Section 12

SPECIAL REVIEW

OVERCROWDING AND SHARING OF HOUSING ACCOMMODATION IN HONG KONG AS REVEALED BY THE 1971 CENSUS

This article gives a detailed account of the state of overcrowding and sharing of housing accommodation in Hong Kong on the basis of information obtained in the 1971 Population and Housing Census. Other general information will be found in the Census Main Report which is in the course of printing.

OVERCROWDING AND SHARING OF HOUSING ACCOMMODATION IN HONG KONG AS REVEALED BY THE 1971 CENSUS

Introduction

General information about the housing situation in Hong Kong obtained in the 1971 Housing Census will be published in the Census Main Report. The present paper describes in greater detail the two characteristics of overcrowding and sharing of accommodation and pinpoints those districts and types of housing in which these are most prevalent.

Definitions and scope

In order to give a clearer picture, the living quarters recorded in the 1971 Census are in general analysed into three major types viz. private, public and temporary. These are defined as follows:—

(*a*) private housing—this includes flats in apartment blocks, whole tenement floors (not individual rooms), modern houses, and simple stone structures;

(*b*) public housing—this includes units in self-contained and non self-contained Resettlement, Government Low Cost Housing, and Housing Authority/Housing Society blocks;

(*c*) temporary housing—this includes living quarters in residential structures of non-durable materials, those in non-domestic buildings of durable materials, and all premises not intended for domestic purposes such as staircases or working premises in factories and shops.

The present paper deals only with those 654,810 living quarters which were found to be occupied during the Census period. Unoccupied living quarters are omitted from the analysis.

Distribution of living quarter types by census area

Table 12.1 below shows the distribution of the three main types of living quarter by census area.

12.1 NUMBER OF LIVING QUARTERS BY TYPE BY AREA

Type	Hong Kong Island	Kowloon	New Kowloon	Tsuen Wan	Rural N. T.	Total	Percent
Private	111,987	93,017	60,967	6,944	44,975	317,890	48.6
Public	33,480	10,057	177,997	36,814	1,683	260,031	39.7
Temporary	18,597	6,543	17,671	4,479	29,599	76,889	11.7
Total	164,064	109,617	256,635	48,237	76,257	654,810	—
Percent	25.1	16.7	39.2	7.4	11.7	—	100.0

It can be seen that private housing accounts for roughly one-half of all living quarters, while public and temporary housing amount to about 40% and 10% respectively. The largest proportion of private housing is found on Hong Kong Island, of public housing in New Kowloon, and of temporary housing in the rural New Territories.

For the various census areas as a whole, New Kowloon has about 40% of all types of living quarters, due mainly to the pre-dominance of public housing, while Hong Kong Island takes another 25%.

Degree of overcrowding

The degree of overcrowding can be measured by the average gross residential floor area per person or its reciprocal. By 'gross residential floor area' is meant the total floor area of a residential building, which includes kitchens, toilets, bathrooms, and even corridors, staircases and landings. The actual living space for a household or a person is more appropriately measured in terms of the 'net' or 'effective' floor area available after deducting kitchens and so forth, and this is usually taken as 50% of the 'gross' floor area.

Degree of overcrowding by district

Table 12.2 below shows average gross floor densities by census district (excluding temporary accommodation). Figures of gross floor area are those recorded by the Crown Lands & Survey Office as at 31st March, 1971. Owing to the slight difference in the reference date, and the difference in definitions used by the Crown Lands Office and the Census Department, the figures used in this table are not fully comparable. They are also affected by new buildings of which the gross floor area was listed by Crown Lands, but which were not included in the

Census figures because they were not yet occupied on Census night, for example several large blocks of flats in the Peak district. However, an approximate idea of living space density by district can be obtained from the results thus compiled.

