

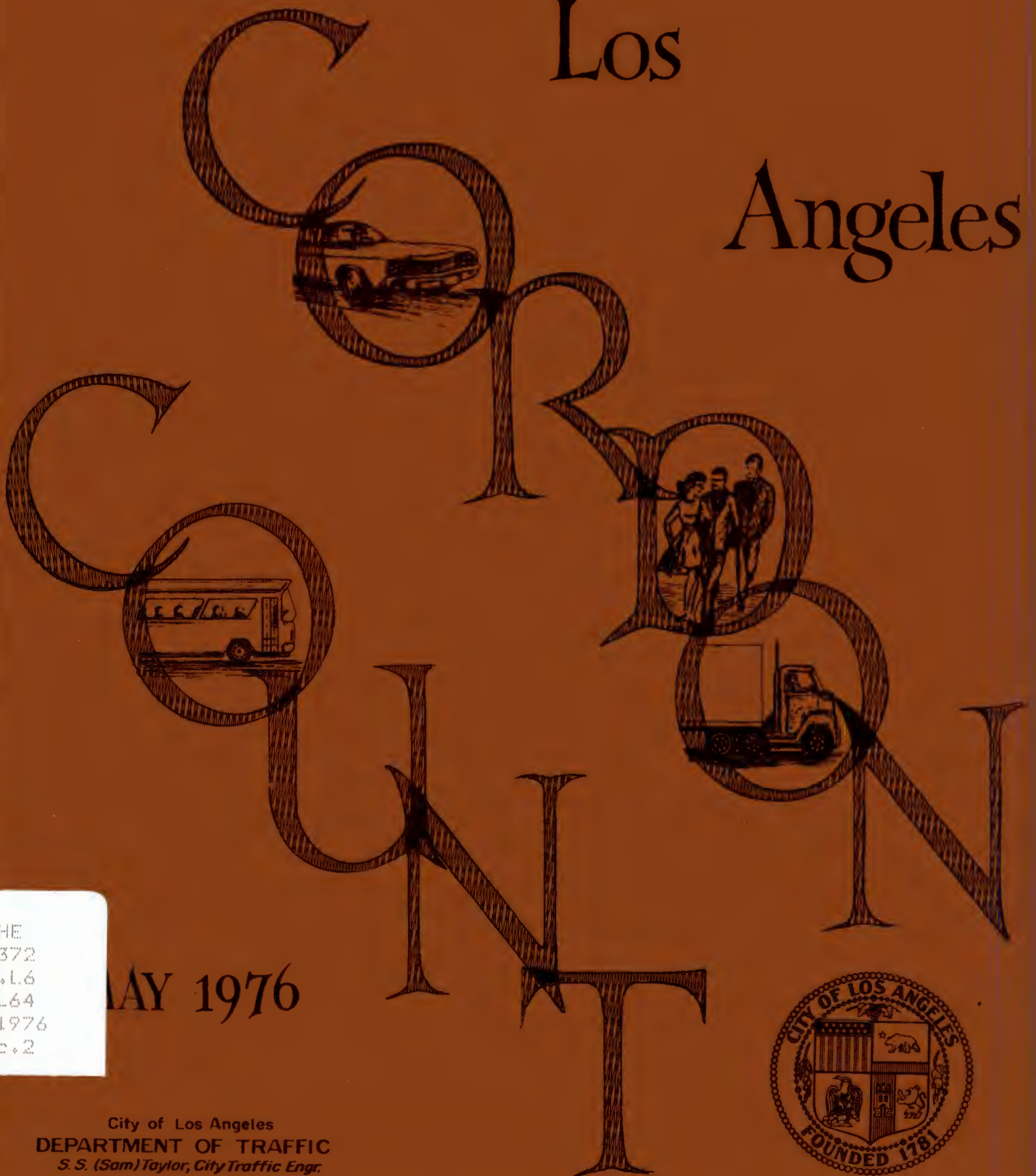
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# Downtown

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MAY 1976

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City of Los Angeles  
DEPARTMENT OF TRAFFIC  
*S. S. (Sam) Taylor, City Traffic Engr.*





## ABSTRACT

### Downtown Cordon Count Study

- The cordon count, as the name implies, is a study providing data on the volume of vehicles and persons entering and leaving a cordoned area, in this instance the Downtown Business District of Los Angeles.
- For this cordon count, automatic machine counts supplemented by manual counts of vehicle type, occupancy, and pedestrians provide the basic source of data. In addition, transit bus and passenger data are furnished by the Southern California Rapid Transit District.
- Summary data on the volume of vehicles and persons entering and leaving at each station on the perimeter of the cordon area and for the entire cordon area are derived through a computer program. This program also provides data on the number of vehicles and persons within the cordon area at half-hour intervals.

### Summary Data - 1976 Cordon Count

- During the 16-hour study period, 6 AM to 10 PM, a total of 633,415 vehicles crossed the cordon boundaries at the 95 stations providing access for vehicles entering or leaving the cordon area. This represents an increase of 30,524 vehicles since the 1974 count.
- At the access stations, a total of 1,235,849 persons entered and left the cordon area during the 16-hour period. This represents an increase of 52,818 persons since the 1974 count.
- Of the total persons entering the cordon area, 64 per cent arrived in automobiles, 26 per cent in transit vehicles, 4 per cent in commercial vehicles (trucks) and the remainder, 6 per cent, entered on foot.
- At the peak accumulation period, 2 PM, there were approximately 65,200 vehicles and 152,100 persons within the cordon area.

### Cordon Area Transportation Trends

- Since 1971 both vehicular and person-trip volumes crossing the cordon boundaries for the 16-hour study period have been on an inclining trend (disregarding the decline in vehicular volumes in 1974, a relatively short duration reversal due to special conditions).
- The volume of person-trips during this period increased proportionately greater than vehicular volumes, which has not historically been the case during earlier periods of increased cordon travel activity.
- Travel mode patterns in the five-year period from 1971 to 1976 were affected not only by on-going building construction, including several multi-purpose, highrise complexes, but also by implementation of new types of transportation facilities or services.
- Details on the magnitude of historical change in various travel modes and factors which contributed to these changes are contained in Section III - "Trends and Analysis" of this report.



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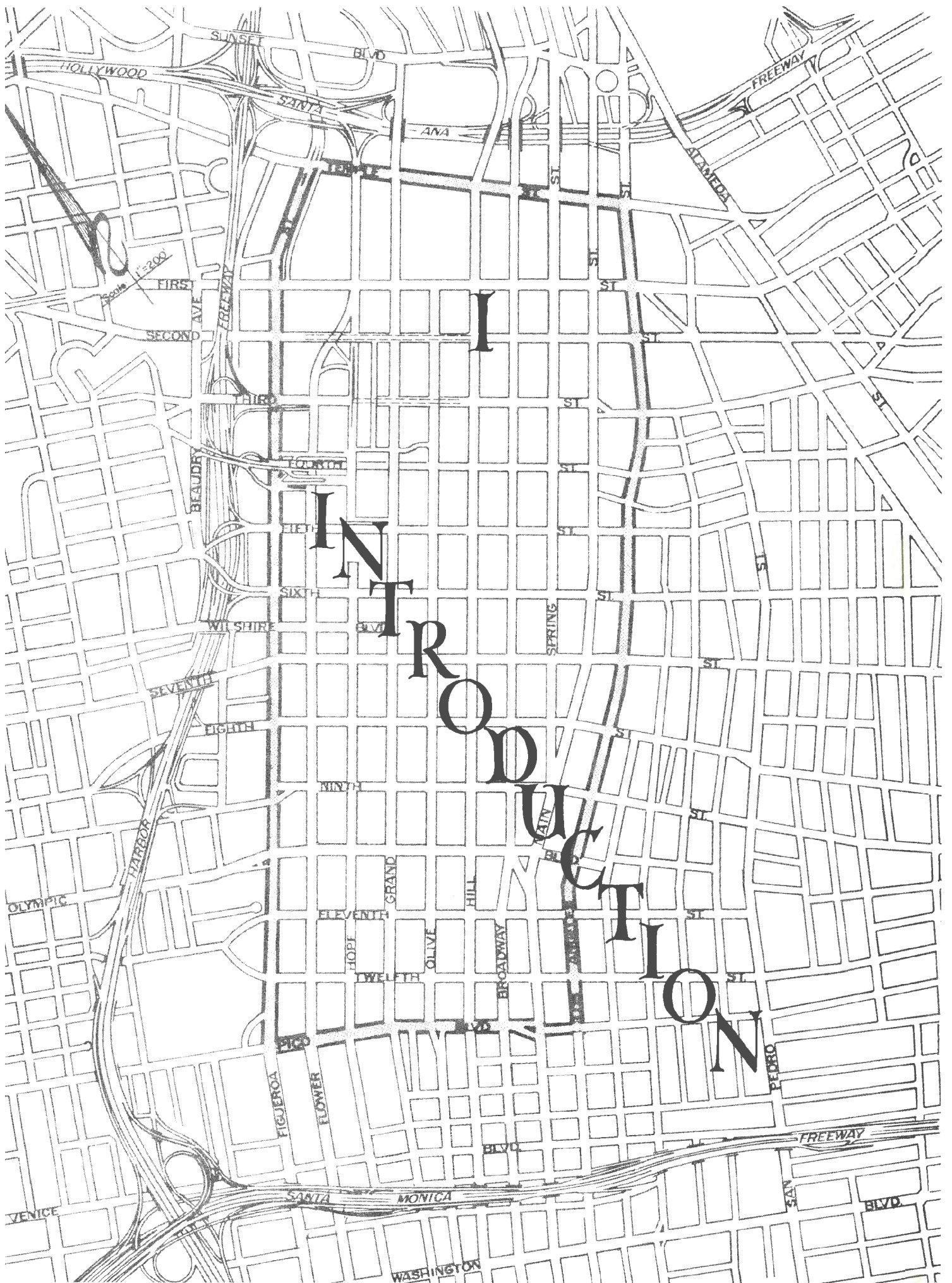




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### Purpose of Study

The Department of Traffic conducts cordon counts of Downtown Los Angeles in order to provide data for traffic planning purposes. These studies were conducted annually from 1963 through 1972. Since 1972 they have been conducted on every even-numbered year.

This report presents the summary results of the 1976 Cordon Count of Downtown Los Angeles for a typical 16-hour Wednesday in May, from 6 AM to 10 PM.

The cordon count study method provides statistical data on the magnitude of the daily influx of vehicles and persons into the Downtown area and of the concentration of each within the area.

Since 1963, the boundaries of the cordon area have been Temple Street, Los Angeles Street, Pico Boulevard, and Figueroa Street. This cordon area, which encompasses the Central Business District, is slightly in excess of one square mile.

At the convergence of numerous intraregional transportation routes, for both private and public modes of travel, Downtown Los Angeles is readily accessible from all sections of the metropolitan region. The regional transportation routes traversing the cordon area serve trips with a destination beyond Downtown as well as trips destined for the Downtown area.

Changes in the intensity or type of land use development within the Downtown area or development of alternate routes have varying degrees of effect on the magnitude of cordon area vehicular- and person-trip volumes. Analysis of the historical cordon count data provides an indication of the relative effect of these conditions. In addition, the cordon count studies reveal changes in travel characteristics through the detailed data included on the magnitude of persons entering the Downtown business district by either private or public transportation modes.

The historical cordon count data also provide a valuable resource for analysis in projections on future travel demand for the Downtown area.



## Cordon Count Procedure

In 1963, a method of using automatic counters for cordon count data was developed and has been used in succeeding years. Machine counts are supplemented by manual sampling counts of vehicle type, occupancy, and pedestrians. Transit bus and passenger data are furnished by the Southern California Rapid Transit District (SCRTD) for service lines operated by said agency. Transit volume data for the Santa Monica Municipal Bus Lines operated in conjunction with the Santa Monica Freeway Diamond Lane Project were recorded by the Department of Traffic personnel.

Basic data on vehicle- and person-trips are processed by location and by half-hour periods. These data provide the primary source for the preparation of most of the tables and plates included and for comparison with previous cordon count studies.

The counts were made on successive Wednesdays in May. Counts at selected stations were also made to provide day-of-week volume comparisons.

Reference to the term "accumulation of vehicles (or persons) crossing cordon boundaries" refers to the number accumulated during the hours of the study, i.e., excludes initial vehicle or person accumulation prior to 6 AM. The term "accumulation" is the total number within the cordon area at any specific time. This total includes vehicles or persons within the area at the beginning of the study.

In 1955 and 1957, the cordon area included the area northerly and westerly to the Santa Ana and Harbor Freeways, respectively. The count in 1941 included only the additional area northerly to Sunset Boulevard.

Implementation of the Convention Center "Park and Ride" program and the Downtown "Mini-Bus" service by the SCRTD was initially in effect during the 1972 Cordon Count. At the time of the 1974 and 1976 study the Mini-Bus service was extended to the north to serve the Olvera Street and Chinatown areas.

