S.C.R.T.D. LIBRARY
CORDON COUNT LA Dept. of Traffic WESTWOODWESTWOODCOUNT 197

May 1975

LA Dept. of Traffic WESTWOODCOUNT 197

UCLA

SAN DIEGO FRWY. SANTA SUNSET BLVD. UCLA (MAIN CAMPUS) WESTWOOD VILLAGE WILSHIRE

047

City of Los Angeles - Department of Traffic S.S. (Sam) Taylor, City Traffic Engineer

#### ABSTRACT

#### Westwood-UCLA Cordon Count Study

- o 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 involving the combined area of the University of California, Los Angeles campus and the Westwood Village commercial center.
- o The Westwood-UCLA cordon area lies at the southerly base of the Santa Monica Mountains, just east of the San Diego Freeway, in the western portion of the City of Los Angeles.
- o The UCLA campus, involving an area of 411 acres, had an enrollment of nearly 30,000 students and a personnel staff of 12,000 at the time of this study.
- o Included in the 0.8 square mile cordon area, in addition to the UCLA campus, is the Westwood Village business district, encompassing an area of 75 acres, and developed with retail and office uses.

#### Summary Data - 1975 Cordon Count

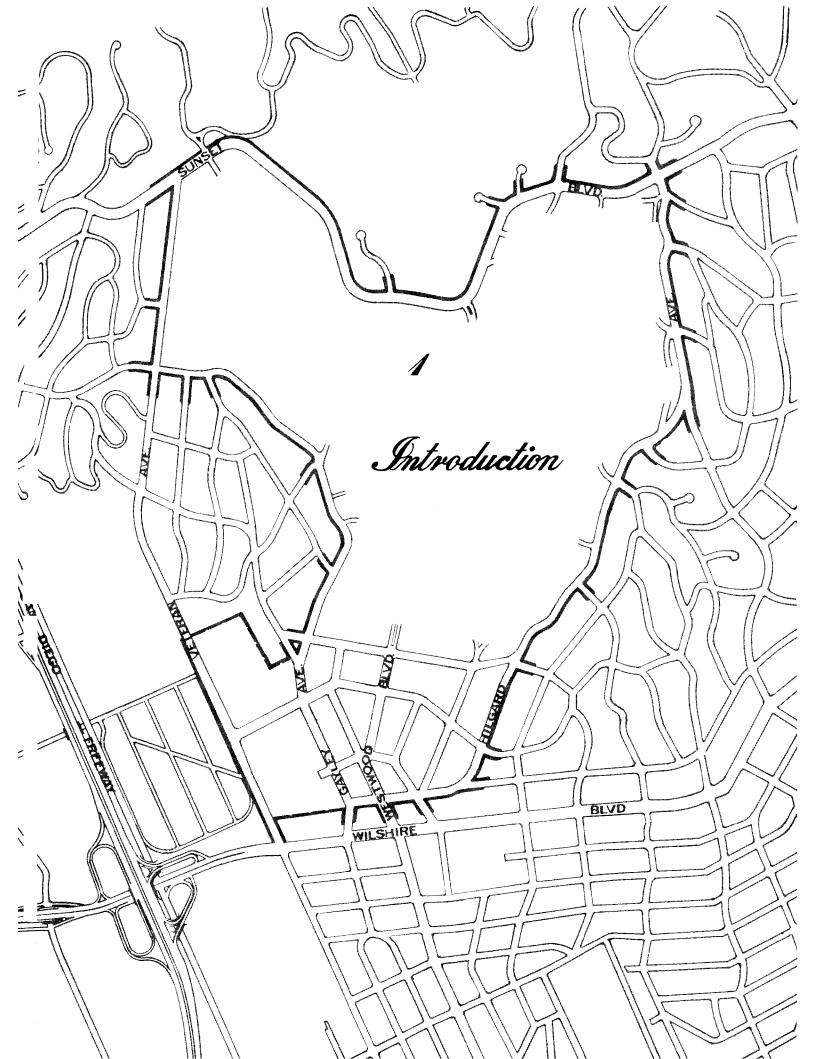
- o During the 16-hour study period, 6 AM to 10 PM, a total of 219,062 vehicles crossed the cordon boundaries at the 64 stations providing access for vehicles entering and leaving the cordon area.
- o At these access stations, a total of 309,482 persons entered and left the cordon area during the 16-hour period.
- o Of the total persons entering the cordon area, 86 per cent arrived in automobiles, 4 per cent in transit vehicles, 4 per cent in trucks and other vehicles, and the remainder, 6 per cent, entered on foot.
- o At the peak accumulation period, 11:30 AM, there were approximately 20,200 vehicles and 31,100 persons within the cordon area.
- o Of the peak person accumulation total (persons having a destination within the cordon area), over 9 per cent were accommodated by public transportation (transit passengers).
- o For the 16-hour study period, there was an average occupancy of 1.28 persons per automobile crossing the cordon boundaries.
- o Approximately 20 per cent of the 16-hour cordon area vehicle trips entered or left the cordon area (across the south boundary) via Wilshire Boulevard.
- o Peak vehicle accumulation within the cordon area in 1975 was 68 per cent greater than the peak vehicle accumulation recorded in a 1962 study.

# TABLE OF CONTENTS

	•	Page No	
	Abstract	i	
Ι.	Introduction	4	
	Purpose and Description of Study	5	
	Cordon Count Procedure	6	
II.	Summary Data - 1975 Cordon Count	7	
111.	Transportation Characteristics - Westwood-UCLA Cordon Area	20	
IV.	Selected Statistics for Village and UCLA Sub-Cordon Areas	25	
٧.	Comparison with Cordon Studies of "Downtown" Los Angeles an Long Beach	nd 30	
VI.	Planning Implications - Westwood-UCLA Cordon Area	36	

		<u>List of Tables</u>	Page No
Table	1	16-Hour Summary 1975 Cordon Count Data	9
T <b>a</b> ble	2	Summary of Vehicles by Location	15
Table	3	Summary of Persons by Location	16
Table	4	Summary of Vehicles by Half-Hour Periods	17
Table	5	Summary of Persons by Half-Hour Periods	18
T <b>a</b> ble	6	Passenger Vehicle Occupancy Data - Westwood-UCLA Cordon Area	24
Table	7	Comparison of Cordon Count Study Data - Downtown Los Angeles-Downtown Long Beach & Westwood-UCLA	34
Table	8	Comparison of Average Automobile Occupancy for Downtown Los Angeles-Downtown Long Beach & Westwood-UCLA	35

	List of Plates	Page No
Plate 1	Map of Cordon Area 16-Hour Vehicles	8
Plate 2	Vehicle Classification and Mode of Transportation Entering Cordon Area	on 10
Plate 3	Vehicles Entering and Leaving Cordon Area	11
Plate 4	Accumulation of Vehicles in Cordon Area	12
Plate 5	Persons Entering and Leaving Cordon Area	13
Plate 6	Accumulation of Persons in Cordon Area	14
Plate 7	24-Hour Traffic Flow Map	19
Plate 8	Boundary Map for Westwood Village & UCLA Sub- Cordon Areas	28
Plate 9	Total Cordon Vehicular Volumes Versus Sub-Cordon Area Vehicle Accumulation	n 29



#### Purpose and Description of Study

The Westwood-UCLA Cordon Count was conducted to provide data on travel characteristics for this unique commercial business district-college campus complex. The travel characteristics include classification by type of vehicle and mode of transportation for person trips.

Similar cordon count studies are conducted bi-annually of the Downtown Los Angeles Business district by the Department of Traffic.

The cordon area study data as contained in this report represent conditions for a typical Wednesday in May 1975, for the 16-hour period from 6 AM to 10 PM.

The cordon count study method provides statistical data on the magnitude of the daily volume of vehicles and persons entering and leaving the cordon area involved. It also provides data on the concentration of vehicles and persons within the cordon area at any specific time.

The boundaries of the subject cordon count study area are Sunset Boulevard, Hilgard Avenue, Wilshire Boulevard, and Veteran Avenue-Gayley Avenue.

The cordon area includes the Westwood Village business district, northerly of Wilshire Boulevard, encompassing approximately 75 acres. Also included is the campus of the University of California, Los Angeles (UCLA) encompassing approximately 410 acres. UCLA at the time of the study had an enrollment of approximately 30,000 students and a staff of 12,000 persons.

The total cordon study area thus encompasses an area of approximately 0.8 square mile. The Downtown Central Business District (CBD) cordon area is just slightly larger, or slightly in excess of one square mile in area. In terms of intensity of development there is, however, a substantial difference between the two cordon areas. Within the Village area there is, according to latest inventory data, approximately 2.5 million square feet of building floor space. There is presently approximately 48.6 million square feet of building floor space (excluding governmental buildings) within the Downtown cordon study area based on latest inventory data, modified to include extensive developments constructed since the data of the inventory.

Historically, the Downtown CBD has been the most intensive and concentrated center within this metropolitan area. Of significant and recognized importance within more recent decades has been the Central Business District of the City of Long Beach. In terms of population size, the City of Long Beach is exceeded only by Los Angeles City for cities within this metropolitan area.

As detailed in this report, results of the subject study reveal that, in terms of vehicular traffic activty, the Westwood-UCLA cordon area is only one-third the intensity of the Downtown CBD but generally comparable to the Long Beach CBD.

The subject study and future cordon count studies of other community business districts in the City will thus be a valuable resource for evaluation of various alternative transportation facilities in relation to local as well as regional service demands.

Areo Loni

#### Cordon Count Procedure

For this cordon count study, the procedure developed for the Downtown cordon study was utilized. This procedure provides a method using automatic counters to secure cordon count data. Machine counts are supplemented by manual sampling counts of vehicle type, occupancy, and pedestrians. In addition, transit bus and passenger data were derived from field checks conducted by Traffic Department personnel. The transit data includes service provided by the Southern California Rapid Transit District (SCRTD) and the Santa Monica Municipal Bus Lines (SMMBL).

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.

