

# **Diversity in California's Health Professions: Current Status and Emerging Trends**

## **The Connecting the Dots Initiative: A Comprehensive Approach to Increase Health Professions Workforce Diversity in California**

### **Produced by:**

The Public Health Institute  
and the UC Berkeley School of Public Health

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## ABOUT THE INITIATIVE

### **The Connecting the Dots Initiative: A Comprehensive Approach to Increase Health Professions Workforce Diversity in California**

This is one of seven reports that share findings from a coordinated set of inquiries commissioned by The California Endowment. The purpose is to foster a more comprehensive, evidenced-based understanding of the issues, challenges, and opportunities associated with efforts to increase workforce diversity in health professions. Each report includes a set of targeted recommendations to increase workforce diversity in California health professions. The basic theme and title of the initiative is “Connecting the Dots,” reflecting an understanding of the need for a thoughtful, deliberate, and sustained commitment by the full spectrum of educational institutions, health professions employers, businesses, community stakeholders, and other leaders in the public and private sectors. The Public Health Institute and UC Berkeley School of Public Health formed a partnership to conduct the research and take action as part of The Connecting the Dots Initiative (CTD) and worked in collaboration with UCSF Center for Health Professions, Gibson and Associates, and The Praxis Project.

The impetus for The Connecting the Dots Initiative was provided by earlier reports from the Institute of Medicine, The Sullivan Commission, and the UCSF Center for Health Professions. These reports documented the dramatic under-representation of many racial and ethnic groups in the health professions and provided evidence that a more diverse health workforce can contribute to improved access and health quality for Americans. They also made the case that increased representation is essential to our future health workforce and economy. The Connecting the Dots Initiative builds on those earlier reports by documenting the current state of affairs in California and developing an evidence-based, comprehensive strategy to increase workforce diversity in health professions. The Connecting the Dots Initiative reports include:

- A quantitative assessment of the current level of diversity in California health professions education institutions and among practicing professionals.
- A qualitative assessment of issues, challenges, and opportunities based on key informant interviews with the leadership of health professions education institutions, health professions employers, and state regulatory agencies.
- Profiles of over 30 exemplary practices to enhance health professions diversity.
- An analysis of how the issue of diversity is framed in the California media and strategies to re-frame the public dialogue.
- Qualitative and quantitative research with health professions students, faculty, and alumni to explore the benefits of diversity in the educational environment.
- A comprehensive annotated bibliography and literature review of diversity-related research to date.
- A qualitative assessment of K-12 networks of support to pursue health careers in four California communities.

All seven reports can be found at <http://www.calendow.org/Article.aspx?id=2290>. The Connecting the Dots Initiative is in its next phase to support the implementation of the targeted recommendations. For more information, please contact Shelly Skillern at [sskillern@phi.org](mailto:sskillern@phi.org).

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The mission of the UCSF Center for Health Professions is to assist health care professionals, health professions schools, care delivery organizations and public policy makers in responding to the challenges of educating and managing a health care workforce capable of improving the health and well being of people and their communities. For more information visit our website at <http://futurehealth.ucsf.edu/>.

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# Executive Summary

## Introduction and Purpose

California's population is among the most racially and ethnically diverse in the U.S. However, policy makers, educators, foundations, and other stakeholders are concerned about how well this diverse population is represented among healthcare practitioners in key health professions and occupations. There are many compelling reasons to work toward achieving a more racially and ethnically balanced health professions workforce in California, including the practical consideration of labor market conditions. Healthcare and related industries have been the largest source of job growth over the past decade and this trend is expected to continue for the foreseeable future. The objective of this analysis is to provide a current picture of diversity in the health professions workforce and educational pipeline in a number of health professions. This inquiry also presents current and projected population data as a benchmark against which to measure diversity in the health professions. It also provides a picture of emerging trends and their implications for meeting California's current and future health workforce needs.

## Methods and Data Sources

The principle research method employed was collection and analysis of publicly available data, using the best available source of data for each major sector of the analysis: population, current workforce, and educational pipeline. A detailed description of data sources is found in Table 1 of the report. In a few cases, proprietary data sources and published reports available for a specific profession were utilized. Limited resources made it important to select a representative sampling of professions. Data limitations eliminated some professions or subgroups of professions from inclusion in the assessment. They were selected primarily because they involve a great deal of direct patient contact, although data availability and expected growth in employment for these professions were also considered. The selected professions represent a range of practice scopes, practice settings and educational requirements. The selected health professions addressed in this inquiry include:

- Medicine
- Nursing (ADN, BSN)
- Dentistry
- Pharmacy
- Mental health: Psychologist and licensed clinical social workers
- Public health: Master's level public health (MPH)
- Allied health occupations: radiologic technologists, respiratory therapists, and health-care support occupations

## **Key Findings**

### ***Population Demographics***

California's population is changing in several ways that have important implications for the state's healthcare workforce. The state's total population is projected to increase by 15 million between 2000 and 2030, growing from 34 million to 49 million. More than 80% of this projected population increase will be due to growth in the Hispanic/Latino population. The number of Hispanic/Latino Californians is expected to double from roughly 11 million to approximately 22 million. The number of Asian Californians is projected to grow substantially between 2000 and 2030 from 3.7 million to more than 6 million. The size of the African American population is projected to grow slowly in the coming decades, increasing from roughly 2.2 to 2.5 million between 2005 and 2030. By contrast, the number of White non-Hispanic Californians is projected to remain stable at roughly 16 million. With the exception of Whites, all racial and ethnic groups are projected to continue growing over the next several decades.

Changes in California's youngest and oldest populations also have important implications for the healthcare workforce. The state's younger population represents the state's future pool of labor on which the healthcare workforce will draw. By 2030 it is projected that nearly 60% of California's population under the age of 18 will be Hispanic/Latino. The state's elderly population will likely be the major recipients of healthcare in the future. California's population over the age of 65 is projected to increase to about 8.3 million by 2030. This growth in elderly Californians is expected to have an unprecedented impact on the overall demand for healthcare services.

### ***Current Health Professions Workforce***

There is wide variation in the level of gender diversity among the current health professions workforce. Medicine and dentistry are predominantly male, while nursing, psychology, social work, and healthcare support occupations are predominantly female. Pharmacy, respiratory therapy and allied health technologists are relatively gender balanced.

For the selected professions and occupations in the current workforce, there are also wide variations in the racial and ethnic composition of each. Whites and Asians represent the largest portion of the workforce for professions with high barriers to entry. Current estimates indicate that roughly 9 out every 10 physicians, dentists, and pharmacists in California is either White or Asian. The workforce is increasingly diverse in those professions with low barriers to entry. Among healthcare support occupations, where opportunity is greatest, 1 in 3 workers is Hispanic or Latino and proportional representation of African Americans is nearly twice its size in the working age population.

Wage data are included in this report because it provides important information on the difference in income between health professions as well as the range of wages within a profession. In comparing wage data across the professions with workforce

diversity, it is evident that the highest paid health occupations are the least racially and ethnically diverse while the lowest paid health occupations are the most racially and ethnically diverse.

### ***Health Professions Education***

Education data indicate that graduates of health professions programs with high barriers to entry (the least number of available slots or highest level of education requirements) also lead to the highest paying jobs and are not reflective of California's diverse population. Among entry level health occupations, there is more racial and ethnic diversity..

Program capacity in medicine and dentistry has not expanded in the last decade. When combined with the fact that these programs are highly competitive, addressing issues of student diversity is challenging. In contrast, first-year enrollment slots in pre-license registered nursing have increased substantially in the past several years. It is important to look at regional data, as well as age cohorts, in assessing progress in increasing diversity in health professions educational programs. Trends indicate that student diversity is beginning to increase in specific regions of the state. Other programs that have expanded output in recent years are masters in social work programs, masters in public health programs, and both radiography and respiratory therapy programs. These increases in output have also coincided with increasingly diverse student bodies.

There have been three new pharmacy education programs established in recent years, although the data in this report do not fully reflect this expansion due to the length of time of the education programs. Even with the expanded number of slots, the student body in pharmacy education lacks racial and ethnic diversity. As in medicine and dentistry, White and Asian students predominate in pharmacy.

Registered nursing (RN) education is an important example of shifts in racial and ethnic composition of the student population. In recent years there have been targeted efforts to intervene in specific ways to effect changes in the size and racial and ethnic composition of RN student bodies. It must be emphasized that these are small compositional shifts and are more apparent in certain regions, such as the Central Valley.

Analysis of education data also indicates that master's level programs in social work (MSW) and psychology are slowly becoming more diverse in terms of race and ethnicity. MSW programs have seen significant increases in the number of Hispanic/Latino graduates and master's level psychology programs saw gains in the number of Hispanic/Latino, Asian and African American graduates. Although White students remain the predominant group in these education programs, proportional representation is slowly shifting.

Master's level public health programs suggest that there are real differences in the racial and ethnic composition of the student body depending on the school. In 2005, roughly 80% of the students graduating from the state's two biggest programs (UC Berkeley and UCLA) were either White or Asian. Programs in the California State University system and the other private schools exhibit greater racial and ethnic diversity in terms of student body composition.

Data describing allied health education programs indicate that the student population is comparatively well-balanced in terms of race and ethnicity. Relative to the current workforce, it appears that in recent years the potential pool of new entrants into the workforce is a much more racially and ethnically diverse group. Education programs in the selected allied health occupations are relatively numerous and well-distributed geographically and are frequently offered in the state's community college system, which are important factors in determining the cost of education and access to opportunity.

### **Limitations in Data and Analysis**

Data used in this report generally represent the best available source of data to describe California's population, employed workforce, and educational pipeline for the selected professions. Each of these sources has limitations in terms of data collection, reporting, and the level of analysis that can be conducted. A major limiting factor is that the categories describing race and ethnicity are not consistent across data sources. In addition, race and ethnicity data are overly general and most sources do not include detailed data that might be of interest in understanding how different ethnic groups are distributed within broader race groups.

Perhaps the most limiting factor in conducting the analysis was the difficulty in making precise connections across the three different sectors of analysis: population, health professions workforce and health professions education programs. These data were collected during different time periods and from a variety of sources and the level of detail and breadth of coverage varies substantially by source. We have been cautious in drawing conclusions about trends across these three sources of data. Nevertheless, we feel that this analysis has produced some important findings about the current state of demographic diversity in selected health professions in California.

## Recommendations

The following recommendations do not include cost considerations, nor are they listed in order of priority.

1. The state should make investments that make it possible to conduct systematic and ongoing health care workforce research and analysis. This will improve our understanding of the complex issues that determine workforce demographics and our ability to track and describe important features of diversity in the health care workforce.
2. The state should require health professional licensing boards to regularly collect and maintain a public-use database containing information that describes licensees by race/ethnicity practice specialty, practice location, locale, and characteristics of the patient population served. The Medical Board of California offers a model of a similar data collection process already underway.
3. It is critical that state organizations involved in data collection (licensing boards, educational institutions, and others) use consistent race/ethnicity categories. This will allow for more meaningful comparisons across professions and across sources of data.
4. Health professions schools should better track race/ethnicity information in describing cohorts of applicants, enrollees, graduates and non-completers. This will allow for more detailed analysis of interventions and targeted efforts to recruit a more diverse student body in the health professions education and would be invaluable when evaluating the success of such efforts.
5. Research on cohorts of underrepresented students could help us understand the process of application, enrollment, graduation, and success in gaining entry into the health professions workforce. For example, a recent bill introduced in the California legislature, AB 2366 by Assembly Member Portantino, would link data from student educational achievement to labor market data. These types of data would provide a means of tracking outcomes from programs such as health career academies.
6. Health professions schools should attempt to track employment of program graduates, particularly in those professions where there are multiple possible career tracks such as psychology, social work, the Master's prepared public health workforce.
7. The health care industry including hospitals, community clinics, long term care, and public health departments should collect and report workforce demographic data in a coordinated manner. This would provide much needed access to data describing the current workforce and would be invaluable in conducting workforce planning.



# Quantitative Assessment of Diversity in Selected Health Professions in California

## I. Introduction

California's population is among the most racially and ethnically diverse in the U.S. However, this diversity has not been well-represented among practitioners and providers in key health professions and occupations. There are many compelling reasons to work toward achieving a more racially and ethnically balanced health professions workforce and among these is the practical consideration of labor market conditions. Healthcare professions and occupations offer an increasingly stable set of career paths, with future opportunity projected to be very strong. Healthcare and related industries have been the largest source of job growth over the past decade with this trend expected to continue for the foreseeable future.<sup>1</sup> Health services and sciences comprise about 10% of employment in California and professions in these industries will generate many of the fastest-growing groups of occupations.<sup>2</sup>

The objective in this analysis is to provide a picture of demographic diversity of three principal groups in the state: the general population, the health professional practice community, and the student body in health professions' education programs. General population data serve as an important benchmark. This assessment looks at the population demographics in California as they exist currently and how they are projected to change. The findings are then compared to the current population of health professional practitioners and, to the current body of health professions' students. Also provided is analysis of current wage data and projected occupational employment data, which can be used to evaluate the relationships between wages, employment opportunity and demographic diversity.

## Selected Health Professions

Many efforts have been made and continue to be made to promote gender diversity and racial and ethnic diversity in the health professions in California. In part, the intent of this report is to provide a vantage point, so that progress or the lack thereof is made visible. It was important to select a representative sampling of professions, and although data limitations eliminated some professions or subgroups of professions from consideration, those selected represent a range of practice, practice settings, and educational requirements. The selected health professions include:

- Medicine
- Nursing (ADN, BSN)
- Dentistry
- Pharmacy
- Mental health: Psychologist and licensed clinical social workers
- Public health: Master's level public health (MPH)

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<sup>1</sup> Michael Mandel. *What's Really Propping up the Economy*. BusinessWeek. September 26, 2006.

<sup>2</sup> California Employment Development Department. *California Labor Market and Economic Analysis 2007*.

- Allied health occupations: Radiologic technologists (Radiographers), respiratory therapists, and health-care support occupations

These professions were selected primarily because they involve a great deal of direct patient contact or community involvement. However, selection was also driven by the scope of the project and the need to focus on only a few professions for in-depth study. Further criteria included data availability, anecdotal information on current workforce shortages, and expected growth in future demand for workers in many of the selected professions. Although occupational projections for each of the selected professions are included in this report, we emphasize that they were selected primarily because they have a high degree of patient contact, not because they necessarily represent the highest growth occupations in healthcare.

Medicine, dentistry, and nursing were included because they represent a large investment of available educational resources in the state. These professions are very competitive, with many applicants for few available training slots. Pharmacy is a smaller profession in size, but important because of the pharmacist's role in overseeing prescription and non-prescription drug utilization. Additionally, there has been little previous analysis of the diversity of this profession in California.

Mental health professionals are critical frontline providers of care, but have differing scopes of practice, work in a variety of fields and are prepared at various levels of education. However, data describing these fields are limited. Two of the more prominent professions were selected: licensed psychologists and licensed clinical social workers. Master's degree prepared public health professionals also work in a variety of industry sectors and settings, but as with mental health professionals there are few data identifying the specific industries or sectors. Policymakers are interested in this group because of their breadth of employment and the fact that formal education is focused broadly on health issues in the general population.

The allied health professions represent another large component of the healthcare workforce. One frequently used typology groups the allied health professions into three major categories: therapeutic, diagnostic and health information services. However, two professions that work primarily in direct contact with patients were selected: radiography and respiratory therapy. These professions are of particular interest to the healthcare industry because of reported, but not easily quantified, shortages and the sense that more should be done to recruit a more diverse student population into these professions. Healthcare support occupations include nursing assistants, home health workers, medical assistants, and various other support personnel. These workers are analyzed as a group because of data limitations. Comparatively, they present quite a different picture with respect to workforce demographics, exhibiting a much higher degree of representation among racial and ethnic minorities.

## II. Methods for Assessing Diversity

### Overview of Methods

The principle research method employed was collection and analysis of publicly available data. In a few cases, we utilized proprietary data sources or published reports that analyzed a specific profession or presented specific student data. Table 1 provides a summary of the major data sources used in this report including the name of the data source or database, the period (year), and a description of its use in this report.

**Table 1. Major Data Sources**

<b>Data Source</b>	<b>Year(s)</b>	<b>Description and Use in this Report</b>
<b>2005 American Community Survey Public Use Microdata Sample (PUMS)</b>	2005	Household survey conducted continuously over the year; used to describe California's general population and current workforce for selected professions.
<b>Medical Board of California: Re-licensing Survey</b>	2007	Survey data collected by Medical Board of CA as part of license renewal process; used to describe California's current Physician/Surgeon workforce.
<b>CA Board of Registered Nursing: 2006 Survey of Registered Nurses</b>	2006	Survey data collected by CA Board of Registered Nursing; used to describe California's current Registered Nurse workforce.
<b>Occupational Employment Statistics (BLS-OES)</b>	2006	National survey of employer establishments; used to describe current wages for selected professions.
<b>California Employment Development Department: Employment Projections</b>	2004-2014	Projected growth in employment by industry & occupation; used to measure relative projected growth for selected professions.
<b>Association of American Medical Colleges (AAMC): Applicant-Matriculant File</b>	1991-2006	Data warehouse describing all applicants and matriculants at US medical schools; used to describe trends in applicants, accepted applicants and matriculants at California's medical schools.
<b>Integrated Postsecondary Education Data System (IPEDS)</b>	2000-2005	Collection of surveys that describe higher education institutions in US; used to describe trends for graduates of selected education programs in California.
<b>California Board of Registered Nursing (BRN): Annual Schools Survey</b>	2001-2006	Annual survey of registered nursing education programs in California; used to describe trends of graduates of RN programs in California.
<b>Association of American Colleges of Pharmacy (AACP): Profile of Pharmacy Students</b>	2001-2005	Publication of data on enrollments and degrees conferred at US schools of pharmacy; used to describe trends of enrollments and graduates of Doctor of Pharmacy programs in California.

<b>Data Source</b>	<b>Year(s)</b>	<b>Description and Use in this Report</b>
<b>American Dental Association: Annual Report on Dental Education</b>	2000-2005	Publication of data on enrollments and degrees conferred at US dental schools; used to describe trends of enrollments and graduates of Doctor of Dental Surgery programs in California.
<b>Association of Schools of Public Health: 2005 Annual Data Report</b>	2005	Publication of data on applications, enrollments, and degrees conferred at member schools of public health; used to describe trends in applications and enrollments at graduate programs in public health in California.
<b>California Department of Finance: Population Projections</b>	2000-2030	Projected estimates of population change; used to describe projected population changes in California.

### **Race and Ethnicity Categories Used in Data Sources**

The race and ethnicity categories used in the different sections of this report are derived from the data sources. Because they are not the same in every source of data, the categories change depending on what is being described: the general population, the current workforce, or the educational pipeline. In general, the following race and ethnicity categories are used: White, African American, Asian, Native American, Hispanic/Latino, and Multirace. The Hispanic/Latino category includes people from all race groups that self-identify as being Hispanic/Latino. All of the other race categories should be understood as non-Hispanic/Latino unless otherwise noted. Frequently, the category Asian includes Native Hawaiians and other Pacific Islanders, but not in every case.<sup>3</sup> As a general rule, in each instance where specific race and ethnicity groups are collapsed into a more general group, we identify who is included in the more general group.

In the section describing education programs, we identify only those students for whom race and ethnicity is reported; those for whom race and ethnicity is unknown or unreported are excluded from the analysis.<sup>4</sup> What this means is that in most<sup>5</sup> figures that present data describing the racial and ethnic composition (%) of a specific student body, the number of students being described is less than the actual total number of students because some proportion (those for whom race and ethnicity was unreported) has been excluded. The proportions represented will always sum to 100% because they represent 100% of the students for whom race and ethnicity was reported. In figures that do not describe the attributes of race and ethnicity, all students are included. In some cases, the proportion of students for whom race and ethnicity was unreported is substantial. In

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<sup>3</sup> See Appendix A for a full listing of the different race and ethnicity groups used by the different data sources.

<sup>4</sup> Students that are reported as non-U.S. citizens were also excluded from the analysis of race and ethnicity in educational programs, though we do make note of them in the case of public health education, where they account for a significant proportion of the student body being described.

<sup>5</sup> We say most because there were instances where race and ethnicity was reported for every student.

these instances, we indicate the size of the proportion and caution the reader against drawing conclusive positions vis-à-vis the data, but we do not speculate as to what might be different were the race and ethnicity of the students known.

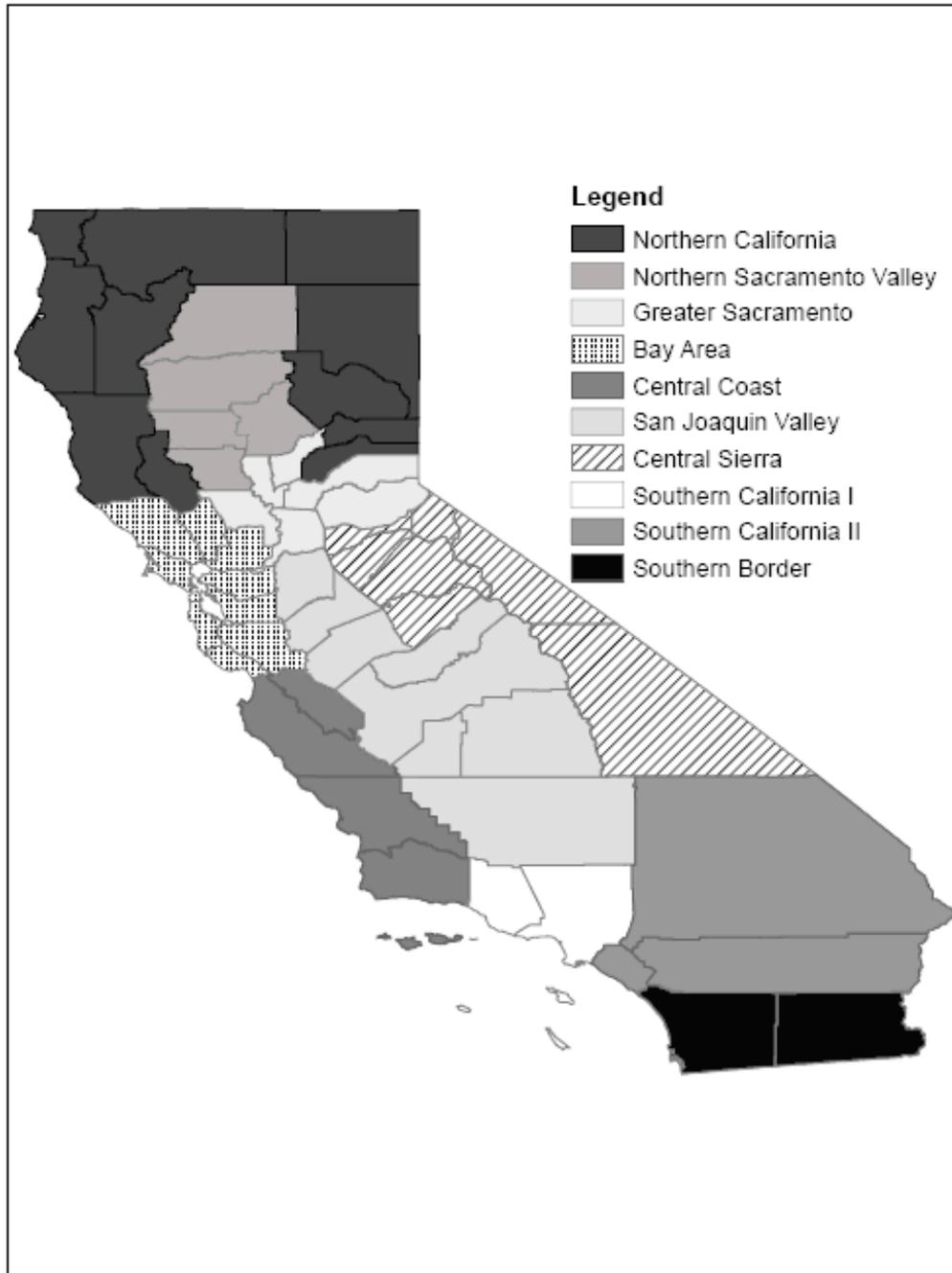
### **Regional Geography Used in Data Sources**

For those sections of the report that describe the general population, the current registered nursing workforce, and pre-license registered nursing education in California, a regional analysis was conducted. The geographic regions used in analyzing California's general population and pre-license nursing education are identical; the regions used to analyze the current registered nursing workforce are slightly different. This is a function of the data being derived from multiple sources. Table 2 and Figure 1 detail the regions and the counties represented by each region used to analyze the general population and pre-license nursing education. A separate table and figure accompany the regional analysis of the current RN workforce.

**Table 2. Geographic Regions Used for Analysis of General Population and Pre-license Nursing Education by County**

<b>Region</b>	<b>Counties Represented</b>
Northern California	Del Norte, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Plumas, Sierra, Siskiyou, Trinity
Northern Sacramento Valley	Butte, Colusa, Glenn, Shasta, Tehama
Greater Sacramento	El Dorado, Placer, Sacramento, Sutter, Yolo, Yuba
Bay Area	Alameda, Contra Costa, Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, Santa Cruz
San Joaquin Valley	Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare
Central Sierra	Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, Tuolumne
Central Coast	Monterey, San Benito, San Luis Obispo, Santa Barbara
Southern California I	Los Angeles, Ventura
Southern California II	Orange, Riverside, San Bernardino
Southern Border	San Diego, Imperial

**Figure 1. Map of Geographic Regions Used for Analysis of General Population and Pre-license Nursing Education**



## Limitations of Data and Analysis

Data sources used in this report to describe California's population, employed workforce and educational pipeline for the selected professions generally represent the best sources available. However, each source has its limitations in terms of collection, reporting, and the level of analysis that can be conducted. As already noted, the race and ethnicity categories are not consistent across data sources and the sources tend not to include detailed data that might be of interest in understanding how different ethnic groups are distributed within broader racial categories. The categories used are overly general, either because data describing a more specific subgroup are not collected or because such data are collected but not released in the interest of maintaining confidentiality. Other limitations include missing (unreported) data, which for some of the education programs was sizeable enough to limit the conclusions that could be drawn. Data describing race and ethnicity are self-reported and are thus subject to the usual errors of self-reported data.

The most significant limitation of the analysis, however, is the ability to make precise connections between data sources in each of the segments analyzed. These data were collected during different time periods and from a variety of sources, and the level of detail and the breadth of coverage varies substantially by source. For example, in order to understand the complete picture in the educational pipeline for a single profession, one might examine student applications, acceptances, enrollments, and graduates for a single cohort. The data presented in this report do not allow that. They can only point to trends that connect these important events. And in some cases, even this is not possible. There are several instances where only data describing program graduates are available.

We have not attempted statistical analysis of the data. Such an attempt would be inappropriate in most cases because of the nature of the data used in this report. In those instances where we might have conducted certain statistical tests, we chose not to, believing that it would divert the focus from clarifying the issues to an exercise in qualifying the data. The analysis presented here is simply descriptive of general trends.

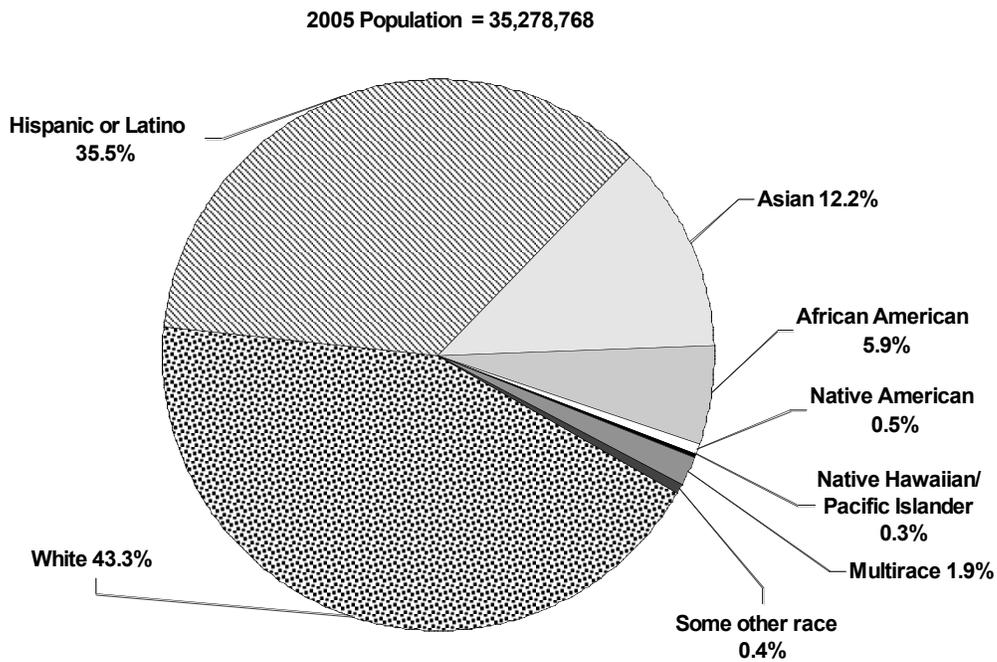
Achieving diversity in the health professions workforce will be a dynamic process. Because of the long educational pipeline in some professions, changing trends in the diversity of students are not yet reflected in the current workforce. Thus we have erred on the side of caution in drawing conclusions about trends across these three sources of data. Nevertheless, we feel that this analysis has produced some important findings about the current state of demographic diversity in selected health professions in California. We also present recommendations to improve data collection and analysis in the future.



### III. Description of California's Current and Projected Population

Our analysis of diversity in the health professions begins by looking at characteristics of the current and projected population in the state overall, and then in different geographic regions. Figure 2 and Tables 3 through 6 describe California's current general population by race and ethnicity and other selected demographic characteristics.

**Figure 2. 2005 California General Population by Race and ethnicity**



Source: 2005 American Community Survey PUMS

**Table 3. 2005 Hispanic/Latino Population in California by Selected National Origin**

<b>National Origin</b>	<b>% of California's Hispanic/Latino Population</b>
Mexican	82.7
Central American	8.0
Other Hispanic <sup>6</sup>	5.5
South American	1.9
Puerto Rican	1.2
Cuban	0.6

Source: 2005 American Community Survey PUMS

**Table 4. 2005 Asian Population in California by Selected Group**

<b>Selected Group</b>	<b>% of California's Asian Population</b>
Filipino	24.9
Chinese (not Taiwanese)	24.7
Vietnamese	12.4
Indian	10.3
Korean	9.2
Japanese	7.1
Other Asian <sup>7</sup>	5.5
Cambodian	1.9
Hmong	1.5
Laotian	1.5
Thai	1.0

Source: 2005 American Community Survey PUMS

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<sup>6</sup> Other Hispanic/Latino includes Dominican Republic and Spaniard as well as any other self-identified Hispanic/Latino that did not select one of the listed groups.

<sup>7</sup> Other Asian includes: Taiwanese, Bangladeshi, Indonesian, Malaysian, Pakistani, Sri Lankan, and any other self-identified Asian that did not selecting one of the listed groups.

