THE FAMILY LIFE CYCLE AND FAMILY NEEDS

IN A HOUSING PROJECT

A Case Study of the Westview Garden Apartments, North Vancouver

by

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B. Arch, Waseda University, Tokyo, Japan, 1963

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARCHITECTURE

in the School

of

Architecture

We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

April 1975
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Department of School of Architecture

The University of British Columbia
Vancouver 8, Canada

Date April 15, 1975.
The objective of this study is to discern how family needs in housing change through the stages of the family life cycle.

The Westview Garden Apartments, a townhouse and apartment development in North Vancouver was chosen for conducting this study. For the collection of residents' behavioral data, a number of family member's daily activity log records were obtained through a series of interviews. The data were collected in the period from September 1973 to April 1974, during which time my family and I occupied one of the housing units in this project.

The family life cycle is divided into eight stages, from arrival of the first baby to the elderly couple. The following activity patterns of a selected number of families in each stage were traced through the analysis of their activity log records; Sleeping, Eating, Housekeeping, Shopping, Children Playing, Evening Sitting, Socializing and Family Recreational Activities. From these activity patterns, together with the residents' opinions about their housing, and adding to this the author's own observation of the daily life in the sample project, the family's needs in each stage were discerned. After that the design of sample housing was examined in detail.

The findings clearly indicate the variations in family needs affecting their housing requirements through the life cycle.
The author concludes that the present housing system has difficulty in accommodating changing family needs. Many families are either forced to move or suffer from living in an incongruent residence. To improve this situation, two directions in future family housing are suggested.

1) An adaptable housing system should be developed. This can accommodate individual family's special needs and reflect the changing needs in their life cycle. Families should be able to assist in designing, building and altering their own houses without high costs or much skill. The author believes it is possible to produce such housing with advanced technology.

2) The present space distribution for daily family activities in private and public space, must be reconsidered. Many family needs which are now being met within the individual housing unit could be satisfied more satisfactorily in neighbourhood communal spaces. In future urban housing development, there is bound to be a large proportion of multiple dwellings. This demands new ways of communal living.

The individual, in future housing, must have maximum power to control his own residence and his neighbourhood.

... Research Advisor...
### TABLE OF CONTENTS

**PART I - INTRODUCTION** ........................................... 1

1. Necessity to Define Family's Needs in Housing .... 1

2. Family's Needs in Housing - Family Variables ... 5

3. Various Methods to Study Our Physical Environments. 11

4. Study Objective, Scope and Method .............. 15

**PART II - THE WESTVIEW GARDEN APARTMENT** ......... 32

5. Choice of Sample Project .................. 32

6. The Site, Residents and Facilities ............. 34

**PART III - FAMILY LIFE CYCLE AND FAMILY ACTIVITY PATTERN** 68

7. Family Activity Pattern Through Stages of Family Life Cycle 68

8. Summary of Activity Patterns and Spatial Requirements Through the Family Life Cycle 166

**PART IV - CONCLUSION** ......................................... 203

9. Adaptable Housing System: Individuality in Housing 203

10. Neighbourhood Facility: Communality in Housing 207
BIBLIOGRAPHY ............................................. 214

APPENDIX I - Some Problems and Suggestions on the Research Method ........... 217

APPENDIX II - Interview Questionnaire Form .......... 223
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of Sample Families by Family Life Cycle Stage</td>
<td>31</td>
</tr>
<tr>
<td>2a. Parking Space</td>
<td>47</td>
</tr>
<tr>
<td>2b. Number of Sample Families by Dwelling Type</td>
<td>54</td>
</tr>
<tr>
<td>3. Intention to Move</td>
<td>61</td>
</tr>
<tr>
<td>4. Public Transportation</td>
<td>63</td>
</tr>
<tr>
<td>5. Location of Facilities of Recreational Centre</td>
<td>66</td>
</tr>
<tr>
<td>6. Hospital and Clinic</td>
<td>67</td>
</tr>
<tr>
<td>7. Location of Last Residence</td>
<td>171</td>
</tr>
<tr>
<td>8. Reason for Moving of Families Who Moved Within The Vancouver Area</td>
<td>171</td>
</tr>
<tr>
<td>9. Bedroom Size</td>
<td>172</td>
</tr>
<tr>
<td>10. Dining Room Size and Arrangement</td>
<td>175</td>
</tr>
<tr>
<td>11. Activities in Back Yard</td>
<td>176</td>
</tr>
<tr>
<td>12. Activities in Front Yard</td>
<td>176</td>
</tr>
<tr>
<td>13. Kitchen</td>
<td>179</td>
</tr>
<tr>
<td>14. Resident's Likes</td>
<td>180</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>15.</td>
<td>Convenience of Shopping</td>
</tr>
<tr>
<td>16.</td>
<td>Location and Facilities of School</td>
</tr>
<tr>
<td>17.</td>
<td>Children's Playground</td>
</tr>
<tr>
<td>18.</td>
<td>Driveway</td>
</tr>
<tr>
<td>19.</td>
<td>Swimming Pool</td>
</tr>
<tr>
<td>20.</td>
<td>Living Room</td>
</tr>
<tr>
<td>21.</td>
<td>Space Wanted</td>
</tr>
<tr>
<td>22.</td>
<td>Neighbourhood Relations</td>
</tr>
<tr>
<td>23.</td>
<td>What Do You Dislike About Living Here</td>
</tr>
<tr>
<td>24.</td>
<td>Location of Church</td>
</tr>
<tr>
<td>25.</td>
<td>Activities Which Occur in a Dwelling Unit</td>
</tr>
<tr>
<td>26.</td>
<td>Distribution of Daily Family Activities</td>
</tr>
<tr>
<td>27.</td>
<td>Number of Families Interviewed</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Housing Plans</td>
</tr>
<tr>
<td>2.</td>
<td>Sample Activity Log Record Sheets</td>
</tr>
<tr>
<td>3.</td>
<td>Family Activity Mapped on Floor Plan</td>
</tr>
<tr>
<td>4.</td>
<td>Location Map</td>
</tr>
<tr>
<td>5.</td>
<td>Site Area</td>
</tr>
<tr>
<td>6.</td>
<td>Site Plan</td>
</tr>
<tr>
<td>7.</td>
<td>Pictures</td>
</tr>
<tr>
<td>8.</td>
<td>Dwelling Types A, B, C, D</td>
</tr>
<tr>
<td>9.</td>
<td>Period of Occupancy</td>
</tr>
<tr>
<td>10.</td>
<td>Sleeping</td>
</tr>
<tr>
<td>11.</td>
<td>Eating</td>
</tr>
<tr>
<td>12.</td>
<td>Occupational Activity (work, housekeeping, school)</td>
</tr>
<tr>
<td>13.</td>
<td>Children's Playing</td>
</tr>
<tr>
<td>14.</td>
<td>Evening Sitting</td>
</tr>
<tr>
<td>15.</td>
<td>Social Activity</td>
</tr>
<tr>
<td>16.</td>
<td>Weekend Activity</td>
</tr>
</tbody>
</table>
I would like to acknowledge my appreciation to the many people who helped with this study. Particular thanks to Professor Wolfgang Gerson of the School of Architecture and to Dr. Henry S. Maas of the School of Social Work, U.B.C., for their patient guidance.

To Architect Leon G. Dirassar of Dirassar, James, Jorgenson, David, designer of the sample project, for his valuable information.

To Ann Motozono for helping me correct and type the draft, and to Donna Peaker for typing the thesis.

To residents of the Westview Garden Apartments, whose warm and cooperative attitude made this study possible, and made my residing in the project an enjoyable and rewarding experience.

Finally to my wife Ella, through whose informal contact with neighbours as mother and wife, made valuable information available.
PART I - INTRODUCTION

1. NECESSITY TO DEFINE FAMILY'S NEEDS IN HOUSING

Each person develops his personality through interaction with his environment. A certain environment encourages him to develop his maximum potentiality which might not unfold in another environment. Man, through his biological mechanisms, can become adjusted even to conditions that will inevitably destroy the very values of the human being. The frightening fact is that the process of adaptation takes place often without man's consciousness.

People in a region of inadequate food supply or extremely hot climate become adjusted to their environment by living less intensely, physically and mentally.¹

People in modern urban areas also have to cope with serious conditions of crowding, pollution, highly regimented social structure and artificial physical environments whose long range effects to the human being have not been fully explored.

Housing, as man's primary physical environment, rooted in his basic biological needs, has great importance for the future direction of human development. In infancy, his home is almost his total environment. As he grows, it expands to the neighborhood, the city and the world, yet his daily life starts and ends in his home. As

¹R. Dubos, So Human an Animal. 1968.
industrialization has brought the migration of rural populations to cities, housing in the urban areas has become an urgent issue almost universally. Numerous new housing projects and rehabilitation of existing housing have been planned. But in the planning process, we start to realize the real needs of the actual occupants are often not enough reflected if not completely neglected. Why does this unfortunate situation happen?

Firstly, the present housing system lacks the direct communication between housing planners or designers and the actual future occupants. The occupants' needs are brought to the professionals (housing designers, architects and planners) not by themselves, but through housing suppliers (developers and public housing agents). Therefore, the majority of housing today is built for the assumed occupants' assumed needs. The suppliers and designers have their own image of people's needs, derived from their limited experience. That is often not accurate and sometimes completely wrong. This misunderstanding can be corrected by evaluating the completed housing and getting information on how they are used and what conflicts are encountered. Unfortunately, such efforts are rarely seen and accumulated information is not available. Therefore, mistakes are likely to be replicated without being aware of it.

Even doctors perform autopsies, but then doctors customarily bury their mistakes, while architectural and environmental blunders not only remain visible but are often replicated.¹

Housing markets get feedback via consumer demands. But compared to other consumer goods, houses require a much greater capital outlay and have social consequences that make it difficult to change when they do not meet the occupant's needs. Because of this limited experience of the consumers, they do not have enough knowledge about what they really need in the long run. Therefore, there is a limit in housing market research. Besides, like any other consumer goods, housing suppliers tend to neglect some demands which are real but not eye-catchers of consumers.

Secondly, we do not have free choice to obtain the suitable houses because of limited resources of housing available in the market and the funds in the consumer side. Ever expanding suburbs are still being developed into traditional subdivisions. With the costly consumption of our limited resources, land and construction materials, the high standard detached houses are provided bearing the price which is beyond the reach of the majority of Canadian families.

Yet, the alternate types of housing cannot meet their housing needs either in their quality or in their quantity.

Therefore many families are forced to live in the incongruent residential environment where some fundamental needs of daily lives are often to be sacrificed.

To improve these shortcomings of the present housing system, the first step we have to take is to inform ourselves with more accurate knowledge of what are the real needs of people in housing.
Then, we can consider the application of those needs to future housing.
2. FAMILY'S NEEDS IN HOUSING - FAMILY VARIABLES

Family's needs in housing varies in the wide range from the basic physiological requirements (protection from bad weather, sun, fresh air, hygienic and energetic services, etc.) to socio-psychological needs (privacy and communication of a family or neighbors, educational and recreational needs). They vary through a time span and geographical locations. Among contemporary Canadian families, many needs in housing vary although some are common, according to:-

1) family structure
2) stage of family life cycle
3) socio-economic status
4) life style
5) cultural background

1) Family Structure

The dominant pattern of the contemporary Canadian family structure is the conjugal nuclear family. But the number of single parent families is increasing and the extended families are also observed. Each family of different structure has their own housing requirements to meet their family member's needs. Bellin and Kriesberg discovered 40 to 55% more husbandless mothers than regular mothers put a value on friendliness in neighbors.¹

Housing which intends to accommodate fatherless families must reflect those needs for mutual assistance into its design.

The extended family requires more than an additional bedroom for a grandparent to accommodate family activities of two or three generations. The "inlaw suite" is a housing type generated from a family structure.

The number of family members is another important variable for the family's needs in housing. One of the characteristics of the modern family is its small size. The average number of children per Canadian family is 1.7. However, the number of children varies and so does each family's needs. Not only more bedrooms but also a larger family sitting area, dining area and play area are wanted by a family with several children.

2) **Stage of Family Life Cycle**

A family's needs change constantly according to its stage in the life cycle. A house which fits a family today may not accommodate the same family after five years. Families in different stages of the life cycle have different needs that may conflict with each other. A retired couple whose children have left home may have difficulty living in a neighborhood of families with young children.

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1971 Census of Canada.
3) **Socio-Economic Status**

Upper, upper middle, lower middle and lower class families have different needs in their housing according to the different ways of life. An upper class family requires a larger dining room for their social gatherings which is an unnecessary burden to maintain for a lower middle class family. A labourer who wants a physical rest at home requires a simple house plan with a cozy sitting area for the evening while a computer scientist may want visual variations in his household spaces to rest his brain or a space for physical exercise after his mental work.

4) **Life Style**

Within the same socio-economic class many families have different ways of life. Wendell Bell explains the life styles, "familism," "careerism," "consumership pattern" and the growth of the suburbs as the result of an emphasis on "familism."¹

A family of "careerism" put a high value to a house on the close location to the working place. Families with active social activities also show the different preference pattern against their housing type from non-social-type families.

Increasing leisure time is going to bring wider varieties of the family life styles and the various types of housing must be available to meet the different housing needs.

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New inventions of household mechanism also affect the family life style. Modern electric kitchen appliances made Frank Lloyd Wright's open house plan acceptable, which brought a new family life style, especially a change in the housewife's position in the family.

5) **Cultural Background**

People of each country have a unique way of life, developed through a long tradition fit to their country's natural condition. This traditional life style is often carried on even after families migrate to a different country.

John Zeisel lays out three different apartment plans suitable to each life style of Puerto Rican working families, middle class white families and black families in the U.S.A. The living room of middle class white families is the symbol of the major sociability and the open kitchen allows wives in the kitchen to join the social activities taking place in the living room. The entrance can be directly open to the living room. (Figure 1-A)

Working class Puerto Rican mothers spend much time in the kitchen where the families also eat. The living room is a reserved space to relax away from the kitchen and for special occasions. (Figure 1-B)

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Figure 1
Southern black families still keep their tradition, the dining room separate from the kitchen, which originated because of the cooking of spicy and smelly foods. (Figure 1-C)

In a young country like Canada, where people of various cultural backgrounds co-exist, different needs of various families must be considered in their housing design.

The needs also vary according to whose needs they are. Individual family members' needs sometimes conflict with other family members. Many family needs are not always fulfilled in the individual housing unit but are solved only at the neighbourhood level or even at a larger community level.

If we do not approach broadly scoped and complicated families' needs in housing through all those variables, the real needs of people cannot be fully realized and the housing which meets various families' needs cannot be achieved.
3. VARIOUS METHODS TO STUDY OUR PHYSICAL ENVIRONMENTS

Various studies have been done to evaluate man-made environments. Two different approaches are used for those researches. One is the evaluation of the environments by the occupants' (users') opinions, and the other is the observation of their behavior in a certain environment.

In the housing field, the former data is collected through the resident's opinion surveys. The direct information of actual occupants' satisfaction, dissatisfaction or likes-dislikes is a popular and strong tool to evaluate their housing. But there are some shortcomings to be considered to handle the data. Firstly, their evaluation is based on their limited experience in their former residences. Each respondent has a different scale for their evaluation. Two families have moved into the same townhouse units, one from the highrise apartment and the other from the detached house. Their evaluations of the new townhouse unit are based on a different standard. Secondly, the complicated nature of the environmental effects creates the difficulty in defining its clear cause-result relations. The residents are not always fully aware of real causes of their likes (or dislikes).

Daily physical environments often effect people without their recognition. A family living near the airport says that the noise does not bother them after a while. But the record of brain waves during their sleep shows clearly the disturbance of their sleep beyond the level of their consciousness.
If those shortcomings can be covered by the careful handling of the questionnaire, the resident's opinions give us valuable data for the assessment of housing.

The other data, the objective behavioral data is starting to be used in architectural research. Direct observations of human behavior in certain building types have been done,¹ but the intense study of everyday activities within the dwelling unit is rarely seen. Only on such occasions when architects are asked to design a custom-built house, might they study a family's daily activities in detail.

In housing research, the private nature of family life sets up a high barrier for researchers and limits certain research methods that are useful for behavioral data collection in other fields.

Direct observation is commonly used by behavioral scientists. It is relatively easy to collect data in the laboratory but the observation of a person's continuous activities in his actual daily life is much more difficult. A boy's behavioral record for 15 days by R. Barker² may be one of the most complete written documents of human behaviors related to his environment. The enormous efforts of the research crew can be imagined.

This direct observation method cannot be used to record the family life within the dwelling unit for the violation of their privacy,


²R. Barker, One Boy's Day, 1951.
but it is useful for the activities in the public space around their unit.

Participant observation gives us more detailed data, though it is a time-consuming research method. H. Gans\textsuperscript{1} and Oscar Lewis\textsuperscript{2} made full use of this tool to collect data of complicated human interactions in urban communities and Mexican families that could not be obtained by any other method. For housing research, useful information about neighborhood social interactions may be collected by this method.

Instead of man's observation, audio-visual machines can be used to record the accurate data of human behavior. Because of such machines' limited mobility and high running costs, this method is suited to intense studies of human behavior in a limited time and space such as R. Helmrich's study of an undersea habitat.\textsuperscript{3}

For the study of daily family life at home, it is difficult to apply this method because of the family's privacy as well as its cost.

The behavioral record of daily life described by the family itself gives us satisfactory data for the study of housing spaces. Personal diaries (families are asked to record their daily activities) is a heavy burden for the respondents and their cooperation may be

\textsuperscript{2}Oscar Lewis, \textit{Five Families}, 1959.
\textsuperscript{3}Helmrich, \textit{Ibid}.
difficult to obtain. A high refusal rate is likely.

The family's activity time budget described by Chapin\(^1\) and Michelson\(^2\) is more suited to collecting reasonably detailed data, as well as a certain quantity of data.

For those reasons, activity log records supplemented by the author's participant observation are used in this research for the collection of residents' objective behavioral data.

Residents' evaluation of their housing and the behavioral data of their daily activities together form more complete information to define a family's needs in housing.

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\(^1\) F.S. Chapin, *Urban Land Use Planning*.

4. STUDY OBJECTIVES, SCOPE AND METHOD

This is a methodological study to test the application of the resident's behavioral data, "Activity Log Records," to define the family's needs in housing.

From the various family variables described in Section II, how the Family Life Cycle induces different family activity patterns and how the sample housing accommodates various family's needs are examined.

A Family Variable – Stage of Family Life Cycle

Each family grows through the years in its own particular way. The problem of dividing the family life cycle into a number of stages is that families are so varied in their structure and growing pace. In reality, there are no clear divisions from one stage to the next, although each family goes through various stages.

A family takes form usually in marriage. A couple, husband and wife, may keep a similar life style to the one they had before marriage. A significant difference in their daily life is brought with the coming of their first baby. As successive children are born, not only does the number of family members increase, but a reorganization of family life occurs.

Parents grow older as children grow and a constant adjustment in each family member's daily activities is required to fulfil their changing needs and desires. A family starts to contract as
children leave home one by one to pursue their own independent lives. Then aging parents again live together as a pair.

Dividing a family life cycle into a certain number of stages is more difficult than dividing a person's life cycle.

Various ways of division are considered according to the research subject. Duvall in his "Family Development - 1962" divides the family life cycle into 8 stages based on the oldest child's phase of growth;

1) Beginning Families (married couple without children)
2) Child Bearing Families (oldest child birth to 30 months)
3) Families with Pre-school Children (oldest child 2½ to 6 years)
4) Families with School Children (oldest child 6 to 13 years)
5) Families with Teenagers (oldest child 13 to 20 years)
6) Families as Launching Centres (first child gone, to last child's leaving home)
7) Families in the Middle Years (empty nest to retirement)
8) Aging Families (retirement to death of one or both spouses)

In this study, each family member's activities are being focussed; the division is based on the youngest child's development stages. Family activities (especially mother's) are supposed to be more closely related to the youngest child's development stages. The first stage, birth to 30 months, is divided into two stages,

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infancy (birth to 18 months) and toddlerhood (1½ to 3 years), because of a significant difference in their physical abilities.

