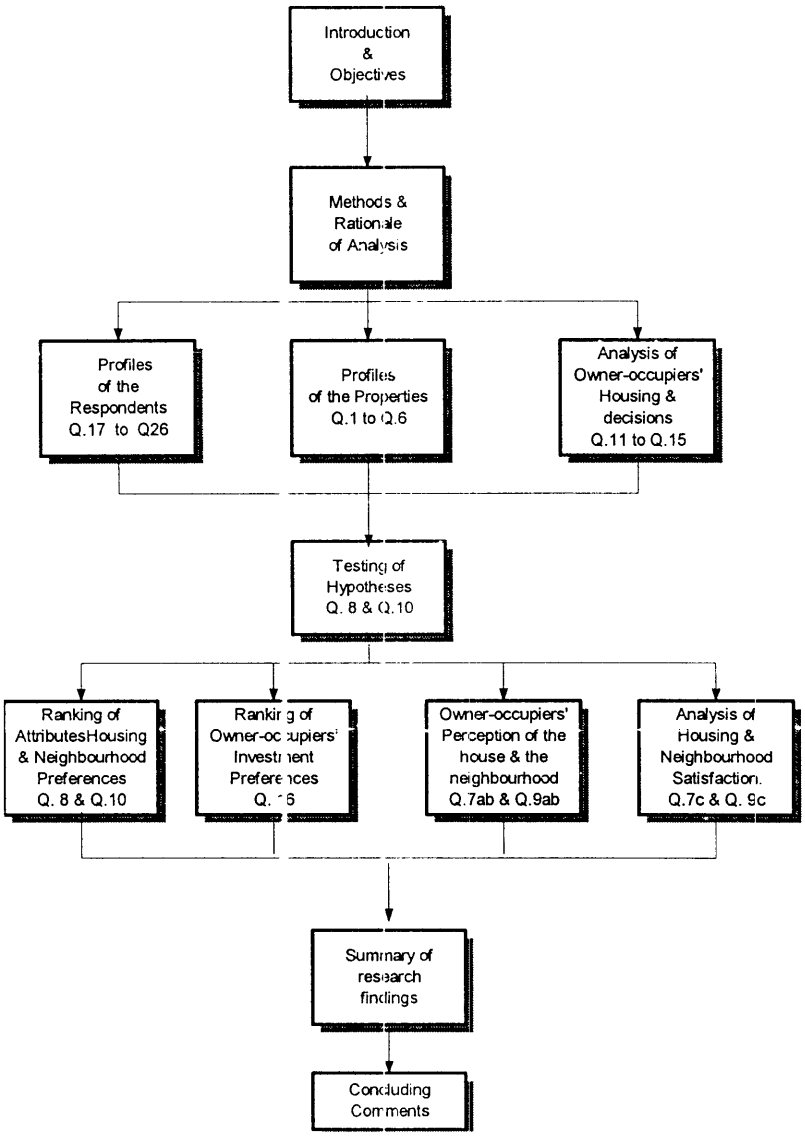
Chapter Six
HOUSING PREFERENCES AND SATISFACTION: ANALYSIS AND RESULTS

6.1 Introduction

The main objective of this chapter is to explore the various propositions developed in the earlier chapters about housing preferences. To achieve this objective, the chapter makes use of descriptive statistical methods to analyse the data obtained in the social survey described in the preceding chapter. The findings are highlighted using tables, charts and percentages. This is followed with inferential statistical methods to draw implications from the data with regard to the housing theories and models presented earlier. The data interpretation put forth in this chapter is essentially a follow-up which firstly involves the search for the meaning and applications of the research results, and secondly makes references relative to other studies on housing preferences. The findings in this chapter should contribute to present knowledge on housing preferences as well as reinforce contemporary thinking on housing preferences.

Following this introduction, the chapter begins with an explanation of the techniques of analysis employed in this research and presents the justifications for using them, and then proceeds to analyse the survey data using relevant statistical tools. The next section of the chapter covers the testing of the hypotheses. Each hypothesis was tested individually and the general perceptions of owner-occupiers on their neighbourhood and housing situations were analyzed and the results tabulated. An important role of this chapter is the ranking of attributes affecting housing preferences. Rankings from two other recent local studies were included for comparison purposes. The sequence of presentation and analysis of data in this chapter is shown in Figure 6-1. The chapter concludes that the quantitative approach adopted in this chapter is only part of a wider study on housing preferences. The other approaches include the more conventional means of literature review and personal observation.



Sequence of Presentation and Data Analysis
Figure 6- (Source: The Author: 1996)

6.2 Methods and Rationale for Data Analysis

> Statistics has its function, but hat function is medial: to inspect data by means of a tool whose facility is that of revealing aspects of the data of which we might not otherwise be aware. Statistics - the testing of the null hypothesis - leaves us frequently with merely an indication that factors or forces either are or are not present which may influence the data (Leedy,1980:161).

Data analysis involves entering data into computer files, inspecting it for errors and running tabulations and various statistical tests. Prior to carrying out the data analysis, data cleaning was performed whereby raw data were checked to verify that it was correct and entered where it should be on the data collection form (Burns and Bush, 1995:63). This process also involve checking the returned questionnaires to ensure that they were from owner-occupiers and not from tenants, as the study is concerned with the housing preferences of the former. More specifically, Chi-square (x^2) analysis is employed in this chapter for the examination of frequencies for two nominally scaled variables in a cross-tabulation table to determine whether or not the variables have a non-monotonic relationship. The process begins with the formulation of null hypotheses as described in the previous chapter. These are tabulated in Tables 6-1 to 6-4. The Chi-square analysis implicitly assumes that no association exists between the two attributes or variables under analysis (Burns and Bush,995:506; Ferguson,1966:194). Furthermore, the Chi-square (x^2) value is calculated for the appropriate degree of freedom as shown in Figure 6-2 on page 130. If this value is equal to or greater than the critical value required for the significance at an accepted significant level for that degree of freedom, the null hypothesis is rejected (Ferguson,1966:194).

While applying the Chi-square analysis it is vital to note that it is simply a method to determine whether or not an association exists between two variables. It does not indicate the nature of the association, and only indicates roughly the strength of association by its size. It is best interpreted as a prerequisite to looking more closely at the two variables to discern the nature of the association that exists between them. When the computed chi-square value is small, then the null hypothesis is generally assumed to be true, and so it is not worth the researcher's time to focus on

associations, because they may be more a function of sampling error than they are of meaningful relationships between the two variables. However, when chi-square analysis identifies a relationship, the researchers can be assured that they are not wasting time and are actually pursuing a real association, a relationship that truly exists between the two variables in the population (Burns and Bush,1995:510).

The chi-square test was chosen for the following reasons (Mitchel and Jolley,1988):

(i) it is simple and can be used to effectively determine whether two or more variables are related,

(ii) the chi square test can be carried out easily using the software package, SPSS version 5.0 and 6.0, and

(iii) it is best used with the nominal data collected from the survey.

Other statistical tools such as the Kolmogorov Smirnov test, the Kruskal-Wallis Test for several independent samples, the Pearson Product-Moment Correlation, and the analysis of variance such as Anova for complex experimental designs were considered but eventually discarded because of their complexity (Zikmund,1988; Graziano and Raulin,1989; Mitchel and Jolley,1988), or the time and cost involved in using them.

For a more thorough analysis of housing preferences, data from secondary sources, especially those obtained by other researchers, are included for comparison and discussion purposes. Detailed and elaborate comparisons of the data obtained with those from local researchers are not possible for two reasons. Firstly, systematic studies using subjective or socio-psychological indicators on housing preferences are practically nonexistent in Singapore. Secondly, as mentioned in Chapter Four, although research on various aspects of housing has been conducted prior to this, there are differences in terms of themes, emphasis and methodologies.

Nevertheless, there have been several studies utilizing independently gathered survey data to gauge the relative importance of selection criteria in housing. Notably, researchers such as Teo (1975), Ho and Sim (1992), and estate management undergraduates like Chua (1986) and Toh (1983) have conducted independent studies related to this and other aspects of housing. These past works were in some ways fragmented in that they either examined issues such as residential mobility as in Teo (1975), condominium selection criteria as in Ho and Sim (1992), landed property selection criteria as in Chua (1986) or selection criteria for HDB resale flats as in Toh (1983). In contrast, this study seeks to integrate many of the themes developed by these studies. For example, in the case of ranking of attributes affecting owner-occupiers' housing preferences, comparative studies are included with those of Ho and Sim (1992) and also with research done by the international property consultancy firm, Knight Frank *[sic]* (1986).

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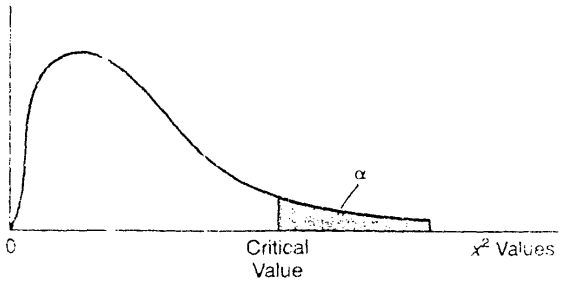


Degrees of Freedom (*d.f.*)	Area in Shaded Right Tail (α)		
	.10	.05	.01
1	2.706	3.841	6.635
2	4.605	5.991	9.210
3	6.251	7.815	11.345
4	7.779	9.488	13.277
5	9.236	11.070	15.086
6	10.645	12.592	16.812
7	12.017	14.067	18.475
8	13.362	15.507	20.090
9	14.684	16.919	21.666
10	15.987	18.307	23.209
11	17.275	19.675	24.725
12	18.549	21.026	26.217
13	19.812	22.362	27.688
14	21.064	23.685	29.141
15	22.307	24.996	30.578
16	23.542	26.296	32.000
17	24.769	27.587	33.409
18	25.989	28.869	34.805
19	27.204	30.144	36.191
20	28.412	31.410	37.566
21	29.615	32.671	38.932
22	30.813	33.924	40.289
23	32.007	35.172	41.638
24	33.196	36.415	42.980
25	34.382	37.652	44.314
26	35.563	38.885	45.642
27	36.741	40.113	46.963
28	37.916	41.337	48.278
29	39.087	42.557	49.588
30	40.256	43.773	50.892

Example of how to use this table: In a chi-square distribution with 6 degrees of freedom (*d.f.*), the area to the right of a critical value of 12.592—i.e., the α area—is 0.05.

