

Holiday and Summer Weekend Traffic Survey

ANDREW V. PLUMMER, LEO G. WILKIE, and ROBERT F. GRAN, respectively, Administrative Engineer, Traffic Engineer, and Statistician, Cook County Highway Department, Chicago, Illinois

● **CONSIDERABLE** information both quantitative and qualitative related to weekday automobile travel habits has been generally available for planning and improving the highway system. During the past several years the Cook County Highway Department has gathered quantitative data in the form of machine volume counts during the Memorial Day, July 4th, and Labor Day holiday periods.

However, there has been little qualitative traffic data for summer weekends and extended holidays.

To provide such data the staff of the Traffic Engineering Division of the Cook County Highway Department designed and conducted a series of roadside interview surveys. During these several surveys more than 12,000 motorists were interviewed.

DESIGN OF STUDY

Two sites were selected for conducting roadside interviews (Fig. 1). These study sites were chosen to represent holiday and non-holiday characteristics for northern Cook County. Site 1, on Rand Road, US 12, is approximately 35 miles northwest of the Chicago CBD and site 2 on Edens Expressway is 14 miles east of site 1.

Rand Road, near the Cook County line, was selected because it is one of the better routes used in going into the northern Illinois and southern Wisconsin lake areas. Interviewing was scheduled for the hours between 2 PM and 8 PM on Friday, July 1 and between 7 AM and 1 PM on Saturday, July 2 for the outbound (northwest) traffic only. These hours were selected because it was felt they would carry a large portion of the outbound holiday traffic. As a criterion for typical non-holiday summer weekend travel, a similar survey was planned at the same location for the corresponding hours two weeks later, July 15 and 16. Enough interviewers were provided to assure a 20 percent sample.

In drawing the sample a flagman directed traffic into an interview lane to provide each interviewer with one vehicle. The flagman then directed traffic into a bypass lane until such time as the interviewers were ready for another set of vehicles.

Randomness in sampling was strived for by channeling all traffic into a single lane and then either selecting a charge of vehicles for interview or allowing traffic to bypass until the interview lane was ready for a complete recharge.

Manual and machine counts were made of all traffic passing through the station so that the data could be factored up to the total ground count. No trucks or commercial vehicles were interviewed because the primary purpose was to determine the nature of holiday travel.

The second site was surveyed in mid-August prior to the Labor Day weekend. The location of this site was on Edens Expressway just north of the Dundee Road interchange.

This location differed markedly from the first. It is located on a six-lane expressway coming north from the Chicago CBD. The particular site selected is just south of an entrance to the Northern Illinois Tollway going north toward Milwaukee. It was known that a substantial portion of the total traffic entered the Tollway at this point. The physical set-up of this station differed slightly from the first to allow for the tremendous difference in traffic volume (Fig. 2).

Lane 1 was used for interviewing. Lane 2 was blocked off for interviewers. Lanes 3 and 4 were used for by-pass. A study on the Saturday before Labor Day was done at