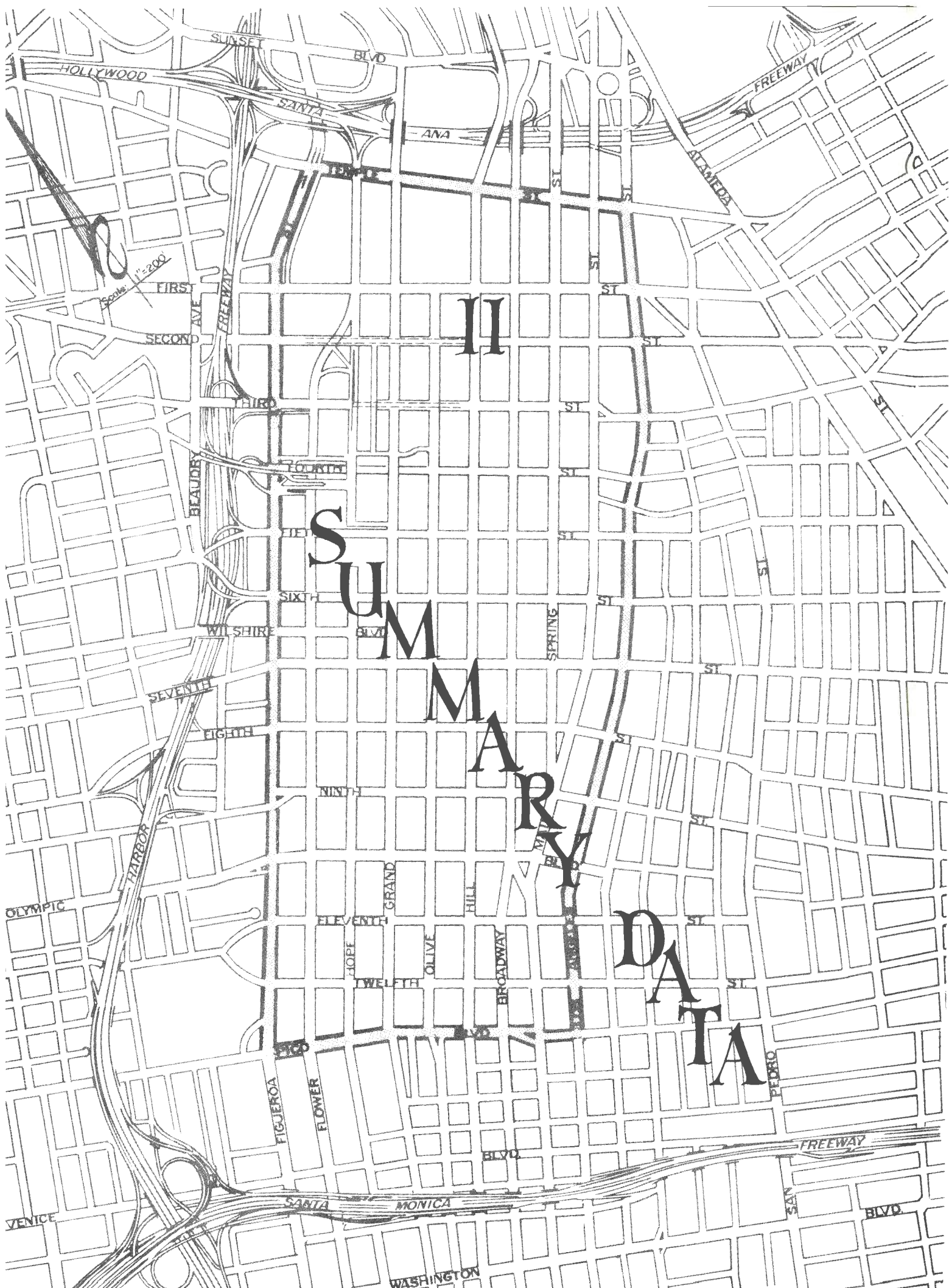
Affecting downtown area travel trends immediately prior to the 1974 cordon count study was the energy crisis as it affected availability of gasoline supplies. Initial reductions in gasoline supply occurred in the latter part of 1973 and reached the most acute stage during the latter part of February, 1974. At the time of the 1974 cordon count study, the supply of gasoline had increased to generally normal levels wherein there was sufficient supply to meet demand.

Also, affecting a significant change in travel characteristics in the cordon area for the initial count in 1974 was the implementation of the 25¢ Flat Fare program for all transit service in Los Angeles County. This program was put into effect on April 1, 1974. At the time of the 1976 study, this Flat Fare program was replaced basically with a 2-zone structure and 35¢ fare for trips within one zone.

Transit passenger volume on routes serving the cordon area were recorded for the first time in the 1976 study on two other transit projects. One was the Contra-Flow Bus Lane operation on Spring Street. The other involved the Santa Monica Freeway Diamond Lane project.







II

# SUMMARY DATA



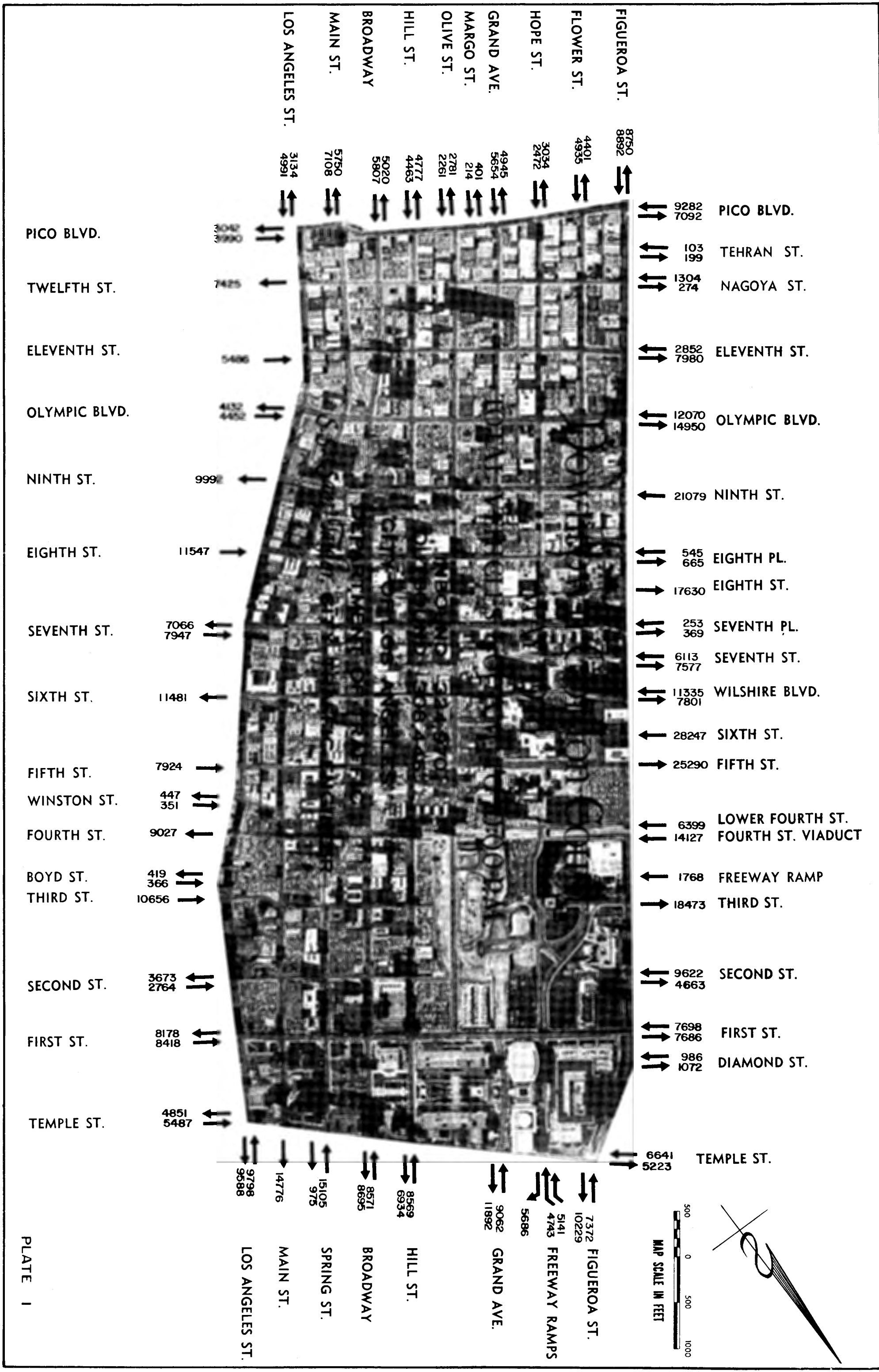


PLATE 1



Table 1

Sixteen-Hour Summary  
1976 Cordon Count Data  
May, Wednesday

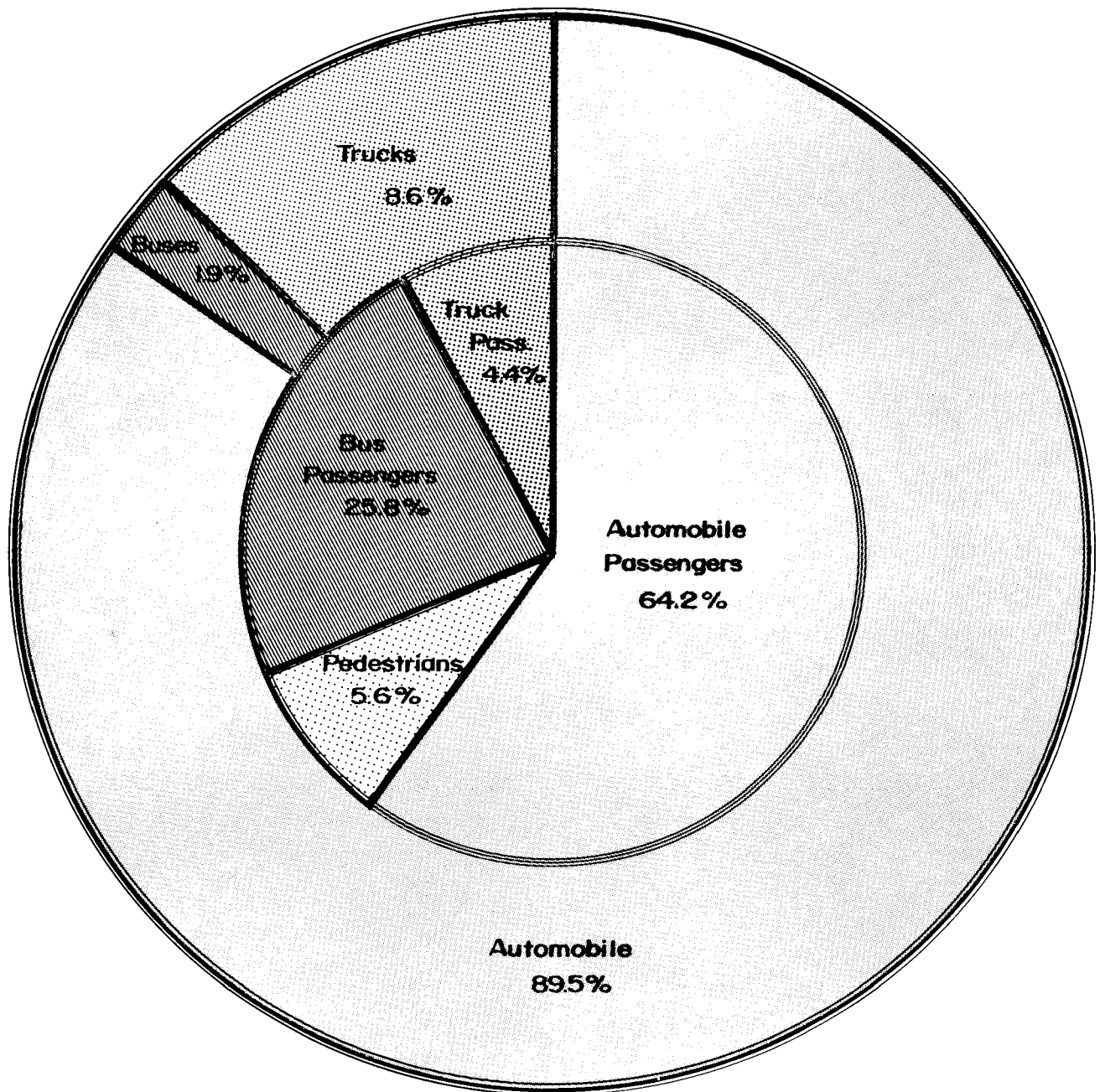
<u>Vehicles</u>	<u>In</u>	<u>Out</u>
Passenger Cars	291,060	278,699
Trucks and Other Vehicles	27,845	23,757
Buses	<u>6,065</u>	<u>5,989</u>
Grand Total - Vehicles	324,970	308,445

<u>Persons</u>	<u>In</u>	<u>Out</u>
Auto Passengers	403,821	387,743
Other Vehicle Passengers	27,845	23,757
Bus Passengers	161,877	162,236
Pedestrians	<u>34,972</u>	<u>33,598</u>
Grand Total - Persons	628,515	607,334



