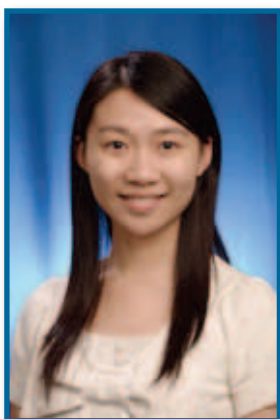BEST
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The Value of Property Management Services in Housing: An Experiment

Li Jinhuan, Joanna
Master of Housing Management (Professional Stream)
The University of Hong Kong

Introduction

Real estate property, like other market goods, reflects its value in terms of market value — price. Characterized by its fixity, durability, sensitivity to spatial externalities and requisition of relatively large amount of capital, residential property is a complex commodity. The value is dynamic and largely responses to the macro-economic environment because the political, economic, geographic, and social-demographic factors essentially alter the market demand and supply (Mackmin, 1994). In microcosmic perspective, Roulac (2007) concludes on a conceptual level that "a property's value is determined by its use, specifically what people will pay for the right to the use of the property". Micro-determinants including location attributes, structural attributes, and neighborhood attributes of a residential property are considered as the major criteria to reflect the value of such multi-dimensional heterogeneous commodity (Butler, 1982; Chau et al., 2001; Mok, et al, 1995; So et al., 1996; Tse and Love, 2000). Apart from that, property management attribute should never be overlooked.

Property management is crucial to the residential environment of high-rise and high density in Hong Kong. The tragedy of commons (Aristotle, 350 B.C.) can be solved by property management when the property owner inclines to neglect the duty which he expects another to fulfill. Lack of care to the property is hence avoided and depreciation in value is minimized. The importance of property management services even rises in recent years due to the SARS outbreak in 2003. Not to mention the role of day-to-day property management in maintaining and improving the physical condition of the properties and economizing the expenses in long term, the benefit from upgrade of quality of life, the psychological pleasure via relationship building with the residents and problem-solving among the co-owners is beyond measure.

In order to capture all determinants and attributes in valuation of residential property, the hedonic prices model is commonly used. Initially developed by Rosen (1974), the model is to measure product differentiation based on the hedonic hypothesis that goods are valued for their utility-bearing attributes or characteristics. Technically, the Ordinary Least Square (OLS) regression is run for the housing transaction prices against a list of all possible partial determinants of the house prices. The relationship between housing price (dependent variable) and the determinants (independent variables) is thus revealed to see whether a specific factor contributes, and by how much if it does to the property value. The hedonic formula demonstrates the consideration of the implicit prices of individual attributes written as:

$$p(z) = \sum_{i=1}^{n} p(z_i)$$

where,

$p(z)$ = the known (observed) price of a differentiated composite good

$p(z_i)$ = the implicit price of the ith attribute present in the composite good

Though being widely applied, the hedonic regression model has a number of practical difficulties as summarized by Leishman (2003). First is data intensive. It requires several thousand observed housing transactions which usually consist of many years' sales records. Consequently the second problem lays in the treatment of time, for that the physical, locational, neighborhood and other attributes are permitted to change. Thirdly, whilst macro factors should never be neglected in examining the housing price, difficulties are brought about to the application of hedonic pricing model as some external factors such as government intervention and fluctuation of global economy are hard to measure. When quantitative measurement is not applicable to reveal the intrinsic relationship precisely, one way to improve is to use experiment for data collection. For this research with the purpose to reveal the value of property management service in housing, experimentation manipulates the implicit magnitude of property management attribute. By simulating the information processing environment of designated residential premises for potential home buyers, the controlling power over the macro- and micro-determinants are greatly strengthened.

Methodology

The study focuses on the property management services for private residential properties, and residential property segment of small to medium size which occupies a large proportion of housing stocks and generates many transactions. Besides, property management companies either under real estate developers or of property management agency firms are included.

The aim of the experiment is to test whether there is any impact of the property management services on the residential property value from the user's perspective. It is worth investigating the influence of property management throughout the dynamic life cycle of a property, bearing in mind that new residential properties generally require less care but then depreciate over time with contribution from property management becoming important. More concisely, the hypotheses are formulated:

H_0: different qualities of property management services make no difference on the value of same grade of properties

H_1: different qualities of property management services make difference on the value of same grade of properties

And,

H_0': for properties in general, different qualities of property management services make no difference on the property value

H_1': for properties in general, different qualities of property management services make difference on the property value

The independent variables of quality standard of property management services and the grades of properties and the dependent variable of property value are hence identified.

Formulating Property Management Services Variable

In Hong Kong, the Government has set up a series of laws and regulations for the practice of property management, which in a sense standardized the basic provision of property management services. Other institutions in the industry also develop various certifications and recognitions to measure the quality of property management service from aspects of quality management,

service supervision, environmental protection, and occupational health and safety, based on which the property management services variable is measured and formulated.

Being the benchmarks for the market participants with large management portfolio representing different service qualities, four real property management companies (PMCs) are selected to reveal the impact on the property market in value terms *(Table 1)*. They are differentiated by nature, perceived service quality, reputation, recognition of ISO standards, and approbation of industrial awards. To better facilitate the experiment, a feigned property management company, PMC-V, is created to serve as the control group.

