

COMMERCIAL VEHICLE PARKING IN NEW HAVEN, CONNECTICUT

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This paper is based upon data obtained from the study of parking in the Central Business District of New Haven, Connecticut and it has been undertaken with the hope that the information herein presented will not only be of assistance to those interested in the solution of New Haven's parking problem, but also will stimulate an interest in factual data.

The parking study in New Haven was made under the supervision of the Bureau of Highway Planning Studies of the Connecticut State Highway Department. The personnel for the field interviewing in connection with the study was supplied by the New Haven Chamber of Commerce.

The characteristics of parking in New Haven's Central Business District have been discussed in a report entitled "New Haven Parking Study" which was prepared for the New Haven Traffic Commission by the Bureau of Highway Planning Studies. This paper may be considered a supplement to that report.

I gratefully acknowledge the assistance and cooperation of my associates in the Highway Department who aided me in the preparation of this paper.

AREA OF STUDY

The New Haven Parking Study was conducted over an area designated the "Central Business District." This area as set up includes five of the nine original squares of the city. It is nearly rectangular in shape, being about four blocks wide and five blocks long containing

twenty-five blocks of the present business area of the City. Figure 1 shows the area covered by the study and its location relative to the surrounding development.

The area under study is relatively small in size, compared to the areas studied in some other cities. However, it covers most of the shopping, financial and retail market area of the City. There are also included in the study two areas which, although not strictly part of the business area, contain parking facilities known to serve the "Central Business District."

The question may be raised as to the completeness of the coverage obtained by studying this relatively small area.

The City of New Haven appropriated a sum of \$4,000 as its share of the cost of the project, and stipulated that the study was to be confined to the central area of the City. A preliminary study of existing parking conditions revealed limits beyond which there was unoccupied parking space. Other areas were found which were congested but used for specific purposes. These areas such as the vicinity of the railroad station, the produce market and Yale University were then excluded from the study as special problems to be studied at a later date. This same decision was reached in the case of the area east of the New York, New Haven and Hartford Railroad cut. This area which is separated from areas of high demand only by the railroad had parking

