



香 港 中 文 大 學  
社 會 研 究 中 心

High-density Effects in Urban  
Hong Kong: What Do We Know  
and What Should We Do?

Rance P. L. Lee

**SOCIAL RESEARCH CENTRE**  
**THE CHINESE UNIVERSITY**  
**OF HONG KONG**

**Suggested citation:**

Lee, Rance P. L. 1979. *High-density Effects in Urban Hong Kong: What Do We Know and What Should We Do?* Hong Kong: Occasional Paper No. 80, Social Research Centre, The Chinese University of Hong Kong.

THE CHINESE UNIVERSITY OF HONG KONG  
SOCIAL RESEARCH CENTRE

HIGH-DENSITY EFFECTS IN URBAN  
HONG KONG: WHAT DO WE KNOW  
AND WHAT SHOULD WE DO?

by

Rance P.L. Lee

(Not to be quoted or reproduced without permission)

January, 1979

All manuscripts are processed through the Editorial Subcommittee and evaluated and approved by its members in collaboration with invited reviewers of relevant specialties.

Members of the Editorial Subcommittee:

Dr. Fai-ming Wong (Convenor)  
Prof. John Jones  
Dr. Siu-kai Lau  
Dr. Sung-hsing Wang

Copyright remains with the author.

Dr. Rance P.L. Lee (1943- ) received his B.S.Sc. from The Chinese University of Hong Kong and Ph.D. in Sociology from the University of Pittsburgh, U.S.A., in 1968. Currently he is Senior Lecturer in Sociology, Chung Chi College, The Chinese University of Hong Kong.

HIGH-DENSITY EFFECTS IN URBAN HONG KONG:  
WHAT DO WE KNOW AND WHAT SHOULD WE DO?\*

Rance P.L. Lee

Contemporary society has been undergoing what Philip Hauser (1968) has called the "social morphological revolution". This revolution includes the remarkable increase in the rate of world population growth, the increasing concentration of the world's peoples on urban areas, and the increasing heterogeneity of populations sharing the same geographical area and life space. There are now over 4 billion people in the world, of which about 38 per cent are living in towns and cities. The population explosion and implosion have resulted in not only high-density living in urban areas but also diversity of urban populations in ethnicity, language, cultural traditions, and social organizations.

A major source of the social morphological revolution is the accelerated tempo of scientific and technological development. It is the scientific and technological progress that have substantially reduced the death rates and have also permitted the ever larger agglomerations of the different kinds of people in urban areas. The question

---

\* The author wishes to acknowledge the suggestions from Dr. Y.K. Chan.

arises: What are the human implications of the population increase in urban areas, which is partly, though not entirely, a result of the scientific and technological development? The object of this paper is to focus on the social and health implications of high-density living in urban areas. Special reference will be made to the case of urban Hong Kong.

#### A REVIEW OF SOCIAL SCIENCE KNOWLEDGE

It has been widely believed that as a city becomes increasingly crowded, it is bound to have a number of social problems including crimes and delinquency, family conflicts, and illness, etc. Such a belief has been confirmed by many, though not all, of the animal studies (for a concise review, see Freedman, 1975, Chapters 2 & 3). Biologists have conducted a number of studies on a great variety of animals such as mice, rabbits, rats, deer, chicken, primates, and wolves. It was generally found that high-density situations produce behavioral deviations and physiological pathologies among animals, such as less maternal care, higher mortality rates, greater hostility, lower fertility, and more sexual deviance. Various explanations have been suggested including, for instance, the territorial needs and the increase of adrenal activity of the animals. The question is: can these findings from animal studies be generalized to human populations?

Numerous theories have been proposed and a large number of studies have been conducted by social scientists in the last two decades, dealing with the human implications of high-density living (for literature reviews, see Winsborough, 1965; Choldin & McGinty, 1972; Freedman, 1973; Loo, 1975; and Choi, et al., 1976). Most studies -- experiments and sample surveys -- follow the tradition of animal research. Their conceptual framework is basically a stress model. It is postulated that high-density living produces stress, which in turn leads to deviant behavior. There are quite a few propositions specifying why high density is stressful to the individuals. For instance, it has been argued that high density is stressful because (1) it produces excessive stimulation or information overload; (2) it imposes behavioral restriction; and (3) it makes the supply of resources less than the demand.

Let us briefly review what we have learnt from the empirical studies. Psychologists have done a number of laboratory as well as field experiments. In a nutshell, most experiments dealt with three major types of behavioral consequences; they are (1) interpersonal affection and attraction, (2) aggression and hostility, and (3) cognitive skills and task performance. Up to now, the experimental findings are rather inconclusive. There are so many contradictory findings that it is uncertain whether high density has adverse effects on human beings.