Table 1. Formulation of property management services variable

PMC / Criteria	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
Nature	Developer Subsidiary	Property Management Agent	Developer Subsidiary	Property Management Agent	
Perceived Service Quality	Higher	Higher	Lower	Lower	
Reputation	Higher	Higher	Lower	Lower	
ISO Certification	— ISO 9001 — ISO 10002 — ISO 14001 — ISO 18001 — ISO 5001	— ISO 9002 — ISO 14001 — ISO 18001	— ISO 9002	Nil	Nil — Feigned PMC as control group
Industrial Award (in 2011)	— Hong Kong Eco-Business Awards — Indoor Air Quality Certificate — Business Superbrands — Sing Tao's Excellent Services Brand Award	— Hong Kong Environmental Excellence Awards — Indoor Air Quality Certificate — Power Smart Contest	— Security Services Best Training Award — Indoor Air Quality Certificate	— Hong Kong Green Mark Certification Scheme	
Management Portfolio	Comprehensive portfolio of various residential properties across the territory				

Formulating Property Grading Variable

Criteria of both location and property age are used to differentiate the grade of property. Generally, newly built residential properties at favorable locations such as those closer to Central Business District are perceived to be superior and those aging residential ones built in less desirable district are inferior. Five feigned residential properties are created with their location and age designated especially to match with the actual development of real estate residential properties since mid-1980s. Other criteria are considered over locational, structural, and neighboring perspectives *(Table 2)*. Most of the attributes are identical across the five properties to minimize the influence from other factors other than property grades. Unit layout is presented by the drawing of the floor plan, and real photos are attached to visualize each premise.

Table 2. Formulation of property grading variable

Grade / Criteria	A	B	C	D	E
Property Name	Grand Garden	Good View Terrace	Sunrise Mansion	Pleasant Court	Trend Villas
Location	Mid-levels	Tsuen Wan	Tseung Kwan O	Tuen Mun	Sham Shui Po
Age	5 Years	10 Years	15 Years	20 Years	25 Years
Type	Estate-Type	Estate-Type	Estate-Type	Non-Estate-Type	Non-Estate-Type
Private Clubhouse	Available	Available	Available	Not Available	Not Available
Car Park	Available	Available	Available	Not Available	Not Available
Area — GFA	558 Sq. Ft.				
Floor Level	18/F				
Orientation	Facing South				
Walking Distance from MTR	5-10 minutes				
Nearby Facilities	School, Super Market, Public Sports Centre				
Layout	Drawings of Floor Plan				
Interior Design	Real Photos (One living room, one dining room, two bedrooms, one kitchen, one toilet, and view from the window)				

Formulating Experimentation Groups

A matrix of 25 residential premises are then generated, in which every of the five properties from Grade A to E (defined by location and property age) are designated to be managed by each of PMC-I to V *(Table 3)*. Twenty-five sets of leaflets could then be designed for the 25 premises respectively, showing all the information in *Table 2*. The property management company for each property is also displayed, by showing both the name and logo of PMC-I, II, III, IV and V.

Table 3. Formulation of categories of tested residential premises

Premises	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
Grade A (Mid-level/5)	P-1	P-6	P-11	P-16	P-21
Grade B (Tsuen Wan/10)	P-2	P-7	P-12	P-17	P-22
Grade C (Tseung Kwan O/15)	P-3	P-8	P-13	P-18	P-23
Grade D (Tuen Mun/20)	P-4	P-9	P-14	P-19	P-24
Grade E (Sham Shui Po/25)	P-5	P-10	P-15	P-20	P-25

Formulating Dependent Variable

The scenario of residential property sale and purchase is then simulated by showing the participants 5 leaflets and asking them to give a price for the premise. For the 5 premises given to any one of the respondent, they are not to repeat in terms of property grading or managed PMC so that each respondent is equally access to premises of 5 grades and managed by the 5 companies. In this way, there would be 120 possible combinations for the grouping of 5 leaflets. Besies, random sequence of the leaflets further achieves internal validity of the experiment. Finally, participant is required to answer about his/her age, education level, monthly household income, and number of property owned.

Data Analysis

The experiment was carried out during the period from 15th February 2012 till 30th March 2012. Each participant was randomly assigned to one set of experiment questions. A total of 162 responses were successfully collected. The mean property value is HK$3.313 mil with standard deviation of HK$1.571 mil. The highest price at HK$7.520 mil falls into P-1 category which is a Grade A property managed by PMC-I while the lowest price goes to P-25 category, a Grade E property managed by PMC-V, with the value of HK$1.588 mil.

Indications between Management Services and Property Value

In a hybrid representing the 25 premises, the mean and standard deviation of estimated value for each premise are generated *(Table 4)*. When viewing by grade, properties of higher grade have higher value as people treasure more for residential properties that are relatively new and located at better site. A descending pattern is thus formed in the means of estimated property value across property grades while they are managed by the same PMC, which supports such grading criteria in property differentiation. When viewing by company, better quality of management services contributes more to property value. PMC-I is always on top, successfully building a good image to the customers who are confident in the properties it manages. For PMC-V, it represents a basic value of property management services to the property. People have no idea about its service quality but knowing at least the property is under management. That the mean estimated value of properties managed by PMC-V is at all times ranked the last indicates the four real companies contribute to the property value exceeding the basic level. If to assess them based on ISO qualifications and industrial recognition, such ranking is identical with the respective means of estimated property value.

Table 4. Matrix of means and standard deviations of the estimated value

All Premises	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V	By Grade
Mid-level (5 years)	6.515 (0.418)	6.368 (0.498)	6.392 (0.497)	61.198 (0.444)	6.016 (0.4832)	**6.300 (0.495)**
Tsuen Wan (10 years)	3.233 (0.223)	3.139 (0.227)	3.051 (0.232)	2.993 (0.228)	2.898 (0.216)	**3.063 (0.251)**
TKO (15 years)	3.100 (0.226)	2.912 (0.189)	2.841 (0.196)	2.787 (0.219)	2.701 (0.220)	**2.869 (0.249)**
Tuen Mun (20 years)	2.520 (0.226)	2.410 (0.211)	2.210 (0.1967)	2.123 (0.213)	2.063 (0.182)	**2.264 (0.263)**
Sham Shui Po	2.329 (0.182)	2.162 (0.209)	2.042 (0.196)	1.961 (0.219)	1.867 (0.185)	**2.070 (0.254)**
By Company	3.555 (1.561)	3.415 (1.565)	3.299 (1.610)	2.465 (1.566)	2.376 (1.529)	**3.313 (1.571)**

Note: (1)   Value is in HK$ million.
　　　 (2)   Figures in parentheses are standard deviation.

