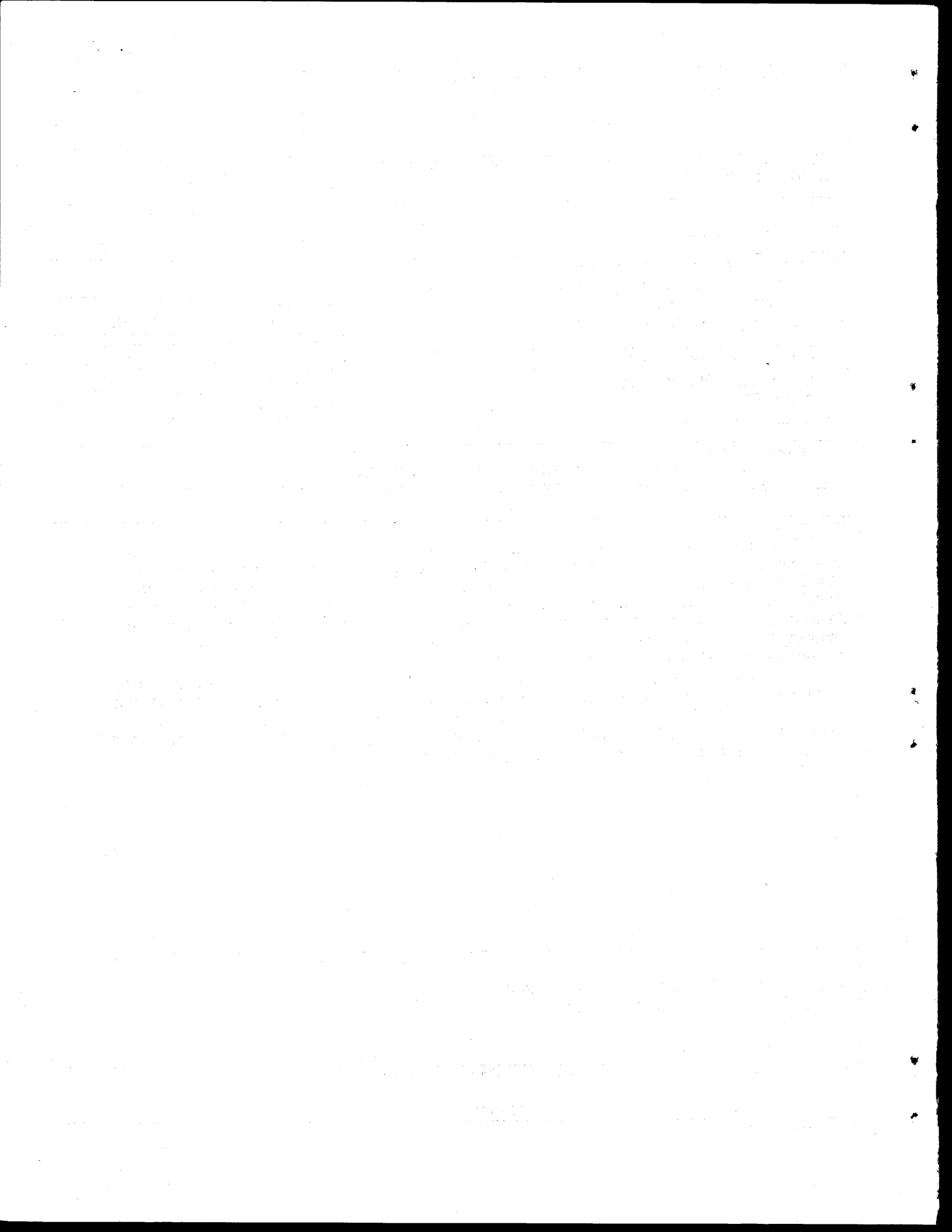


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16. Abstract Incidents, whether due to accidents or stalled vehicles, are a major cause of congestion on urban freeways. Besides causing inconvenience to motorists, incidents also create safety hazards on the freeway. To increase safety and to provide assistance and security to motorists District 12 of the Texas Highway Department has been operating a motorist courtesy patrol on some of Houston's freeways. A questionnaire study and a cost-effectiveness analysis were used to evaluate the operation of the patrol. The questionnaire study indicated that motorists aided by the patrol were overwhelmingly in favor of continuation of the program. The cost-effectiveness analysis showed the patrol to have a benefit-cost ratio of 2 to 1. Several additional benefits that could not be quantified are also discussed. The patrol performs beneficial services and should be continued.					
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COST-EFFECTIVENESS EVALUATION
OF FREEWAY COURTESY PATROLS IN HOUSTON

by

Daniel B. Fambro
Engineering Research Associate

Research Report Number 165-16

Development of Urban Traffic Management
and Control Systems

Research Study Number 2-18-72-165

Sponsored by
The Texas Highway Department
In Cooperation with the
U. S. Department of Transportation
Federal Highway Administration

Texas Transportation Institute
Texas A&M University
College Station, Texas

October 1974

due to earlier removal of incidents from traffic lanes during the peak periods. The Texas Highway Department was able to save \$19,200 due to maintenance personnel not having to respond to aid calls at night and \$17,400 because the courtesy patrol performs some functions normally done by other members of the Highway Department. A \$5,152 savings was attributed to the patrol as a result of a decreased number of secondary accidents. By comparing these estimated benefits to the cost, a benefit to cost ratio of 2 to 1 was computed. In addition, the provision of a feeling of security to motorists and the creation of a favorable public image were considered benefits of the patrol.

It is recommended that the courtesy patrol program be continued in Houston and also be considered for implementation in other major metropolitan areas of the state.

Implementation

Courtesy patrol service helps disabled motorists on Houston's freeways; however, the major benefit of the patrol is reduced delay time to motorists who are indirectly affected by incidents. This study indicates that the District 12 patrol was cost-effective and recommends that it be continued.

Recommendations for Further Research

Criteria for routing and scheduling freeway patrols should be defined. Models could be developed to analyze alternative routing and scheduling techniques. Mathematical and simulation approaches would be appropriate for this analysis. Relationships could be developed between cost and effectiveness for alternative routing and scheduling techniques. Also, future research should be expanded to include a benefit-cost comparison between the courtesy patrol system and other types of motorist aid systems.

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1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The second part of the report is devoted to a critical analysis of the work done and the reasons for the success or failure of the various projects. The third part of the report contains the conclusions and recommendations of the committee.

2. The committee has found that the work done during the year has been satisfactory in many respects. The progress made in the various projects has been considerable and the results achieved have been of a high standard. However, there have been some shortcomings in the work done and these have been pointed out in the report. The committee has also made some recommendations for the improvement of the work done in the future.

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INTRODUCTION

The Problem

The need to provide assistance to stranded motorists arrived with the invention of the automobile. The expected number of stops per mile, both on and off the freeway, increases as either the average daily traffic increases or the average trip length decreases as shown in Figure 1. Large volumes of traffic and short trips are typical of the situation that exists in large urban areas such as Houston. Stops on the freeway comprise 42 percent of the total number of stops. Emergency stops are one of the major causes of congestion on urban freeways whether they are the result of stalled vehicles or accidents. Motorists involved in incidents may require one or any combination of the following needs for aid (1):

- Service
 - Flat tires
 - Mechanical and electrical repair
 - Fuel, oil, water
 - Towing
- Police
- Ambulance
- Fire
- Information:
 - General information
 - Emergency traffic routing

An individual who is confronted with an emergency stop is generally unprepared to immediately cope with even the simplest of situations. The only problem with which the average motorist is generally capable of dealing