Source: Abridged from Table IV of R. A. Fisher and F. Yates, *Statistical Tables for Biological, Agricultural, and Medical Research*, published by Longman Group, Ltd., London (previously published by Oliver & Boyd, Ltd., Edinburgh). Reproduced with the permission of the publishers.

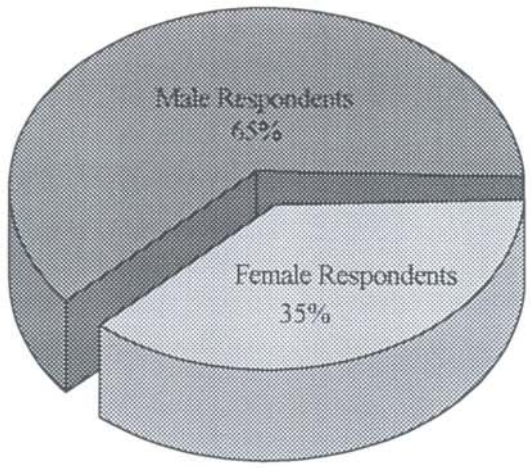
Figure 6-2
Chi-Square Distribution

6.3 Profiles of Respondents

Before examining the data and presenting the survey results, the general profile of the respondents and a summary of details of the properties surveyed are outlined below. The central objective, as set forth in Chapter One, was to investigate the housing preferences of owner-occupiers. The demographic and socio-economic characteristics and the personal predisposition of all the 180 owner-occupiers are of great importance in the empirical investigation of their housing preferences. By first understanding the profile of the respondents, a clearer picture can be obtained from the outcome of the data analysis that follows. A summary of the general profile of respondents is as follows:

(i) Respondent Profile: Sex

65% of the respondents were males and 35% females.
National Figures: Head of Households: Male 65.6 % , Female 34.4 %
(Toh and Tay, 1990: 4)

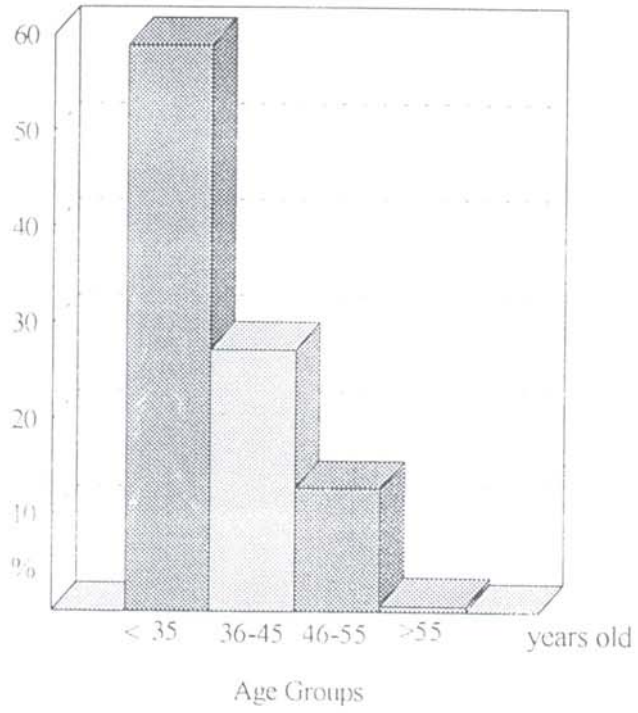


National Figures: Head of Households: Male 65.6 % , Female 34.4 %
Respondent Profile: Sex
Figure 6-3

The ratio of male to female respondents corresponds very well with that of the national figures as shown in Figure 6-3 above. This undoubtedly is a clear sign of a good sampling exercise.

(ii) Respondent Profile: Age Groups

86.6 % of the respondents were under the age of 45 years old.
National Figures : Head of Households : 58.6 % (Toh and Tay,1990:4). This figure is for both private and public housing.

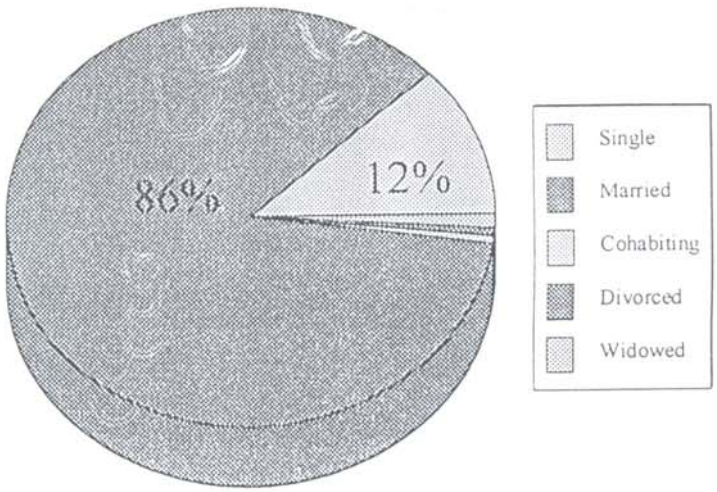


Respondent Profile: Age Groups
Figure 6-4

Figure 6-4 shows that 86.6 per cent of the respondents were below the age of 45 years. This is a reflection of the fact that owner-occupiers of private housing generally consist of young and middle aged professionals and business persons who are much better educated than their parents and who are more likely to earn higher incomes necessary to enter an expensive market. Older people, in general, have a poorer economic background and are less likely to be property owners. However, the situation might change in 20 years when the young professionals are much older; and property prices are so high that new entrants are discouraged from entering the market.

(iii) Respondent Profile: Marital Status

86.1 % of the respondents were married and 12% were single.

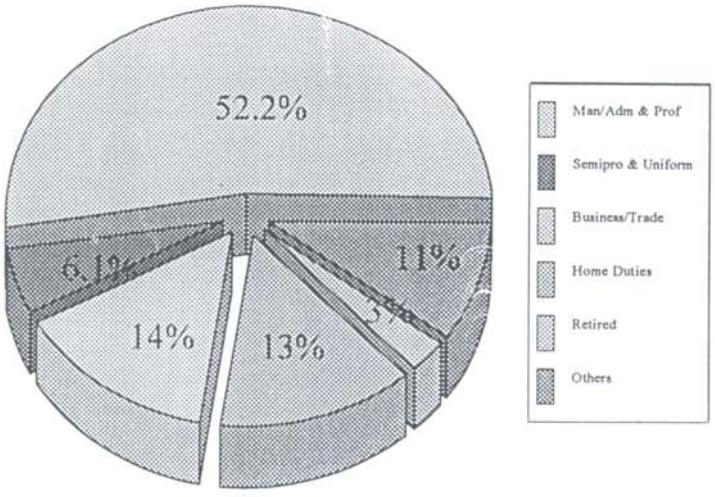


Respondent Profile: Marital Status
Figure 6-5

Figure 6-5 shows that the majority of the respondents were married. This is predictable as most respondents were heads of household, although single persons would also be heads of household.

(iv) Respondent Profile: Employment

In the survey conducted for this study, about 52 per cent of the respondents were holding managerial, administrative and professional positions, 14 per cent were in business and 6.1 per cent were in semi-professional positions. These three groups were classified as professional, administrative, managerial and technical workers in the survey of households and housing in Singapore. In this survey the three groups account for 72.6 per cent of the total respondents. At the national level, Toh and Tay (1990:16) reported that the corresponding figure is 72.8 per cent of the heads of households of private housing (landed properties, condominiums and private housing). Clearly, the two figures are almost identical though there was a time lag of about five years (1994 and 1990) between the two surveys. For HDB housing, only 23 per cent of the households are in these categories of employment in 1990. Very obviously, the figures indicate that owner-occupiers of private housing belong to the middle-income group of earners. The national survey also showed strong preferences for condominiums and private flats (75.6 per cent).



Respondent Profile: Employment
Figure 6-6

Other demographic and socio-economic profiles of respondents are as follows:

(i) Almost 61 per cent were working in the private sector while 23.3 per cent were in the public sector.

(ii) Most homes (89 per cent) have a household size of between 2 to 6 persons. This corresponds very well with the national figures of 86 per cent for landed properties and 77 per cent for condominiums and private flats.

(iii) Most homes (74 per cent) have at least one child.

(iv) Most homes (88 per cent) have at least two adults living together.

(v) Only 24.4 per cent of the respondents' homes had at least one old person living with them.

(vi) About 4 per cent and 41 per cent of the respondents were living in HUDC or HDB flats respectively prior to upgrading to private homes.

(vii) Most of the respondents (80 per cent) were owner-occupiers prior to staying in their present homes.

(viii) About 30 per cent of the respondents/their family members worked in CBD areas while about 18 per cent worked within their own neighbourhood.

(ix) Almost 64 per cent of the respondents owned at least one car at home. The national figures are 62 per cent for those living in landed properties and 41 per cent for condominiums respectively (Toh and Tay, 1990:96).

(x) Slightly over half of the respondents' families were dual income earners while only 27.8 per cent were of single income. The national average for private housing is 49 per cent - dual income earners (Toh and Tay,1990:80). Again these figures are very close to each other.

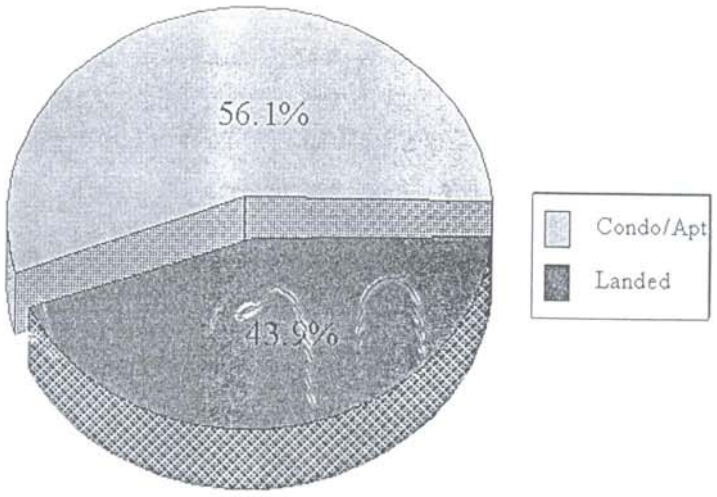
(xi) Almost 56 per cent of the respondents had total household income of between S$48,000 to S$100,000 per annum.

(xii) Male respondents account for 65 per cent of the total number of respondents. Nevertheless, it should be noted that in the survey, respondents were requested to discuss their preferences with their spouse or partner or co-owner when stating their housing preferences.