**Table 5. 2005 Median Age of California's General Population by Race and Ethnicity**

Racial and Ethnic Group	Median Age
Multirace	17.8
Hispanic/Latino	26.2
African American	32.5
Native Hawaiian/Pacific Islander	32.8
Native American	35.5
Asian	36.3
White	42.3

Source: 2005 American Community Survey PUMS

**Table 6. 2004 Fertility Rates in California by Race and Ethnicity<sup>8</sup>**

Racial and Ethnic Group	General Fertility Rate	Fertility Rate Ages 15-19
Hispanic/Latina	88.6	64.3
Native Hawaiian/Pacific Islander	78.5	33.7
Asian	66.0	11.3
White	55.5	16.7
African American	51.6	37.3
Multirace	46.8	22.8
Native American	32.7	20.9

Source: California Department of Health Services, Birth Records

### State-level Population Projections

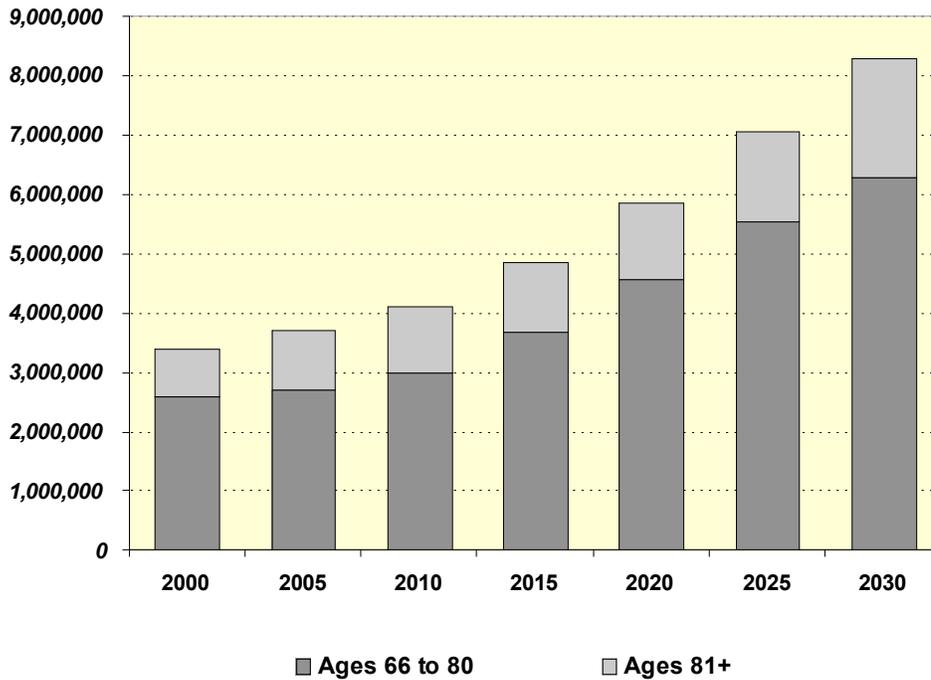
Figure 3 describes California's projected population over the age of 65 and figures 4 through 8 describe California's projected population by race and ethnicity. Population projections are based on models designed by the California Department of Finance, Demographic Research Unit.<sup>9</sup> The key inputs to these models are population counts from the 2000 Census and data describing fertility, mortality rates and migration patterns. The models make certain assumptions about the different rates of survival and fertility and the different migration patterns for specific demographic groups, which are converted into numeric factors. These factors are applied to the 2000 Census population counts and projections are made by age, gender and race and ethnicity for each county in California.

<sup>8</sup> General fertility rates measure live births per 1,000 women of child-bearing age (15-44 years old).

<sup>9</sup> The Demographic Research Unit at the California Department of Finance provides a more technical explanation of the modeling process at:

<http://www.dof.ca.gov/HTML/DEMOGRAP/ReportsPapers/Projections/P1/P1.asp>

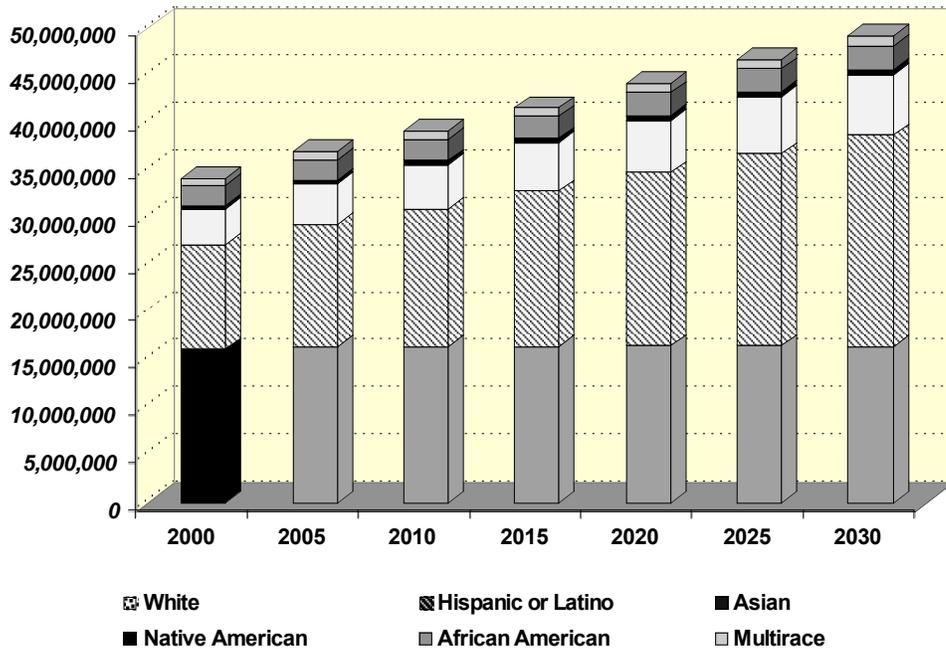
**Figure 3. California's Projected Population Over the Age of 65: 2000-2030**



Source: California Department of Finance

California's population over the age of 65 is expected to grow by 144%, from 3.4 million to 8.3 million. The projected growth will significantly alter the distribution of the state's population by age. In 2000, Californians over the age of 65 represented roughly 10% of the general population. In 2030 Californians over the age of 65 are projected to be approximately 17% of the state's population. This has important implications for the size of the health professions workforce needed to respond to an expected increase in demand for health services.

**Figure 4. California's Projected Population by Race and Ethnicity (Number): 2000-2030<sup>10</sup>**



Source: California Department of Finance

These data show that California's total population is projected to increase by 15 million between 2000 and 2030, growing from 34 million to 49 million people. More than 80% of this projected population increase will be the result of growth in the Hispanic/Latino population. The number of Hispanic/Latinos in California's population is projected to double in size between 2000 and 2030, from 11 million to 22 million. The size of California's Asian population is also projected to grow by nearly 70% between 2000 and 2030, from 3.7 million to just over 6.3 million. The Native American population is projected to nearly double in size; the number of multiracial Californians is projected to grow by 75%, numbering more than 1.1 million in the year 2030. The size of the African American population is projected to grow much less rapidly by comparison, increasing in size by roughly 11% over the coming decades.

By contrast, California's White population is projected to grow only slightly (1.5%) between 2000 and 2030, but this growth is expected to follow an arcing pattern. White population growth is expected to peak in 2020, after which it is projected to decline.

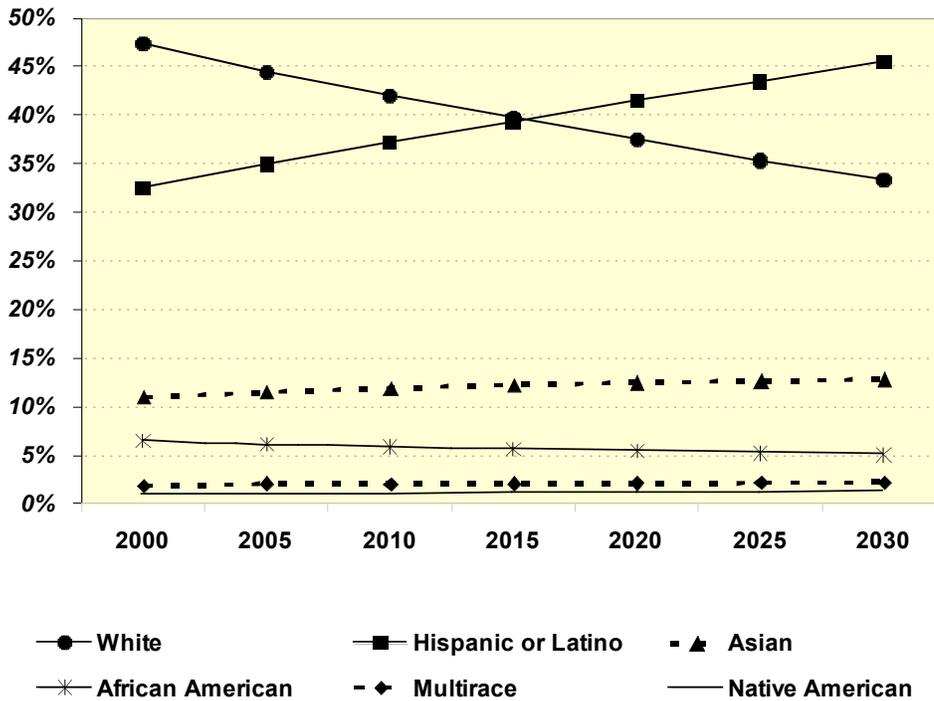
<sup>10</sup> Race groups were combined due to small numbers. Native American includes American Indian, Native Alaskan, Native Hawaiian and other Pacific Islander.

**Table 7. Total Population of California by Race and Ethnicity: 2000-2030**

<b>Race and Ethnicity</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
White	16,134,334	16,408,477	16,438,784	16,473,512	16,508,783	16,482,523	16,377,652
Hispanic/Latino	11,057,467	12,905,840	14,512,817	16,313,610	18,261,267	20,278,634	22,335,895
Asian	3,761,994	4,263,720	4,684,005	5,116,779	5,527,783	5,938,919	6,334,719
African American	2,218,281	2,255,281	2,287,190	2,341,461	2,390,459	2,438,105	2,475,477
Multirace	637,010	779,784	822,281	883,286	951,456	1,034,601	1,120,136
Native American	185,996	215,044	240,721	270,906	299,599	326,067	350,649
Native Hawaiian/ Other Pacific Islander	110,355	129,290	149,878	173,398	196,576	221,458	246,363
Total	34,105,437	36,957,436	39,135,676	41,572,952	44,135,923	46,720,307	49,240,891

Source: California Department of Finance

**Figure 5. California's Projected Population by Race and Ethnicity (Percentage): 2000-2030<sup>11</sup>**

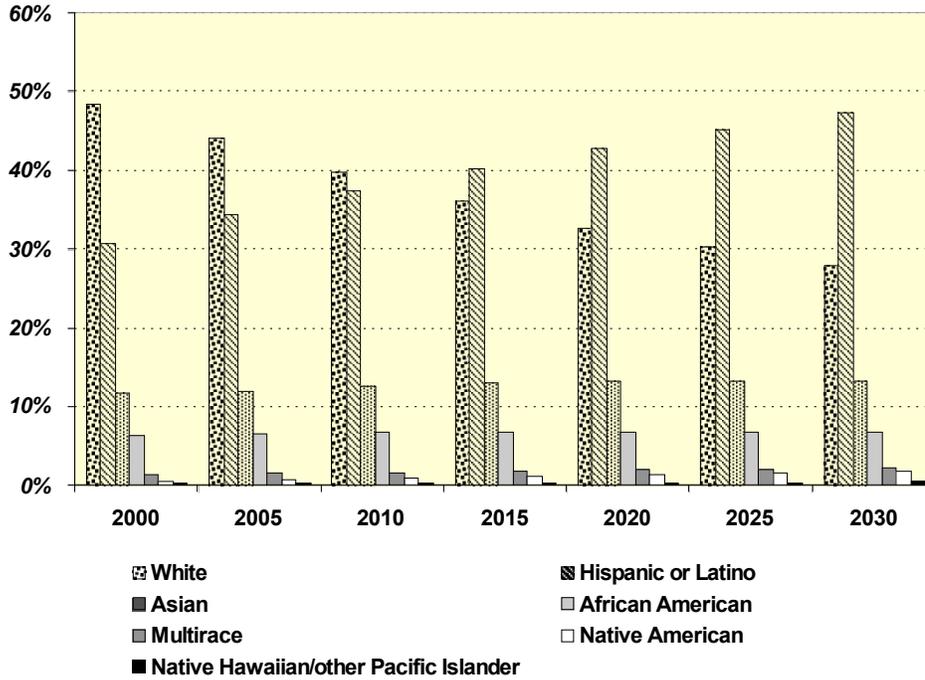


Source: California Department of Finance

Over the period 2000-2030, the Hispanic/Latino population in California is projected to grow from 32.4% to 45.4% of the population. By contrast, in this same period, California's White population is projected to decline from 47.3% to 33.2%. The Asian population is projected to increase as a share of California's total population from 11% in 2000 to roughly 13% in 2030. California's African American population is projected to decline from 6.5% of the population in 2000 to 5% of the population in 2030. Multiracial Californians will increase from 1.9% of the population in 2000 to 2.3% in 2030. In combination, the proportion of Californians who identify as Native American, Native Hawaiian or Pacific Islander is projected to grow very slightly in this period, to form just over 1% of the population by 2030.

<sup>11</sup> Race groups were combined due to small numbers. Native American includes American Indian, Native Alaskan, Native Hawaiian and other Pacific Islander.

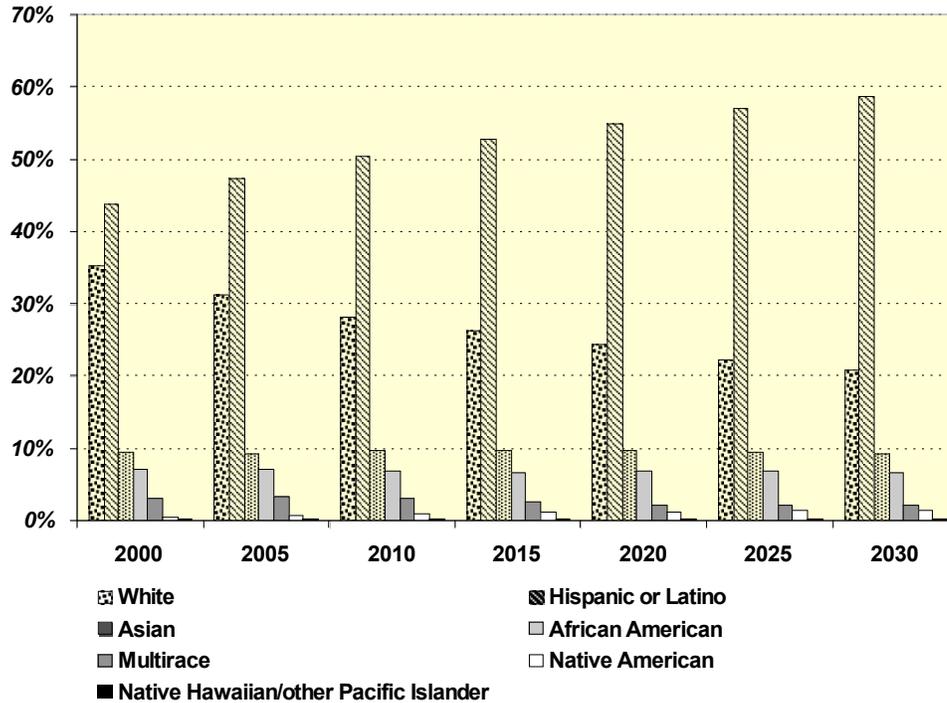
**Figure 6. California's Projected Population Ages 18-64 by Race and Ethnicity (Percentage): 2000-2030**



Source: California Department of Finance

The segment of the population between the ages of 18 and 64 represents the potential pool of labor available to participate in California's work force. Currently, the racial and ethnic composition of the potential labor force looks quite similar to that of the general population as a whole. However, by 2030, it is projected that the labor force will be represented by greater proportions of both the Hispanic/Latino population and the Asian population and a smaller proportion of the White population compared with their respective proportional representation in the general population. This shift is being driven by changes in the racial and ethnic composition of two population groups: Californians under the age of 18 and Californians over the age of 65.

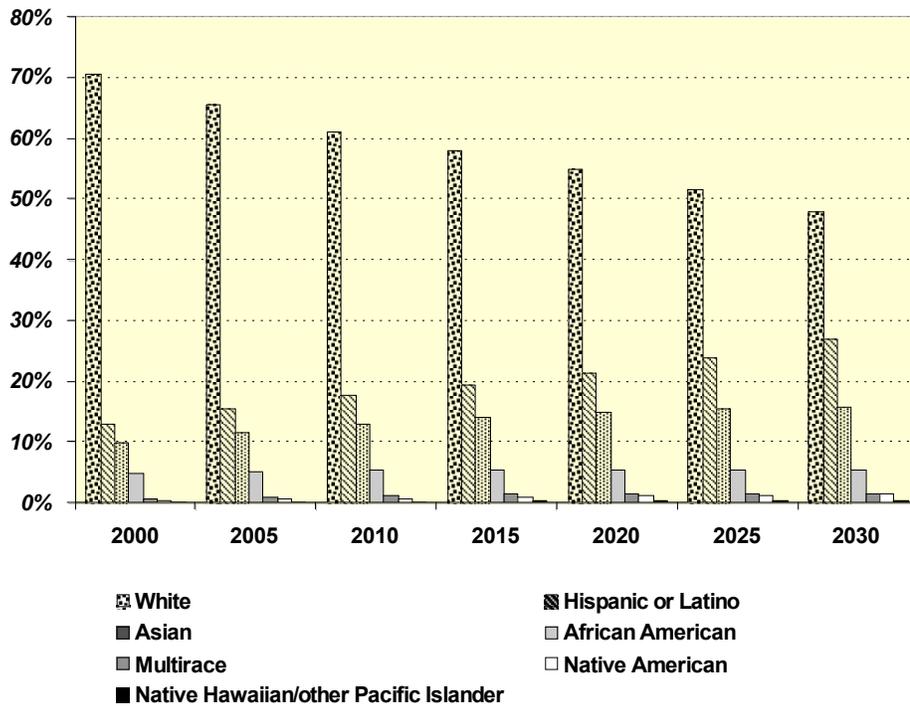
**Figure 7. California's Projected Population Ages 0-17 by Race and Ethnicity (Percentage): 2000-2030**



Source: California Department of Finance

California's younger population represents the state's future healthcare workforce. In 2000, the Hispanic/Latino population was already the largest racial and ethnic group among California's population under the age of 18. By 2030 it is projected that nearly 60% of California's population under the age of 18 will be Hispanic/Latino.

**Figure 8. California’s Projected Population Ages 65 and Older by Race and ethnicity (Percentage): 2000-2030**



Source: California Department of Finance

California’s population ages 65 and over represents a group that will be demanding more healthcare services. This age group was roughly 70% White in 2000, and despite the fact that both the Asian population and the Hispanic/Latino population will form larger proportions of this population in the coming decades, even in the year 2030 the White population is still projected to remain the largest racial and ethnic group of Californians over the age of 65.

**Regional Population Projections**

Tables 8 and 9 describe projected changes in the population in California. Table 8 shows the projected population growth between 2005 and 2030 for each of ten regions, as well as the proportion of California’s population living in each region. Table 9 shows the projected change in the racial and ethnic composition between 2005 and 2030 for each of the ten regions.

**Table 8. California Regional Population Estimates: 2005 and 2030**

REGION	2005		2030	
	REGIONAL POPULATION	PROPORTION OF CA POPULATION (%)	REGIONAL POPULATION	PROPORTION OF CA POPULATION (%)
Northern California	545,506	1.5	680,967	1.4
Northern Sacramento Valley	505,631	1.4	768,167	1.6
Greater Sacramento	2,214,397	6.0	3,159,034	6.4
Bay Area	7,348,547	19.9	9,013,668	18.3
San Joaquin Valley	3,784,633	10.2	6,551,792	13.3
Central Sierra	192,968	0.5	257,339	0.5
Central Coast	1,159,367	3.1	1,433,668	2.9
Southern California I	11,029,959	29.8	12,970,047	26.3
Southern California II	6,956,910	18.8	10,171,759	20.7
Southern Border	3,219,518	8.7	4,234,450	8.6
California (Total)	<b>36,957,436</b>	<b>100.0</b>	<b>49,240,891</b>	<b>100.0</b>

Source: California Department of Finance

Although every region in the state will experience an increase in total population, the growth will be most significant in two regions: San Joaquin Valley, and Southern California II (Orange, Riverside, San Bernardino counties). By contrast, the proportions of California's total population residing in the state's currently most populous regions, Southern California I (Los Angeles & Ventura counties) and the Bay Area, are projected to decline over the coming decades.

**Table 9. California Regional Population Estimates by Race and Ethnicity: 2005 and 2030**

REGION	WHITE (%)		HISPANIC OR LATINO (%)		ASIAN (%)		NATIVE HAWAIIAN/OTHER PACIFIC ISLANDER (%)		AFRICAN AMERICAN (%)		NATIVE AMERICAN (%)		MULTIRACE (%)	
	2005	2030	2005	2030	2005	2030	2005	2030	2005	2030	2005	2030	2005	2030
Northern California	80.2	73.2	10.5	15.3	1.2	1.2	0.2	0.2	1.5	1.5	3.8	5.3	2.6	3.3
Northern Sacramento Valley	78.6	72.1	13.2	19.4	2.6	3.0	0.1	0.1	0.9	0.8	2.0	2.3	2.5	2.3
Greater Sacramento	60.3	50.3	18.7	26.5	9.9	11.3	0.6	0.8	6.3	6.1	0.8	0.7	3.4	4.3
Bay Area	48.3	36.1	21.8	31.7	19.7	22.5	0.6	1.1	6.5	5.0	0.4	0.7	2.7	2.9
San Joaquin Valley	42.5	29.8	43.7	55.2	6.7	8.2	0.2	0.1	4.5	4.6	0.8	0.8	1.7	1.3
Central Sierra	82.0	71.8	10.5	20.3	0.8	0.8	0.1	0.1	1.7	1.3	2.6	2.4	2.3	3.3
Central Coast	51.6	37.3	39.0	52.8	4.4	4.7	0.2	0.3	2.3	2.4	0.5	0.5	1.9	2.0
Southern California I	31.6	21.2	45.6	56.2	12.2	14.0	0.3	0.3	8.3	5.9	0.3	0.3	1.7	2.1
Southern California II	45.2	30.7	37.8	50.2	9.3	10.6	0.3	0.3	5.0	5.7	0.5	0.5	1.9	2.0
Southern Border	52.5	45.8	30.4	36.8	8.8	10.0	0.5	0.8	4.8	3.2	0.8	1.3	2.2	2.1

Source: California Department of Finance

The racial and ethnic composition of the general population in California varies substantially across geographic regions of the state. Generally, populations in the urban regions of California exhibit a greater degree of racial and ethnic diversity compared to less urban and rural regions in the state. With the exception of the Bay Area, the population of Southern California exhibits a greater degree of racial and ethnic diversity than Northern California. Currently, the most heavily Hispanic/Latino regions are the Southern California I region (Los Angeles & Ventura counties) and the San Joaquin Valley region. By 2030, the Hispanic/Latino population is projected to be the largest racial and ethnic group in the general population in almost all regions geographically south of the Bay Area; the single exception is the Southern Border region (San Diego and Imperial counties).

## Summary of Findings: General Population

California is the most populous and among the most racially and ethnically diverse states in the country. Its racial and ethnic composition is projected to change dramatically over the coming decades. This change will be the result of a tremendous growth in size of California's Hispanic/Latino population combined with a White/non-Hispanic population that remains essentially stable in size. Between 2000 and 2030, the relative proportion of each is projected to undergo a near-perfect inversion. In 2000, White/non-Hispanic Californians formed roughly 47% of the population while Hispanic/Latino Californians formed approximately 32% of the population. In 2030, Hispanic/Latino Californians are projected to form 47% of the population, while White/non-Hispanic Californians are projected to form just 30% of the population.

Not only is the racial and ethnic composition of California's general population projected to radically shift in the coming decades, but the overall size of the population is projected to grow dramatically as well. This population growth will be driven by the increasing number of Hispanic/Latino Californians. The state's population is projected to increase by nearly 15 million between 2000 and 2030. Roughly 80% of this increase is expected to be the result of growth in the Hispanic/Latino population. Between 2000 and 2030, the number of Hispanic/Latino Californians is expected to double from roughly 11 million to approximately 22 million. In the same period, the number of White/non-Hispanic Californians is projected to remain steady at roughly 16 million. The number of Asian Californians is also projected to nearly double in size between 2000 and 2030, from 3.7 million to just over 6 million. In fact, with the exception of the White/non-Hispanic population, all racial and ethnic groups in California are projected to increase in size over the coming decades.

Hispanic/Latino Californians already form a near-majority of the population under the age of 18 in the state. This is the driving force behind the projected transformation of the state's racial and ethnic composition in the coming decades. By 2030, it is expected that roughly 60% of California's population under the age of 18 will be Hispanic/Latino. This suggests that in the years beyond 2030, the Hispanic/Latino population will come to represent an even greater share of California's general population. By contrast, the state's population ages 65 and over is overwhelmingly White/non-Hispanic; in 2000 this group formed roughly 70% of California's general population ages 65 and over. Although the Hispanic/Latino and Asian populations will increase as proportions of this age group, projections indicate that even by 2030, White/non-Hispanic Californians will still form a near-majority of the retirement-age population in the state.

While there are several important factors that explain these phenomena, two stand out. One is the fact that the median age among the Hispanic/Latino population is 26, whereas the median age among California's White population is 41. Another is that the general fertility rate for Hispanic/Latina women is substantially higher than it is for White women. Among young women between the ages of 15 and 19, the Hispanic/Latina fertility rate is four times that of the White fertility rate.

The racial and ethnic composition of California's general population varies substantially across geographic regions of the state. In general, the populations in urban geographic regions exhibit a greater degree of racial and ethnic diversity compared to less urban and rural geographic regions. With the exception of the Bay Area, the general population of Southern California exhibits a greater degree of racial and ethnic diversity compared to Northern California. Hispanic/Latino Californians already form a near-majority of the general population in the Southern California I region, which includes Los Angeles County. The Bay Area region has the highest concentration of Asians, who represent nearly 20% of the general population. Nearly 70% of Californians live in three geographic regions: Southern California I (Los Angeles/Ventura counties), Southern California II (Orange/Riverside/San Bernardino counties), and the Bay Area.

Population growth over the coming decades is projected to occur most rapidly in three geographic regions: San Joaquin Valley, Southern California II (which includes Orange, Riverside and San Bernardino counties) and Greater Sacramento. Thus, the general population in these three regions will experience the most significant shift in their racial and ethnic composition. This is the result of the fact that general population growth in the state will be driven by increasing numbers of Hispanic/Latinos and Asians. Projections for the year 2030 indicate that the Hispanic/Latino population will form a majority or near-majority group in three of the four most populous geographic regions in the state (the exception is the Bay Area). Growth in the Asian population is projected to be greatest in the Bay Area region, the Greater Sacramento region and the Southern Border region.

The shifting racial and ethnic composition of California's general population has important implications for the future health professional workforce. The pool of potential labor will become increasingly Hispanic/Latino and to a lesser extent Asian over time (while the retirement-age population remains predominantly White/non-Hispanic). This phenomenon will present both challenges and opportunities. The health professions workforce may become more racially and ethnically diverse simply as a result of this shift in the composition of the population. There will be job opportunities and the pool of labor will necessarily be more diverse. But this outcome is not certain. There are complex social and cultural factors that cause people to self-select into specific professions and occupations as well as barriers that limit entry into some professions. Investigation into these factors will be required in order to build effective strategies aimed at achieving a health professions workforce representative of California's racially and ethnically diverse population.

#### **IV. Describing California's Current Health Professions Workforce: Selected Professions**

The following section includes an analysis of the current workforce for the selected professions (except registered nursing), using multiple data sources: the 2005 American Community Survey Public Use Microdata Sample (PUMS) for California; the California Medical Board Re-licensing Survey; and the California Board of Registered Nursing 2006 Survey of Registered Nurses. Tables of state-wide estimates are presented by gender, by race and ethnicity and age-group where possible.

An important data limitation is that the American Community Survey does not include a unique code to describe radiologic technologists (medical radiographers). They are identified only by the much broader occupational group *Diagnostic-related Technologists & Technicians* (SOC 29-2030). This broad grouping includes cardiovascular technologists & technicians, diagnostic medical sonographers, nuclear medicine technologists, and radiologic technologists & Technicians. Rather than exclude radiographers from the analysis, estimates describing the broader occupational group of Diagnostic-related Technologists & Technicians are presented.

Another limitation is that there are no data available that specifically describe the employment of individuals who have earned a Master's in Public Health (MPH) degree. The public health workforce encompasses a range of professionals including physicians, nurses, dentists, epidemiologists, environmental scientists, biostatisticians, health educators, health administrators, health economists, planners, and policy analysts. These professionals work in a variety of settings which include governmental and non-governmental agencies, hospitals, health plans, medical groups, academic institutions, and the private sector. Data sources on employment, such as the American Community Survey, use occupation and industry codes that do not indicate a specific educational preparation. The MPH is unique in our list of selected health professions because of this factor. A different kind of data collection and analysis is needed to gain a broader understanding of the employment characteristics of professionals who have earned an MPH degree.

Tables 10 and 11 present data describing the current workforce by gender, race and ethnicity, and age group where possible.

**Table 10. Current Composition of Selected Health Professions in California by Race, Ethnicity and Gender**

<b>Profession</b>	<b>Male (%)</b>	<b>Female (%)</b>	<b>White (%)</b>	<b>Asian (%)</b>	<b>Latino (%)</b>	<b>African Am. (%)</b>	<b>Native Am. (%)</b>	<b>Other Race<sup>12</sup> (%)</b>
Physicians/Surgeons <sup>13</sup>	69.3	30.7	61.7	26.4	5.2	3.2	0.6	2.9
Registered Nurses	9.8	90.2	64.3	22.5	5.7	4.5	0.3	2.7
Dentists	69.0	31.0	61.4	29.2	--	--	--	9.4
Pharmacists	53.0	47.0	47.8	44.5	--	--	--	7.7
Psychologists	29.3	72.7	84.0	--	7.6	--	--	8.4
Social Workers	22.8	77.2	67.8	8.4	13.5	8.1		2.2
Respiratory Therapists	53.6	46.4	58.0	--	--	--		42.0
Diagnostic-related Technologists & Technicians	42.2	57.8	56.7	12.6	22.9	--		7.8
Healthcare Support Occupations	14.7	85.3	34.1	17.5	34.8	9.8		3.9
California Population	--	--	43.3	12.2	35.5	5.9	0.5	--

Source: 2005 American Community Survey, Public Use Microdata Sample for California; California Medical Board Re-licensing Survey; Board of Registered Nursing 2006

The current workforce for both physicians/surgeons and dentists are predominantly male. In each case, men represent nearly 70% of the workforce. The current workforce for both psychologists and social-workers trained at the master’s level or higher are predominantly women. In each case, they represent roughly three-quarters of the workforce. Women also represent approximately 85% of the workforce in healthcare support occupations and over 90% of the registered nursing workforce. The current workforce in pharmacy, respiratory therapy and the broad group of diagnostic-related technologists & technicians exhibits a comparatively high degree of gender balance.

Approximately 87% of registered nurses, 88% of physicians/surgeons, and 90% of dentists are either White or Asian. In each case Whites form the largest group. Over

<sup>12</sup> The “Other Race” category represents those groups for which we were not able to generate a valid estimate due to the small number of sample observations, or because survey respondents declined to state race and ethnicity.

<sup>13</sup> The data describing race and ethnicity for California’s physician/surgeon workforce come from the forthcoming report: Kevin Grumbach, Kara Odom, Eric Chen, Christopher Vercammen-Grandjean. *California Physician Diversity: New Findings from the California Medical Board Survey*. Center for California Health Workforce Studies, University of California. January 2008.

