Behavioural Economics and Housing Decisions

Lecture Eight: Social Comparison and Residential Satisfaction

By Helen Bao

Outline

- Research questions

- Housing satisfaction

- Social comparison

- Data and methods

- Findings and discussions

- Future research directions

Research Questions

- Do social comparisons influence residential satisfaction?
- Do better-off and worse-off households respond to changes in their housing consumption differently?

- Related questions:
  - Why is it important to study housing satisfaction?
  - What is the role of social comparison in housing decisions?
  - How to measure social comparison?

Housing satisfaction

- Also called residential satisfaction

- An indicator to measure the quality of build environment and residents' quality of life

- A determinant of household mobility: people vote with their feet

- An important policy tool for public policy evaluation when monetary assessment of effectiveness is inappropriate or impossible (e.g., public housing)

- The investigation of residential satisfaction is multidisciplinary in nature: need to leverage insights from many different disciplines such as psychology, social science and economics

Housing satisfaction

- Theoretical framework: Amerigo, M. and J. I. Aragones (1997). "A theoretical and methodological approach to the study of residential satisfaction." *Journal of Environmental Psychology* 17(1): 47-57.
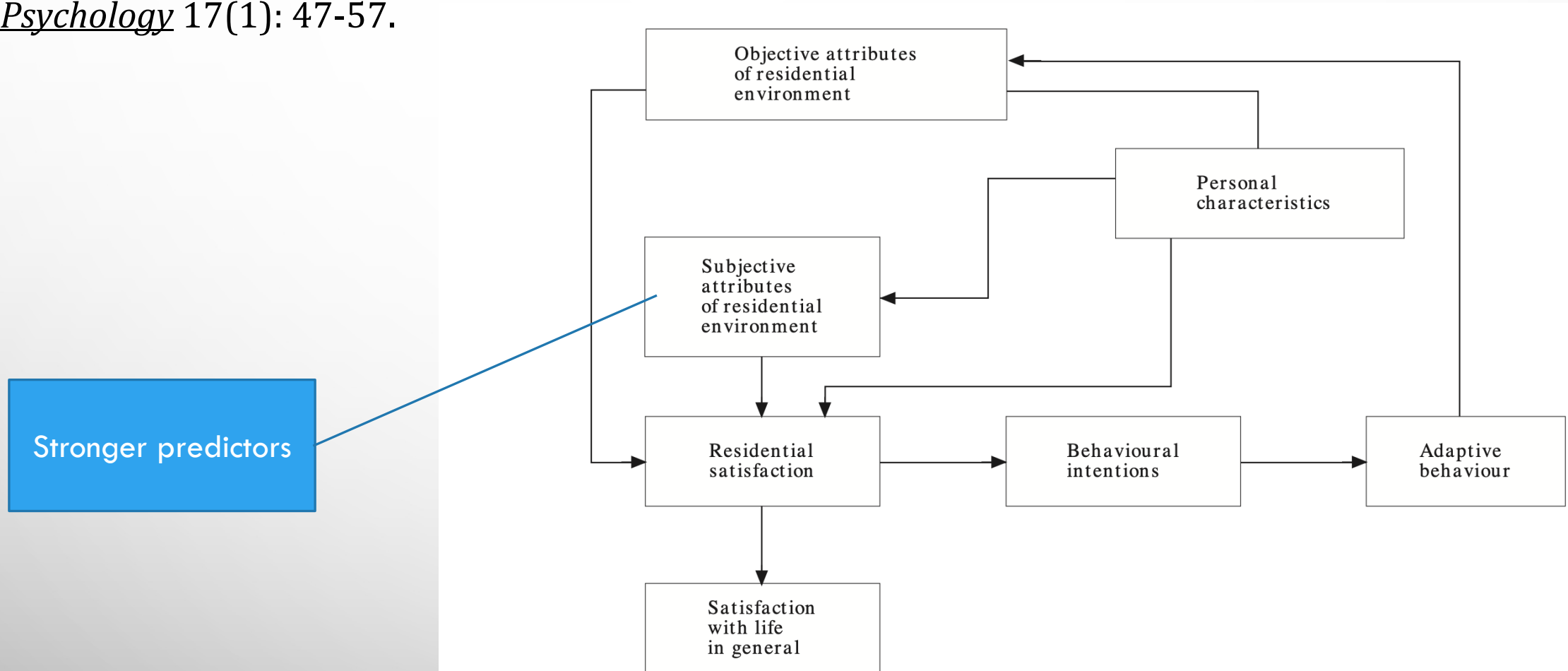

Figure 1.   A systemic model of residential satisfaction. From Amerigo (1990, 1992a).

Housing satisfaction

- Amerigo, M. and J. I. Aragones (1997). "A theoretical and methodological approach to the study of residential satisfaction." *Journal of Environmental Psychology* 17(1): 47-57.

SUBJECTIVE

Degree of maintenance of neighbourhood (g)

Appearance of place (i)

Apartment evaluation (g)

Administration of neighbourhood (i)

Safety (f) (g)

Friendship (g)

Relationship with neighbours (a)

Attachment of residential area (a)

Perception of overcrowding (a) (c) (d) (f)

Homogeneity (g) (f)

PHYSICAL ———————————————————————— SOCIAL

Single-family vs multi-family (a)

Electricity (a)

Noise level (j)

Owner-rented (e) (f)

Time living in house (e)

Time living in neighbourhood (c)

Age (c) (f) (h)

Life cycle (k)

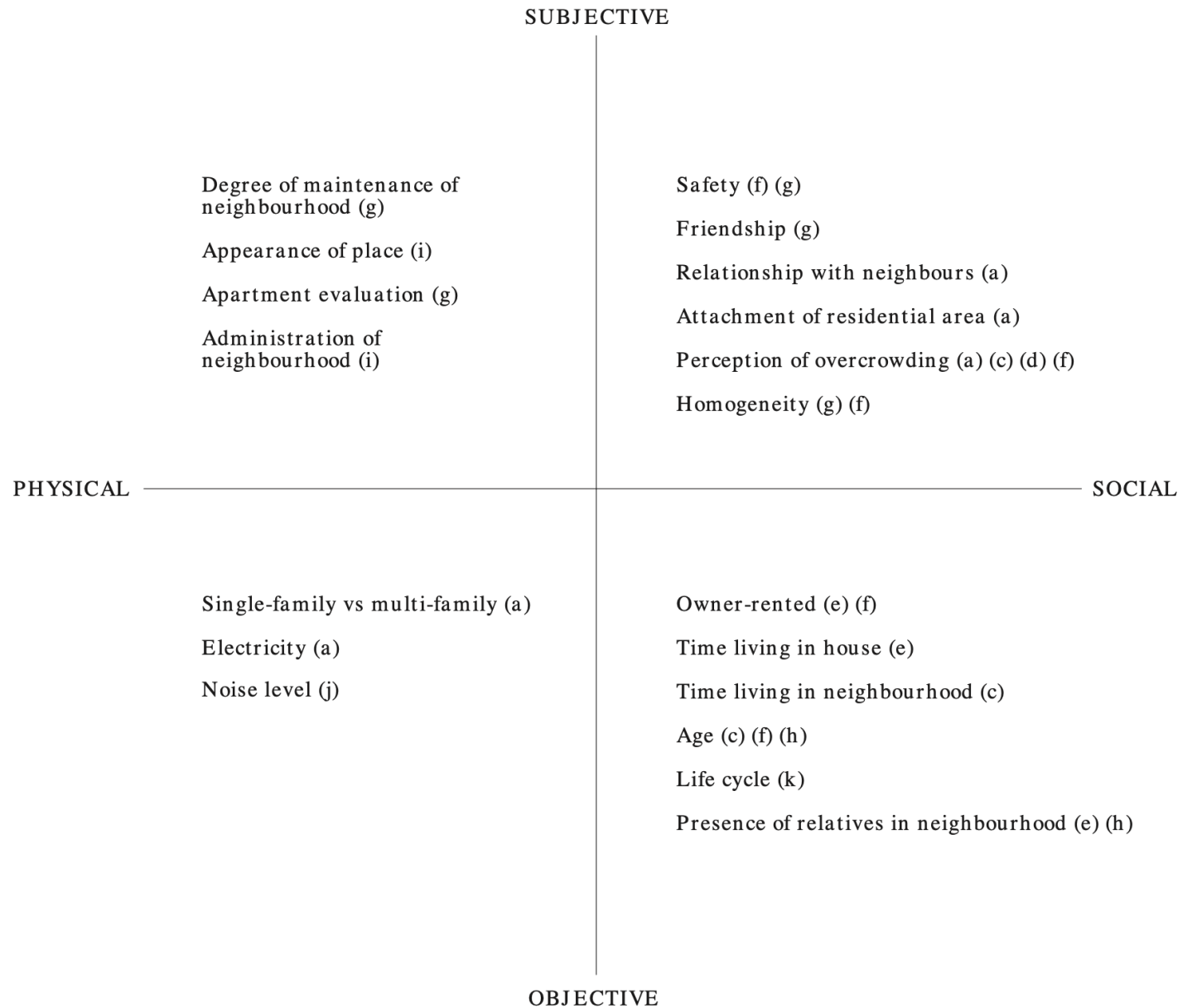Presence of relatives in neighbourhood (e) (h)