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

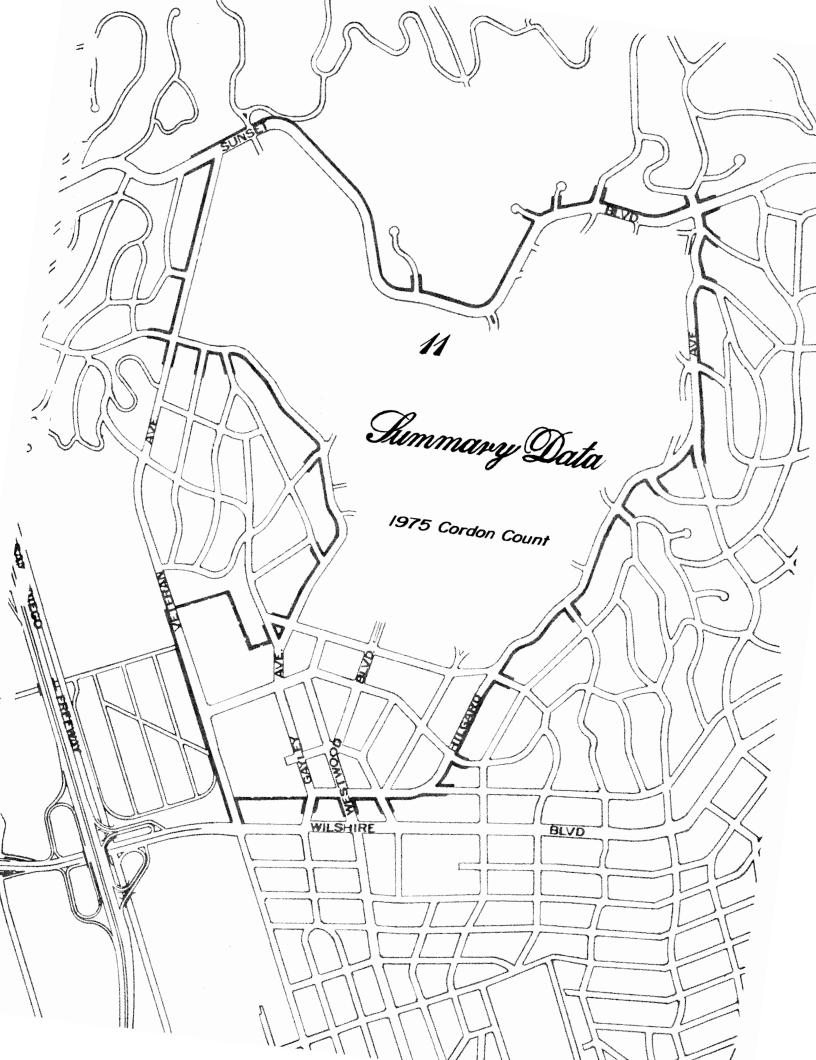
References to the term "accumulation of vehicles (or persons) crossing cordon boundaries" refers to the number accumulated during the hours of the study, i.e., excludes initial vehicle or person accumulation prior to 6 AM. The term "accumulation" is the total number within the cordon area at any specific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

Initial accumulation figures for the Village business district were derived from a field inventory conducted during May 1975. Similar data for the UCLA campus were derived through an inventory conducted by University staff and provided for use in this study through the cooperation and efforts of Dr. George A. Vajna, University Campus and Environmental Planning officer.

To date, there have been no previous studies conducted of the Westwood-UCLA cordon area providing the comprehensive data on vehicle classification or person trip magnitude included in this study. Cordon count studies of only total vehicular traffic have, however, been conducted in prior years for the involved area. Comparison of the historical data thus provides an indication of the trend relative to the magnitude of vehicular traffic for the cordon area. Additionally, parking inventory studies conducted in prior years and at present separately for the Campus and Village area provide historical data on vehicle accumulation for the two areas.

Periodic survey data compiled by UCLA has tended to indicate that the bicycle is becoming an increasingly more important mode of transportation for student travel to the campus. Due to time constraints and manpower limitations, it was not feasible to derive the necessary detailed data on bicycle traffic for incorporation in this study. Details on the data compiled from the limited counts made for this study and on data from other sources relative to the characteristics of bicycle traffic for the cordon area are included in Section III.

The cordon boundary does not include stations on Wilshire Boulevard. Exclusion of total Wilshire Boulevard traffic volumes was essential in order to preclude a biased assessment of total cordon volumes since this route presently carries the highest daily volume of traffic (80,000 vehicles) of any City surface street route, of which a significant portion is through traffic along the south cordon boundary.



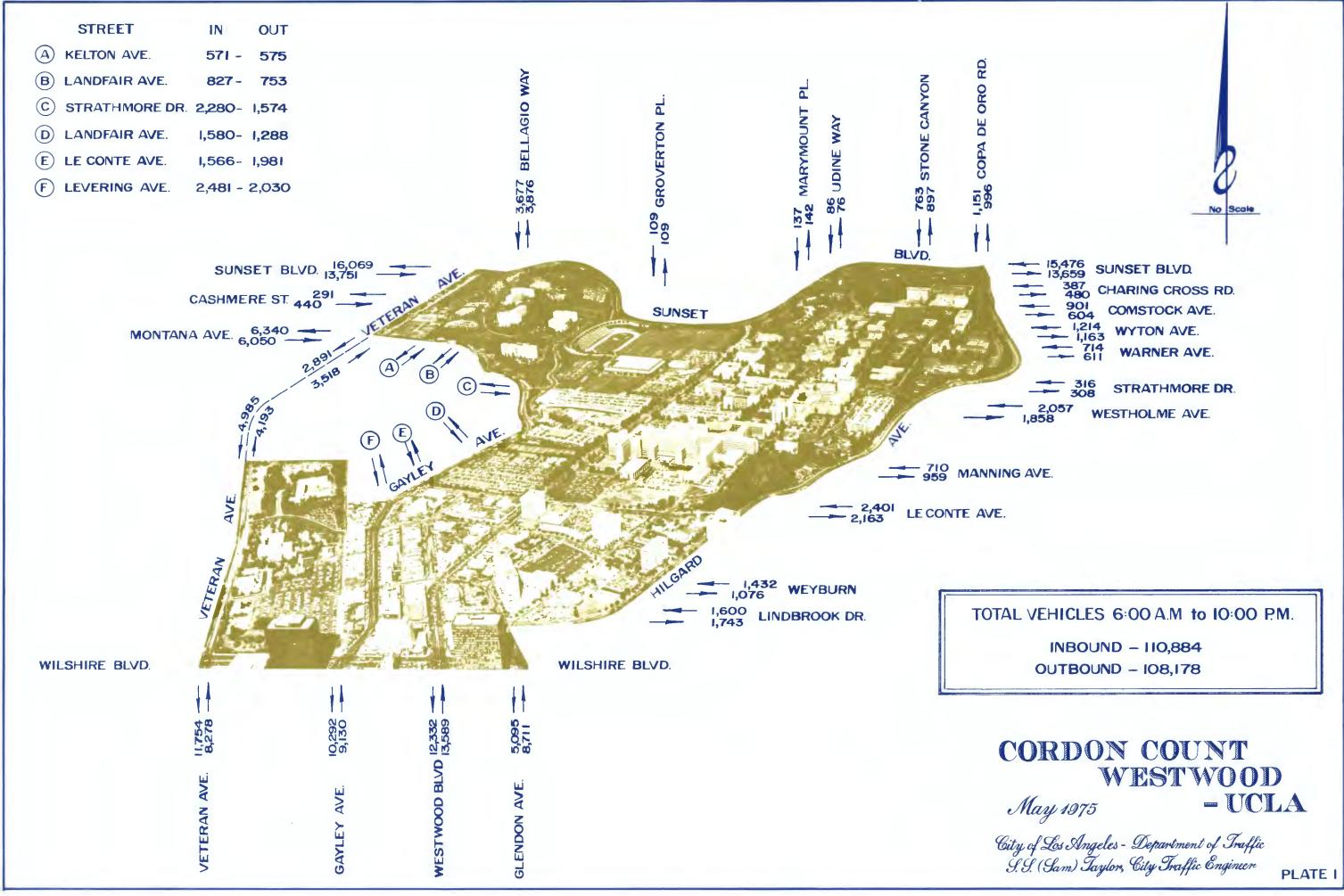


Table I
Sixteen Hour Summary
1975 Cordon Count Data

May, Wednesday

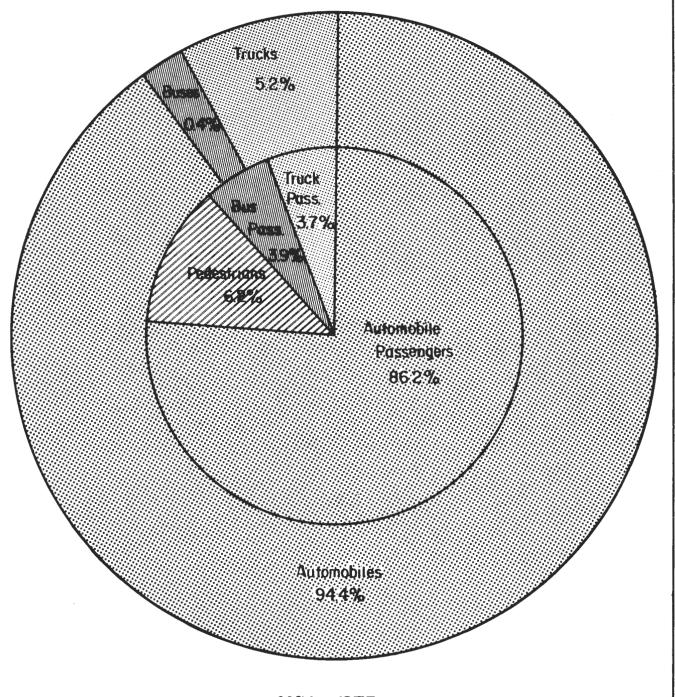
	In	Cut
Passenger Cars Trucks and Other Vehicles Buses	104,678 5,817 389	102,693 5,125 360
Grand Total - Vehicles	110,884	198,178
Auto Passengers	134,266	133,371
Other Vehicle Passengers	5,817	5,125
Bus Passengers	6,035	6,295
Pedestrians	9,713	8,950
Grand Total - Persons	155,831	153,651

