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Street Trading in Hong Kong: Part II — Spatial Economy

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SOCIAL RESEARCH CENTRE

THE CHINESE UNIVERSITY OF HONG KONG

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STREET TRADING IN HONG KONG: Part II

Spatial Economy

by

F.Y. Tse

March, 1974

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VII. ANALYSES OF STREET TRADING DISTRIBUTION

7.1 The Overall Distribution Pattern

One of the simplest ways of measuring a geographic distribution is to calculate its Mean Centre and the Standard Distance. The former is an indication of the location of the centre of gravity of a distribution and the latter is a measure of dispersion calculated as the " Mean Quadratic Distance " of each observation from the Mean Centre.[57]

The Mean Centre of the distribution of street trading in Hong Kong is in Cell 2323 (Ho Man Tin) which is in fact very close to the centre of the Study Area (Fig. 8). The Standard Distance is approximately 3.6 Km. Using the Standard Distance as the radius, a circle centred at the Mean Centre covers almost the entire Kowloon peninsula (Fig. 8). This indicates that the distribution of street trading activities on the Kowloon side outweighs the one on the other side of the Harbour. Such a pattern is concordant with the overall distribution of population in the Study Area. The Population Distribution has a mean centre and a standard distance which are very close to those of the street trading distribution. The statistics are presented as follows:

	Co-ordinates for Mean Centre		Standard Distance in Units of 250 m
	$\bar{X}$	$\bar{Y}$	S
Street Trading Distribution (Survey,1971)	23.38	22.37	14.69
Population Distribution (1971)	23.44	23.61	14.09

The very close proximity of the two sets of statistics could easily lead to the hypotheses that (1) the two distributions are spatially associated with each other, and (2) both are fairly evenly distributed throughout the Study Area. The following analyses will tackle these two problems separately.

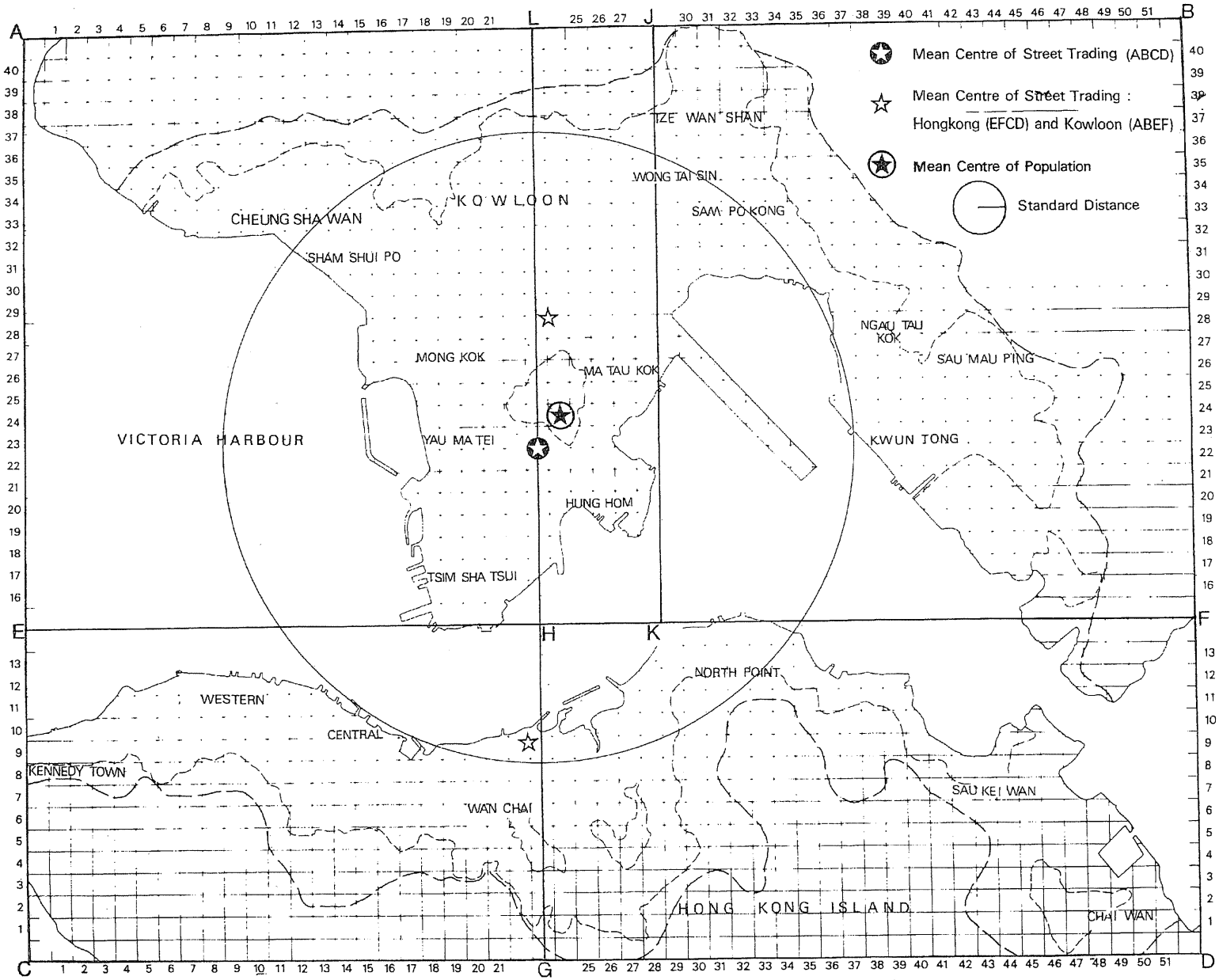


FIG. 8 : REGIONAL BREAKDOWN FOR REGRESSION ANALYSES OF STREET TRADING ON POPULATION

7.1.1 Spatial Association between Population and Street Trading

A visual comparison of the distributions of street trading and population (Figs. 9 and 10) indicates a strong resemblance between the patterns, in particular on the western half of the Study Area (west of Mean Centre). However, examining in detail, marked differences could be found between the two distributions in the eastern half of the Study Area. In order to expose the regional contrasts, a series of regression analyses of street trading on population have been run at various levels of regional breakdown. The breakdown is a very arbitrary one and is presented in Fig. 8.[58] The results of the analyses are listed in Table 34.

Table 34: Regression of Street Trading on Population

Level of Regional Breakdown+	No. of Observations	R*	R^2	B	Constant
Study Area (ABCD)	230	.398	.158	.915	33.908
Hong Kong Island (CDEF)	84	.400	.160	1.028	24.695
East H.K. (HFGD)	40	.443	.196	1.088	16.316
West H.K. (EHCG)	44	.356	.127	.958	33.257
Kowloon Side (ABEF)	146	.388	.150	.875	38.460
Kowloon Proper (AJKE)	99	.420	.176	1.187	13.621
East Kowloon (JBKF)	47	.305	.093	.425	57.421
West Kowloon (ALEH)	68	.542	.294	1.642	-17.806

\+ Referred to Fig. 8.
* Regression coefficients at over 95% significance level

There is no significant contrast between the two sides of the harbour. Yet, the contrasts between the eastern and western halves are noticeable. On the Kowloon side, there is a stronger association between street trading and population in the west (ALEH) than in the east (JBKF). The reverse is the case on the Hong Kong side (compare the R in Table 34). East Kowloon has the weakest association. The variation in the distribution of street traders in East Kowloon can hardly be explained by the present pattern of population distribution (its R^2 is the lowest among all equations in Table 34).

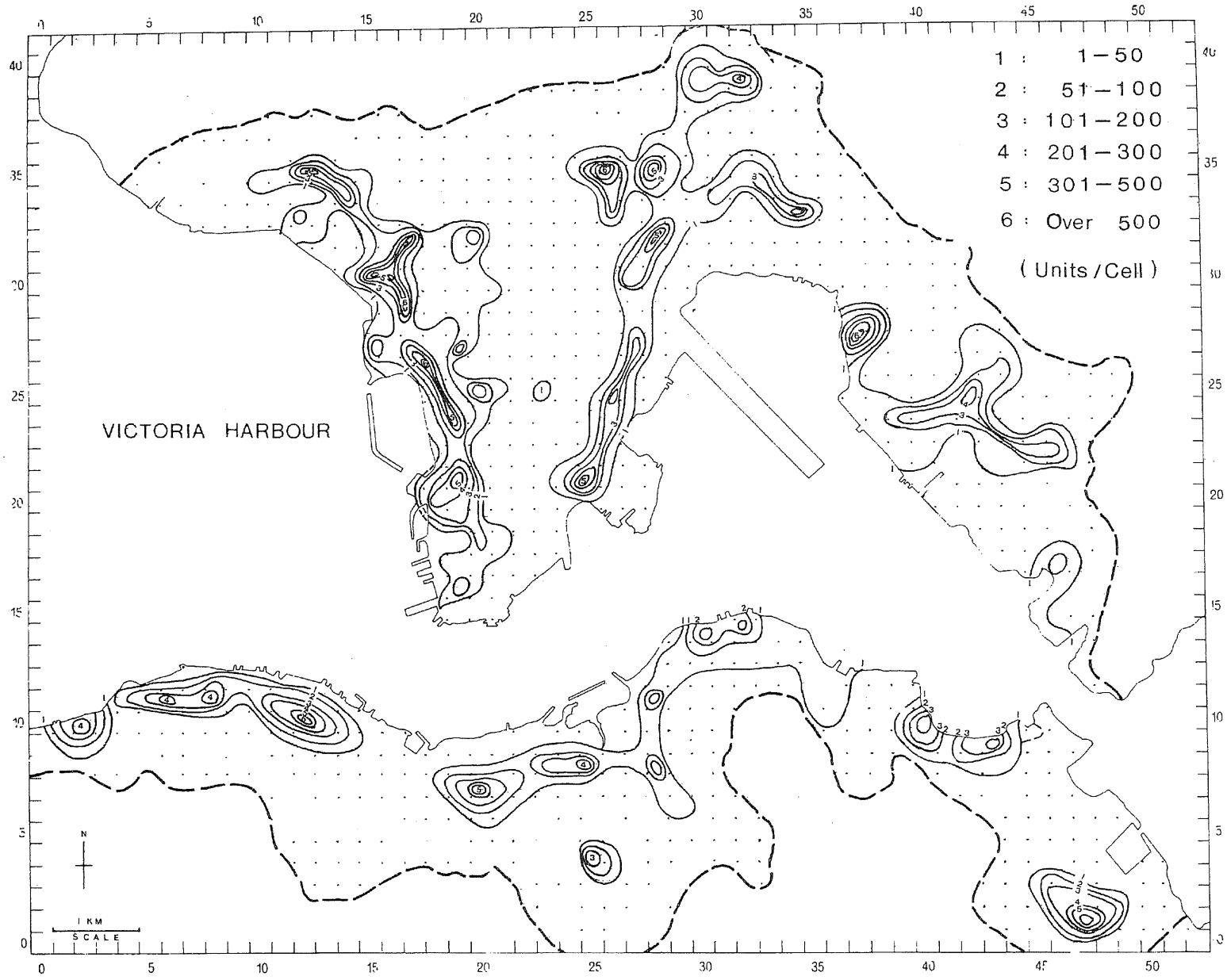


FIG 9 DISTRIBUTION OF STREET TRADING UNITS (1971)

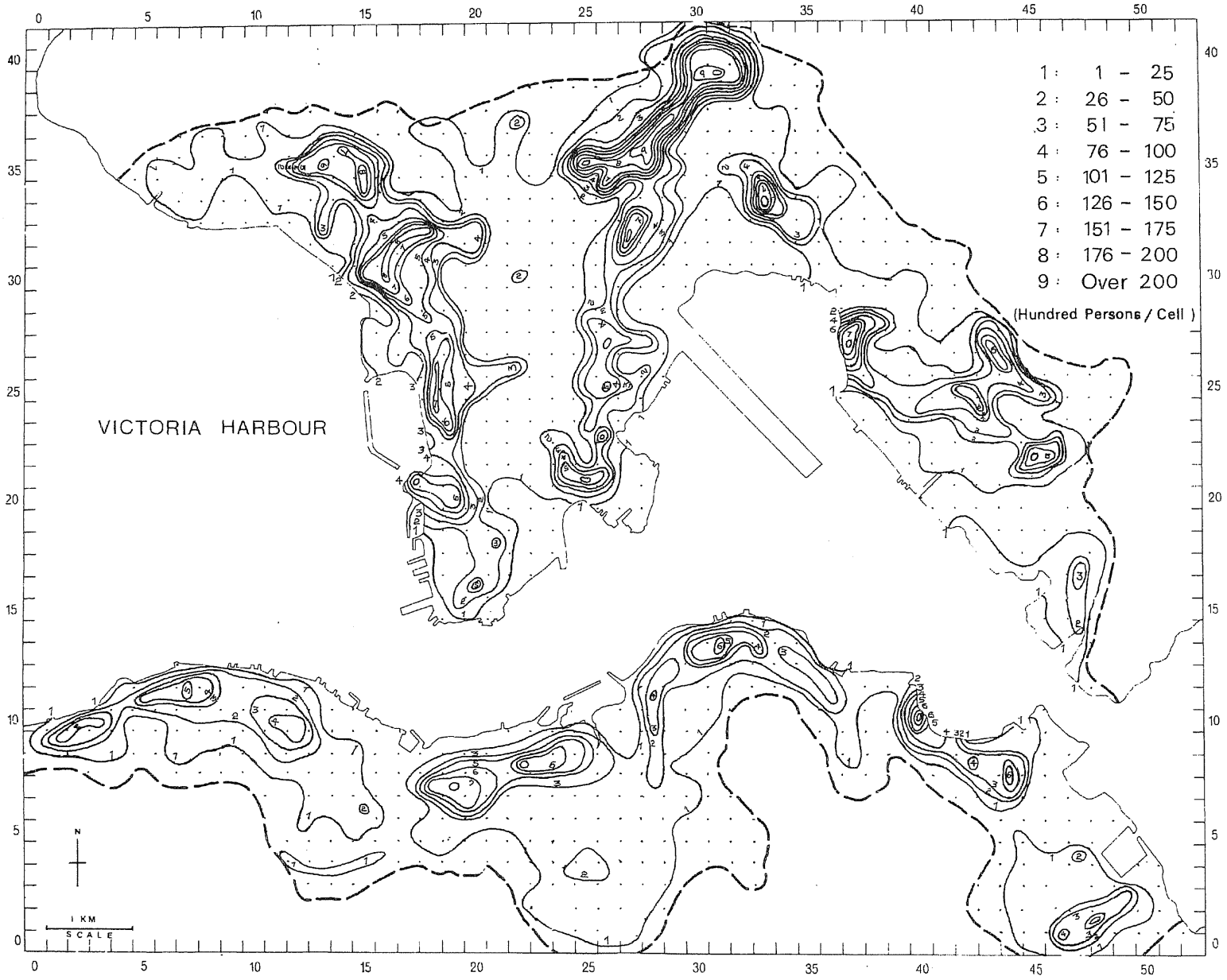


FIG 10 : DISTRIBUTION OF POPULATION (1971)

According to the equations in Table 34, there are fewer street traders relative to population size in East Kowloon than in West Kowloon. In the former, there are about 100 street trading units per 10,000 people, and about 145 in the latter. Assuming population density (population per cell) to be a proper indicator of the demand for street shopping, the above mentioned ratios could also be regarded as supply functions of street trading activities for both areas. The relative positions of the different regression equations listed in Table 34 are presented in Fig. 11. The regional variation in the association between street trading and population is very marked (Fig. 11).

The suggestion that the two distributions are closely associated with each other is acceptable only at a macro scale of reasoning. There are significant regional variations. The predictive value of these regression equations is very low; the best one is in West Kowloon (about 30% of the variation is explained). The conventional method adopted by the planning authority in estimating the size and future growth of street trading communities on the basis of population size is thus subject to serious criticism.[59]

7.2 Even or Clustered Distribution

In view of the central location of the Mean Centre (Fig. 8), one is tempted to consider whether such a well-balanced distribution is attributable to an even distribution or to evenly-spaced clusters of street trading activities across the Study Area. In order to see street trading as a series of foci of street trading stalls and pedlars, the distribution map in Fig. 9 has to be transformed by sorting out the cells which have above-mean values of street traders (the Mean is 103 trading units per cell) as street trading foci or street markets (in most cases the foci are in the form of street markets). These foci are presented in Fig. 12. Their distribution is then tested against the Poisson and the Negative Binomial distributions.[60] For each test, three quadrat sizes (the grid) have been used to count the frequency distributions (1 Km^2, 1½ Km^2, and 2 Km^2).

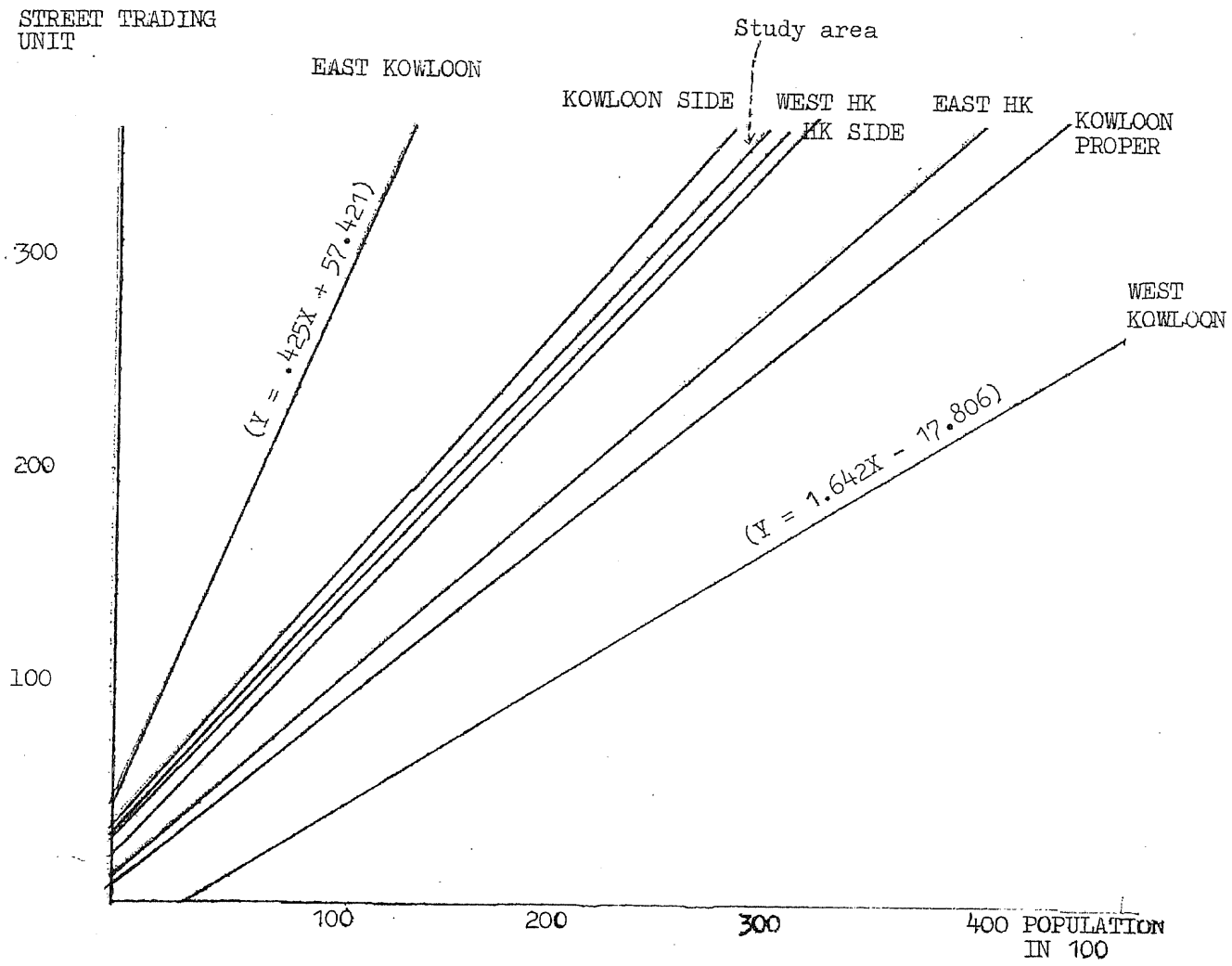


Fig. 11 Regression Lines at Various Levels of Regional Breakdown

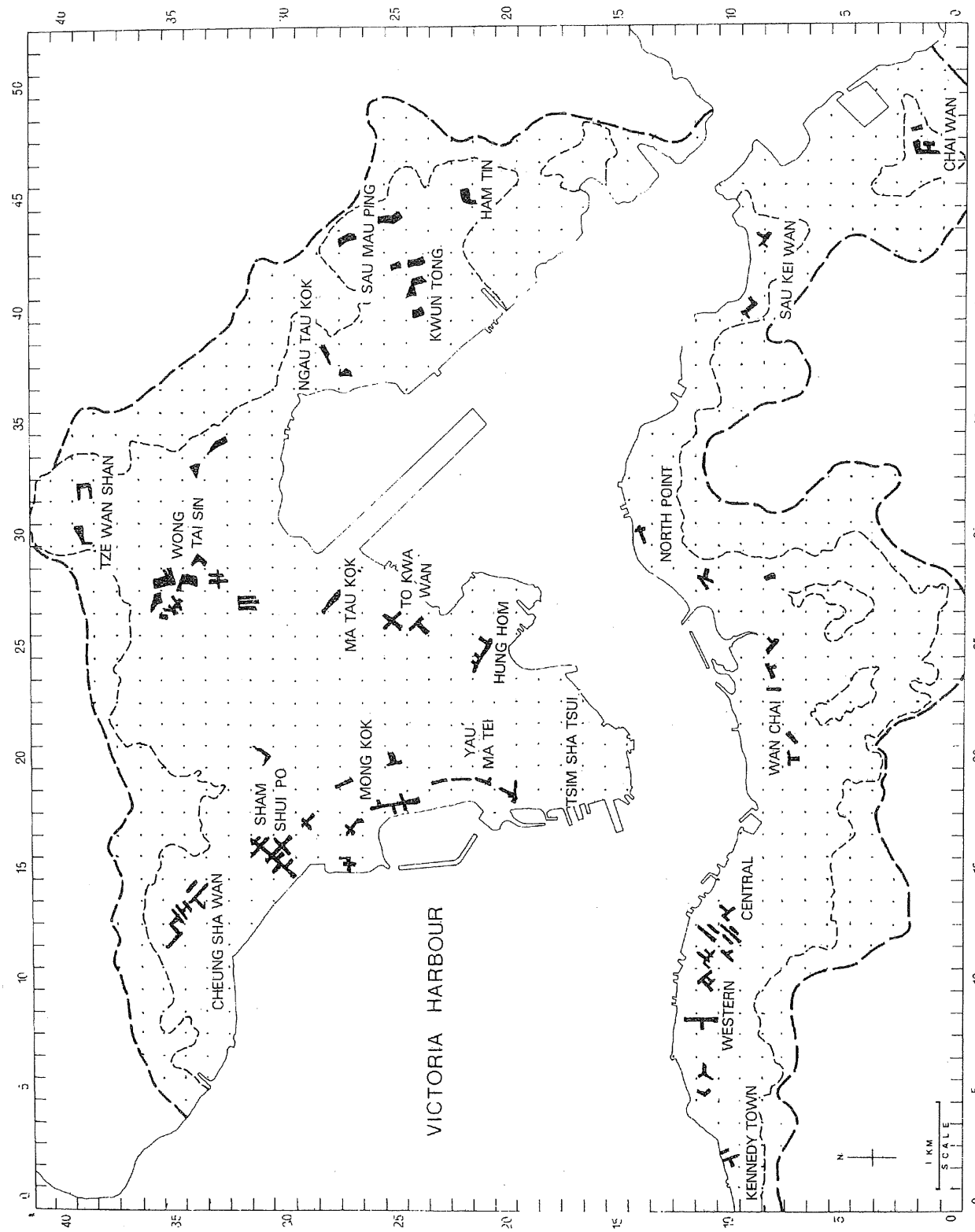


FIG. 12 : DISTRIBUTION OF STREET MARKETS (FOCI)

It has been found that no matter what scale is used the street trading distribution never fits the Poisson Law of Distribution. In other words, street markets are not distributed in a random fashion. As for the Negative Binomial test, there is only one significant fit between the actual and the theoretical distribution occurring on the 1½ Km^2 grid. The two distributions are presented in Fig. 13. According to the expected distribution there should be some quadrats with seven or eight street markets. The extreme concentration of high-density quadrats in one class (six markets per cell) in the actual distribution (Fig. 13) suggests a wide gap between the street-market-rich and street-market-poor districts in metropolitan Hong Kong. But, as a whole, street markets are definitely distributed in a " contagious " fashion in the sense that clusters of street markets are first randomly distributed across the Study Area and the number of individual markets in each cluster then follows a logarithmic distribution.[61] That means once a cluster is " initiated ", a magnetic force is created and it attracts more street traders to form subsidiary foci in the vicinity; eventually a " colony " of street markets is formed. The present well-balanced distribution of street trading activities is not attributed to an even distribution of individual street markets but to randomly scattered clusters of street markets.

7.2.1 Street Trading Clusters and Public Retail Markets

As described in the Law of Negative Binomial Distribution mentioned above, one may consider that public retail markets - close associates with street markets - could have acted as the locational initiators to the clustering of street markets. Given this is the case, the location of public retail markets becomes even more fundamental to the understanding of the distribution of street markets. A similar analysis on public retail markets alone has also been run and it asserts that market-clusters do not fit the Negative Binomial function at an approximation level as high as the street-market-clusters (Statistics are presented in Table 35).

Table 35: Comparison of Three Negative Binomial Results

Point Pattern Analyses*	X^2	Df	P	K
(1) Street Market	6.68	7	.40	.63
(2) Public Retail Market	4.31	3	.20	1.48
(3) Street + Public Mkt	11.22	10	.40	.62

* Quadrat Size = 1½ Km^2
X^2 Chi-Square Statistics
Df Degree of Freedom
P Probability Level
K Estimate of Degree of Clustering within Clusters

Market-clusters are not randomly distributed (low probability level) but there tends to be fairly strong clustering of individual markets within the clusters in certain locations. This is indicated by its relatively high K value in Table 35. The K value is a measure of the degree of clustering within clusters.[62] The higher the K value the greater is the degree of clustering. Of course, there must be a reason why these certain locations are favourable to the clustering of public retail markets. Public markets were built by the authorities in the first place; they were located toward the centres of great demand. The swarming-in of more markets in the vicinities could be explained as a result of the inertia of the primary locations. However, the most important question is whether these clusters of public markets locationally coincide with those of street markets.

In the third analysis, both street and public markets were treated as the same, i.e. as a means of supplying convenience goods to the public. Their " combined " distribution was also tested against the Poisson and Negative Binomial distributions. It was interesting to see that the new distribution followed almost exactly the same function as the street markets (compare the P and K between analyses 1 and 3 in Table 35).