Statistical Significance and Test of Hypothesis

The revealed relationships are then testified via statistical means. To judge the validity of the first null hypothesis, the T-Test result is consolidated by grade in *Table 5*. For each property grade, property value varied for the five property management companies are compared by pairs, showing the mean difference in percentage and indicating an asterisk if the difference is statistically significant. The first null hypothesis is therefore partially rejected. It is testified that if properties are of good grade the property value does not vary much even though they are managed by companies of different service qualities. For Grade A properties, the property value tends to be inelastic to property management services attributes. Only when the grade of property declines, property management services factor becomes prominent according to the tables for properties of Grade B, C, D and E.

Table 5. T-Test Result Table by Grade of Property

Grade A	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
PMC-I	/	2.31%	1.92%	5.11%	* 8.28%
PMC-II	2.31%	/	-0.38%	2.74%	* 5.84%
PMC-III	1.92%	-0.38%	/	3.13%	* 6.25%
PMC-IV	5.11%	2.74%	3.13%	/	3.02%
PMC-V	* 8.28%	* 5.84%	* 6.25%	3.02%	/

Grade B	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
PMC-I	/	3.01%	* 5.97%	* 8.03%	* 11.54%
PMC-II	3.01%	/	2.88%	* 4.87%	* 8.29%
PMC-III	* 5.97%	2.88%	/	1.94%	* 5.26%
PMC-IV	* 8.03%	* 4.87%	1.94%	/	3.25%
PMC-V	* 11.54%	* 8.29%	* 5.26%	3.25%	/

Grade C	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
PMC-I	/	* 6.45%	* 9.12%	* 11.23%	* 14.80%
PMC-II	* 6.45%	/	2.50%	* 4.49%	* 7.84%
PMC-III	* 9.12%	2.50%	/	1.94%	* 5.21%
PMC-IV	* 11.23%	* 4.49%	1.94%	/	3.21%
PMC-V	* 14.80%	* 7.84%	* 5.21%	3.21%	/

Grade D	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
PMC-I	/	* 4.59%	* 14.03%	* 18.70%	* 22.19%
PMC-II	* 4.59%	/	* 9.03%	* 13.49%	* 16.83%
PMC-III	* 14.03%	* 9.03%	/	4.09%	* 7.16%
PMC-IV	* 18.70%	* 13.49%	4.09%	/	2.95%
PMC-V	* 22.19%	* 16.83%	* 7.16%	2.95%	/

Grade E	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
PMC-I	/	* 7.72%	* 14.04%	* 18.76%	* 24.76%
PMC-II	* 7.72%	/	* 5.87%	* 10.24%	* 15.81%
PMC-III	* 14.04%	* 5.87%	/	* 5.06%	* 9.40%
PMC-IV	* 18.76%	* 10.24%	* 5.06%	/	4.13%
PMC-V	* 24.76%	* 15.81%	* 9.40%	4.13%	/

Note: * Means the difference of the means of estimated value is statistically significant at 0.05 confidence level.

For the second null hypothesis, the T-Test is applied to testify the mean difference of value for all properties managed by different companies regardless of property grades. Grade A properties is dropped because they are so highly priced that it boosts up the mean value of property no matter managed by any company. A selected T-Test between means of non-Grade A properties managed by same company is carried out *(Table 6)*. Consequently, the second null hypothesis is also partially rejected, in that higher qualities of property management services can significantly alter the value of the property. However, if the quality of property management services is not satisfactory, the value it adds to the composite property price is slender.

Table 6. Selected T-Test result on the mean difference of value for non-grade A properties with different property management services levels

Non-Grade A	PMC-I	PMC-II	PMC-III	PMC-IV	PMC-V
PMC-I	/	* 5.21%	* 10.26%	* 13.52%	* 17.78%
PMC-II	* 5.21%	/	* 4.80%	* 7.90%	* 11.94%
PMC-III	* 10.26%	* 4.80%	/	2.96%	* 6.81%
PMC-IV	* 13.52%	* 7.90%	2.96%	/	3.75%
PMC-V	* 17.78%	* 11.94%	* 6.81%	3.75%	/

Note: * Means the difference of the means of estimated value is statistically significant at 0.05 confidence level.

Justification of the Experiment Result from Hedonic Pricing Model

This experiment is set on the base of hedonic pricing approach and the result from the experiment shall be justified by the hedonic pricing model in return. Definitions of the variables with description of the data deployed are shown in *Table 7.*

Table 7. List of variables and descriptions

Short form	Explanatory variables [expected effect]	Definition of variables
PRICE	Estimated value (dependent variable)	Price in HK$ million
GRADE	Grade of property [negative]	Property grading classified into 4 levels ranking from best to worst (Grade A properties excluded)
PMC	Property management companies representing various management services qualities [negative]	Companies managing the properties with service quality classified into 4 levels ranking from best to worst (feigned PMC-V excluded)
SUBSIDIARY	Property management companies being real estate developer subsidiary [positive]	1 if property management company is real estate developer subsidiary, 0 otherwise
EST	Estate type of property units [positive]	1 if it is estate-type, 0 otherwise

The literature of hedonic pricing model assumes that the property price can be described by a vector of continuous and dummy variables, formulating as:

$$PRICE = \beta_0 + \beta_1 (GRADE) + \beta_2 (GRADE)^2 + \beta_3 (PMC) + \beta_4 (PMC)^2 + \beta_5 (SUBSIDIARY) + \beta_6 (EST) + \mu$$

where β_0 is the constant, β_i (for i = 1, 2, ..., 6) are the regression coefficients, and μ is a random element that reflects the unobserved variations in the property price. More comprehensively, squared-(GRADE) and squared-(PMC) are introduced, in that the effect of grade of property and level of management company service quality may not be linear.

