

STUDIES OF PARKING DEMAND AS OBSERVED AT PARKING TERMINALS

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SYNOPSIS

This paper describes the techniques and procedures of parking surveys conducted by boy scouts in Detroit, Michigan and Atlanta, Georgia. Parking in the entire central business district was surveyed in one day between 7 A.M. and 7 P.M. All field work was conducted by boy scouts in full uniform. Supervision was divided among boy scout executives, city employees, and adults provided by various downtown establishments. The Detroit survey required approximately 5,000 boys, while the Atlanta survey required approximately 3,000 boys. The paper includes detailed information on conducting the survey, the results and the method of coding.

Intolerable congestion is prevalent in most cities since the lifting of gasoline rationing. Parking spaces are not numerous enough to meet the demand in most downtown areas either on the curb or in offstreet facilities. As a result, downtown traffic is frequently slowed or completely stopped by numerous vehicles whose drivers are cruising while looking for a parking space. In so doing they drive slowly, circle blocks, cut lines of pedestrian traffic, and slow up traffic trying to move at a safe speed. In general they cause a traffic condition which aggravates both vehicle drivers and pedestrians—thereby making a downtown trip undesirable.

Parking, therefore, is public enemy No. 1, in most cities today. In their effort to alleviate parking conditions, officials of many cities are making plans to attempt to solve the parking problem. At the same time, moreover, they are planning expressways, major streets, traffic signal improvements, installation of traffic-safety lighting along thoroughfares, channelization, and other traffic improvements. It is their desire to have sufficient information so that overall traffic planning can be undertaken as one comprehensive project.

The location of an expressway in the vicinity of a central business district poses the problem of the correct location and capacity of ingress and egress ramps. Planning for the location of parking areas must be correlated with the planning of the expressways. In several cities, steps are now being taken to create parking authorities with the power of condem-

nation of land to provide adequate parking facilities. All such improvements require that the officials must have adequate data.

Parking surveys were conducted recently in Detroit, Michigan and Atlanta, Georgia to determine:

1. The proper location and economic feasibility of new off-street facilities.
2. The total accumulation of parked vehicles for which the city must plan.
3. The rate at which vehicles park and unpark.
4. The location of ingress and egress ramps of expressways serving the central business district.

Surveys in both cities were similar. Each curb facility, parking lot and garage in the entire downtown area was surveyed by uniformed boy scouts who obtained information on the time of arrival and departure of every vehicle parked in the area, the location and facility which was used for parking. They interviewed each driver to obtain his home address, his downtown destination, and the purpose of his trip.

It is evident that thorough analysis of this survey provides the traffic engineer and other planning agencies with a vast amount of available data needed for a comprehensive plan. The purpose of this paper is to describe the techniques and procedures of a parking survey conducted by boy scouts.

Method of Survey.

Parking in the entire central business district was surveyed in one day between 7

a.m. and 7 p.m. All field work was conducted by boy scouts in full uniform. Supervision was divided among boy scout executives, city employees, and adults provided by various downtown establishments.

Each square block in the downtown area was coded with a three digit number. For the purpose of identifying groups of square blocks which typify similar land uses, they were coded in the same "hundred". For example, in Detroit the core of the downtown retail section was coded in the 900's, immediately adjacent to that district was an area coded by the 800's and several blocks from the core a commercial district, for example, was identified by its coding in the 700's. The entire downtown therefore was broken into ten areas for the purpose of future analyses which would permit rapid isolation of various sections of the downtown area.

Each parking facility within the square block was designated by the square block number plus a number indicating each facility within the block. For example, 1 always indicated the north curb; 2 the east curb; 3, the south curb; 4, the west curb; and 5, 6, 7, 8 and 9 represented off-street facilities within the block starting at the northwest corner and numbering clockwise around the block. All coding of the entire area was recorded on a map to the scale of 200 ft. per in.

Boy Scout Participation

The boy scout executives approved the use of the boy scouts for the field work because they recognized the importance of the project as a civic venture. From their own standpoint, they felt that it did the boy scout organization good to test its ability to have a large number of boys functioning at one time on one project. In both cities the survey permitted an unprecedented number of boy scouts to be gathered in one area at one time. The Detroit survey required approximately 5,000 boys, while the Atlanta survey required approximately 3,000 boys

Organization

Work on the preparation of forms, maps, instructions, and other organizational material was started more than one month before the survey. The time consuming job of determining the number of boys required at each facility, and the work necessary to assign

troops to each facility, preceded the survey approximately by one month.