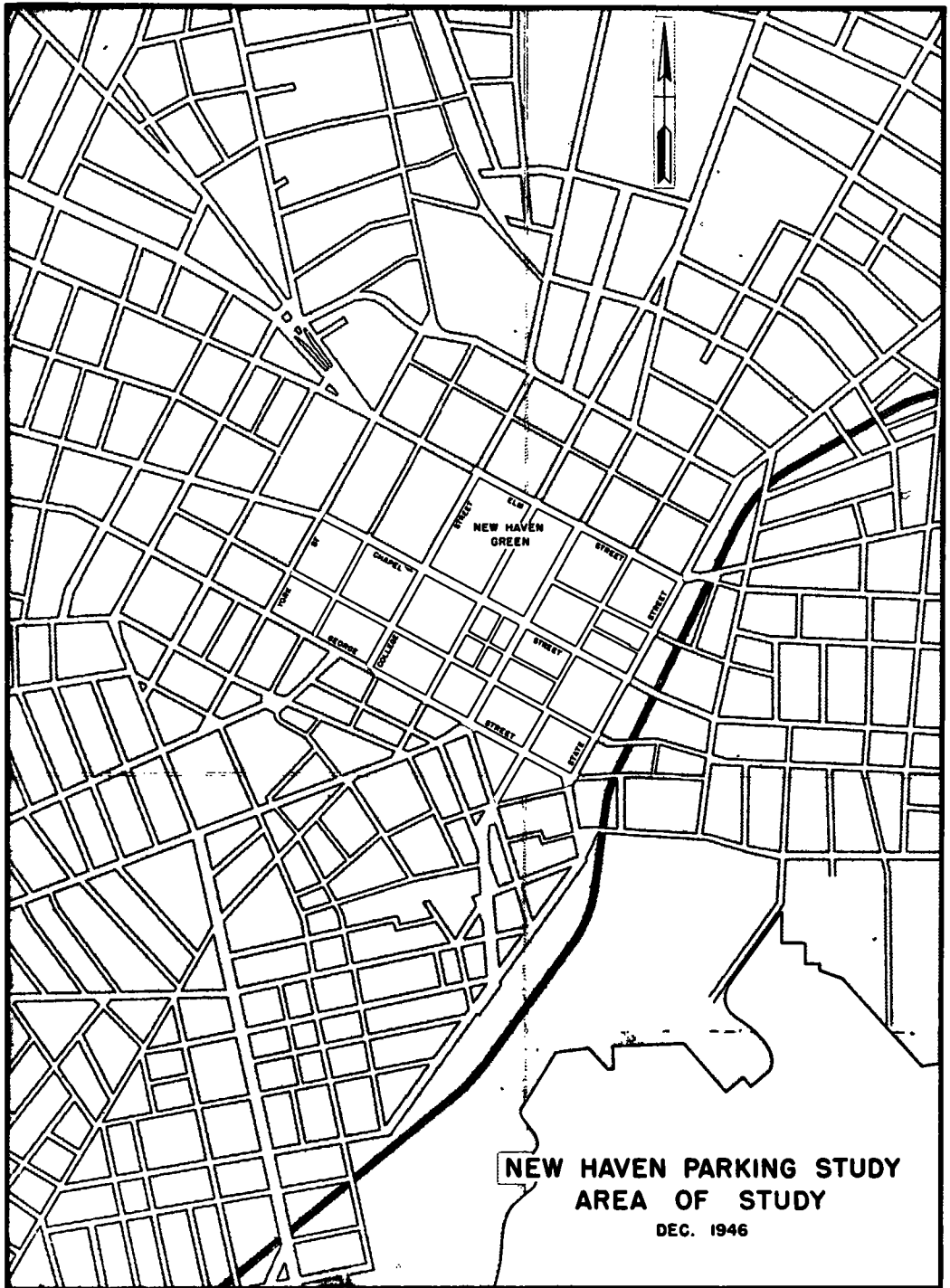


Figure 1

space unoccupied even during the peak periods of the central area.

THE PARKING PROBLEM

Traffic engineers and police officials are in general agreement that the parking problem is one of the major traffic problems confronting the cities and towns of our nation.

A lack of parking facilities conveniently located to the large generators within the central business districts and which are easily accessible from the surrounding towns has been leading to decentralization of the business of these districts, resulting in deterioration of the area, lowering of property values and the accompanying loss of tax revenue from the area so affected.

Parking is, in general, a local problem. The solution of this problem is the responsibility of the individual city or town and whether it is to be financed by public or private funds is for the residents of that city or town to decide. The parking of commercial vehicles is a very vital part of this problem. New Haven, which had a population of 160,000 in 1940 is estimated to have grown to 175,000 by January 1947 and the immediately adjacent towns probably have another 100,000 population. New Haven's retail sales for 1946 were estimated at over 185 million dollars and the wholesale sales at over 350 million dollars. These figures are quoted to illustrate the magnitude of New Haven's transportation problem.

Almost all of the merchandise sold in our cities is moved by some form of motor transport. Facilities for loading and unloading these vehicles must be provided. The problem is where, how and by whom are these facilities to be provided.

INFORMATION OBTAINED FROM THE STUDY

A. TRAFFIC

During the course of the study

automatic traffic counts were made during the months of November and December of 1946 with the interviewing taking place from December 3 to 13 inclusive of that year.

Manual counts were made of the traffic using each street which provided an entrance or exit to the Central Business District. These vehicles were classified into two groups, passenger or commercial. No counts were made of the busses and trolley cars. At the 26 cordon stations each classification was recorded at half hour intervals from 9:30 AM to 5:30 PM. These counts show for the eight hours of the study a total movement of 37,356 vehicles entering and 37,323 leaving the area of the study. Of this number 21 percent were commercial vehicles.

B. PARKING

Any vehicle which stopped was considered to be parked for the purpose of this study, unless the vehicle stopped in the normal movement of traffic or momentarily for the discharge or pickup of passengers.

Fifteen thousand nine hundred and fourteen parking acts were observed. One thousand nine hundred seventy-nine or 12.5 percent of these acts were by commercial vehicles.

