



downtown  
Los Angeles

# CORDON COUNT

May 1978

City of Los Angeles  
DEPARTMENT OF TRANSPORTATION  
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## ABSTRACT

### Downtown Cordon Count Study

- The cordon count is a study providing data on the volume of vehicles and persons entering and leaving the Downtown Business District of Los Angeles. This area is bounded by Temple Street, Los Angeles Street, Pico Boulevard, and Figueroa Street.
- 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 - 1978 Cordon Count

- During the 16-hour study period, 6 AM to 10 PM, a total of 683,707 vehicles crossed the cordon boundaries at the 93 stations providing access for vehicles entering or leaving the cordon area. This represents an increase of 50,292 vehicles or 7.9% since the 1976 count.
- At the access stations, a total of 1,324,250 persons entered and left the cordon area during the 16-hour period. This represents an increase of 88,401 persons or 7.2% since the 1976 count.
- Of the total persons entering the cordon area, 64 percent arrived in automobiles, 24 percent in transit vehicles, 5 percent in commercial vehicles (trucks) and the remainder, 7 percent, entered on foot.
- At the peak vehicle accumulation period, 2 PM, there were approximately 68,100 vehicles within the cordon area. Peak accumulation of persons occurred at 1:30 PM, at which time there were approximately 150,400 persons within the cordon area.

### Cordon Area Travel Trends in Perspective and Prospect

- Over the last 10 years there have been some dramatic shifts in commuter travel patterns, both temporal and spatial.
- During this 10-year period there was also an overall trend of progressively greater volumes of person trips entering and leaving the cordon area. For the 16-hour period, cordon person trip volumes in 1978 were 8.7% greater than in 1968. By four-hour increments, the most profound increases were experienced in the evening, entertainment, period (6-10 PM) and in the midday, shopping, period (10 AM-2 PM), 13.1% and 10.6%, respectively.
- In light of present development patterns, travel volume at the boundaries of the cordon area can be expected to become increasingly greater in the immediate future.

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INTRODUCTION 

## 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 1978 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 that agency. Transit volume data for Santa Monica Municipal Bus Line routes entering and leaving the cordon area were recorded by Department of Traffic personnel for the cordon studies in 1976 and 1978.

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 in this report and for comparison with previous cordon count studies.

The counts were made on successive Wednesdays in May. In studies conducted prior to 1976, counts at selected stations were also made to provide day-of-week volume comparisons. These extraneous 7-day volume counts were discontinued due to the limitations on manpower and counting equipment in conjunction with the more critical need for traffic volume data for other essential and important traffic study projects.

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., it excludes any 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 an estimate of the number of vehicles or persons within the area at the beginning of the study.

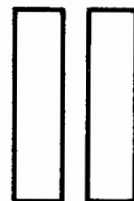
In 1955 and 1957, the cordon area included small areas northerly and westerly to the Santa Ana and Harbor Freeways, respectively. The count in 1941 included only the additional area northerly to Sunset Boulevard.

The Downtown "Minibus" service, initially put into operation during the latter part of 1971, was in operation during the four biennial studies conducted from 1972 to date.

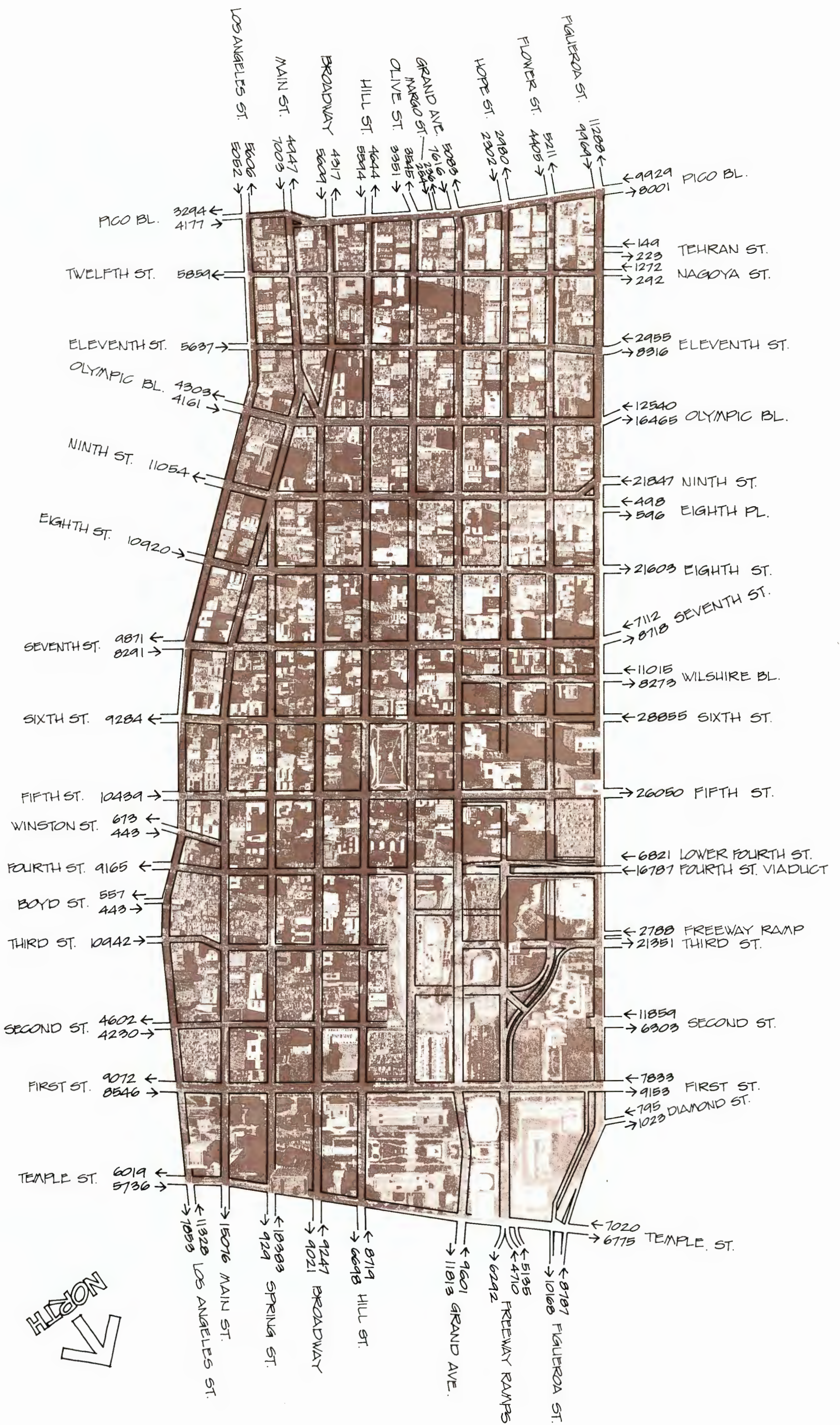
Affecting a significant change in travel characteristics in the cordon area for the initial count in 1974 was the implementation of the 25¢ Flat Fare program for all transit service in Los Angeles County. This program was put into effect on April 1, 1974. At the time of the 1976 study, this Flat Fare program was replaced basically with a 2-zone structure and 35¢ fare for trips within one zone. In May, 1978, the transit program was basically the same as in May, 1976, except for an increase in the fare structure.

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. The Diamond Lane project was subsequently terminated in August of 1976.

SUMMARY DATA - 1978 CORDON COUNT







TOTAL VEHICLES • 6 AM to 10 PM

Inbound 351,105  
Outbound 332,602

DOWNTOWN CORDON COUNT • MAY 1978 Plate 1

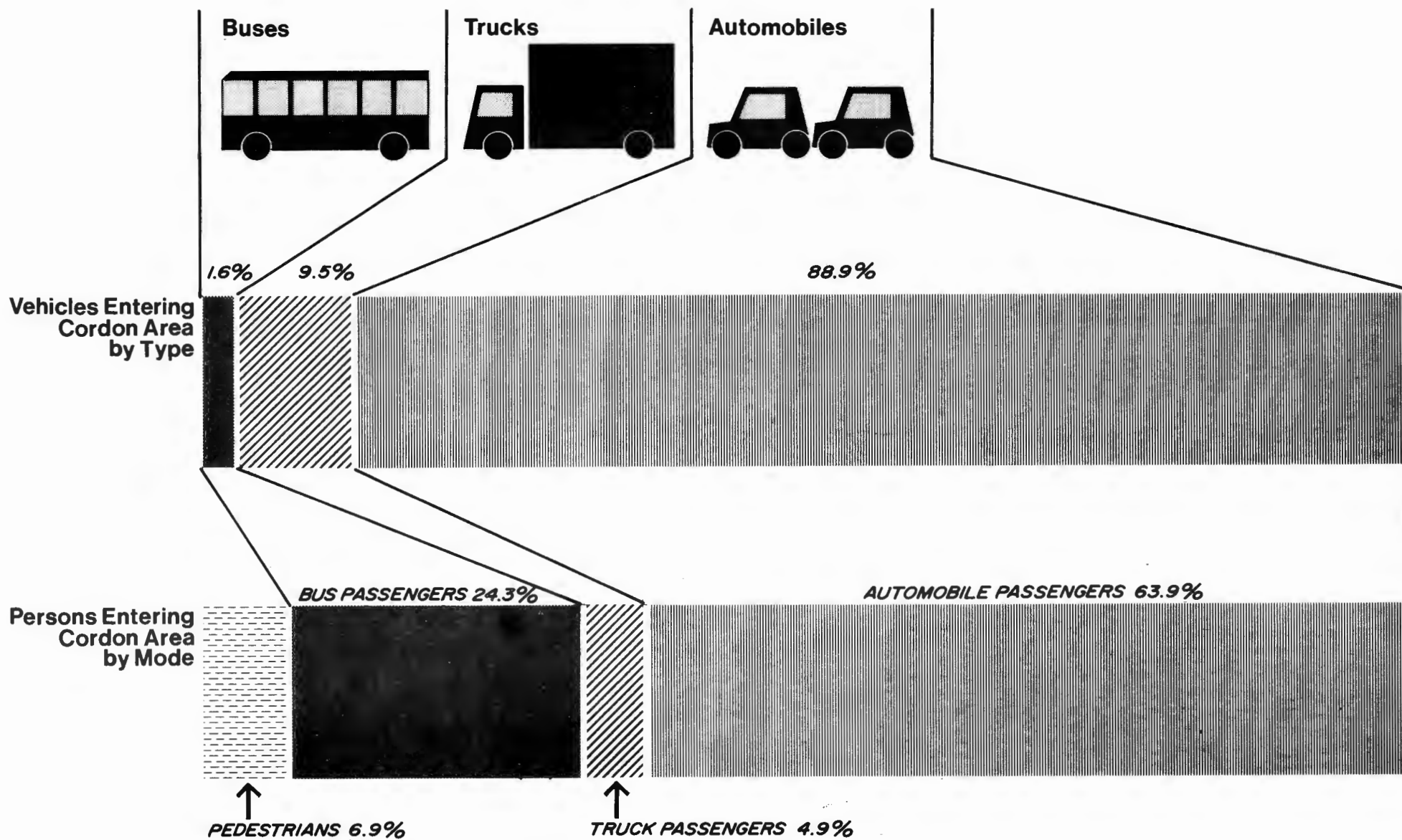




Table 1

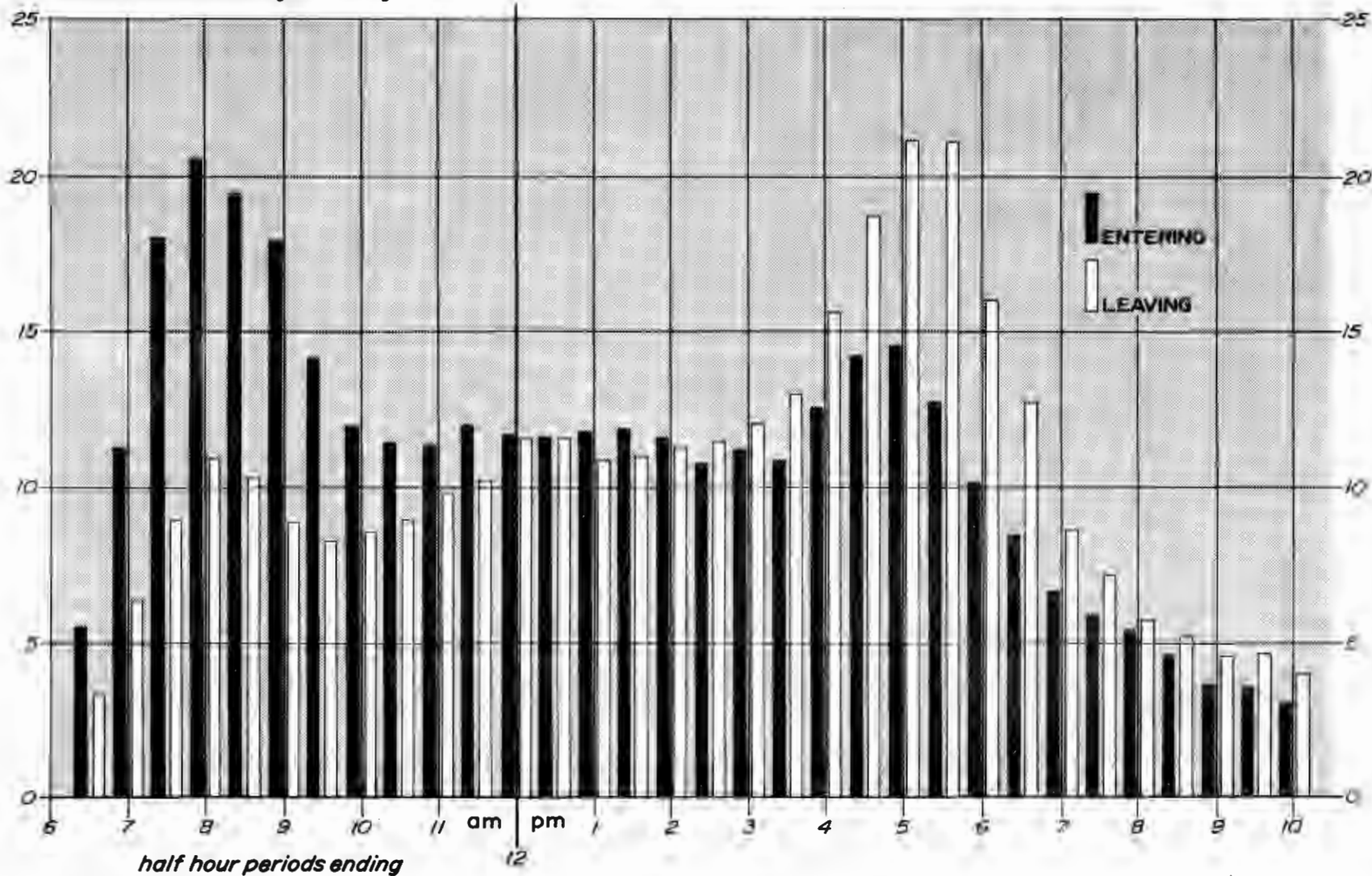
Sixteen-Hour Summary  
1978 Cordon Count Data  
May, Wednesday