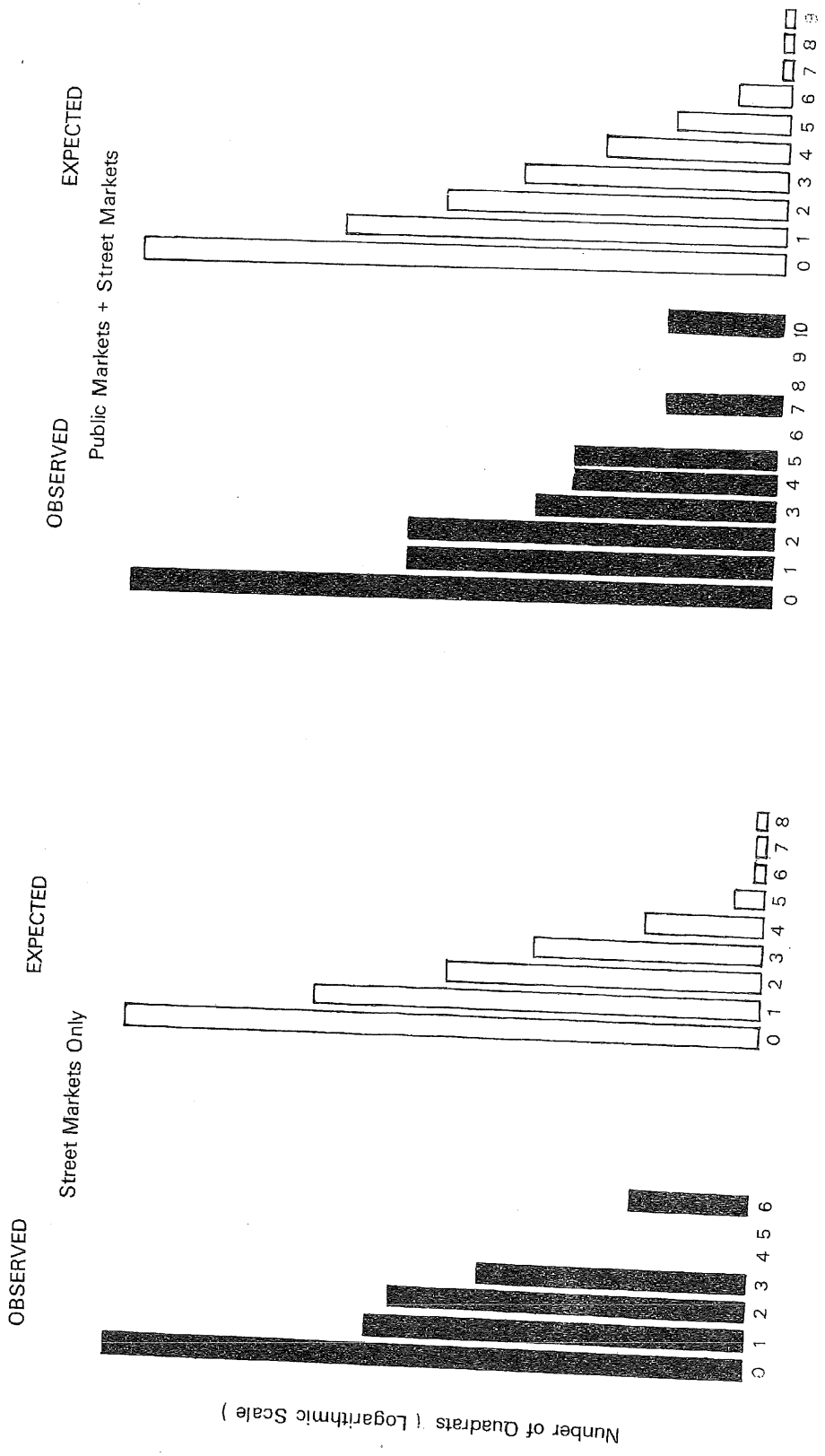


FIG. 13 : HISTOGRAMS OF OBSERVED AND EXPECTED DISTRIBUTIONS

There are two interesting points about the street-cum-public-market distribution. First, the inclusion of public markets with the street-market distribution does not improve the degree of fit to the Negative Binomial Function, at the same .40 level. This suggests public markets do not affect the distribution pattern of street markets significantly, at least in territorial coverage. Second is that the new K value remains at more or less the same level which indicates that the inclusion of public markets with the street-market distribution does not create any effect on the degree of clustering within clusters. In other words, there must be some overlapping between the two distributions. Such a locational interdependence problem is of major interest to the present enquiry. The following is a more detailed examination of the two distributions.

By comparing the two histograms presented in Fig. 13, one sees that the only significant change takes place at the market-rich classes (note the occurrence of two quadrats with seven markets, and another two with ten in the histogram on the right in Fig. 13). There are no noticeable changes in the frequency of market-scarce classes (see bars 1, 2, &3 in both histograms). All these indicate that most public markets are located in quadrats where there are already many street markets. Had there had no street markets, the supply of food-shopping facilities would have been confined to only certain parts of the metropolis where public markets were built in the first place. The present distribution of street markets (in random clusters) actually superimposes itself on that of public markets and extends its coverage to the remote territories (Fig. 14). This leads to a number of questions about the inter-dependence of the two types of markets. Why do they co-exist in certain areas? Do public markets act as the locational initiators in the formation of street trading clusters in the way described by the Law of Negative Binomial Distribution? If the answer to this is in the affirmative then what accounts for the presence of street trading clusters in the areas from which public markets are absent?

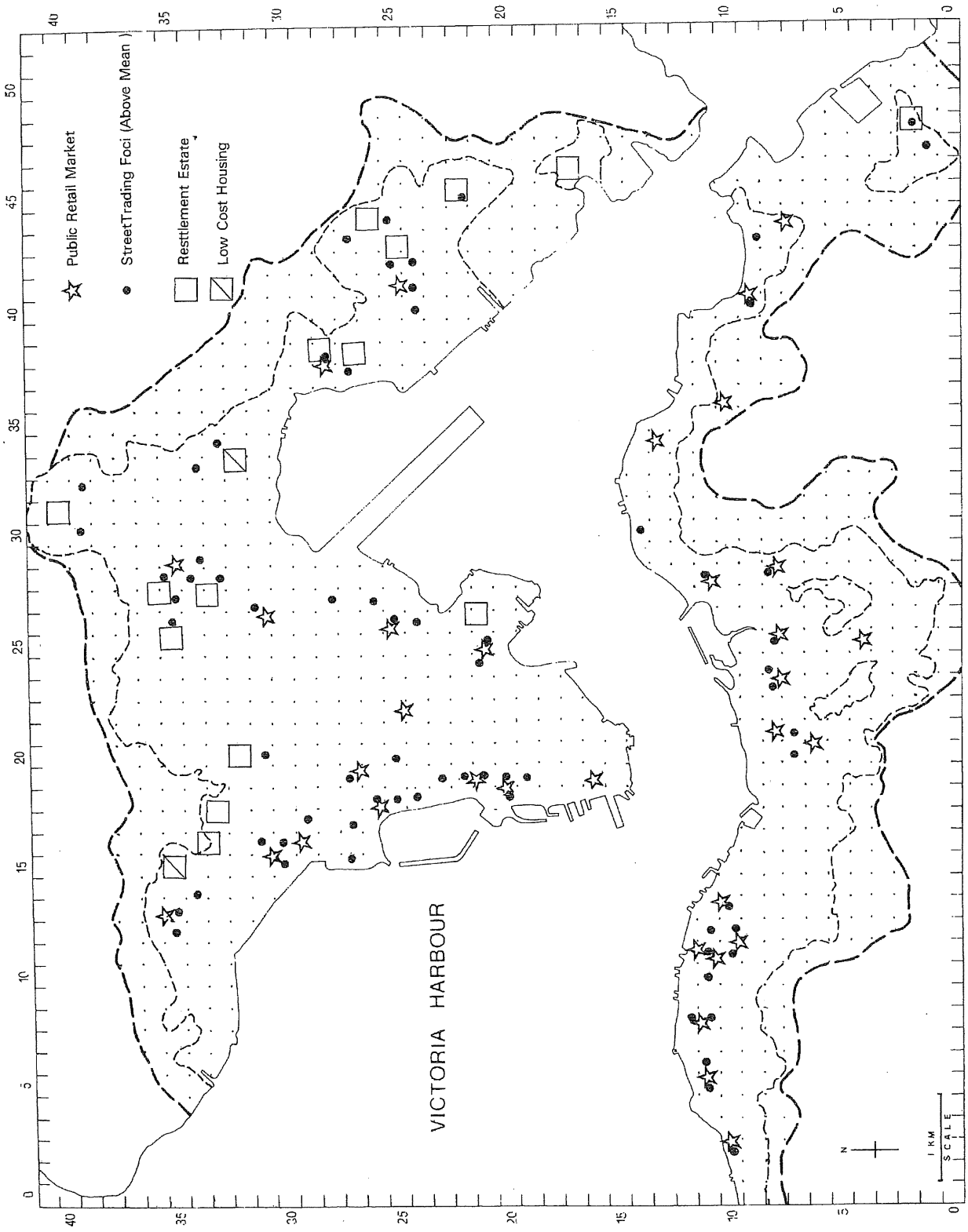


FIG. 14 : LOCATION PATTERN OF PUBLIC MARKETS, STREET MARKETS AND RESETTLEMENT ESTATES

One would argue that it would be difficult to identify whether public markets initiate street markets or the other way round because there are cases where the present public markets are actually the successors of previous street trading markets or bazaars. They are not necessarily the initators. What really matter are the underlying forces which initiate the creation of a trading complex whether a public market or an official street market. These questions will be dealt with later in this chapter. However, some understanding of the cohesion of individual stalls within a street market, similarly of individual markets within a big cluster, is fundamental to the discussion of the bigger issues.

7.3 Spatial Affinities of Retail Activities

External economies arising from the proximity (or accessibility) to particular complementary facilites are of the utmost importance to the explanation of the spatial affinity of economic activities. In retailing, such a complementarity may be of various kinds namely (1) to supply sources, (2) to the ' market ', and (3) to outlets similar in trade type. The most important one is the third type of complementarity.[63]

Just as with the arrangement of shops within shopping centres, external economies are responsible for the presence of areas or streets of specialization, so in the arrangement of individual stalls within street markets. However, in the shop-type system scale economies can sometimes offset the need for locational affinity. The increasing decentralization of giant ' hypermarkets ' from traditional food shopping centres to the suburbs is a recent example. In the street trading system, such economies are very limited. Hence, their reliance on the third type of complementarity mentioned above is far heavier than in retail shops. That is why retail affinities are more discernible in street markets than in shopping centres. The relatively small number of trade types (but not individual type of commodities) in the street trading system is also responsible for the marked affinity pattern because one can argue, at its simplest, that the fewer the trade categories, the greater will be the probability of having similar trades co-existing with one another.[64]

In addition, these trades are actually very closely linked with one another, say vegetables, raw meat, and raw fish, etc. These are all bought in one shopping trip. A street market is thus somewhat a giant super-market with different departments co-existing within one locality. Another reason for the marked affinity pattern is the structure of the ' market '. The ' market ' for street trading is relatively uniform and undifferentiated (in brand preference, loyalty, taste and price consciousness, etc.) compared with that of shops. Theoretically, the smaller the differentiation, the fewer will be the retail varieties, and eventually the probability of having a large number of similar trade types within one locality is higher (say the centre of a ' market '). Finally, the location of street trading activities is almost out of the control of the property market mechanism which controls the retail structure of the city. There is more freedom for the polarization of certain traders in certain locations, or certain sections of a street market. Of course, the final constraint is the availability of space and the pressure of external forces. If space is limited there will be limits to the natural development of the affinity pattern. An operator would simply pick any site which is available to him even if it is poor in terms of affinity economies. That is why in thriving markets such zonal patterns are normally disrupted by the invading mobile traders. The physical layout of a street market has also some effect on the affinity pattern. The wider a traffic-free street the better is the zonal pattern of retail affinity. This is the major difference in the appearance of street markets between the city districts and the resettlement estates.

7.3.1 Analysis of Spatial Affinities - A Model of Stall-Location

In urban retail studies, analyses of the spatial patterns of retail activities have been an interesting area of research. Various techniques have been used to model the actual distribution pattern; yet there seems to be none devoted to the study of the low-order retail activities such as hawkers and street markets.[65]

This may be due to the fact that such activities are of a mobile population which is difficult to measure quantitatively or the possibility that they are regarded as of little importance to a modern retail environment. Like most of the studies, the following analysis is also aiming at the modelling of the actual pattern rather than at a conceptual enquiry into the affinity problem which has been a common weakness in almost all the models developed so far.[66]

The present analysis is a very simple one. First, an inter-correlation matrix of all the 25 street trades was constructed (Table 36). The matrix was viewed as a linkage network, assuming highly correlated trades (with R over .50) as spatially associated or linked. In fact, closely linked trades are selling goods which are intrinsically inter-related such as vegetables and meat, seasonings and preserved foodstuffs. These goods are often shopped on the same trip and preferably from the same locality. In view of the relatively small size of the observation cells (250 m x 250 m) used in the analysis, it is reasonable to assume that a high correlation is equivalent to high spatial proximity or affinity. Then, for every individual trade, the number of the highly correlated ' links ' (R over .50) was counted. The larger the number of links achieved by a trade the greater will be its attraction to other activities. These numbers were then used as a measure of the ranking position within a street trading hierarchy. For example, Grocery is strongly linked to 15 trades (the numbers are listed under the 25 trades in Table 36) whereas there are no links between Newspaper and Magazines (Code 402) and other trades. This suggests that the latter (402) is hardly connected with any other street trades; whereas the former (Code 107) often goes hand in hand with a number of common street trades of which the most associated are Vegetables (108), Fruits (109), and Household Ware (301). The most correlated trade was then taken as the chief " Associate " for the trade concerned. For example, for Grocery (107) the chief associate is Vegetables (R = .97, the highest among those associated with 107).

Table 36: Correlation Matrix of 25 Street Trades

	101 1	102 10	103 5	104 10	105 11	106 6	107 15	108 13	109 14	110 3	201 11	202 12	203 14	204 13	205 4	206 5	207 3	301 12	302 13	303 8	304 1	305 0	401 10	402 0	403 4**
101																									
102																									
103																									
104		.65	.63																						
105		.62	.51	.70																					
106					.65																				
107		.51		.67	.76	.62																			
108				.64	.72	.67	.97																		
109		.52	.51	.82	.81	.59	.92	.93																	
110		.66																							
201				.59	.70	.47	.65	.63	.74																
202		.61		.81	.69	.53	.71	.69	.82		.83														
203			.51	.59	.54		.88	.81	.75		.59	.60													
204		.50					.69	.59	.50		.51	.53	.72												
205													.57	.66											
206							.51							.60											
207		.53			.54																				
301							.84	.78	.68		.60	.62	.83	.83		.69	.43								
302		.76	.57	.72			.73	.68	.74	.75	.50	.70	.75	.59				.63							
303							.54	.52					.67	.50	.55	.73		.70							
304																									
305																									
401							.71	.70	.58				.84	.52	.57	.60		.70	.61	.87					
402																									
403	.55	.55								.71											.67				

The most correlated for each trade are underlined; e.g. the "associate" of 103 is 104 (.63); whereas for 104 the associate is 109 (.82).

** No. of links (R over 0.50) for each trade

The ranking position of the associate was then plotted along the Y co-ordinate for determining the relative position of its partner on the X co-ordinate. The distribution of the 25 trades is presented in Fig. 15.

Fig. 15 can be treated as a stall-location model for a street market. The top right hand corner is where most correlated street trading activities are found. This can be viewed as the core of a street trading concentration. The further away from this corner the greater is the dispersion in distribution and diversity in trading varieties. The spacing between the different trades in the model is, of course, a hypothetical one. The closer the distance between the two trades the greater is the affinity between them. Another important point is that the model depicts only one sector of a street trading concentration which in most cases is confined to one or two streets.

According to the model, Fruits (109), Vegetables (108), and Grocery (107) are very close to one another, in particular between Fruits and Vegetables. These three trades are almost right at the centre of the concentration. In their vicinities, there are Raw Fish (105), and Meat & Poultry (104) on one side, and light manufacturing goods on the other (Emporium Goods - 201, Garments and Clothing - 202, and Footwear - 203). These two sets of street trades hardly juxtapose with each other. That is why in most cases they are separated by the " Semi-Wet " goods, i.e. Fruits and Grocery. So there is a gradual decrease in " Wetness " from the centre (Fish and Meat) to the dry-goods zone. Within the dry-goods zone, there are bulky commodities attached to the exterior of the light manufacturing goods section. These are mainly Household Ware (301) and Metal Ware (302). Variety goods (or specialty goods) are much further away from the core. They are normally located in isolation at the fringe of a concentration. Some prefer a certain degree of localization such as markets specialized in second-hand machinery and antiques. In between the three zones, there are various kinds of mobile and semi-mobile tradesmen or pedlars. Some tend to follow the wet goods (fruit barrows) while others prefer to locate near the dry-goods zone such as piece-goods pedlars. Service trades tend to locate in small numbers in rather out-of-the-way locations around the fringe.

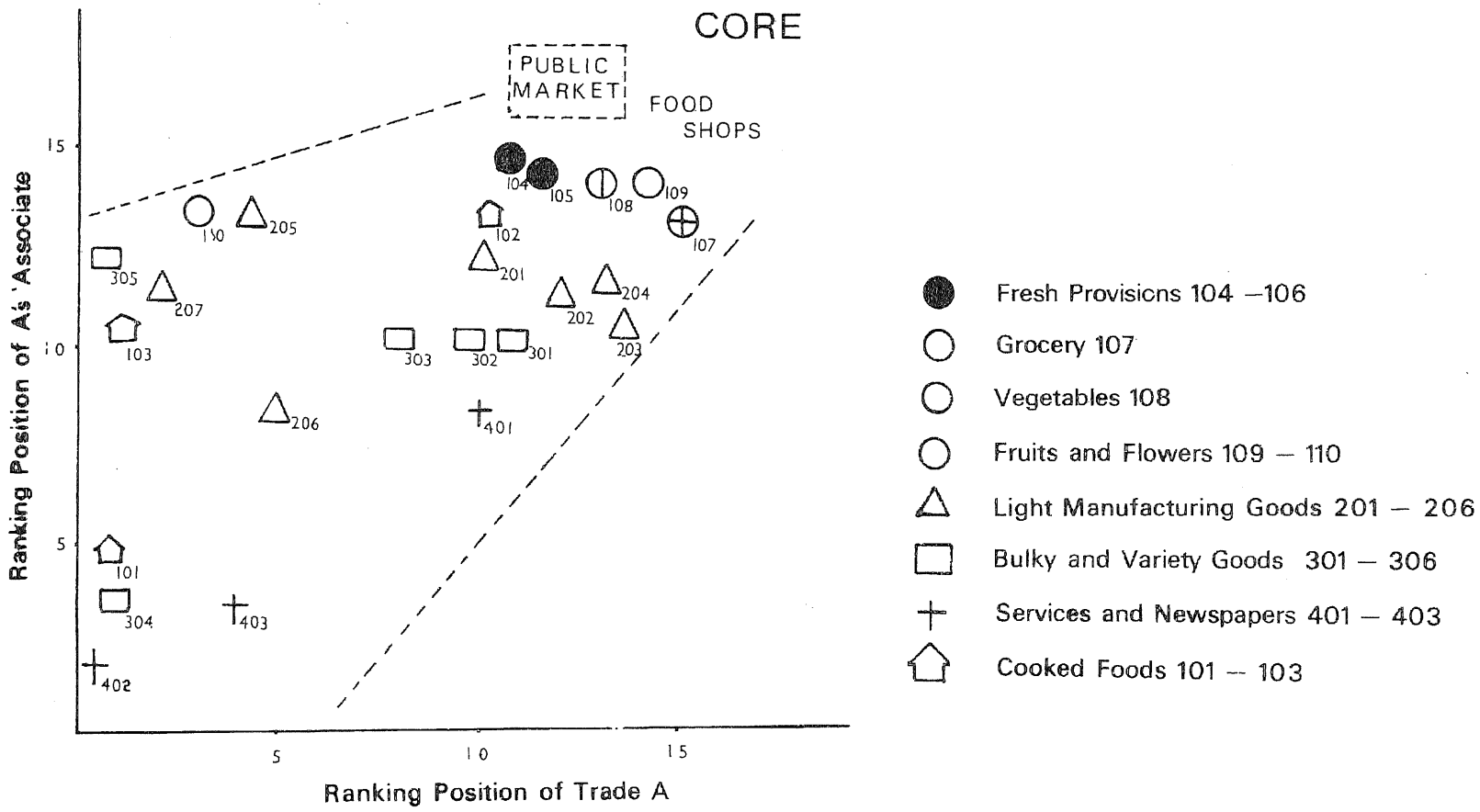
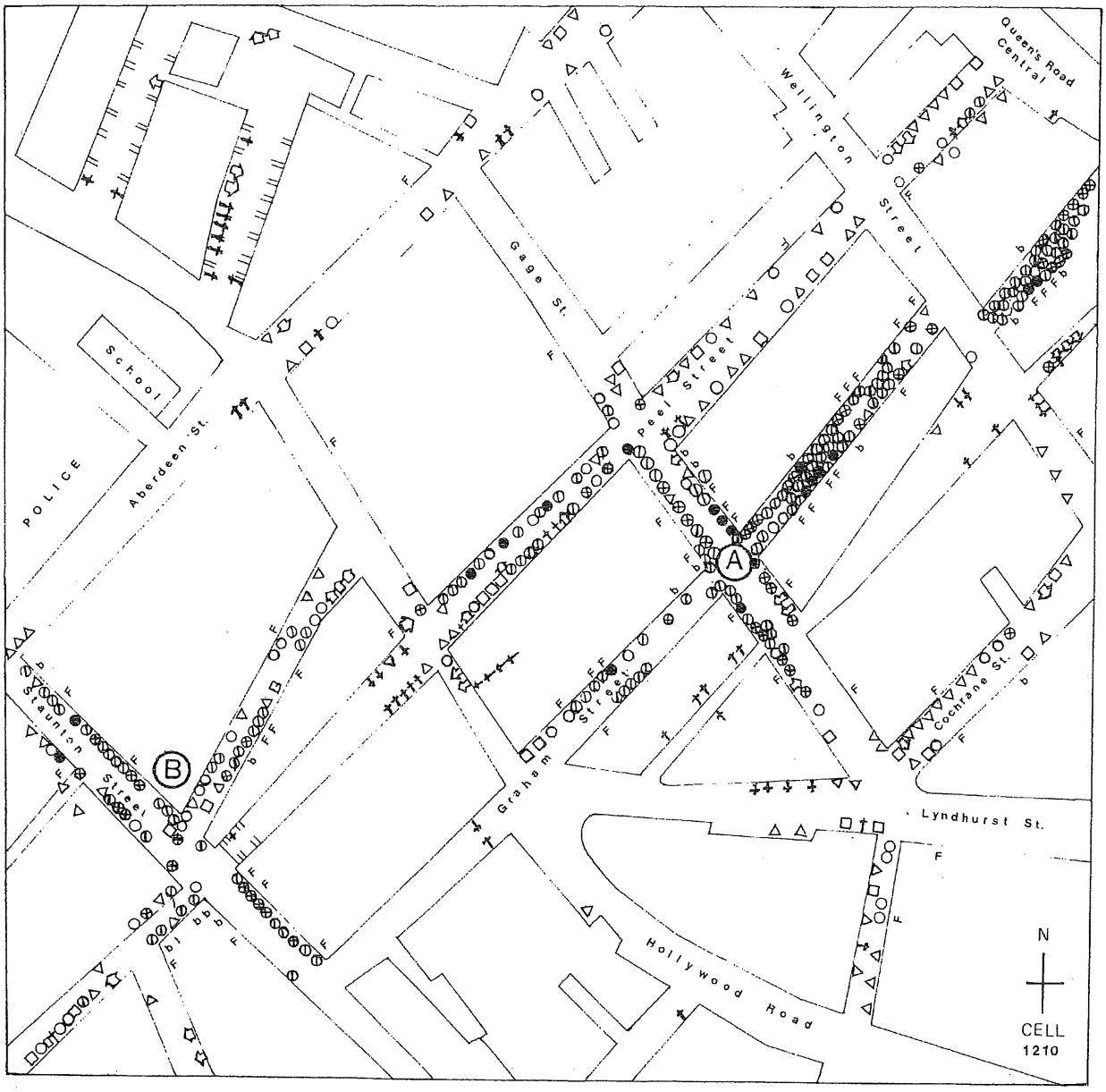


FIG. 15 : MODEL OF STALL – LOCATION

It is very difficult to verify the validity of the above model quantitatively. A comparison with the real world situation is given below only to review its applicability in a descriptive, non-quantitative way. Fig. 16 is the actual distribution of street trading activities in Cell 1210 in Central District, Hong Kong. Only broad categories are presented in the figure. There are roughly two street markets in this tiny area (250 m x 250 m). One is centred around the northern section of Graham Street between Gage Street and Wellington Street (A in Fig. 16). The other is around Staunton Street between Aberdeen Street and Peel Street (B in Fig. 16). The former is larger; it covers almost two thirds of the cell (roughly north of Hollywood Street). There, one sees the core is occupied mainly by wet goods. The relative absence of Raw Fish and Meat traders is mainly due to the fact that this area happens to be under the close surveillance of the Hawker Control Force. There are very few fruit stalls in the midst of wet goods but around the exterior of the central core. Dry goods stalls are further away from the wet zone. They are about one street block away from the centre such as those in the northern section of Peel Street and Cochrane Street (Fig. 16). Two street blocks away, there are small numbers of Service trades distributed in discrete locations (in between Graham Street and Lyndhurst Street and the Top left hand corner of the Cell). In the vicinity of these locations there are variety-goods stalls. There is also the evidence that bulky-goods stalls are seldom in consecutive rows like the light manufacturing goods. The location of cooked food stalls or pitches is rather complicated because, in the map, snack trolleys or barrows (mobile traders) are not distinguished from those stalls which cater for heavy meals. These two types of cooked food trade possess very different locational characteristics. Snack barrows tend to be close to the core even mingle with other mobile traders in the proximity to the market centre; whereas large-scale fixed cooked food stalls are normally in small groups stationed in outer locations.

FIG. 16 : DISTRIBUTION OF STREET STALLS IN CELL 1210 — GRAHAM STREET



- Fresh Provisions 104 — 106
- Grocery 107
- Vegetables 108
- Fruits and Flowers 109 —110
- Light Manufacturing Goods 201 — 206
- Bulky and Variety Goods 301 — 306
- Services and Newspapers 401 — 403
- Cooked Foods 101 — 103

F	Food Shops	49
b	Fresh Provisions Shops	17
No. of Street Trading Units		469
Population		14,825
No of Street Intersections		21
		65·8%

7.3.2 The Location of the Core

According the field survey, the core of a street market is oriented mainly to two complementary retail outlets, i.e. (1) public retail markets and (2) fresh provisions and general food stores. If an area is not equipped with public markets the site adjacent to the majority of the fresh provisions shops and food stores is likely to be the core of a street market. Raw Fish and Meat traders usually locate in very close proximity to these shops. Vegetable stalls tend to line themselves up in rows on both side of these wet-goods stalls. If a public market is present the location of butchery and grocery shops becomes secondary in determining the core. The best location will be around the main entrance of the public market. Usually there will be fewer illegal fish and meat stalls. In such a case, the core will be dominated by vegetable traders rather than meat and fish traders. The presence or absence of public markets is a typical representation of the contrast in street markets between the city districts and the outlying districts. The model presented in Fig. 16 is more suitable for market-absent districts; Vegetables and Grocery are in a more central location. As for market-present districts, Fish and Meat should be in the core; a reversal of the two groups will give the modified model (reversing positions between 104 - 105 and 107 - 109 in Fig. 15). Finally, the most favourable environment for the formation of a core is a street intersection with a public market at one corner and a couple of fresh provisions shops at other corners supported by a number of grocery shops. The street intersection is the point of maximum accessibility whereas the public market generates more shopping attraction. The best example of such an environment is the street market in Kowloon City Road (Cell 2625).

There are a number of factors which may distort the location of a core and the affinity pattern of a street market. The most important one is the degree of official surveillance. In areas of stringent control, fish and meat traders may not be found in the centre of a street market. They may recede to a relatively hidden-away location, say a cul-de-sac, or to less accessible sites (to police patrols) such as a steep and narrow street. A street intersection with one end closed

to traffic (vehicle) could be even more favourable. The centre of a street market will lean toward that end. On the contrary, if there happened to be one end which is occupied by other uses, say a car park or a large garage, the market will certainly avoid that end. It tends to develop along streets which do not have repelling activities.