OBJECTIVE

FIGURE 2. Some predictors of residential satisfaction. (a) Aragones and Corraliza (1992); (b) Christensen *et al.* (1992); (c) Bonnes *et al.* (1991); (d) Aragones, Amerigo and Sukhwani (1992); (e) Rent and Rent (1978); (f) Loo (1986); (g) Weidemann *et al.* (1982); (h) Amerigo and Aragones (1988); (i) Anthony, Weidemann and Chin (1990); (j) Miller *et al.* 1980); (k) Hourihan (1984).

Housing satisfaction

- Applications in studies of housing goods and services for vulnerable or inexperienced consumers

    - **Public housing**: Amerigo, M. and J. I. Aragones (1990). "Residential satisfaction in council housing." *Journal of Environmental Psychology* 10(4): 313-325.

    - **Student accommodations**: Amole, D. (2009). "Residential satisfaction in students' housing." *Journal of Environmental Psychology* 29(1): 76-85.

    - **Elderlies**: Liu, Y. F., et al. (2017). "The subjective well-being of older adults in Shanghai: The role of residential environment and individual resources." *Urban Studies* 54(7): 1692-1714.

    - **Migrants**: Chen, Y., et al. (2020). "An investigation of migrants' residential satisfaction in Beijing." *Urban Studies* 57(3): 563-582.

    - **Relocated renters**: Liu, Z. L. and L. Y. Ma (2021). "Residential experiences and satisfaction of public housing renters in Beijing, China: A before-after relocation assessment." *Cities* 113.

Housing satisfaction

- Amerigo, M. and J. I. Aragones (1990). "Residential satisfaction in council housing." *Journal of Environmental Psychology* 10(4): 313-325.
  - Questionnaire survey of 447 Housewives living in council housing in Madrid, Spain
  - Direct and indirect, multi-item measurement of housing satisfaction
    - Direct questions: how satisfied are you with your neighbourhood/house/neighbours?
    - Indirect questions: how would you define your neighbourhood as a place to live? If you could make changes to your house, how many would you make? If you moved neighbourhood, how many neighbours would you like to meet in the new neighbourhood?
    - Place attachment questions: If the respondent will leave the neighbourhood, or only when she were offered better housing, or won't leave even better housing is offered

Housing satisfaction

- Amerigo, M. and J. I. Aragones (1990). "Residential satisfaction in council housing." *Journal of Environmental Psychology* 10(4): 313-325.

TABLE 4

Results of the analysis of regression including the scores of the main components and objective and sociodemographic variables

	R^2	Standard reg. coefficient
Attachment	0·160 4	0·320[a]
Factor II	0·231 4	0·266[a]
Factor I	0·273 8	0·290[a]
Factor VI	0·311 0	0·187[a]
Family	0·335 2	−0·200[a]
Age	0·343 2	−0·131[a]
Period of residence in neighbourhood	0·351 8	0·108[a]
Factor IX	0·355 5	−0·072[a]
Home improvements	0·359 1	−0·077[a]
Factor V	0·363 5	−0·061[a]
Factor IV	0·366 3	0·069[a]
Heating	0·369 0	0·079[a]
Factor VIII	0·370 9	0·047[a]

[a] $P < 0.001$.

(I)	Basic residencial infrastructure
(II)	Relationship with neighbours
(III)	Safety of the town
(IV)	Infrastructure of the neighbourhood
(V)	Deterioration
(VI)	Connection with the outside world
(VII)	Urban activity and noise
(VIII)	Miscellaneous
(IX)	Open natural spaces

"In this type of sample when their own objective situation demands a better real quality of life, it is questions of a psychosocial type such as the level of attachment to the place they live in and social interactions or networks which form between inhabitants"

Housing satisfaction

- Liu, Y. F., et al. (2017). "The subjective well-being of older adults in Shanghai: The role of residential environment and individual resources." *Urban Studies* 54(7): 1692-1714.
  - Survey data from Shanghai: The China Study on Global Ageing and Adult Health (SAGE), designed by the World Health Organization.
  - 1035 adults aged above 60 years were surveyed in Shanghai in 2010
  - Based on a theoretical model developed by a group of Dutch researchers
  - Linear regression analysis

Housing satisfaction

- Liu, Y. F., et al. (2017). "The subjective well-being of older adults in Shanghai: The role of residential environment and individual resources." _Urban Studies_ 54(7): 1692-1714.

Table 1. Lindenberg's theory of social production function (SPF).

Top level universal goals	Subjective well-being				
	Physical well-being		Social well-being		
First-order Instrumental goals / Basic needs	**Comfort** (physiological needs; pleasant and safe environment)	**Stimulation** (optimal level of arousal)	**Status** (control over scarce resources)	**Behavioural confirmation** (approval for 'doing the right things')	**Affection** (positive inputs from caring others)
Activities	Eating; drinking; resting; using appliances; securing housing and clothing; self-care	Physically and mentally arousing activities; sports; study; creative activities; active recreation	Paid work; consumption; excelling in a valued dimension	Behaving according to external and internal norms (compliance)	Exchanging emotional support; spending time together
Resources and endowments	Financial means; food; housing; physical health	Physical and mental health; financial means	Education; social origin; scarce capabilities	Social skills; social network; normative environment	Attractiveness; empathy; intimate ties; partner; children

Source: Adapted from Ormel et al. (1999) and van Bruggen (2001).

Housing satisfaction

- Liu, Y. F., et al. (2017). "The subjective well-being of older adults in Shanghai: The role of residential environment and individual resources." *Urban Studies* 54(7): 1692-1714.

Table 2. Connections between SAGE datatset and Lindenberg's SPF theory.

SWB & needs	Theoretical operationalisation	Relevant questions in SAGE survey
SWB	Self-evaluation of life conditions and feelings	Q7008 How satisfied are you with your life as a whole these days? Q7010 How happy do you feel these days? Q7009 How would you rate your overall quality of life?
Comfort	Physiological needs, pleasant and safe environment (financial means; food; housing; security; physical health; vitality; absence of pain, fatigue, thirst and hunger)	Q7001 Do you have enough energy for everyday life? Q7002 Do you have enough money to meet your needs? Q7003 How satisfied are you with your health? Q7005 How satisfied are you with your ability to perform your daily living activities? Q7007 How satisfied are you with the conditions of your living place? Q6017 In general, how safe from crime and violence do you feel when you are alone at home? Q6018 How safe do you feel when walking down your street alone after dark?
Stimulation	Physical and mental arousal (sports; study; creative activities; active recreation)	Q7507 Were you enjoying what you were doing for much of the day yesterday?
Status	The feeling of superiority in the eyes of relevant others and oneself (excellence in a valued dimension; control over socially valued resources)	Q7004 How satisfied are you with yourself?

SWB & needs	Theoretical operationalisation	Relevant questions in SAGE survey
Behavioural confirmation	The feeling of behaving according to external and internal norms (pursuing social approval)	Q6001 How often in the last 12 months have you attended any public meeting in which there was discussion of local or school affairs? Q6002 How often in the last 12 months have you met personally with someone you consider to be a community leader? Q6003 How often in the last 12 months have you attended any group, club, society, union or organisational meeting? Q6004 How often in the last 12 months have you worked with other people in your neighbourhood to fix or improve something? Q6007 How often in the last 12 months have you socialised with coworkers outside of work?
Affection	The feeling of being loved and cared for (exchanging emotional support; spending time with family and friends)	Q7006 How satisfied are you with your personal relationships?

