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California's Health Workforce Needs: Training Allied Workers

Technical Appendices

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Appendix A: Health Workforce Occupational Groupings and Projections

We use American Community Survey (ACS) data downloaded from the IPUMS USA website maintained by the Minnesota Population Center at the University of Minnesota (Ruggles et al. 2010). We use 6-digit Standard Occupational Classification (SOC) codes reported in the ACS to categorize the health workforce into broad occupational categories. The SOC codes are also used by the U.S Bureau of Labor Statistics (BLS) in the occupational education and training matrix that we use to determine minimum education requirements and the California Employment Development Department (EDD) to provide information on occupational employment and projections. Table A1 provides a mapping of the SOC codes from the ACS that are used to group more detailed health care occupations into the broader groups that we have used throughout the paper.

TABLE A1
Occupation grouping categories

Broad occupation grouping	Detailed occupations (SOC codes)
Doctors	Doctors and Surgeons (291060)
Other clinicians	Dentists (211020), Chiropractors (291011), Optometrists (291041), Pharmacists (291051), Podiatrists (291081), Dieticians and Nutritionists (291031), and Psychologists (193030)
Therapists	Physician Assistants (291071), Audiologists (291181), Occupational Therapists (291122), Physical Therapists (291123), Radiation Therapists (291124), Recreation Therapists (291125), Respiratory Therapists (291126), Speech Language Pathologists (291127), Other Therapists (29112X), Health Diagnosing and Treating Practitioners, All Other (291199). Also included are Counselors (211010) and Social workers (211020) who are employed in health care industrial sector (NAICS code 62)
Registered nurses	291141, 291151, 291171, 2911XX (includes nurse practitioners, nurse midwives, and nurse anesthetists because earlier SOC codes do not allow us to distinguish those occupations from other RNs)
Technicians and diagnostic support	Clinical Laboratory Technologists and Technicians (292010), Dental Hygienists (292021), Diagnostic Related Technologists and Technicians (292030), Emergency Medical Technicians and Paramedics (292041), Health Practitioner Support Technologists and Technicians (292050), Licensed Vocational Nurses (292061), Medical Records and Health Information Technicians (292071), Opticians (292081), Miscellaneous Health Technologists and Technicians (292090), Other Healthcare Practitioner and Technical Occupations (299000)
Health care support	Nursing, Psychiatric, and Home Health Aides (311010), Occupational Therapy Assistants and Aides (312010), Physical Therapist Assistants and Aides (312020), Massage Therapists (319011), Dental Assistants (319091), Medical Assistants (319092), Medical Transcriptionists (319094), Pharmacy Aides (319095), Phlebotomists (319097), Healthcare Support Workers, All Other (31909X)

In some cases, the SOC codes available in the ACS are more aggregated than the BLS or EDD coding systems. In those cases, we matched more detailed SOC codes from the BLS or EDD to the ACS based on the occupation that had the highest employment in California according to the occupational employment statistics available from the BLS. So for example, the ACS SOC coding has a single code (29-2030) for all diagnostic-related technologists and technicians, but there are five more detailed SOC codes for this group of occupations in the BLS and EDD data. In this case, we match this occupation code to radiological technologists (29-2034) because they represent the largest share (54% percent) of employment in the larger group of diagnostic technologists in California in 2012. We apply this general method of matching at the 5-digit or 4-digit level of SOC codes as necessary in cases where the ACS only has more aggregated codes available.

Health Care Occupational Projections

As described in the text, we utilize projections of employment at the detailed occupation level produced by the EDD. The most recent EDD data project employment changes due to job growth and replacement needs through 2020. Table A2 presents EDD projections at a more detailed level than those reported in the paper. These projections represent an estimate of the future health care labor force in 2020, if the economy and industry operates at its full potential. The estimates account for broad demographic and macroeconomic trends across industries and for projected changes in the distribution of occupations within industries. However, like any projections, these data are only the best estimates at a given point in time and are inherently uncertain.

TABLE A2
Projected job growth in health care occupation groups

	Total employment 2010	Projected employment growth, 2010–2020	Projected replacement job posting, 2010–2020	% New jobs requiring sub-baccalaureate training	
				Minimum entry requirement (BLS)	Actual education of the workforce, 2012
Doctors	76,100	13,800	14,900	0%	0%
Other clinicians	59,100	9,400	16,800	0%	4%
Therapists	72,100	15,900	12,600	16%	24%
Registered nurses	251,800	54,300	45,600	100%	36%
Allied health-technicians and diagnostic support	259,600	59,800	55,900	75%	60%
Health care support	379,200	95,100	56,500	43%	50%
TOTAL	1,097,900	248,300	202,300	54%	42%

SOURCE: Columns 1–4 are from EDD 2010–2020 Occupational Projections, Column 5 also uses ACS 2010–2012.