The experimental approach has some limitations. First, most studies dealt with a special group of individuals in an institutional setting, such as students in schools and patients in hospitals. These findings may not be generalizable to other groups of people. Second many studies were conducted in an artificially created laboratory environment. People under high-density situations in a real-life setting may not behave in the same way as in an artificial setting. Third, most experiments dealt with short-time or momentary effects of high density. The long-term effects may not be the same. All these reservations about experimental findings point to the need for research on the long-term consequences of high-density living on the general populations in real-life settings. In recent years, many psychologists and especially sociologists have responded to this research need and have accumulated a substantial amount of research findings. Most of the studies were conducted in the form of social surveys.

Numerous surveys have been conducted on both ecological and individual levels. Ecological studies use aggregates as units of analysis. There have been comparisons between cities or metropolitan areas, and between census tracts within a city. In addition to ecological studies, there have also been a number of individual-level studies which use individuals as units

of analysis. The individuals under study are normally selected through random sampling procedures.

Both ecological and individual-level surveys have been conducted in a variety of urban contexts, such as Baltimore, Boston, Chicago, Detroit, Indianapolis, Honolulu, New York, Toronto, Hong Kong, Singapore, and Manila. There are also studies in France, Italy, New Zealand, Netherlands, and Taiwan, etc. In these studies, a wide range of behavioral consequences of high density have been examined, including, for instance, (1) health status, e.g., overall mortality, infant mortality, accidental death, mental disorders, stress symptoms, infectious diseases, and venereal disease, (2) aggression, e.g., juvenile delinquency, adult crimes, homicide, and suicide, (3) family relations, e.g., husband-wife conflict, sibling rivalry, parent-child conflict, and divorce, (4) social participation and alienation, e.g., organizational affiliations, and contacts among relatives, neighbors, and friends, (5) political disorder and civil strife, (6) child development, e.g., play pattern, intellectual ability and school performance, aggression, and health, (7) fertility behavior, e.g., number of pregnancies, uses of contraceptives, illegal births, and abortion, (8) sexual behavior and deviance, e.g., the number of sexual intercourse, homosexuals, and extramarital affairs.



Regarding the concept of physical density, a number of measures have been developed. An important development is the distinction between household density and neighborhood density. Some examples of the measures of household density, which refers to density within the dwelling unit, are number of rooms per housing unit, number of families per housing unit, number of persons per housing unit, number of persons per room, and amount of space per person within the housing unit. Neighborhood density refers to the density situations outside the dwelling unit. Some of its measures are number of people per unit area, number of dwelling units per unit area, number of dwelling units per structure, number of structures per unit area, and amount of open space per person.

In the social surveys, it is generally hypothesized that high-density living would produce adverse effects on the health and social behavior of individuals. In examining the hypotheses, survey researchers typically control on certain background variables, such as sex, age, education, socioeconomic status, migration, and ethnicity. Like the experimental findings, however, the results from survey studies are also inconclusive. Most studies found that there are slight or no relationships between high density and various behavioral items, especially when some background variables are held constant.

In sum, neither the psychological experiments nor the social surveys have produced significant and consistent findings about the human implications of high-density situations. After years of research, we seem to come to the conclusion that high density by itself may have little effects on people. Let us now focus on the case of Hong Kong, as it is undoubtedly one of the most densely populated cities on the earth.

#### HIGH DENSITY IN HONG KONG

At the end of World War II, there were about 600,000 people in Hong Kong. It was estimated that at the end of 1977, the total population had increased to about 4.6 million persons. As the total area is 1,049 square kilometers, the overall population density in Hong Kong is about 4.4 thousand people per square kilometers.

Like other parts of the world, the people in Hong Kong are unequally distributed between the urban and the rural sectors. The urban areas -- Hong Kong Island, Kowloon, New Kowloon, and Tsun Wan -- constitute about 14 per cent of the total land in Hong Kong, but its share of the total population is over 90 per cent. The population density in the urban areas is thus nearly 26 thousand people per square kilometers. There are, of course, variations among the various districts of the urban sector. According to the 1971 census, the district of Mongkok in

the peninsula of Kowloon had a population density as high as 155 thousand people per square kilometers. It can not be overstated that wherever we go in urban Hong Kong, we are surrounded by thousands of people and by hundreds of high-rise buildings. High density has, in effect, become a normal way of life in Hong Kong.