Infant, toddler, pre-school children, school children, adolescents and young adults seem to be more suitable divisions for observing a person's activity patterns through life cycle. In this study, after those modifications to Duvall's eight stages, the family life cycle is divided into the following 9 stages:

- **Stage 0**: Married couple without children
- **Stage I**: Youngest child, birth to 18 months (infant)
- **Stage II**: Youngest child, 1½ to 3 years (toddler)
- **Stage III**: Youngest child, 3 to 6 years (pre-school child)
- **Stage IV**: Youngest child, 6 to 12 years (school children)
- **Stage V**: Youngest child, 12 to 18 years (adolescent)
- **Stage VI**: Youngest child, over 18 years to leaving home (young adults)
- **Stage VII**: Married couple after children leave home
- **Stage VIII**: Retirement to death of one or both spouses

**Activity Log Record - Collection of Data**

Family members' activity log records were collected through the respondents' descriptions in a series of interviews. (See Sample Record Sheets) No list of activities was previously given for the reference. The respondent was simply asked to describe his daily activities for a weekly period in as much detail as possible. He usually described one typical weekday's activities from morning to night and gave the alternate activities for the other weekdays.
Weekend activities on Saturday and Sunday were described separately. A clear difference in activity was mostly observed between these two days. Many respondents found it difficult to recall daily routine activities in time budget. To collect data with the same density, I had to often interrupt the respondent's description, which tended to be too sketchy. Even so, the continuous description of whole activities in a day enabled me to visualize the complete daily life of each family. For the effective collection of a large quantity of data, each activity's time and spatial distribution may be asked for separately.

The main interview respondents were mothers who were at home most of the day. Since this study concerns activities in the unit and the neighborhood, husbands' and older children's daytime activities outside of the sample area were not obtained. If this information is necessary, each family member should be interviewed.
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<thead>
<tr>
<th>TIME</th>
<th>what doing</th>
<th>where</th>
<th>with whom</th>
<th>alternate</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00</td>
<td>get up</td>
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<td></td>
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<tr>
<td>7:30</td>
<td>breakfast</td>
<td>O/R</td>
<td>together except baby</td>
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</tr>
<tr>
<td>8:15</td>
<td>feeding baby</td>
<td>O/R</td>
<td>7:45</td>
<td>8:30 home</td>
</tr>
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<td></td>
<td>making bed</td>
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<td>2 hours/day</td>
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<tr>
<td></td>
<td>laundry</td>
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<tr>
<td>Monday</td>
<td>Vacuum cleaning</td>
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<tr>
<td>Tues</td>
<td>cleaning appliances and O/Rs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weds</td>
<td>C/R clean-up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thurs</td>
<td>Kitchen &amp; Family Rm.</td>
<td></td>
<td></td>
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</tr>
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<tr>
<td></td>
<td>housework w/ baby around</td>
<td></td>
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<tr>
<td></td>
<td>Shopping (Park Royal)</td>
<td></td>
<td>once every 7-10 days</td>
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</tr>
<tr>
<td></td>
<td>every Thurs, evening grocery shopping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td>bath baby</td>
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<td>feeding</td>
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<td></td>
<td></td>
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</tr>
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<td></td>
<td></td>
</tr>
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<td>K</td>
<td>baby F/K</td>
<td></td>
</tr>
<tr>
<td>5:30</td>
<td>dinner</td>
<td>family</td>
<td>together D/R</td>
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</tr>
<tr>
<td>6:15</td>
<td>feeding</td>
<td>D/R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00</td>
<td>girl to bed after bath</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2-b  Sample Activity Log Record Sheet 2.
Mother (B)  

Weekday  

7:00  
father work D/R — editor of school newspaper  
mother -> dishwashing  
D/R -> TV watching  
or writing or P/R  

10  
TV for an hour after 2 hr work  

11:00  
go to bed  

Figure 2-c Sample Activity Log Record Sheet 3.
Activity Pattern – Analysis of Data

Activity log records of each sample family are first mapped on the floor plan of their unit. The spatial distribution of each activity such as sleeping, eating, etc. is shown separately with its time duration and members involved in the activity. (See Figure 3)

Each family's activities mapped on the floor plan are then analyzed according to their stage of the family life cycle and activity patterns of each stage are generalized. Thus, the family's needs in housing are defined in its real state, constantly changing forms rather than permanent ones. Then the sample housing is evaluated by seeing the fit between various families' needs generated from those family activity patterns and the space provided. Both the resident's own assessment of the space and the author's participant observation are the sources this evaluation is based on.
Figure 3-a  Family Activity Mapped on Floor Plan - 1
Figure 3-c  Family Activity Mapped on Floor Plan - 3
Figure 3-d  Family Activity Mapped on Floor Plan - 4
Figure 3-f  Family Activity Mapped on Floor Plan

"Workshop for father missing" for craft, music.

Washing dishes
After feeding
Mother writing
Father work for school marking children's papers
"More space desirable"

Girl goes to bed @ 7:00
TV watching

EVENING SITTING & WORK
Figure 3-g  Family Activity Mapped on Floor Plan - 7
Figure 3-h  Family Activity Mapped on Floor Plan - 8

"want separate dining room" or "dining room opens to living room"

4 guests for dinner

DINNER PARTY
Number of Sample Families

Total number of families interviewed is 23. Collection of data from 3 to 5 sample families in each stage had been planned but due to the limited number of families in later stages in the sample project, the expected number of samples was not obtained.

TABLE 1 - Number of Sample Families by Family Life Cycle

<table>
<thead>
<tr>
<th>Stage</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>23</td>
</tr>
</tbody>
</table>

No family in Stage 0 (young married couples without children) was observed in the sample project.
PART II - THE WESTVIEW GARDEN APARTMENT

5. CHOICE OF SAMPLE PROJECT

The Westview Garden Apartments were chosen as a sample project for this study for the following reasons:

1. The project is for family accommodation and consists of two different types, two bedroom apartment units and three bedroom townhouse units, which enable it to accommodate various kinds of families. In fact, families in all stages of their life cycle could be observed in the sample project except young married couples without children.

2. The size of the project, total 178 units, is large enough to obtain a variation in families, yet small enough to evaluate the whole project as a homogeneous living environment.

3. The project has been in existence for ten years, a period long enough to observe the adjustments to the original design as well as adjustments in residents' way of life.

4. Since basically the same dwelling units are used throughout the project, each family's different response to their housing environment could be clearly observed.

5. In future housing development in cities, there is bound to be a larger proportion of multiple dwellings due to ecological and economic reasons. The factual data about
family life in townhouses and apartments is needed today for better family housing.

However, there are also limitations in data collection caused by the sample project. Since the sample units are all rental accommodations, the period of occupancy is short. The average occupancy is less than two years and many families have moved in less than a year ago. Even after four or five years' stay, many families still think of the townhouse/apartment as a temporary residence. Also, because they are renting accommodation, families are not able to change dwelling units according to their needs. Therefore, the data is available only for the family's adjustments to their own residence. A minimum of changes to the dwelling units themselves were observed.
6. THE SITE, RESIDENTS AND FACILITIES

Location

The Westview Garden Apartments are located in the City of North Vancouver which is connected to the City of Vancouver by two bridges over the Burrard Inlet. The City's central, industrial and commercial areas as well as the recreational spots are easily accessible from this site. Downtown Vancouver is 6.5 miles away and it takes twenty to thirty minutes to drive down. The City of North Vancouver has its own central business area which is one and a half miles away.

The site is adjacent to a local shopping centre on its south side. The sample project and the shopping centre were developed together by the same developer in 1964. An arterial road, Upper Levels Highway, connects the area to the City of North Vancouver.

Two garden apartment developments of similar type are at its north and west sides, and there is another townhouse development on the opposite side of the street, Westview Drive. This street runs in a north-south direction and has a busy flow of traffic.

A creek runs along the east border of the site. Over its well-treed banks is a park with walkways and sports courts.

The area is surrounded by middle and upper-middle class detached houses. Facing north there is a panoramic view of mountains.
Figure 5 - Site Area
Figure 7 - (a) View from Westview Drive

Figure 7 - (b) Driveway and Carports

Figure 7 - (c) Curved Driveway and Speed Control Bump
Figure 7 - (d) Swimming Pool, Office & Service Bldgs.

Figure 7 - (e) Landscaped Courtyard
Figure 7 - (f) Playground on Adjacent Sewer Easement

Figure 7 - (g) Playground at South East Corner of the Site
Figure 7 - (h) Walkway to Entrance Gate

Figure 7 - (i) Townhouse Entrance

Figure 7 (j) Covered Carports and Open Guest Parking
Figure 7 - (k) Front Yard of Townhouse Unit

Figure 7 - (l) Landscaped Courtyard Between Townhouse Blocks

Figure 7 - (m) Backyard of Townhouse Unit Facing Creek
Figure 7 - (n) 3 Storey Apartment - Entrance

Figure 7 - (o) 3 Storey Apartment - Balcony and Terrace Facing Public Backyard
The site area of the Westview Garden Apartments is 9.5 acres and contains 178 dwelling units. Despite its relatively high density, 18.8 units per acre, the total design of the project successfully avoids the overcrowded atmosphere. The architects' intention to reduce the appearance of building volumes to a minimum is well achieved by the landscaping, especially since the trees have grown to good sizes in the ten years since building completion.

Cuter units are laid out along property lines to take advantage of the site which is surrounded by open spaces. Inner units are arranged to shape a series of small courtyards.

Along the creek bank to the west of the site, there are open spaces of 20 to 40 foot width from the backyards to the fence. This part does not belong to the apartment site but is maintained by a manager of the Westview Garden Apartments and used as extensions of the backyards. Residents in the units along this creek can enjoy the open space at back as well as view the many tall evergreens on the opposite side of the creek.

A sewer easement to the north of the site is used partially as a children's playground and the rest is left undeveloped. Although townhouse units do not directly face this playground, residents complain about the noise from the play area.

To the south, units are facing a shopping centre's service yards which have a grade 6 feet lower than the backyards of the townhouses.
This difference in levels and landscaped banks allows residents sufficient privacy.

Families in blocks along the street to the east of the site suffer most from the noise of busy traffic flow. There is a minimum setback of 12 feet and 6 inches from the street, and a sidewalk in front is only 6 feet wide. Access to a unit is not pleasant, especially on rainy days.

Residents of inner units around courtyards expressed high satisfaction, with the exception of families who live close to the swimming pool who complained about noise during the summer season.

A swimming pool is in the centre of the site, and an office and service building are adjacent to the swimming pool. The resident manager suggested those service facilities could have been located at the street side where families in townhouse units are now bothered by the traffic noise.

Driveway and Sidewalk:

There are two access roads in the Westview Garden Apartments; one loop driveway and one short dead-end driveway. Both roads are connected to the city street, Westview Drive; and the loop driveway is also connected to the adjoining shopping centre at the south west corner of the site. The driveway is 25 feet wide and has a sidewalk four feet wide on one side.

The driveways are designed to have many bends to reduce the driving speed as well as to avoid the monotonous appearance of the long
straight street. Speed control bumps have been added on the driveway since the bends alone were not sufficient to reduce the driving speed.

Although there are sidewalks beside the driveway, people usually walk on the driveway. The driveway serves only the people in the sample area, so the traffic flow is minimum and the sidewalks seem to be used only when they are the shortest route to the pedestrians' destination.

Parking Space:

One covered carport per family and a total of 38 open guest parking spaces are provided in the site. They are located along the driveway and are usually in front of the buildings. This layout has the advantage of allowing the minimum distance between the parking space and the entrance door to the unit. The linear parking spaces also work as a buffer zone between dwelling units and public roadways. This screening function is important to protect the entrance and the front yard of dwelling units from the direct exposure to the public roadway, especially since the building setback from the roadway is minimum (12 feet 6 inches).

Parking in Westview Garden Apartments is a problem most families complain about. Only three out of 22 sample families think the present parking spaces are adequate facilities. The first complaint is the shortage of parking spaces which is cited by 14 families. Almost every family owns a car and many families have two cars. One family in a townhouse unit even keeps four cars, one for each
family member. Consequently, spaces for the guest parking are always filled by the cars of residents. Visitors have a hard time finding a space within the sample area and quite often have to park in the parking area of the adjacent shopping centre.

The next complaint is the narrowness of each parking space which is mentioned by six families. A parking space is eight feet wide and has two steel posts on one side.

The present distance from the parking space to the entrance door of the unit is accepted by the majority of sample families. Three families who have parking spaces in front of their units have to use the further spaces, 100 to 150 feet apart, due to the overall arrangement of parking spaces. A three storey apartment block needs more spaces for parking than its building frontage.

The manager of the Westview Garden Apartments complains about the damage done to the cars in carports while children are playing around the parking space.

TABLE 2a - Parking Space (N = 22)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair</td>
<td>3</td>
<td>Poor</td>
<td>19</td>
<td>Not enough spaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Too narrow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Too far</td>
</tr>
</tbody>
</table>
Courtyard:

The courtyards surrounded by apartment and townhouse blocks are well landscaped with many trees and shrubs around the artificial ponds. They are generally well kept partially due to the manager's strict ban against children playing in the courtyards. Only toddlers are seen occasionally playing in the small courtyard in the north end of the site which is far from the manager's sight.

The courtyards are enclosed by a 6-foot fence and have access gates from the driveway. The fence and gates discourage people from passing through except those who live in the units facing the courtyard, although there is a passage through the courtyard. The passage itself is designed to have a minimum width, sometimes consisting just of stepping stones. Few people other than children are seen walking through the courtyard. Most families enjoy the view of the yard from their backyard or living room rather than actually using it.

The distance between two facing blocks is seventy feet at the closest point with further setback at every 2 to 3 units. Trees and shrubs have grown to good sizes in the ten years since the Westview Garden Apartments' completion and give a good visual effect for the privacy of residents. The landscaped courtyards are one of the residents' "likes" and the managers have made good efforts to maintain them.
Childrens' Play Area:

In the sample project, there are two childrens' playgrounds which are built outside of the Westview Garden Apartment property. One is on the city sewage easement on the north of the site and the other is in the shopping centre property on the southeast corner of the site. The latter had been larger in the original scheme but when the medical building was erected, the size of the playground was cut down. Both playgrounds were developed as parts of the sample project. Play facilities such as swings, jungle-jim and see-saws have been supplied and maintained by the Westview Garden Apartments.

The playground on the north of the site is approximately 60 feet wide by 120 feet long and partially paved with concrete. The smaller playground is 60 feet by 60 feet and the whole area is paved and fenced around. The landscaping and maintenance of the play areas seems to be poor compared to the courtyards. The swings are often tangled up high beyond younger childrens' reach, by the older children, and there are water pools under the see-saws. Children are more often seen playing on the driveway than in the playgrounds. In the smaller playground, especially, children are scarcely seen.

This is due to the location of the playground as well as the unattractive landscaping and the poor maintenance. Both are located out of the residents' sight to get maximum use of property for dwelling units and also to avoid the noise problem from the
playgrounds. Due to this remote location, not only the noise but childrens' playing itself seems to be cut down.

Swimming Pool:

Many sample families expressed the strong "like" for the outdoor swimming pool on the site. The swimming pool is located in the centre of the site and is well appreciated through the summer season by both children and adults.

The deck chairs are usually fully occupied, with adults having priority on this seating. A life-guard is hired through the season and, from the management point of view, the swimming pool is one of the facilities which needs the most maintenance.

Besides the swimming pool there is an office and service building. There also used to be a cabana which was converted into the workshop and storage for building maintenance. The cabana was used for private parties by the residents in the sample project but due to the shortage in the maintenance storage and the difficulty in cleaning the place after use, the front part is now used as a common sitting area, which is hardly used, and the rest is used for the workshop.

Front Yard:

Every townhouse unit has a paved front yard 12 feet 6 inches wide and 16 feet deep, which is enclosed by the wooden fence. The height of the fence was four feet six inches at the original design, but soon after its completion, another foot was added. The
residents complained about the lack of privacy in their family room which is facing the public sidewalk through the front yard. A garbage can and storage shed are built to form a partition between the adjoining units.

The entrance gate is lower than the fence (3 feet, 6 inches high), so people can see over the gate inside of the fence. This opening above the gate has an important function for the incidental socializing between neighbours (see Part II - Social Activity). Mothers on the way to their shopping stop at the gate to have a little chat with the neighbour who is in the front yard or in the family room. Sometimes they exchange just greetings and at other times their conversation continues for hours in the neighbour's family room with coffee and cake.

This opening does not seem to bother the majority of the sample families. Only one sample family complained about the lack of privacy in the front yard. The gate is three feet wide and people passing by the sidewalk cannot have more than a momentary look at the inside unless they stop at the gate.

This combination of the fence (five feet six inches wide) and the gate (three feet six inches), works well to give sufficient privacy to the resident and at the same time to provide for the openness which is effective for neighbourhood socializing.

Childrens' playing and families' outdoor eating are two popular activities due to the accessibility from the family room. The front yard is also the place to store bulky goods like bicycles,
tricycles, sleighs and a goalie net for street hockey. One family has a metal pre-fabricated storage unit in the front yard.

Backyard:

The backyard of each townhouse unit is 20 feet wide and 12 feet deep and paved with concrete. The yard is partially enclosed by a wooden fence and the rest is open to the public landscaped garden. Some difference is observed between activities in the front yard and ones in the backyard. Outdoor sitting is the most popular activity observed in the backyard.

Garbage Can Storage:

Each townhouse unit has its own covered space for a garbage can in the front yard. For the apartment units, a communal garbage can storage is provided for every two to three units.

In the original design, a larger communal garbage can space was provided besides the carport serving more families, but this was divided into the present smaller spaces because there was a constant mess around. Even now, the inside of the communal garbage can storage is usually quite dirty although it is not seen from the outside, being fenced completely.

It does not seem to work properly to depend on the residents to clean the communal spaces. Some families in the apartment blocks are using their own garbage cans in their units to avoid the trouble and the responsibility of cleaning up the communal garbage can storage.
Three sample families in the apartment units complained of the untidiness of the garbage can storage. No complaints are heard from the sample families in the townhouse units about their own garbage can storage.

**Dwelling Type**

As described before, the Westview Garden Apartments consist of 114 three-bedroom townhouse units and 64 two-bedroom apartment units. Two types of building blocks are mixed side by side without any incoherence by keeping their appearance and volumes similar.

Six to ten townhouse units are in a row and the floor area of a unit is 1,332 square feet. End units are slightly larger (1,434 square feet) but floor plans are basically the same. Three bedrooms are on the upper floor with two bathrooms. Living room, kitchen, family room and a washroom are on the main floor. The family room faces the front yard and the living room opens to the backyard. A storage and garbage can shed is in front, forming a part of the fence.

Apartment blocks are two and three stories high and each unit is accessible directly from an exterior stairway.

There are two types of two-bedroom apartments. One has two bathrooms and a fireplace in the living room, the other has one bathroom and no fireplace. The floor area of a unit is 1,106 square feet or 1,061 square feet each.
A unit has entrance hall, kitchen, separate utility room and open dining-living room. The dining room opens to a balcony or a terrace at the ground floor.

TABLE 2b - Number of Sample Families by Dwelling Type

<table>
<thead>
<tr>
<th>Stage</th>
<th>O</th>
<th>I</th>
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<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>Total</th>
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<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
</tbody>
</table>
APARTMENT TYPE A

The standard two-bedroom garden apartment comprising 1061 square feet is imaginatively planned to offer the maximum in convenience and comfort features. The hardwood entrance hall leads directly to the luxuriously appointed living dining area. The completely equipped kitchen is central to the dining and utility areas.

The two full size bedrooms are removed from the living area and are convenient to the fully-equipped bathroom. Oak floors in the living area, ceramic tile in the bathroom and vinyl tile in the kitchen are included, of course.

Equipment includes Dish Washer, Garbage Disposal Unit and Washer and Dryer in each apartment.
APARTMENT TYPE B

The deluxe two-bedroom garden apartment is a spacious 1106 square feet. The deluxe apartment includes all of the distinctive details of the standard apartment plus a full Norman brick fireplace in the living area and a fully-equipped bathroom ensuite in each bedroom. The storage facilities for both apartments are amply generous.

Both apartments offer a private balcony opening from the living area which permits full appreciation of the garden-like landscaped setting in which the apartments are located.