<u>Vehicles</u>	<u>In</u>	<u>Out</u>
Passenger cars	312,100	295,848
Trucks and Other Vehicles	33,427	31,251
Buses	<u>5,578</u>	<u>5,503</u>
Grand Total - Vehicles	351,105	332,602
 <u>Persons</u>	 <u>In</u>	 <u>Out</u>
Auto Passengers	432,517	408,435
Other Vehicle Passengers	33,427	31,251
Bus Passengers	164,520	162,771
Pedestrians	<u>46,901</u>	<u>44,428</u>
Grand Total - Persons	677,365	646,885

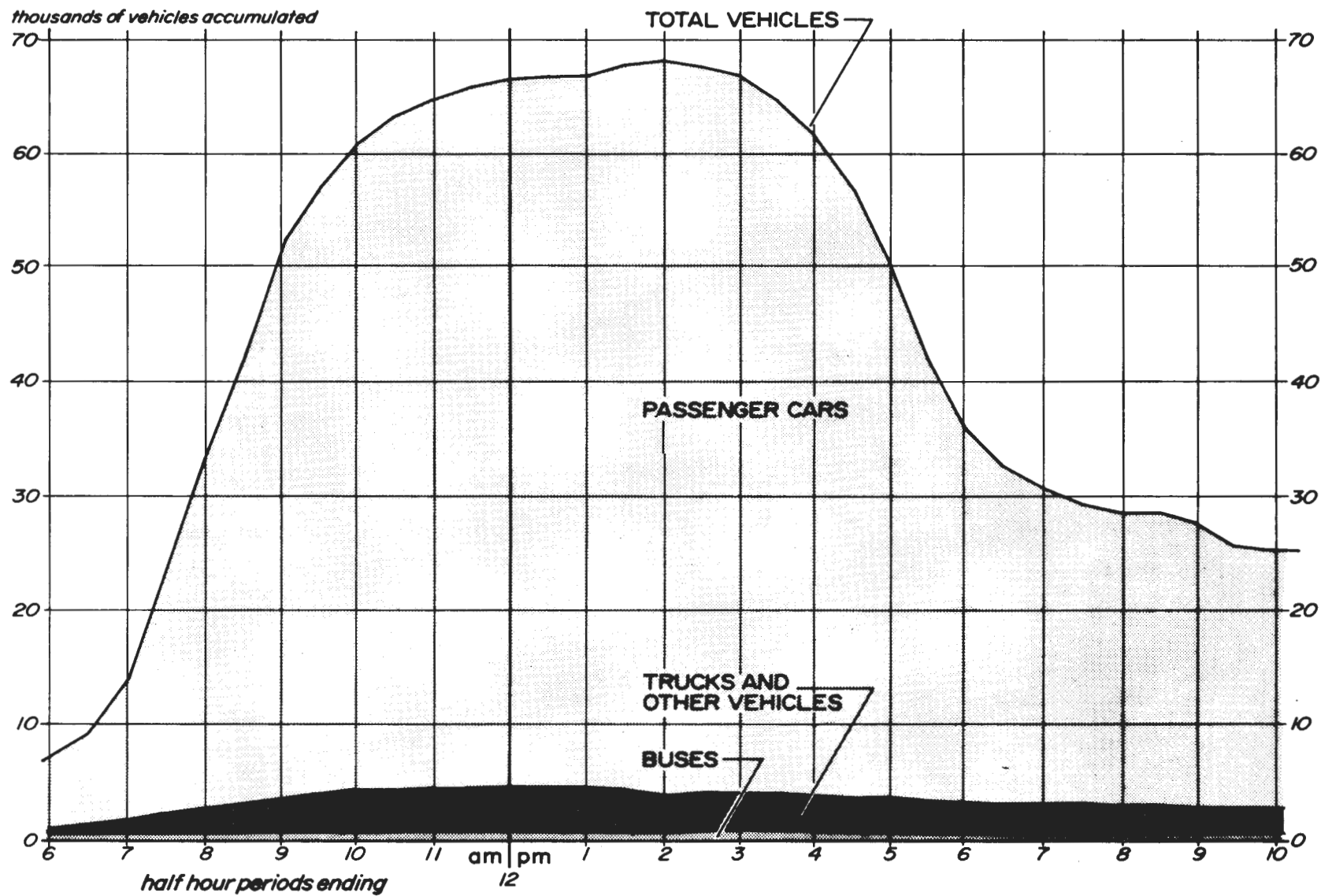


CLASSIFICATION OF VEHICLES AND  
MODE OF TRANSPORTATION ENTERING CORDON AREA • MAY 1978

thousands of vehicles entering and leaving



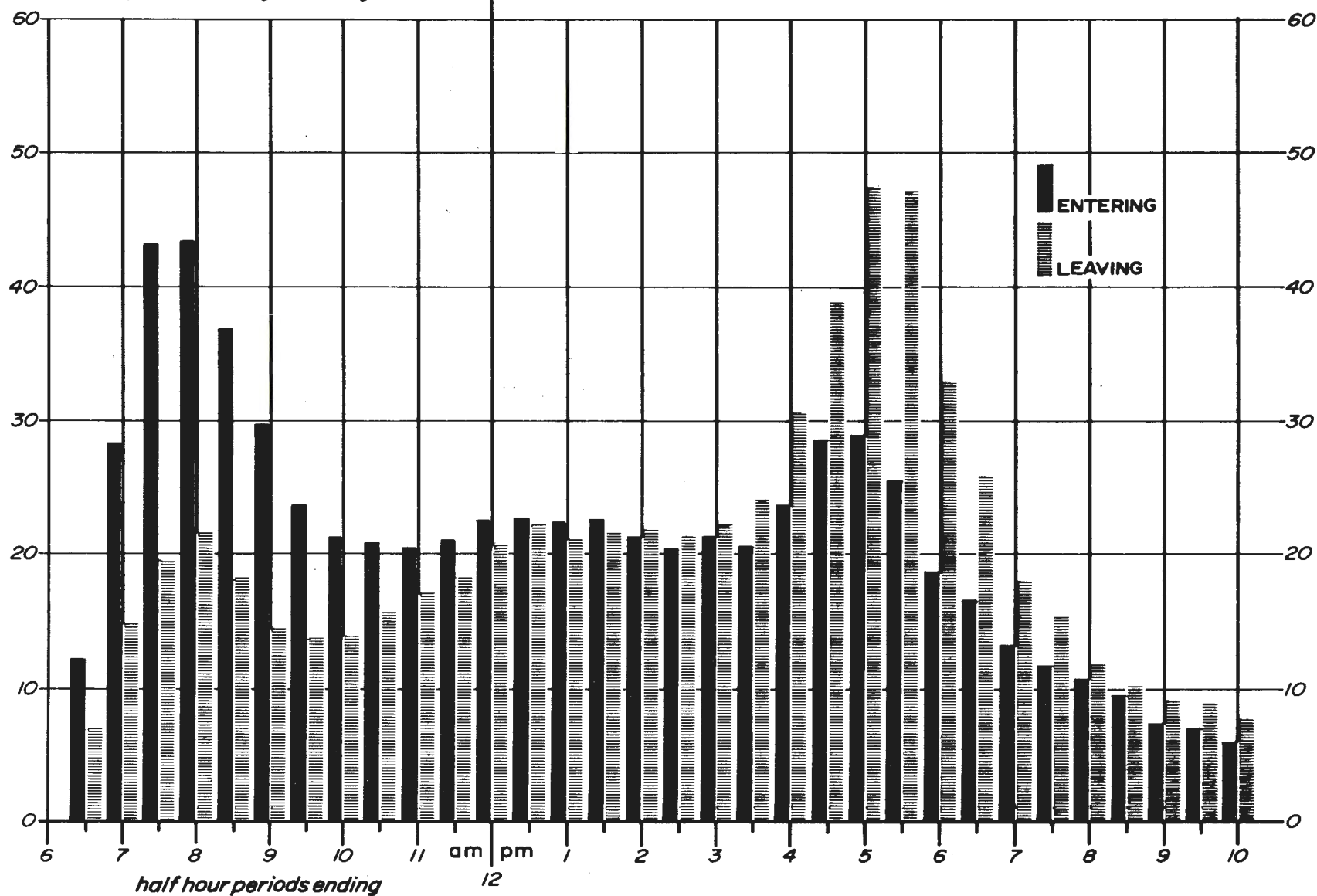
VEHICLES ENTERING AND LEAVING CORDON AREA • MAY 1978



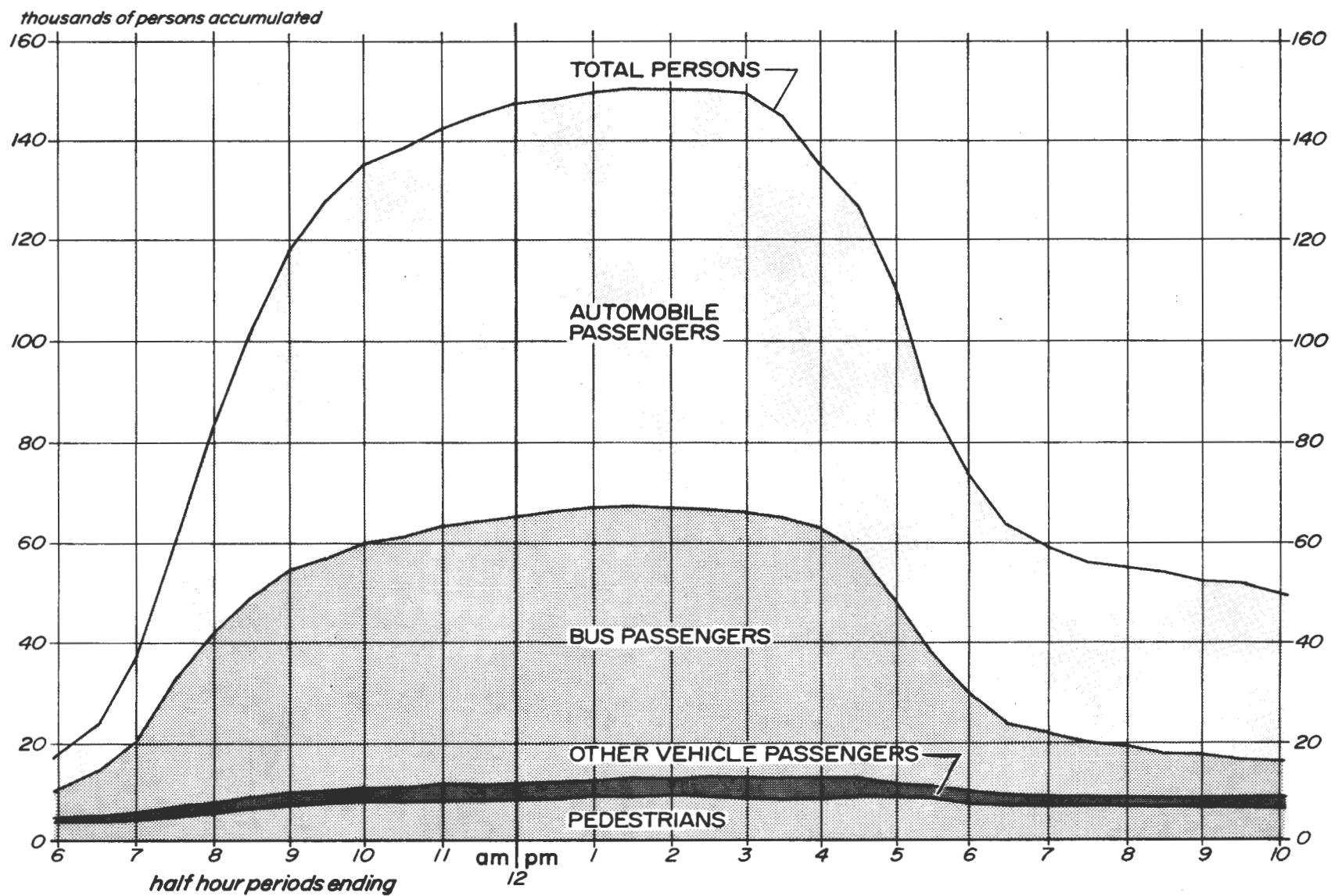
VEHICLES ACCUMULATED IN CORDON AREA • MAY 1978