7.4 Factors Influencing the Distribution of Street Trading Activities

Having discussed the distribution patterns of street trading at two levels of investigation, i.e. (1) the clusters of street markets and (2) the individual stalls within street markets, the following attempts to study the factors which affect the distribution of street trading stalls across the metropolitan area of Hong Kong. Two stepwise multiple regression analyses were used to extract the interrelationship among a large number of independent variables to account for the present street trading distribution. The first analysis was to identify the enviromental and demand factors which were supposed to be responsible for the initiation of a trading location, say the location of clusters. The second was to detect the locational interdependence between street trading and other retail activities such as spatial competition or complementarity which were thought to be responsible for the distribution of street trading at a local level. All the independent variables are listed in Table 37. They are of various kinds such as population (demand), land uses, street layout and accessibility or pedestrian circulation, and the local retail structure. Variables concerning the socio-economic structure of the local residents have also been used in the analyses, but they fail to give any significant results. This further supports the argument (Chapter IV) that street shopping is fairly universally accepted by the rich and the poor alike. There has been no significant proof that street trading is concentrated only in socio-economically poor districts.

Table 37: Variables Used in the Multiple Regression Analyses of Street Trading Distribution

Independent Variables	Simple R	Description of Independent Variables
POP	0.25	Population density
RESIDEN	0.593	% of total floor area within a cell which is devoted to private residential uses
GOVRN	-.307	% of total floor area devoted to governmental uses such as offices and housing.
RESET	-.259	% of (as above) resettment uses
COMRES	0.371	% of (as above) commercial and residential uses
BUSOF	-.266	% of (as above) business and offices
HVYINDS	-.091	% of (as above) heavy industries
LGTINDS	0.460	% of (as above) light industries
OTHERS	-.366	% of (as above) other land uses
STBLCK	0.525	No. of street blocks (official definition) within the cell
STNET	0.516	No. of street intersections within the cell
NSTREET	0.406	No. of streets within the cell
PEDES	-.392	No. of pedestrians passing through a counting point in a major street within the cell in 15 minutes in off-peak hours
DISMKT		Distance to the nearest public retail market in distance units
FPSHCP	0.783	No. of fresh provisions shops
GROCER	0.805	No. of grocery stores including rice shops and any other food shops
GENSTR	0.748	No. of general stores
REFRESH	0.386	No. of refreshment establishments including wine shops
PIECE	0.632	No. of establishments selling piece goods
GARMT	0.557	No. of Garment and Clothing stores
HRDWRE	0.430	No. of hard ware stores
OTRSHOP	0.556	No. of shops other than those included in the above categories
Dependent Variable		Distribution of Street Trading Stalls

A few technical problems which are of vital importance to the reliability of the analyses have to be discussed in the first place. First is the problem of collinearity of the independent variables. If the independent variables included in the regression equation are highly correlated the sampling error will be consequently large resulting in the imprecise estimation of the coefficient. The second is the linearity and homoscedacity of individual variables.[67] It is very laborious to work out the presence or absence of these problems because of the wide spread of the observations. These technical problems have been checked in the present analyses. For the collinearity problem, stress should be placed on the fact whether the intercorrelated variables concerned are of equal importance in explaining the variation of the dependent variable. As for the second type of problem, a trial has been made by log-normalizing all the variables prior to the regression analyses. It has been found that the analysis which is based on the transformed data increases the explanation by only 9%. So it is more convenient to use the non-transformed data for the final analyses.

7.4.1 The Demand and Environmental Factors

By examining the simple correlation coefficients listed in Table 37, one can see that the private residential environment (indicated by variable RESIDEN) is most responsible for the large number of street trading activities compared with other types of landuse environment. It has to be noted that, in Hong Kong, private residential uses are distinguished from other residential uses like resettlement estates and government-aided housing. This type of land use is very common in the city districts, in particular those which are almost packed with high-density low-rise domestic blocks. These blocks usually have the ground floors used for ordinary retail shops in contrast with the modern high-rise blocks which have more commercial activities other than retailing. The latter type of commercial residential land uses are disadvantageous to street trading because there is little complementarity between high-order commercial activities, say

modern shops, department stores, and business firms, etc. and the low-order street trading. That is why there is a negative correlation between the two (see variable COMRES in Table 37). In other words, in a private residential environment the growth of a sizeable street trading community is attributed to (1) the high density of population, mainly of middle and lower income groups, and (2) the low-order shoptype retail structure which is more comparable to street trading than that of a shopping centre. Highly commercialized areas have no attraction for street trading, in particular the business districts (see variable BUSOF in Table 37). The most sterile environment is dominated by governmental and institutional land uses such as government offices, hospitals, or even government quarters (R = -.30). It is interesting to see that light industrial and service landuses are not unfavourable to the concentration of street trading activities. There is quite a significant correlation between the two (R = 0.46). They are particularly advantageous to certain kinds of street trades namely (1) Light Refreshment Stalls (R = 0.49), (2) Take-Away Cooked Meats (R = 0.61), and (3) Garments & Clothing (R = 0.56). This signifies that in a light manufacturing environment the income elasticity of demand favours high unit-value goods rather than common goods like foodstuffs. That is why one can see large numbers of these types of street trades in northwest Kowloon (a traditional light manufacturing district) and in those industrial estates in the new districts such as San Po Kong and Kwung Tong. In these districts, Garments and Clothing is a particularly thriving trade; there are specialized markets which are aimed at mainly the teenage female factory-workers.

The street layout or pedestrian circulation is also of some significane to the distribution of street trading activities. Areas with dense street networks (indicated by numerous intersections) are usually associated with a wide distribution of street traders. It is particularly true when accessibility is favourable to pedestrian traffic but not vehicle traffic. An excellent example is the former commercial district in Central District on the Hong Kong side presented in Fig. 16. There is a wide distribution of street traders either in

the form of street markets or small groupings in narrow and winding streets and steep-gradient lanes which are inaccessible to vehicle traffic.

Taking all the environmental and demand variables into consideration, a multiple regression analysis has been run in order to see how these variables are related to street trading. The stepwise results are presented in Table 38.

Table 38: Multiple Regression of Street Trading on Environmental and Demand Variables

Independent Variable	Multiple R	R^2	R^2 Change	B
STNET	.585	.342	.342	15.928
POP	.682	.469	.127	.952
RESIDEN	.718	.515	.046	14.007
BUSOF	.741	.549	.034	-2.914
				(-99.528)

The first problem arising from the inter-relation of these variables is the possible collinearity between variables STNET and RESIDEN (R = 0.61). As mentioned in a preceding paragraph, it is important to know how these two share the explanation of the variation of the street trading distribution. Variable STNET alone accounts for 34.2% out of the total of 54.9% of the variation in the dependent variable (see R^2 in Table 38); while variable RESIDEN accounts for only 4.6%. In other words, the collinearity problem is not various enough to reject the regression equation. However, this problem sheds light on the likelihood that an old and highly populated sub-commercial environment which is characterized by intricate street networks and high density domestic housing is favourable to the co-existence of a sizeable street trading population.

The density of population in an area can also be regarded as a relative measure of the general demand for street trading goods, in particular the foodstuffs. In the multiple regression analysis, population density (variable POP) accounts for 12.7% of the total variation in the distribution of street traders. There is no collinearity problem between variable POP and the other three variables included in the equation. The variable BUSOF (business & officies) has a negative relationship with the street trading distribution; it contributes about 3.4% to the total explanation. These four variables (Table 38) appear to be quite responsible for the distribution within the city districts because in outlying districts variables STNET, RESIDEN, and BUSOF are certainly of very minor significance. In new districts there are rarely intricate street networks; floor spaces are largely used for resettlement land uses rather than for private residential purposes; and undoubtedly there are very few business offices. The unexplained variation (54.9% explained by the equation) could well be embedded in the outlying new territories.

7.4.2 Locational Inter-dependence Factors

The second analysis included variables which are supposed to be related to street trading. The presence of various kinds of retail outlets and public retail markets would certainly have some effect on the size and performance of street markets within the same locality. Since public markets are not available in all the sample cells, the direct distance from a street market to its nearest public market is used as a measurement of the locational inter-dependence between the two. The number of shops and department stores of every major retail group also serves as an indirect measure of the inter-dependence between street trading and the formal retail system. The multiple regression is presented in Table 39.

Several interesting points are apparent in Table 39. First, there is a supreme importance of the variable GROCER in the explanation of the variation of the variation of the street trading distribution. It alone accounts for 64.9%, even higher than the total score

achieved by the first analysis (Table 38). All the rest of the independent variables are almost of equal importance in the explanation; each contributes less than 10% (see R^2 Change in Table 39).

Table 39: Multiple Regression of Street Trading on All Independent Variables

Independent Variable	Multiple R	R^2	R^2 Change	B
GROCER	.805	.649	.649	4.060
RESIDEN	.853	.728	.078	10.734
FPSHOP	.884	.782	.054	12.702
DISMKT	.929	.864	.082	-4.877
COMRES	.952	.906	.041	-12.855
STNET	.968	.938	.031	8.833
				(-2.231)

Second, DISMKT and COMRES have negative effects on the dependent variable. The further away from a public retail market the smaller is the size of a street market. This reflects the idea that public retail markets are magnets of street trading agglomeration. COMRES remains the same negative force, replacing the BUSOF variable of the first analysis. In fact, COMRES is not as restricted as BUSOF; it exists in the outlying districts as well. Third, the variable STNET has been dropped from a supreme position in Table 38 to the lowest position in Table 39. This indicates that in newly developed areas such as new towns and housing estates, a dense street network is not prerequisite for the growth of street trading.

The above regression analysis reveals the fact that the presence of fresh provisions and grocery shops is favourable to the concentration of street traders. It supports the argument that external economies are the major force of agglomeration. It applies not only to the street trading system itself, but also between street trades and the proper shop-type retailing. There is a complementarity function

between them. The same applies to the location of public markets. By taking all the variables included in the equation into consideration, one is certain that the influence of the local retail structure on the distribution of street stalls is far greater than the environmental and demand factors (note that POP is no longer in the second equation). This could well be the reason that in an extremely compact urban environment like Hong Kong, the spatial variation in demand for ordinary food shopping and in environmental characteristics is not severe enough to reflect their influence on the distribution of quite a ubiquitous activity like street trading. However, there is a marked difference between the two analyses. That is if the locational inter-dependence of shoptype retailing is ignored the demand and environmental factors seem to explain the distribution of street trading at a macro scale, say the location of the clusters as described in the Negative Binomial process. On the other hand, if the distribution of the public retail markets and shops is taken into account, the economies arising from the proximity to these facilities seem to explain the street trading distribution at a micro level. It is the second approach which provides the basis for a further study of the spatial variation in the supply of street trading facilities relative to the feasibility of the shop-type facilities. The residual analysis of the second equation serves this purpose.

7.4.3 The Residual Analysis

The residuals of the second regression equation were first standardized as ratios to the mean residual value and then grouped into four classes, i.e. (1) Above mean over-estimated, (2) below mean over-estimated, (3) above mean under-estimated, and (4) below mean under-estimated. Over-estimation means that the estimated Y (the dependent variable - the street trading distribution) is larger than the observed value (Appendix 3), indicating that there should be evenmore street traders in the cells concerned than there are at the present in accordance with their present level of firm-type retail

feasibility and the local environment. The reverse is the case of under-estimation. Special attention has been given to the extreme cases (the above mean residuals in both over and under-estimations) and the regional contrasts in the estimated value of the supply of street trading facilities.

The regional variations are examined on the basis of five regions achieved by a Principal Component analysis of the same 22 variables and on the same observation cells (Fig. 17). The regions are groupings of individual cells on the basis of their scores on the first two components. Component I is heavily loaded with ' Retail ' variables whereas Component II is dominated by population density, resettlement housing and the absence of industrial activities (for component scores and loadings, see Appendix 4A & B). Component I is regarded as an index of commercialization, in particular retail development while Component II measures the ' dormitory-like ' nature of a local environment. The residuals are presented in Fig. 18. The regional contrasts are summarized as follows:-

1. Commercial and Sub-Central Districts (A and B in Fig. 17 & 18):

There is a tendency towards over-estimating the number of street trading units in these districts than there are at the present in accordance with their present level of retail development (argument based on regression equation in Table 39). The present level of street trading is a reflection of either (a) a saturation of supply due to the large number of food shops, or (b) the presence of some external factors which limit the potential growth of street trading in a local environment. According to the extremely low level of the provision of food-shopping facilities which has been fully discussed in Chapter III, the second premise is more likely to be the real reason for over-estimation in these two regions. This is particularly true in the extreme over-estimated cells such as Lower Pei Ho Street in Sham Shui Po (Cell 2 in Fig. 18), Yin Cheong Street in Mong Kok (Cell 27), Graham Street in Central (Cell 19) and the vicinities of street markets in Hung Hom (Cell 6), and Kowloon City Road (Cell 17) and Kennedy Town (Cell 3). Cells 6 and 17 are rather different. They are off the centres of their local concentrations but are still within the same retail environment of their local street markets; eventually they are over-estimated.

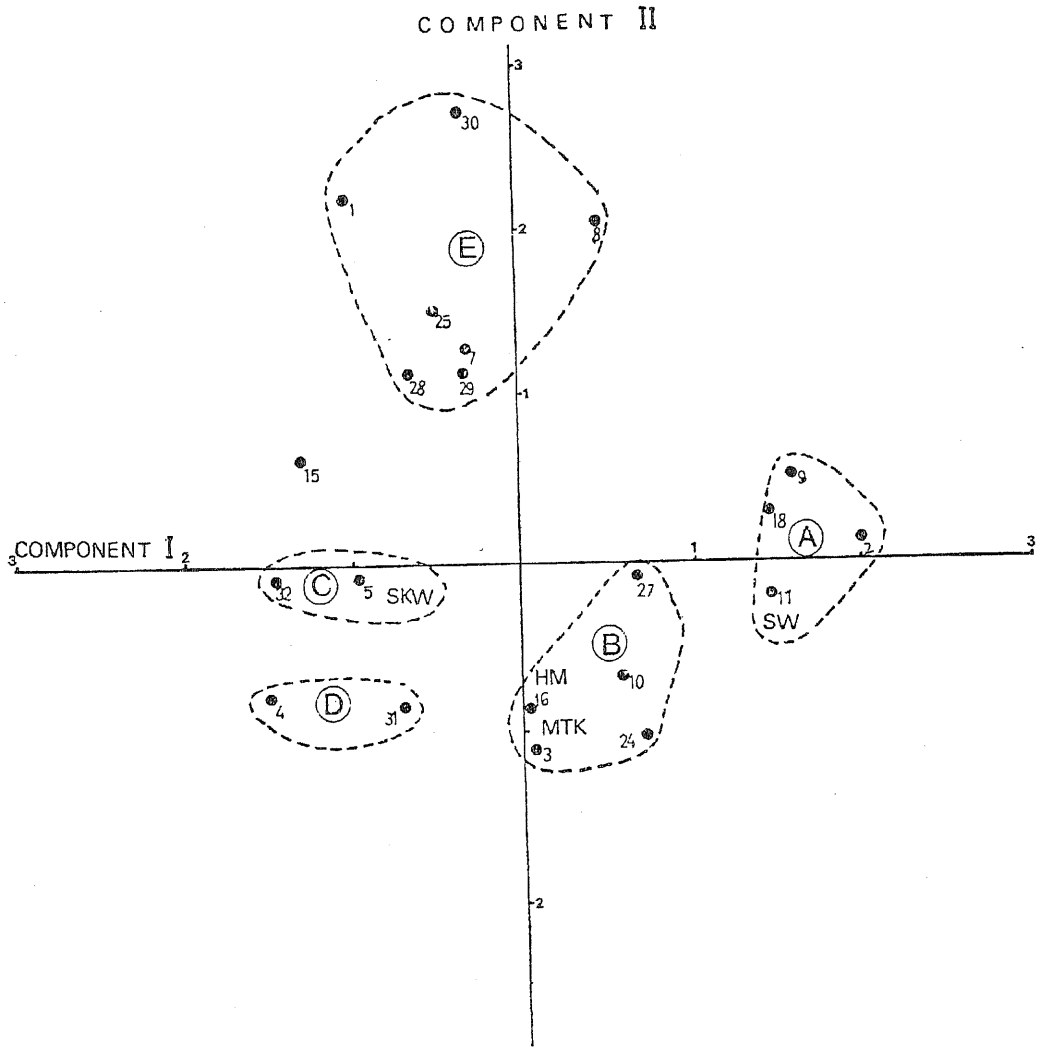


FIG. : GROUPING OF SAMPLE CELLS BY COMPONENT I AND II

Ⓐ SW Sheung Wan (14,19)
- 2 Sham Shui Po
- 9 Yau Ma Tei
- 11 Kwun Chung
- 18 Nam Cheong Street

Ⓑ HM Hung Hom (6,20,26)

MT Ma Tau Kok (12,13,17)
- 3 Kennedy Town
- 10 Fuk Wing St.
- 16 Western
- 24 Hankow Rd.
- 27 Yin Cheong St.

Ⓒ SKW Shau Kei Wan (21,23)
- 5 Tong Lo Wan
- 32 North Point

Ⓓ
- 4 Kwun Tong (industrial)
- 31 Kwun Tong

Ⓔ
- 1 Shek Kip Mei
- 7 Wan Tau Hom
- 8 Ngau Tau Kok
- 25 Tze Wan Shan
- 28 Sau Mau Ping
- 29 Chai Wan

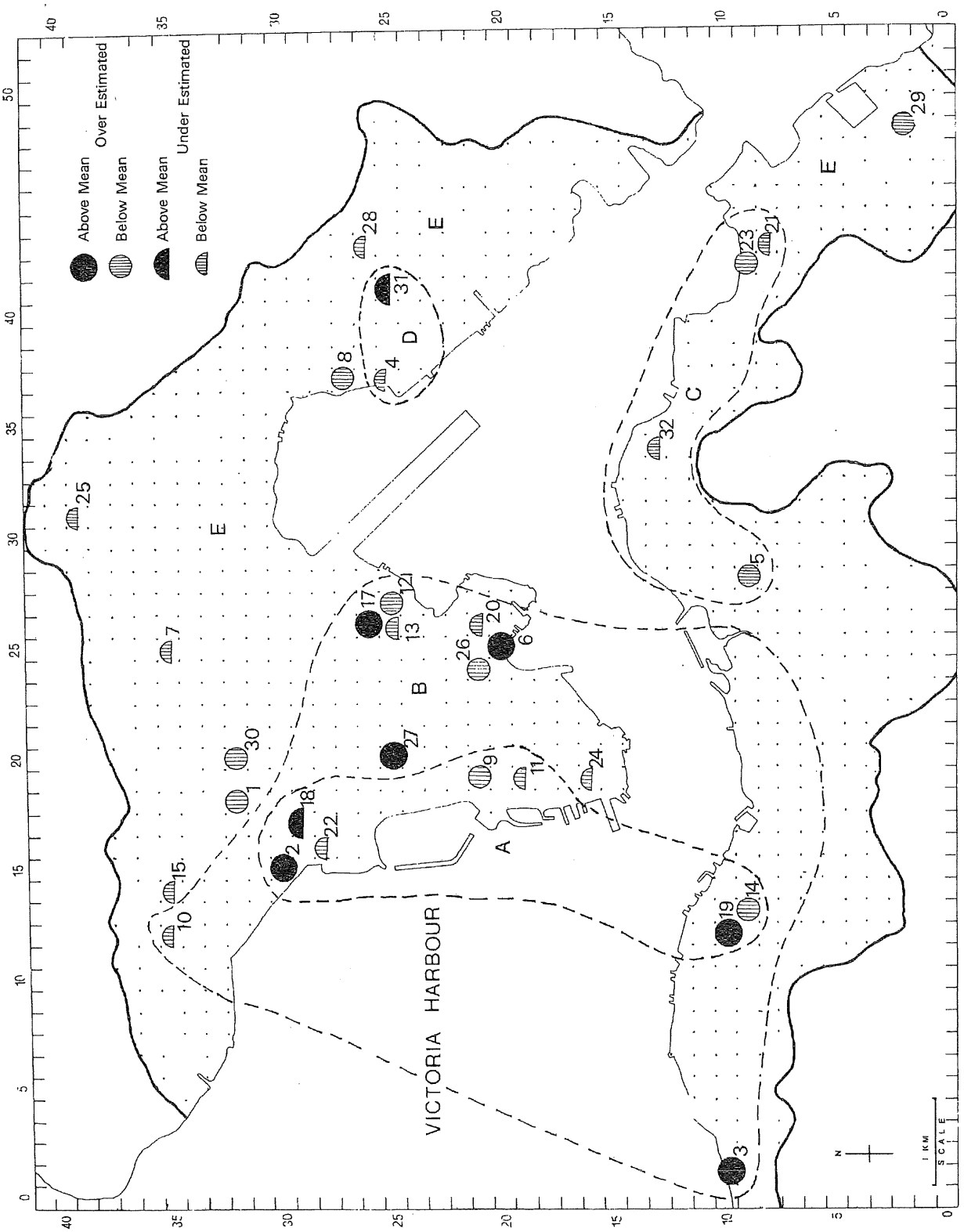


FIG. 18 : DISTRIBUTION OF RESIDUALS

2. Non-Resettlement Suburbs (Group C In Fig. 18):

These cells have the lowest over or under-estimates of street traders. Population density is relatively low in this region compared with other sunurban districts and this results in a relatively low demand for street trading.

3. Industrial Town (Group D in Fig. 18):

This is the only area outside the city districts which is greatly under-estimated by the regression equation. This indicates that there must be a low retail provision in this industrial district; the present street trading activities are supplementary to shops.

4. Outlying Districts (Group E in Fig. 18):

This region is composed of mainly resettlement estates. Formal shopping facilities are generally poor compared with the city districts, in particular the food-shopping facilities because there are extremely few public markets in this region. There appears to be a pattern that the further away from the city districts the heavier will be people's reliance on street traders as the main sources for food shopping. That is why those cells adjacent to major shopping centres are over-estimated, e.g. Cells 1 and 30 by the side of the thriving shopping centre of Sham Shui Po (Fig. 18). Remote cells are under-estimated such as Cell 16 in So Uk Tsuen, Cell 7 in Wan Tau Hom, Cell 25 in Tze Wan Shan, and Cell 28 in Sau Mau Ping. The locational relation between these resettlement estates and street markets and public markets can be seen in Fig. 14 presented in a preceding section.

7.5 Summary of Analyses

Generally speaking the distribution of street trading activities in Hong Kong is fairly paralled with the population distribution. But there are significant variations at regional levels. The conventional method (official) of estimating the size (or growth) of street trading on the basis of the hawker/population ratio is thus inappropriate.

The distribution of street trading follows the Negative Binomial Function that there are random clusters of street markets all over the metropolis; within each cluster, street markets are distributed by number on a logarithmic scale. The distribution of individual stalls within a street market is even more compact. The zonal pattern of specialized sections is an outcome of maximizing the external economies - proximity to complementary stalls. Complementarity does not only exist in between stalls and between trades but also between street trading and the formal retail system. Street markets tend to centre at sites close to public markets or fresh provisions and grocery shops. A street intersection with public markets on one side and a couple of food shops on the other is the ideal location for the core of a street market. The core is dominated by wet goods. Next to the core is a zone of light manufacturing goods. Heavy and variety goods are in the outer zone. Services and mobile traders scatter in between these zones. Generally, the further away from the centre, the greater is the diversity of trading varieties and the weaker is the retail affinity.

Old and densely populated sub-commercial surroundings are responsible for the distribution of street trading at a macro scale, in particular in the city districts. However, at a micro scale, the locational inter-dependence between street trading and the formal retail system becomes more influential in shaping the street market. Public markets are certainly one of the locational forces that attract street traders but they are not necessarily the locational initiators. Fresh provisions shops and grocery shops are complementary to street markets. There is hardly any evidence of repulsion between them.

The residual analysis exposes the regional contrasts in the estimated values of street trading distribution. Outlying districts are largely under-estimated because of their generally low levels of retail development and the lack of government-built shopping markets. Street traders play an important role in minimizing the contrast. This leads to the study of commodity distribution discussed in the following chapter.

VIII STREET TRADERS AND COMMODITY DISTRIBUTION

In Chapter III, it was confirmed that the level of provision of formal retail facilities is extremely low in modern Hong Kong as compared to the United Kingdom and Japan. The preceding chapter has also exposed the regional variation of this problem within Hong Kong through the study of the existing distribution of street trading activities. This is because it is believed that the formal and informal (street trading) systems are strongly inter-related, in particular in the food sector. Districts with low levels of formal retailing are usually supplemented by higher levels of street trading in terms of the number of retail outlets and of the varieties of goods and services left to be handled by street traders. From the point of view of shopping convenience, people in these districts can satisfy most of their needs, say of convenience goods, simply by visiting their local street markets instead of going somewhere else. In such a way, street retailers seem to perform a useful contributing function in the over-all retail distribution system. If only the food-retailing sub-system is considered, their function is even more important, particularly in the distribution of vegetables and fruits for there are almost no formal retail outlets for these commodities. Thus, fruits and vegetables are the largest street trading group and, spatially, are widely distributed. They exist in almost every street market, whether big or small, except the specialized ones. The reverse is the case for high-order shopping goods.

The following is an examination of the ' position ' of street trading within the distribution network; and its links with the supply and consumption ends respectively along a marketing chain. Fig. 19 gives some idea of the relative positions of various marketing intermediaries (shops, market halls, street stalls, etc.) in various chains. It shows that the lower order the goods the closer are the stalls to the final consumer. The wholesale intermediaries are far from the retailers (Fig. 19).