During the eight hours from 9:30 AM to 5:30 PM approximately 7,400 commercial vehicles entered and a slightly greater number left the area under study. Excluding the vehicles which were parked before 9:30 AM 1,827 parking acts by commercial vehicles were observed to take place between 9:30 AM and 5:30 PM. In 373 of these acts the vehicles were noted to have had the origin of the trip within the limits of the Central Business District. Therefore approximately only 1,450 commercial vehicles which passed the cordon stations during the eight hours included in the study were observed to park during the same

period. Some of the vehicles entering during the last few minutes of the study may have parked but would not have been recorded.

No adjustment has been made in any of the accompanying tables. (Tables 1 to 7, see p. 8 - 14) They have been compiled directly from the field interviews.

Many of the following findings confirm what many of us have suspected from casual observations. They are of interest, however, as factual evidence of the behavior of the commercial vehicle operators. I wish that I had had data available on other cities, that comparisons might have been made. It is quite possible that the size of the city and the type of area studied may affect the results.

SUPPLY OF PARKING SPACE -- There were available within the Central Business District 3,668 parking spaces providing 29,157 space hours of legal parking. This does not include approximately 250 parking spaces available to commercial vehicles, but which were located along the curbs of blocks where regular parking was prohibited. About 30 percent of the space hours of available parking was located at the curbs.

The supply of available parking space cannot be discussed in terms of commercial vehicle demand due to the fact that the majority of the space was occupied by passenger vehicles. Obviously if there were no passenger vehicle parking there would be more than sufficient curb space to supply the commercial demand even within the short distance of one-half block of the vehicle's destination.

PARKING FACILITIES USED

Eighty-eight percent of the commercial vehicles were parked at the curb leaving only one vehicle in eight which was provided or used off-street facilities.

About 71 percent of the com-

mercial vehicles parked at the curb where commercial vehicle parking is permissible. This includes 307 vehicles whose operators took advantage of the traffic regulation permitting the parking of commercial vehicles along the curb of blocks where parking was normally prohibited. Approximately 12 percent of the commercial vehicles were parked where parking was prohibited, such as at hydrants, corners, bus stops and on the sidewalk, etc. This was a very small percentage of the total vehicles parked, however 20 percent of the commercial vehicles parked were in "no parking" zones, contributing in a large measure to the traffic congestion and yet cannot be designated as being illegally parked.

LENGTH OF TIME PARKED -- The majority of the commercial vehicles were parked for less than 15 minutes and 74.4 percent were parked less than 30 minutes. Only 2.4 percent were parked for more than four hours; and of these about one-half were in garages.

No attempt has been made to determine the percentage of commercial vehicles which overstayed the time limits of various parking facilities.

BLOCKS WALKED TO DESTINATION--

In the general study of parking 75 percent of the vehicles were parked less than one block from the destination of the operator and similarly 73.5 percent of the commercial vehicles were parked within one block of the destination of these operators. In addition another 20.7 percent were in the group from which no destination was recorded. It is probable that the majority of this 20 percent were also parked within a block of their destinations.

There is nothing to indicate that the time limit of the parking facility used had any effect upon the distance walked. This, of course, is reasonable, proximity of the parking space to the destination of

the operator being of prime importance in making deliveries.

PURPOSE OF TRIP -- As was to be expected the large majority of the commercial vehicles were parked while the operators were on what was classified as business and work. These groups constituted 72.2 percent of the interviews. It is interesting to note that 10.4 percent of the operators of commercial vehicles admitted that they were leaving their vehicles for the purpose of shopping or other unclassified reasons.

SECONDARY DESTINATIONS -- As part of the New Haven Study the operators were asked if they were going to more than one destination while parked at a given facility. It was interesting to note how few motorists said that they had more than one destination. Only 63 commercial vehicle operators indicated two destinations. Three hundred eighty-nine of the commercial vehicles were found to have started their trip within the Central Business District. Over one-half of these trips were less than two blocks in length. This may be explained in that deliveries were being made from many of the vehicles.

DEMAND FOR PARKING -- The cumulative space hours of parking of vehicles whose operators have a given destination is referred to as the "demand" for parking of that destination.

The commercial vehicle parking demand for the eight hours of the study, illustrated by Figure 2, was relatively uniform throughout the Central Business District compared to the total parking demand. This demand amounted to an average of slightly over 40 space hours for area within one-half block of each major intersection. This commercial demand pattern is very different from that of the passenger vehicle parking demand in which there was a high eight hour demand located on

the two main streets of New Haven -- Church Street and Chapel Street.