Apartment living in Westview Town House is a splendid experience in unsurpassed surroundings.
The standard three-bedroom town house offers 1332 square feet of unequalled comfort and convenience. The main floor generously provides family area in abundance—inside and out—with two attractive terraces. The kitchen includes Arborite counter tops and colored appliances.

Upstairs three twin-size bedrooms are served by spacious closets and two complete bathrooms.

The standard town house is a family home designed and detailed for those with particular preferences in comfortable accommodation.
ARTMENT TYPE D

A deluxe three-bedroom town house is a larger edition of the standard plan described opposite. All other aspects are identical.

Note particularly the unity in design between the central living area and the accessible patios. The entire plan consists living space with just a subtle transition of glass from inside to out.

At Westview Town House offers the advantages of suburban living without the complication of maintenance chores. Westview Town House will be completely and carefully tended for your dining enjoyment.
Residents

The sample project houses various types of families, but no single adults or young married couples without children are found in this area. Most families have children except elderly couples whose children are grown up. Families up to stage IV occupy the majority of the area. Families of stages V, VI, VII, VIII are found only in limited numbers.

Although the dominant pattern of a family consists of parents with or without children, the occasional single parent (all of them mothers) is also seen. Extended families are also found but their number is very limited. Among the families interviewed, there is a case of an elderly couple living with the wife's sister and another family living with the wife's mother.

Ethnically, people from many countries are seen within the area. Among the families interviewed were English, German, Swiss, South African, Japanese, East Indian from Nairobi and Uganda, American, as well as Canadian. Different patterns in families with different cultural backgrounds were not observed clearly in their response to their living environment, partially due to the limited number of families interviewed. However, the difference was in the family's activity patterns; especially evident in their social activities.

The monthly rent in 1973 was 205 and 225 dollars for a two-bedroom apartment unit, and 270 and 280 dollars for a three-bedroom townhouse unit. This rent attracts middle class families.
The occupation of the head of each household interviewed (two of them single mothers) is shown as an example of the type of people living in this area.

**Occupation of Family Head:**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>9</td>
</tr>
<tr>
<td>Professionals</td>
<td>5</td>
</tr>
<tr>
<td>White Collar Workers</td>
<td>2</td>
</tr>
<tr>
<td>Blue Collar Workers</td>
<td>3</td>
</tr>
<tr>
<td>Surveyor</td>
<td>1</td>
</tr>
<tr>
<td>Trained Nurse (with advanced nurse's training)</td>
<td>1</td>
</tr>
<tr>
<td>Retired</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>23</td>
</tr>
</tbody>
</table>

Three wives have part-time work and four are working full-time.

**Period of Occupancy and Intention to Move**

The duration of the occupancy period varies for families in various stages of their life cycle. A certain pattern is observed despite the small number of sample families. In earlier stages, duration of rental is short and in later stages the duration of rental periods grows longer.

All families in stages I and II have lived in this area for less than two years. Families in stages III to VI have a period of residence varying from less than a year to seven years. In
stages VII and VIII the longest duration is observed. Both families in stage VIII have lived in this sample area for nine years, one family in a townhouse unit and the other in an apartment unit.

Families' intentions to move also show a difference in response according to families' various stages. Up to stage IV, all families answered "Yes" when asked if they plan to move. The main reason for this is that they want to buy a house, and they consider their present residences as temporary ones. In families after stage V, their intention to move seems to slow down. Both families in stage VIII show no intention to move as long as their conditions of health allow them to live in their present units.

Table 3 - Intention to Move

<table>
<thead>
<tr>
<th>Stage of family life cycle</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Public Transportation

There is a bus line serving this area every half hour from six o'clock in the morning to two o'clock at night. In the morning and evening rush hours, people can take direct bus services to and
Figure 9 - Period of Occupancy
from downtown Vancouver. During other times of the day, people have to change buses to get either to downtown Vancouver or a major shopping centre, and it takes almost an hour.

In the morning peak hour, six to ten people are usually seen waiting for a bus at the bus stop in front of the Westview Garden Apartments. A number of people who own cars take a bus regularly to their work. Bus seats are almost filled in the rush hours; at other times, only a few passengers are seen. Most of them are secondary school children and elderly ladies.

Almost every family in the sample area owns one or two cars and the majority of families commonly depend on private cars. About half of the sample families do not use bus service at all. Only children use buses in two of the eight families who expressed satisfaction with the bus services. Four respondents complained about the poor bus service. Three of them mentioned occasional bus rides for shopping. Since most families regard the bus service as a supplementary means of transportation, their dissatisfaction is not strong.

Table 4 - Public Transportation

<table>
<thead>
<tr>
<th>Number of families</th>
<th>Good Service</th>
<th>Poor Service</th>
<th>Not Using</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>
Shopping

The site is adjacent to a shopping centre which consists of 18 stores of various kinds. Most sample families do their daily shopping at this shopping centre. Since the sample project and the shopping centre were developed at the same time, the two sites were conveniently connected. There are direct pedestrian accesses as well as a car access to the shopping centre from the sample area. Shopping centre carts are always seen on the sidewalks in the Westview Garden Apartments site since many families take shopping carts to their front doors instead of taking their cars.

The next closest shopping area is called "the Village," which is three-quarters of a mile east of the site. It is a typical suburban shopping street and not intensively used by families in the sample area due to the limited numbers of stores.

The central commercial area of the City of North Vancouver is along Lonsdale Avenue which is one and a half miles east of the site. Although some families do their shopping on Lonsdale Avenue, most families in Westview Garden Apartments go to either Park Royal Shopping Centre or to downtown Vancouver for their major weekly shopping.
Recreational Facilities

Parks:

Two parks are in adjacent blocks to the Westview Garden Apartments. One, on the north of the site, has tennis courts, a large open play field and a children's playground. The other, on the opposite side of the creek, has not been fully developed yet and presently an outdoor ice-skating rink and baseball field are the major facilities. An indoor swimming pool and riding trails are under construction. There is a trail along the creek with a small picnic area. People are frequently seen having their daily walks with their dogs whenever the weather is good. Otherwise, not many activities are carried on in those parks, except on the tennis courts.

Despite their proximate locations, the use of the two parks by people in the Westview Garden Apartments seems to be minimum. Neither park has facilities for families to spend an afternoon together with their children. Open fields are good for organized sport and games but not for families' (either parents' or childrens') daily use. The indoor swimming pool will be much appreciated when completed.

The most popular family outdoor recreational spot is Stanley Park, which is four miles away from the site and has various facilities for people of all age groups.
Recreational Centre - North Vancouver Community Centre:

North Vancouver Community Centre is one mile away from the site and teenage students are the main users of its indoor swimming pool, ice-skating rink and gymnasium. Several snack bars and coffee shops are around this recreational centre and make their area a popular meeting spot for secondary school students. The distance from the sample area is walking distance for teens. A swimming pool and an ice-skating rink are occasionally used by younger children followed by their parents.

Ski slopes are easily accessible from the site (30 minutes' drive); and some families, especially the boys, cited skiing as a major outdoor activity.

Table 5 - Location of Facilities of Recreational Centre (N = 22*)

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
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<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>11</td>
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</tbody>
</table>

* One sample unusable.
Amusement:

A few movie theatres and a community hall are in the City of North Vancouver, but major amusement facilities are found in downtown Vancouver. Although there is a restaurant in the adjacent shopping centre, people in the Westview Garden Apartments usually go to the downtown area when they eat out.

Hospital and Clinic

Two doctors and a dentist have their offices in the adjacent shopping centre. Some families in the sample area go to doctors' offices in the Village shopping area (3/4 mile away from the site) and on Lonsdale Avenue (1½ miles away). A hospital is about two miles away from the site.

The sample families' satisfactions about medical service facilities around the area are high and no complaints are cited.

Table 6 - Hospital and Clinic

<table>
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<th>Good</th>
<th>Poor</th>
<th>Have Not Used</th>
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<tbody>
<tr>
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<td>8</td>
</tr>
</tbody>
</table>

(One sample unusable)
PART III  -  FAMILY LIFE CYCLE AND FAMILY ACTIVITY PATTERN

7. FAMILY ACTIVITY PATTERN THROUGH STAGES OF FAMILY LIFE CYCLE

Family activity log records are analyzed according to the stage of the family life cycle using a method described in Part I. Family activity patterns are thus drawn.

In each stage, after a general description of its characteristics, family activity patterns are summarized in the following individual activities: sleeping, eating, housekeeping, shopping, playing, evening sitting, weekend activity and social activity.

Spatial requirements are derived from each activity pattern. Some requirements are basic needs for every family and some are preferences for most families. How the sample project accommodates those requirements is examined and then alternate design solutions are also suggested.
STAGE I : GENERAL

The birth of the neonate brings about a big change in the families' daily activities. The new family member requires the additional space in the dwelling unit and forces many families to move.

The infant's daily environment is almost totally limited to its family and its dwelling unit. It requires the constant care of the family for its growth. Lack of proper care at this stage seriously affects the child's mental and physical development and may even cause its death. The infant is completely dependent on its family and especially on its mother. Mothers' daily activities are limited to within the dwelling unit or the immediate neighbourhood by her infant.

1 "The human brain grows to approximately 70% of its adult weight at about the age of one year. By age 6 its final structure is essentially completed. The experience of early extrauterine life influences man's mental development as well as the conditions of intrauterine existence." Rene Dubos, So Human An Animal, 1968.

STAGE I: SLEEPING

The long sleeping hours of the infant (both in the night and daytimes) require a space undisturbed by family members' activities within the unit as well as by outside noise. When such space is not available, the family usually intends to move.

All three sample families moved within the Vancouver area to provide space for the infant's undisturbed sleep. Family A moved from a two-bedroom half duplex unit to their present three-bedroom townhouse unit when their infant was 3½ months old. Family B moved from a one-bedroom unit to their present two-bedroom apartment unit when their daughter was 7 years old. Family E moved from a two-bedroom unit to a three-bedroom townhouse unit for the child they were expecting.

Some parents put the neonate's crib in their bedroom for a short period and the others let him sleep in a separate room from the beginning when such space is available. Until the infant is 6 to 12 months old, the parents want a separate sleeping space for the infant from his siblings because of their different sleeping patterns.
After about one year, the infant and her siblings can sleep in the same room without disturbing each other too much.

The four sample families show the difference in spatial usage for sleep according to their family structure. In Family A two boys, ages 2 and 3½ years old, occupy one room each and the parents and 9½ month old girl sleep in one room. They would prefer to have four smaller separate rooms rather than three fair-sized bedrooms (11'3" x 14'6", 10'6" x 12'8" and 9'2" x 10'6"). The one year old girl of Family B used to sleep in her own room but since 8 months of age she has slept with her 8 year old sister in the same room. Her former bedroom is now used as the childrens' playroom.

In Family C, boys of 8 and 11 years of age occupy one room and a 1½ year old girl and her parents use the other two rooms to sleep.

Family D lives in a two-bedroom unit. The parents occupy the smaller bedroom and the 2 year old boy and 2½ year old girl use the other.

The conflict observed in the space for sleeping is the noise from outside of the unit. The noise from the inside of the unit (such as
housekeeping, family activities) does not seem to be so critical as the noise from the outside. In the townhouse unit, the difference in the level makes a good separation between the sitting area (down) and the sleeping area (up). In the apartment unit, the doors of the bedrooms do not open directly into the living room but into the hallway which protects the bedrooms from direct sound and light transmission from the family sitting area to the infant's sleeping area.

The noise from the neighbours which is one of the sample families' main dislikes in this project, is caused by the poor sound-proof construction in party walls and floors. The noise of children playing in the driveway and the exterior stair hall is complained about by Family D in the apartment unit. Their two bedrooms both face the driveway which is the childrens' main play area and the infant's day sleep is exposed to the childrens' noise.

**REQUIREMENT : SL-I-1**

The infants' sleeping space is preferred separated from other family members' sleeping spaces because of their different sleeping hours.
In the sample project, the largest bedroom may accommodate an infant's crib as well as the parents' bed, but any kind of separation between them cannot be provided. If parents want the separation, they have to put the crib in another room. A possible alternate solution is an alcove large enough for a crib and a chest which can be separated by a simple partition for the privacy of the neonate and the parents. Up to 6 to 12 months of age, the infant needs a sleeping space separated from her siblings. Different sleeping patterns between siblings disturb the other's sleep.

**REQUIREMENT SL-I-2**

The separation between the spaces for infants' sleep and other family activities is necessary. Between those two different activities, the provision of a buffer zone is preferred rather than a separation by just walls and a door.

In the townhouse unit, the level difference between the family sitting-working area and the sleeping area serves as a good buffer zone for
two different activities. In the apartment unit, the hallway works as an adequate buffer zone. The openings to the living room and bedrooms from the hallway are arranged so as not to allow the light and sound to come in when the bedroom door is opened.

REQUIREMENT SL-I-3

The convenient connection from the parents' bedroom to the infant's crib is necessary for feeding and changing diapers at night, especially for the neonate.

In the sample unit (both apartment and townhouse units) the distance between doors of parents' and children's bedrooms is minimum. In the townhouse unit, the smaller bedroom for the infants' use could be located closer to the master bedroom. Alcove for a crib in the parents' bedroom, as described in Sl-I-1 is also desirable to meet this requirement.
REQUIREMENT SL-I-4

The space for the infants' sleep should be free from the daytime outside noise of traffic flows and childrens' playing.

In the townhouse unit the parents' bedroom, (which may be used as the neonate's sleeping area too) is preferred facing the quiet landscaped courtyard instead of the driveway which is the childrens' main play area. In the apartment unit, at least one bedroom is to be located in the courtyard side.
STATE I : EATING

Mother feeds her infant before or after the family eats. When the family is eating, the infant is in their sight. Breakfast is not always eaten by the family together (Families A and C), but all four sample families eat dinner together. The family room is used for eating by all three sample families in the townhouse unit and the size of eating space (10'0" x 10'5" or 10'6" x 9'0") is evaluated as adequate by three of the families. Family B cited the family room as being too small for the father’s work table and the dining table (see Evening Sitting).

REQUIREMENT EA-I-1

Family dining space should be large enough to have the infant beside the dining table without any danger or at least opening to another space where the infant can see and listen to the family members at the dining table.

The L-shaped dining-living room in the apartment unit is good in this
regard. The family room in the townhouse unit is large enough for the extra space for the infant (10'0" x 10'5") if no other large furniture other than the dining table and chairs are in the room.

STAGE I: HOUSEKEEPING

All mothers of the four sample families in Stage I are not working outside the house. Their weekday daytime is mainly spent in childcare and housekeeping (i.e. cleaning, washing dishes, laundry, cooking, sewing and ironing).

Mother A has three young children to look after and her housekeeping is extended into the evening. She does sewing and ironing in the living room where her husband is relaxing with T.V. Mothers B and C in the townhouse unit have only one infant to look after when other children are in school, and most of their housekeeping is done in the daytime. They work in the living room or the family room as well as in the kitchen with their infants around them.

Laundry facilities within the unit are appreciated by all mothers, but
Mother B complained of the noise of the machines and wants to have a separate laundry room. The apartment unit has a separate utility room where laundry facilities, storage space and a hot water tank are provided. Mother D in the apartment unit complains that the kitchen size (7'6" x 8'6") is too small and also enclosed too much to watch her children from the kitchen playing in the living room. Mothers in the townhouse unit are satisfied with the kitchen size (7'6" x 13'0") including the laundry space.

The shortage of cupboards is cited by mothers in both apartment and townhouse units. All mothers in the townhouse unit do housekeeping on the ground floor where they can watch children playing in the living room, family room or in the front yard.

**REQUIREMENT HK-I-1**

Mothers' main working area, the kitchen, should be close enough to the infants' play area (both indoor and outdoor) for visual and verbal communication between her and her infant while she is doing the housework.
The kitchen in the townhouse unit has a good connection to the family room and the frontyard. The kitchen in the apartment does not have enough view of children playing in the unit and more opening to the dining space and balcony should be provided. Also, the size of the kitchen in the apartment unit (7'6" x 8'6") is too small for the family accommodation.

The sizes of living room (13'6" x 17'0", 12'8" x 20'0"), family room (10'0" x 10'5"), dining space (9'0" x 10'6"), can accommodate the mothers' housekeeping and children's playing at the same time without difficulty.

STAGE I : SHOPPING

Different patterns of shopping are observed among the four sample families. Since Mother C has her own car and only an infant to look after in the daytime, she goes shopping every day with her infant without much difficulty. If the mother has a toddler or two besides the infant to look after, she can hardly manage shopping with her children. She can go shopping on the weekend while her husband is
watching the children (Families A and B). When the husband is out of
the city, she has to ask a babysitter in in order to go shopping
(Family D). Family B occasionally goes shopping together on the week­
end. All mothers use their cars for shopping and tend to go by them­
selves to the major shopping areas rather than to the adjacent shopping
centre. For the mother of the infant, shopping is a chance to go
out, free from her house and children, to see people and breathe the
air outside of her neighbourhood.

REQUIREMENT SH-G-1  (Apply to all stages)

The major shopping area which draws various kinds of people and
activities should be easily accessible as well as the neighbourhood
convenience stores.

The sample project is located close to three major shopping areas:
downtown Vancouver, downtown North Vancouver, and Park Royal Shopping
Centre, besides the adjacent shopping centre. The sample families
are highly satisfied with shopping.
STAGE I: PLAYING - Infants

For the first 12 months, the infant cannot move much by himself so his activities are completely dependent on his mother. He plays quietly with toys and enjoys the view and sounds around him. The mother's daytime activities are managed with the infant around her. The mother keeps her infant close enough to be able to see, talk and listen to the infant while she is working. As the infant starts to grow, the mother has to keep her eyes on her child constantly. No sample family uses a playpen, so the inside of the unit should be free from any danger and the family must try to eliminate damage to family possessions. The infant also needs a safe outdoor space where he can get fresh air, sunbathe and view nature.

REQUIREMENT PL-I-1

The infant's play area should be free from danger and should be close to his mother's working area (see Housekeeping). Both outdoor and indoor spaces for the infant are necessary.
The space does not necessarily have to be large for the infant's playing.

The room sizes of the townhouse and apartment units are evaluated to be adequate by the sample families. The front yard (12'6" x 16'0") in the townhouse unit, and the balcony (5'6" x 10'0") in the apartment unit are adequate outdoor spaces for the infant. The balcony and the front yard facing the north are useless for the infant's outdoor sitting area because of the lack of sun.

STAGE I: EVENING SITTING

Family evening activities show some differences between sample families according to the family structure and the head of the household's occupation. The infant is put to bed after the feeding following supper. Toddlers in Families A and B also go to bed after supper.

Mother A has an hour's break in the living room from the day's housekeeping and childcare when the three children, aged 3½, 2 years and 9½ months, go to bed after supper. Then, she starts sewing and ironing
in the living room with her husband who is relaxing with television.

Father B is a school teacher and does his work for the school paper after an hour's relaxation in the living room watching television. His homework lasts about two hours in the family room. There are a writing table and book shelves in the corner of the family room besides a large dining table. Family B mentioned that the family room is too small for them. Mother B writes letters in the family room or watches television in the living room.

School children of Family C spend time together with their parents in the living room watching television or talking before they go to bed. After the children are in bed, their parents stay in the living room until 11 or 12 o'clock, usually watching television.

Mother D spends her evenings with her girl aged 2½ years in the living room. After the girl is in bed, she watches television and crochets, usually by herself, since her husband is out of the city most of the time.

No complaints are heard among the four sample families about the living room size.
The family room (10'0" x 11'8") in the townhouse unit is adequate for family dining but not for other evening activities which require additional space for furniture or equipment. An additional room for hobbies or for use as a den or exercise room is desired by Families A, B and C. In the sample units, the lack of the extra space limits the family's evening activities to passive ones, mainly watching television.

**REQUIREMENT ES-I-1**

The family sitting area should be located so as not to disturb the infant's sleep. (See Requirement Sleeping: Stage I - 1)

**REQUIREMENT ES-G-1** (Apply to all stages)

For the family who wants active activities in the evening (such as homework, crafts, or exercise) an additional space is necessary besides the family sitting area used for passive evening activities. Such space should be located so as not to disturb other family members' activities.
This is the main reason that people in the sample project wish to have a basement. The extra space affords the family opportunity to pursue their own interests in their free time rather than watching television all evening.