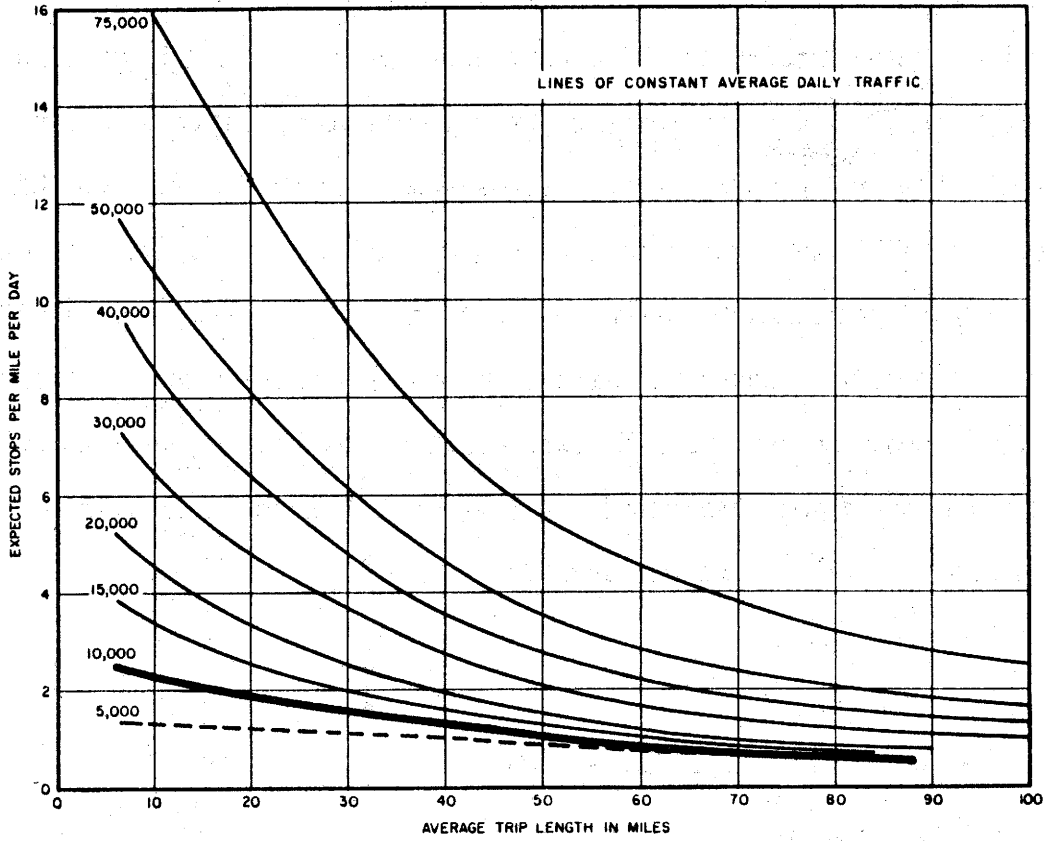


Figure 1 - Expected Number of Stops Per Mile Per Day vs. Average Trip Length on Facility (2)

with by himself is that of changing a flat tire, but if the motorist is a woman, she may be incapable of even doing this. Some motorists might be able to take care of a few of their other needs if they carried appropriate items or material needed to deal with these problems. Clearly, the typical disabled motorist needs assistance.

Safety problems also arise as a result of emergency stops on the freeway. These include the following (1):

- Motorists crossing operating lanes
- Motorists wandering on highway shoulders
- Hitchhiking to seek help
- Leaving abandoned vehicles in or partially in operating lanes
- Climbing roadway protection fences
- Inexperienced motorist self-help (improper use of jack, touching hot engine components, etc.)

A motorist aid system would not eliminate all safety problems, but should be successful in reducing their severity and occurrence. The major cause of these safety problems is the concern the motorist experiences when confronted with an unexpected breakdown in a hostile environment. With the passage of time, presence of darkness, or remoteness of setting, this concern may turn to fear causing the motorist to behave in an irrational manner. In order to reduce or eliminate this feeling, the motorist must have confidence that aid will come. District 12 of the Texas Highway Department, is attempting to deal with the emergency needs of the motorists and the problems that arise as a result of these needs by the operation of a courtesy patrol on selected freeways in the city of Houston.

Objectives of the Patrol

The primary objectives of a courtesy patrol program in the Houston area are to provide safety, assistance, and security for motorists using the free-ways. These objectives can be accomplished by performing the following tasks:

1. Assisting the "stranded" motorist in restoring the disabled vehicle to an operable condition.
2. Summoning additional motorist aid for problems the patrol cannot correct.
3. Removing hazardous objects from the roadway.
4. Performing minor maintenance operations on roadside signs and lights.
5. Directing traffic in a safe and expedient manner in emergency situations.
6. Operating in a prompt and dependable manner so as to instill a feeling of security in the motorists.

If these tasks are carried out, the following benefits might be expected to occur:

1. Motorist related
 - a. Saves motorist expense of calling a private service.
 - b. Reduces waiting time of stranded motorist.
 - c. Provides some sense of security to the motorist.
 - d. Reduces delay time, to those involved in incidents as well as to those not directly involved, by early removal of incidents and directing traffic through or around incident areas.

2. Texas Highway Department related
 - a. Public relations
 - b. Savings in time to other THD employees due to courtesy patrol performing functions that are normally done by other THD employees.
3. Police Department related
 - a. Reduction in police patrol time spent on non-police functions due to operation of the courtesy patrol.
 - b. Reduction in requests of aid which require no police function because the courtesy patrol would take care of some of the requests.
4. Safety related
 - a. Reduction in accidents due to the earlier removal of debris and incidents.
 - b. Reduction in pedestrian movement on freeways.
 - c. Protection of stranded motorists while repairs are being made.

Description of the District 12 Courtesy Patrol

Operation and Equipment - Originally, the courtesy patrol in Houston consisted of one vehicle operating on a twenty-four hour basis, seven days a week. The patrol worked in three, eight-hour shifts; 8:00 a.m. to 4:00 p.m., 4:00 p.m. to 12:00 p.m., and 12:00 p.m. to 8:00 a.m. One man was on duty during each of these three shifts with a fourth man employed as an extra operator. In July 1972, the patrol was expanded to two pickup trucks because of the increasing demands on the services which the patrol was providing. A supervisor's pickup was used as an extra vehicle until a back-up truck

could be added. Currently, there are two men riding in each truck, thus requiring a twelve man crew to operate the patrol. The 8:00 a.m. to 4:00 p.m. shift was discontinued on weekdays on December 12, 1973, because of the energy crisis.

Emergency vehicle service is provided on sixty-four miles of Houston's freeways. Areas that the patrol covers include parts of Loop IH 610 and Interstate Highways 59, 10, and 45 inside the Loop. Figures 2 through 5 show the routes taken by the patrol vehicles. The 1972 average daily traffic on these freeways was between 91,000 and 160,000 vehicles per day (3). The patrol vehicles carry the following types of equipment:

1. One two-way radio
2. Two flashing and one revolving amber lights per vehicle
3. Eight flares and one case of fuses
4. Five gallons of gasoline
5. Five gallons of water
6. One bumper jack
7. One, 1 1/4 ton floor jack
8. One, 2 1/2 lb. and one, 5 lb. CO₂ fire extinguisher
9. Two red flags
10. One cross lug wrench
11. One battery charger
12. Miscellaneous mechanic's tools
13. One shovel and one broom
14. Six traffic cones
15. Absorb-all

The vehicles are also equipped with push-type bumpers that provide a means of moving disabled vehicles from the main lanes to the shoulder. Figures 6 shows one of the patrol vehicles currently being used in Houston.

