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ABSTRACT

Health sciences education planning for California for 1980-82 is examined. The adequacy of educational programs in meeting the needs of California for professional personnel in medicine, nursing, dentistry, pharmacy, and optometry is assessed. Data on enrollments and graduation rates in these fields are updated from the 1978 plan, and similar data on the fields of osteopathy and podiatry are included. Progress in implementing recommendations from the 1978 plan is assessed, and the role of nurse practitioners in geriatric health care is examined. The most recent Health Manpower Plan and the State Health Plan are also reviewed. Various careers that are included in the generic term of allied health are identified, a classification structure for allied health is presented, and the educational and training programs in these fields are described with respect to institutional setting, enrollments, and numbers of graduates. Additionally, preventive health care, and the educational components that provide the professional personnel for prevention vis-a-vis cure in health care are briefly reviewed. Some general areas of discussion include graduate medical education, attrition in the nursing profession, programs in nurse-midwifery, and information needs for health science planning. Recommendations of the Graduate Medical Education National Advisory Committee are appended. (SW)

JANUARY 1981

A REPORT ON HEALTH SCIENCES EDUCATION PLANNING FOR CALIFORNIA: 1980 - 1982

CALIFORNIA POSTSECONDARY EDUCATION COMMISSION

California Postsecondary
Education Commission

Resolution 1-81

Approving A Report on Health Sciences Education Planning for California: 1980-82

WHEREAS, Pursuant to Section 22712.5 of the Education Code the California Postsecondary Education Commission is required to prepare biennially a Health Sciences Education Plan, and

WHEREAS, The Commission is further required in this process to take into account the Health Manpower Plan produced by the Office of Statewide Health Planning and Development, and

WHEREAS, The Commission has prepared the required Plan for 1980-82 in accordance with statute and along the lines it has deemed most appropriate for this biennial period, and

WHEREAS, The Policy Development Committee of the Commission has reviewed and approved the Plan in its present form; now, therefore, be it

RESOLVED, That the California Postsecondary Education Commission adopts the document entitled, A Report on Health Sciences Education Planning for California: 1980-82, and directs that it be published by the Commission and transmitted to the Governor, the Legislature, the Department of Finance, the Office of the Legislative Analyst, the segments of higher education, and other appropriate agencies and entities.

Adopted
January 19, 1981

INTRODUCTION

This is the second in a series of biennial health sciences education reports prepared by the Commission in response to Section 22712.5 of the Education Code. The reports are to contain, as a minimum, the following:

a. a finding, taking into account, the Health Manpower Plan, as to the adequacy of enrollment levels to meet the needs for various types of health personnel;

b. a finding as to the extent to which available clinical and classroom resources are utilized; and

c. any recommendations on program changes which grow out of these findings.

This report contains three major sections. The first section assesses the adequacy of educational programs in meeting the needs of California for professional personnel in medicine, nursing, dentistry, pharmacy, and optometry. Data on enrollments and graduation rates in these fields are updated from the 1978 Plan, and similar data on the fields of osteopathy and podiatry are included for the first time. Progress in implementing recommendations from the 1978 Plan is assessed. In addition, the role of nurse practitioners in geriatric health care is examined as the final portion of a report made to the Legislature earlier in 1980 on potential educational needs in geriatric medicine.

The first section of this report also reviews the most recent Health Manpower Plan--the companion document produced by the Office of Statewide Health Planning and Development--which the Commission is mandated to "take into account" in developing the Health Sciences Education Plan. The State Health Plan is also reviewed, particularly for its broad philosophical orientation.

The second section of this report identifies the various careers which are included in the generic term of allied health. After establishing a classification structure for allied health, the report describes the educational and training programs in these fields with respect to institutional setting, enrollments, and numbers of graduates.

The final section of the report briefly reviews preventive health care, and the educational components which provide the professional personnel for prevention vis-a-vis cure in health care.

In departing somewhat from the format used in the 1978 Health Sciences Education Plan and that of the earlier 1976 Plan produced by an outside contractor, the Commission does not wish to suggest a shift of emphasis from the primary concerns discussed in those earlier reports. However, since certain of those issues have already been thoroughly analyzed and discussed, it was felt that the 1980 report might more profitably explore some new ground rather than limit itself to the issues considered in the past.

Such a decision in no way diminishes the Commission's established commitment to work toward the resolution of important problems in health sciences education. The inclusion here of a progress report on the issues identified in the 1978 Plan is evidence of the Commission's ongoing concern over these issues. Beyond that expression of concern the Commission wishes to take one additional step: the emphatic reaffirmation of the strength of its commitment to the recommendations made in 1978, particularly those dealing with the need to insure that underrepresented minorities and women are brought into professional education programs in the health sciences in significantly larger numbers.

This document was developed in the context of a series of other related reports which collectively describe the State's overall purposes in the postsecondary education programs it supports, including those in the health sciences. To be specific, the particular goals and strategies of health sciences education programs can best be identified from the academic plans of the several segments and institutions. Similarly, the goals and strategies whereby segments and institutions are seeking to increase enrollment of underrepresented minorities and women are to be found in the affirmative action plans of segments and institutions, particularly those dealing with graduate and professional education. The goals of specific educational programs are often described in the catalogs and other basic institutional statements; such goals are sometimes more implicit than explicit, as faculty members share an unspoken commitment to quality, rigor, and individual challenge in the educational process. Finally, the overall goals of postsecondary education in California--in terms of personal and societal needs, tempered by the constraints under which such education operates--are examined in the Commission's Five-Year Plan for Postsecondary Education.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF TABLES

TABLE OF TABLES (Continued)

TABLE OF TABLES (Continued)

LISTING OF FIGURES

PART I

GENERAL UPDATE

SECTION A: AN UPDATE OF INFORMATION IN THE 1978 HEALTH SCIENCES EDUCATION PLAN

The Commission's 1978 Health Sciences Education Plan provided data on enrollments and graduation rates in professional education programs in five fields: medicine, nursing, dentistry, pharmacy, and optometry. It also contained information on the composition of student bodies and graduating classes in the health sciences by sex and ethnicity.

The 1978 Plan explored a number of the issues surrounding the training and utilization of these health professionals. This second report does not review these issues to the same degree. Instead, it concentrates on updating the enrollment/output data on the educational programs in the five health professions previously reviewed, and on providing similar data on educational programs in other health occupations.

The tables that follow display the most recent data on enrollments and graduation rates--enrollments for the fall of 1979, graduation rates for the 1978-79 academic year. Interpretative comments are offered as appropriate.

Medicine

Enrollments in the eight medical schools in California are depicted in Table M-1.

TABLE M-1

Fall Enrollment in Medicine, California Institutions
1976 - 1979

Medical School	Actual 1972	1973	1974	1975	1976	1977	1978	1979
UCD	293	347	401	408	405	402	406	402
UCI	258	246	257	301	308	293	312	367
UCLA	550	557	604	617	598	582	595	609
UCR	-	-	-	-	-	16	35	46
UCSD	211	233	275	319	350	384	425	467
UCSF	555	565	575	633	590	613	626	616
Total Public	1,867	1,948	2,112	2,278	2,251	2,290	2,399	2,507

TABLE M-1 (Continued)

Loma Linda	456	599	627	640	572	588	642	619
Stanford	334	370	374	396	352	362	340	380
USC	445	439	472	517	541	571	587	549
Total Private	1,235	1,408	1,473	1,553	1,465	1,521	1,569	1,548
GRAND TOTAL	3,102	3,356	3,585	3,831	3,716	3,811	3,968	4,055

Sources: UC Statistical Summary; HEGIS; UC Office of Health Affairs.

For the first time, overall enrollment in California medical schools has exceeded four thousand students. It is apparent that this continued growth during the past four years is due to increased admissions at the University of California, not the private sector. Articles in the popular press may suggest that a lid has been placed on enrollment in medical schools--thus limiting educational opportunity--but the fact remains that enrollment in the University's medical schools has grown by more than a third (34.5%) in the last seven years. Additional growth may yet occur, particularly at the Los Angeles campus, which will be operating a third- and fourth-year clinical program at Charles R. Drew Postgraduate Medical School for forty-eight students, but enrollments should stabilize early in the 1980s as capacity is reached.

The composition of medical school enrollment, by sex and ethnicity, is shown in Table M-2.

Several interesting trends can be noted from Table M-2. First, overall enrollment in both public and private medical schools in California continues to rise; however, this increase does not apply equally to the various "minority" groups. In the University of California, the percentage of Black enrollment has dropped in three years from 6.3 to 5.2, primarily as a result of a nearly 30 percent decline in the enrollment of Black males. For Chicanos, the percentage of enrollment has dropped from 9.5 to 9.2, also reflecting declining male enrollment. However, the total number of Chicanos has increased somewhat (from 213 to 231), while there has been a net loss of Blacks (from 141 to 130).

In the private medical schools, conflicting trends are discernible. Black enrollment has declined as a percentage of total enrollment--from 5.2 to 3.9--with a net numerical reduction as well (from 76 to 60). For Chicanos the percentage of enrollment has gone up from 4.7 to 5.4, with a corresponding net gain in the number enrolled (from 69 to 84).

TABLE M-2

Fall Enrollment in Medicine, by Sex and Ethnicity, California Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCD															
1976	5	0	20	4	2	0	39	16	21	4	190	104	277	128	405
1977	11	4	16	8	3	0	29	15	20	5	190	101	269	133	402
1978	10	5	14	7	2	0	31	16	13	4	201	103	271	135	406
1979	13	5	7	8	1	0	28	19	15	5	196	105	260	142	402
UCI															
1976	10	0	21	9	5	1	14	3	35	7	163	40	248	60	308
1977	15	0	19	11	3	1	8	1	32	11	153	39	230	63	293
1978	10	2	22	17	0	0	8	3	41	7	166	36	247	65	312
1979	0	0	17	11	2	1	34	10	46	17	167	62	266	101	367
UCLA															
1976	2	2	20	6	3	0	43	5	49	8	362	98	479	119	598
1977	4	2	21	11	2	0	43	7	47	11	332	102	449	133	582
1978	7	6	20	14	0	0	50	11	34	14	333	106	444	151	595
1979	1	5	20	19	0	0	47	13	34	18	338	114	440	169	609
UCR															
1976	Not operational until 1977														
1977	0	0	0	0	0	0	0	4	0	0	12	0	12	4	16
1978	0	0	0	0	0	0	5	3	0	0	22	5	27	8	35
1979	0	1	0	0	0	0	9	2	0	1	29	4	38	8	46
UCSD															
1976	1	0	7	2	2	1	32	9	12	2	234	48	288	62	350
1977	2	0	8	2	2	2	30	10	15	3	245	65	302	82	384
1978	6	0	4	2	0	2	35	12	16	2	279	67	340	85	425
1979	7	3	7	3	1	2	38	12	17	5	186	86	356	111	467
UCSF															
1976	0	1	32	20	3	0	53	14	56	19	244	148	388	202	590
1977	1	0	28	19	0	1	65	19	58	20	248	154	400	213	613
1978	1	1	22	23	2	0	61	23	53	22	260	158	399	227	626
1979	1	1	20	18	5	0	58	21	53	20	266	153	403	213	616
UC TOTAL															
1976	18	3	100	41	15	2	181	47	173	40	1,193	438	1,680	571	2,251
1977	33	6	92	51	10	4	175	56	172	50	1,180	461	1,662	628	2,290
1978	34	14	82	63	4	2	190	68	157	49	1,261	475	1,728	671	2,399
1979	22	15	71	59	9	3	214	77	165	66	1,282	524	1,763	744	2,507

TABLE M-2 (Continued)

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
LOMA LINDA															
1976	22	3	24	4	1	1	21	6	6	2	381	101	455	117	572
1977	39	10	22	5	0	1	23	7	6	2	378	95	468	120	588
1978	39	9	17	7	0	1	37	13	7	1	402	109	502	140	642
1979	56	8	13	4	0	1	21	8	8	1	392	107	490	129	619
STANFORD															
1976	5	3	27	8	5	4	9	7	21	9	183	71	250	102	352
1977	5	2	26	11	6	4	12	8	21	10	180	77	250	112	362
1978	7	3	15	14	6	3	15	9	20	9	174	65	237	103	340
1979	8	3	19	14	6	1	17	8	24	15	184	81	258	122	380
USC															
1976	3	0	10	3	0	0	31	9	31	0	361	93	436	105	541
1977	6	1	12	8	2	2	39	10	42	4	370	85	461	110	571
1978	5	0	14	10	1	2	39	11	38	5	383	79	480	107	587
1979	0	3	4	6	0	0	53	13	33	3	365	69	455	94	549
PRIVATE TOTAL															
1976	30	6	61	15	6	5	61	22	58	11	925	265	1,141	324	1,465
1977	50	13	60	24	8	7	64	25	69	16	928	257	1,179	342	1,521
1978	51	12	46	31	7	6	91	33	65	15	959	253	1,219	350	1,569
1979	64	14	36	24	6	2	91	29	65	19	941	257	1,203	345	1,548
GRAND TOTAL															
1976	48	9	161	56	21	7	242	69	231	51	2,118	703	2,821	895	3,716
1977	83	19	152	75	18	11	239	81	241	66	2,108	718	2,841	970	3,811
1978	85	26	128	94	11	8	281	[illegible]	222	64	2,220	728	2,947	1,021	3,968
1979	86	29	107	83	15	5	305	106	230	85	2,223	781	2,966	1,089	4,055

In both educational sectors, enrollment of women continues to climb, numerically as well as proportionately. In the University's five medical schools, the percentage of women enrolled has increased from 25.4 to 29.7, and in the private sector from 22.1 to 22.3. Numerically, enrollment of women has gone from 571 to 744 in the UC medical schools, and from 324 to 345 in the private medical schools.

Changes in the number of degrees awarded by California medical schools correspond roughly to changes in enrollment, although overall growth in degrees awarded far exceeds that in enrollment for this period, 41.5 percent to 34.5 percent. Again, it is clear that the sustained growth in recent years has occurred in the University of California, not the private sector. Table M-3 traces the pattern of medical school output in California.

The mix of these graduates, by sex and ethnicity, is displayed in Table M-4.

The continuing increase in the number of women graduating from medical school is immediately apparent. In three years, the percentage of women graduates has risen from 21.9 percent to 26.2 percent in the University's medical schools, and from 17.0 percent to 22.5 percent in the private schools. Numerically the totals have gone from 121 to 150 in the University, and from 58 to 82 in the private schools.

This increase is also apparent in the graduating rates for minorities. In three years, the percentage of Black students graduating from the University's medical schools has gone from 4.3 to 6.1; in the private schools, the percentage has gone from 2.6 to 6.6. The number of Black students graduating from UC medical schools has gone from 24 to 35; in private medical schools the number has gone from 9 to 24. For Chicanos, the percentage of graduates has risen from 4.7 to 7.5 in the University, and from 3.8 percent to 6.3 percent in the private schools. The number of Chicanos graduating from UC medical schools has gone from 26 to 43, and from private medical schools from 13 to 23.

TABLE M-3

Professional Degrees Conferred in Medicine, California Institutions, 1966-1979

Medical School	ACADEMIC YEAR 1965-1966	1966-1967	1967-1968	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
UCSF	99	101	128	130	126	131	122	133	136	137	156	139	148	153
UCLA	70	68	76	71	78	113	130	136	132	144	158	158	152	161
UCD	-	-	-	-	-	-	46*	49	50	95	99	101	89	95
UCI	88	87	89	75	58	64	64	67	63	64	74	82	76	77
UCSD	-	-	-	-	-	-	45*	50	52	48	65	59	88	87
Total Public	257	256	293	276	262	308	407	435	433	488	552	539	554	573
USC	63	71	67	69	73	74	84	85	103	97	113	134	136	153
Stanford	54	48	61	61	69	69	75	88	74	81	72	107	94	81
Loma Linda	89	88	83	69	85	95	97	220	133	83	157	151	143	131
Total Private	206	207	211	199	227	238	256	393	310	261	342	392	373	365
GRAND TOTAL	463	463	504	475	489	546	663	828	743	749	894	931	927	938

*First graduating class

Sources: John C. Wong, Health Manpower Study of Selected Health Professions in California, 1976; and the Higher Education General Information Survey.

TABLE M-4

Professional Degrees Conferred in Medicine, by Sex and Ethnicity
California Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCD															
1975-1976	0	1	2	3	0	1	8	2	2	3	54	23	66	33	99
1976-1977	2	0	5	1	0	0	18	2	5	0	51	17	81	20	101
1977-1978	0	0	2	1	1	0	8	1	6	0	46	24	63	26	89
1978-1979	1	0	3	0	1	0	7	5	2	2	52	22	66	29	95
UCI															
1975-1976	2	2	0	0	0	0	5	0	1	0	52	12	60	14	74
1976-1977	2	0	3	0	1	0	7	1	4	0	51	14	67	15	82
1977-1978	1	0	7	2	1	1	4	0	3	2	45	11	61	16	76
1978-1979	1	0	6	4	0	0	2	1	10	0	45	8	64	13	77
UCLA															
1975-1976	2	2	2	1	0	0	13	6	6	2	114	16	137	21	158
1976-1977	0	1	6	2	1	0	16	2	5	1	104	20	132	26	158
1977-1978	1	0	5	2	2	0	11	1	15	2	95	18	129	23	152
1978-1979	1	1	3	1	0	0	13	3	10	1	96	32	123	38	161
UCSD															
1975-1976	0	1	3	2	1	0	3	0	5	1	36	13	48	17	65
1976-1977	2	1	0	0	0	0	6	1	2	1	42	4	52	7	59
1977-1978	0	0	3	0	0	0	3	1	2	0	59	20	67	21	88
1978-1979	1	0	2	1	0	1	10	3	2	2	57	10	72	15	87
UCSF															
1975-1976	1	0	8	3	0	0	15	4	5	1	91	28	120	36	156
1976-1977	0	1	12	2	1	0	7	1	6	4	75	30	101	38	139
1977-1978	0	0	7	2	0	0	14	1	6	4	70	44	97	51	148
1978-1979	0	0	10	5	0	0	17	6	14	2	57	42	98	55	153
UC TOTAL															
1975-1976	5	6	15	9	1	1	44	6	19	7	347	92	431	121	552
1976-1977	6	3	26	5	3	0	54	7	22	6	323	85	433	137	570
1977-1978	2	0	24	7	4	1	40	4	32	8	315	117	417	137	554
1978-1979	4	1	24	11	1	1	49	18	38	5	307	114	423	150	573
LOMA LINDA															
1975-1976	12	1	3	0	1	0	7	0	3	1	110	18	137	20	157
1976-1977	8	2	4	1	1	0	7	2	2	0	109	15	131	20	151
1977-1978	7	2	3	0	1	0	2	1	1	1	98	22	117	26	143
1978-1979	2	1	6	2	0	0	9	4	1	0	83	23	101	30	131
STANFORD															
1975-1976	0	0	2	0	0	0	0	0	4	0	50	16	56	16	72
1976-1977	2	0	3	2	1	0	2	3	9	1	63	21	80	27	107
1977-1978	2	0	10	0	1	1	4	0	6	3	46	21	69	25	94
1978-1979	1	1	3	3	0	0	1	3	3	1	45	20	53	28	81
USC															
1975-1976	0	0	4	0	0	0	5	3	5	0	77	19	91	22	113
1976-1977	0	0	2	0	0	0	5	1	7	1	94	24	108	26	134
1977-1978	1	1	1	2	1	0	4	1	7	1	92	25	106	30	136
1978-1979	0	0	6	4	1	1	11	2	17	1	94	16	129	24	153
PRIVATE TOTAL															
1975-1976	13	1	9	0	1	0	12	3	12	1	237	53	284	58	342
1976-1977	10	2	9	3	2	0	14	6	18	2	266	60	319	73	392
1977-1978	10	3	19	2	3	1	10	2	14	5	236	68	292	81	373
1978-1979	3	2	15	9	1	1	21	9	21	2	222	59	283	82	365
GRAND TOTAL															
1975-1976	18	7	24	9	2	1	56	9	31	8	584	145	715	179	894
1976-1977	16	5	35	8	5	0	68	13	40	8	589	145	752	210	962
1977-1978	12	3	43	9	7	2	50	6	46	13	551	185	709	218	927
1978-1979	7	3	39	20	2	2	70	27	59	7	529	173	706	232	938

Nursing

Information on enrollments and graduation rates in nursing is contained in the following series of tables, which reflect the various levels and types of training programs for registered nurses.

Enrollments in nursing continue to rise in most sectors of California education, contrary to trends reported nationally. Table N-1 shows enrollments in the four remaining diploma nursing programs.

TABLE N-1

Fall Enrollments in Hospital Nursing Programs, 1972-1979

Institution	1972	1973	1974	1975	1976	1977	1978	1979
CONTINUING PROGRAMS								
St. Luke's	126	133	139	137	132	126	136	141
CA Hospital Medical Ctr.	143	143	151	151	166	166	140	108
L.A. County Medical Ctr.	453	479	405	375	260	324	365	383
Samuel Merritt	186	208	205	216	277	160	189	196
Total	908	913	900	879	835	776	830	828
DISCONTINUED PROGRAMS								
Kaiser	184	162	112	57	-	-	-	-
San Jose Hospital	164	80	39	-	-	-	-	-
St. Vincent's	81	82	-	-	-	-	-	-
Hollywood Presbyterian	142	-	-	-	-	-	-	-
Queen of Angels	49	-	-	-	-	-	-	-
St. Joseph's	29	-	-	-	-	-	-	-
Total	649	324	151	57	-	-	-	-
TOTAL, ALL PROGRAMS	1,557	1,237	1,051	936	835	776	830	828

Sources: Nursing Board; Individual Hospitals.

Associate-degree nursing programs in the Community Colleges are the largest single source of nursing graduates in California. Enrollments in these programs continue to increase, as shown in Table N-2.

There are also three associate-degree nursing programs offered by four-year institutions. Enrollment in these programs, according to Table N-3, seems to have peaked and now is declining.

TABLE N-2

Fall Enrollment in Associate-Degree Nursing Programs
California Community Colleges, 1972-1979

School	1972	1973	1974	1975	1976	1977	1978	1979
American River	74	68	73	68	67	75	76	69
Antelope Valley	86	69	68	72	79	77	82	91
Bakersfield	70	86	91	84	72	92	114	125
Cabrillo	66	66	36	72	74	72	75	77
Cerritos	126	132	152	175	172	147	157	167
Chabot	90	92	64	99	90	87	89	90
Chaffey	99	105	76	110	144	148	142	138
C.C. of San Francisco	145	145	147	172	175	186	174	180
College of the Desert	100	115	126	135	143	145	146	140
College of Marin	99	103	98	106	103	103	93	108
College of the Redwoods	54	55	65	63	65	66	66	66
College of San Mateo	143	119	121	127	121	105	115	120
College of the Sequoias	67	65	65	65	65	77	82	86
Compton College	115	121	136	135	132	124	116	120
Contra Costa	166	159	166	161	171	145	128	121
Cuesta	52	50	50	52	51	53	53	65
Cypress	153	169	165	168	172	151	141	149
De Anza	121	116	100	108	107	111	105	107
East Los Angeles	124	137	185	194	184	196	180	167
El Camino	118	138	155	153	152	152	170	224
Fresno City College	113	117	113	116	143	137	144	118
Golden West	150	153	179	196	220	208	213	256
Grossmont	88	102	101	100	107	105	105	103
Hartnell	58	58	65	62	62	61	56	62
Imperial Valley	69	64	67	72	71	88	78	72
Long Beach City College	197	198	221	245	257	239	256	259
L.A. City College	233	259	240	200	174	175	150	148
L.A. Harbor College	156	169	161	167	166	168	160	174
L.A. Pierce	110	145	162	166	173	173	169	169
L.A. Southwest	125	163	131	193	118	206	209	150
L.A. Trade-Technical	67	66	64	311	311	102	99	93
L.A. Valley	232	247	275	306	268	295	289	269
Los Medanos	-	-	20	38	65	41	44	47
Merritt College	93	96	95	99	105	105	107	108
Modesto J.C.	129	174	161	134	185	137	176	180
Mt. San Antonio	100	109	103	115	101	110	129	130
Napa	94	110	112	96	95	89	97	93
Ohlone	40	85	80	76	81	77	70	77
Palomar	89	107	99	117	119	132	147	146
Pasadena City College	180	252	264	243	255	218	236	240
Rio Hondo	110	126	142	148	173	175	181	200
Riverside City College	175	185	185	191	201	197	184	169
Sacramento City College	116	115	118	132	133	129	121	126
Saddleback	82	107	127	103	124	194	151	188
San Bernardino Valley	98	103	116	110	116	117	122	118
San Diego City	27	30	29	30	33	32	39	43
San Joaquin Delta	110	113	123	127	125	133	129	124
San Jose C.C. - Evergreen Valley	134	134	135	147	164	143	159	156
Santa Ana	-	30	30	30	55	59	47	47
Santa Barbara C.C.	78	83	83	91	74	82	102	97
Santa Monica C.C.	96	106	112	115	115	122	121	134
Santa Rosa C.C.	83	84	96	104	99	97	99	107
Shasta	59	66	69	66	73	70	74	72
Sierra	-	-	-	-	-	-	19	-
Solano	87	78	91	48	87	81	83	88
Southwestern	73	77	79	77	77	79	74	76
Ventura	99	98	95	123	120	131	165	200
Victor Valley	-	-	-	33	58	70	72	83
Totals	5,320	6,319	6,482	7,098	7,242	7,089	7,180	7,332

Source: Nursing Board.

TABLE N-3

Fall Enrollment in Associate-Degree Nursing Programs,
California Four-Year Institutions
1972 - 1979

Institution	1972	1973	1974	1975	1976	1977	1978	1979
Loma Linda	94	114	148	169	167	85	79	59
Mt. St. Mary's	39	94	91	96	124	139	137	133
Pacific Union	146	171	164	182	182	164	168	139
Total	279	379	403	447	473	388	384	331

Enrollment in B.S.-degree nursing programs is shown in Table N-4 on the following page. Apparent variations from year to year in enrollment levels, particularly in the State University and Colleges, may actually reflect periodic difficulty in determining how certain students should be counted, a problem growing out of the way that various nursing and pre-nursing programs are organized.

There are also a number of programs which offer B.S. degrees for students who already are licensed as registered nurses. The rapidly growing enrollment in these programs is shown in Table N-5.

TABLE N-4

Fall Enrollment in B.S. Nursing Programs
California Four-Year Institutions, 1972-1979

Institution	1972	1973	1974	1975	1976	1977	1978	1979
UCLA	102	88	95	92	123	98	97	95
UCSF	311	319	336	269	287	293	281	285
Total, UC	413	408	431	361	410	381	378	380
CSC, Bakersfield	160	168	118	105	83	103	102	115
CSU, Chico	490	499	274	254	232	236	227	196
CSU, Fresno	437	302	439	491	473	434	394	491
CSU, Hayward	284	302	120	195	176	163	212	220
Humboldt State U.	193	197	167	146	182	189	198	181
CSU, Long Beach	488	456	488	578*	577*	571*	515*	498*
CSU, Los Angeles	818	646	723*	784*	814*	727*	739*	713*
CSU, Sacramento	517	496	313	337	346	354	366	348
San Diego State U.	543	423	279	310	419	400	385	408
San Francisco State U.	264	306	325	342	338	411	363	357
San Jose State U.	489	506	442	443	446	457	452	547
Total, CSUC	4,693	4,301	3,688	3,985	4,086	4,045	3,953	4,074
Azusa Pacific	-	-	29	NA	94	64	96	146
Biola	172	210	178	141	353	180	198	194
Loma Linda	114	265	279	255	254	372	311	340
Mt. St. Mary's	100	112	118	120	124	129	135	172
Point Loma	52	57	67	111	259	263	122	123
Stanford	39	18	-	-	-	-	-	-
U. of San Francisco	294	328	365	363	391	403	599	622
Total, Private Institutions	771	990	1,036	-	1,495	1,411	1,461	1,597

*These institutions also have degree-completion programs for R.N.s, the students of which are included in these totals.

Source: For public institutions: HEGIS; UC Statistical Summary; CSUC Statistical Reports
For private institutions: HEGIS; Board of Registered Nursing; Direct Institution Response.