NOTE: The final column is calculated by applying the share of workers in detailed (6-digit) occupation with sub-baccalaureate training to projected total new jobs (columns two plus three).

TABLE A3
Employment projections in detailed health care occupations, 2010–2020

Occupation title	Employment 2010	Projected employment 2020	Employment change	Percent change	Average annual replacement jobs
Anesthesiologists	5,800	6,800	1,000	17%	110
Family and general practitioners	12,300	15,000	2,700	22%	240
Internists, general	8,300	10,000	1,700	20%	160
Obstetricians and gynecologists	3,200	3,900	700	22%	60
Pediatricians, general	6,100	7,300	1,200	20%	120
Physicians and Surgeons, all other	29,900	34,600	4,700	16%	590
Psychiatrists	4,800	5,500	700	15%	100
Surgeons	5,700	6,800	1,100	19%	110
Total Doctor	76,100	89,900	13,800	18%	1,490
Chiropractors	3,900	4,100	200	5%	80
Clinical, counseling, and school psychologists	24,600	28,100	3,500	14%	770
Dentists, all other specialists	1,300	1,300	0	0%	40
Dentists, general	17,000	17,700	700	4%	510
Dietitians and nutritionists	7,000	8,400	1,400	20%	250
Optometrists	4,100	4,800	700	17%	150
Orthodontists	1,100	1,200	100	9%	30
Pharmacists	23,600	29,900	6,300	27%	600
Podiatrists	1,100	1,100	0	0%	20
Psychologists, all other	1,700	1,900	200	12%	50
Total Clinician	85,400	98,500	13,100	15%	2,500
Audiologists	1,500	1,800	300	20%	10
Health diagnosing and treating practitioners	4,500	5,400	900	20%	90
Health care social workers	12,600	16,500	3,900	31%	300
Mental health counselors	9,200	11,100	1,900	21%	200
Mental health and substance abuse social workers	10,600	12,500	1,900	18%	250
Occupational therapists	9,000	11,200	2,200	24%	170
Physical therapists	16,500	20,400	3,900	24%	190
Physician assistants	8,300	10,400	2,100	25%	160

TABLE A3 (continued)

Occupation title	Employment 2010	Projected employment 2020	Employment change	Percent change	Average annual replacement jobs
Radiation therapists	1,600	1,800	200	13%	30
Recreational therapists	1,000	1,100	100	10%	30
Respiratory therapists	14,200	17,900	3,700	26%	270
Speech-language pathologists	11,500	13,100	1,600	14%	220
Therapists, all other	4,000	4,900	900	23%	90
Total Therapist	104,500	128,100	23,600	23%	2,010
Registered Nurses	251,800	306,100	54,300	22%	4,560
Athletic trainers	1,000	1,300	300	30%	40
Cardiovascular technologists and technicians	3,600	4,500	900	25%	60
Dental hygienists	19,900	23,300	3,400	17%	400
Diagnostic medical sonographers	5,300	7,300	2,000	38%	80
Dietetic technicians	1,900	2,200	300	16%	30
Emergency medical technicians and paramedics	15,900	22,600	6,700	42%	320
Health technologists and technicians, all other	15,000	18,800	3,800	25%	300
Health care practitioners and technical workers	8,300	9,900	1,600	19%	290
Licensed practical and licensed vocational nurse	64,500	79,000	14,500	22%	1,720
Medical records and health information technicians	17,400	20,700	3,300	19%	350
Medical and clinical laboratory technicians	16,900	19,400	2,500	15%	330
Medical and clinical laboratory technologists	11,800	13,200	1,400	12%	230
Nuclear medicine technologists	1,600	1,800	200	13%	30
Occupational health and safety specialists	6,300	7,200	900	14%	220
Opticians, dispensing	6,200	7,300	1,100	18%	120
Pharmacy technicians	29,000	38,600	9,600	33%	500
Psychiatric technicians	8,900	10,800	1,900	21%	150
Radiologic technologists and technicians	17,200	21,300	4,100	24%	270
Surgical technologists	8,900	10,200	1,300	15%	150

TABLE A3 (continued)