thousands of persons entering and leaving



PERSONS ENTERING AND LEAVING CORDON AREA • MAY 1978



PERSONS ACCUMULATED IN CORDON AREA • MAY 1978

TABLE 2  
SUMMARY OF VEHICLES BY LOCATION  
DOWNTOWN LOS ANGELES, MAY 1975, 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.	4982	5399	754	620	0	0	5736	6019
1ST ST.	7816	8443	550	442	180	187	8546	9072
2ND ST.	3677	4016	553	586	0	0	4230	4602
3RD ST.	9204	0	1669	0	69	0	10942	0
BOYD ST.	443	557	0	0	0	0	443	557
4TH ST.	0	7915	0	1178	0	72	0	9165
WINSTON ST.	443	673	0	0	0	0	443	673
5TH ST.	9037	0	1197	0	205	0	10439	0
6TH ST.	0	7739	0	1170	0	375	0	9284
7TH ST.	6802	8545	1070	1010	419	316	8291	9871
8TH ST.	9360	0	1312	0	248	0	10920	0
9TH ST.	0	9386	0	1486	0	182	0	11054
OLYMPIC BLVD.	3565	3821	596	482	0	0	4161	4303
11TH ST.	4530	0	1041	0	66	0	5637	0
12TH ST.	0	4524	0	1275	0	60	0	5859
PICO BLVD.	3414	2745	763	544	0	0	4177	3294
SUB TOTAL	63273	63763	9505	8798	1187	1192	73965	73753
SOUTH BOUNDARY								
SOUTH OF PICO BLVD. ON								
LOS ANGELES ST.	4207	4635	845	971	0	0	5052	5606
MAIN ST.	5704	3056	1093	789	206	202	7003	4947
BROADWAY	4661	3523	751	606	197	188	5609	4317
HILL ST.	5096	4087	397	457	101	100	5594	4644
OLIVE ST.	2401	2419	839	1021	111	105	3351	3545
MARGO ST.	254	236	0	0	0	0	254	236
GRAND AVE.	6640	4297	796	610	180	176	7616	5083
HOPE ST.	1896	2557	406	423	0	0	2302	2980
FLOWER ST.	3927	4621	448	559	30	31	4405	5211
FIGUEROA ST.	6744	9673	1106	1497	119	118	9969	11288
SUB TOTAL	43530	40004	6681	6933	944	920	51155	47857
WEST BOUNDARY								
WEST OF FIGUEROA ST. ON								
PICO BLVD.	8660	6989	1070	826	199	186	9929	8001
TEHPAN ST.	149	223	0	0	0	0	149	223
MAGOYA ST.	1272	292	0	0	0	0	1272	292
11TH ST.	2652	7574	303	737	0	5	2955	8316
OLYMPIC BLVD.	11496	15224	904	1101	140	140	12540	16465
9TH ST.	20000	0	1802	0	45	0	21847	0
8TH PLACE	498	596	0	0	0	0	498	596
8TH ST.	0	20111	0	1446	0	46	0	21603
7TH ST.	6201	7793	703	711	208	212	7112	8718
WILSHIRE BLVD.	10112	7560	828	437	275	276	11015	8273
HARBOR FWY OFF RAMP	18458	0	984	0	51	0	19503	0
6TH ST.	7613	0	1476	0	263	0	9352	0
5TH ST.	0	23938	0	1600	0	312	0	26050
LOWER 4TH ST.	6293	0	528	0	0	0	6821	0
4TH ST. VIADUCT	16009	0	770	0	0	0	16787	0
HARBOR FWY OFF RAMP	2681	0	107	0	0	0	2788	0
3RD ST.	0	19649	0	1698	0	4	0	21351
2ND ST.	10661	5784	1197	519	1	0	11859	6303
1ST ST.	7332	8639	384	406	117	108	7833	9153
DIAMOND ST.	795	1023	0	0	0	0	795	1023
TEMPLE ST.	6320	6150	491	422	209	203	7020	6775
SUB TOTAL	137202	131547	11365	10103	1508	1492	150075	143142
NORTH BOUNDARY								
NORTH OF TEMPLE ST. ON								
FIGUEROA ST.	8277	9400	446	720	64	48	8787	10168
HARBOR FWY OFF RAMP	4696	0	439	0	0	0	5135	0
HOLLYWOOD FWY RAMPS	4027	5827	507	463	176	2	4710	6292
GRAND AVE.	8666	10903	734	532	201	378	9601	11813
HILL ST.	5011	6190	651	453	57	55	8719	6698
BROADWAY	8289	7940	715	831	243	250	9247	9021
SPPING ST.	16063	0	1223	0	1097	929	16363	929
MAIN ST.	0	13393	0	1539	0	144	0	15076
LOS ANGELES ST.	10066	6881	1161	879	101	93	11328	7853
SUB TOTAL	68095	60534	5876	5417	1939	1899	75910	67850
GRAND TOTAL	312100	293848	33427	31251	5578	5503	351105	332602

TABLE 3  
SUMMARY OF PERSONS BY LOCATION  
DOWNTOWN LOS ANGELES, MAY 1978, 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.	6963	7415	754	620	0	0	2478	2482	10195	10517
1ST ST.	11024	12110	550	442	6050	6109	1182	1120	16806	19761
2ND ST.	5110	5722	553	536	0	0	678	693	6341	7001
3RD ST.	12487	0	1669	0	1200	0	458	475	15814	475
BOYD ST.	578	761	0	0	0	0	265	328	873	1089
4TH ST.	0	41345	0	1178	0	1049	809	785	609	14357
WINSTON ST.	566	466	0	0	0	0	1257	1172	1843	2138
5TH ST.	13624	0	1197	0	5638	0	2820	2893	23679	2693
6TH ST.	0	11511	0	1170	0	9607	1549	1562	1549	23850
7TH ST.	10440	12872	1070	1010	14930	12831	2455	2194	26895	28907
8TH ST.	14153	0	1312	0	6234	0	2615	2586	24514	2586
9TH ST.	0	14014	0	1484	0	5654	3607	2873	3607	24027
OLYMPIC BLVD.	5053	5160	596	482	0	0	435	499	6089	6141
11TH ST.	6400	0	1041	0	2336	0	1268	1259	11045	1259
12TH ST.	0	6036	0	1275	0	1912	846	810	896	10063
PICO BLVD.	4651	3737	763	549	0	0	541	475	5955	4761
SUB TOTAL	91274	91699	9505	8798	36538	37162	23543	22206	160910	159865
SOUTH BOUNDARY										
SOUTH OF PICO BLVD. ON										
LOS ANGELES ST.	5861	6412	845	971	0	0	419	351	7125	7734
MAIN ST.	8047	5514	1093	789	6726	5988	364	308	16230	12599
BROADWAY	6752	4921	751	606	7525	7721	1058	764	14086	14012
HILL ST.	7372	5664	397	457	3041	3126	496	469	11306	9756
OLIVE ST.	3467	3413	839	1021	1764	1810	322	347	6392	6591
MARGO ST.	356	311	0	0	0	0	0	0	356	311
GRAND AVE.	9227	5917	796	610	4447	4121	452	472	14922	11120
HOPE ST.	2637	3487	406	423	0	0	1044	1033	4067	4943
FLOWER ST.	5451	6329	448	559	1174	1043	525	470	7598	8401
FIGUEROA ST.	12323	13441	1106	1497	4275	4367	596	547	16300	19052
SUB TOTAL	61493	55429	6661	6933	26952	28176	5276	4781	102402	95319
WEST BOUNDARY										
WEST OF FIGUEROA ST. ON										
PICO BLVD.	12662	9537	1070	826	7454	7085	622	614	21808	18062
TEHRAN ST.	200	285	0	0	0	0	22	36	222	321
NAGAYA ST.	1823	573	0	0	0	0	266	341	2069	719
11TH ST.	3838	10387	303	737	0	175	135	147	4276	11446
OLYMPIC BLVD.	16517	20698	904	1101	4768	4135	762	744	22951	26878
9TH ST.	27659	0	1802	0	802	0	631	717	31094	717
8TH PLACE	685	769	0	0	0	0	269	321	954	1090
8TH ST.	0	27793	0	1446	0	622	1171	943	1171	30809
7TH ST.	8706	10845	703	711	8137	7450	1963	2022	19509	21028
WILSHIRE BLVD.	14211	10220	628	437	7356	9164	804	636	22999	20457
HARBOR FWY OFF RAMP	23726	0	994	0	673	0	0	0	25343	0
6TH ST.	9855	0	1476	0	10069	0	1152	1049	22552	1049
5TH ST.	0	32505	0	1800	0	8672	169	388	369	43565
LOWER 4TH ST.	8140	0	526	0	0	0	917	789	9565	789
4TH ST. VIADUCT	20268	0	778	0	0	0	697	608	21743	608
HARBOR FWY OFF RAMP	3367	0	107	0	0	0	0	0	3472	0
3RD ST.	0	26362	0	1688	0	151	182	147	162	26354
2ND ST.	14461	6021	1197	519	36	0	116	121	15810	6661
1ST ST.	9958	11949	384	406	4618	4055	264	279	15224	16689
DIAMOND ST.	1079	1376	0	0	0	0	0	0	1079	1376
TEMPLE ST.	8713	8477	491	422	6086	6290	599	680	15869	15869
SUB TOTAL	185668	179807	11365	10103	49999	47999	11141	10576	258373	246487
NORTH BOUNDARY										
NORTH OF TEMPLE ST. ON										
FIGUEROA ST.	11004	11671	446	720	1659	1445	329	325	13438	14161
HARBOR FWY OFF RAMP	4367	0	439	0	0	0	0	0	6806	0
HOLLYWOOD FWY RAMPS	5526	7633	507	463	5060	89	0	0	11093	8185
GRAND AVE.	11537	14282	734	532	6886	12319	583	543	19790	27676
HILL ST.	11237	6858	651	453	1521	1529	418	705	13827	11545
BROADWAY	12022	11587	715	831	5557	5840	646	673	19540	19131
SPRING ST.	22264	0	1223	0	27216	22529	1285	1102	51986	23631
MAIN ST.	0	17676	0	1539	0	5081	1419	1305	1419	25601
LOS ANGELES ST.	13875	9793	1161	879	682	602	2061	2010	17779	13264
SUB TOTAL	93882	61500	5876	5417	46981	49434	6941	6863	155680	143214
GRAND TOTAL	432517	408435	33427	31251	164520	162771	46901	44428	677365	646685

TABLE 4

## SUMMARY OF VEHICLES BY HALF HOUR PERIODS

DOWNTOWN LOS ANGELES, MAY 1973

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
			6300			500			200			7000
630	4484	2726	8058	685	303	882	132	116	216	5301	3145	9156
700	9973	5667	12364	1110	526	1466	255	195	276	11338	6388	14106
730	16509	8035	20838	1192	712	1946	336	221	391	18037	8968	23175
800	18991	9817	30012	1326	866	2406	330	236	485	20647	10919	32903
830	17922	8983	38951	1283	999	2690	293	227	551	19498	10209	42192
900	16409	7668	47692	1310	1046	2954	226	200	577	17945	8914	51223
930	12528	6804	53416	1439	1238	3155	185	177	585	14152	8219	57156
1000	10225	7114	56537	1635	1301	3489	161	154	592	12031	8569	60618
1030	9766	7330	58973	1552	1410	3631	160	160	592	11478	8900	63196
1100	9698	8332	60339	1499	1451	3679	149	150	591	11346	9933	64609
1130	9665	8524	61480	1514	1500	3693	165	156	600	11344	10180	65773
1200	10515	9835	62160	1428	1433	3688	150	153	597	12093	11421	66445
1230	10328	10224	62264	1256	1264	3680	158	163	592	11742	11651	66536
1300	10194	9502	62956	1279	1269	3690	154	155	591	11627	10926	67237
1330	10394	9530	63820	1228	1398	3520	163	158	596	11785	11086	67936
1400	10074	9764	64130	1232	1392	3360	166	164	598	11472	11320	68088
1430	9238	9966	63402	1478	1369	3469	160	160	598	10876	11495	67469
1500	9677	10456	62623	1362	1319	3512	179	164	613	11218	11939	66748
1530	9286	11357	60552	1416	1449	3479	199	185	627	10901	12991	64658
1600	10734	13713	57573	1492	1658	3313	219	206	640	12445	15577	61526
1630	12655	17104	53124	1365	1407	3271	221	256	605	14241	18767	57000
1700	13002	19441	46685	1202	1324	3149	239	325	519	14443	21090	50353
1730	11523	19669	38539	978	1087	3040	224	336	407	12725	21092	41986
1800	9207	14935	32811	671	755	2956	189	270	326	10067	15960	36093
SUB TOTAL	273007	246496		30932	28476		4813	4687		308752	279659	
1830	7749	11257	29303	551	633	2874	167	196	297	8467	12086	32474
1900	6204	8211	27296	465	488	2851	138	144	291	8807	8843	30438
1930	5541	6574	26263	305	424	2732	120	112	299	5966	7110	29294
2000	5072	5471	25864	321	320	2733	87	90	296	5480	5881	28893
2030	4368	4843	25389	262	250	2745	79	83	292	4709	5176	28426
2100	3595	4443	24541	214	245	2714	61	65	288	3870	4753	27543
2130	3412	4559	23394	230	243	2701	65	69	284	3707	4871	26379
2200	3152	3994	22552	147	172	2676	48	57	275	3347	4223	25503
SUB TOTAL	39093	49352		2495	2775		765	816		42353	52943	
GRAND TOTAL	312100	295848		33427	31251		5578	5503		351105	332602	

TABLE 5

## SUMMARY OF PERSONS BY HALF HOUR PERIODS

DOWNTOWN LOS ANGELES, MAY 1978

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
			8200			500			6300			4000			19000
630	5778	3626	10352	635	303	882	5304	2509	9095	446	344	4102	12213	6782	24431
700	13730	7514	16568	1110	526	1466	11952	5518	15529	1339	1097	4344	28131	14655	37907
730	22833	10533	28873	1192	712	1946	16203	6235	25497	2583	1834	5093	42816	19314	61409
800	24805	12125	41553	1326	866	2406	14346	6231	33612	2672	1949	5816	43149	21171	83387
830	22864	11243	53169	1283	999	2690	10653	4443	39822	2091	1247	6660	36891	17937	102341
900	19909	9304	63774	1310	1046	2954	6865	2980	43707	1615	932	7343	29699	14262	117778
930	15443	8610	70607	1439	1238	3155	5277	2508	46476	1287	1113	7517	23446	13469	127755
1000	13049	9010	74646	1635	1301	3489	4923	2424	48975	1387	1159	7745	20994	13894	134855
1030	12839	9573	77912	1552	1410	3631	4487	3053	50409	1453	1443	7755	20331	15479	139707
1100	12717	10937	79692	1499	1451	3679	4406	3221	51594	1473	1400	7828	20095	17009	142793
1130	13315	12045	80962	1514	1500	3693	4208	3358	52444	1606	1460	7974	20643	18363	145073
1200	14304	13316	81950	1428	1433	3688	4302	3485	53261	2103	1980	8097	22137	20214	146996
1230	14481	14514	81917	1256	1264	3680	4430	3724	53967	2524	2257	8364	22691	21759	147928
1300	14305	13601	82621	1279	1269	3690	4310	3998	54279	2294	1958	8700	22188	20826	149290
1330	14522	13755	83388	1228	1398	3520	4211	4041	54449	2184	1879	9005	22145	21073	150362
1400	13840	13860	83348	1232	1392	3360	4041	4478	54012	1916	1778	9143	21029	21508	149883
1430	12963	13668	87663	1478	1369	3469	4142	4255	53899	1499	1515	9127	20082	20807	149158
1500	13653	14066	82250	1362	1319	3512	4717	5126	53490	1448	1445	9130	21180	21955	148382
1530	12450	15469	79231	1416	1449	3479	4878	5355	53013	1558	1589	9099	20302	23862	144822
1600	14368	18702	74897	1492	1658	3313	5797	8193	50617	1725	1740	9084	23382	30293	137911
1630	17269	23648	68518	1365	1407	3271	7294	11509	46402	2628	2421	9291	28556	38985	127482
1700	18369	26013	60874	1202	1324	3149	6826	16816	36412	2544	3165	8670	28941	47318	109105
1730	16459	26914	50419	978	1087	3040	6231	16476	26167	1766	2599	7837	25434	47076	87463
1800	13154	20166	43412	671	755	2956	3804	10419	19552	943	1415	7365	18577	32755	73285
SUR TOTAL	367429	332217		30932	28476		153607	140355		43084	39719		595052	540767	
1830	11902	15740	39574	551	633	2874	3298	7954	14896	823	1135	7053	16574	25462	64397
1900	10192	12361	37405	465	488	2851	1994	4381	12509	520	698	6875	13171	17928	59640
1930	9154	10898	35661	305	424	2732	1627	3233	10903	517	654	6738	11503	15209	56034
2000	8679	8496	35844	321	320	2733	1127	2167	9863	474	516	6696	10601	11499	55136
2030	8056	7861	36039	262	250	2745	947	1515	9295	416	519	6593	9681	10145	54672
2100	6209	7455	34793	214	245	2714	659	1164	8790	412	448	6557	7494	9312	52854
2130	5741	7158	33376	230	243	2701	744	1177	8357	374	410	6521	7089	8988	50955
2200	5155	6249	32282	147	172	2676	517	825	8049	281	329	6473	6100	7575	49480
SUB TOTAL	65088	76219		2495	2775		10913	22416		3817	4709		82313	106118	
GRAND TOTAL	432517	408435		33427	31251		164520	162771		46901	44428		677365	646885	