TABLE N-5

Fall Enrollment in B.S. Programs for Previously Licensed Nurses, California Four-Year Institutions 1973 - 1979

Institution	1973	1974	1975	1976	1977	1978	1979
CSU, Fullerton	-	36	141	237	288	271	255
CSC, San Bernardino	-	120	106	110	101	119	99
Sonoma State U.	119	165	195	210	227	226	244
CSC, Stanislaus	-	-	-	-	57	100	133
Total, CSUC	119	321	442	557	673	716	731
Holy Names	-	18	44	61	66	65	76
Univ. of San Diego	79	90	105	110	119	120	100
California Lutheran	-	-	-	-	-	18	28
Total, Priv. Inst.	79	108	149	161	185	203	204

Sources: HEGIS; Supplemented by data from CSUC Chancellor's Office.

The composition of nursing enrollment by sex and ethnicity is available only for State University programs. Table N-6 displays these data in seven ethnic categories.

It is interesting to observe that during the three-year period covered by this table, Black enrollment in State-supported nursing programs declined from 7.4 percent of the total to 5.2 percent, while Chicano enrollment increased from 4.6 percent of the total to 6.0 percent. Male enrollment declined from 6.8 percent to 6.4 percent.

Information on nursing graduates is a better measure of what is happening quantitatively in nursing education than is enrollment because of the difficulty in determining who should be counted as a nursing major. Data on the number of graduates in various programs follow.

Table N-7 contains information on the number of graduates in diploma nursing programs.

Graduation rates in associate-degree programs in the California Community Colleges are displayed in Table N-8.

TABLE N-6

Fall Enrollment in Nursing, by Sex and Ethnicity
California Public Four-Year Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		Amer. Ind./ Alaska Nat.		Asian/Pac. Islander		Hispanic		White Non-Hispanic		Filipino		No Resp.		Other		Total		Total, All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCLA																					
1976				7				25		8	2	76		4				1	2	121	123
1977				3				19		7		62		6		1				98	98
1978		1		5				9		13		62		3	1				1	93	94
1979		2		3				9		7	4	67			1	2			5	90	95
UCSF																					
1976				16		2	2	38	3	5	29	161		11	3	14		3	37	250	287
1977		1	1	17		1	5	37	1	5	24	172		14		4		4	31	251	282
1978		2	2	15			3	29	2	9	27	170		11		7	3	4	37	247	284
1979		4	2	12		1		31	3	11	26	171	1	10		6	4	3	36	249	285
CSC, Bakersfield																					
1976		3		1		1		1	1	6	7	44				2			8	58	66
1977		1						5	1	4	7	65		1		3			8	79	87
1978				1		1		6			4	64				5	1		5	81	86
1979		2		4		1		6		8	6	67	1	12			2	4	9	104	113
CSU, Chico																					
1976				4			1	4		7	10	158			2	38	1	2	14	213	227
1977				3			1	2		7	10	152			2	43	1		14	207	221
1978				2		1				4	13	135			2	48		3	15	193	208
1979						1				5	14	122			2	34	2	5	18	167	185
CSU, Fresno																					
1976				8		3	2	19	3	20	20	227			2	9		5	27	292	319
1977		2		4		2	2	15	1	15	15	180			5	30		4	23	252	275
1978	1	2	1	5		2	1	12	4	15	18	169	1	1	1	8	1	4	28	218	246
1979				13		8	1	27	6	33	17	343	1	7	2	24	1	8	28	463	491
CSU, Hayward																					
1976		4		4		1		3		2	11	105		2		2	2	4	13	127	140
1977		5		1		2		3		2	10	91		2		1	2	3	12	110	122
1978		4		3		2		12		8	16	97		1		4			16	131	147
1979				5		4		17	1	15	13	131		2		3			14	177	191
Humboldt State U.																					
1976				3		1			3	5	10	63			2	11		4	15	89	104
1977				5				1	2	4	14	87			3	8		1	19	106	125
1979				3		2		3	2	2	21	129				14	1	2	24	155	179

TABLE N-7

Diplomas Conferred in Hospital Nursing Programs, 1972-1979

Institution	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
CONTINUING PROGRAMS								
St. Luke's	37	34	34	45	40	41	39	32
CA Hospital Medical Ctr.	24	23	30	40	42	35	40	43
L.A. County Medical Ctr.	162	177	175	163	229	120	126	162
Samuel Merritt	57	48	65	70	60	79	50	51
Total	280	282	304	318	371	275	255	288
DISCONTINUED PROGRAMS								
Kaiser	46	45	45	56	-	-	-	-
San Jose Hospital	30	42	35	-	-	-	-	-
St. Vincent's	36	54	-	-	-	-	-	-
Hollywood Presbyterian	39	-	-	-	-	-	-	-
Queen of Angels	38	-	-	-	-	-	-	-
St. Joseph's	22	-	-	-	-	-	-	-
Total	211	151	80	56	-	-	-	-
Total, All Programs	491	433	384	374	371	275	255	288

Sources: Nursing Board; Individual Hospitals.

TABLE N-8

Degrees Conferred in Associate-Degree Nursing Programs
California Community Colleges, 1972-1979

School	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
American River	26	37	33	33	35	28	35	39
Antelope Valley	36	34	35	28	31	40	33	32
Bakersfield	33	42	38	47	58	42	32	59
Cabrillo	35	25	24	36	33	35	34	36
Cerritos	42	53	49	71	78	84	71	86
Chabot	38	48	46	40	50	49	44	47
Chaffey	43	52	50	50	29	72	69	65
C.C. of San Francisco	51	42	69	87	81	80	88	85
College of the Desert	46	40	34	51	65	58	90	80
College of Marin	44	40	40	33	51	47	42	47
College of the Redwoods	14	23	22	28	30	28	42	37
College of San Mateo	41	40	50	35	45	49	37	52
College of the Sequoias	39	29	27	32	30	29	29	42
Compton College	32	52	51	63	46	46	42	42
Contra Costa	96	85	75	79	70	74	64	59
Cuesta	25	26	26	22	25	25	26	27
Cypress	62	67	77	77	78	76	85	69
De Anza	47	56	54	55	33	45	34	45
East Los Angeles	48	49	66	64	92	45	79	65
El Camino	69	51	60	71	84	77	75	73
Fresno City College	45	49	43	49	54	72	70	75
Golden West	57	69	64	84	93	108	84	89
Grossmont	42	40	40	47	46	50	49	44
Hartnell	25	22	23	26	24	27	25	21
Imperial Valley	-	30	26	23	32	24	24	34
Long Beach City College	72	89	82	102	119	129	115	128
L.A. City College	79	81	110	75	95	95	68	68
L.A. Harbor College	40	61	77	51	67	60	68	57
L.A. Pierce	50	30	60	74	71	75	81	74
L.A. Southwest	51	41	47	56	53	82	64	55
L.A. Trade-Technical	72	67	64	64	62	84	92	69
L.A. Valley	90	108	110	130	158	138	160	169
Los Medanos	-	-	-	-	16	20	19	20
Merritt College	52	43	49	46	49	50	52	55
Modesto J.C.	32	43	57	42	38	105	51	69
Mt. San Antonio	25	35	42	43	41	48	46	47
Napa	31	29	46	50	47	33	39	38
Ohlone	-	-	32	37	30	39	36	26
Palomar	27	31	61	37	65	49	56	71
Pasadena City College	78	83	101	154	126	121	99	90
Rio Hondo	46	50	47	65	64	84	82	84
Riverside City College	54	61	71	71	81	93	88	87
Sacramento City College	44	46	41	44	55	55	63	52
Saddleback	-	36	38	63	67	54	83	83
San Bernardino Valley	41	45	45	49	51	57	57	59
San Diego City	31	27	29	28	30	28	29	38
San Joaquin Delta	60	48	49	57	67	60	61	66
San Jose C.C. - Evergreen Valley	58	54	51	54	50	63	48	59
Santa Ana	-	-	29	30	54	53	58	47
Santa Barbara C.C.	24	32	37	36	14	37	22	28
Santa Monica C.C.	36	42	54	59	60	65	57	62
Santa Rosa C.C.	21	25	36	44	52	48	44	39
Shasta	23	23	29	33	31	35	29	36
Solano	34	39	29	36	37	36	34	34
Southwestern	32	29	32	33	33	37	33	34
Ventura	51	4	52	39	53	49	64	64
Victor Valley	-	-	-	-	-	28	28	31
Totals	2,290	2,451	2,729	2,933	3,129	3,320	3,482	3,289

Source: Nursing Board

Table N-8 reflects the first drop in recent years in the number of nursing degrees conferred by the Community Colleges. In the past, the continued growth in the number of graduates made it possible to resist pressures for additional programs which some people felt were needed to meet a perceived shortage of nurses. This decline should be monitored closely to determine if it is a harbinger of a new trend.

Some four-year institutions also offer associate-degree programs in nursing. Table N-9 displays data for these programs.

TABLE N-9

Degrees Conferred in Associate-Degree Nursing Programs, California Four-Year Institutions 1972 - 1979

Institution	1972	1973	1974	1975	1976	1977	1978	1979
Loma Linda	24	24	40	54	64	61	85	11
Mt. St. Mary's	-	-	34	36	32	46	69	66
Pacific Union	72	78	83	103	119	107	99	102
Total, 4-year Institutions	96	102	157	193	215	214	253	179

Source: Nursing Board.

The total number of students receiving the B.S. degree in nursing continues to rise in both public and private institutions. These increases can be seen in Table N-10 on the following page.

TABLE N-10

Degrees Conferred in B.S. Degree Nursing Programs, California Four-Year Institutions, 1972-1979

Institution	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
UCLA	40	49	38	43	81	48	51	46
UCSF	67	90	79	182	132	140	140	136
Total, UC	107	139	117	225	213	188	191	182
CSC, Bakersfield	-	57	62	38	46	55	77	92
CSU, Chico	61	70	89	92	91	78	107	129
CSU, Fresno	95	129	105	128	114	110	125	58
CSU, Hayward	-	20	55	87	65	73	62	54
Humboldt State U.	14	21	22	39	29	34	33	36
CSU, Long Beach	61	74	72	83	92	105	132	103
CSU, Los Angeles	141	146	233	178	161	94	199	212
CSU, Sacramento	49	47	76	59	100	74	241	137
San Diego State U.	105	84	79	84	95	87	97	118
San Francisco State U.	81	57	56	80	70	63	84	96
San Jose State U.	97	119	130	114	12	110	106	70
Total, CSUC	704	767	979	982	992	883	1,263	1,287
Azusa Pacific	-	-	-	-	-	*	28	59
Biola	22	20	28	29	39	44	57	57
Loma Linda	66	46	74	83	77	81	76	103
Mt. St. Mary's	34	45	63	73	73	68	58	78
Pt. Loma	-	-	31	28	35	33	39	40
Stanford	26	18	18	-	-	-	-	-
U. of San Francisco	79	90	105	110	119	120	129	125
Total, Private Institutions	227	219	319	323	343	346	377	462

*Azusa Pacific reported no graduates to HEGIS for 1976-77, but the institution reported 23 graduates in May of 1977 to the Board of Registered Nursing.

Sources: HEGIS; UC Statistical Summary; CSUC Statistical Reports.

There is also a group of programs which provide B.S. degrees for previously licensed nurses from associate degree or diploma programs. Table N-11 indicates the rapid growth in output of these programs.

TABLE N-11

Degrees Conferred in B.S. Programs for Previously Licensed Nurses, California Four-Year Institutions 1973 - 1979

Institution	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
CSU, Fullerton	-	-	-	11	28	53	49
CSC, San Bernardino	-	-	-	33	24	5	12
Sonoma State U.	-	37	56	78	72	82	70
CSC, Stanislaus	-	-	-	-	-	-	27
Total, CSUC	-	37	56	122	124	140	158
Holy Names	-	-	-	-	4	7	26
Univ. of San Diego	5	NA	5	3	12	24	22
California Lutheran	-	-	-	-	-	-	3
Total, Priv. Inst.	5	-	5	3	16	31	51

Sources: HEGIS; Supplemented by data from CSUC Chancellor's Office.

Data on the sex and ethnicity of B.S. graduates of State University nursing programs are displayed in Table N-12.

An examination of Table N-12 indicates that no progress has been made in the public four-year programs in graduating greater numbers of nurses from historically underrepresented ethnic groups. For Blacks, the percentage of nursing graduates has dropped from 7.5 to 5.1 in the last three years, and for Hispanics, from 4.6 to 4.2. The only underrepresented group showing a gain is male graduates, whose percentage went from 5.8 to 8.0 of the total during this period.

Ethnic data are not available for B.S. graduates of independent institutions, but Table N-13 displays data on the sex of graduates, reflecting an increase in the number of male graduates in nursing in these institutions.

TABLE N-12

Professional Degrees Conferred in Nursing, by Sex and Ethnicity
California Public Four-Year Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Filipino		No Resp.		Other		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCLA																					
1975-76		2		6				12		6	7	45		1				2	7	74	81
1976-77				3				7		3	1	30		1				3	1	47	48
1977-78								12		3	1	32		3					1	50	51
1978-79				3				6		4		30		3						46	46
UCSF																					
1975-76				16		1	1	9	2	4	5	77	1	2	2	5		7	11	121	132
1976-77				8		1		16	1	2	15	80		1	3	10		3	19	121	140
1977-78				8		1	2	20	1	1	11	84		8		3		1	14	126	140
1978-79		1	1	5			3	16		3	14	86		3		3		1	18	118	136
CSC, Bakersfield																					
1975-76			1	3				1	1	2	6	32							8	38	46
1976-77	1	3		1		1	1	3	2	3	7	33							11	44	55
1977-78	1	1					2	1		4	12	52	1			3			16	61	77
1978-79		1			1			5	2	1	7	74		1					10	82	92
CSU, Chico																					
1975-76				3		1		1			3	74				8		1	3	88	91
1976-77				1				2		2	3	60				9		1	3	75	78
1977-78				1				2		3	3	62			1	34	1		5	102	107
1978-79				2						3	7	72			4	43			9	120	129
CSU, Fresno																					
1975-76		4		2	1			5		6	3	91				1		1	4	110	114
1976-77				4		2		3	1	4	8	81			2	2		3	11	99	110
1977-78		1		1		1	2	11		8	6	90				2		3	8	117	125
1978-79								1		1	11	32	1		1	10		1	13	45	58
CSU, Hayward																					
1975-76		1		6		1		3			5	41		2		2		4	5	60	65
1976-77		2		2				1		1	5	56				2		4	5	68	73
1977-78		3		1		1					2	52		1				2	2	60	62
1978-79				1				1		1	7	43					1		8	46	54
Humboldt State U.																					
1975-76						1		2			1	23				2			1	28	29
1976-77		1		1		2			1		3	17				6		3	4	30	34
1977-78										2	1	30							1	32	33
1978-79				1						1	3	23			2	4	1	1	6	30	36

TABLE N-12 (Continued)

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Filipino		No Resp.		Other		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
CSU, Long Beach																					
1975-76				7			1	8		2	1	69				4			2	90	92
1976-77		1		6		2	1	4		3	1	73				12		2	2	103	105
1977-78		1		6		1		10		6	2	87		1		17		1	2	130	132
1978-79		1		8		1		3		6	4	61		1		17	1		5	98	103
CSU, Los Angeles																					
1975-76		2	2	22		2		20		19	1	84			1	8			4	157	161
1976-77			2	19				10	1	5	2	50				5			5	89	94
1977-78				22		1		16	1	14	4	125		2	1	13			6	193	199
1978-79		3	1	29		1	1	11		15	6	120		1	1	23			9	203	212
CSU, Sacramento																					
1975-76		2		5	1	1		2		3	3	57			3	23			7	93	100
1976-77				1				2		3	4	47			1	12		4	5	69	74
1977-78		8		5			1	3	1	8	12	188		1	1	13			15	226	241
1978-79		4		7	2			6		6	7	88			4	11	1	1	14	123	137
San Diego State U.																					
1975-76				3			1	1		1	14	75							15	80	95
1976-77							1				4	81				1			5	82	87
1977-78		1		1						3	1	91							1	96	97
1978-79				4		2		3		3	10	96							10	108	118
San Fran. State U.																					
1975-76				8				7		1	1	47		2		2		2	1	69	70
1976-77			1	3		1		10				43		2		1		2	1	62	63
1977-78				2		1		12			5	54		4		2		4	5	79	84
1978-79		1		6				12	1	2	2	65		6		1			3	93	96
San Jose State U.																					
1975-76		1		8		1		8	2	6		85		1		16		1	2	127	129
1976-77				4		1	1	10		1	2	74		1	2	14			5	105	110
1977-78				3				9			2	70		1	2	15		4	4	102	106
1978-79		18				1		2		2	3	35				6		3	3	67	70
TOTALS																					
1975-76		12	3	89	2	8	3	79	5	50	50	800	1	8	6	71		18	70	1,135	1,205
1976-77	1	7	3	53		10	4	68	6	27	55	725		5	8	74		25	77	994	1,071
1977-78	1	15		50		6	7	96	3	52	62	1,017	1	21	5	102	1	15	80	1,374	1,454
1978-79		31	2	71	3	7	4	68	3	57	87	929	1	15	12	139	4	12	116	1,329	1,445

TABLE N-13

Degrees Conferred in B.S. Degree Programs, by Sex
California Independent Institutions
1972 - 1979

Institution	1972		1973		1974		1975		1976		1977		1978		1979	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Biola	0	22	N/A		0	28	0	29	0	39	1	43	N/A		1	56
Loma Linda	0	66	N/A		2	72	2	81	1	76	1	80	3	81	3	100
Mt. St. Mary's	0	34	N/A		0	63	0	73	0	73	0	68	1	75	0	78
Pt. Loma	N/A		N/A		1	30	2	26	1	34	1	32	0	41	4	36
Univ. of S.F.	1	78	N/A		1	104	2	108	1	118	1	119	N/A		3	122

Graduate degrees represent advanced specialization in nursing. The number of such degrees awarded, and the absence of any clear trends, are shown in Table N-14.

TABLE N-14

Graduate Degrees Conferred in Nursing
California Institutions
1973 - 1979

Institution	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
MASTER'S DEGREE PROGRAMS							
CSU, Chico	1	4	8	6	8	8	3
CSU, Fresno	16	12	18	14	5	11	8
CSU, Los Angeles	24	40	46	29	39	26	21
San Jose State U.	14	9	12	15	19	12	12
CSU, Long Beach	-	-	-	-	-	8	18
Total, CSUC	55	65	84	64	71	65	62
UCLA	59	75	89	69	83	105	85
UCSF	137	153	51	149	155	134	98
Total, UC	196	228	140	218	238	239	183
Loma Linda	19	17	15	22	31	19	23
DOCTORATES DEGREE PROGRAMS							
UCSF	2	7	4	3	2	8	5

Sources: CSUC Statistical Reports; UC Statistical Summary; HEGIS.

Dentistry

Enrollments in California's five dental schools, which are displayed in Table D-1, have registered only modest increases in recent years.

TABLE D-1

Fall Enrollment in Dentistry, California Institutions
1976 - 1979

	Actual							
School	1972	1973	1974	1975	1976	1977	1978	1979
UCSF	317	333	339	352	377	384	401	411
UCLA	395	420	428	425	426	425	406	425
USC	497	502	500	519	508	511	521	584
UOP	417	456	398	404	404	408	401	403
Loma Linda	270	273	289	284	208	233	255	269
Total	1,896	1,984	1,954	1,984	1,923	1,961	1,984	2,092

Sources: HEGIS; UC Statistical Summary.

The composition of this enrollment, by sex and ethnicity, is shown in Table D-2.

As Table D-2 indicates, the percentage of Black students enrolled in the University's two dental schools increased from 7.1 to 8.0 over the three-year period, but the percentage of those in private dental schools declined from 2.2 to 1.2. For Hispanics, at the University, the percentage grew from 11.6 to 14.6 during the same period; in the private schools, however, it declined from 5.7 to 4.9. Women constitute 22.7 percent of the University's dental enrollment, up from 19.8 percent three years ago, and 12.1 percent of the private school enrollment, up from 9.3 percent.

It seems reasonable to infer from these data that the percentage of Blacks and Hispanics enrolled in dentistry at California public institutions now closely approximates the last reported percentages that these minorities represent in the total California population (7.1% and 15.8%, respectively). These percentages of Blacks and Chicanos significantly exceeded those for both of these ethnic minorities in the eligibility pool of recent college graduates (4.6% and 4.9%, respectively).

TABLE D-2

Fall Enrollment in Dentistry, by Sex and Ethnicity, California Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCLA															
1976	10	4	19	11	4	1	40	15	35	7	204	76	312	114	426
1977	10	2	23	18	1	0	55	20	54	6	208	81	351	127	478
1978	4	1	19	23	2	0	47	19	40	8	175	68	287	119	406
1979	7	2	25	18	1	2	61	21	51	13	154	70	299	126	425
UCSF															
1976	1	1	18	9	2	0	53	6	49	2	209	27	332	45	377
1977	1	0	21	8	3	0	71	11	45	4	198	25	339	48	387
1978	1	0	14	10	3	0	82	12	45	5	196	33	341	60	401
1979	1	0	17	8	3	0	84	20	54	6	199	33	358	67	425
UC TOTAL															
1976	11	5	37	20	6	1	93	21	84	9	413	102	644	159	803
1977	11	2	44	26	4	0	126	31	99	10	406	106	690	175	865
1978	5	1	33	33	5	0	129	31	95	13	371	101	628	179	807
1979	8	2	42	26	4	2	145	41	105	19	353	103	657	193	850
LOMA LINDA															
1976	13	0	3	4	0	1	8	1	2	1	169	6	195	13	208
1977	12	3	2	2	0	0	18	4	3	0	181	8	216	17	233
1978	15	7	1	3	0	0	21	10	7	1	186	4	230	25	255
1979	27	10	1	3	0	0	14	6	6	0	190	12	238	31	269
UOP															
1976	0	0	1	0	1	0	52	9	5	1	302	33	361	43	404
1977	0	0	0	0	0	0	56	9	5	1	307	30	368	40	408
1978	1	0	0	0	1	0	55	10	4	1	297	32	358	43	401
1979	0	0	0	0	1	0	50	12	4	0	295	41	350	53	403
USC															
1976	37	6	15	3	4	0	52	6	45	9	327	26	480	50	530
1977	37	9	8	3	3	0	61	5	37	10	306	32	452	59	511
1978	15	4	6	2	5	0	95	13	39	9	300	33	460	61	521
1979	13	2	7	2	3	0	101	10	45	6	360	35	529	55	584
PRIVATE TOTAL															
1976	50	6	19	7	5	1	112	16	52	11	798	65	1,036	106	1,142
1977	49	12	10	5	3	0	135	18	45	11	794	70	1,036	116	1,152
1978	31	11	7	5	6	0	171	33	50	11	783	69	1,048	129	1,177
1979	40	12	8	5	4	0	165	28	55	6	845	88	1,117	139	1,256
GRAND TOTAL															
1976	61	11	56	27	11	2	205	37	136	20	1,211	168	1,651	263	1,914
1977	60	14	54	31	7	0	261	49	144	21	1,200	176	1,726	291	2,017
1978	36	12	40	38	11	0	300	64	145	24	1,154	170	1,676	308	1,984
1979	48	14	50	31	8	2	310	69	160	25	1,198	191	1,774	332	2,106

The number of degrees conferred in dentistry is depicted in Table D-3 on the following page. Considerable variation in output appears to occur from year to year, and no clear trend emerges.

The composition of the graduating classes in dentistry, by sex and ethnicity, is shown in Table D-4 for the last four years.

The apparent progress in admitting traditionally underrepresented minorities into the University's dental program is not yet reflected in graduation rates. In fact, over the past three years, the percentage of Blacks slipped from 4.6 to 4.3 of all graduating students even though Black enrollment increased from 7.1 to 8.0 during that time. Similarly, the percentage of Chicanos dropped from 10.3 percent to 8.1 percent of all graduating students, while enrollment increased from 11.6 percent to 14.6 percent. With women, however, increases in the percentage of the graduating class have exceeded enrollment increases: the percentages of graduates increased up from 9.2 to 16.8, while enrollment was climbing from 19.8 to 22.7.

In the three private dental schools, the percentage of Blacks in the graduating classes dropped from 2.7 to 0.0 over the three years, and the percentage of Hispanics from 5.3 to 3.2. Women constituted 8.4 percent of the 1979 graduating class in private dental schools, up from 5.9 percent three years earlier.

TABLE D-3

Professional Degrees Conferred in Dentistry, California Institutions, 1966-1979

Actual

School	1965-1966	1966-1967	1967-1968	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
UCSF	72	70	68	71	73	74	72	68	77	73	89	76	88	86
UCLA	--	--	27	26	74	92	91	90	93	99	85	94	106	103
USC	94	82	101	107	118	113	121	130	124	122	147	132	134	107
UOP	40	46	58	55	61	79	93	97	191	119	125	137	127	133
Loma Linda	41	57	55	59	59	64	56	64	69	120	66	66	73	68
Total	247	255	309	318	385	422	433	449	554	533	512	505	528	497

Source: John Wong Report, updated by HEGIS.

TABLE D-4

Professional Degrees Conferred in Dentistry, by Sex and Ethnicity, California Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCLA															
1975-76	0	0	3	0	1	0	9	1	11	2	51	7	75	10	85
1976-77	2	2	3	1	3	1	4	2	3	0	49	24	64	30	94
1977-78	3	0	5	0	0	0	17	6	7	1	47	20	79	27	106
1978-79	2	0	4	3	1	0	8	5	4	0	62	14	81	22	103
UCSF															
1975-76	1	0	5	0	0	0	11	4	5	0	61	2	83	6	89
1976-77	0	1	3	1	0	0	3	1	5	0	56	6	67	9	76
1977-78	0	0	7	1	1	0	12	2	11	0	49	5	80	8	88
1978-79	0	0	0	1	0	0	24	1	11	0	38	7	73	9	82
UC TOTAL															
1975-76	1	0	8	0	1	0	20	5	16	2	112	9	158	16	174
1976-77	2	3	6	2	3	1	7	3	8	0	105	30	131	39	170
1977-78	3	0	12	1	1	0	29	8	18	1	96	25	159	35	194
1978-79	2	0	4	4	1	0	32	6	15	0	100	27	154	31	185
LOMA LINDA															
1975-76	3	0	0	1	0	0	7	0	2	2	49	2	61	5	66
1976-77	6	0	0	0	0	0	5	1	1	0	50	3	62	4	66
1977-78	3	1	1	1	0	0	3	0	1	0	61	2	69	4	73
1978-79	5	1	0	0	0	0	6	1	2	0	51	2	64	4	68
UOP															
1975-76	0	0	0	0	0	0	9	1	3	0	105	7	117	8	125
1976-77	3	1	1	0	0	0	15	2	1	0	103	11	123	14	137
1977-78	0	0	0	0	0	0	18	3	1	0	97	8	116	11	127
1978-79	0	0	0	0	0	0	18	3	1	0	103	8	122	11	133
USC															
1975-76	3	3	7	1	0	0	22	1	11	0	97	2	140	7	147
1976-77	4	0	0	0	4	0	15	0	11	0	93	5	127	5	132
1977-78	5	1	5	0	0	0	22	3	7	6	75	10	114	20	134
1978-79	1	0	0	0	2	0	12	1	5	2	76	8	96	11	107
TOTAL PRIVATE															
1975-76	9	3	7	2	0	0	38	2	16	2	251	11	318	20	338
1976-77	13	1	1	0	4	0	35	3	13	0	246	19	312	23	335
1977-78	8	2	6	1	0	0	43	6	9	6	233	20	299	35	334
1978-79	6	1	0	0	2	0	36	5	8	2	230	18	282	26	308
GRAND TOTAL															
1975-76	10	3	15	2	1	0	58	7	32	4	363	20	476	36	512
1976-77	15	4	7	2	7	1	42	6	21	0	351	49	443	62	505
1977-78	11	2	18	2	1	0	72	14	27	7	329	45	458	70	528
1978-79	8	1	4	4	3	0	68	11	23	2	330	39	436	57	493

Pharmacy

Enrollment in the four pharmacy programs in California are shown in Table P-1. This enrollment appears to be relatively stable.