Housing satisfaction

- Liu, Y. F., et al. (2017). "The subjective well-being of older adults in Shanghai: The role of residential environment and individual resources." _Urban Studies_ 54(7): 1692-1714.

Table 3. Variables and descriptive statistics.

Type		Variable	N	%	Mean	Min	Max
SWB		Subjective well-being	1035		−0.01	−3.11	2.52
Needs satisfaction		Comfort	1035		0.00	−0.34	0.28
		Stimulation	1035		0.76	0	1
		Status	1035		0.00	−3.06	2.03
		Behavioural confirmation	1035		0.00	−1.28	1.88
		Affection	1035		0.00	−3.44	2.16
Individual resource	Physical	Age	1035		71.12	60	94
		Health	1035		0.00	−2.71	2.23
		Physical losses	1035		0.01	−1.28	3.15
	Economic	Household income	1035		38,828	600	1,000,000
		Working status	1035	100			
		Working	185	17.9			
		Not working *	850	82.1			
		Economic sector	1035	100			
		Public sector *	500	48.3			
		Private sector	194	18.7			
		Self-employed	314	30.3			
		Informal sector	27	2.7			
		Occupation	1035	100			
		High skilled	166	16.0			
		Skilled non-manual	258	24.9			
		Skilled manual *	586	56.6			
		Elementary	25	2.5			
		Education	1035	100			
		Higher education	82	7.9			
		Secondary education	266	25.7			
		Primary education	163	15.7			
		Below primary education *	524	50.7			
		Homeownership	1035	100			
		Owned *	818	79.0			
		Rented	217	21.0			
		House size	1035		3.43	1	23
	Social	Household size	1035		2.67	1	7

Housing satisfaction

- Liu, Y. F., et al. (2017). "The subjective well-being of older adults in Shanghai: The role of residential environment and individual resources." *Urban Studies* 54(7): 1692-1714.

Table 5. Multiple linear regression models on the effects of residential environment and individual resources on subjective well-being and basic needs.

	Basic needs					
	SWB	Comfort	Stimulation	Status	Behavioural confirmation	Affection
Individual resources						
Physical resources						
Age					−0.078***	
Health	0.254***	0.312***		0.289***	0.084***	0.204***
Physical losses	−0.177***	−0.234***	−0.266**	−0.169***		−0.131***
Economic resources						
Household income	0.090***				−0.104***	
Working status (ref. = Not working)						
Working		0.054*	−1.064***			
Economic sector (ref. = Public sector)						
Private sector	−0.076***	−0.086***				
Self-employed		−0.136***			−0.125***	
Informal sector		−0.048*	−1.997***		−0.056**	
Occupation (ref. = Skilled manual)						
High skilled	0.090***	0.074***		0.085***	0.122***	
Skilled non-manual		0.049*			0.076***	
Elementary job					0.058**	
Education (ref. = Below primary education)						
Higher education				−0.054*	0.122***	
Secondary education					0.165***	0.069**
Homeownership (ref. = Owned)						
Rented						0.060*
Social resources						
Household size		0.069*				
Living arrangement (ref. = Lives with spouse only)						
Lives alone	0.046*					
Lives with spouse and child			1.496***			
Lives with spouse and grandchild	0.054**					
Lives with spouse, child and grandchild		−0.075**	0.689***	−0.052*		−0.057**
Lives with relatives and others	−0.051**				0.068**	
Marital status (ref. = Married)						

Housing satisfaction

- Chen, Y., et al. (2020). "An investigation of migrants' residential satisfaction in Beijing." _Urban Studies_ 57(3): 563-582.
  - Data source: a questionnaire survey conducted by the Chinese Academy of Sciences in Beijing in 2013, targeting migrants who had lived in Beijing for more than six months.
  - 5000 questionnaires distributed, 1819 valid sample collected
  - Residential satisfaction is measured by the question 'All things considered, how satisfied are you with your residential environment as a whole?' (0 to 100)
  - Independent variables: personal characteristics (age, education, household composition, income, jobs, length of residence in Beijing) and housing attributes (commuting time, distance to park/museum/subway, district, type of housing) only. No social or psychological factors.

Housing satisfaction

- Chen, Y., et al. (2020). "An investigation of migrants' residential satisfaction in Beijing." *Urban Studies* 57(3): 563-582.

Table 3. Multilevel models of residential satisfaction.

Variables	Model 1		Model 2	
Individual-level variables	Coefficient	Std. error	Coefficient	Std. error
Age	0.874*	0.593	0.802*	0.588
Age^2	0.647**	0.363	0.63*	0.358
Male	−0.813	0.684	−0.794	0.663
Junior high school	0.8	1.093	0.69	1.107
Senior high school	−0.063	0.8	−0.079	0.729
Couple household	0.923	0.967	1.062	0.973
Couple with children	0.766	1.068	0.853	1.017
Household income	0.751**	0.375	0.744**	0.376
Duration 8–15 years	−0.738	0.854	−1.142	2.12
Duration > 15 years	−2.524**	1.37	−7.757**	3.761
Homeowner	−2.327**	1.09	−2.332**	1.125
Commuting time	−0.03***	0.013	−0.031***	0.013
Affordable housing	−1.262*	0.867	−1.228*	0.835
Urban village	−3.598***	1.147	−3.701***	1.166
Work-unit housing	−1.548*	0.989	−1.429*	0.958
Distance to subway	−0.653	0.99	−0.765	0.97
Distance to park	0.109	1.318	0.152	1.306
Distance to museum	0.875	1.303	0.975	1.267
North inner suburb	1.806*	1.214	1.846*	1.164
City centre	0.426	1.476	0.584	1.427
South inner suburb	2.544**	1.319	2.602**	1.282
South outer suburb	4.835**	2.195	4.635**	2.136
Sub-district-level variables				
% migrants	−0.082***	0.033	−0.09***	0.034
% Bachelor's degree	0.001	0.038	−0.001	0.039
% 1949 house	0.043	0.118	0.042	0.117
% affordable housing	0.013	0.052	0.012	0.05
Density	0.303	1.413	0.295	1.418
Interaction: duration * %migrants				
Duration 8–15 * %migrants			0.011	0.047
Duration > 15 * %migrants			0.132*	0.088
Constant	69.011***	8.696	69.46***	9.17
DIC	11,863.66		11,866.17	
pD	45.412		43.996	

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Default categories are female, Bachelor's degree and above, single household, duration in Beijing < 8 years, privately-owned company, ordinary staff, not homeowner, commercial properties and located in north outer suburb.

Housing satisfaction

- Liu, Z. L. and L. Y. Ma (2021). "Residential experiences and satisfaction of public housing renters in Beijing, China: A before-after relocation assessment." *Cities* 113.
  - Data source: a survey of recently relocated renters in new public rental housing (PRH) projects in Beijing conducted during January–April 2019, supplemented with on-site observations and qualitative interviews
  - Five PRH projects, with sample size between 76 and 150 in each project

Table 1
Features of the five PRH projects selected for the study.