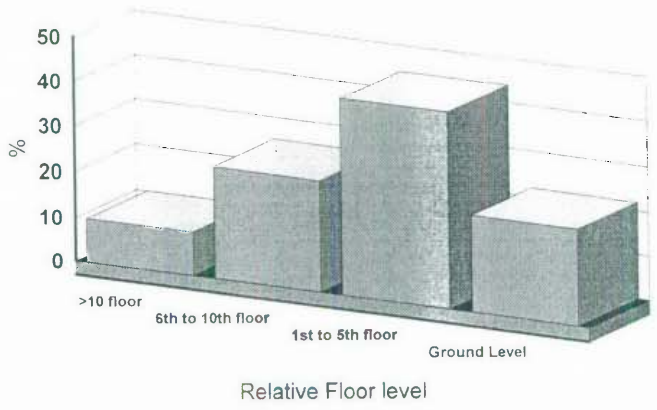
From the profile of respondents presented above, the average respondents in this survey can be regarded as reasonably wealthy, upwardly mobile, and belonging to a growing proportion of Singapore's population. Their opinions are particularly valuable to policy-makers and real estate developers because they inevitably represent the way of the future.

6.4 PROFILE OF PROPERTIES SURVEYED

A total of 180 homes were surveyed. These were made up of 101 units (56.1 per cent) of condominiums/private apartments and 79 units (43.9 per cent) of landed properties. These figures are fairly representative of the national figures as at fourth quarter 1992, i.e. 32.7 per cent for landed properties and 67.3 per cent for condominiums/private apartments (Singapore Real Estate Statistics Quarterly, Fourth Quarter 1992). Of the condominium and apartments, about 22 per cent of the units were at ground level, 44 per cent were from first to fifth floor, and 25 per cent from 11th to 20th floor. This reflects the local design for such housing as the maximum height seldom exceeds 20 floors. Slightly over half of the homes surveyed had floor areas ranging from 1,201 sq. ft to 2,000 sq. ft. About 31 per cent had a floor area of between 2,001 to 3,000 sq. ft. Only 5.7 per cent of the units had a floor area of below 1,200 sq. ft.



Profile of residential properties: Categories of houses surveyed
Figure 6-7



Relative floor level of condominiums/apartments surveyed

Figure 6-8

The average number of years spent by the respondents in their homes is 7.3. About 27 per cent of the respondents had stayed in their present home for periods ranging from 6 to 8 years. This means that they had moved into their home between the years 1986 to 1988. These were years when the property prices were at their lowest.

In terms of tenure, 87.6 per cent of the units are of freehold or 999-year leasehold titles, and the remainder were 99-year or less leasehold titles. The period 1985 to 1991 seems to have been the most popular one for the purchase of residential properties. Most of the dwellings cost between S$200,000 to S$800,000, accounting for over 70 per cent of the units surveyed. However, it should be noted that prices of dwellings have since then increased substantially and so the cost figures are historical rather than current and so are of less significant.

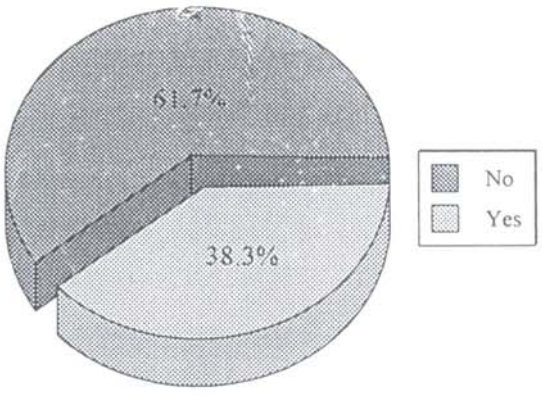
The next section highlights the three important issues which involve owner occupiers' housing decisions.

6.5 Housing Decisions

This section discusses three issues which involve owner occupiers' housing mobility, their perception of 99-year leasehold housing and their willingness to downgrade to public housing.

6.5.1 Intention to move from the current dwelling

Only 38.3 per cent of all the respondents surveyed indicated their intention to move from their existing dwellings. Of these, 37.8 per cent would consider moving within one or two years, while 32.8 per cent would move between 3 to 5 years and the remaining 29.3 per cent would do so only after 5 years. This result is surprisingly consistent with the nationwide survey conducted by the Marketing Services and Research Division of the Singapore Press Holding (The Straits Times, 28th November 1995). In the 1995 survey, it was revealed that while 92 per cent of Singaporeans already owned a flat or house, 38 per cent wanted to upgrade in the next five years.



Intention to move
Figure 6-9

From the figures it can be deduced that about 15 per cent of all respondents can be expected to move within two years and 27 per cent within five years. The Singaporean householders, especially the younger ones in their 30s and 40s, are very

much on the look-out for opportunities to upgrade. Of course, the upgrading instinct is a natural result of rising expectations with progress and the accompanying purchasing power as discussed in Chapter Three. However, older people often downsize to something more manageable after the children leave home. In any case, the constant quest for better housing will place great pressure on government, bureaucracy, and the building industry to supply what residents are looking for. This aspect of the study will be further discussed in the next chapter.

6.5.2 Willingness to invest in 99-year leasehold properties

Generally, the vast majority (82.4 per cent) of those surveyed earlier by the property consultant company, Knight Frank, stated their preference for apartments with freehold title, with only 5 per cent having no objection to owning leasehold titles. However, owner-occupiers with lower budgets are less concerned with the type of title (Knight Frank Cheong Hock Chye and Baillieu,1987:15). This agrees with the long-standing idea of 'sequential packing' in which high income earners have first choice in the housing market, while progressively lower earners have progressively less choice. At the bottom end, owner-occupiers have little housing choice and are therefore likely to be relatively indifferent to title questions. Merely owning a property is the pre-eminent goal. On the other hand, as expected, the ultra-wealthy rank freehold tenure very highly.

Data obtained in this study reveals that about 46 per cent of those who intend to move out indicated that they are likely to consider buying 99-year leasehold properties, though the levels of willingness vary. Over 50 per cent of those who intend to move are not likely to buy 99-year leasehold properties. These figures are in tandem with those obtained by Lim (1995:69) whose survey on selection criteria for condominium housing revealed that 56.7 per cent of the respondents indicated that 99-year leasehold properties were acceptable, while 42.3 per cent indicated otherwise. However, it is vital to note that her survey covered only one condominiums. Nevertheless, 99-year leasehold tenured properties are still not as popular among owner-occupiers as freehold properties. With time though, and with an increased supply on the market of

99-year leasehold private housing units, it is expected that there will be an increasing level of acceptance for such properties. As for 99-year leasehold properties with less than 75 years of lease remaining, the survey in this study revealed that only 11.6 per cent of the respondents indicated their likelihood to purchase such properties. The remaining 88.4 per cent were not likely to invest in such properties.

6.53 Willingness to downgrade

From the data received, it was found that only 44.1 per cent of those who contemplated moving out of their private housing indicated their likelihood of purchasing the improved HDB flats from the resale market. The other 55.9 per cent had no intention of doing so. The overall effect on demand for resale HDB flats from this group of owner-occupiers can be considered small. This aspect of owner-occupiers' housing decision is further discussed in Chapter Seven.

6.6 Investment Preferences [Question 16]

When it comes to investment, property is the obvious choice among the owner-occupiers. Out of the 170 respondents who responded to question no. 16, a ranking question listing six main areas of investment in Singapore, 119 respondents or (70 per cent) of the respondents voted investment in real estate property as the first choice and in the stock market as the second (15 per cent). The traditional way of saving by opening a fixed deposit account came in third (11 per cent). Others, such as investment in the futures market, golf clubs and foreign currencies, were low in their priority listing. But it appears that the property and stock market are closely related. As an example, the government's announcement of immediate measures to curb property speculation led property stocks to plunge on the 15th June 1996 soon after the measures took effect.

6.7 Hypothesis Testing

> In the last analysis, the testing of the null hypothesis merely confirms or denies the deeper presence of "something" that is working within the data. It is this all-important something that the genuine researcher seeks to identify and evaluate. To stop with a mere indication that "something" is there which accounts for a significant difference between one set of data and another set of data is to settle for a ghost, and research is not a systematic quest for ghosts. It is a systematic search for Truth (Leedy,1980:161).

Four sets of hypotheses as shown in Tables 6-1 to 6-4, were tested. Except for the following null hypotheses, the Chi Square test supports all the other null hypotheses, signifying a lack of significant relationship in those cases. The following null hypotheses are rejected: That there is no significant relationship between:

(i) the age group of the owner-occupiers and the importance being placed on the type of neighbours (Table 6-1:item 10.6).

(ii) the age group of the owner-occupiers and the importance being placed on the view and scenery (Table 6-2:item 10.80).

(iii) the categories of owner-occupiers and the importance being placed on Geomancy (Table 6-2:item 10.17).

(iv) the categories of owner-occupiers and the importance being placed on the likelihood of flooding (Table 6-3:item 10.18).

(v) the categories of owner-occupiers and the importance being placed on the internal layout of the dwelling unit (Table 6-3: item 10.20).

(vi) the categories of owner-occupiers and the importance being placed on the availability of recreational facilities (Table 6-3: item 10.1).

(vii) the age group of the owner-occupiers and the importance being placed on availability of recreational facilities (Table 6-3: item 10.1).

(viii) the number of children the owner-occupiers had and the importance being placed on availability of recreational facilities (Table 6-3: item 10.1).

(ix) the categories of owner-occupiers and the importance being placed on the age of the dwelling unit (Table 6-3: item 10.28).

(x) the age group of the owner-occupiers and the level of housing satisfaction (Table 6-4: item Q18).

Each of the above will now be discussed in greater depth so as to obtain a clearer picture of the results.