TABLE P-1

Fall Enrollments in Pharmacy, California Institutions
1971 - 1979

Institution/ Program	1971	1972	1973	1974	1975	1976	1977	1978	1979
UCSF Pharm. D.	353	362	378	386	399	417	450	443	457
USC Pharm. D.	--	--	--	532	573	N/A	603	609	605
UOP Pharm. D.	225	524	364	417	422	456	440	404	375
UOP B.S.	254	--*	194	169	184	167	151	157	163
Total	832	886	936	1,335	1,578		1,644	1,613	1,600

*UOP reported a single enrollment total for the two programs.

Sources: UC Statistical Abstract; HEGIS; Institutions.

The composition of enrollment in pharmacy, by sex and ethnicity, is shown in Table P-2 on the following page.

According to Table P-2, Black enrollment in the one pharmacy program in a public institution declined from 7.3 percent to 6.3 percent of the total during the past three years, while Chicano enrollment dropped from 7.3 percent to 6.6 percent. The percentage of women enrolled went from 46.3 to 46.8 during this time.

In the three pharmacy programs in the private sector, Black enrollment declined from 2.0 percent to 1.1 percent of the total, and Chicano enrollment from 4.6 percent to 3.8 percent. The percentage of women enrolled in pharmacy in the private sector climbed from 32.6 to 38.9 over the three-year period.

The number of degrees conferred in pharmacy is shown in Table P-3.

The composition of the graduating classes in pharmacy is shown, by sex and ethnicity, in Table P-4.

TABLE P-2

Fall Enrollment in Pharmacy, by Sex and Ethnicity, California Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCSF															
1976	4	4	11	18	0	0	54	60	24	5	122	98	215	185	400
1977	4	6	13	20	0	0	56	58	22	5	134	109	229	198	427
1978	6	4	17	17	0	0	52	63	21	5	132	126	228	215	443
1979	4	4	17	12	0	0	67	66	21	9	134	123	243	214	457
USC															
1976	19	6	10	10	5	0	99	69	22	6	245	116	400	207	607
1977	11	7	5	10	4	2	117	68	34	6	225	115	396	208	604
1978	5	5	4	8	1	2	123	79	20	11	216	135	369	240	609
1979	22	24	1	4	3	3	129	83	16	8	200	112	371	234	605
UOP (Pharm. D.)															
1976	31	15	1	1	0	1	96	23	16	4	187	81	331	125	456
1977	19	12	1	1	2	0	95	39	8	5	166	92	291	149	440
1978	21	8	0	4	3	1	75	48	6	7	143	88	248	156	404
1979	10	6	4	3	2	0	64	60	6	6	133	81	219	156	375
UOP (B.S.)															
1976	4	3	2	1	0	1	16	19	5	3	71	42	98	69	167
1977	9	4	2	0	0	0	14	19	6	3	59	35	90	61	151
1978	5	6	1	0	0	0	20	19	6	2	62	36	94	63	157
1979	4	2	4	2	1	0	31	20	4	4	64	27	108	55	163

TABLE P-3

Professional Degrees Conferred in Pharmacy
California Institutions
1966-1979

School/ Program	1965-1966	1966-1967	1967-1968	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
UCSF Pharm.D.	80	62	79	71	81	86	83	78	84	84	61	91	85	97
USC Pharm.D.	99	93	122	82	96	114	99	113	131	121	126	142	140	136
UOP Pharm.D.	3	3	2	1	22	30	36	91	130	152	165	137	133	144
UOP B.S.	42	59	62	56	78	71	60	127	62	45	45	61	46	40
Total	224	217	265	210	277	301	278	409	407	402	397	431	407	417

Source: John Wong Report, supplemented by HEGIS.

TABLE P-4

Degrees Conferred, Pharmacy, by Sex and Ethnicity

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCSF															
1975-76	0	0	0	0	0	0	8	19	2	0	29	3	39	22	61
1976-77	1	1	0	3	0	0	17	16	3	0	29	21	50	41	91
1977-78	0	3	2	3	0	0	21	15	4	0	25	15	52	36	88
1978-79	2	0	2	5	0	0	11	13	4	0	29	31	48	49	97
USC															
1975-76	5	2	0	2	1	0	25	16	1	0	56	18	88	38	126
1976-77	7	1	1	4	0	0	20	13	5	1	65	25	98	44	142
1977-78	8	1	1	1	3	0	23	15	3	0	66	20	104	37	141
1978-79	3	4	1	4	1	0	21	14	1	1	57	29	84	52	136
UOP (Pharm. D.)															
1975-76	0	0	1	0	0	0	28	13	1	0	90	32	120	45	165
1976-77	0	0	1	0	0	0	42	7	0	0	67	20	110	27	137
1977-78	0	0	1	0	0	0	28	8	4	0	63	29	96	37	133
1978-79	8	5	1	0	0	0	34	14	0	0	53	29	96	48	144
UOP (B.S.)															
1975-76	0	0	0	1	0	0	3	5	1	0	26	9	30	15	45
1976-77	0	0	0	1	0	0	7	2	1	0	32	18	40	21	61
1977-78	2	1	2	0	0	0	5	4	2	2	17	12	28	18	46
1978-79	1	1	0	1	0	0	2	6	1	1	13	14	17	23	40

As Table P-4 indicates, the percentage of Black graduates in pharmacy at the University went from zero in 1975-76 to 7.2 in 1978-79, and the percentage of Chicanos, from 3.3 to 4.1. In the three programs in independent institutions, the percentage of Black graduates went from 1.2 to 2.2, and that of Hispanics, from 0.9 to 1.3. For women, the percentage of pharmacy graduates at the University jumped from 36.1 to 50.5 over the three-year period, marking the first time that women have outnumbered men graduates in a professional program in the health sciences, other than nursing. In the independent sector, the percentage of women pharmacy graduates rose from 29.2 to 38.4 during the same period.

Optometry

Relatively stable enrollments in California's two professional programs in optometry are shown in Table O-1.

TABLE O-1

Fall Enrollments in Optometry, California Institutions
1972 - 1979

	Actual							
Institution	1972	1973	1974	1975	1976	1977	1978	1979
UC, Berkeley	232	238	251	261	270	257	257	262
Southern California College of Optometry	--	314	367	371	390	397	387	390

Source: John Wong Report, updated by HEGIS; projections from institutions.

Table O-2, on the following page, shows enrollment in optometry, by sex and ethnicity, during the past four years.

At the University, Black enrollment in optometry declined from 4.0 percent of the total to 2.7 percent, while Chicano enrollment increased from 5.1 percent to 5.7 percent. The percentage of women enrolled in optometry has declined from 27.3 to 23.7 of the total. In the State's one private optometry school, the percentage of Black enrollment has risen from 0.5 to 1.3, and that of Chicanos from 2.8 to 3.3. Enrollment of women in this program has shown a dramatic increase over the three years, from 8.2 percent of the total to 23.3 percent.

Degrees conferred in optometry are shown, by sex and ethnicity, in Table O-3.

At the University, the percentage of Black graduates in optometry declined from 1.7 to 0.0, while an increase from 1.7 to 3.1 was taking place for Chicanos. For women graduates, the percentage remained almost constant during this period, rising only from 21.7 to 21.9. In the private optometry program, no Black students were graduated in either of the comparison years. For Chicanos, the percentage of the graduating class dropped from 3.2 to 3.0; for women, the percentage increased from 6.3 to 6.9.

TABLE O-2

Fall Enrollment in Optometry, by Sex and Ethnicity, California Institutions, 1976-1979

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCB															
1976	2	1	6	4	0	0	38	29	9	4	129	31	134	69	253
1977	3	0	5	5	0	0	33	27	12	4	139	27	192	63	255
1978	0	2	3	3	0	0	37	21	11	2	147	31	198	59	257
1979	1	2	2	5	0	0	41	22	13	2	143	31	200	62	262
SCCO															
1976	0	0	1	1	1	0	32	5	11	0	313	26	358	32	390
1977	0	0	1	1	2	0	28	6	10	0	309	40	350	47	397
1978	1	0	2	0	2	0	22	11	12	1	286	50	325	62	387
1979	2	0	4	1	3	0	23	16	9	4	258	70	299	91	390
TOTAL															
1976	2	1	7	5	1	0	70	34	20	4	442	57	542	101	643
1977	3	0	6	6	2	0	61	33	22	4	448	67	542	110	652
1978	1	2	5	3	2	0	59	32	23	3	433	81	523	121	644
1979	3	2	6	6	3	0	64	38	22	6	401	101	499	153	652

TABLE O-3

Degrees Conferred, Optometry, by Sex and Ethnicity

	Non-Resident Alien		Black Non-Hispanic		American Indian/ Alaskan Native		Asian/ Pacific Islander		Hispanic		White Non-Hispanic		Total		All
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
UCB															
1975-76	3	1	2	0	0	0	15	6	1	0	26	6	47	13	60
1976-77	1	1	2	0	0	0	7	10	1	0	27	8	38	19	57
1977-78	1	0	1	2	0	0	7	9	1	3	31	6	41	20	61
1978-79	0	0	0	0	0	0	10	5	2	0	38	9	50	14	64
SCCO															
1975-76	0	0	0	0	0	0	8	1	2	0	49	3	59	4	63
1976-77	0	0	0	0	0	0	6	1	4	0	67	6	77	7	84
1977-78	1	0	1	0	1	0	4	0	2	0	47	6	56	6	62
1978-79	1	0	0	0	0	0	9	1	3	0	81	6	94	7	101
TOTAL															
1975-76	3	1	2	0	0	0	23	7	3	0	75	9	106	17	123
1976-77	1	1	2	0	0	0	13	11	5	0	94	14	115	26	141
1977-78	2	0	2	2	1	0	11	9	3	3	78	12	97	26	123
1978-79	1	0	0	0	0	0	19	6	5	0	119	15	144	21	165

Osteopathy

Osteopathy is included in the Health Sciences Education Plan this year for the first time. There is one institution of osteopathy in California, the College of Osteopathic Medicine of the Pacific, located in Pomona. The institution is relatively new, and has yet to graduate its first class.

Enrollments at the institution are shown below:

Non-Resident Alien		Black Non-Hispanic		Am. Ind./ Alaskan Native		Asian/ Pac. Island.		Hispanic		White Non-Hispanic		Total	
M	F	M	F	M	F	M	F	M	F	M	F	M	F
0	0	1	0	0	1	5	0	1	0	70	13	77	14

The fact that California's only educational program in osteopathic medicine is new is a reflection of the history of the profession in the State. Most California osteopaths became licensed as medical doctors in 1962 as a result of Proposition 22 of that year, a circumstance which obviated the need for osteopathic education. At that time, the only institution in the State offering education in osteopathic medicine was converted to a public allopathic medical school which is now part of the University of California, Irvine.

For twelve years after that date no provision existed in law for new licensure of osteopaths, although several hundred osteopaths who did not want to become medical doctors continued to practice under their existing licenses. In 1974, the State Supreme Court struck down the provisions of the 1962 law which had eliminated new licensure. Since that time, osteopathy in California has grown, with about 450 practitioners now licensed as osteopaths. This growth within the profession created the pressure for the new educational program.

Osteopathy has been identified by a recent Kellogg Foundation study as the fastest growing health profession. There are now fourteen osteopathic medical schools in the United States, with another school scheduled to open in 1981. Several of these fourteen are state institutions, and several others receive some state support. Only one institution is located in the western states, the College of Osteopathic Medicine of the Pacific.

About 1,300 graduates a year are added to the profession, which now numbers about 19,000 osteopaths nationally, all of whom have full parity with medical doctors under state and federal laws. Although some osteopaths may specialize, about 75 percent of osteopaths are engaged in primary care.

Podiatry

Podiatry is also being included in the Plan for the first time. One institution exists, the California College of Podiatric Medicine, in San Francisco. Through its ties with the University of California, San Francisco, this independent institution is receiving $747,000 annually in State support.

Enrollments and graduation rates of the institution are shown below:

	Non-Resident Alien		Black Non-Hispanic		Am. Ind./ Alaska Native		Asian/ Pac. Island.		Hispanic		White Non-Hispanic		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1979 Fall Enrollment	9	1	1	3	0	0	28	8	4	0	297	45	339	57
1978-79 Graduates	0	0	1	0	0	0	3	0	2	0	79	9	85	9

In one sense, it would be relatively easy to respond narrowly to the statutory mandate for this report by concluding that the capacity and output of California's health sciences education programs are entirely adequate to meet the State's overall needs for trained professionals in each field. But the Commission would be ignoring part of its responsibility if it did not note that participation in such educational programs have not been shared equally by all ethnic groups. The progress achieved by public institutions in admitting women to health sciences education programs clearly indicates that the historical mix of students in these programs can be balanced. The challenge now is to achieve a comparable balance in ethnicity.

SECTION B: DISPOSITION OF RECOMMENDATIONS FROM THE COMMISSION'S 1978 PLAN

In its 1978 Health Sciences Education Plan, the Commission addressed problems with long-range policy implications, as well as those which could be resolved within the two-year life of the Plan. A summary of those recommendations together with their current status, follows.

In medical education, five recommendations were made.

1978 Recommendation	Current Status
1. Because of the large and growing number of physicians now practicing or receiving graduate medical education in the State, no additional medical schools or sub-campuses of medical schools should be implemented or phased-in in California until the rate of in-migration drops markedly. During this time, existing and currently planned two-year programs should not be expanded beyond two-year status.	No change has occurred in the status of any medical school or program. Third-year students at the University of California's Los Angeles campus have not yet been assigned to the Charles R. Drew Postgraduate Medical School. The first such students should enter Drew in 1983-84. Looking to that event, the Commission has been asked by the Legislature to determine if some 250 postgraduate students projected for Drew should be funded as University-affiliated residents.
2. The State should determine the mode and degree of State influence on medical education programs, particularly residencies, which would achieve the most beneficial results in effecting desired distribution of medical specialties and optimum utilization of medical education as a means of providing health care in underserved areas.	Several steps have been taken to address the problem of residencies. Control language in the 1980-81 State Budget requires that the University of California develop a detailed justification of any changes in the number and types of residencies, and submit that justification in connection with its 1981-82 Health Sciences Budget. Also, an advisory committee on graduate medical education has been organized under the auspices of the Office of Statewide Health Planning and Development. Legislation requiring

		an extensive study of residencies failed to emerge in the final days of the 1980 session. However, the Legislature imposed budget language on the University reducing the number of State supported residencies by ninety-nine.
3.	The health manpower and health science education planners of the State should develop standards for assessing the adequacy of the total health care which is available to urban and rural Californians, reflecting normal patterns of mobility but taking into account the barriers--cultural, linguistic, economic, and psychological--which may affect the utilization of existing health care resources.	Progress seems to have been made in clarifying the designation of "underservice" in primary medical care. However, there is still a constant shuffling of medical service study areas (and even census tracts) from one designation to another. Also, State health planners have redefined primary care in such a way as to divorce it from total health care. On the other hand, the statewide AHEC (Area Health Education Center), has taken a broader view of primary care in developing programs to increase the effectiveness of a number of types of health professional, and has developed its own approach to the assessment of community health care needs.
4.	The State should provide for the certification of nurse practitioners and should further define this profession and the scope of its practice. The educational and experiential requirements for certification should be established at a standardized professional level, but should provide for a variety of paths to the attainment of those requirements.	Senate Bill 666, which provided for certification of nurse practitioners, died in the Legislature. For further discussion of the status of nurse practitioners see the section of the current Plan dealing with geriatric nurse practitioners.
5.	The State should encourage, through appropriate means, the recruitment of medical	Fairly extensive efforts have been made to increase the diversity of medical school

students and residents from diverse backgrounds, cultures, and languages, and should encourage, through the medical education programs it supports, the development of sensitivity on the part of physicians to the needs of people as individuals and as members of diverse cultures and groups.	student bodies. In addition to those efforts described in the Commission's first Plan, further impetus for recruiting health professionals from underrepresented groups has been provided by the Statewide Area Health Education Center Project, administered by the University's San Francisco Medical Center. Opportunity programs are an integral part of this Project, which is designed to individualize the training of primary care personnel. With the numerous career opportunity, affirmative action, and outreach programs now in operation, there is now a need to coordinate and evaluate such activities.

Two recommendations were made in the 1978 Health Sciences Education Plan, relative to the field of nursing.

1. The Postsecondary Education Commission, together with the Division of Health Professions Development in the Office of Statewide Health Planning and Development, should jointly establish a task force to make a differentiated assessment of statewide nursing-care needs manpower resources. This group should be made up of nursing educators, health planners, hospital spokespersons, legislative staff, representatives of licensure boards and professional associations, working nurses, et al. The task force should explore ways of determining the supply of and demand for nurses, including specialists; resolve problems in the education, employment, and retention of the proper number and types of nurses;	Limits on staff time and resources have delayed the organization of this study. Discussions on this topic have continued, however. At the end of the 1980 session an attempt was made through a legislative resolution to point up the importance of a study on nursing attrition in order to give a private professional association some leverage in obtaining grant funds to carry out such a study. The resolution, however, did not pass.

and assist various agencies and organizations to work together toward fuller utilization of nursing manpower resources.	
2. In order to achieve better coordination and articulation, the two boards now licensing nurses--the Board of Registered Nursing and the Board of Vocational Nurse and Psychiatric Technician Examiners--should be combined into a single board with responsibilities for all licensure of patient-care personnel.	Legislative efforts to accomplish this goal through Senate Bill 666 were not successful. The bill may have been too comprehensive, in that it also sought to provide for certification of nurse practitioners and other specialists, greater Board control over career ladders, a dominant position for RNs in the membership of the joint Board, the eventual elimination of the category of psychiatric technician, the elimination of continuing education requirements, the use of competency-based examinations for licensure, etc. These extensive changes may have prompted a number of groups to join together in opposing the bill.

Three recommendations, all concerning use of auxiliary personnel, were made in the field of dentistry.

1. The State should clarify the scope of practice of extended-function dental auxiliaries, and should provide educational programs to prepare Californians for these para-professional fields.	In general, there has been little change in the status of dental auxiliaries. A bill to place a dental assistant and a dental hygienist on the Board of Dental Examiners died in the Legislature, as did a bill to permit the practice of denturism in California. A bill to authorize dental hygienists to incorporate and practice as dental corporations passed.
2. Greater use should be made of expanded role dental auxiliaries, particularly in meeting dental needs in underserved areas.	See 1 above.

3. Additional minority students should be recruited for careers of facilitating community screening and peer counseling which will provide assistance and support to people in underserved areas who need further dental care.	See 1 above.

Only one recommendation in the 1978 Plan dealt with the field of pharmacy.

1. The State should provide in statute and regulation for the delineation of function between a professional pharmacist and a pharmacy technician, and should provide appropriate educational programs in each field, taking into account the variety of roles which pharmacists may fill, ranging from traditional retail dispensing of drugs to the delivery of primary health care.	A bill authorizing the use of pharmacy technicians in pharmacies was introduced in the Legislature, but died in committee.

Two recommendations were made in the 1978 Plan concerning optometric education and personnel.

1. The State should include optometry in the AB 1503 experimental health manpower programs in order to explore possible new roles for optometrists in primary health care, and for optometric technicians in patient care.	The Division of Health Professions of the Office of Statewide Health Planning and Development reports that optometry, while not mentioned in AB 1503, is eligible for experimental manpower programs under the category of "other".
2. Future health manpower plans prepared by the Office of Statewide Health Planning and Development should investigate the overlapping responsibilities of optometrists and ophthalmologists in providing vision care, and should recommend public policies with respect to the utilization of each kind of vision specialist.	The 1979 Health Manpower Plan incorporates this recommendation and the OSHPD proposes to examine t · issue through the study of graduate medical education it is conducting.

With respect to increasing educational opportunity in the health sciences for historically underrepresented groups, the 1978 Plan offered four recommendations.

1. California institutions should continue outreach, recruiting, and admissions programs to increase the number of minority and women undergraduates as a means of increasing the numbers eligible for programs in the health sciences.	A wide variety of outreach, recruiting, and admissions activities in California institutions suggest that this goal is a high priority at both the campus and the systemwide levels. The data on enrollments and graduation rates, presented earlier, however, indicate that uneven progress toward this goal has been made in some areas of health sciences education.
2. Monitoring of educational opportunities in the health professions should be a part of any ongoing monitoring of affirmative action activities by segmental headquarters and such agencies as the California Postsecondary Education Commission. As a result of such monitoring, those special State and federal programs presently operating to increase enrollment of ethnic minorities and women in the health sciences should be evaluated by January 1, 1981, to determine their effectiveness.	The Commission's monitoring activities in the areas of educational opportunity and affirmative action have been increased through State budget language and through Commission action. Although additional Health Careers Opportunities Programs have been launched with federal money, no evaluation of existing federal and State programs has yet been made.
3. California institutions should continue to recruit and admit additional, qualified ethnic minorities and women in the health sciences to offset the historic underrepresentation of these groups. Women, as a group, are underrepresented in proportion to their numbers as college graduates, as well as their numbers in the total population. They should be given special priority in these recruiting and admission efforts.	The Health Career Opportunity Program in the Office of Statewide Health Planning and Development quotes enrollment figures from the Association of American Medical Colleges, and asserts that minority admissions to California medical schools in 1979 increased 21 percent over the previous year, reversing a four-year decline. Enrollment data collected by the Commission also show continued progress in bringing greater numbers of women into health sciences programs in greater numbers. As noted

		elsewhere in this report, progress in affirmative action seems to have been achieved in medicine and dentistry. Somewhat less progress is evident in nursing, pharmacy, optometry, osteopathy, and podiatry.
4.	All entities of State government which support, govern, or administer education, from the Legislature to local campuses and public school systems, should increase their efforts to identify and overcome those barriers which have prevented minorities and women from participating fully in professional education in the health sciences. Such efforts should be assigned high priority in the allocation of public resources of time and money.	It is difficult to assess the effectiveness of individual approaches, components, or activities of any public agency or institution in achieving progress in expanding educational opportunity for underrepresented groups. The 1978 recommendation reflects the fact that the responsibility for achieving such progress lies with a variety of people and agencies.

SECTION C: SUMMARY OF RECOMMENDATIONS IN OTHER HEALTH-RELATED PLANS

In developing its Health Sciences Education Plan, the Commission is required by the Education Code to "take into account" the Health Manpower Plan issued biennially by the Office of Statewide Health Planning and Development. The second such plan developed by that agency was produced in 1979, and contains a number of recommendations on health manpower which have a bearing on health sciences education.

Moreover, a new State Health Plan has been issued for the first time since 1971. This document, which is discussed later in this section, contains recommendations on manpower and other aspects of health which are relevant to health sciences education. The recommendations from these two Plans follow, together with Commission response.

Health Manpower Plan

Recommendations on Physicians	Commission Response
(Repeated from the 1977 Plan)	
1. No action should be taken at this time to increase the overall supply of physicians in California.	The Commission endorsed Recommendations 1 and 2 in its 1978 Health Sciences Education Plan.
2. The State should increase its encouragement of primary care residency training programs located in rural physician shortage areas and should support the recruitment and admission of persons with rural backgrounds into medical schools.	
(Modified from the 1977 Plan)	
3. The State should evaluate the effectiveness of existing mechanisms and explore other strategies to influence the location of pri-	The Commission had no disagreement with Recommendations 3-7 in its 1978 Health Sciences Education Plan.

mary care physicians and non-physician medical practitioners in urban and rural geographic shortage areas.

4. As an overall state goal, within five years, 50 per cent of physicians entering practice in California should be principally engaged in the delivery of primary care services.

5. The Office of Statewide Health Planning and Development, the Postsecondary Education Commission, and the training institutions should collaborate on research for further evaluation of the numbers needed and deployment, quality of care provided, extent and nature of collaboration with physicians, public acceptability, and cost/benefits of training and utilizing physicians' assistants and nurse practitioners in California.

6. Pending additional research findings, the State should continue to support and encourage the expansion and development of training programs for primary care nurse practitioners and primary care physicians' assistants in sufficient numbers so that the positive contribution to health care services they have already demonstrated can be fully explored. The

State should encourage development of appropriate methods for their reimbursement by third-party payers and should modify administrative regulations so that they can be fully utilized.

7. The State should continue to support existing mechanisms such as the Song-Brown Family Physician Training Act, to increase the number of family practice residents training in California with priority emphasis on those programs which are located in or have strategies oriented towards rural and inner city shortage areas.

8. Fifth-Pathway programs as presently constituted should be continued only through June, 1981. The Office of Statewide Health Planning and Development, in cooperation with the Health Manpower Policy Commission, the California Postsecondary Education Commission and other interested groups, should develop a plan for restructuring Fifth-Pathway programs so that entrance into them thereafter is conditional on participants contributing to meet specific state geographic and specialty goals.

The Commission concurs that Fifth-Pathway programs should be restructured into a plan to require a commitment to service in an underserved area in return for admission to the extra year of clinical training.

(New Recommendations)

9.	For purposes of health manpower planning, primary care should be redefined as "comprehensive primary medical care" and "limited primary medical care" and physician specialties categorized accordingly.	This definition may be useful to those concerned with the details of planning medical care; however, it moves away from the concept of primary health care, a concept which makes use of nonphysician health care providers.
10.	Effective in Fiscal Year 1980-81, there should be an increase in first-year positions in family practice, in accordance with a phase-in plan that would increase the total number of first-year positions to 400 within five years, as compared to a current number of approximately 200 first-year positions.	This recommendation should be held in abeyance until: (1) the University of California, presents its rationale for the development of residencies as required in supplemental language in the 1980-81 State Budget; and (2) the impact of the new statewide Area Health Education Center (AHEC) project on primary care residencies is determined.
11.	The medical education sector should recognize the potential consequences of excesses or imbalances in the supply of specialist physicians and should develop, in cooperation with state planners and other agencies, a voluntary alternative to state regulatory mechanisms.	The Commission concurs with Recommendations 11-13.
12.	The State should support existing mechanisms such as the Song-Brown Family Physician Training Act to expand team-training programs for primary care physicians, primary care physician assistants and family nurse practitioners in rural and inner city shortage areas.	

13. The State should consider changes in the methods and relative reimbursement rates in the Medi-Cal and other publicly funded medical care programs that would result in financial advantages to those primary care physicians and other primary care providers who choose practice locations in underserved rural and urban areas.

Recommendations on Dental Personnel

(Repeated from the 1977 Plan)

14. Significant numbers of California children and adults, especially among low income and ethnic minority groups, have serious dental problems that are not being helped. State policy should encourage and support programs to meet this need through dental health education, dental services, and environmental measures to prevent dental disease.

15. The State should actively promote the fluoridation of community water supplies as the most important single step to prevent dental cares and to free dental health manpower for functions that will prevent and treat other oral pathology.

The Commission had no disagreement with Recommendations 14-18 in its 1978 Health Sciences Education Plan.

16. There should be no special State Initiatives to increase the numbers of dentists trained in California unless the increases are targeted to service in underserved areas or to underserved populations. This recommendation should be contingent on preparation and use of adequate numbers of dental auxiliaries and increases in the proportions of minority personnel in dental health occupations.

17. Full development of regulations for the training and utilization of expanded role dental assistants and expanded role dental hygienists as authorized by AB 1455, 1974, should be completed.

18. The State should encourage and financially support, if necessary, experimentation with the training and utilization of expanded role mid-level auxiliaries who will perform a broad range of preventive, screening, and dental care functions under the general direction of a dentist.

(New Recommendations)

19. The State should permit independent practice by licensed dental hygienists, so that their services are fully accessible to the public, especially in organized, cost-effective service settings.

The Commission concurs in principle, inasmuch as this position is consistent with implicit support of free-standing dental hygienists in its 1978 Health Sciences Education Plan. The Commission suggests a pilot-project approach to this

recommendation in order to insure that the concept is fully tested before implementation.

20. The State should encourage a limited number of pilot projects for the evaluation of the training and utilization of denturists so that acceptability, safety and desirability of their legalization in California can be tested before regulatory laws are changed.

The Commission concurs in principle with this recommendation.

Recommendations on Nursing Personnel

(Modified from the 1977 Plan)

21. State initiatives simply to increase overall supply of nurses should not be undertaken. Any expansion should be specifically targeted toward such goals as solving problems of chronic job vacancies; increasing the supply in underserved geographic areas; increasing the number of needed nurse specialists, such as family nurse practitioners, intensive care nurses and geriatric nurses; increasing the number of nurses who are prepared to serve actively in rural and urban shortage areas of the State and increasing the number of nurses who can work effectively among bilingual and multi-cultural populations.