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>	<u>1978</u>
16-Hour	Total	--	327,046	291,506	289,332	319,245	306,663	324,970	351,105
Total In	Pass. Cars	288,000	283,097	253,731	253,203	283,229	271,899	291,060	312,100
16-Hour	Total	--	323,624	285,970	276,164	310,339	296,228	308,445	332,602
Total Out	Pass. Cars	--	278,224	247,836	242,649	277,039	263,671	278,699	295,848
High	Total	18,500	22,077	19,267	20,345	19,927	18,350	19,104	20,647
1/2-Hour In	Pass. Cars	--	20,402	16,870	18,891	18,554	16,912	17,653	18,991
Same	Total	12,000	12,689	10,912	9,735	11,150	9,895	9,944	10,919
1/2-Hour Out	Pass. Cars	--	11,202	9,349	8,782	10,180	8,875	8,983	9,817
High	Total	20,500	22,760	19,730	20,488	22,182	19,550	20,023	21,092
1/2-Hour Out	Pass. Cars	--	20,384	17,176	18,959	20,575	17,881	18,515	19,669
Same	Total	13,500	15,602	12,893	12,099	14,069	13,115	13,513	12,725
1/2-Hour In	Pass. Cars	--	13,876	11,131	10,758	12,735	11,902	12,246	11,523
Highest Veh.	Total	49,000	48,306	--	62,100	58,789	58,576	65,215	68,088
Accum. Inc.	Pass. Cars	--	46,007	--	57,470	53,641	54,094	59,730	64,130
Initial									

Table 7

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

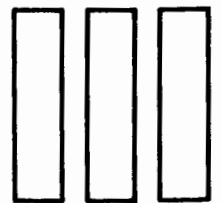
## CORDON COUNT

		<u>1941</u>	<u>1957</u>	<u>1963</u>	<u>1967</u>	<u>1972</u>	<u>1974</u>	<u>1976</u>	<u>1978</u>
16-Hour	Persons	757,120	687,906	605,730	570,928	598,673	605,029	628,515	677,365
Total In	Auto Pass.	441,647	403,015	368,844	350,323	389,768	372,979	403,821	432,517
% Auto Passengers		58	59	61	61	65	62	64	64
16-Hour	Persons	723,191	692,195	589,964	549,977	532,094	578,002	607,334	646,885
Total Out	Auto Pass.	415,403	402,399	355,152	337,627	377,295	352,449	387,743	408,435
% Auto Passengers		57	58	60	61	65	61	64	63
High	Persons	50,161	59,411	50,922	50,673	42,433	43,524	43,438	43,149
1/2-Hour In	Auto Pass.	25,982	31,247	27,505	28,630	25,053	23,071	24,009	24,805
% Auto Passengers		52	53	54	57	59	53	55	57
Same	Persons	26,298	28,010	20,825	18,914	20,881	19,331	19,650	21,171
1/2-Hour Out	Auto Pass.	14,499	17,100	11,608	11,003	12,425	10,899	11,304	12,125
% Auto Passengers		55	61	56	58	59	56	58	57
High	Persons	61,710	61,592	47,588	48,994	49,198	48,232	48,886	47,318
1/2-Hour Out	Auto Pass.	31,558	31,362	27,167	28,506	28,611	24,264	26,076	26,013
% Auto Passengers		51	51	57	58	58	50	53	55
Same	Persons	29,629	29,888	26,519	19,253	25,856	25,045	26,450	28,941
1/2-Hour In	Auto Pass.	18,160	19,201	15,973	12,180	17,068	15,571	16,709	18,369
% Auto Passengers		61	64	60	63	66	62	63	63
High	Persons	174,758	132,618	--	136,194	122,729	135,071	135,061	131,362
Accum*.	Auto Pass.	67,593	57,128	--	74,162	68,224	68,450	75,739	75,188
% Auto Passengers		39	43	--	54	55	51	56	57

\*Persons Crossing Cordon



# CORDON AREA TRENDS AND ANALYSIS



#### A - General Observation on Cordon Area Development and Transportation Characteristics

The downtown business district has traditionally been the major activity center for the Los Angeles metropolitan area. Centrally located in regard to the metropolitan population of seven million people, the Downtown business district is also located at the crossroads of several radial freeway routes which formed the initial construction of the extensive 490 mile freeway system presently developed within Los Angeles County.

The Downtown area is thus readily accessible from virtually every community in this metropolitan area for both public and private transportation services. For public transportation, there were 72 regular scheduled local and suburban bus routes of the SCRTD that crossed the cordon boundaries in May 1978. In addition, there were 41 special, commuter or subscription bus routes of the SCRTD that entered and left the cordon area at the time of the May, 1978 study.

The 1.1 square mile cordon area encompasses not only the central business district, but also a substantial portion of the Los Angeles Civic Center. Within the cordon area, there is presently over 50 million square feet of building floor space.

Since the earliest recorded cordon travel data, in the early 1920's, the passenger volume crossing the Downtown cordon boundaries in public and private means of transportation has been over the one million mark (for the 16-hour period from 6 AM to 10 PM on an average weekday).

#### B - Summary Data on Cordon Person and Vehicle Trips for 1978

Processing of the myriad information collected for the cordon count study through a computer program provides the comprehensive, detailed data on vehicle and person trips, as shown on Tables 2 through 5. Data shown on Table 1 or as graphically illustrated on Plates 1 through 6 are derived primarily from the four computer tables.

As indicated by these data, a total of 683,707 vehicles crossed the cordon boundaries during the 16-hour study period from 6 AM to 10 PM. During the 16-hour study period, a total of 1,324,250 persons entered and left the cordon area.

Of the total persons entering the cordon area, 63.9% arrived in automobiles, 24.3% in transit vehicles, 4.9% in trucks, and the remainder, 6.9% entered on foot.

At the peak person accumulation period, 1:30 PM, there were a total of 150,362 persons within the cordon area. Peak accumulation of vehicles occurred at 2:00 PM at which time there were a total of 68,088 vehicles within the cordon area.

### C - Long Term Historical Cordon Travel Trends

The earliest data of record on Downtown cordon area travel activity included only passenger volume data, i.e., did not include pedestrian trips, and encompassed only the 13-hour period from 6 AM to 7 PM.

This study conducted in 1924 disclosed that over 1.2 million passengers crossed the cordon boundaries during the 13-hour study period. Of this total, 61% were passengers in public transportation facilities and the remainder, 39% were passengers in private transportation vehicles, either automobiles or commercial vehicles.

The only other study including data on person trips of record prior to World War II was conducted in 1941. For the 13-hour period of this study, a total of nearly 1.3 million passengers entered and left the cordon area. In terms of proportional values, this study disclosed a reversal from the 1924 study, public transportation passengers represented 39% of the total passengers crossing the cordon boundaries and the remaining 61% were occupants in private vehicles.

Comparable 13-hour passenger volume data for the two studies noted above and for selected cordon studies from the numerous studies conducted subsequent to World War II are shown on Table 8.

The study conducted in 1941 provided data on total person trips, included pedestrian volumes, and further corresponded to current cordon study procedures in that it encompassed the 16-hour period from 6 AM to 10 PM.

The trend in regard to inbound cordon person trips, for the 16-hour period, by the various modes from 1941 to data is depicted on Plate 7.

### D - Short Term (10-year) Cordon Trend Analyses

As is evident from Plate 7, since 1967 there has been a general trend of increasingly greater volumes of person trips crossing the cordon boundaries. Over the last 10 years, there have also been some significant changes in travel mode patterns.

To provide some insight in regard to these changes in travel patterns and modes, detailed analyses has been made of the cordon data for the biennial studies conducted from 1968 to 1978.

#### 1 - Peak Period Person-Trip Volume Trend

Of primary concern in regard to traffic flow patterns is the magnitude of peak period traffic demand.

Review of cordon data for inbound person trips reveals that the volumes in 1978 for the morning peak hour (7-8 AM) and even for the peak two-hour period (7-9 AM) were below the respective volumes recorded in 1968, as noted below:

	<u>Inbound Person Trips</u>		<u>Percent Decrease</u>
	<u>1968</u>	<u>1978</u>	
Peak Hour (7-8 AM)	89,958	85,965	4.4%
Two Peak Hours (7-9 AM)	156,115	152,255	2.5%

More detailed study of the cordon data for the 10-year period for 1968 to 1978 by half-hour increments, however, reveals that the reduction in peak-hour trips has occurred primarily in the final half-hour incremental period, 7:30 to 8 AM. Volumes in the initial half-hour, 7 to 7:30 AM, of the peak-hour have remained relatively stable over the 10-year period.

Additionally, the study data revealed a pattern of overall increasing trip volumes for the two half-hour increments preceding the peak-hour period, e.g., 6 to 6:30 AM and 6:30 to 7 AM. For the latter, 6:30 to 7 AM, inbound person trip volumes have increased steadily over the 10-year period from 1968 to 1978.

Inbound person trip volumes for the four half-hour periods from 6 to 8 AM from the biennial cordon studies 1968 through 1978, in terms of absolute and proportional values, are graphically illustrated on Plate 8.

Comparison of inbound person trip volumes for 1978 with 1968 reveals that although the volume for the two-hour period increased by nearly 6,000 trips, there was a decrease of slightly over 6,000 trips in the highest morning incremental half-hour period, e.g., the period from 7:30 to 8 AM. Offsetting this decrease were increases for each of the remaining three half-hour periods which accordingly amounted to an aggregate increase of 12,000 inbound person trips in 1978 over 1968 trip volumes.

The following comparison of absolute and proportional values on inbound person trip volumes for the half-hour incremental periods from 6 to 8 AM provides additional insight in regard to 1968 and 1978 commuter travel patterns:

	<u>Inbound Person Trips - 6 to 8 AM</u>				<u>Change in %</u>
	<u>Volume</u>		<u>Percent</u>		
	<u>1968</u>	<u>1978</u>	<u>1968</u>	<u>1978</u>	
6:00 - 6:30 AM	9,707	12,213	8.03	9.67	+1.64%
6:30 - 7:00 AM	21,307	28,131	17.61	22.27	+4.66%
7:30 - 8:00 AM	40,114	42,816	33.16	33.90	+0.74%
7:30 - 8:00 AM	49,844	43,149	41.20	34.16	-7.04%
6:00 - 8:00 AM	120,972	126,309	100%	100%	-

The preceding indicates that volumes in 1978 were generally at a uniform demand throughout the entire peak-hour period (7-8 AM) whereas the trip volumes in 1968 during the latter part of the peak hour demand were considerably higher than the trip volumes recorded in the initial half-hour incremental period. Stated another way, the "peak" half-hour incremental period (7:30 - 8 AM) for inbound commuter travel was most likely considerably less critical in regard to general operating conditions in 1978 than the conditions experienced during said period in 1968.

More fundamentally, the preceding data provide an indication of the changes that have taken place in commuter travel patterns over the last ten years. The cordon count study procedure does not provide the details to identify or measure the extent of change for the various factors that have an effect on cordon travel patterns. It can, however, reasonably be surmised that the temporal shifts in commuter travel patterns was due in part to changing conditions over the last ten years which, in effect, resulted in an increasingly greater number of employees on flextime arrangements, staggered work hour schedules or on four-day workweek programs.

As would be expected, for the afternoon peak traffic period, there were changes in travel patterns quite similar to the changes observed for the morning commuter period. It must be noted that commuter travel patterns for the afternoon period are not as pronounced and readily evident since this travel flow includes more non-work type trips than the morning peak period flow.

For an insight on changes in the afternoon peak period travel patterns, 1968 and 1978 outbound person trip volumes for each of the half-hour periods between 3 and 7 PM have been plotted on Plate 9. As can be discerned from this plate, the most significant changes in person trip volumes in 1978 from 1968 were (1) a reduction of trips for the "peak" half-hour period, 5-5:30 PM, and (2) a substantial aggregate increase for the three consecutive half-hour periods preceding the peak "5-5:30 PM" period.

## 2 - Peak Period Vehicular Travel Patterns

To determine the trend in vehicular trips, an analysis was made of inbound volumes from 6 to 8 AM for the years 1968 and 1978 at the west boundary of the cordon area. Inbound vehicular trips at the west boundary in 1978 represented nearly 40% of the total inbound cordon vehicular trips for the 16-hour study period. For additional detail, the data was also aggregated to provide a comparison of volumes for four selected corridors of travel.

The comparative data on vehicular trips disclosed conditions similar to the trend on person trip volumes relative to changes by half-hour increments, as shown on Plate 10. From the data plotted on this plate, it is further apparent that not only have there been temporal shifts in commuter travel patterns, but also adjustments spatially (over different travel routes).

The spatial adjustments in this comparison of two-hour volumes (6-8 AM) for 1978 with 1968 involve primarily a decrease (of approximately 5%) in

inbound vehicular trips crossing the west boundary on the surface streets in the southern portion (Corridor "D") and an increase (of approximately 50%) on the streets in the most northerly corridor (Corridor "A"). Comparison of data considering both temporal and spatial adjustments reveals even more extreme variations in travel adjustments. Inbound vehicular trips in Corridor "D" for the period for 7:30-8 AM in 1978 were 25% lower than the volumes recorded in 1968. Conversely, there was an increase of over 100% in inbound vehicular trip volumes in Corridor "A" for the period from 6:30-7 AM in 1978 compared to 1968.