The people in Hong Kong have diverse ethnic and cultural backgrounds. More than 98 per cent of the population are Chinese in origin. The Chinese are not homogeneous among themselves. About a half of them were born in Hong Kong, while the others came from different regions of China such as Canton, Sze Yap, Chiu Chow, and Shanghai. The non-Chinese include people from Britain, India, America, Australia, Portugal, Pakistan, The Philippines, Singapore, Canada, Japan, Indonesia, and West Germany, etc. Cantonese and English are the major languages in Hong Kong, but a wide variety of local dialects are still used by many ethnic and racial groups.

The morphological revolution -- population explosion, implosion and diversity -- in Hong Kong is associated with the scientific and technological development. In the past few decades, Hong Kong has been rapidly transformed from a commercial entrepot to a modern cosmopolitan industrial city-state. From 1951 to 1975, the total consumption of electricity increased from 354 to 6,424 million kilowatt-hours, while the number of registered motor vehicles

increased from 15 to 188 thousand. During the same period, the employment in manufacturing industries increased from 94 to 679 thousand employees. Moreover, it was estimated (Cheng, 1977) that the Gross Domestic Product per capita at current market prices increased from HK\$1,695 in 1960 to HK\$6,764 in 1973. Should we exclude the element of inflation, then the Gross Domestic Product per capita at constant price (the level of 1964) increased from HK\$1,784 in 1960 to HK\$3,978 in 1973. These statistics indicate that the technological and economic growth in Hong Kong has been phenomenal. It has attracted people from many places especially the mainland China. Meanwhile, it has substantially reduced the death rates and thus facilitated the natural increase of population. From 1951 to 1975, the crude death rate decreased from 10.2 to 4.9 per thousand, while the crude birth rate decreased from 34 to 18.2 per thousand. Apparently there have been more births than deaths in Hong Kong.

The technological advancement and the fast growing economy have given Hong Kong the ability to absorb the rapid growth of population. Nowadays, neither unemployment nor under-employment is a major issue in Hong Kong. However, the problem that Hong Kong has grown up with is the shortage of living space. What is of great concern to the Hong Kong people today is the social and health implications of high-density living.

In the early 1960s, an American scholar, Robert Schmitt, came to Hong Kong and was impressed by the fact that although Hong Kong was more densely populated than many cities in the United States, it had lower rates of death, disease, and social disorganization (Schmitt, 1963). However, Hong Kong is different from American cities in many respects. Schmitt's observation can not be taken as the conclusive statement about the effects of high density.

In the late 1960s, another American scholar, Robert Edward Mitchell, came to Hong Kong and directed the Survey Research Centre of the Chinese University of Hong Kong. He and his staff conducted the Study of Family Life in the urban areas of Hong Kong. A total of 3,966 individuals aged 18 and over were interviewed in 1967. Data were also collected through self-administered questionnaires from a 10 per cent sample of all Forms 3 and 5 students.

Using part of the family life survey data, Mitchell (1971) investigated the effects of household densities on the emotional health and family relations in urban Hong Kong. Household density was measured by the amount of floor space per person within the dwelling unit. Emotional health was measured by two indicators of the superficial levels of strain (happiness and worry) and two indicators of the more severe levels of strain (emotional illness and hostility). Family relations were indicated by husband-wife relationships (the frequency of husband-wife

communications, tension in husband-wife relations, and marital happiness), parent-child relationships (the degree to which children are forced out of the house and away from the control of their parents), and the family's relationships with kins and nonkins living elsewhere.

From the survey data, Mitchell estimated that the median size of dwelling units in the urbanized areas was 400 square feet, and the median square feet per person was 43. Apparently, in the late 1960s urban Hong Kong had a very high degree of household density. However, it was found that high-density living within dwelling units did not adversely affect the more severe forms of emotional strain, and that it affected the superficial strain for only people in low-income families. Although high-density living by itself (i.e., after controlling for income and education) had little effect on emotional health, Mitchell noted that if people had to share the dwelling unit with non-related households and especially if these people could not easily escape each other by retreating outdoors, then the high-density living would create stressful situations. Under such conditions, people were more likely to complain about the shortage of space and the lack of privacy, and to express emotional difficulties.

Regarding family relations, Mitchell found that high-density living within the dwelling unit had no apparent effect on husband-wife relationships, but it had

a clear impact on the parent-child relationships. Children in high-density housing were more likely to be away from home, thus reducing the parental control over their children. Moreover, it was difficult for these young people to find a place to study, and their educational development was thus adversely affected. Mitchell also reported that high-density living within dwelling units affected the family's relationships with non-family members, because it discouraged the entertaining of neighbors and friends at home.