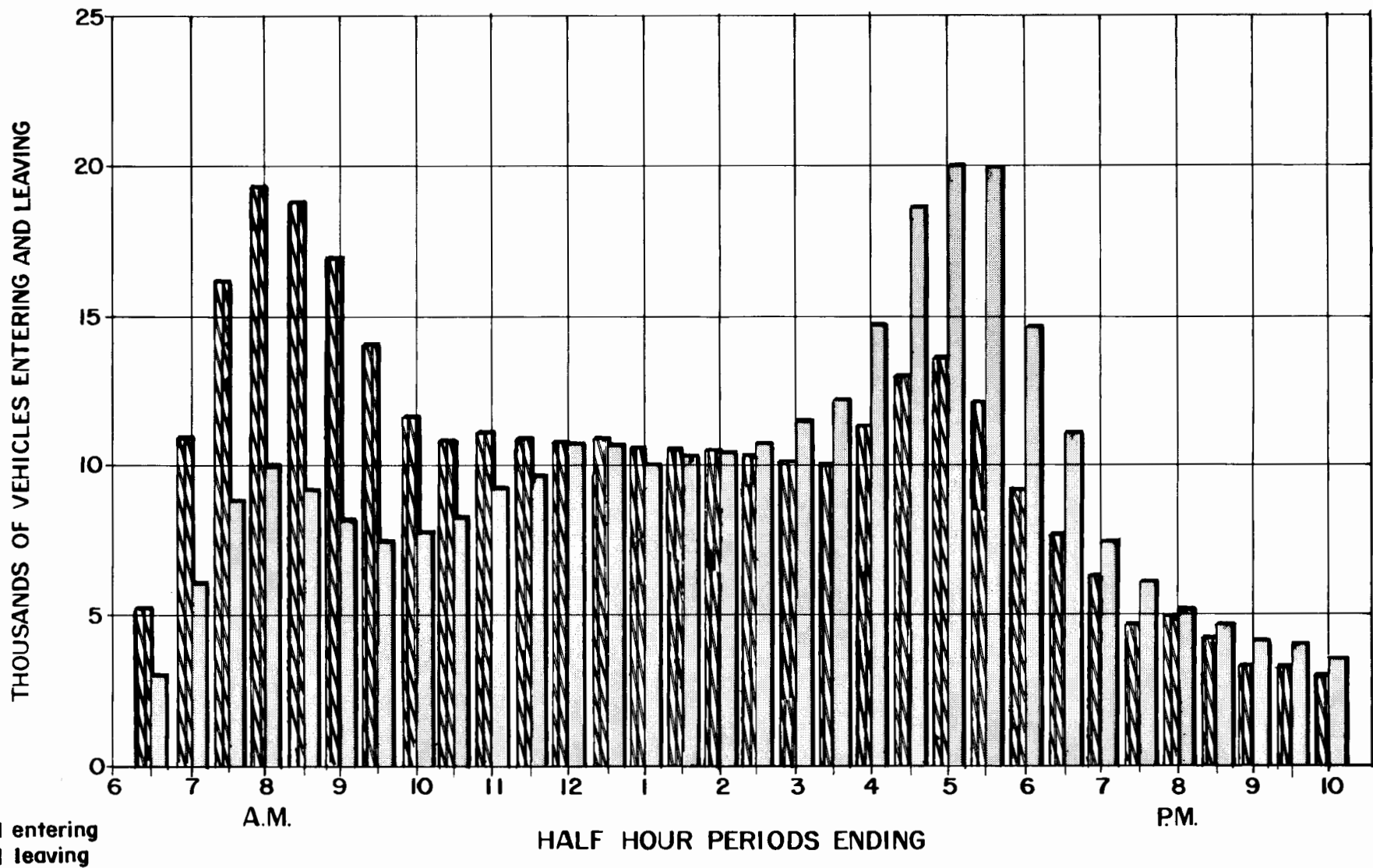
CLASSIFICATION OF VEHICLES AND MODE OF TRANSPORTATION  
ENTERING CORDON AREA



MAY 1976







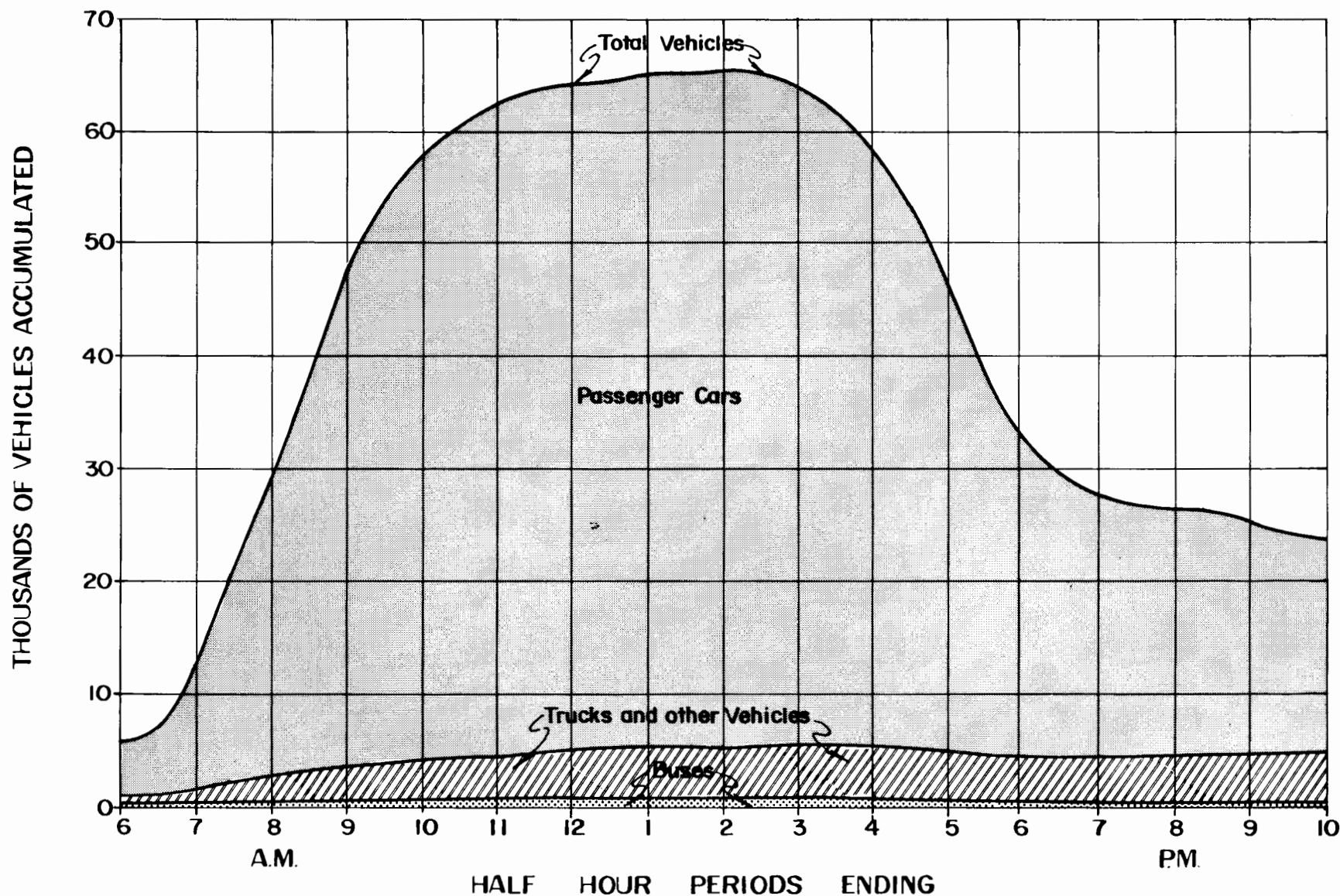
VEHICLES ENTERING AND LEAVING CORDON AREA, MAY 1976

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PLATE  
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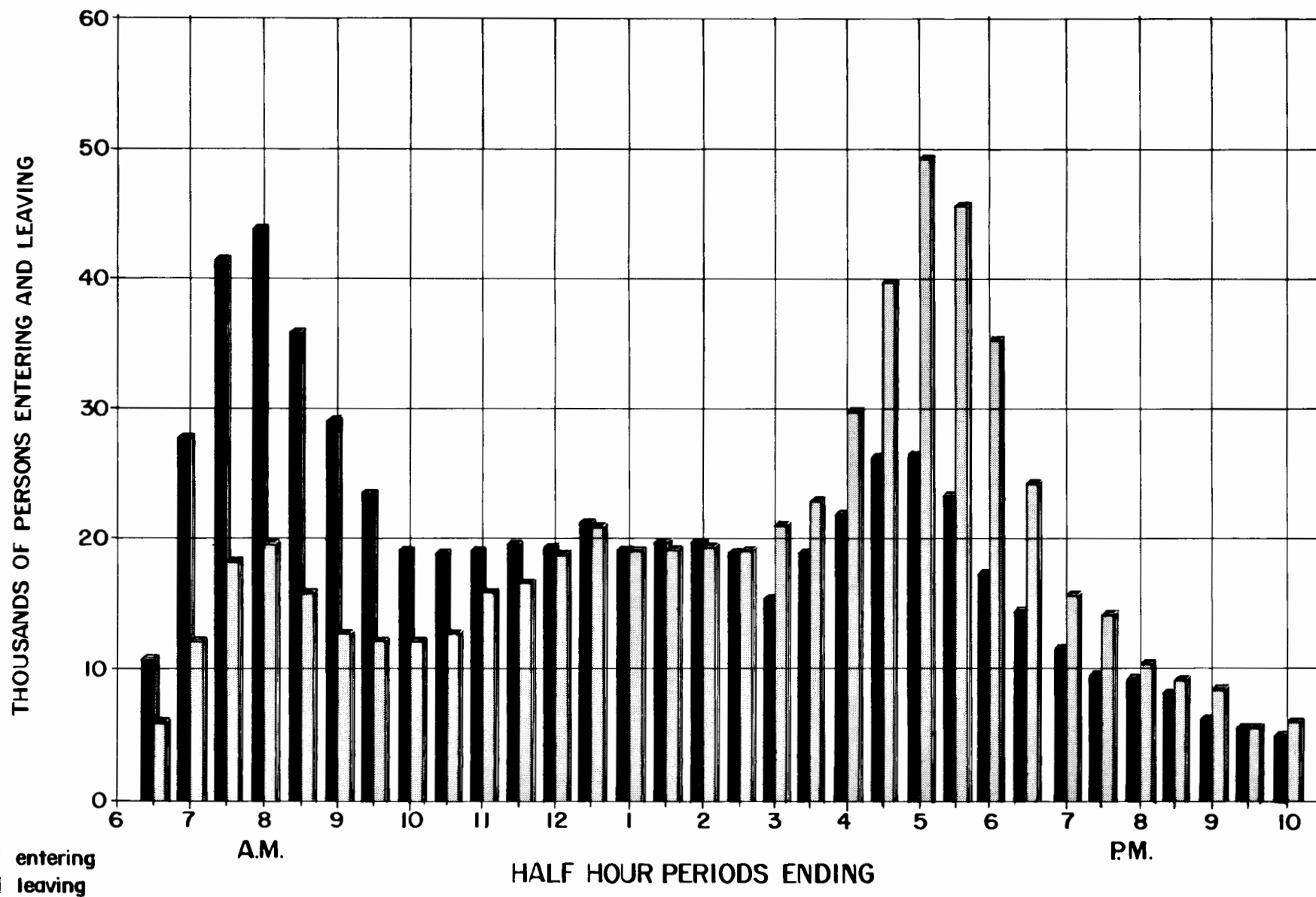
VEHICLES ACCUMULATED IN CORDON AREA, MAY 1976

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S. S. Taylor, City Traffic Engr.

PLATE  
4

edwards



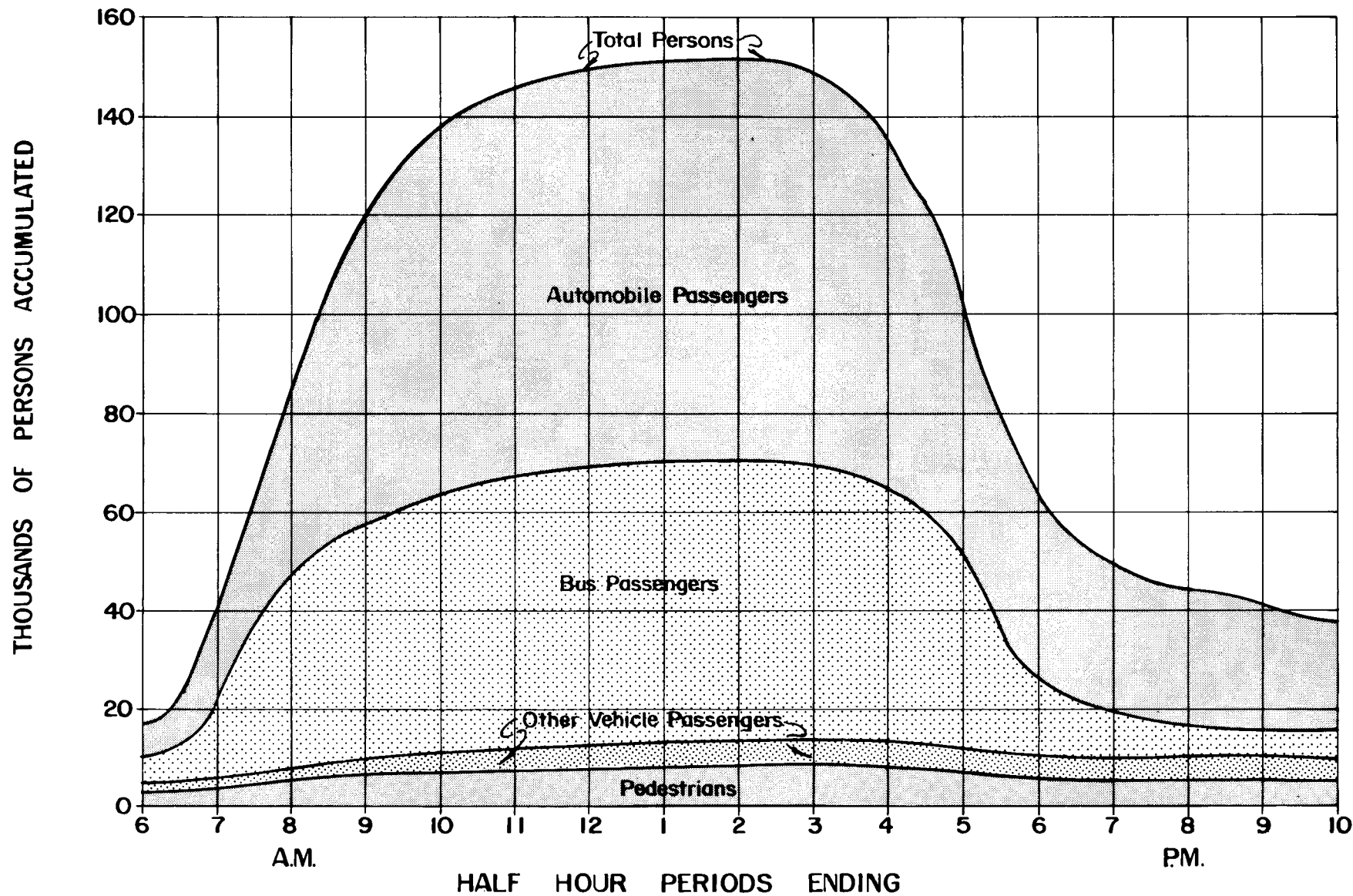


PERSONS ENTERING AND LEAVING CORDON AREA, MAY 1976

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PLATE  
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PERSONS ACCUMULATED IN CORDON AREA, MAY 1976