Table 6-1

Hypothesis Testing (Social, Security, Financial)

s/no	Attributes	Null Hypotheses: There is no significant relationship between:		Chi Square Value	Chi Square Table		Accept Null Hypothesis ?
					Value	DF	
10.2	Social	prestige	income group.	0.68	5.99	2	Yes
		prestige	age group.	2.9	5.99	2	Yes
		prestige	categories of owner-occupiers.	1.23	5.99	2	Yes
10.3	Social	trend & fashion	age group.	0.61	5.99	2	Yes
		trend & fashion	categories of owner-occupiers.	1.18	5.99	2	Yes
10.4	Social	lifestyle	age group.	5.68	9.49	4	Yes
		lifestyle	categories of owner-occupiers	1.32	5.99	2	Yes
10.6	Social	neighbour	age group.	10.14	5.99	2	No
			categories of owner-occupiers.	0.79	5.99	2	Yes
			profession.	4.09	5.99	2	Yes
10.7	Social	close relatives	age group.	1.81	9.49	4	Yes
			nos. of children	5.94	9.49	4	Yes
10.11	Social	traffic condition	number of cars in the household.	0.18	3.84	1	Yes
10.27	Social	privacy	categories of owner-occupiers	0.46	3.84	1	Yes
10.50	Security	security	age group.	4.56	9.49	4	Yes
		security	categories of owner-occupiers.	1.11	5.99	2	Yes
		security	nos. of children.	4.07	9.49	4	Yes
10.29	Financial	rental values	categories of owner-occupiers.	3.37	5.99	2	Yes
10.30	Financial	price	age group.	22.11	11.07	5	No
			profession.	8.62	11.07	5	Yes

Two main Categories of Owner-occupiers are: Landed Housing and Condominium/Apartment
DF: Degree of Freedom

Table 6-2
Hypothesis Testing (Environmental)

s/no	Attributes	Null Hypotheses		Chi Square Value	Chi Square Table		Accept Null Hypothesis?
		There is no significant relationship between:			Value	DF	
10.8	Environment	view and scenery	categories of owner-occupiers.	3.23	5.99	2	Yes
			age group.	8.36	5.99	2	No
10.9	Environment	nearby buildings	categories of owner-occupiers.	3.47	5.99	2	Yes
			age group.	5.59	9.49	4	Yes
10.1	Environment	HDB estates	categories of owner-occupiers.	1.06	5.99	2	Yes
10.12	Environment	air quality	categories of owner-occupiers.	0.29	3.84	1	Yes
			floor level.	0.11	3.84	1	Yes
10.13	Environment	noise	categories of owner-occupiers.	0.1	3.84	1	Yes
			floor level.	0.09	3.84	1	Yes
10.14	Environment	daylight	categories of owner-occupiers.	0.22	3.84	1	Yes
10.15	Environment	ventilation	categories of owner-occupiers.	0.72	3.84	1	Yes
			floor level.	0.02	3.84	1	Yes
10.16	Environment	orientation	categories of owner-occupiers.	0.03	5.99	2	Yes
			age group.	4.46	5.99	2	Yes
			gender.	2.28	5.99	2	Yes
10.17	Environment	geomancy	categories of owner-occupiers.	7.75	5.99	2	No
			age group.	8.4	9.49	4	Yes

Two main Categories of Owner-occupiers are: Landed Housing and Condominium/Apartment
DF: Degree of Freedom

Table 6-3

Hypothesis Tes ing : Housing Preferences
(Locatio ı, Design, Facilities)

s/no	Attributes	Null Hypotheses		Chi Square Value	Chi Square Table		Accept Null Hypothesis ?
		There is no signif cant relationship betw :en:			Value	DF	
10.18	Location	flooding	categor es of owner-occupiers.	8.96	5.99	2	No
10.19	Location	Aedes mosquitoes	categor es of owner-occupiers.	0.87	3.84	1	Yes
10.20	Design	internal layout	categor es of owner-occupiers.	9.63	5.99	2	No
10.21	Design	quality of finishes	categor es of owner-occupiers.	3.87	5.99	2	Yes
10.22	Design	external facade/appear ance/design	categor es of owner-occupiers.	0.92	5.99	2	Yes
10.23	Design	ease of movement	categor es of owner-occupiers.	0.75	5.99	2	Yes
10.24	Design	ease of maintenance	categor es of owner-occupiers.	1.09	5.99	2	Yes
10.1	Facilities	recreational facilities	categor es of owner-occupiers.	13.89	5.99	2	No
		recreational facilities	age gro ıp.	11.54	9.49	4	No
		recreational facilities	numbei of children.	11.59	9.49	4	No
10.25	Facilities	parking space	categor es of owner-occupiers,	0.52	3.84	1	Yes
			numbei of cars in the household.	0.36	3.84	1	Yes
10.26	Structure	structural consideration	categor es of owner-occupiers.	1.25	3.84	1	Yes
10.28	Structure	age of the house	categor es of owner-occupiers.	8.5	5.99	2	No

Two main Categories of Owner-occupie s are: Landed Housing and Condominium/Apartment
DF: Degree of Freedom

Table 6-4

Hypothesis Testing :
Neigbourhood / Housing Satisfaction
& Personal Situation Factors

Question no	Null Hypotheses: There is no significant relationship between:		Chi Square Value	Chi Square Table		Accept Null Hypothesis?
				Value	DF	
Q2	neighbourhood satisfaction	categories of owner-occupiers.	1.67	5.99	2	Yes
Q18		age group	2.26	5.99	2	Yes
Q17		gender.	0	5.99	2	Yes
Q20a		employment.	1.65	5.99	2	Yes
Q23		places of employment of family members.	3.18	12.59	6	Yes
Q26		income group.	2.16	5.99	2	Yes
Q2	housing satisfaction	categories of owner-occupiers.	0.24	3.84	1	Yes
Q18		age group	7.9	5.99	2	No
Q17		gender.	0	3.84	1	Yes
Q20a		employment.	1.1	3.84	1	Yes
Q23		places of employment of family members.	3.17	7.82	3	Yes
Q26		income group.	0.46	3.84	1	Yes

Two main Categories of Owner-occupiers are: Landed Housing and Condominium/Apartment
DF: Degree of Freedom

(i) Age Group vs Neighbours

Improving the quality of neighbourhood environmental characteristics will increase residents' concern with the appearance of the neighbourhood along with their concerns about the quality of people who live there, which in turn enhances higher perceived levels of neighbourhood safety (Baba and Austin, 1989:763).

This null hypothesis is rejected:

There is no significant relationship between the age group of the owner-occupiers and the importance being placed on the type of neighbours (see Table 6-1: item10.6).

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		NEIGHBOUR			
	Count / Row Pct / Col Pct / Tot Pct	V. Impt 1	Q Impt 2	Not Impt 3	Row Total
AGE					
under 35	1	38	51	15	104
		36.5	49.0	14.4	59.4
		48.7	73.9	53.6	
		21.7	29.1	8.6	
36 - 45	2	30	10	8	48
		62.5	20.8	16.7	27.4
		38.5	14.5	28.6	
		17.1	5.7	4.6	
46 and over	3	10	8	5	23
		43.5	34.8	21.7	13.1
		12.8	11.6	17.9	
		5.7	4.6	2.9	
	Column Total	78 44.6	69 39.4	28 16.0	175 100.0

Chi-Square	Value	DF	Significance
Pearson	12.393	4	.01465

Minimum Expected Frequency - 3.680
Cells with Expected Frequency < 5 - 1 OF 9 (11.1 per cent)

Chi-Square Distribution value for degree of freedom of 4 : 9.488

Number of Missing Observations: 5

Table 6-5 Cross Tabulation : Age Group and Neighbours

The Chi Square Value of 12.39 is above the critical value of 9.48 for a degree of freedom of 4. As such, the null hypothesis is rejected. From the above table, it can be seen that owner-occupiers in the age group of 35 to 46 years consider the type of neighbour one gets as a very important consideration in their housing preferences. Those above 46 years or under 35 years seem to be less concerned. A reason for this phenomenon could be that people in the age group of 35 to 46 years old are likely to have teenage children. They would not like their children to mix with "bad elements". Furthermore, this is also the age group that is likely to be more educated and sociable. A friendly neighbourhood with helpful neighbours would not only encourage public consciousness in looking after common facilities, but would also enhance the value of the properties. This, they believed, would add pride to the ownership of the dwelling (Toh and Tay,1990:93). Nevertheless, the figures cited suggest that the importance of neighbourliness is not viewed similarly by all age groups. This finding offers a new dimension to previous beliefs that such a factor is important to all age groups.

(ii) Age Group vs View/Scenery

This null hypothesis is rejected:

There is no significant relationship between the age group of the owner-occupiers and the importance being placed on the view and scenery from the dwelling unit (see Table 6-2 : item 10.80).

		VIEW			
	Count / Row Pct / Col Pct / Tot Pct	V. Impt 1	Q Impt 2	Not Impt 3	Total
AGE					
under 35	1	55	41	8	104
		52.9	39.4	7.7	59.1
		67.9	56.9	34.8	
		31.3	23.3	4.5	
36 - 45	2	19	21	8	48
		39.6	43.8	16.7	27.3
		23.5	29.2	34.8	
		10.8	11.9	4.5	
46 and over	3	7	10	7	24
		29.2	41.7	29.2	13.6
		8.6	13.9	30.4	
		4.0	5.7	4.0	
	Column Total	81 46.0	72 40.9	23 13.1	176 100.0

Chi-Square	Value	DF	Significance
Pearson	10.66748	4	.03057

Minimum Expected Frequency - 3.136
Cells with Expected Frequency < 5 - 1 OF 9 (11.1 per cent)
Chi-Square Distribution value for degree of freedom of 4 : 9.488

Number of Missing Observations: 4

Table 6-6 Cross Tabulation: Age Group and View/Scenery

With the rejection of the null hypothesis, a significant relationship appears to exist between the age group of the owner-occupiers and the importance being placed on the view and scenery from the dwelling unit. From the table, it can be seen that those below the age of 45 are more concerned about this aspect than those 46 and above. Of the respondents who said that this aspect is extremely or very important, 67.9 per cent were from the under 35 age group. However, judging from the Chi -square value, the significance is very low. It was found in a survey conducted in 1987 by property consultancy firm Knight Frank Cheong Hock Chye and Ballieu that house hunters in the higher budget group place stronger emphasis on the availability of a commanding view over the surroundings, and this can be associated with the greater degree of importance they place upon the need for tranquillity and privacy.

(iii) Geomancy vs Categories of Owner-occupiers

To be in the right place facing the right direction doing the right thing at the right time is, then, a cross between being practically efficient and being ritually correct. It is being in tune with the Universe (Stephan Feuchtwang in Stephen Skinner, 1982).

This null hypothesis is rejected:

There is no significant relationship between the categories of owner-occupiers and the importance being placed on geomancy (see Table 6-2 : item 10.17).