On the basis of the above findings, Mitchell came to the conclusion that high-density living has very little effect on individuals and families in Hong Kong. However, it is my impression that according to Mitchell's findings, the high-density living within dwelling units is more likely to have adverse effects on family relations (especially parent-child relationships) than the psychosomatic state of individuals. Mitchell's conclusion seems to be overstated and should be qualified.

Mitchell's findings about the zero relationship between high density and the relatively severe forms of emotional strain is rather striking. In the study, the index of emotional illness was measured by eleven items from Langner's Twenty-Two Item Psychiatric Screening Scale. As Sheelagh Millar (1976, p.124) has remarked, "it is questionable whether the procedure of extracting

a few items from such a carefully constructed and validated scale is useful, and Mitchell does not, in fact, present evidence for a validation of his own scale of psychiatric distress." Moreover, six psychosomatic symptoms were used in the index of hostility; but again, the index has not been validated. We are, therefore, not sure about the extent to which Mitchell's findings on the relationship between densities and emotional strain can be trusted.

In the early 1970s, Sheelagh Millar of the Human Ecology Group of the Australian National University worked with Y.K. Chan of the Social Research Centre of The Chinese University of Hong Kong in conducting the Biosocial Survey. The survey is part of the Hong Kong Human Ecology Program directed by Stephen Boyden. Its major objective is to assess the long-term effects of high-density living on the biopsychic state of individuals in the urban areas of Hong Kong. Research findings have been fully reported by Sheelagh Millar (1976) in her doctoral dissertation, entitled "Health and Well-being in Relation to High Density Living in Hong Kong."

The study was based on a conceptual model consisting of the following postulates:

- (1) High-density living may produce in the individual a feeling of being crowded.
- (2) If the sensation of being crowded is not resolved, a state of frustration may develop.



(3) The unresolved state of frustration may develop into a state of stress.

(4) If the stress is excessive or prolonged, the individual may suffer from a state of biopsychic maladjustment.

On the basis of the above postulates, Millar hypothesized that high-density living would result in biopsychic maladjustment. Since each stage in the pathway from high density to maladjustment is subject to adaptive intervention, it is expected that the effects of high density are relatively weak. To test the hypothesis, a random sample of 3,983 urban residents between the ages of 20 and 59 years were interviewed in the summer of 1974. In addition, over 200 adults were selected for interviews from five isolated village communities for the purpose of making urban-rural comparison in responses to conditions of population density.

In the Biosocial Survey, both household and neighborhood densities were considered. The former was measured by the amount of effective floor space per person in the dwelling unit, while the latter was measured by the number of persons per hectare in the Tertiary Planning Unit of residence. It was found that about 43 per cent of the respondents lived in census tracts with densities of over 1,000 persons per hectare, and that only 14 per cent lived in areas with a density of less than 250 persons per hectare.

Moreover, nearly a half of the respondents lived in dwelling units with a density of less than 38 square feet of effective floor space per person. Some person even lived in no more than a bed-space of about 10 square feet. Only 29 per cent of the respondents lived in a home with one or more rooms per person. Apparently, the survey confirmed that both the neighborhood and household densities were exceedingly high in urban Hong Kong. In subsequent analyses, Millar combined the two types of density into a composite index of physical density.

In the survey, the biopsychic state of each individual was measured by four indices: (1) general physical health, which was measured by the self-reported experience of pains and mild infectious disorders in the recent months, (2) personal distress, which was measured by Langner's Twenty-Two Item Scale with four or more symptoms indicating psychic maladjustment, (3) personal well-being, which was measured by N.M. Bradburn's positive affect, negative affect, and affect balance scales, and (4) enjoyment of life, which was measured by a single question concerning the extent to which the respondents found their lives generally enjoyable. It should be underscored that these various indices were found to have an acceptable degree of reliability and validity. According to the indices, the people of urban Hong Kong tended to have relatively good health and a rather high degree of well-being, especially the people with higher

social and economic status. The question is: would the biopsychic state be associated with physical densities?

The survey data showed that there was a positive, but relatively weak, relationship between high density and biopsychic maladjustment, and that this was the case regardless of the sex, age, economic status, and educational level of the individuals. In other words, people living at a higher level of physical density were somewhat more likely to suffer from psychic distress, a poor state of general physical health, a low degree of personal well-being, and a lack of life enjoyment. It should be noted that the adverse effect of physical density was strengthened when only those with a relatively high level of education were considered.

Millar did not compare the effect of household density with that of neighborhood density. Reading her report, I got the impression that household density was relatively more important than neighborhood density in the determination of the biopsychic state of individuals. This impression was partly supported by Y.K. Chan's study. Using part of the Biosocial Survey data, Chan (1978) found that life satisfaction was negatively correlated with household density but not with neighborhood density.