The commercial demand reached a high of 82.7 space hours within a half block of the intersection of State Street and Court Street. There were three intersections at

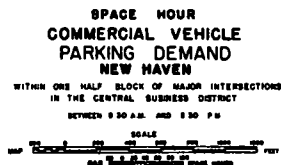
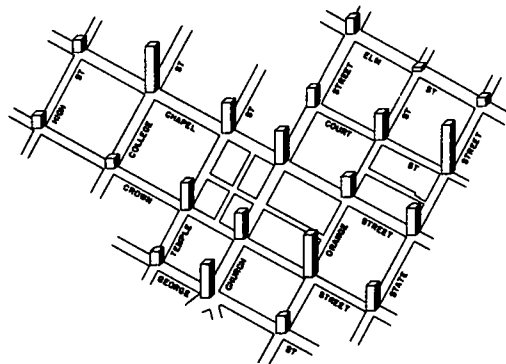


Figure 2

which the commercial demand was about twice the average demand of the intersections of the Central Business District. In two instances an attempt has been made to meet this need for parking space by providing off-street parking areas.

The commercial demand was only 5 percent of the total demand for the eight hours covered by the study. This does not necessarily mean that only 5 percent of the demand in the city is by commercial vehicles. This study is confined chiefly to the retail and financial areas of the city with high commercial parking demands.

The peak of the total demand and the peak of the commercial demand do not coincide. During the peak hour the total demand was 3039.9 space hours. In this period there was a commercial demand of only 123.8 space hours or 4 percent of the total peak hour demand.

The inventory of parked vehicles taken at half hour intervals indicated that the greater number of commercial vehicles were parked in the Central Business District during the morning hours.

EXISTING PARKING REGULATIONS --

Some of New Haven's buildings were built before the advisability of providing customer and commercial parking space became apparent and it is regrettable that new buildings have been built with no regard for this need. In addition there are in New Haven's Central Business District many relatively small buildings. Many of these buildings are so small that a loading area could not be economically provided within the building.

New Haven has recognized the need for providing parking facilities for the commercial vehicles serving these buildings. Accepting the fact that curb facilities were being used to practical capacity by passenger cars the traffic regulations were drawn to provide additional space for commercial parking. A paragraph in the Traffic Regulations permits commercial vehicles "to stand, while loading and unloading with reasonable dispatch," in designated areas where parking is otherwise prohibited. This provision provides considerable space along Crown Street, Center Street, Temple Street, and State Street. Three hundred and fifty-four commercial vehicles parked in these restricted areas during the eight hours of the study and an additional 395 passenger cars were illegally parked in these areas.

The above-mentioned traffic regulation while providing some space for the parking of commercial vehicles tends to hamper the free movement of traffic by the reduction of the roadway width available to traffic. This reduction amounts in some instances, notably Crown Street, and State Street, to 1/3 and 1/2 of the width of roadway

available to traffic.

CONCLUSIONS AND RECOMMENDATIONS

1. Complete conclusions regarding parking in New Haven cannot be drawn solely from the data herein presented. It is necessary to consider the parking of passenger vehicles.

2. In New Haven the commercial vehicle operator has been shown to be, generally speaking, a short term parker requiring parking space within one block of his destination. That he parked at the curb by preference is questionable as few off-street facilities were provided, however he did park his vehicle at the curb and often the location was such that the free flow of traffic was impeded. It was also noticeable that while the large majority of the vehicles were operated for business purposes many were used as a means of personal transportation.

3. Streets and highways were built to permit the movement of people and goods from place to place. Provisions of terminal facilities for the carriers of these persons and goods is also essential. However I do not believe that these facilities should be provided within the established travel way, either for passenger or commercial vehicles, if there is, as a result, an economic loss to the public.

4. While stricter enforcement of existing regulations will aid in the solution of the parking and traffic problem, it is suggested that the traffic regulations permitting commercial vehicles to park in otherwise restricted areas be revoked and provision made for necessary curb parking of commercial vehicles by the creation of small loading zones along curbs where regular parking is also permitted.

5. Satisfactory off-street passenger vehicle parking facilities are not in all cases suitable for commercial vehicles. It is advisable that facilities for commercial ve-

hicles be adjacent to the destination served in order that loading and unloading may be made directly between the vehicle and business establishment.