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		DWELLING UNIT		
	Count / Row Pct / Col Pct / Tot Pct	Condo pte	Landed ppty	Row Total
		1	2	
Geomancy				
1 Very Important		29	10	39
		74.4	25.6	25.0
		32.6	14.9	
		18.6	6.4	
2 Quite Important		19	24	43
		44.2	55.8	27.6
		21.3	35.8	
		12.2	15.4	
3 Not Important		41	33	74
		55.4	44.6	47.4
		46.1	49.3	
		26.3	21.2	
Column Total		89	67	156
		57.1	42.9	100.0

Chi-Square	Value	DF	Significance
Pearson	7.75433	2	.02071

Minimum Expected Frequency - 16.750

Number of Missing Observations: 24

Chi-Square Distribution value for degree of freedom of 2 : 5.991

Table 6-7 Cross Tabulation : Geomancy vs Categories of Owner-occupiers

Fengshui or geomancy is the art of living in harmony with the land and deriving the greatest benefit, peace and prosperity from being in the right place at the right time (Skinner,1982). The ancient Chinese believed that success and failure in life are attributable more to the workings of environmental forces than to human action. The workings of these environmental forces are commonly known as *Fengshui* which translated, literally means *"wind" and "water"* (Ong,1990). Geomancy has to do with the subtle relation between man and his natural surroundings.

Nigel (1979) defined geomancy as the science of putting human habitats and activities into harmony with the visible and invisible world around us. His view is that in geomancy, the world is conceived as a continuum in which all acts, natural and supernatural, conscious and unconscious, are linked in a subtle manner, one with the next. In this world view, the incorrect performance of an act, such as misorientating a building, is not merely doomed to fail in achieving its desired objective, but will also bring unforeseen and uncontrollable consequences. Conversely, if the correct manner is applied at the right place and time, the procedures will reflect not only what had gone before, but also what was about to happen.

In the local custom, developers and real estates agents feel that Fengshui is relevant in property development. They believe that Fengshui is one of the important factors that must be considered when embarking on a project, as it affects the success and salebility of their products. However, some western trained valuers, especially those who are young and English-educated, do not think that *Fengshui* is an important factor in determining the market value of properties. These valuers are generally less willing to account for Fengshui in their valuations, because they feel that this factor is highly subjective and difficult to justify (Ong,1990:16).

From the data obtained it is obvious that owner-occupiers of condominiums and private apartments are more concerned with geomancy than those occupying landed properties. About 33 per cent of the former group rated geomancy as extremely or very important, compared to only 14.9 per cent for those from the landed properties.

(iv) Flooding vs Categories of Owner-occupiers

In Singapore almost 242 ha of low-lying land across the whole island will still flood occasionally... because some areas are low-lying and thus vulnerable when heavy rains coincide with high tides, it is unrealistic to expect a totally flood-free Singapore (Nathan,1995b : 25).

This null hypothesis is rejected:

There is no significant relationship between the categories of owner-occupiers and the importance being placed on the likelihood of flooding (see Table 6-3: item 10.18).

		DWELLING UNIT		
	Count / Row Pct / Col Pct / Tot Pct	Condo pte (1)	Landed ppty (2)	Row Total
FLOOD				
1 Very Important		54	54	108
		50.0	50.0	69.7
		60.7	81.8	
		34.8	34.8	
2 Quite Important		21	5	26
		80.8	19.2	16.8
		23.6	7.6	
		13.5	3.2	
3 Not Important		14	7	21
		66.7	33.3	13.5
		15.7	10.6	
		9.0	4.5	
Column Total		89	66	155
		57.4	42.6	100.0

Chi-Square	Value	DF	Significance
Pearson	8.96396	2	.01131

Minimum Expected Frequency - 8.942
Chi-Square Distribution value for degree of freedom of 2 : 5.991

Number of Missing Observations: 25

Table 6-8 Cross Tabulation : Flooding vs Categories of Owner-occupiers

Notwithstanding the above fact, owner-occupiers, especially those of landed properties, are still apprehensive of this aspect in their housing preferences. This can be discerned from the rejection of null hypothesis signifying that there is significant relationship between the importance being placed on the possibility of flooding and the types of owner-occupiers. About 82 per cent of those who lived in landed properties were very concerned with the likelihood of flooding, as compared to only 61 per cent for those living in condominiums. This is understandable as condominiums and private apartments are usually high-rise in nature and thus are not so much affected by the incidence of flooding.

(v) Internal Layout vs Categories of Owner-occupiers

The home *internal layout or interiors* (words in italics are author's own addition) is the setting for the development and maintenance of a variety of interpersonal relationships. As such, it provides an ideal setting in which to contemplate temporal and physical factors that are important in the formation and progress of relationship (Werner,1987:169).

This null hypothesis is rejected:

There is no significant relationship between the categories of owner-occupiers and the importance being placed on the internal layout of the dwelling unit (see Table 6-3: item 10.20).

		DWELLING UNIT		
	Count / Row Pct / Col Pct / Tot Pct	Condo / pte	Landed ppty Row 2	Total
LAYOUT				
1 Very Important		6	31	97
		68.	32.0	59.1
		68.	45.6	
		40.	18.9	
2 Quite Important		2	29	55
		47.	52.7	33.5
		27.	42.6	
		15.	17.7	
3 Not Important			8	12
		33.	66.7	7.3
		4.	11.8	
		2.	4.9	
Column Total		9 58.	68 41.5	164 100.0

Chi-Square	Value	DF	Significance
Pearson	9.62594	2	.00812

Minimum Expected Frequenc - 4.976
Cells with Expected Frequency < 5 - 1 OF 6 (16.7 per cent)
Chi-Square Distribution value for degree of freedom of 2 : 5.991

Number of Missing Observations: 16

Table 6-9 Cross Tabulation : Internal Layout vs Categories of Owner-occupiers

It is interesting to note that 69 per cent of the owner-occupiers living in condominiums considered the internal layout of their home as a very important aspect of their housing preferences as compared to only 47 per cent in landed properties. This could be explained by the fact that as their dwellings are smaller in area, these owner-occupiers are particular in their choice of layout. In landed housing, the layouts are usually rather standardised and lack the variety of condominium housing. The latter come in an almost infinite variety of shapes and sizes. Internal layout of

the apartment was found to be one of the five main factors influencing the choice of an apartment by respondents in a survey conducted by Knight Frank Cheong Hock Chye and Ballieu in 1987. The others are the number of bedrooms, good view, floor area and floor level. A well conceived and efficient internal layout will ensure that the various rooms have good juxtaposition with each other to maintain privacy and to achieve convenience in movement.

It is observed that studies pertaining to this aspect of housing are quite common in Western countries but not in Asian countries. For example, Sadalla and Oxley (1984) conducted three studies in Arizona to explore the relationship between the shape and the perceived size of rectangular and square rooms. They concluded that a substantial illusion can be produced by rectangularity. In other words, more rectangular rooms consistently were estimated as larger than less rectangular rooms of equal size, and this effect was independent of the viewing position of the observer.

Other researchers who have done studies on such issues include Holmberg and Holmberg (1969), Garling (1970) and Smith (1969). All of these researchers were concerned in some ways with the shapes, layout and sizes of the physical space and the effect it has on the perception of the occupants. Researchers like Holmberg and Holmberg (1969) and Garling (1970) conducted experimental work on the perception by human subjects on rectangular rooms while Smith (1969) studied the effects of figured shape on the perception of area. The outcome of these studies was influenced not only by the physical shapes and sizes of the rooms to which subjects were exposed, but also by the psychological cognition of the subjects.

(vi) Recreational Facilities vs Categories of Owner-occupiers

This null hypothesis is rejected:

There is no significant relationship between the categories of owner-occupiers and the importance being placed on the availability of recreational facilities (see Table 6-3: item 10.1).

		DWELLING UNIT		
	Count / Row Pct / Col Pct / Tot Pct	Condo / Landed Property		Row Total
		1	2	
Facilities				
1 Very Important		27	9	36
		75.0	25.0	20.2
		26.7	11.7	
		15.2	5.1	
2 Quite Important		41	22	63
		65.1	34.9	35.4
		40.6	28.6	
		23.0	12.4	
3 Not Imp and don't know		33	46	79
		41.8	58.2	44.4
		32.7	59.7	
		18.5	25.8	
Column Total		101	77	178
		56.7	43.3	100.0

Chi-Square	Value	DF	Significance
Pearson	13.88588	2	.00097

Minimum Expected Frequency - 15.573

Chi-Square Distribution value for degree of freedom of 2 : 5.991

Number of Missing Observations: 2

Table 6-10 Cross Tabulation: Recreational Facilities vs Categories of Owner-occupiers

As expected, owner-occupiers living in condominiums are very much more concerned about the availability of recreational facilities in their estates as compared to those living in landed properties. This study shows that 26.7 per cent of the former indicated that such availability is very/extremely important, compared to only 11.7 per cent from those living in landed housing. About 60 per cent of those who lived in landed housing felt that such facilities are not important at all. This is obvious as landed housing usually does not have such facilities within the housing precinct, short of a playground for children and perhaps some forms of exercise areas. This clearly indicates that the expectations for such facilities of owner-occupiers of landed housing are different from those of condominium housing.

(vii) Recreational Facilities vs Age group of owner-occupiers

This null hypothesis is rejected:

There is no significant relationship between the age group of the owner-occupiers and the importance being placed on availability of recreational facilities (see Table 6-3: item 10.1).

Facilities	AGE: under 35	AGE: 36 _ 45	AGE: 46 and over	Row Total
1 Very Important	2	10	1	36
	69.	27.8	2.8	20.3
	23.	20.8	4.2	
	14.	5.6	.6	
2 Quite Important	4	18	5	63
	63.	28.6	7.9	35.6
	38.	37.5	20.8	
	22.	10.2	2.8	
3 Not Impt and don't know	4	20	18	78
	51.	25.6	23.1	44.1
	38.	41.7	75.0	
	22.	11.3	10.2	
Column Total	10	48	24	177
	59.	27.1	13.6	100.0

Chi-Square	Value	DF	Significance
Pearson	11.4008	4	.02112

Minimum Expected Frequency - 4.881
Cells with Expected Frequency < 5 - 1 OF 9 (11.1 per cent)
Chi-Square Distribution value for degree of freedom of 4 : 9.488

Number of Missing Observations: 3

Table 6 - 11 Cross Tabulation: Recreational Facilities vs Age group of owner-occupiers

From the table it appears that there is a significant relationship between the age group of the owner-occupiers and the importance being placed on availability of recreational facilities. Younger owner-occupiers under the age of 35 years seem more concerned with this aspect of their housing preferences compared to older owner-occupiers. Of all those who indicated such availability as very/extremely important, nearly 70 per cent came from this age group. Within this age group, only 22.4 per cent said that such availability is not important. As for the older age groups, only 4.2 per cent felt that such facilities are very/extremely important.