Tests of the hedonic regression model (OLS1) are shown in *Table 8*. The two formulated variables in the experiment, GRADE and PMC are tested to be significant, making the experiment design justified. The explanatory power of the model is close to 75 per cent of the variation in estimated property value. A note should be taken that the explanatory power of the regression equation decreases to less than 70 per cent (OLS), indicating the importance of property management services.

Table 8. Analysis of hedonic pricing measurement

	OLS	OLS1	OLS2	OLS3
(Constant)	*** 3.850	*** 4.163	*** 3.988	*** 3.649
	(0.132)	(0.135)	(0.130)	(0.131)
Grade	*** -0.372	*** -0.383	*** -0.384	*** -0.351
	(0.081)	(0.075)	(0.0711)	(0.067)
(Grade)^2	** 0.046	** 0.043	* 0.041	* 0.039
	(0.014)	(0.016)	(0.013)	(0.010)
PMC	—	*** -0.180	*** -0.140	*** -0.167
		(0.054)	(0.051)	(0.050)
(PMC)^2	—	* 0.029	* 0.028	* 0.025
		(0.011)	(0.010)	(0.010)
Subsidiary	—	—	** 0.073	** 0.079
			(0.023)	(0.022)
Estate Type	—	—	—	**0.094
				(0.030)
Adj. R2	0.697	0.746	0.768	0.790
SSE	1.761	0.842	0.829	0.817
F-statistics. Sig.	*** 0.000	*** 0.000	*** 0.000	*** 0.000

Note: (1)*, ** and *** indicate significance at the 0.1, 0.05 and 0.01 levels.
(2) Figures in parenthesis are standard errors.

As expected, the coefficient of GRADE and PMC variables are negative, whereas the variables of squared-GRADE and squared-PMC are positive. This means when the property value decreases as the grade of property or level of management service quality declines, it reduces exponentially. The SUBSIDIARY variable is also found significant. By adding it, the equation explanatory power increases to almost 77 per cent (OLS2), and the independent variable PMC becomes less profound as the coefficient changing from -0.180 to -0.140. It indicates a glory from property developer that people give more credits to the property managed by developer subsidiary than that by property management agent. Consideration over the attribute of estate type (dummy variable EST) further improves the explanatory power of the model to 79 per cent (OLS3). The impact of PMC is strengthened at the same time, meaning for estate-

type property with private facility provisions the service quality of property management company is greater emphasized as it requires higher level of skills to take care of the daily operation of that property.

Demographic Impact and Customer Segmentation

The significance of each type of demographic influence is testified *(Table 9)*. It finds that only home ownership alters people's consideration of property management services for individual property grade and in aggregate. Property owners better realize the importance of property management services and are willing to pay more,. Besides, people from the elder age group value more about property management services than the younger one, but income and education level do not make a difference.

Table 9. T-Test results for demographic characteristics

	Ownership (yes/No)	Age (>34/≤34)	HouHld Income (M) (>37.8k/≤37.8k)	Education (higher/lower)
Grade B	* 5.66%	* 3.30%	2.41%	-0.49%
Grade C	* 8.13%	* 3.32%	2.66%	0.23%
Grade D	* 4.53%	2.71%	2.32%	0.65%
Grade E	* 3.96%	2.39%	2.11%	0.13%
General	* 5.41%	* 2.90%	2.49%	0.23%

Note: * means the mean differences between the two samples is statistically significant at 0.05 confidence level.

Conclusion

The purpose to determine the influence of property management services on the value of private residential properties in Hong Kong is achieved. Successfully and creatively, the value of property management services adding to the owner-occupied housing is measured from the customer's perspective by experimentation methodology, based on the hedonic pricing model. Real time data are collected in more economically and efficient way and macro influencing factors is minimized so that impact of the property management services attribute is directly measure.

Property management practitioners should gain confidence from the result as the hedonic value that property management service adds to the property is justifiable. The service quality of property management, however, is critical to make such value realized. It proves that criteria such as achievement of ISO certifications and industrial capabilities and good reputation among the public are indicators of higher service quality to property management companies. Demographic characteristics also determine how people value management services. Real estate developers shall then focus its marketing resources for the after sale management services at a longer term. With development portfolio including both old and new buildings, good performance from the management subsidiary for the aging properties can increase the aspiration of potential buyers for the new ones. Such findings can provide reference to the players in property management industry to better identify its market segment and achieve strategic pertinence.

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Elderly Housing in Hong Kong: Preferences and Attributes

Mr Chan Tak Ho, Terence, Mr Chiu Chi Lok, Ricky, Miss Lam Shu Yan, Zoe,
Master of Arts in Housing Studies
City University of Hong Kong

Introduction

"An elder in a family is likely a treasure on hand" is a popular proverb in traditional Chinese society. Our population keeps dramatically aging as those post-war "baby-boomers" reach their retirement age. It is estimated that by 2039, 40.17% of our total population will be over 55 years old. Furthermore, we doubted if there were any specific housing policies designated upon the elderly though these elderly people have contributed the prime time of their life to their families and our society in years past.

Most researchers mainly investigated the affordability, social care services and housing preferences as essential elements on a long term of focused and comprehensive housing policy for the elderly. In this project we concentrate on housing attributes and to investigating the factors that might affect housing preferences of the elderly especially the differences between two groups, aged 55 to 64 ("soon to be old") and 65 or above ("the old").

The objectives of our research are as follows:

1.) To identify and investigate the factors affecting the housing preferences and attributes of elderly.
2.) To compare the housing preferences and attributes of two age groups (the old and soon to be old) and examine any variance among three districts representing the elderly of different socio-economic status.
3.) To review and evaluate the existing elderly housing conditions with the current housing policy in our living environment.

Our housing attributes are targeted at non monetary factors such as quality of life, kinship's care, social networks, community supporting services, health conditions and aging in place, which might significantly affect the housing preferences of the elderly. This study will explore and investigate the housing preferences' differences between the "soon to be old" and the elderly affected by the severe socio-economic changes with the speedily ageing population.