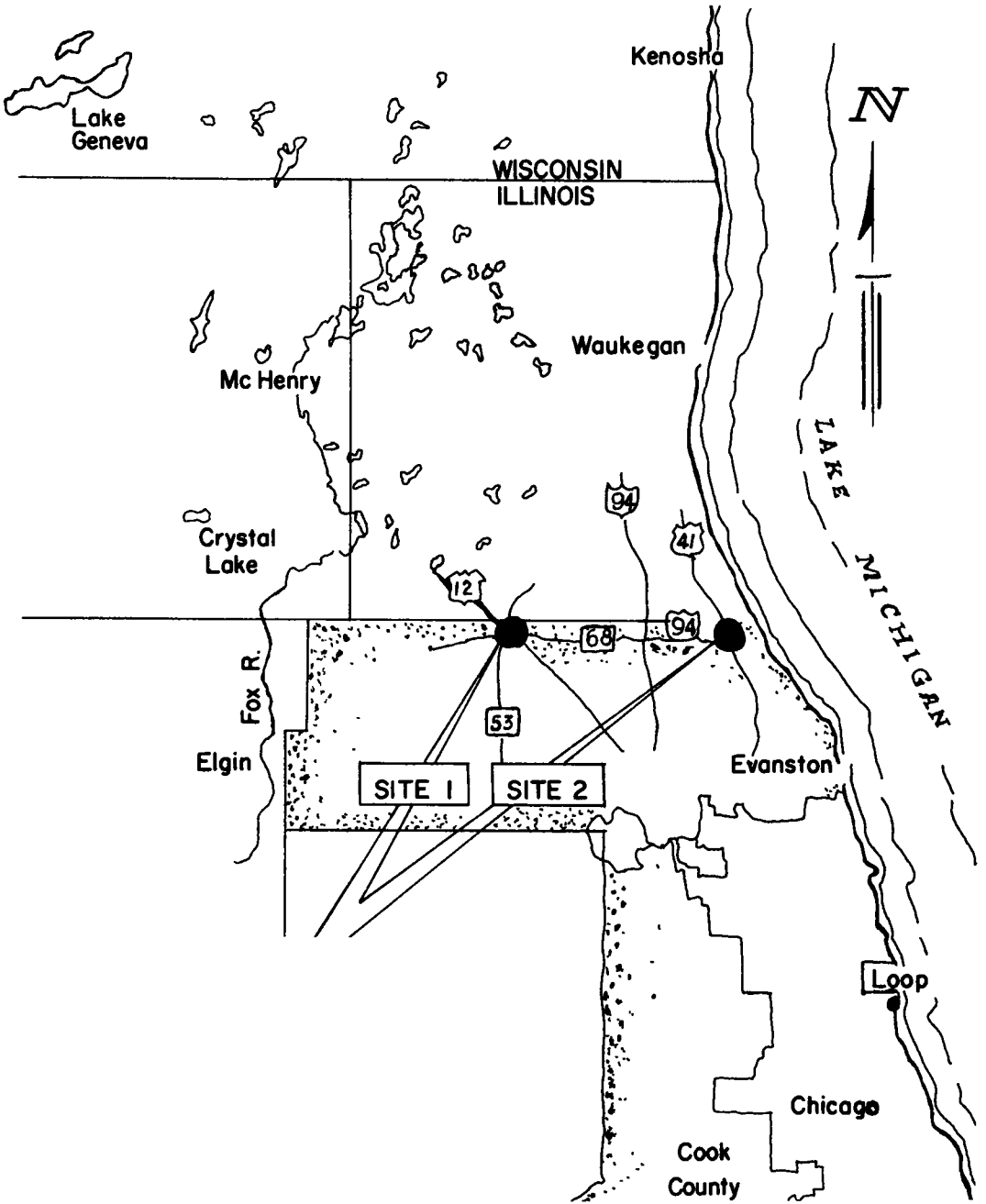


Figure 1. Survey site locations.

Rand Road site for the inbound (southeast) direction. It was felt that this would give some qualitative data on holiday trips into the Chicago area.

INTERVIEW FORM

The basic questions on the interview schedule were those pertaining to origin, desti-