The Commission concurs with Recommendations 21-23.

(New Recommendations)

22. The State should institute and maintain a system of regular and comprehensive collection and analysis of basic data on all nurses licensed in California, based on a regular reporting procedure required of all licentiates, and capable of making available such essential planning data as numbers, location, employment status, practice specialty, potential availability, and other information necessary to anticipate needs and to facilitate planning for appropriate distribution of nurse personnel supply.

23. In order to employ all feasible measures that will maximize participation of credentialed nurses in active practice, the State and appropriate organizations such as the California Nurses' Association, the California Hospital Association and the California Association of Health Facilities, should analyze the findings of existing research studies and should collaborate to conduct any further studies of California nurses necessary to better understand the social, psychological, economic and employment environment factors responsible for the high rate of job turnover among nurses, includ-

ing the "burn-out" and frustration of well-credentialed RNs.

24. Nursing educational programs should study and incorporate processes of student selection and academic and clinical training of nurses so that those selected and trained are those most likely to practice actively and work in locations where most needed. Where necessary, applicable state policy and regulations governing admissions should be changed to allow for this. Nurse training should include thorough orientation to the realities of actual work, and experience, including clinical training in diverse settings and on different work shifts, in a variety of levels of function and involving realistic stress and workload expectations.

The Commission concurs that attention should be given in the admission process to candidates who are psychologically suited to nursing and that nurse training should make use of diverse settings and time frames to achieve realistic training situations. Admitting only those candidates who are psychologically suited to nursing may pose difficulty for the Community Colleges, where the open-door admissions policy prevails. However, the Commission believes that institutions generally can make such modifications without changes in "state policy and regulations."

25. Organizations and institutions that employ nurses--principally hospitals and nursing homes--should continue to study and implement all changes feasible directed to improving those aspects of the work setting and employment conditions of nurses that will make active and sustained professional practice more attractive. These changes should include, but not be limited to, optimum and equitable pay and ben-

The Commission concurs with Recommendations 25 and 26.

efit packages, flexible shift and hours arrangements, child care facilities, easier access to continued (sic) education, more opportunity for nurses to assume professional practice responsibilities and roles appropriate to their training, and should involve system changes to increase the status and personal job satisfaction of nurses.

26. The State should continue existing mechanisms, such as stipends, salary incentives and deferred or cancelled loans, based on commitments to serve in need areas, and should expand public health service corps programs and should explore other strategies to encourage location of nurses in shortage areas of the State.

Recommendations on Optometrists

(New Recommendation)

27. A special sub-task force made up of representatives of the fields of ophthalmology and optometry should be constituted to function as a part of the collaborative process now being undertaken to study graduate medical education in California. The sub-task force should determine and recommend the appropriate roles and utilization of

The Commission concurs, inasmuch as this recommmendation responds to an issue identified in the 1978 Health Sciences Education Plan.

ophthalmologists and optometrists in the delivery of cost-effective vision care.

Recommendations on Pharmacists

(Repeated from the 1977 Plan)

28. The professional role of pharmacists in the delivery of primary health care should be expanded to make maximum use of the scope and nature of professional pharmacy education.

29. The State should encourage and support further experimentation with training of pharmacy technicians for functions as expanded role pharmacy auxiliaries and the training and utilization of such personnel should be evaluated for quality of care, public acceptability and cost/benefits.

The Commission endorsed Recommendations 28 and 29 in its 1978 Health Sciences Education Plan.

Recommendations on Minorities

(Repeated from the 1977 Plan)

30. The State should provide more active support of programs that promote the preparation, acceptance and training in medical schools and other health professional schools of increased numbers of persons from underrepresented minority backgrounds, who will have a high likeli-

In its 1978 Health Sciences Education Plan, the Commission concurred with Recommendations 30 and 31, and made strong recommendations of its own on this subject. The Commission also pointed out the absence of definitive studies showing a relationship between place of origin and place of practice. The

	hood of practicing in minority health manpower shortage areas.	Commission suggested that increased minority enrollment in health professions education be viewed as a goal in itself--as a means of providing increased opportunity for historically underrepresented groups and for greater diversity within the profession.
31.	The State should provide active support, including financial support, to efforts to increase the number and proportions of underrepresented minorities in the health professions.	
(New Recommendations)		
32.	California should seek a larger share of federal funds and, for more immediate and direct effect, should establish State funding for an appropriate number of community, student or school based health professions recruitment and retention projects.	Regarding Recommendations 32-34, the Commission concurs in principle with the need to make special efforts to recruit additional minorities. In its 1978 Health Sciences Education Plan, the Commission recommended that such special efforts be evaluated to determine their effectiveness. The Commission is not aware that any such evaluations have been conducted.
33.	The number of minority biomedical support type programs on college campuses should be increased through more vigorous pursuit of NIH funds, direct state funding or redirection of existing funds to such programs.	
34.	Summer undergraduate pre-health professional pre-	

paration programs should be instituted in California through funding sources identified in No. 33 above.

35. Admissions procedures to California's health professional schools should be restructured so that the admissions mechanisms result in increased probability that the priority health professional manpower needs of the State are met.

While broad admissions guidelines are matters of public policy, the admissions procedures referred to in Recommendation 35 are generally the prerogative of the institution. The implication of State intervention in admission procedures raises a sensitive issue. The 1978 Health Manpower Plan proposed a quota system which would limit, by specific percentages, the number of students who could enter a particular area, such as research, family practice, etc. Such a system would force students to elect a career pattern without adequate knowledge of the practice of medicine. It also would threaten the tradition of free choice for California medical students.

36. The number of health service corps placements of health professionals in "barrios" and "ghettos" in California should be increased as a short-term measure to make health services available and accessible to persons living in those areas.

The Commission concurs with Recommendation 36, inasmuch as it is similar in principle to one made by the Commission in the 1978 Health Sciences Education Plan.

Recommendation on Women

(New Recommendation)

37. The State should employ all feasible means to increase the proportion of women in health professions toward eventual parity. Efforts should focus on mechanisms to enlarge the applicant pool, the initial enrollment levels, and the retention of trainees. Numbers of women advisors, faculty and counselors should be increased for recruiting, assisting and acting as role models for women in health professions.	The Commission concurs with Recommendation 37. In its 1978 Health Sciences Education Plan the Commission criticized the 1977 Health Manpower Plan for not devoting any attention to women as an underrepresented group in the health professions. Thus, this addition of this recommendation is encouraging.

Other Recommendations

(Repeated from the 1977 Plan)

38. All health professions education should include strong components from the field of social and behavorial sciences and humanistic studies, and understanding of the approaches of holistic health, a knowledge of the capacities of other health care personnel, and training in referring patients to other members of the health team and collaborating in treatment cooperatively with other health disciplines.	The Commission endorsed Recommendations 38-40 in its 1978 Plan.

(Modified from the 1977 Plan)

39. Proposals for National Health Insurance should be analyzed for their impact on California health	

manpower requirements including the optimum use of health manpower for primary medical and dental services, including preventive health services, and also as to their provision for reimbursement of physicians' assistants, nurse practitioners, and other new health practitioners.

40. State health manpower policy should support the training of personnel prepared for health promotion and illness prevention and to provide leadership to the redirection of the health care system toward these ends.

(New Recommendations)

41. State legislation should be enacted to place all categories of nursing personnel under the jurisdiction of one credentialing and regulatory board.

The Commission concurs, inasmuch as a similar recommendation was made in its 1978 Health Sciences Education Plan.

42. State legislation should be enacted to establish administrative mechanisms to evaluate proposals for the credentialing of existing, but currently non-credentialed, categories of health personnel. Proposals for new categories of health personnel and for expanded scopes of practice should be evaluated for need and feasibility under the existing administrative mechanism, health manpower pilot projects (AB 1503).

The Commission concurs with Recommendations 42-44.

43. The State should seek the active participation of the federal government in the development and validation of competence-assurance standards and criteria.

44. The State should review all existing structures and procedures for the credentialing of health personnel, to determine what may be abandoned, or merged, or otherwise changed to eliminate redundancies and unnecessary requirements or procedures.

State Health Plan

The Commission is not required to review the State Health Plan in the same sense in which it "takes into account" the Health Manpower Plan. However, the Commission feels that the former document contains some observations on health manpower which perhaps are more comprehensive than those of the latter document and therefore worthy of note.

The State Health Plan is produced by the Office of Statewide Health Planning and Development (OSHPD), but in a section separate from the Division of Health Professions Development which produces the Health Manpower Plan. Under the National Health Planning and Resources Development Act of 1974, (Public Law 93-641) the OSHPD is required to prepare a preliminary State health plan annually, consisting of the plans of the fourteen Health Systems Agencies throughout the State. The Act also requires the State Health Coordinating Council to produce an annual State health plan which reflects the preliminary State health plan.

California has never created the State Health Coordinating Council required by federal law, nor has the State mandated a State health plan under any other aegis. Thus, the Plan produced by the OSHPD attempts to carry out the spirit of the federal legislation in the absence of the prescribed mechanism to do so. As such, it is an interesting and provocative look at the health care needs of California's citizens. The Plan has been criticized as being an iconoclastic attack on the present health care system, and a grandiose and unrealistic design for a new mode of health care. It has also been defended as a courageous, insightful, and timely attempt to reorient the State's responsibilities in health toward greater cost-effectiveness and better health.

The tone can be detected early in the Plan when the authors identify four "realities":

- Individual behavior, choice and attitude play a major role in the etiology, management, and cure of disease, not to mention the promotion of health.
- Resources of the earth are finite--which is not necessarily to say in short supply but simply not infinite.
- The health care system, in its organization, financing and philosophy, has not been concerned with promotion of health.
- Perverse incentives in that system are creating a service too expensive to be universally available in desired amounts.

The Plan assumes that the level of health experienced by an individual or a society is the product of four related but distinct factors: human biology, environment, behavior, and health care services. In order for California to develop policies which encourage the optional functioning of these factors, six priority issues must be addressed:

- improving health status
- controlling the cost of health care
- supply and regulation of health personnel
- the future of publicly financed health services
- planning for health systems with statewide impact
- coordination of existing State health policies.

For each issue a set of policy recommendations is made. Of particular relevance to this report are those recommendations for the supply and regulation of health personnel. These recommendations and a short rationale for each appear below, together with the Commission responses.

State Health Plan

Recommendations on Supply and Regulation of Health Personnel	Commission Response
1. The tasks, functions, and roles of many health care practitioners should be recognized as frequently overlapping and potentially interchangeable for many purposes. Rationale: Effective planning for and use of health personnel must begin with the acknowledgement that many distinctions among types of personnel are barriers to flexibility, mobility, and innovation.	In its 1978 Plan, the Commission identified this overlap and potential interchangeability as a problem for the planner, particularly since all health professions prepare their personnel as though they were discrete units of health care delivery rather than part of a spectrum of health care providers.
2. Improvements in access to health care services should be achieved in the future through better organization of services, changed reimbursement patterns, improved physician productivity, and innovative use of non-physician manpower, rather than through increases in total supply of physicians. Rationale: There are many ways to overcome remaining problems of access to health care. Physicians are more expensive to educate, remunerate, and back up than any other health professional. Physicians are not needed for many tasks they could and have delegated.	The expanded use of mid-level practitioners, and the development of advanced specialization for such personnel, have been advocated by the Commission in both its 1978 Plan and its current 1980 report.

3. Numbers of enrollees in undergraduate and graduate medical education should be planned to reflect the numbers of physicians needed as determined by the Office of Statewide Health Planning and Development.

   Rationale: Effective voluntary planning and successful incentive programs to effect a desirable geographical distribution and specialty balance may make it unnecessary for the State to consider regulatory measures to affect physician supply. Such planning should be based on need for physicians established by a State source.

Given the continued immigration of physicians and the total physician population, it theoretically might be possible to meet the "number of physicians needed" without any medical education programs in California. However, as a planning agency concerned with educational opportunity, the Commission cannot accept a rationale for providing medical education based solely on manpower needs.

As noted in the rationale, voluntary actions coupled with incentives are the key to the problem of physician distribution. These measures would appear to include the continued recruiting of additional undergraduate and graduate students, who will receive information--and possibly incentives--for choosing a career path which is both personally gratifying and socially productive.

4. The State should view direct regulation of physician numbers and practice location as a last resort for protecting the public's interest in an adequate but not excessive supply of physicians.

   Rationale: An ever-increasing number of physicians entails significant economic consequences and creates a potential for provision of unnecessary

This recommendation is generally consistent with the Commission's position that cooperative and voluntary efforts should be used in working out problems of physician numbers and distribution. Relative to the effects of an "excessive" supply of physicians, health manpower planners should provide a balanced analysis of such effects, so that the public will clearly understand that limiting

	care. If rationalized economic incentives fail to moderate growth . . ., more direct controls may be required.	the number of physicians is in its own interest.
5.	The State should support the preparation of mid-level practitioners to assume appropriate roles in primary health care teams, and identify and employ all feasible methods to remove remaining barriers. Rationale: Physicians' assistants, nurse practitioners, certified nurse midwives, and expanded duty dental auxiliaries have demonstrated that they effectively perform many health care tasks. Their acceptability by the public has been high, they have tended to locate in need areas, and work well in collaboration with their associated professionals. At the same time, attitudes, practice regulations, third-party reimbursement and other barriers continue to impede the maximum use of these health professionals.	The Commission, in its 1978 and 1980 reports, has consistently endorsed the concept of stronger roles for mid-level practitioners, and the elimination of barriers to their full utilization.

6. Steps taken by the State, by schools of nursing, and by hospitals to improve the distribution of nurses should be directed toward changes in recruitment, training, and working conditions, rather than toward increases in overall supply.

   Rationale: The lack of nurses is due to problems "in the pipeline" following entry into school and practice. Additional numbers alone will not improve current, specific shortages.

This recommendation is consistent with the findings of the Commission in developing the nursing section of its 1978 Plan.

7. Diligent recruitment of minority students into all the health professions, and strong support of minority health care practitioners who serve minority groups, should be a secure part of any state health personnel manpower program, particularly where numbers of places, positions, or reimbursements are to be held constant or diminished.

   Rationale: The primary route for minority advancement in the health care professions has been through increasing the supply. Commitment to opportunity and rewards to minority students and practitioners must be maintained within overall, necessary, societal limits.

In all of its planning documents, the Commission has called for the recruitment and support of minority health professionals. At the same time, the Commission has pointed out a greater share of a fixed amount of educational opportunity for one group inevitably will mean less of the same opportunity for another.

8.	Legislation should be enacted to enable a gradual and rational integration of various personnel practice acts, state-recognized roles, and quality monitoring. Rationale: Legislation is necessary to achieve a full-scale, long-term rationalization of personnel resources consistent with related State policies concerning financing and organization of health services.	The Commission supports in principle the "rationalization of personnel resources," but feels that considerable discussion of this problem is necessary before the Legislature undertakes to identify and resolve the problem.
9.	All health professions' education programs should incorporate processes for student selection and training such that those selected and trained are those most likely to practice actively and to work in locations where most needed. Rationale: Many current problems of personnel maldistribution and unavailability can be traced to inadequate selection and training procedures. Selection and training should anticipate actual conditions of practice (some of which, of course, need to be changed) and reflect State health care policy.	This recommendation is consistent with the findings of the Commission in developing the nursing section of its 1978 Plan, and is applicable to all health professions.
10.	Planning methods used by the Office of Statewide Health Planning and De-	The Commission noted in its 1978 Plan that the present system of identifying health

velopment and the Health Systems Agencies should integrate analyses and need projections among different types of manpower and between manpower and other health resources. Rationale: Fragmented planning for particular types of manpower resources is not conducive to consideration of broad cost-effective approaches, alternatives, or trade-offs.	care needs is inflexible; it is geared to discrete categories of professionals and ratios of such professionals to the population, rather than to determining how the total needs can be met through the use of a number of different kinds of health professionals and paraprofessionals working together.

A related recommendation on health manpower appears in the section of the State Health Plan dealing with cost containment.

1. The benefits of existing health facility and personnel licensure and certication regulations should be evaluated, the benefits of future regulations demonstrated, and redundant and duplicative regulations eliminated. Rationale: The intent of licensure and certification regulations is generally to protect public safety and welfare. The impact on costs is not always considered. Under current conditions, such inattention cannot continue.	The Commission believes that a study of personnel licensure and certification is an appropriate part of the "rationalization of personnel resources" called for in Recommendation 8 above.

Several other recommendations from the State Health Plan, which are listed below, are of interest to the Commission, inasmuch as they suggest the need for a shift to preventive health care, a theme given further treatment in Section Three of this report.

Recommendation 1 on Coordination
There should be an emphasis in State programs away from traditional medical services and toward promotion and prevention services, and state agencies should develop ways to shift resources to such programs.

Recommendation 4 on Costs
Major environmental interventions and personal responsibility for health should be recognized as necessary, long-term strategies for controlling health care costs.

Recommendation 5 on Prevention/Promotion
The Office of Statewide Health Planning and Development should establish a task force to develop planning approaches to promotion and prevention, including identification of supply resources, specification of target groups, and estimates of resource requirements.

Recommendation 7 on Prevention/Promotion
The Department of Health Services, in cooperation with universities in the state system, the California Medical Association, and the Department of Education, should design K-12 curricula to emphasize health promotion and disease prevention in health education programs.

Recommendation 9 on Prevention/Promotion
Research should be undertaken to determine effective methods of encouraging personal health promotion, including transmission of information and sources of resistance to changing personal behavior.

Recommendation 10 on Prevention/Promotion
Self-care should be viewed as the prerogative of an individual of any class, and the Health and Welfare Agency should seek ways to promote acceptance of self-care, but not as a substitute for needed or appropriate professional care.

Recommendation 11 on Prevention/Promotion
Health sciences (medical, nursing, etc.) schools and professional associations should accord greater weight to the potential of self-care in chronic disease management, and should train students and practitioners to teach patients to use self-care.

For the Commission's views on the prevention of disease and the promotion of health see the section of this report dealing with preventive health care, Part III.

SECTION D: GERIATRIC NURSE PRACTITIONERS

Assembly Bill 2796 (Chapter 907, Statutes of 1978) directed the Commission to study certain aspects of professional education in the field of geriatric medicine. The Commission reported to the Legislature in January 1980 on all aspects of the study except the role of nurse practitioners and physician assistants in the provision of geriatric care. Inasmuch as the reporting date for that final section of the study was January 1981, the Commission has decided to combine its report on nurse practitioners and physician assistants in geriatric care with this 1980 report.

In its report on geriatric medicine the Commission made this observation:

> It is quite possible that geriatric nursing rather than medicine is the key to improving the health care of the elderly. Inasmuch as nurses spend far more time with patients in long-term-care facilities than do physicians, they become the primary providers of chronic (sic) health care for the aged.

The Commission's 1978 Health Sciences Education Plan listed those training programs for nurse practitioners and physician assistants which had a particular focus. No physician assistant program was oriented toward geriatric care, and only the nurse practitioner program at California State University, Long Beach had a geriatric focus.

Since that time, four other programs have come into existence: two at the University of California, Los Angeles; another at the University's San Francisco Medical Center; and one at San Jose State University. One of the Los Angeles programs is a gerontological nurse practitioner option and gerontological clinical nurse option, both leading to an M.N. degree. The San Francisco program, which is offered primarily at the doctoral level, is in long-term care/gerontological nursing. At San Jose State University a new Gerontological Nurse Specialist program leads to the M.S. degree. Thus, while unique opportunities in geriatric health care seem to exist, particularly for nurse practitioners, relatively little attention has been devoted until recently to educating specialized personnel in this area.

One of the difficulties in establishing nurse practitioner programs in State institutions has been the lack of adequate funding. Some programs have had small enrollments which have not generated enough State support to offset high costs; others are certificate, rather than degree programs, thus earning enrollment-based financial

support at the highest--and least remunerative student/faculty ratio. The threatened reduction of federal support to health personnel programs, including reduced funding for special project grants, increases the fiscal difficulties being encountered today by nurse practitioner programs.

A related problem is that of administrative structure. Of the nine nurse practitioner programs in various fields identified in the 1978 Health Sciences Education Plan, only four reside in university nursing schools. Two are housed in public medical school settings, two in public hospital settings, and one at a State University campus which has no other nursing or allied health programs. Such arrangements militate against a program attaining strong institutional identity, prestige, and support. Fortunately, all the geriatric/gerontological nurse practitioner programs are housed in strong, well-established nursing schools or departments.

Two possible solutions to the funding problem seem readily apparent. One is to cluster a number of advanced nursing specialty programs in the same institution so that they can share expensive resources. This approach seems to have helped the San Francisco and Los Angeles campuses of the University and California State University at Long Beach, in developing stable nurse practitioner programs, including those in geriatrics/gerontology. The other solution is to adopt the subsidy approach used by the State to encourage the training of family nurse practitioners. A portion of the annual Song-Brown Act appropriation is set aside to assist family nurse practitioner programs. In 1979-80 about $157,500 was awarded to such programs, with another $262,500 going to physician assistant programs. If the State considers the training of geriatric nurse practitioners to be a high priority, similar subsidy program might be an effective way to increase the number of such personnel.

In the final analysis, the potential effectiveness of geriatric nurse practitioners depends on the degree to which the State grants the statutory authorization to all nurse practitioners to exercise the independent judgments necessary to provide ongoing health care. The development of greater professional autonomy for nurse practitioners in California has been slow, a situation which may reflect problems of role identity more than adequate financial support.

The inherent ambiguity in the nurse practitioner's role is reflected in language in the Business and Professions Code:

> The Legislature finds that various and conflicting definitions of the nurse practitioner are being created by state agencies and private organizations within California. The Legislature also finds that the public is

harmed by conflicting usage of the title of nurse practitioner and lack of correspondence between use of the title and qualifications of the registered nurse using the title. Therefore, the Legislature finds the public interest served by determination of the legitimate use of the title "nurse practitioner" by registered nurses. [Section 2834.]

In response to this legislative mandate, efforts by the Board of Registered Nursing to reduce the ambiguity have not been entirely successful. Regulations issued by the Board in 1979 specify that nurses may identify themselves to the public as nurse practitioners if they have: (1) completed a program of study approved by the Board; (2) been certified by a national or state organization; or (3) completed a nonapproved program together with two years of experience in "primary health care." No educational level is specified, and associate degree, diploma, and baccalaureate nurses can all become nurse practitioners after the same two semesters of training in a curriculum with seventeen specified elements in an academic or hospital setting. Because of the looseness of the educational requirements under these regulations, the first Health Sciences Education Plan called for the State to take the additional step of certifying nurse practitioners at a standardized high level of educational attainment, provided that experiential pathways to such certification were also available. Legislation sponsored by the Department of Consumer Affairs (SB 666), contained a provision for certification of nurse practitioners, but failed passage in the Legislature early in 1980. 1/

Other factors continue to limit the utilization of nurse practitioners. Nurse practitioners cannot function at any level higher than that allowed to nurses under the Nurse Practice Act. They generally cannot prescribe treatment or medication, admit patients, or be reimbursed by third-party payers. Physician acceptance of nurse practitioners also remains a problem.

In spite of these limitations, however, there is still movement toward expanded roles for nurse practitioners in the care of the chronically ill. A widely-cited study in Utah has shown that geriatric nurse practitioners, social workers, clinical pharmacists, and physicians, are a particularly effective delivery team in providing quality primary health care in nursing homes. An important aspect of this team approach is the ability of the nurse practitioner to train the aides and other non-professional employees of nursing homes to deal with areas which would ordinarily require the attention of a nurse practitioner or physician.

Given the reluctance of physicians to spend great amounts of time on elderly patients with chronic conditions, as noted in the

Commission's report on geriatric medicine, the geriatric nurse practitioner appears to be the health professional best equipped to assume major--perhaps even basic--responsibility for the care of the chronically ill in institutional or home settings.

After an examination of the potential utilization of nurse practitioners in geriatric care, the Commission offers the following findings.

Findings

1. Several geriatric nurse practitioner programs and/or specialized nursing programs with geriatric or gerontological emphases operate within the State. These programs appear to be well-designed, and are housed in educational institutions which can supply the support necessary to insure quality and viability of programs. Nurse practitioner programs in other specialties could benefit from similar arrangements.

2. Advanced nursing specialization requires advanced or postgraduate education. Therefore, there is need to explore the question of whether nurse practitioners--including those with geriatric/gerontological specialization--should be educated at the baccalaureate level or equivalent as a minimum foundation for their advanced certificate or degree training.

3. Before optimum utilization of nurse practitioners in geriatric patient care can be achieved, legal and attitudinal barriers to the semi-autonomous practice of such health professionals must be overcome.

SECTION E: GENERAL AREAS OF CONCERN

In concluding the first section of this report, it is necessary to comment briefly on some concerns which remain from the Commission's 1978 report, or which have been identified in the development of this second report. One of the concerns involves medicine, and two, nursing. The remaining issue deals with the limitations in developing an informational base necessary for decision making in health manpower and health sciences education.

Graduate Medical Education

The size and the composition of the graduate medical education programs in California continue to present problems to manpower and educational planners.

For several years there has been pressure on the University of California, and to a lesser degree on private universities, to modify graduate medical education programs. This pressure has been exerted through recommendations in the Health Manpower Plan, through bills (largely unsuccessful) in the Legislature, and through supplementary budget language. The pressure generally has been applied to the existing distribution of primary and nonprimary care residencies, with calls for more residents in family medicine, general internal medicine, pediatrics, and OB-GYN, as well as in certain specialties perceived to be in short supply: emergency medicine, public health, occupational medicine, and preventive medicine. For all other specialties, medical schools have been called upon to reduce or hold constant their enrollments.

Until recently, compliance with these calls for change has been voluntary, but in the 1980-81 State Budget the Legislature imposed reductions in the number of non primary care residents in the University of California's medical schools. The Legislature also imposed on the University the requirement to develop a system whereby various State priorities are reflected in the creation of new residencies and in the shifting of residencies from location to location and specialty to specialty. The Commission believes that the University's response will be a significant step in improving planning for residencies. But it also believes that the task will be difficult for a number of reasons:

1. State policy on residencies is not clear. The State is committed through the Song-Brown Act to support family practice residencies, but not necessarily to the exclusion of others. The Health Manpower Plan calls for an emphasis on primary care residencies--and appendices to that Plan have

called for drastic reductions in other residencies--but the Plan has not been adopted by the Legislative or Executive Branch. The Legislature, but only through supplemental budget language in recent years, has called for increases in primary care residencies at the expense of others. For many years, however, the residency programs in California were allowed--even encouraged--to grow to their present proportions without policy guidance from the State, so it is not clear even today just what "public policy" is in this area.

Furthermore, there are several recent developments that raise questions about the basic premises of State "policy" on residencies. A study published in 1979 by a group of researchers at the University of Southern California strongly suggests that considerable amounts of what is normally regarded as primary medical care are delivered by specialists. Thus, the assumption of State planners that providing more primary care, requires training more physicians in the primary care specialties may not be exclusively true. In addition, the long-awaited report of the Graduate Medical Education National Advisory Committee, issued just this fall, suggests that virtually all specialists will be in surplus by 1990, even those in primary care, including family physicians. This prediction suggests that the State should be thinking about cutting back on all residencies, not just non primary care.

2. Some State concerns such as geographical maldistribution cannot be solved by approaches based on geography alone. The State may indicate that a particular area is medically underserved, but unless there are teaching or affiliated hospitals in the area at which residents can be trained, graduate medical education cannot be expected to support the State's goal of more medical care in the area.