### 3 - Cordon Person Destination Trends

Travel data in this study on inbound trips at the cordon boundaries include trips which merely pass through the cordon area as well as trips which have a destination within the cordon area.

To provide insight on the latter, an analysis has been made of data on cordon accumulation, which constitute for the greater part trip destinations within the cordon area.

For this purpose, compilation was made of cordon accumulation data for the biennial cordon studies for 1968 to 1978 for the 2-hour period for 6 to 8 AM. It should be noted that this involved data on accumulation of persons crossing the cordon boundaries, i.e., did not include initial accumulation.

As shown on Plate 11, in the period from 1968 to 1974, the 2-hour volume of cordon person destinations in motor vehicles (excluding transit) and on foot were on opposing declining and inclining trends, respectively. Since 1974 there has, however, been a complete reversal in the person destination trends for these two modes.

For the other remaining mode, bus passengers, there was a significant change (increase) in the volume of cordon person destinations by this mode in 1974 compared to the three previous biennial studies. This substantial increase in transit passenger destinations occurred primarily as a result of implementation of the 25¢ Flat Fare program for transit service in Los Angeles County, on April 1, 1974, just prior to the 1974 cordon study.

With this change in the public transportation mode there was also a considerable reduction in the volume of person destinations in private vehicles. This consequently resulted in the proportion of cordon person destinations for the 2-hour period (6-8 AM) in the public transportation mode in May, 1974 slightly exceeding the proportion of the private transportation mode, 45.6% vs. 45.4%. In the three prior biennial studies, passengers in buses, as a proportion of cordon person destinations, ranged from 19 to 22% less than the proportion accommodated as occupants in automobiles and trucks.

In the two studies conducted since 1974, there has been a reversal to the pre-1974 pattern for the private and public transportation modes. For



the current study, May 1978, the proportion of automobile and truck occupants was 13% greater than the bus passenger proportion, 54.8% vs. 42.4%

Analysis of the 10-year biennial data on cordon person destinations at the peak accumulation period, 1:30 to 2 PM, reveals mode patterns generally similar to the conditions noted above for the period from 6 to 8 AM. This data includes initial accumulation and is, of course, of a greater magnitude, or a volume approximately double the net influx of persons for the period from 6 to 8 AM. The volume trend and distribution pattern by modes for the peak period person accumulation from 1968 to 1978 is depicted on Plate 12. As is apparent from this plate, the magnitude of persons within the cordon area at the peak accumulation period has remained relatively **constant** for the last three biennial studies-peak accumulation totals of slightly over 150,000 persons.

#### 4 - Vehicle Accumulation Patterns

Review of the biennial cordon study data from 1968 to 1978 on the magnitude of vehicles within the cordon area at the peak accumulation period indicates a relatively stable trend in the period from 1968 to 1974 and an inclining trend since 1974.

Vehicle accumulation, especially as it relates to peak demand, is dependent to a certain extent on the supply of off-street parking spaces. In the 10-year period from 1968 to 1978 there was a substantial increase in the supply of off-street parking spaces within the cordon area. This increased supply was provided by the construction of numerous high-rise offices or multi-purpose developments. With these high-rise developments, an increase of over 10,000 off-street parking spaces, either as an integral part of the building complexes or in separate parking structures, was provided on the sites involved. A substantial portion of this construction activity was completed during the mid-portion of the 1970s.

Comparison of data for 1978 with 1968 discloses that the increase in vehicle accumulation has not been consistent over the total 16-hour study period. As shown on Plate 13, the most significant increases in vehicle accumulation in 1978 over 1968 have occurred in the daytime shopping period (10 AM to 2 PM) and in the evening entertainment activity period (6 to 10 PM). The change during these periods can be attributed to a certain extent to the resurgence of retail facility development within the cordon area. During the last ten years, new high-rise, multi-purpose complexes have provided approximately one million square feet of retail floor space, including a 250,000 square foot major department store, within the cordon area.

#### 5 - Automobile Occupancy Analysis

Automobile passengers in 1978 represented 64% of the total 16-hour volume of person trips crossing the cordon boundaries. Changes in the volume of automobile passengers are affected not only by the variations in automobile volumes, but also by variations in automobile occupancy factors.

To provide detail on the latter, an analysis has been made of the automobile occupancy count data acquired for individual cordon count studies. Comparative data, from this analysis, for the biennial cordon counts from 1972 to 1978, by four-hour increments, are shown on Table 9.

As can be noted from these comparative data, the composite factor (for all of the four-hour incremental units) indicates there has been an overall growth pattern in automobile occupancies for the total 16-hour period. Considering, however, that there were different patterns (in changes in occupancy factors for successive cordon counts) for each of the 4-hour incremental units, this can not necessarily be construed as being indicative of trend of greater ride sharing or carpooling activities.

The more profound change in automobile occupancies by four-hour incremental units for the study period involved was the increase in 1978 compared to 1976 for the period from 6 to 10 PM. As indicated by the data on Table 9, in 1978 during this four-hour period nearly five out of every ten automobiles entering the cordon area had two or more occupants while in 1976, less than four out of every 10 automobiles had two more occupants.

#### 6 - Cordon Person Trip Volume Trends

As was noted in the previous sections, some of the most substantial changes on vehicle accumulation and automobile occupancies over the last 10 years have occurred in the midday period, 10 AM to 2 PM, and in the evening period, 6 to 10 PM.

To determine the extend of changes over the total 16-hour study period for the most significant cordon travel activity measurement, person trips, linear regression analyses were conducted by four-hour increments of the latest 10-year biennial study data.

The linear trend lines derived from these analyses are plotted on Plate 14.

In terms of the volume of person trips entering and leaving the cordon area, the greatest growth rates have occurred in the evening, entertainment, period (6 to 10 PM), and in the midday, shopping period, (10 AM to 2 PM). Conversely, thus, the least growth in person trips has occurred in the two periods which involve the greater majority of work trips.

The data analyzed above involves person trip volumes crossing the cordon boundaries. As was noted previously, cordon travel activity measured at the cordon boundaries includes not only trips which have an origin or destination within the cordon area, but also through trips, i.e., trips which have an origin and destination beyond the cordon area.

Evaluation of certain travel activities, such as cordon person accumulation data, has disclosed that there had been a relatively minor overall increase in cordon destinations over the last 10 years. This would thus tend to indicate that the increasingly greater volumes of travel at the cordon boundaries resulted to a certain extent due to a growth in through or non-Downtown oriented trip volumes.



Over the last ten years there have been several high-rise developments constructed on the periphery of the cordon area. Considering the additional traffic generated on these sites contiguous to the cordon area, these developments have undoubtedly affected an increase in the volume of non-Downtown oriented trips which cross the cordon boundaries.

Extrapolation lines, as shown on Plate 14, are merely extensions of the ten-year (1968-1978) linear trend lines. These extrapolated lines provide an indication of the magnitude of future person trip volumes across the cordon boundaries for the four-hour incremental units or 16-hour study period in the event development and travel patterns result in growth rates over the next ten years similar to the trends observed during the preceding ten-year period.

At the time of the May, 1978 study, there were five high-rise development under construction or in the planning stage within the cordon area. Additionally, there were several extensive projects under construction or in the planning phase on the periphery of the cordon area.

At the present time, the Downtown People Mover (DPM) proposal is the only short-range transportation project in process which would affect a diversion or reduction of vehicular trips on the cordon area surface streets.

Projected data for 1990 for the DPM project envision that regional Downtown-oriented person trips in automobiles intercepted at the two proposed parking terminals would result in a reduction of 10,500 daily automobile trips entering and leaving the Downtown area from the volume that would otherwise occur without the DPM project.

Continuation of the 1968-1978 linear trend growth in cordon travel activity would result in an increase of approximately 30,000 daily vehicle trips across the cordon boundaries in 1990 over existing vehicle trip volumes.

Thus, due to anticipated new development, the Downtown area access routes will be experiencing increasingly greater volumes of travel for the immediate future, with such growth moderated by approximately one-third in the event the DPM project is ultimately implemented.

Table 8

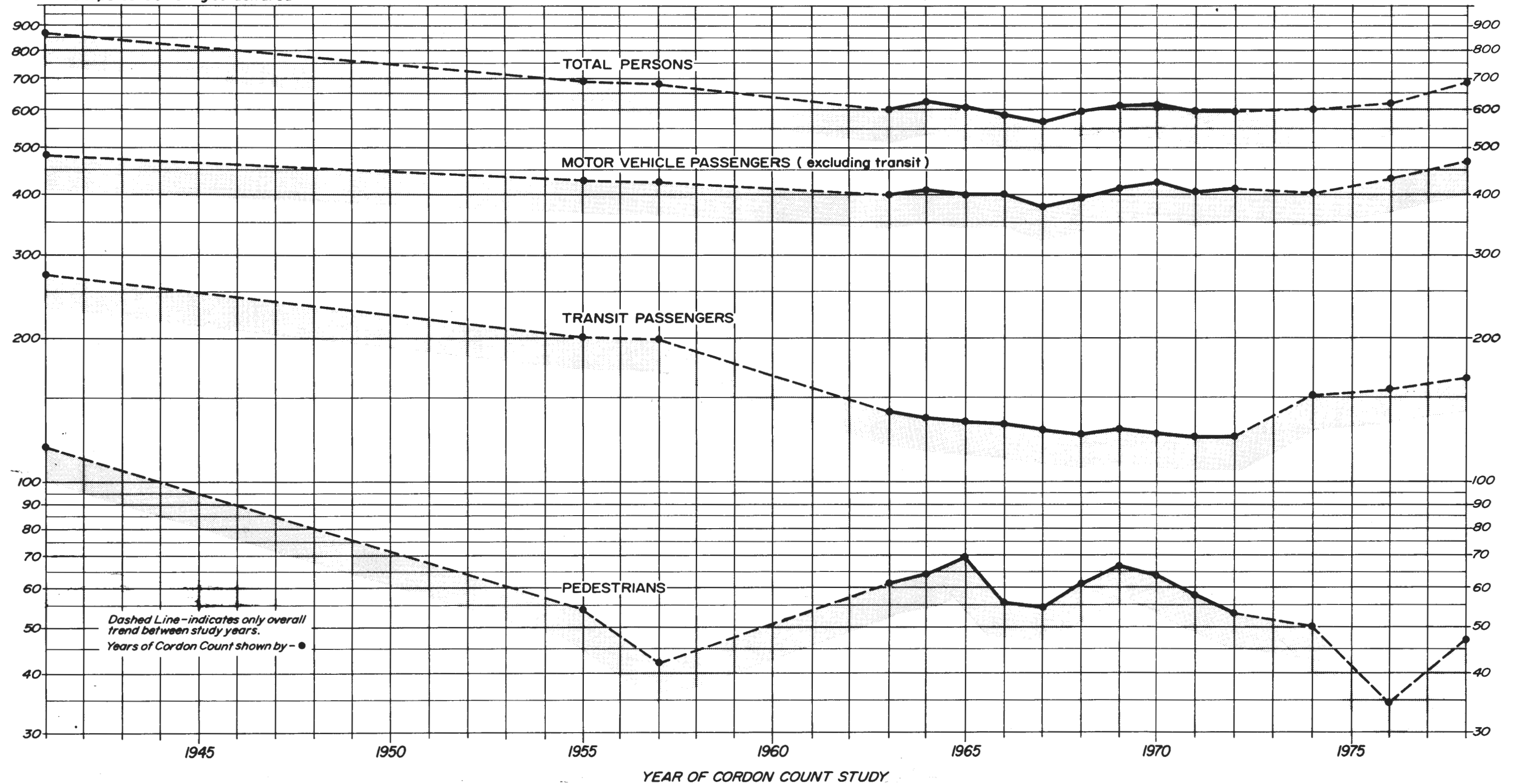
Downtown Cordon Area Passenger Mode Trends

Passenger Volumes Crossing Cordon Boundaries <sup>1</sup>				
Year	Auto. Pass.	Comm. Veh. Pass.	Transit Pass.	Total Pass.
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
1968 <sup>4</sup>	672,310	54,140	247,840	974,290
1970 <sup>4</sup>	692,730	53,408	248,353	994,491
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
1978 <sup>4</sup>	749,841	61,545	311,589	1,122,975

Proportional Rates By Passenger Mode				
Year	Auto Pass.	Comm. Veh. Pass.	Transit Pass.	Total Pass.
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%
1968	69.0%	5.6%	25.4%	100%
1970	69.6%	5.4%	25.0%	100%
1972	70.0%	5.8%	24.2%	100%
1974	65.7%	5.4%	28.9%	100%
1976	66.5%	4.6%	28.9%	100%
1978	66.8%	5.5%	27.7%	100%

<sup>1</sup> 13 Hours - 6AM to 7 PMSources: <sup>2</sup>Report on a Comprehensive Rapid Transit Plan for the City and County of Los Angeles, Kelker, DeLeuw & Co. 1925.<sup>3</sup>Los Angeles County Regional Planning Commission<sup>4</sup>Los Angeles City, Department of Transportation

thousands of persons entering cordon area\*

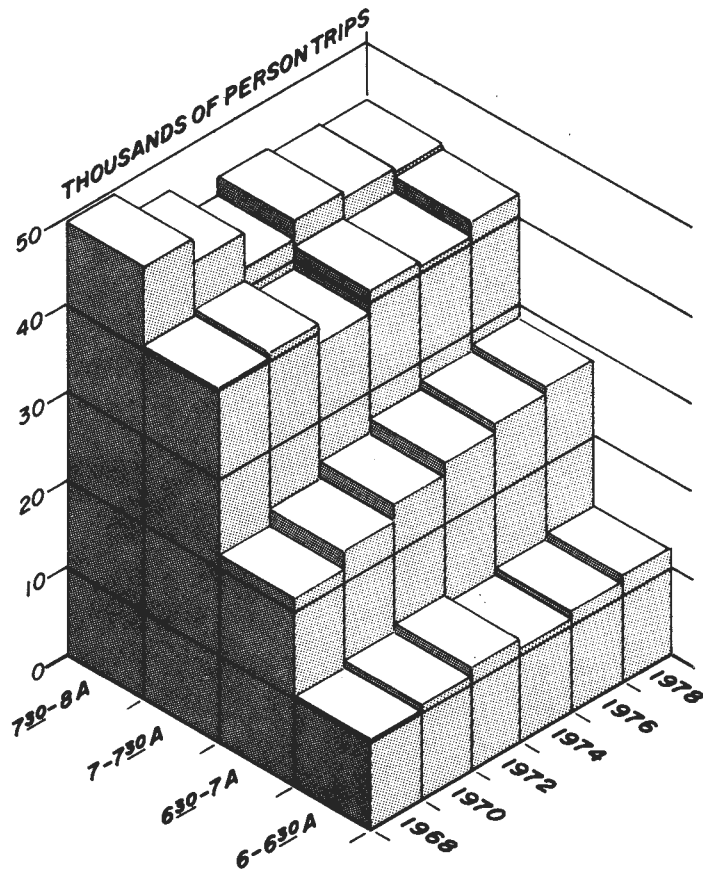
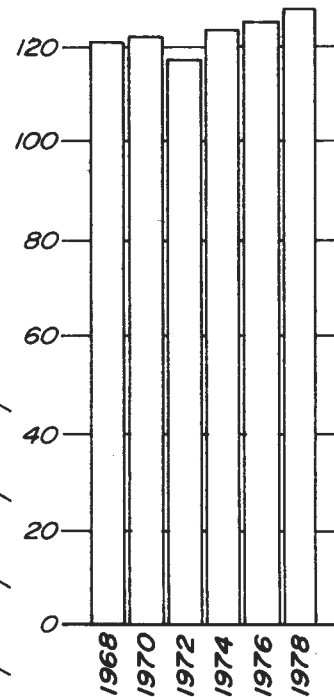