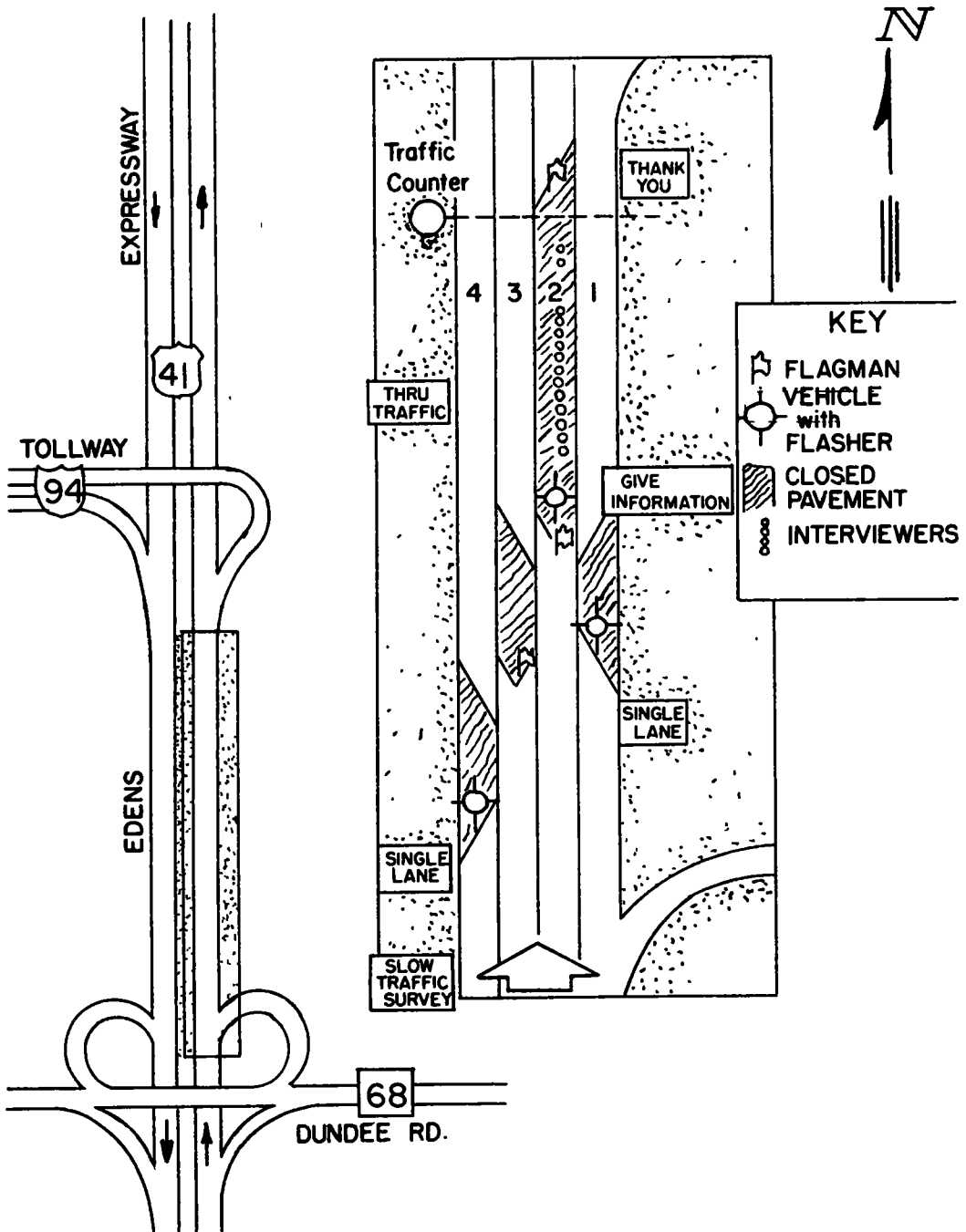


Figure 2. Interview station—site 2.

nation and trip purpose. For recreational trips, additional questions as to the frequency of trip and return date were also included. In addition, there were several questions relative to occupation and quitting time.

The site 2 schedule also included a question regarding tollroad use.

FIELD PORTION OF STUDY

The station requirements varied from site to site depending on the physical nature of the site and the traffic volumes expected during the survey hours. No attempt was made to obtain a constant sample size. Rather, a charge of vehicles was channeled into the interview lane so as to provide each interviewer with one vehicle. When the last of this group of vehicles left the station after being interviewed, another group of vehicles was immediately channeled into the interview lane.

This method maximized the sample size while maintaining randomness and minimizing motorist delay time. Because of the fact that the sample size was a variable percentage of the total traffic, it was necessary to factor all data up to the total passenger traffic volume. This was accomplished by computing factors for each 15-min intervals.

Figures 3 through 10 portray some of the initial findings. A considerable portion of the analysis remains to be done. Figure 3 shows the holiday weekend travel beginning