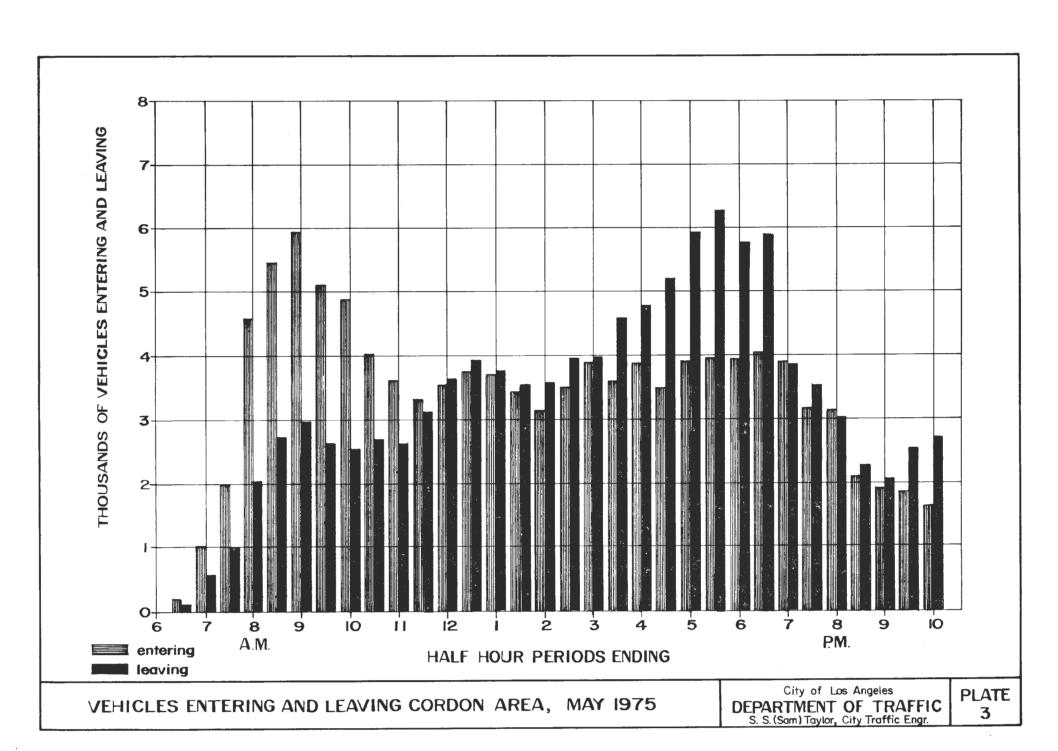
# Day of Week Vehicle Factor

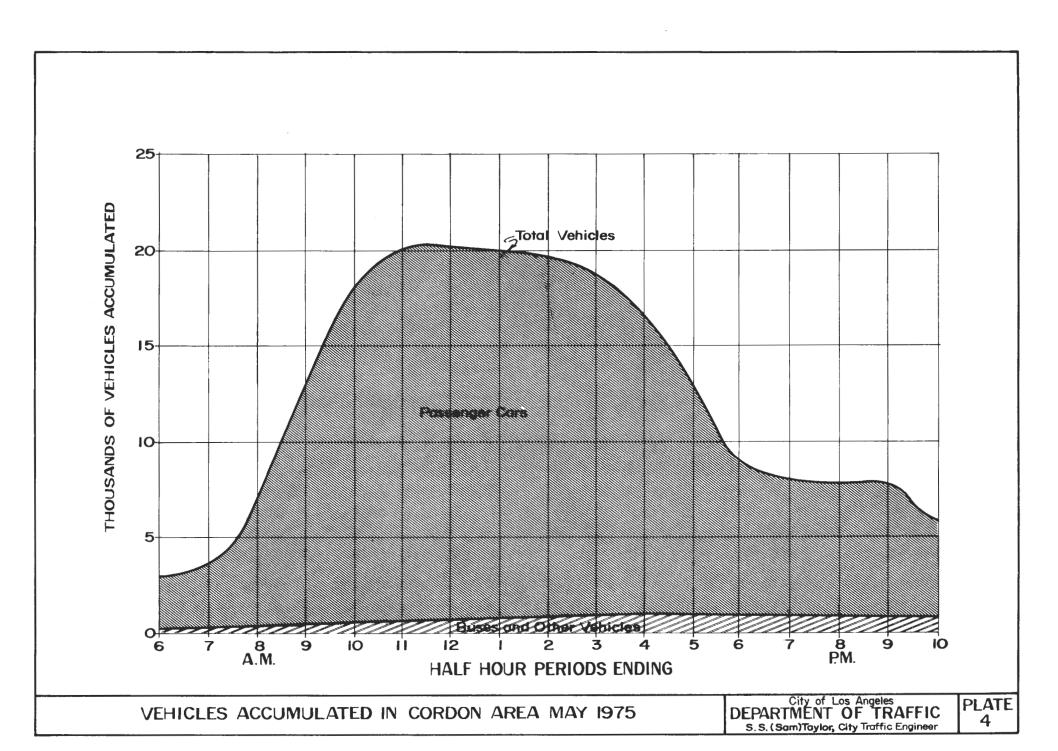
Monday	0.97
Tuesday	0.97
Wednesday*	1.00
Thursday	1.01
Friday	1.09
Saturday	0.93
Sunday	0.79

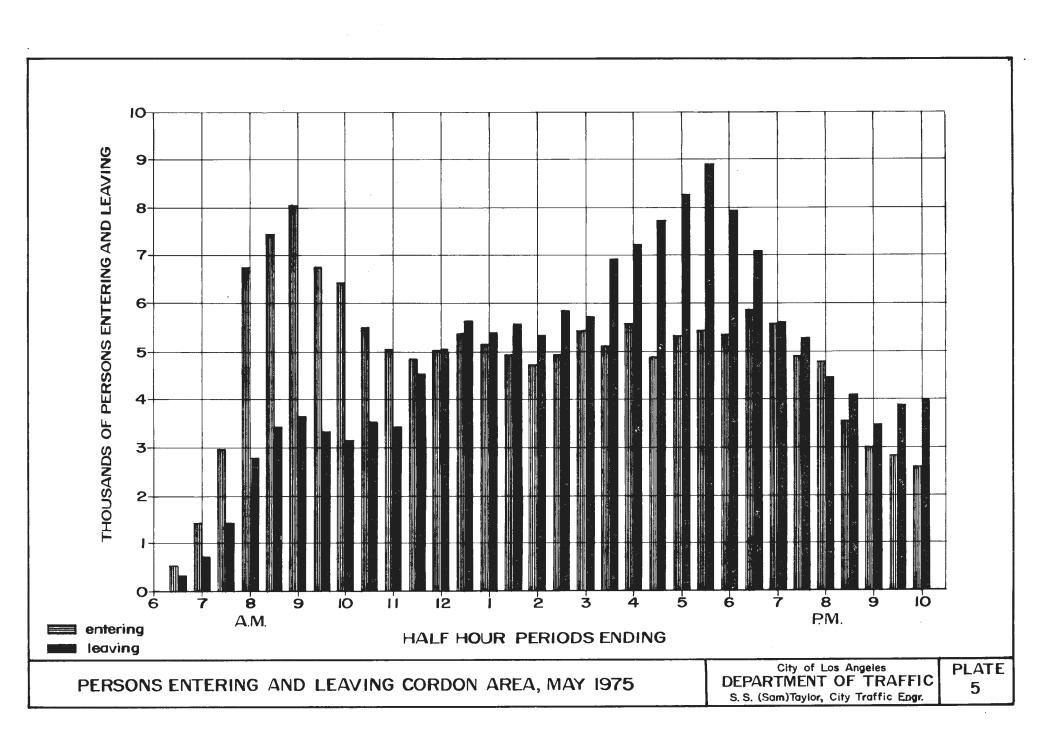
<sup>\*</sup>Base

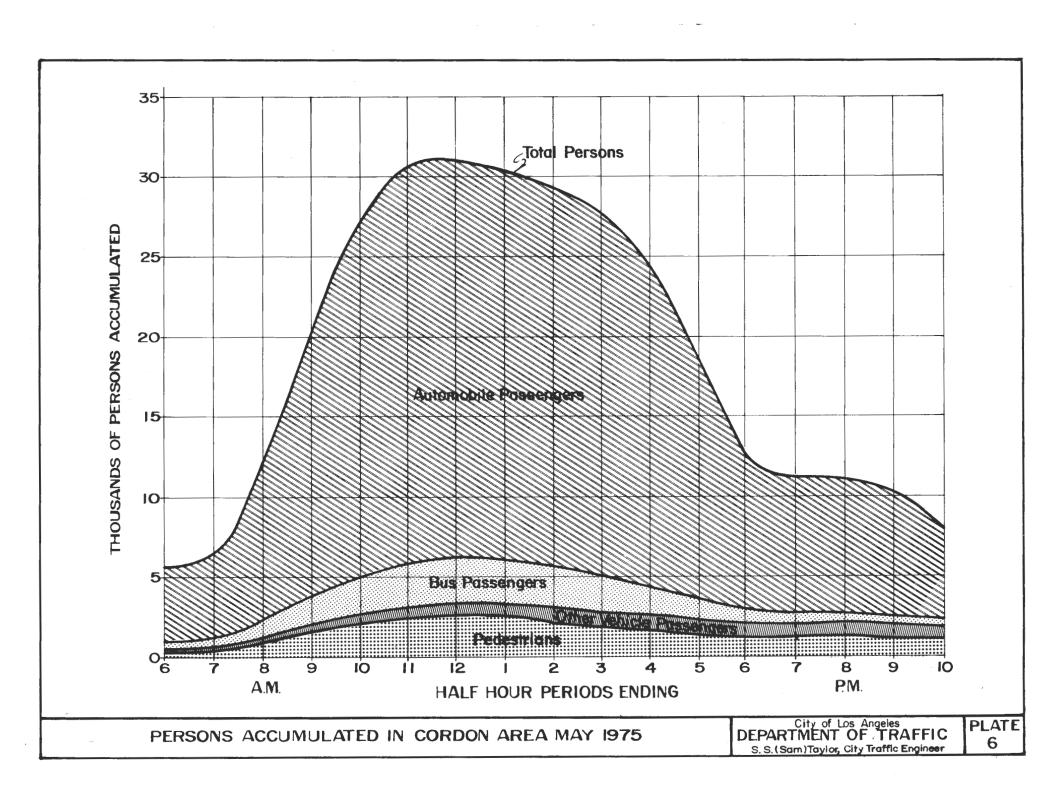
# CLASSIFICATION OF VEHICLES AND MODE OF TRANSPORTATION **ENTERING CORDON AREA**











TA\_\_\_\_ 2

SUMMARY OF VEHICLES BY LOCATION
WESTWOOD - UCLA, MAY 1975 6AM-LUPM

•

	PASSEN	NGER CARS		S AND EHICLES	₿USE	S	TOTAL N	VEHICLES
EAST BOUNCARY EAST OF HILGARD AVE, ON	IN	ССТ	ΙN	OUT	IN	OUT	1 N	aut
SUNSET BLVD.	14698	12842	752	<b>7</b> 93	26	24	15476	13659
CHAR ING CROSS RD.	358	427	29	53	0	2 4 C	387	480
COMSTOCK AVE.	863	572	38	32	Ö	ŭ	901	604
WYTON ER.	1174	1132	40	31	0	Č	1214	1163
WARNER AVE.	675	586	39	25	0	a	714	611
STRATHMORE DR.	303	279	13	29	0	Č	316	3 18
WESTHOLME AVE.	1998	1803	59	55	9	0	2057	1853
MANNING AVE.	695	951	15	3	ű	C	710	959
LE CONTE AVE.	2354	2137	47	26	0 -	Č	2401	2163
WEYBURN AVE.	1404	1046	23	33	Ö	. 0	1432	1076
LINDBROCK CR.	1573	1699	27	44	ບ	ŏ	1600	1743
SUB TOTAL	26095	23474	1087	1126	26	24	27208	24624
SOUTH BOUNDARY								
NORTH OF WILSHIRE BLVD. O								
GLENEON AVE.	8395	4831	316	264	. 0	С	8711	5095
WESTWOOD BLVD.	12532	11572	748	475	309	285	13589	12332
GAYLEY AVE.	8657	9606	473	<b>6</b> 86	Û	Ú	S130	10292
VETERAN AVE.	7978	11505	300	249	Э	0	€278	11754
SUB TOTAL	3 7562	37514	1837	1674	3 39	285	39758	39473
WEST BOUNDARY								
WEST OF VETERAN AVE GA		( 00 (	22.2	7.0.7		2	1025	4103
VETERAN AVE.	4777	4006	208	187	Ĵ	Š	4985	4193
LEVERING AVE.	2381	1934	100	96	9	Ú	2481	2030
LE CONTE AVE.	1516	1937	50	44	õ	<b>0</b> 0	1566	1981
LANDFAIR AVE.	1532	1254	43	34	ე ე	•	1583	1288
STRATHMORE DR.	2252	1542	28	32	۵	C	2280	1574
LANCFAIR AVE.	811	744	16	9	-	C	827	753 575
KELTON AVE	548	536	23	39 <b>2</b> 22	0	3 - C	571 3518	289 L
VETERAN AVE.	3312	2669	206 191		20	21	6050	6340
MUNTANA AVE. Cashmere St.	5839 435	6081 288	5	238 3	3	C	440	291
SUNSET BLVD.	12233	15038	1484	1001	34	30	13751	16069
SUE TUTAL	35636	36029	2359	1905	54	51	38049	37985
NORTH COUNCARY								
NORTH OF SUNSET BLVD. ON								
BELLAGIC WAY	3324	3584	<b>35</b> 3	292	J	J	3677	3376
GROVERTON PL.	105	98	4	11	0	8	109	109
MARYMOUNT PL.	113	115	24	27	j,	C	137	142
UDINE WAY	77	69	5	7	ა	ĉ	82	76
STONE CANYON RD.	701	881	62	16	0	C	763	897
COPA CE ORO RD.	1065	929	86	67	)	3	1151	996
SUB TOTAL	53 8 5	5676	534	420	U	S	5919	6ù96
GRAND TOTAL	104678	102693	5817	5125	389	36 C	110884	103178