Name	District	Moving date of target sample	Number of units	Distance to nearest subway station (km)	Distance to nearest class 3A comprehensive hospital (km)	Number of grocery stores, food markets, and supermarkets within 1 km	# of valid samples
WQ	Haidian	June 2018	1046	2.2	10.2	14	76
RW	Chaoyang	September 2018	587	1.5	3.0	1	102
MQY	Chaoyang	June 2018	3143	0.7	2.7	12	79
GGZ	Fengtai	June 2018	3307	0.9	2.2	8	150
YHW	Tongzhou	September 2018	2055	1.4	7.0	21	137

Housing satisfaction

- Liu, Z. L. and L. Y. Ma (2021). "Residential experiences and satisfaction of public housing renters in Beijing, China: A before-after relocation assessment." _Cities_ 113.
  - Housing satisfaction measurement: single question for current or previous neighbourhood
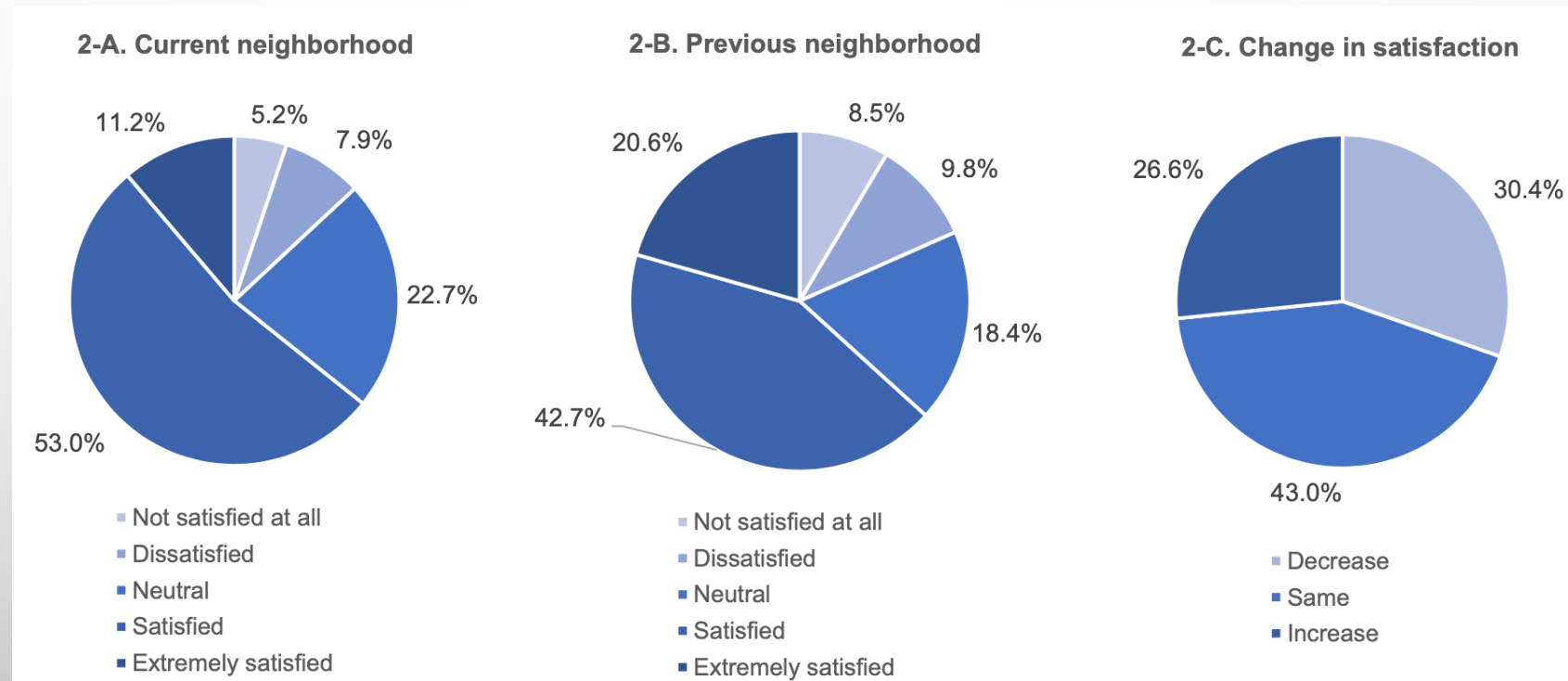

Fig. 3. Residential satisfaction of PRH renters.

Housing satisfaction

- Liu, Z. L. and L. Y. Ma (2021). "Residential experiences and satisfaction of public housing renters in Beijing, China: A before-after relocation assessment." *Cities* 113.
  - Housing satisfaction determinants:
    - Housing characteristics (space and housing cost)
    - Housing history (number of relocations, and the type of previous housing)
    - Neighbourhood environment (satisfaction with project management, perceived neighbourhood safety, index of perceived neighbourhood social support, public transit accessibility, grocery shopping accessibility, and hospital accessibility)
    - Social-demographic control variables (income, age, gender, hukou, employment, education)

Housing satisfaction

- Liu, Z. L. and L. Y. Ma (2021). "Residential experiences and satisfaction of public housing renters in Beijing, China: A before-after relocation assessment." *Cities* 113.

Table 5
Ordinal logistic regression results for satisfaction with the current neighborhood.

	Model 1		Model 2	
	B	S.E.	B	S.E.
Number of relocations	−0.037*	0.032	−0.034	0.033
Previous renting private housing	0.014	0.206	−0.034	0.212
Per capita living space	−0.008	0.008	−0.012	0.010
Real rent over 30% household income	−0.127	0.219	−0.066	0.257
Perceived neighborhood social support	0.360***	0.112	0.373***	0.115
Satisfaction with project management	1.057***	0.121	1.047***	0.126
Perceived safety	1.172***	0.129	1.178***	0.134
Public transit accessibility	1.181***	0.333	1.232***	0.371
Hospital accessibility	0.022	0.067	0.047	0.079
Grocery shopping accessibility	0.064***	0.020	0.053**	0.022
Household income per capita(ln)			0.163	0.182
Age			−0.005	0.012
Male			−0.032	0.200
Local *hukou*			0.232	0.274
Employed			0.367	0.268
Education (ref: elementary or lower)				
High school/vocational school			−0.290	0.348
College/undergraduate			−0.836**	0.373
Postgraduate			−1.001**	0.509
N	513		502	
Log likelihood	−461.117		−449.457	
Pseudo R^2	0.294		0.296	

Social comparison

- Theoretical framework:
  - Festinger, L. (1954). "A Theory of Social Comparison Processes." *Human Relations* 7(2): 117-140.
  - People compare themselves with those of similar abilities and views, in order to have an accurate self-evaluation
  - We are self-motivated to obtain an accurate self-evaluation in order to define ourselves and to eliminate uncertainty in self-knowledge.
  - We prefer objective standards in evaluations.
  - When objective information is unavailable, we turn to social comparison.
  - This is similar to the way that herd behaviours work – when our own information is insufficient, either in quality of quantity or both, we rely on other people's information to make decisions.

Social comparison

- Upward comparison vs. downward comparison:
  - Wood, J. V. (1989). "Theory and Research Concerning Social Comparisons of Personal Attributes." *Psychological Bulletin* 106(2): 231-248.
  - Downward/upward comparison: enhances/reduces self-esteem by comparing with others who are worse/better off.
  - Both processes are largely subjective, tinted with biased self-perceptions.
  - When social comparison is conducted via social media, it is predominantly upwards comparison.
    - Verduyn, P., et al. (2017). "Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review." *Social Issues and Policy Review* 11(1): 274-302.
    - Clark, J. L., et al. (2018). "Social Network Sites and Well-Being: The Role of Social Connection." *Current Directions in Psychological Science* 27(1): 32-37.

Social comparison

- How to measure social comparison?

- Who to compare? What to compare?

  - **Income of neighbours**: Wang, D. G., et al. (2019). "Does exposure to richer and poorer neighborhoods influence wellbeing?" *Cities* 95.

  - **Happiness of friends**: Olivos, F., et al. (2021). "Asymmetric Social Comparison and Life Satisfaction in Social Networks." *Journal of Happiness Studies* 22(1): 363-384.

  - **Access to transport**: van Wee, B. (2021). "Accessibility and mobility: Positional goods? A discussion paper." *Journal of Transport Geography* 92.

Social comparison

- Wang, D. G., et al. (2019). "Does exposure to richer and poorer neighborhoods influence wellbeing?" *Cities* 95.
  - Used activity-travel survey data from 2010 in Hong Kong
  - 1500 people were invited to fill in the diary and provide other related information online. A total of 770 complete observations.
  - Life satisfaction is measured by a single question "Taking all things together, how satisfied are you with your life as a whole?"
  - Social comparisons with regard to income matter to life satisfaction as well as emotional wellbeing (i.e., how enjoyable the out-of-home activities are).
  - Downward income comparisons tend to have stronger effects on wellbeing than upward comparison

Social comparison

- Wang, D. G., et al. (2019). "Does exposure to richer and poorer neighborhoods influence wellbeing?" *Cities* 95.
  - Reference income measurement: the median income for the neighborhood where respondents live
  - Relative income measurement (social comparison):
    - Better-off group: respondent's monthly household income is over HK$3000 more than neighbourhood median (downward comparison)
    - Worse-off group: respondent's monthly household income is over HK$3000 less than neighbourhood median (upward comparison)

Social comparison

- Wang, D. G., et al. (2019). "Does exposure to richer and poorer neighborhoods influence wellbeing?" *Cities* 95.