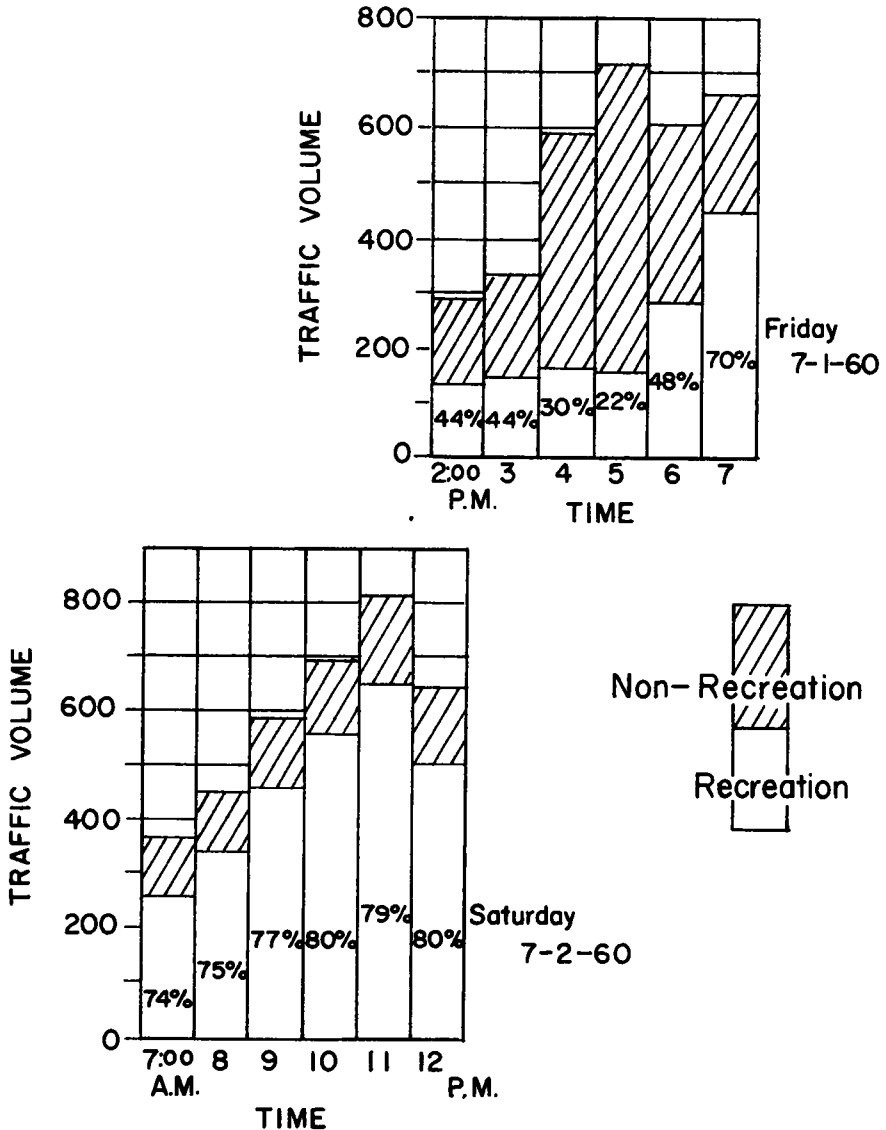


Figure 3. Recreation trips in relation to total traffic volume by time of day on holiday weekend; outbound, site 1.

at 2 PM on Friday preceding the three-day 4th of July weekend. The lower portions of the bar graphs indicate the number and percent of recreational trips for each of the survey hours. Between 2 and 6 PM the number or recreational trips was fairly constant but the percentage ranged from 22 percent to 44 percent. However, after 6 PM the number and percentage of recreational trips increased significantly to a maximum of 70 percent.

The percentage of recreational trips for the next day, Saturday, ranged from 74 percent to 80 percent. The peak hour for the number of recreational trips was between 11 AM and 12 noon. The average percent of recreational trips for Friday was 42 percent and for Saturday was 78 percent while the number of trips was slightly more than double on Saturday.

The hourly pattern for trips on the non-holiday portion of the survey are shown in Figure 4. The absolute number as well as the percentage of recreational trips were both significantly less for the non-holiday weekend.