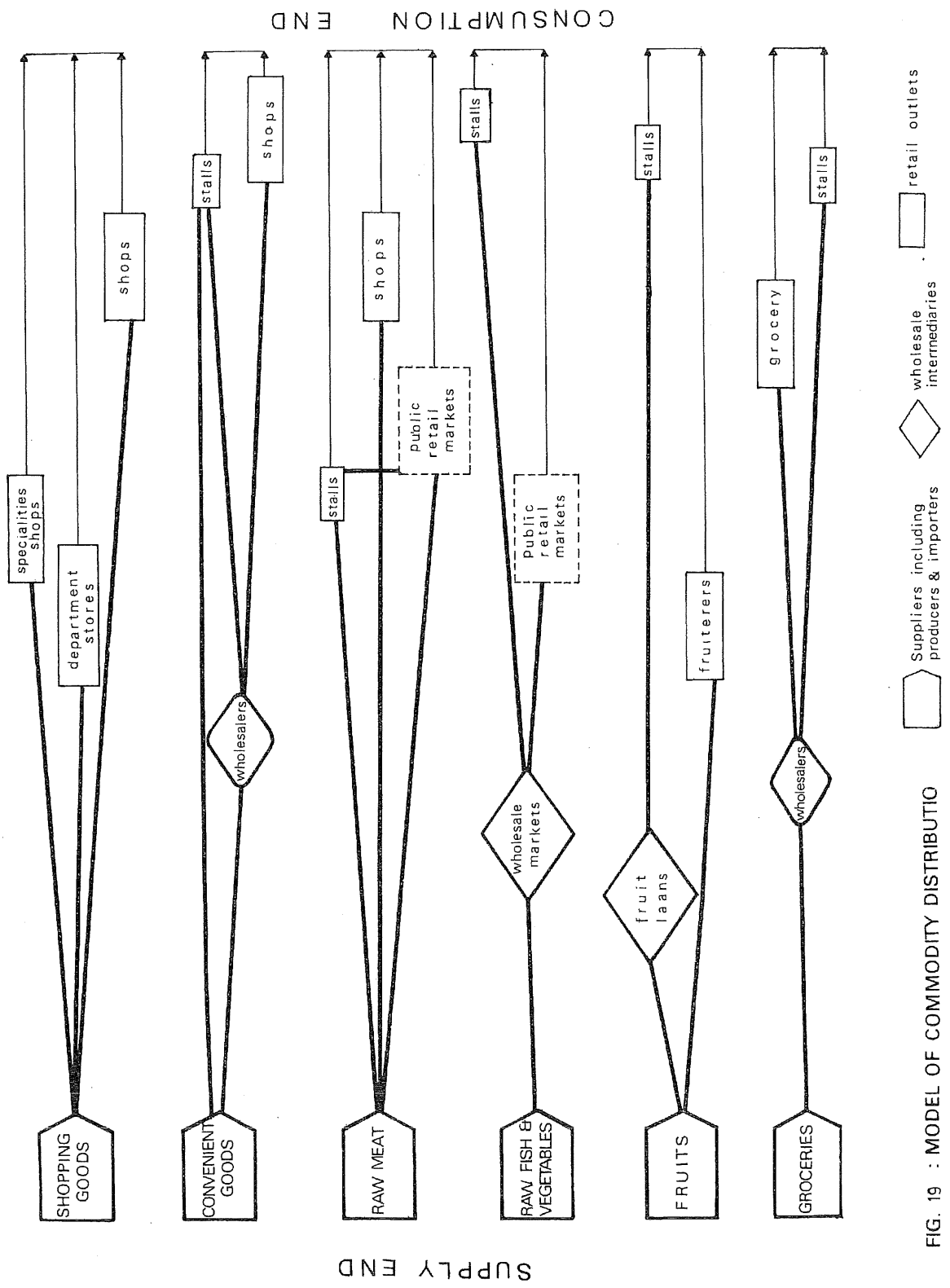


FIG. 19 : MODEL OF COMMODITY DISTRIBUTIO

8.1 The Retailer (Street Traders) and the Supplier (Wholesaler)

Almost all the perishable goods sold in street markets are obtained from wholesale markets. Vegetables are marketed through the official Vegetable Marketing Organization (VMO) at the government-built wholesale markets. The collection of local farm produce is fairly well organized by the authorities. The only problem is the delivery from the wholesale markets to the individual stalls. The Fish Marketing Organization (FMO) operates wholesale markets located at a number of fishing port; there is no such market within the present Study Area. Small fish traders seldom draw their supplies directly from these markets. However, the imported pond fish and the locally caught fish and crustacea are marketed in a government wholesale market in Kennedy Town on the Hong Kong side, i.e. the only government fish market in the Study Area. But, there are some privately operated wholesale markets called ' laan 欄 ' located in co-existence with some large retail markets. The handling of raw meat is strictly under the control of the authorities. Slaughtered animals have to come from government abattoirs and are distributed by special delivery vans. Quite a number of meat shops act as wholesalers to street traders as well. The most neglected areas are fruits, poultry, pondfish and crustaceans. They are almost all handled by laans. Laans are not necessarily marketlike buildings; they can be places where bulk buyers and sellers meet. The present distribution of laans is largely an outcome of a natural development of commodity distribution which is primarily based on the long established government wholesale and retail markets.

Along the distributive chain, the movement of goods from wholesale points to the retail outlets is almost entirely in the hands of private transport agents. There is no official delivery system except for the meat trade. Generally, the privately operated delivery systems in the vegetable and fruit trades are fairly institutionalized. Street traders do not have to ship their purchases on their own, yet they definitely select and purchase supplies personally. The following is an examination of the movement of three major types of street trading commodities from the supply points to the retail outlets.

8.1.1 The Movement of Vegetables

Fig. 20 shows the movement of vegetables from major supply sources (indicated by ◯ in Fig. 20) to the sample street markets.[68] The two major sources are government wholesale markets in Cheung Sha Wan and Kennedy Town respectively. The former deals mainly with the wholesaling of fresh vegetables collected from farmers in the New Territories. The latter is for the wholesaling of heavy and dry vegetables imported mainly from Mainland China. On the Hong Kong side, there are a number of wholesale centres in the Western district, i.e. east of Kennedy Town. These are mainly individual wholesalers or importers who do the bulk-breaking at the point of import. Some tenants at public retail markets also resell commodities to street traders. There appears to be a tendency for more and more wholesale activities to be established in locations away from the official wholesale markets but closer to the hub of demand instead (Fig. 20). On the Kowloon side, there are also illegal wholesale markets, the so-called ' black markets ', further apart from the Cheung Sha Wan Wholesale Market but towards the centre. These markets purchase selected commodities directly from the New Territories. But the most important attraction is their locational advantage relative to the buyers from the eastern part of the Study Area. In fact, some of these markets originated as thriving street markets with good access to the arterial road network. The one in Boundary Street, Sham Shui Po South, is a good example. It is on a major east-west trunk road connecting the city districts in West Kowloon and the outlying districts in Northeast and East Kowloon. Street traders from the east are eager to get their supplies very early in the morning so as to catch the morning business peak. Some distant traders even obtain their supplies directly from the New Territories because it takes them more or less the same length of time to reach the government wholesale markets on the western fringe and ship the goods back (see trips generated from the East in Fig. 20).

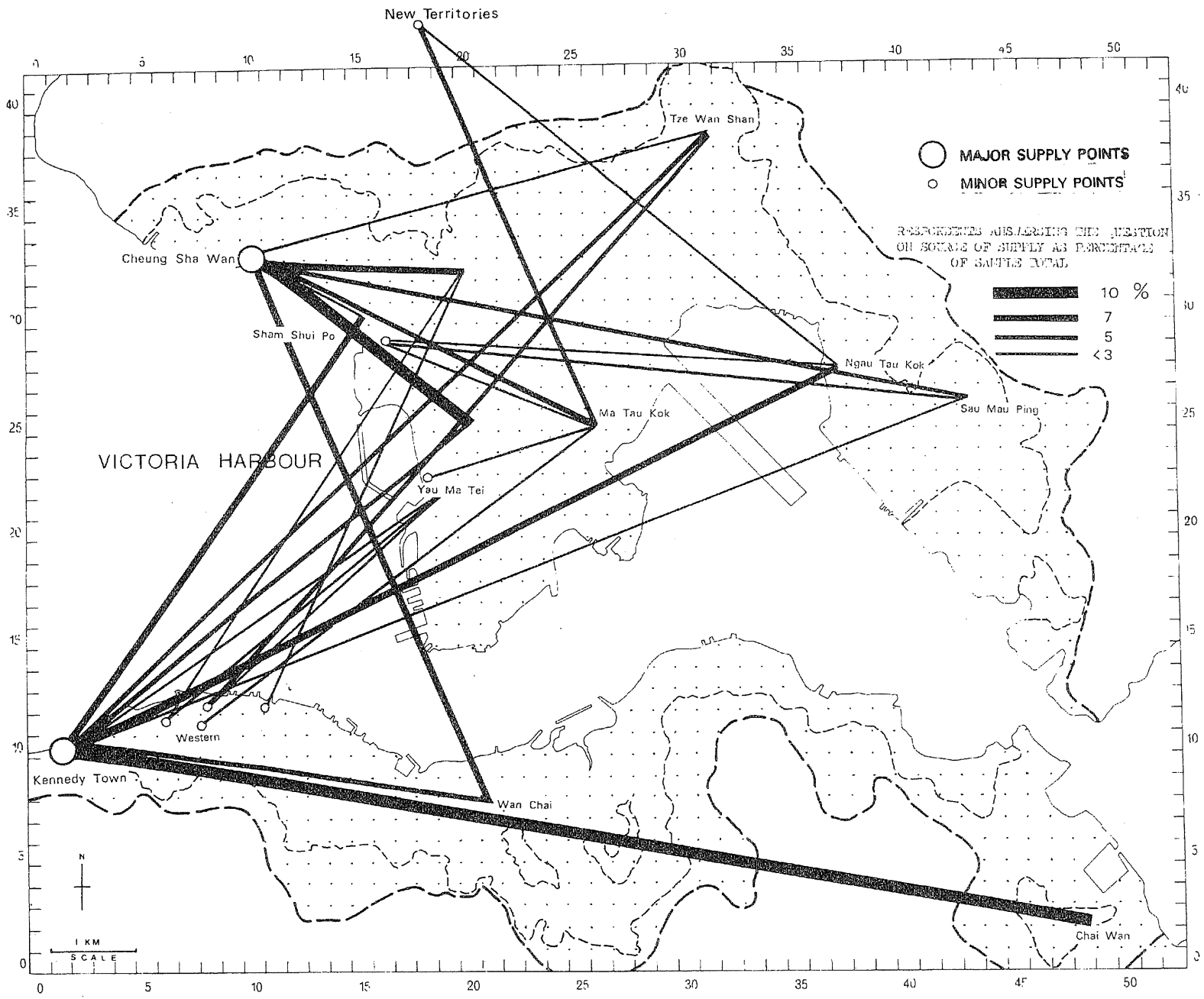


FIG. 20 : SUPPLY OF VEGETABLES

The most astonishing feature of Fig. 20 is the large amount of cross-harbour traffic, e.g. goods delivery and commuting. It is not uncommon to see street traders travelling from one corner of the metropolis to the opposite corner for the purchases of supplies. The notable examples are those from Ngau Tau Kok in East Kowloon and Chai Wan in the eastern end of Hong Kong. This raises the question whether the present functional division in the wholesaling of fresh and dry vegetables between two locationally contradictory wholesale markets is justified in the light of aggregate travel by the retailers, long haulage of goods, and the potential traffic congestion induced by these movements. This may be operationally economical from the marketing authorities' point of view; but certainly not from the street traders' stand point. A sizeable trader has to draw supplies from two sides of the harbour.

8.1.2 The Movement of Fruits

There is very little cross-harbour movement of fruits - a feature contradictory to Fig. 20 (Fig. 21). This is mainly due to the fact that fruit laans (not government markets) and wholesalers are not concentrated on one side of the harbour. Furthermore, the transferability of fruits is much more flexible. Wholesaling can be handled by individual operators in a large number of locations. However, like vegetables, the wholesale activities are still more or less concentrated on the western side of the metropolis, yet somewhat closer to the hub of demand. The largest fruit laan is in Yau Ma Tei (Cell 1823). The other is by the side of Western Market in Western District, Hong Kong (Cell 1111). Comparitively speaking, there are still more wholesalers on the Hong Kong side than on the Kowloon side because Western District is the landing point for imported fruits. From a locational point of view, fruit laans are more convenient to retailers than vegetable wholesale markets. This is particularly true in the city districts. However, for those traders on the eastern half of the metropolis long distance commuting and haulage is still unavoidable.

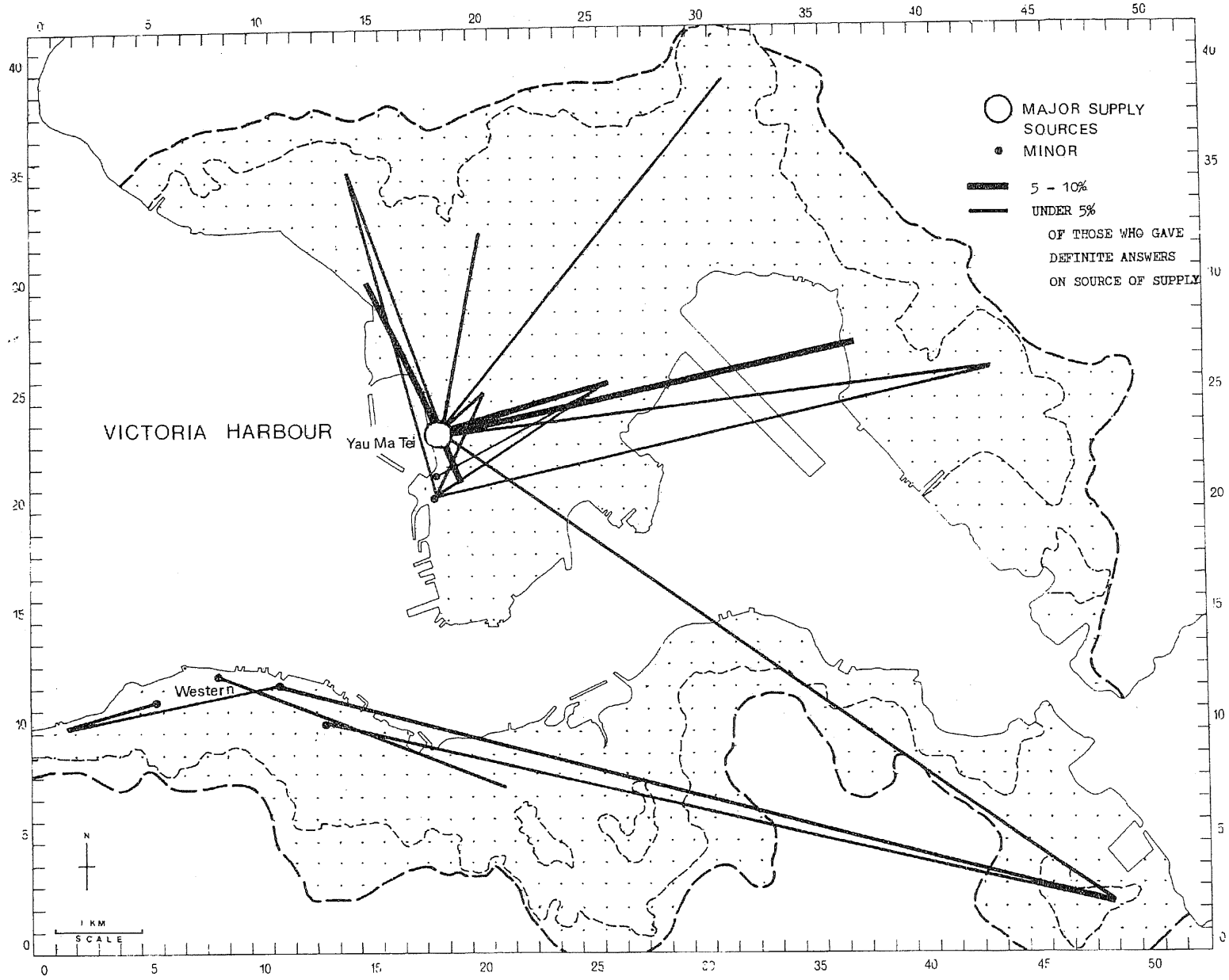


FIG. 21 : SUPPLY OF FRUITS

8.1.3 The Movement of Dry Goods

The pattern of dry-goods movements presented in Fig. 22 is more complicated. This is mainly because movements of several kinds of dry goods are presented together in one map. Yet, discrete wholesale districts are still discernible. Sham Shui Po is specialized in the wholesaling of cheap apparel, particularly in Yu Chou Street (Cells 1630 and 1531), and footwear in Nam Cheong Street (Cells 1630 and 1731) and other general household goods. In addition, there are small manufacturing factories where rejected export-products could be obtained from time to time. Some street traders even act as wholesalers. For example, large clothing and garments street stalls in Pei Ho Street (Cells 1530 and 1631) supply goods to other street retailers from as far as East Kowloon (see considerable movements from Sham Shui Po to East Kowloon and Tze Wan Shan in Fig. 22). On the Hong Kong side, there are two major wholesaling areas, i.e. (1) the rag trade around Jervois Street (Cell 1310) in Central District and (2) the preserved foodstuffs trade in Sai Wan (Western). These are traditional wholesaling centres which have long been serving the shop-type retailers all over Hong Kong.

There is a certain degree of decentralization in the distribution of wholesaling outlets in the dry-goods trade. This is exemplified by the growing importance of Yau Ma Tei as a third centre and the presence of individual wholesalers in intermediate locations between the city districts and the outlying districts. Kowloon City (Cells 2630 & 2832) and Ma Tau Kok (Cell 2627) are locationally more convenient to the eastern half of the metropolis. Even in Kwun Tong (Cell 4024) the trading centre also acts as one of the supply sources for its neighbouring resettlement estates. On the Hong Kong side, there is little evidence of this sort of decentralization. However, one notices that at least the main centre has moved slightly towards the Central District. In general, dry-goods wholesaling activities are closer to the retailers than those for vegetables and fruits. This can be illustrated by the location of their wholesale outlets in relation to the mean centre of street trading distribution on both sides of the harbour respectively (compare Figs. 20, 21, & 22).

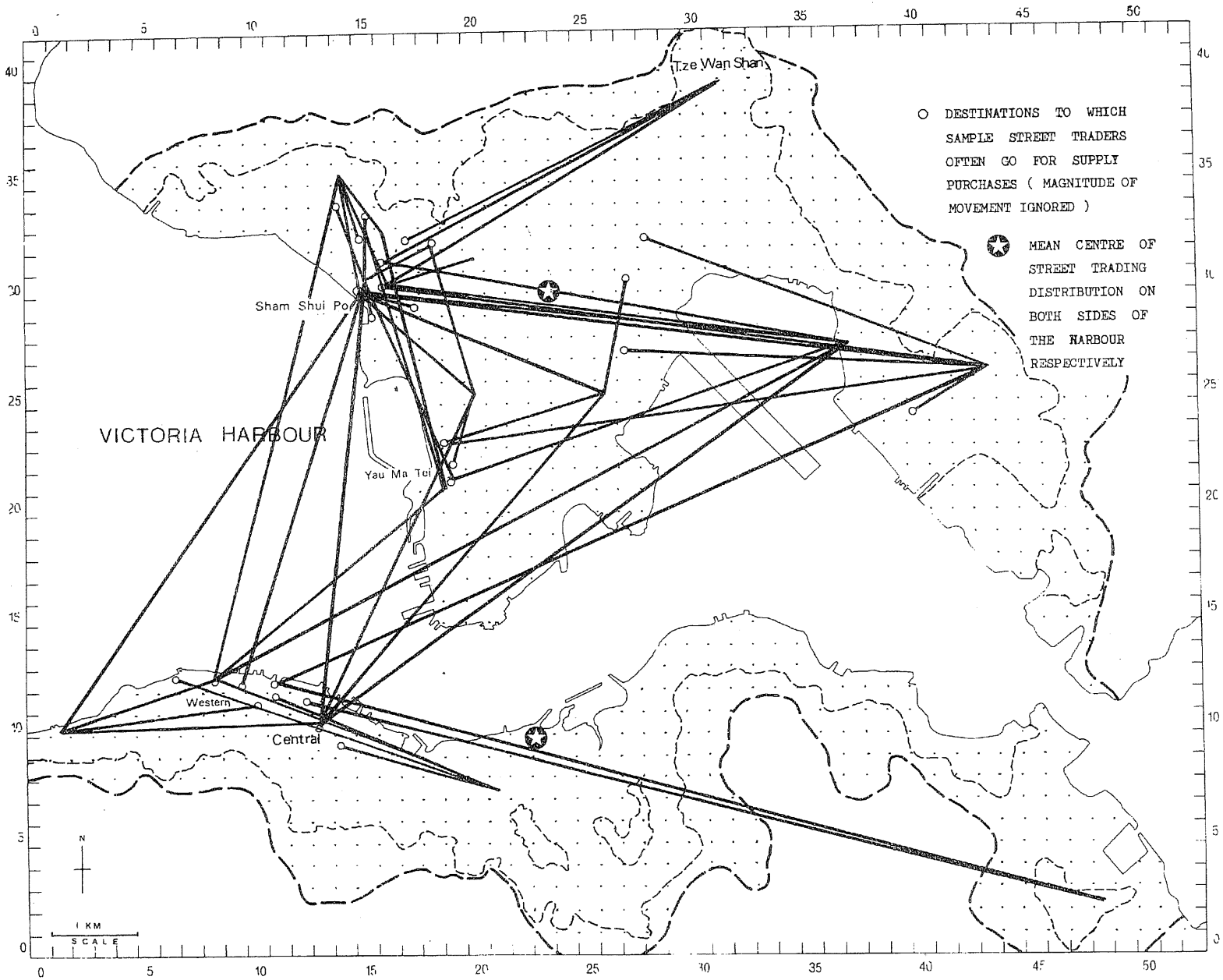


FIG. 22 : SUPPLY OF DRY GOODS

8.1.4 Discussion

Common to the above-mentioned three patterns of commdodity distribution, the supply sources are largely concentrated on the western side of the metropolis. These wholesaling facilities are convenient only to those traders in the west. The rest of the metropolis lacks such facilities. Street traders in the east have to bear higher transport costs in bringing their goods to their stalls. On average, for dry goods, they have to pay one-half to one-third more than the city-district traders. As for wet goods, the differential ranges from one-third to one-quarter.[69]

The spatial imbalance of wholesaling services has created a potential demand for privately operated or illegal wholesaling facilities in intermediate locations. This has first taken place in the meat trade. In the Study Area there are two government-built abattoirs, one in Cheung Sha Wan and the other in Kennedy Town (adjacent to the vegetable wholesale markets respectively). Slaughtered animals are dispatched from these two centres to public retail markets and fresh provisions shops all over the metropolis. In the light of the limited legitimate delivery-service and the serious traffic congestion caused by other wet-goods movements generated by the vegetable wholesale markets, distant retailers are constantly dissatisfied with the late deliveries. Some prefer buying from the large meat dealers in the retail markets or from butchery shops, though at higher prices, in order to save time. For example, in three of the major retail markets in Central and Western Districts, i.e. Central Market, Western Market South Block and North Block, two thirds of the meat traders said that less than one-quarter of their business was actually generated from petty shoppers.[70] They are supposed to be retailers, yet they have switched to the wholesale line of operation. They cater largely for bulk-buyers such as restaurants, meal caterers, ships, and street retailers. Although it has been impossible to estimate to what extent butchery shops are also engaged in the wholesaling business, yet it is certain that large ones do operate as wholesalers. In general, there appears to be a transference of some wholesaling functions from the ill-located wholesale markets to

the more centrally located retail markets and independent operators. On the Hong Kong side, this has been a diffusion process toward the east. Similar developments are growing rapidly on the Kowloon side as well; but the reselling of meat takes place mainly in butchery shops rather than in retail markets. After all, there is a severe shortage of market stalls as well. The delivery of meat is no longer confined to the official delivery system. Private transport arrangements are required to cope with the late delivery problem. These are widely practised by street traders in the outlying districts.

A follow-up development has also taken place in the vegetable trade. This can be illustrated by the presence of a number of illegal wholesale markets at major transport nodes (ferry piers, trucking terminals, and major trunk road to the New Territories) on the Kowloon side. Another piece of evidence is the gradual decrease in transaction volume of fresh vegetables marketed through the official Vegetable Marketing Organization during the last decade. The peak year was in 1962 when 94,620 long tons of fresh vegetables were marketed through V.M.O. This had dropped to 50,294 long tons in 1971.[71] The poor location of the wholesale markets and the severe traffic congestion around the markets could well be main reasons.

A similar development is less discernible in the fruit trade. There are several reasons for this. First, the location of the major wholesale outlets is relatively more central than that of vegetable and meat wholesale markets. Second, the greater transferability of fruits allow inmediate bulk-breaking at the point of import, so saving other marketing intermediaries such as fruit laans. Of course, this is confined to the less perishable fruits. Finally, there is no specific time for transactions in fruits unlike fresh vegetables which have to be sold and dispatched a few hours before business starts in the morning; the selling and buying of fruits can be carried out several times during the day. This results in a better utilization of the existing wholesaling facilities and avoidance of congestion compressed in a short time-span in the morning. Therefore, it is fair to say

that the demand for extra wholesaling facilities is less severe than in the vegetable and meat trades. But this does not imply that the present fruit wholesaling facilities are wholly adequate.

8.1.5 Labour Involvement in Commodity Distribution

Since the majority of foodstuffs are imported, the distributive chain does not start from the source of origin but rather the point of import; and it ends at the final consumption point. The effort involved along the distributive chain is basically a function of (1) the distance friction between the two ends of the chain and (2) the transferability of the commodity. However, in street trading there are two factors which make the distributive process even more labour intensive. First is the personal attendance at purchase selection and acquisition prior to the movement of goods. According to the survey, over 85% of the wet goods traders said that they had to arrive at the wholesale market early in the morning and do the selction and purchase personally.[72] Although placing orders for supplies can be done over the phone in some areas of the dry-goods sector, yet still 40 to 50% of various dry goods traders interviewed preferred personal attendance. That means they have first to travel from home to the wholesale market and spend a few hours there for selecting or sampling purchases and arranging transport; and then make the trip back to the stall. Second is the frequency of purchase. This is not only due to the perishability of the commodity, say fresh vegetables, fish and raw meat.[73] Another compelling factor is the small scale of operation which does not allow sizeable stock-keeping resulting in less frequent purchases for supplies. The following is an examination of the labour investment by the street traders alone in bringing goods from the supply point to the retail outlets.

Frequent commuting is the most labour intensive part during the process of supply acquisition. Street traders seldom start their purchasing trip from their stalls; they go straight from home early in the morning. Thus for a street trader the journey to work is not simply commuting between the place of residence and the place of work (the

stall). It includes the journey to the source of supply. Figs. 23A & B show the home location of street traders interviewed in the 12 sample street markets. An outstanding feature is the considerable amount of west-east cross-city commuting. There are quite a number of street traders who work in the city districts but live in the outlying districts (Fig. 23A). Although their places of work are close to the supply points, i.e. the western side of the side of the metropolis, yet they have to travel long distances from/to their homes. For those who make their living in the outlying districts, wheir locational disadvantage is obvious. It is strange to see that quite a number of street traders are non-local residents. Ngau Tau Kok is a notable example; well over half the interviewed are non-local residents. Some come from places as far as Cheung Sha Wan and Yau Tong (Fig. 23B).

Fig. 24 is a representation of the average commuting distances (measured in straight lines) for each of the sample street markets. The upper bars denote the home-to-purchase trips; the lower ones are for home-to-stall trips. It is evident that street traders in outlying districts have to bear long purchase-trips, almost from one end of the city to the other. However, they benefit from the short distances from their homes. This is particularly significant to those who need part-time assistance from their family members. The helper may come to the stall at any time and frequently so long as he/she is free at home. As for those in city districts, the locational advantage in relation to the supply points is offset considerably by the relatively long distances to their homes. In the traditional street trading districts such as Sham Shui Po, Yau Ma Tei and Kennedy Town, quite a large proportion of the operators are local residents; they have been in the business for a long time, say since the last war. However, in the comparatively new districts or in the major thriving markets, the operators are largely from other districts. Quite a number of them live in the outlying resettlement estates and come to the stalls every morning. In the latter case, the street traders are not much better off than those from outlying districts in terms of aggregate travel.