Unstandardized coefficients in ordered logit model for life satisfaction.

Variables	Model A Reference income & absolute income	Model B Relative income only	Model C Relative income & absolute income
Monthly household income (other = 0)			
< HK$20,000	−0.646***		0.163
> HK$40,000	0.902***		0.446*
Median monthly household income	−8.447E-006		
Respondent's monthly household income is (other = 0)			
Over HK$3000 less than neighborhood median		−0.324	−0.390
Over HK$3000 more than neighborhood median		0.790***	0.712***
Respondent's monthly household income is (other = 0)			
Over HK$3000 less than the mean of neighborhood Medians[a]		0.135	0.097
Over HK$3000 more than the mean of neighborhood medians[a]		0.446*	0.357
Model fit			
−2 Log Likelihood	1699.0	1688.3	1683.3
Chi-Square	124.3	135.0	139.7
Degree of freedom	25	26	28
Pseudo R^2 (McFadden)	0.068	0.074	0.077

Social comparison

- Wang, D. G., et al. (2019). "Does exposure to richer and poorer neighborhoods influence wellbeing?" *Cities* 95.
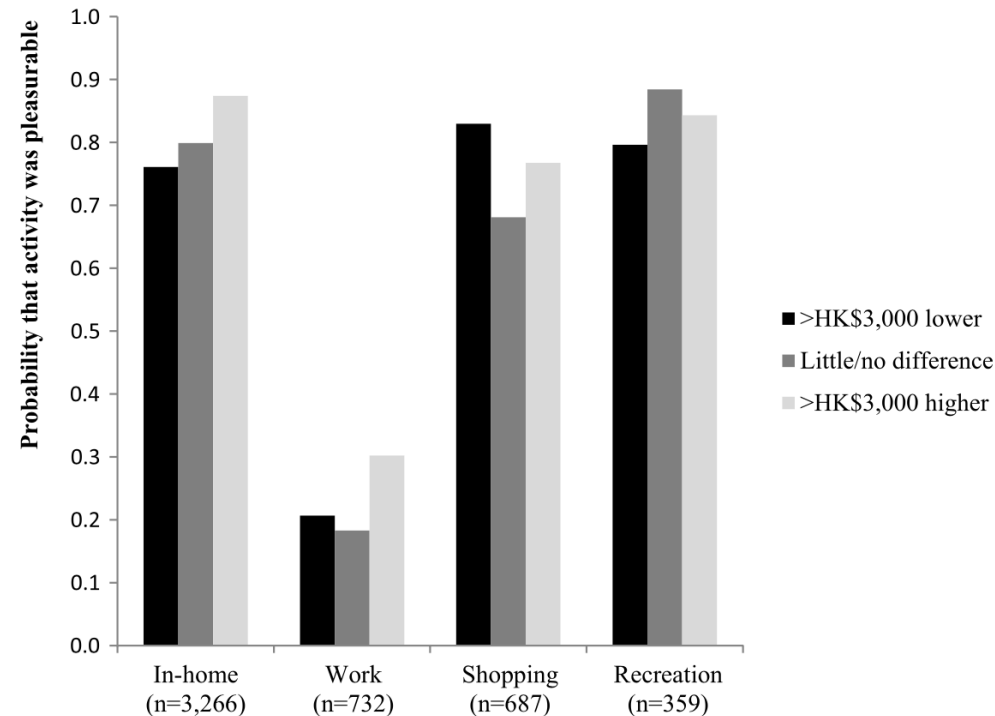
Estimated probabilities for activities lasting at least 120 minutes, started in the afternoon, undertaken together with others and conducted by women aged 30-50, in employment, with medium education and income levels, not living in public rental housing, without a driving license or a car, from households of a married couple without children or older adult, and living in an average Hong Kong neighborhood as far as accessibility, proportions of highly educated, older people, and adults living and working in the same neighborhood, and the presence of public rental housing are concerned.

Fig. 3. Estimated probabilities of activity episodes being pleasurable, according to activity type and relative income.

Social comparison

- Olivos, F., et al. (2021). "Asymmetric Social Comparison and Life Satisfaction in Social Networks." *Journal of Happiness Studies* 22(1): 363-384.

  - 2267 Chileans over the age of 18 who were interviewed face- to-face between November 2014 and January 2015. The final sample size is 1596

  - Life satisfaction is a summation of scores in five questions, including satisfaction with health, friendship, family and work

  - The positive effect of downward comparison and the negative effect of upward comparison are confirmed.

  - Upward comparison seems to be more substantial than downward comparison.

Social comparison

- Olivos, F., et al. (2021). "Asymmetric Social Comparison and Life Satisfaction in Social Networks." *Journal of Happiness Studies* 22(1): 363-384.
  - Measurement of social comparison
    - List up to five persons (comparison targets) you had spoken to most during the previous 6 months
    - Nine questions about the comparison targets, including age, education, and gender
    - One question about comparison target's life satisfaction: "Overall, how happy do you think [name] is?". Answers range from 1 (very happy) to 4 (nothing happy)
    - The average of the five comparison targets' happiness scores is calculated.
    - Define downward/upward comparison as follows.

$$Down_i = \begin{cases} |y_i - \bar{y}_{ir}| & \text{if } y_i \geq \bar{y}_{ir} \\ 0 & \text{if } y_i < \bar{y}_{ir} \end{cases} \qquad Up_i = \begin{cases} |y_i - \bar{y}_{ir}| & \text{if } y_i \leq \bar{y}_{ir} \\ 0 & \text{if } y_i > \bar{y}_{ir} \end{cases}$$

Social comparison

- Olivos, F., et al. (2021). "Asymmetric Social Comparison and Life Satisfaction in Social Networks." *Journal of Happiness Studies* 22(1): 363-384.
  - Measurement of reciprocity
    - List up to five persons (comparison targets) they had spoken to most during the previous 6 months
    - "If [name] would have a problem, how much would you be willing to support them?". Answers range from 1 (very willing) to 4 (unwilling).
    - "If you have a problem, could you count on [name] to solve it?". Answers range from 1 (Yes, of course) to 3 (I don't think so).
    - Rec_i = 1 if answer to both question is 1 (i.e., complete reciprocal exchange) for all five comparison targets

Social comparison

- Olivos, F., et al. (2021). "Asymmetric Social Comparison and Life Satisfaction in Social Networks." *Journal of Happiness Studies* 22(1): 363-384.

$$Y_i = \beta_0 + \beta_1 Down_i + \beta_2 Up_i + \beta_3 Rec_i + \beta_4 S_i' + \beta_5 N_i' + \mu_i$$

| Variables	Model D	Model E	Model F	Model G
	B	B	B	B
Down	1.113***	2.392***	1.111***	2.570***
	(0.340)	(0.805)	(0.340)	(0.858)
Up	−2.136***	−2.132***	−2.220***	−1.762***
	(0.285)	(0.286)	(0.636)	(0.670)
Reciprocity	2.368***	2.763***	2.328***	2.991***
	(0.411)	(0.479)	(0.475)	(0.596)
Reciprocity#Down		−1.554*		−1.760*
		(0.865)		(0.932)
Reciprocity#Up			0.098	−0.433
			(0.683)	(0.730)
Constant	14.992***	14.598***	15.029***	14.380***
	(1.591)	(1.620)	(1.609)	(1.667)
Observations	1596	1596	1596	1596
R^2-adjusted	0.196	0.198	0.196	0.197

Social comparison

- van Wee, B. (2021). "Accessibility and mobility: Positional goods? A discussion paper." *Journal of Transport Geography* 92.

  - The appreciation of a certain level of accessibility or mobility depends on the level of accessibility or mobility of others

  - Accessibility and mobility as positional goods is similar to the idea that houses as positional goods

  - How are residential choice and housing satisfaction affected by accessibility from a social comparison perspective, i.e., using a relative measurement of accessibility?