"Tin Shui Wai" is the home of many new immigrants from the Mainland; which are mainly the lower income group with higher numbers of Comprehensive Social Security Assistance (CSSA). "Sham Shui Po"is the home of many local low income families, and "Taikoo Shing" has middle class income families. Through studying the people in these three districts we can see the characteristics of elderly in different income groups in HK.

A Review on the Existing Housing Situations

The Hong Kong Government is aware that housing is the most important issue among all elderly services. Before making any evaluations and recommendations on our current housing policy and community care and facilities services, we look into our existing elderly housing policy, senior citizens housing scheme for middle class income group and the Public Rental Housing (PRH) for the lower income groups. With regard to these reviews, we can identify with the elderly housing needs and demand finally.

Indeed, the elderly housing issue or policy is only superficially touched on and even lightly mentioned in the past policy addresses as there is no blanket government policy for elderly housing at all. Elderly person flats and senior housing under different schemes and types are provided by Housing Society (HKHS) and Housing Authority (HA) respectively.

In the short to medium terms, only various subsidized elderly care services such as revised old age allowances and Guangdong scheme will be brought up to cope with a surging elderly population. Finally, in the medium and long run, the Government has strategically introduced the projects of Mandatory Provident Fund (MPF) and Reverse Mortgage so as to assist the elderly at retirement age financially. Last but not the least, the Government offers in lack of variety of housing products for different income groups or classes of elderly in Hong Kong.

To gear up the development of quality elderly housing for financially better equipped seniors, the HKHS has been launching a new elderly housing project, "Joyous Living," via Tanner Hill Residences in North Point and Wetland Park Road Project in Tin Shui Wai. Therefore, in one of our

studies is to gather the comments of these new SEN scheme projects by our respondents so as to evaluate if the projects are demanded in this particular elderly housing market.

The primary role of the Hong Kong Housing Authority (HA) is to provide public rental housing (PRH) to eligible low-income persons who cannot afford private accommodation with housing needs. (Corporate Plan 2011-2012 HKHA) Approximately 30% of the Hong Kong population is now living in public rental housing units. (HKHA web site retrieved on 7/3/2012) Obviously, the PRH is regarded as the most popular housing tenure and in-kind subsidy of the elderly by our government in Hong Kong.

A number of elderly households are provided with public rental housing, but there is still a large demand for elderly housing. However, as the well educated retirement group of middle income class and the new Mainland immigrant elderly group from lower class are seeking housing options and self determination, it is necessary for our government to identify the housing preferences for these different income classes of elderly before trying to stimulate any elderly housing supply in the market.

As a matter of fact, we have been requiring various housing products to meet with the needs of higher income, middle income and lower income class of the elderly within different districts in Hong Kong. As discussed, SEN scheme are designed to tackle the housing problems of higher or middle income elderly group and the PRH is catering for the lower income elderly housing need. With existing services gap in elderly care and support services to facilitate the community living, we have to comprehend the elderly housing preferences upon their housing attributes due to our intensive growth of ageing population and projections of elderly housing demands. Apart from the old aged

over 65, we emphasize on the group of "soon to be old" age group mainly because elderly housing policy and community care services are taken timely to accomplish the changes and revision constantly. In short, we have to prepare for not only the ageing boom of different cohorts but also different districts in particular so as to allocate our resources effectively and efficiently.

Literature Review

Growing old is a normal occurrence which affects every living being. It is believed that the psychological, physiological, and social effects of the ageing process have impinged on different people at different age with different paces. To examine and identify the main housing attributes of elderly housing preferences we must have more understanding about gerontology and the associated social theories on aging such as role theory, disengagement theory, exchange theory, activity theory and age subculture theory as well. Apart from theories, quality of life and environment needs are scrutinized for the elderly life satisfaction.

The concepts of "Community Care" and "Aging in Place" are always the main concerns of the housing policy makers and community's facilities and care services providers of Hong Kong Government. In general, the above issues examine the feasibility of our community care and supportive facilities upon our existing housing policy. Meanwhile, some other factors (i.e. kinship care, social network, financial situation, health conditions, living arrangements, and housing aspiration) affecting housing preferences will be explored in the end of the literature review. With reference to the above factors, we shall also investigate if there are differences of respondents' housing preferences among the three districts, apart from age cohorts, due to the socio-economic status.

Table 1 Hong Kong Projections of the Population Aged 55 – 64 and 65 and above by sex for the period 2010-2039

Age / Year		2010	2019	2024	2029	2034	2039
55-64	Men	432,900	585,800	539,700	468,100	442,400	446,300
	Women	432,500	631,200	639,200	605,500	599,300	640,300
65+	Men	424,500	616,700	779,700	936,000	1,015,300	1,049,900
	Women	490,600	713,400	907,200	1,125,900	1,296,200	1,435,700
Total	N	1,780,500	2,547,100	2,865,800	3,135,500	3,353,200	3,572,200
	%	25%	33%	36%	38%	39%	40%

Data Source: Census and Statistics Department 2012:26

The number and the proportion of elderly population will continue to increase. With the success of our economy and societal change, the status of the elderly in the family is gradually declining and the younger generation is becoming less capable of taking care of their elders.

In addition, the existing retirement protection scheme (MPF) may not be sufficient, especially for those who are now aged among 45-59 may not benefit from the MPF when they retire due to their short contributory period. Furthermore, an actuarial analysis shown the MPF will provide only a minimum floor income to retirees if contribution made to the MPF is at the minimum amount. So, the aging population could inspire the housing problem into the society in Hong Kong.

For the study of care for the elderly, the two important concepts — "Community Care" and "Aging in Place" are reviewed and regarded as the common approaches for the care of the elderly. With reference to these concepts and the social theories on aging, they are the entire theoretical basis for our study on housing attributes upon elderly housing preferences.

