 + \theta_1.z_i + \theta_2.ControlVariable_i + u_i$$

The list of instruments (z_i) includes the variables that represent the backgrounds of individuals, including the length of stay in New Zealand, the number of generations in New Zealand, the number of people who raised the individual who were born in New Zealand, and the ease of expressing own identity in New Zealand.
$2^{nd} stage :$

$$y_i = \beta_0 + \beta_1.\widehat{x_i} + \beta_2.\widehat{x_i}^2 + \beta_3.ControlVariables_i + \epsilon_i$$
$$, \widehat{RDEP_i} = \widehat{DEP_i} - ADEP_i$$

Socio-demographic characteristics

Do they affect residential satisfaction?

Dekker et. al. (2011),Baum et. al. (2010):
The characteristics of individuals and their opinions about the living environment have greater effect on neighbourhood satisfaction than the characteristics of the residential environment.

Socio-demographics

- Tenure status
- Income level
- Ethnicity
- Education level
- Children
- Age
- Individuals' own group characteristics

Socio-demographic characteristics

Socio-demographics

- Tenure status
  Statistics New Zealand (2011): Renters are twice as likely to have major problems with their residential environment than owners.
  Roskruge, Grimes, McCann and Poot, 2011: Homeownership affects social capital formation, which leads to a higher life satisfaction (Bjornskov, 2003).

- Income level

- Ethnicity

- Education level

- Children

- Age

- Individuals' own group characteristics

Socio-demographic characteristics

Socio-demographics

- Tenure status

- Income level

- Ethnicity
  Mare and Coleman (2011) and Wang and Maani (2012):
  Immigrant groups and ethnic minorities usually live in more
  concentrated areas and so are more limited to their own
  neighbourhood.

- Education level

- Children

- Age

- Individuals' own group characteristics

- Area composition

Socio-demographic characteristics

Socio-demographics

- Tenure status
- Income level
- Ethnicity
- Education level
- Children
  Social interaction and mobility
- Age
  Adaptation
- Individuals' own group characteristics
- Area composition

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Socio-demographic characteristics

- Tenure status

- Income level

- Ethnicity

- Education level

- Children

- Age

- Individuals' own group characteristics
  A comparison between individuals and their neighbourhoods:
  $\frac{\#i's\,ethnicity}{\#neighbourhood}, \frac{\#i's\,occupation}{\#neighbourhood}$

- Area composition
  $\frac{\#ethnicity}{\#neighbourhood} \qquad \frac{\#occupation}{\#neighbourhood}$

Model number:	(1) Logit	(2) 2SLS	(3) PD
Residential Satisfaction (dummy)			
RDEP	0.9993		
	(0.001)		
$RDEP^2$	0.999998		
	(0.000)		
$\widehat{RDEP}$ (Affluent)		0.9954**	0.9954**
		(0.002)	(0.002)
$\widehat{RDEP}^2$		0.99998*	0.99998*
		(0.000)	(0.000)
$\widehat{RDEP}$# Dummy1 (Poor)		1.0069**	1.007**
		(0.003)	(0.003)
$\widehat{RDEP}^2$# Dummy1		0.99994**	0.99994**
		(0.000)	(0.000)
DEP	0.99483		
	(0.009)		
DEP^2	1.000003		
	(0.000)		
$\widehat{DEP}$		0.9772	0.957
		(0.070)	(0.069)
$\widehat{DEP}^2$		1.00002	1.00003
		(0.000)	(0.000)

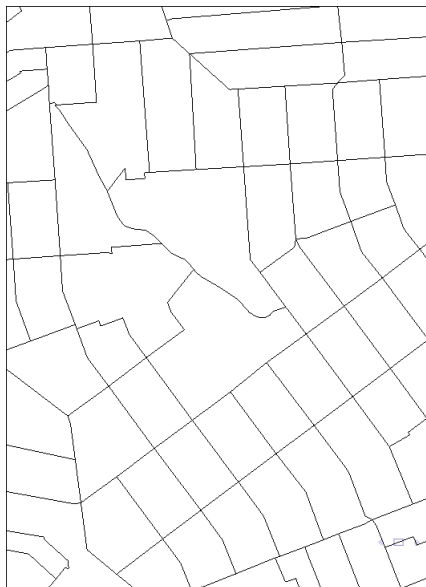| Model number:	(1)	(2)	(3)
	Logit	2SLS	PD
Residential Satisfaction (dummy)			
RD	0.192**		
	(0.130)		
RD2	1.475		
	(0.440)		
$\widehat{RD}$		2.8874	1.936
		(6.658)	(4.344)
$\widehat{RD}^2$		0.5208	0.591
		(0.397)	(0.438)
DENS	0.831*		
	(0.098)		
DENS2	1.024		
	(0.023)		
$\widehat{DENS}$		0.459	0.4243
		(0.796)	(0.776)
$\widehat{DENS}^2$		1.088	1.128
		(0.305)	(0.334)
PD			0.1915***
			(0.044)