  - Possible variables to use for social comparison: travel times and distances to destination categories, or the number of destinations within one category (for example: restaurants) accessible within a certain travel time or distance

- Pot, F. J., et al. (2021). "Perceived accessibility: What it is and why it differs from calculated accessibility measures based on spatial data." *Journal of Transport Geography* 94.

The happiness literature

- Despite significant increases in real income in western countries over fifty years, reported happiness levels have not risen correspondingly – the Easterlin Paradox.

- Easterlin, R. A. (1973). "Does Money Buy Happiness?" _Public Interest_ (30): 3-10.
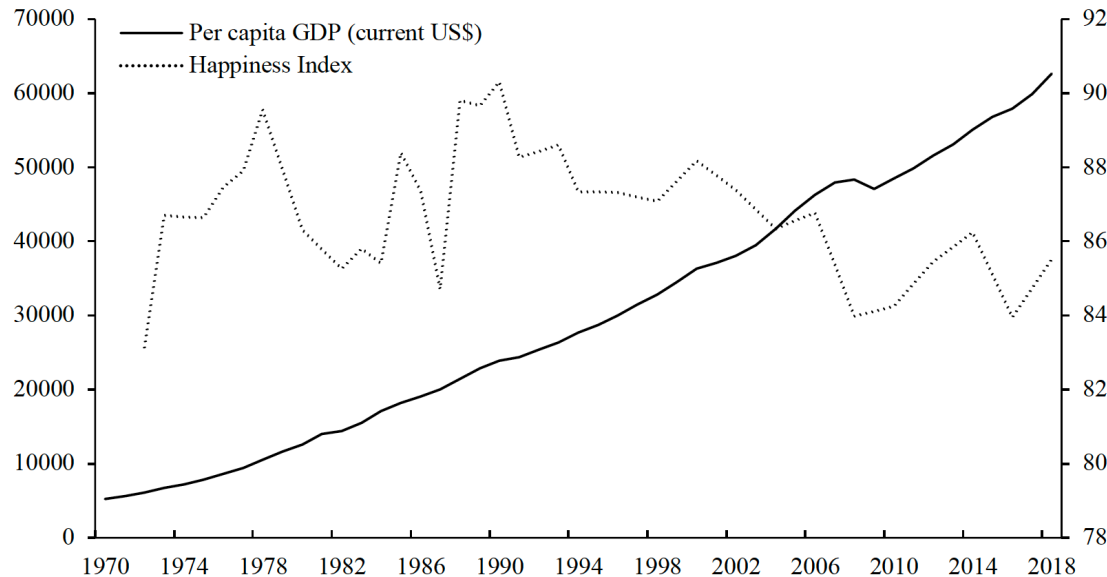
Figure 9.1: Per capita GDP (current US$) and happiness index in the USA

Source: Per capita GDP is from World Development Indicators, The World Bank. Happiness index is calculated based on the question "Taken all together, how would you say things are these days--would you say that you are very happy, pretty happy, or not too happy?" in the US General Social Survey. Index numbers is the proportion of respondents choosing "Very happy" or "Pretty happy".
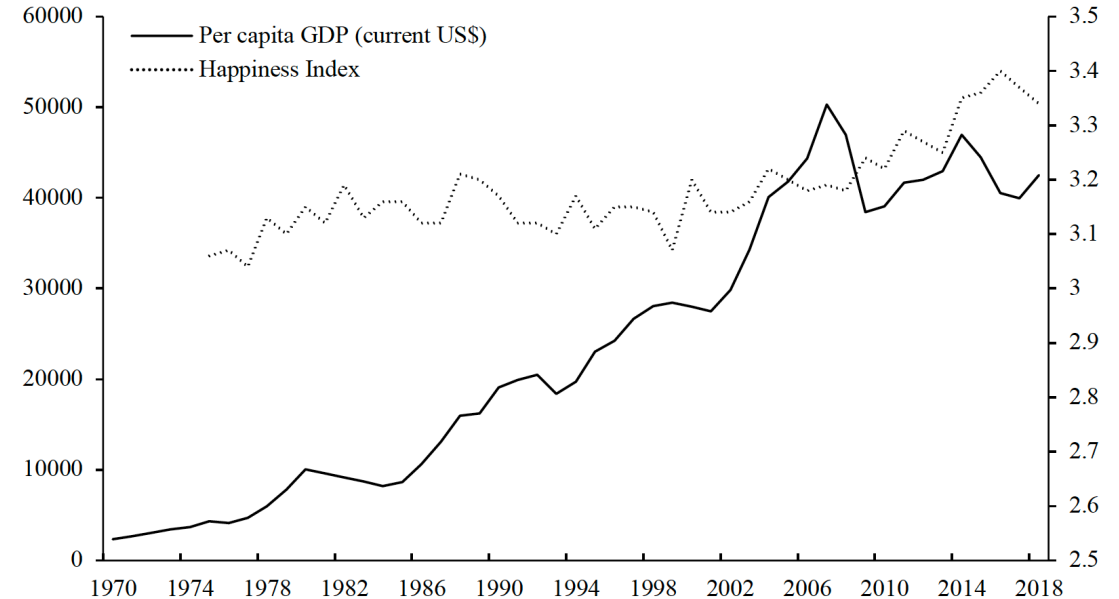
Figure 9.2: Per capita GDP (current US$) and happiness index in the UK

Source: Per capita GDP is from World Development Indicators, The World Bank. Happiness index is calculated based on the question "How satisfied are you with the life you lead?" from the World Database of Happiness. Index numbers is the average of responds ranging from 4 = very satisfied to 1 = not at all satisfied.

The happiness literature

- Clark, A. E., et al. (2008). "Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles." *Journal of Economic Literature* 46(1): 95-144.

  - Two explanations of the Easterlin's Paradox
  - Both absolute and relative income affect happiness
  - Adaptation also at work – happiness treadmill
  - The relative income explanation has been tested and confirmed in the literature many times
  - The adaptation explanation has relatively weaker empirical support

$$(5) \quad U_{it} = \beta_1 \ln(y_{it}) + \beta_2 \ln(y_{it}/y_t^*) + Z_{it}'\gamma$$

$$y_t^* = (y_{it-1})^{\alpha}(y_{it-2})^{\gamma}(y_{it-3})^{1-\alpha-\gamma}$$

$$U_{it} = \beta_1 \ln(y_{it})$$

$$+ \beta_2[\ln(y_{it}) - \alpha\ln(y_{it-1})$$

$$- \gamma\ln(y_{it-2})$$

$$- (1-\alpha-\gamma)\ln(y_{it-3})]$$

$$+ Z_{it}'\gamma.$$

Prospect theory

- According to prospect theory, people derive value $V(C_i)$ from the consumption of housing good C_i as described by the following function

$$V(C_i) = \begin{cases} (C_i - R)^\alpha & if\ C_i > R \\ -\lambda(R - C_i)^\beta & if\ C_i < R \end{cases}$$

- The distinction between Clark et al (2008)'s model and the PT model is loss aversion.

- Clark et al (2008) does not consider asymmetric social comparison, whilst PT model allows social comparison effects differ between the worse-off and better-off groups.

Prospect theory

- An illustrative example to demonstrate how PT model works

- Let $\alpha = \beta = 1$, and $\lambda = 2.5$. C_i is the number of bedrooms in your house. The value function is now

$$V(C_i) = \begin{cases} (C_i - R) & \text{if } C_i > 2 \\ -2.5(R - C_i) & \text{if } C_i < 2 \end{cases}$$

- Assume that you are living in a two-bedroom house now. The reference point is a two-bedroom house as well (which means you are right on target). $V(C_i) = 0$.

- If you move into a three-bedroom house, $V(C_i) = 1$

- If you move into a one-bedroom house, $V(C_i) = -2.5$

- Same change in different direction, but losses loom larger than gains!

Prospect theory

- It is an extension of the relative income model in the happiness literature
- When applied to residential satisfaction, there are significant policy implications
    - If we find out what the reference groups are, it is possible to improve residential satisfaction by altering the reference groups without changing the housing condition significantly - should we mix public and private housing residents?
    - The housing condition of individuals in their loss domain, or individuals with housing conditions that fall short of their expectation, needs more attention
    - Increasing the housing conditions of the poor without changing the housing conditions of the wealthy individuals could possibly improve the overall satisfaction. Thus, reducing inequality can be the key to solving dissatisfaction which increases social stability and overall life satisfaction.