12.2 GROSS FLOOR DENSITY BY CENSUS DISTRICT

District	Gross floor area (sq. ft.)	Population	Average gross floor density (sq. ft.)
Central	2,119,655	18,604	114
Sheung Wan	4,916,428	63,116	78
West	12,051,468	138,385	87
Mid-Levels and Pok Fu Lam	14,037,222	40,969	343
Peak	5,962,062	8,071	739
Wan Chai	12,919,002	134,401	96
Tai Hang	15,427,212	87,779	176
North Point	21,709,520	159,160	136
Shau Kei Wan	8,549,483	129,884	66
Aberdeen	7,259,494	96,549	75
South	4,777,366	9,923	481
HONG KONG ISLAND	109,728,912	886,841	124
Tsim Sha Tsui	11,606,554	69,720	167
Yau Ma Tei	16,273,711	194,337	84
Mong Kok	14,173,882	163,865	87
Hung Hom	14,863,943	181,590	82
Ho Man Tin	12,367,354	75,127	165
KOWLOON	69,285,444	684,639	101
Cheung Sha Wan	20,580,268	244,734	84
Shek Kip Mei	10,812,566	175,859	62
Kowloon Tong	5,212,098	17,880	292
Kai Tak	32,353,667	522,557	62
Ngau Tau Kok	18,829,799	219,792	86
Lei Yue Mun	12,216,216	206,236	59
NEW KOWLOON	100,005,614	1,387,058	72
TOTAL	279,019,970	2,958,538	94

It can be seen that districts such as Shau Kei Wan (Chai Wan), Aberdeen, Shek Kip Mei, Kai Tak (Wong Tai Sin) and Lei Yue Mun (Kwun Tong), where major resettlement estates are situated, are the most overcrowded; while districts like Mid-levels and Pokfulam, the South District of Hong Kong Island, and Kowloon Tong are the least overcrowded.

Even when districts such as the Peak, South, Mid-levels and Pok Fu Lam, and Kowloon Tong are excluded, the average gross floor density per person for every district is still over 50 sq. ft. However, this does not indicate a good condition, since the corresponding average effective floor area per person is only about 25 sq. ft. This is about the same standard as the earlier types of resettlement blocks, and well below the modern minimum standard of 35 sq. ft.

Degree of overcrowding by living quarter type

Apart from the geographical distribution of overcrowding, it is important to consider the degree of overcrowding in different types of housing, for example, as between Mark I/II resettlement blocks and private tenement floors.

The gross floor density as between private and public housing can be computed using the first two columns of Table 12.2 by the method of multiple regression as shown at Appendix I. To secure reliable results, temporary housing has been excluded from this analysis, because gross residential floor areas obtained from the Crown Lands & Survey Office do not include temporary structures or living quarters in the New Territories.

Limiting the analysis to two broad types of housing, private and public, the calculations show a gross floor density of 103 sq. ft. per person for private and 57 sq. ft. per person for public housing, which correspond to effective floor densities of about 51 and 28 sq. ft. respectively. The low figure for public housing is due to the high proportion of older, more overcrowded resettlement estates.

By assuming the gross floor density of 57 sq. ft. per person to be constant for all public housing in all districts, it is possible to use the same formula to estimate gross floor areas per person for the two main types of private housing, i.e. flats as against tenement floors. This calculation was limited to those districts which were both

overcrowded and had a high percentage of sharing which were also those with a preponderance of private tenement floors, i.e. Sheung Wan, West, Wan Chai, Yau Ma Tei, Mong Kok, Hung Hom, Cheung Sha Wan (quadrant D of Appendix II). In this calculation, gross floor densities were found to be 61 sq. ft. per person for tenements and 136 sq. ft. for apartment flats, which correspond to effective floor densities of 30 and 68 sq. ft. respectively. Thus, the degree of overcrowding in private tenement floors is roughly the same as in public housing blocks, and is more than twice that of apartment flats.

Degree of sharing

By degree of sharing is meant the number of households occupying each living quarter. A high degree of sharing naturally involves the shared use of living quarter facilities such as toilet, kitchen, water supply and bathroom between the different households, so that inconvenience or even conflict may sometimes arise.

Table 12.3 below shows the geographical distribution of sharing in different types of living quarter.