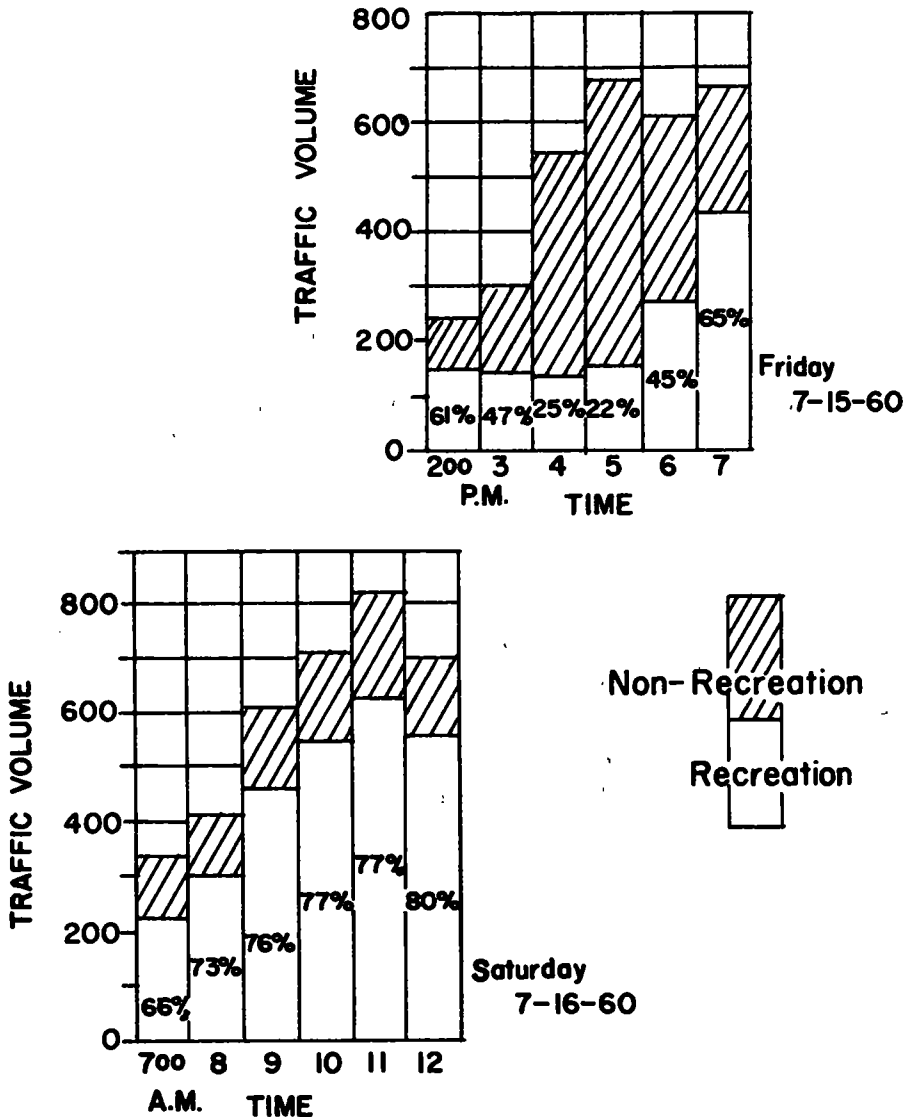


Figure 4. Recreation trips in relation to total traffic volume by time of day on non-holiday weekend; outbound, site 1.

RECREATIONAL TRIPS FOR A NON-HOLIDAY SUMMER WEEKEND BY TIME OF DAY

Figure 5 shows the Friday portion of the site study and shows that the percentage of recreational trips ranges from 25 to 48. In absolute number the peak for recreational trips was between 6 and 7 P.M. This represents a significant difference from the characteristics found at site 1, Rand Road, during a non-holiday summer weekend. Another difference is in the relative percentage of recreational trips, site 2 carrying a larger percentage of non-recreational trips.

Figure 6 shows the Saturday portion of the non-holiday summer weekend study, and shows that the general recreational trip characteristics are quite similar to that for site 1. Again, however, site 2, on Edens Expressway carries substantially larger percentages of non-recreational trips for each survey hour, compared to site 1, Rand Road.