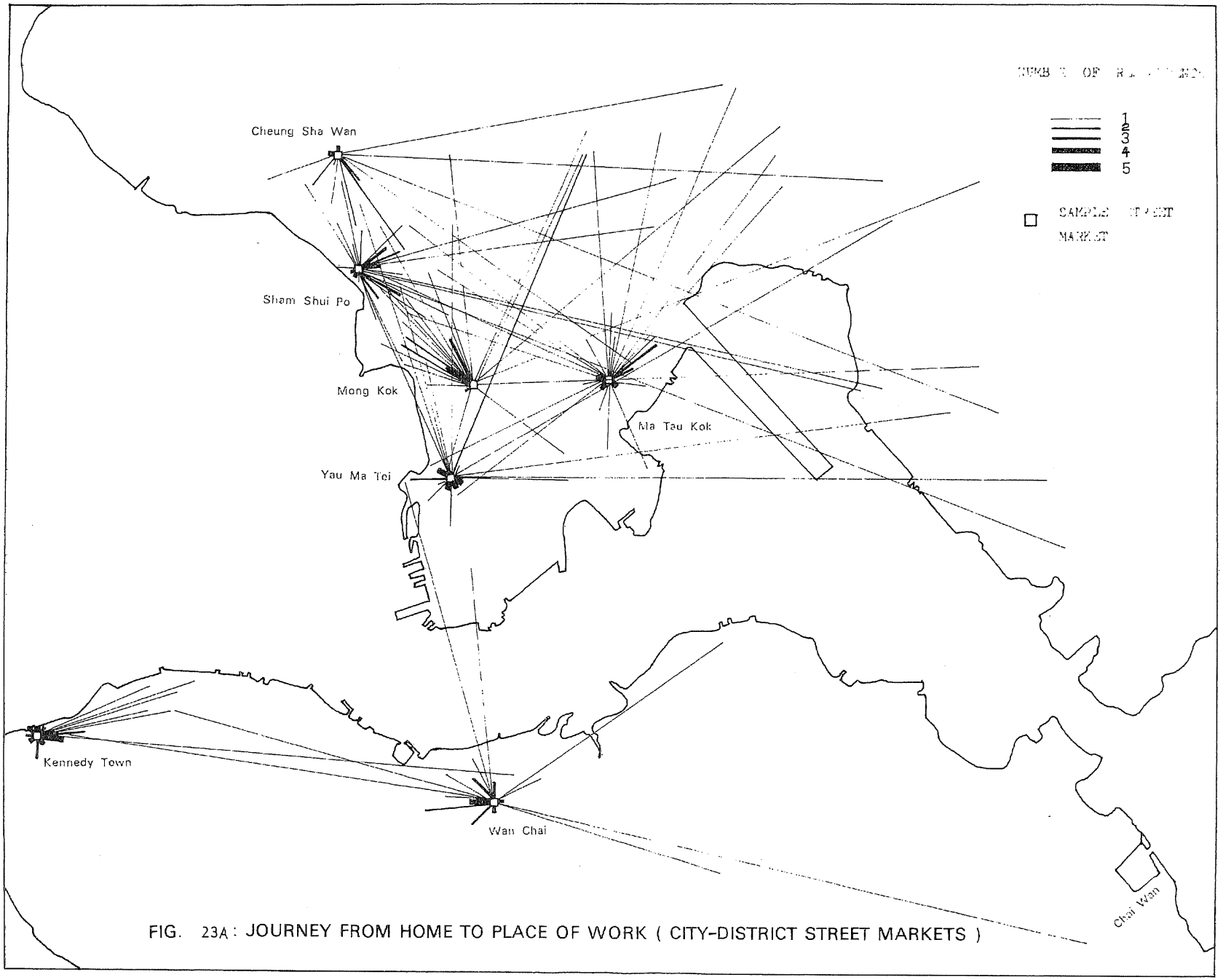
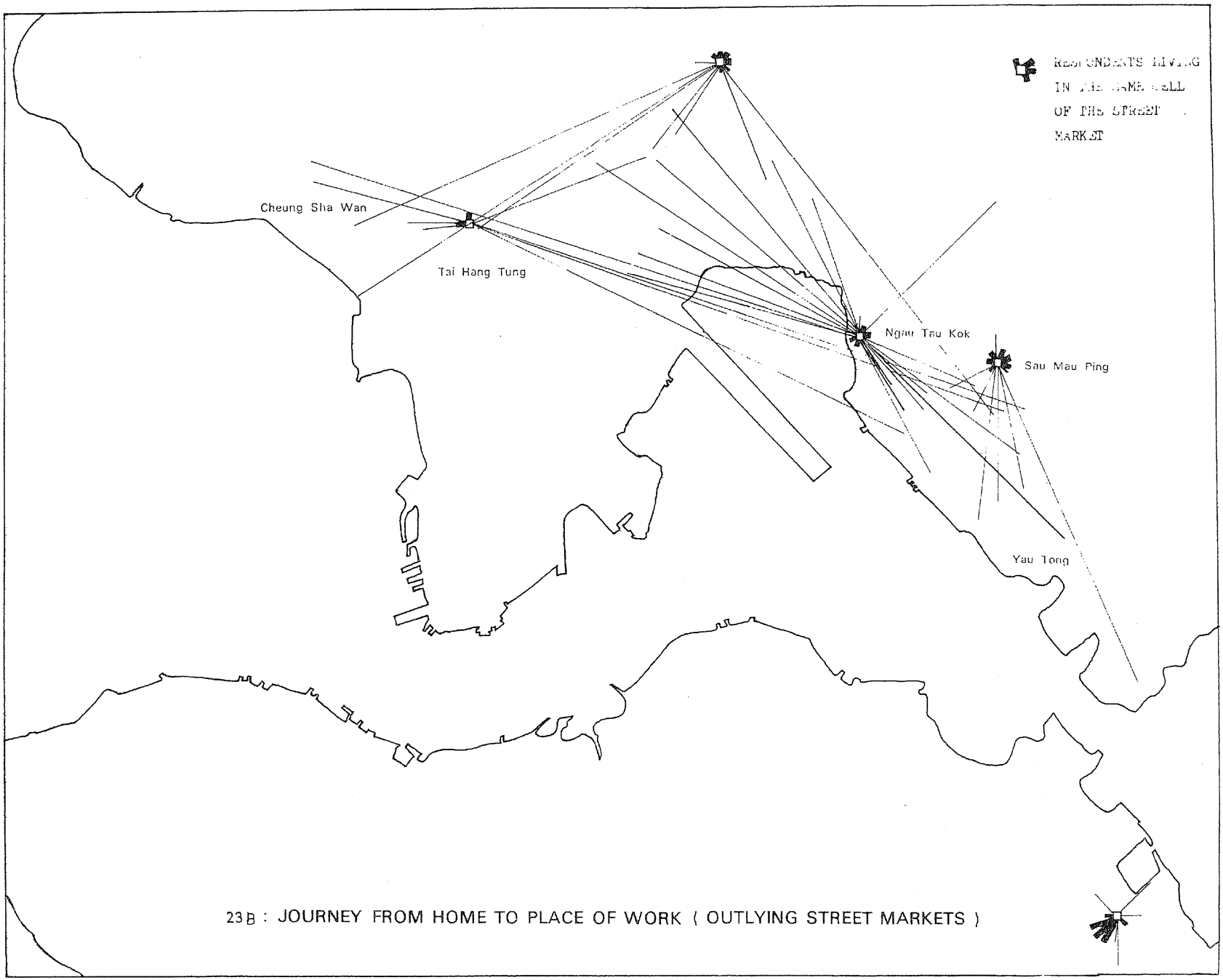
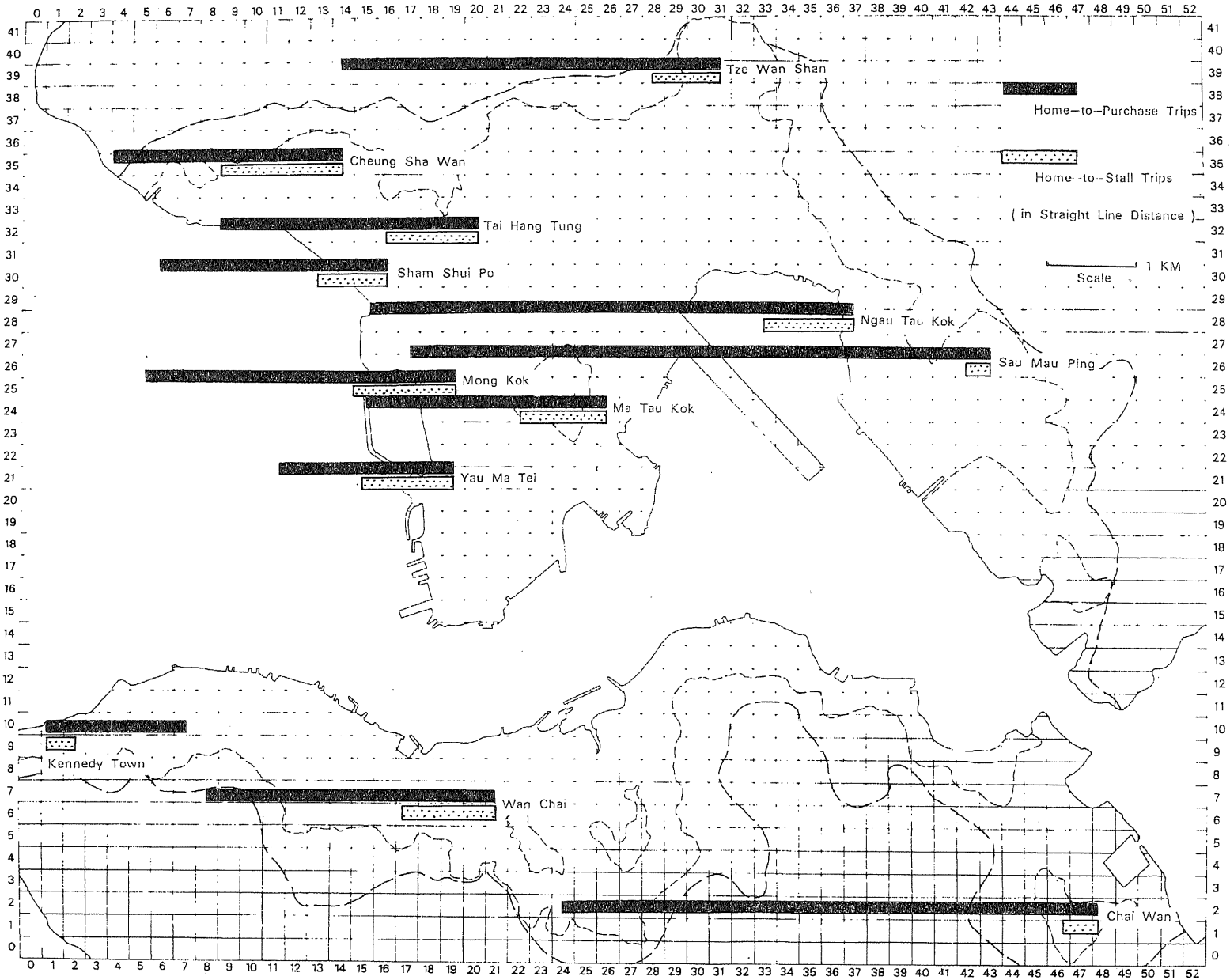


FIG. 23A : JOURNEY FROM HOME TO PLACE OF WORK (CITY-DISTRICT STREET MARKETS)



23B : JOURNEY FROM HOME TO PLACE OF WORK (OUTLYING STREET MARKETS)



24 :JOURNEY TO SOURCE OF SUPPLY AND TO PLACE OF WORK (STREET MARKET)

Table 40: Time Consumed in Supply Acquisition

Time Spent	%
Personal attendence not required	12.9
Under 2 hours	14.3
2 - 3 hours	13.6
3 - 5 hours	19.0
5 - 7 hours	8.7
7 - 9 hours	6.5
Over 9 hours	13.8
Unspecified	11.2
	100.0 (N=448)

Source: Field Interview, 1971

More important is the time consumed in commuting. According to the Interview, it was not uncommon for a trader to spend five to six hours for supply acquisition. Table 40 is the result of the question on the number of hours spent in commuting, goods selection and transport arrangement (delivery time not included) (Table 40). Considering the frequency of commuting (Appendix V.) - for instance over 90% of the vegetable traders have to make the purchases at least once a day - one can imagine the sheer amount of labour investment in bringing goods from the sources of supply to the widely distributed retail outlets. The next section studies the result of this enormous effort in bringing the goods to the final consumers.

8.2 The Street Retailer and the Final Consumer

The efficiency of the last leg of the disributive chain - from retailer to final consumer - is subject to the locational interdependence between the two ends of the chain. The closer the proximity between the two the greater is the efficiency in terms of saving in time and costs for the public. The interaction between the two is by and large fairly

straight forward. This can be indicated partly by the quick and frequent transactions on street trading commodities and partly by the little effort in haggling and bargaining between the buyer and the seller. According to the Survey, in a thriving street market, the number of transactions achieved could be as many as five or six successful deals in every five minutes during the peak hour (for detail, see Appendix VI.). In the course of transaction, little haggling or bargaining was required. According to the Interview, only one-quarter of the interviewed said that bargaining was common to them. The rest either said it was unnecessary or it happened only occasionally.[74] In addition, most street traders enjoyed a constant ' market '. According to the same interview, 55% of the people who shopped at street markets were regarded by the respondents as regular customers.[75] They were mainly familiar patrons from their local neighbourhoods. The link between street retailers and the ordinary shoppers is normally very close. The spatial implication of such a close relationship is to be examined in the following two perspectives. First is to see how they are inter-related in terms of spatial proximity between the supply and demand potentials of the activity. Second is to examine the position and role of street markets in relation to the overall food-shopping hierarchy within which the public retail markets have also a role to play.

8.2.1 Spatial Proximity between Supply and Demand

Two potential models have been used to measure the spatial distribution of supply of and demand for street trading facilities. In the supply potential, the number of street trading units within each cell is used to measure the mass factor, and the straight line distance in units of 250 metres is for the distance factor. As for the demand potential, the mass factor is simply based on the number of people in each cell. The demand potential is actually a measure of the proximity of people to every cell all over the study area. It can be viewed as an accessibility model. The most accessible point should be a locality where the largest number of potential customers may visit, i.e. the

centre of the demand cone. The same technique is applied to the supply potential; the point with the greatest potential should be a locality in which most potential street traders would be likely to agglomerate, i.e. the most accessible street shopping centre. In the light of the short range and the narrow threshold of the street trading activity and, in addition, the relatively small size of the study area, no weighting is necessary for the mass factor and the distance factor. The above mentioned simple potential model has been found adequate. The demand and supply potentials are presented respectively in Figs. 25 & 26.[76]

There are three areas with high demand potentials (Fig. 25). The maximum is around Pei Ho Street and Nam Cheong Street in Sham Shui Po, about 300,000 people/250 metres. It stretches down to Mong Kok. The majority of the city districts in West Kowloon are under the cover of this huge demand cone. The second highest demand cone covers more or less a similarly large territory in the Northeast centred around Wong Tai Sin and Wang Tau Hom (for a comparison with the actual population distribution, see Fig. 9, Chapter VII, p.104), with a potential of 270,000 people/250 metres. An isolated demand cone centres some where between Sau Mau Ping Resettlement Estate and Kwun Tong Urban Centre (Fig. 25). But its potential is about only half that of the previous two, at a similar level to Wan Chai District on the Hong Kong side. Generally speaking, the demand potential on the Hong Kong side is relatively low and fairly evenly distributed; whereas on the Kowloon side extreme concentration is the situation.

As for the supply potential (Fig. 26), the distribution pattern appears to be fairly similar to that of the demand potential in particular on the Hong Kong side. On the Kowloon side, the supply ' cone ' is high and sharp, signifiying extreme concentrations in a number of sub-centres within a major street trading territory (Fig. 26). But as a whole, the supply potential matches the demand potential almost perfectly. This is indicated by their extremely high correlation coefficient of 0.93. In other words, street traders do bring goods and services right to the final consumers. The gap between the two ends of the final leg of commodity distribution is almost non-existent.

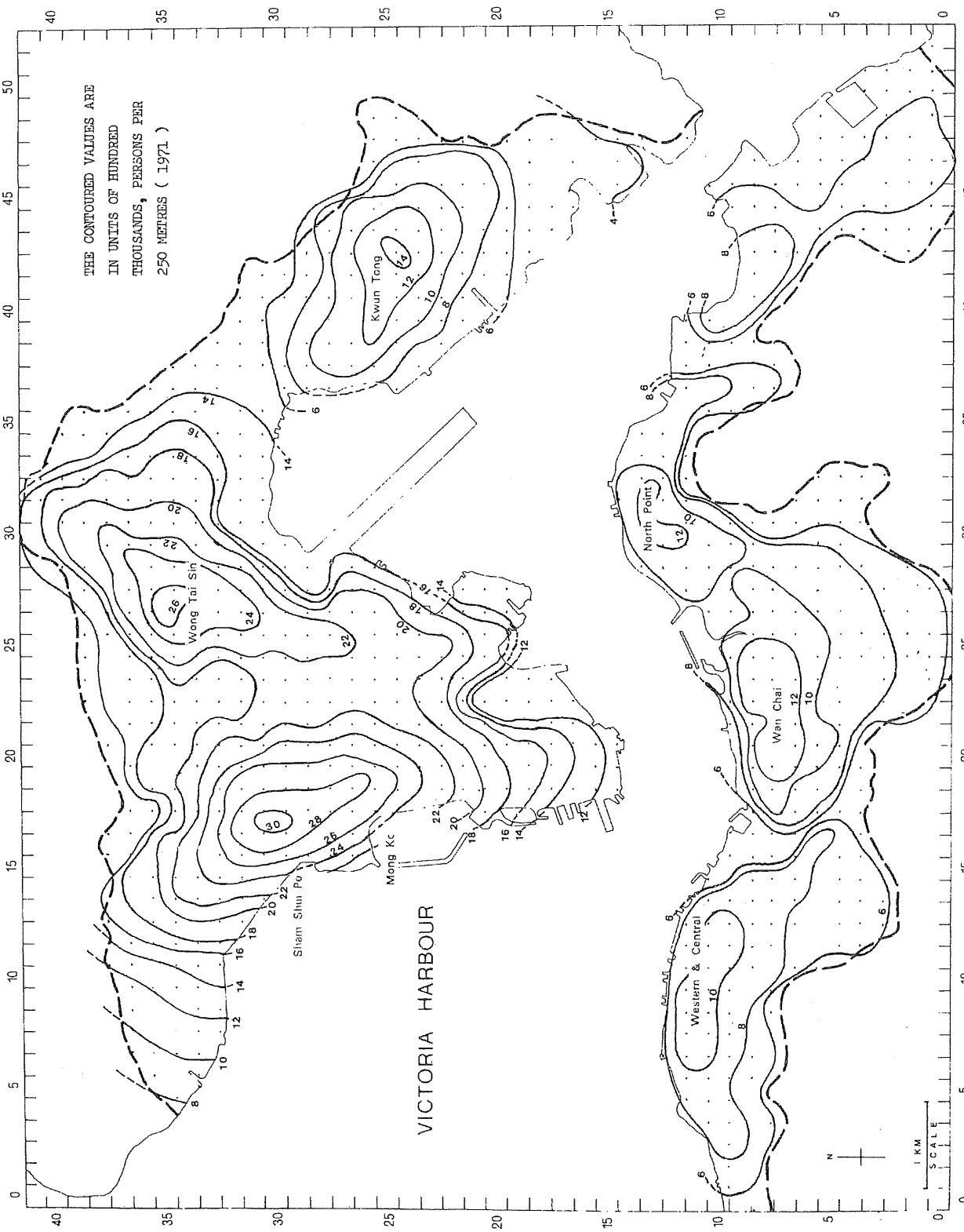


FIG. 25 : DEMAND POTENTIAL OF STREET SHOPPING

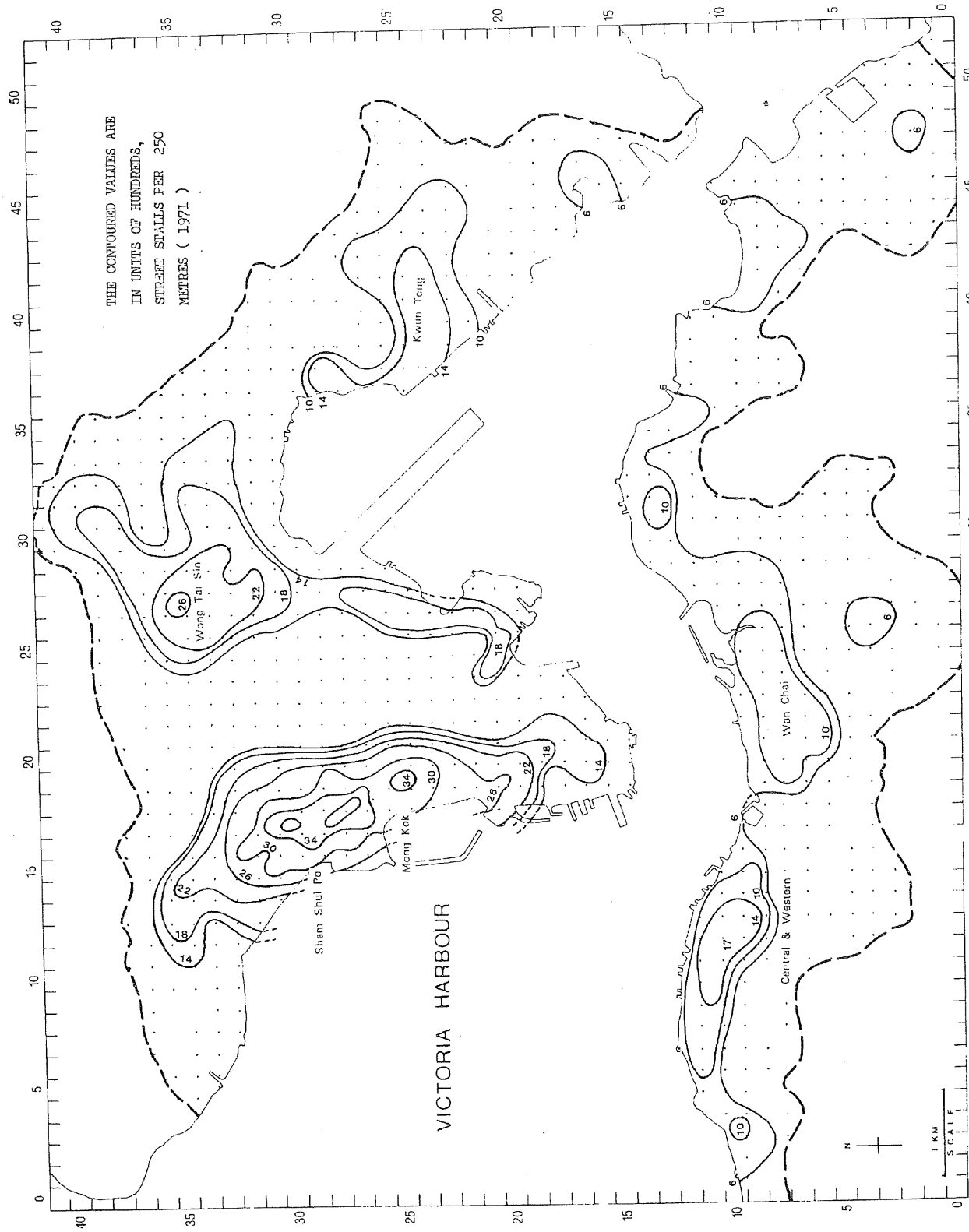


FIG. 26 SUPPLY POTENTIAL OF STREET TRADING FACILITIES

A comparison with the supply potential of public retail market facilities would be helpful to the appreciation of the extraordinary proximity of street traders to the general public. The public market potential was constructed by the same method used in Figs. 25 & 26, but the mass factor was based on the number of market stalls within each cell rather than the number of market halls (sometimes there may be more than one market hall in one cell). Contrary to Figs. 25 & 26, the regional imbalance in the public-market potential is very great (Fig. 27). The major supply cone covers only a tiny area around Western and Central Districts on the Hong Kong side, with about 385 stalls per 250 metres at the peak. It is an extreme concentration. Kowloon side is particularly poor in accessibility (supply potential) to public markets. This is due to (1) relatively few public markets concentrated in fewer locations, (2) small size of most markets and (3) a wider territory to be served. Its highest potential is only slightly higher than that of Wan Chai District (Kowloon peak is 194 stalls per 250 metres), and about half the Hong Kong peak. Yet, Mong Kok (the Kowloon Peak) has one of the greatest demand potentials of the whole metropolitan area (Fig. 25). The outlying districts are even worse; they are almost inaccessible to government-built markets. Their supply potential is about one-tenth of the market-rich districts of Western and Central Districts on the Hong Kong side. The rest of Hong Kong Island is still able to benefit from a wider distribution of public markets (also see Fig. 29 in the next paragraph). The regional contrasts could hardly be matched by the demand distribution (Fig. 25). Their correlation coefficient is .187, i.e. no significance at all! However, there seems to be a certain degree of spatial complementarity with the street trading potential (compare Figs. 26 and 27).

8.2.2 Street Traders and Food-Shopping Centres

In the preceding chapter, it was confirmed that street traders prefer aggregating themselves with public-market stalls and provisions shops. Normally, the larger the aggregation the greater is the shopping attraction and eventually the wider is the service area. According to

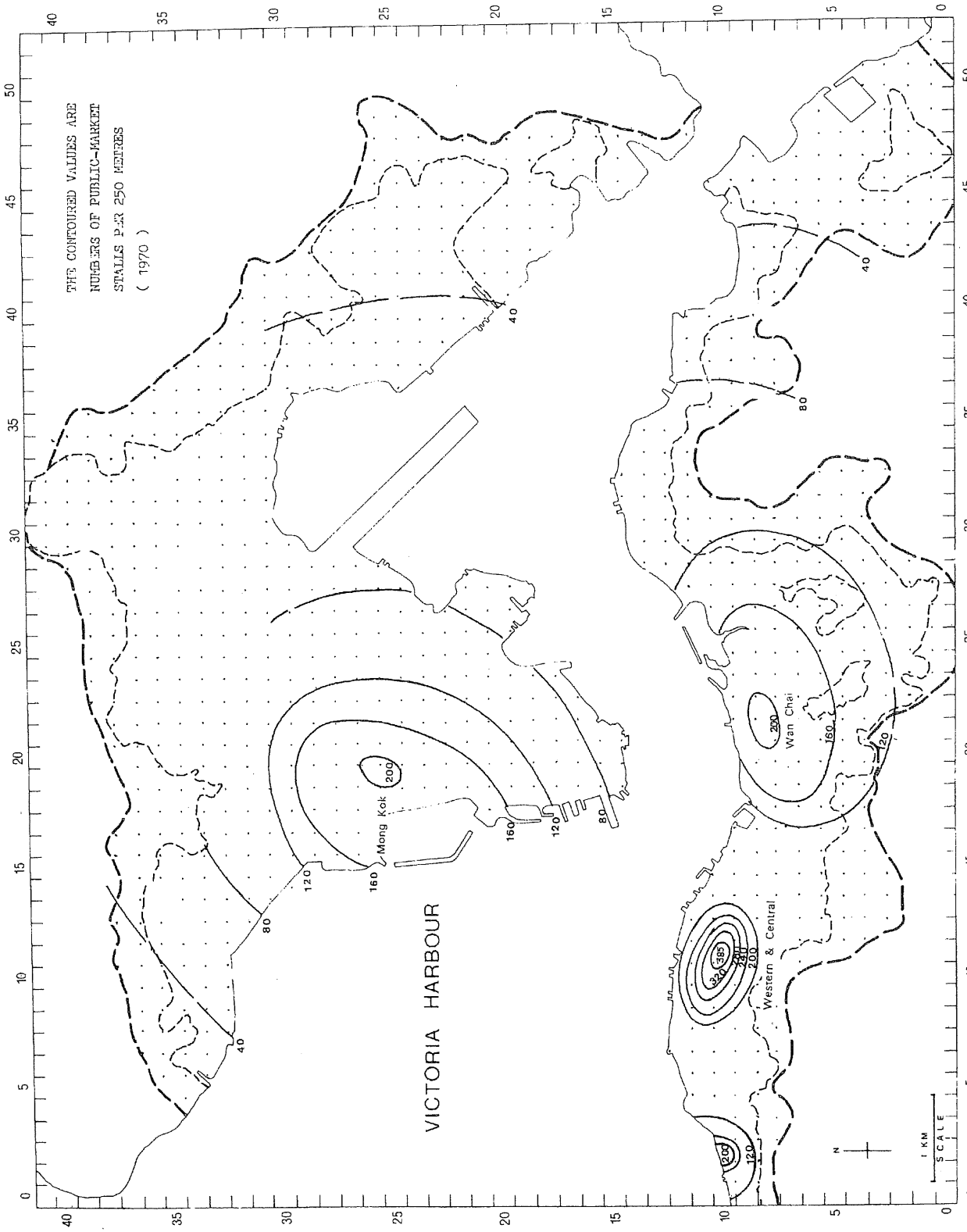


FIG. 27 : SUPPLY POTENTIAL OF PUBLIC MARKETING FACILITIES

the Household Survey, the food-shopping centres frequently visited by the sample households were mapped and presented in Fig. 28.[77] By comparing their locations with those of public markets presented in Fig. 29, one can easily see that superimposed on almost all the public markets are the food-shopping centres (shopping centres in co-existence with public markets are shown as solid squares in Fig. 30). Almost all these public markets are in co-existence with street markets and together form food-shopping centres. It is hard to say which is subordinate to which because they are complementary to one another. Normally, people shop for higher order foodstuffs such as live sea-foods, rare game, forced vegetables, etc. from public markets rather than from street stalls. In addition, some large public markets actually act as ' semi-wholesale ' markets and rely only lightly on retailing. However, it is definite that when street stalls are forming as an adjunct to a public market the combined trading complex will become a major food-shopping centre. It will be at a higher position within the food-shopping hierarchy and eventually command a wider service area. That is why, in Fig. 28, those shopping centres within the major street trading districts, say West Kowloon, almost all belong to this type. They have wide service territories covering as far as the city fringe. Food-shopping centres in Yau Ma Tei (3 & 11), Mong Kok (9 in Fig. 28) and Central District (1, 4, & 5) are good examples.