An important contribution of Millar's study was the development of the concept of density tolerance. It was

found that less than a third of the respondents were intolerant of high-density living, and that intolerance was unrelated to high physical density but was clearly a major source of biopsychic maladjustment. The adverse effect of intolerance of high density on maladjustment was stronger among those with low social-economic status.

Since people with tolerant attitudes were less likely to suffer from maladjustment, it is important to find out what kinds of people could develop such attitudes. It was found that the tolerance of high density was more prevalent (1) among older people, (2) among people living under high-density conditions, and (3) among people of lower economic and educational status. Tolerance is also more prevalent (4) among people from the Kwangtung Province of China than those who were born in Hong Kong, and (5) in the isolated village communities than in the urban areas of Hong Kong. On the basis of these results, Millar suggested that the traditional Chinese culture might be conducive to the development of tolerant attitudes toward high-density living. On the other hand, the adoption of modern Western ideas and practices might create discontent with high-density conditions.

Millar focused merely on the biopsychic consequences of high density. She did not touch on the social implications. In a recent paper, Chan (forthcoming) used part of the Biosocial Survey data and examined the

effects of both household and neighborhood densities on attitudes toward interacting with others and on social involvement with kins, friends, and neighbors. However, it was concluded that neither household nor neighborhood densities had a significant bearing upon social attitudes and relations.

#### CONTRIBUTIONS TO PLANNING AND DEVELOPMENT

Population density in the urban areas of Hong Kong is exceedingly high. As Millar (1976) has shown, both household and neighborhood densities in urban Hong Kong are higher than many other cities in the world. On the whole, however, the people in Hong Kong appear to have a rather high degree of biopsychic and social well-being (Schmitt, 1963; and Millar, 1976). Of course, it does not mean that the varying densities within urban Hong Kong do not have differential impact on the people. Robert Mitchell's Family Life Study and Sheelagh Millar's Biosocial Survey are the two well-known studies that are concerned with the human implications of high-density living in urban Hong Kong. Findings from these two large-scale studies, however, are not entirely consistent with each other. In general, we may say that high-density living in urban Hong Kong tends to have adverse effects on the biopsychic state of individuals and the relationships among family members, but the effects are relatively weak. It should be pointed

out that Singapore is another modern industrial city-state in Asia, with a majority of people who are Chinese in origin. Studies in Singapore have also come up with inconsistent findings. It seems that high density per se has remarkably little effect on biopsychic maladjustment or social disorder in the Singapore populations (Chen, 1978).

The question arises: In terms of planning and development, what could we learn from these research findings about the effect of high-density living? In my opinion, the findings suggest that there are research needs as well as needs for improving the housing plans and development.

#### I. Research Needs

(1) Policy-makers and funding agencies should encourage more scientific studies to identify the adaptive or coping behavior under conditions of high density. Previous studies in Hong Kong and other countries were mostly concerned with the "causal" relationship between high density and human behavior. After years of research, we seem to have come to the conclusion that high density by itself has little effect on the people. It could be that people have their special ways to cope with the high-density situations, and thus do not have the feeling of being crowded. As both Mitchell (1971) and Millar (1976) have shown, most people in urban Hong Kong are quite

tolerant of high density. They have made little complaints about the shortage of space. Unfortunately, very few social science studies have been conducted to identify and to probe into the coping behavior. In the case of the Chinese people, I found only one study which was conducted by an American anthropologist, E.N. Anderson (1973). From his personal experience with a few traditional Chinese households in Hong Kong and Penang, Anderson discovered several coping mechanisms in Chinese culture, such as the stress on the desirability of several generations sharing the same dwelling unit, the definition of privacy in terms of primary groups not individuals, the conformity to seniority hierarchy (e.g., the rule of elderly first or man first), and the avoidance of social or emotional interactions among non-related persons in public space. Although Anderson's insightful observations have yet to be elaborated and confirmed by systematic data, the study opens up a fruitful area for future research. There are social-cultural mechanisms other than those suggested by Anderson, such as the time-scheduling of activities, the cultural habit of using the same space for multiple purposes (e.g., sleeping, dining, reading, and entertaining), the popular use of compact furniture in the household (e.g., futon in Japan, sofa-cum-beds in Indian cities, and double-deck beds in Hong Kong), the first-come-first principle in public service, the cultural acceptance of a relatively close spatial distance between individuals,

the custom of entertaining friends in restaurants rather than at homes, the establishment of hourly-rate hotels for couples or lovers to make love, and the popularization of "space-intensive" games (e.g., machong in Hong Kong and pachinko in Japan).