90% of pharmacists are either White or Asian and the two groups are roughly equal in size. Approximately 84% of psychologists and nearly 68% of social workers are White. The most racially/ethnically balanced workforce is the broad group of healthcare support occupations; the Hispanic/Latino and African American populations are most heavily represented among healthcare support occupations.

Table 11 displays information on the age composition of the current workforce for the selected health professions. These data give some indication of which professions may experience a higher proportion of retirements in the next decade, thus requiring replacement workers.

**Table 11. Current Composition of Selected Professions in California by Age Group**

<b>Profession</b>	<b>Under 35 (%)</b>	<b>35 – 44 (%)</b>	<b>45 – 59 (%)</b>	<b>60 + (%)</b>
Physicians/Surgeons	12.9	20.3	47.8	19.0
Registered Nurses	17.8	22.9	45.6	13.8
Dentists	16.1	30.6	36.3	17.0
Pharmacists	35.3	15.7	30.5	18.5
Psychologists	12.9	20.3	47.8	19.0
Social Workers	27.2	20.6	35.6	16.6
Respiratory Therapists	31.5	30.2	31.3	7.0
Diagnostic-related Technologists & Technicians	28.1	26.8	36.1	9.0
Healthcare Support Occupations	44.8	23.1	25.0	7.1

Source: 2005 American Community Survey, Public Use Microdata Sample for California; California Board of Registered Nursing 2006 Survey of Registered Nurses

The workforce for both physician/surgeons and psychologists are the oldest of those selected for analysis. In each case, roughly 65% of the workforce is estimated to be 45 years of age or older. Healthcare support occupations represent the youngest workforce, with an estimated 45% under the age of 35. Both pharmacy & social work exhibit an interesting cohort effect: a sizeable proportion of the workforce is in the 18 – 35 age group, followed by a much smaller proportion in the 35 – 44 age group, followed by a sizeable proportion in the 45 – 60 age group.

### **Analysis of California Physician/Surgeon Workforce using Medical Board of California Re-licensing Survey Data**

Additional data on the diversity of the physician population are available due to the existence of a state regulation requiring California physicians and surgeons to respond to a set of survey questions at the time of re-licensure. The Medical Board of California re-licensing survey was enacted by legislation in 2001, with a goal of collecting ongoing information from the practicing physician community during the licensure renewal process. Among the significant pieces of data are detailed information on the race and ethnicity of California’s active physician workforce, detailed information on the ability to speak a language other than English, practice location, and medical specialty practice

area. (In this report only descriptions of the detailed racial and ethnic composition of the workforce are presented.)

The analysis presented in this section comes from the report, *California Physician Diversity: New Findings from the California Medical Board Relicensing Survey*.<sup>14</sup> The relicensing data are weighted to represent roughly 73,000 active physicians in the state, focused on patient care. One important limitation of these data is that they describe only physicians with a medical degree (MD); osteopathic physicians are licensed by a separate board.

The re-licensing survey includes 28 different options for physicians to choose from when indicating race and ethnicity; physicians can select more than one category. Table 12 shows the racial and ethnic composition of California’s physician workforce using two different methods of analysis. In the first column physicians are forced into a single category based on their responses using a hierarchical protocol developed by the authors of the report noted above. The rank order is African American, Latino, Native American, Asian & Pacific Islander, and White. This means that if a physician selected both African American and White, s/he would be placed into the African American category. If a physician selected Latino and Native American s/he would be placed in the Latino category etc. The second column shows the racial and ethnic composition where physicians who select more than one race and ethnicity category are placed into a multiracial category.

**Table 12. California’s Current Physician/Surgeon Workforce by Race and ethnicity**

<b>Race and ethnicity</b>	<b>Assigned to a Single Ethnicity (%)</b>	<b>Multiple Ethnicities Allowed (%)</b>	<b>California’s General Population (%)</b>
White	61.7	61.7	42.8
African American	3.2	3.0	6.0
Asian/ Pacific Islander	26.4	25.0	12.5
American Indian/ Native American	0.6	0.1	0.5
Latino	5.2	4.1	35.9
Multiracial	-	3.4	2.0
Other	2.9	2.7	-

Source: Grumbach et al. *California Physician Diversity: New Findings from the California Medical Board Survey*. January 2008

The under-representation of Latino and African American physicians is an issue that has received a great deal of attention over the past two decades. According to these new findings from the Medical Board survey, Latinos and African Americans remain

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<sup>14</sup> Kevin Grumbach, Kara Odom, Eric Chen, Christopher Vercammen-Grandjean and Elizabeth Mertz. *California Physician Diversity: New Findings from the California Medical Board Survey*. Center for Health Workforce Studies, University of California, San Francisco. January 2008.

underrepresented in California’s physician workforce. In the case of Latino physicians, the issue is very serious; Latino physician represent just 5% of the state’s physician workforce, but more than a third of California’s population.

**Analysis of California Registered Nursing Workforce using California Board of Registered Nursing 2006 Survey of Registered Nurses<sup>15</sup>**

We selected the California Board of Registered Nursing: 2006 Survey of Registered Nurses as the best source of data on employed nurses in the state. The survey is the fifth in a series of surveys that date back to 1990. It describes licensed registered nurses (RNs) in California, both active and inactive, across a wide range of characteristics. In this report, analysis is limited to California-licensed, *active* RNs. In most cases, estimates presented describe California-licensed, active RNs who reside in the state; in other instances the estimates include California-licensed, active RNs whose mailing address was outside the state at the time of the survey.<sup>16</sup> The regional geography of the analysis presented in this section differs from that defined earlier in this report. There are two fewer regions represented. All of Northern California is grouped together into a single region, and the Central Sierra and San Joaquin Valley regions are also combined into a single region.

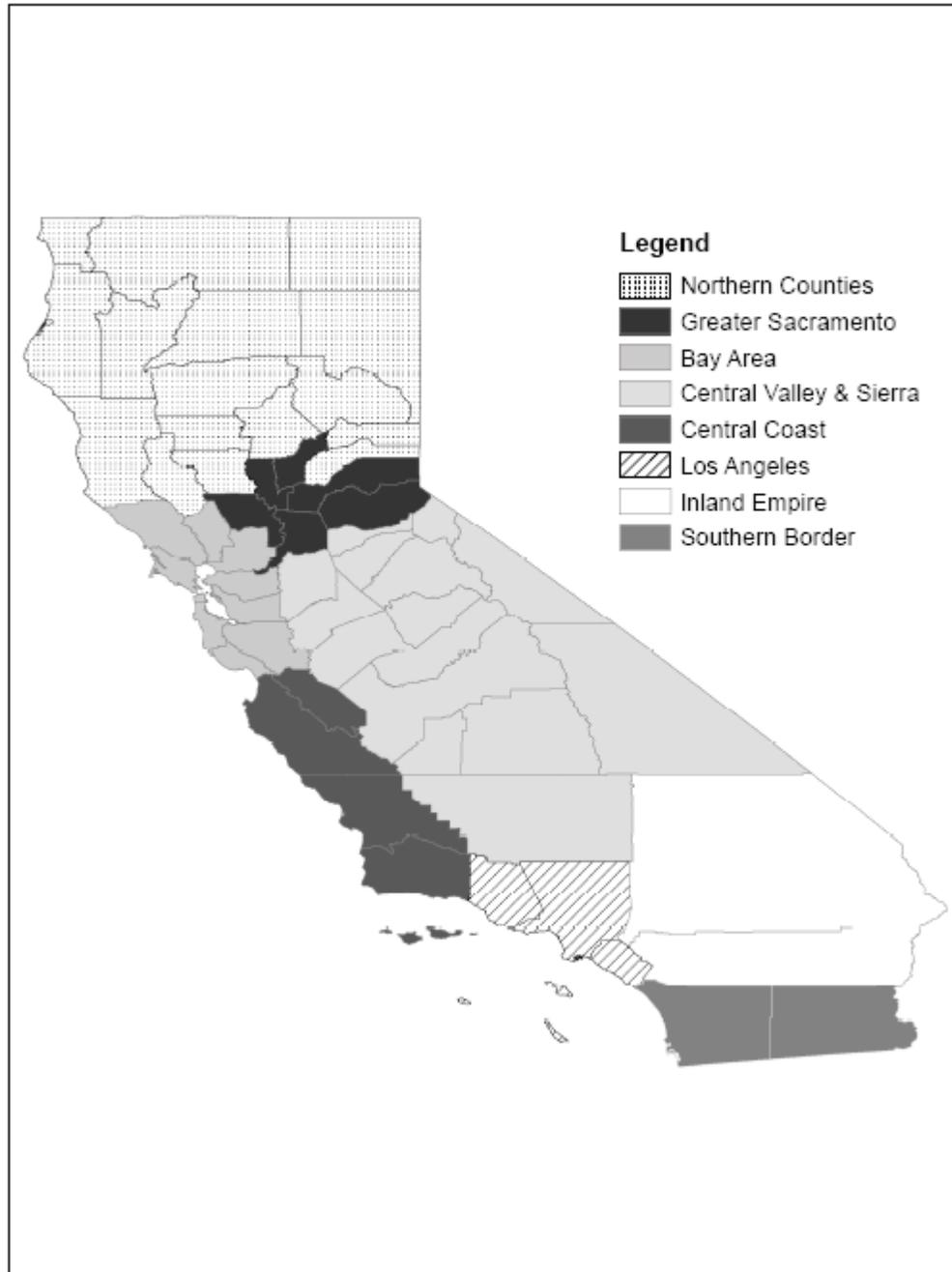
**Table 13. Geographic Regions Used for Analysis in California Board of Registered Nurses 2006 Survey of Registered Nurses**

<b>Region</b>	<b>Counties Represented</b>
Northern Counties	Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity
Greater Sacramento	El Dorado, Placer, Sacramento, Sutter, Yolo, Yuba
Bay Area	Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma
Central Valley & Sierra	Alpine, Amador, Calaveras, Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, San Joaquin, Stanislaus, Tulare, Tuolumne
Central Coast	Monterey, San Benito, San Luis Obispo, Santa Barbara
Los Angeles	Los Angeles, Orange, Ventura
Inland Empire	Riverside, San Bernardino
Southern Border	Imperial, San Diego

<sup>15</sup> All data in this section describing characteristics of the current registered nursing workforce come from the following report: Joanne Spetz, Dennis Keane and Laurie Hailer. *California Board of Registered Nurses 2006 Survey of Registered Nurses*. University of California, San Francisco School of Nursing and Center for the Health Professions. 2007.

<sup>16</sup> The sample size is 5,066 and estimates are weighted to represent approximately 303,000 California-licensed, active registered nurses, roughly 263,000 of whom reside in the state.

**Figure 9. Map of Geographic Regions Used for Analysis of California Board of Registered Nursing: 2006 Survey of Registered Nurses**



Tables 14 through 19 present data describing California's active RN workforce by age, gender, race and ethnicity, and by geographic region.

**Table 14. 2006 California-licensed, Active RNs by Age Group**

Age Group	Percentage Distribution (%)
Under 35	17.8
35-44	22.9
45-59	45.6
60 & over	13.8

Source: 2006 BRN Survey of Registered Nurses

**Table 15. 2006 California-licensed, Active RNs by Age Group and Gender**

Age Group	Women (%)	Men (%)
18-34	88.8	11.2
35-44	86.4	13.6
45-54	91.0	9.0
55-64	92.7	7.3
65 & over	96.2	3.8

\*Includes roughly 44,000 California-licensed, active RNs with out-of-state mailing address at time of survey

Source: 2006 BRN Survey of Registered Nurses

The 2006 BRN survey estimates that 59.4% of the RN workforce is over the age of 45. This is a relatively large proportion compared with the other professions selected for analysis, and only slightly smaller than the workforce of physicians/surgeons and psychologists (roughly 65% over the age of 45). Although women predominate in all age groups, men are better represented in the younger segments of the RN workforce

**Table 16. 2006 California-licensed, Active RNs by Age Group and Region**

Region	Under 35 (%)	35 – 44 (%)	45 – 59 (%)	60 + (%)
Northern Counties	8.8	18.8	55.0	17.4
Sacramento	14.1	23.4	47.8	14.7
Bay Area	16.8	21.2	46.8	15.2
Central Valley/Sierra	16.6	24.2	46.5	12.6
Central Coast	12.1	19.4	50.7	17.8
Los Angeles	17.1	23.2	46.1	13.4
Inland Empire	17.5	24.4	43.4	14.7
Southern Border	18.4	22.0	44.6	15.0

Source: 2006 BRN Survey of Registered Nurses

The two oldest RN workforces, by geographic region, are the Northern Counties region with roughly 72% of the workforce over the age of 45, and the Central Coast region with roughly 69% of the workforce over the age of 45. The youngest regional RN workforce is in the Inland Empire, where roughly 42% of the workforce is under the age of 45.

**Table 17. 2006 Composition of California-licensed, Active RN Workforce by Race and Ethnicity\***

Racial and ethnic Group	Number of RNs	Share of RN Workforce (%)
Total	303,544	100.0
White non-Hispanic	195,179	64.3
Filipino	48,567	16.0
Hispanic/Latino	17,302	5.7
Asian, non-Filipino/non-Indian	16,695	5.5
African American	13,659	4.5
Multirace	6374	2.1
Asian Indian	3035	1.0
Native Hawaiian/other Pacific Islander	607	0.2
Native American/Alaskan	911	0.3
Some other race	1214	0.4

\*Includes roughly 44,000 California-licensed, active RNs with out-of-state mailing address at time of survey

Source: 2006 BRN Survey of Registered Nurses

**Table 18. 2006 Composition of California-licensed, Active RN Workforce by Age Group and Race/Ethnicity\***

Racial and ethnic Group	Under 35 (%)	35 – 44 (%)	45 – 54 (%)	55 – 64 (%)	65 + (%)
White non-Hispanic	47.8	54.5	69.4	77.0	79.0
Filipino	25.2	21.0	13.5	9.3	6.3
Hispanic/Latino	10.3	7.7	4.3	2.7	2.3
Asian, non-Filipino/Indian	7.1	7.8	4.6	3.5	4.4
African American	4.1	4.6	4.5	4.5	5.2
Asian Indian	2.5	0.9	0.3	1.1	0.3
Multirace	2.0	2.6	2.1	1.6	2.5
Native American/Alaskan	0.1	0.4	0.5	0.1	<0.1
Native Hawaiian/other Pacific Islander	<0.1	0.2	0.4	<0.1	<0.1
Some other race	0.8	0.4	0.3	0.3	<0.1

\*Includes roughly 44,000 California-licensed, active RNs with out-of-state mailing address at time of survey Source: 2006 BRN Survey of Registered Nurses

Overall, California's current RN workforce is predominantly White. The next largest group in size is Filipino. Together these two groups constitute roughly 80% of the RN workforce. Looking at the RN workforce by age-composition reveals a different picture, however. The RN workforce over the age of 45 is predominantly White and

considering that 59% of the workforce is over the age of 45, it is easy to see why the overall racial and ethnic composition of the RN workforce is currently predominantly white. The younger RN workforce exhibits a much greater degree of racial and ethnic diversity, which suggests that new entrants to the workforce are more diverse as a group.

**Table 19. 2006 Composition of California’s Active RN Workforce by Region and Race/Ethnicity**

Region	White (%)	Hispanic (%)	African American (%)	Filipino (%)	Asian, non-Filipino (%)	Other race (%)
Northern Counties	93.5	2.3	0.7	0.5	1.0	2.1
Sacramento	77.2	4.0	2.2	11.3	3.4	1.9
SF Bay Area	63.2	4.2	3.2	17.9	8.5	2.9
Central Valley/Sierra	71.4	7.8	2.3	11.4	4.1	3.0
Central Coast	81.4	7.2	0.7	7.7	1.0	2.1
Los Angeles	53.3	6.5	6.3	20.4	10.7	2.9
Inland Empire	57.6	9.2	6.6	15.2	5.6	5.9
Southern Border	68.4	6.9	2.6	16.5	2.8	2.8

These regional data show that diversity of the RN workforce is related to diversity of the general population. Regions of the state where the general population is racially/ethnically diverse exhibit a greater degree of racial and ethnic diversity in the RN workforce.

### **Current Wages for Selected Health Professions in California**

Although wage data do not include any indication of race and ethnicity by occupation, they do illustrate relative wages across the occupations and can be combined with data describing the racial and ethnic composition of the workforce to evaluate the relationship between wages and racial and ethnic diversity. The following table reports the 2006 estimated hourly wages by profession at different wage levels: the 10<sup>th</sup> percentile, median and 90<sup>th</sup> percentile. These percentile categories should be interpreted as the hourly wage where X% of all workers in the occupation earn that amount or less. For example, the 2006 estimated hourly wage for Epidemiologists at the 10<sup>th</sup> percentile is \$21.77. This means that in 2005, 10% of those working as Epidemiologists made \$21.77/hour or less. The usefulness of this data is in how it shows the wide range of earnings in the selected health professions, and how wages can be related to the diversity of a particular workforce. The percentile categories also serve as a proxy for experience; in most cases, we assume that people earning a wage at the 10<sup>th</sup> percentile are entry-level workers, while people earning a wage at the 90<sup>th</sup> percentile are those with a lot of work experience.

In the following table, the mental health professions have been expanded to take advantage of all the available data. These data include psychologists, mental health social workers, mental health counselors, and mental health/substance abuse counselors. These are all professionals trained at the master’s level or higher. We have also included

the only two public health occupations that are specifically identifiable in the available data: epidemiologists and public health social workers. Finally, we expanded the category of healthcare support workers to include the largest occupations represented by this broad occupational group: home health aides, nursing aides, medical assistants and dental assistants. Again, the reason for expanding the categories is simply to present available data.

Table 20 presents wage estimates at the 10<sup>th</sup> percentile, median, and 90<sup>th</sup> percentile for selected professions, ranked by median wage.

**Table 20. 2006 Estimated Hourly Wages for Selected Health Professions in California**

<b>Profession</b>	<b>10<sup>th</sup> Percentile (\$)</b>	<b>Median (\$)</b>	<b>90<sup>th</sup> Percentile (\$)</b>
Anesthesiologists†	n/a	89.61	n/a
Obstetricians & Gynecologists†	53.96	86.19	n/a
Psychiatrists†	39.96	82.5	n/a
Surgeons†	46.15	76.43	n/a
Pediatricians	41.06	68.11	n/a
Family & General Practitioners	25.04	66.75	n/a
Dentists, general	37.56	62.03	n/a
Internists†	43.01	59.96	n/a
Pharmacists	38.37	53.03	62.33
Registered Nurses	25.45	35.23	49.48
Clinical, Counseling & School Psychologists	19.57	34.74	57.01
Epidemiologists	21.77	33.62	43.59
Respiratory Therapists	21.8	28.03	36.76
Radiologic Technologists & Technicians	17.79	28.03	39.33
Medical & Public Health Social Workers	15.84	26.68	38.86
Mental Health Counselors	10.33	17.47	34.98
Mental Health & Substance Abuse Social Workers	11.70	17.26	29.21
Substance Abuse and Behavioral Disorder Counselors	10.30	15.13	24.49
Healthcare Support Occupations	8.44	12.32	20.60
Dental Assistants	10.03	15.12	21.78
Medical Assistants	9.61	13.81	22.11
Nursing Aides/Orderlies/Attendants	8.70	11.34	17.06
Home Health Aides	7.48	9.38	13.71

†Data is from 2005.

Source: BLS Occupational Employment Statistics survey

## **Summary of Demographic Characteristics and Wages for California's Current Health Professions Workforce: Selected Health Professions**

The most striking characteristic of the current health care workforce among the selected professions is how the racial and ethnic composition varies between professions. Whites and Asians are concentrated in those professions that have the greatest educational requirements and are at the upper end of the wage scale. For dentists and pharmacists, Whites and Asians represent more than 90% of the workforce. For physicians, the estimate ranges from 85-90%. By contrast, African American, Hispanic/Latino and other non-White/non-Asian workers are much more highly represented in the healthcare support occupations, forming roughly 65% of this workforce. The healthcare support occupations are at the lower end of the wage scale, have a low degree of professional requirements such as certification and/or licensure, and low levels of educational requirements.

Although the current registered nursing workforce is predominantly White, the racial and ethnic composition of this workforce exhibits variation based on regional geography. In terms of the general population, the more racially and ethnically diverse regions of the state are represented by a more racially and ethnically diverse RN workforce. This may also be the case for other professions/occupations where labor markets are more localized and training opportunities are more widely distributed with fewer barriers to entry. Another note of interest specific to the RN workforce is the fact younger RNs are more racially/ethnically diverse compared to older RNs.

A second feature of the selected health professions workforce is the pattern of gender composition. Social workers and psychologists trained at the master's level or higher are predominantly women, representing roughly 75% of each respective workforce. Women represent an even larger proportion of the healthcare support occupations (roughly 85%) and the registered nursing workforce (roughly 90%). By contrast, the two most heavily male workforces are physicians/surgeons and dentists; in each case, men represent roughly 70% of the workforce. The professions that exhibit the most balance in terms of gender composition are pharmacy, respiratory therapy and the broad occupational group of diagnostic-related technologists/technicians (which includes radiographers).

Finally, the age composition of the selected health professions indicates that the workforce for both physicians/surgeons and psychologists have the highest proportions over the age of 45; in both cases, roughly 67%. This suggests that these professions will experience a greater number of retirements over the coming decade, thus requiring replacement workers. The youngest of the selected health occupations are, not surprisingly, the healthcare support occupations. Roughly 45% of those working at these occupations are estimated to be under the age of 35. Pharmacists present an interesting cohort-effect, whereby there appears to be two peaks and two troughs in the age composition of this workforce. There is a substantial proportion of pharmacists in the 18-35 age group and a substantial number in the 45-59 age group, and much smaller proportions in the 35-44 age group and the over 60 age group.<sup>17</sup>

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<sup>17</sup> This pattern is also seen in national data presented by Katherine Knapp (Dean of the College of Pharmacy at Touro University California) in a lecture delivered at UCSF on February 15, 2007.

## V. Projected Employment for Selected Professions

There are two principal components of employment projections: (1) occupational growth (*new jobs*), driven largely by growth in those industries where such occupations are concentrated; and (2) the need to replace workers who leave their jobs for whatever reason (in most cases, a new job or retirement). For many occupations, job openings caused by the need to replace workers are more numerous than those due to occupational and industrial growth. In some cases, for those occupations concentrated in declining industrial sectors, the need to replace workers is the only source of job openings.

There are also two principal ways to measure projected growth in employment: relative growth and absolute growth. Relative growth indicates how rapidly the occupation is growing, while absolute growth measures the total number of jobs. This is an important distinction. An occupation may be growing very rapidly, but if it's a small workforce, the number of new job openings will be relatively few. Conversely, an occupation may be growing very slowly, but because it is such a sizeable workforce, the number of new job openings is very large.

For each selected occupation we provide two rankings: a “fastest-growing” ranking and a “most jobs” ranking. The “fastest-growing” ranking measures only new job openings due to occupational growth, meaning it does not factor in job openings due to replacement needs. The “most jobs” ranking takes into account both components of projected job openings: growth and replacement needs. The rankings are expressed as a percentile, and are measured against the 671 other detailed occupations for which projections were made. For example, if the “fastest-growing” rank column for Pharmacists shows the number 80, this should be interpreted as “employment for Pharmacists is projected to grow more rapidly than 80% of all occupations for which projections were made.” If the “most jobs” rank column for Registered Nurses shows the number 99, this should be interpreted as “the total number of job openings for Registered Nurses is projected to be greater than 99% of all other occupations for which projections were made.”

As with the data describing estimated wages in the previous section, certain of the job categories have been expanded due to greater availability of data. In the following table, data describing projected employment for social workers are reported in three occupational groups: child, family and school social workers; medical and public health social workers; and mental health and substance abuse social workers. Projected employment for mental health workers is also described by three different occupational groups: clinical, counseling and school psychologists; substance abuse and behavioral disorder counselors; and mental health counselors. Data describing projected employment for all of these professionals assumes educational attainment at the level of a master's degree or higher. The broad occupational group of healthcare support occupations is represented in the following table by the four largest occupations of this group: home health aides, nursing assistants/orderlies/attendants, dental assistants and medical assistants. These four occupations account for roughly 75% of employment among healthcare support occupations.

**Table 21. Projected Employment for Selected Health Professions in California due to Occupational Growth (2004-2014)**

SOC†	Occupation	Employment due to Occupational Growth				Fastest Growing Rank‡
		Number		Change		
		2004	2014	No.	%	
00-0000	All Occupations	16,376,500	19,013,700	2,637,200	16.1	**
19-3031	Clinical, Counseling, and School Psychologists	24,200	29,600	5,400	22.3	75
21-1011	Substance Abuse and Behavioral Disorder Counselors	9,600	12,100	2,500	26.0	85
21-1014	Mental Health Counselors	13,100	16,100	3,000	22.9	75
21-1021	Child, Family, and School Social Workers	25,300	30,200	4,900	19.4	60
21-1022	Medical and Public Health Social Workers	10,000	12,200	2,200	22.0	75
21-1023	Mental Health and Substance Abuse Social Workers	11,300	14,000	2,700	23.9	80
29-1021	Dentists, General	15,700	17,600	1,900	12.1	30
29-1051	Pharmacists	23,700	29,400	5,700	24.1	80
29-1060	Physicians and Surgeons	55,200	63,000	7,800	14.1	35
29-1111	Registered Nurses	230,300	291,200	60,900	26.4	85
29-1126	Respiratory Therapists	10,700	13,100	2,400	22.4	75
29-2034	Radiologic Technologists and Technicians	14,800	17,800	3,000	20.3	65
31-1011	Home Health Aides	41,200	60,900	19,700	47.8	99
31-1012	Nursing Aides, Orderlies, and Attendants	106,600	131,600	25,000	23.5	80

SOC†	Occupation	Employment due to Occupational Growth				Fastest Growing Rank‡
		Number		Change		
		2004	2014	No.	%	
31-9091	Dental Assistants	41,300	58,200	16,900	40.9	99
31-9092	Medical Assistants	51,000	69,200	18,200	35.7	95

†SOC = Standard Occupation Code, a hierarchical classifying system developed by the Bureau of Labor Statistics to organize occupational data.

‡Expressed as a percentile ranking.

Source: California Employment Development Department, Employment Projections 2004 – 2014

**Table 22. Projected Employment for Selected Health Professions in California due to Occupational Growth and Replacement Needs**

SOC†	Occupation	Average Annual Job Openings due to Occupational Growth and Net Replacement Needs			Most-jobs Rank ‡
		New Jobs	Net Replacements	Total	
19-3031	Clinical, Counseling, and School Psychologists	540	530	1,070	80
21-1011	Substance Abuse and Behavioral Disorder Counselors	250	220	470	60
21-1014	Mental Health Counselors	300	300	600	65
21-1021	Child, Family, and School Social Workers	490	430	920	75
21-1022	Medical and Public Health Social Workers	220	170	390	55
21-1023	Mental Health and Substance Abuse Social Workers	270	190	460	60
29-1021	Dentists, General	190	260	450	60
29-1051	Pharmacists	570	460	1,030	80
29-1060	Physicians and Surgeons	780	740	1,520	85
29-1111	Registered Nurses	6,090	4,820	10,910	99
29-1126	Respiratory Therapists	240	350	590	65

SOC†	Occupation	Average Annual Job Openings due to Occupational Growth and Net Replacement Needs			Most-jobs Rank ‡
		New Jobs	Net Replacements	Total	
29-2034	Radiologic Technologists and Technicians	300	280	580	65
31-1011	Home Health Aides	1,970	540	2,510	90
31-1012	Nursing Aides, Orderlies, and Attendants	2,500	1,400	3,900	95
31-9091	Dental Assistants	1,690	1,160	2,850	90
31-9092	Medical Assistants	1,820	940	2,760	90

†SOC = Standard Occupation Code, a hierarchical classifying system developed by the Bureau of Labor Statistics to organize occupational data.

‡Expressed as a percentile ranking.

Source: California Employment Development Department, Employment Projections 2004 – 2014

### Summary of Projected Employment for Selected Health Professions in California

Most of the occupations selected for analysis are projected to add new jobs at a rate much higher than the average for all occupations. The two exceptions are dentists and physicians/surgeons. This is likely due to the fact that both of these highly trained professions are heavily regulated and have limited capacity to accommodate new entries into the profession. An increased demand for physician services does not easily translate to job growth.<sup>18</sup> Employment opportunity for registered nurses is projected to grow at a rate far above average, which is also significant due to the fact that it is the single largest healthcare workforce in the state. The mental health occupations sector is also projected to be a fast-growing sector. The various psychology specialists, behavioral disorder counselors, mental health counselors, and mental health social workers all rank in the top one-quarter of fastest-growing occupations. However, the projected fastest-growing segment of all selected health professions is among healthcare support occupations. Dental assistants and home health aides are each in the top 1% of fastest-growing occupations; medical assistants are in the top 5%. These are also among the lowest paid occupations in healthcare and in the workforce overall.

For most of the selected occupations, the need to replace workers will be a significant component of job opportunities. In the case of dentists and respiratory

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<sup>18</sup> Projecting employment demand for such highly regulated professions is a very difficult process. The following report commissioned by the University of California Office of the President examines issues of supply and demand in detail for the physician/surgeon workforce: *California Physician Workforce: Supply and Demand through 2015*.

Available at: <http://www.ucop.edu/healthaffairs>

therapists, for example, the majority of job opportunities are projected to come from replacement needs. In terms of total job opportunities, registered nursing will offer more job opportunities than 99% of all other occupations. As noted above, it is the single largest healthcare workforce and more broadly, one of the largest among all segments of the state's workforce. Over the period 2004-2014, it is projected that an annual average of more than 10,000 RN jobs will be open. Openings for physicians and surgeons are also projected to be significant, ranking in the 85<sup>th</sup> percentile of all occupations. As data presented in the previous section of this report indicated, the physician workforce is relatively older; nearly half of annual job openings are expected to come from replacement needs. Healthcare support occupations are not only a fast-growing segment of the health professions workforce, but because there is a relatively high amount of turnover among these occupations, job opportunities deriving from the need to replace workers will be substantial.

Taking into consideration both job creation and the need to replace workers, job openings over the coming decade for the entire group of healthcare professions selected for this report are projected to occur at a rate far above average. The occupations that are expected to grow most rapidly are those where educational requirements and median wages are lowest; the data indicate that this is the most racially and ethnically diverse segment of the health professions workforce. Job opportunities among the critical primary care health professions will be driven more by the need to replace retiring professionals.



## VI. Describing California's Health Professions Educational Pipeline

The following section presents data on the educational pipeline for selected professions. Because the best available source of data was used for each profession, the amount of data and level of detail are not equal for all professions. For some of the professions, data are limited to program graduates and are available for only a few years (or even a single year). However, for medicine, dentistry, nursing, and pharmacy, data describing some combination of applicants, enrollments as well as graduates were available. In the case of medicine, data were available going back to 1990. Additionally, for the section on registered nursing, data describing education programs were organized by regional geography. Findings are summarized for each profession separately, following the figures and tables describing each profession.

### Overview of Health Professions Graduates Across Professions

Table 23 shows trends in the number of graduates for selected health professions programs. These data represent reported program graduates and give some sense of whether program size is increasing or decreasing over time. As noted previously, the data available vary by profession. Empty cells in the table indicate that data are missing for certain years.