\*16 hour period from 6AM to 10PM

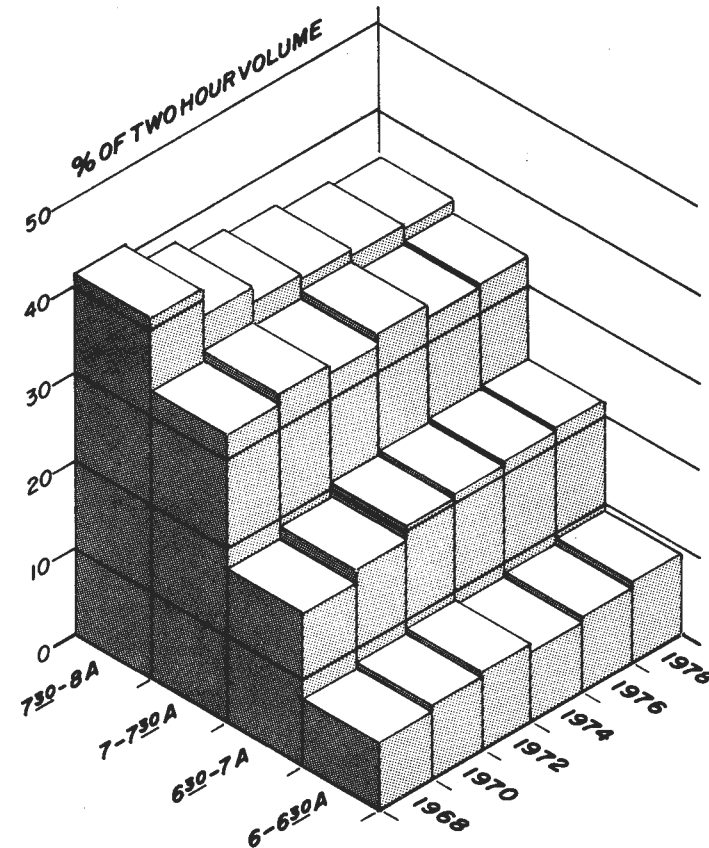


# TOTAL INBOUND VOLUME OF PERSON TRIPS • 6-8A

thousands of person trips  
140



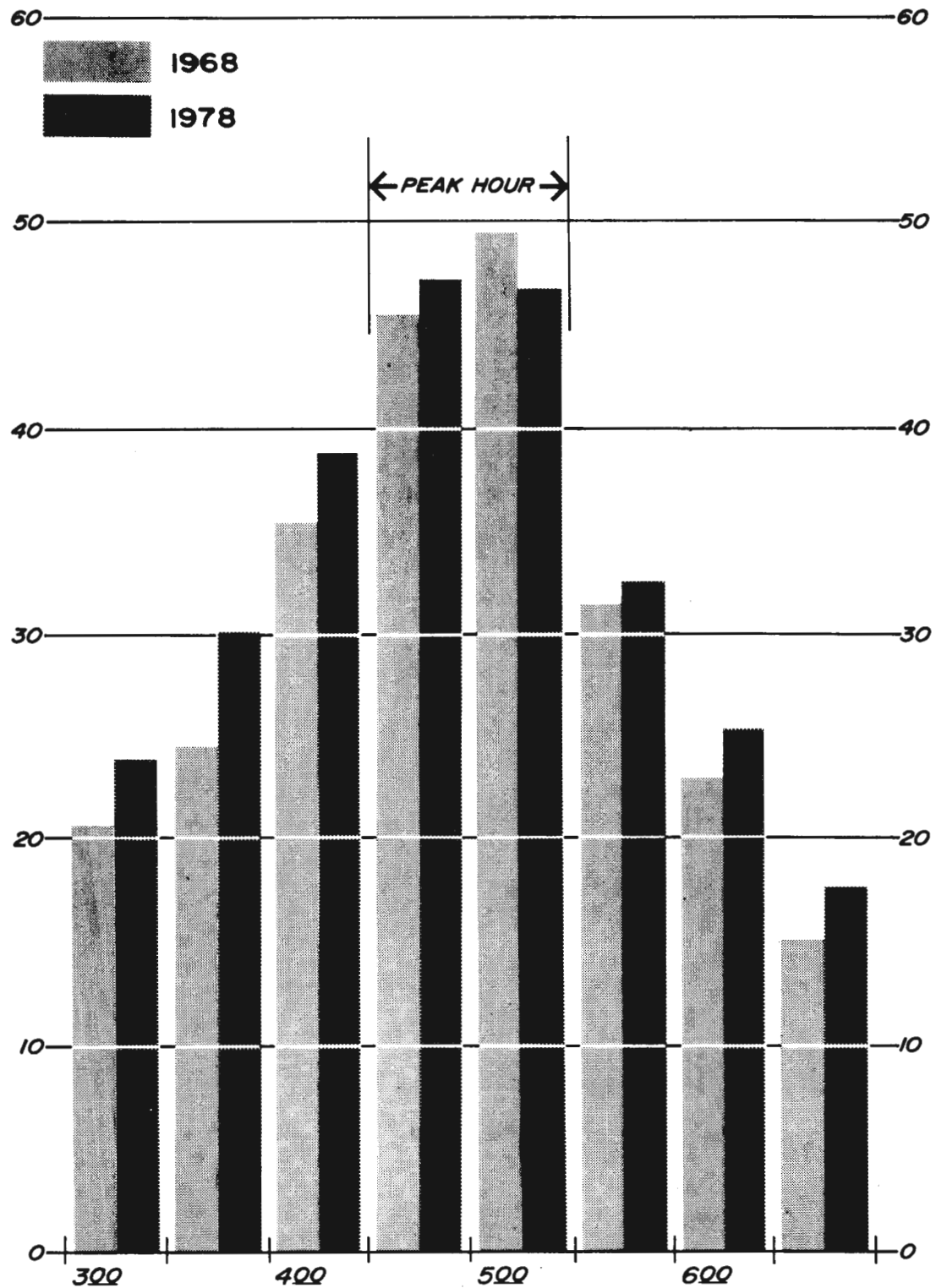
VOLUME OF INBOUND CORDON PERSON TRIPS  
BY HALF HOUR INCREMENTS



PERCENTAGE OF INBOUND CORDON PERSON TRIPS  
BY HALF HOUR INCREMENTS FOR RESPECTIVE YEARS

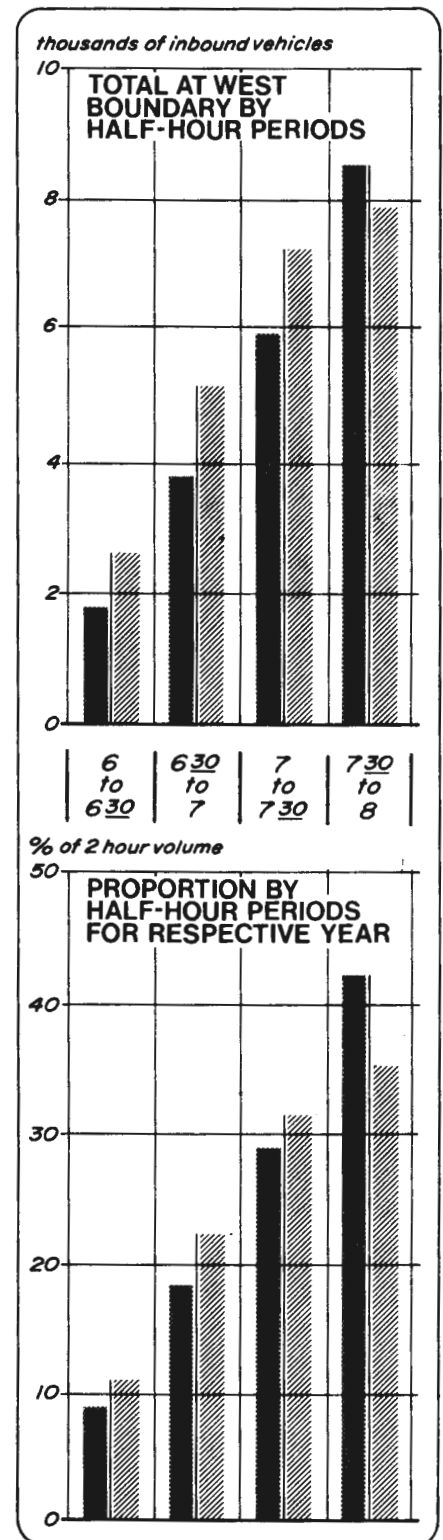
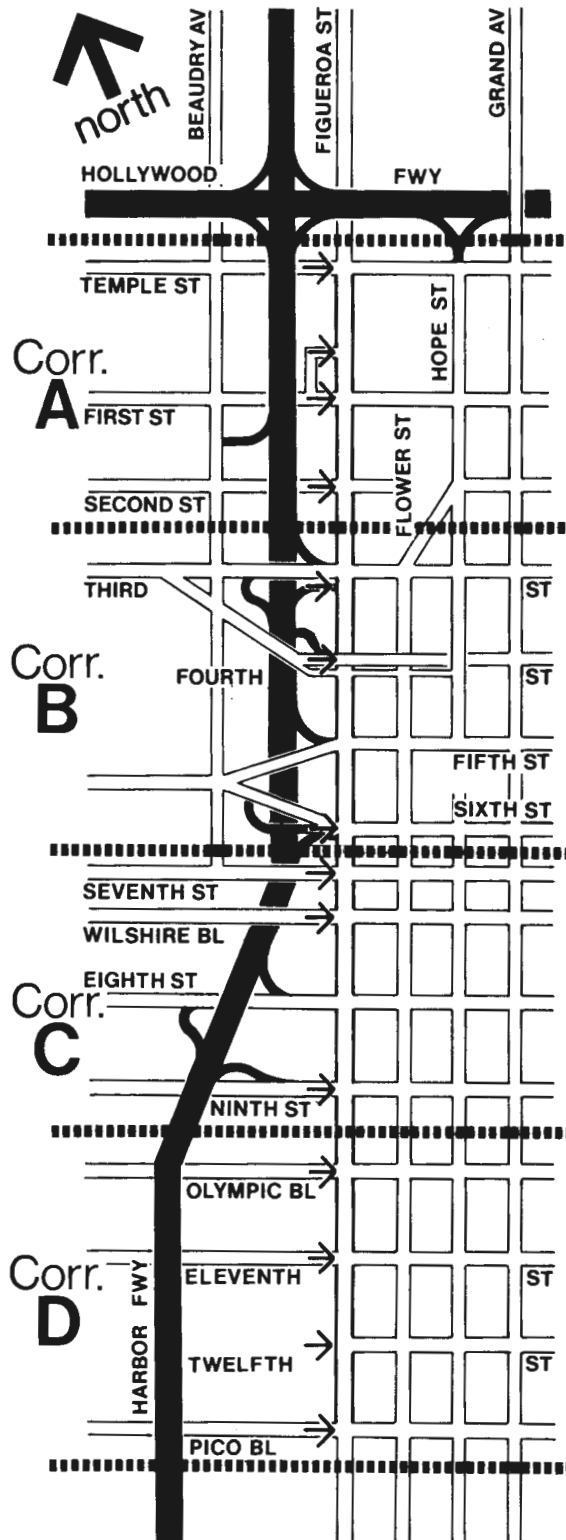
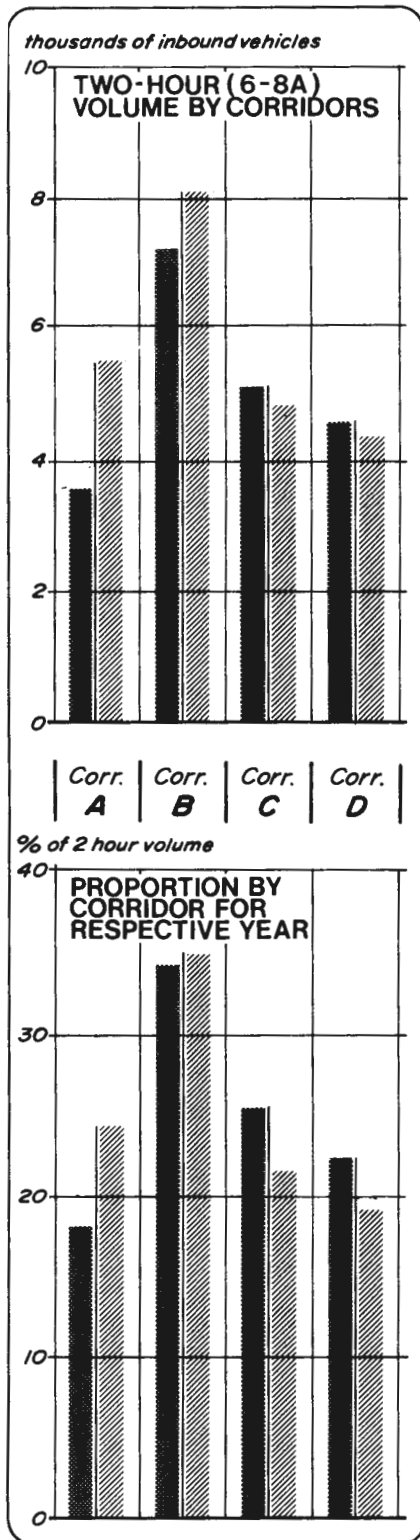
## TREND IN INBOUND DOWNTOWN CORDON PERSON TRIPS 6 to 8AM • 1968 to 1978