Besides the social-cultural mechanisms, there are physical defenses such as walls, curtains, fences, doors, windows, pictures, colour of enclosing walls, and shape of the room. There are also internal psychological devices, such as perceptual and cognitive withdrawal, day dreaming and fantasy (for more discussion, see Rapoport, 1975; and Choi, et al., 1976).

The various kinds of coping mechanisms -- physical, social-cultural, and psychological -- have to be discovered. And once they are discovered, they should be systematically verified. It is noted that very few anthropologists have been engaged in the study of high-density living. It might be that anthropologists are traditionally more concerned with rural or tribal communities than the densely populated urban societies. Perhaps, it is the time to invite anthropologists to come and search for the coping behavior through some forms of participant observation. Their insights can then be verified by sociologists or psychologists in a more controlled setting or with a more representative sample.



The size of population and its concentration in urban areas would continue to increase in the years to come. In Hong Kong, for instance, in spite of the success of the family planning programmes, the population is recently growing at about 2 per cent a year. Moreover, the number of women in the fertile age group is expected to increase substantially in the coming ten years. The identification of coping mechanisms in the various population groups would have a great deal of policy implications. It will tell us how to increase people's ability to survive and even enjoy themselves under conditions of high density. In particular, I would like to urge for more studies of coping behavior in Asian cities, as they generally have a very high level of density living. Perhaps, the coping with high density is the kind of knowledge and experience that the people in the West can learn and benefit from the East.

(2) There are research needs on the long-term effects of recurrent experience with high-density in non-residential areas. Previous studies in Hong Kong and elsewhere mostly dealt with the effect of household or neighborhood densities. However, many people do not spend that much time at home or in the immediate surroundings. They have to go and work in factories, commercial concerns or government offices, to go and study in schools, to go and shop in markets and department stores, and to go and watch films or life shows, etc. The

recurrent experience with traffic congestion and with high density in the various non-residential settings may have implications to their health and social well-being. Are there adverse effects? and what are the coping mechanisms? These questions have to be systematically studied.

(3) The possible positive effect of high density should not be ignored and should be researched. Previous studies in Hong Kong and elsewhere are mostly based on the stress model, which tends to emphasize the adverse effect of high-density living but neglect the possible positive effect. Quite a few scholars have suggested that high-density living may be good rather than bad. For instance, it has been argued (Durkheim, 1933; Winsborough, 1965; Hawley, 1972; and Freedman, 1975, Chapter 9) that (a) high density is a pre-requisite to the development of the division of labour and specialization, because it provides more talents and abilities of different kinds and also it reduces the time and cost for the exchange of goods and information; (b) dense living provides more chances for mutual stimulation and is thus conducive to technical and cultural innovations; and (c) dense living allows more opportunities to get access to supportive and intimate relationship, and is thus good for social integration. In an extensive study of American cities, Galle and his associates (1974) in fact found that high density was inversely related to homicide and suicide rates. Freedman

(1975, Appendix 2) also reported that within poor neighborhoods in New York city, density is negatively related to juvenile delinquency. Recently, Freedman (1975) formulated his "density-intensity" theory, arguing that high density by itself has neither good nor bad effects and that it serves to intensify the normal reaction, making a bad experience worse and good experience better. In a series of experiments, he demonstrated that if people like each other, placing them in a crowded situation would increase friendliness. These various arguments and empirical studies clearly indicate a need for developing studies to discover some positive effects of high density and especially the conditions under which the good effects of high density can be strengthened.

## II. Needs for the Improvement of Housing Plans and Development

(1) The residential space should be increased. In a very densely populated city like Hong Kong, the adverse effect of high-density living on people may be relatively weak but, nevertheless, there are effects. Mitchell's Family Life Study have demonstrated the adverse effect of high household density on family relations and especially the parent-child relationships, while Millar's Biosocial Survey has found some effects of high physical density (especially household density) on biopsychic maladjustment.

More important, as Millar has observed, education plays an important role in the effect of high-density living. The better-educated are more likely to suffer from high-density situations and they also tend to be less tolerant of high density. An important trend in Hong Kong as well as other parts of the world is the expansion of formal education. An increasing number of people are able to receive an increasingly higher level of schooling. In the years to come, therefore, people would have greater demand for more space to live. The failure to meet the increasing demand may create stressful situations. It is not only desirable, but also a matter of necessity, that in the housing plans more space be allocated to the residents.

An important strategy of the Hong Kong Government to alleviate high densities in urban areas is the development of new satellite towns in the periphery of city areas and the construction of public housing estates in these new towns (Choi & Chan, 1977). Currently, the public housing accommodates about 46 per cent of the total population in Hong Kong. In the public housing estates, the minimum floor space per person within the dwelling unit has increased from 24 square feet in 1954 to 35 square feet in 1970. Such an increase is good, but in view of the expanding education, the trend should continue.