**Table 23. Reported Graduates by Program: 1995 - 2006**

Program	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Medicine (MD)*	1024	1023	1023	1023	1049	1035	1039	1034	1039	1053	1067	1065
Registered Nursing*	--	--	--	--	--	--	6128	6422	7457	7825	8926	11131
Dentistry*	--	561	570	563	561	545	558	565	572	589	567	--
Pharmacy	--	--	--	--	--	--	584	575	615	611	571	656
Clinical/ Counseling Psychology (PhD)	--	--	--	--	--	850	783	743	764	755	733	--
Clinical/ Counseling Psychology (Masters)	--	--	--	--	--	2353	2276	2085	2067	2235	2397	--
Masters in Social Work	1078	1115	919	1239	1206	1190	1256	1208	1290	1320	1435	--
Masters in Public Health	546	515	557	632	544	638	591	565	606	655	652	--
Respiratory Therapy	891	799	686	712	675	540	535	695	628	499	722	--
Radiography	678	641	626	621	519	551	576	529	652	720	789	--

\* Data represent first-year enrollments for these three programs.

Table 24 presents an overview of education data by gender and race and ethnicity for a single year (2005) to allow for comparisons across professions.

**Table 24. 2005 Composition of Graduates by Program (California) by Gender and by Race/Ethnicity**

<b>Program</b>	<b>Male (%)</b>	<b>Female (%)</b>	<b>White (%)</b>	<b>Asian (%)</b>	<b>Hispanic/Latino (%)</b>	<b>African American (%)</b>	<b>Native American (%)</b>
Medicine (MD) <sup>19</sup>	49.6	50.4	42.6	34.8	11.5	3.7	0.1
Registered Nursing	12.4	87.6	47.2	23.6	20.7	7.6	0.9
Dentistry	57.7	42.3	46.1	47.7	5.4	1.1	0.2
Pharmacy	29.1	70.9	25.8	66.1	5.8	1.9	0.4
Clinical/Counseling Psychology (PhD)	23.5	76.5	74.4	9.8	9.0	5.5	1.3
Clinical/Counseling Psychology (Masters)	21.3	78.7	70.3	9.3	12.0	7.7	0.6
Masters in Social Work	13.9	86.1	42.6	13.2	31.1	11.5	1.6
Masters in Public Health	25.9	74.1	52.3	24.6	15.6	6.2	1.3
Respiratory Therapy	46.9	53.1	33.2	28.7	27.3	9.1	1.6
Radiography	45.5	54.5	42.5	17.7	28.8	10.6	0.4

## **Medicine**

There have been important changes in the way medical school applicants have self-reported race and ethnicity over time and how the Association of American Medical Colleges (AAMC) has reported student data using racial and ethnic categories.<sup>20</sup> As a result, student data provided by the AAMC was separated into two time periods: 1990-2001 and 2002-2004. The racial and ethnic category changes reflect changes in Federal Office of Management and Budget guidelines for reporting racial and ethnic data and correspond to the racial and ethnic categories used in the 2000 Census.

The reporting changes were significant in four ways: 1) beginning with the applicant pool in 2002, individuals were asked about Hispanic/Latino ethnicity separately from race; 2) beginning with the applicant pool in 2002, individuals were allowed to

<sup>19</sup> For medicine we've used data describing first-year enrollments as proxy for graduates.

<sup>20</sup> These changes are well-documented in a recently published report: *Increasing Diversity in U.S. DHHS Region IX Medical Schools: Opportunities and Challenges*, prepared by the Institute for Health Policy Studies at the University of California San Francisco for the Office of Minority Health, Office of Public Health and Science, U.S. Department of Health and Human Services, March 2006. The report is available by contacting the Institute for Health Policy Studies directly at: Institute for Health Policy Studies, 3333 California St, Suite 265, San Francisco, CA 94118 or by calling 415-476-8263.

select multiple race categories (and are reported as Multirace); 3) in the years 2002 and 2003, individuals were given an option to select “other race” as a category but this option was then removed beginning with the 2004 applicant pool; and 4) the category “other Pacific Islander” was grouped with Asian in the period 1990-2001, but grouped with “Native Hawaiian” after 2002.

All figures in this section that present data describing racial and ethnic composition show a break between these two time periods. This reflects the fact that for those groups affected by reporting changes, data from the two periods are not directly comparable. However, it is still possible to draw useful inferences and present analysis of trends without risking false or misleading claims. Figures that present data describing a total without racial and ethnic detail or data describing gender composition do not show a break because comparability is not an issue. The “other race” category is poorly defined and was used only for those two years in 2002 and 2003, so as a result we decided to exclude it. Table 25 outlines the racial and ethnic categories used in the two time periods. Note that Hispanic/Latino ethnicity is a mutually exclusive category over the entire period 1990-2006.

**Table 25. AAMC Race Categories Used by Period 1990 – 2001 vs. 2002-2006**

	<b>1990-2001</b>	<b>2002-2006</b>	
<b>Non-Hispanic/Latino</b>	White	White	
	African American	African American	
	Asian (includes other Pacific Islander)	Asian	
	Native American (includes American Indian, Alaska Native, and Native Hawaiian)		Native American (includes American Indian, Alaska Native)
			Native Hawaiian/ other Pacific Islander
Multirace			
	Some other race (only 2002 and 2003)		
<b>Hispanic/Latino</b>	Hispanic/Latino of any race	Hispanic/Latino of any race	

## Applications<sup>21</sup>

The trend in total applications to California’s allopathic medical schools over the past fifteen years shows three distinct periods. Between 1990 and 1995 they increased 65%, from roughly 30,000 to a peak of more than 49,000. Beginning in 1996 total applications declined for seven consecutive years and in 2002 fell to approximately 35,000. Over the past five years, between 2002 and 2006, applications have steadily increased, and by 2006 were roughly 85% of the 1995 peak.

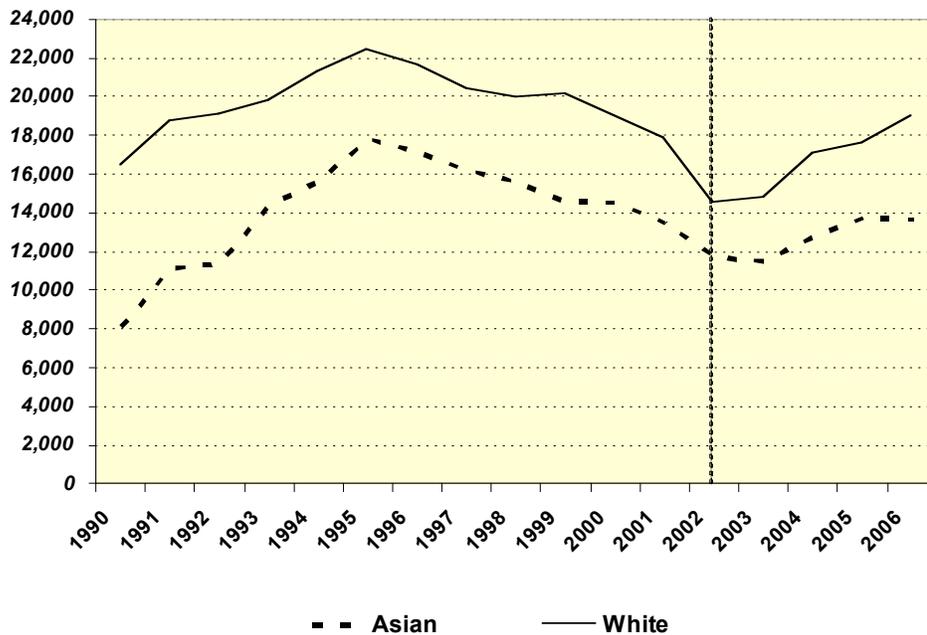
<sup>21</sup> These data represent total applications submitted, not an unduplicated count of individual applicants.

The large increase in applications between 1990 and 1995 was driven by growth in applications from both women and men: applications from men increased by 62% and applications from women increased by 70%. By contrast, roughly three-quarters of the decline of 14,000 applications occurring between 1996 and 2002 can be attributed to fewer applications from men. The result was that by 2002 and thereafter, women have represented roughly half of total applications (compared to a third of total applications in 1990).

### Race/Ethnicity of Applicants

Figures 10 through 14 describe the racial and ethnic composition of total applications between 1990 and 2006.

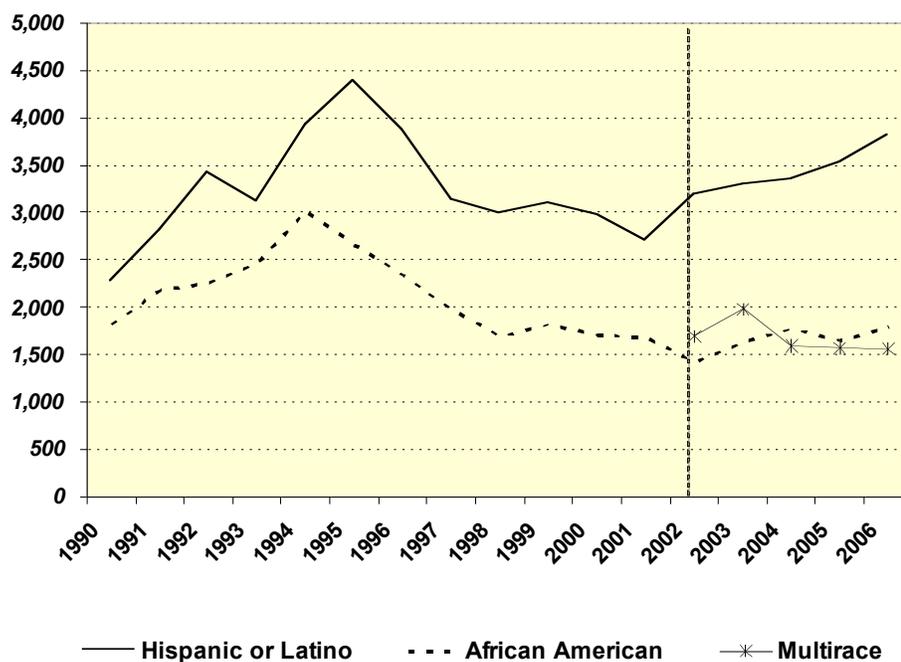
**Figure 10. White and Asian Applications to California Medical Schools: 1990-2006**



Source: AAMC Data Warehouse: Applicant-Matriculant File, current as of May 9, 2007

Applications from both Asian and White students follow the pattern seen for applications overall. They increased between 1990 and 1995, declined between 1996 and 2002, and since 2002 have been increasing. However, the increase in applications from Asians in the early 1990s was more dramatic, roughly doubling between 1990 and 1995, from 8,000 to 16,000. Proportionally, the decline in applications from both Asian and White students between 1996 and 2002 was roughly equal. In the period since 2002, applications from both groups are trending upward, although the slope of the trend-line for White students is comparatively steeper.

**Figure 11. Hispanic/Latino, African American and Multirace Applications to California Medical Schools: 1990-2006**



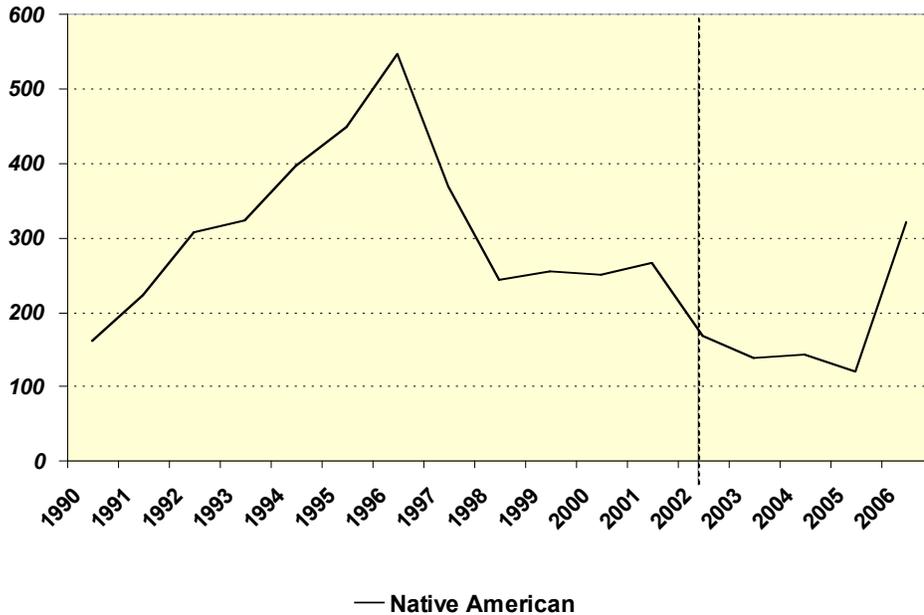
Source: AAMC Data Warehouse: Applicant-Matriculant File, current as of May 9, 2007

Applications from Hispanic/Latino and African American students over the period 1990-2006 resemble the pattern seen in total applications, as well applications from Asian and White students. Between 1990 and 1995, applications submitted by Hispanic/Latino students roughly doubled. The increase in applications from African American students was also significant, growing roughly 65% in this period.

African American applications began declining a year earlier than the period of decline seen from all other groups. The relative decline in African American applications was also the most significant. They fell from a peak of roughly 3000 in 1994 to just over 1400 in 2002, which is actually fewer applications than were submitted in 1990. Since 2002, African American applications have fluctuated between 1600 and 1800 per year, which is also unlike the pattern evident in other groups, where applications have been increasing in the last five years.

Applications from Multiracial students are roughly equal in proportion to those from African American students, despite the fact that the multiracial population is significantly smaller. Data for multiracial applications have been reported only since 2002, which makes trend analysis for this group unreliable. However, it appears that multiracial applications are stable at around 1600 applications per year.

**Figure 12. Native American Applications to California Medical Schools: 1990-2006**



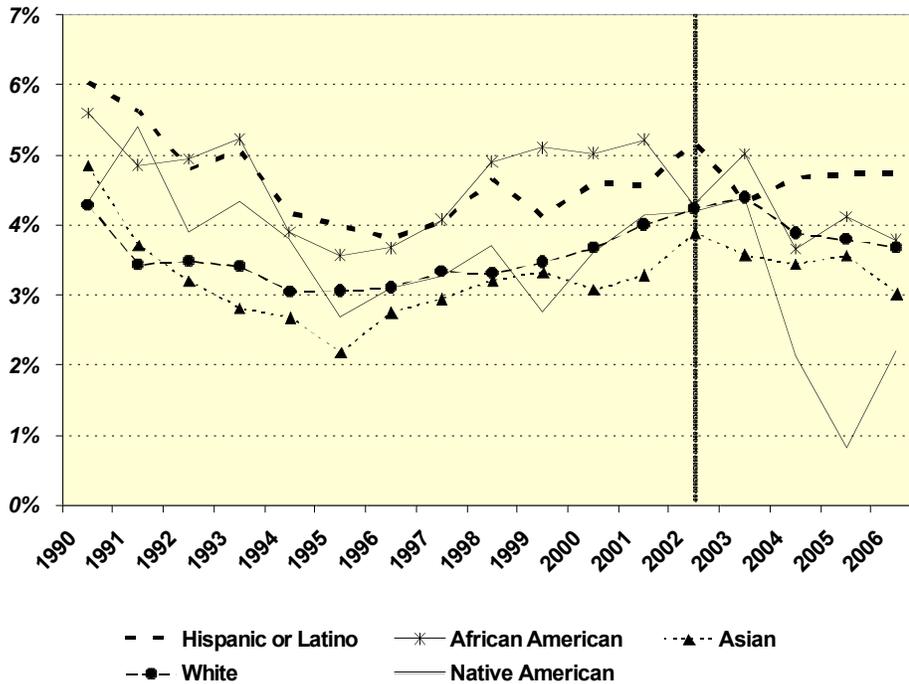
Source: AAMC Data Warehouse: Applicant-Matriculant File, current as of May 9, 2007

Native American applications more or less follow the general pattern seen for all other racial and ethnic groups. Proportionally, the 240% increase in the number of applications between 1990 and 1995 was by far the largest of any group. However, the actual number of applications was still quite small, increasing from roughly 150 to 550 (which is approximately 0.5-1.0% of the total). In a pattern similar to African American applications, the declining trend which began in 1995, continued beyond 2002 and lasted through 2005, at which point the number of Native American applications fell to 120 per year (a 15-year low). In 2006, total applications increased dramatically in relative terms; the 320 submitted is a ten-year high.

### **Accepted Application Rates by Race Ethnicity**

Accepted application rates refer to the ratio of total applications to total accepted applications. In this case, a different rate for each racial and ethnic group is calculated.

**Figure 13. Acceptance Rates at California's Medical Schools by Race/Ethnicity: 1990-2006**



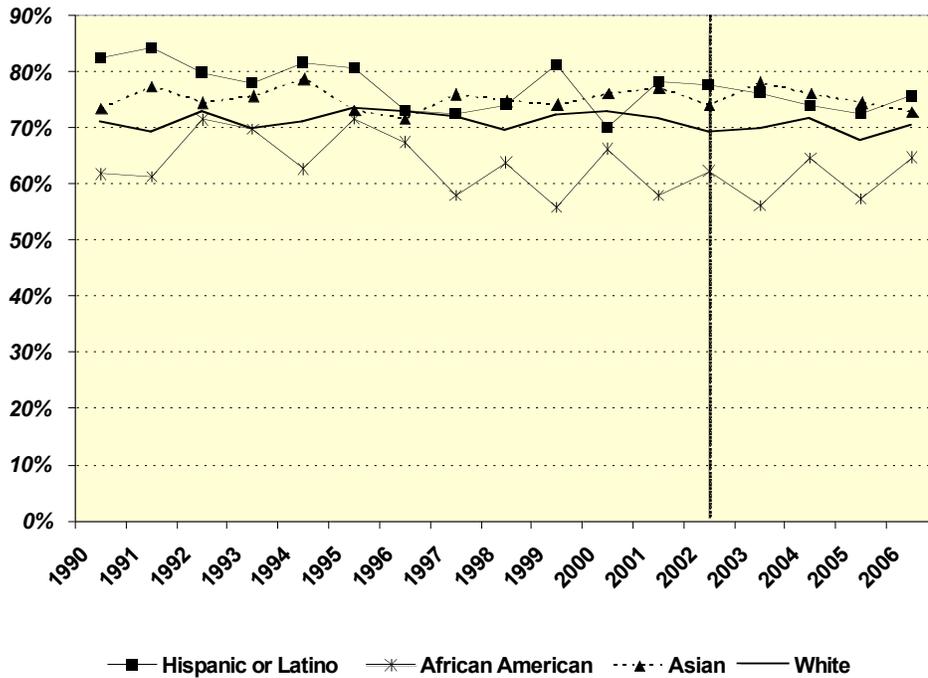
Source: AAMC Data Warehouse: Applicant-Matriculant File, current as of May 9, 2007

Overall these data show that medical schools in California accept only a small portion of applications submitted. The general pattern of acceptance rates resembles an inversion of the trend in total applications. In the period between 1990 and 1995, total applications from each racial and ethnic group were increasing and acceptance rates were declining. Between 1995 and 2002, as applications from all groups were declining, rates of acceptance were increasing. In the period between 2002 and 2006 this pattern is less definitive, but seems to hold true for Whites and Asians. Acceptance rates for Hispanic/Latino and African American applicants appear to flatten out after 2002. This mirrors what has happened with African American applications but contradicts the trend with Hispanic/Latino applications, which were increasing in this period. The significant drop in the acceptance rate for Native Americans is not easily explained. It may simply be a statistical artifact, a result of the very small number of applications.

**Matriculation Rates**

Matriculation rates refer to the ratio of total matriculants (first-year enrollees) to total accepted applicants. In this case, a different rate for each racial and ethnic group is calculated using unduplicated counts of matriculants and accepted applicants.

**Figure 14. Matriculation Rates at California’s Medical Schools by Race/Ethnicity: 1990-2006**



Source: AAMC Data Warehouse: Applicant-Matriculant File, current as of May 9, 2007

There are two striking features with respect to matriculation rates by race and ethnicity at California’s medical schools. Over time, the rates for both White and Asian matriculants have been comparatively stable while rates for both Hispanic/Latino and African American matriculants exhibit a greater degree of variance from year to year. The second feature is that the rate of matriculation for African Americans is quite a bit lower compared to the other groups. Due to the very small number of Native American matriculants, a rate was not calculated for this group. Similarly, due to the limited number of years for which data were available and because of the changes in reporting categories implemented in the period after 2002, a rate was not calculated for Multirace matriculants.

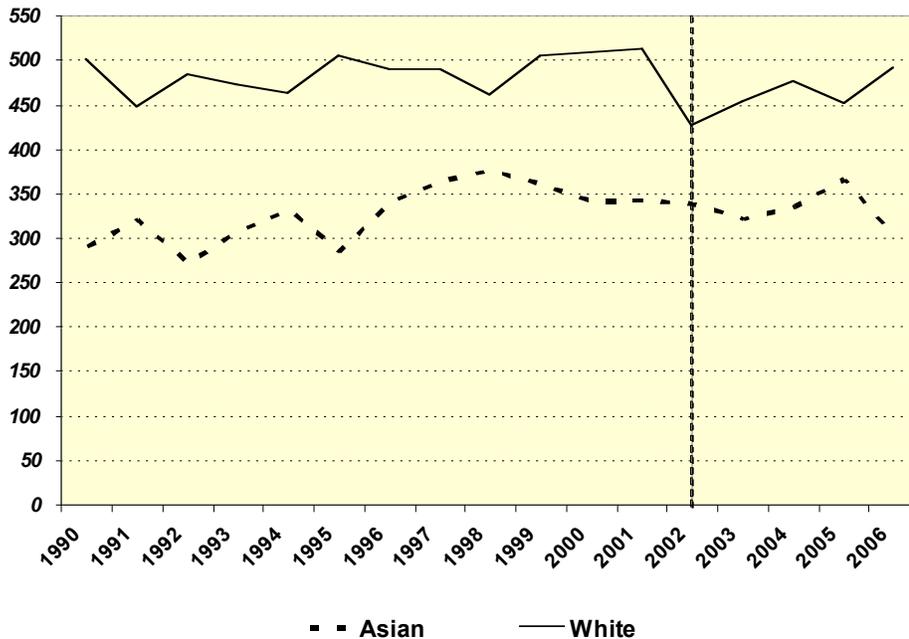
**Matriculants**

The number of allopathic medical schools in California has been constant and the number of slots available to first-year medical students has increased only slightly over the past fifteen years. Roughly a thousand students matriculated in 1990; in 2006, the number was 1,065. The trend of increasing numbers of women in the pool of total applications led to increasing numbers of women matriculants. By 2003 women represented roughly half of all matriculants in California’s allopathic medical schools.

## Race/Ethnicity of Matriculants

Figures 15 and 16 describe the racial and ethnic composition of matriculants (first-year enrollments) at California's medical schools between 1990 and 2006.

**Figure 15. Asian and White Matriculants at California Medical Schools: 1990-2006**

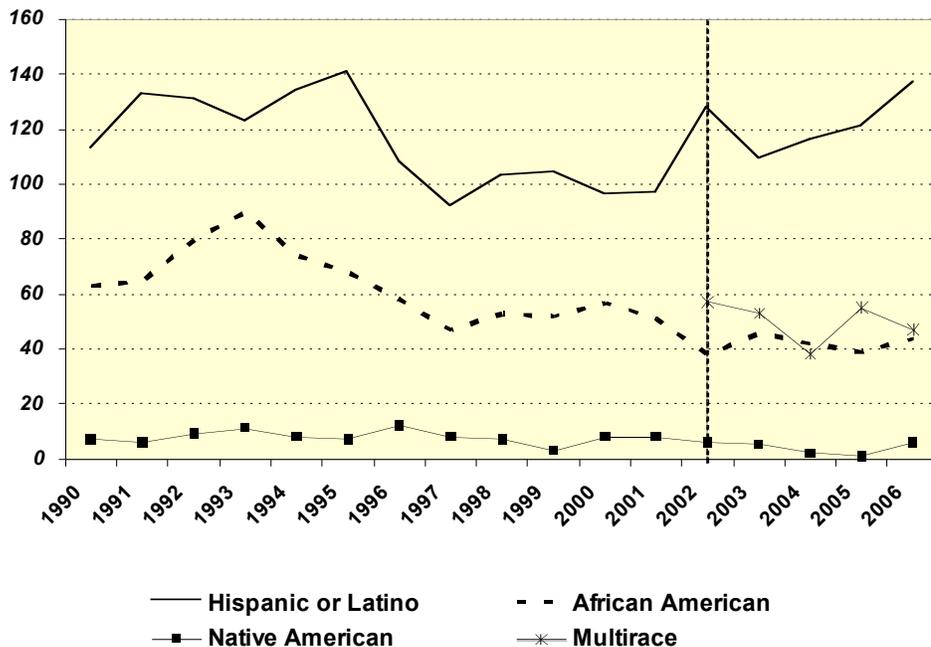


Source: AAMC Data Warehouse: Applicant-Matriculant File, current as of May 9, 2007

Between 1990 and 2001, the shapes of each trend line describing Asian and White matriculants are, more or less, inversions of one another. The slopes of the up and down fluctuations are not identical, but the directional changes are synchronous; upward movement in one parallels downward movement in the other. This pattern is interrupted only for a few years beginning in 2002, when the number of White matriculants declined sharply but the number of Asians remained stable. One factor that may explain this is the policy change in race and ethnicity reporting implemented in 2002. This is the first year students were able to select Multirace as a race and ethnicity reporting category. It may be that many of the Multirace students, prior to that year, had been reported as White.

Matriculating students in California's medical schools over the past fifteen years have been predominantly White and Asian. The combined proportion has fluctuated between 73-83% in this period. The high year was 1997; the low year was 2002. Again, the policy change in reporting race and ethnicity may explain the low figure in 2002. The high mark in 1997 may be the result of other California-based policy changes discussed below. It is significant that despite the substantial drop in applications from both White and Asian students between 1995 and 2002, the number of White matriculants stayed within a consistent range and the number of Asian matriculants actually increased.

**Figure 16. Hispanic/Latino, African American, Native American and Multirace Matriculants at California Medical Schools: 1990-2006**



Source: AAMC Data Warehouse: Applicant-Matriculant File, current as of May 9, 2007

Figure 16 shows that to a large extent, the trends for Hispanic/Latino and African American matriculants resemble the trends seen in applications. Increasing numbers of applications between 1990 and 1995 appear to have translated into increasing numbers of matriculants. The subsequent drop in applications after 1995 shows up as a sharp drop in the number of matriculants. After 2002, increasing numbers of Hispanic/Latino applications are mirrored by increasing numbers of matriculants and the generally stable number of African American applications is reflected in the generally stable number of matriculants.

One general difference between the trends in applications and matriculants for Hispanic/Latino and African American students is that despite the fact that Hispanic/Latino and African American applications continued to decline throughout the period 1995-2002, the number of matriculants remained fairly stable for most of these years.

The drop in the number of African American matriculants between 2001 and 2002 may reflect the 2002 policy change in race and ethnicity reporting categories. Multiracial students who identified as African American prior to 2002 may have selected the new Multirace reporting category beginning in 2002. Despite the relatively significant upward and downward movements in the number of applications from Native American students, the number of matriculants per year has fluctuated narrowly between 5 and 10

for most of the last fifteen years. As with applications, multiracial matriculants are roughly equal in number to African American matriculants. They represent approximately 5% of the total number of matriculating students, which is double the size of their proportion in California's general population.

## **Graduates**

Unfortunately we were not able to obtain a data set describing graduates comparable to those used in analyzing applications and matriculants for this report. As a result we are not able to present any findings regarding trends in the period under review. However, a recent study of applicants/matriculants/graduates of California's medical schools during this same period suggests that there is no discernible difference in the overall graduation rates among the different racial and ethnic groups.<sup>22</sup> It seems reasonable to assume that matriculants are a good proxy for graduates and that in the period under review, trends describing these two groups are highly correlated.

## **Summary of Medical Education in California**

The trend in total applications to California's allopathic medical schools shows three distinct periods within the timeframe of 1990-2006. There was a substantial upward trend between 1990 and 1996 driven largely by the huge increase in the number of applications submitted by Asian students (although applications from all racial and ethnic groups also increased). There was a significant downward trend between 1995 and 2002, driven by large declines in the number of applications submitted by students in all racial and ethnic groups and a moderate upward trend since 2002 driven by increases in the number of applications submitted by White students and Hispanic/Latino students.

Although applications from all racial and ethnic groups declined during the period 1995-2002, the decline in applications from Hispanic/Latino, African American and Native American students was sharp and relatively dramatic compared to White and Asian applications, which declined more gradually. In recent years, White, Asian, and Hispanic/Latino applications have been increasing. The number of African American applications has remained stable. The number of Native American applications actually declined for ten consecutive years beginning in 1996. The 320 submitted in 2006 is a ten-year high.

Overall, the data on medical school acceptances show that medicine remains a very selective professional program and that only a small portion of applications are accepted. Analysis of data describing accepted applicants indicate that trends in the acceptance rate (the ratio of applications to accepted applications) among the different racial and ethnic groups over time resembles an inversion of the trends in applications. Increasing numbers of total applications led to declining rates of accepted applications and declining numbers of applications led to increasing rates of accepted applications. However, this pattern is not seen as clearly among Hispanic/Latino, African American and Native American acceptance rates after the year 2002.

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<sup>22</sup> Institute for Health Policy Studies (UCSF), 2006.

Analysis of matriculation rates (the ratio of matriculants to unduplicated accepted applicants) shows that rates among Whites and Asians have been comparatively stable over time. Rates for Hispanic/Latino and African American matriculants have been much more variable from year to year. It is also striking that rates for African American matriculants have been significantly lower than the other groups over time. Others have speculated that this reflects competition among medical schools to attract qualified African American students.<sup>23</sup> The data presented here are not conclusive on this point. Due to the very small numbers of Native American matriculants and because of the relative few years of available data for Multiracial matriculants, a rate was not calculated for these groups.

To some extent, trends in the racial and ethnic composition of matriculating students at California's allopathic medical schools reflect those of total applications. Big increases in the number of applications from Asians and from women have led to much greater representation by Asians and women among matriculating students. The sharp decline in Hispanic/Latino and African American applications after 1995 led to declining representation among matriculating students, although the numbers did not decline below a certain level. In recent years the number of Hispanic/Latino matriculants has been increasing, which mirrors the trend in applications. This is not true in the case of African Americans; the number of matriculants has remained roughly the same since its low-point in 2002. In contrast, the number of Native American matriculants is very small and does not appear to be very sensitive to fluctuations in the number of applications.

It may be that the 2002 policy change introducing the Multirace reporting category primarily affected students who had been previously identified as either White or African American, but the data are not conclusive on this point. Multiracial students account for approximately 5% of matriculants, which is roughly equal in size to the proportion of African American matriculants. Compared to the general population, multiracial students are more heavily represented in California's medical doctor degree programs.

In the mid 1990s, there were two significant policy events that very likely impacted medical school applications and enrollments in California. They are the 1995 resolution SP-1 of the Regents of the University of California to forbid consideration of sex, race, or ethnicity in admissions and the 1996 passage of Proposition 209, a state constitutional amendment that prohibited the State or any other public entity from discriminating against or giving preferential treatment to any group on the basis of sex, race or ethnicity. It is clear from the data that a sharp drop in Hispanic/Latino, African American and Native Americans applications coincides with the years these policy events were taking shape and just after their implementation. It is also clear that the slope of the downward trend is relatively steep by comparison with the general trend in declining applications to California's medical schools. Finally, the declining number of

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<sup>23</sup> Institute for Health Policy Studies (UCSF), 2006.