thousands of person trips outbound



**OUTBOUND PERSON TRIPS**  
BY HALF HOUR INCREMENTS • 3 to 7 PM





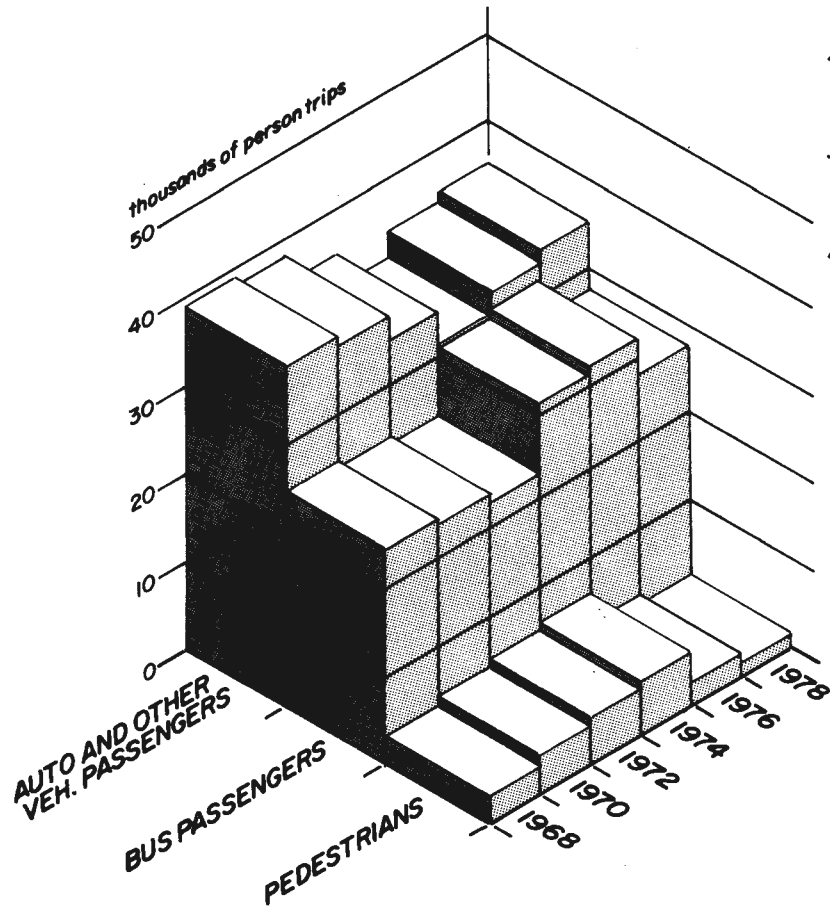
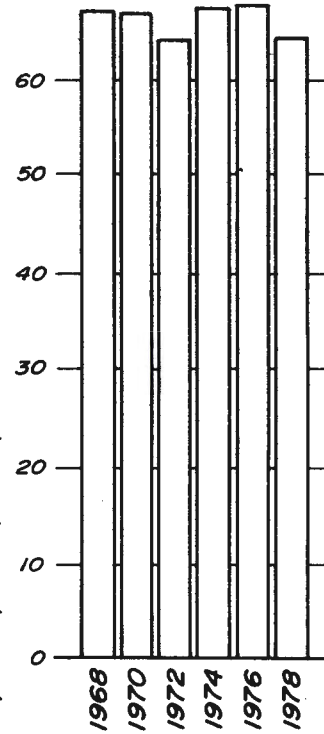
**TOTAL INBOUND VOLUME OF VEHICLES AT WEST BOUNDARY · 6 to 8AM**

1968 - 20,322 1978 - 22,878 1968 vs 1978 +13%

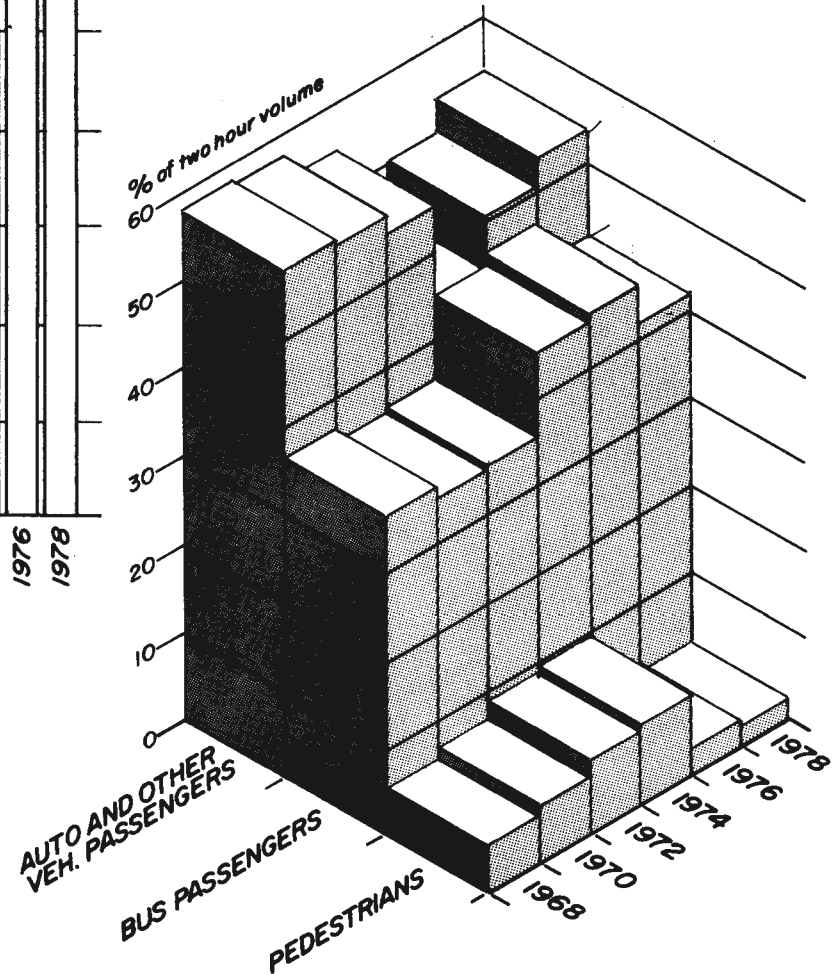
**INBOUND VEHICULAR VOLUME ACROSS WEST CORDON BOUNDARY 6 to 8AM · 1968 vs 1978**

# TOTAL CORDON PERSON DESTINATIONS BY ALL MODES 6-8A

thousands of person destinations  
70



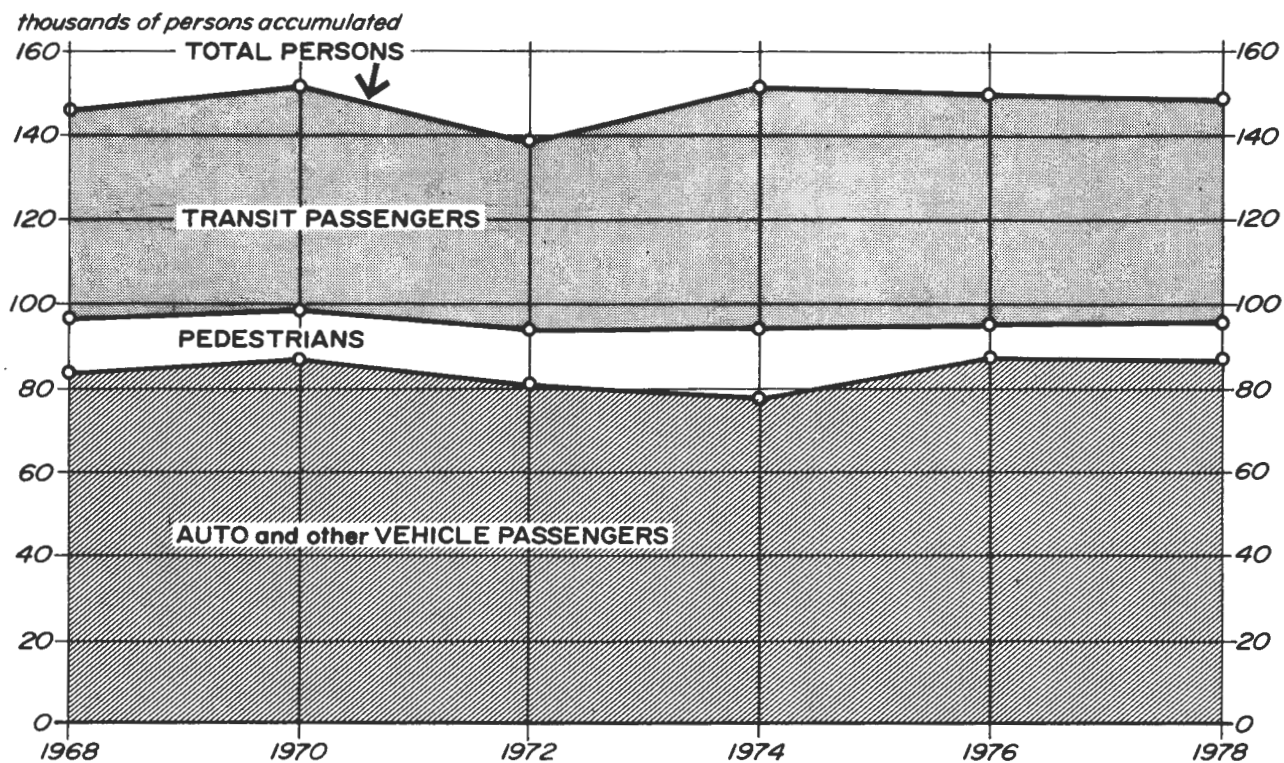
VOLUME OF CORDON PERSON DESTINATIONS  
BY MODE • 6-8A