# SUMMARY OF PERSONS BY LOCATION WESTWOOD - UCLA, MAY 1975 6AM-10PM

AUTO PASSENGERS PASSENGERS IN BUS PASSENGERS PEDESTRIANS TOTAL PERSONS OTHER VEHICLES EAST BOUNCARY ĪΝ CLT ĪΝ CUT IN 0.17 IN OUT IN CUT EAST OF FILGARD AVE. ON SUNSET BLVD. 3) CHARING CROSS RD. C CEMSTECK AVE. WYTON DR. C WARNER AVE. STRATEMERE DR. WESTHOLME AVE. 252C MANNING AVE. LE CONTE AVE. J Ũ WEYBURN AVE. C 48C LINCBROCK DR. SUB TOTAL SOUTH BOUNDARY NORTH OF WILSTIRE BLVD. ON GLENCON AVE. Ü i) WESTWOOD BLVD. CAYLEY AVE. J Ú VETERAN AVE. Ü U SUB TOTAL 5C431 WEST BOUNCARY WEST OF VETERAN AVE. - GAYLEY AVE. ON VETERAN AVE. O C LEVERING AVE. LE CONTE AVE. Ω Û LANCFAIR AVE. STRATHMORE CR. j :) 114) LANDFAIR AVE. KELTON AVE. Ω Ω 9.1 VETERAN AVE. MONTANA AVE. CASHMERE ST. U) SUNSET BLVC. IS SUB TOTAL NORTH ECUNEARY NORTH OF SUNSET BLVD. ON Ð 1.5 BELLAGIO WAY GROVERTON PL. J U 14C MARYMOUNT PL. J UDINE WAY U STONE CANYON RO. J COPA DE CRO RE. C SUB TOTAL Ð Ĵ GRAND TOTAL 

# TARLE 4 \$LMMARY OF VEHICLES BY HALF HOUR PERIODS

#### WESTWOOD - UCLA, MAY 1975

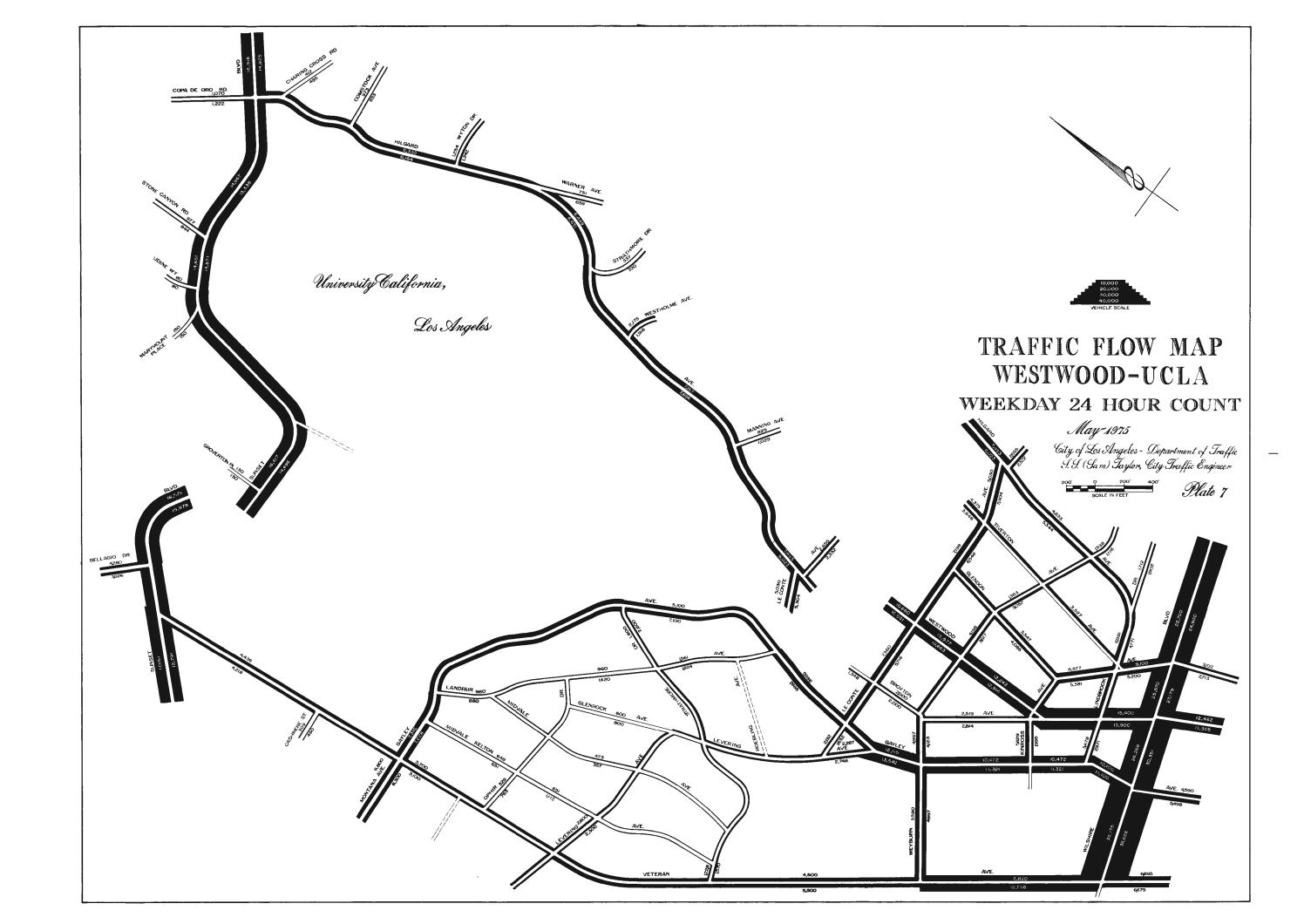
GAM - IJPM

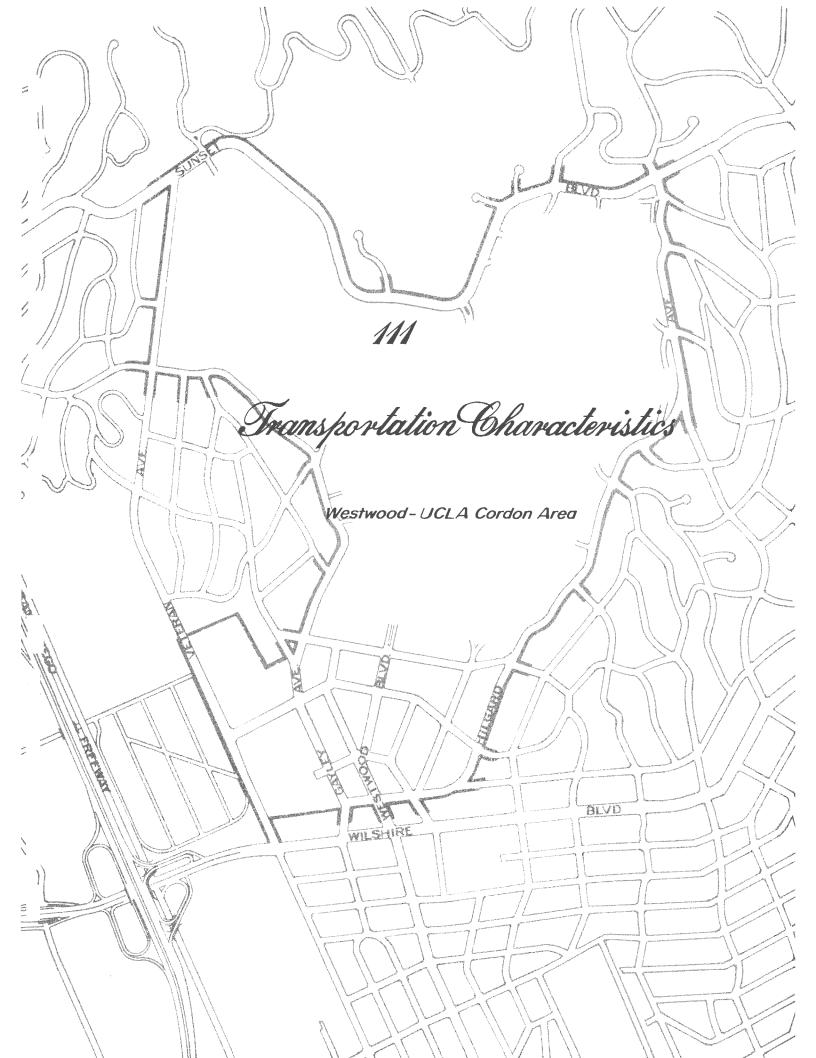
TIME PERIOD					TRUCKS							
ENCING	P	SSENGER C	AR S	CTH	HER VEHICL	ES		BUSES		Ţ	OTAL VEHIC	LES
	111	OUT	ACCUM 3000	IN	CUT	ACCUM 150	I ti	OUT	ACCUM 10	IN	OLT	ACCUM 3160
63C	326	240	3086	36	38	148	3	2	1 i	365	280	3245
700	976	531	3531	65	74	139	9	9	11	1050	014	3681
730	1917	948	4500	108	125	122	11	10	12	2036	1383	4634
608	4408	2013	6895	228	161	189	24	15	21 .	4660	2189	7105
830	5165	2578	5482	292	169	312	19	16	24	5476	2763	9818
900	5645	2685	12446	276	208	380	21	14	31	5946	2907	12857
93)	4933	2496	14883	258	166	472	13	9	35	5204	2671	15390
1000	4548	2334	17097	275	193	554	16	16	35	4839	2543	17586
1030	3826	2536	18387	269	222	601	13	10	35	4135	2768	19323
1100	3385	2408	15368	278	267	612	15	10	4 C	3682	2685	20020
1130	3116	2928	19556	270	281	601	10	8	42	3396	3217	20199
1200	3255	3427	15384	274	259	616	14	8	48	3543	3694	2 ) ) 48
1233	3560	3750	15154	221	176	661	11	14	45	3792	3 94 C	19900
1300	3393	3521	19066	263	215	709	13	10	48	3669	3746	19823
1330	3175	3319	18922	284	227	766	12	12	4 €	3471	3558	19/36
1400	2971	3305	18588	285	257	794	13	12	49	3269	3574	19431
1430	3210	3662	18136	290	244	840	12	14	47	3512	392C	19023
1500	3557	3749	17944	276	213	903	13	11	49	3846	3573	15396
1530	3417	4502	16859	182	158	927	1,5	16	43	3609	4676	17829
1600	3565	4540	15884	257	226	958	17	17	43	3839	4783	16885
1630	3232	5053	14063	205	209	954	19	18	44	3456	52 EC	15061
1700	3601	5602	12062	192	191	955	12	12	44	3805	5805	13061
1730	3784	6131	5715	152	171	936	17	14	47	3953	6316	10698
1800	3830	5613	7532	89	140	885	14	16	45	3533	5769	8862
SUB										•		
TOTAL	82803	77871		5325	4590		328	293		88456	82754	
1830	3950	4718	7164	85	120	850	10	14	41	4045	4852	8 355
1900	3772	3714	7222	68	89	829	11	9	43	3851	3812	3094
1930	3286	3496	7012	73	63	839	3	11	40	3367	3570	7891
2000	3208	2951	7269	63	70	837	8	11	3 7	3284	3032	8143
2030	2237	2555	6551	58	5)	845	7	5	39	2302	2610	7835
2100	1875	2152	6674	51	59	837	£	7	38	1532	2218	7549
2130	1812	2572	5914	51	46	842	7	5	40	1870	2623	6796
2200	1735	2664	4985	38	38	842	4	5	39	1777	2707	5866
SUB TCTAL	21875	24822		492	535		61	67		22428	25424	
GRANE TOTAL	104678	102693		5817	5125		389	360		110284	1 C 8 1 7 8	