6. New Haven is fortunate that there are within the Central Business District several block interiors suitable for use as both passenger vehicle parking and commercial vehicle loading facilities. These areas are now used chiefly for passenger vehicle parking. It is suggested that these areas be developed beyond the present use through cooperation with the adjacent business establishments to provide for commercial vehicle access to loading platforms of the surrounding buildings.

7. Realistic regulations written into the zoning and building codes can and should require that, at the time of construction, all new buildings, within the central business districts of our cities, provide for the inclusion of off-street parking and loading facilities adjacent to the building. Existing structures may be required to conform to similar regulations within a given period of years.

8. No other study has come to my attention which has given any attention to commercial vehicle parking. The findings in this study, however, indicate that commercial vehicle parking is an integral part of the parking problem and a part which should merit consideration in any future studies.

**NUMBER and PERCENTAGE of COMMERCIAL VEHICLES Observed PARKED
at each TYPE OF PARKING FACILITY
Between 9:30 A.M. and 5:30 P.M.**

TYPE OF FACILITY	NUMBER OF VEHICLES	PERCENTAGE
Curb - Metered		
<u>30 min. limit</u>	1006	50.8
<u>1 hr. limit</u>	35	1.8
<u>2 hr. limit</u>	5	0.2
Unmetered		
<u>30 min. limit</u>	20	1.0
<u>1 hr. limit</u>	39	2.0
<u>2 hr. limit</u>	1	0.1
<u>No Parking Block</u>	307	15.5
Total Permissably Parked	1413	71.4
No Parking Areas		
<u>Corner</u>	69	3.8
<u>Fire Hydrant</u>	61	3.1
<u>Drives</u>	40	2.0
<u>Sidewalks</u>	41	2.0
<u>Bus Stops</u>	7	0.4
<u>Double Parked</u>	27	1.4
<u>Restricted Areas*</u>	85	4.3
Total in "No Parking" Areas	330	16.7
Total Curb	1743	88.1
Lot - Public	72	3.6
<u>Restricted</u>	115	5.8
Garage	49	2.5
Total Off-Street	236	11.9
Grand Total	1979	100.0

*No Parking Areas in metered
or unmetered blocks

NUMBER and PERCENTAGE
vs FACILITY TYPE

Table 1

**NUMBER and PERCENTAGE of COMMERCIAL VEHICLES PARKED Between 9:30 A.M. and 5:30 P.M.
Grouped by LENGTH of TIME PARKED and TYPE of PARKING FACILITY Used**

TYPE OF FACILITY	NUMBER and PERCENTAGE	LENGTH OF TIME PARKED							Total	
		Less than 15 min.	15 to 29 min.	30 min. but less than 1 hr.	1 hr. but less than 2	2 hrs. but less than 4	4 hrs. but less than 6	6 hrs. and over		
Curb - Metered	Number	595	322	207	78	23	8	3	1236	
	30 min. limit	%	30.1	16.4	10.4	3.9	1.2	0.4	0.1	62.5
	1 hr. limit	Number	31	13	2	1	1	0	0	48
		%	1.6	0.7	0.1	--	--	--	--	2.4
	2 hr. limit	Number	1	0	2	2	0	0	0	5
		%	0.1	--	0.1	0.1	--	--	--	0.3
	Unmetered	Number	10	5	2	4	1	0	0	22
		30 min. limit	%	0.5	0.2	0.1	0.2	0.1	--	--
1 hr. limit		Number	56	8	6	3	1	2	0	76
		%	2.8	0.4	0.3	0.1	0.1	0.1	--	3.8
2 hr. limit		Number	1	0	1	0	0	0	0	2
		%	--	--	0.1	--	--	--	--	0.1
No Parking Block		Number	243	82	20	7	2	0	0	354
		%	12.2	4.2	1.0	0.4	0.1	--	--	17.9
Lot	Number	15	10	10	12	15	6	4	72	
	Public	%	0.8	0.5	0.5	0.6	0.7	0.3	0.2	3.6
	Restricted	Number	43	30	22	13	5	1	1	115
		%	2.1	1.5	1.1	0.8	0.2	0.1	--	5.8
Garage	Number	3	2	2	6	12	5	19	49	
	%	0.2	0.1	0.1	0.3	0.6	0.2	1.0	2.5	
Total Commercial Vehicles	Number	998	472	274	126	60	22	27	1979	
	%	50.4	24.0	13.8	6.4	3.0	1.1	1.3	100.0	