Hispanic/Latino, African American and Native American applications and enrollments in California was dramatic by comparison with national trends<sup>24</sup>.

## **Registered Nursing**

The data presented in this section are from the California Board of Registered Nursing Annual School Survey Prelicensure Database.<sup>25</sup> Pre-license registered nursing (RN) programs are offered at three different degree levels: the associate's degree (ADN), the bachelor's degree (BSN) and the entry-level master's degree (ELM). There are more than 100 such programs throughout the state. The data describing *applications* to pre-license RN programs as well as those describing *first-year enrollments* are presented only for the entire state of California. Data describing *graduates* of pre-license RN programs are presented by geographic region. These regional groupings are the same as those presented in Figure 1 at the beginning of this report. There are no pre-license RN programs in the Central Sierra region.

The data describing new student enrollments and program graduates of pre-license RN programs include information on race and ethnicity. The data describing applications do not. The race and ethnicity categories used to identify students in this data are slightly different from preceding sections. The following groups are identified: White, African American, Filipino, Asian, Native American and Hispanic/Latino.

Students whose race and ethnicity was unreported have been excluded from the analysis of racial and ethnic composition. In figures presenting analysis of racial and ethnic composition, the total number of students represented is always less than the actual total number of students because some proportion has been excluded. Proportions represent 100% of the students for whom race and ethnicity was reported. It isn't known what affect unreported race and ethnicity has on the accuracy of the estimates for the overall racial and ethnic composition of RN students.

## **Applications and Enrollments**

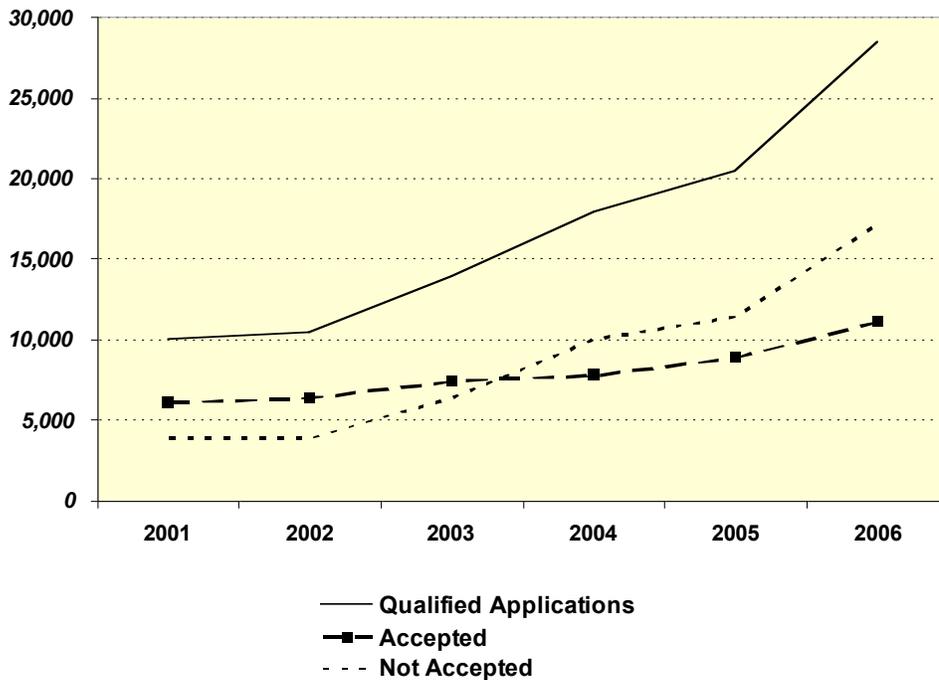
Figures 17 through 19 present data describing applications and first-year enrollments in California's pre-license RN programs during the period 2001-2006. It needs to be emphasized that these application data **do not** represent an unduplicated count of individual applicants. They represent the total number of applications submitted.

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<sup>24</sup> K. Grumbach, E. Mertz, and J. Coffman. *Underrepresented Minorities and Medical Education in California: Recent Trends in Declining Admissions*. Center for Health Workforce Studies, UCSF. 1999

<sup>25</sup> This database was designed by Joanne Spetz and Renae Waneka at the Center for the Health Professions, University of California San Francisco and is available on the Board of Registered Nursing website: <http://www.rn.ca.gov/>

**Figure 17. Total Applications, Accepted Applications and Not Accepted Applications to California’s Pre-licensure Registered Nursing Programs: 2001-2006**

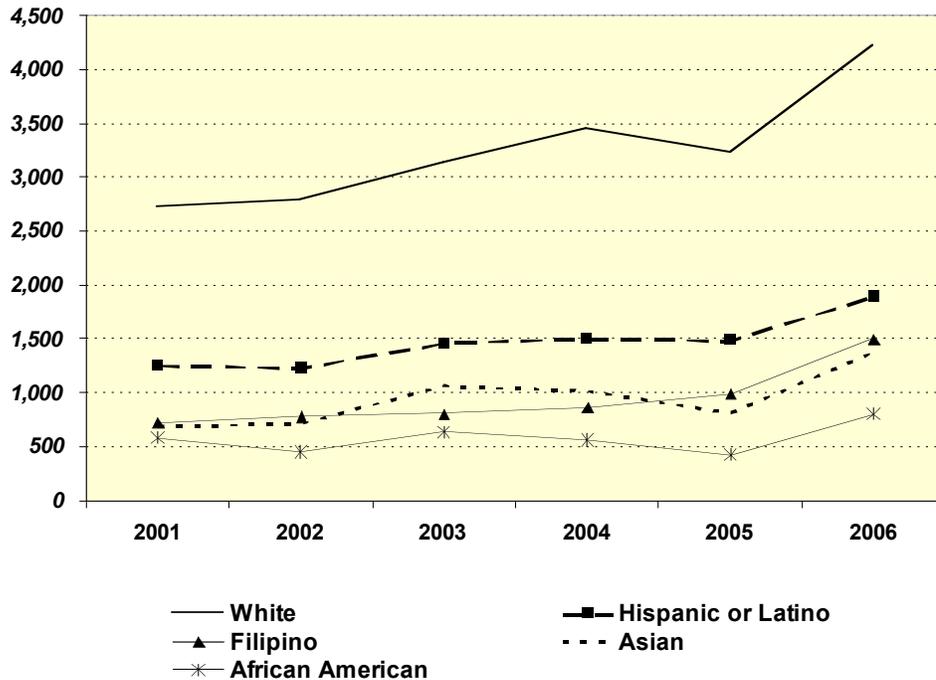


Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

The number of qualified applications<sup>26</sup> to California’s pre-licensure RN programs increased from just over 10,000 in 2001 to more than 28,000 in 2006. This is a gain of 183%. One result of this dramatic growth is a similarly large increase in the number of qualified applications that were not accepted. In 2001, roughly 6 out of every 10 qualified applications were accepted. In 2006, roughly 4 out of every 10 qualified applications were accepted. In 2006, 13,000 more qualified applications were not accepted compared with 2001.

<sup>26</sup> Criteria for qualified applications may vary by program but typically include overall GPA; GPA in prerequisite coursework; geographic location of applicant’s residence; CA Community College Nursing Prerequisite Validation Study Composite Score; and health-related work experience.

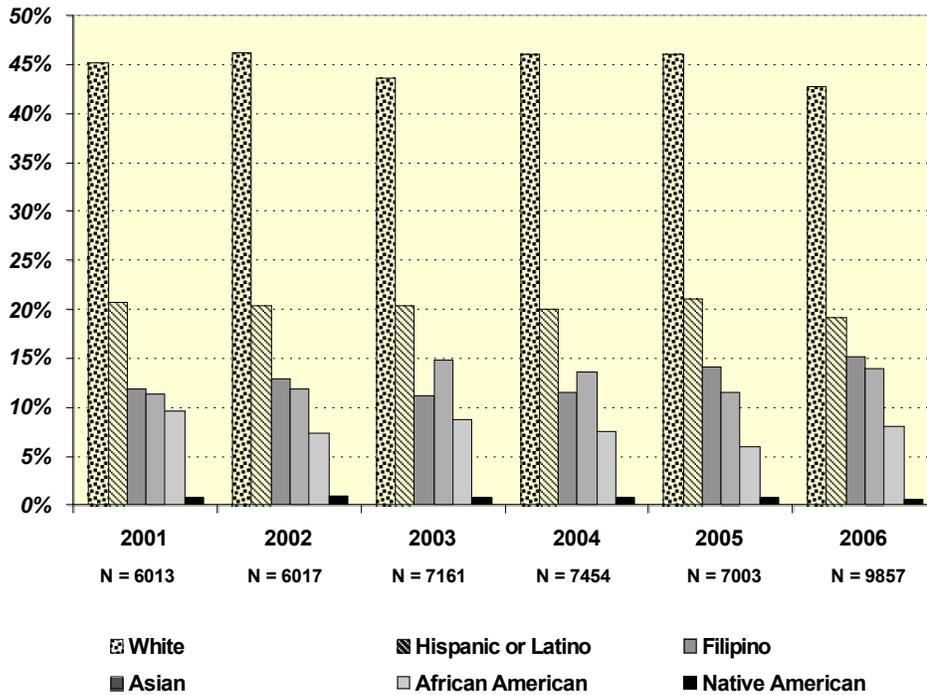
**Figure 18. New Student Enrollments in California’s Pre-licensure Registered Nursing Programs by Race/Ethnicity (Number): 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

In terms of absolute numbers, the increase in new enrollments among White students dwarfs the gains experienced by other groups; they increased by roughly 1500 over the five-year period (and much of this increase occurred between 2005 and 2006). Evaluated in terms of relative growth, however, the enrollment gains experienced by most of the other (non-White) racial and ethnic groups of students were comparatively equal or greater. Asian enrollments doubled between 2001 and 2006, as did Filipino enrollments. Hispanic/Latino enrollments grew by 51%, which is comparable to the growth in White enrollments (55%). The number of Native American new enrollments in pre-licensure RN programs over the past five years has fluctuated narrowly between 50 and 65 per year. This is not shown in the above figure.

**Figure 19. Composition of New Student Enrollments in California’s Pre-license Registered Nursing Programs by Race/Ethnicity (Percentage): 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

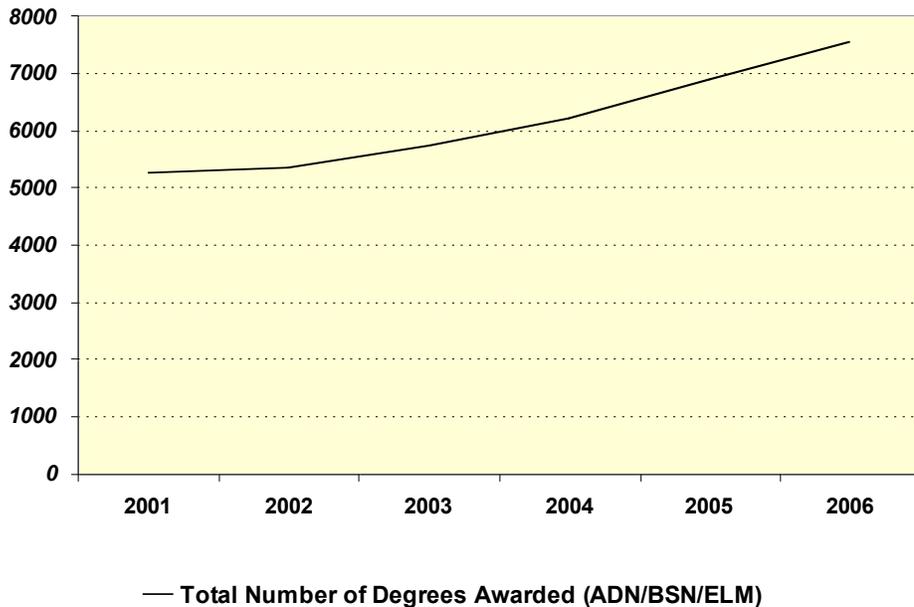
The racial and ethnic composition of new student enrollment in California’s pre-license RN programs is beginning to shift. The increasing numbers of Filipino and Asian new student enrollments have also increased their proportional representation. Despite the large absolute growth in the number of White new student enrollments, their proportional representation has actually declined slightly. This is also true for Hispanic/Latino enrollments. This is not surprising, given that the number of White and the number of Hispanic/Latino students grew at roughly half the rate of growth for Asian and Filipino enrollments between 2001 and 2006.

In the years 2001 through 2004, the proportion of new enrollments for which race and ethnicity was unreported ranged from 2-5% of the total. In 2005, however, it swelled to roughly 22% of the total. It isn’t known what impact this has on the accuracy of the estimates of the racial and ethnic composition of new enrollments.

## Graduates

Figures 20 through 22 present data describing graduates of California's pre-license RN programs during the period 2001-2006.

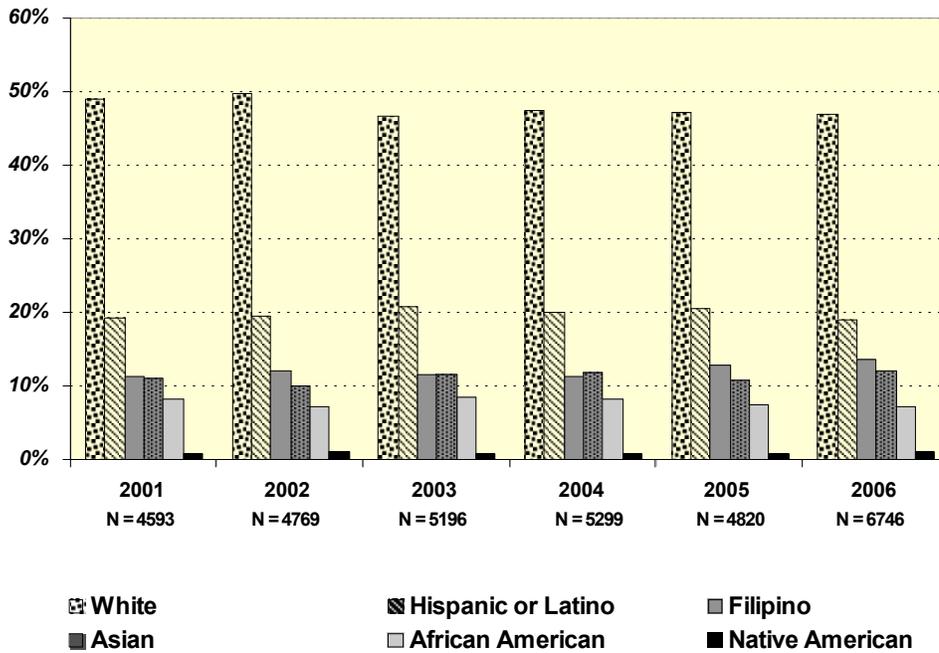
**Figure 20. Total Number of Graduates of California's Pre-license Registered Nursing Programs: 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

As with applications and new enrollments, the number of graduates of California's pre-license RN programs grew dramatically between 2001 and 2006. There were roughly 2300 more graduates produced in 2006 compared to 2001. Graduates of ADN programs far outnumber graduates of BSN or ELM programs. Roughly 71% of the more than 7,500 graduates in 2006 were from ADN programs; another quarter represented graduates of BSN programs; ELM graduates accounted for the remaining 4% of the total.

**Figure 21. Composition of Graduates of California’s Pre-licensure Registered Nursing Programs by Race/Ethnicity: 2001-2006**

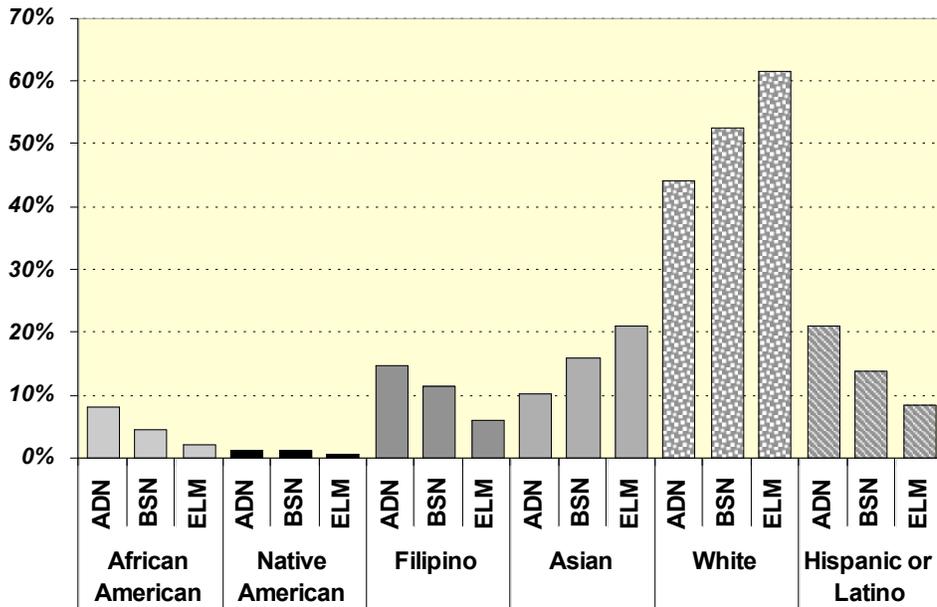


Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

As with new student enrollments, there was a small shift in the racial and ethnic composition of graduates of California’s pre-licensure RN programs between 2001 and 2006. Predictably, the fastest-growing groups of graduates were Filipino and Asian. This follows the trend for new enrollments. For both groups, the increasing number of graduates was substantial enough to cause their respective proportional representation to grow by small amounts. The number of White graduates and Hispanic/Latino graduates grew less rapidly in this period and as a result, proportional representation among White and Hispanic/Latino graduates declined slightly. The number of Native American graduates ranged from 35-50 per year between 2001 and 2005. In 2006, the number increased to 77, which is roughly 1% of the total.

In the years 2001 through 2004 and in 2006, the proportion of graduates for which race and ethnicity was unreported was around 10%. However, in 2005, the race or ethnicity for roughly 2,000 graduates was unreported. This is 30% of the total number of graduates. It isn’t known what affect this may have on the accuracy of the estimates of the racial and ethnic composition of reported graduates.

**Figure 22. 2006 Composition of Graduates of California’s Pre-license RN Programs by Degree Level and by Race/Ethnicity**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

This figure shows how racial and ethnic representation changes as the pre-license RN degree level changes. Among African American, Filipino and Hispanic/Latino graduates, representation *decreases* as the degree level advances. For example, in 2006, Filipino graduates represented approximately 15% of the total number of graduates at the ADN level, but just 11% of graduates at the bachelor’s level and only 6% of graduates of entry-level master’s programs. The opposite is true with White and for Asian graduates, for whom representation *increases* as the degree level advances.

**Nursing Programs by Regional Geography**

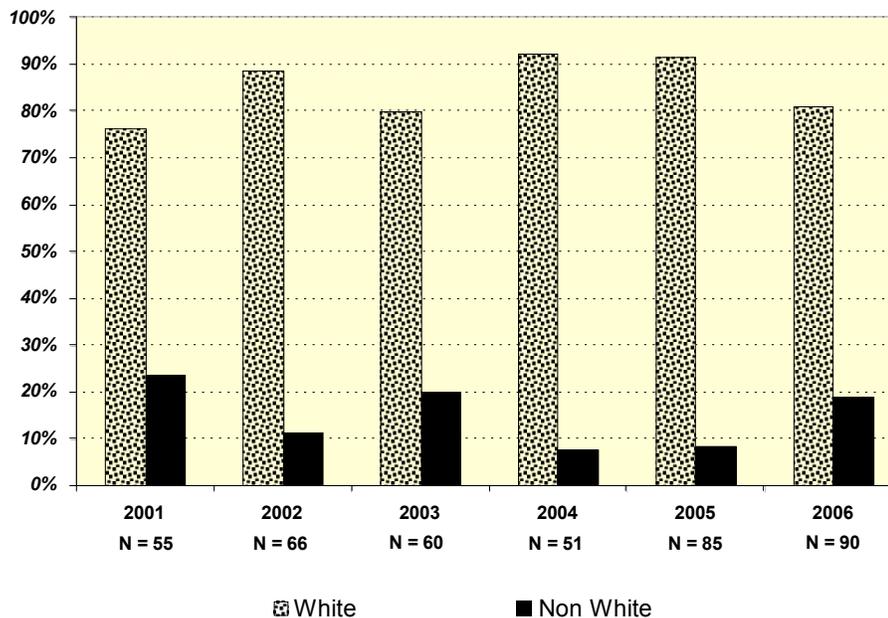
Table 26 presents data describing the composition of 2006 graduates of pre-license RN programs by race and ethnicity for each of the nine BRN regions. Figures 23 through 31 present data describing the racial and ethnic composition of pre-license RN graduates by geographic region for the period 2001 - 2006. We refer the reader to Figure 1, which maps the regions and indicates the counties included in each regional category.

**Table 26. 2006 Composition of Graduates or Pre-licensure Registered Nursing Programs by BRN Region**

Region	White (%)	Hispanic/Latino (%)	Asian (%)	Filipino (%)	African American (%)	Native American (%)
California (statewide)	46.9	18.9	12.2	13.7	7.2	1.1
Northern California	81.1	8.9	--	2.2	--	7.8
Northern Sacramento Valley	89.1	5.8	0.6	1.3	0.6	2.6
Greater Sacramento	67.5	7.9	8.2	9.2	4.7	2.4
Bay Area	48.9	10.6	17.9	14.6	7.3	0.8
San Joaquin Valley	43.4	25.5	11.3	11.3	6.7	1.7
Central Coast	72.1	14.3	4.3	5.0	2.1	2.1
Southern CA I	33.0	26.1	13.0	17.5	9.5	0.8
Southern CA II	49.9	20.8	10.5	11.7	6.9	0.2
Southern Border	56.6	14.7	9.0	13.2	5.1	1.5

**Northern California Region**

**Figure 23. Composition of Graduates of Pre-licensure Registered Nursing Programs in the Northern California Region by Race/Ethnicity: 2001-2006**

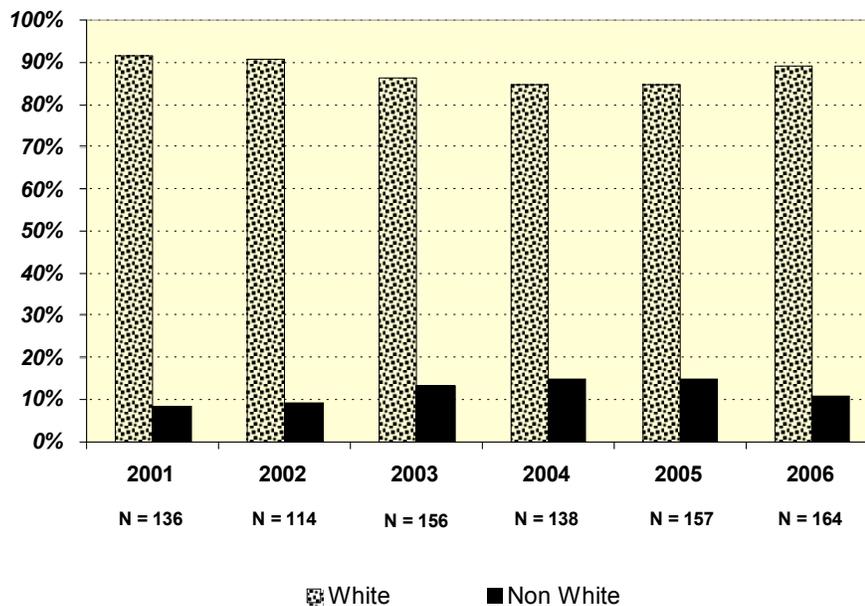


Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

There are three pre-license registered nursing programs in the Northern Counties region and the combined number of graduates each year is comparatively small. Of this small total, the number of non-White graduates is tiny. Accordingly, non-White students have been collapsed into a single group. Overall, there is a fair amount of fluctuation in the proportional representation of White versus non-White graduates. However, these fluctuations are exaggerated by the very small totals. Students graduating from pre-license RN programs in the Northern California region are predominantly White (roughly 80-90% of the total).

### Northern Sacramento Valley

**Figure 24. Composition of Graduates of Pre-license Registered Nursing Programs in the Northern Sacramento Valley Region by Race/Ethnicity: 2001-2006**



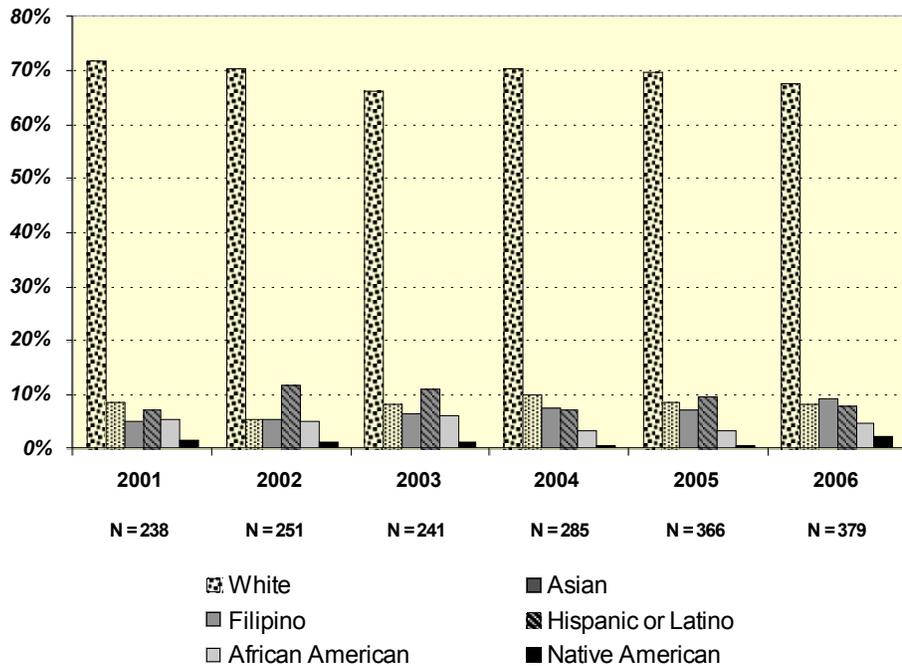
Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

Characteristics of the Northern Sacramento Valley region closely resemble those of the Northern California region. The racial and ethnic composition of the general population is quite similar in both regions. The number of registered nursing programs (three) is the same in both regions and the combined number of graduates produced each year is quite small in both regions. The racial and ethnic composition of RN program graduates is very similar in both regions.

The number of non-White graduates is very small. Accordingly, they have been collapsed into a single group and represent roughly 10%-15% of the total number of graduates each year. In 2004, the race and ethnicity for roughly one-third of the total number of graduates was unreported (45 of the 138 total). It is unknown what affect this may have on the accuracy of the estimates of the racial and ethnic composition of reported graduates.

## Greater Sacramento

**Figure 25. Composition of Graduates of Pre-licensure Registered Nursing Programs in the Greater Sacramento Region by Race/Ethnicity: 2001-2006**



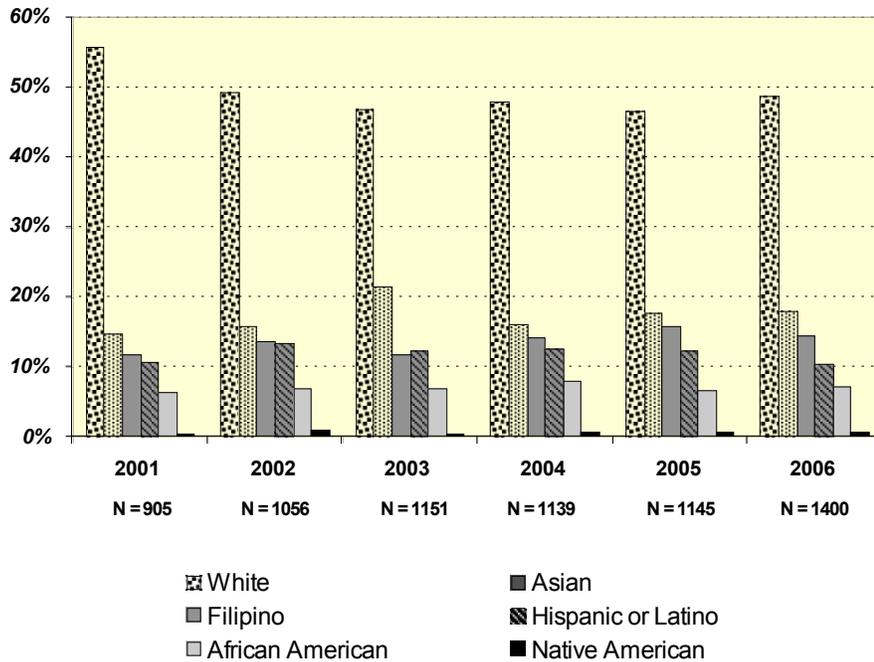
Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

There was a small shift in the racial and ethnic composition of graduates from RN programs in the Greater Sacramento region between 2001 and 2005. This is due mainly to growth in the number of Filipino graduates, who increased at a rate much higher than the other racial and ethnic groups. This had the simultaneous effect of increasing their proportional representation among total graduates and causing the proportional representation of White graduates to decline slightly. Still, White graduates account for roughly 65-70% of the total each year.

The number of graduates from other racial and ethnic groups fluctuates from year to year within a narrow range. Hispanic/Latino graduates number between 25 and 35 per year (7-12% of the total). Asian graduates number between 20 and 30 per year (8-10% of the total). African American students consistently represented 5% of the total number of graduates (around 15 graduates per year). Native American students account for 1-2% of the total number of graduates (3-4 graduates per year).

## Bay Area

**Figure 26. Composition of Graduates of Pre-licensure Registered Nursing Programs in the Bay Area Region by Race/Ethnicity: 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

The Bay Area region ranks second in size in terms of the number of RN graduates produced annually, behind the Southern California I region (Los Angeles/Ventura counties). There are 24 pre-licensure RN programs in the region, several of which offer programs at multiple degree levels.

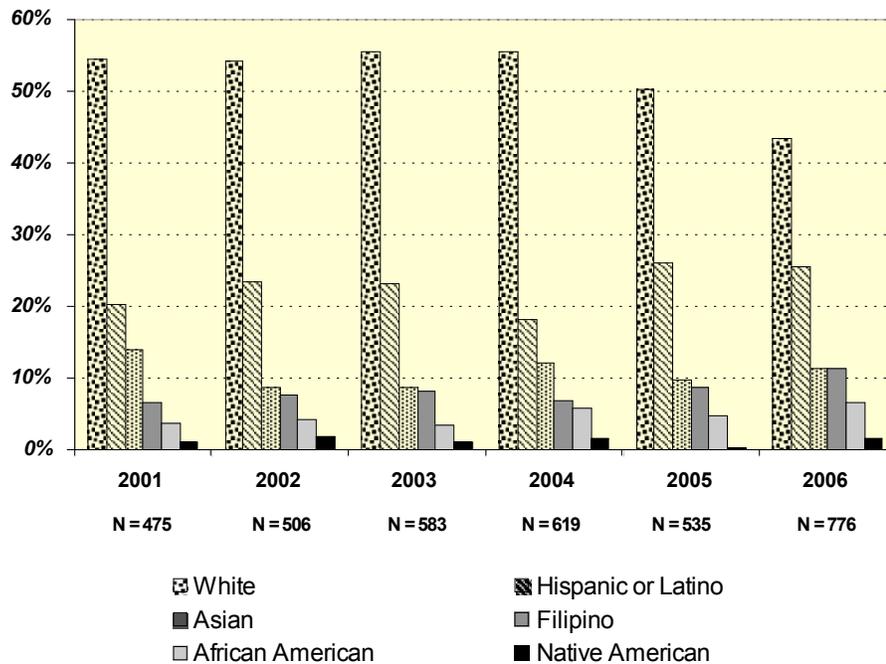
The racial and ethnic composition of RN graduates did shift slightly between 2001 and 2006. The proportional representation of White graduates declined from 56% of the total (2001) to 49% of the total (2006), while the proportional representation of Asian and Filipino graduates generally increased. The number of Filipino graduates doubled and the number of Asian graduates grew by roughly 85% between 2001 and 2006. This follows a statewide trend and reflects the increasing numbers of Asian and Filipino enrollments.