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PLATE  
6

edwards





TABLE 2  
SUMMARY OF VEHICLES BY LOCATION  
DOWNTOWN LOS ANGELES, MAY 1976, 6AM - 10PM

	PASSENGER CARS		TRUCKS AND OTHER VEHICLES		BUSES		TOTAL VEHICLES	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
EAST BOUNDARY								
EAST OF LOS ANGELES ST. ON								
TEMPLE ST.	4809	4297	678	554	0	0	5487	4851
1ST ST.	7206	7051	847	760	365	367	8418	8178
2ND ST.	2327	3210	437	463	0	0	2764	3673
3RD ST.	9456	0	1130	0	70	0	10656	0
BOYD ST.	366	419	0	0	0	0	366	419
4TH ST.	0	8153	0	801	0	73	0	9027
WINSTON ST.	351	447	0	0	0	0	351	447
5TH ST.	6626	0	1151	0	147	0	7924	0
6TH ST.	0	10044	0	1048	0	389	0	11481
7TH ST.	6423	5890	980	808	544	368	7947	7066
8TH ST.	10267	0	1030	0	250	0	11547	0
9TH ST.	0	8640	0	1165	0	187	0	9992
OLYMPIC BLVD.	3934	3749	518	383	0	0	4452	4132
11TH ST.	4486	0	929	0	71	0	5486	0
12TH ST.	0	6508	0	854	0	63	0	7425
PICO BLVD.	3388	2600	602	442	0	0	3990	3042
SUB TOTAL	59639	61008	8302	7278	1447	1447	69388	69733
SOUTH BOUNDARY								
SOUTH OF PICO BLVD. ON								
LOS ANGELES ST.	4381	2481	610	653	0	0	4991	3134
MAIN ST.	6187	5037	687	492	234	221	7108	5750
BROADWAY	5134	4450	465	376	208	194	5807	5020
HILL ST.	4025	4293	330	379	108	105	4463	4777
OLIVE ST.	1948	2508	278	241	35	32	2261	2781
MARGO ST.	214	401	0	0	0	0	214	401
GRAND AVE.	4969	4293	448	432	237	220	5654	4945
HOPE ST.	2228	2773	244	261	0	0	2472	3034
FLOWER ST.	4415	3857	373	404	147	140	4935	4401
FIGUEROA ST.	8144	7800	682	882	66	68	8892	8750
SUB TOTAL	41645	37893	4117	4120	1035	980	46797	42993
WEST BOUNDARY								
WEST OF FIGUEROA ST. ON								
PICO BLVD.	7517	6079	1539	820	226	193	9282	7092
TEHRAN ST.	103	199	0	0	0	0	103	199
NAGOYA ST.	1304	274	0	0	0	0	1304	274
11TH ST.	2598	7334	254	621	0	25	2852	7980
OLYMPIC BLVD.	10764	14016	1167	789	139	145	12070	14950
9TH ST.	19527	0	1508	0	44	0	21079	0
8TH PLACE	545	665	0	0	0	0	545	665
8TH ST.	0	16375	0	1212	0	43	0	17630
7TH PLACE	253	369	0	0	0	0	253	369
7TH ST.	5391	6856	473	459	249	262	6113	7577
WILSHIRE BLVD.	10561	7191	531	364	243	246	11335	7801
HARBOR FWY OFF RAMP	17687	0	845	0	0	0	18532	0
6TH ST.	8269	0	1179	0	267	0	9715	0
5TH ST.	0	23532	0	1516	0	242	0	25290
LOWER 4TH ST.	5877	0	522	0	0	0	6399	0
4TH ST. VIADUCT	12858	0	1269	0	0	0	14127	0
HARBOR FWY OFF RAMP	1614	0	154	0	0	0	1768	0
3RD ST.	0	17318	0	1150	0	5	0	18473
2ND ST.	8869	4188	752	475	1	0	9622	4663
1ST ST.	7259	7225	319	342	120	119	7698	7686
DIAMOND ST.	986	1072	0	0	0	0	986	1072
TEMPLE ST.	6012	4658	410	351	219	214	6641	5223
SUB TOTAL	127994	117351	10922	8099	1508	1494	140424	126944
NORTH BOUNDARY								
NORTH OF TEMPLE ST. ON								
FIGUEROA ST.	6928	9658	391	516	53	55	7372	10229
HARBOR FWY OFF RAMP	4815	0	326	0	0	0	5141	0
HOLLYWOOD FWY RAMPS	4147	0	405	0	191	0	4743	0
HOLLYWOOD FWY RAMPS	0	5308	0	376	0	2	0	5686
GRAND AVE.	8315	11100	545	397	202	395	9062	11892
HILL ST.	7990	6333	524	370	55	231	8569	6934
BROADWAY	7531	7739	625	697	415	259	8571	8695
SPRING ST.	12945	0	1003	0	1157	975	15105	975
MAIN ST.	0	13365	0	1260	0	151	0	14776
LOS ANGELES ST.	9111	8944	685	644	2	0	9798	9588
SUB TOTAL	61782	62447	4504	4260	2075	2068	68361	68775
GRAND TOTAL	291060	278699	27845	23757	6065	5989	324970	308445



TABLE 3

SUMMARY OF PERSONS BY LOCATION  
DOWNTOWN LOS ANGELES, MAY 1976, 6AM - 10PM

	AUTO PASSENGERS		PASSENGERS IN OTHER VEHICLES		BUS PASSENGERS		PEDESTRIANS		TOTAL PERSONS	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
EAST BOUNDARY										
EAST OF LOS ANGELES ST. ON										
TEMPLE ST.	6651	5869	678	554	0	0	1891	1894	9220	8317
1ST ST.	9981	9911	847	760	7466	6800	3115	3237	21409	20708
2ND ST.	3223	4411	437	463	0	0	433	441	4093	5315
3RD ST.	12772	0	1130	0	686	0	297	277	14885	277
BOYD ST.	481	544	0	0	0	0	235	261	716	805
4TH ST.	0	11116	0	801	0	1360	536	597	536	13874
WINSTON ST.	460	595	0	0	0	0	963	892	1423	1487
5TH ST.	8990	0	1151	0	3700	0	2528	2150	16369	2150
6TH ST.	0	13725	0	1048	0	9216	1183	1196	1183	25185
7TH ST.	8715	7968	980	808	15435	11502	1643	1425	26773	21703
8TH ST.	13813	0	1030	0	5096	0	1841	1688	21780	1688
9TH ST.	0	11597	0	1165	0	5204	2365	1882	2365	19848
OLYMPIC BLVD.	5500	5167	518	383	0	0	388	427	6406	5977
11TH ST.	6247	0	929	0	1525	0	975	968	9676	968
12TH ST.	0	8978	0	854	0	1855	441	642	441	12329
PICO BLVD.	4696	3578	602	442	0	0	342	296	5640	4316
SUB TOTAL	81529	83459	8302	7278	33908	35937	19176	18273	142915	144947
SOUTH BOUNDARY										
SOUTH OF PICO BLVD. ON										
LOS ANGELES ST.	6536	3597	610	653	0	0	213	220	7359	4470
MAIN ST.	9355	7390	687	492	5549	5675	172	143	15763	13700
BROADWAY	7768	6460	465	376	7099	7814	528	359	15860	15009
HILL ST.	6089	6193	330	379	2941	2852	856	765	10216	10189
OLIVE ST.	2898	3696	278	241	605	604	175	178	3956	4719
MARGO ST.	289	551	0	0	0	0	0	0	289	551
GRAND AVE.	7144	6092	448	432	5061	4530	268	256	12921	11310
HOPE ST.	3203	3941	244	261	0	0	522	516	3969	4718
FLOWER ST.	6202	5466	373	404	5097	4263	214	201	11886	10334
FIGUEROA ST.	11694	11097	682	882	2348	2264	337	309	15061	14552
SUB TOTAL	61178	54483	4117	4120	28700	28002	3285	2947	97280	89552
WEST BOUNDARY										
WEST OF FIGUEROA ST. ON										
PICO BLVD.	9843	8190	1539	820	7755	7015	445	486	19582	16511
TEHRAN ST.	125	258	0	0	0	0	19	32	144	290
NAGOYA ST.	1688	359	0	0	0	0	230	296	1918	655
11TH ST.	3370	9864	254	621	0	207	94	103	3718	10795
OLYMPIC BLVD.	13939	18866	1167	789	4685	4190	469	503	20260	24348
9TH ST.	26554	0	1508	0	753	0	620	534	29435	534
8TH PLACE	740	883	0	0	0	0	221	263	961	1146
8TH ST.	0	23085	0	1212	0	574	873	702	873	25573
7TH PLACE	327	481	0	0	0	0	314	585	641	1066
7TH ST.	7335	9561	473	459	8107	7131	1676	1503	17591	18654
WILSHIRE BLVD.	14334	9905	531	364	7103	8768	596	473	22564	19510
HARBOR FWY OFF RAMP	23990	0	845	0	0	0	0	0	24835	0
6TH ST.	11267	0	1179	0	10154	0	899	819	23499	819
5TH ST.	0	33209	0	1516	0	9425	271	288	271	44438
LOWER 4TH ST.	8093	0	522	0	0	0	54	33	8669	33
4TH ST. VIADUCT	17513	0	1269	0	0	0	2	2	18784	2
HARBOR FWY OFF RAMP	2157	0	154	0	0	0	0	0	2311	0
3RD ST.	0	23870	0	1150	0	205	14	36	14	25261
2ND ST.	12081	5742	752	475	45	0	136	122	13014	6339
1ST ST.	9925	9908	319	342	4150	4048	192	200	14586	14498
DIAMOND ST.	1336	1423	0	0	0	0	0	0	1336	1423
TEMPLE ST.	8221	6331	410	351	6223	6680	442	506	15296	13868
SUB TOTAL	172838	161935	10922	8099	48975	48243	7567	7486	240302	225763
NORTH BOUNDARY										
NORTH OF TEMPLE ST. ON										
FIGUEROA ST.	8657	11746	391	516	1221	1337	77	116	10346	13715
HARBOR FWY OFF RAMP	6116	0	326	0	0	0	0	0	6442	0
HOLLYWOOD FWY RAMPS	5303	0	405	0	6061	0	0	0	11769	0
HOLLYWOOD FWY RAMPS	0	6455	0	376	0	80	0	0	0	6911
GRAND AVE.	10427	13540	545	397	7057	13812	491	458	18520	28207
HILL ST.	12030	9838	524	370	1481	2438	297	503	14332	13149
BROADWAY	11918	12009	625	697	7263	6317	528	611	20334	19634
SPRING ST.	19990	0	1003	0	27131	20444	919	786	49043	21230
MAIN ST.	0	20509	0	1260	0	5626	810	627	810	28022
LOS ANGELES ST.	13835	13769	685	644	80	0	1822	1791	16422	16204
SUB TOTAL	88276	87866	4504	4260	50294	50054	4944	4892	148018	147072
GRAND TOTAL	403821	387743	27845	23757	161877	162236	34972	33598	628515	607334