Prospect theory applications

- Yan, J. H. and H. X. H. Bao (2018). "A prospect theory-based analysis of housing satisfaction with relocations: Field evidence from China." *Cities* 83: 193-202.
  - Theoretical framework: prospect theory
  - Tested the effect of reference dependence and loss aversion
  - Study area: Chenggong Avenue redevelopment project, Xiamen, China. A total of 1350 families are relocated among six resettlement communities.
  - Data source: questionnaire survey (in-person) in June 2016
  - Stratified sampling by using six settlement areas as the strata
  - 253 valid sample collected, which is close to 20% of the relocated families
  - Good sample representativeness

Prospect theory applications

- Yan, J. H. and H. X. H. Bao (2018). "A prospect theory-based analysis of housing satisfaction with relocations: Field evidence from China." *Cities* 83: 193-202.
  - Hypothesis 1 (internal reference point hypothesis). The housing satisfaction of relocated households depends on the discrepancy between their relocation outcome and their ex ante expectations.
  - Hypothesis 2 (external reference point hypothesis). Comparisons with relevant others or peer groups indicate the worse-off households have low levels of housing satisfaction.
  - Hypothesis 3 (direct test of loss aversion effect). For the same amount of deviation from the reference point, relocated households in the loss domain experience more changes (i.e., decreases) in housing satisfaction level than do households in the gain domain.
  - Hypothesis 4 (indirect test of loss aversion effect). Endowment effect (in the form of place attachment) is a significant determinant of housing satisfaction toward relocations.

Prospect theory applications

- Yan, J. H. and H. X. H. Bao (2018). "A prospect theory-based analysis of housing satisfaction with relocations: Field evidence from China." *Cities* 83: 193-202.
  - Measurement of satisfaction: "Overall, how satisfied are you about the relocation?"
  - Internal reference point: "Compared to your expectation based on the blueprint of residential resettlement promised by the government, do you think your relocation outcome is worse off, about the same, or better off?"
  - External reference points: "Compared to your relatives/friends/others (i.e., strangers) who live in the same or nearby communities and also have been relocated, do you think your residential relocation is worse off, about the same, or better off?"
  - Place attachment: "What type of relocation are you classified in: (1) return resettlement (on-site or within 1 km of the original residence); (2) far from the original residence (more than 1 km away)"

Prospect theory applications

- Yan, J. H. and H. X. H. Bao (2018). "A prospect theory-based analysis of housing satisfaction with relocations: Field evidence from China." *Cities* 83: 193-202.

Variable definition and descriptive statistics.

Category	Variable	Definition	Mean	Max	Min	Std. dev
Dependent variable	Satisfaction with relocation	1 = dissatisfied, 2 = neutral, 3 = satisfied	2.2885	3	1	0.7714
Demographic	Gender	1 = male, 0 = female	0.5020	1	0	0.5010
	Age	Age of the respondent	46.1621	82	22	12.8088
	Education	Educational attainment in years	10.2806	19	3	3.9697
	Income	Monthly household income in CNY: 1 = below 3500, 2 = 3500–6000, 3 = 6000–8000, 4 = 8000–10,000, 5 = 10,000–15,000, 6 = above 15,000	3.1186	6	1	1.4204
Knowledge about policies	Policy information	1 if the resident knows details of the housing compensation and resettlement policies; 0 otherwise	0.5652	1	0	0.4967
Physical housing	Improvement of housing space	1 if construction area increases after relocation; 0 otherwise	0.8024	1	0	0.3990
	Housing quality	1 if housing quality is perceived to be low, 3 if housing quality is perceived to be high	2.2451	3	1	0.8233
Neighborhood characteristic	Location	1 if resettlement housing is located in Siming District; 0 if it located in Huli District	0.7391	1	0	0.4400
	Public service	1 if public service cannot meet household's needs at all; 5 if it can meet needs completely	3.4427	5	1	0.9352
Psychological factors	Proximity to original place	1 for return resettlement; 0 otherwise	0.3636	1	0	0.4820
	Comparison with relatives	1 if perceived to be worse than relatives; 3 if perceived to be better off	1.9681	3	1	0.6316
	Comparison with friends	1 if perceived to be worse than friends; 3 if perceived to be better off	1.9801	3	1	0.6838
	Comparison with unfamiliar persons	1 if perceived to be worse than others except relatives and friends; 3 if perceived to be better off	2.0754	3	1	0.6959
	Comparison with expectation	1 if perceived to be worse than expectations; 3 if perceived to be better off	2.0949	3	1	0.7499

Prospect theory applications

- Yan, J. H. and H. X. H. Bao (2018). "A prospect theory-based analysis of housing satisfaction with relocations: Field evidence from China." *Cities* 83: 193-202.

$$S = \alpha + \beta_{11}EC_{gain} + \beta_{21}EC_{loss} + \beta_{12}SC_{gain} + \beta_{22}SC_{loss} + \theta P + \gamma Z + \varepsilon$$

Hypothesis	Variables	Test
1. Internal reference point	EC_{gain} and EC_{loss}	$\beta_{11} > 0$ and $\beta_{21} < 0$
2. External reference point	SC_{gain} and SC_{loss}	$\beta_{12} > 0$ and $\beta_{22} < 0$
3. Loss aversion (direct test)	EC_{gain} and EC_{loss} SC_{gain} and SC_{loss}	$\beta_{11} < \|\beta_{21}\|$ $\beta_{12} < \|\beta_{22}\|$
4. Loss aversion (indirect test)	P	$\theta > 0$

Prospect theory applications

- Yan, J. H. and H. X. H. Bao (2018). "A prospect theory-based analysis of housing satisfaction with relocations: Field evidence from China." *Cities* 83: 193-202.

Ordered logit regression estimates of satisfaction with relocation outcome.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Proximity to original place		1.0798***	0.8918***	0.8188**	0.8439**
		(0.3431)	(0.3564)	(0.3824)	(0.3726)
Worse than expectations		-2.3449***	-2.3084***	-2.6681***	-1.9370***
		(0.4424)	(0.4564)	(0.5138)	(0.4851)
Better than expectations		1.4932***	1.3948***	1.3258***	1.3049***
		(0.3865)	(0.4161)	(0.4564)	(0.4119)
Worse than relatives			-1.5109***		
			(0.4014)		
Better than relatives			1.1392**		
			(0.5191)		
Worse than friends				-2.6195***	
				(0.4878)	
Better than friends				1.8257***	
				(0.5341)	
Worse than others except relatives and friends					-2.7560***
					(0.5131)
Better than others except relatives and friends					1.1538***
					(0.4093)
McFadden's R-squared	0.2462	0.3741	0.4198	0.4980	0.4707
LR Chi-squared	128.93	195.87	218.58	259.29	245.79
Prob (LR Chi-squared)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Number of observations	253	253	251	251	252

Prospect theory applications

- Yan, J. H. and H. X. H. Bao (2018). "A prospect theory-based analysis of housing satisfaction with relocations: Field evidence from China." *Cities* 83: 193-202.
  - Field study based on a prospect-theory framework
  - Empirical evidence for the presence of psychological and social reference points
  - Social comparison matters
  - Place attachment affect relocation satisfaction
  - Significant policy implication:
    - Consistency in relocation policies must be maintained across different municipal jurisdictions and over time
    - The emotional tie of relocated households to their old residence should be sufficiently recognised in policy designs and implementations

Data and methods

- Data source: British Household Panel Survey (BHPS), 2005 - 2008

- The BHPS started with about 5,500 households and approximately 10,300 individuals from Great Britain in 1991.

- The project was funded by the Economic and Social Research Council for 18 years, making it one of the longest longitudinal surveys in the world.

- In 2009, BHPS merged into a larger longitudinal survey project, Understanding Society (US). About 6,700 BHPS panelists agreed to continue their work with Understanding Society

- We use data before the merge, because housing satisfactions are not included in the US questionnaire anymore.

- The data set contains 13,710 observation of 2,742 individuals over the five-year period.