One week prior to the survey four mass meetings were held—one in each of four schools throughout the city. At each mass meeting, the purpose was to instruct and distribute material. In Detroit, one representative from each troop was required to be at each meeting, while in Atlanta the entire troop attended. The interest of the boys was maintained by a well planned meeting. At the beginning of the meeting the boys were lead in several scout songs by their executives. Singing was followed by a pep talk by a scout executive who explained the importance of the job at hand and the assurance that the boy scouts would be able to "deliver the goods". After the pep talk, a movie was shown which contained views of expressways and parkways in various cities throughout the country. The movie was followed by a talk by a city official who told the boys of the survey, the benefit to the city, and the necessity for the information which the boys would gather.

In the last portion of the meeting a sample of the field form was distributed and explained. Instruction sheets were also distributed. A period was then devoted to questions and answers. As soon as the boys understood the form and the job, they were instructed where to stand on the sidewalks and in parking lots and garages, how to interview the motorists and were given their assignments and field books.

The Conduct of Survey

The downtown area, for the purpose of organization, was divided into four parts, each of which maintained a headquarters in some vacant building or other space made available in downtown stores. Each headquarters was supervised by a scout executive who had a pool of surplus boys available in case of reported absenteeism. At the beginning of the survey at 7 a.m. supervisors quickly made the rounds of their assigned territories to determine whether or not all boys assigned were present. Any shortages were reported to headquarters, at which time the headquarters supervisor dispatched boys and field books as needed. The supervisor (identified by an arm band) carried a surplus supply of books for boys who may have left their books at home

The boy scouts assigned to curb parking had each approximately one-half block to cover. As a vehicle parked at the curb, the boy recorded the license number, the time of arrival and then quickly interviewed the driver as to his home address, downtown destination, and purpose of trip. In cases where a driver parked his car at the curb and then opened the door on the drivers side and walked across the street before the boy scout had an opportunity to interview him, the instructions were specific that no boy would be permitted to cross the street in order to interview the driver. Two to six boys were assigned in parking lots and garages, depending on the number and location of entrances and exits as well as the number of vehicles which parked in the facility. The division of duties of the boys in the larger facilities was assigned by the troop leader. Some boys recorded the time of arrival, license number, and conducted the interview. Others recorded only the license number and time of departure at exit gates. The matching of license numbers to determine the time of arrival and departure of those vehicles which were recorded in different books was conducted after the survey.

Forms for the survey were on 8½ by 11-in. sheets bound into a book form with a spiral binder. The cover of the book was marked with a code number to identify the facility and facility number. The first two pages in the book carried the same instructions as were distributed to the boys at their mass meetings. The third page in the book was a map of the area with the assignment location marked plainly in red in order to orient the boys who otherwise might be confused by their assignment.

The shifts for each boy ranged from 4 to 6 hr. Where troops assigned their boys on a 4-hr. shift, only one book was assigned to each facility and the book had to change hands at each shift change. In this way the entire parking history of one facility was recorded in one book. At the end of the survey at 7 p.m. each boy assigned to the last shift was required to return the book to the headquarters in his area.

Transportation and lunch were furnished each boy.

Results

In both Detroit and Atlanta the results of the surveys were more successful than anticipated and probably more accurate than would have been obtained by paid interviewers. The public cooperated with the boys about 95 per cent. The acceptance by the public and the cooperation given to a boy in uniform is probably greater than that which would be given to an adult interviewer. The fact that all boys were in their full dress uniform (most of whom had pinned on every appropriate medal ever earned in scouting) gave the boys a feeling of pride which was reflected in their accuracy. Several books contained penmanship which could be used for lessons in neatness as well as beautiful handwriting.

In addition to the superb functioning of the boy scouts, success of the survey is attributed to the publicity given before the survey by all newspapers and radio stations.

Coding

The office work necessary after the survey was the collection of books, the checking of books received against books distributed, and the coding of the information.

In parking facilities where more than one book was used, it was necessary to match the license numbers of the vehicles to determine the time entering and the time of leaving. During the heavy afternoon periods of the day the boys recorded only the license number and time leaving, since in many cases it was impossible to check the leaving time on the same line as that on which the information was originally recorded. All information was coded by numbers and transcribed to punch cards. Included in the coding were:

1. The square block location
2. The facility number
3. The type of facility
4. Time in
5. Time out
6. Duration of parking
7. Downtown destination area
8. Purpose of trip
9. Parking fee, if any
10. Distance walked from parking place to downtown destination.

All codings recorded in books were marked in red pencil in such a way that the entire book was given to the key punch operator who punched cards directly from the field book.

DISCUSSION

MR. JOHN T. LYNCH, *Public Roads Administration*: An important feature in the Atlanta survey was the publicity which was obtained. May we have some more information about the kind of publicity and how it was secured in Atlanta?