TABLE 4

## SUMMARY OF VEHICLES BY HALF HOUR PERIODS

DOWNTOWN LOS ANGELES, MAY 1976

6AM - 10PM

TIME PERIOD ENDING	PASSENGER CARS			TRUCKS OTHER VEHICLES			BUSES			TOTAL VEHICLES		
	IN	OUT	ACCUM	IN	OUT	ACCUM	IN	OUT	ACCUM	IN	OUT	ACCUM
630	4131	2600	5300	627	234	500	145	118	200	4903	2952	6000
700	9430	5358	6831	949	385	893	277	182	227	10656	5925	7951
730	14828	7898	10903	954	537	1457	367	234	322	16149	8669	12682
800	17653	8983	17833	1062	688	1874	389	273	455	19104	9944	20162
830	17400	8137	26503	1101	813	2248	337	250	571	18838	9200	29322
900	15525	7121	35766	1206	781	2536	246	216	658	16977	8118	38960
930	12567	6408	44170	1324	878	2961	197	192	688	14088	7478	47619
1000	10067	6575	50329	1428	981	3407	179	175	693	11674	7731	54429
1030	9470	7134	53821	1260	988	3854	172	172	697	10902	8294	58372
1100	9620	7969	56157	1214	1071	4126	167	166	698	11601	9206	60980
1130	9407	8371	57808	1202	1080	4269	170	170	698	10779	9621	62775
1200	9397	9388	58844	1161	1039	4391	167	165	700	10725	10542	63435
1230	9642	9531	58853	1010	895	4513	172	179	700	10824	10605	64066
1300	9387	8909	58964	975	847	4628	160	175	693	10522	9931	64285
1330	9241	9099	59442	1103	1014	4756	177	172	678	10521	10285	64876
1400	9233	9087	59584	1052	1088	4845	166	173	683	10451	10348	65112
1430	8920	9610	59730	1222	976	4809	183	171	676	10325	10757	65215
1500	8743	10219	59040	1111	1040	5055	196	187	688	10050	11446	64783
1530	8642	10703	57564	1117	1223	5126	209	194	697	9968	12120	63387
1600	9961	12891	55503	1180	1366	5020	232	218	712	11373	14475	61235
1630	11661	17080	52573	1070	1242	4834	245	289	726	12976	18611	58133
1700	12246	18515	47154	990	1123	4662	277	385	682	13513	20023	52498
1730	11024	18514	40885	795	893	4529	250	383	574	12069	19790	45988
1800	8315	13917	33395	628	594	4431	207	332	441	9150	14843	38267
SUB TOTAL	256510	234017	27793	25741	21776	4465	5287	5171	316	287538	260964	32574
1830	7048	10593	24248	469	488	4446	180	213	283	7697	11294	28977
1900	5699	7185	22762	381	332	4495	152	166	269	6232	7683	27526
1930	4372	5814	21320	283	286	4492	111	106	274	4766	6206	26086
2000	4570	4880	21010	288	233	4547	85	91	268	4943	5204	25825
2030	3902	4501	20411	245	206	4586	76	64	275	4223	4776	25272
2100	3063	3990	19484	172	175	4583	60	57	278	3295	4222	24345
2130	3070	3971	18583	146	142	4587	62	62	278	3278	4175	23448
2200	2876	3748	17661	120	119	4588	52	54	276	2998	3921	22525
SUB TOTAL	34550	44682	2104	1981	778	618	37432	47481				
GRAND TOTAL	291060	278699	27845	23757	6065	5989	324970	308445				



TABLE 5

## SUMMARY OF PERSONS BY HALF HOUR PERIODS

DOWNTOWN LOS ANGELES, MAY 1976

6AM - 10PM

TIME PERIOD ENDING	AUTO PASSENGERS			PASSENGERS IN OTHER VEHICLES			BUS PASSENGERS			PEDESTRIANS			TOTAL PERSONS		
	IN	OUT	ACCUM	IN	OUT	ACCUM	IN	OUT	ACCUM	IN	OUT	ACCUM	IN	OUT	ACCUM
			7000			500			5500			4000			17000
630	5897	3400	9497	627	234	893	4102	2160	7442	421	254	4167	11047	6048	21999
700	12984	6732	15749	949	385	1457	12263	4384	15321	1299	638	4828	27495	12139	37355
730	20884	10019	26614	954	537	1874	17546	5843	27024	2184	1510	5502	41568	17909	61014
800	24009	11304	39319	1062	688	2248	16087	5941	37170	2280	1717	6065	43438	19650	84802
830	21936	9685	51570	1101	813	2536	11152	4211	44111	1678	995	6740	35867	15704	104965
900	19263	8800	62033	1206	781	2961	6442	2673	47880	1292	762	7278	28203	13016	120152
930	15929	8197	69765	1324	878	3407	4917	2465	50332	1046	904	7420	23716	12444	130924
1000	12409	8236	73938	1428	981	3854	4136	2194	52274	1111	922	7609	19084	12333	137675
1030	12213	8997	77154	1260	988	4126	4166	2370	54070	1124	1005	7728	18763	13360	143078
1100	12957	10635	79476	1214	1071	4269	3774	2906	54938	1134	1078	7784	19079	15690	146467
1130	12951	11376	81051	1202	1080	4391	4042	3120	55860	1191	1078	7897	19386	16654	149199
1200	12525	12399	81177	1161	1039	4513	4098	3579	56379	1477	1470	7904	19261	18487	149973
1230	14220	13929	81468	1010	895	4628	4409	4042	56746	1736	1584	8056	21375	20450	150898
1300	13126	12974	81620	975	847	4756	3726	4095	56377	1602	1436	8222	19429	19352	150975
1330	13149	12918	81851	1103	1014	4845	4168	4037	56508	1501	1314	8409	19921	19283	151613
1400	13410	12522	82739	1052	1088	4809	3664	4235	55937	1369	1202	8576	19495	19047	152061
1430	12605	13285	82059	1222	976	5055	3947	4453	55431	1003	1040	8539	18777	19754	151084
1500	12159	13915	80303	1111	1040	5126	4320	5047	54704	946	981	8504	18536	20983	148637
1530	11706	14685	77324	1117	1223	5020	5027	5381	54350	1223	1357	8370	19073	22646	145064
1600	13575	18507	72392	1180	1366	4834	5533	8245	51638	1309	1412	8267	21597	29530	137131
1630	16436	24328	64500	1070	1242	4662	6766	11528	46876	1872	2015	8124	26144	39113	124162
1700	16709	26076	55133	990	1123	4529	6860	18817	34919	1891	2870	7145	26450	48886	101726
1730	15613	25205	45541	795	893	4431	5552	17583	22888	1167	1905	6407	23127	45586	79267
1800	12025	19463	38103	628	594	4465	3848	10723	16013	649	1037	6019	17150	31517	64600
SUB TOTAL	348690	317587		25741	21776		150545	140032		32505	30486		557481	509881	
1830	10454	15256	33301	469	488	4446	3293	7668	11638	455	734	5740	14671	24146	55125
1900	8390	10583	31108	381	332	4495	2563	4629	9572	354	456	5638	11688	16000	50813
1930	7244	9968	28384	283	286	4492	1711	3451	7832	388	390	5636	9626	14095	46344
2000	8069	8211	28242	288	233	4547	1139	1864	7107	320	395	5561	9816	10703	45457
2030	6733	7272	27703	245	206	4586	764	1517	6354	298	328	5531	8040	9323	44174
2100	5322	6859	26166	172	175	4583	555	1027	5882	232	311	5452	6281	8372	42083
2130	4705	6353	24518	146	142	4587	773	1204	5451	232	270	5414	5856	7469	39970
2200	4214	5654	23078	120	119	4588	534	844	5141	188	228	5374	5056	6845	38181
SUB TOTAL	55131	70156		2104	1981		11332	22204		2467	3112		71034	97453	
GRAND TOTAL	403821	387743		27845	23757		161877	162236		34972	33598		628515	607334	





Table 6

Comparison of Total Vehicle and Passenger Car  
Statistics, Downtown Los Angeles, Selected Years

CORDON COUNT

		<u>1941</u>	<u>1957</u>	<u>1963</u>	<u>1967</u>	<u>1972</u>	<u>1974</u>	<u>1976</u>
16-Hour	Total	--	327,046	291,506	289,882	319,245	306,663	324,970
Total In	Pass. Cars	288,000	283,097	253,731	253,203	283,229	271,899	291,060
16-Hour	Total	--	323,624	285,970	276,164	310,339	296,228	308,445
Total Out	Pass. Cars	--	278,224	247,836	242,649	277,039	263,671	278,699
High	Total	18,500	22,077	19,267	20,345	19,927	18,350	19,104
½-Hour In	Pass. Cars	--	20,402	16,870	18,891	18,554	16,912	17,653
Same	Total	12,000	12,689	10,912	9,735	11,150	9,895	9,944
½-Hour Out	Pass. Cars	--	11,202	9,349	8,782	10,180	8,875	8,983
High	Total	20,500	22,760	19,730	20,488	22,182	19,550	20,023
½-Hour Out	Pass. Cars	--	20,884	17,176	18,959	20,575	17,881	18,515
Same	Total	13,500	15,602	12,898	12,099	14,069	13,115	13,513
½-Hour In	Pass. Cars	--	13,876	11,131	10,758	12,735	11,902	12,246
Highest Veh.	Total	49,000	48,306	--	62,100	58,789	58,576	65,215
Accum. Incl.	Pass. Cars	--	46,007	--	57,470	53,641	54,094	59,730
Initital								



Table 7

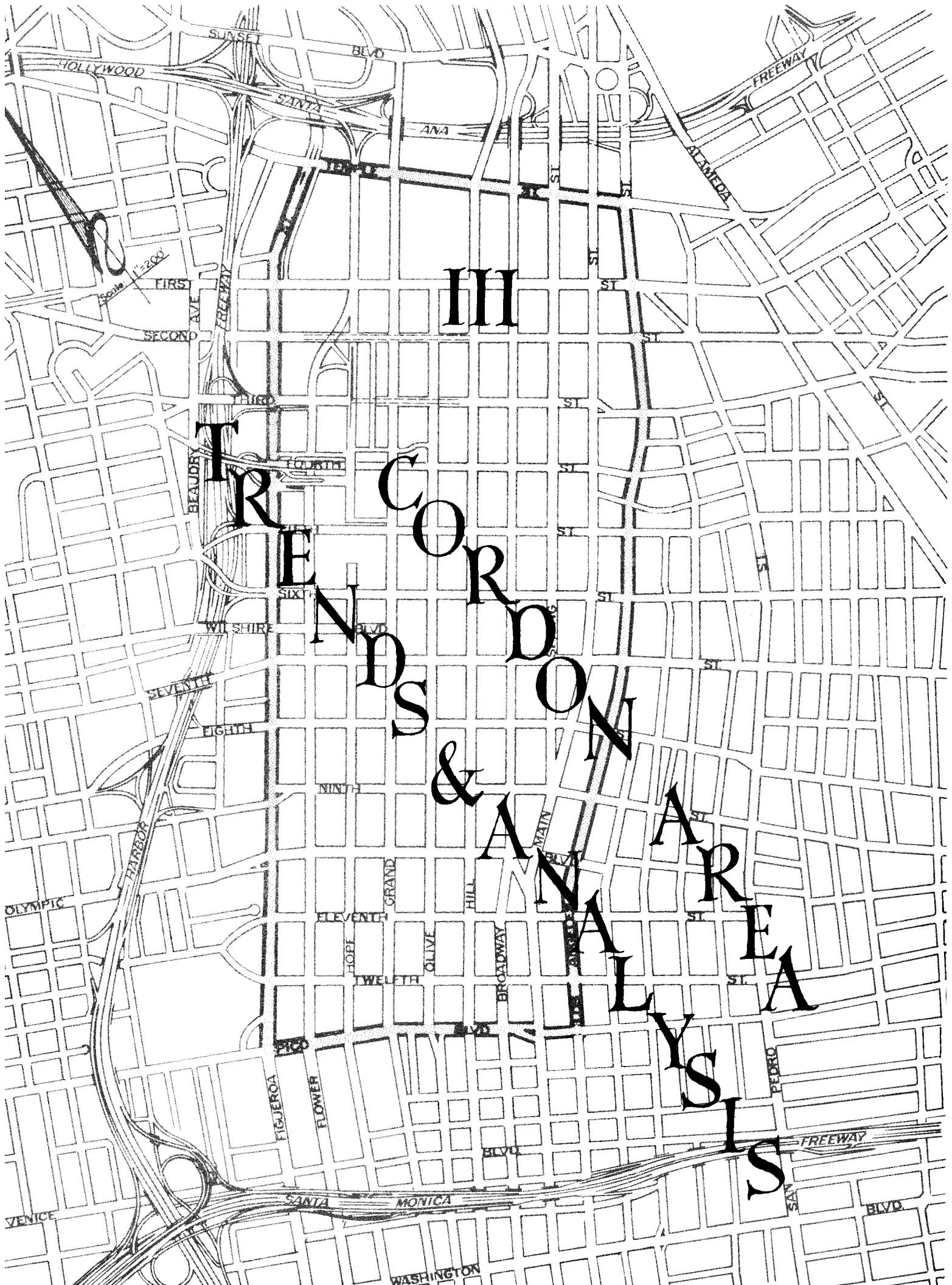
Comparison of Total Person and Auto Passenger  
Statistics, Downtown Los Angeles, Selected Years

## CORDON COUNT

		<u>1941</u>	<u>1957</u>	<u>1963</u>	<u>1967</u>	<u>1972</u>	<u>1974</u>	<u>1976</u>
16-Hour	Persons	757,120	687,906	605,730	570,928	598,673	605,029	628,515
Total In	Auto Pass.	441,647	403,015	368,844	350,323	389,768	372,979	403,821
	% Auto Passengers	58	59	61	61	65	62	64
16-Hour	Persons	723,191	692,195	589,964	549,977	582,094	578,002	607,334
Total Out	Auto Pass.	415,403	402,399	355,152	337,627	377,295	352,449	387,743
	% Auto Passengers	57	58	60	61	65	61	64
High	Persons	50,161	59,411	50,922	50,673	42,433	43,524	43,438
½-Hour In	Auto Pass.	25,982	31,247	27,505	28,630	25,053	23,071	24,009
	% Auto Passengers	52	53	54	57	59	53	55
Same	Persons	26,298	28,010	20,825	18,914	20,881	19,331	19,650
½-Hour Out	Auto Pass.	14,499	17,100	11,608	11,003	12,425	10,899	11,304
	% Auto Passengers	55	61	56	58	59	56	58
High	Persons	61,710	61,592	47,588	48,994	49,198	48,232	48,886
½-Hour Out	Auto Pass.	31,558	31,362	27,167	28,506	28,611	24,264	26,076
	% Auto Passengers	51	51	57	58	58	50	53
Same	Persons	29,629	29,888	26,519	19,253	25,856	25,045	26,450
½-Hour In	Auto Pass.	18,160	19,201	15,973	12,180	17,068	15,571	16,709
	% Auto Passengers	61	64	60	63	66	62	63
High	Persons	174,758	132,618	--	136,194	122,729	135,071	135,061
Accum.*	Auto Pass.	67,593	57,128	--	74,162	68,224	68,450	75,739
	% Auto Passengers	39	43	--	54	55	51	56

\*Persons Crossing Cordon





# III TRENDS & ANALYSIS CORRIDOR AREAS



## Cordon Area Trends and Analysis

### General Observations

The volume of vehicular trips across the cordon boundaries for the 16-hour study period increased steadily from 1967 until 1974. Vehicular traffic entering and leaving the cordon area in 1974 declined by approximately 4% from the volume recorded in 1972.

