CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are drawn from the study of trip generation from five housing estates in Bangkok of National Housing Authority of Thailand.

1. As defined in socio-economic terms, two levels of housing estates were studied: low level and medium and high level. The low-level housing estates are Dindaeng Flats, Huaykwang Flats and row houses at Klongchan. These housing estates comprise flats and houses for a family income level of 1,500 baht per month or less. The average family size is 5.90, and the average car ownership per household is 0.13. The medium and high level housing estates are Tungmahamek, Prachanivet 2, and detached houses and duplex dwellings at Klongchan. These housing estates were built for households having a monthly income of 3,000 baht and over. The average family size as determined in the survey is 5.60, and the average car ownership per household is 1.05.

2. From-home trips and total trips per household are directly related to family size. The average frequency of from-home trips and that of total trips increase with an increasing number of persons per household. The least squares regression equation relating family size and from-home trip frequency is $T = 0.179 + 0.712 P$. The regression equation relating family size and total trip frequency is $T = 0.534 + 1.50 P$. Thus, the addition of one family member would increase the number of from-home trips by about 0.7, and would increase total trip production by 1.5 trips per day. The ratio of trip-makers to residents is quite an important variable in the determination of trip frequency. The addition of one additional

family member—except children who are not yet going to school—would increase from-home trips and total trip production by about 0.8 and 1.7 trips per day, respectively.

3. The effect of car ownership on the frequency of from-home trips was found in this research to be small. The least squares regression equation relating car ownership and from-home trip frequency is $T = 4.25 + 0.116V$, which indicates that the addition of one car in a household would not greatly increase the production of from-home trips. Total trip frequency was found to increase with an increasing number of cars per household. On the average, families owning one car generated 1.2 more total trips than zero-car households, and multi-car households generated approximately 1.6 more total trips than one-car households

4. By the least squares method, the linear regression equation of the joint effects of family size and vehicle ownership on the frequency of from-home trips was determined to be $T = 0.193 + 0.713P - 0.046V$.

5. It was found that the distance from the CBD and the socio-economic status of households do not have a strong effect on either the from-home trip or total trip frequency.

6. From the data gathered from 458 households in five estates, the average from-home trips per household was found to be 4.30, and the average number of total trips per household was 9.26. The average household size of all surveyed households was 5.80, and the percentage of trip-makers to residents was 74 percent.

7. Transit is a dominant mode of travel. In low socio-economic level households, 70 percent of the total trips were made by transit. In the high socio-economic level households, 41 percent of the total trips were made by transit.

Walking trips were found to be an important mode in low level households; 23 percent of total trips were walking trips, these were mainly walking to school. In the high level households, there were few walking trips, but auto-driver trips and auto-passenger trips were found to be important. Auto-driver trips accounted for 32 percent of total trips, and 24 percent of total trips were auto-passenger trips. The latter were mainly to serve children going to or coming from school.

8. Work trips are dependent upon family size and are a directly function of the number of wage earners per household. Work trips increase with increasing family size from 0.50 trips per household in single households to 3.66 trips per household in these having ten or more members. With increasing numbers of wage earners per household, from single wage earner households to six and more wage earners households, work trips per household increased from 0.98 to 5.00 trips per household. For all surveyed households, the average number of work trips per household was 1.94, the average number of wage earners per household was 2.11, and the percentage of wage earners to residents was 36.4 percent.

9. School trips are also related to family size, and especially related to the number of students per household. School trips range from 0.50 trips per house-hold in single person households to 3.31 trips per household in those having ten or more members. The addition of each student in a household would increase school trip-making by about 1.00 trips per day. For all households, the average number of school trips per household was found to be 1.96, the average number students per household was 2.17, and the percentage of students to residents was 37.5 percent.

10. Trips other than work trips, school trips and home trips had little effect

on the total trip generation rates. These other-purpose trips accounted for only 8 percent of the total trips from low-level households, and 17.6 percént of the total trips generated from high-level households. The main purpose of these other-purpose trips from the high level households (which was 12.6 percent of the total trips) was to serve passengers. Most of these trips were to transport children to and from school. From the present research, it was found that these other-purpose trips are not related to family size nor to car ownership, except those serve-passenger trips which were found to be related to car ownership.

Recommendations

The results of this research evaluate the travel demand of the residents in housing estates. This information is a key to determine the transport survices needed by the residents. Such data are necessary because of the rapid increase in the number of housing estates in Bangkok. Without attention during the planning, transportation problems are almost certain to follow. The results of this reseach show that 21 percent of total trips are school trips from the entire range of socio-economic levels, and 12.6 percent of total trips in high-level households are to serve passengers (mostly to serve school children). To reduce these trips, new estates should be located near schools which are within walking distance from the housing estates. Conversely, new schools should be sited near housing estates. Thus, walking trips will be substituted for serve-passenger trips, and auto-passenger trips will then decline in frequency. This phenomenon can be seen occurring in the low-level housing estates which were studied.

From the experience gained from this study, it is recommended for further studies that separate evaluations be made of housing estates at different socio-

economic levels. The low-level housing estates to be studied should be flats of the National Housing Authority. The medium and high-level housing estates to be studied should be private owner's housing estates, because they are more apt to display the important characteristics of medium and high-level households. The occupants of the National Housing Authority's estates are between medium and high-level households and it is difficult to specify the socio-economic status of these households.