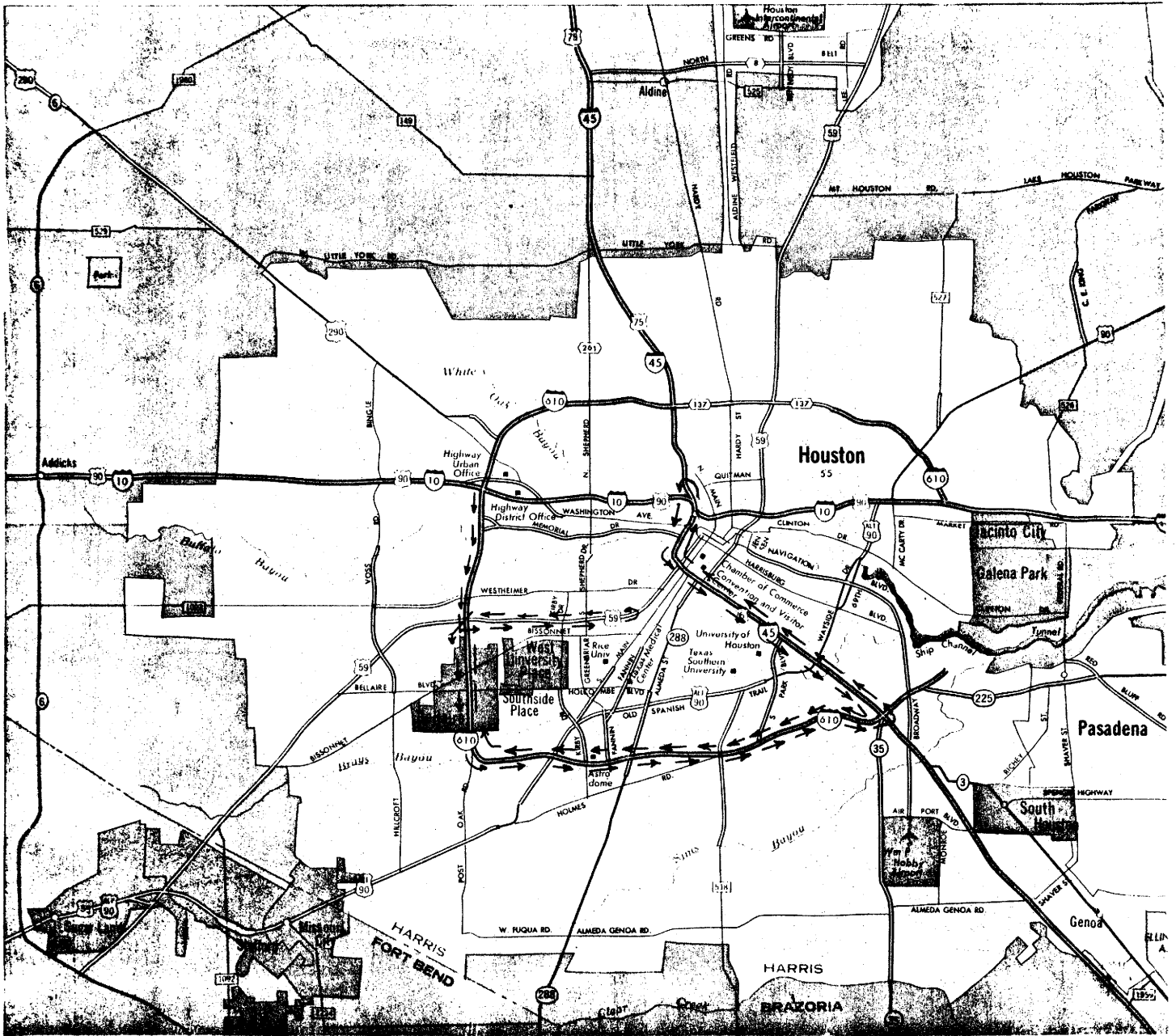


Figure 2 - Courtesy Patrol-South Route Number 1

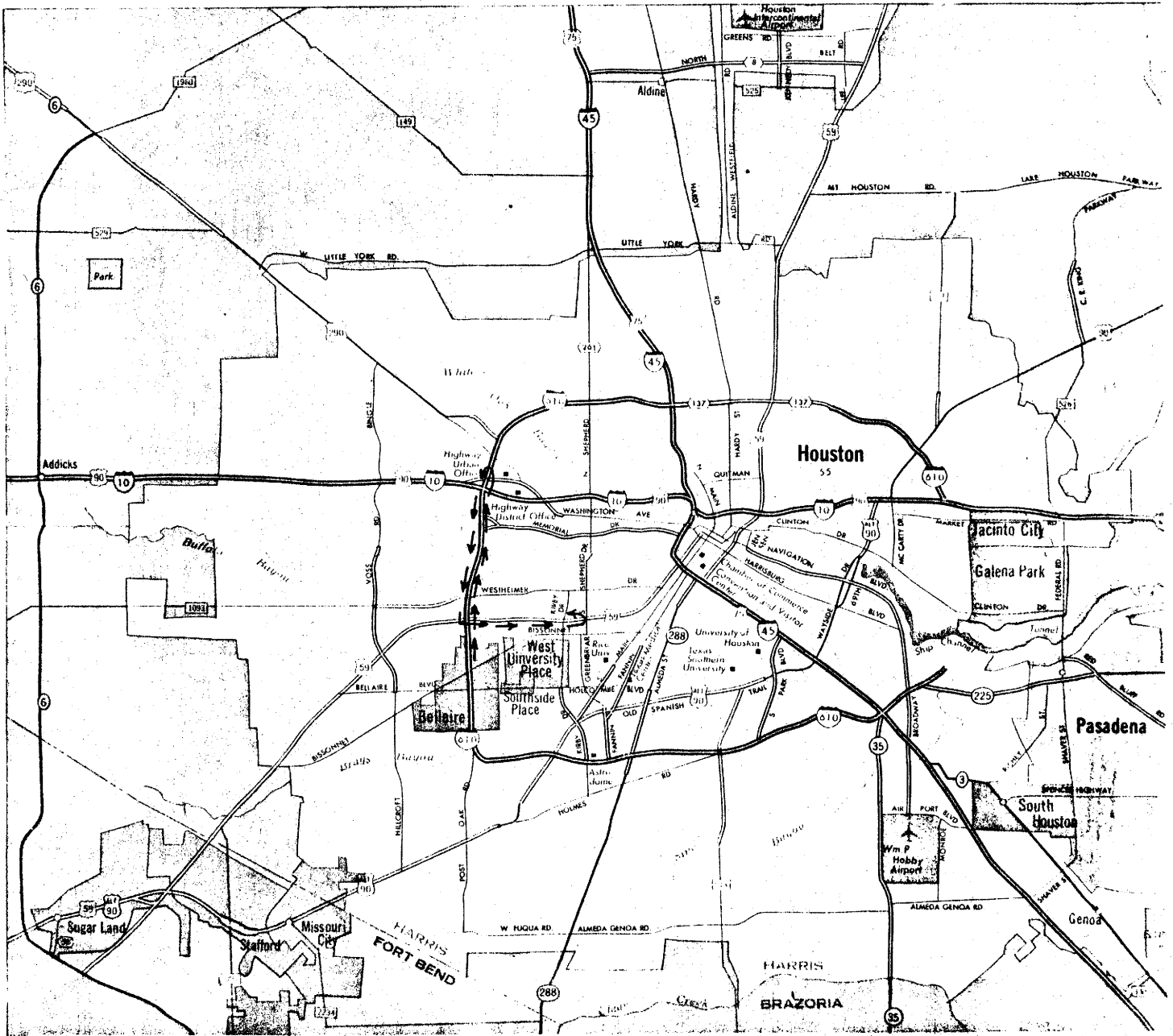


Figure 3 - Courtesy Patrol-South Route Number 2

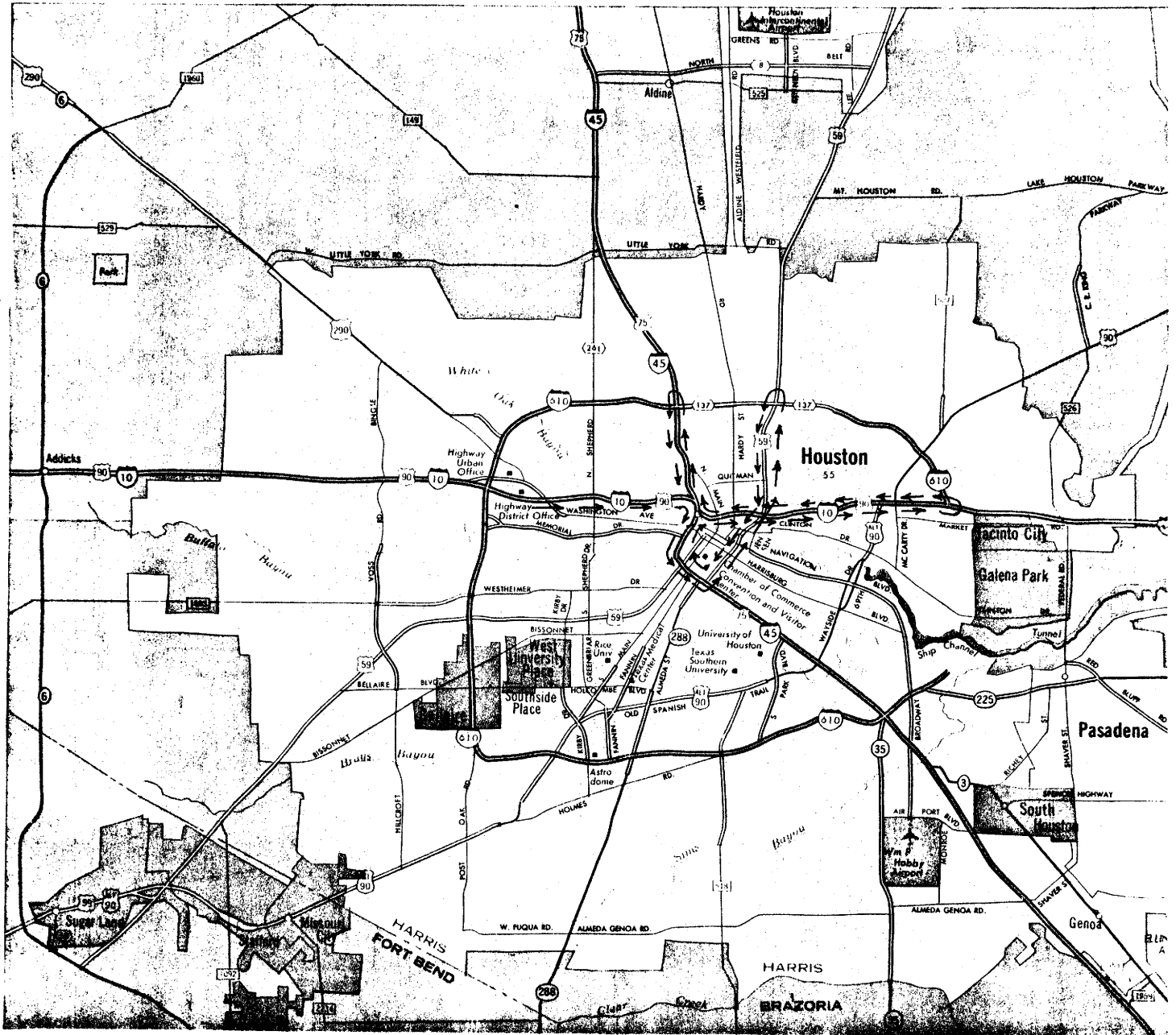


Figure 4 - Courtesy Patrol-North Route Number 1

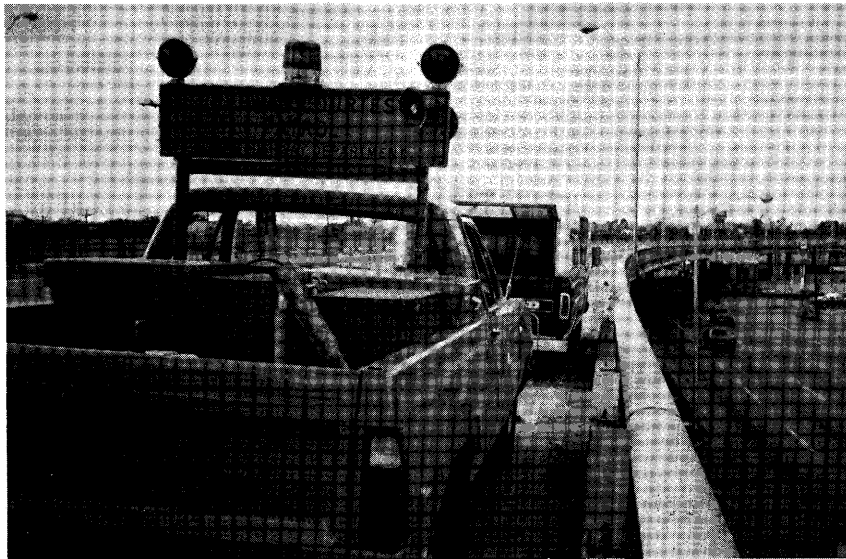


Figure 6 - Courtesy Patrol Vehicle

Services Provided - The patrol provides services that directly benefit motorists in need of aid, services that benefit other members of the Highway Department, services that benefit the Houston Police Department, and services that benefit motorists that may not need aid themselves. Table 1 is a month-by-month tabulation of the services rendered by the Houston courtesy patrol during 1973. Table 2 gives totals, percentages, and averages for different time periods during the year. These data were taken from log-books that were kept by the vehicle operators. An explanation of how the services were classified from the log statements can be found in Appendix A.

Method of Study

The evaluation of the courtesy patrol was done in two parts. First, responses to a questionnaire given motorists who were helped by the patrol were evaluated. The second phase of the analysis compared the benefits resulting from operation of the patrol to costs necessary to provide them.

Table 1
Services Rendered by the Courtesy Patrol by Month During 1973

SERVICE RENDERED	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Removed Debris or Hazard	154	200	186	297	328	324	335	275	288	316	261	297
Issued Gas	60	59	65	100	108	119	113	116	109	118	130	120
Controlled Traffic	74	58	69	95	72	95	110	102	121	95	113	115
Pushed from Traffic	38	28	27	41	49	48	40	72	70	65	59	35
Changed Tire	19	12	22	38	35	27	44	60	74	74	70	71
Loaned Tools	29	39	44	51	61	52	65	58	66	63	82	86
Issued Water	11	8	15	27	38	30	54	52	57	50	44	19
Took to Phone	6	7	20	26	18	26	14	20	16	16	21	11
Took to Service Station	25	26	30	32	28	41	35	35	25	35	32	13
Charged Battery	4	17	21	28	36	29	51	1	3	3	6	6
Made Call for Motorist	11	12	19	34	33	29	34	39	28	44	46	36
Made Minor Repair to Vehicle	3	7	13	29	21	23	28	15	20	22	23	16
Started Vehicle	18	23	27	41	38	46	38	79	82	115	116	84
Reported Stall	7	11	15	12	16	21	18	19	21	10	18	28
Reported Accident to Police	17	20	27	52	33	32	48	42	47	47	39	48
Reported Debris	7	5	6	9	6	10	5	6	7	5	9	6
Reported Abandoned Vehicle	16	12	23	18	9	29	28	17	22	14	15	19
Called Wrecker	17	12	20	29	26	22	14	19	19	18	36	26
Reported Damage to Facilities	44	33	34	51	42	42	61	42	47	75	44	45
Repaired Facilities	25	22	32	28	50	22	28	33	37	30	26	37
Gave Directions	7	5	6	4	3	11	21	9	19	18	20	17
Put Fire Out			2	1	1	1	4	3	4	1	2	2
Other Help	3	5	12	9	14	11	18	21	44	42	31	47
TOTALS	595	621	735	1052	1065	1090	1206	1135	1226	1276	1243	1184

Table 2
Services Rendered by the Courtesy Patrol for Different Time Periods During 1973

SERVICE RENDERED	1973 Totals	Percent of Total	Daily Average	Weekday Daily Avg.	Weekend Daily Avg.	12M to 7 Total	7 to 9 Total	9 to 4 Total	4 to 6 Total	6 to 12M Total	Total Peak Period	Percent Peak Period