Includes only time parked during 8 hours of study

NUMBER and PERCENTAGE
vs DURATION
vs FACILITY TYPE
Table 2

NUMBER and PERCENTAGE of COMMERCIAL VEHICLES PARKED Between 9:30 A.M. and 5:30 P.M.
Grouped by BLOCKS WALKED to DESTINATION and TYPE of PARKING FACILITY Used

TYPE OF FACILITY	Number and Percentage	BLOCKS* WALKED TO DESTINATION					
		Less than 1	1 but Less than 2	2 but Less than 3	3 or over	Refusals and No Contacts	Total
Curb - Metered	Number	933	48	19	13	223	1236
	30 min. limit %	47.2	2.4	0.9	0.7	11.3	62.5
	Number	38	0	1	0	9	48
	1 hr. limit %	1.9	—	0.1	—	0.4	2.4
	Number	2	0	1	1	1	5
	2 hr. limit %	0.1	—	0.1	0.1	—	0.3
	Number	20	1	0	0	1	22
	30 min. limit %	1.0	0.1	—	—	—	1.1
Number	56	1	0	0	19	76	
1 hr. limit %	2.8	—	—	—	1.0	3.8	
Number	1	0	0	0	1	2	
2 hr. limit %	0.1	—	—	—	—	0.1	
No Parking Block	Number	291	7	0	0	56	354
	%	14.7	0.4	—	—	2.8	17.9
Lot	Number	32	1	6	2	31	72
	Public %	1.6	—	0.3	0.1	1.6	3.6
	Number	74	1	0	0	40	115
	Restricted %	3.7	0.1	—	—	2.0	5.8
Garage	Number	8	0	5	5	31	49
	%	0.4	—	0.2	0.3	1.6	2.5
Total Commercial Vehicles	Number	1455	59	32	21	412	1979
	%	73.5	3.0	1.6	1.2	20.7	100.0

*One block is equivalent to approximately 400 ft.

NUMBER and PERCENTAGE
vs BLOCKS WALKED
vs FACILITY TYPE
Table 3

**NUMBER and PERCENTAGE of COMMERCIAL VEHICLES PARKED Between 9:30 A.M. and 5:30 P.M.
Grouped By PURPOSE OF TRIP and TYPE OF PARKING FACILITY Used**

TYPE OF FACILITY	NUMBER and PERCENT AGE	PURPOSE OF TRIP					
		Shopping	Business	Work	Other	Unknown	Total
Curb - Metered	Number	80	804	112	44	196	1236
	%	4.1	40.6	5.7	2.2	9.9	62.5
30 min. limit	Number	2	32	1	5	8	48
	%	0.1	1.6	--	0.3	0.4	2.4
1 hr. limit	Number	0	4	0	0	1	5
	%	--	0.2	--	--	0.1	0.3
2 hr. limit	Number	0	18	1	2	1	22
	%	--	0.9	--	0.1	0.1	1.1
Unmetered	Number	1	50	1	4	20	76
	%	--	2.5	0.1	0.2	1.0	3.8
30 min. limit	Number	0	1	0	0	1	2
	%	--	0.1	--	--	--	0.1
1 hr. limit	Number	17	290	6	12	29	354
	%	0.9	14.7	0.3	0.6	1.4	17.9
2 hr. limit	Number	8	30	6	4	24	72
	%	0.4	1.5	0.3	0.2	1.2	3.6
No Parking Block	Number	11	31	26	12	35	115
	%	0.5	1.6	1.3	0.6	1.8	5.8
Lot	Number	0	9	6	4	30	49
	%	--	0.5	0.3	0.2	1.5	2.5
Public	Number	119	1269	159	87	345	1979
	%	6.0	64.2	8.0	4.4	17.4	100.0
Restricted	Number						
	%						
Garage	Number						
	%						
Total Commercial Vehicles	Number						
	%						