12.3 DEGREE OF SHARING BY DISTRICT BY LIVING QUARTER TYPE

District	Private			Public		Temporary
	Apartment flats	Tenement floors	Houses or simple stone structures	Self-contained units*	Non self-contained resettlement	
Central	1.26	1.75	1.09	—	—	1.03
Sheung Wan	1.20	1.63	1.42	—	—	0.98
West	1.44	1.80	1.12	1.01	—	1.03
Mid-Levels and Pok Fu Lam	1.08	1.39	1.31	—	—	1.09
Peak	1.15	1.00	1.31	—	—	1.00
Wan Chai	1.46	1.96	1.59	—	—	1.15
Tai Hang	1.23	1.59	1.14	—	—	1.03
North Point	1.40	1.83	1.55	1.02	—	1.04
Shau Kei Wan	1.20	2.05	1.37	1.02	1.01	1.20
Aberdeen	1.22	1.68	1.26	1.00	1.01	1.10
South	1.04	1.07	1.15	—	—	1.05
HONG KONG ISLAND	1.30	1.80	1.28	1.01	1.01	1.10
Tsim Sha Tsui	1.31	2.25	1.21	—	—	1.04
Yau Ma Tei	1.66	2.23	1.49	—	—	1.21
Mong Kok	1.60	2.19	1.27	—	—	1.05
Hung Hom	1.43	2.11	1.94	1.01	1.11	0.91
Ho Man Tin	1.09	1.38	1.11	1.00	—	1.13
KOWLOON	1.45	2.18	1.30	1.00	1.11	1.06
Cheung Sha Wan	1.62	2.41	1.38	1.01	—	1.01
Shek Kip Mei	1.06	1.37	1.17	1.00	1.06	1.20
Kowloon Tong	1.06	1.09	1.26	—	—	1.11
Kai Tak	1.31	1.69	1.56	1.00	1.01	1.14
Ngau Tau Kok	1.26	1.38	1.16	1.00	1.01	1.06
Lei Yue Mun	1.37	1.00	1.26	1.00	1.01	1.04
NEW KOWLOON	1.40	2.08	1.40	1.00	1.03	1.09
Tsuen Wan	1.29	2.26	1.50	1.00	1.01	1.13
Yuen Long	1.11	1.26	1.05	1.00	—	1.04
Tai Po	1.13	1.24	1.05	—	—	1.04
Islands	0.94	1.37	1.15	—	—	1.03
Sai Kung	1.08	1.24	1.04	—	—	1.01
NEW TERRITORIES	1.18	1.70	1.09	1.00	1.01	1.05
OVERALL	1.37	1.99	1.16	1.00	1.02	1.07

* This means units with their own water supply and toilet. It includes units in Housing Authority and Housing Society blocks as well as government low cost housing and resettlement.

When interpreting Table 12.3, two points must be borne in mind:—

(*a*) the inclusion of living quarters occupied by collective households of less than 20 persons but not the households themselves results in occasional degrees of sharing of less than unity;

(*b*) the degree of sharing shown represents the average of conditions in all living quarters of a particular type in a particular district, and not that of shared living quarters only. Thus, it is not possible at present to show the number of living quarters occupied by two or more households.

From Table 12.3, it can be seen that high degrees of sharing are mainly found in private tenement floors and private apartment flats. Districts having an average degree of sharing of over 2 households per living quarter

include Shau Kei Wan, Tsim Sha Tsui, Yau Ma Tei, Mong Kok, Hung Hom, Cheung Sha Wan and Tsuen Wan. Temporary structures usually have a much lower degree of sharing of 1.07 overall, except in Shau Kei Wan, Yau Ma Tei and Shek Kip Mei where a value of 1.2 is reached. In public housing, where each room is defined as a whole living quarter, sharing appears to be negligible, but in fact communal sharing of toilet or washing facilities is very normal in the earlier marks of resettlement blocks.

Excess of households over living quarters

The excess of households over the number of living quarters by living quarter type and district is shown in Table 12.4 below. The minus quantities are due to the inclusion of living quarters occupied by collective households of less than 20 persons.