The number of graduates from other racial and ethnic groups increased between 2001 and 2006, but this growth was not so substantial as to alter their proportional representation. Hispanic/Latino graduates represent roughly 10% of the total and African American graduates represent roughly 7% of the total. The number of Native American graduates is very small, between 5 and 10 each year, which is roughly 0.8% of the total number of graduates.

The number of graduates each year for whom race and ethnicity was unreported is relatively large in the Bay Area region. In 2005 the race and ethnicity for roughly 450 of the 1600 reported graduates is unknown (about 28%). In three other years: 2001, 2004 and 2006, this proportion is 20%. It isn't known what affect this may have on the accuracy of the estimates of the racial and ethnic composition of reported graduates.

## San Joaquin Valley

**Figure 27. Composition of Graduates of Pre-licensure Registered Nursing Programs in the San Joaquin Valley Region by Race/Ethnicity: 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

There are nine pre-licensure RN programs in the San Joaquin Valley region. Growth in the number of graduates produced each year was the most substantial of any of the regions. Although the figure above details only those graduates for whom race and ethnicity was reported, the number of graduates from RN programs in this region increased 82% between 2001 (506 graduates) and 2006 (922 graduates).

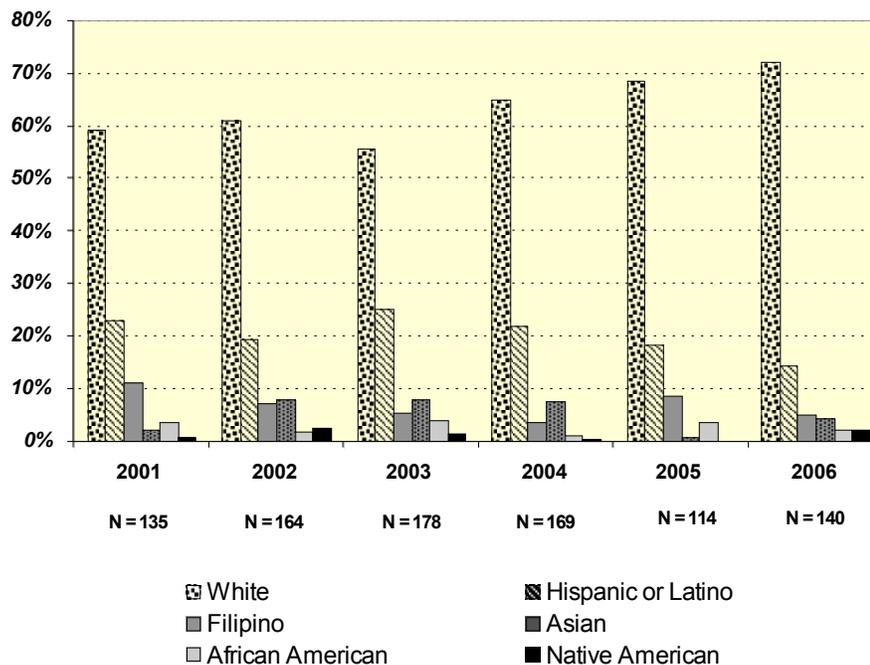
The shift in racial and ethnic composition of pre-licensure RN graduates between 2001 and 2006 was also the most substantial of any of the regions. This is the result of significant increases in the number of Hispanic/Latino graduates, which doubled between 2001 and 2006, Filipino graduates, which nearly tripled between 2001 and 2006, and African American graduates, which also nearly tripled between 2001 and 2006. By contrast, the number of White graduates grew by roughly 30%. As a result, the proportional representation of White graduates declined (from 55% of the total in 2001 to 43% of the total in 2006) while proportional representation for Hispanic/Latino, Filipino

and African American graduates all increased. The number of Native American graduates is very small, between 5 and 10 each year, which is roughly 1-2% of the total number of graduates.

In most years, the proportion of graduates each year for whom race and ethnicity was unreported was around 10%. In 2005, however, this proportion swelled to 30% of the total number of graduates. It isn't known what affect this may have on the accuracy of the estimates of the racial and ethnic composition of reported graduates.

## Central Coast

**Figure 28. Composition of Graduates of Pre-licensure Registered Nursing Programs in the Central Coast Region by Race/Ethnicity: 2001-2006**



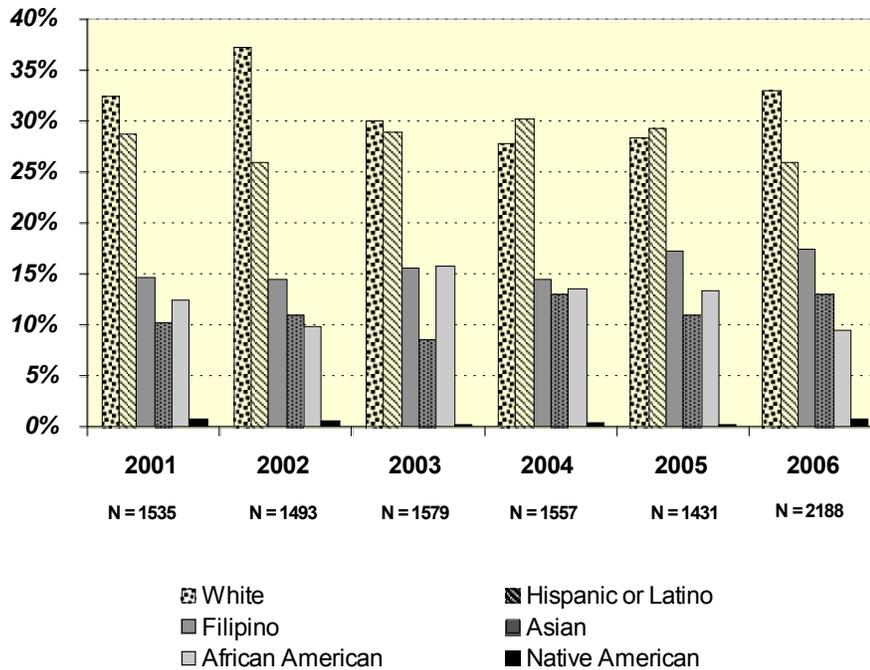
Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

The Central Coast region has five pre-licensure RN programs which produce roughly 150-175 graduates annually. The region seems to be in the unique position of seeing RN graduates becoming less diverse over time. Declining numbers of graduates overall in the last couple of years coincide with declining numbers of reported Hispanic/Latino, Asian and Filipino graduates. The result is that between 2001 and 2006 proportional representation of White graduates increased roughly by 10-12%.

The proportion of graduates whose race and ethnicity was unreported was very low in most years (1-3%), but in both 2001 and 2005 the numbers were much higher (roughly one-quarter of the total). It isn't known what affect this may have on the accuracy of the estimates of the racial and ethnic composition of reported graduates.

## Southern California I

**Figure 29. Composition of Graduates of Pre-licensure Registered Nursing Programs in the Southern California I Region by Race/Ethnicity: 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

The Southern California I region (LA/Ventura counties) is the largest region in terms of the number of graduates produced annually. There are 29 pre-licensure RN programs in the region, several of which offer programs at multiple degree levels. The regional RN student body is also the most racially/ethnically diverse, reflecting the diversity of the region's general population.

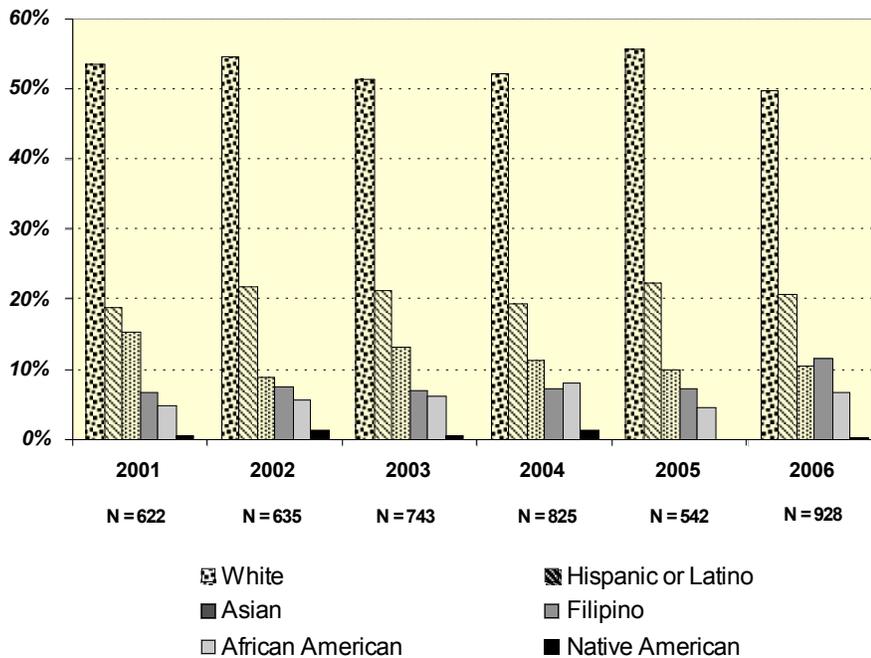
Small shifts in proportional representation are being driven by increasing numbers of Asian and Filipino graduates. Asian graduates increased roughly 79% between 2001 and 2005 and for Filipino graduates the increase was 69%. This is much faster growth compared with other racial and ethnic groups. Because the absolute size of the body of Asian graduates and Filipino graduates was relatively small in 2001, the effect on proportional representation has been minimal. The group most affected by this small shift was African American graduates, who have not increased much in number (if at all) over the last several years. Their proportional representation has declined as a result.

Although they grew much less rapidly, both Hispanic/Latino and White graduates have been increasing in number, and the data indicate that in most years cohorts of graduates were roughly equal in size. Native American graduates have been very few in number and were actually declining for most of this period. The downward trend was reversed in 2006 when 18 graduates were reported (the most in a single year for this period).

In most years the proportion of graduates whose race and ethnicity was unreported ranged from 5% to 10%, but ballooned in 2005 to 29%. It isn't known what affect this may have on the accuracy of the estimates of the racial and ethnic composition of reported graduates.

## Southern California II

**Figure 30. Composition of Graduates of Pre-license Registered Nursing Programs in the Southern California II Region by Race/Ethnicity: 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

There are 14 pre-license RN programs in the Southern California II region (Orange/Riverside/San Bernardino counties), which currently produce roughly 900-1000 graduates annually. All but two of the programs are at the associate's degree level.

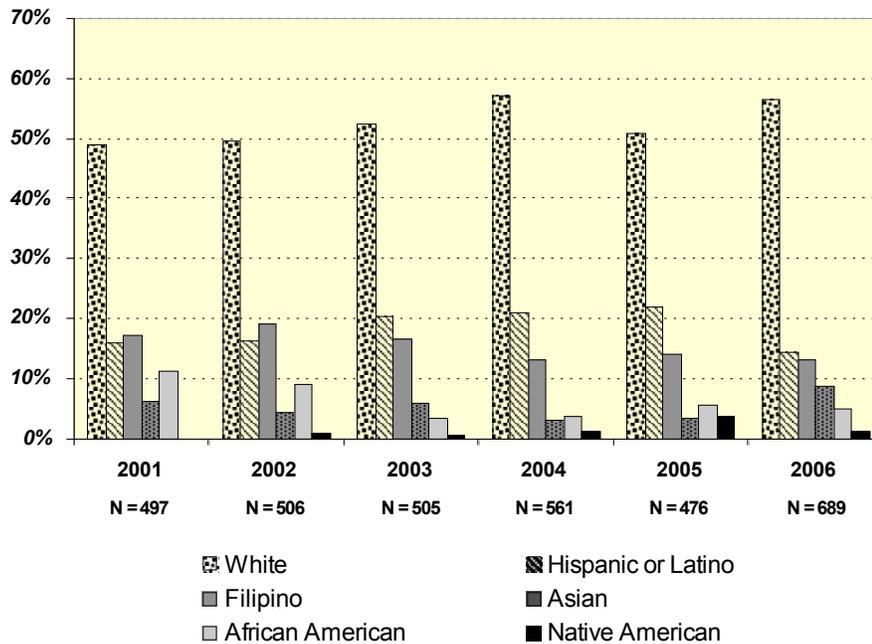
Of all racial and ethnic groups, annual numbers of African American graduates and Filipino graduates increased the most rapidly between 2001 and 2005. The annual number of African American graduates roughly doubled in this period and the annual number of Filipino graduates in 2006 was two-and-a-half times as large as it was in 2001. Both groups were relatively small in number in 2001, so the gains were relatively small in terms of proportional representation (roughly 2-3% over the period). The annual number of Hispanic/Latino graduates grew somewhat less rapidly over the past six years, but because this was a comparatively large group in 2001, the gain in proportional representation was about the same size (roughly 2-3%).

The annual number of White graduates grew between 2001 and 2006, but proportional representation declined slightly (roughly 5%). The annual number of Asian graduates has fluctuated between 50 and 100, though these fluctuations may be the result of unreported data. It is more likely that over the past six years the number of Asian graduates has not grown and the lack of growth has resulted in a proportional decline in representation. Native American graduates are very few in number. The highest annual total during this period was 12.

In four of the six years, the number of graduates whose race and ethnicity was unreported was relatively large, and in 2005 race and ethnicity for nearly half of the total is unknown. It is unknown what affect this has on the accuracy of the reported data. It may be that the 2005 data should be disregarded.

### Southern Border

**Figure 31. Composition of Graduates of Pre-license Registered Nursing Programs in the Southern Border Region by Race/Ethnicity: 2001-2006**



Source: CA Board of Registered Nursing Annual School Survey Prelicensure Interactive Database

There are 11 schools that offer pre-license RN programs in the Southern Border region at all degree levels. The number of graduates produced annually has increased in each of the last six years. Among the different racial and ethnic groups the most consistent growth was in the number of White graduates. Also notable was the doubling of the number of reported Asian graduates between 2005 and 2006, as well as the sharp decline in the number of African American graduates between 2001 and 2006. The annual number of Hispanic/Latino graduates did grow in this period, but the growth took

place between 2001 and 2004 after which it declined for two consecutive years. In 2004 they represented 22% of total graduates, but by 2006 only 15% of the total.

In most years the proportion of graduates whose race and ethnicity was unreported was roughly 6%, but like so many other regions, the proportion was much larger in 2005. Race and ethnicity for 31% of the graduates in 2005 was unreported. It is unknown what affect this may have on the accuracy of the estimates of the racial and ethnic composition of reported graduates.

## **Summary of Pre-license Nursing Education in California**

There are more than 100 pre-license RN education programs in California, and their geographic distribution covers nearly the entire state. The size of the pre-license RN student body increased dramatically between 2001 and 2006. The 43% increase translates to 2,279 more graduates in 2006 compared to 2001. Most of this increase occurred at the associate's degree in nursing level. Total applications to pre-license RN programs increased even more dramatically during this period. In 2001 the total number of qualified applications numbered roughly 10,000. In 2006, the number of qualified applications increased to more than 28,000. One result of this huge increase in submitted, qualified applications was a decrease in accepted applications. In 2001, roughly 6 out of every 10 qualified applications were accepted. In 2006, roughly 4 out of every 10 qualified applications were accepted.

The racial and ethnic composition of the pre-license RN student body differs by the level of the degree program. In general, the associate's degree programs exhibit a greater breadth of racial and ethnic diversity than do the bachelor's degree programs or the entry-level master's degree programs. For all but White non-Hispanic students and Asian non-Filipino students, proportional representation decreases as the level of degree program increases; for White non-Hispanic and Asian non-Filipino students, the opposite is true. In terms of gender composition, the RN education pipeline remains primarily female while men account for roughly 10% of the graduating students. This mirrors the gender composition of the current workforce, suggesting that it will remain predominantly female for the foreseeable future.

On a state-wide basis, data describing both new student enrollments and graduates show a small shift in the racial and ethnic composition between 2001 and 2006. This is illustrated in Figure 21: Composition of Graduates of California's Pre-license Registered Nursing Programs by Race and ethnicity: 2001-2006. The proportion of White non-Hispanic students declined slightly and the proportion of Filipino students increased slightly. The proportion of Hispanic/Latino students, African American students and Asian students remains fairly consistent throughout this period. The number of Native American students pursuing pre-license RN education remains very small, representing well under 1% of the student body.

The racial and ethnic composition of pre-license RN graduates varies by geographic region. In regions of the state where the general population is more racially and ethnically diverse, the students enrolling and graduating from pre-license RN

programs are more racially and ethnically diverse. The Southern California I region (Los Angeles/Ventura counties) is by far the largest and most diverse regional RN student body and the general population of Los Angeles County is, of course, the largest and most diverse in the state. RN programs draw a student body that is local. Considering how many individual programs exist and how widely geographically distributed programs are, most of the population that is interested in entering a pre-license RN program lives within a reasonable distance of one. The need to travel far outside one's community to receive the education is not related to lack of access to a local program, except in the least populous areas of the state.

Change in proportional representation over the past six years has been small at the state-level and in most regions. Although groups of non-White RN students in most regions of the state are growing more rapidly than the group of White students, the proportional effect is small because of the difference in absolute size. In 2001, every region of the state with the exception of the Los Angeles area had a RN student body that was predominantly White; and White students have continued to pursue RN education in large numbers. It is not surprising that proportional representation over the past six years looks to have changed very little.

### **Dentistry**

Data presented in this section are from the American Dental Association Survey of Dental Education (series). The race and ethnicity categories used in this section differ from preceding sections. They include White, Hispanic/Latino, African American, Asian and Native American.

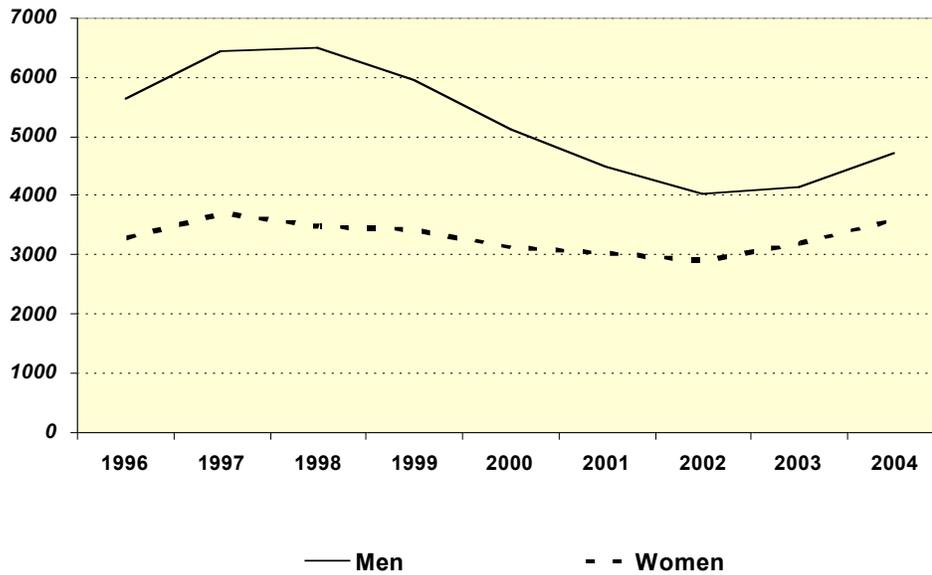
### **Applications**

Figures 32 through 34 present data describing applications<sup>27</sup> to California's Doctor of Dental Surgery (DDS) programs for the period 1996-2004. Total applications peaked in 1997 and then declined roughly 30% between 1997 and 2002, from more than 10,000 to just under 7,000. Since 2002 this trend has reversed itself and in 2004, total applications were roughly 85% of the 1997 level. More recent data would indicate whether applications have continued to increase.

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<sup>27</sup> Applications data describe total applications submitted, not an unduplicated count of individual applicants.

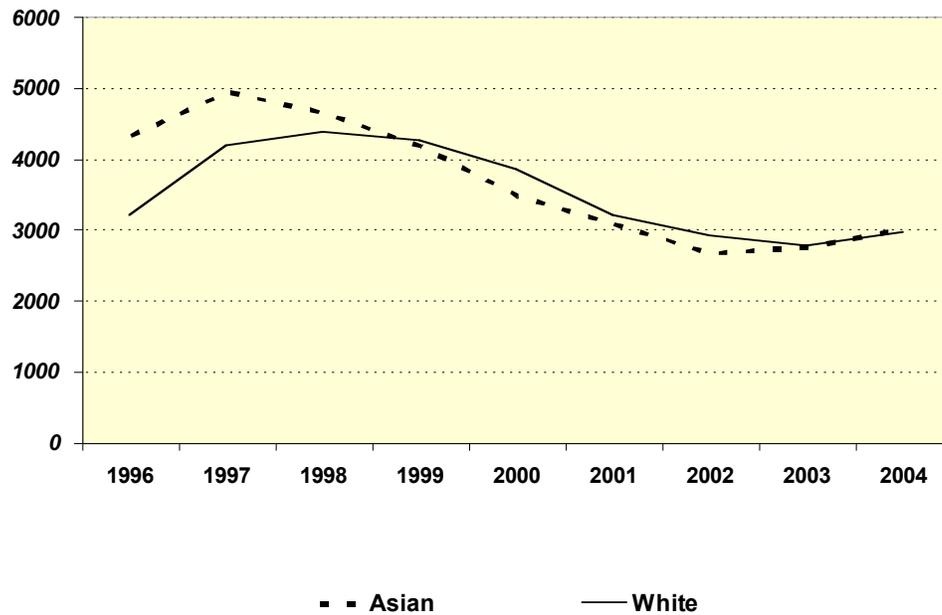
**Figure 32. Composition of Applications to California's Doctor of Dental Surgery (DDS) Programs by Gender: 1996-2004**



Source: American Dental Association, Annual Report on Dental Education

The number of applications from women did fall slightly in the period 1997-2002. However, 73% of the overall decline in applications in the period 1997-2002 is the result of fewer applications from men.

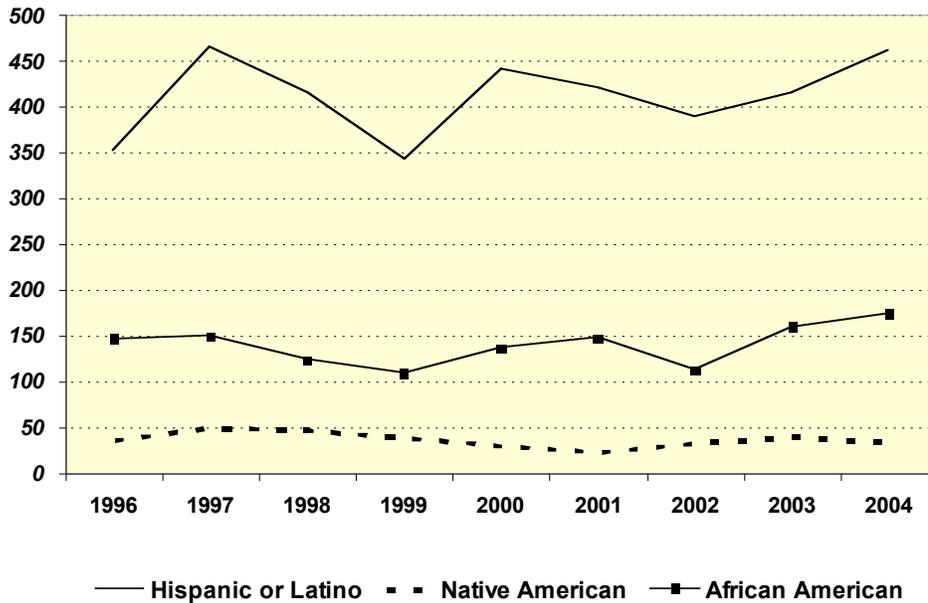
**Figure 33. Asian and White Applications to California's Doctor of Dental Surgery (DDS) Programs: 1996-2004**



Source: American Dental Association, Annual Report on Dental Education

The above figure shows that the number of applications from both Asian students and White students declined substantially in the period 1997 – 2002 and has been flat since. Therefore we can assume that the overall decline in applications in this period was driven by Asian and White men.

**Figure 34. Hispanic/Latino, African American and Native American Applications to California’s Doctor of Dental Surgery (DDS) Programs: 1996-2004**



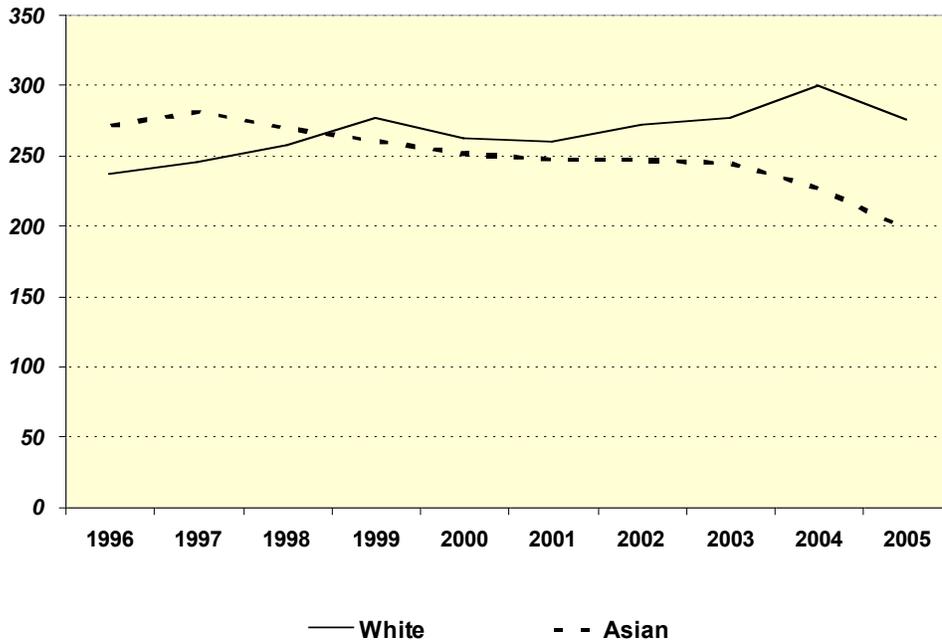
Source: American Dental Association, Annual Report on Dental Education

Hispanic/Latino applications have fluctuated between 350 and 450 per year over the period 1996 – 2004. The trend is upward since 2002, though more recent data are needed to determine whether this has continued or whether it is simply the upswing of another cycle in a fluctuating pattern in this same range of 350-450 applications per year. A similar pattern describes the data for African American applications, which have fluctuated between 125 and 150 per year in the period 1996-2002, but were slightly higher in 2003 and 2004. Again, more recent data are needed to see if any real upward trend is beginning. Applications to California’s DDS programs from Native American applicants are very small in number and in the period 1996-2004 have fluctuated within the narrow range of 25-50 per year.

**Enrollments**

The data in figures 35 and 36 describe first-year enrollments at Doctor of Dental Surgery (DDS) programs in California for the period from 1996-2005. Total first-year enrollments in this period have fluctuated narrowly in the range of 550-560 per year.

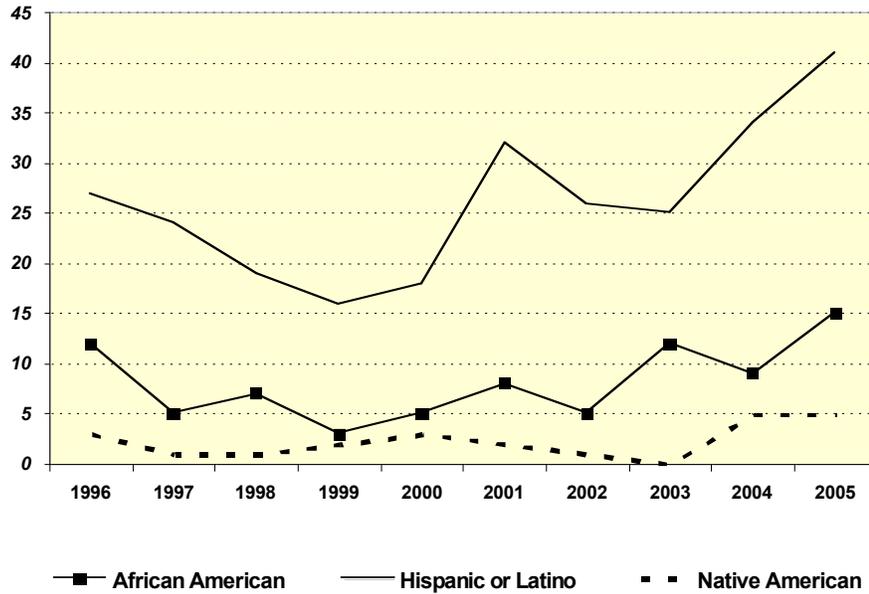
**Figure 35. Asian and White First-year Enrollment in California’s Doctor of Dental Surgery (DDS) Programs: 1996-2005**



Source: American Dental Association, Annual Report on Dental Education

As applications to California’s DDS programs from Asian students declined between 1997 and 2004, Asian first-year enrollments also declined. The effect is that the proportion of Asian first-year enrollments fell from 49.4% of the total in 1996 to 37.1% in 2005. Although applications from White students declined every year between 1997 and 2004, first year enrollments have steadily increased in this same period. In 1995, White students accounted for 43% total first-year enrollment, but 52% in 2005. In some combination, White and Asian students accounted for upwards of 90% of first year enrollments in period 1996-2005.

**Figure 36. Hispanic/Latino, African American and Native American First-year Enrollment in California’s Doctor of Dental Surgery (DDS) Programs: 1996-2005**



Source: American Dental Association, Annual Report on Dental Education

The pattern for Hispanic/Latino first-year enrollments in California’s DDS programs resembles the pattern for applications; a downturn in applications results in a downturn in enrollments and vice versa. The 40 first-year student enrollments in 2005 is the highest total in the last 10 years. Still, it’s important to recognize that Hispanic/Latino first-year enrollments represent just 5-7% of the overall total.