# SUMMARY OF PERSONS BY HALF HOUR PERIODS WESTWOOD - UCLA, MAY 1975

6AM - 10PM

TIME PERIOC ENDING	TUA	O PASSEN	GERS		SSENGER HER VEH		виз	PASSEN	GERS	PI	EDESTRI.	<b>4</b> N S	רז	TAL PERS	CNS
	IN	OUT	ACCUM	1 N	CLT	ACCUM	IN	CUT	ACCUM	IN	OUT	ACCUM	IN	CLT	ACCUM
			4500			150			550			350			5550
630	384	261	4623	36	3.8	148	27	6	571	84	23	411	531	328	5753
750	1154	581	5196	65	74	139	131	60	642	119	30	500	1469	745	6477
730	2347	1077	6466	108	125	122	252	145	749	247	67	680	2954	1414	3017
800	5422	2313	9575	228	161	189	637	178	1258	452	136	1120	6739	2758	11998
830	6277	2985	12867	292	169	312	483	180	1511	378	123	1276	7430	3462	15966
900	6839	3147	16559	276	208	380	557	145	1923	415	161	1524	8087	3667	20330
930	5842	2953	15448	258	166	472	309	42	2190	374	139	1759	6783	3300	23869
1000	5384	2756	22076	275	193	554	3 <b>5</b> 8	113	2435	442	121	2080	6459	3183	27145
1030	4733	3093	23716	269	222	601	237	52	2620	268	179	2169	55C7	3546	29106
1100	4171	2925	24962	278	267	612	245	113	2752	404	131	2442	5098	3436	30763
1130	4046	3884	25124	273	281	601	211	68	2895	342	296	2488	4869	4529	31108
1200	4212	4563	24773	274	259	616	214	91	3018	408	255	2641	5108	5168	31043
1230	4481	4673	24581	221	176	661	142	321	2839	511	491	266ì	5355	5661	3 3 7 4 2
1300	4257	4377	24461	263	215	709	231	237	2833	443	567	2537	5164	5366	30540
1330	4066	4215	24308	284	227	766	175	348	2660	422	784	2175	4547	5578	29909
1400	3807	4218	23897	285	257	794	193	294	2559	415	540	2050	47GC	5309	29300
1430	4151	4690	23358	290	244	84)	136	478	2187	353	461	1947	4905	5873	29332
1500	4597	4797	23158	276	213	903	194	299	2082	315	422	1840	5382	5731	27983
1530	4599	617C	21587	182	158	927	8.5	313	1354	250	319	1771	5116	696C	26139
1600	4788	6252	20083	257	226	958	275	314	1815	238	381	1628	5558	7213	24484
1630	4198	6615	17666	205	209	954	182	413	1584	287	470	1445	4812	7707	21649
1700	4704	7334	15036	192	151	955	122	311	1395	266	384	1327	5284	8220	18713
1730	4761	7749	12048	152	171	936	234	549	1050	271	429	1175	53 94	8898	15209
1800	4803	7093	9758	8.8	14C	885	135	345	840	298	329	1144	5325	7907	12627
SUB															
TCTAL	104023	98765		5325	459C		5675	5385		8013	7219		123036	115959	
1830	5284	6445	8597	85	120	8 <b>5</b> 0	79	235	684	368	291	1221	5816	7091	11352
1900	5053	5094	<b>გ</b> 556	68	89	829	124	125	683	313	263	1271	5558	5571	11339
1933	4521	4848	8229	73	63	839	32	89	626	233	245	1259	4859	5245	10953
2000	4435	4097	8567	6.8	7 C	837	43	30	589	231	225	1265	4777	4472	11258
2030	3256	3710	8113	58	5 C	845	27	84	532	181	239	1207	3522	4083	10697
2100	2774	3116	7771	51	59	837	13	80	473	145	150	1162	2588	3445	10240
2130	2538	3595	6714	51	46	342	25	49	440	119	143	1138	2733	3833	9140
2200	2382	3701	5395	38	38	842	12	7 ੪	390	110	135	1113	2542	3952	7730
SU8 TOTAL	30243	34606		452	535		360	მ20		1700	1731		32795	<b>37</b> 692	
GRAND TOTAL	124266	133371		5817	5125		6035	6205		9713	99 <b>5</b> 0		155431	153651	
TOTAL	134766	133311		2011	2163		0033	しょしょ		7113	5720		£ 2 2 0 7 L	12202	





#### Transportation Characteristics of Westwood-UCLA Cordon Area

The cordon study procedure encompassed the combined area of the Westwood Village and the UCLA Campus. Detailed data on vehicle classification and mode of transportation for person-trips are thus available only for the total combined area. Internal machine counts were, however, made to provide separate data on the magnitude of vehicular volumes for each of the Village and UCLA sub-cordon areas. For the purpose of this report, thus, reference to cordon study area means the combined area. References to the two sub-areas will be noted as either "Village" or "UCLA."

#### Westwood-UCLA Cordon Study Area

#### Summary Data on Vehicle and Person Trips

As noted on the tables (1 through 5) in the Summary Section, a total of 110,884 vehicles entered the cordon study area for the 16-hour period from 6 AM to 10 PM. Of this total, automobiles accounted for 94.4 per cent of the volume.

Directional peak-hour vehicular volumes, as derived from the machine counts by aggregating the highest four successive 15-minute time intervals, were as follows:

	Inbound	Outbound		
AM Peak Hour	11,400	5,700		
PM Peak Hour	7,600	12,100		

At the peak accumulation period, 11:30 AM, there were a total of 20,199 vehicles accumulated within the cordon study area.

Of the total 155,831 persons entering the cordon study area during the 16-hour period, the majority (86.2 per cent) were automobile passengers. Persons in commercial vehicles (trucks) represented 3.7 per cent of the total inbound. Public transportation (bus passengers) accounted for 3.9 per cent of the total inbound persons. The remainder, 6.2 per cent, entered on foot.

A total of 31,108 persons were accumulated within the cordon study area at the peak period, 11:30 AM.

#### Automobile Occupancy

Compilation of data from the numerous occupancy counts made for the study revealed that for the 16-hour period there were an average of 1.28 occupants per automobile crossing the cordon boundaries. The detailed data on occupancy, as shown on Table 6, reveals that slightly over three-fourths of the cordon automobile traffic had only a driver-occupant. Breakdown by four-hour periods indicates the greatest intensity of carpooling (defined for this purpose as automobiles with 2 or more occupants) occurred during the evening hours from 6 to 10 PM. During this period, slightly over 30 per cent of the automobiles had 2 or more occupants. The average occupancy for this period was 1.39 compared to an average occupancy of 1.26 persons per automobile for the daytime business hours from 6 AM to 6 PM.

#### Transit Passenger Data

Public transportation service for the cordon study area is provided by the Southern California Rapid Transit District and the Santa Monica Municipal Bus Lines. Data as presented in this report in reference to buses and bus passenger volumes is the combined total of service by both transit agencies.

Summary results of the study, Tables 1 through 5, reveal that a total of 12,240 passengers crossed the cordon boundaries during the 16-hour period on the bus lines of the two agencies. This represents 4.0 per cent of the total persons, 309,482, entering and leaving the cordon area.

During the peak traffic hours, combined total of morning and afternoon peak hours, transit passengers represented 5.0 per cent of the total cordon person trips for the involved period.

Accumulation data indicates that public transportation is a more significant mode of transportation for persons destined to the cordon area than the preceding indicates. Transit patronage at the peak accumulation period totalled 2,895 passengers, or 9.3 per cent of the total persons, 31,108, accumulated within the cordon study area at this time interval.

Survey data<sup>1</sup> derived by UCLA, as part of the enrollment procedure, indicates a generally similar pattern for transit usage by students. In the questionnaire survey for 1974-75, approximately 10 per cent of the students indicated public transportation as the transportation used most often as the travel mode to the campus.

#### Bicycle Traffic

Prior studies or data have generally inferred that the bicycle is an important mode of transportation for the cordon area. According to the 1974-75 student survey, approximately 6 per cent of the students used the bicycle as the common mode for transportation to the campus.

As part of a more comprehensive study<sup>2</sup> of UCLA bicycle traffic patterns, an inventory conducted on the morning of May 16, 1973, revealed a total of 618 bicycles parked on campus during that period. A questionnaire survey of the student bicyclists involved revealed that 23 per cent were on-campus residents and 50 per cent of the total resided within a 3-mile distance from the campus.

Due to time constraints and manpower limitations, it was not possible to make a complete count of cordon area bicycle volumes. Counts for the 16-hour study period and abbreviated 6-hour periods were made at several locations.