12.4 EXCESS OF HOUSEHOLDS OVER LIVING QUARTERS BY DISTRICT

District	Private			Public		Temporary
	Apartment flats	Tenement floors	Houses or simple stone structures	Self-contained blocks	Non self-contained resettlement	
Central	252	1,498	5	—	—	17
Sheung Wan	393	4,930	13	—	—	−26
West	2,591	8,502	52	25	—	50
Mid-Levels and Pok Fu Lam	640	217	118	—	—	50
Peak	254	—	74	—	—	—
Wan Chai	4,043	10,777	22	—	—	239
Tai Hang	2,796	2,016	72	—	—	31
North Point	6,948	4,277	33	44	—	150
Shau Kei Wan	621	3,493	901	128	96	1,106
Aberdeen	35	833	125	20	22	174
South	52	6	99	—	—	62
Hong Kong Island	18,625	36,549	1,514	217	118	1,853
Tsim Sha Tsui	3,045	3,291	10	—	—	33
Yau Ma Tei	7,195	19,367	28	—	—	389
Mong Kok	6,632	14,359	18	—	—	96
Hung Hom	3,357	16,531	90	29	156	−163
Ho Man Tin	645	143	37	—	—	30
Kowloon	20,874	53,691	183	29	156	385
Cheung Sha Wan	6,907	22,482	238	106	—	18
Shek Kip Mei	44	396	132	6	1,374	477
Kowloon Tong	171	12	171	—	—	70
Kai Tak	1,028	4,739	2,445	134	516	833
Ngau Tau Kok	1,924	924	16	22	104	152
Lei Yue Mun	22	—	618	138	45	125
New Kowloon	10,096	28,553	3,620	406	2,039	1,675
Tsuen Wan	272	4,186	1,339	89	88	579
Yuen Long	70	196	928	1	—	490
Tai Po	96	702	704	—	—	489
Islands	−2	138	670	—	—	64
Sai Kung	12	30	130	—	—	6
New Territories	448	5,252	3,771	90	88	1,628
TOTAL	50,043	124,045	9,088	742	2,401	5,541

As expected, an excess of households is found mainly in private tenement floors and private apartment blocks in Hong Kong Island, Kowloon, and New Kowloon, where the degree of sharing is high.

Ranking of districts with combined high degrees of overcrowding and sharing

When comparing living conditions in different districts, it is insufficient just to consider either the degree of overcrowding or the degree of sharing alone. A study of Tables 12.2 and 12.3 shows that a district with a high degree of overcrowding may often be associated with a low degree of sharing (e.g. Shek Kip Mei, Lei Yue Mun), while the reverse is also possible (e.g. Central District, Tsim Sha Tsui). In order to establish a ranked list of districts in which housing conditions are unsatisfactory, overcrowding and degree of sharing have been combined in Table 12.5 where each factor has been expressed in terms of a ratio to its respective mean value. Ratios instead of actual values have been used so that the two different quantities may be added. In this way, a district having a degree of overcrowding and a degree of sharing equal to the average for all districts will have values of one in the first two columns of Table 12.5, and a value of 2 in the last column. In this table, the two factors have been given equal weight; however, it would be possible to produce tables giving different weightings.

12.5 COMBINED OVERCROWDING AND SHARING BY DISTRICT

District	Ratio of overcrowding to mean*	Ratio of degree of sharing to mean†	Sum of ratios
Central	0.90	1.15	2.05
Sheung Wan	1.31	1.13	2.44
West	1.17	1.15	2.32
Mid-Levels and Pok Fu Lam	0.30	0.81	1.11
Peak	0.14	0.85	0.99
Wan Chai	1.06	1.27	2.33
Tai Hang	0.58	0.96	1.54
North Point	0.75	1.04	1.79
Shau Kei Wan	1.55	0.91	2.46
Aberdeen	1.36	0.77	2.13
South	0.21	0.78	0.99
Hong Kong Island	0.83	1.01	1.84
Tsim Sha Tsui	0.61	1.10	1.71
Yau Ma Tei	1.22	1.46	2.68
Mong Kok	1.18	1.39	2.57
Hung Hom	1.25	1.27	2.52
Ho Man Tin	0.62	0.77	1.39
Kowloon	1.01	1.26	2.27
Cheung Sha Wan	1.21	1.35	2.56
Shek Kip Mei	1.66	0.77	2.43
Kowloon Tong	0.35	0.80	1.15
Kai Tak	1.65	0.80	2.45
Ngau Tau Kok	1.19	0.78	1.97
Lei Yue Mun	1.72	0.74	2.46
New Kowloon	1.41	0.87	2.28