Preference, taste and past experiences are other personal factors which are also volatile and can change. Quality of life and environment needs are so closely inter- related that we have to pay more attention. Besides, the economic factors, especially affordability, are also difficult to be grasped and crucial factors of housing preferences though the housing affordability is not our major discussion. In our literature review, we study the most convincing factors (i.e. kinship care, social network, financial situation, health conditions, living arrangements, and housing aspiration) which do affect the housing needs or preferences of our designated different district population in Hong Kong.

Methodology

The prime methodology of this research is, with the aid of quantitative surveys, to analyze our understanding of (1) the satisfaction of their existing living conditions, (2) the four housing attributes and preferences of Kinships' care, Social Networks, Communities Facilities and Staying in Familiar Place (aging in place) and (3) the five importance issues of Finance, Quality Life, Health and Self Care, Kinship's Care and Government Supports in elderly life between retired and soon to be retired elderly age groups and among three selected districts of Taikoo Shing, Sham Shui Po and Tin Shui Wai and evaluate whether the Hong Kong Government has considered in her housing policy or not, especially the recent revised SEN scheme which aims at satisfying the needs of retirement life and further on housing aspiration as well.

Totally, 180 respondents were successfully interviewed, in which the sex distribution was rather even (96 respondents were female and 84 respondents were male). 51% of the respondents have primary education level, 30% secondary level and 20% tertiary level. The respondents in Taikoo Shing with over 80% of higher than primary level is the highest education level among three districts which is in line with the impression of middle income class district.

Statistical Analysis and Findings

Most respondents of Taikoo Shing are living with a spouse only. Respondents of Sham Shui Po are living with a spouse, spouse with children or children only evenly. And most respondents of Tin Shui Wai are living with a spouse and children which may be due to many nuclear families in this new town. But the older the age tends to live alone.

During the spare time, all respondents will gather with neighbours or friends or stay at home. Over 80% respondents expressed that their family members of all districts will visit them occasionally or above and over 70% respondents of Sham Shui Po and Tin Shui Wai expressed that their neighbours or friends or relative will visit them occasionally or above, but more than 80% respondents of Taikoo Shing expressed that their neighbours or friends or relative will not visit them. So the elders are easy to fall into the negative side of ageism.

More than half of all respondents will first approach their spouse, children or relative when they encounter daily problems. It has also reflected that family ties were still important and deep-rooted in traditional Chinese value.

In our overall data analysis, we find that most elderly of our sample population are not very satisfied of their living conditions, more than half of the overall elderly were not satisfied with their living status, and the majority of our sample population is living with spouse or spouse and children potentially caused by some family tension, disagreement and/or generation gaps.

Elders were not satisfied with the housing type and living environment properly due to the insufficient elderly facilities in the building and surrounding. It is contrary that our government has placed an important target on the aging in place in her elderly care and housing policy. The least important of the Government Supports factors implied that the elderly might be used to the insufficient supports from the Government in the past and didn't have any expectations of the Government.

According to the table 1, most elderly has rated Kinships, Social network as their important housing preference. Kinships is even the most important housing preference and Staying in familiar place is not important which may be due to the dissatisfaction of living conditions. Most elderly of our sample population rated Finance, Health & Self Care and Kinship's Care are important issues in elderly life for them .

Table 2 — Housing Preferences & Elderly Life Important Issues (Overall)

Housing Preferences (Overall)		
Kinships		
Mean	4.23	
Standard deviation	0.99	
1 - 2. Least Important	3	2%
3. Average	29	16%
4 - 5. Very Important	148	82%
Total	180	100%

Housing Preferences (Overall)		
Social networks		
Mean	3.89	
Standard deviation	0.99	
1 - 2. Least Important	11	6%
3. Average	51	28%
4 - 5. Very Important	118	66%
Total	180	100%
Community facilities		
Mean	3.38	
Standard deviation	1.13	
1 - 2. Least Important	38	21%
3. Average	65	36%
4 - 5. Very Important	77	43%
Total	180	100%
Staying in familiar place		
Mean	1.97	
Standard deviation	0.96	
1 - 2. Least Important	140	78%
3. Average	26	14%
4 - 5. Very Important	14	8%
Total	180	100%
Important Issue In Your Elderly Life (Overall)		
Finance		
Mean	4.14	
Standard deviation	0.96	
1 - 2. Least Important	10	6%
3. Average	18	10%
4 - 5. Very Important	152	84%
Total	180	100%

Housing Preferences (Overall)		
Quality of Life		
Mean	1.78	
Standard deviation	0.95	
1 - 2. Least Important	141	78%
3. Average	30	17%
4 - 5. Very Important	9	5%
Total	180	100%
Health and Self Care		
Mean	3.71	
Standard deviation	1.04	
1 - 2. Least Important	18	10%
3. Average	71	39%
4 - 5. Very Important	91	51%
Total	180	100%
Kinship's Care		
Mean	3.63	
Standard deviation	1.12	
1 - 2. Least Important	27	15%
3. Average	51	28%
4 - 5. Very Important	102	57%
Total	180	100%
Government Supports		
Mean	1.79	
Standard deviation	0.77	
1 - 2. Least Important	160	89%
3. Average	14	8%
4 - 5. Very Important	6	3%
Total	180	100%

In our two elderly age groups data analysis, we find out that elderly of both age groups of our sample population are not very satisfied of their existing living conditions, more than half of the elderly did not satisfy their living status, 64% of elderly in the age group of 65 or above and 51% of elderly in the age group of 55-64 dissatisfied with their existing housing type. According to the table 2, only Kinships of housing preferences are statistically significant with age. Therefore, older the age tends to be more dissatisfied with their existing housing type and to rate Kinships as a more important housing preference.