Removed Debris or Hazard	3261	26.2	8.9	9.2	8.2	1321	164	979	255	542	237	7.2
Issued Gas	1217	9.7	3.3	3.4	3.2	301	72	356	155	333	178	14.1
Controlled Traffic	1119	9.0	3.1	3.1	3.0	271	62	345	133	308	149	13.3
Pushed from Traffic	572	4.6	1.3	1.2	1.4	100	46	185	96	145	119	20.8
Changed Tire	546	4.4	1.5	1.1	2.5	130	35	196	50	135	57	10.4
Loaned Tools	696	5.6	1.9	1.8	2.1	174	31	210	81	200	83	11.9
Issued Water	405	3.3	1.1	1.1	1.1	64	24	136	71	110	67	16.5
Took to Phone	201	1.6	0.6	0.6	0.5	32	17	73	33	46	45	22.3
Took to Service Station	357	2.9	1.0	1.0	0.9	82	23	129	38	85	44	12.3
Charged Battery	205	1.7	0.6	0.6	0.5	46	0	84	7	68	6	2.9
Made Call for Motorist	365	3.0	1.0	0.9	1.3	80	15	114	45	111	47	12.8
Made Minor Repair to Vehicle	220	1.8	0.6	0.6	0.7	30	13	94	25	58	37	16.8
Started Vehicle	707	5.7	1.9	2.0	1.8	131	67	221	98	190	134	18.9
Reported Stall	196	1.6	0.5	0.5	0.7	126	1	26	12	31	8	4.0
Reported Accident to Police	452	3.6	1.2	1.2	1.3	91	29	121	86	125	92	20.3
Reported Debris	81	0.7	0.2	0.2	0.3	23	2	31	5	20	5	6.1
Reported Abandoned Vehicle	222	1.8	0.6	0.6	0.6	76	16	60	25	45	35	15.7
Called Wrecker	258	2.1	0.7	0.7	0.8	46	12	67	53	80	46	17.8
Reported Damage to Facilities	560	4.5	1.5	1.3	2.1	243	16	126	24	151	17	3.0
Repaired Facilities	370	3.0	1.0	0.9	1.2	202	13	79	17	59	19	5.1
Gave Directions	140	1.1	0.4	0.3	0.5	42	3	49	14	32	7	5.0
Put Fire Out	21	0.1	0.1	0.1	0.1	4	1	5	7	4	5	23.8
Other Help	257	2.1	0.7	0.7	0.8	48	25	92	36	56	41	15.9
TOTALS	12428	100	33.7	33.1	35.6	3663	687	3778	1366	2934	1468	11.8

QUESTIONNAIRE STUDY

After the motorist patrol had been in operation for a short time, a questionnaire was distributed to all the motorists that were helped by the patrol during an eight-month period from March to October during 1973. A total of 1429 motorists filled out the questionnaire that is shown in Figure 7. The following is a discussion of the responses to the questionnaire.

1. About how long had you waited before the courtesy patrol arrived?

In response to this question, 47 percent of the motorists replied they had to wait less than five minutes for service, 74 percent less than 15 minutes, 90 percent less than 30 minutes, and 96 percent less than an hour. Replies to this question are shown in Table 3.

2. What caused your problem; flat tire, out of gas, mechanical, other?

The purpose of this question was to determine what type of aid the motorist needed. Replies indicated that 24 percent of the people helped had flat tires, 28 percent were out of gas, 30 percent had mechanical difficulty, and the remaining 18 percent had other problems. Table 4 is a tabulation of the replies to this question.

3. Did this service help you?

Table 5 summarizes the response to this question. Of the motorists that returned the questionnaire, 94 percent replied that it did. The four people whom the patrol did not help commented that either they were not in need of aid or that help was already on the way.