* Mean Overcrowding=9.79 persons per 1,000 sq. ft. gross area.
† Mean Degree of sharing=1.37 households per living quarter.

From Table 12.5 it can be seen that while New Kowloon is more overcrowded than the average, Kowloon is more highly shared. Owing to the heterogeneous conditions of public and private housing, correlation between overcrowding and sharing is not well defined. To clarify the situation of each district, these factors have been plotted graphically at Appendix II.

It can be seen that the four quadrants are more or less segregated according to the predominance of a particular type of housing:—

Quadrant A—districts lying in this quadrant contain mainly private apartment flats and only a very small proportion of private tenement floors or public housing; the degrees of overcrowding and sharing are both below average.

Quadrant B—the three districts Central, Tsim Sha Tsui, and North Point are rather higher in their degree of sharing, but the problem of overcrowding is not severe.

Quadrant C—the degree of sharing is much below average but the degree of overcrowding is extremely high. In fact all districts in this quadrant contain major public housing estates, especially resettlement estates.

Quadrant D—districts in this quadrant have combined higher than average degrees of sharing and overcrowding.

The geographical distribution of the degree of overcrowding and sharing is shown pictorially in the map in Appendix III.

Conclusion

In the foregoing description, the degree of overcrowding can be seen as increasing in the order of private flats, private tenements, public housing; whereas the degree of sharing increases in the order of public housing, private flats and private tenements. This means that, although public housing is more overcrowded than private housing, its degree of sharing is low. However, it must be recognized that the degree of sharing here refers only to the sharing of a living quarter between households, but not to the sharing of living facilities such as water supply, toilets, kitchens, or bathrooms. In fact, all the earlier marks of resettlement estates have only communally shared facilities, and the degree of sharing, viewed in this way, is then much higher than for private tenement floors.

APPENDIX I

COMPUTATION OF GROSS FLOOR DENSITY BY MULTIPLE REGRESSION ANALYSIS

For any one particular district, let

y=Gross residential floor area in square feet (all types except temporary housing),

x_1=Number of persons in public housing,

x_2=Number of persons in private housing,

a_1=Gross floor density in public housing,

a_2=Gross floor density in private housing,

and assume that the following relationship exists:—

$$y=a_1x_1+a_2x_2 \qquad \text{.....(1)}$$

Since the value of y for each district can be obtained from the Crown Lands & Survey Office, P.W.D., and x_1, x_2 are known from the census, the regression constants and a_1 and a_2, assumed independent of district location, can be found using a least square-error criterion.

The sum of square error is:

$$\Sigma E^2=\Sigma(y-a_1x_1-a_2x_2)^2 \qquad \text{.....(2)}$$

Thus,

$$\left.\begin{aligned}\frac{\delta\Sigma E^2}{\delta a_1}&=2\Sigma(y-a_1x_1-a_2x_2)(-x_1)=0\\ \frac{\delta\Sigma E^2}{\delta a_2}&=2\Sigma(y-a_1x_1-a_2x_2)(-x_2)=0\end{aligned}\right\} \qquad \text{.....(3)}$$