Based on these counts and volume data noted in the 1974 UCLA Bikeway Study, it is estimated that a total of 1,000 bicyclists entered and left the cordon area during the 16-hour period from 6 AM to 10 PM.

<sup>&</sup>lt;sup>1</sup>UCLA Student and Housing Transportation Survey - various years

<sup>2&</sup>quot;UCLA Bikeway Study" - February 1974, Crommelin-Pringle and Associates, Incorporated.

Assuming that this is a realistic figure for the time of the study, the volume of persons entering the cordon area on bicycles would have represented slightly over one-half of 1 per cent of the total persons entering the cordon area for the 16-hour study period.

There is apparently, however, a substantial variation in the daily volume of bicycle traffic in the vicinity of the cordon area. The 1974 UCLA Bikeway Study noted that inventories conducted on 5 different days during 1972 and 1973 revealed a range of 618 to 1,498 bicycles accumulated on-campus for the respective inventory days involved.

From the preceding it is evident that in order to properly assess the impact or magnitude of the bicycle mode of travel for the Westwood-UCLA environs, more definitive data on this mode of transportation must be acquired through complete checks of the total area.

#### Wilshire Boulevard Flow Patterns in Relation to Cordon Area

For the south cordon boundary, the cordon checkpoints were made at a location just north of Wilshire Boulevard. By this procedure, total volume demands on Wilshire Boulevard were not included in the cordon area summary data. A cordon line drawn to include counts on Wilshire Boulevard would have included the substantial volume of through traffic on this route along the south cordon boundary. Automatic counts made at the time of the cordon study revealed that Wilshire Boulevard was accommodating 16-hour volumes of 43,000 and 72,000 vehicles at the east and west boundaries, respectively. Directional peak-hour volumes of 1,900 and 4,700 vehicles were recorded at the east and west boundaries, respectively, by these counts.

The substantial difference in traffic volumes on Wilshire Boulevard between the count locations at the east and west boundaries is also indicative of the importance of this route for the Westwood-UCLA cordon area. Based on an analysis of data from intersection movement counts, 21 per cent of the 16-hour cordon area vehicle trips entered or left the cordon area via Wilshire Boulevard (to or from destinations in both easterly and westerly directions).

Conversely, cordon area trip productions (generated or attracted) have a significant influence on the substantial volume of traffic on Wilshire Boulevard at the west cordon boundary. Of the total 16-hour volume of 72,000 vehicles on Wilshire Boulevard, at the west boundary, nearly half originated or had a destination within the cordon area.

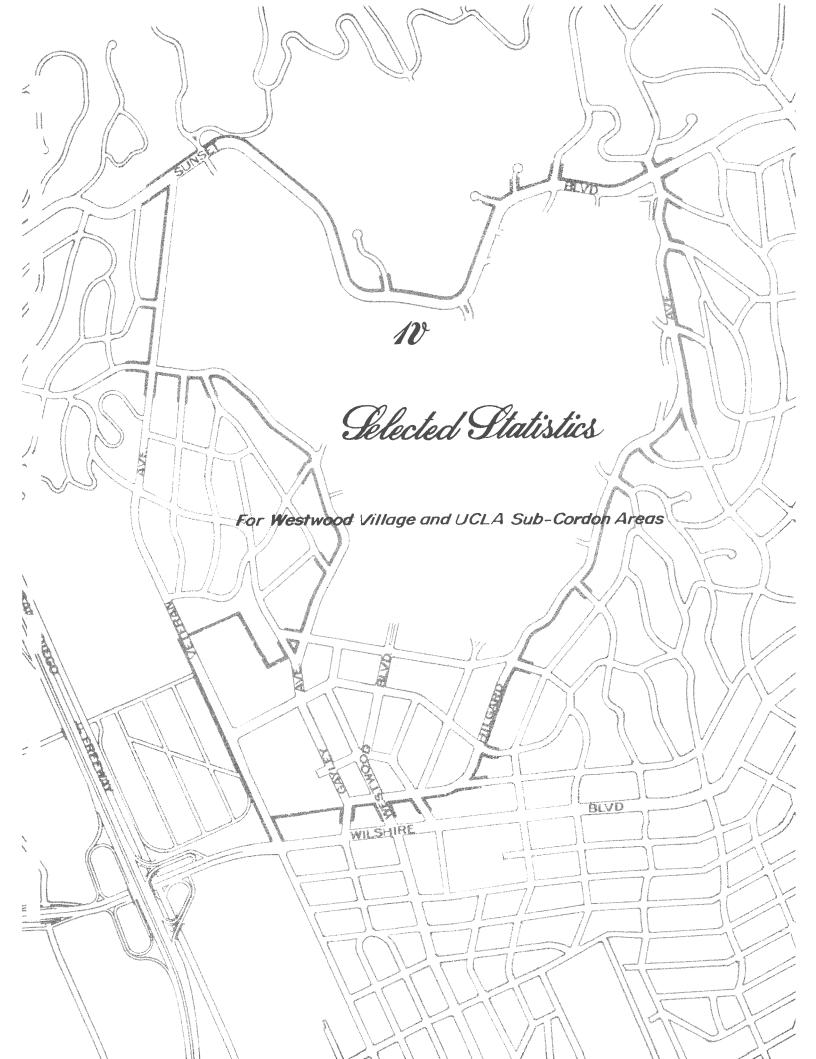
As is readily apparent from the preceding, there is a heavy flow pattern of vehicles between Wilshire Boulevard, to the west of the cordon area, and the subject cordon area. One of the primary factors for this distinct flow pattern is the close proximity of the ramp interchange of the San Diego Freeway at Wilshire Boulevard immediately westerly of the cordon study area.

Table 6
Passenger Vehicle Occupancy Data

Westwood-UCLA Cordon Area May - 1975

	Proportion of Autos by Occupancy				Average Occupancy		
	Inbound		Outbound		Per Automobile		
	One Occupant	2 or more Occupants	One Occupant	2 or more Occupants	Inbound	Outbound	IN & OUT
6A - 10A 10A - 2P 2P - 6P 6P - 10P 16 Hour	81.77% 79.58% 77.19% 69.07% 77.36%	18.23% 20.42% 22.81% 30.93% 22.64%	87.35% 80.17% 79.45% 69.67% 77.81%	12.65% 19.83% 20.55% 30.33% 22.19%	1.23 1.25 1.29 1.39 1.28	1.15 1.24 1.29 1.38 1.28	1.20 1.25 1.29 1.39 1.28

		Average Occupancy - Inbound Autos by Cordon Boundaries				
	East	South	West	North	Total Cordon	
6A - 6P 6P - 10P 16 Hour	1.19 1.18 1.18	1.30 1.52 1.35	1.26 1.42 1.29	1.33 1.51 1.37	1.26 1.39 1.28	



#### Selected Statistics for Village and UCLA Sub-Cordon Areas

As noted previously, only vehicular volume data are available for the two sub-areas. It should also be noted that the combined total entering and leaving volume for the two sub-areas cannot be compared to the total cordon study area since there is duplication of the internal count data used to derive each of the sub-area volumes. The areas involved for the two sub-areas are shown on Plate 8.

As can be seen from Plate 8, the Village sub-area includes the UCLA West Medical Campus property since it was not readily feasible or necessarily desirable to subdivide the cordon area in any other configuration.

Vehicle accumulation data derived for each sub-area can be combined and related to the total cordon vehicle accumulation. Since all the counts were not made on the same day, some variation in the comparative accumulation data would, of course, be expected. Plate 9 depicts the vehicle accumulation curves for the two sub-areas. For additional insight, hourly volumes of inbound and outbound vehicles for the total cordon study are also plotted on this plate.

As is readily apparent from Plate 9, the UCLA Main Campus accounts for the major portion of the vehicle accumulation within the cordon study area during the daytime hours. At the peak accumulation period for the UCLA Campus, 11 AM, there were approximately 15,000 vehicles within this sub-area. At the same period, the Village sub-area had an accumulation of approximately 5,000 vehicles. Peak accumulation for the Village sub-area occurred at 3 PM, at which time there were approximately 6,200 vehicles accumulated within said area.

Vehicle accumulation data from previous cordon count or parking inventory studies in comparison with current data is the only data readily available for use in determining historical growth in cordon area volumes.

Data from cordon count studies conducted by this Department for the two sub-areas in 1962 in relation to current data reveals growth in peak vehicle accumulation as follows:

Peak Vehicle	Accumu]	lation*
--------------	---------	---------

Area	1962	1975	% Growth
UCLA Village	7,129 2,219	13,215 3,576	85% 61%
Combined Area	9,273	15,539	66%

<sup>\*</sup>Crossing cordon boundaries (excludes initial)

The above data on 1975 accumulation for the Village and combined area has been modified to exclude the West Medical Campus area since this area was not included in the 1962 study.

More readily comparable data on vehicle accumulation is available from parking inventory studies conducted for the two sub-areas.

Reports prepared by Wilbur Smith and Associates include data from parking inventory studies conducted for the Westwood Village<sup>1</sup> in August 1962 and for the UCLA Campus<sup>2</sup> during the 1962-63 school year. Data for the UCLA Campus for 1975 were provided by the University staff from an inventory conducted during the week of April 7-12, 1975. For the Westwood Village, the office of Wilbur Smith and Associates provided preliminary data for a parking inventory study report in process at the time this report was being prepared.

Data derived from the preceding sources reveals the supply of parking spaces, closely associated with vehicle accumulation, within the subject areas under study increased significantly for the time period involved as indicated by the following:

#### Number of Parking Spaces

	1962	1975	% Increase
UCLA Campus	9,326	18,003	93%
Westwood Village	3,799	5,381	42%

The cordon count and parking inventory data also indicate a high parking space occupancy factor for both areas in 1975 as noted below:

	Peak	Parking	
	Vehicle	Space	Per Cent
	Accumulation	Supply	<u>Occupancy</u>
UCLA Sub-Area	15,000	16,379	92%
Village Sub-Area*	6,200	7,005	89%