Contrary to the above-mentioned major centres are a larger number of local ones. They are lower in the hierarchical order. They are largely formed by aggregates of street stalls or small public markets. It is evident that almost all the shopping centres in the outlying districts belong to this type. The spatial variation between the city districts and the outlying districts is well represented by such a contrast. In the former districts, there is quite a considerable amount of cross-centre shopping; a housewife may not necessarily shop at her nearest centre, she may go to a further but larger one for higher order goods. In the outlying districts, shopping trips are generally very short; each centre has its local ' market '. It is interesting to see that in between these two, there are intermediate shopping centres. The Kowloon City

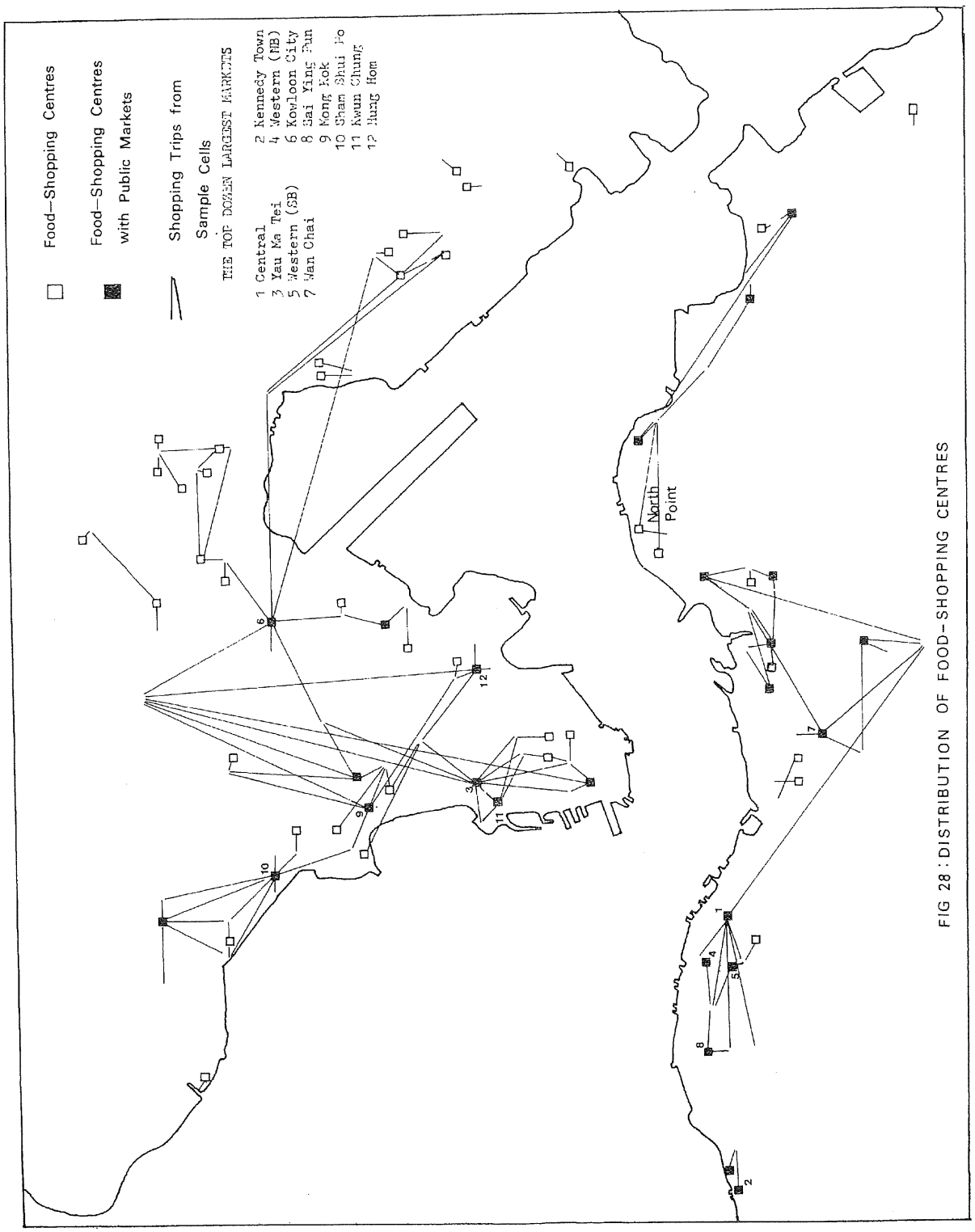


FIG 28 : DISTRIBUTION OF FOOD-SHOPPING CENTRES

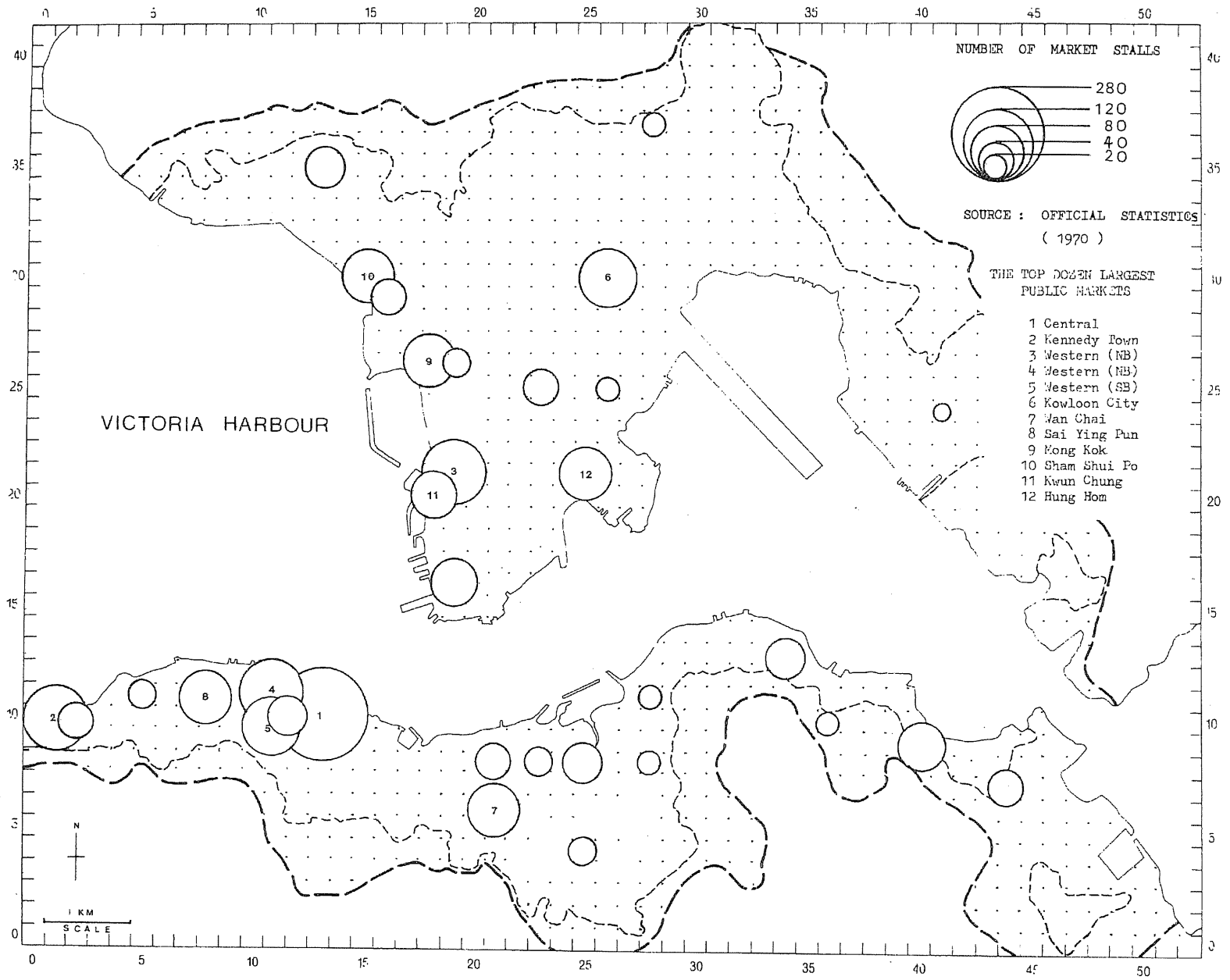
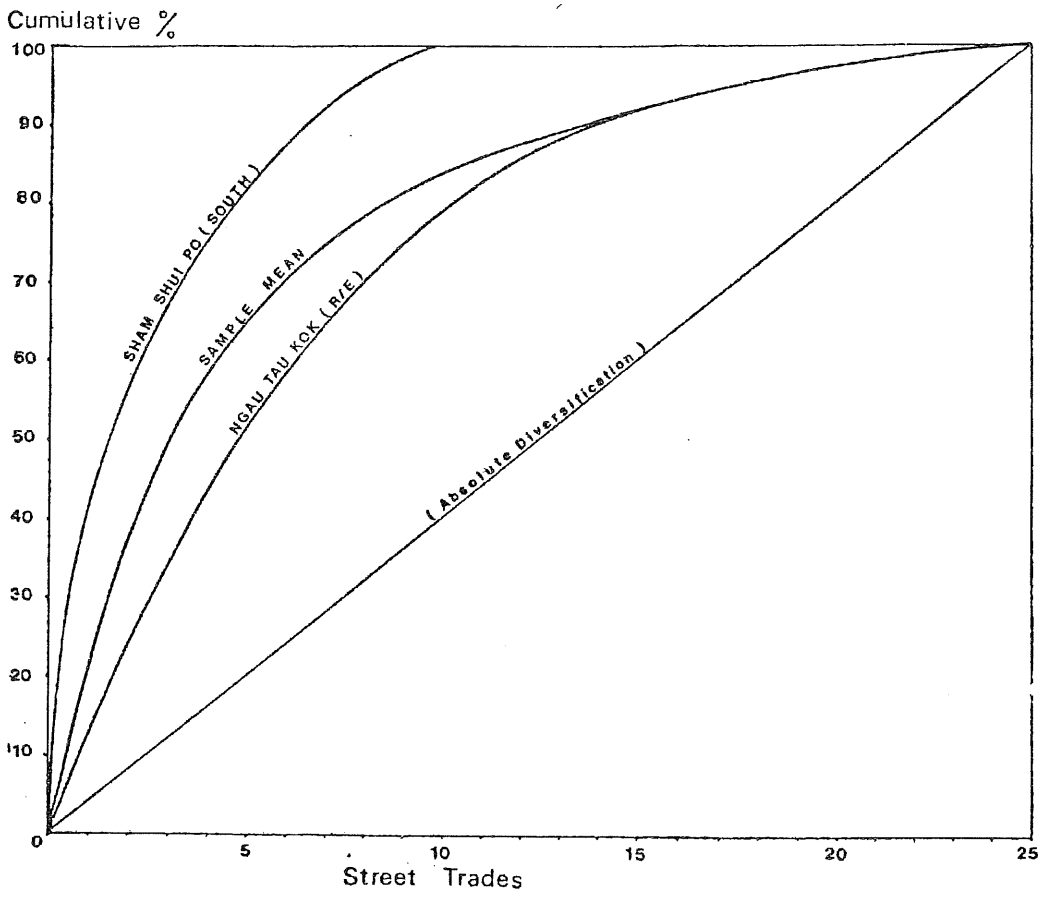


FIG. 29 : DISTRIBUTION OF PUBLIC RETAIL MARKETS (1970)

Market (6 in Fig. 28) is a very good example. Its service area stretches to both the outlying districts and the city districts (Fig. 28). It becomes a centre for higher order goods for the former districts. Its intermediate location and good accessibility to the " gate-way " to the east and northeast are contributing factors. The regional contrast is less marked on the Hong Kong side due to a more even and relatively high provision level of public market facilities and street markets. To a certain extent, shopping centres in the east of North Point are similar to those of Northeast and East Kowloon (for a similar comparison, see grouping of residuals in Fig. 18, Chapter VII).

In short, the spatial implication of the role of street trading in commodity distribution can be explained in terms of its position within the retail hierarchy. In the commercial and sub-commercial city districts, street markets are complementary to the government-built markets in providing mainly vegetables, fruits and other foodstuffs. There is a fairly marked functional division among the three types of retailers (shops, public markets, and street markets) which together form a thriving shopping centre. The size of a street market would upgrade the position of the shopping centre in the hierarchical order. In the outlying districts, street markets become the main body of a shopping centre though this is lower in the hierarchical order. Generally, they are fairly comprehensive in terms of the variety of goods and services available in the street market. Complementarity between shops and street markets does not take place only in the functional division between wet goods (street markets) and dry goods (shops), but between one trade and the other within a same sector. That is why in outlying districts there are relatively more dry goods traders than in the city-district markets. This argument can be supported by the comparison of the diversity of trading activities between the city-district and outlying-district street-markets (for Index of Diversification, see Appendix VII.). For the sake of visual comprehension, the Lorenz Curves of two sample street markets (each represents the respective districts) are plotted against the ' Average ' curve to show the relative position of the two markets (Fig. 30). One sees the marked difference between the two



Indes

Index of Diversification:

Sample Mean 0.72*

Sham Shui Po South 0.85

Ngau Tau Kok 0.58

* By coincidence, the Sample Mean serves a dividing line between the city districts and outlying districts (for indices, see Appendix 10).

FIG. 30 : DIVERSIFICATION PATTERNS BY SELECTED STREET MARKETS AND OVERALL SAMPLE TOTAL.

Source: Field Survey.

districts. Ngau Tau Kok is an outlying district; its street market is more comprehensive, with an Index of Diversification 0.58, compared with 0.85 in Sham Shui Po South (an old sub-commercial district in West Kowloon). The higher the value of the index, the greater is the degree of concentration of the street trades in a limited range of categories. In other words, in higher-order retail centres, street markets are responsible for the distribution of mainly foodstuffs on a large scale; whereas in the outlying lower ordered centres, street markets handle a larger variety of goods other than foodstuffs. In the more remote resettlement estates, retail shops appear to be an adjunct to the street market rather than the other way round.

8.3 Summary of Analyses

From the shoppers' point of view, the major merit of street trading is ' shrinking ' the distance to be traversed to reach goods from the supply point to the final consumption point. Street traders have to invest a great amount of labour in bringing the goods to the consumers, in particular in journeys to obtain supplies. The spatial disparity of the wholesale facilities is mostly responsible for such a labour intensive form of commodity distribution. The diffusion of some wholesaling activities from the ill-located official wholesale markets to private or illegal operators in sites closer to the consumption points has been a natural outcome of this spatial disparity. New facilities should be installed in the deprived east. This would (1) relieve the city districts from the present heavy traffic congestion, (2) cut the unnecessary transport costs arising from long distance haulage, and (3) keep the wholesale pricing-mechanism away from the hands of independent operators.

It is fair to say that street traders render useful service to the public in terms of shopping convenience. They are in very close proximity to the final consumers. In the city districts, they are complementary to public retail markets as well as to shops in providing mainly foodstuffs to all the inhabitants. In the outlying districts, where public markets are almost absent and shops are inadequate, street markets serve as the main source of ordinary supplies. The inclusion of street trading in the formal retail system, though narrowing down to the food sector, plays an important part in influencing the ranking and the distribution of shopping centres within a hierarchy.

IX PRICE COMPARISON

In addition to accessibility, cheapness may be the other major service rendered by street traders. It has been a long accepted concept that street traders provide a cheaper means of commodity distribution than do other formal channels and that the competition of street traders has a beneficial effect on prices. In fact, these have been the major reasons for the persistence of a semi-official 'laissez faire' policy toward street trading in Hong Kong for the past decades.[78] In the light of the disparity in the provision of formal retail facilities between the city and the outlying districts, the spatial perspective of this concept has to be examined. Thus, the central question becomes whether street traders are bringing goods and services at low prices to the public in all parts of the metropolis as they do in accessibility - a problem which has been examined in the preceding chapter. The present investigation is developed in three successive steps. First is to identify whether street trading prices are really cheaper than shop prices. Do all types of commodities have the same pattern of price differentiation between shops and street stalls? The second step is to study how street prices as well as shop prices vary independently. Are there any spatial pricing determinants? Do street prices and shop prices act in the same way in response to the variation of the same determinants, say the supply and demand potential, the accessibility to certain complementary retail outlets, or certain competing factors? Is there any spatial variation in the price differential between shops and street stalls? Finally, the findings of the preceding two stages of investigation will be put to a test embracing regional contrasts in retail prices between the most needed and the least needed areas, in terms of reliance on street markets as the major source of daily supplies, so that one can see how street trading benefits different parts of the metropolis in price terms.

9.1 Comparison between Shop Prices and Street Trading Prices

A major problem in a price comparison is the uniformity of quality and quantity between the compared commodities. Price varies in accordance with quality and quantity. An item sold in the High Street could be very different from a similar item bought from street stalls. The standard of weight and measure may vary as well. For example, a 'catty 斤 ' of vegetables bought from a street trader could well be a couple of taels less in weight than the catty obtained from a formal greengrocer. Generally, street sellers are believed to have a lower standard of honesty than the shop keepers.[79] The potential variation in quality is undoubtedly greater in high-order goods than in the simple and basic convenience goods. Furthermore, high-order goods are less available in the street trading system; therefore the comparable items have to be limited to the low-order range. In other words, only those available in both street stalls and retail shops are suitable for a fair comparison in price between the two systems. However, in practice, the number of compared items is further limited by the fact that not all the compared items are available in each observation cell from which price data are collected for a spatial analysis.

Table 41 is a set of filtered data listing the mean prices of the major commodity groups obtained from various retail outlets. Only raw meat, fish and vegetables are available in the government-built public retail markets as well as in shops and street stalls. The rest are compared on the basis of the following four types of outlet, i.e. (1) street markets, (2) nearby shops, (3) individual street stalls and (4) distant shops. These four were operationally defined to include a locational significance. Street markets and public retail markets are usually in the middle of a trading compound. This has been confirmed in a preceding analysis on the distribution of street trading activities (Chapter VII). Nearby shops are those ordinary shops located by the side of street markets or public retail

markets. Individual stalls are defined as those located in isolation away from the street market. They are less likely to be able to enjoy the agglomeration economies generated from the market centre, but they face less competition from their fellow traders. Distant shops are those at least two street blocks apart from the 'nearby shops'. Certainly they are away from the direct influence of the street market.

The mean prices were derived from (1) calculating the mean price for each individual item for each type of retail outlet, (2) filtering off those items with high standard deviations - over an arbitrary level of 1.5, and (3) aggregating the remaining items into sub-groups based on commodity types. This process reduced the initial 79 items to a final total of 59. They are presented in 12 sub-groups under the categories of (1) Cooked Food, (2) Raw Food, (3) Dry Goods, and (4) Services (Table 41). The street-market price is used as the base (100) for easy comparison both between outlets as well as between the two retail systems (for detailed list of individual items, the units and mean prices, see Appendix IX.

Table 41: Mean Prices on Commodity Groups by Retail Outlet

COMMODITY GROUPS	No. of Items	Public Market	STREET TRADING SYSTEM		SHOP TRADING SYSTEM	
			Street Market	Individual Stalls	Nearby Shops	Distant Shops
Cooked Meals	5	NA	14.29 (100)	14.99 (105)	16.02 (112)	15.48 (108)
Refreshment	8	NA	4.74 (100)	5.02 (106)	6.73 (142)	6.48 (137)
Cooked Meat	2	NA	14.49 (100)	15.40 (106)	16.04 (111)	17.17 (118)
COOKED FOOD	15	NA	33.52 (100)	35.41 (106)	38.79 (116)	39.13 (117)
Raw Meat	6	27.24 (104)	26.15 (100)	27.85 (107)	27.51 (105)	27.61 (106)
Raw Fish	2	6.31 (102)	6.26 (100)	6.28 (100)	6.77 (108)	6.05 (97)
Vegetables	4	7.63 (104)	7.32 (100)	5.95 (81)	7.06** (96)	7.37 (101)
Grocery	7	NA (100)	8.87 (100)	9.06 (102)	10.17 (114)	10.44 (118)
Fruits	5	NA	4.62 (100)	4.56 (99)	6.20 (134)	6.67 (144)
RAW FOOD	24	NA	53.22 (100)	53.70 (101)	57.71 (108)	58.14 (109)
Confectionery	4	NA	13.91 (100)	13.66 (98)	13.67 (98)	13.79 (99)
Emporium Goods	8	NA	14.56 (100)	14.95 (103)	16.99 (117)	16.41 (108)
Electricals	3	NA	19.84 (100)	20.55 (104)	22.10 (111)	21.15 (107)
Household Ware	2	NA	7.47 (100)	7.04 (91)	8.27 (107)	7.65 (99)
DRY GOODS	17	NA	56.05 (100)	56.20 (100)	61.03 (109)	59.00 (105)
Services	3	NA	14.97 (100)	10.86 (73)	13.88 (93)	15.80 (105)
TOTAL	59	NA	157.76 (100)	156.17 (99)	171.41 (108.6)	172.07 (109.1)
System Average			156.9 (100)		171.74 (109.4)	

** Estimated as the mean of other outlets

Source: Field Survey, September 1971.

9.1.1 Findings

A feature common to almost all the commodity groups is the marked price differential between the stalls and the retail shops. Within these two systems, the price differential between a centre location (street markets and nearby shops) and an off-centre location (individual stalls and distant shops) is, on the contrary, very small: about only one per cent or even less compared with a 10% differential between the two systems (see bottom row, Table 41).

With regard to individual commodity groups, the two kinds of differential are more striking in the Cooked Food and Refreshment trades. This may be due to the big differences in quality. Refreshment or light meals are certainly dearer in restaurants and cafes than in roadside stalls. The dearer prices cover the high quality of food and also the service and comfort which are normally unavailable at street stalls. The second most variable group is Services. Intrinsic to the nature of the service industry, standardization of quality is by no means easy; so, needless to say, is an accurate price comparison. The big price differentials in the fruit trade also reflect the quality problem. On average, shop prices are one-third to 50% higher than the street trading prices. This is because shop-type fruiterers normally sell more of the higher ordered fruits such as selected grades, forced fruits, and air-borne imported exotic fruits. However, in some prosperous localities street stalls may also sell as many exotic varieties as shops. That is why prices also vary among street stalls.

As for other foodstuffs, the quality problem is less serious because almost all the compared items, except fish, are fairly clearly specified (that is why there are only two fish items left in Table 41). Grocery items are mainly branded stuff such as canned foods, oils, and seasonings, etc. As a whole, prices are about 10% higher in shops than in street stalls. But there is the exception of public retail markets (meat and fish only). Public market prices are higher than street prices yet still cheaper than fresh provisions shops.

Manufactured goods are also fairly standardized. Items like dresses, garments, and footwear are excluded from the final comparison because of the quality variations. However, attention should be paid to the Confectionery group. Its street price is above the retail shop level. This may be due to the different pricing policy adopted by large confectionery shops; they may put low mark-ups (or even under-cut prices) on the massive selling items such as those used in the present comparison, and high mark-ups on the higher ordered items. Small scale operators like street traders are less likely to do so. This may account for a higher street price level on these items. Such pricing irregularities are difficult to detect; and they may cause difficulties for a genuine price comparison. Therefore, it would be risky to generalize on the whole confectionery trade simply from the present findings.

Taking all the 12 sub-groups as a whole, shop prices are about 10% higher than street prices. The raw food trade has a similar differential. The differential between two types of street stall (market and isolated stalls) is very slight, about one percent; the differential between two types of shop is more noticeable, about 5 - 9% (distant shops have a higher price). In view of the dominance of raw food in the street trading system and its pricing simplicity, further analysis was thus confined to the food trade. After all, price variations in the food trade are more significant to the well being of the general public than those in any other dry goods trade or in services because, in Hong Kong, an ordinary household (five persons) normally spends one-fifth of its food bill at street stalls.[80]

9.2 Locational Implication of the Price Comparison

As mentioned earlier, there is a locational significance in obtaining price figures from five types of retail outlet. These outlets can be arranged in a locational sequence. That is to say that in the centre of a trading compound there are street markets and, in some cases, public retail markets. Next to them are the 'nearby shops' around which there is an outer ring of individual stalls located in discrete sites among the so-called distant shops. The sequence is thus seen as a cross-section of a food shopping compound from the centre to the fringe as presented in Fig. 31. According to Fig. 31, the centre has the lowest price level (see the sub-total curve in Fig. 31). Around the street market are shops selling goods at a higher price level, some eight per cent higher than the street price. When public markets are present, the public market price level lies in between that of the street market and the nearby shops. Distant shops and individual stalls have slightly higher price levels in their respective system. There is one deviant in this highly hypothetical model. That is the vegetable price curve. There are extremely few shop-type greengrocers. Thus it is impossible to compare vegetable prices on all types of retail outlet. Even between the street market and the individual stalls, a similar problem exists because the trade is highly concentrated at street markets. It has been impossible to collect sufficient data from individual stalls to make a comparison possible.