At a glance

Category	Result	Sig
Deprivation level (DEP)	Does not affect RS	No
$\widehat{DEP}$	Does not affect RS	No
Relative deprivation (RDEP)	Does not affect RS	No
RDEP # Dummy	Living in a poor area: Raises RS	Yes
	Living in a rich area: lowers RS	Yes
$\widehat{RDEP} = \widehat{DEP_i} - ADEP_i$	Living in a poor area: Raises RS	Yes
	Living in a rich area: lowers RS	Yes
Household crowding (RD)	Lowers RS	Yes
$\widehat{RD}$	Does not affect RS	No
Area density (DENS)	Lowers RS	Yes
$\widehat{DENS}$	Does not affect RS	No
RDM	Does not affect RS	No
$RDM - \widehat{RDM}$	Does not affect RS	No
Perceived density (PD)	Affects RS negatively	Yes

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Future research

- The modelling method of the current study is the simple Spatial explicit model (SLX). The robustness of the results should be checked on by taking a more complex spatial modelling approach, such as the Spatial Durbin Model (SDM) or the Spatial Error Model (SEM).

- As concluded in our previous study, the neighbourhood that fits the individuals' evaluation of their living environment the best consists of the area that may be visited in a 15 minute walk around the individual's most likely location, i.e. the centroid feature of an area. Therefore, in order to derive the best relative deprivation measure, the spatial weighting approach taken in the current study, which is the nearest k-neighbour approach, needs to be investigated.
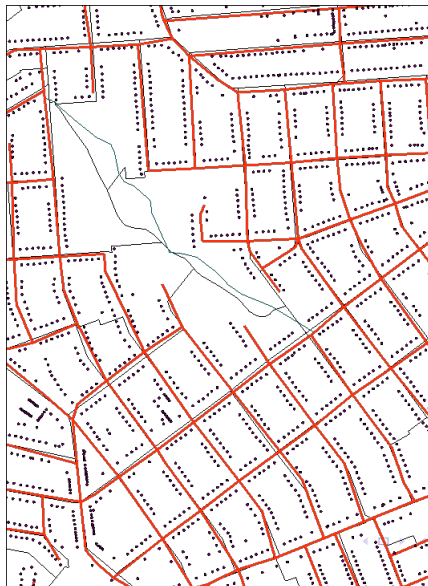
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Geographical matrix

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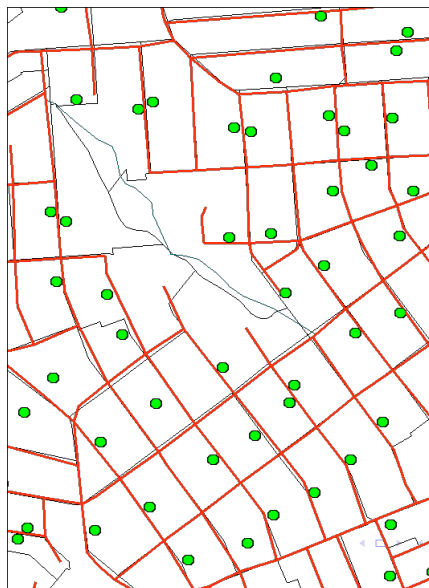
Geographical matrix
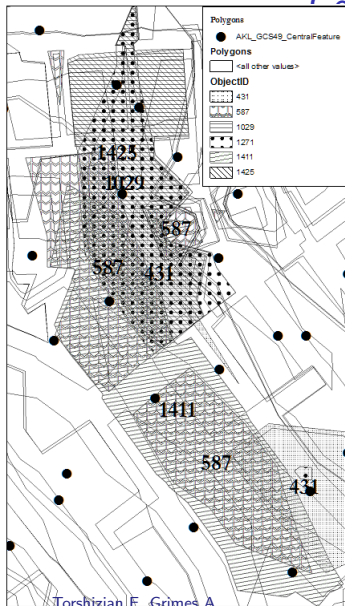
	431	587	964	1029	1411	1425
1411	0.054	0.277	0.092	0.053	1	0.049
1029	0.067	0.07	0.118	1	0.052	0.233

Contributions

From the theoretical point of view

- This study's contribution on a relative approach by considering the impacts of the ratio of the room density of an individual to the average room density of its neighbourhood is a novel approach.

- The use of neighbourhood level analysis extends previous studies.

From the applied perspective

- The results of this research will contribute to "create enduring neighbourhoods".

The identification of the causal relationship

- Simultaneity problem

$$y_{1n} = \alpha_0 + \alpha_1.x_{1n} + \alpha_2.x_{2n} + \alpha_3.y_{2n} + \epsilon_{1n}, E(\epsilon_{1n}|x_{1n}) = 0$$

$$y_{2n} = \alpha_0 + \alpha_1.x_{2n} + \alpha_2.x_{1n} + \alpha_3.y_{1n} + \epsilon_{2n}, E(\epsilon_{2n}|x_{2n}) = 0$$

If $\alpha_3 = 0$ and $E(\epsilon_{1n}, \epsilon_{2n}) = 0 \Rightarrow Cov(\epsilon_{1n}, \epsilon_{2n}|x_{1n}, x_{2n}) = 0 \Rightarrow$

Identification is possible.

- The correlated unobserved problem
- The endogenous group membership problem

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The identification of the causal relationship

- Simultaneity problem
- The correlated unobserved problem
- The endogenous group membership problem
  Mare and Coleman (2011): The effect of own-group attraction
  on Aucklander's location choice.

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RSA's Conference

Eilya Torshizian
Arthur Grimes

28th November 2014