For some activities which require a larger space, a communal room for the neighbourhood can be provided instead of a private one in each unit. Father B uses the school workshop to do his hobby metal work in. For the maximum usage of such communal space, a proximate location (to be within a short walking distance) and good maintenance are essential. If the communal space is successful, neighbourhood contact based on a common interest is also encouraged.

For passive evening activities, the living room size of the sample unit (13'6" x 17'0" in the apartment unit and 12'8" x 20'0" in the townhouse unit) is adequate.

**STAGE I : WEEKEND ACTIVITY**

Weekend activities cited by four sample families in Stage I are family
outings (3 families), exchange visits with friends (2 families) or with relatives (2 families), shopping (3 families), watching television (2 families) and church attendance (1 family). Most activities are done by the family together except shopping (See Shopping). Father B goes to school to supervise the school band on Saturday. Exchanging visits, family outings (to the park, beach or just driving) and shopping are the major weekend activities observed in families in Stage I.

REQUIREMENT WA-G-1 (Apply to all stages)

Easy access to public family recreational spots is to be considered. The sample project is located close to the major parks and beaches for families to spend weekends. Indoor places for the family to visit in the winter season should also be provided. (The shopping centre can be used as a place for more activities than just shopping.)
STAGE I: SOCIAL ACTIVITY - Neighbours

The daily activities of the infant's mother are limited to her unit and immediate neighbourhood during the weekdays. The possibility for her to have contact with people outside of her family is mostly within the neighbourhood. When such contacts are not available, she feels shut off from the outside world. Staying home all day long with an infant is a big change in a woman's way of life, especially for those mothers who worked outside the home before having their first child. Having a little chat with her neighbour helps to prevent the mother from feeling sudden isolation from the outside world. Easy access for mothers to the places for incidental meetings with neighbours should be considered in designing the family housing.

Two mothers (Families A and B) mentioned a regular afternoon talk with neighbours. Both have toddlers and infants and the neighbours with whom they have contacts have toddlers also. The other two mothers (Families B and C) have school children besides infants and do not cite such regular neighbour contacts.
Toddlers seem to work as the principal medium for mothers' neighbourhood interaction (See Stage II - Social Activity).

Mothers' immobility in the daytime is also considered a determinant of her neighbourhood interaction or lack of interaction. The two mothers who do not have neighbourhood contact find it easier to go out since both can use their own car and have only an infant to take with them while the other children are in school (Families B and C). The mother of toddlers and an infant hardly manages to go out without a car (Family A) or even with a car (Family D). The more mobility the mother has, the less contacts with the neighbours she tends to have. The length of the occupancy does not seem to be a determinant of such contacts. Mothers A and D who have such contacts have stayed in the unit for 6 months and 1½ years and Mothers B and C who do not have contacts in the neighbourhood, have stayed 1½ and 1 year.

For the afternoon talks with neighbours, Mother A, in the townhouse unit, uses the family room and Mother D, in the apartment unit, uses the living room. No neighbourhood contact is observed between fathers of the four sample families. It is considered that they do not feel
the need for social contacts with neighbours as their wives do, since the contact with the outside world is available for them during their working hours.

A children's party or such occasion as a birthday or Halloween are mentioned by Families B and D as opportunities for neighbourhood contact. No spatial complaints on such occasions are cited.

**REQUIREMENT SON-G-1**

The frequent incidental meetings with neighbours encourage the neighbourhood contacts. A part of each dwelling unit (either indoor or outdoor) should have visual connection to the public walkway which neighbours use most commonly on such occasions as shopping.

The front yard and the family room of the townhouse unit satisfies this requirement. Through the entrance gate of the front yard fence, neighbours can see and talk to the residents in the front yard or in the family room. In the apartment unit no such space is available. If the balcony faces the sidewalk instead of the courtyard, it may
serve as a place for communication between residents and their neighbours on the sidewalks. Those outdoor semi-private spaces should preferably be connected to the family sitting area or the mothers' working area to best serve this requirement. Direct access from the outside to such indoor space is preferable to provide a place for casual neighbourhood talk.

**REQUISITE ON-I-2**

An open public space should be provided in the neighbourhood for mothers with a baby carriage to have a short afternoon break and meet neighbours for a little chat. Such public space is important especially for mothers in the apartment unit since they have less chance for such contact because there is no direct connection between the public walkway and their units.

The space is to be protected from the traffic noise, danger and bad weather. The size of the open space does not necessarily have to be large but should be well-landscaped and equipped with benches for casual neighbourhood meetings. Easy access from each unit and visual connection between the area and the public walkway is necessary.
Preferably, the location should be adjacent to the toddlers' playground for mothers of both infants and toddlers (See Stage II Social Activities).

In the sample project, no benches are provided besides in the children's playgrounds and in the landscaped courtyards. Benches adjacent to the swimming pool or children's playground could attract mothers in the neighbourhood as well as elderly people (See Stage VIII, Social Activity).

STAGE I: SOCIAL ACTIVITY - Friends and Relatives

On weekends, Families A and B mentioned the exchange of visits with friends, and Families B and C exchange visits with relatives. They dine together in the family room and talk in the living room (Families A, B and C) or play cards in the family room (Family A). Family B mentioned the family room could be larger for a dinner party. Family D want a separate dining room which can be opened into the living room when more space is needed.
Relatives' occasional overnight visits are mentioned by Families A, B and D. They sleep on a folding bed or a couch in the living room (Families A and C), or in the childrens' bedroom (Family D). No strong inconvenience is felt by the sample families about the usage of space for occasional parties or overnight visitors. People are tolerant of the shortage of space (at parties) or the inconvenience in space usage (guests' sleeping in the living room) because of the short duration of such occasions.

REQUIREMENT SOF-G-1 (Apply to all stages)

Some families want larger dining space for occasional dinner parties although many families do not strongly feel the need.

A possible solution for this requirement, while still keeping the floor area minimum, is the expandable dining space in such occasions. If the dining area is adjacent to the living room as it is in the sample apartment unit, the dining space can expand to the living room. Isolated dining space as in the sample townhouse unit is impossible to expand.
STAGE II: GENERAL

The baby starts to walk and talk in the toddler phase. His rapidly increasing physical and verbal capacities encourage him to explore his surroundings. As his area of activities expands, the safety of the infant and the protection of the family's possessions has to be considered both in and out of the unit. In spite of the newly-gained ability to walk by himself, the toddler still requires his parents' constant company and attention because of his physiological and intellectual instability.

The parents' responsibility (especially the mother's) as the tutor of their toddler has great importance in guiding the child's personality development. "In learning the language, the child is learning only the verbal communication but is also assimilating the culture's system of meanings and its ways of thinking and reasoning." (Theodore Lidz, The Person, 1968). The mother's daily activities are still mostly confined to her unit and neighbourhood. The need for the toddler's playmates increases the mother's neighbourhood interactions.
As the infant enters the toddler stage, he needs less sleep. He commonly has one to two hours' sleep in the afternoon. In the evening he goes to bed after a short time of play.

Two sample families (E and F) in the townhouse units have only one child each. The parents use the larger room with the bathroom and the child occupies the other room. The third room is used as a children's playroom (Family F), or for the father's workroom (Family E). Both families are satisfied with the sizes of the bedrooms. Family G in the apartment unit has two girls; ages six and three, and expressed the wish to have a third bedroom so that each girl could have her own room. The older girl, now in grade one, is starting to have her own effects for school. The size of the bedrooms, (12'-0" x 13'-0" and 10'-6" x 12'-0"), is cited as "fair" by Family G. The poor sound-proofing from the unit above rather than from the side is a source of complaint by Family G in the apartment unit.
REQUIREMENT : SL-II-1

The toddler needs a sleeping space apart from his parents' bedroom. For siblings up to the pre-school stage, the sleeping spaces can be arranged in the same room.

The toddler starts to be an individual person in the family and parents want to have their own privacy from him at night as well. The toddler no longer requires nursing at night and a convenient connection between his bedroom and the parents' is not important. The pre-school child and the toddler can sleep in the same room without much conflict. The toddler and his school age siblings prefer to have separate bedrooms because of their different activity patterns and the school child's need for his own space. (See Stage IV)

STAGE II : EATING

The toddler now joins the family at the dining table. Families E and G have breakfast together but in Family F, the father just has a cup of
coffee before leaving for work and the mother and the two-year-old girl eat breakfast an hour later.

In all three families, the mother and children eat lunch together while the fathers eat out. At supper, all family members get together. Families E and F in the townhouse units use the family room for eating, and Family G in the apartment uses the dining space. All mentioned that the size of the dining space was "good."

**REQUIREMENT : EA-II-1**

Extra space is required besides that already occupied by the dining table and chairs, to accommodate a highchair as well as an area for the toddler to safely walk about in.

The sizes of the family rooms in the townhouse units and the dining space in the apartments are large enough to satisfy this requirement, (10'-0" x 10'-5" and 9'-0" x 10'-6").
When the toddler starts walking by himself, his mother has difficulty in keeping her eyes on him. He does not stay in one place for long and follows his mother "to help" her with the household chores. The mother spends a fair amount of time daily in preparing meals and washing dishes, while supervising her children at the same time.

Families E and F in the townhouse units do their sewing in the family room. Ironing is done in the room where the television set is located; the living room (Family E) or the family room (Family F). The mother does her ironing and knitting occasionally in the evening while either watching television or having a conversation with her husband after the children are in bed. No complaints were made concerning space of housework except for the shortage of kitchen space in the apartment unit (Family G).

**REQUIREMENT HK-II-1**

The kitchen should be connected to an area where the toddler can play both indoors and outdoors and yet where the mother working in the
kitchen can maintain visual and verbal communication with him, (See Requirement HK-I-1).

**REQUIREMENT HK-G-1 (Applies for all stages)**

The family sitting area should have space for ironing and sewing without taking over the space for family sitting.

The size of the living room (12'-8" x 10'-0") and the family room (10'-0" x 10'-5") was cited as "fair" by the sample families. The L-shaped dining-living room in the apartment unit allows more flexibility in the usage of space for more than two different activities at the same time. When the family members engage in different activities and want to maintain some visual and verbal contact, the open living-dining room could give them more space than two separate rooms. One open space, however, does not allow for two different activities at the same time, for example, sewing and watching television or listening to music.

**STAGE II : SHOPPING**
All three families do their grocery shopping two or three times a week during the day at the adjacent shopping centre. The mother takes her toddler along whether she uses the car or not. The major shopping is done on Saturdays (Family G) or every Friday evening (Family E) by the entire family. They go to the Park Royal Shopping Center or downtown Vancouver.

**REQUIREMENT SH-G-2** (Applies to all stages)

The stores for daily grocery shopping are preferred to be located within walking distance.

The sample project has a shopping centre adjacent to it which is one of the top "likes" of the residents. For the mother and toddler without a car for daily grocery shopping, the shopping cart is an ideal convenience if it can be taken to the entrance door of each unit. At the present time, the carts are not allowed to be taken out of the shopping centre area but some carts are always seen on the sidewalks of the sample project. A simple solution to the problem of empty carts left around would be the provision of several spaces for them beside
STAGE II: PLAYING - Toddlers

The child's physical development allows the toddler much active playing but his territory is still limited most of the time to within his dwelling unit. He cannot stay long by himself or with his playmates of the same age group without an adult's supervision. His mental development is not comprehensive enough to control his physical capacity. He still has to depend on his parents' constant supervision.

He enjoys his rapidly expanding physical capacity to walk, run, jump and toss objects. He learns the language and recognizes the outside world of his family and dwelling unit by knowing the playmates in his neighbourhood.

In the morning, all three mothers do their housekeeping accompanied by their children who play either within the unit or in the front yard. After lunch, Families F and G cited the exchange of visits with neighbours. While the mothers talk, the children of both play together in
the family room or frontyard (Family F in the townhouse unit) or in the living room and the children's bedroom (Family G in the apartment unit). Family E moved to the present unit a month ago and their child (twenty months of age) has not had the opportunity to play with neighbouring children as yet. The front yard of the townhouse unit is well used for toddlers' play and Family F, who moved from the high-rise apartment unit, listed the front yard for their children to play in as one of their "likes." They also cited the availability of playmates for their girls compared to when they were living in the high-rise apartment unit. All three mothers expressed their dissatisfaction with the playgrounds in the sample project. Family E cited poor maintenance and a dislike of the concrete paving. Family F complained of the older children's dominance in the playgrounds. Mothers of Families E and F occasionally take their toddlers to a public playground in Delbrook Park which is half a block away from the site. A larger space and greater variety of play equipment as well as better landscaping are provided there. Family G mentioned the remote location of the playground which is located completely out of the sight of most units. Their apartment units do not have an enclosed
private yard as do the townhouse units. Their three-year-old daughter usually plays in the front yard of the neighbouring townhouse unit or in the driveway with her friend. Family G also cited the availability of playmates and play areas as their top "likes" of living in the sample project.

The swimming pool on the site is used "every day" by Families F and G in the summer.

**REQUIREMENT PL-II-1**

Within the unit, the toddler requires the space (both indoor and outdoor) to run and jump around without any danger and damage to family possessions. The play area is to be located close enough to the mother's working area for constant supervision.

The toddler requires a larger and freer space for playing than the infant, but the relation between the mother's working area and the child's play area is similar to that of Stage I. (See PL-I-1) The size of rooms is cited as adequate for the toddler's indoor activities and
the paved front yard (12'-6" x 16'-0") is well appreciated by families in the townhouse units, (Families E and F). The balcony in the apartment unit (5'6" x 10'-0") is not large enough to be considered as an outdoor play area. The family in the apartment unit requires communal open outdoor space for toddlers which is located close enough for a mother's visual and verbal supervision from her unit.

**REQUIREMENT PL-II-2**

The communal playground is to be provided within a short walking distance from the unit. Benches and pleasant landscaping are required as well as play facilities. An open grassed area for toddlers is preferred to be provided in the neighbourhood.

It is preferred that the mother can see and call her toddler in the playground from the unit or from the entrance of it. The playgrounds of the sample project are at the corners of the site and out of sight from most of the units, mainly to protect the units from noise. The complaints about the noise are heard mostly from childless couples or families with an infant (See SL-I-4). The grouping of families according
to their stage in the life cycle to occupy one to two blocks of the buildings (six to twelve units) would solve the problem of noise as well as proximity to the playground. In this way, the young child has more of an opportunity to get together with playmates in the neighbourhood.

STAGE II: EVENING SITTING

After supper, the toddler stays together with his family for a while. After the children go to bed, the parents relax by watching television (Families E, F and G), while knitting (mothers E and F) or drinking (Father G). In good weather, Family E go out for a walk together or to the playground. The family room is used for evening sitting by Family F and the living room by Families E and G. All three families are satisfied with the size of the room. No active evening activities within the unit are observed among the three sample families.

REQUIREMENT ES-II-1

The family sitting area is to be separated from the children's bedrooms, (See ES-I-1).
STAGE II : WEEKEND ACTIVITY

Families E and G spend much of their time outside on the weekends. They visit parks, beaches and eat out frequently. Family E also go out for walks. Father G spends a day golfing while his wife and children stay home. Father F has Monday and Wednesday off each week instead of the weekend. Occasional visits of friends, father's bowling or sitting at home are cited as activities on his days off.

STAGE II : SOCIAL ACTIVITY - Neighbours

Compared to the mother in Stage I, the mother in this stage has more of an opportunity to go out with her child. Since the toddler needs friends outside of his family to play with under his mother's supervision, neighbourhood interaction is observed to be most active among mothers in this stage. When the toddlers are accompanied by their mother and meet on the sidewalk or playground, they do not hesitate to play together immediately. The mothers, meanwhile, start a conversation and become acquainted. The next time, the mother, on her way shopping
greets her neighbour in the front yard or in the family room and stops over for a short visit. Often the visit extends to hours in the neighbour's family room with coffee and cake while their children play together.

Both mothers of Families F and G mentioned such contacts with neighbours. Mother E did not mention her neighbourhood interactions, possibly due to her short period of occupancy in the sample unit, (one month). Families A and D in Stage I also cited the neighbourhood contacts through their toddlers' playmates. In the townhouse unit, the family room is the area for mothers' visits while in the apartment unit, the dining-living room is used. Fathers' neighbourhood interactions were not observed among the three sample families in Stage II.

**REQUIREMENT SON-II-1**

The place for the mothers' neighbourhood contacts is to be considered together with that of the toddlers' play area. Outside of the unit, this place is to be adjacent to the children's playground, (See SON-I-2). Within the unit, it should be connected to the children's outdoor and indoor play areas.
The arrangement of the family room and front yard in the townhouse unit well satisfies this requirement. The dining-living room of the apartment unit has enough space for the mothers' talks with her neighbours and the play of their children but lacks the informal access from the public sidewalk (See SON-I-1), and the children's outdoor play area. (The balcony is too small for the children to play on.)

SOCIAL ACTIVITY - Friends and Relatives

Family E mentioned evening visits from friends to talk, drink and play cards in the living room and the family room. (Four adults and two high school children.) They have not had over-night visitors yet.

Family F cited an evening cocktail party of approximately twenty adults held in their living room and also a dinner party with four couples in their family room. Over-night visitors (friends and relatives) stay in the children's playroom.

Family G in the apartment unit complained that the kitchen was far too small. In the summer, they use the backyard (since their unit is on the ground floor) for barbeque parties. Over-night visitors sleep on
the couch in the living room. They wish to have an additional room to use as a guest room but mentioned the greater need to have an extra room so that their two girls could each have her own bedroom. Strong complaints about the space limitation in the unit for parties and overnight visitors is not observed.

**REQUIREMENT SOF-G-2 (Applied to all stages)**

The space for occasional parties and over-night visitors is to be considered.

The degree of spatial need for social activities varies among the families. Most families can manage such occasions within the available space of their unit. Some families who have frequent over-night visitors prefer to have a guest room, but the need is not so critical as the spatial need for daily activities.
STAGE III: GENERAL

When the child passes the infancy and toddler stages, his independence increases. His interest shifts from the close attachment to his family, (especially his mother) to his playmates. The territory of his activities also expands to that beyond the dwelling unit – to the neighbourhood. Easy access to playmates and a safe play area are both essential for families with pre-school children. Distinction between the sexes becomes evident when the children separate at play.

Although increasing detachment of the child allows the mother more time for herself, the pre-school child still requires occasional supervision. Consequently, the mother's activities are still mostly confined to her dwelling unit and neighbourhood.

STAGE III: SLEEPING

Children begin to distinguish between the sexes at this stage and some parents prefer to provide separate bedrooms for children of the opposite sex. There is no shortage of sleeping space as observed in Families H
and J. Family J have two girls of ages five and three and a half years and each has occupied her own room since the younger was two months old. Family H has only a four and a half year old boy.

Family K, the largest family among twenty-three sample families, consists of parents, mother of the husband (sixty-six years old), two boys and one girl. The grandmother and ten-year-old girl share a bedroom as do the boys, ages eight and five. They expressed the need for an extra bedroom for the girl. They were satisfied with the sizes of the bedrooms of the parents and the boys.

**REQUIREMENT SL-III-1**

Some parents prefer to have separate bedrooms for pre-school children of the opposite sex.

The need for privacy between two sleeping areas for a boy and girl at Stage III is much less than at Stage IV. The sleeping alcoves created by a simple partition opening into a common play area can serve the purpose. They begin to collect toys and other personal belongings in their rooms and want their own storing spaces which, in many cases, is their bedroom.
STAGE III: EATING

Similar patterns to Stage II are observed in the families at Stage III. All three sample families eat supper together. Family J eat breakfast together. The father of Family H leaves home at six o'clock in the morning without breakfast. He has coffee in his office. The mother and boy eat breakfast together. In Family K, the father and three children eat breakfast quickly, then grandmother and mother have theirs. The fathers lunch out while the rest of the family members eat at home. All three sample families use the family room for dining and cited the room size as "fair." A 10'-0" x 10'-6" dining room will accommodate six people for family dining.