Table 3 — Housing Preferences & Elderly Life Important Issues (Two Elderly Age Groups)

Housing Preferences	55-64		65 or above		T-test Statistics	P value
Kinships						
Mean	4.08		4.39		2.66	☑ ☑
Standard deviation	0.88		0.68			
1 - 2. Least Important	2	2%	1	1%		
3. Average	22	24%	7	8%		
4 - 5. Very Important	66	73%	82	91%		
Total	90	100%	90	100%		
Social networks						
Mean	3.97		3.82		0.97	☒
Standard deviation	0.97		1.02			
1 - 2. Least Important	6	7%	5	6%		
3. Average	19	21%	32	36%		
4 - 5. Very Important	65	72%	53	59%		
Total	90	100%	90	100%		
Community facilities						
Mean	3.48		3.29		1.13	☒
Standard deviation	1.16		1.08			
1 - 2. Least Important	19	21%	19	21%		
3. Average	30	33%	35	39%		
4 - 5. Very Important	41	46%	36	40%		
Total	90	100%	90	100%		

Housing Preferences	55-64		65 or above		T-test Statistics	P value
Staying in familiar place						
Mean	2.04		1.90		1.01	☒
Standard deviation	0.89		1.03			
1 - 2. Least Important	68	76%	72	80%		
3. Average	16	18%	10	11%		
4 - 5. Very Important	6	7%	8	9%		
Total	90	100%	90	100%		
Important issue in your elderly life	**55-64**		**65 or above**		**T-test Statistics**	**P value**
Finance						
Mean	4.08		4.20		0.85	☒
Standard deviation	0.99		0.94			
1 - 2. Least Important	6	7%	4	4%		
3. Average	10	11%	8	9%		
4 - 5. Very Important	74	82%	78	87%		
Total	90	100%	90	100%		
Quality of Life						
Mean	1.83		1.72		0.78	☒
Standard deviation	0.91		0.99			
1 - 2. Least Important	68	76%	73	81%		
3. Average	19	21%	11	12%		
4 - 5. Very Important	3	3%	6	7%		
Total	90	100%	90	100%		

Housing Preferences	55-64		65 or above		T-test Statistics	P value
Health and Self Care						
Mean	3.68		3.74		0.43	☒
Standard deviation	1.07		1.02			
1 - 2. Least Important	9	10%	9	10%		
3. Average	37	41%	34	38%		
4 - 5. Very Important	44	49%	47	52%		
Total	90	100%	90	100%		
Kinship's Care						
Mean	3.71		3.54		0.99	☒
Standard deviation	1.18		1.06			
1 - 2. Least Important	14	16%	13	14%		
3. Average	19	21%	32	36%		
4 - 5. Very Important	57	63%	45	50%		
Total	90	100%	90	100%		
Government Supports						
Mean	1.72		1.87		1.26	☒
Standard deviation	0.73		0.80			
1 - 2. Least Important	82	91%	78	87%		
3. Average	6	7%	8	9%		
4 - 5. Very Important	2	2%	4	4%		
Total	90	100%	90	100%		
P value:	Statistically Insignificant ☒ ≥ (0.05) Statistically Significant ☑ ≤ (0.05) ☑☑ ≤ (0.01) ☑☑☑ ≤ (0.001)					

In our three districts data analysis, the respondents in Taikoo Shing district have different ratings when comparing with other two districts on the satisfaction of their existing living conditions. It is found that only the Taikoo Shing elderly group is generally pleased with their existing living status, housing type and the community supporting services or facilities within their district.

Regarding the community supporting services or facilities overall in Hong Kong, the elderly of Taikoo Shing and Tin Shui Wai are dissatisfied, and elderly in Sham Shui Po gave average rating at it. According to the table 3, the elderly in Taikoo

Shing and Sham Shui Po rated Kinships and Social network are the most important housing preference and the average rating at community facilities. However, the elderly in Tin Shui Wai rated Kinships and Community Facilities the important housing preference and Social network the average preference only.

The elderly in all districts rated Finance, Health & Self Care and Kinship's Care are the important issues in their life, among them while Finance is the most important issue, but the Quality of Life and Government Support are rated as the least important.

Table 4 — Housing Preferences & Elderly Life Important Issues (Three Districts)

Housing Preferences	Taikoo Shing		Sham Shui Po		Tin Shui Wai		Chi Square	Significant test statistics
Kinships								
Mean	4.30		4.15		4.25		24.60	☑ ☑ ☑
Standard deviation	0.91		0.63		0.84			
1 - 2. Least Important	3	5%	0	0%	0	0%		
3. Average	6	10%	8	13%	15	25%		
4 - 5. Very Important	51	85%	52	87%	45	75%		
Total	60	100%	60	100%	60	100%		
Social networks								
Mean	3.65		4.72		3.32		128.21	☑ ☑ ☑
Standard deviation	1.20		0.45		0.50			
1 - 2. Least Important	11	18%	0	0%	0	0%		
3. Average	9	15%	0	0%	42	70%		
4 - 5. Very Important	40	67%	60	100%	18	30%		
Total	60	100%	60	100%	60	100%		

Housing Preferences	Taikoo Shing		Sham Shui Po		Tin Shui Wai		Chi Square	Significant test statistics
Community facilities								
Mean	3.08		2.63		4.43		134.85	☑ ☑ ☑
Standard deviation	1.21		0.49		0.59			
1 - 2. Least Important	16	27%	22	37%	0	0%		
3. Average	24	40%	38	63%	3	5%		
4 - 5. Very Important	20	33%	0	0%	57	95%		
Total	60	100%	60	100%	60	100%		
Staying in familiar place								
Mean	2.20		2.35		1.37		54.41	☑ ☑ ☑
Standard deviation	1.09		0.90		0.49			
1 - 2. Least Important	42	70%	38	63%	60	100%		
3. Average	12	20%	14	23%	0	0%		
4 - 5. Very Important	6	10%	8	13%	0	0%		
Total	60	100%	60	100%	60	100%		
Important issue in your elderly life	**Taikoo Shing**		**Sham Shui Po**		**Tin Shui Wai**		**Chi Square**	**Significant test statistics**
Finance								
Mean	3.92		4.33		4.17		26.87	☑ ☑ ☑
Standard deviation	1.18		0.48		1.04			
1 - 2. Least Important	6	10%	0	0%	4	7%		
3. Average	11	18%	0	0%	7	12%		
4 - 5. Very Important	43	72%	60	100%	49	82%		
Total	60	100%	60	100%	60	100%		