(viii) Recreational Facilities vs Number of Children of owner-occupiers

This null hypothesis is rejected:

There is no significant relationship between the number of children the owner-occupiers have and the importance placed on availability of recreational facilities (see Table 6-3: item 10.1).

		Facilities			
	Count / Row Pct / Col Pct / Tot Pct	V. Impt	Q. Impt	Not Impt	Row Total
		1	2	3	
No. of Children					
1		6	27	32	65
< 1 child		9.2	41.5	49.2	36.7
		16.7	42.9	41.0	
		3.4	15.3	18.1	
2		14	20	31	65
2 children		21.5	30.8	47.7	36.7
		38.9	31.7	39.7	
		7.9	11.3	17.5	
3		16	16	15	47
>= 3 children		34.0	34.0	31.9	26.6
		44.4	25.4	19.2	
		9.0	9.0	8.5	
Column Total		36	63	78	177
		20.3	35.6	44.1	100.0

Chi-Square	Value	DF	Significance
Pearson	11.5322	4	.02065

Minimum Expected Frequency - 9.55
Chi-Square Distribution value for degree of freedom of 4 : 9.488

Number of Missing Observations: 3

Table 6 -12 Cross Tabulation: Recreational Facilities vs Number of children of owner-occupier

Owner-occupiers with three or more children are more particular about the availability of recreational facilities than those with less than 3 children. The Chi Square analysis rejected the null hypothesis that no such significant relationship exists. However, from the table, it can be seen that 34 per cent of the owner-occupiers in this group indicated that the availability of recreational facilities is very/extremely important. For those without any children, only 9.2 per cent indicated similarly.

With the government's emphasis on families having more children, the implication is clear that such facilities will increasingly be more important in the planning of condominiums or even public housing.

(ix) Age of the Dwelling vs Categories of Owner-occupiers

This null hypothesis is rejected:

There is no significant relationship between the categories of owner-occupiers and the importance being placed on the age of the dwelling (see Table 6-3: item 10.28).

		DWELLING UNIT	
Count / Row Pct / Col Pct / Tot Pct		Condo / Landed ppty	Row
HSE_AGE		1	2	Total
1		46	23	69
Very Important		66.7	33.3	39.9
		46.5	31.1	
		26.6	13.3	
2		42	31	73
Quite Important		57.5	42.5	42.2
		42.4	41.9	
		24.3	17.9	
3		11	20	31
Not Important		35.5	64.5	17.9
		11.1	27.0	
		6.4	11.6	
Column Total		99 / 57.2	74 / 42.8	173 / 100.0

Chi-Square	Value	DF	Significance
Pearson	8.50193	2	.01425

Chi-Square Distribution value for degree of freedom of 2 : 5.991
Minimum Expected Frequency - 13.250

Number of Missing Observations: 7

Table 6 -13 Cross Tabulation: Age of Dwelling vs Categories of Owner-occupiers

This study was partly conducted to determine whether relationships exist between categories of owner-occupiers and housing preferences in terms of age of the dwelling. Interestingly, the result of the analysis shows that owner-occupiers of condominiums are more concerned with the age of their home as compared to owner-occupiers of landed housing. As shown in Table 6-13, 46.5 per cent of them indicated in the survey that age is a very important or extremely important aspect of their housing preferences. This group of owner-occupiers made up 66.7 per cent of all those who indicated thus. For those from the landed housing, 27.0 per cent felt that age of the house is not important. For condominium owner-occupiers, the figure is 11 per cent. Such a finding indicates that because of the continuous supply of condominiums reaching the market, home buyers are given greater choice and thus most would prefer the newer developments.

(x) Housing Satisfaction vs Age Group of owner-occupiers

This null hypothesis is rejected:

There is no significant relationship between the age group of the owner-occupiers and the level of housing satisfaction (see Table 6-4: item Q18).

AGE_	Count / Row Pct / Col Pct / Tot Pct	SATLEV_R: Very satisfy (1)	Quite and not real (2)	Row Total
under 35	1	76	30	106
		71.7	28.3	59.6
		64.4	50.0	
		42.7	16.9	
36 _ 45	2	32	16	48
		66.7	33.3	27.0
		27.1	26.7	
		18.0	9.0	
46 and over	3	10	14	24
		41.7	58.3	13.5
		8.5	23.3	
		5.6	7.9	
Column Total		118	60	178
		66.3	33.7	100.0

Chi-Square	Value	DF	Significance
Pearson	7.90241	2	.01923

Minimum Expected Frequency - 8.090
Chi-Square Distribution value for degree of freedom of 2 : 5.991

Number of Missing Observations: 2

Table 6 -14 Cross Tabulation : Housing Satisfaction vs Age group of owner-occupiers

When it comes to housing satisfaction, the Chi Square test rejects the null hypothesis. The Chi Square test gives a Pearson Chi Square value of 7.9 as against the Chi Square Table value of 5.99 for a degree of freedom of 2. It appears that there is a relationship, albeit a very marginal one, between housing satisfaction levels and the age group of the owner-occupiers. Table 6-14 shows that 71.7 per cent of the owner-occupiers below the age of 35 were extremely or very satisfied with their dwelling unit as compared to only 41.7 per cent for those above 46 years. No significant relationship, however, exists between housing satisfaction and the categories of owner-occupiers.

(xi) Housing Satisfaction vs Gender of owner-occupiers

The survey carried out in this thesis was based on the opinion of the legal owner of the home and that the respondent may confer with the joint owner or owners before answering the questions in the survey. About 86 per cent of the respondents were married. Single owner occupiers account for about 12 per cent. It is therefore, very likely that most of the opinions expressed are that of the joint owners rather than from any individual. Nevertheless, as far as gender is concerned, it was found that male respondents are slightly more satisfied with their housing than female respondents. However, the percentage of male respondents indicating that they are very satisfied with their housing is around 7 per cent higher than that of the former. As such, no concrete conclusion can be drawn from the results. In addition, female respondents constitute only 35 per cent of the total respondents.

6.8 Neighbourhood Satisfaction

Housing and neighbourhood satisfaction have been subjects of academic examination especially in the West (Galster, 1987). A perceptual measure of the neighbourhood could be in the form of the percentage of persons expressing overall satisfaction with their neighbourhood, and their personal assessment of neighbourhood attributes such as convenience, upkeep of housing, types of neighbours and safety (Hempel and Tucker,1979). From Table 6-13 it can be deduced that owner-occupiers are in general more satisfied with their houses than with the neighbourhood they are in. About 66 per cent of them were extremely or very satisfied with their homes, compared to only 14.5 per cent who said the same thing about their neighbourhood. Three possible reasons can be deduced:

(i) Owner-occupiers are more concerned about their immediate dwelling units than they are about their neighbourhood.

(ii) Owner-occupiers are house-proud and thus would consider their home first and the neighbourhood second.

(iii) Neighbourhood satisfaction is more abstract a term to the owner-occupiers than the idea of housing satisfaction.

Almost 68 per cent of owner-occupiers of condominiums were found to be extremely/very satisfied with their houses compared to almost 65 per cent for those who own landed properties. As for neighbourhood satisfaction, the corresponding figures are 14.0 per cent and 16.5 per cent respectively.

Owner-occupiers of :	Percentage of owner-occupiers who are extremely/very satisfied with their:	
	Housing	Neighbourhood
Condominiums	68.0	14
Landed Housing	64.6	16.5

Table 6 -15 Housing and Neighbourhood Satisfaction

These figures are very similar and no significant relationship was found between housing or neighbourhood satisfaction and the type of owner-occupiers. It was also found that there is no significant relationship between housing or neighbourhood satisfaction and the employment status, place of work and income of respondents.

6.9 Perception of the Dwelling Unit and Neighbourhood

(This section is based on the responses of the owner-occupiers to the open ended questions 7a, 7b , 9a and 9b of the survey questionnaires.)

As discussed in Chapter Four, studies have shown that the housing selection process consists of several stages, and households with different socio-economic characteristics have different selection criteria in their choice of a dwelling place. Rossi (1955) pointed out that prospective home buyers make their choices based on cost, space factors, location and social composition of the neighbourhood in that order. In Case's(1978) opinion, a family selects a dwelling place on the basis of price, cost of using the housing unit, and location of the unit with respect to work, shopping, schools and other areas they visit regularly. In this study, the preferences of the owner-occupiers were also examined through open ended questions. As described in Chapter Five, respondents were asked to state the three best and three least liked things they felt about their home and neighbourhood. Respondents were not given fixed choices for their answers and were encouraged to use their own words to express their view about their home or neighbourhood.

It was observed that a number of respondents did not include any adverse comments regarding their home or neighbourhood, presumably because they found it more difficult to nominate negative features. Nevertheless, comments received were grouped into :

For Neighbourhood Preferences:

(i) Locational (Locality)
(ii) Environmental
(iii) Social attributes

For Housing (Dwelling Unit) Preferences:

(i) Physical Design
(ii) Environmental
(iii) Locational

6.9.1 Neighbourhood Preferences

For neighbourhood preferences expressed in the survey, the biggest number of comments were on locational attributes (383), followed by environmental (200) and social/security attributes (142). There were 472 positive comments as against only 253 negative ones. In all, 725 comments were recorded as shown in Table 6-16.

Neighbourhood Preferences				
Number of comments from Open-ended questions				
Attributes	Number of comments			Ranking
	3 Best Liked Things	3 Least Liked Things	Total	
Locational (Locality)	230	153	383	1
Environmental	146	54	200	2
Social[3]	96	46	142	3
Total	472	253	725	

Table 6-16 Perception of the Neighbourhood

Some of the comments given include:

(i) There are plenty of shops in the neighbourhood.
(Positive locational attribute)

(ii) There is no MRT station nearby.
(Negative locational attribute)

(iii) The estate is very serene and peaceful.
(Positive environmental attribute)

(iv) There is an incinerator nearby !
(Negative environmental attribute)

(v) Very friendly and helpful neighbours.
(Positive social attribute)

(vii) Very unfriendly and selfish neighbours
(Negative social attribute)

From the above, it can be hypothesized that locational attributes form the single group that is of greatest concern to the owner-occupiers in their neighbourhood choice.

The social choice hypothesis proposes that patterns of socio-economic residential dispersion result from differences in group values, needs, and aspirations (Duncan and Duncan, 1960; Feldman and Tilly, 1960; Laumann, 1966; Schewirian and Rico-Valaaco, 1971; Hempel and Tucker, 1979). Preference factors for locational decisions evolving from this hypothesis basically emphasise the desire to reside close to prestigious or interpersonally compatible households. Moriarty(1974) also identified other possible preferences to include:

(i) preference to reside close to job locations

(ii) preference for a more spacious living environment

(iii) preference to reside near households of similar racial and ethnic status

Respondents, regardless of gender, are almost equally concerned about how well they can get along with their neighbours. About 45 per cent of the male respondents rated the types of neighbours they live with, as extremely important compared to about 43 per cent of the female respondents.