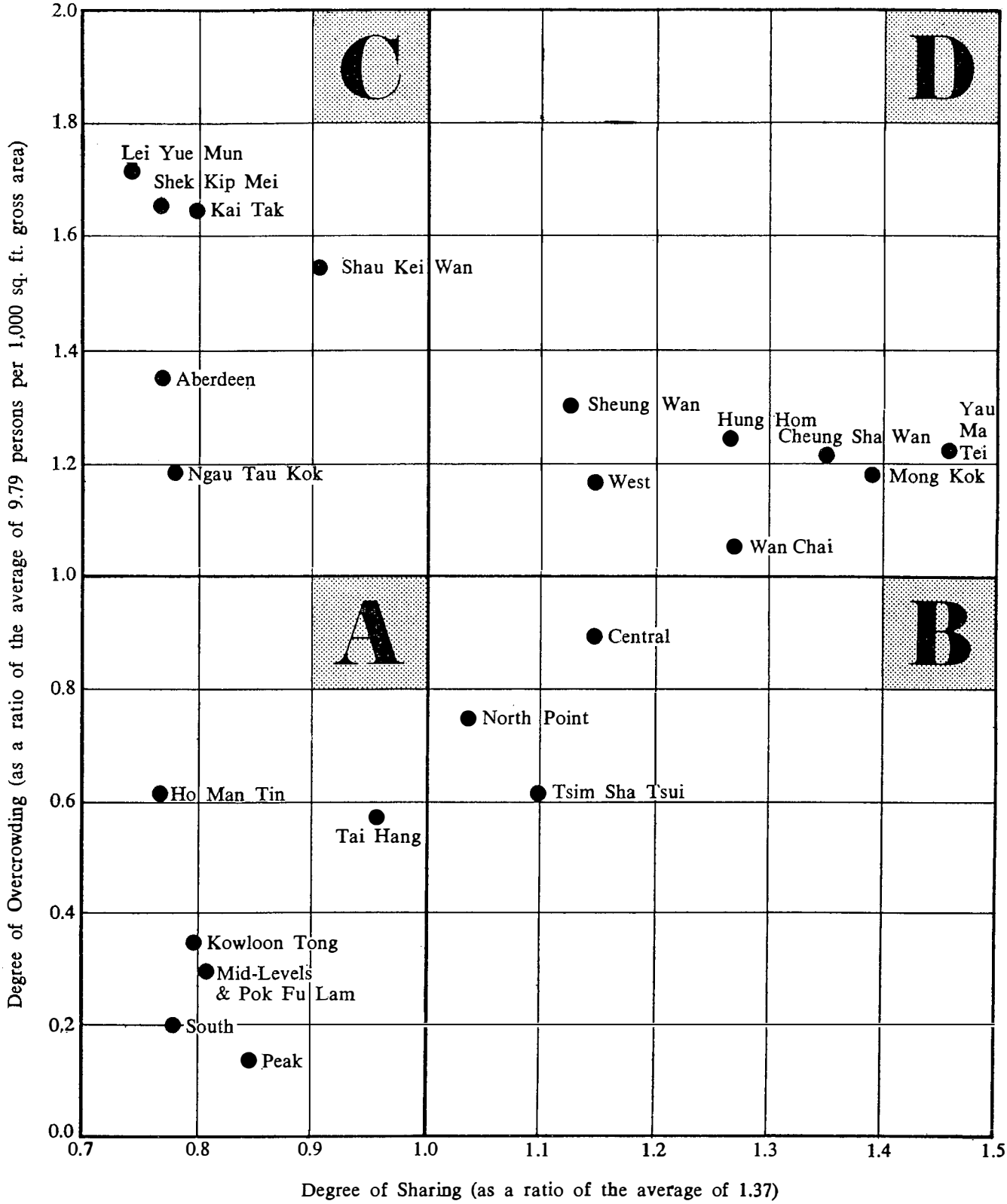
Solving the two equations

$$\left.\begin{aligned}&a_1\Sigma x_1^2+a_2\Sigma x_1x_2=\Sigma x_1y,\\ \text{and}\quad &a_1\Sigma x_2x_1+a_2\Sigma x_2^2=\Sigma x_2y,\end{aligned}\right\} \qquad \text{.....(4)}$$

a_1 and a_2 can be found.