Housing Preferences	Taikoo Shing		Sham Shui Po		Tin Shui Wai		Chi Square	Significant test statistics
Quality of Life								
Mean	2.43		1.20		1.70		125.01	☑ ☑ ☑
Standard deviation	0.74		0.58		1.05			
1 - 2. Least Important	40	67%	55	92%	46	77%		
3. Average	17	28%	5	8%	8	13%		
4 - 5. Very Important	3	5%	0	0%	6	10%		
Total	60	100%	60	100%	60	100%		
Health and Self Care								
Mean	3.90		4.10		3.13		75.27	☑ ☑ ☑
Standard deviation	0.86		1.00		1.02			
1 - 2. Least Important	0	0%	0	0%	18	30%		
3. Average	25	42%	27	45%	19	32%		
4 - 5. Very Important	35	58%	33	55%	23	38%		
Total	60	100%	60	100%	60	100%		
Kinship's Care								
Mean	3.60		3.38		3.90		51.42	☑ ☑ ☑
Standard deviation	1.25		1.01		1.05			
1 - 2. Least Important	17	28%	6	10%	4	7%		
3. Average	3	5%	27	45%	21	35%		
4 - 5. Very Important	40	67%	27	45%	35	58%		
Total	60	100%	60	100%	60	100%		

Housing Preferences	Taikoo Shing		Sham Shui Po		Tin Shui Wai		Chi Square	Significant test statistics
Government Supports								
Mean	1.17		1.98		2.23		131.64	☑☑☑
Standard deviation	0.46		0.22		0.95			
1 - 2. Least Important	58	97%	59	98%	43	72%		
3. Average	2	3%	1	2%	11	18%		
4 - 5. Very Important	0	0%	0	0%	6	10%		
Total	60	100%	60	100%	60	100%		
Degree of Freedom	4							
Significant test statistics:	Statistically Insignificant ☒ ≥ (0.05) Statistically Significant ☑ ≤ (0.05) ☑☑ ≤ (0.01) ☑☑☑ ≤ (0.001)							

According to the Table 4, the results of the SEN scheme data analysis revealed that the scheme is not very popular by the elderly of any elderly age group, only the Taikoo Shing district shows their interest on SEN scheme. The most reason of not favoring this scheme is too expensive and not affordable. This result also supported our finding that the important issue of elderly life is "Finance". Also if the location of the scheme in North Point and Tin Shui Wai would be the factors that they prefer to live close to their children, relatives or friends, because of the important issue of Kinship and Social Networks in the elderly housing preferences.

Table 4 — Purchase of SEN Scheme

SEN Scheme	Taikoo Shing		Sham Shui Po		Tin Shui Wai		Total	
Yes	7	12%	2	3%	1	2%	10	6%
No	53	88%	58	97%	59	98%	170	94%
Total	60	100%	60	100%	60	100%	180	100%

Recommendations and Conclusion

Over the past decade, the Hong Kong Government has initiated a variety of social policies and services accompanied with housing policies to cater for the increasing number of the elderly people as the population of Hong Kong will age at a fast pace in the middle of next decade with a very high life expectancy.

Elderly of both age groups of our sample population rated Kinships, Social network and Communities facilities are important housing preference for them and among all, Kinships is the most important. Both age groups have similar rating of Staying in familiar place as the least important. Finance, Health & Self Care and Kinship's Care are important issues in elderly life for both age group and among all, Finance is the most important issue in elderly life.

Elderly in Taikoo Shing and Sham Shui Po rated Kinships and Social network are important housing preference and rated Communities facilities is average, but the elderly in Tin Shui Wai rated Kinships and Communities facilities are important housing preference and rated Social network is average.

Elderly in all districts rated Finance, Health & Self Care and Kinship's Care are important issues in elderly life, among them, Finance is the most important issue, highest score in Sham Shui Po, and lowest score in Taikoo Shing which seen to be Sham Shui Po is regarded as the poorest district in Hong Kong. The elderly of all districts rated the issues of the Quality of Life and Government Support as least important.

After finishing our study, we have found that most elders are not satisfied with their existing living conditions and environment. Also, it is believed that our Government should not only provide a dwelling for the elderly but also a caring home with quality of life.

Although the HS has declared to tailor-make the SEN scheme for middle income elderly, the SEN scheme seems not so popular and it is well-known that most elders cannot afford to buy as the entry contribution is too high. Thus, the above findings of our research could be made general references to the policy makers and services providers of social security, retirement, health care, community care support and residential care services for the elderly.

Based on our findings, some recommendations to help government devise a holistic housing policy planning for the elderly are as follows:

1. According to policy address 2011-12, we should speed up the annual construction of 15,000 units or not higher than 20,000 units of PRH.

2. Higher tax allowances should be imposed to encourage adult children to live with their parents as kinship's care and financial situations are most important issues in the heart of elders.

3. According to our survey outcomes, SEN is not welcomed due to affordability. However, SEN can be subsidized in other ways catering for this middle income elderly group who contribute a lot for the society in the past days.

4. To examine all types of community support services for the elderly so as to accommodate various needs of elderly people while living in the community and attention should be paid to the special needs of the frail elderly.

5.	To meet the housing demand of the elderly and soon to be old group in the near future, the housing aspiration and consumption patterns of the elderly and soon to be old cohorts have to be investigated because of intensive infrastructure cross-border networks between Mainland China and Hong Kong in the recent years.

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