6.9.2 HOUSING PREFERENCES

When asked to state the three best liked things about their home, the biggest number of responses concerned its physical aspect (367 comments). Some comments concern the exterior design, the interior layout as well as the finishes. A total of 119 comments were recorded for environmental attributes. A total of 100 comments concern locational attributes. Overall, 586 written comments were recorded of which 392 were positive comments. Not all respondents responded fully to the open ended questions and this resulted in unequal numbers of positive and negative remarks. Some samples of comments received are:

(i) Good layout of the dwelling unit (Positive physical design attribute)

(ii) Insufficient bathrooms or bedrooms (Negative physical design attribute)

(iii) Good ventilation within the dwelling unit (Positive environmental attribute)

(iv) The dwelling unit is warm in the afternoon (Negative environmental attribute)

(v) The dwelling unit offers a good view of the reservoir (Positive locational attribute)

(vi) The lift does not serve my floor level (Negative locational attribute)

Housing Preferences				
Number of comments from Open-ended questions				
Attributes	Number of comments			Ranking
	3 Best Liked	3 Least Liked	Total	
Physical Design[1]	263	104	367	1
Environmental[2]	75	44	119	2
Locational[3]	54	46	100	3
Total	392	194	586	

Table 6-17 Perception of the dwelling unit

6.10 Housing Preferences : Ranking of Attributes

> A comfortable house is a great source of happiness. It ranks immediately after health and a good conscience.
>
> Sydney Smith (1771–1845)
> English writer, clergyman

To provide additional insights and test some preconceived notions, a ranking of attributes was carried out for the purpose of determining the predominant attributes which owner-occupiers considered as vital considerations in their housing preferences. Such a technique has been commonly employed by researchers in similar fields of study Pecotich and Fraser (1990), for instance, presented a ranking based on the importance of criteria in house purchase. However, no direct comparison could be made with results obtained in this study for two reasons. First, the study by Pecotich and Fraser was done in Western Australia and thus there is a cultural gap between their results and those from the present study. Second, their study was effectively a survey into real estate consumer behaviour in Western Australia rather than a study of housing preferences of owner-occupiers. Thus, its importance lies primarily in methodological terms. However, two other studies conducted locally and which made use of ranking of attributes, are included in this study for comparative purposes.

In a survey conducted in 1987 by the property firm, Knight Frank Cheong Hock Chye and Baillieu, the factors considered by buyers in their selection of the locality, the condominium development and the apartment unit within the development were combined to determine the most important factors in the overall selection procedure. In this analysis, the respondents had a choice of 37 factors to consider in the selection procedure, and were given the opportunity to select the five most important factors. The responses were then recorded as a percentage of the valid observations in each group. The methodology adopted therein has the disadvantage of forcing respondents to choose from a pre-determined set of responses.

In a later study, Ho and Sim (1992) embarked on a similar study to analyse the factors influencing choice of condominium units in Singapore. It examines the importance of 30 condominium selection criteria identified from foreign studies and local market experience. The two researchers analysed the effects of locational attributes, physical characteristics, cost considerations, peacefulness and prestige factors on the selection of a condominium unit.

As for this thesis, a total of 31 attributes were offered to respondents for their ranking. In addition, respondents were given the liberty to express their view through open-ended questions as mentioned previously. Contingency tables were used to show the respondents' ranking in terms of importance placed on the basic criteria influencing housing preferences.

Comparative Ranking of Attributes

The ten most important attributes obtained in the present study were compared with those from Knight Frank's survey, those of Ho and Sim (1992) and Pecotich and Fraser (1990). It should be noted that since the results from Knight Frank and Ho and Sim were based on survey conducted for owner-occupiers of condominiums, only the responses from this group of owner-occupiers are used for comparison purposes. The ranking of attributes from the three studies are shown in Tables 6-18 to 6-20.

Top 10 Ranking of Attributes		
Attributes	Preference Ranking	Classification of attributes
Privacy/Peace	1	Social
Security	2	Social
Ventilation	3	**Environmental**
Price	4	Financial
Air Quality	5	**Environmental**
Structure	6	Physical design
Noise	7	**Environmental**
Daylight	8	**Environmental**
Mosquito	9	**Environmental**
Parking	10	Locational

Ranking of attributes in this thesis.
(Condominiums' owner-occupiers only)
Table 6-18

Of the ten most important factors listed above, five were classified under environmental attributes, two were classified under social, and one each under physical design, locational and financial attributes. Top in the list of most important attributes is privacy. It has been found that owner- occupiers are concerned with the number of units making up the development, as this tends to have a significant impact on the prestige as well as the tranquility and privacy of the housing development. This aspect had also been ranked first by Ho and Sim (1992) and fourth by Knight Frank (1987). The present study also noted that security was regarded as the second most important attribute by owner-occupiers of condominium housing. This is despite the fact that the island state has been rated as the safest country in Asia, according to a

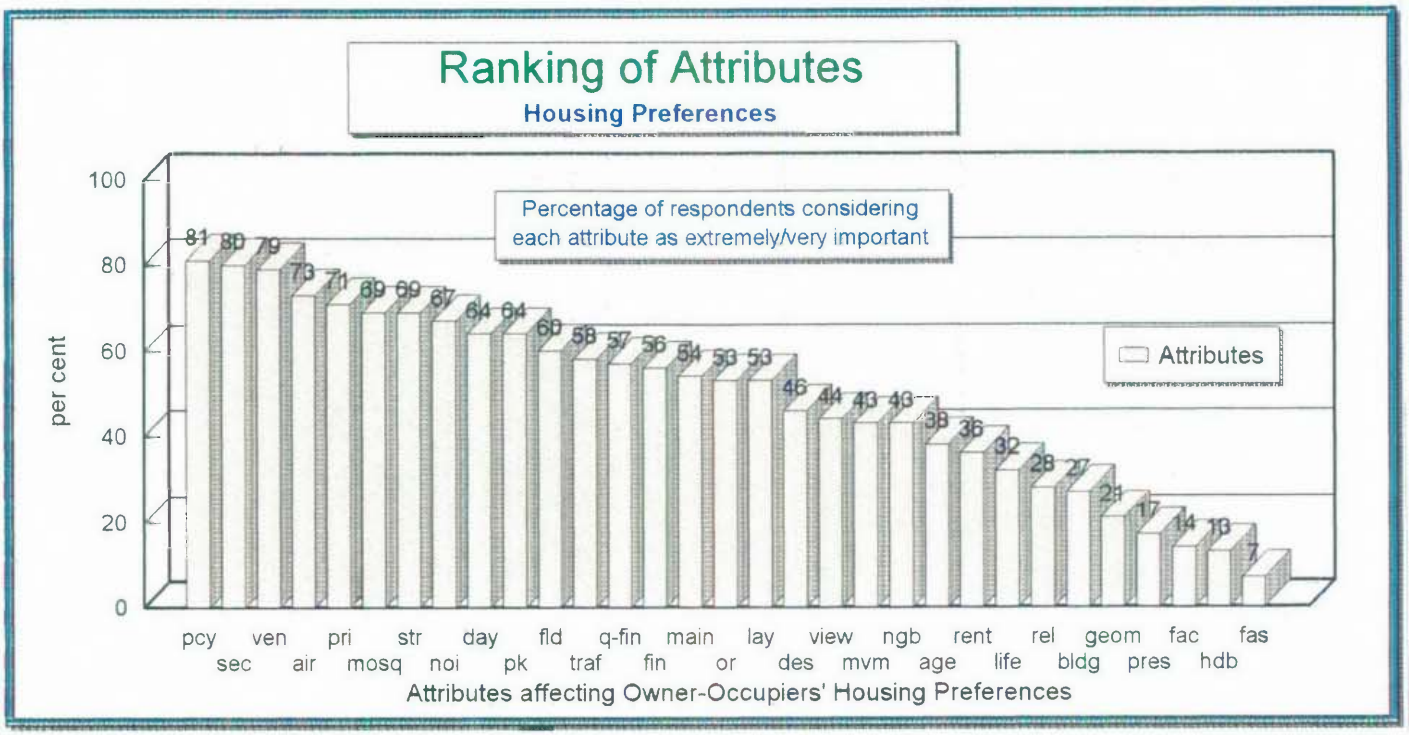
survey by Hongkong-based Political and Economic Risk Consultancy (Perc) Limited. On a scale of zero to 10, with zero representing the best situation, Singapore's rating of 1.25 made it the safest among the 12 countries studied. One possible explanation for this is that the notion of security has been firmly ingrained into the minds of the owner-occupiers over the years by government agencies.

For financial considerations, it is more meaningful to speak in terms of affordability rather than price, as price is relative. How important this factor is and how relevant it is in studies on housing preferences depends very much on affordability in relation to the individuals' financial standing. Nevertheless, in all the three studies, respondents were asked to rank price as one of the attributes in their housing preferences. In this study 'price' of the home was ranked fourth, which is the same ranking as in Ho and Sim (1992). Price attribute was not ranked among the top ten attributes in Knight Frank's study.