Occupation title	Employment 2010	Projected employment 2020	Employment change	Percent change	Average annual replacement jobs
Total Allied	259,600	319,400	5,9800	23%	5,590
Dental assistants	43,700	49,000	5,300	12%	920
Health care support workers, all other	23,100	26,700	3,600	16%	350
Home health aides	61,100	93,100	32,000	52%	790
Massage therapists	24,100	27,500	3,400	14%	390
Medical assistants	80,900	99,000	18,100	22%	1,240
Medical equipment preparers	7,100	8,000	900	13%	110
Medical transcriptionists	6,000	6,100	100	2%	90
Nursing aides, orderlies, and attendants	109,500	134,100	24,600	22%	1,410
Occupational therapy assistants	2,000	2,700	700	35%	30
Pharmacy aides	8,100	10,700	2,600	32%	120
Physical therapist aides	6,400	8,300	1,900	30%	100
Physical therapist assistants	4,600	6,000	1,400	30%	70
Psychiatric aides	2600	3100	500	19%	30
Total health care support	379,200	474,300	95,100	25%	5,650

SOURCE: California Employment Development Division 2010–2020 Occupation Projections.

In addition to EDD projected labor force demand, we also examine estimates of projected labor force shortages within a subset of health care occupations. Fenton Communications and Beacon Economics (2010) created estimates of the shortage of workers in California’s allied health care occupations. Its projections are presented in Table A3. These estimates combine demographic and employment data from federal and state sources, including the U.S. Census Bureau, the Centers for Disease Control and Prevention, the California Department of Finance, and the EDD and make a number of assumptions in order to estimate detailed labor force shortages (or excess). A primary assumption behind the estimates is that health care services will be increasingly provided in an ambulatory setting or through nursing and residential care facilities, with a relative decline in hospital usage. Ambulatory and nursing care employ more allied health workers than hospitals. Fenton Communications and Beacon Economics project a 20 percent drop in hospital usage per capita by 2030, with a 31 percent increase in ambulatory care visits over that time. This assumption is reasonable, as hospitals are very expensive, and there has been a movement away from inpatient hospital care whenever possible. The EDD projections of labor force demand (above) do not incorporate detailed estimates of shifts in patient care across health sectors.

The wide range of demand for workers in the Fenton Communications and Beacon Economics study is due to the range of possible replacement rates for jobs across allied health care occupations, accounting for typical change in job openings due to retirement or turnover. The Fenton and Beacon researchers generate estimates based on a low scenario of a 7.5 percent replacement rate and a high scenario of 10 percent. The

replacement rate could vary for a number of reasons, including people leaving the workforce due to improving macroeconomic conditions, or moving up/delaying retirement.

The projected shortages in Table A4 include only occupations that require some kind of postsecondary certificate or degree. As such, these represent a subset of the workers described in our report.

TABLE A4
Projected shortages in certified allied health care occupations

Occupation	2010–2020 shortage
Licensed practical and licensed vocational nurses	25,983–40,055
Dental assistants	15,671–27,881
Dental hygienists	22,304–29,081
Medical records and health information technicians	12,609–16,180
Medical and clinical laboratory technologists	11,972–15,239
Physical therapists	9,671–13,365
Radiologic technologists and technicians	7,075–11,288
Medical and public health social workers	6,004–8,233
Respiratory therapists and technicians	5,053–7,718
Psychiatric technicians	3,584–5,538
Occupational therapists	3,084–4,548
Opticians, dispensing	2,869–4,397
Physician assistants	2,384–3,941
Surgical technologists	2,367–3,680
Physical therapist assistants	1,726–3,283
Health educators	1,345–2,169
Dietetic technicians	848–1,153
Speech-language pathologists	483–719
Recreational therapists	409–788
Occupational therapist assistants	-197–684
Dietitians and nutritionists	-719–258
Cardiovascular technologists and technicians	-1,258– -464
Diagnostic medical sonographers	1,234– -929
Pharmacy technicians	-13,851– -12,050
Emergency medical technicians and paramedics	-20,215– -16,949
Medical assistants	-42,081– -25,200
Total shortage	55,886–144,605

SOURCE: Fenton Communications and Beacon Economics (2010).

Appendix B: Health Program Groupings at California Public and For-Profit Colleges

We used data collected annually by the U.S Department of Education’s National Center for Education Statistics on all colleges, universities, and technical and vocational institutions that participate in the federal student financial aid program throughout the country. The Integrated Postsecondary Education Data System (IPEDS) contains information at the college-level on degree completions by award level, institutional characteristics, and student characteristics, such as race and ethnicity, as well as detailed categories of the types of programs. We use all of this information including the 6-digit Classification of Instructional Programs (CIP)—a taxonomy developed to accurately track and report fields of study and program completions—in our analysis of health programs.