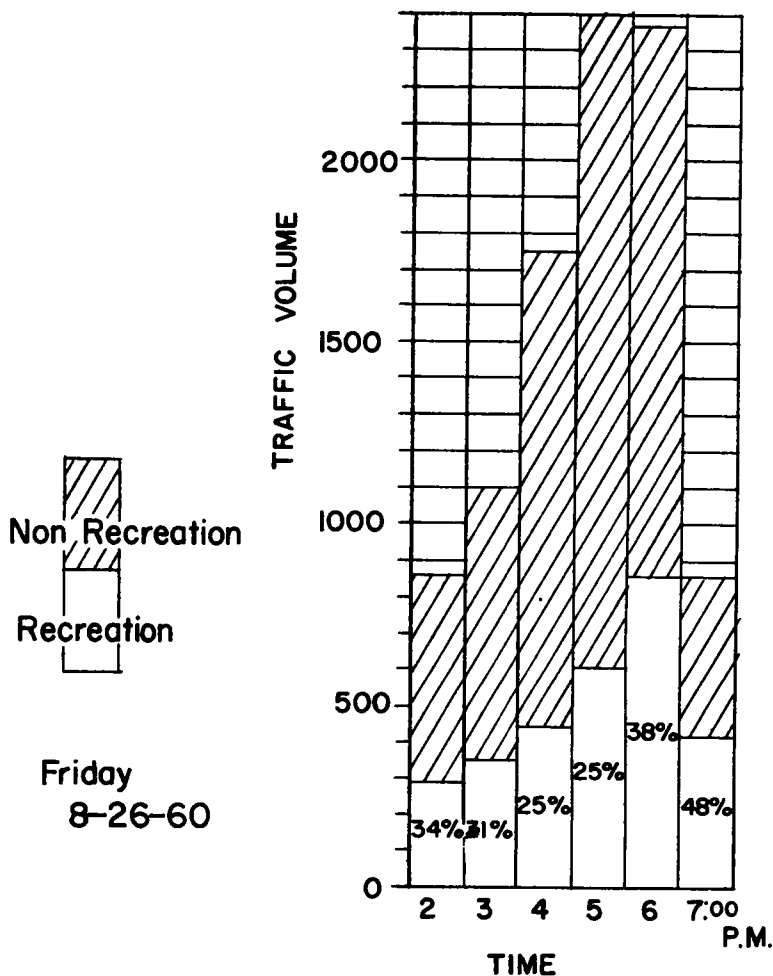


Figure 5. Recreation trips in relation to total traffic volume by time of day on non-holiday weekend; outbound, site 2.

RECREATIONAL TRIPS AS A FUNCTION OF DAY OF RETURN TRIP FOR HOLIDAY AND NON-HOLIDAY SUMMER WEEKENDS; SITE 1, OUTBOUND

The two sets of bar graphs on the left side of Figure 7 indicate the number and percentage of recreational trips by return day. The lower portion of each graph represents same day return. The left portion is for holiday trips and the right for non-holiday. On Friday at Rand Road, for the holiday portion, 20 percent of the recreational trips indicated a return on the same day and 80 percent a longer recreational stay. The corresponding non-holiday, Friday, showed 36 percent with same day return trip and a 64 percent longer stay.

On Saturday similar differences were observed between holiday and non-holiday weekends, although for each a much larger percentage indicated same day returns.

Statistically, the differences between holiday and non-holiday recreational trips with respect to return date were highly significant.

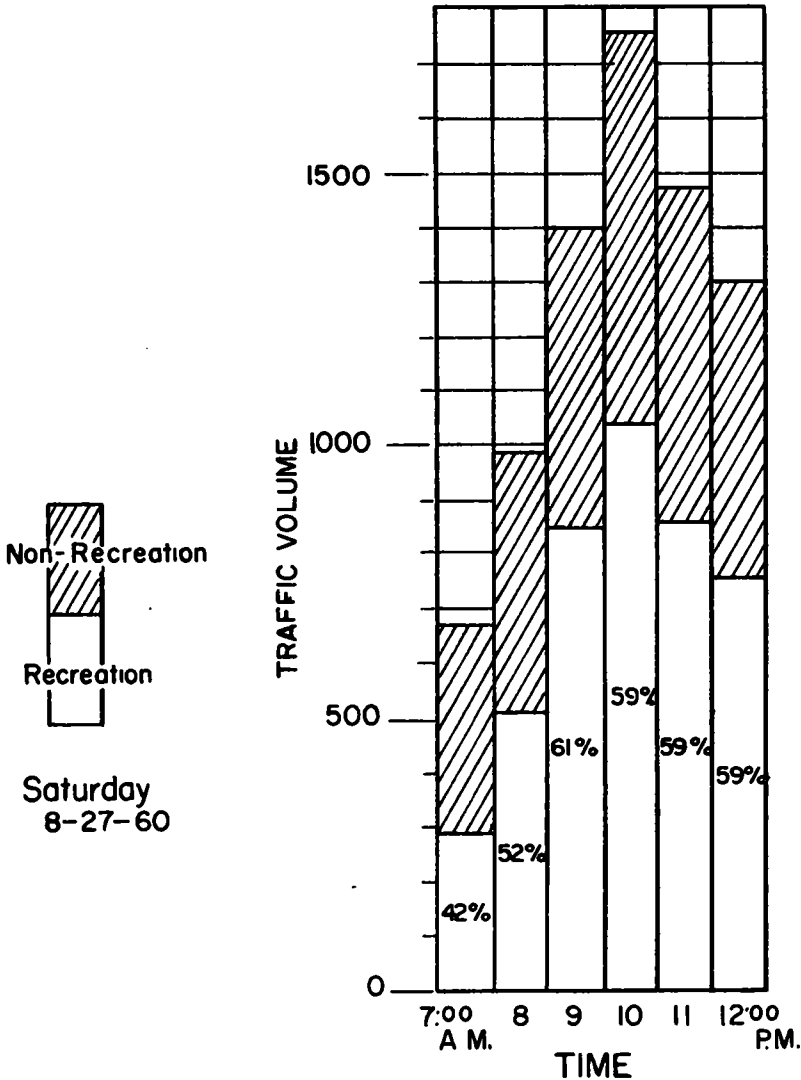


Figure 6. Recreation trips in relation to total traffic volume by time of day on non-holiday weekend; outbound, site 2.