3. Enrollments in graduate medical education programs in California is not the result of any specific University policy. Enrollments in graduate medical education exceed those in undergraduate medical education by a ratio of at least two to one. There are several explanations of this phenomenon:

   a. California has a number of urban centers containing the kinds of large hospitals in which graduate medical education takes place. Some states, including several with medical schools, simply do not have the population or institutional base for this type of education.

b. California provides graduate medical education for a large number of people who received their basic medical education in other states and countries. California remains an attractive place for graduate and/or professional education for those educated elsewhere.

c. There are medical schools elsewhere in which the graduate medical education component is not as large as the undergraduate medical education component.

d. California sponsors a share of the total United States effort in graduate medical education which is commensurate with its share of the population. The Journal of the American Medical Association notes that 9.6 percent of the 4,630 accredited residency programs in this country are in California (as of October 1979) and that 6,503 residents were being trained in California of the 63,163 being trained nationally (as of September 1978). These ratios compare closely to the approximately 10 percent of the United States population which is made up of Californians.

e. Nationally, there are 71,573 residencies being offered during 1980-81, and there were 62,574 students enrolled in United States medical schools the previous year. This means that there are roughly 14.4 percent more residency slots than there are students in training (and the total length of the two types of training is roughly comparable). Since it is likely that virtually all new graduates of American medical schools will be going through formal residencies, the surplus of residency seats probably exists to accommodate foreign medical graduates and older physicians who are acquiring their first formal specialty training, or perhaps retraining in a new specialty. California may appear to have a disproportionate amount of this training, but even if the State has 6,503 residents, its share of the national residencies is only 9.1 percent. 2/

This detail has been presented in order to show that the question of what is an appropriate level of activity for the University of California in graduate medical education is a complex issue, involving a number of factors other than the State's supply of and demand for specialists.

Attrition in the Nursing Profession

The situation described in the 1978 Health Sciences Education Plan, with respect to the unwillingness of many nurses to work, has not improved.

An examination of help-wanted columns in the classified sections of metropolitan newspapers, and a review of the quarterly and annual reports of the California Hospital Association on the number of vacancies in nursing, should convince any reader that a problem of supply exists. Notwithstanding the existence of a large reservoir of trained nurses in California, large numbers do not choose to work under existing conditions. Regardless of whether it is called a shortage or a withholding of service, the problem of supply is real and it is getting worse. Curiously, it has not been linked by the media to any significant deterioration of health care in the State, although there is ample evidence of the closing of units--even wings--in hospitals for lack of nurses. There is ample evidence, too, that the resulting pressures on the nurses who do work in hospitals further contributes to dissatisfaction and defection.

The lack of dialogue on this situation is also a curious phenomenon. Neither the Legislature nor the Office of Statewide Health Planning and Development has expressed great concern about this problem, but the California Hospital Association--representing the employers of the majority of nurses in the State--has actively sought the support of other agencies, including the Legislature, in dealing with the nurse shortage. Educators have remained relatively silent on this issue as well, perhaps because the solution to the problem does not appear to lie within the nursing curriculum.

Progress in resolving the difficulty, however, is discernible, albeit dimly. Stories in the media have done much to identify the real issues underlying the widespread dissatisfaction with nursing as a career. Increasingly, bright young American women reject the notion that women in nursing must be docile, a quality which nursing recruiters are going overseas to find. With utter candor, the California Hospital Association states that the industry needs docile nurses, and those who are dependable and can follow directions. The nursing profession may resent this attitude, but it scarcely speaks with a single voice about what it is that nurses want.

Programs in Nurse-Midwifery

The administrative structure for programs to train nurse-midwives in California does not appear to be conducive to strong fiscal support and professional identity.

There are three nurse-midwifery programs in California: one at San Francisco General Hospital, sponsored by the OB-GYN Department of the Medical School of the University of California, San Francisco; one in the Department of Community Medicine in the Medical School of the University of California, San Diego; and one which will soon begin operation in the Department of OB-GYN in the Medical School of the University of Southern California.

The most unique program, administratively, is the one in San Francisco. A student wanting to enter this program registers through Continuing Education in Nursing at the University of California, San Francisco, paying a fee of $2,000 for four quarters--almost double the normal fee structure for regularly enrolled students. A dilemma is at work here: The program was conceived philosophically to be open to all nurses--including those without the B.S. degree--and thus must operate at the certificate level. Because it is a certificate program, and incompatible with the San Francisco campus's academic mission in nursing, it cannot be offered as a regular component of nursing instruction at the normal fee level.

Under these circumstances it is remarkable that the program has survived at all, much less graduated its first class and achieved accreditation. Apparently no State higher education funds have supported the instruction in this program. Instead, federal funds--including some coming through the State Department of Health Services--have underwritten much of the start-up costs of the program. Enter another dilemma: the National Health Service Corps, the major supporter of nurse-midwifery students, refuses financial assistance to programs not on a graduate level. The possibility for stable financial support seems to elude the program at every turn.

At a reported annual cost of $25,000 per student, midwifery training may require some special State support if it is to become a permanent part of health science instruction in the University of California. With a student/faculty ratio of eight to one, and with relatively small enrollments, it is clear that only a fraction of the cost of such instruction could be met through conventional enrollment-driven State support.

The nurse-midwifery program at the University of California, San Diego, has faced similar uncertainties in funding. It is a nurse-midwife component of a nurse practitioner program, housed in a medical school. It has also depended heavily on federal funding. It is a certificate program out of necessity, inasmuch as there is no nursing program at the San Diego campus, to provide academic ties, but it is designed as a post-baccalaureate program. It is now accredited, and currently has six students.

The program at the University of Southern California is ready to enroll its first students in January of 1981. It is a post-baccalaureate program, and there are plans to offer ultimately a master's degree, although the campus has no professional program in nursing at the present time. The nurse-midwifery program will begin with only four students, building to an enrollment of twelve. This program was conceived to operate without the "soft money" of federal grants, using instead regular university budget support.

Questions must inevitably be asked concerning these nurse-midwifery programs. Are they really needed? Can they ever become viable?

The Department of Health Services, which has subsidized the nurse-midwifery programs, argues that the programs are needed. At a recent legislative hearing on midwifery it was noted that seventeen counties of the State do not have an obstetrician, and midwives are needed in order to increase access to and lower the costs of prenatal, perinatal, and postnatal care. The option of using midwives was also identified as a consumer issue--a woman should be able to choose to have her baby delivered in other than the impersonal setting of a hospital delivery room by a physician whom she has seen previously only during a series of brief visits. At this hearing there seemed to be cautious acceptance of nurse-midwifery by physicians, but no comparable acceptance of lay midwifery.

As to the viability of nurse-midwifery programs, it is difficult to offer a prediction. The San Francisco program, in particular, requires attention from State planners. Some of its problems would end if it were moved to the postgraduate level, as is the case with the programs at the University of California, San Diego, and the University of Southern California, rather than kept at the certificate level. In determining how to resolve the special problems of the program at San Francisco, it might be useful if the Legislature and interested agencies could explore the entire question of nurse-midwifery without discussing lay-midwifery, a subject which seems to raise other and often emotional issues.

Information Needs for Health Sciences Planning

The research and information capabilities of the State and its institutions have not been utilized extensively enough in providing information to aid in making public policy decisions in health manpower and health sciences education.

The Commission senses that future health sciences education plans will require much better information than that which has characterized its first two plans. Improvements in information are necessary not only in descriptive data about students who are being

educated in the health sciences in California, but also in the basic information that shapes the assumptions under which the State operates.

To be specific, imbalances in health manpower today are largely those of maldistribution, rather than of shortage. In the case of physicians, this maldistribution can be either geographic or by specialty, or in the case of nurses, by willingness to work. Manpower planners--and educational planners, anxious to show that the educational system is concerned with relevancy, profess to understand the supply and demand economics and the incentive systems which presumably lead the health professional to practice in an area where he or she is needed. But the information which underlies the basic assumptions of the planners may be fragmentary, out-of-date, or from geographical or cultural settings unlike California. For example, planners assume from a review of the literature that factors such as place of origin and location of residency training influence the location of practice site for a physician. But what do planners really know of this relationship in California in recent years in the various geographical settings? The absence of applicable research on this question raises doubts about assumptions concerning the factors related to choice of practice site, and yet public policy--including a State-supported subsidy program--is based on this assumption.

Planners also assume that an excessive supply of medical specialists is socially undesirable because health economists have argued that it is, but for the most part that assumption has not been tested in California--particularly in light of the recent study at the University of Southern California that determined that specialists provide considerably more primary health care than was once thought to be the case.

Similarly, planners profess to understand some of the reasons why nurses drop out of active employment in such large numbers. But in California there is yet not enough research that identifies the real reasons why nurses are reluctant to work, even though tens of millions of dollars are being spent annually on band-aid approaches in trying to fill vacant nursing positions.

The research capability to deal with these problems constructively is scarcely lacking in California. California probably has one of the most highly developed research capabilities of any state, including its universities and their organized research institutes, its faculties and graduate students, its private think-tanks such as the Rand Corporation, and its various State agencies in health manpower and planning, health services, educational coordination, and legislative research. What is lacking is a means of coordinating the efforts of all these groups to insure that the basic information

needs of health planners and policy makers in Sacramento can be communicated to and ultimately met by some appropriate element of the research establishment.

During the time this report was being prepared a document was published that could have a significant effect on residencies in the United States, and perhaps on undergraduate medical education as well. After a three-year study, the Graduate Medical Education National Advisory Committee published its report on specialty training in medicine. At the request of the federal government, this distinguished panel has developed a number of recommendations, some of which suggest significant reductions and shifts of emphasis in graduate and undergraduate medical education. Because of the recency of this report, there has been no attempt to examine it here, but the main recommendations of the report--as described in the Chronicle of Higher Education--are contained in the Appendix.

FOOTNOTES

1/ It might be possible to achieve the goal of establishing higher educational standards for nurses who specialize in the care of the elderly by identifying their activities with the public health nurse, rather than with the nurse practitioner or clinical specialist. Public health nurses are certified by the Department of Health Services which requires that they be graduates of baccalaureate nursing programs. A new pilot program established by AB 3122 (Moorhead) of 1980 authorizes the use of equivalent experience in lieu of the degree. Perhaps advanced geriatric nursing could benefit from establishing such educational or equivalency requirements for certification. It is interesting to consider the benefits of a public health nurse functioning as a gerontological specialist, visiting nursing homes regularly to check on the health care needs of older patients.

2/ The exact number of residencies in California has been difficult to determine. The 1978 Health Sciences Education Plan, using materials developed in a survey by the Office of Statewide Health Planning and Development, placed the figure at 8,799 non-federal and 741 federal residencies. However, the list of California residencies in that edition of the Plan, taken from the directory of accredited residencies published by the Liaison Committee on Graduate Medical Education, included 6,813 non-federal and 767 federal positions. In a supplement to the 1977 Health Manpower Plan, the Office of Statewide Health Planning and Development revised the figure for non-federal residencies to 8,058. A new study by that agency, based largely on American Medical Association data and released at the end of 1980, places the non-federal figure at 6,510 for 1980-81, excluding flexible residencies. The California Postsecondary Education Commission acknowledges that its concerns about the growth in residencies in recent years have been influenced by the higher totals in the earlier reports. Now, assuming that the total number of non-federal residencies in California is closer to 6,500 than to 8,500--with roughly 4,200 affiliated with the University of California, 1,500 with independent medical schools, and the balance unaffiliated--there seems to be considerably less reason for concern about the growth of residencies than was suggested by the earlier totals.

PART II

ALLIED HEALTH

INTRODUCTION

For the layman and the professional alike, allied health is the many-headed Hydra of the health care system. In no single area is the enormous growth of the health industry so apparent as in the allied health field. More than 100 allied health occupations and specialties 1/ and over 700 job titles now exist. 2/ By 1978, it was estimated by the then U.S. Department of Health, Education, and Welfare (HEW) that more than 3.5 million workers nationally were employed as allied health workers; if one includes the occupations embraced by this Plan's working definition of allied health (see below), the number would be closer to 4 million. Yet, new specialties continue to multiply and educational programs to prepare individuals for both new and old health occupations abound. It is clear that the Hydra of allied health needs some sort of herculean effort to describe and perhaps to contain it.

DEFINITIONS

The term "allied health" itself is not easily defined. If described broadly, the field would include all professional, technical, and supportive workers in patient care and administrative services, health research, and health education. A recent federal report on allied health, however, excludes all physicians, dentists, optometrists, podiatrists, nurses, pharmacists, veterinarians, and other independent health practitioners as well as professional public health personnel, biomedical research personnel, natural and social scientists working in the health field, nursing auxiliaries, and occupations requiring no formal training. 3/

The American Medical Association (AMA) Council on Medical Education suggests that allied health personnel include professional and supporting workers in the fields of patient care, public health, and health research who assist independent practitioners in providing health services. 4/ The AMA's emphasis in this definition on the "independent practitioner" is vaguely reminiscent of the medical profession's earlier insistence on retaining the term "medical profession" for itself alone. This single-mindedness eventually brought the term "health professions" into use as an umbrella category. From there, it was a short step to "allied health professions" to indicate many diverse practitioners with different educational backgrounds, skills, and functions, working together to serve the patient or client. 5/

The Public Health Service Act similarly defines allied health personnel as all individuals with training and responsibilities for (a) supporting, complementing, or supplementing the professional functions of physicians, dentists, and other health professionals in the delivery of health care to patients, or (b) assisting environmental engineers and other personnel in environmental health control and preventive medicine activities. 6/ On the other hand, the National Commission on Allied Health Education endorses a more autonomous stance for allied health personnel as "all health personnel working toward the common goal of providing the best possible services in patient care and health promotion." 7/

Yet another definition for allied health personnel is that recently proposed by the Health Subcommittee of the U.S. Senate's Labor and Human Resources Committee:

> The term Allied Health Personnel means individuals trained at the associate, baccalaureate, master's or doctoral level in a health-care related science, with responsibility for the delivery of health-care related services (included services related to the identification, evaluation, rehabilitation, and prevention of diseases and disorders, dietary and nutrition services, health promotion, and health systems management), but who, for the purposes of this title, are not graduates of schools of medicine, osteopathy, dentistry, veterinary medicine, optometry, podiatry, pharmacy, or nursing. 8/

In the interest of both clarity and comprehensiveness, this report will look at allied health in the broadest context possible and will exclude only those categories of health professions treated separately in the first section of this report: medicine, nursing, dentistry, pharmacy, optometry, osteopathy, and podiatry.

BACKGROUND

At the turn of the century, health services were provided almost entirely in homes and doctors' offices, and physicians, nurses, and dentists constituted the health care team. Although other health-related professions gradually arose to augment the more established medical cadre--at least twenty-seven such occupations were established between the turn of the century and 1940 9/--it was not until after World War II that the allied health work force exploded upon the health scene. Several reasons account for this phenomenal growth:

- demands for more health services
- changing technology in the health sciences
- shortages in the medical field
- societal pressures for lower cost health care

As the nation's population continues to grow as a result of increased life expectancy, lower infant mortality, control and elimination of disease, and expanded public health education, it is anticipated that the allied health field will continue to expand and that the number of specialized allied health occupations will continue to proliferate.

A look at the want ads of any major metropolitan newspaper reveals the extraordinary range of allied health positions available. These allied health personnel apparently share only a commitment to the health field, for they are clearly differentiated by educational preparation, certification requirements, licensure qualifications, association membership, job functions, and the facilities where they may be employed. An allied health worker could be an eighteen-year-old medical assistant with a high school education who has been trained for 6-8 months in a small proprietary school and is now working under considerable supervision at a set of routine tasks in a physician's office, or a medical technologist with a baccalaureate degree and advanced clinical training in immunohematology who works independently in a large hospital laboratory, relying primarily upon his or her own critical judgment and expertise. Obviously, there is little reason for these two people to share any mutual feeling of professional kinship as members of the allied health field.

Fragmentation, then, has accompanied growth. Each specialty and subspecialty is endowed with what has been called the "identity of one" 10/ syndrome leading to an "impotence of singularity." 11/ Students are schooled in the techniques of their field with little understanding of other disciplines. There is a tendency on the part of independent practitioners, like physicians, to share only the most routine tasks with their non-physician colleagues. Licensing laws and professional organizations jealously guard boundaries. The dangers of provincialism face every profession, and allied health is no exception. When differences are stressed rather than similarities, vision constricts and unnecessary duplication multiplies. Edmund Pellegrino, often quoted spokesman for the health professions, accurately summarizes the situation:

> Let us admit unequivocally that allied health personnel are absolutely essential in providing the complex technical services modern medicine entails. The question is not one of returning to some pristine simplicity which would obviate their use. Instead, the real issue is how to bring about some convergence in function and numbers. The present

course of unguided proliferation is socially untenable and fiscally unsupportable. 12/

Convergence, integration, and coordination are called for. The question is how to begin?

TAXONOMY

Because this report treats the educational needs of the allied health professional, an attempt has been made to circumscribe the dimensions of the allied health field by developing the following taxonomy which places occupational titles under broad functional areas. Any classification system has its limitations, however, and this is not the first attempt made to bring order to the allied health field. 13/ In using this or any other typology, several caveats are in order. First, discrete categories simply do not exist in allied health. Second, categorical boxes can lead to a larger "Pandora's Box" of problems. Sensitivities can be aroused and strong disagreements arise which may cast doubt upon the validity of the basic research effort. In addition, lines between categories are often blurred, and many occupations cut across several functions. For example, a dental hygienist can be labeled as fulfilling a preventive, diagnostic, therapeutic, and educational function. Based on the literature, this report would have the dental hygienist in the preventive category as that is most commonly seen as the primary function of the position. Yet, there assuredly would be disagreement from sources both within and without the profession. In addition, since the system to collect information about the allied health professions is imperfect, no generalizations can be made which is perhaps the most resounding caveat of all.

It is clear why there is no universally accepted allied health taxonomy. Everyone looks at allied health from varying perspectives. For the purposes of this report, however, a single taxonomy is requisite to an understanding of the profession and its educational needs. A classification system such as that displayed in Table AH-1 may also contribute to the coordination and integration of the allied health field. This section of the report should be viewed, therefore, as a beginning rather than as a conclusion.

TABLE AH-1

A Functional Taxonomy of Allied Health Fields

I. PREVENTIVE CARE

Dental Hygienist
Environmental Health Technician
Health Educator
Genetic Counselor
Industrial Hygienist and Safety Specialist
Nutritionist
Sanitarian

II. CLINICAL SERVICES

A. Diagnosis

Audiologist
Bioanalyst
Biochemist
Biochemistry Technologist
Clinical Laboratory Technologist
Clinical Laboratory Bioanalyst
Clinical Laboratory Microbiologist
Cytotechnologist
Electrocardiograph Technician
Electroencephalograph Technician
Hematology Technician
Histologic Technician
Nuclear Medicine Technologist
Ophthalmic Technician/Assistant
Radiologic Technologist, diagnostic
Sonographic Technician
Toxicologist

B. Medical-Surgical Care

1. Autonomous Practitioner

Chiropractor
Naturopathic Physician

2. Paraprofessional

Blood Bank Technologist
Cardiopulmonary Technician
Cardiovascular Technologist
Dental Assistant
Emergency Medical Technician
Hemodialysis Technician
Home Health Aide
Hospital Pharmacy Technician
Medical Assistant (Office)
Midwife
Nursing Assistant/Aide
Psychiatric Technician
Surgical Technician

C. Rehabilitative Care

1. Therapeutic Care

Acupuncturist
Art Therapist
Clinical Social Worker
Clinical Psychologist
Dance Therapist
Dietician
Dietetic Technician
Drama Therapist
Herbalist
Hypnotist
Massage Therapist
Music Therapist
Occupational Therapist
Physical Therapist
Radiologic Technologist, Therapeutic
Sex Therapist
Recreation Therapist
Respiratory Therapist
Speech Pathologist
Ultrasound Therapist

2. Restorative/Prosthetic Care

Dental Technologist
Denturist
Hearing Aid Dispenser
Optical Technician
Optician

Orthotist/Prosthetist

III. ADMINISTRATIVE SERVICES

A. Executive

Health Planner
Health Service Administrator
Hospital Administrator
Nursing Home Administrator

B. Support

Biomedical Equipment Technician
Medical Records Administrator/Technician
Medical Statistician
Medical Writer/Illustrator

IV. RESEARCH AND DEVELOPMENT

Biomedical Engineer
Biomedical Scientist
Geneticist

V. OTHER

It is clear that this listing of occupations is not exhaustive. Several hundred allied health fields can be named, but in such an extensive list, considerable duplication would be inevitable. For example, inhalation therapy, respiratory therapy, and pulmonary technology appear to be the same field; similarly, although there may be technical distinctions, an ambulance attendant, an emergency medical technician, and a paramedic are all involved in emergency care. The latter example illustrates a broad caveat that must be kept in mind in dealing with the allied health fields: educational programs, types of work performed, job titles, and categories of licensure frequently do not match up for allied health personnel as exactly as they do for physicians, dentists, nurses, optometrists, pharmacists, osteopaths, or podiatrists.

Public health is a classic example of the disparity which may occur within a profession. There are a variety of educational programs in this field, leading to degrees in public health, including the M.P.H. and D.P.H., in schools of public health. There is a generic category of work performed which is known as public health, but no job titles

or licensure as public health workers or specialists exist. Public health becomes an adjective, describing the setting in which one carries out more specific work: public health statistician, public health nurse, public health epidemiologist, etc.

LICENSURE

In California, public health nurses and public health microbiologists are licensed by the State, as are personnel in many other allied health fields. In actual practice, this licensure is regarded as certification, since a person is not required to have it before practicing, but in this report all such State credentialing will be identified as licensure to distinguish it from the professional certification granted by private associations, an important form of competence assessment in the health professions.

The responsibility for licensure in the allied health fields is divided in California, with the Department of Consumer Affairs licensing some categories and the Department of Health Services licensing others. Some misalignment of educational programs and licensure occurs, as when environmental health sciences programs lead to licensure as a registered sanitarian. It is also difficult to identify some educational programs as the direct source of allied health personnel. For example, graduates in biology, chemistry, or microbiology may choose to pursue a career in a field other than allied health.

Table AH-2 indicates for various categories of allied health, as identified in the taxonomy of Table AH-1, the appropriate licensing and credentialing agency, if appropriate, and the location of the educational programs which appear to prepare students for the practice of the specialty. The primary source for Table AH-2 is the Inventory of Academic and Occupational Programs, to be found as Part B in the Guide to California Colleges and Universities published by the Commission in August 1980. The information in this Guide is furnished by either the institutions themselves or by the segmental offices.

TABLE AH-2

ALLIED HEALTH OCCUPATIONS, BY CREDENTIALS AND EDUCATIONAL PROGRAMS

Occupation	Licensure	Certification	Educational Programs
Acupuncturist	Board of Medical Quality Assurance		
Art Therapist			Independent Institutions College of Notre Dame U.S. International Univ.
Audiologist/Speech Pathologist	Board of Medical Quality Assurance	American Speech and Hearing Association	University of California Santa Barbara California State Univ. and Coll. Chico Fresno Fullerton Hayward Humboldt Long Beach Los Angeles Northridge Sacramento San Diego San Francisco San Jose Stanislaus

Occupation	Licensure	Certification	Educational Programs
Audiologist/Speech Pathologist (Continued)			Independent Institutions Chapman Loma Linda Pacific Union Stanford La Verne Pacific
Biochemist	Department of Health Services (Bioanalyst or Clinical Chemist)		University of California Berkeley Davis Irvine Los Angeles Riverside San Diego San Francisco Santa Barbara California State Univ. and Coll. Bakersfield Dominguez Hills Fullerton Hayward Long Beach Los Angeles San Francisco San Jose San Luis Obispo

Occupation	Licensure	Certification	Educational Programs
Biochemist (Continued)			Independent Institutions Loma Linda Mt. St. Marys Occidental Pacific Union Stanford
Biomedical Engineer		Association for the Advancement of Medical Instrumentation	University of California Berkeley Davis Los Angeles San Diego Santa Barbara California State Univ. and Coll. Long Beach Sacramento Independent Institutions Southern California
Biomedical Engineering Technician			Community Colleges Chabot College of the Desert Foothill Golden West Grossmont

Occupation	Licensure	Certification	Educational Programs
Biomedical Engineering Technician (Continued)			Community Colleges (Cont.) Los Angeles City Los Angeles Trade/Technical Los Angeles Valley Monterey Napa Orange Coast Ventura
Blood Bank Technologist		American Association of Blood Banks	University of California Berkeley Davis San Francisco
Cardiac Care Technologist			Community Colleges Grossmont Mt. San Antonio
Clinical Laboratory Technologist (See Medical Laboratory Technologist)	Department of Health Services		
Clinical Psychologist	Board of Medical Quality Assurance		California State Univ. and Coll Dominguez Hills

Occupation	Licensure	Certification	Educational Programs
Clinical Psychologist (Continued)	Psychological Examining Committee		Calif. State Univ. and Coll. (Cont.) Fresno Fullerton Hayward Long Beach San Bernardino San Francisco San Jose Stanislaus Independent Institutions California School of Professional Psychology-Fresno Fuller Theological Seminary Graduate School of Human Behavior Institute for Integrative Therapy Pacific Graduate School of Psychology Palo Alto School of Professional Psychology Pepperdine University Psychological Studies Institute Synthesis Graduate School for the Study of Man The Fielding Institute
Clinical Social Worker	Board of Behavioral Science Examiners		University of California Los Angeles

Occupation	Licensure	Certification	Educational Programs
Clinical Social Worker (Continued)			California State Univ. and Coll. San Diego San Francisco Independent Institutions Institute of Clinical Social Work
Chiropractor	Board of Chiropractic Examiners		Independent Institutions Cleveland Chiropractic LA College of Chiropractic Pasadena College of Chiropractic Northern California Chiropractic
Cytotechnologist	Department of Health Services	American Society of Clinical Pathologists	University of California San Francisco Occupational Programs Hospital of the Good Samaritan School of Cytology Mary Summerlin Hippen School of Cytology Los Angeles County-USC Medical Center Sharp Memorial Hospital
Dance Therapist			

Occupation	Licensure	Certification	Educational Programs
Dental Assistant	Board of Dental Examiners	American Dental Assistants Association	Independent Institutions Loma Linda Community Colleges Alameda Allan Hancock Bakersfield Cabrillo Cerritos Chabot Chaffey Citrus City College of San Francisco Contra Costa Cypress Diablo Valley Foothill Grossmont Los Angeles City Long Beach Marin Merced Modesto Monterey Peninsula Orange Coast Palomar Pasadena Redwoods Reedley Rio Hondo Sacramento San Diego Evening

Occupation	Licensure	Certification	Educational Programs
Dental Assistant (Continued)			Community Colleges (Cont.) San Diego Mesa San Jose San Mateo Santa Barbara Santa Rosa Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental/Medical Asst. Oakland College of Dental/Medical Asst. Rancho Arroyo College San Jose Institute of Paramedical Careers Occupational Programs Weslyn College of Medical and Dental Careers Western College of Allied Health Careers Western College of Medical and Dental Assistants Valley College of Medical/Dental Careers United Health Careers Institute Southern California College of Medical and Dental Careers Southland College of Medical-Dental Legal Careers (4 locations)

Occupation	Licensure	Certification	Educational Programs
Dental Assistant (Continued)			Occupational Programs (Cont.) Pacific College of Medical and Dental Assistants North American Correspondence School Mid-State College Lawton School for Medical and Dental Assistants (2 locations) Galen College of Medical and Dental Asst. (2 locations) Glendale College of Business Paramedical Eden Area Vocational Programs Bryman School (9 locations) Andon College of Vocational Health Careers The Barton School Med-Help Training School (2 locations) San Joaquin Valley College Valley Vocational Center Paramedical Occupations Center California Institute of Dental Technology San Diego College of Medical and Dental Assistants North-West College of Medical and Dental Assistants (2 locations)
Dental Hygienist	Board of Dental Examiners		University of California San Francisco

Occupation	Licensure	Certification	Educational Programs
Dental Hygienist (Continued)			Independent Institutions Loma Linda Southern California Community Colleges Cabrillo Cerritos Chabot Cypress Diablo Valley Foothill Fresno Pasadena Sacramento Santa Ana West Los Angeles
Dental Laboratory Technologist	Board of Dental Examiners		Community Colleges City College of San Francisco Cypress Diablo Valley Merced Pasadena Riverside Santa Ana Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental/ Medical Asst.