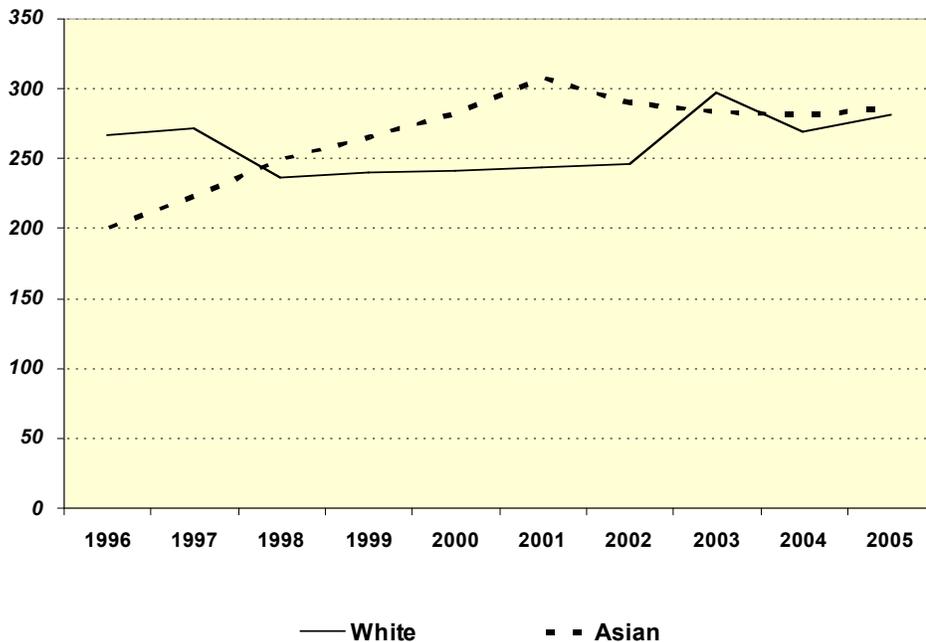
Similarly, the trend for African American first-year enrollments resembles the pattern seen in applications. The total fluctuates between 5-15 students per year, which is 1-3% of the total. There appears to be a very small upward trend beginning in 2002, which is also true for applications. Data for future years will confirm whether the trend is sustaining, or simply the upward portion of the fluctuating cycle.

The very small number of applications to California’s DDS programs from Native American students is reflected in the tiny number of first-year enrollments, 1-5 students per year between 1996 and 2005. This translates into 0.2-0.9% of the total.

## Graduates

Figures 37 and 38 present data for graduates of California's Doctor of Dental Surgery programs for the period 1996-2005. The total number of graduates increased in this period from roughly 500 students per year to roughly 600 per year. This may be the result of enrollment increases that took place at some point prior to 1996.

**Figure 37. Asian & White Graduates of California's Doctor of Dental Surgery (DDS) Programs: 1996-2005**

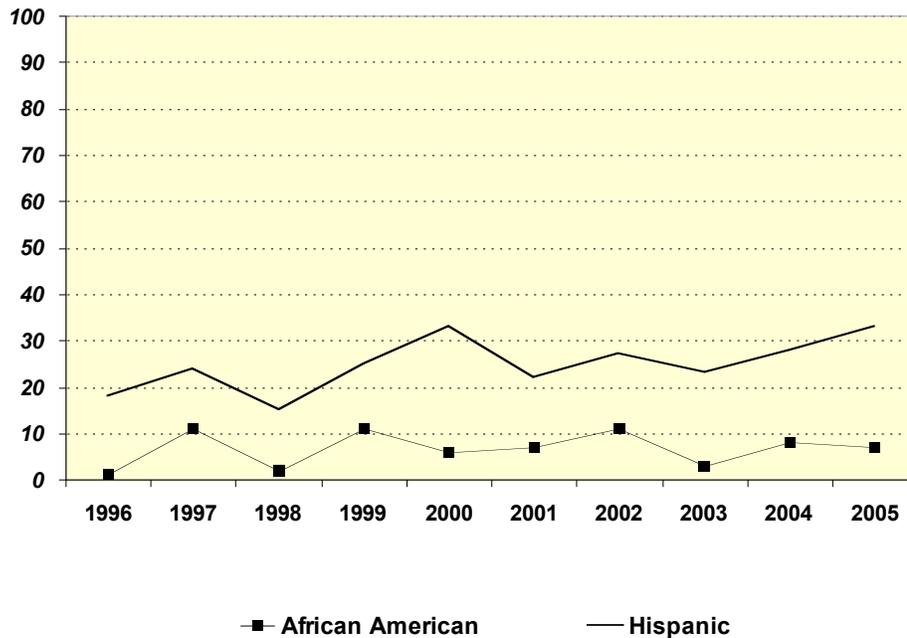


Source: American Dental Association, Annual Report on Dental Education

The number of Asian students graduating from California's DDS programs increased steadily between 1996 and 2001. Although we do not have data that describe first-year enrollments prior to 1996, it is a reasonable assumption that in the early 1990s Asian first-year enrollments substantially increased. This would explain the significant upward trend in Asian graduates. Since 2001 the trend is slightly downward, which is a reflection of declining Asian first-year enrollments.

The trend for White students graduating from California's DDS programs reflects the trend in first-year enrollments. The increase in enrollments looks to be appearing in 2002. The earlier years of the period shown in this figure would reflect enrollments for years in which we did not have data.

**Figure 38. Hispanic/Latino & African American Graduates of California’s Doctor of Dental Surgery (DDS) Programs: 1996-2005**



Source: American Dental Association, Annual Report on Dental Education

The number of Hispanic/Latino students graduating from California’s DDS programs has fluctuated between 20 and 30 students in the period 1996 to 2005. The number of African American graduates from California’s DDS programs has fluctuated between 1 and 10 students during this period. To some extent these patterns reflect trends in enrollments, but the fluctuations may also reflect students taking longer to complete the program. The number of Native American graduates from California’s DDS programs is tiny and is not shown in the figure above. In most years there is only a single graduate, in some years there are none.

### Summary of Dentistry Education in California

Beginning in 1997 and continuing until 2002, the number of applications to California’s Doctor of Dental Surgery (DDS) programs steadily decreased. Between 1997 and 2002, total applications dropped 32.5%. Almost the entire decline is due to a drop in the number of applications from Asian and White men. However, this trend has reversed itself in recent years. The racial and ethnic composition of the applicant pool for California’s DDS programs has shifted over the past decade. In the middle of the 1990s, Asian students were the largest racial and ethnic group in the applicant pool for California’s DDS programs. However, following several years of declining numbers of applications, Asian students and White students were applying to California’s DDS programs in roughly equal numbers. Combined, these two groups account for 90% of the total number of applications.

Among Hispanic/Latino and African American students, the trend in applications shows a pattern that fluctuates. Hispanic/Latino applications represent roughly 5-7% of the total in any given year. Applications from African American students represent roughly 1-3% of the total in any given year. Native American applications number between 25-50 per year and account for roughly 0.5% of the total. Beginning in 2002, applications from both Hispanic/Latino and African American students began to increase; more recent data would indicate whether this is an upward trend or simply the upward cycle of the fluctuating pattern.

To some extent, enrollments in California's Doctor of Dental Surgery programs resemble the patterns seen for applications, with the major exception being that enrollments did not significantly decline between 1997 and 2002. In some combination, Asian and White students have formed upwards of 90% of first-year enrollments. In the mid 1990s, Asians were the larger group of the two. By 2005, however, first-year White students (275) far outnumbered first-year Asian students (198).

The patterns seen in applications and first-year enrollments among Hispanic/Latino, African American and Native American students are similar. Hispanic/Latino first-year enrollments have fluctuated narrowly between 3-5% of the total and first-year African American enrollments have fluctuated between 1-2% of the total. In recent years the number of Hispanic/Latino first-year enrollments began increasing as have the number of African American first-year enrollments. However, more recent data would indicate whether these upward trends are sustaining. Native Americans are largely absent from DDS programs. There are typically 2 or 3 first-year enrollments in any given year. Overall, non-White/non-Asian enrollment in California's DDS programs is tiny. However, for the first time in a decade in 2005, it surpassed 10% of total first-year enrollment due to the small increase in the number of Hispanic/Latino students.

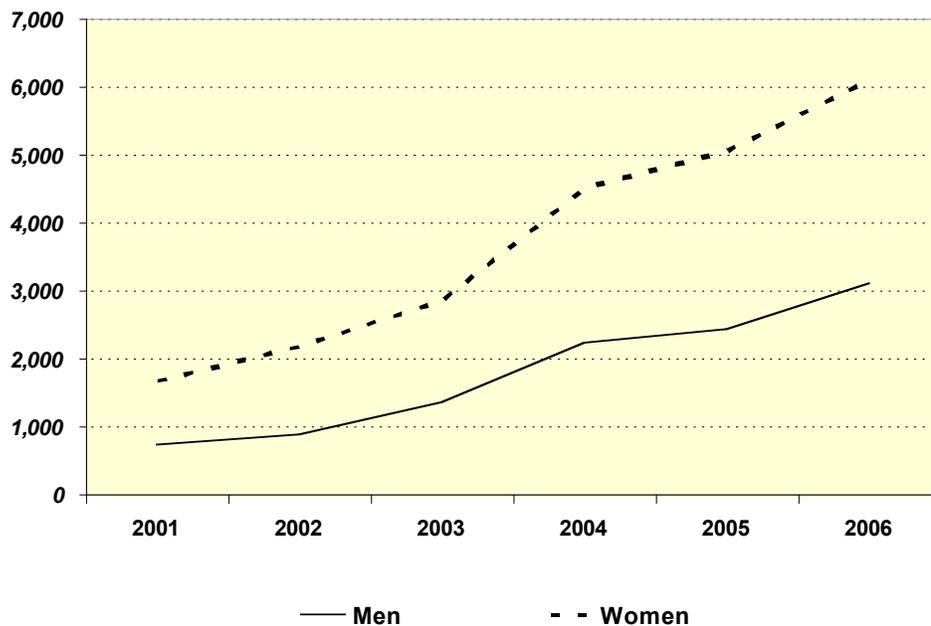
## **Pharmacy**

Data in this section are from the American Association of Colleges of Pharmacy, *Profile of Pharmacy Students* (series).

### **Applications**

Details on the race and ethnicity of applicants are not available. Total applications grew significantly during this period, and roughly half of the growth is the result of the opening of three new programs: UC San Diego, Loma Linda and Touro University. However, applications also grew rapidly at the established programs during this period. Figure 39 presents data describing applications to California's Doctor of Pharmacy (PharmD) programs by gender between 2001 and 2006.

**Figure 39. Total Applications to California's Doctor of Pharmacy Programs (PharmD) by Gender: 2001-2006**



Source: American Association of Colleges of Pharmacy, Profile of Pharmacy Students

Applications from men grew more rapidly between 2001 and 2006 compared with women, growing more than 300% (from roughly 750 to 3100). However, the number of applications from women also increased significantly during this period (roughly 250%) and the ratio of women to men in terms of total applications has remained roughly 2:1 over the past six years.<sup>28</sup>

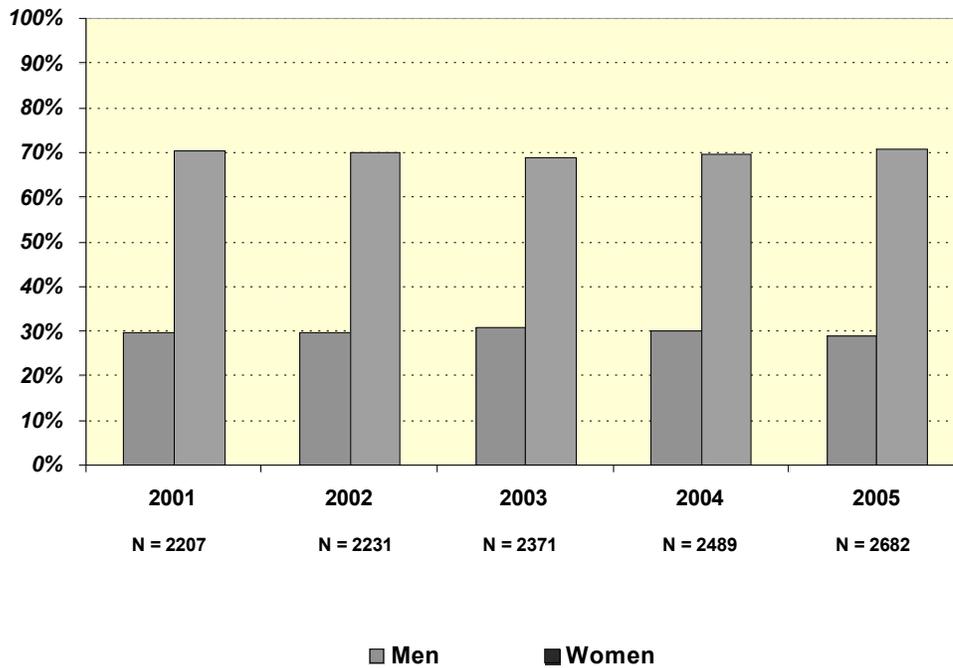
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<sup>28</sup> The data describe total applications and not an unduplicated count of applicants.

## Enrollments

Figures 40 through 42 describe total enrollment at California's PharmD programs between 2001 and 2005 (data for 2006 are not available).

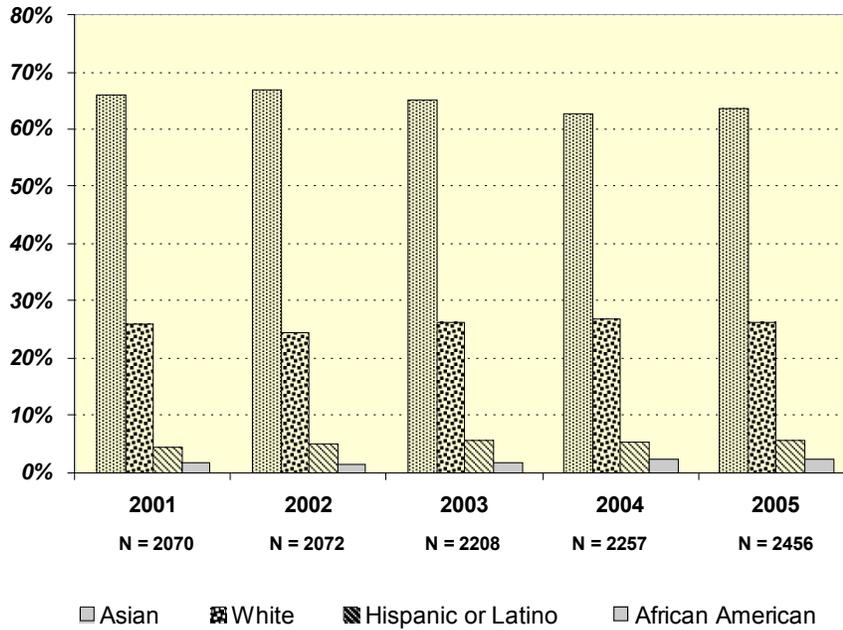
**Figure 40. Total Enrollment in California's PharmD Programs by Gender: 2001-2005**



Source: American Association of Colleges of Pharmacy, Profile of Pharmacy Students

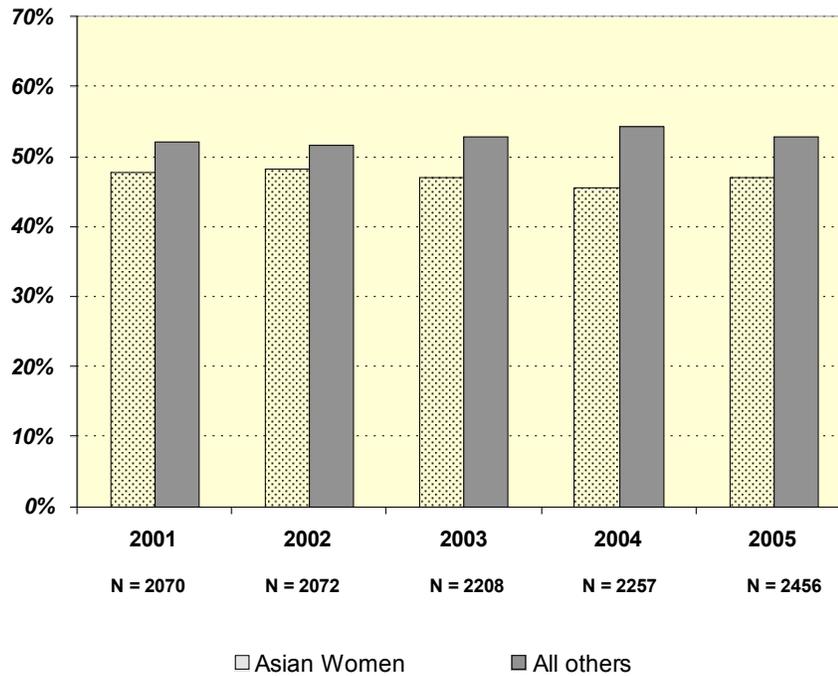
Students enrolled in California's PharmD programs are predominantly women, representing roughly 70% of total enrollment. The ratio of women to men is slightly greater than 3:1, compared to the roughly 2:1 ratio of women to men in total applications.

**Figure 41. Total Enrollment in Doctor of Pharmacy (PharmD) Programs by Race/Ethnicity: 2001-2005**



Students enrolled in California’s PharmD programs are predominantly Asian, representing roughly 65% of total enrollment each year. In combination, Asian and White students form upwards of 90% of all enrolled PharmD students. The number of enrolled Hispanic/Latino and African American students enrolled in California’s PharmD programs is very small. In 2005, there were roughly 140 Hispanic/Latino students enrolled in PharmD programs, up from roughly 90 in 2001. In terms of proportional representation, this is an increase of about 1.5%. For African American students the numbers are even smaller. In 2005, approximately 60 African American students were enrolled in California’s PharmD programs, up from 30 in 2001. The number of enrolled Native American students is also very small. In 2005 there were 15, which is 0.6% of total enrollment. They are not shown in the above figure.

**Figure 42. Asian Women Enrollment in California's Doctor of Pharmacy (PharmD) Programs: 2001-2005**



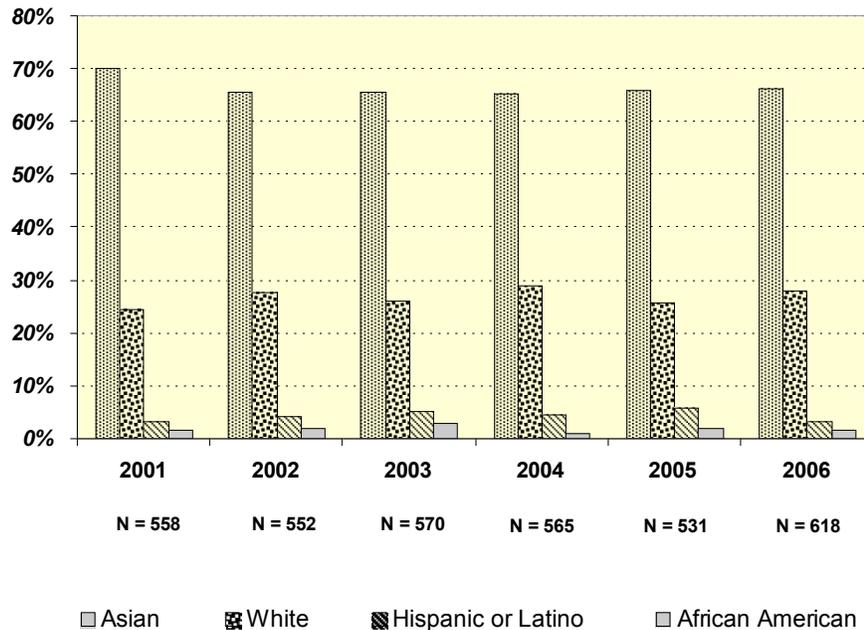
Source: American Association of Colleges of Pharmacy, Profile of Pharmacy Students

Asian women are heavily represented in the pharmacy profession in California. Nearly half of the students enrolled in California's PharmD programs are Asian women. This trend has been evident for several years.

## Graduates

Figure 43 presents data describing the racial and ethnic composition of graduates of California's Doctor of Pharmacy (PharmD) between 2001 and 2006.

**Figure 43. Graduates of California's Doctor of Pharmacy (PharmD) Programs by Race/Ethnicity: 2001-2006**



Source: American Association of Colleges of Pharmacy, Profile of Pharmacy Students

Proportional representation by race and ethnicity in California's PharmD programs has been static for the past six years. The data describing graduates reflect the patterns seen in the data describing total enrollment. Graduates are predominantly women and predominantly Asian. In combination, White and Asian graduates account for upwards of 90% of the total number of graduates.

As with total enrollment, Hispanic/Latino graduates represent roughly 5-6% of the total, which is approximately 25-30 per year. The number of African American graduates is even fewer at roughly 10 per year (2% of the total). Native American graduates number 1 or 2 per year.

## **Summary of Pharmacy Education in California**

There are now seven Doctor of Pharmacy (PharmD) programs in the state. Two of these programs enrolled their inaugural classes in 2003 and a third in 2005. Total applications to the state's PharmD programs have increased significantly over the past six years. The opening of these three new programs explains roughly half of this growth, which means that applications received by four established schools also grew rapidly between 2001 and 2006. Total enrollment expanded during this period as a result of the three new programs, while at the state's four established programs,<sup>29</sup> enrollment has not expanded much, if at all. Proportional representation by race and ethnicity in California's PharmD programs has been static for past six years. Asian and White students combined represent upwards of 90% of the student body.

## **Psychology and Social Work Education in California**

The following figures present data describing graduates of master's and doctoral level programs in psychology and master's level programs in social work at both public and private institutions in California. The source of the data is IPEDS.

### **Psychology**

Data describing the education of mental health professionals are limited. In this section we present analysis of reported graduates of programs in general, clinical, and counseling psychology at both the master's and PhD levels. We assume that these programs are a likely source of professionals who would enter into practice in fields of mental health. We included data reported for graduates of general psychology programs because most schools that offer clinical and counseling programs simply report student data using the generic category of general psychology. While this is an imprecise method, it offers a crude estimate of the potential educational pipeline for mental health professionals.

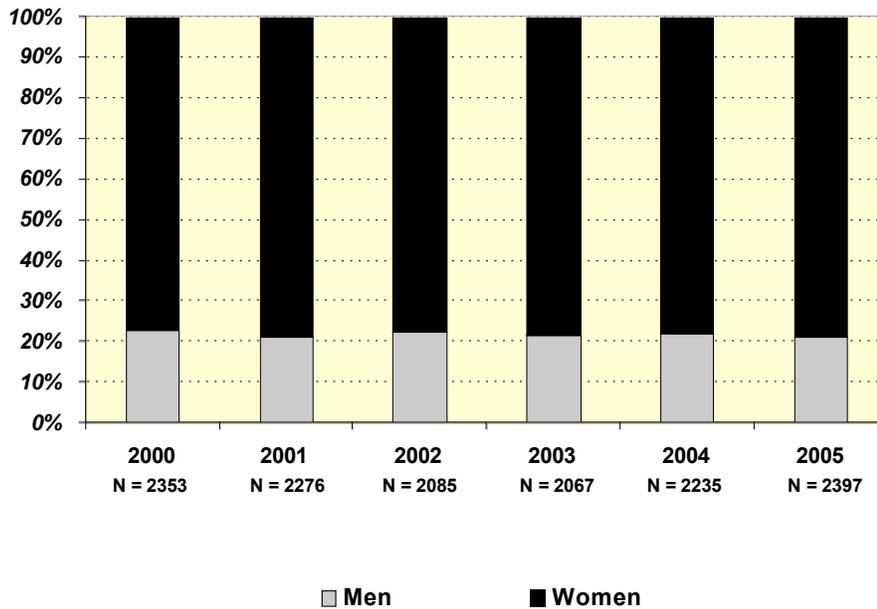
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<sup>29</sup> The four "established" schools of pharmacy are: USC, UC San Francisco, University of the Pacific, and Western University of Health Sciences. UC San Diego and Loma Linda enrolled their inaugural classes in 2002; Touro University in 2005.

## Master's Level Programs

Figures 44 and 45 present data describing graduates of master's level programs in general, clinical and counseling psychology programs between 2000 and 2005. The number of programs annually reporting data ranges from 55 to 60 during this period. While we are not certain how many programs there are in the state, we believe that these data are representative.

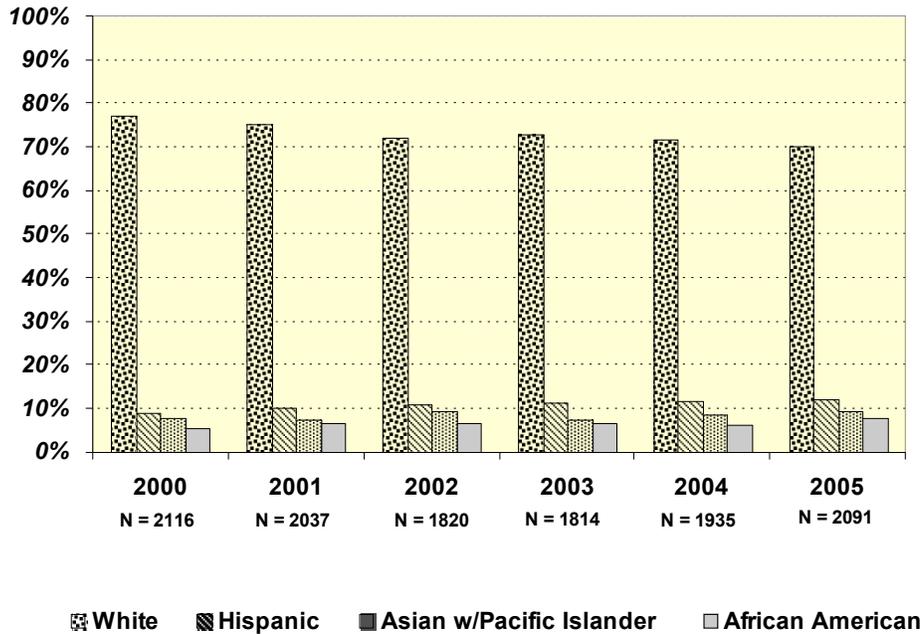
**Figure 44. Composition of Graduates of Master's Degree Programs in General, Clinical & Counseling Psychology by Gender: California 2000-2005**



Source: Integrated Postsecondary Education Data System (IPEDS)

At least since 2000, graduates of master's level programs in general, clinical and counseling psychology have been predominantly women (approximately 70%). This mirrors estimates of the gender composition of the current workforce, where roughly 72% of those working as psychologists and trained at the master's level or higher, are women.

**Figure 45. Composition of Graduates of California’s Master’s Degree Programs in General, Clinical & Counseling Psychology by Race/Ethnicity: California 2000-2005**



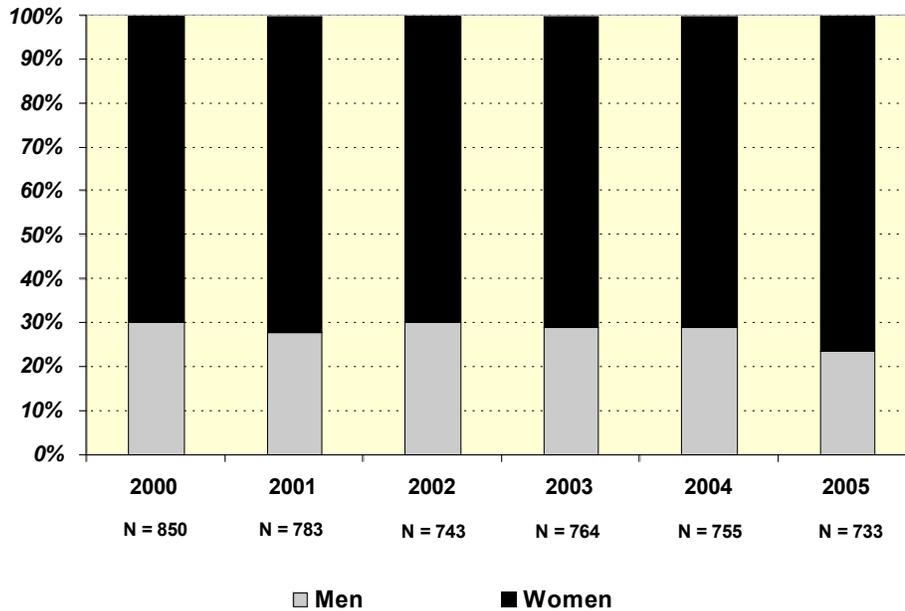
Source: Integrated Postsecondary Education Data System (IPEDS)

Graduates of general, clinical and counseling psychology programs at the master’s level between 2000 and 2005 were predominantly White. However, proportional representation by race and ethnicity is shifting slightly. Annual numbers of Hispanic/Latino, Asian and African American graduates all increased slightly during this period, while the number of White graduates declined slightly. In 2000, White graduates represented 77% of the total, however this dropped to 70% of the total in 2005. The number of Native American graduates is very small, ranging from 0.6-1.2% of the total between 2000 and 2005.

## Doctoral Level Programs

Figures 46 and 47 present data describing graduates of doctoral level programs in general, clinical and counseling psychology programs between 2000 and 2005. The number of programs reporting data ranges from 29 to 32 during this period. While we aren't certain how many programs there are in the state, we believe that these data are representative.

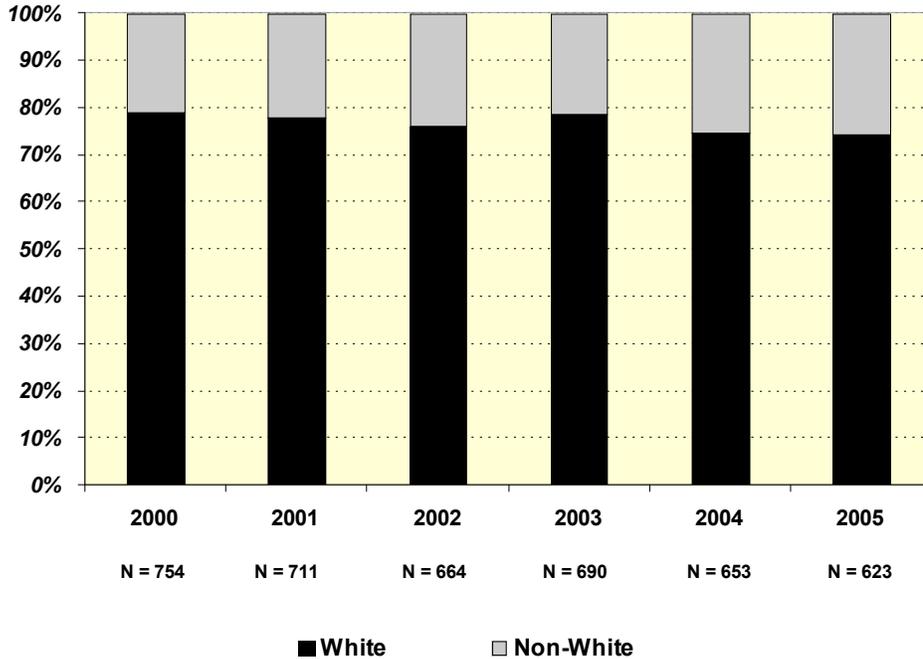
**Figure 46. Composition of Graduates of Doctoral Degree Programs in General, Clinical & Counseling Psychology by Gender: California 2000-2005**



Source: Integrated Postsecondary Education Data System (IPEDS)

At least since 2000, graduates of master's level programs in general, clinical and counseling psychology have been predominantly women (approximately 70-75%). This mirrors estimates of the gender composition of the current workforce, where roughly 72% of those working as psychologists and trained at the master's level or higher, are women.

**Figure 47. Composition of Graduates of Doctoral Degree Programs in General, Clinical & Counseling Psychology by White v. Non-White Race/Ethnicity: California 2000-2005**



Source: Integrated Postsecondary Education Data System (IPEDS)

Graduates of general, clinical and counseling psychology programs at the doctoral level between 2000 and 2005 were predominantly White. However, proportional representation by race and ethnicity is shifting slightly. Annual numbers of graduates from all non-White groups are very small and have been stable since 2000. The number of White graduates has been declining. In 2000, White graduates represented 79% of the total but this dropped to 74% of the total in 2005.