RECREATIONAL AND NON-RECREATIONAL TRIPS BY DESTINATION FOR TOLL ROAD AND NON-TOLL ROAD USERS; SITE 2, OUTBOUND

Figures 8 and 9 pertain to toll road selection. Figure 8 relates toll road selection to destination of trip and breaks each indicated destination into recreational and non-recreational trips.

The left portion of each set of bar graphs is for recreational trips and the right for non-recreational.

Of the outbound recreational trips to the Chicago suburban area, 37 percent used the toll road while 63 percent did not. Of the non-recreational outbound trips only 19 percent used the toll road.

Of the recreational trips to the Illinois resort areas beyond suburban Chicago, 77 percent used the toll road. Only 58 percent of the non-recreational trips to the Illinois resort areas used the toll road.

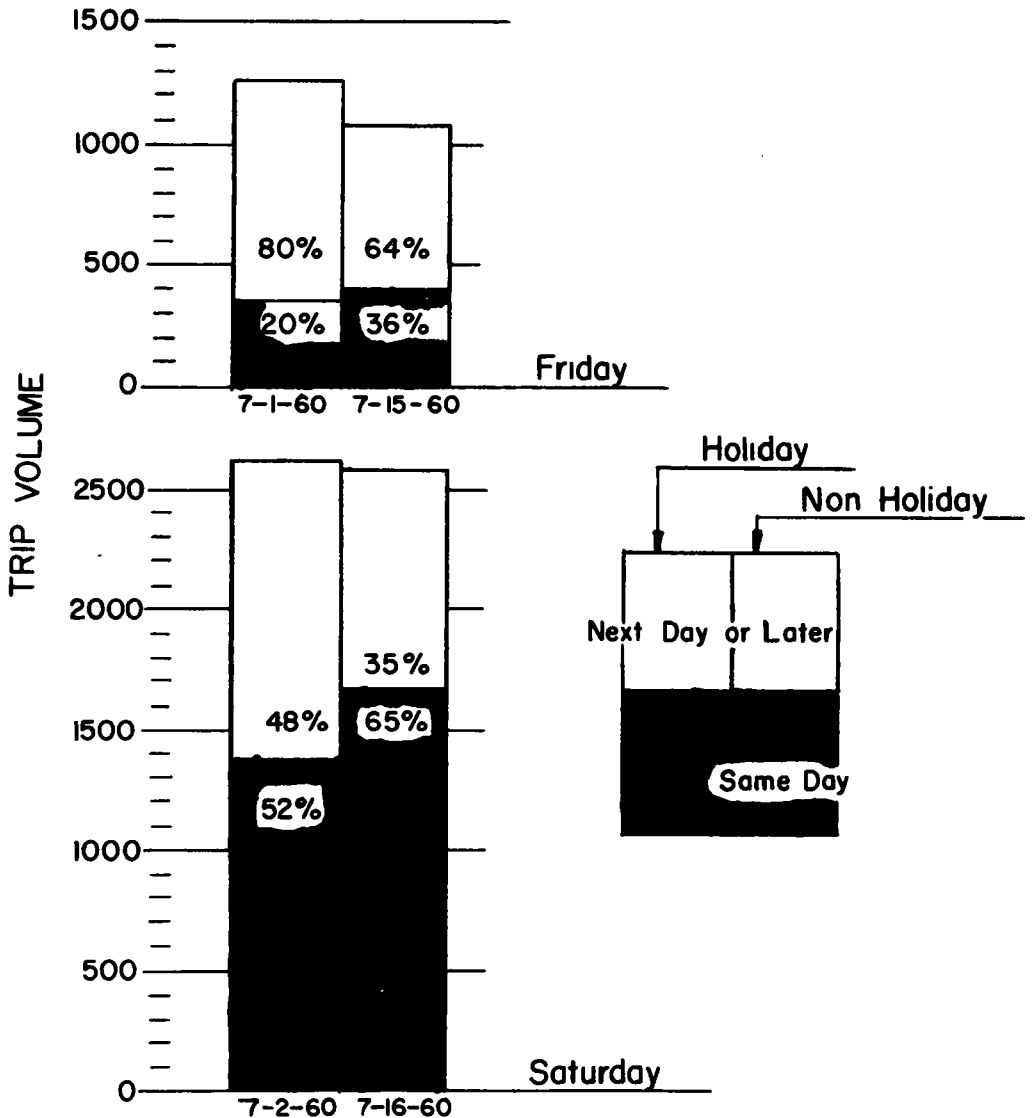


Figure 7. Return day for recreational trips.