Occupation	Licensure	Certification	Educational Programs
Dental Laboratory Technologist (Continued)			Occupational Programs (Degree-Granting Authorized) (Cont.) Oakland College of Dental/Medical Asst. Rancho Arroyo College San Jose Institute of Paramedical Careers Occupational Programs Dental Technology Institute California School of Dental Technology Weslyn College of Medical and Dental Careers Ultratex School of Dental Technology Southern California College of Medical and Dental Careers Southland College of Medical-Dental Legal Careers California Institute of Dental Technology
Denturist			
Dietician (see Nutritionist)			

Occupation	Licensure	Certification	Educational Programs
Dietetic Technologist			Community Colleges Chaffey City College of San Francisco Grossmont Los Angeles Valley Long Beach Mission
Drama Therapist			
Electro-Diagnostic Technologist Electrocardiography (EKG) Electroencephalography (EEG)		American Board of Registration of EEG Technologists	Community Colleges Mt. San Antonio Orange Coast Rio Hondo Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental/Medical Asst. San Jose Institute of Paramedical Careers Occupational Programs Med-Help Training School California Paramedical and Technical College Technical Health Careers

Occupation	Licensure	Certification	Educational Programs
Emergency Medical Technician			Community Colleges Allan Hancock Antelope Valley Bakersfield Butte Chabot Chaffey Compton Crafton Hills Cuesta Desert East Los Angeles Evergreen Valley Gavilan Glendale Imperial Valley Los Angeles Pierce Long Beach Modesto Mt. San Antonio Ohlone Orange Coast Porterville Riverside Saddleback San Joaquin Delta San Jose Santa Ana Santa Monica Santa Rosa Sequoias Shasta Sierra Siskiyous

Occupation	Licensure	Certification	Educational Programs
Emergency Medical Technician (Continued)			Community Colleges (Cont.) Skyline Southwestern Victor Valley Yuba Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental/ Medical Asst. San Jose Institute of Paramedical Careers Occupational Programs American College of Paramedical Arts and Sciences United Health Careers Institute Associated Technical College Southland College of Medical-Dental Legal Careers Western College of Medical and Dental Assistants Southern California College of Medical and Dental Careers
Geneticist			University of California Berkeley Davis Irvine

Occupation	Licensure	Certification	Educational Programs
Geneticist (Continued)			University of California (Cont.) Riverside San Diego San Francisco California State Univ. and Coll. San Diego Independent Institutions Stanford
Genetic Counselor			University of California Berkeley
Health Educator			Univeristy of California Los Angeles California State Univ. and Coll. Los Angeles Northridge Sacramento San Francisco San Jose San Luis Obispo

Occupation	Licensure	Certification	Educational Programs
Health Educator (Continued)			Independent Institutions Loma Linda University of San Francisco Whittier Community Colleges American River Cabrillo Chabot City College of San Francisco Desert Diablo Valley Marin Modesto Orange Coast Rio Hondo San Joaquin Delta Skyline Ventura Yuba
Health Services Administrator			Independent Institutions National University La Verne Community Colleges Los Angeles Valley Palomar

Occupation	Licensure	Certification	Educational Programs
Hearing Aid Dispenser	Board of Medical Quality Assurance		
Hematologic Technician			
Hemodialysis Technician			
Herbalist			
Histologic Technician		American Society of Clinical Pathologists	
Home Health Aide			Community Colleges Antelope Valley Evergreen Valley Mission Mt. San Antonio Orange Coast Palomar Saddleback San Francisco Community Center Shasta Victor Valley Yuba

Occupation	Licensure	Certification	Educational Programs
Hospital Administrator			University of California Berkeley Los Angeles San Francisco California State Univ. and Coll. Bakersfield Chico Consortium Dominguez Hills Fresno Los Angeles Northridge Independent Institutions Loma Linda Mt. St. Marys Stanford
Hospital Pharmacy Technician			Community Colleges Cerritos Chabot Cypress Santa Ana
Industrial Hygienist (also Occupational Safety and Health Technologist)			California State Univ. and Coll Hayward

Occupation	Licensure	Certification	Educational Programs
Industrial Hygienist (Continued)			Independent Institutions Cogswell National Community Colleges Chaffey Los Angeles City Merritt Modesto Mt. San Antonio Orange Coast San Diego City
Inhalation Therapist (see Respiratory Therapist)			
Massage Therapist			Occupational Programs Buena School of Massage American Institute of Massage and Therapy Dean Associates at San Andreas Health Council Getting in Touch School of Massage Massage School of Santa Monica Mueller College of Massage Sacramento Holistic Health Institute

Occupation	Licensure	Certification	Educational Programs
Medical Assistant	Board of Medical Quality Assurance and Department of Health Services (for certain procedures)	American Association of Medical Assistants; American Medical Technologists	Independent Institutions Loma Linda Community Colleges Alameda Allan Hancock Bakersfield Cerritos Chabot Chaffey Citrus City College of San Francisco Contra Costa Cosumnes River Cuesta Cypress De Anza Desert East Los Angeles El Camino Indian Valley Los Angeles City Los Angeles Valley Long Beach Modesto Monterey Peninsula Ohlone Orange Coast Palomar Pasadena Redwoods Rio Hondo

Occupation	Licensure	Certification	Educational Programs
Medical Assistant (Continued)			Community Colleges (Cont.) Riverside Saddleback San Bernardino San Diego Evening San Diego Mesa San Mateo Santa Ana Santa Barbara Santa Rosa Shasta West Valley Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental/Medical Asst. Oakland College of Dental/Medical Asst. Rancho Arroyo College San Jose Institute of Paramedic Careers Occupational Programs Bryman School (9 locations) CCDS Community Skill Center Paramedical Occupations Center The Barton School Med-Help Training San Joaquin Valley College

Occupation	Licensure	Certification	Educational Programs
Medical Assistant (Continued)			Occupational Programs (Cont.) Weslyn College of Medical and Dental Careers Western College of Allied Health Careers Western College of Medical and Dental Assistants Valley College of Medical/Dental Careers United Health Careers Institute Southern California College of Medical and Dental Careers Southland College of Medical-Dental-Legal Careers (4 locations) Pacific College of Medical and Dental Assts. North American Correspondence School North-West College of Medical and Dental Assts. (2 locations) Medical Training Institute Mid-State College Lawton Institute of Medical Studies Lawton School for Medical and Dental Assts. (2 locations) HMO Research Institute Hillcrest College Galen College of Medical and Dental Assts. (2 locations) Glendale College of Paramedicals Cabrillo School of Nursing California Paramedical and Technical College

Occupation	Licensure	Certification	Educational Programs
Medical Assistant (Continued)			Occupational Programs (Cont.) Andon College Vocational Health Careers MTD Business College Institute of Medical Studies Associated Technical College California Pacific College/Institute of Medical Studies San Diego College of Medical and Dental Assistants Eaton College Maric College
Medical Laboratory Technologist	Department of Health Services	American Society of Clinical Pathologists	California State Univ. and Coll. Bakersfield Chico Dominguez Hills Fullerton Hayward Humboldt Long Beach Los Angeles Northridge Pomona Sacramento San Francisco San Jose San Luis Obispo Sonoma

Occupation	Licensure	Certification	Educational Programs
Medical Laboratory Technologist (Continued)			Independent Institutions California Lutheran College of Notre Dame Holy Names Loma Linda Pacific Union Community Colleges Chabot Desert Fullerton Laney San Diego Mesa Ventura Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental and Medical Asst. Oakland College of Dental and Medical Asst. San Jose Institute of Paramedical Careers Occupational Programs More than 50 hospitals offer the one-year clinical training required for licensure in laboratory technology.

Occupation	Licensure	Certification	Educational Programs
Medical Records Administrator/Librarian		American Medical Records Association	University of California Los Angeles Independent Institutions Loma Linda
Medical Records Technician		American Medical Records Association	Community Colleges Cerritos Chabot City College of San Francisco Crafton Hills Cypress East Los Angeles Fresno San Diego Evening San Diego Mesa West Valley Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental and Medical Asst. Occupational Programs Weslyn College of Medical and Dental Careers West Valley Occupational Center Grossmont School District Health Careers Center Galen College of Medical and Dental Assts.

Occupation	Licensure	Certification	Educational Programs
Midwife	Board of Medical Quality Assurance		
Music Therapist			
Naturopathic Physician			Independent Institutions Pacific College of Naturopathic Medicine
Nuclear Medicine Technologist	Department of Health Services	American Registry of Radiologic Technologists	Independent Institutions Loma Linda Community Colleges Los Angeles City Occupational Programs Charles R. Drew Postgraduate Medical School Cancer Foundation of Santa Barbara
Nursing Assistant/Aide	Department of Health Services		Community Colleges Allan Hancock Antelope Valley Butte Chaffey

Occupation	Licensure	Certification	Educational Programs
Nursing Assistant/Aide (Continued)			Community Colleges (Cont.) Citrus Cuesta Imperial Valley Long Beach Marin Merced Merritt Mission Modesto Porterville Redwoods Saddleback San Francisco Community Center Santa Monica Shasta Southwestern Victor Valley Yuba Occupational Programs (Degree-Granting Authorized) Bay Cities College of Dental and Medical Asst. Rancho Arroyo College San Jose Institute of Paramedical Careers Occupational Programs Medical Services Training Center HMO Research Institute

Occupation	Licensure	Certification	Educational Programs
Nursing Assistant/Aide (Continued)			Occupational Programs (Cont.) Harbor Occupational Center Hillcrest College Hilldale Vocational School Grossmont School District Health Careers Center Cabrillo School of Nursing California Pacific College Palo Vista College of Nursing and Allied Health CCDS Community Skill Center Valley Vocational Center Paramedical Occupational Center West Valley Occupational Center
Nursing Home Administrator	Board of Examiners of Nursing Home Administrators		
Nutritionist			University of California Davis California State Univ. and Coll. Chico Fresno Long Beach Los Angeles Northridge Pomona

Occupation	Licensure	Certification	Educational Programs
Nutritionist (Continued)			Calif. State Univ. and Coll. (Cont. San Diego San Jose San Luis Obispo Independent Institutions Chapman College of Notre Dame Loma Linda Pacific Union Whittier Community Colleges American River Bakersfield Butte Canada Chabot City College of San Francisco Compton Fullerton Hartnell Los Angeles City Los Angeles Harbor Lassen Long Beach Los Medanos Merritt Moorpark Mt. San Antonio Orange Coast

Occupation	Licensure	Certification	Educational Programs
Nutritionist (Continued)			Community Colleges (Cont.) Pasadena Riverside San Bernardino San Joaquin Delta Santa Ana Santa Rosa Ventura West Valley
Occupational Therapist		American Occupational Therapy Association	California State Univ. and Coll. San Jose Independent Institutions Loma Linda Southern California Community Colleges Chabot Fullerton Los Angeles City Monterey Peninsula Ventura
Ophthalmic Technologist			Community Colleges Canada Cerritos

Occupation	Licensure	Certification	Educational Programs
Ophthalmic Technologist (Continued).			Community Colleges (Cont.) Citrus Crafton Hills Merritt San Diego City
Optician, Dispensing	Board of Medical Quality Assurance		
Optical Technician			Community Colleges Crafton Hills Los Angeles City Santa Rosa Occupational Programs Delco College of Optics Valley College of Medical and Dental Assts. American College of Optics
Optometric Technologist			Independent Institutions Southern California College of Optometry Community Colleges Cypress

Occupation	Licensure	Certification	Educational Programs
Orthotist/Prosthetist			Community Colleges Cerritos Chabot Foothill Los Angeles Southwest
Physical Therapist	Board of Medical Quality Assurance		University of California San Francisco California State Univ. and Coll Fresno Long Beach Northridge Independent Institutions Loma Linda Mt. St. Marys Stanford Southern California
Physical Therapy Asst.			Community Colleges Cerritos De Anza Fullerton Imperial Valley Los Angeles Pierce Monterey Peninsula

Occupation	Licensure	Certification	Educational Programs
Physical Therapy Asst. (Continued)			Community Colleges (Cont.) Mt. San Antonio San Diego Mesa Ventura Occupational Programs Cobb Method Self-Employment Caree Center
Psychiatric Technician	Board of Licensed Vocational Nurse and Psychiatric Technician Examiners		Community Colleges Cerritos Cuesta Cypress East Los Angeles Golden West Los Angeles Trade-Technical Mission Mt. San Antonio Napa Porterville Rio Hondo Saddleback San Bernardino San Francisco Community Center San Joaquin Delta Santa Rosa Ventura

Occupation	Licensure	Certification	Educational Programs
Psychiatric Technician (Continued)			Occupational Programs (Degree-Granting Authorized) Rancho Arroyo College Occupational Programs West Valley Occupational Center Hillcrest College Grossmont School District Health Careers Center California Pacific College Palo Vista College of Nursing and Allied Health Sciences Valley Vocational Center
Radiologic Technologist, Diagnostic Radiologic Technologist, Therapeutic	Department of Health Services	American Registry of Radiologic Technologists	University of California Irvine San Francisco California State Univ. and Coll. Los Angeles Northridge San Diego Independent Institutions Loma Linda Southern California

Occupation	Licensure	Certification	Educational Programs
Radiologic Technologist, Diagnostic Radiologic Technologist, Therapeutic (Continued)			Community Colleges Antelope Valley Bakersfield Cabrillo Canada Chabot Chaffey City College of San Francisco Compton Cypress El Camino Foothill Fresno Los Angeles City Long Beach Merced Merritt Mt. San Antonio Orange Coast Pasadena Saddleback San Diego Evening San Diego Mesa San Joaquin Delta Santa Barbara Santa Monica Santa Rosa Ventura Yuba

Occupation	Licensure	Certification	Educational Programs
Radiologic Technologist, Diagnostic Radiologic Technologist, Therapeutic (Continued)			Occupational Programs West Valley Occupational Center St. Francis Hospital School of Radiologic Technology St. Johns Hospital School of Radiologic Technology St. Josephs Medical Center School of Radiologic Technology San Bernardino County Hospital School of Radiologic Technology Santa Monica Hospital School of X-Ray Technology Sutter Community Hospital School of Radiologic Technology Peninsula Hospital School of X-Ray Technology O'Connor Hospital School of X-Ray Technology Huntington Memorial Hospital School of X-Ray Technology Daniel Freeman Memorial Hospital School of Radiologic Technology California Hospital Medical Center School of Radiologic Technology City of Hope Medical Center School of Radiologic Technology Associated Technical College Los Angeles County-USC Medical Center UCLA Center for the Health Sciences University Hospital of San Diego County

Occupation	Licensure	Certification	Educational Programs
Radiologic Technologist, Diagnostic Radiologic Technologist, Therapeutic (Continued)			Occupational Programs (Cont.) Zellerbach Saroni Tumor Institute of Mt. Zion Hospital Cancer Foundation of Santa Barbara Stanford University Hospital LA County-Harbor General Hospital
Recreation Therapist			
Respiratory Therapist		National Board for Respiratory Therapy	Independent Institutions Loma Linda Mt. St. Marys Casa Loma Institute of Technology Community Colleges American River Butte Chabot Compton Crafton Hills Desert East Los Angeles El Camino Foothill Fresno Grossmont Los Angeles Valley Long Beach Mt. San Antonio

Occupation	Licensure	Certification	Educational Programs
Respiratory Therapist (Continued)			Community Colleges (Cont.) Napa Orange Coast Rio Hondo Saddleback Santa Monica Santa Rosa Skyline Ventura Victor Valley Occupational Programs Valley College of Medical/Dental Careers Southland College of Medical-Dental Legal Careers (3 locations) Medical Training Institute Eden Area Vocational Program California College for Respiratory Therapy California Pacific College/Institute of Medical Studies California Paramedical and Technical College UCLA Center for the Health Sciences American College of Paramedical Arts and Sciences North-West College of Medical and Dental Assistants

Occupation	Licensure	Certification	Educational Programs
Sanitarian	Department of Health Services		
Sex Therapist	Board of Behavioral Science Examiners (for Marriage Counselor)		
Sonographic Technician			
Surgical Technician		Association of Operating Room Technicians	Community Colleges Los Angeles Trade-Technical Long Beach Mission Occupational Programs San Joaquin Valley College California Paramedical and Technical College Simi Valley Adult School American College of Paramedical Arts and Sciences Southland College of Medical-Dental-Legal Careers Maric College

EDUCATION AND TRAINING

Historically, education for many allied health disciplines began either through coordinated efforts with existing programs in nursing or as on-the-job training in health care facilities. Individuals trained in this fashion then formed professional associations which in turn established standards for accrediting nonacademic clinical programs of study. The standards for medical technology, for example, which is among the oldest allied health fields, were developed in the early 1930s. As demand for allied health personnel and the cost of preparing them increased, however, on-the-job training became largely impractical, and training moved from clinical to academic settings. In 1950, the University of Pennsylvania established the School of Allied Health Professionals, the first allied health school in the country; in 1957-58, the University of Florida and Indiana University followed. At latest count, at least sixty-six colleges and universities have schools or divisions of allied health.

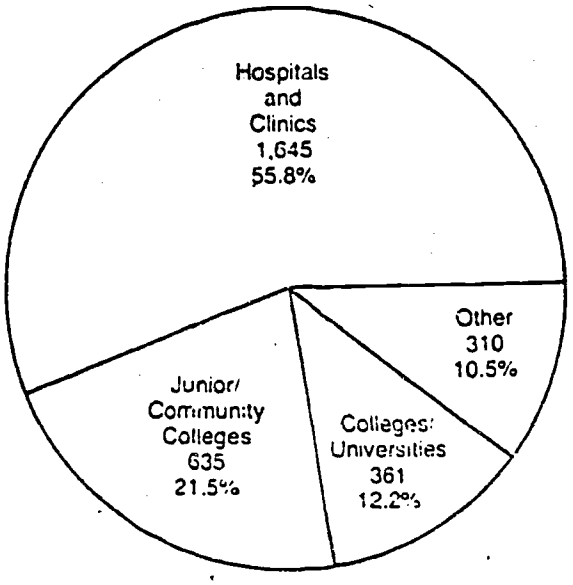
In 1966, the Allied Health Professions Personnel Training Act gave impetus to the creation of new programs and the strengthening of existing ones. Designed "to increase the opportunities for training of medical technologists and personnel in other allied health professions" and "to improve the educational quality of the schools training such allied health professions personnel," the Act provided grants-in-aid to public and private nonprofit training centers. As this federal funding became available for buildings, equipment, faculty salaries, and other operating costs, as well as for student stipends and tuition, local, state, and private funding sources also expanded. The proliferation of two-year community colleges and technical institutes with their certificate and associate degree programs, together with the ready availability of financing, fortuitously coincided with the burgeoning demand for allied health personnel, and postsecondary education became a partner of the health industry in producing allied health professionals.

The community colleges and technical institutes have not been totally responsible for the educational preparation of all allied health personnel, however. Many health professionals require graduate or baccalaureate degrees. Indeed, there are pressures from our credentialed and credentialing society to develop baccalaureate programs to replace associate degree courses of study and postgraduate training to replace bachelor's level programs. Hospitals and clinics, too, maintain a significant number of allied health training programs (55.8% nationally), and other programs reside in medical schools (5%), U.S. government institutions (2.1%), special schools (2%), proprietary schools (.8%), and blood banks (.6%). The following graph developed by the Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical

Association, although relying upon a different data base from this report, is helpful in showing the distribution of sponsorships of CAHEA-AMA accredited allied health programs in the U.S. 14/

FIGURE I

DISTRIBUTION OF SPONSORSHIP OF ACCREDITED ALLIED HEALTH PROGRAMS NATIONALLY, 1978



The breakdown of allied health education programs is shown somewhat differently in the final report of a two-year study done by the National Commission on Allied Health Education (NCAHE): 52 to 54 percent are housed in collegiate settings, 33 to 35 percent in hospitals, 10 to 12 percent in postsecondary noncollegiate institutions like public vocational-technical institutes and private career schools, and 1 percent in the armed forces. 15/ Whatever the actual percentage differences may be, it is clear that colleges and universities sponsor a significant proportion of all allied health training programs in the country today. The NCAHE data (although skewed by a 20 percent nonresponse rate) indicates that in 1975 over half of the 3,000 institutions of higher education in the country sponsored at least one allied health program. Such programs were more likely to be offered by public collegiate institutions than by private institutions and by two-year institutions rather than four-year institutions. 16/

The total number of allied health educational programs in operation today--academic and nonacademic, accredited and nonaccredited--is

not easily determined. From data available in 1979 from HEW's Division of Associated Health Professions, more than 11,000 programs could be identified nationally in 1975 with about 220,000 graduates. 17/ Adding only a conservative percentage of increase for the period 1975-1980, one can see that the education and training of allied health professionals is big business in itself.

In California, allied health training programs exist in all segments of postsecondary education. The University of California has only a few such degree-granting programs which can be readily identified from the regular data channels such as the Higher Education General Information Survey (HEGIS), but a recent inventory by a faculty committee reportedly has found a substantial number of professional certificate programs in allied health. 18/ The California State University and Colleges system has about eight major degree programs in allied health, plus a coordinating unit in the Chancellor's Office funded by a federal grant. The independent four-year institutions in California generally support only a limited number of allied health programs, the major exception being Loma Linda University, which has a number of programs within a School of Allied Health.

Large numbers of allied health programs of two years or shorter duration are located in the 106 public Community Colleges within the State. A somewhat smaller group of programs is available through secondary school districts--in high schools, regional occupational programs or centers, skills centers, or adult schools. Private vocational schools also play a significant role in a number of the allied health fields. A final group of programs is sponsored by hospitals, which are the primary employers in many allied health fields.

Data on enrollments and the number of graduates of these programs are not universally available or reliable. For degree programs in the University and the State University the data are generally quite good, subject to the problem of inconsistent labeling of programs from campus to campus, with enrollments and graduates identified by sex and ethnicity through the Commission's statewide information system. For independent institutions the HEGIS procedures are used, producing only the distribution by sex for graduates each year and data for enrollments by sex only in alternate years.

Community College data have been difficult to collect. HEGIS has provided information on sex of graduates, but no data on enrollment. The Commission's first efforts to put Community College data into its information system have been disappointing. Sixty-three Community Colleges, including some of the largest in the State, reported no data on enrollment by major, and a number of other campuses had incomplete data on enrollment by major. However, data are available by sex for the graduates of the Community College allied health programs through HEGIS.

Information on enrollment and completions in allied health programs operated by secondary school districts is available through an annual reporting requirement imposed on vocational education programs by the State Department of Education, which is the agency with federally mandated information responsibilities in vocational education. Community Colleges also report data on vocational education programs, including those in allied health, through this mechanism.

Historically, it has been difficult to obtain data on enrollments and outputs from the private vocational schools. These schools have felt that such information was indeed private, in the same sense that their financial data were privileged, and that disclosures might put some schools at a competitive disadvantage within the industry. With increased participation in federal aid programs requiring certain accountability, the private school industry has, in recent years, moved toward greater acceptance of a responsibility to report data to State and federal agencies. The Commission achieved a high degree of cooperation from the industry in carrying out the first "Career School Survey," using the federal survey instrument entitled, Survey of Programs and Enrollments, Postsecondary Schools. Data from that survey for 1978-79 are included in this report in several tables which list the schools by program but aggregate the data from all private schools operating each program.

The final group of allied health programs, those sponsored by hospitals, has also been difficult for educational agencies such as the Commission to monitor. Enrollment and output data for hospital-based programs that are accredited by the Committee on Allied Health Education and Accredition/American Medical Association are generally reported in AMA publications, but it is virtually impossible to know the status of all non-accredited programs. At the State level, a different section of the Education Code covers hospital-based programs than that which deals with vocational schools. Apparently some hospital programs are reported through the "Career Schools Survey," some are identified through the annual reports made to the Health Facilities Commission, and some may not be reported at all. The Commission anticipates that through the attention devoted to allied health in this report it will be able to do a more comprehensive survey of hospital-based programs when it conducts the Survey of Programs and Enrollments, Postsecondary Schools in the future.

Data on enrollments in eight allied health programs in the University and the State University are shown in Table AH-3.

Several significant relationships are revealed by an examination of Table AH-3. First, and perhaps most surprising, in all of these fields there are more women than men enrolled. Counting all

TABLE AH-3

Enrollment, Public Institutions, Allied Health, Fall 1979

Program and Institution	Non Resident Alien		Black Non-Hispanic		American Indian Alaska Native		Asian Pacific Islander		Hispanic		White		Filipino		No Response		Other		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Clinical Social Work																				
CSUC																				
Undergraduate																				
Los Angeles	0	0	9	21	1	1	1	2	5	18	7	30	0	0	4	13	0	0	27	85
Graduate																				
Fresno	0	0	2	2	2	0	0	1	3	3	16	13	0	0	10	2	0	0	33	21
San Diego	0	0	1	1	1	0	0	0	1	1	7	32	0	0	4	6	0	1	14	41
San Francisco	0	0	0	6	0	0	3	0	0	1	5	25	0	1	4	15	0	1	12	49
Dental Hygiene																				
UC																				
Undergraduate																				
San Francisco	0	0	0	1	0	0	0	14	1	3	0	28	0	2	0	0	0	1	1	47
Medical Laboratory Technology																				
CSUC																				
Undergraduate																				
Bakersfield	1	0	0	0	0	0	0	0	0	1	2	4	1	0	0	0	0	0	4	5
Chico	1	2	1	6	0	0	0	0	1	0	13	21	0	0	1	8	0	0	17	32
Dominguez Hills	1	3	9	10	0	1	5	14	3	3	10	21	8	18	1	2	0	0	37	72
Los Angeles	4	7	4	8	0	0	18	27	5	11	14	16	3	17	9	17	0	0	57	103
Sacramento	3	1	2	2	0	1	2	6	1	1	20	37	1	1	21	31	2	1	52	81
San Francisco	6	8	3	12	0	1	22	45	1	7	17	45	16	26	14	37	2	4	81	185
San Jose	2	3	3	3	1	0	3	16	0	1	7	36	2	4	12	27	1	5	31	95
Graduate																				
San Francisco	2	4	0	2	0	3	3	15	1	2	18	40	1	1	9	18	0	1	34	86
Occupational Therapy																				
CSUC																				
Undergraduate																				
San Jose	0	1	0	5	0	3	0	20	0	5	3	99	1	1	5	56	0	8	9	198
Graduate																				
San Jose	0	0	0	1	0	0	0	2	0	1	0	12	0	0	0	13	0	0	0	29

TABLE AH-3 (Continued)

Program and Institution	Non Resident Alien M	Non Resident Alien F	Black Non-Hispanic M	Black Non-Hispanic F	American Indian Alaska Native M	American Indian Alaska Native F	Asian Pacific Islander M	Asian Pacific Islander F	Hispanic M	Hispanic F	White M	White F	Filipino M	Filipino F	No Response M	No Response F	Other M	Other F	Total M	Total F
Physical Therapy																				
UC																				
Undergraduate																				
San Francisco	0	1	0	0	0	1	1	2	0	0	6	27	0	2	0	0	0	0	7	33
CSUC																				
Undergraduate																				
Fresno	0	0	0	5	2	3	3	8	7	10	40	160	0	0	15	16	0	2	67	204
Long Beach	0	0	11	37	1	3	6	30	15	19	41	205	1	6	40	155	5	12	120	467
Northridge	0	0	7	6	0	0	5	15	5	8	29	86	2	3	9	26	2	3	59	147
Public Health																				
UC																				
Undergraduate																				
Los Angeles	0	1	1	3	0	0	0	4	0	3	6	18	1	1	1	0	0	1	9	31
Graduate																				
Berkeley	16	13	4	10	12	12	8	12	7	10	63	118	0	1	4	8	0	2	114	186
Los Angeles	2	5	0	4	0	0	6	5	5	1	39	48	0	0	5	12	0	1	57	76
Professional																				
Los Angeles	12	19	6	9	0	4	2	14	9	14	56	131	0	2	13	26	0	0	98	219
Radiologic Technology																				
UC																				
Graduate																				
Irvine	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0
CSUC																				
Undergraduate																				
Northridge	0	0	0	1	0	0	0	0	0	0	5	11	1	0	3	1	0	1	9	14
Graduate																				
San Diego	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0	1	1	4	3

TABLE AH-3 (Continued)

Program and Institution	Non Resident Alien M	Non Resident Alien F	Black Non-Hispanic M	Black Non-Hispanic F	American Indian Alaska Native M	American Indian Alaska Native F	Asian Pacific Islander M	Asian Pacific Islander F	Hispanic M	Hispanic F	White M	White F	Filipino M	Filipino F	No Response M	No Response F	Other M	Other F	Total M	Total F
Speech Pathology/Audiology																				
CSUC																				
Undergraduate																				
Chico	0	0	0	5	0	1	0	3	0	3	5	104	0	0	2	24	1	3	8	143
Fresno	0	1	1	4	0	1	0	5	2	8	16	128	0	1	2	14	1	4	22	166
Fullerton	0	0	0	4	0	1	1	4	0	6	7	87	0	0	4	32	0	0	12	134
Hayward	0	0	1	22	0	0	0	0	0	4	2	54	0	0	1	8	0	1	4	89
Humboldt	0	0	0	1	0	1	0	3	0	1	5	52	0	0	0	10	0	4	5	72
Long Beach	0	1	1	15	0	1	1	8	0	8	11	104	0	0	7	75	0	3	20	215
Los Angeles	0	0	5	20	0	1	1	6	2	24	7	40	1	1	2	17	0	0	18	109
Northridge	0	0	0	10	1	3	0	8	0	11	8	115	0	0	2	22	1	6	12	175
Sacramento	0	0	0	9	0	0	1	5	1	3	7	77	0	1	6	55	0	2	15	152
San Diego	0	0	1	10	0	6	1	7	1	14	19	114	0	3	2	54	2	17	26	225
San Francisco	0	0	1	1	0	1	0	3	0	1	0	45	0	0	2	12	0	1	3	64
San Jose	0	0	1	7	0	2	1	8	0	6	4	57	0	0	7	52	2	4	15	136
Stanislaus	0	0	0	0	0	1	0	0	0	3	2	10	0	0	2	15	0	2	4	31
Graduate																				
Chico	0	0	0	0	0	0	0	0	0	0	1	11	0	0	3	2	0	1	4	14
Fresno	0	0	0	1	0	0	0	1	0	1	1	21	0	0	1	22	0	1	2	47
Fullerton	0	0	0	0	0	0	0	2	0	1	0	19	0	0	0	4	0	0	0	26
Humboldt	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	3	0	2	1	13
Long Beach	0	0	0	1	0	1	0	0	0	0	3	13	0	0	2	11	0	0	5	26
Los Angeles	0	0	0	3	0	0	0	1	0	2	2	11	0	0	2	7	0	0	4	24
Northridge	0	0	0	0	0	0	0	3	0	0	0	42	0	2	2	10	0	0	2	61
Sacramento	0	0	0	1	0	0	0	1	0	0	1	21	0	0	2	8	0	1	3	32
San Diego	0	0	0	0	0	0	0	0	0	0	2	28	0	0	1	11	0	1	3	40
San Francisco	0	0	0	0	0	0	0	0	0	0	4	18	0	0	0	1	0	0	4	19
San Jose	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	4
Stanislaus	1	0	0	0	0	0	0	0	0	0	0	9	0	0	0	3	0	0	1	12

undergraduate and graduate enrollment, including some miscellaneous enrollment not shown in the table, it is evident that the percentage of women is greatest in dental hygiene (97.9%), followed in descending order by occupational therapy (96.5%), speech pathology/audiology (91.0%), physical therapy (76.7%), clinical social work (69.4%), medical laboratory technology (67.0%), public health (57.6%), and radiologic technology (52.9%).