The development of new towns provides not only better housing, but also more services and open space in the surrounding areas. However, the research findings seem to indicate that the alleviation of neighborhood density is of course desirable, but relatively speaking it is not as urgent as the widening of the living space within dwelling units. It has been found that household density appears to be more likely than neighborhood density to have adverse effects on human beings.

How do we increase the household space? In view of the limited space in Hong Kong and other cities, the construction of multi-storey buildings should not be discouraged. What is important is that each household can have more space to live. Under the condition of space shortage, it is the high-rises that can provide more space to the households. It should here be noted that as Freedman (1975) has argued and as Mitchell (1971) and Chen (1977) have testified in Hong Kong and Singapore, the high-rise living by itself does not seem to have adverse effect on residents. It is the social, rather than the physical, features of high-rises that would affect the people. As I shall discuss later, what is most needed is the development of close interpersonal relations among the residents.

(2) Social planning should be included in the housing development. Like some other countries, Hong Kong's

development of new towns and housing estates is primarily based on physical plans. In the planning process, the buildings and the physical surroundings are thoroughly considered, but not the people who will make use of the physical facilities. The stress on physical planning has resulted in low degree of community consciousness, lack of neighborly interactions, and under-utilization of public space and facilities (Chen, 1973; and Kan, 1975). The worse is that such undesirable social conditions may strengthen the adverse effects of high-density living.

In the study of Hong Kong family life, Mitchell (1971) found that high-density living within the dwelling unit is a source of stress only if the people are unrelated to each other. In other words, should the people develop close interpersonal relationships, they may not suffer from the high-density situations. Mitchell's finding is, in a way, consistent with Freedman's theory of density-intensity. The theory states that high density by itself has neither good effects nor bad effects on people but rather serves to intensify the individual's typical reactions to the situation (Freedman, 1975, Chapter 8). Hence, if a person ordinarily finds the circumstances pleasant, he would have a more positive reaction under conditions of high density. Otherwise, he would have a more negative reaction.

Mitchell's finding and Freedman's well-formulated theory indicate the importance of social planning in housing

and new town development. Should we mobilize the residents and organize them into meaningful social networks, then high density may not have adverse effects and may even have some positive effects. In the case of multi-storey buildings, social planning is even more essential. As Mitchell has shown, residents in the upper floors are more likely to be adversely affected by high density because they are forced to interact with non-related persons. Should we develop social plans to turn the "strangers" into friends, high-density living in high-rises may not adversely affect the residents.

The Hong Kong Government has taken the initiative to formulate Mutual Aid Committees in public housing estates and Owner's Corporations in private multi-storey buildings. The major function of these organizations at the grass-root level, however, has been limited to the management of the building and to uphold environmental standards. In my opinion, the function of these organizations should be strengthened, and they should also aim at creating close social networks among residents. Only if the residents become friends with each other, then they would not be annoyed with high-density situation.

Moreover, whenever possible the social backgrounds and the previous relationships among applicants should be taken as criteria for allocating public housing units. If

the new residents in the same estate have similar occupational and ethnic backgrounds and if they have previously had some friendship or kinship ties, then it will be easier for them to communicate with each other and to organize themselves into meaningful social groups.

In short, one of the ways to alleviate the adverse effect of high density is the development of close interpersonal relationships among residents. A physical plan, no matter how thorough it is, can not ensure the emergence of a sense of community or neighborliness. Social plans have to be formulated. Perhaps, the government should institute a social planning body within the housing or new town development office for the specific purpose of building up community spirit and creating solidary social networks.

(3) When the housing estates are designed, it is the biosocial implications rather than the time and cost that should be borne in mind. As Hong Kong has been under the great pressure of housing shortage, the government and the private investors have been constructing buildings as cheaply and as quickly as possible. The design of the building, however, would certainly have some implications to the well-being of the residents. In the well-conducted study of student dormitories in the United States, Baum and Valins (1977) observed that residents in suite-type buildings are less likely than those in corridor-type buildings to manifest a syndrome of stress, and that on the contrary



they are more likely to form friendship groups. Baum and Valins therefore proposed that a building should be designed so as to permit the clustering of residents in smaller groups around semi-private or controlled-access public space. It is noted that Freedman (1975, Chapter 10) has made a similar proposal, on the basis of his empirical studies. He proposed that the anonymity of high-rise housing would be reduced by breaking up the corridors into separate units, and by providing smaller play areas and social areas for each floor or set of floors. It should be recognized that the modification of the social features of housing is an important mechanism to alleviate the ill effects of high-density living, but the extent to which we can modify the interpersonal relationships is in one way or another dependent on the physical layouts. Moreover, as Mitchell (1971) has learnt from his Hong Kong family life research, some social features of housing affect individuals only if they are under certain physical conditions. For instance, it was found that the sharing arrangement only affects residents on the upper floors, because these people are forced into close interaction with non-related persons, while those on the low floors can easily escape each other by retreating outdoors.