Date _____

T.H.D. Driver (Initials) _____

Highway No. _____

The Texas Highway Department is pleased to be able to offer the service you have received as both a safety and a courtesy measure, on an experimental basis. Its continuation will depend partially on its value to you, the motoring public. If you believe this to be of value, it will be helpful to the program if you would answer the following questions and return this form to the Highway Department.

1. About how long had you waited before the Courtesy Patrol arrived? _____
2. What caused your problem? Flat tire _____ Out of gas _____
Mechanical _____ Other _____
3. Did this service help you? _____
4. The service is paid for out of the taxes you pay. Do you recommend that it be continued? _____
5. Comments: _____

Signature

Please return to

Texas Highway Department
P.O. Box 1386
Houston, TX 77001

Address

Figure 7 - Courtesy Patrol Questionnaire

Table 3
Estimated Response Time of Patrol

Waiting Time (Minutes)	Time Period			Total Replies	Percent
	March-May	June-August	September-October		
t<5	150	242	208	600	46.8
5<t<15	94	125	128	347	27.0
15<t<30	41	75	98	214	16.7
30<t<60	15	20	36	71	5.6
t>60	15	18	17	50	3.9
Total	315	480	487	1,282	100.0

Table 4
Classification of Problems

Problem	Time Period			Total Replies	Percent
	March-May	June-August	September-October		
Flat tire	82	115	140	337	24
Out of gas	88	147	150	385	28
Mechanical	108	156	159	423	30
Other	60	109	80	249	18
Total	338	527	529	1349	100

Table 5
Motorist Reaction to Service Provided

Did Service Help	Time Period			Total Replies	Percent
	March-May	June-August	September-October		
Yes	334	514	504	1342	94.0
No	2	0	2	4	0.2
No Answer	14	40	29	83	5.8
Total	350	544	535	1429	100

Table 6
Motorist Reaction to Courtesy Patrol Program

Continue Program	Time Period			Total Replies	Percent
	March-May	June-August	September-October		
Yes	324	515	504	1343	94.0
No	3	0	0	3	0.2
No Answer	23	29	31	83	5.8
Total	350	544	535	1429	100

4. This service is paid for out of the taxes you pay. Do you recommend that it be continued?

The responses to this question were very similar to those of question three. Ninety-four percent of the motorists answered yes. Table 6 is a tabulation of the response to this question.

5. Comments

Because of the many different responses to this question, the replies were categorized into very favorable, favorable, unfavorable, and no comment.

Very favorable comments included such things as "excellent service," "very good service - should be continued," "the best program ever," "there should be more programs of this sort," detailed accounts of exactly what the individuals' problems were and how the Texas Highway Department should be commended for providing the service, and "this is a great service for ladies traveling by themselves." Favorable comments were typically such things as "thank you," "good program," and "your men were very helpful and courteous." Unfavorable comments were those that contained any negative response to the patrol. The last category was for those motorists who did not answer this question.

Thirty-five percent of the motorists responded very favorably, 26 percent were favorable, and 39 percent offered no comments. None of the motorists listed any unfavorable comments. Typical comments are listed in Appendix B. Tabulation of the responses to Question five is shown in Table 7.

Table 7
General Comments of Stranded Motorists

Comment	Time Period			Total Replies	Percent
	March-May	June-August	September-October		
Very Favorable	163	170	171	504	35
Favorable	76	158	133	367	26
Unfavorable	0	0	0	0	0
No Comment	111	216	232	559	39
Total	350	544	535	1429	100

COST EFFECTIVENESS - TWENTY-FOUR HOUR OPERATION

Procedure

All costs associated with the operation of the courtesy patrol were relatively easy to determine while some of the benefits were rather difficult to quantify. The approach selected was to quantify those benefits that could readily be evaluated and to describe the additional non-priceable benefits that make the service more effective. The benefits that could be priced were used in a benefit-cost analysis to determine the effectiveness of the courtesy patrol.

Costs

The cost to operate the patrol in 1973 on a 24-hour basis was computed using data supplied by District 12 of the Texas Highway Department. A breakdown of the costs is shown in Table 8. The annual cost to operate the patrol was found to be \$229,400. This is an average of \$6.70 per vehicle mile of travel by the courtesy patrol.

Benefits

The quantifiable benefits of the Houston courtesy patrol were:

Motorist Related

Saves motorist expense of calling a service facility - The courtesy patrol provides several services which a motorist would normally obtain from a service facility. Table 9, taken from data in the courtesy patrol's log books, shows the total services of this type that were performed by the patrol in 1973.

The savings in expenses to a stranded motorist were assumed to be the cost of obtaining aid from service facilities. The Houston office of the

Table 8
Cost to Operate Courtesy Patrol in 1973

Cost	Per Month	Annual
Administration	\$ 1,500	\$ 18,000
Labor (12 man years)	14,500	174,000
Vehicle Operating Expense and Depreciation	2,400	28,800
Materials and Supplies	720	8,600
TOTAL	\$19,120	\$229,400

Table 9
Private Business Services Rendered in 1973

Services Rendered	1973 Totals
Issued gas	1,217
Pushed from traffic	572
Changed tire	546
Loaned tools	696
Issued water	405
Charged battery	205
Made minor repair to vehicle	220
Started vehicle	707
TOTAL	4,568

American Automobile Association (AAA) was contacted and, in turn, furnished the following cost information typically incurred by motorists for aid requests in the Houston area:

1. The maximum allowable charge for tow-in service by law inside Houston's city limits is \$27.50. All receipts that were examined by TTI in the AAA office indicated that the maximum amount was generally charged.
2. There is a standard \$5 charge by service facilities to go to the aid of a motorist on the freeway. If the private wrecker has to travel over a mile, this price may increase to \$10 which is the charge to go from a location on the Loop to downtown Houston. For analysis purposes, the minimum \$5 charge was assumed. This \$5 charge is in addition to the cost of the service provided.
3. The average price to fix a flat tire is \$2.50.
4. The average price for gasoline in Houston is \$0.507 per gallon for regular (July 1974).

Based on the above costs for services in Houston and the author's personal experience of service rates in other cities, the following additional costs were estimated:

1. The charge to start a car or charge a battery would be a minimum of \$1.50.
2. On the average, minor repairs to vehicles could not be done for less than \$5.
3. Loaning tools or issuing water might not require an additional charge.
4. Pushing a car from traffic would require wrecker service.

By utilizing the above data, the savings to the motorist serviced by the courtesy patrol in Houston during 1973 were computed and tabulated in Table 10. The results indicate that \$40,161 was saved by stranded motorists due to operation of the courtesy patrol.

Reduces delay time of stranded motorists - The operation of the courtesy patrol enables the stranded motorist to receive aid faster than if no patrol vehicles were available. The savings in time to the motorist is a benefit of the courtesy patrol.

The average stopping times for disabled freeway motorists determined in a previous study conducted in Houston (4) are shown in Table 11. The data from Table 11 were used to estimate an average stopped time per disabled vehicle of 49 minutes. Table 12, taken from the questionnaire evaluation, was used to estimate an average waiting time of 12 minutes for each disabled motorist before the patrol vehicle arrived. Previous studies in Houston (4, 5, 6, 7) indicate that 10 minutes is an acceptable estimate of the time required for an aid service to be performed. Therefore, if courtesy patrol aid were obtained, the estimate of the average stopped time per disabled vehicle becomes 22 minutes. Thus, on the average, each motorist related service the patrol performed saved the disabled motorist 27 minutes.

In 1973, the patrol performed 4,568 motorist related services. The total time savings to the vehicles involved is estimated as follows:

$$(4,568 \text{ services}) \times (27 \text{ minutes saved per service}) \times (1 \text{ hour per } 60 \text{ minutes}) = 2056 \text{ vehicle-hours}$$

Based on a 1969 economic study of the Gulf Freeway and the conservative estimate of 1.0 persons per passenger vehicle, the cost per person-hour of travel using 1967 data was determined to be \$2.92 (9). Assuming a conservative

Table 10

Motorist Savings Gained by Not Having to Request Aid
From a Private Business
in 1973

Service	Cost per Service	No. of Services	Annual Savings
Issued gas	\$0.507 + \$5	1217	\$ 6,702
Pushed from traffic	\$27.50	572	15,730
Changed tire	\$2.50 + \$5	546	4,095
Loaned tools	\$5	696	3,480
Issued water	\$5	405	2,025
Charged battery	\$1.50 + \$5	205	1,333
Made minor repair to vehicle	\$5.00 + \$5	220	2,200
Started vehicle	\$1.50 + \$5	707	4,596
TOTAL			\$40,161

Table 11

Average Stopped Times for Different
Reasons of Stopping (4)

Reason for Stop	Number of Stops	Average Stopped Time (Minutes)	Total Stopped Time (Minutes)
Gas	131	30.9	4047.9
Tire	207	41.4	8569.8
Mechanical	299	82.3	24607.7
Accident	50	72.6	3630.0
Other	194	14.6	2832.4
Total	881		43687.8