For the environmental attributes the rankings observed in this study are :

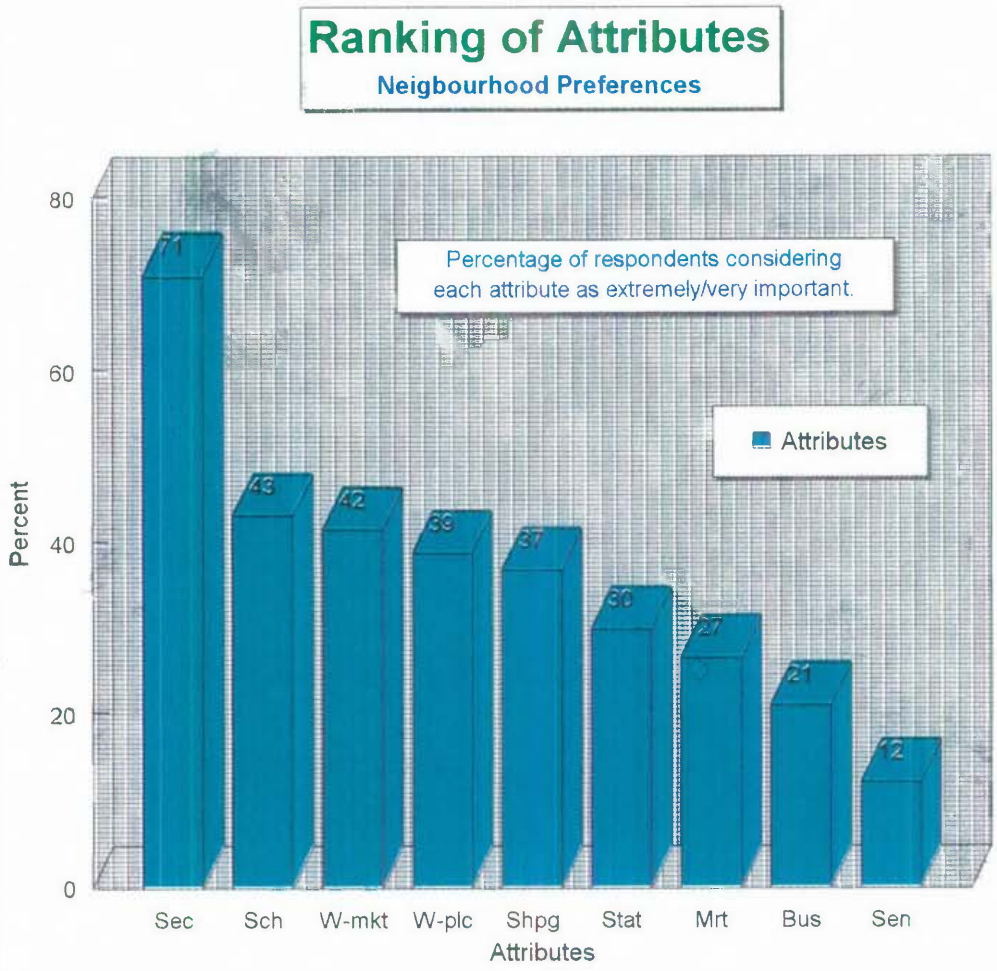
Ranking no 3: Ventilation
Ranking no 5: Air quality
Ranking no 7: Noise
Ranking no 8: Daylight
Ranking no 9: Mosquito

As noted in Chapter Four, these environmental attributes are known to affect the owner-occupiers' health and comfort and are therefore important in the study on housing preferences. In contrast to the other two studies, this thesis shows that they are of great concern to owner-occupiers. Such attributes were not within the top ten ranking in the other two studies (see Tables 6-19 and 6-20 on page 171). However, structural soundness and the availability of parking space was ranked sixth and tenth respectively in this study. Parking space was ranked number sixteenth by Knight Frank, and fourteenth, by Ho and Sim. Structural soundness, however, was not within the top ten ranking in the two studies.



Attributes	Symbol	per cent	Attributes	Symbol	per cent
Privacy of the house	pcy	81	Orientation of the house	or	53
Security of the house	sec	80	Internal Layout	lay	53
Importance of Ventilation	ven	79	Design of the house	des	46
Importance of Air Quality	air	73	View from the hosue	view	44
Importance of Price	pri	71	Movement	mvm	43
Mosquito	mosq	69	Neighbour	ngb	43
Structural Soundness	str	69	Age of the house	age	38
Noise	noi	67	Rental Value	rent	36
Daylight	day	64	Lifestyle	life	32
Parking space	pk	64	Relative	rel	28
Flood	fld	60	Type of nearby building	bldg	27
Traffic Cond.	traf	58	Geomancy	geom	21
Quality of finishes	q-fin	57	Prestige	pres	17
Finance	fin	56	Facility	fac	14
Ease of Maintenance	main	54	HDB	hdb	13
			Fashion	fas	7

Figure 6-10 Ranking of Attributes: Housing Preferences
(Source: The Author,1995)



Attributes	symbols	Per cent
Security	Sec	71
School	Sch	43
Wet market	W-mkt	42
Work place	W-plc	39
Shopping	Shpg	37
Status	Stat	30
MRT Station	Mrt	27
Bus interchange	Bus	21
Sentimental Attachment	Sen	12

Figure 6-11 Ranking of Attributes: Neighbourhood Preferences
(Source: The Author,1995)

Top 10 Ranking of Attributes in Ho and Sim(1992)			
Ranking	Ho and Sim (1992)	This thesis	Remarks
1	Peacefulness of the neighbourhood*	1	HP
2	Amenities and Recreational Facilities	27	HP
3	Design of the project	18	HP
4	Price*	4	HP
5	Security of the neighbourhood	2	NP
6	Tenure (Freehold)	Not ranked	Not ranked
7	Age of the building	20	HP
8	Design of the housing unit	12	HP
9	Familiarity of neighbourhood*	9	NP
10	Proximity to workplace	4	NP

Note :
HP = The ranking is for housing preferences.
NP = The ranking is for neighbourhood preferences.
* = denotes same ranking found in both studies.

6-19 Top 10 Ranking of Attributes in Ho and Sim (1992)

Top 10 Ranking of Attributes in Knight Frank (1987)			
Ranking	Knight Frank(1987)	This thesis	Remarks
1	Accessibility to work	4	NP
2	Design and Layout	12	HP
3	Tenure (Freehold)	Not Ranked	
4	Security	2	HP
5	Tranquillity and Privacy	1	HP
6	Number of Bedrooms	Not Ranked	
7	Prestige of neighbourhood	6	NP
8	Floor Area	Not Ranked	
8	Geomancy	26	HP
8	View	21	HP
8	Maintenance Fee	14	HP

Note :
HP = The ranking is for housing preferences.
NP = The ranking is for neighbourhood preferences.
In the survey by Knight Frank (1987), 4 factors share the number 8 place.

Table 6-20 Top 10 Ranking of attributes in Knight Frank (1987)

Three attributes, namely: price, peacefulness, and familiarity of the neighbourhood, share the same ranking in this study as in Ho and Sim (1992). While facilities were ranked second in Ho and Sim (1992), they were ranked no 27 in this study. A possible reason could be that the respondents in Ho and Sim (1992) were drawn mainly from potential buyers, while in this study, they are the actual owner-occupiers themselves, who may have taken the facilities for granted. From the

results, it can be seen that the ranking of attributes differs markedly in all three studies. However, the findings in this study correspond more closely with those of Ho and Sim (1992) rather than those of Knight Frank (1987). No comparison was possible for ranking of attributes by owner-occupiers of landed properties, as no previous study had been made of this group of owner-occupiers. The only comparison possible is between the ranking by both groups of owner-occupiers in their housing and neighbourhood preferences. Table 6-21 on page 173 compares the ranking of the top ten attributes by owner-occupiers of landed housing and condominium housing. Figure 6-10 on page 169 shows the overall ranking of attributes by all the owner-occupiers. The top ten attributes are :

(i)	Privacy	(vi)	Price
(ii)	Security aspects	(vii)	Structural soundness
(iii)	Ventilation	(viii)	The presence of mosquito
(iv)	Air quality	(ix)	Noise (peacefulness)
(v)	Daylight	(x)	Availability of parking space

It is noted that out of the ten attributes, five of the attributes concern the environmental aspects of housing. Of course, prices and structural soundness are important too.

For neighbourhood preferences, as can be seen from Figure 6-11 on page 170, security of the neighbourhood ranks first, followed by proximity to school (second), wet market (third), workplace (fourth) and shopping areas (fifth). Five other attributes are: the status attached to the neighbourhood (sixth), proximity to MRT station (seventh), proximity to bus interchange (eighth) and sentimental attachment to the neighbourhood (ninth).

It was found that ventilation, privacy and security are the three most important attributes for both groups of owner-occupiers (see Table 6-21 on page 173). As expected, owner-occupiers of condominium housing place greater emphasis on price, as well as the structural soundness of their dwelling unit. Owner-occupiers of landed housing are more concerned about the effect of flooding on their house, this being so since they are in touch with the ground!

Top Ten Ranking of Attributes Comparison between landed and condominium housing			
Landed Ranking	Attributes	Condo Ranking	Comments
1	Ventilation	3	These three attributes share the top 3 spots in the ranking. For landed housing, the importance of ventilation tops the list.
2	Privacy	1	
3	Security	2	
4	Noise	7	Owner-occupiers of landed housing ranked the effect of Noise higher than that of those living in Condominium housing.
5	Air Quality	5	Air Quality was ranked 5th by both groups.
6	Daylight	8	Within a house, daylighting is an important attribute and so owner-occupiers of landed housing ranked this higher than those living in condominium housing.
7	Flood	17	Since flood affects landed housing more than high rise condominium housing, this attribute was more important to those who live in landed properties. It was ranked no.7.
8	Mosquitoes	9	The presence of mosquitoes is a concern for both groups of owner-occupiers. The ranking for both groups is quite similar.
9	Structural soundness	6	Being mostly of high rise structure, the structural soundness of condominium housing is a greater concern the owner-occupiers. For landed housing, it is also a concern, but it was ranked lower down (9th).
10	Price	4	Presumably, owner-occupiers of condominium housing are more concerned with the investment return on their property than those living in landed housing. As such, this aspect was ranked no 4 in the case of condominium housing.

Table 6 -21 Top Ten Ranking of Attributes

6.11 Concluding Comments

The findings reported in this chapter contribute to the debate about the meaning which should be given to owner-occupiers' expressed housing preferences. These findings show that the opinions of owner-occupiers of both landed housing and condominiums differed markedly on a number of attributes, such as the importance placed on the availability of facilities, on the internal layout, the age of the dwelling unit and other such factors as the likelihood of flooding and the perception of geomancy.

However, the findings also indicate that both groups of owner-occupiers converged on most other issues. These issues include the preference for freehold tenure and the importance being placed on the security. When the data are disaggregated, however, a more complex picture emerges. The age group and the number of children in the household were all seen as affecting the owner occupiers' housing preferences in terms of attributes such as the availability of facilities and level of housing satisfaction. There was some evidence, presented in Chapter Four, that the housing preferences of the owner-occupiers was related to their personal situational factors such as life cycle, financial ability to own a home, and their cultural background. Similarly, there was also evidence that external factors beyond the control of the owner-occupiers also affect their housing preferences. As for gender, it was found that both male and female respondents share a more or less similar degree of housing satisfaction. Nevertheless, this aspect of the survey is not well tested and more detailed studies are needed to obtain a more accurate forecast of preferences with respect to gender.

The next chapter attempts to provide the implication of the results presented in this chapter and examines housing preferences in relation to the 'Great Expectations' of an increasingly affluent group of middle income Singaporeans.