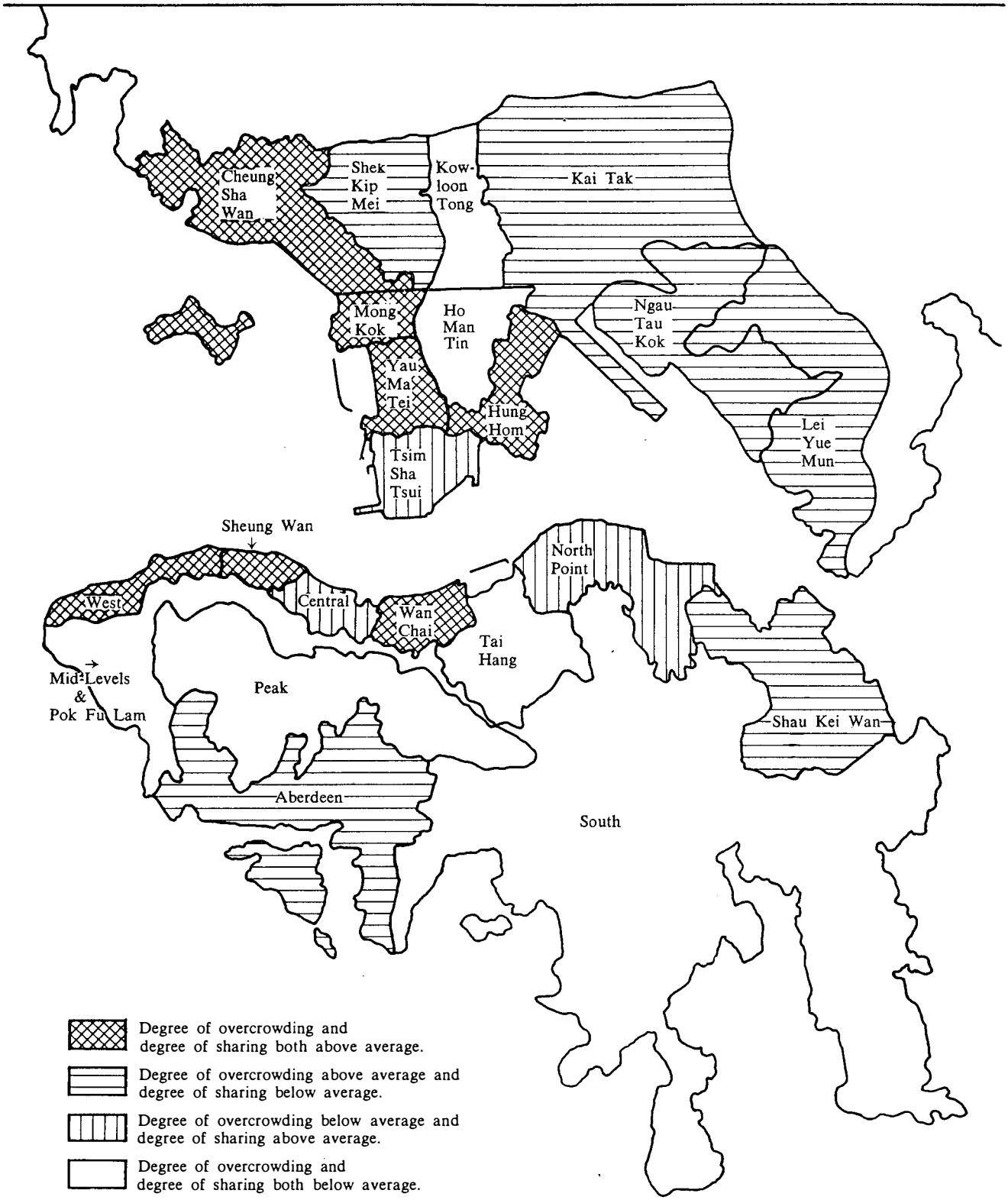
APPENDIX II

DEGREE OF OVERCROWDING BY DEGREE OF SHARING



APPENDIX III

GEOGRAPHICAL DISTRIBUTION OF DEGREE OF OVERCROWDING AND DEGREE OF SHARING



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