The following groupings of CIP codes were used in Figure 5 to group programs into the broader categories we present. In some cases we used 4-digit codes (broader groupings that include all 6-digit categories), and in other cases we specifically used the 6-digit codes. We categorized only the CIP codes for programs in which there was at least one completion in the California public and private institutions we examined. Nursing programs included CIP codes 5138. Health programs categorized as “technical” included the following CIP codes: 5109, 5110, 510000, 510204, 510602, 510603, 510699, 510802, 510805, 510809, 510810, 510811, 510812, 510899, 511501, 511502, 511599, 511801, 511802, 512099, 512208, 512399, 512309, 513103, 513901, 513999, and 519999. Programs categorized as “support” included the following CIP codes: 5126, 510801, 510803, 510806, 510601, 511009, and 513902. Programs categorized as “other: included 5107, 5111, 5133, 5135, 5136, and 5137.

Appendix C: Health Care Programs at California's Community Colleges

We examined course offerings and student success in health programs at California's community colleges using publically available data from the California Community Colleges Chancellor's Office's Data Mart system. Table C1 shows changes in course offerings over the recent three-year period marked by substantial state budget cuts. It categorizes course offerings for broad health and nonhealth program groupings and also presents information for more detailed health programs. Figure C1 presents course success metrics described in the report. Courses were categorized as nonhealth, registered nursing, or allied health based on Shulock and Moore (2011). All credit courses—both in traditional and online settings—are considered in this broad analysis.

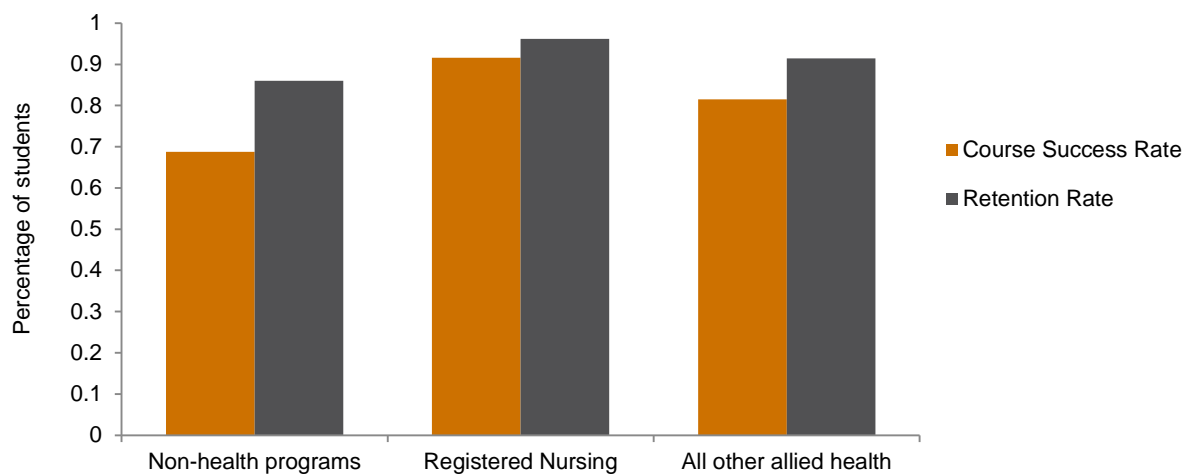
TABLE C1
Health care course offerings were cut during the state's budget crisis

Courses	Total sections offered, 2008–09	Changes in course offerings between 2008–09 and 2011–12	Percentage change in course offerings
Nonhealth	347,689	-71,214	-20%
All health	15,546	-4,085	-26%
<i>Selected health programs:</i>			
Registered nurse	6,281	-2,427	-39%
Emergency medical technician	1,527	-600	-39%
Licensed vocational nurse	1,156	-539	-47%
Dental assistant	836	-308	-37%
Dental hygienist	263	205	78%
Medical assistant	220	173	79%
Respiratory therapist	177	161	91%

SOURCE: California Community Colleges Chancellor's Office Data Mart system, accessed spring 2013.

NOTE: Courses are divided into health and nonhealth categories according to Shulock and Moore (2011).

FIGURE C1
Student success in community college health programs, 2014



SOURCE: California Community Colleges Chancellor's Office Data Mart system, accessed March 2014.

NOTE: Success rates are share of students with a passing grade; retention rates are share of student who complete.

References

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