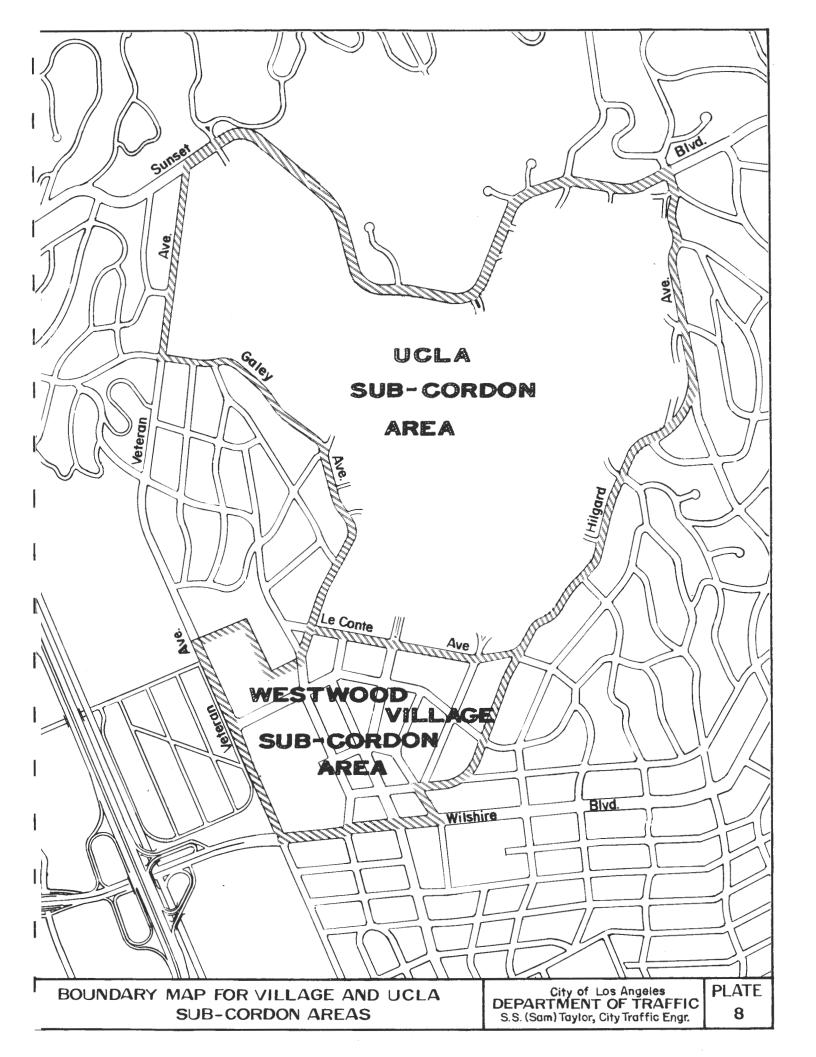
<sup>\*</sup>Includes West Medical Campus area.

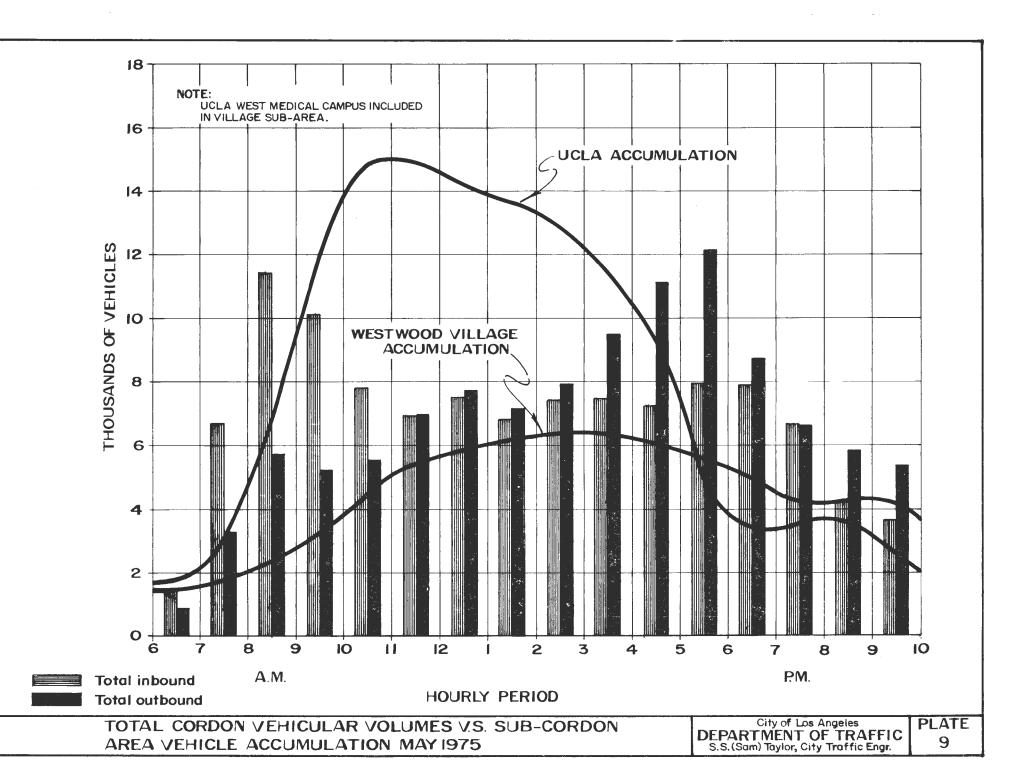
For the Village area, excluding the West Medical Campus, preliminary data provided by the office of Wilbur Smith and Associates indicates a 1975 occupancy factor of 77 per cent, based on a supply of 5,381 spaces and peak accumulation of 4,117 parkers.

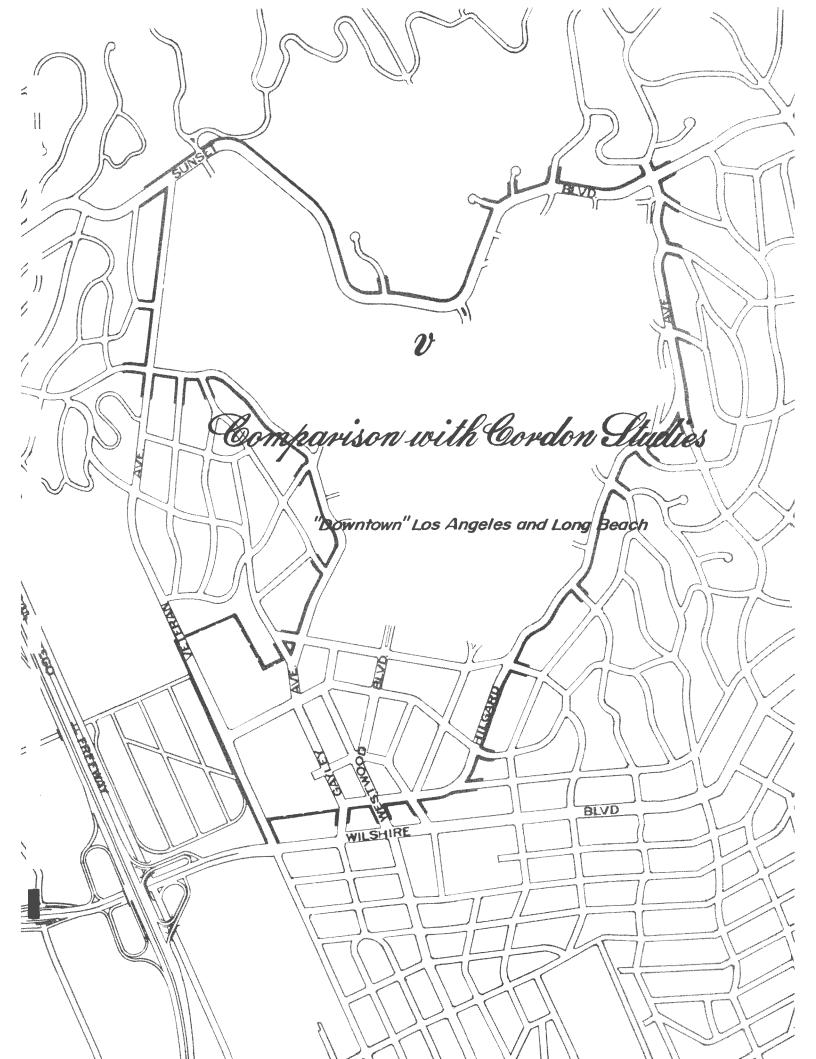
For each of the preceding sets of data the designation for "UCLA Campus" or "Village" does not involve the same area in each instance. Accordingly, the numerical values for 1975 in the last set cannot be related (are dissimilar) to corresponding activity data in the first two sets.

<sup>&</sup>quot;Westwood Village Parking Study" - December 1962.

<sup>&</sup>lt;sup>2</sup> Traffic and Parking Study - University of California, Los Angeles, 1964.







### Comparison With Cordon Studies of "Downtown" Los Angeles and Long Beach

In order to provide some perspective into the magnitude and modal distribution of travel activities disclosed from this study of the Westwood-UCLA complex, a comparison has been made of the subject data with data from cordon count studies for the Downtown Los Angeles and Long Beach CBD areas.

The latest cordon count study of the Downtown Los Angeles area, also conducted by the Traffic Department, was made in May, 1974. Data for the Long Beach CBD were derived from a report titled, "Cordon Count Survey-Downtown Long Beach, 1970" prepared by the Engineering Department of said City.

The Long Beach cordon count study encompassed the 14-hour period from 6 AM to 8 PM. The Downtown Los Angeles cordon study encompassed the same 16-hour period involved in the subject study. For readily comparison, the data compiled and included in this section applies only for the 14-hour period encompassed in the Long Beach CBD study unless otherwise noted.

The three cordon areas under discussion are quite similar in terms of area size but vary substantially in terms of level of employment as evidenced from the following:

	Area	1970 Census
	Size	Employment Data <sup>1</sup>
Cordon Area	(Sq. Miles)	(No. of Persons)
Westwood-UCLA	0.8	23,000
Los Angeles CBD	1.1	110,400
Downtown Long Beach	0.7	4,900

Available data on building area also indicates that the intensity of non-governmental building development for the Downtown Los Angeles cordon area is approximately 20 times greater than the commercial development within the Village area, 48.6 million square feet versus 2.5 million square feet of floor space. It should be noted that the Village area portion of the subject cordon area encompasses an area of only 0.1 square mile in comparison to the 1.1 square mile Downtown cordon area.

Travel activity data for the cordon area involves, however, not only the activity generated by Village area development but also activity generated by the UCLA campus, which encompasses approximately 85 per cent of the total cordon study area.

Academic and research related facilities (excluding residence halls and parking structures) presently developed on the UCLA campus encompasses approximately 5.0 million A.S.F., assignable square feet (excluding corridors, stairways, restrooms, etc.) of floor space, according to data supplied by University staff.

Los Angeles and Long Beach CBD's - "Urban Transportation Fact Book, Part 2" - American Institute of Planners and Motor Vehicle Manufacturers Association of the United States, Incorporated.

<sup>&</sup>lt;sup>1</sup>Source: Westwood-UCLA - "Census Bureau Transportation File."

Total building intensity for this cordon study area is thus approximately 15 per cent of the level of intensity developed in the Downtown Los Angeles cordon area, 7.5 million versus 48.6 million square feet of building floor space.

Comparison of data for the three cordon count studies, Table 7, reveals that the 14-hour volume of travel activities, vehicle and person trips, crossing the Westwood-UCLA cordon boundaries is approximately 13 per cent more than the volume crossing the Downtown Long Beach cordon area boundaries but only 30 per cent of the volume of activity entering and leaving the Downtown Los Angeles cordon area.

The data further indicate the three cordon areas are quite similar in regard to the automobile volume as a proportion of the total traffic, varying only from a range of 89 per cent to 94 per cent for the areas involved. In terms of the relative proportion for person trip modes, the Westwood-UCLA cordon area is generally similar to the Downtown Long Beach travel modes. Travel modes for the Downtown Los Angeles area vary substantially from either of the other two cordon areas primarily in regard to lower proportionate volume of automobile passengers and conversely higher proportionate values in transit passenger volume.