STAGE III: HOUSEKEEPING

The pre-school child after approximately three years of age, starts to demonstrate the detachment from his mother in his activities. He plays in and out of his unit with his friends without mother's constant supervision although she checks the child's play regularly. Now the mother has more time for herself, between housework and freedom from
her child. A mother's daytime discretionary activity was observed among two families. Other than meeting with her neighbours, Mother J has piano lessons (every second day) together with her girls, or studies English in the afternoon. (They are a Japanese family.) Both activities are done at home in the living room or family room. Mother K goes to college twice a week for a bookkeeping class. Mother H does sewing upstairs and Mother J does ironing in her bedroom upstairs during the daytime. This indicates that the close relationship to the child's play area is not so important any more. Mother K does sewing and ironing in the family room. No complaints were made from the three sample mothers about the space for housekeeping.

REQUIREMENT HK-G-2 (Apply to all stages)

Mother needs an area for her private activities besides housekeeping, for such things as studying, writing, reading or arts and crafts.

Generally, the mother uses the common family space (living room, dining room, family room, kitchen or bedroom) for those activities. Some mothers pursue activities which require more space and better facilities. (See Requirement ES-G-1)
STAGE III: SHOPPING

Grocery shopping is done by the mother in the adjacent shopping centre without using a car. (Daily by Families H and K and twice a week by Family J.) The mother usually goes grocery shopping alone while her pre-school child is playing in the neighbourhood. On weekends, families go shopping together by car to downtown Vancouver or the Park Royal Shopping Centre. The weekend family shopping, often combined with eating out, is a popular form of family outing.

REQUIREMENT SH-G-1 (See Stage I: Shopping)

STAGE III: PLAYING

Without mother's constant supervision, the pre-schoolers enjoy children's programs on television, toys, picture books or drawing, inside of the dwelling unit. Tricycle riding, exploring the neighbourhood and playing roles of television heroes are the popular outdoor activities of the child at this stage as observed in the sample area. He also enjoys the physical ability to play without another's help with the
facilities in the playground, such as swings, slides, jungle-gyms, see-saws and the merry-go-round.

All sample families had complaints concerning the playground site. They cited the location as too far to supervise (Family H), older children's dominance (Family J), and poor maintenance (Family K). The most popular outdoor play among pre-school children is riding their tricycles on the driveway and sidewalk. From late morning to afternoon when the car traffic within the site is reduced, the driveway becomes a busy racing track for tricycles and bicycles. In fact, the driveway is the only large paved area available on the site, and mother can supervise from the unit.

Mothers did not express serious concern about their children playing on the driveway. Since the landscaped area is restricted for children to play on (by the manager) and the playgrounds are poorly located and maintained, the driveway becomes the most popular play area.

In the summer season, the swimming pool is well appreciated by all three sample families.
Two mothers cited the lack of an indoor play area for the rainy weather. The townhouse unit is too small for the pre-schooler's active play. Family H wish to have a basement for their child to ride his tricycle in. Family K have three children and the mother did not want the living room occupied by children playing.

No communal playroom is provided on the site.

REQUIREMENT PL-III-1

An outdoor play area large enough for tricycle riding is to be provided in the neighbourhood. The location should be close enough so that a mother can conveniently supervise. The mother prefers to be able to see and call her child when he is playing outside the unit. (See PL-II-1)

In a number of estates in London, architects have made the experiment of providing small play decks in blocks of dwellings to furnish unsupervised play facilities for under-fives. However, it has been found that these have not achieved the purpose for which they were intended: mothers are reluctant to let their small children play in
unsupervised play spaces where they cannot keep an eye on them. (Lady Allen of Hurtwood, Planning for Play, 1968).

The front yard in the townhouse unit (Families H and J) is used for their children's tricycle riding but it is not large enough for their children's friends to join them there. The driveway and the sidewalk are used commonly for riding. The driveway which only serves local traffic should be designed as a children's play area unless another paved open area, close to the units, is provided. Speed control bumps and bends on the driveways in the sample project are successful up to a certain degree, but are not adequate. Either a bend or a bump should be provided every one hundred and fifty to two hundred feet to restrict the driving speed to five to ten miles per hour.

A clear view of the driveway is also necessary for the safety of the children on the road. The driveway in the sample project is twenty-five feet wide and adjacent to the carports. Children running out to the driveway from behind the parked cars are difficult to see by the drivers. An open space between the parking area and the driveway should be provided. Since it is the major play area, different paving
materials, narrowing the driveway at the entrance or a little difference in levels could help to control the driving speed. Using the driveway as a play area, children also learn to live with cars under safer conditions (less traffic flow and lower driving speed) than on city streets.

REQUIREMENT PL-III-2

A children's covered play area is to be provided for their play during the rainy weather. A communal covered play area should be provided instead of individual ones per unit for the active play of the pre-schooler (such as bicycle riding).

For the sample townhouse unit, another floor (not increasing the building area nor reducing the density of the project) is necessary to provide the child's play area. The front yard size (12'-6" x 16'-0") seems to be adequate for such a play area. Two families (H and J) cited the front yard as a good place for the pre-schooler's tricycle riding.

The playroom within the unit is most convenient for mother's supervision
but most costly and not easily accessible to playmates from the neigh-
bourhood. If the communal play area is enclosed as a room, a super-
visor's attendance would be necessary. Since the mother cannot keep
an eye on her child from her unit, without a supervisor, she does
not like her child to play there. Two mothers cited their dislike
for the remote location of the playground on the site. The higher
density housing has the advantage to support communal facilities at a
closer distance from each unit. This advantage is especially
appreciated for the play area of the younger children.

A play area covered only by a roof allows visual as well as verbal
communication between the child in the area and the mother in the unit.
It also allows children active outdoor play in the rain without a
supervisor's attendance.

STAGE III : EVENING SITTING

The living room is used for family sitting after supper by all three
sample families. Children go to bed after about one hour of television
watching. Parents relax with television (Families H, J and K), reading
papers with drinks (J) or coffee (H). The father of Family K goes out for a walk or visits his friends by himself after supper. The mother writes letters or studies English in the family room when her husband is late returning from his work.

All the activities observed are of the passive type and therefore no spatial complaints were heard.

**REQUIREMENT ES-G-1 and ES-II-1** (See Stages I and II Evening Sitting)

**STAGE III: WEEKEND ACTIVITY**

Going out to parks, driving, shopping and exchanging visits with friends or relatives are cited commonly by all three sample families as weekend activities.

Different activities pursued by individual members in one family were also observed among Families H and J. Mother H visits her friend on Sundays while the rest of the family go out to a park or for a drive. Father J plays golf on the weekends while mother and children stay at home. Family K sometimes separates into three parties; parents go
shopping, grandmother stays at home and the children play outside or
go to movies. No particular weekend activity within the unit is
observed besides visits from friends or relatives.

STAGE III : SOCIAL ACTIVITY — Neighbours

A similar pattern to mothers at Stage II is observed among the pre­
schooler's mother. Mothers H and J cited the regular contacts with
neighbours whose children were playmates of hers. They sit in the
family room or in the living room while their children play together.
Mother K does not mention the neighbourhood contact and said, "People
here are too busy among themselves to meet each other." Family H of
East Indian ethnic origin, moved from Uganda a year ago. Family J is
of Japanese origin and the mother has neighbourhood contacts with
another Japanese mother.

The cultural differences based on ethnic origin seem to be a strong
determinant for neighbourhood contact among the new immigrants.
The father's neighbourhood contacts are not observed among the three
sample families at this stage.
REQUIREMENT SON-III-1

Same as REQUIREMENT SON-II-1 at Stage II, but the connection between the children's play area and the mother's sitting area is not as critical at this stage as in II. (See Stage II - Playing).
STAGE IV : GENERAL

Entering school, the child spends more time outside of his family, in playing with his peers and in studying at school. The child's personality development is greatly affected by the special friend\(^1\) or the peer group,\(^2\) at this stage. Playmates, play area and school availability in the neighbourhood are the major concerns of families in this stage. Five out of six sample families cited their "likes" as the availability in the neighbourhood of playmates, play areas (roadway with less traffic), schools, play facilities such as a swimming pool; although one sample family cited the lack of a place for children to play as a "dislike."

During the child's school hours, his mother has time of her own, free

\(^1\) "At about the age of ten, the centre of the child's life moves from the group of peers to a special friend, the "chum." This friendship is the first important experience which develops on the basis of the common personality trait outside of the family." Harry Stack Sullivan, The Interpersonal Theory of Psychiatry, 1953.

\(^2\) "The adult's capacity for intimacy is related to the nature of the peer relation in his pre-adolescent period." H.S. Maas, "Pre-adolescent Peer Relations and Adult Intimacy," Psychiatry, 31, May 1968
from the responsibility of child care (for the first time since her child's birth). Mothers with a full-time occupation outside of the home were observed in five out of six sample families (including two single mothers).

Three sample families listed the maintenance-free aspect of the unit as one of their "likes." This advantage over the detached house is appreciated by the family where both parents work.

STAGE IV: SLEEPING

Children start to recognize the two sexes in Stage III, but now show the distinction clearly in their activities. Families P and R use one bedroom for both boy and girl and have expressed the need to have an extra bedroom.

Family L moved to their present three-bedroom townhouse unit from their two-bedroom unit because of the need for separate bedrooms for their nine-year-old boy and six-year-old girl. In Family N, boys of fifteen and sixteen years share a bedroom but they did not feel such a strong need for an extra bedroom.
Two school children of the same sex seem to experience much stress in sleeping in the same room. School children need more space for their personal belongings, to play or to study, compared to children in the earlier stages. However, complaints of space shortage is not heard from the six sample families.

REQUIREMENT SL-IV-1

School children of different sexes need separate rooms in which to sleep. The children of the same sex can sleep in the same room if adequate space is provided.

For the family whose children are of different sexes and have to share the same room, the sizes of their bedroom in the townhouse unit could be arranged to create four smaller private sleeping spaces. The present sizes are 11'-0" x 12'-8", 10'-6" x 12'-6" and 11'-3" x 14'-6" in Type D unit; and 9'-2" x 10'-6", 10'-6" x 12'-8" and 11'-3" x 14'-6" in Type C unit.

STAGE IV : EATING
All six sample families have supper together but not always breakfast. Two families mentioned two-shift breakfasts according to the time the family members had to leave the home (Families L and N). Only Family M in the townhouse unit uses the family room for eating. Families P and S mentioned occasional dinners while watching television in the living room.

Space shortage for the dining area is a complaint from two families who have extra things to put in the family room. Family L has a dishwasher and a freezer, while Family M has two large bird cages in the family room where they eat. Other families are satisfied with the room sizes for family dining.

STAGE IV : HOUSEKEEPING

The mother at this stage is free from child-care during the school hours and able to leave home alone to pursue her own work or interests. Five mothers out of six sample families in this stage are working out. The family where the mother is working has a different daily activity pattern especially in housekeeping.
Family members of the working mother participate more in housekeeping. The father (Family L) or fourteen-year-old girl (Family P) cooks supper occasionally. The grocery shopping is done by the children (Families N and Q) or the father (Family L). Other housekeeping is done mostly by the mother on her days off. Family F has a cleaning-woman in every Saturday morning. The mother of Family M who is at home does her housekeeping during the day. Besides housekeeping she looks after plants and birds, writes letters and visits friends during the day.

The family shopping on the weekends is not observed any longer in the families of this stage. Children have their own weekend activities.

No complaints are heard concerning spatial inadequacy for housekeeping except concerning the shortage of kitchen cupboards. Sewing is done in the bedroom (Families M and Q) or in the living room (Families L and N).

**REQUIREMENT HK-G-3**

The security of the house and the minimum maintenance problem are important aspects of housing design, especially for mothers who have
activities outside of their unit during the day. Townhouse units have the advantage on both points over detached houses. Many sample mothers express "freedom to be out" as one of their strong likes.

STAGE IV : PLAYING - Children

The children are now playing with their peers in the neighbourhood, independent of their parents' supervision. The bicycle riding on the driveway is most popular among the school children of both sexes. Street hockey is also a popular sport among boys, and skipping rope among the girls. Girls use the steel post of the carport to fasten one end of the rope to. A gang of boys are observed exploring the creek bank adjoining the site. Girls sitting and talking on the steps of the landscaped courtyard are also observed. Girls seem to spend more time inside of the unit with their friends than the boys do.

In summer, boys and girls in this stage most enjoy the swimming pool on the site. They do not require adult accompaniment any longer. School children also join the organized groups for sport games (soccer, baseball), musical band or dancing classes outside of their neighbourhood.
The playgrounds on the site are hardly used by school children. The remote location and the small size of the open space do not satisfy children of this stage. Their major play area is the driveway and the manager complains of damage to the cars in the carports.

The children's indoor activities are limited to the inactive type such as watching television, games, reading, crafts and homework, since no space for active play is available in the neighbourhood. An indoor play area is not provided either for the communal use or for private use.

In the long, rainy winters of this region, parents and children are both frustrated. Five out of six sample families cited the lack of an indoor play area for children. The space within the unit is large enough to accommodate children's quiet activities but not the active play which they require daily.

REQUIREMENT PL-IV-1

Outdoor play area large enough for bicycle riding or ball games is to be provided in the neighbourhood.
Part of the local roadway should be designed as a safe play area unless another paved play area large enough for bicycle riding is provided. (See PL-III-1).

**REQUIREMENT PL-IV-2**

A visual connection between the children's play area or public sidewalks and the children's sitting area in the unit is necessary to encourage contacts with other children.

The visual connection between the children's sitting areas (children's bedroom or the family room in the sample units) and the outdoor play area draw more children in the unit to the play area. When the child in the unit sees his peers playing outside, he tends to join them. Children in the apartment unit talking through the window of their rooms to their peers on the driveway are frequently observed.

The informal access to the unit described for the mother's neighbourhood interaction (See SON-II-1), is also important for the school children. A group of peers gathering at the front gate of the townhouse unit is also observed frequently.
REQUIREMENT PL-IV-3

The indoor play area is to be provided in the neighbourhood. (See PL-III-2).

REQUIREMENT PL-IV-4

Access to nature (trees, flowers, water, animals and birds) available in the neighbourhood, is desirable for school children.

To recognize nature through his own experience in daily life, aids the child in obtaining a wider vision of the world.

The sample project is well-landscaped with various kinds of trees and shrubs. The creek runs adjacent to the site and many birds and sometimes even raccoons visit the area. Children can enjoy various forms of nature although pets are not allowed on the sample project. The prohibition of pets is one of the stresses the people have to bear in living in this medium-high-density area. However, only one family complained about this ruling.
STAGE IV: EVENING SITTING

Watching television is the most popular evening activity observed in all six sample families. One family has their set in the family room while the others have it in their living room.

A new pattern which appeared in this stage was that the children watch television separately from their parents. Families L and N have two sets, one in the living room and one in the upstairs bedroom. When parents and children differ on what programs they want to watch, the children go upstairs.

Games (Families N and R) and reading (Family M) are other evening activities cited. Some of the children do their homework in the evening. (See Stage IV – Playing).

No complaints about the space for family sitting or children's studying are heard.
In some families, children's and parents' sitting areas start to become separate. Two separate sitting areas, therefore, are required by such families.

Evening activities observed among the sample families are inactive; such as watching television, reading, listening to music or children doing homework. The sample unit well-accommodates two different evening activities at the same time. No spatial inconvenience is cited by the six sample families on this aspect. When the children want to see a different television program, they go upstairs to watch it on another set, while the parents watch theirs in the living room. Children do their homework in the family room while parents sit in the living room.

STAGE IV: WEEKEND ACTIVITY

Less time is spent by the families together on the weekends as they enter this stage. Children start to have their own activities apart from their parents. They play with peers (all families), or go to
movies (Family N).
Two single mothers spend weekends together with their children, visiting grandparents (Family S) or at the vacation cottage (Family R). Working mothers commonly spend one day of the weekend cleaning house and shopping.

STAGE IV : SOCIAL ACTIVITY - Neighbours

A little talk with one or two neighbours on the sidewalk is cited, but no further contacts are observed among the six sample families. 'Saying 'Hello,' that's all,'(Family L), is the typical neighbourhood interaction of families in this stage.

Among the families where the mother is out working, no further daily social contact with neighbours is observed. Mother M who does not work, mentioned frequent visits by bus to her friends outside of her neighbourhood but not within her neighbourhood.

Children's play is now independent of mothers' supervision which reduces the neighbourhood contact between mothers, even among those not working.
On weekends, two families mentioned the occasional exchange of visits with friends. Both cited evening visits without their children. A single mother visits her parents' home every Sunday with her children. Another single mother mentioned frequent weekend visits from her separated children and her sister.

On those weekend visits, casual dining, drinking, talking, and playing games are common activities. The living room, the family room (townhouse unit), and the dining space (apartment unit) are all spacious enough to accommodate a couple or a family's visit. Most families seem to manage parties with a large number of guests without much difficulty. Family N mentioned forty guests, twenty-five at a time, and Family R had sixteen guests at their Christmas party.

Family S in the apartment unit cited that noise was a problem after receiving complaints by a neighbour. Noise from the exterior wooden stairs which is adjacent to the bedroom is the cause of complaints from neighbours when guests leave the apartment unit late at night.
Children's friends' over-night visits on weekends and holidays are mentioned by Families L, M and N. No inconvenience for such occasions is cited since they sleep on air mattresses and sleeping bags on the floor.

**REQUIREMENT SOF-G-2**  (Apply to all stages)

The dwelling unit is to be protected from the noise of neighbour's parties. The sound protection should be considered not only at walls and floors but also at the access to the unit for guests coming and going at night.

In the sample apartment unit the exterior staircase creates the noise problem. The steps should have a sound-absorbing finish and the walls between the access stairs and dwelling units should be constructed for minimum sound transmission. The access to the unit is preferred to be located away from the bedrooms.
The child in the secondary school is still wholly under the protection of his family but constantly increasing his consciousness about self and independent behaviour. His daily activities now expand beyond his neighbourhood. He spends most of his free time pursuing his own interests independent from his parents and siblings. His parents are now less occupied with their child and more with their own activities as individuals or as a couple.

In two sample families, both mothers are working out, either part-time or full-time. The maintenance-free living is cited by both families as one of their foremost "likes" of the sample project.

STAGE V : SLEEPING

Both sample families live in the three-bedroom townhouse units. Children of the same sex sleep in one room. Two girls of ages seventeen and twelve and a half years (Family S) or three boys of ages eighteen, seventeen and thirteen years (Family T) share a bedroom while a fourteen
year-old boy (Family S) and a seventeen-year-old girl each occupy their own room. The wish for extra bedrooms in order that the three boys could each have their own room was cited by Family T, but they do not show any intention to move for this reason. Family T had lived for one year in Malaysia before moving into the sample unit. Having experienced the poor housing conditions in Malaysia, the mother related that the family was able to cope with the small space in their unit.

Complaints of noise is made by Family T since their unit faces the busy city street (See Section O - Site Plan). The three boys use the bedroom facing the city street while the parents and girl occupy the remaining two bedrooms facing the quiet courtyard.

Family S have no complaints about their bedrooms. The father of Family S uses his bedroom as an office occasionally in the daytime. Both families appreciated the two-and-a-half bathroom facilities in the unit.

REQUIREMENT SL-V-1

The secondary school child (especially the high school child) prefers to have his own bedroom.
When the limited space does not allow an individual bedroom for each child, alcoves can be created in parts of a shared bedroom. Such alcoves are enclosable by a screen whenever privacy is required.

STAGE V : EATING

Family members commonly eat breakfast separately according to their time schedule. In Family S each has the self-help breakfast.

Children usually come home to have lunch and the mother (Family T) or the father (Family S) joins them for lunch whenever she or he is at home. Both families eat dinner together.

The family room is used for dining, although both have a dining suite in one corner of the living room which is used for the occasional dinner party. Both families are satisfied with the family dining space.

STAGE V : HOUSEKEEPING

For Mother S who is working out full-time, Sunday is the house cleaning
day. Mother T who works part-time, does her housekeeping and shopping during the daytime when she is not working.

Sewing and ironing are done in the living room (Families S and T). The seventeen-year-old girl of Family S frequently does her own sewing.

No space complaints are heard for housekeeping. Both families appreciate the minimum maintenance of their unit compared to the detached house.