NUMBER and PERCENTAGE
vs PURPOSE
vs FACILITY TYPE
Table 4

NUMBER and PERCENTAGE of COMMERCIAL VEHICLES PARKED Between 9:30 A.M. and 5:30 P.M.
Grouped by BLOCKS WALKED TO DESTINATION and LENGTH of TIME PARKED

LENGTH OF TIME PARKED	NUMBER AND PERCENTAGE	BLOCKS* WALKED TO DESTINATION					Total
		Less than 1	2 but Less than 2	2 but Less than 3	3 and over	Refusals & No Contacts	
Less than 15 min.	Number	768	30	10	3	187	998
	%	38.8	1.5	0.5	0.2	9.4	50.4
15 to 29 min.	Number	347	14	6	3	102	472
	%	17.5	0.7	0.3	0.3	5.2	24.0
30 to 59 min.	Number	202	5	6	6	55	274
	%	10.2	0.3	0.3	0.3	2.7	13.8
1 hr. but less than 2	Number	93	7	3	4	19	126
	%	4.7	0.3	0.2	0.2	1.0	6.4
2 hrs. but less than 4	Number	35	2	2	5	16	60
	%	1.8	0.1	0.1	0.2	0.8	3.0
4 hrs. but less than 6	Number	7	1	3	0	11	22
	%	0.4	0.1	0.1	--	0.5	1.1
6 hrs. and over	Number	3	0	2	0	22	27
	%	0.1	--	0.1	--	1.1	1.3
Total	Number	1455	59	32	21	412	1979
	%	73.5	3.0	1.6	1.2	20.7	100.0

*One block is equivalent to approximately 400 feet.

NUMBER and PERCENTAGE
vs BLOCKS WALKED
vs DURATION
Table 5

**NUMBER and PERCENTAGE of COMMERCIAL VEHICLES PARKED Between 9:30 A.M. and 5:30 P.M.
Grouped by PURPOSE OF TRIP and LENGTH OF TIME PARKED**

LENGTH OF TIME PARKED	NUMBER AND PERCENTAGE	PURPOSE OF TRIP					
		Shopping	Business	Work	Other	Unknown	Total
Less than 15 min.	Number	50	708	52	42	146	998
	%	2.5	35.8	2.6	2.1	7.4	50.4
15 to 29 min.	Number	25	308	35	17	87	472
	%	1.3	15.7	1.8	0.8	4.4	24.0
30 to 59 min.	Number	28	150	33	15	48	274
	%	1.4	7.6	1.6	0.8	2.4	13.8
1 hr. but less than 2	Number	9	72	18	8	19	128
	%	0.5	3.6	0.9	0.4	1.0	6.4
2 hrs. but less than 4	Number	3	22	17	3	15	60
	%	0.1	1.1	0.9	0.2	0.7	3.0
4 hrs. but less than 6	Number	4	6	2	2	8	22
	%	0.2	0.3	0.1	0.1	0.4	1.1
6 hrs. and over	Number	0	3	2	0	22	27
	%	--	0.1	0.1	--	1.1	1.3
Total	Number	119	1269	159	87	345	1979
	%	6.0	64.2	8.0	4.4	17.4	100.0

NUMBER and PERCENTAGE
vs PURPOSE
vs DURATION
Table 6

**NUMBER OF VEHICLES Having Their Trip ORIGIN WITHIN
the CENTRAL BUSINESS DISTRICT**

Classified by Type of Vehicle and Time of Parking

TIME AT WHICH PARKED	TYPE OF VEHICLE		
	Passenger	Commercial	Total
Before 9:30 A.M.	56	16	72
Between 9:30 and 9:59	46	32	78
10:00 " 10:29	81	52	133
10:30 " 10:59	98	46	144
11:00 " 11:29	92	33	125
11:30 " 11:59	74	28	102
12:00 " 12:29PM	86	18	104
12:30 " 12:59	96	30	126
1:00 " 1:29	107	19	126
1:30 " 1:59	105	23	128
2:00 " 2:29	108	20	128
2:30 " 2:59	94	18	112
3:00 " 3:29	90	15	105
3:30 " 3:59	89	10	99
4:00 " 4:29	71	13	84
4:30 " 4:59	80	10	90
5:00 " 5:29	44	6	50
Total	1417	389	1806

NUMBER WITH ORIGIN IN CENTER

Table 7