If one views the above comparison from the point of view of locational interdependence between the two systems, the question may be asked whether the lower price level in the centre, in particular in the street market, is a result of greater competition both among street traders themselves and between street and shop traders; whereas in the outer zone a higher price level is the inevitable result of slight competitions. Theoretically, a similar hypothesis can be applied to the shop type system as well. In terms of supply and demand, the supply tends to be

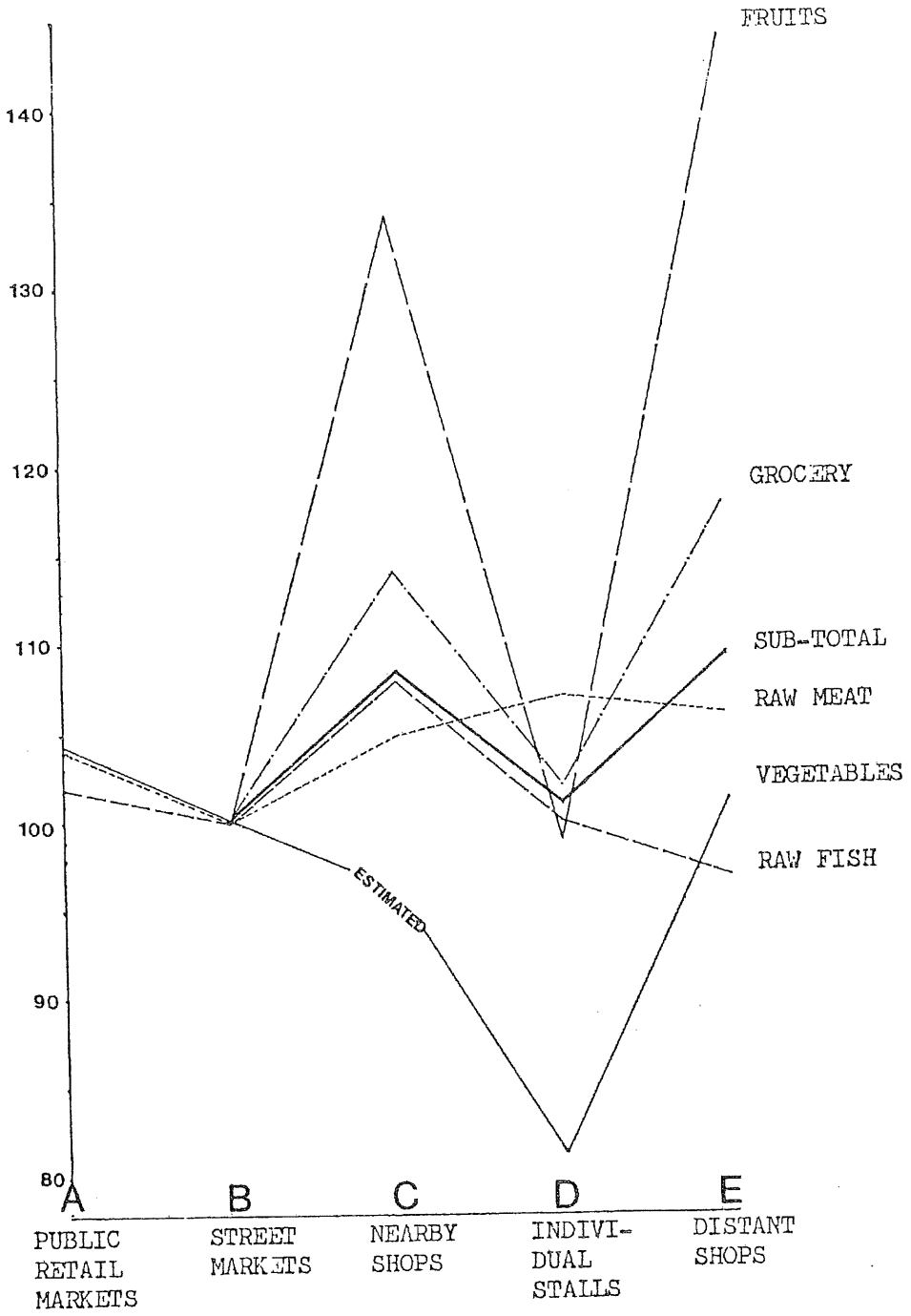


FIG. 31: FOOD PRICES RELATIVE TO THE STREET-MARKET PRICE LEVEL AT VARIOUS RETAIL OUTLETS

greater in the centre (agglomeration) than in the outer zone. Are street trading prices (as well as shop prices) solely directed by the supply function? How about the demand function? The model would be subject to criticism unless the demand variable had been taken into account. Thus, it is necessary to explore the factors which are responsible for the price variations, in particular the spatial pricing determinants. The following section is devoted to the study of the variations in both street trading and shop trading prices.

9.2.1 Spatial Variations in Street Trading Prices

Three broad categories of independent variable have been employed for a series of multiple regression analyses on the spatial variations of street trading prices. First is the category concerning variables related to the demand side of the street trading function. Only the significant ones are mentioned here. FDBILL is indicated by the percentage of the sample households in a given district who spend HKD 5.00 - 8.00 on fresh foodstuffs per meal (This is the mode of food shopping expenditure[81]). One important note to this variable is that the size of food bill (FDBILL) is not necessarily directly related to household income but rather to the size of household. POPPO is the population potential. It is more appropriate to regard this variable as a measure of demand in general unlike FDBILL which is specified for the demand for foodstuffs. STDEPN is a measure of the actual demand specifically made on street traders because it is measured by the percentage of the sample households in a given district who claim street markets as their major source of daily necessities. Theoretically, the poorer the provision of retail shops in a district, the more likely it is to be highly dependent on street markets for food shopping.

The second category concerns the supply side of some retail functions. The most fundamental supply variable is the supply potential of street trading stalls (HWKPO), a variable used in the preceding chapter. The greater the potential, the more likely is keen competition from potential suppliers and so eventually the lower the retail price. Similarly, potentials of this sort can also be constructed for public retail market stalls and ordinary shops. But they have been found rather insignificant in explaining the price variations. Two alternatives were used instead, i.e. HWKPRO and MKTPRO. These two were calculated simply by dividing the population potential by the supply potentials of street stalls and public market stalls respectively. The higher their values, the lower are the provision standards of street stalls and market stalls respectively. A high value means that a larger number of potential customers will be served by a smaller number of potential suppliers. With regard to ordinary shops, only food shops including fresh provisions shops, groceries and rice shops were considered. Their absolute numbers have been found useful in representing the provision level of formal shopping facilities in a given district. Therefore, the potential model is not required.

The third category concerns the 'market' situations. PRISDLF is the price differential on groceries and meat products between shops and street stalls (no comparison with public markets due to the lack of public markets in some sample districts). It is simply the 'Z' score of the differential — (street price - shop price)^2. STPRIS is the price level of groceries, meat products and vegetables in street stalls. Finally, the shopping environment of the two retail systems is represented respectively by HWKDIV and SOPDIV - the diversity of trade types within the two systems respectively. The higher the values of these two variables, the greater is the concentration of trading activities in very few trades. These are indirect measures of the agglomeration economies of a trading compound both to the sellers as well as to the shoppers.

9.2.2 Findings

For the sake of convenience and clarity, the results of the multiple regression analyses are presented in one table (Table 42).

Table 42: Multiple Regression Analyses of Street Trading Prices on Vegetables, Groceries, and Fruits.

Dependent Variable	Independent Variable: Variable Name	Multiple R	R^2	R^2 Change	B
STVEG	FDBILL	.688	.474	.474	1.328
	FDSHOP	.872	.760	.286	-.090
					5.021
STGRO	PRISDIF	.742	.551	.551	-1.192
	FDBILL	.884	.782	.231	.118
	SOPDIV	.926	.858	.075	-1.876
					4.477
STFRU	POPPO	.604	.365	.365	1.060
	FDBILL	.796	.634	.268	-.242
					.846

1. Vegetables

The spatial variation of vegetable street-trading prices may well reflect the distribution of food shopping demand (FDBILL). The price rises as demand increases (note the positive FDBILL in Table 42). But it is affected by the number of food shops in a given area. The larger the number of food shops, the more likely is there to be a lower vegetable price relative to other parts of the Study Area. It is unlikely that this is due to the comeptition of retail shops for there are very few shop-type green grocers. However, it may suggest that a thriving food shopping environment (larger number of food shops) is often accompanied by a large

number of street traders, in particular food traders and eventually competition takes place among the street sellers themselves. The relationship of the two variables is expressed as follows:-

$$STVEG = 5.021 + 1.328\ FDBILL - .090\ FDSHOP \quad \text{——— (1)}$$

2. Grocery

Grocery stalls offer prices at a higher level relative to other parts of the Study Area where there is (1) a narrow price differential between shops and street markets, or (2) a high demand for food shopping, or (3) a fairly diverse shopping environment. The first situation indicates that street trading may not be subordinate simply to retail shops; it may command its own price level. This could well be due to the complementary relationship between grocery shops and grocery stalls. The former sell mainly higher order goods whereas the latter are concentrated in lower order goods; both share different sectors of the 'market'. The two last named situations signify that grocery prices are relatively higher in more comprehensive shopping centres where demand for food shopping is also great. The inter-relationship is expressed as follows:-

$$STGRO = 4.477 - 1.192\ PRISDIF + .118\ FDBILL - 1.976\ SOPDIV \quad \text{——— (2)}$$

3. Fruits

Unlike Grocery and Vegetables, fruit prices are positively related to the spatial distribution of the population potential (potential customers) rather than the demand for food shopping. The higher the population potential of a district, the higher fruit prices offered by street stalls tend to be, in relation to other parts of the Study Area. On the contrary, fruit prices vary with the food demand in a negative direction. In other words, prices

tend to fall in food shopping markets (negative FDBILL). Both POPPO and FDBILL are demand variables; but have a different effect on street fruit prices. Such a contradictory situation requires an explanation about the cultural distinctiveness of the Hong Kong society in fruit consumption. In Hong Kong, generally there are two patterns of fruit consumption, i.e. (1) consumption on the spot at the place of purchases and (2) consumption at home. Unlike the West, in Hong Kong, consumption on the spot is widely accepted; eating fruits or drinking freshly made fruit juice in fruit shops or at roadside stalls is not considered harmful to social prestige. This type of consumption pattern is, in fact, very common in the commercial and entertainment districts, in particular on hot summer days. Normally, this is concentrated in the area of high unit-value fruits provided mainly by fruit shops and street corner fruit stalls. The second type of consumption (home consumption) tends to be dominant in the area of low unit-value fruits which are, to a greater extent, supplied by street market traders who specialize in massive selling of one or two kinds of in-season fruits. There is a locational significance in this contradictory situation: those who aim at the first type of consumption are usually located in non-food shopping markets or streets, say on street corners, at transport terminals, in the vicinity of places of entertainment, etc. (for distribution pattern, see preceding chapter); whereas those who aim at the second type of consumption are normally located in or around thriving food shopping markets. In other words, both have their own 'market', i.e. 'pedestrian' customers versus food shoppers. These two market situations may well be accounted for by the two independent variables of the following equation:-

$$STFRU = .846 + 1.060\ POPPO - .242\ FDBILL \qquad (3)$$

A major drawback to the above three analyses is the limited range of commodities included in each of the three dependent variables, i.e. four vegetables in STVEG, three groceries in STGRO, and three fruits in STFRU. This is mainly due to the lack of the complete data which are required for a spatial approach to analysis. However, if one considers the fact that all these commodities are very standardized and of very low unit-value, their reaction to the spatial pricing determinants, say demand potential, shopping environment, etc., should be regarded as the most basic pattern of price variation of street trading.

Taking the three equations as a whole, one sees the exclusion of the supply factor in the explanation of the spatial variations of street trading prices. There is no evidence that street prices fall as supply increases. Perhaps, the variables HWKPRO is not refined enough to specify the supply situations of the three trades. But, it is very likely that in Hong Kong, in the light of the poor standard of provision of shopping facilities, the demand is far greater than the supply, in particular for the street - oriented trades such as those used in the present analyses. The above three equations confirm the predominance of the demand and 'market-nature' variables in price variations.

9.2.3 The Spatial Variation of Shop Grocery-Price

To be comparable to the street trading situation, only grocery prices were used for the spatial analysis of the variation of shop prices. This is because there are very few greengrocers and fruiterers in the shop trading system. Attempts should not be made to generalize from these few examples on the situation for the whole shop trading system. According to the analysis, shop grocery prices tend to rise where there are high standards of the provision of street stalls and public market stalls (see negative HWKPRO and MKTPRO in Equation 4 in the following). It has to be remembered that the lower the values of variables HWKPRO and MKTPRO mean higher provision standards because of the smaller number of potential customers to be served by each street stall or market stall.

In other words, at a locality within a major street trading environment or in the vicinity of public markets, shop keepers can set higher prices for their goods. This is quite contrary to the traditional and incorrect view that shop prices tend to be pulled down by the presence of large numbers of street traders. In fact, it depends on whether (1) the demand is surpassed by the supply generated from the addition of street traders and (2) there is any direct competition between the shops and street stalls. As far as grocery is concerned, the competition is only marginal; both shops and street stalls tend to share different sectors of the 'market';[82] they are complementary rather than overlapping. With regard to other raw foods, competition seems hardly the cause of price variation. The relationship between price variation and the provision of street trading and public market trading (relative to population potential) is presented as follows:-

$$\text{SOPGRO} = 2.838 - 1.355\ \text{HWKPRO} - .10\ \text{MKTPRO} \qquad (4)$$

9.2.4 Spatial Variation of the Shop/Street Price Differential

On account of the old problem of incomplete data, the study of the shop/street differential has to be confined to a limited range of grocery and meat prices which are available for both shops and street stalls (in some cases, public market prices had to be used to stand for meat shop prices because some items were unavailable in certain samples). According to a multiple regression analysis, the price differential tends to widen in districts where (1) the overall street prices are at a relatively low level compared with other parts of the metropolis, (2) local demand for food shopping is not particularly strong and (3) people are less dependent on street markets for their daily purchases. The interrelationship is shown by the following equation:-

$$\text{PRISDIF} = 1.783 - 1.417\ \text{STPRIS} - .893\ \text{FDBILL} - .028\ \text{STDEPN} \qquad (5)$$

It is clear that the more prosperous a shopping community, the narrower is the price differential between shops and street stalls. The most significant finding of the present regression equation is that the price differentials enlarge as street prices fall (see negative STPRIS). The range of differential is subject to the fluctuation of the street price level rather than the shop price itself. If one assumes that intrinsically shop prices in general are higher than street prices, say on the basis of costs, then the narrower the price gap between the two, the more likely is the result to be a rise in the street price level rather than a fall of the shop level.

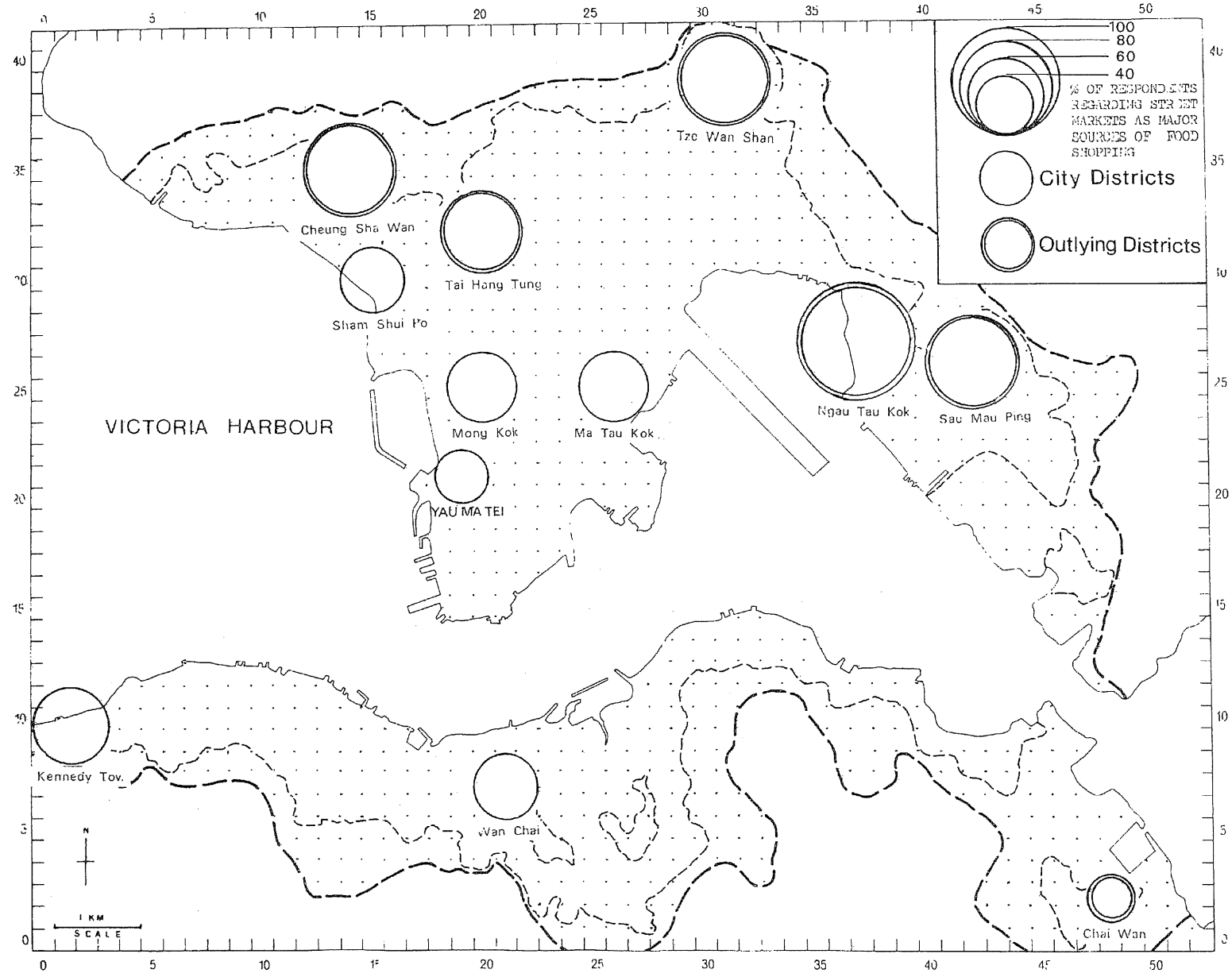
With reference to the finding of two preceding analyses (Equations 1 and 2), street prices are found to be higher in areas of great demand, and/or in poorly equipped shopping centres (see FDBILL and FDSHOP and SOPDIV in the two equations). Furthermore, street grocery prices are also found to be higher in situations where street prices and shop prices are not very much different from one another (see negative PRISDIF in Equation 2). So, by linking these arguments with the present analysis (Equation 5), one can predict that in the highly populated (greater demand for food), and less equipped territories (the resettlement estates) street prices will be fairly high resulting in a narrow price gap between shops and street stalls. It is very likely that both prices are at a higher level relative to other parts of the metropolis. This problem will be further examined in the following table (Table 43).

Table 43: Regression of People's Dependence on Street Markets on Supply and 'Market' Variables

Independent Variable	Multiple R	R^2	R^2 Change	B
HWKDIV	.625	.390	.390	-348.503
PRISDIF	.830	.690	.299	-261.819
HWKPRO	.934	.873	.183	80.829
				489.026

The multiple regression coefficient is extremely high, reaching 0.934. This means the three independent variables included in the equation best 'explain' the total variation of people's dependence on street markets (see relative sizes of the 'R Change' of the three variables in Table 43). The negative sign attached to HWKDIV indicates that the greater the diversity of a street market the greater is its role in satisfying the local shopping demand. This may suggest that the more comprehensive a street market the more likely is complementarity to exist between the street market and its local shops. The negative sign of PRISDIF indicates that people will find narrow shop/street price differential in areas where they depend very much on street markets. But this does not necessarily mean that the overall price level is high or low. Nor does it indicate which is cheaper than the other. The price level is determined by the demand situations. Finally, the poor provision standard of shopping facilities (both street stalls and shops), in relation to population potential, is responsible for people's heavy dependence on street markets. It has to be remembered that a higher value of HWKPRO means a poor provision standard in terms of number of potential customers to be served by individual potential suppliers (POPPO/HWKPO = HWKPRO). So, it is clear that in areas with poor provision of shopping facilities people tend to regard street markets as the main source of supplies; the markets are fairly comprehensive in meeting their demand; but the prices do not seem to be very different from those of the local shops.

The distribution of the estimated values of STDEPN obtained from the preceding analysis should give some idea of the potential of certain street markets in supporting their local demand situation (Fig. 32). The regional contrast in people's dependence on local street markets between the city and outlying districts is clearly shown by Fig. 32. Greater dependence on street markets prevails largely in the outlying districts, in particular in the


100
80
60
40
% OF RESPONDENTS REGARDING STREET MARKETS AS MAJOR SOURCES OF FOOD SHOPPING
City Districts
Outlying Districts
Tze Wan Shan
Cheung Sha Wan
Tai Hang Tung
Sham Shui Po
VICTORIA HARBOUR
Mong Kok
Ma Tau Kok
YAU MA TEI
Ngau Tau Kok
Sau Mau Ping
Kennedy Tov.
Wan Chai
Chai Wan
N
1 KM
SCALE

resettlement estates.* The demarcation between the two is seen to be very similar to that used in the regionalization of street trading markets achieved by a component analysis in Chapter VII (see Group E of Fig. 18). According to the regression equation, the variable PRISDIF should be of vital importance the question whether street traders are providing goods at low prices to the public, in particular to the outlying districts where people depend heavily on them. The following is a closer examination of this particular feature.

9.3 Price Comparison between City and Outlying Districts

Table 44 is a comparison of a list of commodity prices in groups and categories between the city and outlying districts as well as between the street trading and shop trading systems. Several points have to be made clear in the first place. First, the Table does not include prices obtained from (1) individual stalls and (2) distant shops - these were studied in the general comparison presented in Table 41. This is mainly due to the fact that there are very few individual stalls, in particular in outlying districts. Second, Electricals and Services are also not included in the Table. The former type of street trade is fairly localized in certain dry goods markets, and is less available in outlying districts, whereas the latter has the basic problem of quality differentiation. Third, the average commodity price for all over Hong Kong (Col. G in Table 44) is the arithmetic mean of all types of retail outlets, i.e. street markets, individual stalls, nearby shops and distant shops. Therefore, the figures in Col. G are not identical with the arithmetic mean of Cols. A, B, D, & E combined. Finally, only the Category prices (Cooked Food, Raw Food, and Dry Goods) are presented with

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* Note that in Fig. 32 it is the inner circle which is drawn to scale (for outlying districts).

price indices for inter-outlet comparisons. The Hong Kong Average (Col. G) serves as the base level for comparison (100). For the sake of visual comprehension, the categorical comparisons are presented in graphs shown in Fig. 33. The findings are presented briefly as follows:

Table 44: Commodity-Group Price by Retail Outlet and by Region

Commodity	No. of Items	CITY-DISTRICT Street-Market Price (A)	CITY-DISTRICT Shop Price (B)	CITY-DISTRICT Street + Shop Average (C)	OUTLYING-DISTRICT Street-Market Price (D)	OUTLYING-DISTRICT Shop Price (E)	OUTLYING-DISTRICT Street + Shop Average (F)	Hong Kong Average (G)
Cooked Meals	5	13.78	16.18		13.15	13.67		15.19
Refreshment	8	4.75	8.38		4.91	5.29		6.00
Cooked Meat	2	14.82	15.86		14.13	16.24		15.78
COOKED FOOD	15	33.36 (90.2)	40.42 (109.3)	36.89 (99.7)	32.20 (87.1)	35.20 (95.2)	33.70 (91.1)	36.97 (100)
Raw Meat	6	25.86	27.95		26.45	25.96		27.28
Raw Fish	2	5.90	6.67		6.72	6.92		6.33
Vegetables	4	7.14	7.06*		7.51	7.06*		7.03
Grocery	7	9.12	10.31		8.60	8.44		9.65
Fruits	5	4.63	6.94		4.78	4.09		5.11
RAW FOOD	24	52.69 (95.1)	58.96 (106.4)	55.82 (100.7)	54.08 (97.6)	52.48 (94.7)	53.28 (96.1)	55.40 (100)
Confectionary	4	13.53	13.71		12.63	12.65		13.15
Emporium Goods	8	11.80	17.03		15.84	17.28		15.57
Household Ware	2	8.35	7.65		6.66	9.26		7.67
DRY GOODS	14	33.70 (92.6)	38.40 (105.5)	36.05 (99.0)	35.14 (96.5)	39.20 (107.7)	37.17 (102.1)	36.39 (100)
TOTAL	53	119.75 (93.0)	137.78 (107.0)	128.77 (100.0)	121.42 (94.3)	126.88 (98.5)	124.15 (96.4)	128.76 (100)

* Estimated value for the sake of compiling the total price

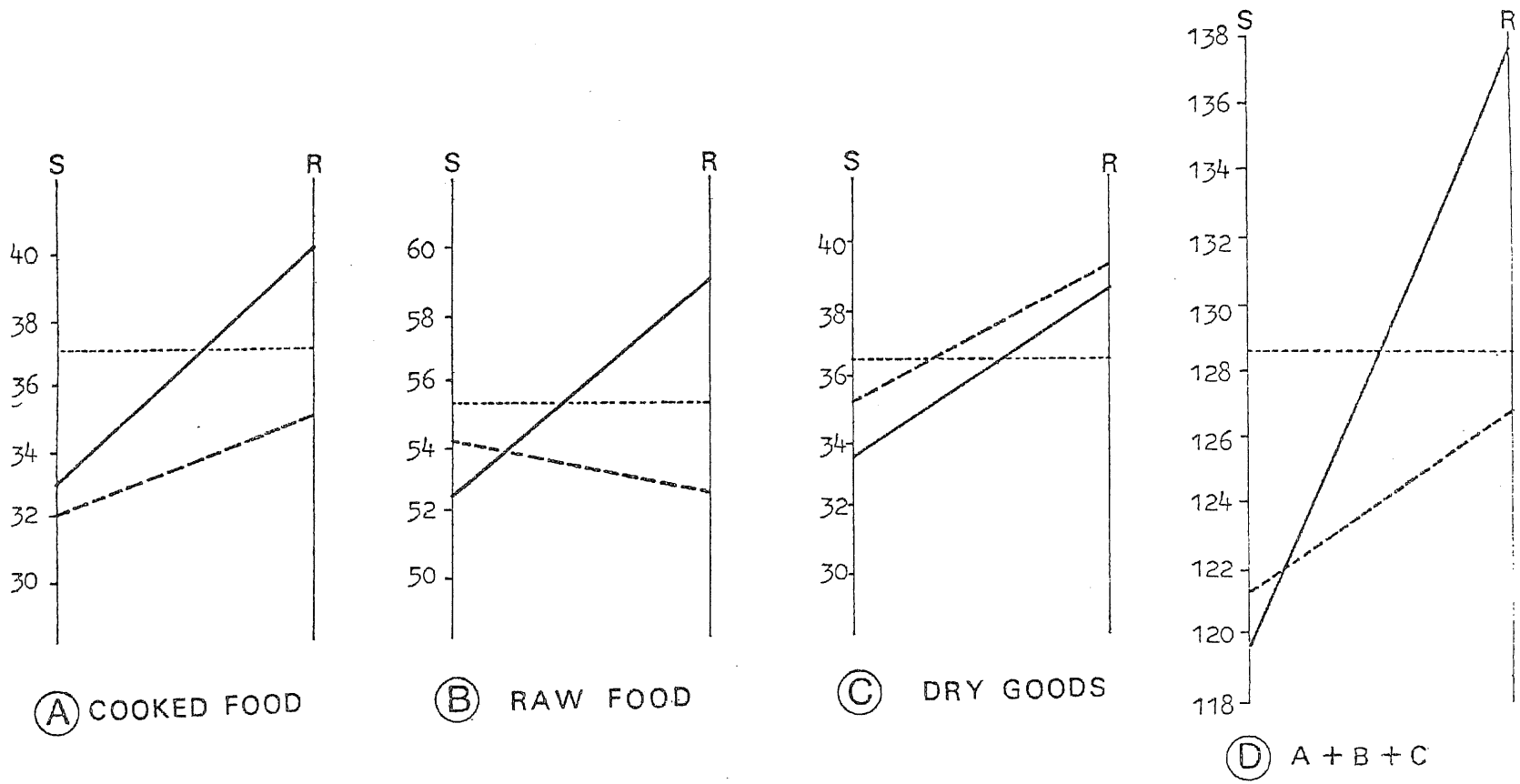

FIG. 33 : REGIONAL COMPARISONS OF STREET-MARKET AND RETAIL-SHOP PRICES

1. Outlying districts do have a narrower shop/street price differential than the city districts: 4.2% compared with about 10% (the percentages are based on the Hong Kong Average price level). Shop prices are definitely higher than street prices (see bottom row of Table 44, and compare the two slopes in Fig. 33 D) in broad categories.