Average Stopped Time per Disabled
Motorist (43687.8/881)

49.6

Table 12

Average Waiting Time for Courtesy Patrol
Aid Based on Estimates by Stranded
Motorists in 1973

Waiting Time (Minutes)	Midpoint (X_i)	Number (N)	Total Time (X_i)(N)
<5	2.5	600	1500
5<15	10.0	347	3470
15<30	22.5	214	4815
30<60	45.0	71	3195
>60	60.0	50	3000
Total		1282	15980

Average Waiting Time per Disabled
Motorist (15980/1282)

12.5

compound increase of five percent per year for six years and a more realistic value of 1.2 persons per passenger vehicle, the value of one vehicle-hour in 1973 would be \$4.69. By using this amount, the value of time savings to the disabled motorists helped by the patrol is calculated as follows:

$$\text{Savings in time} = (2056 \text{ vehicle-hours}) \times (\$4.69 \text{ per vehicle-hour}) = \underline{\$9,643}$$

Reduces delay time at certain incidents due to earlier removal of incidents from traffic lanes during the peak periods - Incidents, whether stalled vehicles or accidents, are a major cause of congestion on urban freeways. Incidents reduce the capacity of the roadway and if the reduction in capacity reaches a point where the demand on the facility is greater than the available capacity, motorists experience considerable delay. During the peak periods, Houston's freeways operate at or near capacity; therefore, any incident that occurs at this time will cause motorists to experience greater travel times. A previous study on the Gulf Freeway (7) indicated that an incident which blocked one lane of a three-lane freeway for 15 minutes during the peak period caused 690 vehicle-hours of delay for motorists. During 1973, the patrol pushed 119 vehicles from the traffic stream during the peak period. Assuming the 690 vehicle-hours is a reasonable estimate of the savings per incident and using the value of time previously shown as \$4.69 per vehicle hour, the following monetary benefit was estimated as a result of the courtesy patrols assisting stranded motorists off the freeway mainlanes during peak periods.

$$\begin{aligned} \text{Savings} &= (119 \text{ services/year}) \times (690 \text{ vehicle-hours/service}) \\ &(\$4.69/\text{vehicle-hour}) = \underline{\$385,096 \text{ per year}} \end{aligned}$$

Texas Highway Department Related

Saves other Texas Highway Department employees time - In the absence of the courtesy patrol, the Texas Highway Department would have to use other personnel to perform some of the services the patrol currently provides. Before the patrol began operation, the Maintenance Sections in District 12 had to deal with requests for aid or repair work made at night. Due to the operation of the patrol, each of the four Maintenance Sections in the city feel they save an average of \$400 per month in time alone (9). Thus, the annual savings can be conservatively estimated as follows:

$$\begin{aligned} \text{Savings} &= (\$400/\text{month}/\text{section}) \times (4 \text{ sections}) \times (12 \text{ month}/\text{year}) \\ &= \underline{\$19,200 \text{ per year}} \end{aligned}$$

Other functions the patrol performed which other members of the Department normally did are shown in Table 13. Data for the table were taken from the patrol's log books. Even though these services account for over 41 percent of the total jobs the patrol performs, they are the type of services that can be done quickly. Assuming these jobs take a minimum of 10 percent of the patrol's time, at least 10 percent of the labor cost, from Table 8, of the courtesy patrol could be considered a benefit to other members of the Highway Department.

$$\begin{aligned} \text{Savings to Other THD Employees} &= (\$14,500 \text{ labor per month}) \times \\ & (12 \text{ months per year}) \times (0.10) = \underline{\$17,400 \text{ per year}} \end{aligned}$$

Safety Related

Reduces number of accidents due to earlier removal of debris and incidents - The services which the courtesy patrol provides makes Houston's freeways a

Table 13

Services the Patrol Performed in 1973
Normally Done by Others

Service	Number	Percent of Total Services
Removed Debris or Hazard	3261	26.2
Reported Stall	196	1.6
Reported Accident to Police	452	3.6
Reported Debris	81	0.7
Reported Abandoned Vehicle	222	1.8
Reported Damage to Facilities	560	4.5
Repaired Facilities	370	3.0
Total	5142	41.4

safer place to drive. Kuprijanow (2) estimated that 16 stops per mile per day could be expected on a freeway with an ADT of 75,000 and an average trip length of 10 miles (See Figure 1). Of these, 42 percent of the total are emergency type stops (2). Emergency stops are those which require services rendered by the highway patrol, private operators of tow services, ambulance services, or local fire departments. Since the ADT on the Houston freeways serviced by the patrol was between 90,000 and 160,000, sixteen stops is considered to be a conservative estimate of the number of stops per mile per day in the patrol area. Because of the lack of data, ten miles was assumed to be a conservative estimate of the average trip length on the freeways serviced by the patrol. Based on these assumptions, the number of emergency stops that would be expected in the 64-mile section of Houston freeways covered by the courtesy patrol is:

$$\text{Number of emergency stops} = (16 \text{ stops/mile/day}) \times (0.42) \times (64 \text{ miles patrolled}) \times (365 \text{ days/year}) = 156,979 \text{ emergency stops per year}$$

Goolsby (4) observed 27,000 emergency stops in an eleven-mile section of freeway in Houston in a one-year period. This stoppage rate would result in 157,090 emergency stops per year in a 64-mile section. Because of the favorable comparison of the results of the two references, 157,000 is considered to be a good estimate of the number of emergency stops in the patrol section during 1973.

Each emergency stop has the possibility of causing a secondary accident; secondary, meaning an accident involving a stopped, parked, or disabled vehicle. Data supplied by the Gulf Freeway Surveillance and Control Center indicated that during 1973, there were 144 accidents of this type in the patrol

section (See Table 14). Data taken from the log books show that the courtesy patrol assisted over 8,000 disabled motorists during this same time period. Because of the safety aspect of courtesy patrol service (flashing lights, quicker service, experienced operators), no secondary accidents were reported when the patrol assisted disabled motorists. In contrast, a statistical analysis shows that in a random sample of 8,000 unaided emergency stops some secondary accidents would have been expected to occur. Since all secondary accidents in the patrol section occurred when courtesy patrol aid was not provided, the estimated number of secondary accidents per unserved emergency stop can be computed as follows:

$$\begin{aligned} \text{Secondary accident rate} &= (144 \text{ secondary accidents in the patrol} \\ &\text{section}) / (157,000 \text{ emergency stops} - 8,000 \text{ serviced emergency stops}) = \\ &9.7 \times 10^{-4} \text{ secondary accidents per unserved emergency stop} \end{aligned}$$

Assuming this accident rate is a reasonable estimate, it is further estimated that the number of secondary accidents which would have occurred if the courtesy patrol had not provided aid for the 8,000 disabled motorists it helped during 1973 could be calculated as follows:

$$\begin{aligned} \text{Number of secondary accidents avoided} &= (9.7 \times 10^{-4} \text{ secondary accidents} \\ &\text{per unserved emergency stop}) \times (8,000 \text{ serviced stops}) = \\ &8 \text{ secondary accidents that did not occur} \end{aligned}$$

Burke (10) in 1970 determined accident costs for three types of accidents. It was assumed that in the eight secondary accidents only two cars would have been involved and that only property damage would have occurred. Using Burke's figure of \$307 cost per vehicle for a property damage accident in 1972 and assuming a five percent inflation rate per year, causes the cost of eight

Table 14

Accidents Involving Parked Motor Vehicles
in the Patrol Section During 1973

LOCATION	DIRECTION	TIME OF DAY				
		12M-7	7-9	9-4	4-6	6-12M
IH 10 West Katy Freeway	Inbound	2	1	3	2	2
	Outbound	1	1	5	2	6
	Unknown			1		
IH 10 East East Freeway	Inbound	2		3	1	1
	Outbound			6		2
	Unknown		1		2	1
US Highway 59 SW Freeway	Inbound	2		1	3	2
	Outbound	2		2		2
	Unknown	1	1		2	2
US Highway 59 Eastex Freeway	Inbound		1	3	1	
	Outbound	2		2	1	2
	Unknown			1		2
IH 45 South Gulf Freeway	Inbound	4	1	1		3
	Outbound	3		1		2
	Unknown	1	1	1		3
IH 45 North North Freeway	Inbound			1		
	Outbound	1		1		2
	Unknown		2			2
State Highway 225 La Porte Freeway	Inbound			1		
	Outbound					
	Unknown	1	1			
IH 610 North Loop East	East			1	1	
	West					
	Unknown					
North Loop West	East			1		1
	West					
	Unknown					1
South Loop East	East	1				
	West		1	1	1	1
	Unknown				2	
South Loop West	East	1		1		
	West			1		1
	Unknown					1
West Loop North	North			1		
	South	1		1		
	Unknown					
West Loop South	North			2		1
	South	1	2	2	1	
	Unknown	1		1		
TOTALS		27	13	45	19	40

= 144

secondary accidents in 1973 to be:

$$(\$322 \text{ per vehicle}) \times (16 \text{ vehicles}) = \$5,152$$

Annual savings due to the reduction of eight secondary accidents is \$5,152.