**REQUIREMENT HK-G-3** (See Stage IV)

**STAGE V : EVENING SITTING**

Different evening activities are observed between parents and children. The child in late Stage V spends his evenings independent of his siblings. Both families cited the family room as the children's sitting room in the evening, mostly for watching television. Parents sit in the living room watching television, reading (father) or knitting (mother). Children go out frequently in the evening. The girls go out with their friends and the boys go out for sports.
Parents of Family S go out frequently in the evening to visit friends or to theatres.

No complaints are heard about the sitting spaces.

**REQUIREMENT ES-V-1**

Two separate sitting areas are required for parents and children. The sitting areas are to be independent from each other's sound and sight.

For the quiet activities such as watching television, reading and knitting, the family room and the living room in the townhouse unit can accommodate two separate activities. More desirable would be the provision of a children's common sitting space upstairs, creating a separation from the parents' sitting space (living room).

**REQUIREMENT ES-V-2**

The child needs a quiet space for study, reading and meeting friends independent from the sight and sound of other family members.
If the child can have his own bedroom, it ideally satisfies this requirement. When enough private space is not available in the unit, the communal space can be used. The public library for studying and reading or the coffee shop to meet friends, if it is closely located, is the possible alternative.

STAGE V: WEEKEND ACTIVITY

Each family member now spends weekends more independently. Children's weekend activities are mostly outdoor activities such as skiing, playing soccer or hockey and meeting friends.

Parents of Family T visit friends sometimes with the youngest son (thirteen years of age) or relax at home with television, drinks and many phone calls to friends.

Parents of Family S spend half of the weekend at their work. The father often travels on weekends and the mother works on Saturdays and housecleans on Sunday.
STAGE V: SOCIAL ACTIVITY

Father T mentioned occasional drinks with one neighbour. He cited that the neighbourhood relation in his former detached house had been too strong compared to the one in the sample project. Family S who have lived in the unit for six years did not mention any neighbourhood contacts. They commented that people move before they get to know each other.

Ten to fourteen people were invited for a dinner party at the dining table in the corner of their living room (Families S and T). Twenty-four guests came for the cocktail party in the living room and family room (Family S). When the children have a party, parents usually go out (Family T). Frequent overnight guests are cited by Family S. A couple with four children could stay overnight using sleeping bags. Children's friends stay overnight frequently (Family T).

No spatial requirement is mentioned for the overnight visitors but a basement for parties is desired by both families.
REQUIREMENT SOF-V-1

The space for social activities should be located so as not to disturb other activities of other family members.

The basement party room in the unit is the preferable solution although it is costly for the occasional usage it would have. The simplest solution is to have other family members stay out of the unit during the party. This can be done without much trouble if the parties are not frequent.
STAGE VI : GENERAL

The children leave their home one by one to start a life of their own. After high school, they may continue to live with their parents or may start to live by themselves, independent from parents' protection, by either working or continuing studies. For parents, this is a transitional period, a time to start preparing for a new way of life without children after a long period of living together.

A sample family U moved to a house close to the grandparents and married son after living for twelve years in North Vancouver. However, their unmarried children who had been living with the parents did not want to live so far away from their school and friends so did not move with them to the new house. After nine months, the parents could not live any longer without the children, so they returned to North Vancouver to live with the children in the sample project. Now two of the children (both are college students) are living with them in the townhouse unit. They cited the unit as "the second best" since the detached house is too expensive for them to buy or even to rent. They have chosen townhouse living because of the direct accesses to
outdoor yards both in front and back of their unit, and the feeling of their "own" unit which is not available in the apartment unit. At the same time, they miss the features of the detached house such as the basement for a workshop, recreation room, and a laundry room; but they did not show any intention of moving in the near future.

STAGE VI : SLEEPING

Parents, a twenty-year-old girl and eighteen-year-old boy each have their own bedrooms. The two children have desks for study purposes in their rooms. They cited the bedroom sizes as "good" and the two-and-a-half bathrooms as "extra-good" although one-and-a-half bathrooms would be adequate.

REQUIREMENT SL-VI-1

Each child prefers to have his own room for sleeping and studying. See Requirement SL-V-1 in Stage V.

STAGE VI : EATING
The father of Family U eats earlier than the rest of the family and the children's breakfast time varies according to their schedule at college. Mostly the two children come home for lunch when they have the use of the second car. Family U eat dinner together. The family room is used for dining and its size is cited as "good."

**STAGE VI : HOUSEKEEPING**

The mother of Family U is not working and does her housekeeping and grocery shopping during the daytime. Sewing is done in the living room and ironing in the family room. The kitchen is cited as adequate in its size and handy with a washer and dryer in it.

In her free time during the day, she takes a Yoga course once a week, and visits friends, her married children's families, or her parents.

**REQUIREMENT** (See HK-G-3 in Stage IV)

**STAGE VI : EVENING SITTING**

The television set is in the family room and parents spend the evening
watching or playing cards. The father attends art classes one evening a week. The children go out frequently after supper. The boy goes to his college to play basketball and the girl goes out with her friend. At home, they watch television in the family room or study in their bedrooms. The girl occasionally plays the piano in the living room.

Individual family members' quiet evening activities are observed in the unit and no complaints are heard about the space for such activities.

REQUIREMENT ES-VI-1

Each child prefers to have his own space for the private activities, such as studying and reading, apart from the family sitting area.

In this stage, the family members hardly sit together except at dinner. Since only parents mostly occupy the family sitting area, it need not be necessarily large. The sizes of the bedrooms of the sample unit (9'-2" x 10'-6" and 10'-6" x 12'-8") seem to be large enough to accommodate their individual quiet activities besides sleeping.
STAGE VI : SOCIAL ACTIVITY

The neighbourhood contacts are not observed in Family U. Their social contacts are mostly with relatives or friends in the region. The mother frequently visits her children, parents and friends during the daytime. On the weekends, parents exchange visits with friends and relatives without their children accompanying them. The girl meets with her friends more frequently than the boy, and expressed the wish to have the space to bring her friends in and be free to make noise.

When the parents have a dinner party, the children go out for the evening.

REQUIREMENT SOF·VI·1

Children want to have a space to bring friends to which has visual and sound privacy from parents and siblings.

Children's bedroom should have space for a few visitors. Bedroom sizes in townhouse type "D", 9'-2" x 10'-6", 10'-6" x 12'-8" seem to be sufficient.

See also SOF-V-1 for parties.
STAGE VI: WEEKEND ACTIVITY

Children pursue their own activities mostly outside of their unit. The boy spends weekends in sports such as skiing and basketball. The girl works on Saturdays at the department store and spends Sundays usually with friends working on photography which she studies at college. The father is presently helping his son build a house on the weekends and his wife usually joins him. He teaches skiing on Saturdays during the winter season and she does some pot gardening in her yard. Her own yard, where she can actually plant, is desired; as well as a workshop for her husband who is "a handyman." Frequent visits are exchanged on weekends with friends and relatives.

REQUIREMENT (See ES-G-1 in Stage I)
STAGE VII : GENERAL

After the children leave home, the couple starts a life by themselves after a long period of living with children. This is a big change which they have to cope with. They suddenly feel their house so empty and some families tend to move into the smaller unit, while others continue to live in the same place, emotionally attached to their long-accustomed residence and neighbourhood.

Family W moved to a two-bedroom apartment unit from their detached house after their children left home. However, they found the apartment living less spacious with only one bathroom, no extra bedroom for guests and no yard. So they moved to the present three-bedroom townhouse unit three years ago. They are still considering buying their own home for the possibility of gardening and for economical reasons (paying rent vs. paying into a home of their own).

Family V with their children moved to their three-bedroom townhouse unit from a four-bedroom house outside of the province six years ago. Since then, their children have left home and only the parents (both
working) live in the unit. However, they do not have any intention of moving. The convenient location, the landscaped gardens and the maintenance-free aspect are their foremost "likes" in living in the sample project.

STAGE VII : SLEEPING

Both couples occupy the bedroom with ensuite bathroom and are satisfied with the size. Family W like the two-and-a-half bathrooms. The husband and the wife use separate bathrooms upstairs. Family V mentioned that one-and-a-half bathrooms would be adequate but the extra bathroom was appreciated for guests.

The husband of Family W is a marine pilot who works an irregular time-schedule and sometimes has to sleep in the daytime. A small paved open space used to be in front of their unit and the noise from children playing there disturbed his sleep during the day. After his complaint, the manager converted the paved area into a planted area. His sleeping time is an exceptional case but still some people require a nap during the day, including infants.
REQUIREMENT SL-G-1 (Applies to all stages)

For some people who need day sleep, the quiet area separated from the children's play area should be provided.

This can be solved by providing different blocks for elderly or adults and also for families with young children. Although it requires more time to screen tenants to fill the vacancy; it would bring residents a greater degree of satisfaction and longer residence in the units.

STAGE VII: HOUSEKEEPING

The wife of Family V is not working out and she does daily housekeeping and shopping in the morning; knitting, sewing and ironing in the afternoon. Her afternoon free-time is spent at the health spa, writing letters or visiting friends or family.

The wife of Family W does laundry and cooking after she comes home from school (she is a teacher). On Saturday, she does major cleaning and shopping.
No complaints are cited about the space for housekeeping, except the "dark" kitchen (Family V).

STAGE VII : EVENING SITTING

Television watching is cited by both families. Family V relax in the living room and Family W in the family room or reading books in the living room. In the summer, Family V usually go to the swimming pool on the site.

No conflicts are observed in the space for evening sitting among the two families.

STAGE VII : EATING

Both couples eat breakfast and supper together. Family W use the dining table in the living room for their supper but for breakfast, they use the family room. Family V use the family room for eating but they felt the family room was too small when their children lived there. How, the space is more than adequate for a couple.
STAGE VII : WEEKEND ACTIVITY

For the wife of Family W who is a full-time school teacher, Saturday is spent cleaning and shopping. Her husband is building a house on their farm on the weekends and she joins him on Sunday. They also see their grandchildren on weekends either at their place or the childrens'.

Family V go out after a late brunch for golfing, bowling, visiting family or meeting with neighbours. At home, the husband works at his hobby (miniature electric trains) in his den upstairs. The wife does knitting or reading in the living room or a room upstairs. She misses gardening in her unit. They often eat in the front yard on weekends.

REQUIREMENT (See HK-G-3 in Stage IV)

STAGE VII : SOCIAL ACTIVITY

Family V cited frequent informal contacts with the couple next door. Occasional parties are mentioned by both families (the cocktail party of twelve to forty people in the living rooms and family rooms by families V and W).
Both families mentioned the space of their unit for such occasions as "O.K." For dinner parties, Family V move the dining table in the family room into the living room for more space. They prefer the combined dining-living space for such occasions.

Over-night visitors of families and friends are cited by both families. Since they have extra bedrooms, guests can stay without much inconvenience. A mother of the wife stayed for a couple of months (Family V). Family V still keep their children's beds in their former bedrooms although one room is used as a library. The two-and-a-half bathrooms are appreciated for guests by both families.

**REQUIREMENT** (See SOF-G-1 in Stage II)
STAGE VIII : GENERAL

After children leave home, a couple have to face yet another change in their lives - retirement. Now, they have to adjust not only mentally but also physically to the change in the way of daily living. Their limited income may force the couple to move from their long-lived-in attached place to a smaller unit in a foreign neighbourhood. Some couples move due to decreasing physical ability to maintain their units by themselves. If their physical condition does not allow them to look after themselves, they have to move to an institution for senior citizens or to their children's home.

Two sample families (Family X and Family Y) have lived in the present unit since completion of the building nine years ago. Both moved when they retired and showed no intention of moving as long as their physical condition allows them to care for themselves. They chose the sample project for the proximity to stores as well as to their children's homes and also for the maintenance-free aspect of the unit. Their complaints were no gardening possibilities and the lack of space for entertaining guests or for storing their many possessions which they accumulated.
throughout life. Family X (a couple and wife's sister) live in a two-
bedroom apartment unit. Family Y live in a three-bedroom townhouse
unit. Both families spend much time out of town in the summer.
Family X has a summer cottage and Family Y keeps a large trailer for
travelling.

STAGE VIII : SLEEPING

The elderly people seem to be more concerned about noise and the safety
and security of their unit. Both families are cautious about burglary.
Family Y do not have newspaper delivery because newspapers left at
the front door may indicate their absence from the city. Family X
chose the unit on the second floor because of less possibility of a
break-in. They also mentioned the dislike of the high-rise apartment
for fear of fire. Family Y live in the end unit and the neighbouring
family do not have younger children so they are not bothered by noise
but complained about the noise from the swimming pool which is close
to their unit.

Family X have neighbours with two children and they cited the noise
quite disturbing (especially the stereo sound at night).
REQUIREMENT SL-VIII-1

The unit for elderly people should be well-protected against noise from the outdoors and the immediate neighbours.

The sound transmission through party walls and floors of the unit should be kept to a minimum.

Confining families in similar stages of life to the same block is preferred to avoid the noise complaint. Similarly, an elderly people's block can be established at a location far from the children's play area.

REQUIREMENT SL-VIII-2

The security and the safety of the unit are important features of the elderly. Good fire protection for the building and emergency access should be provided.

Townhouse units have direct accesses to the outside. Two to three storey apartment blocks have two exterior stairs per unit which provide sufficient exits although they are of combustible material. The
exterior stairs are also better for security since people on the street can see the staircase. There are no hidden corners such as there are on the interior stairs and corridors of high-rise apartment buildings.

STAGE VIII : EATING

Family X usually eat all three meals together at home in the dining space. Family Y eat breakfast and supper at home in the family room, but eat lunch out frequently. Eating lunch at the Park Royal Shopping Centre is part of their daily schedule and has also the purpose of getting out of the unit and seeing people. No complaints were made about the dining space.

REQUIREMENT EA-VIII-1

The restaurant and coffee shop which attract different kinds of people in the daytime, should be easily accessible from the unit, preferably within walking distance.

There is a restaurant with a snack counter in the adjacent shopping
centre but does not seem active during the day. The store lacks the connection to the outside where people are, as well as being attractive in itself.

People in the sample unit have to go to the Park Royal Shopping Centre or downtown Vancouver to eat and to enjoy watching people.

STAGE VIII: HOUSEKEEPING

Both families usually go shopping at the Park Royal Shopping Centre, partially as an outing from their place. Family X in the apartment unit complained that their kitchen was too small. They also cited the shortage of storage space. They have many possessions which they are too attached to to get rid of.

REQUIREMENT: HK-VIII-1

Generous space for storage should be provided for the elderly.

If no extra room besides the bedrooms is available, a larger storage room is necessary (Family X). Extra rooms as in the townhouse unit
can easily accommodate furniture as well as other possessions.

STAGE VIII : SITTING - Evening and Daytime

Playing games or cards, reading, writing letters, knitting and watching television are sample family activities in the unit. Children's noise from the swimming pool (Family Y) or from the driveway and neighbours (Family X) were common complaints. However, Family Y enjoy the view of the swimming pool from their back yard.

The living room is crowded with much furniture and even a grand piano (Family Y). Family X complained about the lack of space for a card table. Family Y enjoy gardening in the front yard although they want more than the flower pots to do their gardening in. They also enjoy sitting in the backyard in the summer. Family X cited that they miss gardening.

REQUIREMENT ES-VIII-1

The sitting area for elderly people should be well-protected from the noise of children's play, traffic flow, and other neighbours. See
Requirement SL-VIII-1.

REQUIREMENT ES-VIII-2

An outdoor sitting area is to be provided where people can sit in the sun or enjoy gardening.

Two different kinds of outdoor spaces are preferred to be provided. One is a quiet and private outdoor sitting area which has an area for gardening for those who enjoy it. The back yard in the townhouse has enough space for a private flower bed. Part of the paved area can be converted to a bed by the resident who wants to do gardening. The balcony (5'-10" x 10'-0") is large enough for flower pots only, and not for a flower bed where residents can enjoy actual gardening.

The other outdoor space is one where the elderly people can sit and talk with neighbours and watch people going by. This can be provided as a public area protected from the traffic noise and older children's active play, yet within a short walking distance from each unit. It would be preferable to be combined with the toddler's play area, for the elderly usually enjoy watching them.
STAGE VIII : SOCIAL ACTIVITY

Strong attachment to their families is observed in both sample couples. They chose the unit for the proximate location to their children's homes, as frequent exchanges of visits with their children was observed. Family X visit their daughter's family on the weekends. Family Y mentioned almost daily visits to their son's family. Their grandchildren occasionally stay over-night with them.

Despite their nine-year residence in the sample project, no neighbourhood contacts are observed in either families. Not many elderly people are living in the area nor in the immediate neighbourhood. The opportunity of meeting neighbours is rare especially since no communal space is available for the elderly to meet. Their social contacts are only within their families and friends outside of the sample area. Occasional exchange of visits with friends are mentioned by both families. No party with a large number of guests is observed.

REQUIREMENT SOF-VIII-1

Elderly people's residence is preferred to be located close to their
children's residence.

In a larger scale development, an area of senior citizens' residences or personal care home is preferred to be included in the project. If given the opportunity to live in such a project, a family of two generations can live close by, yet independently.

REQUIREMENT SOF-VIII-2

The extra sleeping place for grandchildren's overnight visits is to be considered in the unit for some of the elderly people.

The degree of need for extra sleeping space varies among families. Some families do not feel the need as strongly as others.

REQUIREMENT SON-VIII-1

Outdoor and indoor communal sitting areas are to be provided within a short walking distance for daily neighbourhood contacts.
Communal facilities such as an indoor space for games, cards and afternoon teas as well as an outdoor space for watching people or sun-bathing are only supportable by a certain number of the elderly living in the area, unless such facilities are used by other people. Mothers with infants and toddlers would appreciate such facilities (See Stages I and II - Social Activity).

STAGE VIII: WEEKEND ACTIVITY

Since the couple are not working, weekend activities do not differ from the week days as they do in the families of other stages in the life cycle. Frequent exchanges of visits with families and occasional church attendance are mentioned by Family X.
8. SUMMARY OF ACTIVITY PATTERNS AND SPATIAL REQUIREMENTS THROUGH THE FAMILY LIFE CYCLE

The family activity patterns and the spatial requirements have been generalized in each stage of the family life cycle.

Here their variation through the family life cycle is summed up in each activity—sleeping, eating, evening sitting, children's playing, social activity, week-end activity and occupational activity (working, housekeeping, schooling).
Stage I

Stage II

Stage III

Stage IV

Stage V

Stage VI

Stage VII

Stage VIII

Figure 10 - Sleeping
SLEEPING - Requirements

Stage I

SL-I-1 The infant's sleeping place is preferred separated from other family members' sleeping places.

SL-I-2 The separation between the space for infants' sleep and other family activities is necessary. Between those two different activities, the provision of a buffer zone is preferred rather than a separation by just walls and a door.

SL-I-3 The convenient connection from the parents' bedroom to the infant's crib is important especially for neonate.

SL-I-4 The space for the infant's sleep should be free from the daytime outside noise of traffic flows and children's playing.

Stage II

SL-II-1 The toddler needs a sleeping space apart from his parents' bedroom. For the siblings up to the pre-school stage, the sleeping spaces can be arranged in the same room.

Stage III

SL-III-1 Some parents prefer to have separate bedrooms for pre-school children of the opposite sex.
Stage IV

SL-IV-1 School children of different sexes need separate rooms to sleep in.

Stages V and VI

SL-V-1 The child prefers to have his own bedroom.
SL-VI-1

Stage VIII

SL-VIII-1 The unit for elderly people should be well-protected against noise from outdoors and the immediate neighbours.

SL-VIII-2 The good fire protection and easy emergency access are especially important for elderlies' unit.

Requirements which apply to all stages.

SL-G-1 The quiet sleeping space is required not only at night but also during the day for some families.

SLEEPING

Sleeping is one of the major family activities within the dwelling unit through the life cycle. The spatial requirements (both quantitative and qualitative) for sleep varies according to the stage of the family life cycle. The quantitative need generally follows the increase and decrease of the numbers of family members in the dwelling unit. A neonate can stay in the parent's bedroom for a short period but soon requires a separate space (Stage I).
Many families move because of the space shortage caused by the increase of the family members. Siblings of different sexes can sleep in the same room without much conflict in Stage II, but start to recognize the sexes and prefer to sleep in separate rooms in Stage III. In Stage IV, separate rooms for children of different sexes become a definite need. This is the second period for families to move when such spaces are unavailable in their unit. Children in Stage V increase their independence and prefer to have their own room. Then, they leave home one by one to start their own careers and families. The number of the family members decrease and at last, only parents are left by themselves (Stage VII). They now tend to move to a smaller unit.