Although there were most likely numerous factors which contributed to this reversal, the primary factors were: (1) implementation of the 25¢ Flat Fare Program on April 1, 1974, for transit service in Los Angeles County, (2) increasing patronage on the San Bernardino Freeway Express Busway route, and (3) effects of the energy crisis as it affected availability and price of gasoline supplies.

Cordon area vehicular traffic in 1976 increased by 5% over the 1974 volume and surpassed the level recorded in 1972, which was the highest recorded since the beginning of the annual series in 1963.

Analysis of the data and trends relative to the most significant changes in the magnitude of travel crossing the cordon boundaries and in the variations on accumulation within the cordon area are contained in the following sections.

### Travel Volume Across Cordon Boundaries

Automatic machine and manual counts conducted at the boundaries of the cordon study area provide detailed data only on the total volume of vehicle or person-trips at the perimeter of the area. This total includes trips which are non-downtown oriented (through traffic) as well as trips which have an origin or destination within this business district.

Data from the cordon count studies conducted since 1963 reveal that the volume of vehicular traffic declined steadily between 1964 and 1967. This decline occurred immediately subsequent to the extension of the Santa Monica Freeway westerly of Vermont Avenue to its present terminus and was apparently due to the fact that surface street were accommodating increasingly lower volumes of through traffic. Disregarding the decline in 1974, since this was due to special conditions over a relatively short duration, the volume of vehicular traffic on the downtown surface street routes has increased steadily since 1967.

To provide an insight into the cordon area travel activities for the overall 13-year period (1963 to 1976), the volume data for each of the cordon studies and the calculated linear trend lines (for these data) are graphically illustrated on Plate 7. The linear trend lines were determined mathematically by the least-square method and provide an indication of the long-term trend for the respective data.

Based on the linear trend analysis, vehicular trips across the cordon boundaries for the 16-hour study period have increased overall in the 13-year





period by approximately 8% while person trip volumes have increased only slightly or by approximately 1%.

More detailed study of the cordon count data was made to determine the effects of recent changes in travel modes and new development on peak-hour travel activities.

These data, as shown on Table 8, disclose that for the highest 3-hour commuter periods (6:30 to 9:30 AM and 3:30 to 6:30 PM), directional volumes of vehicular traffic in 1976 represented a slight reduction from the corresponding volume in 1972 and increasingly greater reductions for the peak two-hour and peak-hour volumes. Directional person-trip volumes for the 3-hour commuter period indicated an opposing trend, increased volumes, however, with a similar pattern of consecutively less proportionate change (increase) from the peak two-hour and peak-hour periods.

These changes in commuter travel patterns are most likely the result of numerous factors. The Cordon Count Study procedure does not, however, provide the details to identify or measure the extent of the various factors responsible for such changes.

#### Accumulation of Vehicles and Persons within Cordon Area

The volume of vehicles and persons within the Cordon area at any specific time is affected to only a very minor extent by the changes in the magnitude of through traffic. Basic data on accumulation provide essentially a relative indication of the activities occurring within the cordon area.

As is shown on Plate 7, overall in the 13-year period from 1963-1976, peak accumulation of vehicles within the cordon area increased at an average annual rate of 1.64% while peak person accumulation declined at an average annual rate of 0.34%, based on the linear regression analysis.

Since passenger vehicles account for approximately 90% of the total cordon vehicles, vehicle accumulation reflects primarily the magnitude of automobiles within the cordon area.

Review of the cordon count study data reveals that the peak accumulation of automobiles remained relatively stable between 1967 and 1970, 57,470 in 1967 vs. 57,651 in 1970. According to an inventory study report<sup>1</sup>, there was a supply of 47,028 off-street parking spaces in 1970 within all of the cordon area except the blocks between Temple Street and First Street. This represented an increase of 2,159 spaces over the supply of 44,869 spaces in 1966. A breakdown for only the core area (between 3rd Street and Olympic Boulevard) indicated, however, that there was a

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<sup>1</sup>"Los Angeles Central City, Off-Street Parking Space Inventory", Dec. 1970-Associated Parking Consultants.



net decrease of 465 off-street parking spaces between 1966 and 1970 in the blocks westerly of Grand Avenue.

Subsequent to the 1972 cordon count, five office or multi-purpose complexes have been completed within the core area westerly of Grand Avenue. Parking facilities for these complexes constructed as an integral part of each facility or in separate parking structures resulted in a net increase of over 5,500 off-street parking spaces on the sites involved. This corresponds generally to the increase of over 6,000 automobiles accumulated within the cordon area at the peak period in 1976 over 1972, 59,730 vs. 53,641.

Peak accumulation of persons within the cordon area from the historical data, Table 9, reflects the effect of the increase in automobile accumulation in addition to changes due to other conditions. As the data on this table indicates, between 1967 and 1972 there was a declining trend in total person accumulation and in the two primary modes, automobile and transit passengers. Between 1972 and 1976 there was an increase in the accumulation for the automobile and transit passenger modes that more than offset the reduction during the previous 5 years. However, during the latest 4-year period, there was also a significant reduction in pedestrian accumulation so that peak accumulation of persons in 1976 was still less than the 1967 peak.

#### Passenger Mode Trends

Travel volumes crossing the cordon boundaries are indicative not only of the magnitude of accumulation within the cordon area but also of the magnitude of through travel activities.

The declining trend of transit passenger vehicles across the cordon boundaries since 1969 was reversed in 1974 due primarily to the implementation of the 25¢ Flat Fare Program and increasing patronage on the San Bernardino Freeway Express Busway route. Although the volume of transit passengers in 1976 increased over the 1974 volumes, in proportionate values it remained at the same level, or approximately 29% of the total cordon passenger trips, as is shown on Table 10. For the other primary mode, automobile passengers, the increase in absolute volumes in 1976 over 1974 also resulted in this mode accommodating a greater proportion of the cordon passenger volumes.

Changes in mode of travel, pedestrian volumes and off-street parking supply have effected changes in not only the magnitude of cordon area vehicle and person trips but also in changes in travel activity along the four cardinal boundaries.

Comparison of data by cardinal boundaries, Table 11, discloses that during the last 10 years (1966-1976) the 16-hour volume of vehicle and person trips entering and leaving the cordon area has increased by 9.4% and 6.4%, respectively. By cardinal boundaries, the most significant changes in



travel activity have occurred along the west and north boundaries. In 1976 the volume of vehicles or persons crossing these two boundaries represented increases ranging from 11% to 16% over the respective volumes recorded in 1966.

Initially in effect during the 1976 cordon count study was the Santa Monica Freeway Diamond Lane project. This project, which was put into operation on March 15, 1976, provided an exclusive lane in each direction for buses and carpools (3 or more persons) during the hours of 6 to 10 AM and 3 to 7 PM on weekdays. Transit routes utilizing the exclusive lanes entered and left the cordon area along the south boundaries. Volume data on Table 11 for the south boundary discloses that, although there was a slight reduction (0.2%) in vehicular traffic, the volume of persons crossing this boundary in 1976 was nearly 9% greater than the 1971 volume. These changes reflect, to some extent, the effects of the Diamond Lane project.

In order to more clearly illustrate the long-term trend in various modes of transport for persons entering the cordon area, the data from the historical cordon count studies have been plotted on a graph with a semi-logarithmic scale, Plate 8. For the annual series counts between 1963 and 1972, a straight line on a linear basis indicates a constant rate in increasing or decreasing magnitude with an inclining or declining slope, respectively.

#### Passenger Vehicle Occupancy Data

Numerous occupancy counts conducted to derive basic data on automobile passenger volumes also provide a resource for comparison of data on the relative proportion of automobiles by number of occupants for various years.

As a result of the decreasing supply of gasoline during the 1974 energy crisis, which reached the most critical stage about two months prior to the cordon study for that year, there was generally a greater intensity of carpooling activity during this period.

In addition to providing an incentive for greater transit patronage, the Santa Monica Freeway Diamond Lane project was implemented in order to encourage more carpooling activities.

To provide some insight into the relative effects of these conditions, data from the occupancy counts were compiled to derive greater detail on the proportionate number of automobiles with single, two, or three, and more occupancies for the last three cordon studies. The data, Table 12, reveal that for each succeeding study there have been a slightly lower proportionate number of automobiles entering the cordon area during the 16-hour study period with a single occupant (driver only). Conversely, of course, the number of automobiles with two or more occupants as a proportion of the total automobiles increased in 1974 and over 1972 and in 1976 over