Reduces number of pedestrian accidents - Because the courtesy patrol provided aid to over 8,000 disabled motorists, the number of would be pedestrians walking for aid services in the patrol area decreased. A California study (11) concluded that 43 percent of all the pedestrians struck on freeways were on the facility as a result of their vehicle either being disabled or involved in a prior accident. Data from the Gulf Freeway Surveillance and Control Center showed that there were 34 pedestrian accidents in the patrol section during 1973 (Table 15). No pedestrian accidents were reported when courtesy patrol service was provided for disabled motorists; therefore, all pedestrian accidents that occurred were assumed to be the result of unserviced stops. The estimated pedestrian accident rate is calculated as follows:

$$\begin{aligned} \text{Pedestrian accident rate} &= (34 \text{ total pedestrian accidents}) \times (.43 \text{ as a} \\ &\quad \text{result of their vehicle being disabled or involved in prior accident}) / \\ &\quad (157,000 \text{ emergency stops} - 8,000 \text{ serviced emergency stops}) = 1 \times 10^{-4} \\ &\quad \text{pedestrian accidents per unserviced emergency stop} \end{aligned}$$

Based on the estimated accident rate, the number of pedestrian accidents that would have occurred in the patrol section if the patrol had not serviced the 8,000 disabled motorists would have been less than one. Although the number of would be pedestrians decreases, no reduction in number of pedestrian accidents occurs because of the low pedestrian accident rate. An estimated reduction in the number of accidents would occur if the patrol was able to assist more stranded motorists.

Table 15
Pedestrian Accidents in the Patrol
Section During 1973

LOCATION	DIRECTION	TIME OF DAY				
		12M-7	7-9	9-4	4-6	6-12M
IH 10 West Katy Freeway	Inbound	2			1	1
	Outbound			1		1
	Unknown			1		
IH 10 East East Freeway	Inbound				1	
	Outbound					1
	Unknown					
US Highway 59 SW Freeway	Inbound					
	Outbound	1			1	
	Unknown	1				
US Highway 59 Eastex Freeway	Inbound				1	
	Outbound	1	1			1
	Unknown				1	2
IH 45 South Gulf Freeway	Inbound			1		1
	Outbound					
	Unknown					
IH 45 North North Freeway	Inbound			2	1	
	Outbound					
	Unknown					1
State Highway 225 La Porte Freeway	Inbound					
	Outbound					
	Unknown					
IH 610 North Loop East	East					
	West				1	
	Unknown					
North Loop West	East			1		
	West				1	
	Unknown					
South Loop East	East	2		1		
	West			1		
	Unknown					
South Loop West	East					
	West			1		
	Unknown					
West Loop North	North					
	South					
	Unknown					
West Loop South	North					1
	South					
	Unknown					
TOTALS		7	1	9	8	9

= 34

Comparison of Benefits and Costs

Costs to operate the patrol in 1973 was \$229,400. Monetary benefits of the patrol are shown in Table 16 to be \$476,652. The resulting benefit-cost ratio is:

$$B/C = \$476,652/\$229,400 = 2$$

This means that for every dollar spent to provide courtesy patrol service on the Houston freeways during 1973, an estimated two dollars worth of benefits were gained by motorists and/or the Texas Highway Department.

Additional Benefits

In addition to the quantifiable benefits that have already been discussed, the following non-priceable benefits add to the effectiveness of the patrol:

Motorist Related

Provides some sense of security for motorists - Prompt, dependable service by the courtesy patrol will create some sense of security for stranded motorists. Knowing the patrol is on duty, motorists just feel safer when their vehicle becomes disabled. This feeling of safety is intensified when trouble occurs late at night or the vehicle operators are alone and female. Assigning a monetary value to this feeling would at best be an arbitrary value and is not considered in this report as such; however, it is recognized as a benefit that the patrol provides.

Texas Highway Department Related

Improves public relations - The questionnaire survey indicated that nearly all (99.8 percent) of the people which the patrol helped thought it to be a worthwhile service and one which should be continued. No one that was interviewed made any negative comments about the operation of the patrol indicating that the courtesy patrol has helped to establish a favorable public

CONCLUSIONS AND RECOMMENDATIONS

The results of this report indicate that the courtesy patrol provided by District 12 of the Texas Highway Department on the Houston freeways is a cost-effective program. The benefit-cost ratio for the patrol during the year 1973 was found to be approximately 2.

From March, 1973, to October 1973, questionnaires were handed out to the motorists which the courtesy patrol had offered aid. Over 1400 of the questionnaires were returned and the responses were overwhelmingly in favor of continuation of the patrol; only three motorists were not in favor of continuation. Of the over 800 comments concerning the patrol, all were considered favorable. The patrol was able to help all but three of the motorists who returned the questionnaire and, in over 75 percent of the cases arrived on the scene of the incident in less than 15 minutes.

Motorists on Houston's freeways gained several monetary benefits due to the operation of the courtesy patrol in 1973. There were: \$40,161 saved because the motorist did not have to request aid from a private service, \$9,643 saved by the disabled motorists due to the reduced waiting time for emergency aid, and \$385,096 saved by other motorists due to earlier removal of incidents from traffic lanes during the peak periods. The Texas Highway Department was able to save \$19,200 due to maintenance personnel not having to respond to aid calls at night and \$17,400 because the courtesy patrol performs some functions normally done by other members of the Highway Department. A \$5,152 savings was attributed to the patrol as a result of a decreased number of accidents. In addition, the provision of a feeling of security to motorists and the creation of a favorable public image were considered benefits of the patrol.

Further research should be directed toward determining whether the effectiveness of the courtesy patrol could be increased by adding more vehicles to the program. The effectiveness of the patrol during different time periods should also be evaluated in order to determine the optimum time for operation.

This report recommends that the courtesy patrol program be continued in Houston and also be considered for implementation in other major metropolitan areas of the state.

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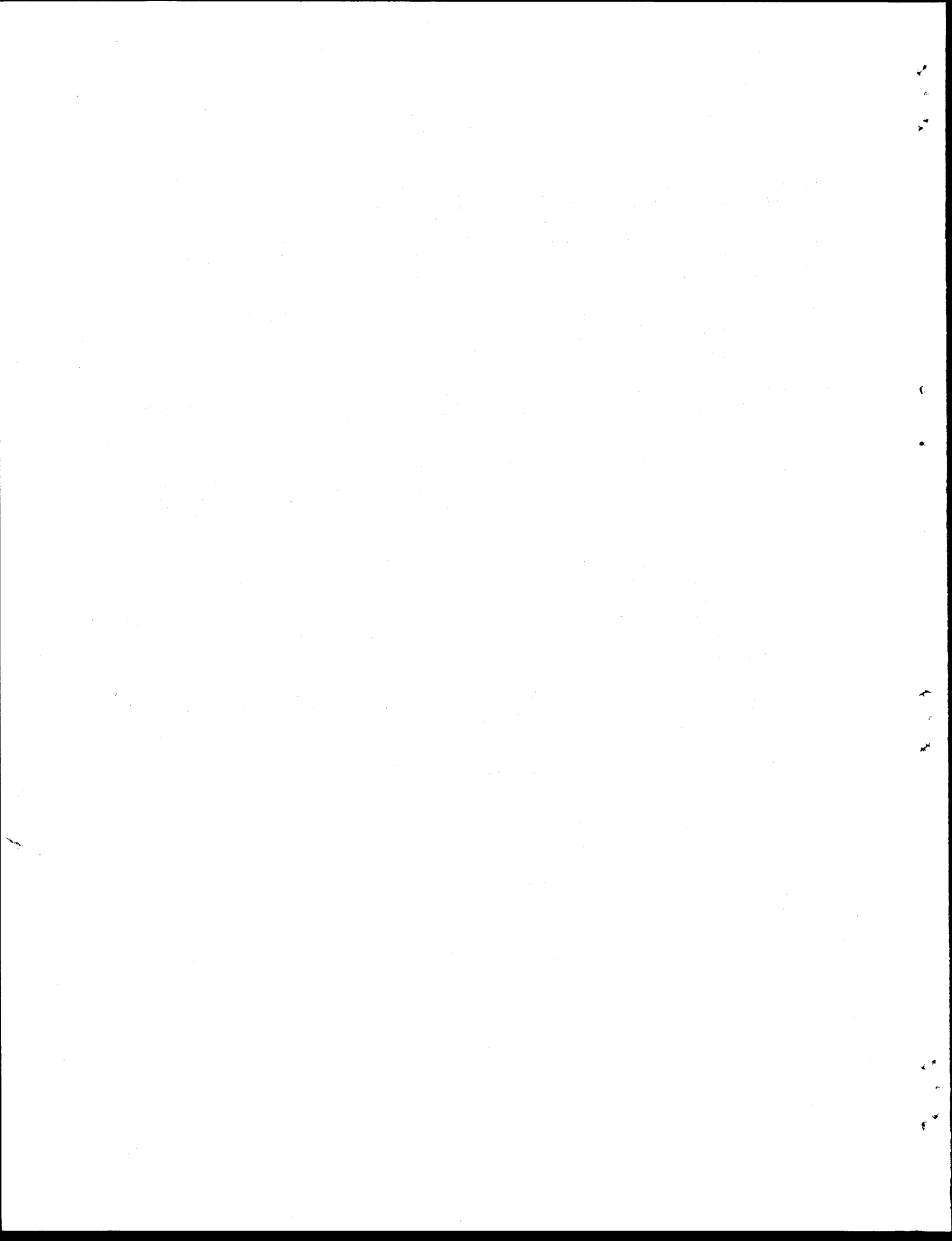
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REFERENCES