This changing spatial need for sleeping is one of the main causes of the family's moving. About half of those interviewed are families who moved from other cities or other countries. Most of them moved because of business transfers of the head of the household.

Among families who moved within the Vancouver area, younger families moved more likely from apartments and older families from detached houses. All of them mentioned their spatial needs, either more or less, as a reason for their moving. This reflects the changing spatial requirements in different stages of the family life cycle.

Families in Stages I, II and IV moved for "more space" and families in Stage VIII moved for "less space." A family in Stage VII moved from a house to a two-bedroom apartment but found this space too small and moved to a three-bedroom townhouse unit. They
could not adjust their daily life to the drastic change in living space.

TABLE 7 - Location of Last Residence (N = 23)

<table>
<thead>
<tr>
<th>Location</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the Vancouver Area</td>
<td>11</td>
</tr>
<tr>
<td>Other Cities</td>
<td>12</td>
</tr>
</tbody>
</table>

TABLE 8 - Reason for Moving of Families Who Moved Within the Vancouver Area (N = 11)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>More Space</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Less Space</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Economic*</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Separation of Spouses</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

*Two families mentioned economic reasons for moving from detached houses to townhouse units.

Quietness and privacy are required for the sleeping space by families of all stages, but the especially critical need is for elderly people. Families with infants and toddlers need a quiet space in the daytime for their children's afternoon nap. Afternoon naps for older people may also be important. Most sample families show their satisfaction with the size of the bedrooms.
TABLE 9 - Bedroom Size (N = 23)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good or fair</td>
<td>20</td>
</tr>
<tr>
<td>Could be smaller</td>
<td>1</td>
</tr>
<tr>
<td>Too small</td>
<td>2*</td>
</tr>
</tbody>
</table>

* Both families who expressed the bedroom size "too small" were using a bedroom for two children (ages 11 and 8, and 12 and 9).
Figure 11 - Eating
EATING - Requirements

Stage I

EA-I-1 Family dining space should be large enough to have the infant beside the dining table without any danger or at least opening to another space where the infant can see and listen to the family members at the dining table.

Stage II

EA-II-1 The extra space is required besides that already occupied by the dining table and chairs to accommodate a highchair as well as an area for the toddler to safely walk about in.

Stage VIII

EA-VIII-1 The restaurant and coffee shop which attract different kinds of people in the daytime are to be easily accessible from the unit, preferably within walking distance.

EATING

A relatively consistent pattern is observed in eating through the family life cycle. The family generally eat supper together, regardless of their stage of the family life cycle. This indicates that having supper together means more than just filling their stomachs. In Stages V and VI, children and parents have more independent activities at home and the supper time becomes the
only time for many families to sit together to talk as well as to eat.

Breakfast is more oriented to nourishment of the individual family members. Whether the family eat breakfast together or not depends on the individual's time schedule in the morning. In the later stages (V and VI) each family member starts to have his individual breakfast. Most working fathers (or sometimes mothers) eat lunch out. Children up to Stage V generally have lunch at home with their mother. Old couples may have all their meals together.

Sample families showed general satisfaction about their eating space. Families who complained that the dining room was "too small" were using the space also as working or hobby area (office, birdcages) and storage (freezer, dishwasher). Two families in the townhouse unit where the eating space is open to the kitchen, mentioned their preference in having the dining room open to the living room. One family in an apartment unit wanted to have a separate dining room instead of the open living-dining space.

<table>
<thead>
<tr>
<th>TABLE 10 - Dining Room, Size and Arrangement (N = 23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair</td>
</tr>
<tr>
<td>Too small</td>
</tr>
<tr>
<td>Separate dining room wanted</td>
</tr>
<tr>
<td>Open living-dining space wanted</td>
</tr>
</tbody>
</table>
Front and back yards of townhouse units are extensively used as outdoor eating spaces. The size of the balcony in the apartment unit does not allow families to enjoy such activity.

**TABLE 11 - Activities in Back Yard (N = 18)**

<table>
<thead>
<tr>
<th>Activity</th>
<th>No. of families</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor eating</td>
<td>7</td>
</tr>
<tr>
<td>Sitting</td>
<td>6</td>
</tr>
<tr>
<td>Childrens' Play</td>
<td>1</td>
</tr>
<tr>
<td>Gardening</td>
<td>1</td>
</tr>
<tr>
<td>Not Using</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

**TABLE 12 - Activities in Front Yard**

<table>
<thead>
<tr>
<th>Activity</th>
<th>No. of families</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children's Play</td>
<td>8</td>
</tr>
<tr>
<td>Outdoor Eating</td>
<td>6</td>
</tr>
<tr>
<td>Sitting</td>
<td>2</td>
</tr>
<tr>
<td>Greenhouse, Gardening</td>
<td>2</td>
</tr>
<tr>
<td>Storage</td>
<td>4</td>
</tr>
<tr>
<td>Not Using</td>
<td>5</td>
</tr>
</tbody>
</table>
Figure 12 - Occupational Activity
(work, housekeeping, school)
HOUSEKEEPING - Requirements

Stages I and II

HK-I-1 Mothers' main working area, the kitchen, should be close enough to the child's play area (both indoor and outdoor) for visual and verbal communication between her and her child while she is doing the housework.

HK-II-1 General space for storage should be provided for the elderly.

Requirements which apply to all stages.

HK-G-1 The family sitting area should have space for ironing and sewing without taking over the space for family sitting.

HK-G-2 Mother's own area for her private activities besides housekeeping.

HK-G-3 The security of the house and minimum house maintenance work are key factors in housing design for many families.

OCCUPATIONAL ACTIVITY (Working, Housekeeping, School)

Most husbands' occupation work is done outside of their home, but some require the space within the dwelling unit for their work at home.

Wives are usually involved in child care and housekeeping at home until Stage III. After children start to go to school many
mothers start to work outside. Means of transportation are necessary for wives as well as for husbands.

As children advance from elementary school to secondary school to university or college, the locations of the schools change from the neighbourhood, (reached by walking) to the district (bicycle, bus) then to the city (private car, bus). For the children's study area, a common space is preferred by elementary and secondary school children. High school or college students want their own private room for study.

In earlier stages, the mother's main working area, the kitchen, should be closely connected to the child's play areas for constant supervision.

Only one-third of the sample families are satisfied with their kitchen. Shortage of cupboard space is the major complaint and the size of the kitchen in the apartment unit is cited as "too small" by three families.

<table>
<thead>
<tr>
<th>TABLE 13 - Kitchen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fair</strong> 8</td>
</tr>
<tr>
<td><strong>Poor</strong> 15 -</td>
</tr>
<tr>
<td>not enough cupboards 10</td>
</tr>
<tr>
<td>too small 3</td>
</tr>
<tr>
<td>other 2</td>
</tr>
</tbody>
</table>

After children reach school age, mothers start to have their own
activities outside of their unit. The security and minimum maintenance work at home are essential for families in such stages. This is one of the advantages of apartments or townhouse units compared to detached houses. The maintenance-free aspect of the units is the second best "likes" listed by the sample families.

Most of the families who listed the maintenance-free aspect as their "like" had experience in living in their own detached houses. Young families in Stages I and II who moved from apartment suites did not point out the maintenance-free aspect.

Also, the family's life style is reflected in their likes and dislikes. Families who have more activities outdoors appreciate the freedom from maintaining their house and yard. Better security is also mentioned by families who moved from detached houses. "We can enjoy freedom to be out."

Those advantages over single housing are designed to attract more families in the future due to increase in recreational activities or weekends and holidays.

TABLE 14 - Resident's Likes

<table>
<thead>
<tr>
<th>Location</th>
<th>21 families</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>21 families</td>
</tr>
<tr>
<td>Maintenance-free</td>
<td>11 &quot;</td>
</tr>
<tr>
<td>For children's play</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Private yard and landscaped garden</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Room layout and facilities inside and out</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Swimming pool</td>
<td>3 &quot;</td>
</tr>
<tr>
<td>Other</td>
<td>3 &quot;</td>
</tr>
</tbody>
</table>
**SHOPPING** - Requirements which apply to all stages.

SH-G-1 The major shopping area which draws various kinds of people and activities should be easily accessible, as well as the neighbourhood convenience stores.

SH-G-2 The stores for daily grocery shopping are preferred to be located within walking distance.

Convenient neighbourhood stores in the minimum walking distance and the active central commercial area in the handy location are both the needs of all families.

All the sample families expressed the highest satisfaction on the convenient shopping.

**TABLE 15 - Conveni ence of Shopping (N = 23)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenient</td>
<td>23 families</td>
</tr>
<tr>
<td>Inconvenient</td>
<td>0 families</td>
</tr>
</tbody>
</table>

**SCHOOLS**

Parents and children were highly satisfied with the location and the standards of their schools. An elementary school is just one block away and a secondary school five blocks away from the site.
Although children have to cross the streets with busy traffic flows, there seems to be little problem due to traffic lights for pedestrian crossings. At lunch time, most elementary school children who have a mother at home in the daytime have lunch at home.

**TABLE 16 - Location and Facilities of School (N = 23)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>14 families</td>
</tr>
<tr>
<td>Bad</td>
<td>0 families</td>
</tr>
<tr>
<td>No Attendance</td>
<td>9 families</td>
</tr>
<tr>
<td>Stage</td>
<td>Unit</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>Stage I</td>
<td><img src="image1" alt="Stage I" /></td>
</tr>
<tr>
<td>Stage II</td>
<td><img src="image5" alt="Stage II" /></td>
</tr>
<tr>
<td>Stage III</td>
<td><img src="image9" alt="Stage III" /></td>
</tr>
<tr>
<td>Stage IV</td>
<td><img src="image13" alt="Stage IV" /></td>
</tr>
<tr>
<td>Stage V</td>
<td><img src="image17" alt="Stage V" /></td>
</tr>
<tr>
<td>Stage VI</td>
<td><img src="image21" alt="Stage VI" /></td>
</tr>
<tr>
<td>Stage VII</td>
<td><img src="image25" alt="Stage VII" /></td>
</tr>
<tr>
<td>Stage VIII</td>
<td><img src="image29" alt="Stage VIII" /></td>
</tr>
</tbody>
</table>

Figure 13 - Children's Playing
PLAYING

Stage I

PL-I-1 The infant's play area should be free from danger and close to his mother's working area. Both outdoor and indoor spaces for the infant are necessary.

Stage II

PL-II-1 Within the unit, the toddler requires the space (both indoor and outdoor) to run and jump around without any danger and damage to family possessions. The play area is to be located close enough to the mother's working area for constant supervision.

PL-II-2 The communal playground is to be provided within a short walking distance from the unit.

Stage III

PL-III-1 An outdoor play area large enough for tricycle riding is to be provided in the neighbourhood. The location should be close enough so that a mother can conveniently supervise.

PL-III-2 A children's communal covered play area is to be provided which is large enough to accommodate tricycle riding.
Stage IV

PL-IV-1  A communal outdoor play area large enough for bicycle riding or ball games is to be provided in the neighbourhood.

PL-IV-2  The communal indoor play area is to be provided in the neighbourhood.

PL-IV-4  Access to nature available in the neighbourhood is desirable.

CHILDREN'S PLAYING

The territory of children's playing expands according to their physical and mental developments. The infant's (Stage I) activities are mostly limited within the dwelling unit. The toddler (Stage II), under his mother's supervision, plays in the public playground in the neighbourhood besides in his unit. The outdoor play areas both in the unit and in the neighbourhood are essential for the families in Stage II and Stage III. Children of Stages III and IV start to play more with friends in the neighbourhood, independent from their family. The time spent outside of their unit without mother's supervision increases. In Stage IV, children of different sexes often engage in different play activities. A paved open space large enough for their active play is necessary in the neighbourhood. The indoor play areas (both public and private) are also required to accommodate active play for families in Stages II to IV.
The territory of children in Stage V expands beyond their neighbourhood. The place for meeting friends as well as facilities for various sports is to be accessible easily from their units without depending on private cars.

For the children of Stage VI, means of easy access to the major cultural and amusement centers is necessary.

The noise of children's play bothers families in the later stages. The consideration of noise segregation is an essential requirement for families in Stage VIII.

The children's play area seems to hold a key to the success in designing the family housing project as well as parking availability. If adequate play areas are not provided for the children of various age groups, children occupy areas for playing which are not always safe or pleasant for other residents.

Most sample families expressed their dissatisfaction about children's playgrounds. (See Table 17.) Families in different stages have different complaints. For the families with toddlers and preschool children, the children's playground is most important for their daily use. Various complaints are heard from those family groups; poor maintenance, poor facilities and landscaping, dominance of older children in the playground and the distance making the playgrounds too far away to supervise.

Three out of five sample families in Stage IV do not use the playground. School children play most of the time on the driveway which they use for bicycle rides, playing soccer, hockey and
skipping rope. Boys in this age group expressed the need for a larger play area.

Families in Stages V to VIII do not use the playground at all. The two families in Stages VII and VIII complained of the noise from children playing on the roads.

**TABLE 17 - Children's Playground (N = 23)**

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Poor</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1*</td>
<td>1*</td>
<td>13</td>
</tr>
<tr>
<td>Not Using</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>

* Complaint about noise as heard from two families.

Indoor play areas, either communal or private, are wanted by many sample families; as are outdoor play areas for small children. (See Table 21).

Eight sample families in townhouse units use their front yard for children's play area, but only one family use their back yard (See Table 12). This is due to the layout of the townhouse unit. The front yard is easier for mothers to supervise their children from the kitchen or family room where they are doing housework.

The most popular children's play area in the sample project is the driveway. There have not been any serious traffic accidents
within the site but some dangerous points about the driveway are
heard from several sample families. Those complaints are caused
by the fact that the driveway is the main play area for children
in the Westview Garden Apartments.

TABLE 18 - Driveway (N = 23)

<table>
<thead>
<tr>
<th>State</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair</td>
<td>15</td>
</tr>
<tr>
<td>Poor</td>
<td>8</td>
</tr>
<tr>
<td>dangerous</td>
<td>6</td>
</tr>
<tr>
<td>noisy</td>
<td>2</td>
</tr>
</tbody>
</table>

The swimming pool in the neighbourhood is a strong attraction for
both adults and children of all stages. The year round operation
of such facilities is wanted by many sample families.

TABLE 19 - Swimming Pool (N = 23)

<table>
<thead>
<tr>
<th>Stage of Family Life Cycle</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Not using</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1*</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

* One family has not yet experienced summer in the sample project.
Stage I

Stage II

Stage III

Stage IV

Stage V

Stage VI

Stage VII

Stage VIII

Figure 14 - Evening Sitting
EVENING SITTING - Requirements

Stages I, II and III

ES-I-1 The family sitting areas should be located so as not
ES-II-1 to disturb the children's sleep.
ES-III-1

Stage IV

ES-IV-1 Separate sitting areas for parents and children are
required by some families.

Stage V

ES-V-1 Two separate sitting areas independent from each other's
sound and sight are required for parents and children.

Stages V and VI

ES-V-2 The child needs a quiet space independent from the sight
ES-VI-1 and sound of other family members.

Stage VIII

ES-VIII-1 The sitting area for the elderly should be well-
protected from the noise - daytime and at night.

ES-VIII-2 Outdoor sitting areas, both private and public, are
to be provided where people can sit in the sun or
enjoy gardening.

Requirements which apply to all stages.

ES-G-1 For the family who want active activities in the evening,
an additional space is necessary besides the family sitting area which is used for passive evening activities. Such space should be located so as not to disturb other family members' activities.

EVENING SITTING

The dominant family evening activity through all the stages is watching T.V. After dinner, father and children sit in front of the T.V. set, and mother joins them after washing the dishes; father with newspaper and mother with knitting or ironing. This is the most popular family scene in the evening. Up to Stage IV, T.V.-watching is a whole family activity, but in Stage V, parents and children start to watch different T.V. programs on different sets.

Children from late Stage IV start to have their own evening activities and want to leave the separate sitting area independent from parents. They also go out often in the evening for sports or meeting friends.

Parents stay together mostly in the evening. Each is engaged in their own activities (mostly passive type) yet are able to communicate to each other visually and vocally. The space for active hobby or exercise is wanted either in the unit or in the neighbourhood by many sample families regardless of their stage.

Most sample families showed their satisfaction of their living room size and arrangement.
## TABLE 20 - Living Room (N = 23)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair</td>
<td>22</td>
</tr>
<tr>
<td>Too small</td>
<td>1</td>
</tr>
</tbody>
</table>

## TABLE 21 - Space Wanted

<table>
<thead>
<tr>
<th>Space Wanted</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basement (Rec. Room or Workshop)</td>
<td>10</td>
</tr>
<tr>
<td>Children's playroom</td>
<td>4</td>
</tr>
<tr>
<td>Indoor play area</td>
<td>3</td>
</tr>
<tr>
<td>Guest room</td>
<td>3</td>
</tr>
<tr>
<td>Private yard for gardening</td>
<td>3</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
</tr>
</tbody>
</table>
Figure 15 - Social Activity
SOCIAL ACTIVITY - Neighbours

Stage I

SON-I-1 A public open space free from the traffic noise, danger and bad weather should be provided in the neighbourhood. Easy access from each unit and visual connection between such space and the public walkway is necessary.

Stages II and III

SON-II-1 The place for the mothers' neighbourhood contacts is to be considered together with that of the children's play area.

SON-III-1

Stage VIII

SON-VIII-1 The outdoor and indoor communal sitting areas are to be provided within a short walking distance for daily neighbourhood contacts.

SON-G-1 A part of each dwelling unit (either indoor or outdoor) should have visual connection to the public walkway which neighbours use most commonly on such occasions as shopping.

SON-G-2 The sound protection between units should be considered not only at party walls and floors but also at the access to the unit for such occasions as late night parties.
SOCIAL ACTIVITY - Friends and Relatives

Stages V and VI

SOF-V-1 The space for social activities should be located so as not to disturb other activities of other family members.

SOF-VI-1 The child wants to have a space which has visual and sound privacy from parents and siblings, to bring friends to.

Stage VIII

SOF-VIII-1 Elderly people's residences are preferred to be located close to their children's residence.

SOF-VIII-2 The extra sleeping place for grandchildren's overnight visits is to be considered in the unit of some of the elderly people.

Requirements apply to all stages.

SOF-G-1 Larger dining space for occasional dinner parties is wanted by some families, although many families do not strongly feel that need.

SOF-G-2 The space for occasional parties and overnight visitors is to be considered.
SOCIAL ACTIVITY

The pattern of social activity varies among families according to family member's sociability as well as the stage of the family life cycle.

Social activities with friends and relatives are observed through all the stages. Families in Stages I to III exchange informal visits usually with children. In the later stages, parent's and children's social activities tend to be separated.

The privacy for children's (or parent's) social activity from their parents (or children) is required in the unit.

The close attachment to children's family is observed among couples in Stages VII and VIII. The proximity between parent's and children's units is wanted. The active social meeting with friends is also common for families in Stages VI and VII to fill the loneliness after children's leaving home.

Spatial requirements of the unit for social activities are not as strong as other daily activities. The infrequency of such occasions, the possibility of having such meetings in other places and the flexible nature of such activities are considerations.

The neighbourhood contacts are observed to be most active among mothers in Stages I to III. Their children are the main medium for the informal afternoon visits. Children's play areas and
mother's sitting areas in the unit should be well connected. Public outdoor sitting areas beside young children's playgrounds encourage the informal social interaction among mothers. When children reach the stage of playing by themselves, the frequency of parent's neighbourhood contacts decreases.

The longer period of occupancy, the place for neighbours to pursue a common interest, the proximity to the neighbours with a common cultural and social background and chances for frequent incidental meeting are major factors for the further neighbourhood interactions.

Sample families' opinions about their neighbours are fairly good and no strong complaints are cited. Two out of 15 families who mentioned positive opinions about their neighbours expressed very good neighbourhood relations. Those two are in the same townhouse block and in Stages I and II. Five families in stages up to III cited friendly relations based on their children's playing together and exchanging babysitting. Two families cited occasional drinks with neighbours. When families in similar stages of their life cycle are living in the same block, their satisfaction about neighbours is usually high.