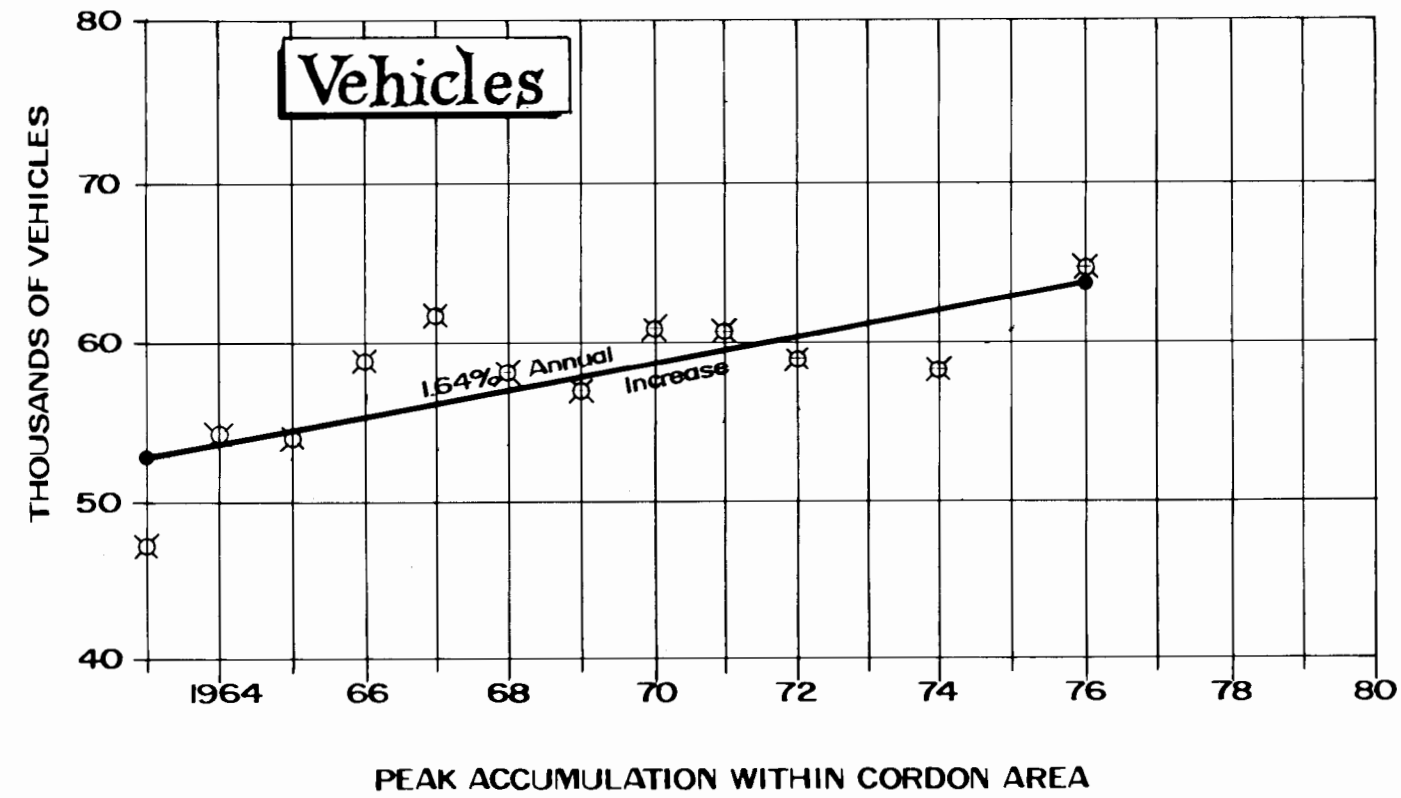
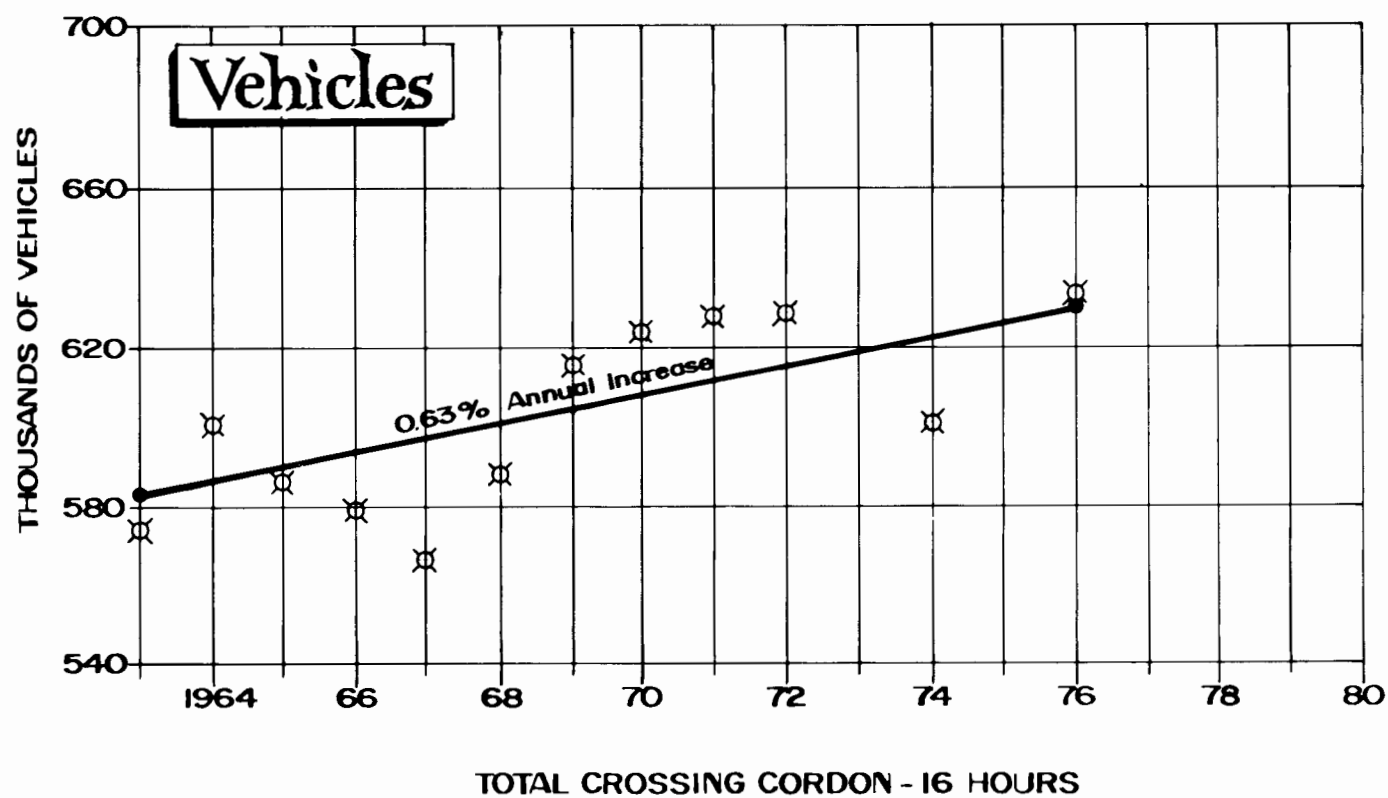
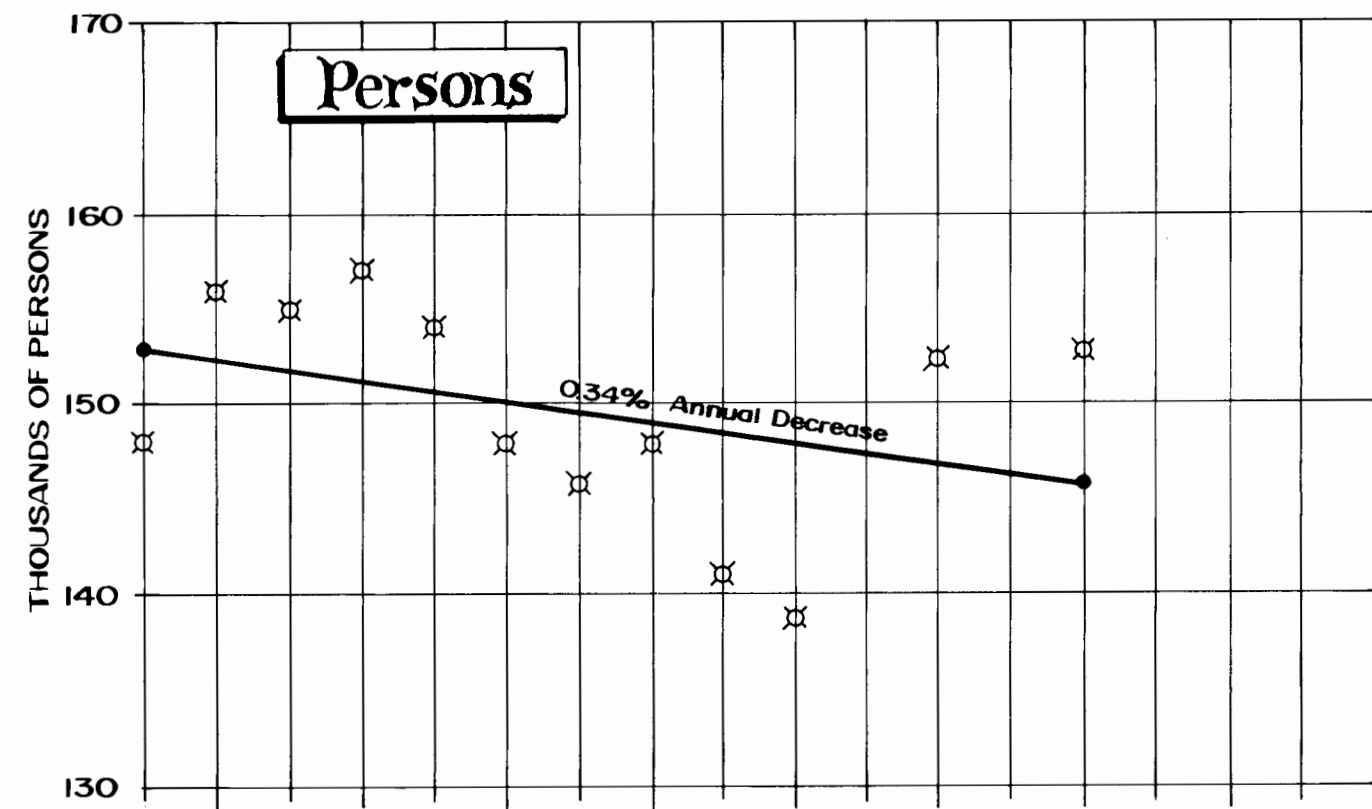
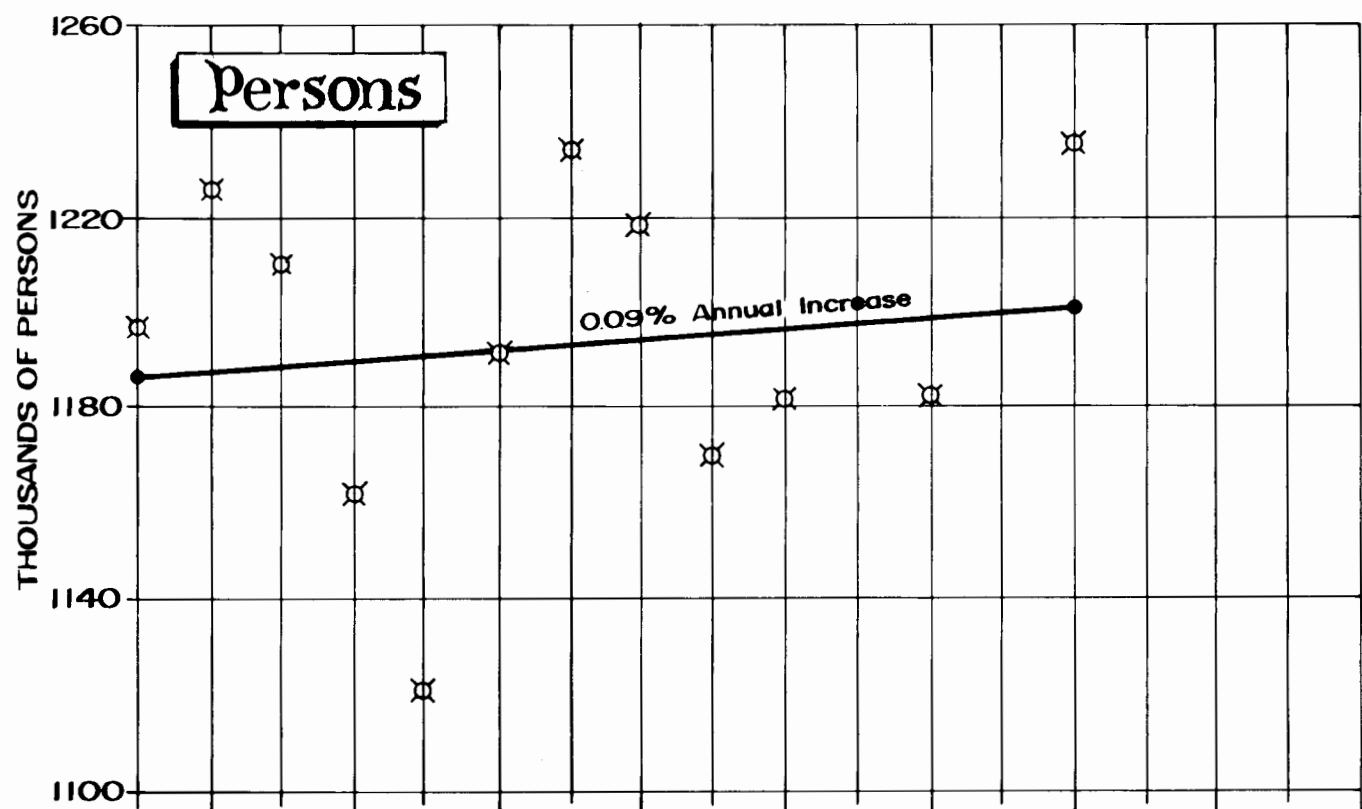


1974. This in effect has resulted in average occupancy factors of 1.36, 1.37, and 1.38 persons per automobile in 1972, 1974 and 1976, respectively.

Compilation of data for the period encompassing the commuter traffic hour 6 AM to 6 PM, when carpooling activities would generally be most affected by the conditions noted above, provides additional insight into the changes effected. On the basis of the computer overall factors, this data indicates that even though the number of automobiles entering the cordon area during this 12-hour period increased by nearly 3%, there was apparently a slight decrease, less than 1%, in the number of entering automobiles with a single occupant (driver only) in 1976 compared to 1972. In effect, while the total inbound automobile passengers during the 12-hour period in 1976, compared to 1972, increased by slightly over 3%, the volume of automobile passengers in automobiles with two or more occupants increased by nearly 9%.







x Observed volumes

NOTE: All charts have a value other than zero at the baseline.



Table 8

Comparison of Vehicular & Person Trip Volumes  
During Peak Traffic Periods  
By Highest Hour - Two Hour & Three Hour Increments

	<u>Number of Vehicles</u>		
	<u>1972</u>	<u>1976</u>	<u>% Change</u>
Peak Hour <sup>1</sup>	81,438	77,755	-4.5%
Two Peak Hours <sup>2</sup>	147,700	144,335	-2.3%
Three Peak Hours <sup>3</sup>	195,725	194,848	-0.4%
16-Hours <sup>4</sup>	629,584	633,415	+0.6%

	<u>Number of Persons</u>		
	<u>1972</u>	<u>1976</u>	<u>% Change</u>
Peak Hour <sup>1</sup>	175,612	179,478	+2.2%
Two Peak Hours <sup>2</sup>	304,821	314,478	+3.2%
Three Peak Hours <sup>3</sup>	398,308	418,865	+5.2%
16-Hours <sup>4</sup>	1,180,767	1,235,849	+4.7%

<sup>1</sup>Inbound AM & Outbound PM - Vehicles - 7:30 - 8:30 AM & 4:30 - 5:30 PM

Persons - 7:00 - 8:00 AM & 4:30 - 5:30 PM

<sup>2</sup>Inbound 7:00 - 9:00 AM & Outbound 4:00 - 6:00 PM

<sup>3</sup>Inbound 6:30 - 9:30 AM & Outbound 3:30 - 6:30 PM

<sup>4</sup>Inbound & Outbound 16-Hours - 6:00 AM - 10:00 PM

Table 9  
Downtown Cordon Area  
Peak Accumulation of Automobiles & Persons by Mode  
For Selected Cordon Count Study Years

	<u>Peak Accumulation</u>			
	<u>1967</u>	<u>1970</u>	<u>1972</u>	<u>1976</u>
Automobiles	57,470	57,651	53,641	59,730
Total Persons	154,194	148,289	139,729	152,061
Auto Passengers	81,162	83,289	75,224	82,739
Other Veh. Pass.	4,222	3,225	4,800	4,809
Bus Passengers	54,346	48,437	45,372	55,937
Pedestrians	14,464	13,338	14,333	8,576

Absolute & Proportionate Changes

	<u>1972 vs. 1967</u>		<u>1976 vs. 1972</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Automobiles	-3,829	-6.7%	+6,089	+11.4%
Total Persons	-14,465	-9.4%	+12,332	+8.8%
Auto Passengers	-5,938	-7.3%	+7,515	+10.0%
Other Veh. Pass.	+ 578	+13.7%	+ 9	+0.2%
Bus Passengers	-8,974	-16.5%	+10,565	+23.3%
Pedestrians	-1,126	-7.8%	-5,757	-40.2%

**Table 10**  
**Downtown Cordon Area Passenger Mode Trends**

Passenger Volumes Crossing Cordon Boundaries <sup>1</sup>				
Year	Auto Passengers	Comm. Veh. Passengers	Transit Passengers	Total Passengers
1924 <sup>2</sup>	393,322	74,252	741,124	1,208,698
1941 <sup>3</sup>	715,057	74,724	501,503	1,291,284
1957 <sup>4</sup>	717,591	70,650	394,171	1,182,412
1963 <sup>4</sup>	648,414	60,416	267,033	975,863
1972 <sup>4</sup>	691,198	56,738	238,880	986,816
1974 <sup>4</sup>	657,874	53,994	290,010	1,001,878
1976 <sup>4</sup>	710,960	49,187	308,730	1,068,877

Proportional Rates by Passenger Mode				
Year	Auto Passengers	Comm. Veh. Passengers	Transit Passengers	Total Passengers
1924	32.5%	6.2%	61.3%	100%
1941	55.4%	5.8%	38.8%	100%
1957	60.7%	6.0%	33.3%	100%
1963	66.4%	6.2%	27.4%	100%
1972	70.7%	5.8%	24.2%	100%
1974	65.7%	5.4%	28.9%	100%
1976	66.5%	4.6%	28.9%	100%

<sup>1</sup>13 Hours - 6 AM to 7 PM

**Sources:**

<sup>2</sup>Report on a Comprehensive Rapid Transit Plan for the City and County of Los Angeles, Kelker, De Leuw & Company, 1925.