Ethnic minorities are represented unevenly. Blacks make up 18.1 percent of the enrollment in clinical social work, 8.4 percent in physical therapy, and 8.2 percent in medical laboratory technology; their lowest rate of participation is 4.0 percent in public health and 3.8 percent in radiologic technology.

For Chicanos, the highest participation is also in clinical social work with 14.7 percent of the enrollment, followed by public health (9.4%) and physical therapy (8.1%). The lowest percentage of enrollment for Chicanos is in occupational therapy (3.6%) and radiologic technology (3.8%).

Contrasted with Black and Chicano enrollment is that of Asians, a smaller group generally well represented in the health professions. In medical laboratory technology 23.1 percent of the total enrollment is Asian; in occupational therapy 13.9 percent is Asian, and in public health, 10.2 percent. The lowest percentage of enrollment of Asians occurs in clinical social work, 3.4, with speech pathology/audiology showing 4.3.

Information is also available by sex and ethnicity for the graduates in these same eight programs in the public four-year institutions. Table AH-4 displays these data.

The only apparent anomaly between the relationships shown for enrollment in Table AH-3 and those for graduates in Table AH-4 above is in radiologic technology, where the enrollment was shown to be more than half female, and yet no female graduates are shown. At Northridge, the designation of an undergraduate program as radiologic technology for purposes of enrollment but not for graduates explains this anomaly.

Data on graduates of six allied health programs in independent institutions are shown in Table AH-5, by degree level and sex, as reported through HEGIS.

The largest single source of trained allied health personnel is California's Community Colleges. Data on completions--degrees or certificates--in a number of allied health programs are displayed in Table AH-6.

TABLE AH-4

Degrees Conferred, Public Institutions, Allied Health, 1978-79

ogram and stitution	Non Resident Alien M	Non Resident Alien F	Black Non-Hispanic M	Black Non-Hispanic F	American Indian Alaska Native M	American Indian Alaska Native F	Asian Pacific Islander M	Asian Pacific Islander F	Hispanic M	Hispanic F	White M	White F	Filipino M	Filipino F	No Response M	No Response F	Other M	Other F	Total M	Total F
inical Social Work																				
UC																				
B.S. Degree																				
Los Angeles	0	0	1	6	1	0	0	0	0	5	0	13	0	0	0	2	0	0	2	26
M.S.W. Degree																				
Fresno	0	0	1	0	0	0	0	0	0	0	10	5	0	0	2	3	0	0	13	8
San Diego	0	0	0	1	0	0	0	3	1	0	15	20	0	0	1	1	0	0	17	25
San Francisco	0	0	0	1	0	0	0	3	0	0	8	8	0	0	0	2	0	0	8	14
ental Hygiene																				
B.S. Degree																				
San Francisco	0	0	0	0	0	0	0	5	0	0	0	18	1	0	0	0	0	0	1	23
edical Laboratory Technology																				
SUC																				
B.S. Degree																				
Dominguez Hills	0	0	1	1	0	0	0	2	0	0	0	1	0	3	2	0	1	0	4	7
Los Angeles	3	0	0	0	0	0	5	10	2	3	2	14	1	2	1	3	0	0	14	32
San Francisco	3	3	0	1	0	0	10	17	0	1	10	19	4	5	1	2	2	1	30	49
M.S. Degree																				
Dominguez Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	64	0	0	48	64
San Francisco	0	0	0	0	0	0	3	2	0	0	1	3	0	0	0	1	0	0	4	6
Sonoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	0	0	5	8
ccupational Therapy																				
SUC																				
B.S. Degree																				
San Jose	1	0	0	1	0	0	0	5	0	2	3	40	1	0	1	19	0	4	6	71
M.S. Degree																				
San Jose	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE AH-4 (Continued)

Program and Institution	Non Resident Alien M	Non Resident Alien F	Black Non-Hispanic M	Black Non-Hispanic F	American Indian Alaska Native M	American Indian Alaska Native F	Asian Pacific Islander M	Asian Pacific Islander F	Hispanic M	Hispanic F	White M	White F	Filipino M	Filipino F	No Response M	No Response F	Other M	Other F	Total M	Total F
Physical Therapy																				
UC																				
B.S. Degree																				
San Francisco	0	0	0	0	0	0	1	2	0	0	4	23	0	0	0	0	0	1	5	26
CSUC																				
B.S. Degree																				
Fresno	0	0	0	0	0	0	0	0	0	0	1	0	0	0	9	13	0	0	10	13
Long Beach	0	0	0	0	0	0	1	3	0	1	13	83	0	0	1	7	1	1	16	45
Public Health																				
UC																				
B.S. Degree																				
Berkeley	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Los Angeles	0	0	0	1	0	0	0	1	0	0	3	16	0	0	0	0	1	1	4	16
M.P.H. Degree																				
Berkeley	18	4	4	8	4	7	4	4	5	1	53	67	0	1	1	3	3	2	92	97
Los Angeles	5	5	4	2	1	2	5	8	3	3	49	96	0	3	4	2	0	5	71	126
CSUC																				
B.S. Degree																				
Los Angeles	1	1	1	1	0	0	1	1	4	0	5	1	0	0	0	0	0	0	12	4
San Diego	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
M.P.H. Degree																				
Long Beach	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Northridge	1	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	1	1	10
San Jose	2	5	0	0	0	0	0	1	1	0	1	12	0	0	0	9	0	0	3	27
Radiologic Technology																				
UC																				
M.S. Degree																				
Irvine	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	3	0
CSUC																				
M.S. Degree																				
San Diego	0	0	0	0	0	0	0	0	0	0	5	1	1	0	1	0	0	0	7	1

TABLE AH-4 (Continued)

Program and Institution	Non Resident Alien		Black Non-Hispanic		American Indian Alaska Native		Asian Pacific Islander		Hispanic		White		Filipino		No Response		Other		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Speech Pathology/Audiology																				
CSUC																				
B.S. Degree																				
Chico	0	0	1	0	0	0	1	0	0	0	0	15	0	0	0	7	0	0	2	22
Fresno	0	0	0	1	0	0	0	3	0	5	4	40	0	0	0	3	0	1	4	53
Hayward	0	0	0	2	0	0	0	3	0	0	1	17	0	1	0	0	0	0	1	23
Humboldt	0	2	0	0	0	0	0	0	0	0	3	22	0	0	1	1	0	3	4	28
Long Beach	0	0	0	1	0	0	0	2	0	0	1	40	0	0	2	7	0	0	3	50
Los Angeles	0	0	0	3	0	0	0	2	0	4	2	15	0	0	1	1	0	0	3	25
Northridge	0	0	0	0	0	0	0	0	0	2	1	23	0	0	0	6	0	0	1	31
Sacramento	0	0	0	0	0	0	1	0	1	0	0	13	0	0	2	3	0	1	4	17
San Diego	0	0	0	1	0	0	0	1	0	2	8	53	0	0	0	0	0	0	8	57
San Francisco	0	0	0	1	0	0	1	0	0	0	1	12	0	0	0	2	0	0	2	15
San Jose	0	0	0	1	0	0	0	3	0	1	0	15	0	1	0	9	0	1	0	31
M.S. Degree																				
Chico	0	0	0	0	0	0	0	0	0	0	0	11	0	0	3	2	0	0	3	13
Fresno	0	0	0	0	0	0	0	3	0	1	2	23	0	0	2	11	0	1	4	39
Humboldt	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Long Beach	0	3	0	0	0	0	0	0	0	0	1	22	0	0	0	7	0	0	1	32
Los Angeles	0	0	1	0	0	0	0	5	1	1	2	18	0	0	2	2	0	0	6	26
Northridge	0	0	0	1	0	2	0	1	0	1	2	26	0	1	0	12	0	0	2	44
Sacramento	0	0	0	0	0	0	0	1	0	11	0	0	0	0	0	0	0	0	0	12
San Diego	0	0	0	0	0	0	0	0	0	0	4	12	0	0	0	5	0	1	4	18
San Francisco	0	0	0	0	0	0	0	1	0	1	0	17	0	0	0	1	0	0	0	20
Stanislaus	0	0	0	0	0	0	0	0	0	1	1	11	0	0	0	4	0	0	1	16

TABLE AH-5

Degrees Conferred in Allied Health, By Sex, California Independent Institutions
1978 - 1979

Program and Institution	Bachelor's Degrees		Master's Degrees		Doctor's Degrees	
	M	F	M	F	M	F
Dental Hygiene						
Loma Linda	0	35				
Medical Laboratory Technology						
California Lutheran	0	2				
Holy Names	0	3				
Loma Linda	12	11				
Pacific Union	6	7				
Occupational Therapy						
Loma Linda	1	19				
Univ. of Southern California	1	23	0	12		
Physical Therapy						
Loma Linda	19	35				
Stanford			7	22		
Univ. of Southern California	0	4	12	26		
Public Health						
Loma Linda	2	5	31	28	10	2
Speech Pathology/Audiology						
Chapman	0	8	0	7		
Loma Linda	0	6	0	7		
Pacific Union	0	8				
Univ. of LaVerne	0	4	0	3		
Univ. of Pacific	2	4	1	17		

TABLE AH-6

Completions in Allied Health Programs Within
California Community Colleges
1979

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
5201 Health Services Assistant Technologies, General				
American River	0	2	0	0
Antelope Valley	0	1	0	0
Bakersfield	3	10	0	0
Butte	1	1	0	0
Compton	2	1	0	0
Crafton Hills	1	14	0	0
East Los Angeles	0	1	69	17
Gavilan	0	0	7	0
Los Angeles City	39	121	0	0
Los Angeles Pierce	3	8	0	0
Los Angeles Southwest	12	7	0	0
Los Angeles Valley	30	170	0	0
Mendocino	0	1	0	0
Monterey Peninsula	2	0	0	0
Orange Coast	2	3	0	0
Pasadena	6	16	16	6
Sacramento City	0	1	0	0
San Bernardino Valley	0	1	0	0
Santa Rosa	0	1	0	0
Shasta	0	0	0	8
	101	359	92	31
5202 Dental Assistant Technologies				
Alameda	0	2	0	8
Allan Hancock	0	11	0	0
Bakersfield	0	4	0	16
Cabrillo	0	2	0	9
Cerritos	0	11	0	13
Chabot	0	15	0	0
Chaffey	0	26	0	0
Citrus	0	24	0	0
Contra Costa	0	2	0	11
Cypress	0	11	0	0
Diablo Valley	0	14	0	2
East Los Angeles	0	1	0	0
El Camino	0	1	0	0

TABLE AH-6 (Continued)

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
Foothill	0	5	0	18
Grossmont	1	8	0	0
Long Beach City	0	5	0	0
Marin	0	11	0	0
Merced	0	3	0	15
Modesto	0	11	0	0
Monterey Peninsula	0	7	0	0
Orange Coast	0	4	0	13
Palomar	0	0	0	13
Pasadena	0	6	0	0
Redwoods	0	8	0	0
Reedley	0	18	0	0
Rio Hondo	0	22	0	0
Sacramento City	0	21	0	0
San Diego Mesa	0	7	0	12
City College of San Francisco	1	17	0	0
San Jose City	0	7	0	1
San Mateo	0	6	0	0
Santa Barbara	0	1	0	0
Santa Rosa	0	13	0	0
Yuba	0	4	0	0
	2	308	0	131
5203 Dental Hygiene Technologies				
Bakersfield	0	1	0	0
Cabrillo	0	13	0	19
Cerritos	0	18	0	0
Chabot	0	17	0	0
Cypress	0	3	0	0
Diablo Valley	0	4	0	15
East Los Angeles	0	1	0	0
Foothill	2	19	0	0
Fresno City	0	20	0	0
Long Beach City	0	1	0	0
Orange Coast	0	1	0	0
Pasadena	0	19	0	0
Sacramento City	1	14	0	0
West Los Angeles	0	14	0	0
	3	145	0	34
5204 Dental Laboratory Technologies				
Diablo Valley	6	1	3	1
Monterey Peninsula	3	0	0	0
Orange Coast	3	4	10	3

TABLE AH-6 (Continued)

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
Pasadena	1	6	0	0
Riverside	0	0	5	3
City College of San Francisco	6	5	0	0
Santa Ana	0	2	0	0
	19	18	18	7
5205 Medical or Biological Laboratory Assistant Technologies				
Bakersfield	0	2	0	0
Cabrillo	0	1	0	0
Cypress	2	0	0	0
Desert	0	0	0	17
De Anza	0	6	0	0
East Los Angeles	0	2	0	0
El Camino	9	16	0	0
Fullerton	0	2	0	0
Los Angeles Pierce	4	0	0	0
Orange Coast	1	3	0	0
San Diego Mesa	0	4	0	7
Santa Ana	0	2	2	10
Siskiyous	0	0	1	0
Yuba	5	1	0	0
	21	39	3	34
5207 Radiologic Technologies (X-Ray)				
Antelope Valley	1	3	0	0
Canada	5	7	0	0
Chaffey	10	6	0	0
Compton	0	1	0	0
Cypress	6	18	0	0
El Camino	8	12	0	0
Foothill	5	25	0	0
Fresno	7	7	0	0
Long Beach City	9	18	0	0
Merced	4	10	3	11
Merritt	12	19	0	0
Mt. San Antonio	8	12	3	0
Orange Coast	6	19	4	5
Pasadena	4	10	0	0
Riverside	0	1	0	0
San Diego Mesa	8	13	0	0
City College of San Francisco	10	10	0	0
San Joaquin Delta	1	6	0	0
Santa Barbara	3	14	0	0
Yuba	12	6	0	0
	119	217	10	16

TABLE AH-6 (Continued)

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
5210 Occupational Therapy Technologies				
Cerritos	11	0	0	0
Crafton Hills	2	2	0	0
Long Beach City	0	1	0	0
Pasadena	0	3	0	0
	13	6	0	0
5211 Surgical Technologies				
Cerritos	6	5	0	0
Golden West	1	3	1	3
Los Angeles Trade-Tech	0	0	6	0
	7	8	7	3
5212 Optical Technologies (including ocular care, ophthalmic, optometric technologies)				
Canada	5	6	0	0
Citrus	3	1	3	1
Crafton Hills	3	1	0	0
Pasadena	3	1	0	0
San Diego City	1	6	1	14
	15	15	4	15
5213 Medical Record Technologies				
Chabot	0	19	0	0
Cypress	1	6	0	0
East Los Angeles	0	17	0	21
San Diego Mesa	0	13	0	0
City College of San Francisco	1	17	0	0
West Valley	0	15	0	0
	2	87	0	21
5214 Medical Assistant and Medical Office Assistant Technologies				
Alameda	0	7	0	15
Allan Hancock	0	19	0	0
Bakersfield	0	11	0	22
Butte	0	0	0	5
Cerritos	0	10	0	7
Chabot	0	13	0	0
Citrus	0	6	0	8

TABLE AH-6 (Continued)

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
Contra Costa	2	13	1	13
Cosumnes River	1	5	0	0
Cypress	0	6	0	0
Desert	1	0	0	0
De Anza	0	0	0	5
East Los Angeles	0	1	0	1
El Camino	0	5	0	5
Fresno City	0	5	0	1
Imperial Valley	0	0	0	2
Indian Valley	0	9	0	5
Long Beach City	0	2	0	0
Los Angeles Harbor	3	9	0	2
Los Angeles Valley	0	8	0	0
Modesto	0	9	0	0
Monterey Peninsula	1	10	0	0
Ohlone	0	7	0	8
Orange Coast	0	7	0	14
Palomar	0	4	0	8
Pasadena	0	7	0	0
Redwoods	0	3	0	0
Rio Hondo	1	4	0	0
Riverside	0	5	0	4
Saddleback	0	6	0	3
San Bernardino Valley	0	1	0	0
San Diego Mesa	0	10	1	14
City College of San Francisco	0	16	0	0
San Mateo	0	12	0	0
Santa Ana	0	2	0	1
Santa Barbara	0	0	0	13
Santa Rosa	0	5	0	0
Ventura	0	4	0	3
West Hills	0	1	0	0
West Valley	0	16	0	0
	9	258	2	154
5215 Inhalation Therapy Technologies				
American River	3	10	0	0
Butte	14	18	0	0
Compton	0	4	0	0
East Los Angeles	9	8	3	1
Foothill	4	9	0	0
Fresno City	7	11	0	0
Grossmont	10	6	0	0
Long Beach City	6	13	0	0
Los Angeles Valley	2	24	13	10

TABLE AH-6 (Continued)

Program and Institution	Program Completions: Associate Degrees M	Associate Degrees F	Certificates M	Certificates F
Mt. San Antonio	14	9	6	6
Napa	6	8	0	0
Orange Coast	10	3	2	2
Rio Hondo	5	6	0	0
San Bernardino Valley	2	3	0	0
Santa Monica	3	9	6	12
Santa Rosa	5	3	1	0
Skyline	7	11	11	14
Ventura	0	1	2	2
Victor Valley	6	2	0	2
	113	158	44	49
5216 Psychiatric Technologies (including mental health aide)				
Bakersfield	6	12	0	0
Cerritos	0	0	7	5
Crafton Hills	2	2	0	0
Cuesta	0	2	0	0
Cypress	3	6	0	0
East Los Angeles	1	0	1	2
Golden West	6	33	2	3
Los Angeles Trade-Tech	1	0	5	8
Los Angeles Valley	0	0	5	6
Mission	7	9	1	2
Mt. San Antonio	1	11	0	0
Napa	5	5	0	0
Orange Coast	1	0	0	0
Porterville	4	0	28	37
Rio Hondo	2	2	0	0
Sacramento City	1	5	0	0
San Joaquin Delta	6	27	0	0
Santa Rosa	1	5	15	37
Ventura	0	2	0	0
	47	121	64	100
5217 Electro Diagnostic Technologies (including EKG, EEG, etc.)				
Orange Coast	4	4	2	8
5218 Institutional Management Technologies				
Bakersfield	1	0	0	0
Cerritos	2	1	0	1
Foothill	0	0	1	0

TABLE AH-6 (Continued)

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
Fresno City	0	1	0	0
Los Angeles Valley	0	0	0	2
Mission	0	0	2	8
Orange Coast	2	2	1	3
Pasadena	0	1	0	0
San Bernardino Valley	2	0	0	0
San Diego City	0	1	0	0
San Diego Evening	4	1	1	0
	11	8	5	14
5219 Physical Therapy Technologies				
Cerritos	1	12	0	1
Compton	1	0	0	0
Cypress	0	2	0	0
De Anza	11	30	0	0
Imperial Valley	1	3	0	0
Long Beach City	0	2	0	0
Los Angeles Pierce	4	0	0	0
Los Angeles Southwest	1	0	0	0
Modesto	0	1	0	0
Monterey Peninsula	0	1	0	0
Orange Coast	1	2	0	0
Pasadena	5	6	0	0
San Bernardino Valley	1	6	0	0
San Diego City	0	1	0	0
San Diego Mesa	1	9	0	0
	27	75	0	1
5299 Other, Emergency Medical Care				
Butte	0	1	10	2
Canyons	0	0	36	42
Crafton Hills	5	1	0	0
Imperial Valley	0	0	11	4
Lassen	0	0	26	27
Santa Ana	11	0	1	0
Skyline	0	0	103	25
Southwestern	0	1	1	0
	16	3	188	100
5299 Other, Mortuary Science				
Cypress	0	0	3	17

TABLE AH-6 (Continued)

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
5299 Other, Nurses Aide				
Southwestern	0	0	3	17
5299 Other, Nutrition/Dietetic Asst.				
Bakersfield	0	6	0	10
Orange Coast	1	12	0	9
	1	18	0	19

Table AH-6 illustrates several points. The mismatch between programs and jobs can be inferred from the 5201 category: Health Services Assistant Technologies, General. What is a graduate of such a program prepared to do? Considering the size of this program, a more specific job-related orientation seems necessary.

Large Community College programs exist in fields in which other sectors--especially public schools and private vocational schools--also have large programs. This is particularly true of dental assisting and medical assisting.

Men are not outnumbered by women in all programs. The output of men is greater than that of women in emergency medical care, dental technology, and institutional-management technology. But there are no male-dominated fields as there are fields dominated by females.

A number of allied health fields produce only a handful of graduates annually. (There are at least seventy-five institutional programs with five or fewer graduates.) If this situation characterizes these programs every year, questions may be raised concerning whether these programs have adequate resources to insure quality.

In general, there seems to be adequate geographical distribution of allied health programs, but some Community Colleges seem to offer none of the programs listed in Table AH-6.

Nursing has been discussed elsewhere in this report, and is not included in this allied health section. However, because data on licensed vocational nurses (LVNs) were not available for the Commission's 1978 Plan, and because the HEGIS reports do include data on graduates in this field, an additional table is being provided to establish a basis for future review of output of LVN programs. Table AH-7 contains information on 1978-79 completions in these programs.

With both associate degree and certificate programs leading to LVN licensure, the confusion generated by multiple educational levels for nursing licensure, as discussed in the 1978 Plan, is compounded.

Data on completions in the allied health programs sponsored by public secondary schools are reported through the vocational education reporting system. Table AH-8, which is modified from material in the California Vocational Education Accountability Report, 1977-78, displays program completions in such programs, along with completions in Community Colleges. An additional column has been added showing occupational programs as reported in the "Career Schools Survey" instrument, although the data in this column are for 1978-79 rather than for 1977-78. The first two columns in the table

TABLE AH-7

Completions In Community College Licensed Vocational Nursing Programs

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
5209 Nursing, Licensed Vocational Nurse				
Allan Hancock	0	16	0	0
American River	0	4	0	0
Antelope Valley	0	3	0	0
Bakersfield	0	11	6	40
Barstow	0	0	0	17
Butte	0	10	0	22
Cabrillo	3	1	4	28
Canada	0	2	0	0
Cerritos	1	17	0	29
Canyons	0	7	0	0
Cerro Coso	0	13	0	0
Chaffey	0	0	0	6
Citrus	0	6	1	44
Columbia	1	0	0	0
Compton	0	2	0	0
Contra Costa	0	6	0	9
Cypress	0	3	0	0
Desert	1	0	3	27
De Anza	0	0	1	10
El Camino	0	17	0	0
Fresno City	1	12	0	13
Gavilan	0	0	0	16
Glendale	0	5	4	49
Golden West	0	6	0	0
Imperial Valley	1	6	0	9
Laney	1	5	1	28
Lassen	0	0	2	14
Long Beach City	2	40	0	0
Los Angeles Harbor	0	28	0	0
Los Angeles Mission	0	1	0	0
Los Angeles Trade-Tech	2	12	4	62
Los Angeles Valley	2	26	0	0
Los Medanos	0	0	1	32
Marin	1	7	0	0
Merced	0	7	1	23

TABLE AH-7 (Continued)

Program and Institution	Program Completions			
	Associate Degrees		Certificates	
	M	F	M	F
Mira Costa	0	0	1	19
Mission	0	7	1	40
Modesto	0	9	1	27
Mt. San Antonio	0	32	0	0
Mt. San Jacinto	0	0	1	30
Napa	1	5	0	0
Pasadena	0	11	3	41
Redwoods	0	2	0	0
Rio Hondo	1	2	0	0
Riverside	0	2	3	25
Sacramento City	0	19	5	53
Saddleback	0	2	0	0
San Bernardino Valley	0	1	0	0
San Diego City	4	19	3	38
San Diego Mesa	2	14	2	28
San Joaquin Delta	0	40	0	0
San Mateo	0	4	0	0
Santa Ana	2	10	8	46
Santa Barbara	0	4	0	0
Santa Monica	1	5	1	24
Santa Rosa	0	0	2	26
Sequoias	0	1	3	20
Shasta	0	2	0	9
Sierra	1	17	1	15
Siskiyous	0	0	1	10
Solano	0	2	0	0
Southwestern	1	3	4	29
Ventura	0	1	0	16
West Valley	0	9	0	0
Yuba	0	5	0	0
	29	502	68	974

TABLE AH-8

Completions in Allied Health Programs in Vocational Education

OE Code	Instructional Program	Current Employment	Annual Job Openings	Completions			
				Total	Secondary	Community College	Occupational Programs
07.0000	Health Occupations Education	0	0	23	23	0	0
07.0100	Dental	0	0	114	114	0	0
07.0101	Dental Assisting	22,911	2,432	2,919	18	1,075	1,826
07.0102	Dental Hygiene	4,061	400	382	0	382	0
07.0103	Dental Laboratory Technology	3,547	184	580	0	266	314
07.0199	Other Dental	0	0	128	29	0	99
07.0200	Medical Laboratory Technology	0	0	0	0	0	0
07.0201	Cytology	1,044	79	6	0	0	6
07.0202	Histology	1,021	77	0	0	0	0
07.0203	Medical Laboratory Assisting	18,446	1,383	108	0	50	58
07.0209	Other Medical Laboratory Tech	0	0	10	0	10	0
07.0300	Nursing	0	0	336	336	0	0
07.0301	Nursing	89,063	6,684	3,932	0	3,862	70
07.0302	Practical Nursing	31,800	2,725	3,739	502	2,940	297
07.0303	Nursing Assistance	69,267	5,196	4,508	2,970	1,158	380
07.0304	Psychiatric Aide	5,650	427	684	16	587	81
07.0305	Surgical Technician	2,127	162	50	0	31	19
07.0307	Home Health Aide	355	26	259	52	207	0
07.0399	Other Nursing	0	0	651	4	592	55
07.0401	Occupational Therapy	99	9	56	0	56	0
07.0402	Physical Therapy	3,489	329	165	0	81	84
07.0403	Prosthetics	400	28	38	0	38	0
07.0404	Orthotics	1,661	123	0	0	0	0
07.0499	Other Rehabilitation	0	0	13	0	13	0
07.0500	Radiologic	0	0	75	0	75	0
07.0501	Radiologic Technology	7,811	589	829	0	571	258
07.0502	Radiation Therapy	NA	NA	NA	NA	NA	2
07.0503	Nuclear Medicine Technology	601	45	5	0	0	5
07.0599	Radiologic Occupations, Misc.	NA	NA	NA	NA	NA	4
07.0600	Ophthalmic	0	0	175	0	61	114
07.0601	Ophthalmic Dispensing	2,283	125	40	0	40	0
07.0602	Orthoptics	499	38	0	0	0	0
07.0603	Optometric Assistant	0	0	24	0	24	0
07.0700	Environmental Health	0	0	42	0	42	0
07.0702	Radiological Health Technician	375	28	0	0	0	0
07.0703	Sanitarian Assistant	224	10	0	0	0	0
07.0799	Other Environmental Health	0	0	33	0	33	0
07.0800	Mental Health Technology	0	0	208	0	200	8
07.0801	Mental Health Technician	0	0	211	16	195	0
07.0899	Other Mental Health Technology	0	0	0	0	0	0
07.0900	Misc. Health Occupations	0	0	145	88	57	0
07.0901	Electroencephalograph Technician	1,136	87	44	0	0	44

TABLE AH-8 (Continued)

OE Code	Instructional Program	Current Employment	Annual Job Openings	Completions			
				Total	Secondary	Community College	Occupational Programs
07.0902	Electrocardiograph Technician	2,489	190	113	0	78	35
07.0903	Inhalation Therapy	3,187	240	853	48	598	207
07.0904	Medical Assistant	2,285	195	4,008	303	1,389	2,316
07.0905	Central Supply Technician	5,757	392	0	0	0	0
07.0906	Community Health Aide	0	0	50	0	50	0
07.0907	Medical Emergency Technician	6,754	540	3,591	112	2,959	520
07.0908	Food Service Supervisor	0	0	134	0	134	0
07.0909	Mortuary Science	861	20	67	0	62	5
07.0910	Orthopedic Assisting	0	0	11	0	11	0
07.0915	Medical Record Technologies	NA	NA	NA	NA	NA	31
07.0920	Physicians Assistant	NA	NA	NA	NA	NA	81
07.9900	Other Health Occupations Education	0	0	2,115	579	1,037	539
	Total, All Programs	289,223	22,763	31,632	5,210	18,964	7,458

Source: California Vocational Education Accountability Report, 1977-78 (all data are for 1977-78 except those for Occupational Programs), supplemented by 1978-79 data on Occupational Programs from Private Career School Survey conducted by CPEC.

display data on the current employment and the anticipated annual job opportunities in each field, both of which have been determined by the Department of Employment Development.