2. By category, the differentials in the city districts are very similar to the overall pattern of differentiation between the two systems: 10% higher in shops, except cooked food (20%). As for the outlying districts, the differential varies greatly among the three categories. The widest differential is not in the cooked food trade but rather in Dry Goods. Dry goods sold by shops are generally 10% higher in price (relative to Hong Kong Average) than those sold by street stalls. But most surprising is that raw food prices are higher in street stalls than in ordinary shops. This may reflect the special circumstances of resettlement estates. This is the only category where street prices are even higher than shop prices. That is also why the total price differential (three categories combined) for the outlying districts is reduced to as low as 4.2% between the two systems compared with about 10% in the city districts (Cols. E minus D in Table 44; also compare the slopes among the three categories in both city and outlying districts in Fig. 33).

3. Although raw foods are more expensive in the outlying districts than in the city districts (street-market price only) the overall price level on foodstuffs is still lower in the outlying districts than in the city districts (Cols. C and F). The city-district price level is more or less the same as the Hong Kong Average (including 4 types of retail outlet) whereas it is about 3.6% lower in the outlying districts. As for individual categories, Cooked Foods on the whole are much cheaper in the outlying districts than in the city districts. The reverse is the case for dry goods; they are 2.1% higher in the outlying districts. Wet goods are at a lower level in the outlying districts but this is mainly due to the low shop level rather than the street level. After all,

there are fewer food shops in these districts; people have to shop at higher prices from street markets.

4. By comparing only the street prices between the city and outlying districts, one sees that street traders in the city districts are selling at lower prices compared with their fellow traders in the outlying districts (compare Cols. A and D in Table 44; also see relative positions of the two price levels along the 'S' axis in Fig. 33). The only exception is Cooked Foods, i.e. higher in the city district than in the outlying district. Almost all the compared street trading commodities, whether dry goods or wet goods, are a few percent higher in price in the outlying districts where, in general, people need street trading most.

9.4 Summary and Conclusion

For the very basic retail commodities, street trading is, by and large, a cheaper means of retail distribution. It provides goods to the public at a price 10% lower than shops. But this is not universal all over the metropolis.

As far as raw food is concerned, street trading prices vary spatially in accordance with (1) the distribution of demand for food shopping and (2) the provision of formal shopping facilities. Price rises as demand increases, and/or in areas deprived of the provision of shops and public markets. The supply factor does not seem to have a significant effect on price. The agglomeration of street traders does not pull shop price down, but on the contrary shop prices tend to be even higher in a thriving hawking environment. Shop prices also rise in areas with a high provision of public retail markets. This results in a narrow price differential between shops and street stalls. Usually, narrow price differentials are associated with high street prices which again is determined by demand. Therefore, in areas of great demand, the narrow price differentials between the two retail systems can be seen as a result of a rise in street price rather than a fall

in shop price. The traditional preconception that street trading contributes to pulling down shop price level is thus proved to be no longer true in modern Hong Kong. This could well be the reason why even when street trading facilities are taken into account the overall retail facilities (shops plus street stalls) are still insufficient to meet the rising demand. Furthermore, street traders and shops seldom overlap; they share different sectors of the 'market'. Thus, the presence of a large number of street traders does not simply mean an increase in the supply function.

The shop/street price differential tends to narrow down in areas where there is a high street price level and a high demand for street shopping and where people regard street markets as their main source of daily supplies. These coincide with the situations of most outlying districts which are characterised by (1) high population density, (2) poor provision of formal shopping facilities, and (3) heavy dependence by the local people on street markets. According to the price comparison between the city and outlying districts, the differential between shops and stalls is about 10% in the city districts but only a few per cent in the outlying districts. In the latter, raw food prices are even higher in the street than in ordinary shops (small shops). In other words, the greater the need for the services of street trading of a district the higher is the price to be paid for the convenience of street shopping. The notion that street trading is a cheaper means of distribution than other formal channels is only partly correct; it does not bring goods at low prices to the remote territories.

FOOTNOTES

57. The Mean Centre and Standard Distance are obtained from the following calculations:

Mean X ($\overline{X}$)

$$Xj = \sum_{i=1}^{n} (aij \times Xi) / \sum^{n} aij$$

Mean Y ($\overline{Y}$)

$$Yj = \sum_{i=1}^{n} (aij \times Yi) / \sum_{i=1}^{n} aij$$

Standard Distance (S)

$$Sj = \frac{\sum_{i=1}^{n} aij (xi - Xj)^2 + \sum_{i=1}^{n} aij (yij (yi - Yj)^2)}{\sum_{i=1}^{n} aij}$$

See Bachi, R. (1962): Standard distance measures and related methods of spatial analysis, Regional Science Association Papers, 10:83-182.

58. The regional breakdown of the Study Area is arbitrary. West Kowloon and West Hong Kong are delimited by the X co-ordinate 23 which cuts the Study Area into two halves through the Mean Centre. But the name East Kowloon is given only to the territory east of the X co-ordinate 29 because such a demarcation would be more relevant to the local meaning of the term " East Kowloon". West of this co-ordinate is Kowloon Proper, or the Peninsula. Generally speaking, East Kowloon embraces almost all the new development areas or the outlying districts; whereas Kowloon Proper consists of mainly the city districts. All these are not official terms; there are hardly any clear definitions.

59. The official planning standard for hawker bazaars is 75 stalls for 10,000 people. It is far below the existing situation in West Kowloon which has the best regression on street trading so far (for similar problems, see Chapter III).

60. The Negative Binomial Probability Law differs from the Poisson Law in a number of ways. The most important theoretical difference is that if a point falls on a particular items, say a quadrat, the probability that the next point will fall again on the item tends to be increased. Thus the Negative Binomial is useful in the analysis of agglomerative situations whereas the Poisson is useful where the distribution is random.

61. A danger of the Negative Binomial is to ' over-identify ' the process of the distribution (Harvey, P.166). Dacey has proposed six different generating processes which can lead to the derivation of the distribution, i.e. (1) Inverse Binomial Sampling, (2) Randomly Distributed Colonies, (3) Immigration-Birth-Death Process, (4) Mixed Random Process, (5) Clustering Process, and (6) Compound Poisson Process (Dacey, p.61). However, it is Rodgers' interpretation which seems to fit the street trading situation best (Rodgers, p.1098). Harvey, D. (1969): Explanation in Geography, Chap. 14 & 15. Dacey, M. F. (1968): An empirical study of the areal distribution of houses in Puerto Rico, in Harvey's, Chap. 14. Rodgers, A. (1965): A stochastic analysis of the spatial clustering of retail establishments, Journal of American Statistical Association, 60: 1094-1103.

62. The K exponent is used in Rodgers' interpretation as the indicator of the " Spatial Affinity " of retail firms (Rodgers, p.1100). In the present market-cluster analysis it is regarded as an indicator of the affinity of street markets or between street markets and public retail markets in the third analysis. It is derived from the following:

$$u_2 = m + \frac{m^2}{k}$$

where m is the mean, u_2 the variance of the negative binomial, and k the exponent. If $K \longrightarrow 0$ from the positive direction the variance increases without bound and greatly exceeds the mean indicating a highly clustered distribution.

63. In street trading, both complementarity to (a) ' market ' and (b) to outlets similar in trade type often go hand in hand. This is because basically retailing is oriented to the demand (the ' market '). Thus the two types of complementarity overlap each other. Proximity to supply is also relatively insignificant in street trading unlike material-intensive industries. Similar arguments are found in Scott's Georgraphy and Retailing. (1970), p.26.

64. Getis in his sequence analysis of retail affinities found that the greater the heterogeneity of the data (low taxonomic generalization), the larger will be the sets of associations. In other words, the affinity pattern is more complex and less discernible than that on less heterogenous data (see Fig. 1 in Getis, 1968).
Getis, A. & J. M. Getis (1968): Retail store spatial affinities, Urban Studies, 5:317-332.

65. Patterns of retail affinities are discernible in traditional markets and bazaars. However, no quantitative studies have been carried out so far. As for the firm-type retail system, there are a number of techniques developed in the following studies:
Artle, R. (1959): Studies in the Structure of the Stockholm Economy, Stockholm: Business Research Institute.

Berry, B. J. L. (1959): Ribbon developments in the urban business pattern, Annals of the Association of American Geographers, 49:145-155.

Boyce, R. R. (1960): Measurements of urban retail affinity: a further application of linkage analysis, Annals of the Association of American Geographers, 50:305 (Abstract).

Parket, H. R. (1962): Suburban shopping facilities in Liverpool, Town Planning Review, 33:197-223.

Getis, A. (1963): The determination of the location of retail activities with the use of a map transformation, Economic Geography, 39:14-22; also (1967): A method for the study of sequence in Geography, Institute of British Geographers, 42:87-92; also (1968), see Footnote 64.

Rodgers, A. (1965): see Footnote. 61

66. Scott, P. (1970): Geography and Retailing, Hutchinson University Library, p.36.

67. The technical problems of the multiple regression analysis are explicitly dealt with in the following:

Blalock, H. M. (1963): Correlated independent variables: the problem of multicollinearity, Social Forces, 42:233-237.

Farrar, D. E. & Glauber, R. R. (1967): Multicollinearity in regression analysis: the problem revisited, Review of Economic Statistics, 49:92-107.

Fox, K. A. (1968): Intermediate Economic Statistics, Weley, N.Y., Chaps. 7 & 13.

68. There have been no official statistics on the amount of vegetables (other street trading goods) moved from wholesale markets to various parts of the metropolis. Even the overall total figure is unknown. The present analyses were based on data obtained from field interviews. Fig. 20 as well as Figs. 21 & 22 attempt to identify where the respondents (from 12 street markets) get their supplies. The flows in these figures should be viewed with care; they do not represent the amount of goods being moved from the supply sources to the street markets but the number of street traders who draw their supplies from various sources.

69. For freight rates, see Footnote 52 in Part I.

70. The analysis was based on detailed survey data on three public retail markets (1969) provided by the Market Section of the Urban Services Department, Hong Kong. Central Market in Central District, Hong Kong has been found the most oriented towards wholesaling operations among the three.

71. Hong Kong Statistics 1947 - 1967, p.75; and Hong Kong Monthly Digest of Statistics, Dec., 1971, p.16.

72. It is a common practice for a vegetable or fruit trader to have a family member to take care of the supply acquisition so that he/she can open the stall early to prepare for a day's selling. For Interview results on supply acquisition, see Appendix VII.

73. Generally dry-goods traders do not have to draw supplies every day. Normally they go to the wholesalers once every few days. For purchase frequency, see Appendix V.

74. The result of the questionnaire on bargaining is:

No Bargaining At All	32.1%
Rarely	14.1%
Occasionally	29.2%
Fairly Often	15.2%
Often	9.4%
	100.0% (448)

75. For degree of patronization by trade, see Appendix VIII.

76. For review of the technique and application of the gravity and potential model, see Walter Isard (1960): Methods of Regional Analysis - An Introduction to Regional Science, M.I.T. Press, Chapter 11. The model used in the present analyses is a simple one; no weighting on the mass and distance factors is used. The formula is

$$P_i = \sum_{j=1}^{n} M_j D_{ij}$$

where P_i is the potential for Cell i, M_j is the mass (say, population, street stalls, market stalls) in Cell j, and D_{ij} is the straight line distance in units of 250 metres between i and j.

77. In the Survey, 1200 households from 64 sample cells were asked where they often went for their food-shopping. Fig. 3 in Part I shows their destinations only; their frequency was not presented. In most cells, households from the same cell normally had a common destination where they went shopping everyday; whereas in high income districts, the destinations vary significantly from household to household.

78. For the discussion on Government policies on hawking, see Chapter X.

79. In the Household Interview, a question was asked whether the respondent regarded the standard of weights and measures in street trading unreliable. The result is listed below:-

Most Likely	9.2%
Probably Yes	41.6%
Uncertain	18.2%
Probably Not	17.5%
Most Unlikely	2.4%
Others	10.8%

80. See Household Expenditure on Purchases from Street Traders, Chapter IV.

81. In the Household Interview, a question was asked on the respondents' usual expenditure on fresh foodstuffs (HKD per meal). The result is listed below:-

HKD per Meal	%
under 2.0	2.5
2.0 - 2.9	10.7
3.0 - 4.9	30.7
5.0 - 7.9	36.7
8.0 - 9.9	12.2
above 10	7.2

82. According to the free interviews with a number of shop keepers in major street trading concentrations, generally there were unexpectedly few negative opinions against street trading. The common reason for a negative attitude was obstruction. The majority had a neutral attitude, in particular the dry goods shop keepers. It was not uncommon to come across sympathizers; they said that street trading was a way of making one's living. Those in favour of street trading were mainly food shop owners. Some said street trading brought them more custom; others advocated the benefit of specialization (in the form of a food ' market ' 成行成市); and they shared a common market with the street traders. As a whole, there seemed to be little fear of the competition from street traders in price terms.

Appendix III.

Residuals of the Multiple Regression Analysis of Street Trading Distribution

The inclusion of six independent variables in the second multiple regression equation presented in Table 39 is mainly for the purpose of displaying the most important variable for the explanation of the total variation. However, for pratical purposes, say predicting the size or demand of space for hawker bazaars, the first four variables will be good enough. The regression equation will be:

$$Y = 3.444\ X_1 + 12.003\ X_2 + 12.863\ X_3 - 4.665\ X_4 + 24.554$$

The residuals are listed in the following:

Area	Y Value	Y Estimate	Residual
1	24.00	37.99	-13.99
2	291.00	345.04	-54.04
3	85.00	138.91	-53.91
4	44.00	4.24	39.75
5	12.00	33.41	-21.41
6	5.00	85.68	-80.68
7	99.00	67.39	31.60
8	347.00	355.43	-8.43
9	492.00	505.04	-13.04
10	115.00	77.99	37.00
11	123.00	93.48	29.51
12	33.00	79.76	-46.76
13	362.00	325.99	36.00
14	29.00	56.73	-27.73
15	5.00	-3.03	8.03
16	205.00	Missing	
17	86.00	229.56	-143.56
18	604.00	502.43	101.56
19	494.00	548.27	-54.34
20	20.00	-18.34	38.34
21	251.00	231.66	19.33
22	86.00	71.91	14.08
23	6.00	24.96	-18.96
24	63.00	22.29	40.70
25	59.00	54.33	4.66
26	132.00	161.67	-29.67
27	184.00	307.88	-123.19
28	100.00	86.88	13.11
29	138.00	150.77	-12.77
30	191.00	197.91	-6.91
31	231.00	130.71	100.29
32	31.00	28.42	2.57

Appendix IV A

Component Loadings of the 22 Variables

	Variable*	Component I	Component II
1	POP	.23	.67
2	DISMKT	.12	.24
3	RESIDEN	.58	-.44
4	GOVRN	-.35	.28
5	RESET	-.31	.67
6	COMRES	.75	-.22
7	BUSOF	.56	-.30
8	HVYINDS	-.09	-.49
9	LGTINDS	.41	-.51
10	OTHERS	.01	.18
11	STBLCK	-.20	.28
12	STNET	-.08	-.29
13	NSTREET	-.00	-.14
14	PEDES	.53	-.23
15	FPSHOP	.57	.44
16	GROCER	.75	.44
17	PIECE	.81	.15
18	GARMT	.58	.37
19	HRDWRE	.88	.18
20	REERESH	.79	.03
21	GENSTR	.80	.05
22	OTRSHOP	.91	.07

* For variable names and definitions, see Table 37 in Chapter VII.

Appendix IV B

Component Scores of 32 Sample Cells

Area* (Cell)	Component I +	Component II ++
1	-1.22	2.10
2	2.06	.07
3	.04	-1.17
4	-1.45	-.83
5	-.91	-.08
6	-.29	-.72
7	-.33	1.22
8	.54	1.99
9	1.66	.52
10	.61	-.66
11	1.51	-.20
12	-.62	-1.42
13	.83	-1.32
14	.89	-.81
15	-1.37	.61
16	-.98	-.83
17	.37	-.18
18	1.25	.33
19	2.13	.56
20	-.69	-1.17
21	.50	-.00
22	-.81	-1.72
23	-1.31	-.47
24	.79	-1.12
25	-.54	1.54
26	.25	-.11
27	.67	-.11
28	-.63	1.03
29	-.37	1.10
30	-.42	2.73
31	-.64	-.85
32	-1.46	-.04

* For cell names, see Appendix X.

\+ Commercialization Component

++ Dormitory-like Housing Component

Appendix V

Frequency of Supply Purchasing

Trade	More than Once a Day	Daily	Every 2 days	Every Few Days	Weekly	Biweekly	Monthly	Others*
				(% of Row Total)				
Vegetables	8.1	82.3	1.6	3.2	0	1.6	1.6	1.6
Fish	20.5	76.9	2.6	0	0	0	0	0
Meat	2.9	68.6	8.6	11.4	0	0	0	8.6
Fruits	1.7	66.1	11.9	11.9	0	0	3.4	5.1
Grocery	0	25.9	8.6	31.0	13.8	5.2	15.5	0
Garment & Clothing	2.0	0	0	35.3	9.8	0	27.5	25.5
Confectionery	3.6	7.1	7.1	32.1	17.9	7.1	10.7	14.3
Emporium Goods	4.5	15.9	2.3	22.7	2.3	0	27.3	25.0
Household Ware	4.5	4.5	0	27.3	13.6	0	18.2	31.8
Newspapers & Magazines	53.3	46.7	0	0	0	0	0	0
Services & Medical	45.7	5.7	0	0	11.4	0	20.0	17.1

Source: Field Interview; N = 448

* Including non-specific answers and ' Don't Knows '

Appendix VI.

No. of Successful Transactions Achieved in 5 Minutes During the Peak Hour

Cooked Food	4
Light Cooked Food	6.2
Snack	6
Meat & Poultry	5
Fish	5.9
Cooked Meat	4
Grocery	5.1
Vegetables	6.8
Fruits	4.9
Flowers	1
Emporium Goods	1
Garment & Clothing	2.2
Footwear	1
Toys & Stationery	1.5
Books	NA
Confectionery	1.5
Pet Animals	NA
Household Ware	1
Metal Ware	NA
Electricals	NA
Machinery	NA
Antique	NA
Services	NA
Newspapers	NA

NA - Not available in the centre of street market

Counts were taken in 32 sample street markets between 10.00 and 10.15 a.m. The stalls from which counting was made were picked from the busiest section of the street market in each cell. That is why most dry goods and services are not avialable.

Appendix VII.

Supply Acquisition

Trade	By Own Purchasing	Via Sale Representatives or orders	Others
Fruits	98.3	1.7	0
Vegetables	93.5	6.5	0
Fish	92.3	2.6	5..
Grocery	86.2	12.1	1.7
Meat	85.7	11.4	2.9
Emporium Goods	68.2	20.5	11.4
Garment & Clogh	58.8	33.3	7.8
Newspapers	53.3	20.0	26.7
Confectionery	50.0	50.0	0
Services	42.9	54.3	2.9
Household Ware	40.9	45.5	13.6

Source: Field Interview, N = 448

Appendix VIII.

Degree of Patronization by Trade

	Percentage of Customers Regarded as Regular Patrons						
	≤30	30	50	70	≥70	D.K.	Row Average
Fruits	11.9	20.3	16.9	15.3	33.9	1.7	56.8
Raw Meat	17.1	20.0	25.7	8.6	25.7	2.9	50.7
Raw Fish	10.3	30.8	23.1	12.8	15.4	7.7	48.1
Vegetables	29.0	25.8	6.5	4.8	25.8	8.1	44.2
Grocery	17.2	6.9	17.2	15.5	37.9	5.2	59.4
Household Ware	13.6	13.6	13.6	13.6	45.5	0	61.1
Garment & Cloth.	15.7	15.7	11.8	17.6	7.3	2.0	58.1
Confectionery	32.1	3.6	21.4	0	35.7	7.1	40.2
Services	14.3	11.4	11.4	17.1	45.7	0	62.1
Newspapers	13.3	0	0	20.0	66.7	0	72.6
Overall	17.6	17.2	14.7	12.5	34.4	3.6	55.1

Source: Field Interview; N = 448

Appendix IX

Mean Price of Commodities Obtained from Different Outlets

Commodity Item	Unit	Mean Unit Price (S) At				
		Public Mkts	Street Mkts	Indiv. Stalls	Nearby Shops	Distant Shops
COOKED MEAL						
Rice with Roasted Goose & Pork	Dish	N	1.86	1.63	2.21	2.28
Fried Noodle with Beef	Dish	N	1.90	1.95	1.95	2.03
Fried Vegetable with Beef	Dish	N	3.37	4.00	3.44	3.66
Stew Crab with Giner & Onion	Dish	N	6.96	7.20	7.97	7.16
Plain Boiled Rice	Bowl	N	.20	.21	.45	.30
REFRESHMENT						
Beef Congee	Bowl	N	.55	.58	1.18	1.47
Congee with Giblets	Bowl	N	.66	.86	1.33	1.54
Wun Tun Noodle in Soup	Bowl	N	.77	.84	1.03	1.05
Spaghetti with Fish Balls	Bowl	N	.71	.73	.55	.60
Tea with Milk	Cup	N	.43	.40	.55	.57
Icy Lemon Tea	Cup	N	.57	.54	.72	.82
Coca Cola	Btle	N	.40	.42	.51	.55
Red Bean Ice	Glass	N	.65	.65	.86	.88
COOKED MEAT						
Roasted Pork	Catty	N	8.17	8.80	9.05	9.73
Roasted Duck	Catty	N	6.32	6.60	6.99	7.44
RAW MEAT & POULTRY						
Lean Pork (Best Cut)	Catty	4.90	4.81	5.20	4.84	4.98
Belly Pork	"	2.33	2.45	2.56	2.32	2.22
Beef (Best Cut)	"	6.13	6.10	5.93	6.21	6.38
Chicken (Local)	"	5.09	5.01	4.96	5.23	5.36
Chicken (Mainland China)	"	5.70	4.76	5.50	5.96	5.85
Duck (Cleaned)	"	3.09	3.02	3.70	2.95	2.82

N Not Avaialble, or Incomplete Data

FISH						
Gold Thread	Catty	1.77	1.76	2.28	1.99	1.95
Carp	"	4.54	4.50	4.00	4.78	4.10
Life Prawn (Medium)*	"	10.72	12.66	16.00	7.00	N
VEGETABLES						
Winter Melon	Catty	0.95	1.22	.98	N	1.50
Green Peas	"	3.67	2.82	3.27	N	4.00
Bean Sprouts	"	.70	.87	.64	N	.80
Season Vegetable	"	2.31	2.41	1.06	N	1.07
GROCERIES						
Chao Pai Salted Fish	Catty	N	2.05	2.20	3.27	3.18
Salted Promfret*	"	N	8.65	6.90	10.77	14.40
Ground Nut Oil*	"	N	5.19	2.61	4.23	4.00
Soya Source (Branded)	Blte	N	1.76	1.82	1.82	1.81
Soya Source (Unbranded)	"	N	.90	.90	.90	1.21
Sugar*	Catty	N	.90	N	1.04	1.00
Canned Bouble Cooked Pork Slices	Can	N	.67	.66	.65	.65
Salt	Catty	N	.30	.27	.30	.36
Canned Milk (Dutch)	Can	N	1.81	1.81	1.82	1.83
Del Monte Peach	Can	N	1.38	1.40	1.41	1.41
FRUITS						
Orange (Sunkist)	Each	N	.37	.38	.43	.45
Orange (Ouspan)	"	N	.30	.34	.38	.35
Orange (China)	"	N	.41	.37	.68	.52
Water Melon	lb	N	.80	.71	.68	.52
Lung Naan (Thailand)	lb	N	2.74	2.76	4.03	4.85
CONFECTIONERY & PASTRY						
Buns*	Each	N	.26	.30	.60	.40
Crackers (Branded)	lb	N	1.10	1.00	1.12	1.05
Biscuits (Branded)	lb	N	1.30	1.20	1.23	1.30
Loaf of Bread (Branded)*	Each	N	.68	.83	.45	.50
Suhus (Sweets)	lb	N	2.78	2.43	2.69	2.64
Chocolate (Golden Cup)	ob	N	8.05	8.20	8.18	8.30

* Excluded due to Large Internal Variations (SD above 1.5)

EMPORIUM GOODS						
Plastic Sandals (Local)	Pair	N	.58	.59	.82	.59
Plastic Sandals (Imported)	"	N	1.52	1.34	1.71	1.59
Rubber Soled Shoes (Size 38)	"	N	3.25	3.55	3.48	3.47
Men's Underwear (Sanlet)	Each	N	1.98	1.87	2.50	2.01
Men's Underwear (Imported)	"	N	2.06	1.88	2.04	2.19
Women's Underwear (Nylon)	"	N	2.33	1.90	2.44	3.23
Washing Powder (Sunkist)	Box(M)	N	1.96	2.00	2.04	2.00
Washing Powder (Local)	lb	N	1.33	1.34	1.21	1.22
Tooth Paste (Colgate)	Fam. Size	N	2.60	2.98	2.98	3.11
Toilet Roll (Andrex)	Each	N	.61	.74	1.42	.80
ELECTRICALS						
Cassette	Each	N	6.92	7.50	6.10	6.84
Long Play Record (Specified)	Each	N	6.71	7.25	8.00	6.96
Long Play Recrod (Specified)	Each	N	6.21	5.80	8.00	7.35
HOUSEHOLD WARE						
Broom	Each	N	1.20	1.12	1.17	1.24
Sauce-pan (Aluminium, Branded)	Each	N	6.54	5.92	7.10	6.41
SERVICE						
Watch Maintenance	Piece	N	8.21	8.16	8.81	10.71
Laundry		N	2.48	2.03	3.40	3.60
Shoe Repair		N	1.28	.67	1.67	1.49
GARMENTS						
Shirt*	Each	N	7.45	11.33	9.97	10.81
Jersey Dress*	"	N	10.00	9.00	7.50	18.77
Tailor Made Lady Dress*	"	N	9.63	8.83	7.54	8.02
Labour Charge for Cheung Sham*	"	N	10.43	32.00	38.84	35.59
Labour Charge for Suit*	"	N	95.00	97.50	104.21	108.32
Labour Charge for Trousers*	"	N	15.50	14.88	16.50	20.36
Pinafore*	"	N	10.97	12.00	11.79	18.23
FOOTWEAR						
Flat Heel Shoes*	Each	N	3.97	13.57	12.52	10.86
Labour Charge for Hand Made Shoes	"	N	10.63	10.90	15.01	16.20
Sandal*	"	N	3.00	2.40	24.13	24.41

Appendix X.

Index of Diversification

Code	Place Name	ID
1435	Shun Ning Road	0.71
1235	Fuk Wing Street	
2032	Tai Hang Tung R/E	0.73
1832	Shek Kip Mei R/E	
1530	Pei Ho Street	0.78
1430	Sham Shui Po Ferry	
1729	Nam Cheong Street	0.69
1628	Sham Shui Po (S)	0.85
2025	Yin Cheong Street	0.71
1921	Yau Ma Tei (S)	0.78
1919	Bowering Street	0.79
1916	Hankow Road	0.78
2625	Kowloon City Road	0.72
2626	Pau Cheung Street	0.68
2725	Sheung Heung Road	
2622	Ma Tau Wai Road	
2421	Bukeley Street	0.65
2520	Hung Hom Ferry	0.88
2535	Wang Tau Hom R/E	
3139	Tze Wan Shan R/E	0.70
3727	Ngau Tau Kok R/E	0.58
4125	Kwun Tong	
4326	Sau Mau Ping R/E	0.64
0110	Kennedy Town	0.68
1210	Graham Street	0.68
1309	D'Aguilar Street	0.81
2107	Wan Chai Road	0.70
2809	Causeway Bay Road	
3413	Tanner Hill	
4209	Sai Wan Ho	
4308	Sau Kei Wan	0.67
4802	Chai Wan R/E	0.71
Total		0.72