We have thus seen the important role of housing design in the alleviation of the adverse effect of high-density living. The housing in Hong Kong has been designed

in many different forms, such as H-shape, L-shape, U-shape, twin-cross shape, twin-tower shape, and corridor-shape, etc. The health and social implications of these different forms of housing on the people living under conditions of high density have not been systematically assessed. The government and funding agencies should, therefore, encourage social science studies along this line. Buildings should be designed in such a way that the negative effects of high-density living are minimized while the positive effects are maximized. As the population continues to grow and to concentrate in urban cities, scientific studies of this kind would have a great deal of policy implications.

REFERENCES

- Anderson, E.N., Jr. 'Some Chinese methods of dealing with crowding'. Urban Anthropology, V.1, 1972, pp. 146-151.
- Baum, A. & Valins, S. Architecture and Social Behavior: Psychological Studies of Social Density. Lawrence Erlbaum Associates, N.J., 1977.
- Chan, Y.K. 'The rise and growth of Kwun Tong: a study of planned urban development'. An occasional paper of the Social Research Centre, The Chinese University of Hong Kong, August 1973.
- Chan, Y.K. 'Life satisfaction in crowded urban environment, Hong Kong'. Paper presented at the Fourth Asian Pacific Social Development Seminar, Seoul, 1978.
- Chan, Y.K. 'Urban density and social relations in Hong Kong'. Journal of The Chinese University of Hong Kong, forthcoming.
- Chen, Peter S.J. 'Socio-psychological implications of high-density living: with special reference to Hong Kong'. in Peter S.J. Chen & Hans-Dieter Evers, eds., Studies in ASEAN Sociology. Chopmen Enterprises, Singapore, 1978.
- Cheng, T.Y. The Economy of Hong Kong, Far East Publications, Hong Kong, 1977.
- Choi, C.Y. & Chan, Y.K. 'Housing policy and internal movement of population: a study of Kwun Tong, a Chinese New Town in Hong Kong'. An occasional paper of the Social Research Centre, The Chinese University of Hong Kong, February 1977.
- Choi, S.C., Mirjafari, A. & Weaver, H.B. 'The concept of crowding: a critical review and proposal of an alternative approach'. Environment & Behavior, V.8, 1976, pp. 345-362.
- Choldin, M. & McGinty, M. 'Bibliography: population density, crowding and social relations'. Man-Environment Systems, V.2, 1972, pp. 131-158.
- Durkheim, E. The Division of Labour in Society. G. Simpson translation, Free Press, 1933.

- Freedman, Jonathan L. 'The effects of population density on humans'. In James Fawcett, ed., Psychological Perspective on Population. Basic Books, New York, 1973.
- Freedman, Jonathan L. Crowding and Behavior. W.H. Freeman & Company, San Francisco, 1975.
- Galle, O.R., Megarthy, J.D. & Gove, W. 'Population density and Pathology'. Paper presented at the Annual Meeting of the Population Association of America, New York, 1974.
- Hauser, Philip M. 'The chaotic society: product of the social morphological revolution'. American Sociological Review, V.34, 1969, pp. 1-18.
- Hawley, A. 'Population density and the city'. Demography. V.9, 1972, pp. 521-529.
- Kan, Angela W.S. 'Implications of concentrated utilization of local facilities and services in public housing estates in Hong Kong'. An occasional paper of the Social Research Centre, The Chinese University of Hong Kong, April 1975.
- Loo, C. 'The psychological study of crowding'. American Behavioral Scientist. V.18, 1975, pp. 826-842.
- Millar, Sheelagh E. Health and Well-being in Relation to High Density Living in Hong Kong. Doctoral Dissertation, Australian National University, 1976.
- Mitchell, R.E. 'Some social implications of high density housing'. American Sociological Review, V.36, 1971, pp. 18-29.
- Rapoport, A. 'Toward a redefinition of density'. Environment & Behavior, V.7, 1975, pp. 133-158.
- Schmitt, Robert C. 'Implications of density in Hong Kong'. Journal of the American Institute of Planners, V.29, 1963, pp. 210-217.
- Winsborough, H.H. 'The consequences of high population density'. Law and Contemporary Problems, V.31, 1965, pp. 120-126.