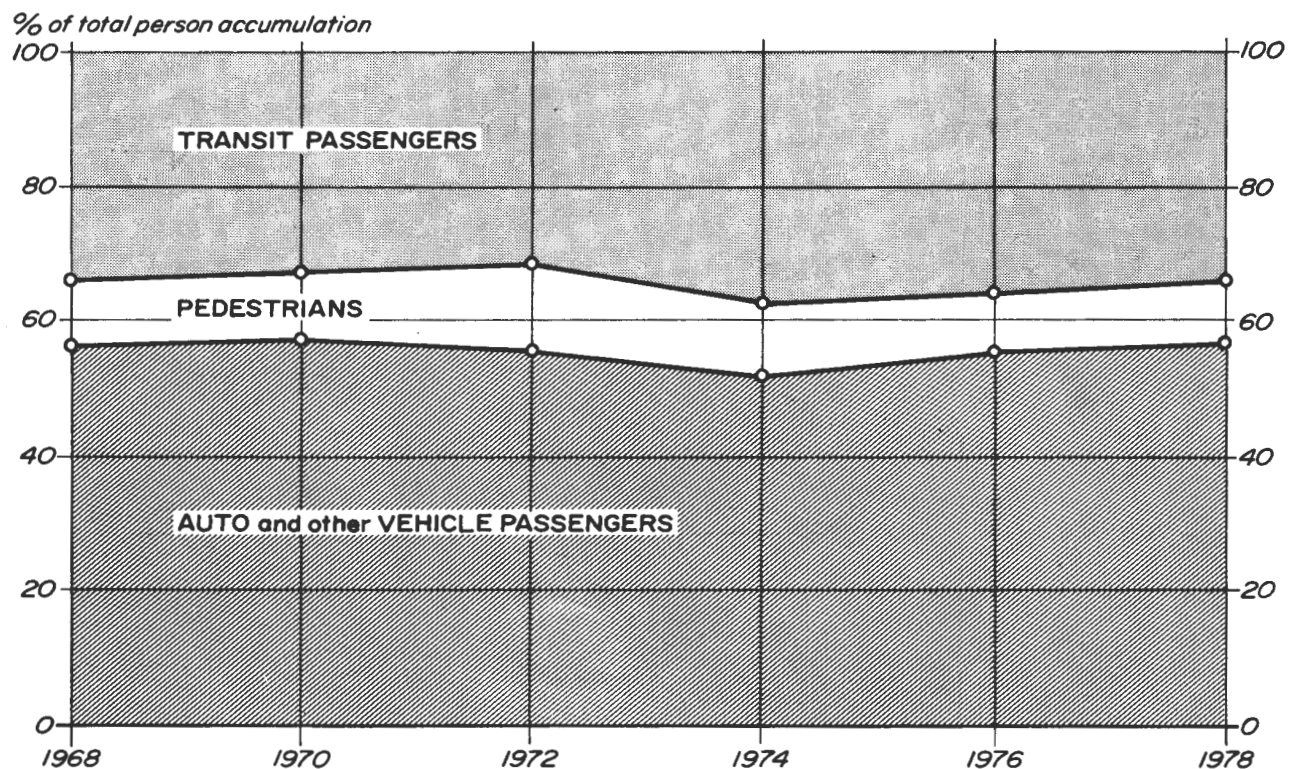
PERCENTAGE OF CORDON PERSON DESTINATIONS  
BY MODE FOR RESPECTIVE YEARS

## TREND IN DOWNTOWN CORDON PERSON DESTINATIONS 6 to 8AM • 1968 to 1978



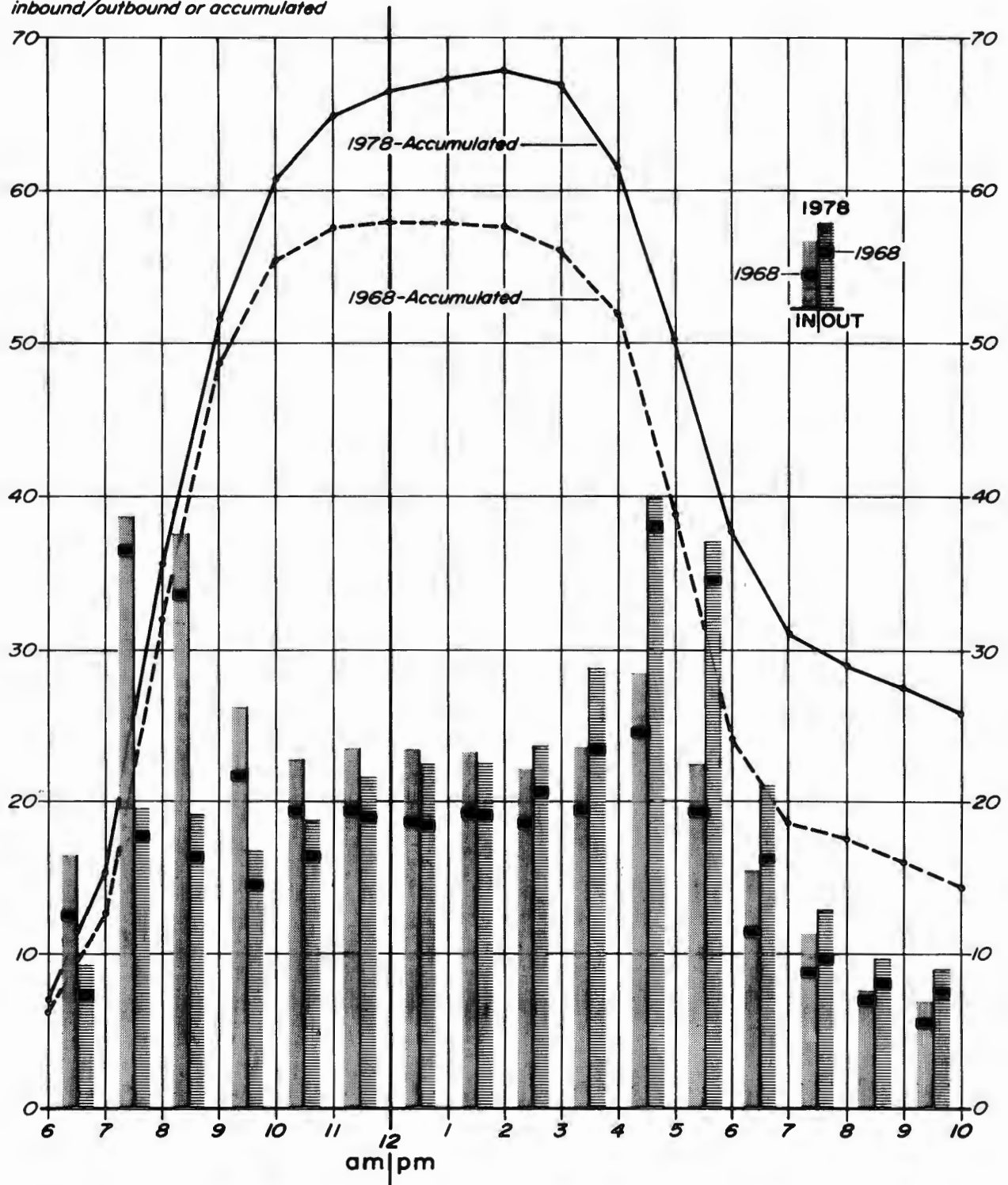


**PEAK PERIOD PERSON ACCUMULATION  
VOLUME BY MODE**



**PEAK PERIOD PERSON DISTRIBUTION  
PROPORTION BY MODE**

Thousands of Vehicles  
inbound/outbound or accumulated



COMPARISON of VEHICLE ACCUMULATION  
and HOURLY VOLUMES • 1978 vs 1968

Table 9

COMPARISON OF OCCUPANCY DATA  
FOR PASSENGER VEHICLES ENTERING DOWNTOWN CORDON AREA  
BY SELECTED TIME INCREMENTS

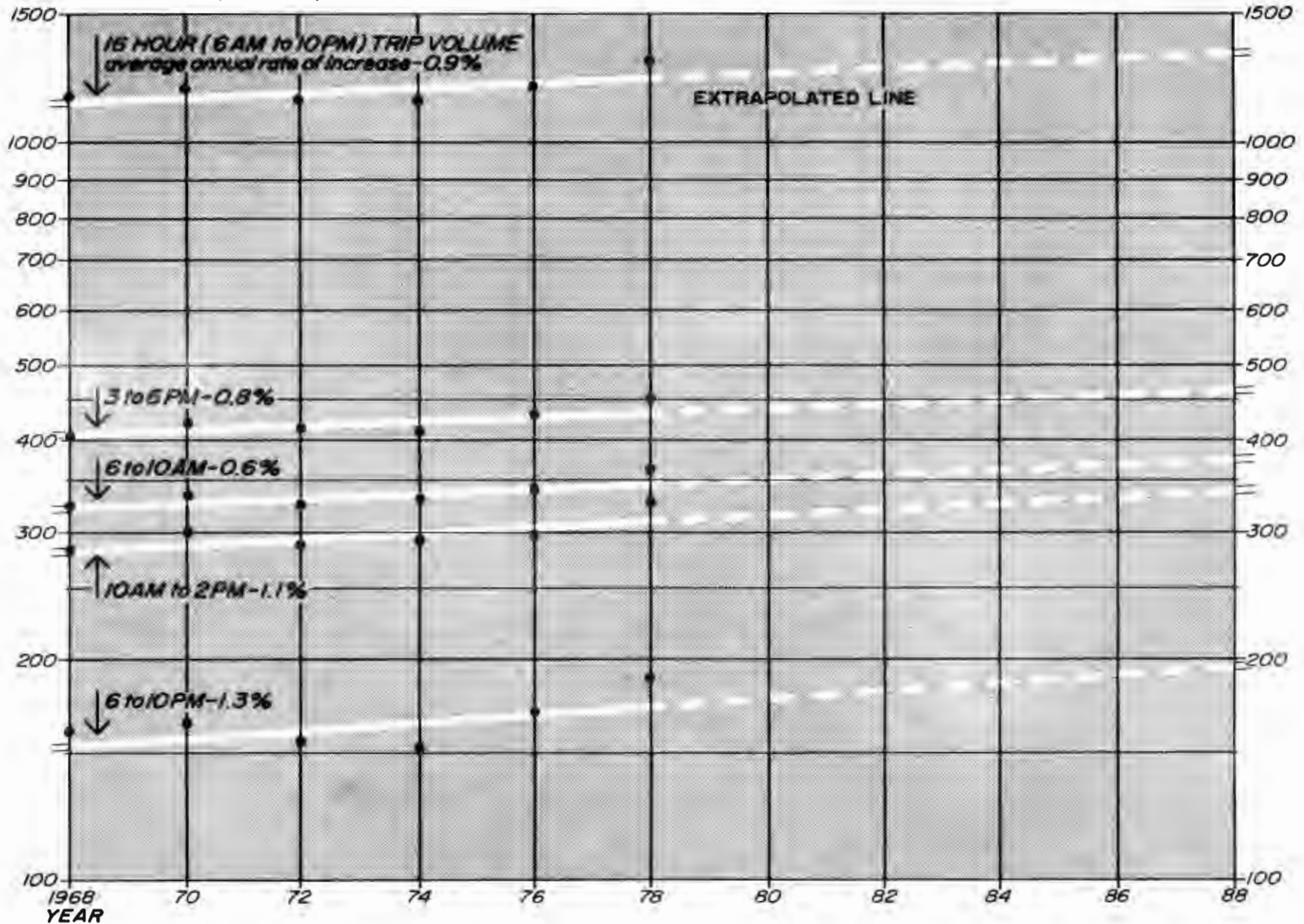
1972-1974-1976-1978

PERCENTAGE OF INBOUND AUTOMOBILES BY NUMBER OF OCCUPANTS								
Time Period	1972		1974		1976		1978	
	One	2 or More	One	2 or More	One	2 or More	One	2 or More
6 AM to 10 AM (4 Hours)	76.11	23.89	74.31	25.69	74.61	25.39	75.59	24.41
10 AM to 2 PM (4 hours)	71.56	28.44	71.79	28.21	70.33	29.67	70.45	29.55
2 PM to 6 PM (4 Hours)	72.80	27.20	72.14	27.86	71.21	28.79	70.53	29.47
6 AM to 6 PM (12 Hours)	74.32	25.68	72.93	27.07	72.34	<b>27.66</b>	72.34	27.66
6 PM to 10 PM (4 hours)	60.34	39.66	60.07	39.93	61.54	38.46	54.41	45.59
6 AM to 10 PM (16 Hours)	72.77	27.23	71.57	28.43	70.89	29.11	70.13	29.87

## Average Automobile Occupancy

	1972	1974	1976	1978
6 AM to 10 AM (4Hours)	1.30	1.31	1.31	1.31
10 AM to 2 PM (4 hours)	1.36	1.36	1.39	1.36
2 PM to 6 PM (4 Hours)	1.36	1.36	1.36	1.39
6 AM to 6 PM (12 Hours)	1.34	1.34	1.36	1.36
6 PM to 10 PM (4 Hours)	1.50	1.53	1.57	1.63
6 AM to 10 PM (16 Hours)	1.36	1.37	1.36	1.40

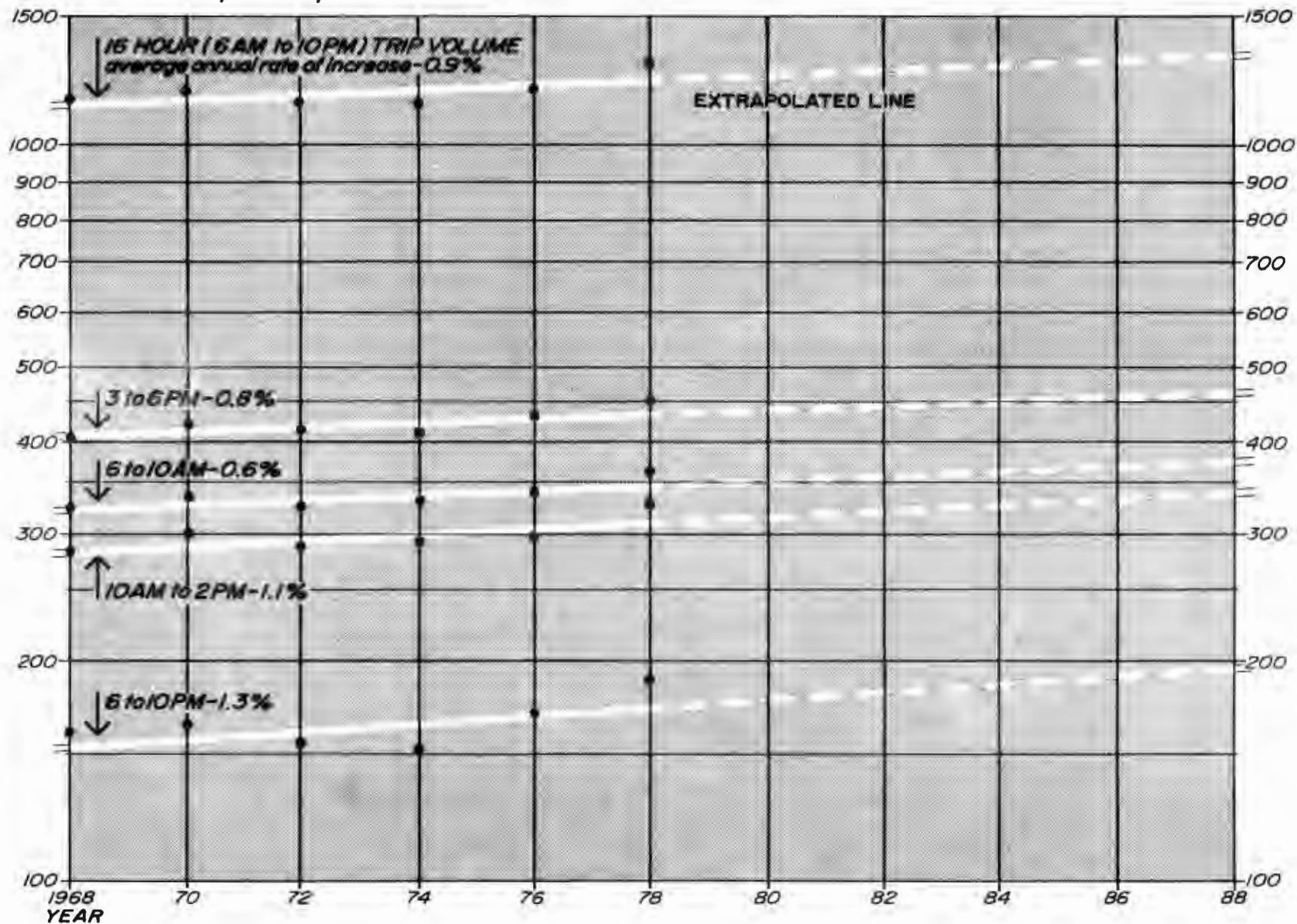
thousands of cordon person trips



LINEAR TREND LINES • CORDON PERSON TRIP VOLUMES  
1968 to 1978 and EXTRAPOLATED to 1988



thousands of cordon person trips



LINEAR TREND LINES • CORDON PERSON TRIP VOLUMES  
1968 to 1978 and EXTRAPOLATED to 1988

SUMMARY OBSERVATIONS ON  
CORDON TRAVEL TRENDS



#### IV. Summary Observations on Cordon Travel Trends

There are numerous complex, interrelated factors which have an effect on cordon travel activity. Cordon travel activity is affected, for example, by more extensive development (greater trip volumes generated), by improvements or fare reductions in transit service (changes in travel modes) and preferences of individual travelers (as to time period of travel and travel route used).

Some of these, such as changes in transit service, have an almost immediate effect on cordon travel mode patterns. For the others, for the greater part, the effect on cordon travel patterns is not readily evident over a two-year or even longer time period.

Analysis of the historical Downtown cordon data also indicates that a single trend or change can produce complex effects resulting in both positive and negative effects. Temporal shifts in commuter travel from a peak-hour demand period to a non-peak hour period results in lower volume demands and consequently improved operating conditions for the peak-hour period while simultaneously resulting in increased volumes and less efficient operating conditions for the non-peak hour period affected. A reduction in the transit fare structure resulted in a substantial increase in cordon bus passenger volumes while simultaneously providing a proportionate decrease of the same magnitude in automobile passenger volumes. This further affected the trend in temporal shifts of commuters, to some extent, from peak-hour to non-peak hour travel periods.

Over the last 10 years, Downtown commuter travel (in terms of vehicle trips) has increased by over 10% yet the peak hour trip volume has remained relatively stable. For specific half-hour periods (least incremental time unit measured in cordon study) in selected corridors of travel there were even more extreme variations ranging from a reduction of 25% to an increase of 100% in the volume of vehicle trips in 1978 compared to 1968.

In light of apparent trends in regard to planned developments on the periphery as well as within the cordon area, there will most likely be a continuation of the present trend of increasing travel volumes at the boundaries of the cordon area. This should include increasing trip volumes not only during primary commuter periods but also for the midday (shopping) and evening (entertainment) activity periods.

With this growth in travel there will undoubtedly, also be continuing adjustments, both temporal and spatial, in commuter travel patterns.

The extent of changes on the cordon travel modes and patterns and on person destinations and vehicle accumulation can best be determined from the comprehensive detail provided by the cordon count study procedure.