<sup>3</sup>Los Angeles County Regional Planning Commission.

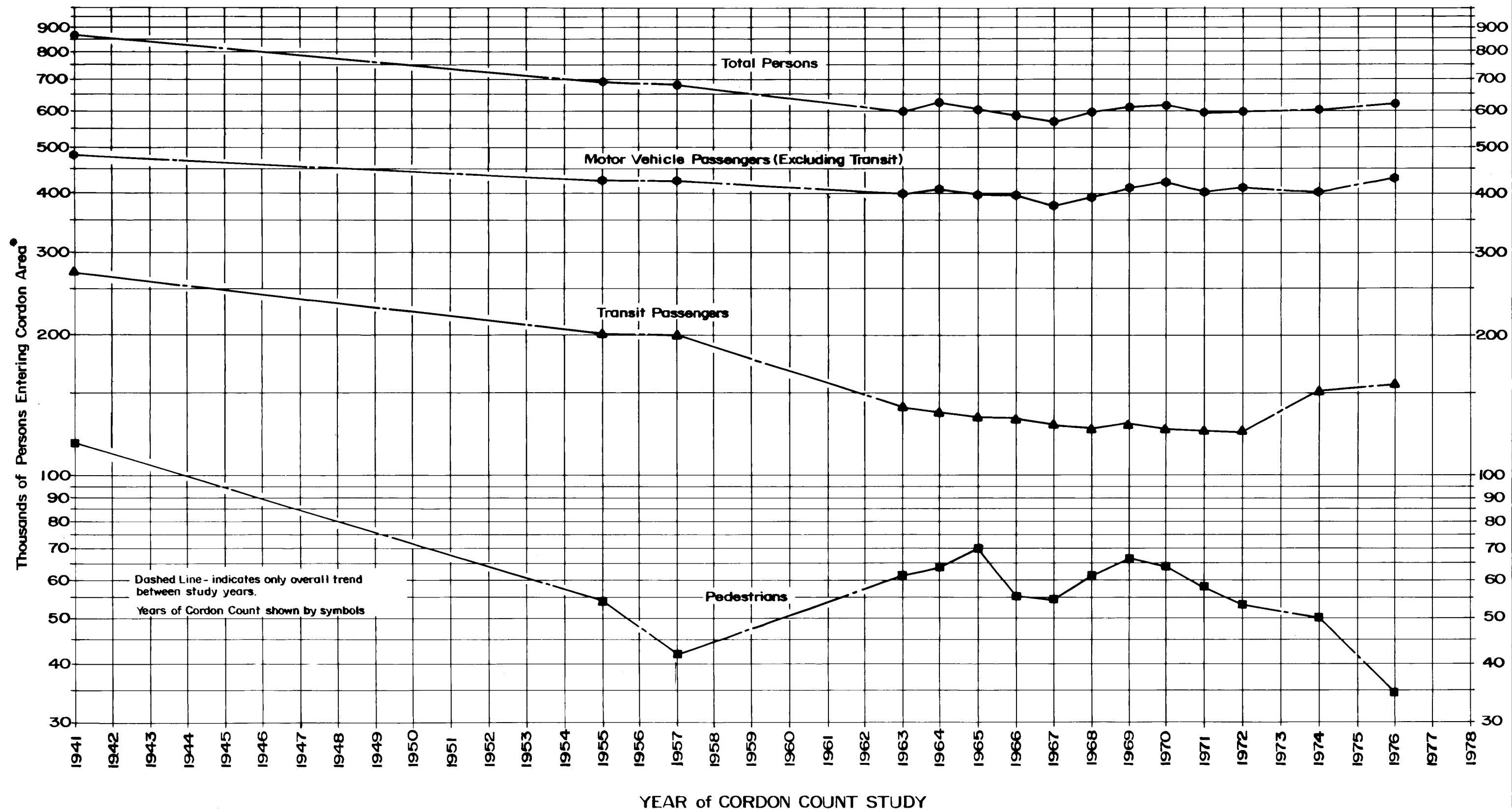
<sup>4</sup>Los Angeles City, Department of Traffic

Table 11

Ten Year Perspective  
Trend in Total Vehicles and Persons  
Entering & Leaving Cordon Area  
By Cardinal Boundaries at 5-year Intervals

	<u>Total Vehicles</u>			<u>Percent Change</u>		
	<u>16-Hour Volume</u>					
	<u>1966</u>	<u>1971</u>	<u>1976</u>	<u>1971</u> <u>vs.</u> <u>1966</u>	<u>1976</u> <u>vs.</u> <u>1971</u>	<u>1976</u> <u>vs.</u> <u>1966</u>
East	131,862	142,189	139,121	+ 7.8%	-2.2%	+ 5.5%
South	84,438	89,937	89,790	+ 6.5%	-0.2%	+ 6.3%
West	239,135	256,262	267,368	+ 7.2%	+4.3%	+11.8%
North	123,664	139,751	137,136	+13.0%	-1.9%	+10.9%
TOTAL	579,099	628,139	633,415	+ 8.5%	+0.8%	+ 9.4%

	<u>Total Persons</u>			<u>Percent Change</u>		
	<u>16-Hour Volume</u>					
	<u>1966</u>	<u>1971</u>	<u>1976</u>	<u>1971</u> <u>vs.</u> <u>1966</u>	<u>1976</u> <u>vs.</u> <u>1971</u>	<u>1976</u> <u>vs.</u> <u>1966</u>
East	311,451	308,737	287,862	-1.9%	- 6.8%	- 7.6%
South	174,492	171,797	186,832	-1.5%	+ 8.8%	+ 7.1%
West	420,098	427,700	466,063	+1.8%	+ 9.0%	+10.9%
North	255,958	260,946	297,090	+1.9%	+13.9%	+16.1%
TOTAL	1,161,999	1,169,180	1,235,849	+0.6%	+ 5.7%	+ 6.4%



\* 16 hour period from 6 AM to 10 PM

# TRENDS IN MODAL DISTRIBUTION - PERSONS ENTERING DOWNTOWN CORDON AREA

City of Los Angeles  
 DEPARTMENT OF TRAFFIC  
 S. S. (Sam) Taylor, City Traffic Engineer





Table 12

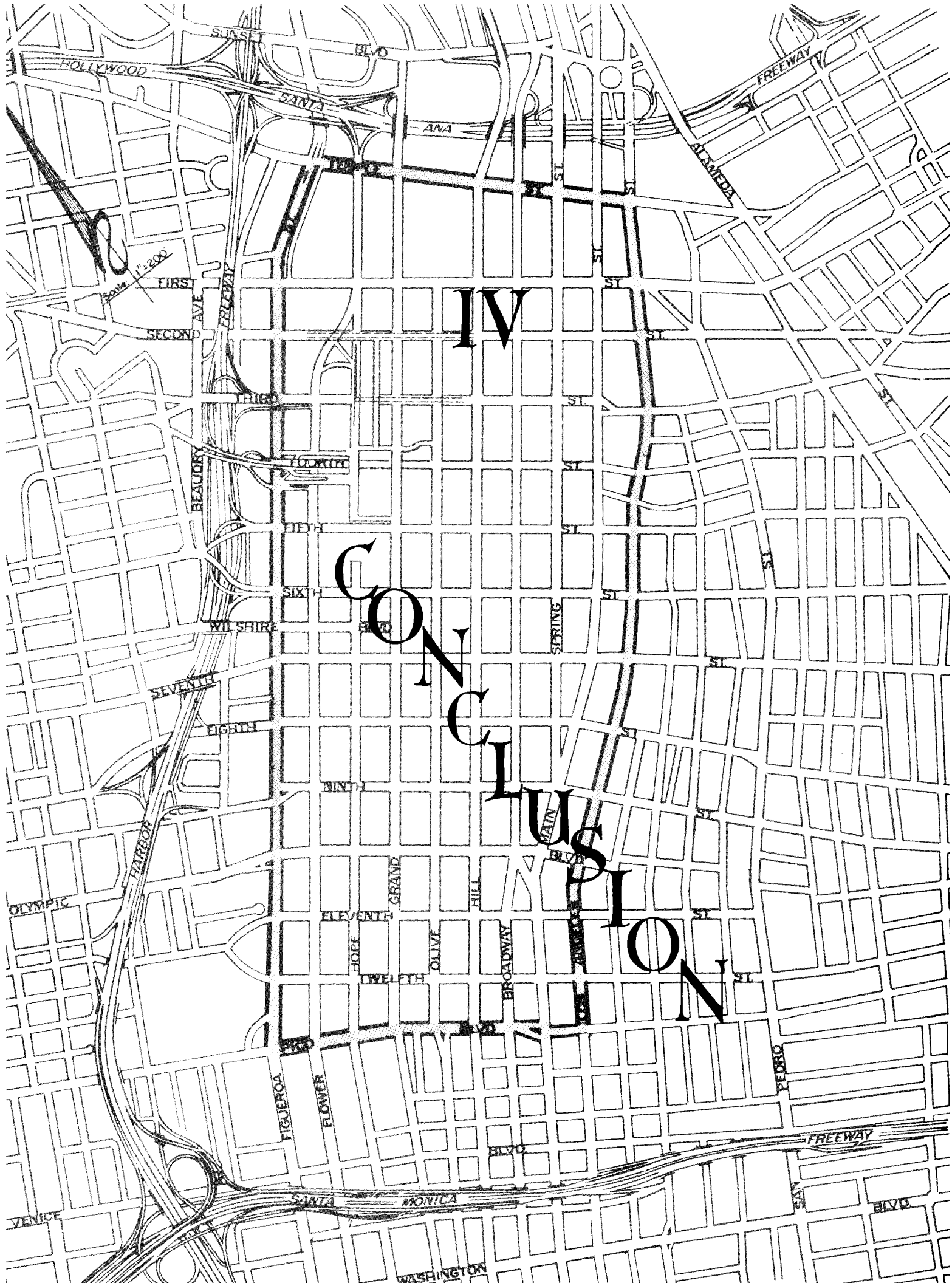
Comparison of Passenger Vehicle Occupancy  
Entering Downtown Cordon Area

1972 - 1974 - 1976

Percentage of Inbound Autos By Number of Occupants									
Time Period	1972			1974			1976		
	One	Two	3 Or More	One	Two	3 Or More	One	Two	3 Or More
6A - 10A	76.11	19.87	4.02	74.31	21.71	3.98	74.61	21.32	4.07
10A - 2P	71.56	22.19	6.25	71.79	22.54	5.67	70.33	23.03	6.64
2P - 6P	72.80	20.37	6.83	72.14	21.15	6.71	71.21	22.49	6.30
6A - 6P	74.32	20.35	5.33	72.93	21.79	5.28	72.34	22.16	5.50
6P - 10P	60.34	27.87	11.79	60.07	28.04	11.89	61.54	27.57	10.89
6A - 10P	72.77	21.19	6.04	71.57	22.45	5.98	70.89	22.89	6.22

Average Automobile Occupancy

	<u>1972</u>	<u>1974</u>	<u>1976</u>
6A - 10A	1.30	1.31	1.31
10A - 2P	1.38	1.36	1.39
2P - 6P	1.36	1.38	1.38
6A - 6P (12 Hour)	1.34	1.34	1.36
6P - 10P	1.58	1.58	1.57
6A - 10P (16 Hour)	1.36	1.37	1.38



IV

# CONCLUSION

### Conclusion

Implementation of the 25¢ Flat Fare program and increasing patronage on the San Bernardino Freeway Busway route resulted in a substantial transit passenger increase and concurrently a decrease in automobile passenger volumes in 1974 compared to 1972 volumes. Even with the Santa Monica Freeway Diamond Lane project in operation, the transit passenger volume in 1976 remained at the same level as in 1974, approximately 29% of the passenger volume entering and leaving the cordon area. With, however, greater volume of person trips being generated, by downtown or external facilities, the volume of automobile passengers and consequently, volume of automobile traffic, in 1976 increased over 1974 and moreover surpassed the vehicular volume of 1972, which was the highest volume recorded since the beginning of the annual series counts in 1963.

Continuing extensive developments, presently under construction or planned for the immediate future, will most likely result in greater accumulation of vehicles within the cordon area as well as increased travel activity on the perimeter of the cordon area.

Additionally, at present there are no plans in process for the construction of by-pass routes which would otherwise provide alternate facilities for the increasing volume of non-downtown oriented trips in the general vicinity.

From the preceeding it can only be concluded that the cordon area surface streets will be accommodating increasingly greater volumes of travel activity for the immediate future.

As the historical data has indicated, the extent of the increases in vehicular volumes is not necessarily of the same proportionate increase as person trip volumes. In addition to changes in travel mode, market-place forces also have an effect on cordon travel activity. For example, rising parking costs, as supply becomes more limited, has a corollary decreasing effect on the magnitude of all-day parkers that enter and remain within the cordon area.

The magnitude of change which these inter-acting factors have on various travel modes, can of course, only be ascertained from the comprehensive data provided by the cordon count study procedure.