trip drivers. This percentage on Friday was 85 percent of the frequent trip users to 64 percent of the occasional trip drivers. On Saturday the percentage was 65 for the frequent toll road recreational trip users to 54 for the occasional toll road trip users. The data shown in both of these figures were found to be highly significant.

RECREATIONAL TRIP FOR A HOLIDAY SUMMER WEEKEND BY TIME OF DAY; SITE 1, INBOUND

It is generally believed that there is a substantial exchange of population between city and country for recreational purposes on a holiday weekend. To ascertain the degree of this exchange, a study was made of inbound traffic at site 1 on the Saturday preceding Labor Day.

Figure 10 shows that this exchange is not nearly as marked as had been expected; for instance, the total recreational trips passing through this station was only about one-third as large as the number leaving during comparable hours of the July 4th weekend. The percentage of recreational trips for the total of the five survey hours was 48 percent as compared to 78 percent for the outbound study during the Saturday portion of the July 4th weekend.

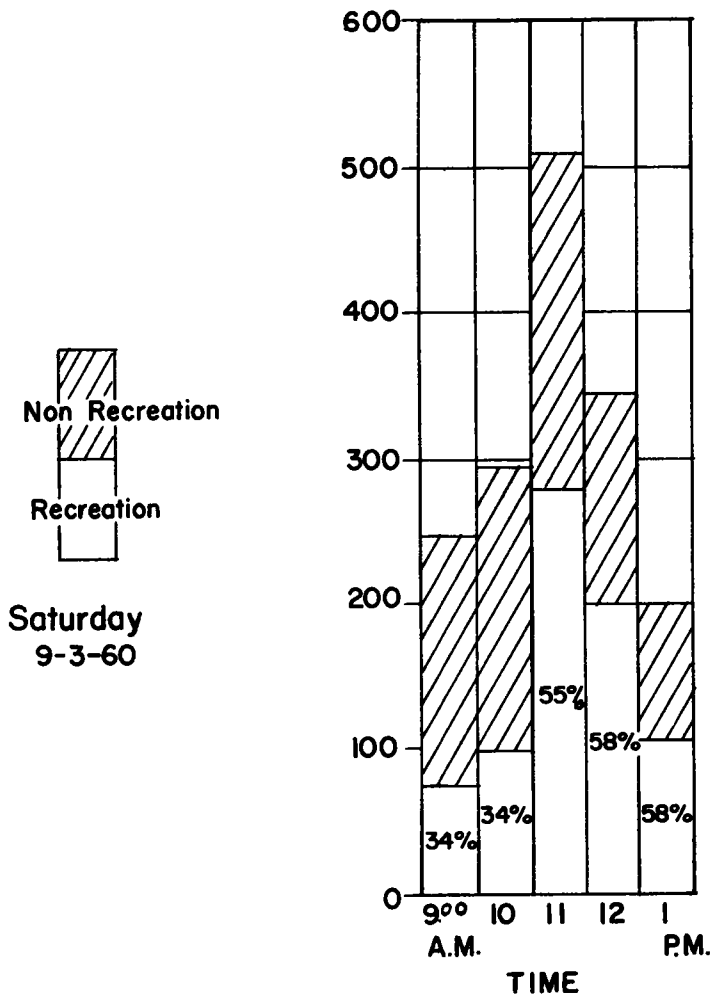


Figure 10. Recreation trips in relation to total traffic volume by time of day on Labor Day holiday weekend; inbound, site 1.

Although there is no direct trip comparison for both directions of flow at a given station for the same day, an examination of traffic volumes during the survey hours shows that there was more than twice as much traffic outbound than there was inbound and that the peak volumes both inbound and outbound occurred between 11 and 12. The actual peak hour for the 24-hr day was between 11 AM and 12 noon for the outbound traffic and between 7 PM and 8 PM for the inbound. This inbound peak can be largely accounted for by the recreational trip returns from Friday and Saturday trips.

Further analysis of these studies is in progress and a report is expected to be completed shortly.