MR. BRAFF: About three weeks before the survey we contacted the editors of the metropolitan papers and told them of the stories we wanted, when the study would be made, and that we needed their cooperation in order to acquaint the public with what was to be done. They agreed to help and to break the story in all the papers the same day, about four days before the survey was to be made. In spite of such publicity the public does forget. The radio stations were approached and they gave publicity in two ways: newscasters told about it three days before the survey in one of their newscasts; and on the day of the survey they gave a human interest story rather than the details of the survey. Also, spot announcements were made which were plugged for publicity and to help the boys. For instance, at 6:30 P. M., the night before the day of the survey, the station would break in and call attention "All boy scouts are gathering information tomorrow on highway surveys, the weather is expected to be fair, be sure to be on your jobs at 7 o'clock in the morning." That broadcast informed the scouts as well as the public.

In Atlanta, in addition to the newspapers and radios, several department stores, the transit company and others ran quarter page ads of such things as, "Help the boy scouts," with some pictures of boys interviewing motorists. Getting the public's acceptance before the job is done is very important.

MR. ROY E. JORGENSEN, *Connecticut State Highway Department*: Did you attempt to find out if the publicity affected the normal habits of people coming downtown to park? Is there not danger of creating an abnormal parking condition, because of the big show on downtown? Did you do anything to see if there was any abnormal parking?

MR. BRAFF: I do not think there is any reason for people to come to town to see the boy scouts make a parking survey. However,

there is one effect that is not desirable in this type of survey. Probably, on the day of the survey, on those spaces where there is a time limit on parking, the parkers lived up to the one-hour limit, whereas on any other day they might have stayed all day with the chance of having to pay a 2-dollar fine for overtime parking.

MR. S. T. HITCHCOCK, *Public Roads Administration*: The parking study which has recently been completed in the central business districts of Providence and Pawtucket, Rhode Island, obtained the same kind of information about parking habits of drivers and about parking facilities as was obtained in Detroit and Atlanta. A different method was used, however, in the collection of the information.

The basic operations of the two methods are essentially the same: that is, they consist of the same three phases of work and are both limited to the central business district.

1. Preliminary work
2. Cordon count
3. Parking interview

The preliminary work is the same for both methods. It consists of an inventory or audit of existing parking facilities, both at the curb and off the street. This inventory obtains for existing parking facilities the location, ownership, operation, type, capacity, and cost rates, if any. The work schedule for the parking interviews is necessarily based on this preliminary work.

The two methods differ in the length of time taken to make the cordon count of traffic and the traffic interviews. The work in Providence and Pawtucket was scheduled over a period of 3 weeks instead of during one day. The same number of traffic counts and parking interviews are made.

There are certain advantages to be gained if operations can be scheduled over a longer period

1. It is necessary to train a relatively small number of men for counting traffic or for making interviews
2. It is necessary to have only a few supervisors.
3. If scheduled operations are abnormal on any day because of inclement weather or other

unusual unforeseen events, they can be postponed to a later date with little difficulty or with little added effort or expense.

4. If the initial day's work or the work of any other day at any station is found to be in error, it can be repeated with a little added expense as an addition to the scheduled work.

5. Older and experienced men can be employed as interviewers.

6. Operations over a period of time should tend to be more representative than a study made on one day.

There are some disadvantages to be recognized if operations are scheduled over a longer period.

1. Publicity in connection with the study should be extended over a longer period.

2. Some persons may be interviewed more than once. This is also true to a lesser extent for the one-day study.

3. Control stations should be operated continuously during the period of the study to expand the information to an average daily basis.

Comments

The use of boy scouts gives them an opportunity to share in civic responsibility. Where scouts have been used previously, the job of organization is easy. In other cities it would be more difficult.

There were indications that traffic and parking were lighter on the day of the survey in

Atlanta than usual for the day of the week.—patrolmen's comments.

Costs

The cordon counts and interviews in Providence, a city of 253,500 people, took 45 men who worked 12 days. A total of 7,936 parking spaces were included in the central business district. This field work cost \$3,900—approximately \$0.50 per space.

In Pawtucket, a city of 75,797 persons, 32 men worked 4 days covering 1,935 parking spaces in the central business district. This cost \$1,400, or approximately \$0.72 per space.

The analysis work in these two cities has not been completed as yet, so complete costs for the whole study are not available.

In Baltimore it is estimated that the corresponding work on a parking study of 12,800 spaces in the central business district will cost approximately \$0.64 a space.

An average of the costs of this field work in the three cities indicates the cost to be approximately \$0.60 per parking space.

MR. T. M. MATSON, *Yale Bureau of Street and Highway Traffic*: Did that cost include preparatory work?

MR. HITCHCOCK: No. Some preparatory work is co-extensive with several phases of the origin and destination surveys. It is not very easy to state how much preparatory work was included, but it could not be very much.