It is necessary to exercise caution in drawing conclusions from this table, since the data have been compiled from separate sources. Further, it is impossible to validate the data--by comparing Community College completions as reported in the California Vocational Education Accountability Report and through HEGIS--because the numbers are for different years. Finally, assuming for purposes of comparison that the years were the same, Table AH-8, based on data from the Accountability Report reports substantially more output than does HEGIS in LVN, nursing aide, dental assisting, medical assisting, emergency medicine, and a number of other programs. For 1977-78, the Accountability Report indicates a total of 18,964 completions in Community College allied health programs. By contrast, HEGIS reports only 8,807 total completions for 1978-79 in Community College allied health programs.

Thus, inadequacy and noncomparability of information must be identified as the first problem in dealing with the allied health fields. While the Commission feels that the initial attempt in this report to define, identify, and count the programs and participants in allied health education has been worthwhile, it is equally certain that an enormous task lies ahead in developing a system that can monitor these fields.

The lack of identity and unity within the allied health fields is a second problem, and one which contributes to the fragmentation of information. If "allied" means joined together in a common purpose, then these health-related fields do not deserve that appelation. The absence of any commonality of interest among allied health fields, means that no one speaks authoritatively for the entire field in legislative or professional matters. At the same time, most individual fields are not large enough to achieve strong professional standing on their own, and to develop associations with effective information and legislative staffs. Also, being largely female fields, a number of allied health occupations may encounter the same problem that confronts nursing, that of achieving professional recognition from the dominantly male fields of medicine and hospital administration. As a result of all these circumstances, the impact of the allied health fields upon health planning or in shaping the health industry is relatively limited, even in supplying basic information on its own practitioners and trainees.

A third, interrelated problem is the lack of career mobility within the broad area of allied health. Because occupations are so narrowly defined and have so little vertical distance between entry-level and senior positions, it is possible for a person soon to reach a

professional dead end from which he or she cannot escape without retraining. Changes in technology or philosophy can accelerate this process; consider what would happen to radiology technicians if, for reasons of radiation safety, sonography were to replace radiology as a diagnostic procedure. Excessive specialization can result in a number of people being locked into technician-level jobs with limited salary potential and no means of redirecting their careers without additional training.

There have been efforts to develop "core" curricula, common to a number of fields, in the health sciences to increase the possibility that a person could shift from one field to another in pursuit of career opportunities, but these efforts have not significantly enhanced career mobility in allied health. Other efforts at academic articulation between segments of allied health education have failed to make the pathways for entry into allied health any easier to travel than the career paths between fields.

A fourth problem resides in various conflicting pressures for change in health care delivery. These pressures make it difficult to predict the future for allied health. On the one hand, societal and governmental pressures for more cost-effectiveness in health care might result in a larger role for those relatively low-cost allied health practitioners who could be used in lieu of higher-level professionals. Dentorism is perhaps the best-known example of this possibility, but there are a number of other fields in which senior professionals could also be bypassed.

On the other hand, it is conceivable that economic circumstances could force senior professionals to reclaim some of the functions previously delegated to allied health personnel. Dentistry again provides an example; in the event of a surplus of dentists it is quite possible that a dentist might return to performing tasks which would displace the dental assistant and dental hygienist. In nursing, the move toward "basic" nursing has a philosophic, rather than an economic, orientation, but the effect is the same: the displacement of nursing aides and orderlies as RNs reclaim functions they once held.

Other factors that could affect the future role of allied health within the total health care profession include the reluctance of the Legislature to establish new categories of licensed health personnel along with the State's cautious exploration of possible de-licensure of one or two fields, and shifting viewpoints regarding the educational levels appropriate for certain allied health personnel.

Like the health professions they support, allied health fields have emerged in recent years from a period of expansion, stimulated in some cases by federal subsidy, and now face a period of adjustment

and reorientation. But, unlike the health professions, the allied health occupations have not enjoyed professional autonomy. For that reason, they may not always be able to determine their own future and, as a result, may find it difficult to adapt to those changes which face the health care industry in the years ahead: new reimbursement mechanisms, national health insurance, preventive self-care, cost containment actions by government, holistic health care, health maintenance organizations, etc.

This allied health field is not only an important component of health sciences education, but also has an important role in providing health care services to the citizens of California.

Consequently, the full range of allied health occupations and the educational programs that produce the practitioners in these fields merit attention and support from the State.

FOOTNOTES

1/ U.S. Department of Health, Education, and Welfare, A Report on Allied Health Personnel, 1979, p. I-3.

2/ U.S. Department of Health, Education, and Welfare, Health Resources Statistics: Health Manpower and Health Facilities, 1976-77 ed., p. 5.

3/ U.S. H.E.W., Report, 1979, p. I-1.

4/ American Medical Association, Allied Health Education Directory, 8th ed., 1979, p. 463.

5/ Richard M. Magraw, "Education in the Health Sciences," in Review of Allied Health Education: 2, ed. Joseph Hamburg (Lexington, Kentucky: The University Press of Kentucky, 1977), p. 161.

6/ Subpart II, Part G, Title VII of The Public Health Service Act, Section 795.

7/ National Commission on Allied Health Education, The Future of Allied Health Education (San Francisco: Jossey Bass, 1980), p. 14.

8/ American Society of Allied Health Professions, "Allied Health Trends."

9/ National Commission, Future of Allied Health Education, p. 2.

10/ J. Warren Perry, "The Next Decade: Issues and Challenges," in Review of Allied Health Education: 3, ed. Joseph Hamburg, (Lexington, Kentucky: The University Press of Kentucky, 1977), p. 7.

11/ Ibid.

12/ Ibid.

13/ National Commission, Future of Allied Health Education, pp. 19-21.

14/ American Medical Association, Allied Health Directory, p. 101.

15/ National Commission, Future of Allied Health Education, p. 79.

16/ Ibid., pp. 80-81.

17/ U.S. H.E.W., Report, p. III-1. NB: The National Commission on Allied Health Education would add 3,000 more programs based upon survey nonresponse rates.

18/ This committee is a subcommittee of the Academic Planning and Review Board--Health Sciences Committee, a systemwide administrative body, and consists of both faculty and administrators from various campuses. The subcommittee identified the fact that although the University of California has only a few official Degree/Certificate granting programs in allied health, its medical centers do sponsor some independent training programs and provide facilities and faculty for the clinical experience segments of programs offered by the Community Colleges and the State University and Colleges.

PART III

PROMOTION OF HEALTH AND PREVENTION OF DISEASE

In the closing pages of its 1978 Health Sciences Education Plan, the Commission briefly noted the importance of preventive health care and the responsibilities that individuals and governments assume for the promotion of health and the prevention of disease. Subsequently, the State Health Plan has also stressed the importance of prevention and self care as means of improving the health of Californians while controlling the spiraling costs of health care.

It is appropriate in this second Commission report to examine what California postsecondary education is doing currently to provide the trained professionals necessary to lead this effort to promote health and prevent disease. This section will also explore briefly how postsecondary institutions can discover and transmit knowledge of healthful living to the citizens of the State.

The State Health Plan describes prevention as a process akin to the traditional functions of "public health." Prevention takes place at three levels: primary, secondary, and tertiary. Primary prevention contains five elements: (1) health education; (2) communicable disease control, including immunization; (3) selected medical services, including family planning, pre-natal care, well-baby care, mental health services, and dental care; (4) nutrition services, particularly for pregnant women, infants, and the elderly; and (5) environmental protection and numerous other public health activities such as sanitarian and radiation protection.

Although these elements stress the role of trained professionals and organizations, the individual is equally important as an agent of prevention in a number of basic areas--diet; exercise; sleep; stress; use of tobacco, alcohol, and drugs; and self-medication. In the final analysis, it is the individual who is the key to health promotion and disease prevention.

Secondary prevention consists of the screening of large groups of people whose illnesses can be avoided or minimized through early treatment--hypertension, vision and hearing defects, venereal disease, etc. Tertiary prevention involves medical care to prevent further complications from the conditions identified through secondary prevention.

The five services identified under the category of primary prevention generally correspond to most people's understanding of what constitutes preventive health care. California already has the educational programs that offer training for these services and health professionals who provide them. Therefore, if the State decided to stress prevention, it would be only a matter of reordering its health care priorities rather than reorganizing and expanding its health sciences education system.

Health educators are currently trained by a number of California institutions, are certificated in some cases by the Teacher Preparation and Licensing Commission, and function within both secondary schools and collegiate institutions, providing information about health and hygiene. Communicable disease control is the responsibility of several specialists: physicians trained in public health, biostatisticians functioning as epidemiologists, entomologists serving as vector control officers, and a number of other specialists with comparable educational credentials. Selected medical services are generally in the hands of physicians and nurses with specialized training, or of allied health specialists such as genetic counselors and dental hygienists. Nutrition services are furnished by those trained in a limited number of nutrition programs in the health sciences or in a larger number of programs in home economics. Environmental protection is provided by a corps of specialists educated through a variety of academic programs in industrial hygiene and safety, water and air quality, radiation safety, food and drug quality, etc.

For the most part, professions involved in prevention require advanced education in the sciences. The fields oriented toward the public health approach use the Master of Public Health as the standard educational credential, but many of those who receive this degree have already earned degrees in science or medicine. In a number of environmental health areas, advanced degrees in chemistry or engineering are common.

Graduate medical education programs prepare physicians for specialization in several areas which promote health and prevent disease, for example, prevention, public health, and occupational medicine. In the past, these programs have not been particularly well-developed in California, and the Legislature is now encouraging the University of California to expand its residencies in these areas.

The research function of higher education is also an important element of health promotion and disease prevention. Much of the basic research carried out by faculty, research staff, and students in graduate academic programs in medical schools seeks to develop a better understanding of normal biological processes: metabolism, natural immunity, aging, genetic selection, cell development, etc. Other research strives to identify the pathogens responsible for various kinds of abnormality or illness micro-organisms, biochemical compounds, viruses, hormones and enzymes, etc. In each case, whether studying the normal or the abnormal, biomedical researchers can provide valuable insights into the maintenance of health.

Another common area of medical research can be called epidemiologic, in that it deals with the incidence, distribution, and control of disease in a population. Originally identified with infectious diseases, this field now includes studies of such conditions as cancer, heart disease, and hypertension. The methodology is pri-

marily a statistical one that attempts to link certain environmental and behavioral parameters to the pathologies they are suspected of causing. In recent years, the work done on the Legionnaire's Disease is the most memorable example of epidemiological research.

It is unfortunate that medical research is not always accorded the importance it deserves by some State agencies and among some legislative staff. At times, efforts to encourage greater numbers of primary care health practitioners, a worthwhile goal in itself, seem to be taken at the expense of academic and/or research medicine. Some of the literature of the primary care movement seems to imply that conducting medical research, rather than caring for patients, is a less than worthy goal for promising students. In fact, the 1979 Health Manpower Plan suggests limiting the number of medical students who are allowed to go into academic and research medicine to five percent of the total.

In the 575 pages of the State Health Plan, there are only a few paragraphs devoted to research. Included is a call for the establishment of a State epidemiological research unit that would conduct research in the "determinants of health," evaluate other research, and advise State agencies on effective intervention strategies and resource allocations. No other type of research is mentioned. Perhaps, like much of the basic and applied research of universities and laboratories in other fields, medical research has failed to "sell" its product to the public and to government. This is unfortunate; research has so much to offer in the prevention of disease--as witnessed by the great medical breakthrough of our time, the near-eradication of polio through the Salk vaccines, a product of biomedical research.

Research findings in matters of health are generally reported in scientific and professional journals in what amounts to a peer-review process, with findings that survive the rigid scrutiny of colleagues, then becoming part of the "literature" of the field. Because of the enormous public concern with matters of health, the mass media monitor some of the leading medical journals for items of interest to the lay-audience. In recent years, it has become fairly common to see or hear The New England Journal of Medicine or the Journal of the American Medical Association quoted in stories in print or in the electronic media.

While such an approach may produce some technical inaccuracies and perhaps an overstatement of the benefits of a new medical concept, it is a fairly effective means of assuring that the general public is aware of new developments in health. Since the consumer needs to know not only how to manage his or her own health, but also how to use the formal health care system--including knowing how to stay out of it as long as possible, and how and where to enter it when necessary, this process linking research and prevention is a vital part of the educational system.

APPENDIX

Recommendations of the Graduate Medical Education National Advisory Committee*

Source: Chronicle of Higher Education; October 6, 1980.

WASHINGTON

Following is the text of recommendations in the summary report of the federal government's Graduate Medical Education National Advisory Committee. The committee's summary condenses 107 recommendations included in its complete six-volume report to Secretary of Health and Human Services Patricia R. Harris.

1 Allopathic and osteopathic medical schools should reduce entering class size in the aggregate by a minimum of 10 per cent by 1984 relative to the 1978-79 enrollment or 17 per cent relative to the 1980-81 entering class.

Supportive recommendations:

A. No new allopathic or osteopathic medical schools should be established beyond those with first-year students in place in 1980-81.

B. No increase in the entering class size into allopathic and osteopathic medical schools beyond the entering class of 1981 should occur.

C. The current Health Professions Law, which authorizes grants to health professions schools for construction of teaching facilities, should be amended to allow the Secretary of the Department of Health and Human Services to grant waivers to allow them to ignore the law's requirement to increase enrollment. This recommendation applies as well to the pertinent Veterans Administration authorities under the Manpower Grants' Program.

D. The current Health Professions Law should be amended to allow the Secretary of the Department of Health and Human Services to waive immediately the requirement that allopathic and osteopathic medical schools, as a condition of receiving a capitation grant, maintain the first-year enrollment at the level of the preceding school year. This recommendation applies as well to the pertinent Veterans Administration authorities under the Manpower Grants' Program.

2 The number of graduates of foreign medical schools entering the U. S. yearly, estimated to be 4,100 by 1983, should be severely restricted. If this cannot be accomplished, the undesirable alternative is to decrease further the number of entrants to U. S. medical schools.

Supportive recommendations:

A. All federal and state assistance given through loans and scholarships to U. S. medical students initiating study abroad after the 1980-81 academic year should be terminated.

B. The current efforts in the private sector to develop and implement a uniform qualifying examination for U. S. citizens and aliens graduating from medical schools other than those approved by the L.C.M.E. (Liaison Committee for Medical Education) as a condition for entry into L.C.G.M.E. (Liaison Committee for Graduate Medical Examination) approved graduate training programs should be supported. Such an examination must assure a standard of quality equivalent to the standard applied to graduates of Liaison Committee on Medical Education accredited medical schools. These U. S. citizens and aliens must be required to complete successfully Parts I and II of the National Board of Medical Examiners' examination or a comparable examination. The Educational Commission for Foreign Medical Graduates (E.C.F.M.G.) examination should not be used as the basis for measurement of the competence of [American graduates of foreign medical schools] or alien physicians.

C. Alien physicians, who enter the United States as spouses of U. S. citizens, should be required to complete successfully Parts I and II of the National Board of Medical Examiners' examination or a comparable examination prior to entry into residency training.

D. The ability to read, write, and speak English should remain a requirement for graduate medical education programs for all alien physicians.

E. The Federation of State Medical Boards should recommend and the states should require that all applicants successfully complete at least one year of a G.M.E. [graduate medical-education] program that has been approved by the L.C.G.M.E. and successfully pass an examination prior to obtaining unrestricted licensure. The examination should assure a standard of quality in the ability to take medical histories, to do physical examinations, to carry out procedures, and to develop diagnostic and treatment plans for patients. The standard of quality should be equivalent to graduates of United States medical schools.

F. The states should severely restrict the number of individuals with limited licenses engaged in the practice of medicine. This restriction applies to those practicing independently without a full license and to those practicing within an institution without adequate supervision.

G. The "fifth Pathway" for entrance to approved programs of graduate medical education should be eliminated.

H. The transfer of U. S. citizens enrolled in foreign schools into advanced standing in U. S. medical schools should be eliminated.

3 The need to train nonphysician health care providers at current levels should be studied in the perspective of the projected oversupply of physicians.

4 To correct shortages or surpluses in a manner not disruptive to the G.M.E. system, no specialty or subspecialty should be expected to increase or decrease the number of first-year trainees in residency or fellowship training programs more than 20 per cent by 1986 compared to the 1979 figure.

5 In view of the aggregate surplus of physicians projected for 1990, medical school graduates in the 1980's should be strongly encouraged to enter those specialties where a shortage of physicians is expected or to enter training and practice in general pediatrics, general internal medicine, and family practice.

6 Extensive research on the requirements for N.P.'s [nurse practitioners], P.A.'s [physician's assistants,] nurse-midwives, and other nonphysician providers should be undertaken as soon as possible. Special attention must be given to the effect of a physician excess on their utilization and to the benefits these providers bring to health care delivery. These studies should consider the full range of complementary and substitute services.

7 Until the studies in Recommendation 6 have been completed, the number of P.A.'s, N.P.'s, and N.M.W.'s [nurse-midwives] in training for child medical care, adult medical care, and obstetrical/gynecological care should remain stable at their

present numbers. Delegation levels recommended by G.M.E.N.A.C. for 1990 are: in obstetrics/gynecology 197,000 of the normal uncomplicated deliveries (5 per cent of all deliveries), 7.1 million maternity-related visits (20 per cent of the obstetrical caseload), and 7.5 million gynecological visits (19 per cent of the gynecological caseload); in child care not more than 46 million ambulatory visits (16 per cent of the child ambulatory caseload; and in adult medical care not more than 128 million ambulatory visits (12 per cent of the adult medical ambulatory caseload).

8 All incentives for increasing the class size or the number of optometric or podiatric schools should cease until the studies in Recommendation 6 have been completed and evaluated.

9 State laws and regulations should not impose requirements for physician supervision of N.P.'s and P.A.'s, beyond those needed to assure quality of care.

Supportive recommendations:

A. State laws and regulations should be altered as necessary so that a P.A. or N.P. working under appropriate physician supervision can independently complete a patient encounter for conditions which are deemed delegable.

B. The states should provide P.A.'s, N.P.'s, and nurse-midwives with limited power of prescription, taking necessary precaution to safeguard the quality of care including explicit protocols, formularies, and mechanisms for physician monitoring and supervision.

C. At a minimum, P.A.'s, N.P.'s, and nurse-midwives should be given power to dispense drugs in those settings where not to do so would have an adverse effect on the patient's condition.

D. States, particularly those with underserved rural areas, should evaluate whether the laws and regulations pertaining to nonphysician practice discourage nonphysician location in these areas.

10 The requirements of third party payors for physician supervision should be consistent with the laws and regulations governing nonphysician practice in the state.

11 Medicare, Medicaid, and other insurance programs should recognize and provide reimbursement for the services by N.P.'s, P.A.'s, and nurse-midwives in those states where they are legally entitled to provide these services. Services of these providers should be identified as such to third party payors and reimbursement should be made to the employing institution or physician.

12 N.P.'s, P.A.'s, and nurse-midwives should be eligible for all federal incentive programs directed to improving the geographic accessibility of services, including the National Health Service Corps Scholarship Program.

13 Graduate medical education should be constructed to give residents experience in working with P.A.'s, N.P.'s, and nurse-midwives to insure that these physicians will be prepared to utilize nonphysician services.

14 G.M.E.N.A.C. recommends that the basic unit for medical manpower planning should be a small geographic area within which most of the population receives a specified medical service. These functional medical service areas, service by service, are recommended as the geographic units for assessing the adequacy of manpower supply.

15 G.M.E.N.A.C. encourages the support of efforts within the profession to assess the outcomes of common medical and surgical practices exhibiting high variation across communities. Accomplishing this step would help to establish long-range requirements for physician services in the United States.

16 Variations between communities in the utilization of specific medical services should be continuously documented and analyzed. The effect of differing financing and organizational arrangements for the delivery of medical care services should be evaluated.

Supportive recommendations:

A. Utilization rate experiences, relative to the norms of other physicians practicing in the immediate area, the region, or the nation, should be made available to physicians.

B. Future health manpower planning groups should compare manpower estimates, whether derived from "need" based, "demand" based, or "requirements" based models, against empirical estimates selected from areas in the United States exhibiting high and low utilization patterns.

17 G.M.E.N.A.C. recommends that health manpower shortage area be defined by a minimum service specific physician to population ratio and a maximum travel time to service for child care, adult medical care, obstetrical services, general surgical services, and emergency medical services.

Supportive recommendations:

A. The minimum acceptable physician to population ratio for any area in the U. S. should be 50 per cent of the requirements estimated by G.M.E.N.A.C. for each type of health service in the nation as a whole.

B. Maximum travel times to service for 95 per cent of the population within a geographic area should be 30 minutes for child care, adult medical care, and emergency medical service; 45 minutes for obstetrical care; and 90 minutes for general surgical services.

18 Alternative data systems for monitoring the geographic distribution of physicians should be developed and evaluated.

19 Medical students should be encouraged to select a location for practice in underserved rural and urban areas by several approaches: (1) urban and rural preceptorships should be continued and expanded by those schools having an interest, (2) governmental loan and scholarship programs should be catalogued and evaluated to determine their effectiveness in improving geographic distribution, (3) loan forgiveness programs modeled after those which have been successful should be used, and (4) the National Health Service Corps and its scholarship program should be supported.

20 The medical profession in making decisions as to residency training programs should consider the aggregate number of programs, their size, and the geographic distribution

of their graduates. in addition to the quality of the program. in light of national and regional needs.

21 Family practice residency training programs should be supported since these programs tend to train providers who are more likely to choose to practice in underserved areas.

A similar rationale underlies support needed for resident experiences in underserved areas and for certain nonphysician provider training programs.

22 Area-wide programs of decentralized medical education and service such as W.A.M.I. (Washington. Alaska. Montana. and Idaho). W.I.C.H.E. (Western Interstate Commission for Higher Education). and some A.H.E.C.'s (Area Health Education Centers) should be evaluated for replicability. Such programs have been effective in placement of physicians in sparsely populated areas.

23 More research and evaluation should be conducted on factors relating to the geographic distribution of physicians.

24 Medical education in the medical schools and in the early phase of graduate medical education in the teaching hospitals should provide a broad-based clinical experience with emphasis on the generalist clinical fields. A portion of graduate medical training should occur in other than tertiary care medical centers.

25 A more vigorous and imaginative emphasis should be placed on ambulatory care training experiences.

Supportive recommendations:

A. The out-patient services of the academic medical centers should be upgraded through special project grants.

B. Educational innovation in outpatient settings should be fostered by providing financial support.

C. Faculty should be encouraged and supported to develop careers focused on ambulatory medicine through a career development award mechanism.

26 Greater diversity among the medical students should be accomplished by promoting more flexibility in the requirements for admission; by broadening the characteristics of the applicant pool with respect to socio-economic status. age. sex, and race; by providing loans and scholarships to help achieve the goals; and by emphasizing. as role models. women and under-represented minority faculty members.

27 Information about physician manpower needs in the various specialties and in different geographic settings should be disseminated broadly to medical schools; administrators; faculty; and medical students. residents. fellows. and spouses.

28 Capitation payments to medical schools for the sole purpose of increasing class size or for influencing specialty choice should be discontinued in view of the impending surplus of physicians.

29 Special purpose grants to medical schools and other teaching institutions for primary care training in family medicine. general internal medicine. and general pediatrics should be continued in order to continue and to increase the emphasis on primary care services and ambulatory care.

Supportive recommendations:

A. Family practice programs. at least for the near term. should be given special attention in view of the difficulty in financing training programs from ambulatory care revenues.

B. Specialties in short supply should be considered for special project grants.

30 Ambulatory care training should be promoted further by the provision of grants for renovation and construction of facilities. for the support of training programs in ambulatory sites. and for student preceptorships and residency experiences in out-of-hospital care.

31 The medical profession. having the major responsibility for correcting physician oversupply. should insure the quality of all graduate medical education programs and full funding of these programs through reimbursement should be given only to accredited programs when mechanisms are in place.

32 Calculations of the true costs of graduate medical education should include the compensation for residents and teaching personnel and all of the ancillary and indirect costs. should distinguish between the cost of education and the cost of patient care by a uniform recognized reporting system. Costs should be borne equitably by all payors as part of the normal rate structure for patient care costs at the teaching hospitals. clinics. and other sites where health services and training are provided to the extent that such costs are not financed by tuition. grants. or other sources of revenue.

33 The health professions should assume a major responsibility for cost containment in new program development. in accreditation and certification. and in the provision of health services.

34 Public and private reimbursement policies should be adjusted to: emphasize ambulatory care services and training; encourage practice in underserved areas; explore the concept of shared risk among physicians: and pay professional fees to teaching physicians where their services have been identifiably discrete and necessary.

35 Continuous monitoring and evaluation of existing and new financial programs should be supported. Actions undertaken to alter financing and reimbursement strategies should not be advanced as permanent mechanisms for change until adequate evaluation/demonstration efforts have been performed..

36 Additional research should be accomplished on a broad array of topics related to financial considerations.

37 Special project grants for states on a cost sharing basis should be considered to influence the geographic distribution of physicians within the states. The development of incentives for practice in underserved areas is one program to be considered.

38 The development of future medical faculty. administrators. and researchers should be assured by provision of adequate financial support for their training.

39 A successor to the Graduate Medical Education National Advisory Committee should be established by statute. This successor should be an advisory body without regulatory functions.

40 In addition to the continuous monitoring, the supply projections, requirements estimates, and recommendations of G.M.E.N.A.C. in their entirety must be reevaluated and modified at least every five years to take account of changes in data, assumptions, and priorities occurring over time.