1. Motorists Aid Systems. National Cooperative Highway Research Program Synthesis of Highway Practice No. 7, 1971.
2. Kuprijanow, A., Rosenzweig, S., and Warskow, M. A. Motorists' Needs and Services on Interstate Highways. National Cooperative Highway Research Program Report No. 64, 1969.
3. Tignor, S. C. State-of-the-Art on Equipment for Servicing Freeway Incidents. Interim Report of the Task Group on Incident Detection and Response - Freeway Operations Committee, January 1974.
4. Goolsby, M. E. and McCasland, W. R. Evaluation of an Emergency Call Box System. Texas Transportation Research Report No. 132-1F, December 1969.
5. Messer, C. J., Dudek, C. L., and Loutzenheiser, R. C. A Systems Analysis for a Real-Time Freeway Traffic Information System for the Inbound Gulf Freeway Corridor. Texas Transportation Research Report No. 139-5, April 1971.
6. McCasland, W. R. Freeway Control and Information Systems. Texas Transportation Institute Research Report No. 139-13F, January 1972.
7. Pittman, M. A. and Loutzenheiser, R. C. A Study of Accident Investigation Sites on the Gulf Freeway. Texas Transportation Institute Research Report No. 165-1, August 1972.
8. McFarland, W. F., Adkins, W. G., and McCasland, W. R. Evaluation of the Benefits of Traffic Surveillance and Control on the Gulf Freeway. Texas Transportation Institute Research Report 24-22, 1969.
9. Biggs, R. Texas Highway Department, Letter sent to Dr. C.L. Dudek, August 15, 1974.
10. Burke, Dock. Highway Accident Costs and Rates in Texas. Texas Transportation Institute Research Report 144-1F, 1970.
11. Johnson, Roger T. Freeway Pedestrian Accidents. Highway Research Record No. 99, 1965, pp. 274-280.

REFERENCES

1. Motorists Aid Systems. National Cooperative Highway Research Program Synthesis of Highway Practice No. 7, 1971.
2. Kuprijanow, A., Rosenzweig, S., and Warskow, M. A. Motorists' Needs and Services on Interstate Highways. National Cooperative Highway Research Program Report No. 64, 1969.
3. Tignor, S. C. State-of-the-Art on Equipment for Servicing Freeway Incidents. Interim Report of the Task Group on Incident Detection and Response - Freeway Operations Committee, January 1974.
4. Goolsby, M. E. and McCasland, W. R. Evaluation of an Emergency Call Box System. Texas Transportation Research Report No. 132-1F, December 1969.
5. Messer, C. J., Dudek, C. L., and Loutzenheiser, R. C. A Systems Analysis for a Real-Time Freeway Traffic Information System for the Inbound Gulf Freeway Corridor. Texas Transportation Research Report No. 139-5, April 1971.
6. McCasland, W. R. Freeway Control and Information Systems. Texas Transportation Institute Research Report No. 139-13F, January 1972.
7. Pittman, M. A. and Loutzenheiser, R. C. A Study of Accident Investigation Sites on the Gulf Freeway. Texas Transportation Institute Research Report No. 165-1, August 1972.
8. McFarland, W. F., Adkins, W. G., and McCasland, W. R. Evaluation of the Benefits of Traffic Surveillance and Control on the Gulf Freeway. Texas Transportation Institute Research Report 24-22, 1969.
9. Biggs, R. Texas Highway Department, Letter sent to Dr. C.L. Dudek, August 15, 1974.
10. Burke, Dock. Highway Accident Costs and Rates in Texas. Texas Transportation Institute Research Report 144-1F, 1970.
11. Johnson, Roger T. Freeway Pedestrian Accidents. Highway Research Record No. 99, 1965, pp. 274-280.



APPENDIX A

HOW PATROL VEHICLE SERVICES WERE CLASSIFIED

(Definition of terms listed as Service Rendered.)

1. Removed Debris or Hazard
The word removed was nearly always in the log statement.
2. Issue Gas
The words issue and gave are used by THD personnel.
3. Controlled Traffic
Helped at accident, flagged traffic, used lights to warn traffic, etc.
4. Pushed From Traffic
The word pushed was nearly always used.
5. Changed Tire
They either helped change the tire or did it completely.
6. Loaned Tool
Loaned lug wrench frequently; also jack. Always stated clearly.
7. Issued Water
Usually stated thus.
8. Took To Phone
Gave motorist ride to a phone. Often stated as took to station to call for help. Listed this only under took to phone.
9. Took to Service Station
Usually stated as took to station to get help.
10. Charged Battery
These words were usually used. Also, battery boosts which fail to start car were listed as charged battery.
11. Made Call for Motorist
Usually stated as had 45* to call for motorist; excludes called wrecker.
12. Made Minor Repair
Usually stated as helped repair.
13. Started Vehicle
Either stated as started or as successful battery boost.

14. Reported Stall

Either stated as thus or as motorist down in vehicle.

15. Reported Accident

Usually to 45*, most of the time police called.

16. Reported Debris or Hazard

As stated.

17. Reported Abandoned Vehicle

As thus, unless in traffic; then listed as stalled.

18. Called Wrecker

Had 45* do thus.

19. Reported Damage to Facilities

Lights out, sign down, guardrail damaged, barrels destroyed, etc.

20. Repaired Facilities

Nailed sign, etc.

21. Gave Directions

As stated.

22. Other Help

Stated as gave help, but didn't say how or what. Also, didn't say if motorist didn't need help.

* Forty-five is the radio call sign of the District radio dispatcher.

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APPENDIX B

SELECTED COMMENTS*

1. Saved money - plus time and the patrolmen were nice and deserve a raise.
2. I hope that this service is continued. Thank you.
3. I never would have made it without the gentlemen's help.
4. For being stuck on the freeway for the first time and having service as soon as possible as yours provided, I commend you very highly. I was impressed and your service was very helpful and courteous. Keep up the good work.
5. Would like to pay for this service. It's great.
6. The gentleman who helped me provided me with all of the essentials which I needed to complete my repair. The man was most courteous and efficient.
7. Simply to keep it up because it helps a lot.
8. Should have more trucks on the freeways. Should put it on television and radio.
9. This highly recommended and appreciated.
10. I think its a wonderful service especially for women when you're not capable of getting help. Keep it up, please.
11. As it happened on this occasion my husband was with me. However, I do use the car myself frequently and consider this safety and courtesy measure invaluable to all, but especially to the lone woman driver. I am deeply appreciative of this service and urge that it be continued.
12. At this very moment I think we need more service like this. Thank you very much.
13. This is indeed a great service to the public because many times incidents like this happen to people who have no one to call for help, doesn't know anything about cars, nor are we financially able to take care of the problem. The courtesy patrol was indeed very courteous and did correct the problem.
14. The service was very nice and friendly. Thank you very much.
15. Excellent idea.
16. This is a very helpful service and should be continued and enlarged.
17. This is my first contact with this service and I think it is a very fine and helpful service and should be continued.
18. The men were courteous. I don't know what I would have done if they hadn't come along.

19. This service is the best I've ever seen. It should be in all cities and counties.
20. Very good policy - without the aid of the two very courteous Highway Department men I would have been unable to fix the tire.
21. We need a great deal of this.
22. Good idea for all freeways.
23. This free service is absolutely at the top of city priorities to me. The city should be congratulated and the Highway Department for this service. It's good - Good Luck.
24. The service man was courteous and helpful. This was one of the first quick services the state has ever shown.

*An attempt was made to select comments that typified the feeling of the people that filled out questionnaires. One or two word comments (most of which were classified as favorable in the report) and replies of no comment were omitted from this list. Spelling errors were corrected, but otherwise the comments appear as they were received on the questionnaires.