Further comparison of data on average automobile occupancy, as shown on Table 8, indicates a different variation in regard to traffic characteristics for the three cordon study areas. This data reveals comparable overall average occupancy factors for the Downtown Los Angeles and Downtown Long Beach cordon areas, 1.37 versus 1.36 persons per inbound automobile for the 16-hour and 14-hour periods, respectively, involved in the two studies. A materially lower factor or average occupancy of 1.28 persons per inbound automobile was observed during the 16-hour period for the Westwood-UCLA cordon area.

From the preceding, it is apparent that each cordon area has its own unique overall transportation characteristics. There are, of course, also significant dissimilarities in regard to intensity of building development and the composition of types of uses, such as retail, office, institutional, or other uses, involved in the respective areas under consideration.

One of the most prominent variations in land use composition is in regard to the extensive facilities developed for institutional use. The Westwood-UCLA cordon area includes a major university campus which is not the case for either the Los Angeles or Long Beach Downtown cordon areas. In addition to the academic facilities for the student enrollment of 30,000 and staff of 12,000 the campus includes the substantial "Centers for Health Sciences" (HSC) facilities. A 1974 study of the hospital facilities for the HSC, located at the southern portion of the Main Campus, revealed a daily volume of approximately 25,000 persons entering and leaving these facilities. The study report also noted that there was a total of 2,200 persons at these Main Campus HSC facilities at the peak accumulation period.

Since the automobile mode accounted for over 85 per cent of the persons entering the cordon study area, utilization of the vehicle accumulation

<sup>&</sup>quot;UCLA Health Sciences Center - Parking Structure Impact Study" - April 1974 Crommelin-Pringle and Associates, Incorporated.

data for the two sub-areas provide a logical basis to derive a fairly reliable estimate of the sub-area person accumulations. On the basis of the vehicle accumulation date, there was an estimated total of 23,000 persons within the UCLA sub-cordon area at the peak accumulation period for this area. For the Village sub-cordon area, at the peak accumulation period, there was an estimated total of 9,000 persons within this area.

On the basis of the 2.5 million square feet of floor space, there were, thus, at the peak accumulation period within the Village sub-cordon area, an estimated 3.6 persons per 1,000 square feet of floor space. This indicates a slightly higher concentration than for the Downtown Los Angeles cordon area where the 1974 data (48.6 million square feet of floor space and 152,000 peak person accumulation) denotes a ratio of 3.1 persons per 1,000 square feet of floor space at the peak accumulation period. For the total cordon area under study, i.e., including both the UCLA Campus and Village areas, there was a peak concentration of 4.1 persons per 1,000 square feet of building floor space, based on the magnitude of accumulation recorded from the study data.

Review of cordon person trip generation rates also provide additional insight into the effects of different levels of intensity and land use composition.

Intensity of development in the Downtown Los Angeles cordon area is nearly 5 times greater than the intensity within the Westwood-UCLA cordon area in terms of building intensity per acre, 70,000 square feet versus 15,000 square feet of floor space per acre, respectively. As would be expected, the 16-hour acreage generation rate for the Downtown Los Angeles area is substantially higher than the rate for the Westwood-UCLA area, 1,700 versus 60 cordon person trips (entering and leaving) per acre.

Floor space generation rates reveal, however, an opposing pattern. The study data indicates 16-hour rates of 25 and 40 person trips per 1,000 square feet of floor space for the Downtown Los Angeles and Westwood-UCLA cordon areas, respectively.

As is evident from the preceding, travel activity rates for one of the cordon areas are not suitable as a basis for reliable predictions of travel activities for any of the other cordon areas. Travel demands for any substantial activity center can only be reliably determined from detailed study data for the particular area involved.

Table 7
Comparison of Cordon Count Study Data

Downtown Los Angeles - Downtown Long Beach And Westwood - UCLA

Volume Data - 14-Hour Period - 6 AM to 8 PM

Inbound Vehicles	Downtown <sup>1</sup> Los Angeles (Mav 1974)	Westwood <sup>1</sup> UCLA (May 1975)	Downtown <sup>2</sup> Long Beach (Spring 1970)
Total	293,937	103,003	86,669
Proportion - Auto's	88.5%	94.2%	90.2%
Inbound Persons			
Total	582,195	144,046	126,760
Proportion By Mode			
Auto Passengers	60.9%	85.6%	90.2%
Other Vehicle Passengers	4.9%	3.9%	1.4%
Bus Passengers	25.8%	4.1%	8.4%
Pedestrians	8.4%	6.4%	N.A.

N.A. - Not Available

#### Source:

<sup>&</sup>lt;sup>1</sup>Department of Traffic - City of Los Angeles.

<sup>&</sup>lt;sup>2</sup>"Cordon Count Survey - Downtown Long Beach" - Engineering Department, City of Long Beach.

Table 8

Comparison of Average Automobile Occupancy
For

Downtown Los Angeles - Downtown Long Beach
and Westwood-UCLA Cordon Areas

Average Occupancy - Inbound Automobiles

Time Period	Downtown <sup>1</sup> Los Angeles (Mav 1974)	Westwood <sup>1</sup> UCLA (May 1975)	Downtown <sup>2</sup> Long Beach (Spring 1970)
6A - 10A	1.31	1.23	1.22
10A - 2P	1.36	1.25	1.40
2P - 6P	1.38	1.29	1.35
6P - 10P	1.58	1.39	1.65*
16 Hour	1.37	1.28	1.36**

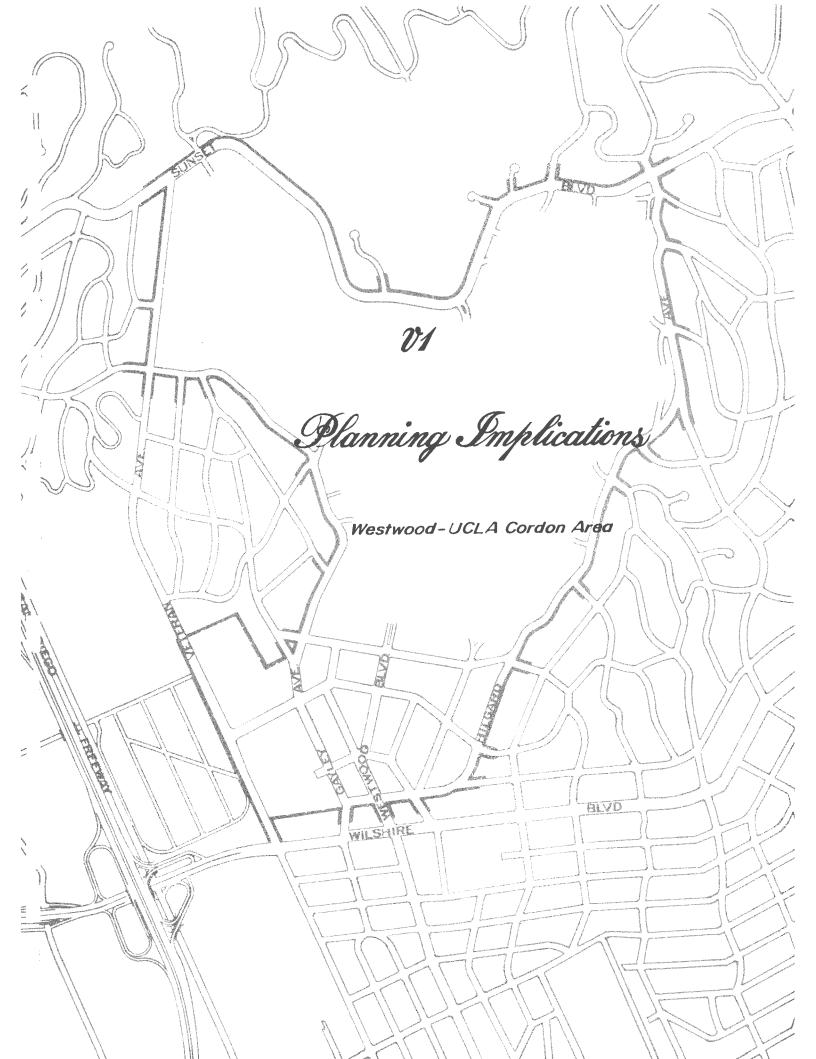
#### Source:

<sup>\* - 6</sup>P - 8P only

<sup>\*\* - 14</sup> Hour

<sup>&</sup>lt;sup>1</sup>Department of Traffic - City of Los Angeles.

<sup>&</sup>lt;sup>2</sup>"Cordon Count Survey - Downtown Long Beach" - Engineering Department, City of Long Beach.



#### Planning Implications - Westwood-UCLA Cordon Area

Due to the street pattern which precludes continuity for through travel in a north-south direction on the routes along the east and west boundaries of the cordon area, primary access for the area is served by the east-west streets along the north and south boundaries, Sunset Boulevard and Wilshire Boulevard, respectively. Both of these streets are designated major highways on the Highways and Freeways Element of the General Plan.

Presently accommodating a daily volume of over 30,000 vehicles, Sunset Boulevard is not improved to its designated standard in the reach adjoining the cordon area, which includes an alignment with numerous horizontal curves. Wilshire Boulevard, improved to "super" major highway standards, in the proximity of the cordon area is the most heavily travelled surface street route in the City, presently accommodating over 80,000 vehicle trips per weekday.

Operating conditions during peak traffic hours are presently at a critical level on both Sunset Boulevard and Wilshire Boulevard in the vicinity of the cordon area.

With student enrollment at UCLA presently at its planned ultimate capacity, any increases in cordon area trip productions should only occur as a result of greater intensity of development within the Westwood Village area.

Greater intensity of development has resulted in an approximate 70 per cent increase in the volume of vehicles accumulated within Westwood Village, at the peak accumulation period, in 1975 compared to 1962.

A "Specific Plan for Westwood Village" was adopted by the City Council in conformance with one of the recommended programs of the adopted Westwood Community Plan. The "Specific Plan Area" includes all of the Village subcordon area except the West Medical Campus and the blocks east of Tiverton Avenue. Under the provisions of the Specific Plan, the permissible building intensity was reduced from the former Floor Area Ratio of either 13 to 1 or 10 to 1 to a ratio of 3 to 1, with the exception that ground retail floor area could be excluded in computing the total permissible floor area for any building.

Even with this reduction of permissible building intensity, development within Westwood Village could potentially result in an increase in building floor area space of over 100 per cent over the level of intensity presently existing within this business district.

To accommodate even a minor, or realistic portion of this potential, at least at present level of operating conditions, will require substantial improvements of transportation facilities, for prevailing travel characteristics. Improvement of Sunset Boulevard, to its designated standard as a major highway is essential to provide adequate circulation along the north under existing conditions. Increased vehicular trips, from more intensive development within the Village cannot be reasonably accommodated without such an effort.