Measurement of social comparison

- What to compare?
    - Social comparison is made based on house value, instead of income
    - House value is estimated, not observed or revealed: "About how much would you expect to get for your home if you sold it today?"
    - Professional house valuation is not included in the BHPS dataset, and is challenging to derive from other data source. Using perceived house values from the same dataset ensure the consistency and reliability.
    - Most homeowners won't sell their houses; they are not experienced enough to have a fair valuation of their home either. Their perceived value and the market value of their home do not necessarily agree. Residential satisfaction is more responsive to perceived home value than market valuation, because the former is more salient and available for homeowners.

Measurement of social comparison

- Who to compare? the choice of reference group
  - We assume that people make reference to other individuals within their same **age** group (5 groups), with similar **education**al background (3 groups), living in the same **region**(19 groups) or working in the same type of **jobs** (20 groups).
  - The multi-dimensional approach helps us to identify where and how social comparisons are made. The determination of social comparison is not a black box.
  - This approach also helps to establish the robustness of the relative residential satisfaction theory, if we can find that the effect is present in most or even all of the social comparison groups considered

Measurement of social comparison

- Use AGE as an example.

- Individuals are firstly allocated in the six age groups.

- Within each group, if an individual's house value is below the first quartile of the house value in her age group (i.e., her house value is lower than 75% of the people in her age group), she will be identified as 'worse-off', and AGE_{low}= 1.

- If on the other hand, an individual's house value is above the third quartile of the house value in her age group (i.e., her house value is greater than 75% of the people in her age group), she will be identified as 'better-off', and AGE_{high} = 1.

Measurement of social comparison

- Use AGE as an example.

- Lisa and Holly are homeowners. Both of their houses are valued at £150,000.

- Lisa is 20-years old and Holly is 40.

- Standard economic theory predicts that Lisa and Holly derive the same amount of pleasure from their housing consumption, because the value of their houses is the same.

- However, if the third quartile of house price for all 20-years old individuals in the UK is £100,000 and the first quartile of house price for all 40-years old people is £200,000, Lisa will be in the 'better-off' category and Holly will be in the 'worse-off' category.

- Consequently, even if Lisa and Holly have the same level of housing consumption, Lisa will be happier than Holly, because she is doing relatively better in her own year group.

- The same logic applies to other social comparison groups too.

Other variables

Variable name	Definition	BHPS Question	BHPS Variable Name	Mean	Std Dev
Dependent Variable					
HOUSAT	Residential satisfaction	How dissatisfied or satisfied you are with your house/flat? 1. = not satisfied at all, …, 7 = completely satisfied	lfsat3	5.47	1.12
Personal Characteristics					
GENDER	= 1 if male, 0 otherwise	Gender of the respondent	sex	0.53	0.50
INCOME	Annual personal income in £1,000	Annual personal income before tax and other deductions	rprfitb	23.61	18.28
AGE2	=1 if 25 - 35 years old	Year of birth	birthy	0.14	0.35
AGE3	=1 if 35 - 45 years old			0.35	0.48
AGE4	=1 if 45 - 55 years old			0.30	0.46
AGE5	=1 if over 55			0.18	0.39
EDU1	=1 if college education or above, 0 otherwise	Highest academic qualification	qfachi	0.22	0.42
EDU2	=1 if secondary school or equivalent, 0 otherwise			0.59	0.49

Other variables

Objective attributes of residential environment

PRICE	Estimated home value in £1,000	About how much would you expect to get for your home if you sold it today? Please type amount in £
TALKNEIGH	Frequency of talking to neighbours	How often do you talk to any of your neighbours? Is it . . . 1. On most days 2. Once or twice a week 3. Once or twice a month 4. Less often than once a month 5. Never
DAMP	=1 if property has problems with damp walls, floors, foundation, 0 otherwise	Does your accommodation have any of the following problems: Damp walls, floors, foundation etc?
POLLUTION	=1 if there is pollution, grime or other environmental problems caused by traffic or industry, 0 otherwise	Does your accommodation have any of the following problems: Pollution, grime or other environmental problems caused by traffic or industry?
CRIME	=1 if there is vandalism or crime in the area, 0 otherwise	Does your accommodation have any of the following problems: Vandalism or crime in the area?

Subjective attributes of residential environment

SPACE	=1 if there is short of space, 0 otherwise	Does your accommodation have any of the following problems: Short of space?
NEIGHNOI	=1 if there is noise from neighbours, 0 otherwise	Does your accommodation have any of the following problems: Noise from neighbours?
STREETNOI	=1 if there is street noise, 0 otherwise	Does your accommodation have any of the following problems: Other street noise (traffic, businesses, factories etc) ?
FIN	= 1 if managing well financially, 0 otherwise	How well would you say you yourself are managing financially these days? Would you say you are. . . 1. Living comfortably 2. Doing alright 3. Just about getting by 4. Finding it quite difficult 5. Finding it very difficult?
FINBETTER	= 1 if believes will be financially better off a year from now, 0 otherwise	Looking ahead, how do you think you will be financially a year from now, will you be. . . 1. Better off 2. Worse off than you are now 3. About the same?
FINSAME	= 1 if believes will be financially about the same a year from now, 0 otherwise	

Findings and conclusions

- Are social comparisons a matter for residential satisfaction?

  - Yes. All social comparison variables are significant at the 1% level.

  - The results are robust to alternative social comparison measurements.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
AGELOW		-0.2124***			
		(0.0363)			
AGEHIGH		0.1557***			
		(0.0356)			
EDULOW			-0.2299***		
			(0.0369)		
EDUHIGH			0.1746***		
			(0.0341)		
REGLOW				-0.1933***	
				(0.0369)	
REGHIGH				0.2019***	
				(0.0331)	
SELOW					-0.2237***
					(0.0348)
SEHIGH					0.1195***
					(0.0331)
Adjusted R Square	0.1222	0.1297	0.1314	0.1315	0.1299
F	19.0726	19.5353	19.9962	19.8028	19.7646
p	0.0000	0.0000	0.0000	0.0000	0.0000

* $p<0.10$, ** $p<0.05$, *** $p<0.01$

Findings and conclusions

- Do better-off and worse-off households respond to changes in their housing consumption differently?
  - Yes. The absolute value of coefficient for the worse-off group is much larger than that for the better-off group in three of the four models. In model (5), the estimated loss aversion parameter is 0.2237 / 0.1195 = 1.87.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
AGELOW		-0.2124***			
		(0.0363)			
AGEHIGH		0.1557***			
		(0.0356)			
EDULOW			-0.2299***		
			(0.0369)		
EDUHIGH			0.1746***		
			(0.0341)		
REGLOW				-0.1933***	
				(0.0369)	
REGHIGH				0.2019***	
				(0.0331)	
SELOW					-0.2237***
					(0.0348)
SEHIGH					0.1195***
					(0.0331)
Adjusted R Square	0.1222	0.1297	0.1314	0.1315	0.1299
F	19.0726	19.5353	19.9962	19.8028	19.7646
p	0.0000	0.0000	0.0000	0.0000	0.0000

* $p<0.10$, ** $p<0.05$, *** $p<0.01$

Conclusions

- Prospect-theory based theoretical framework

- Multi-dimensional social comparison measurement, based on house value instead of income

- Social comparison matters

- How about adaptation?

- Why not to develop a social comparison index, instead of using four separate measurements?

- These analyses have been included in Helen X. H. Bao and Charlotte C. Meng. (2023). Housing Wealth Distribution, Inequality, and Residential Satisfaction, *Regional Studies*.

Final examination

- Choose one, and only one, of the six case studies in this course.

- Discuss how to replicate the study in Beijing. Describe the ways to collect and analyze data, and possible ways of improving the research design in the case study.

- You are encouraged to cite the papers discussed in the lectures to support your arguments

- You are NOT required to collect new data or perform statistical analysis using the case data

- The word limit is 1,000 words, including everything (e.g., references)

- Submission deadline: 5pm, 28 July 2023 (Beijing time)

- Please send your essay in Word format to the teaching assistant of this course, Xiao Yan

Summary

- Research questions
- Housing satisfaction
- Social comparison
- Data and methods
- Findings and discussions
- Future research directions

Q & A