Eight families mentioned no frequent interactions with neighbours. Most of them "say 'hello' to neighbours and that's all." Many families listed the short period of occupancy as the reason for not having strong contacts with their neighbours.
Several families mentioned that they had deeper contacts with their neighbours when living in detached houses. One family also mentioned that closer relationships were not always good. "Neighbours came into our house any time and we felt no privacy at all." A family in Stage VIII who are living in a townhouse unit cited, "We are living too close to socialize."

To adapt to the high density living, each family in a townhouse or an apartment unit seems to protect their privacy more consciously than families in detached houses. The privacy between neighbours is the key factor for residents' satisfaction in higher density living. The poor sound-proofing between neighbouring units is the top "dislike" of sample families.

Families' comments: "We can hear an old lady coughing." "We know whether our neighbour is doing laundry or vacuum cleaning." "Our former neighbour used to fight often but now we have a quiet neighbour."

In apartment blocks, sound proofing of floors is worse than walls,
especially when there are no carpets on the floor. "We just knock each other on the ceiling or floor by a broom stick whenever the noise becomes too much." "We can trace a little boy above us pushing a doll stroller in his suite."

Also in apartment blocks, the noise of people walking up and down bothers families in bed since the exterior stairs are made of wood and located beside the bedrooms. Such occasions as guests leaving late after a party are unbearable to families living below.

TABLE 23 - What Do You Dislike About Living Here?

<table>
<thead>
<tr>
<th>Dislike</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>9</td>
</tr>
<tr>
<td>Space too small</td>
<td>8</td>
</tr>
<tr>
<td>Parking</td>
<td>5</td>
</tr>
<tr>
<td>No freedom</td>
<td>4</td>
</tr>
<tr>
<td>Poor maintenance</td>
<td>3</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

"No freedom to do what we want." is a complaint voiced by prospective renovators and gardeners. Some families complain about the rules for communal living.
Figure 16 - Weekend Activity
WEEKEND ACTIVITY

Requirement which applies to all stages.

WA-G-1  Easy access to public family recreational spots of various kinds is to be considered.

Up to the early Stage IV, the family spends weekends mostly together. After this period, parents and children start to pursue weekend activities separately.

Shopping is one of the most popular patterns of weekend family outings in Stages II and III. The shopping area should be considered as a family recreational spot, providing various children's attractions and family eating spots.

The family's recreational activities varies in a wide range according to each family's interests. Variety of sports, cultural and amusement facilities are to be easily accessible to all family members. Gardening is a strong attraction for many families and the private yard for gardening is to be a resident's possible option.

Attending church is not a popular Sunday activity among sample families. Only two out of 22 families mentioned regular attendance at church. Two Hindu families are attending the weekly religious meetings which are held at school in the evening. One family cited occasional attendance at the church and one cited only their children’s attendance. Sixteen families
mentioned no attendance at any religious gatherings. For the most part, religious activities occupy little of the daily lives of the sample families.

TABLE 24 - Location of Church (N = 22*)

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Bad</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No Attendance</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>16</td>
</tr>
</tbody>
</table>

* One sample unusable.

Findings indicate that some activity patterns are fairly consistent, but most activity patterns vary through the family life cycle. Quantity and quality of housing space and facilities have to follow changing family needs. When the space of the dwelling unit and neighbourhood facilities cannot accommodate the family's activities, the family moves to a more congruent place or adjusts their residence to better fulfill their needs. Families who, with limited funds available, can neither move nor adjust their residence, are forced to adjust their activities to live in an incongruent environment.

We do not often recognize many such adjustments in daily life, but the serious long-range effect on our family life and personality is considerable.
PART IV - CONCLUSION

From the findings of this family activity survey, two directions for better family housing are drawn:--

1. The adaptable housing system which can accommodate the family's ever-changing needs should be developed.

2. The space distribution of various daily family activities in our residential environment is to be reconsidered. The space and facilities of the neighbourhood should be given more priority in family housing design.

9. ADAPTABLE HOUSING SYSTEM: INDIVIDUALITY IN HOUSING

Half of all Canadian families have lived in their present residence for less than five years. The duration of occupancy is less than two years for 35 percent of all families.¹ In the sample housing project, family's average duration is around two years.²

The high mobility of the family is a typical character of the industrialized society. People move to other cities or even to other countries for better job opportunities. Many moves are also caused by the present housing system which cannot accommodate the family's changing needs. The dominant family pattern of a

¹1971 Census of Canada
²Verbal information from the resident manager of the sample housing.
contemporary society, the nuclear family, is congruent to the social system which requires higher mobility. It is an emotionally highly charged system based on unique intensity and emotional import of the relationship between husband-wife and parent-children. By the sickness or departure of its members, it is highly vulnerable to disruption, while in the extended family, someone can carry the nursing role. In the small town community in the pre-industrialized era, a kind of solidarity between people existed to help each other whenever necessary.

The family's high mobility in the present society creates many isolated nuclear families, cut off from close relationships with either their kins or neighbouring friends. The prevalence of mental disorders is related to the length of residence. The evidence shows the highest incidence of mental disorders is found in persons with the least length of occupancy in the same dwelling unit.

The present housing system helps to create such an unfortunate situation. After living in a dwelling unit for a certain period of time, the family's needs change and a misfit between family life and their unit occurs. The adjustment of this misfit, when the resource is available, is usually made by people moving to a more suitable unit, rather than changing the previous unit.


This choice is naturally based on the cost-reward judgment. The addition to or alteration of the house is costly and sometimes impossible because housing is not designed for such adjustments. With the same capital expenditure, we can usually get more by moving to another unit. A family buying their first house according to their financial resources available, often have a plan to move to the larger one according to family members and/or income increase. This trend is accelerated by the speculative housing market because of the steep rise of housing prices. Many families move happily when it is an upward move toward a house with more space, higher market value and neighbourhood of higher socio-economic status. But every time they move they are paying the other cost of cutting off their roots from the community. Real concern about the community cannot be expected from families who are planning to move out of the area soon. Thus, the frequent moves create many isolated families through their constant withdrawal from the community.

This becomes a tragedy when elderly couples are forced to move out of their long-occupied house. Because of limited income and physical decline after retirement, they cannot maintain their large empty nest when all children have left home.

We have to seek an alternate housing system which increases each family's control over shaping their own unit to reflect their changing needs.

Every family should be able to adjust their own dwelling unit to accommodate their ever-changing needs instead of moving to another unit.
For almost a thousand years in Japan, by using a "tatami module" (approximately 3 feet by 6 feet) every family has been able to lay out their own house plan very easily.

Today, with our advanced technology, it will be possible for every family not only to design but to build their own house without high costs or much skill. We can buy building components like buying furniture or appliances and assemble them to create a house to meet each family's particular needs. Following a common structural and service system, we can add or subtract any components according to changing needs. This process should be simple enough for any layman, just as putting up a tent at a campground with the help of friends and some technical guidance would be. This self-help building system has a great potentiality not only, as presently observed, in developing countries. In highly industrialized countries, with their advanced technology, people can have maximum control in building or adjusting their own dwelling units. Each dwelling unit becomes a genuine expression of an individual family's life style.

The goal is not the full industrialization of housing to cut the cost, but to establish a highly industrialized system which allows people to create their own house to accommodate their unique way of life.
The family's daily activities occur in different levels of their environment - a dwelling unit, a neighbourhood and a larger community or district, city or country. The character of the boundary between a dwelling unit and the outside community is the key factor in forming a housing pattern which suits a particular way of life. Where the boundary of each dwelling unit is strong, the family life is segregated from the community and where the boundary is not so strict, the community life and the family life are fused together.

In a small medieval town, a strong boundary was achieved by a wall surrounding the whole town for protection against invasion from outsiders. Within the protection wall, the boundary between private houses and the public space was not so distinct. Social activities on the street often flowed into the private houses and the street was used as an extended part of the house. A solidarity between the people spontaneously developed.

The space available in the dwelling unit also helps to determine the boundary of daily family activities. In Michel's study of French working-class families living in an apartment hotel, many family activities flowed into the public space or beyond the boundary of each unit.¹

¹A. V. Michel, "Kinship relations and relationships of proximity in French working-class households." in N. Bell and E.F. Vogels (eds.) A Modern Introduction to the Family, 1962.
Young children play mostly in the public hallway or courtyards under the common supervision of mothers. They often eat or even sleep in other family units. Families in the apartment hotel live like a family and that is caused by the shortage of space and facility in each apartment unit. They learn to share the space available to overcome the shortage.

Thus, the spatial distribution of the daily family activities varies according to the character of the boundary that each housing type has.

Table 25 indicates what kind of activities are observed within a dwelling unit of various dwelling types.

Sleeping and reproduction are observed through all housing types. The shelter for those activities is the basic function of housing often found even in animal's settlements.

The physiological activities are most constantly seen in the various housing types and the amount of discretionary activities in the unit varies most from the self-sufficient palace to the communal living.

Where various daily activities are accommodated in the sample housing is shown in Table 26.

Many families' needs are met every day in the different levels of the community, dwelling unit, neighbourhood, district and larger communities of a city or region. Some needs are only fulfilled in the private space within the unit (sleeping, washing,
<table>
<thead>
<tr>
<th>Activity</th>
<th>Toppy</th>
<th>Church</th>
<th>Sport Court</th>
<th>Park</th>
<th>School</th>
<th>Laundry</th>
<th>Cook</th>
<th>Sewing</th>
<th>Ironing</th>
<th>childcare</th>
<th>Dinner</th>
<th>Bed</th>
<th>Washing</th>
<th>Housekeeping</th>
<th>Reproduction</th>
<th>Activity</th>
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<tbody>
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<td>Primitive Society</td>
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<tr>
<td>Contemporary Society</td>
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</table>

**Table 29** - Activities which occur in a dwelling unit.
<table>
<thead>
<tr>
<th>Daily Activity</th>
<th>Individual Dwelling Unit</th>
<th>Neighbourhood</th>
<th>District</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td>Bedrooms</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Washing</td>
<td>Bathroom(s)</td>
<td>Public Washroom</td>
<td></td>
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<tr>
<td>Eating</td>
<td>Kitchen</td>
<td>Restaurant</td>
<td></td>
<td></td>
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<tr>
<td>Cooking</td>
<td>Dining Room</td>
<td></td>
<td>Restaurant</td>
<td></td>
</tr>
<tr>
<td>Laundry</td>
<td>Family Room</td>
<td>Coin Laundry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ironing</td>
<td>Utility Room</td>
<td>Dry Cleaning</td>
<td></td>
<td></td>
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<tr>
<td>Sewing</td>
<td>Bedroom/family room</td>
<td>Cloth Store</td>
<td></td>
<td></td>
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<tr>
<td>Child Care</td>
<td>Whole Unit</td>
<td>Daycare Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Whole Unit</td>
<td>School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children's Play</td>
<td>Whole Unit</td>
<td>Park</td>
<td></td>
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<tr>
<td>Recreational (Passive)</td>
<td>Liv. room, yard</td>
<td>Library</td>
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<td></td>
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<tr>
<td></td>
<td>Fam. Rm. (workshop)</td>
<td>Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreational (Active)</td>
<td>Rec. Room (workshop)</td>
<td>Recreational Centre</td>
<td>Beach, Mountain Park</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Living room (Rec. rm.)</td>
<td>Cafe</td>
<td></td>
<td>Club</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restaurant</td>
<td></td>
<td>Lounge</td>
</tr>
</tbody>
</table>
reproduction), while the others are met in various levels from the individual unit to the larger community.

From this space distribution of daily activities, we realize the lack of space and facility at the neighbourhood level. This seems to be a typical drawback of housing development today. We can hardly see such a residential environment, either urban or suburban, which encourages neighbourhood activities in everyday life.

Many family's needs are met better at the level of the neighbourhood than at the level of the individual unit or larger community.

The restaurant in the neighbourhood can be used more often as an extension of each family kitchen. Hot meals (not instant frozen food) can be brought to the dining room of each unit, not only for parties but for everyday family dining. It saves the cooking time of individual families and relieves the heavy burden of the wife's housework. An extra kitchen space and cooking facilities for once-a-year parties is not necessary in each unit if covered by the kitchen of the neighbourhood restaurant. Afternoon tea at the neighbourhood cafe, not exclusively in the living room, will help to develop informal interactions between neighbours. Those functions of a neighbourhood cafe and restaurant cannot be replaced by ones in the downtown areas.

Outdoor sitting areas, beside young children's playground, are also needed by mothers or the elderly, who want to have contacts with people but are not able to travel very much. Communal
ironing services available in the neighbourhood will be appreciated by all mothers, especially ones with young children. A daycare centre in the neighbourhood is a strong need of not only working mothers, but for all mothers.

The replacement of the individual family's household work by the extensive usage of public service facilities to save the housewife's heavy daily burden, is best achieved at the neighbourhood level because of the convenience. A communal workshop for car repair or for use by weekend carpenters not only saves the cost of providing a workshop in each dwelling unit but also encourages neighbourhood interactions between husbands based on their common interest which could not be observed in the sample housing.

A swimming pool, which is one of the major attractions of the sample families, is a good example of recreational facilities supported by the neighbourhood community. The extensive usage observed in nearly all families regardless of their stage, is not in competition with the swimming pool serving the district.

Indoor sport facilities are also wanted in the neighbourhood for year-round operation which cannot be accommodated in the individual unit. Such space can be used as a ballroom for large social gatherings of families. The important function of those communal facilities is not only to save costs, labor or space in each family unit, but to encourage neighbourhood interactions and raise the solidarity between families. Supporting such facilities cannot be done without every resident's
voluntary involvement and patient co-operation. But through this process, we form our community consciousness and start to control our own neighbourhood. Individual power reflected in our daily environment can be realized more directly in the neighbourhood than in larger communities. By extending to the neighbourhood the power to control their own dwelling unit, individual families take the initiative in creating a better living environment.

When we consider the direction of housing, we have to have the vision of what kind of life we want to live. Without this clear vision of our life, the answer for better housing will never be found.

Individuality in the dwelling unit and communality in the neighbourhood, which are both essential in our daily life, should be achieved in our future housing.
BIBLIOGRAPHY


Alexander, Christopher et al. Houses Generated by Patterns. Centre for Environmental Structure, California, 1970.


APPENDIX I

SOME PROBLEMS AND SUGGESTIONS ON THE RESEARCH METHOD
Interview Procedure and Respondents

The main source of data used in this study derives from a series of time-consuming interviews.

All interviews were held by the author during the winter of 1973-1974. Respondents were asked for the interview at the entrance door without any previous notice. About half of the residents who answered the door calls accepted interviews at the first visit. The rest of the interviews were done at the second visit with appointment having been arranged. Two of the four families who rejected the interview were elderly ladies who seemed to be very cautious about strangers and rejected the interview without giving any reason. The other two were mothers with young children who said they were too busy to spare the time.

Interviews were usually held in the respondents' living room. Each interview took forty minutes to one hour. At the townhouses, some wives answered the questionnaire in the family room while they were doing housework.

Wives were the main respondents and many interviews were done in the afternoon when they were expected to be able to spare a short time. Some of the interviews, mainly for the working couples or single working mothers, were done in the evening with husband and wife, mother and children or the whole family.

If more than two people were available within a family and could be interviewed separately, the reliability of the data
could have been checked. However, this idea was abandoned to keep the families' time expenditure to a minimum. When two or three respondents were present, they were interviewed together at the same time. Data about family daily activities is mostly based on one family member's description.

The number of families who were absent when visited suggests that many people have activities out of the home, either occupational or recreational. "Freedom to be out," listed by a sample family as one of their strong "likes" seems to be well-appreciated by a large number of families living in this project.

TABLE 27 - Number of Families Interviewed

<table>
<thead>
<tr>
<th>Interviewed At First Visit</th>
<th>Interviewed After Appointment</th>
<th>Interview Rejected</th>
<th>Absent When Visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 families</td>
<td>9 families</td>
<td>4 families</td>
<td>50 families</td>
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</table>

Questionnaire

The interview form was based on the previous study done in the fall of 1973 by the author and adjusted after pre-testing in the sample area. (See Appendix II for a questionnaire form.)

In preliminary inquiries, to get each respondent's maximum response to his living environment, questions were asked informally. No pre-coded responses, such as (very good - good - fair -
bad) or (small - fair - large) were used. Instead, the respondent's own expression to the sample project was expected. The interview method was also chosen (not mailing questionnaire to the respondents) to draw the maximum personal opinion from the informal conversations. During the interviews, a great care was required to collect the data with the same density without offending a smooth flow of response.

It was possible for the limited scale of this study to collect and handle this raw data in the ways described. If the scale of research had been larger, a more systematic questionnaire would have had to be introduced.

One elderly couple claimed during the interview that the questionnaire went too much into their private life when asked about their daily activities. Another family complained to the resident manager after the interview about the nature of the questionnaire. Both turned out to be concerned about the possibility of theft. Those two complaints are the only ones known to the author among the 23 interviews.

Participant Observation

By our living in a unit of the sample project, data collection was possible through my family's informal contact with neighbours. Some useful information, particularly about mothers with young children, was obtained through my wife who is a mother of a one-and-a-half year old girl.
Analysis of Data

In analysis of the family activities, all family members' activities do not always belong to the stage in which the family is categorized. Activities of a family with three children, infant, toddler and school child, span three stages. In such a case, family activities are basically analyzed according to the youngest child's age. But older children's independent activities were used for the other stages for analysis where each child belongs.

The activity patterns generalized in each stage of the family life cycle were based on the limited size and quality of the data from 23 interviews and my own observation.

I could not prove to what extent those activity patterns apply more generally. Most activity patterns were generalized during and after the data collection and could not be tested by a further systematic observation. They are a series of hypotheses to be tested by the result of scientific research.

Among the stages of the family life cycle, besides the young married couple without children, the sample of a single elderly widow or widower, was not available. This is another important stage to be studied since their housing needs would be much different from elderly couples.

Besides the family life cycle, housing needs are to be studied according to other variables such as family structure, socio-
economic status, life-style and cultural background.

Only knowledge about the total scope of family needs will give us the right direction for the search of better housing.
APPENDIX II

INTERVIEW QUESTIONNAIRE FORM
FAMILY ACTIVITY SURVEY

home interview form

date: ______________________
dwelling type: ________________

1) When did you move into this unit? ________________________________

2) In what type of dwelling unit did you live before? ________________

3) Why did you move out?
1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________

4) Do you plan to move in the near future? _________________________
   If yes, why?
   1. _________________________________________________________
   2. _________________________________________________________
   3. _________________________________________________________

5) What do you like about living here?
1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________

6) What do you dislike about living here?
1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________

7) Who is presently living in your suite?

<table>
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<tr>
<th>relation</th>
<th>sex</th>
<th>age</th>
<th>occupation</th>
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8) Could you show me your furniture layout?
9) In special occasions, how do you use your suite?
   a) parties (what kind of parties, how many people?)
   b) visitors (overnight stay, longer stay)
   c) family member's sickness
   d) any other occasions

10) What kind of facilities or spaces do you want?
    1.
    2.
    3.

11) I would like to know your opinion about:
    a) location and services (who uses, how often)
       1. public transportation
       2. hospital and clinic
       3. school and nursery
       4. recreation centre and amusement facilities
       5. church
       6. shopping
       7. neighbours (do you have frequent contact with neighbours?)
c) outdoor space
   1. driveway and sidewalk (safety, convenience)
   2. parking space - guest parking
   3. children's play area (who uses, when, where, how)
   4. swimming pool (who, when)
   5. landscaped garden (who, when, how)
   6. front yard (who, when, how)
   7. back yard (who, when, how)
   8. garbage can storage (convenience)

d) indoor space
   1. number of rooms and arrangement of rooms (convenience)
   2. living room
   3. dining room (other usage - when, how, who)
   4. kitchen (other usage, who)
   5. bedrooms (other usage - who, when, how)
   6. entrance hall (other usage)
   7. bathroom(s) (who uses)
   8. utility room and storage

12) Now, I would like to ask you about your daily activities in detail.
<table>
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<tr>
<th>TIME</th>
<th>what doing</th>
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<th>with whom</th>
<th>alternate</th>
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