**Summary of Selected Psychology Education in California**

Graduates of programs in general, clinical and counseling psychology at both the master’s and doctoral levels are predominantly women and predominantly White. The gender composition is roughly the same at both degree levels; the racial and ethnic composition is slightly less diverse at the doctoral level. The annual number of non-White graduates at the master’s level has been increasing slightly since 2000 and proportional representation by race and ethnicity has shifted very slightly. At the doctoral level proportional representation has also shifted slightly, but that this is due to declining numbers of White graduates as opposed to increasing numbers of non-White graduates.

These data represent only one group of professionals who may provide mental health services. The usefulness of these data is limited in that it does not indicate the

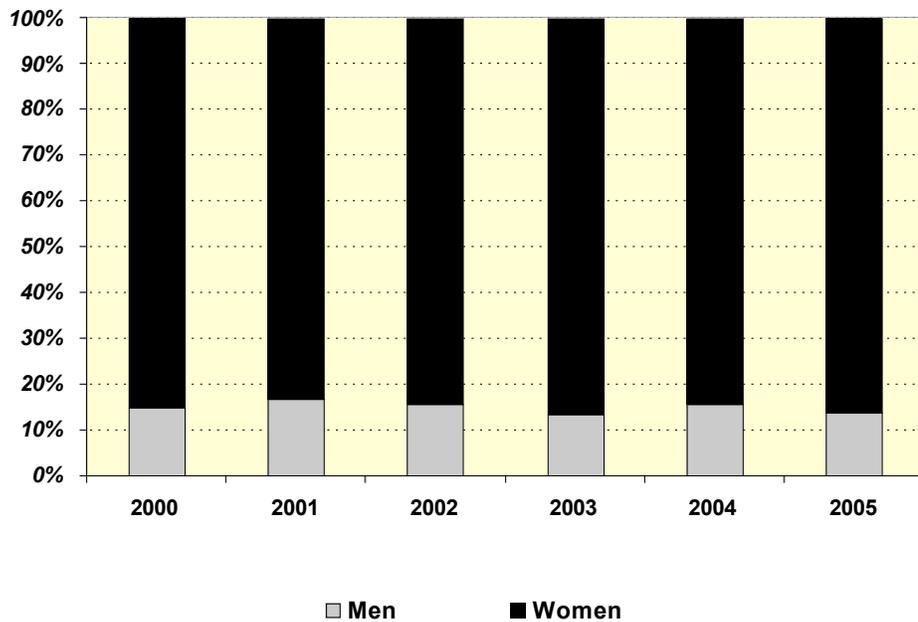
proportion of these graduates who will work in mental health. They afford only a general and partial impression of the potential pool of mental health professionals.

### **Social Work**

In this section we present analysis of reported graduates of master’s in social work (MSW) programs. These programs are another possible source of professionals who might enter into practice in fields of mental health. As noted above, this is an imprecise method of capturing the educational pipeline for the mental health workforce. While some proportion of the graduates coming out of California’s MSW programs are likely to go to work as mental health professionals, there are no data indicating what that proportion is.

Figures 48 and 49 present data describing graduates of master’s in social work (MSW) programs in California between 2000 and 2005. The total number of students graduating annually from MSW programs has been increasing in recent years, from roughly 1,200 in the year 2000 to roughly 1,400 in 2005. This is the result of additional programs. In 2000 there were 13 programs reporting graduates, by 2005 the number of programs had increased to 17. The four new programs are in the California State University system.

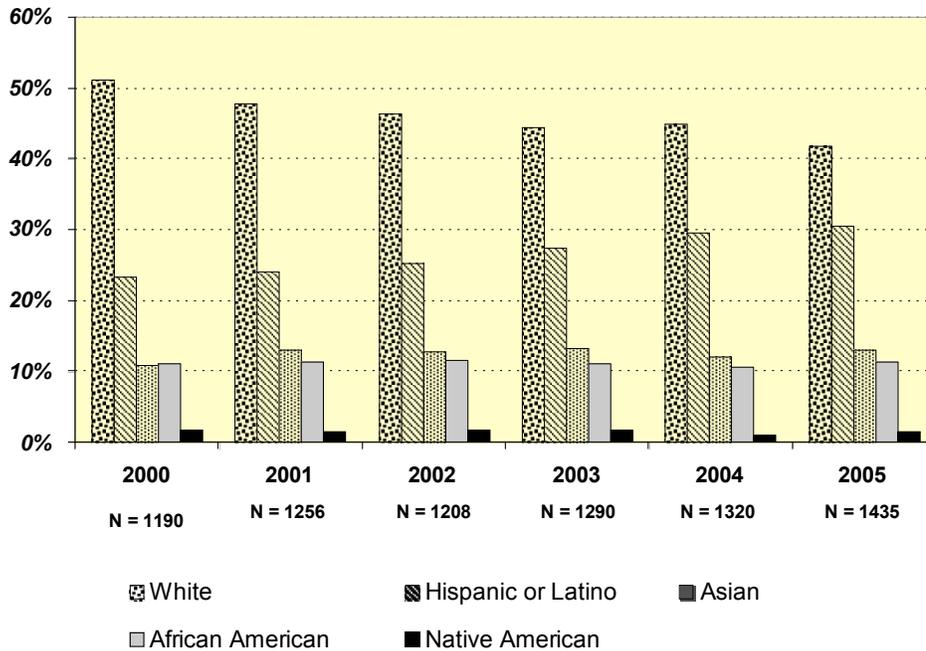
**Figure 48. Composition of Graduates of Master’s in Social Work Programs by Gender: California 2000-2005**



Source: Integrated Postsecondary Education Data System (IPEDS)

Roughly 85% of the graduates of MSW programs each year are women. This proportional representation was stable between 2000 and 2005. This is actually a greater concentration of women compared to the 2005 estimate of the gender composition of the current social work workforce. Women represent approximately 77% of current social work professionals who hold a master’s degree or higher.

**Figure 49. Composition of Graduates of Master’s in Social Work Programs by Race/Ethnicity: California 2000-2005**



Source: Integrated Postsecondary Education Data System (IPEDS)

Proportional representation by race and ethnicity has been shifting since 2000. This is being driven by increasing numbers of Hispanic/Latino graduates and decreasing numbers of White graduates. Between 2000 and 2005, the proportion of White MSW graduates declined from 51% of the total to 42% of the total, while Hispanic/Latino graduates grew from 23% to 31% of the total. The annual number of Asian and African American graduates has been increasing, but at a rate that has kept their respective proportions stable over this period. The number of Native American graduates is small, roughly 20 each year. However, this does represent roughly 1.5-2.0% of the total, which is a substantially larger proportion compared with Native American representation in the general population.

## Summary of Master's in Social Work (MSW) Education in California

The vast majority of MSW programs and graduates are represented in the California State University system; with 13 of the 17 programs and 67% of the total number of reported graduates. Graduates of MSW programs are predominantly women, representing roughly 85% of the annual total between 2000 and 2005. The greater concentration of women in the education programs as compared to the social work workforce may mean that some women do not tend to stay in the workforce or that men employed in the social work workforce have possibly been educated in another field. The racial and ethnic composition of MSW graduates is shifting. In the past six years, the annual number of Hispanic/Latino graduates has increased by roughly 48%, and in 2005 represented more than 30% of the total number of graduates. In this same period, the proportional representation of White graduates declined.

As with data describing graduates of psychology programs, these data are a crude instrument for evaluating the education pipeline for mental health professionals because there is no indication as to what proportion of these MSW graduates work in mental health.

### **Public Health**

Data describing applications and enrollments in this section are from the Association of Schools of Public Health *2005 Annual Data Report*. Data describing graduates are from the Integrated Postsecondary Education Data System (IPEDS).

The public health workforce encompasses a wide range of professionals from clinicians to administrators to policy analysts and planners. Because of the range of skills needed, the public health workforce likely represents a variety of educational backgrounds. We selected master's level programs in public health (MPH) based on data availability.

There are 12 programs in the state that offer the MPH degree, producing roughly 600-650 graduates annually for the past several years. Four of the programs represent schools of public health; the other eight are graduate programs in public health.<sup>30</sup> UC Berkeley and UCLA train roughly half of all students pursuing master's level public health education in California.

Formal masters' programs in public health offer a range of concentrations including epidemiology, biostatistics, public health practice, health services administration, health education/behavioral science, environmental science, public health nutrition, international health and laboratory sciences. Roughly two out of every three MPH students pursue training in one of three concentrations areas: health services

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<sup>30</sup> The schools of public health are UC Berkeley, UCLA, Loma Linda University and San Diego State. The master's programs are CSU Fresno, CSU Long Beach, CSU Northridge, San Francisco State, San Jose State, USC, University of San Francisco and UC Davis.

administration, health education/behavioral sciences, and epidemiology.<sup>31</sup> However, there is variation in concentrations among the different schools and programs. For example, both Loma Linda and the University of San Francisco have relatively large proportions of their respective student bodies pursuing training in the areas of public health practice and international health. Although data can be used to describe how graduates of public health programs are distributed across these different concentrations, there is no race and ethnicity detail at this level. Analysis of race and ethnicity is limited to the generic categories of applications, enrollments and graduates.

## **Applications**

Data describing applications to California's public health programs are limited to programs that are members of the Association of Schools of Public Health (ASPH) and include all applications to both the master's level and doctoral level programs.<sup>32</sup> Between 1995 and 2005, total applications experienced both growth and decline. There was a period of growth between 1995 and 1998, followed by three consecutive years of declining numbers (at all programs with the exception of UCLA). Since 2002, total applications have once again been growing in number. In 2005, total applications were up roughly 10% compared with 1995.

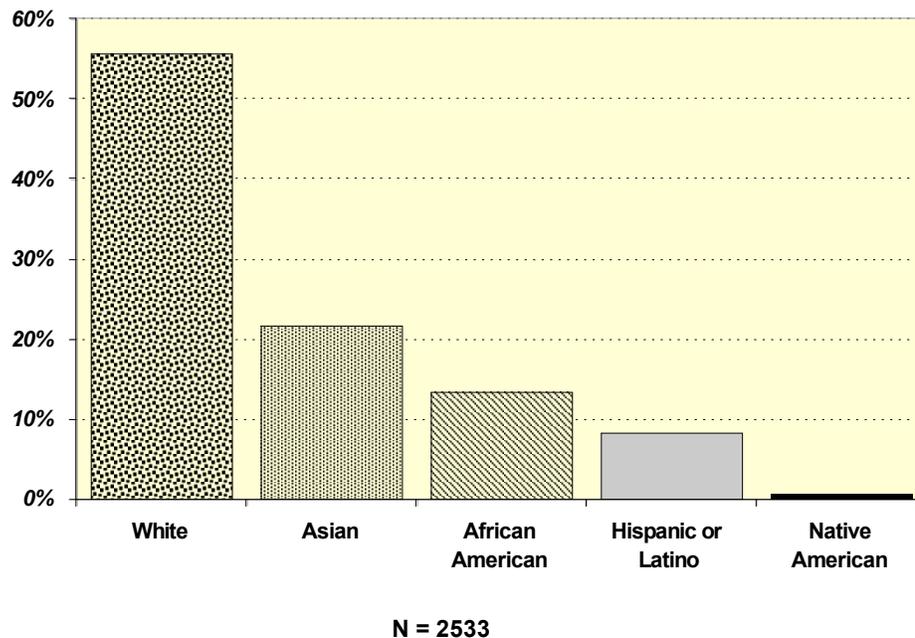
Data indicate that applications by women represent roughly 70-75% of the total and that this proportion has been consistent since at least 2001. Data also indicate that approximately 20% of applications come from non-U.S. citizens, significantly higher than any of the other education programs analyzed in this report. The proportion of applications accepted varies significantly by program. UC Berkeley is among the most competitive MPH programs in the country. In 2005 only 36% of applications were accepted, the smallest proportion reported by any school in the U.S. Other schools in California report accepting roughly 60-65% of applications. Figure 50 presents 2005 data describing applications by race and ethnicity at ASPH-member public health programs in California.

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<sup>31</sup> Association of Schools of Public Health. *2005 Annual Data Report*.

<sup>32</sup> The programs represented are: UC Berkeley, UCLA, Loma Linda, San Diego State, USC and University of San Francisco.

**Figure 50. 2005 Applications to ASPH-Member Public Health Programs in California by Race/Ethnicity**



Source: Association of Schools of Public Health 2005 Annual Data Report

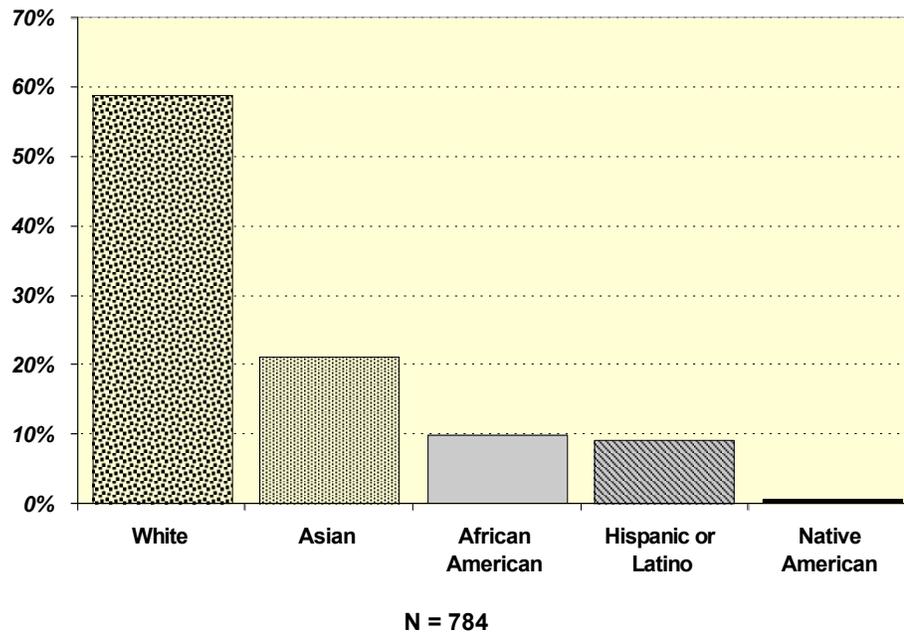
White (56%) and Asian (22%) applications represented roughly 78% of total applications to the selected public health programs in 2005. The number of Native American applications was fewer than 20. Analysis of data not shown here indicates that the proportional representation by race and ethnicity illustrated by the above figure has been consistent since at least 2001.

### **Enrollments**

As with applications, data describing first-year enrollment in California's public health programs are limited to ASPH-member programs and include enrollments in both master's level and doctoral level programs. The number of students enrolled has not changed much between 1995 and 2005, at least for the six programs represented by these data. There are year to year fluctuations in the size of new entering classes, but it does not appear that any of these programs are either expanding or declining. The exception is University of Southern California, where total enrollment has been declining since 1997.

Data indicate that women represent roughly 70-75% of new enrollments and that this proportion has been consistent at least since 2001. This mirrors the gender composition of total applications. Data also indicate that approximately 14% of new enrollments are non-U.S. citizens. This is a smaller proportion compared to applications (20%), but still notable in that it is significantly higher compared with the other education programs analyzed in this report where non-U.S. citizens typically represent less than 1% of the student body. Figure 51 presents 2005 data describing applications by race and ethnicity at the ASPH-member programs in California.

**Figure 51. 2005 New Enrollments at ASPH-Member Public Health Programs in California by Race/Ethnicity**



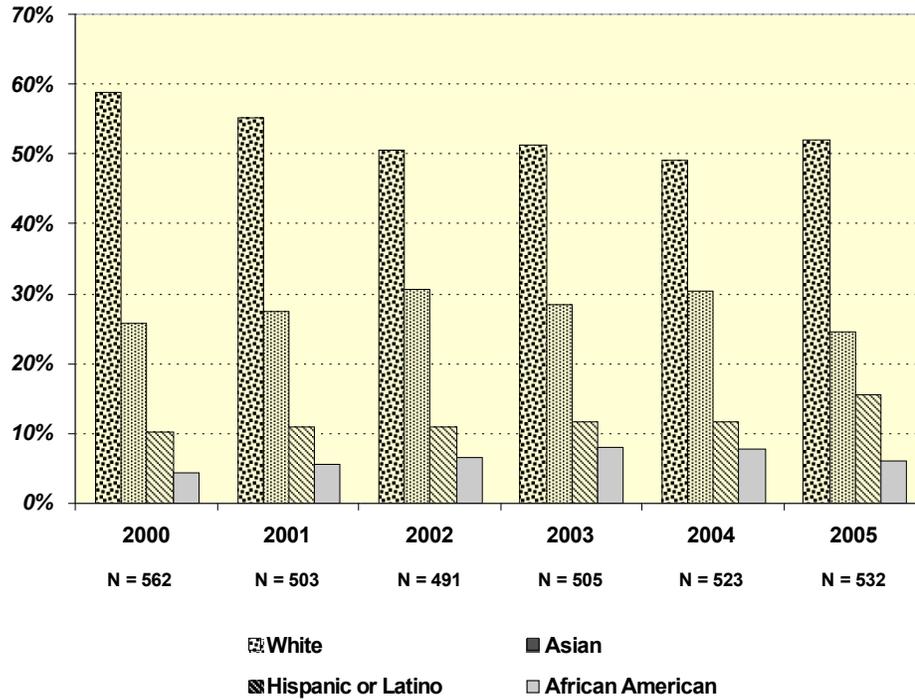
Source: Association of Schools of Public Health 2005 Annual Data Report

White and Asian new enrollments represented roughly 80% of new enrollments at the selected public health programs in 2005. This is a slightly higher proportion compared with applications (roughly 78%). African American new enrollments represented 10% of total new enrollments in 2005, which is comparatively smaller than the proportion of African American applications (13%). Hispanic/Latino new enrollments represented 9% of the total, which is slightly larger compared with Hispanic/Latino applications (8%). There were five Native American new enrollments in 2005. Analysis of data not shown here indicates that the proportional representation by race and ethnicity illustrated by the above figure has been consistent since at least 2001.

## Graduates

Figures 52 and 53 describe graduates of California MPH programs between 2000 and 2005. There are twelve MPH programs in the state, which currently produce between 600-650 graduates per year. The annual number of graduates has fluctuated during this period, but has generally increased due to the opening of additional MPH programs. Data not shown here indicate that the proportion of men graduating from the state's MPH programs began declining in the late 1990s. In 1997, approximately 32% of graduates were men; since 2000, the gender composition of MPH graduates has been roughly 75% women, 25% men.

**Figure 52. Composition of Graduates of California’s Master’s in Public Health Programs by Race/Ethnicity: 2000-2005**



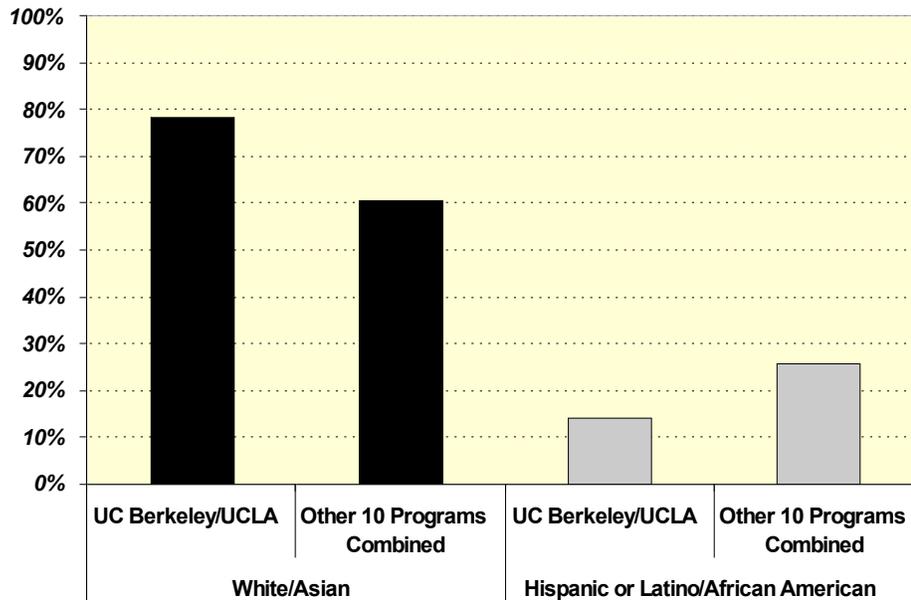
Source: Integrated Postsecondary Education Data System (IPEDS)

Proportional representation by race and ethnicity in California’s MPH programs shifted between 2000 and 2005. This was driven mainly by declining numbers of White graduates between 2000 and 2004. In 2005, the number of White graduates was up, as was the number of Hispanic/Latino graduates, while the number of Asian graduates fell. This is shown in the above figure as changes in the proportional representation of each. The number of African American graduates each year has been consistently between 30 and 40 per year. The number of Native American graduates is tiny; in some years there was only a single graduate.

Data describing graduates are not directly comparable with data on applications and enrollments. They are from two different sources and the universe of programs and students in each data set is different.<sup>33</sup>

<sup>33</sup> Data describing graduates come from the Integrated Postsecondary Education Data System (IPEDS). They represent all 12 MPH programs, and only MPH students. Data on applications and enrollments come from the Association of Schools of Public Health and represent only 6 of the state’s programs and describe both master’s and doctoral students.

**Figure 53. 2005 Composition of Master’s in Public Health Graduates by Institutional Group and by Race/Ethnicity: UC Berkeley/UCLA vs. Other Public Health Programs**



Source: Integrated Postsecondary Education Data System (IPEDS)

UC Berkeley and UCLA differ from the other MPH programs in proportional representation by race and ethnicity. The concentration of White and Asian graduates at the state’s two largest MPH programs is substantially greater compared to the other ten programs. In 2005, this difference was roughly 18%. Consequently, representation among Hispanic/Latino and African American graduates is much greater at these other ten MPH programs.

### Summary of Public Health Education in California

Public health professionals represent a diverse group of workers with diverse educational backgrounds. The data used in this report are quite limited in their ability to help identify sectors of employment for students who have graduated with an MPH degree. We expect that these students work in a broad range of fields including healthcare, social services, and environmental science. More research on MPH graduates and their career and employment decisions is needed before one can begin to understand issues of demographic diversity.

However, using IPEDS for information about MPH graduates and ASPH for information about applications and enrollment does provide a partial picture of student pipeline. Applications to public health programs have been increasing for the last several years, after a brief period of decline in the late 1990s and early part of this decade. Women represent roughly 75% of the applicant pool, which has been a consistent

proportion since the late 1990s. The proportion of applications that come from non-U.S. citizens (roughly 20%) is significantly higher than any of the other professions analyzed in this report. Proportional representation by race and ethnicity has been unchanged since at least 2001. In combination, White and Asian applications account for roughly 75-80% of the total.

Enrollment data closely resemble application data, with the exception that total enrollment was stable over the past decade. There are year-to-year fluctuations in the size of entering classes, but with the exception of USC (which has been declining in size) it does not appear that public health graduate programs are either expanding or declining. As with the pool of total applications, women represent roughly 70-75% of new enrollments each year. The proportion of non-U.S. citizen new enrollments (14%) is comparatively smaller than its representation among total applications (20%), but still notable in that it is significantly higher compared with the other education programs analyzed in this report where non-U.S. citizens typically represent less than 1% of the student body.

In combination, White and Asian students represent roughly 80% of new enrollments each year at the six schools reporting enrollment data to ASPH in 2005. This may be a slightly larger proportion by comparison with applications, but it is very close in size. African American new enrollments represent a smaller proportion of the total by comparison with total applications (10% of new enrollments versus 13% of total applications in 2005). Hispanic/Latino new enrollments represented 9% of total new enrollments in 2005, which is a slightly larger proportion by comparison with total applications (8%). The number of Native American students enrolling in California's graduate programs in public health is very small; in 2005 there were five new enrollments.

Despite year to year fluctuations, the annual total number of MPH graduates has been steadily increasing since 1995. This is due to the addition of new programs. From a gender perspective, women predominate in MPH programs. The proportion of graduates who are men has steadily fallen since the late 1990s. In recent years there has been a shift in the racial and ethnic composition of graduates driven mainly by declining numbers of White graduates. Still, graduates of MPH programs are predominantly White and Asian. In combination, these two groups account for roughly 70-75% of the total number of graduates each year. The concentration of White and Asian students in MPH programs appears to be significantly greater at the state's two largest programs: UC Berkeley and UCLA.

### **Allied Health: Respiratory Therapy and Radiography**

Data in this section are from IPEDS and the figures that follow display data describing graduates of respiratory therapy and medical radiography programs in California. The vast majority of these programs are concentrated in the California Community College system and all programs are offered at the associate degree or 2-year certificate level. Healthcare support occupations, which are part of the allied health professions, are not described in this section. This is because the institutions that offer

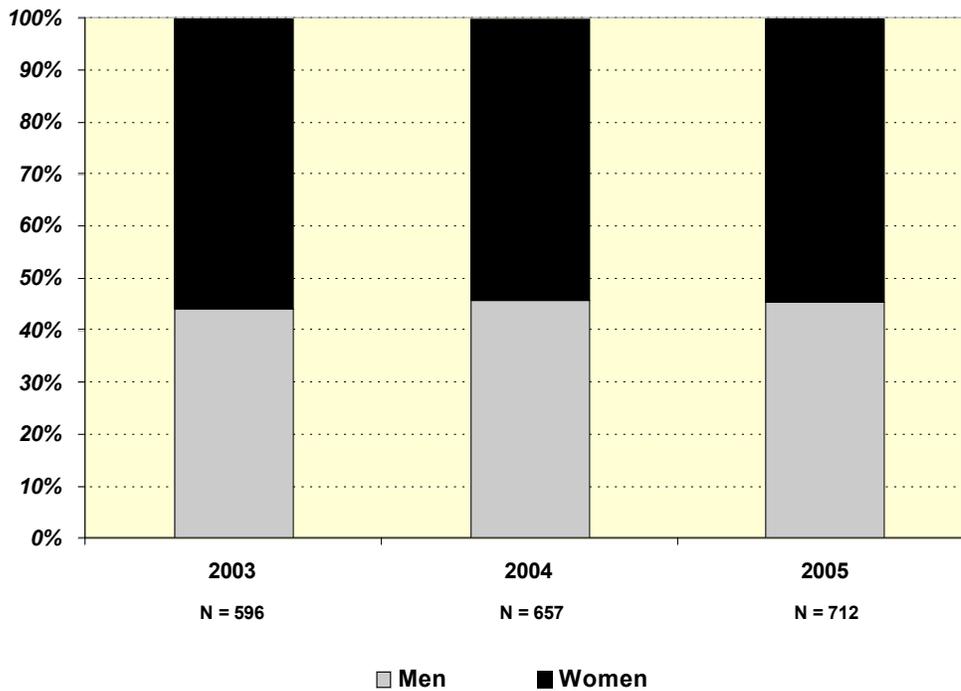
educational training for healthcare support occupations, in large part, do not consistently report student data through IPEDS or any other standardized reporting system.

### **Radiography**

Figures 54 and 55 describe graduates of medical radiography programs in California between 2003 and 2005. The graduates represented here are qualified to sit for the certifying exam sponsored by the American Registry of Radiologic Technologists. The exam functions as California's licensing exam. There are currently 34 Medical Radiography programs in California; 23 of these are community college programs. Programs in medical radiography are open to qualified high school graduates and are typically two years in length. Both a certificate and the associate's degree are commonly awarded. Data indicate that a certificate of completion is more frequently awarded than the associate's degree, but the difference is small.

Medical Radiography is the largest (in size) of the medical imaging professions. It is considered a point of entry into the broader field of radiologic technology. The primary task of medical radiographers (rad techs) is taking x-rays, however, they are almost always licensed to deliver fluoroscopic treatment and they frequently obtain post-primary certification and license to practice mammography, computed tomography and magnetic resonance imaging.

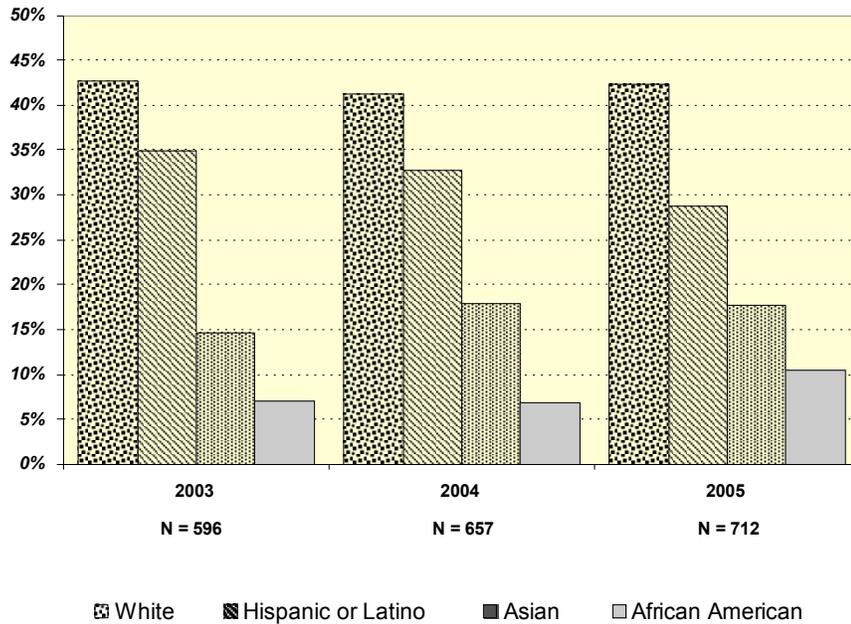
**Figure 54. Composition of Graduates of Medical Radiography Programs by Gender: California 2003-2005**



Source: Integrated Postsecondary Education Data System (IPEDS)

The gender composition of medical radiography graduates has been comparatively balanced in recent years; women represent roughly 55% of graduates, and men represent roughly 45% of graduates.

**Figure 55. Composition of Graduates of Medical Radiography Programs by Race/Ethnicity: California 2003-2005**



Source: Integrated Postsecondary Education Data System (IPEDS)

Data not shown here indicate that in the late 1990s and early part of the current decade, radiography programs were declining in size. This trend is reversing itself as evidenced by the above figure; in each year the number of reported graduates increases. This growth is being driven by increasing numbers of White, Asian and African American graduates, although the rate of increase has been greater among Asians and African Americans. Accordingly, proportional representation by race and ethnicity has shifted in recent years. Asian and African American graduates represent increasingly larger proportions of the total number of graduates, while the proportion of White graduates has remained consistent and the proportion of Hispanic/Latino graduates has declined. The number of Native American graduates is very small, ranging from 3-6 per year; this is roughly 0.5-1.0% of the total.

Workforce data presented earlier in this report indicated that the 57% of the broad occupational group diagnostic-related technologist workforce is White. By contrast, graduates of radiography programs in recent years have been much more diverse (roughly 43% White). However, these two groups are not directly comparable. Data that uniquely describes proportional representation by race and ethnicity of the current radiographer workforce are not available.

## **Summary of Medical Radiography Education in California**

The data presented here are for the years 2003-2005. The reason for including fewer years compared with other professions examined in this report is the lack of reliable data. Both the gender composition and racial and ethnic composition of radiography graduates is comparatively balanced. There have been small shifts in proportional representation by race and ethnicity over the past few years. The proportion of graduates who are White has remained consistent while the proportions of Asian and African American graduates have increased, and the proportion of Hispanic/Latino graduates has declined. The number of Native American graduates is very small, between 3 and 6 per year, which represents roughly 0.5-1.0% of the total.

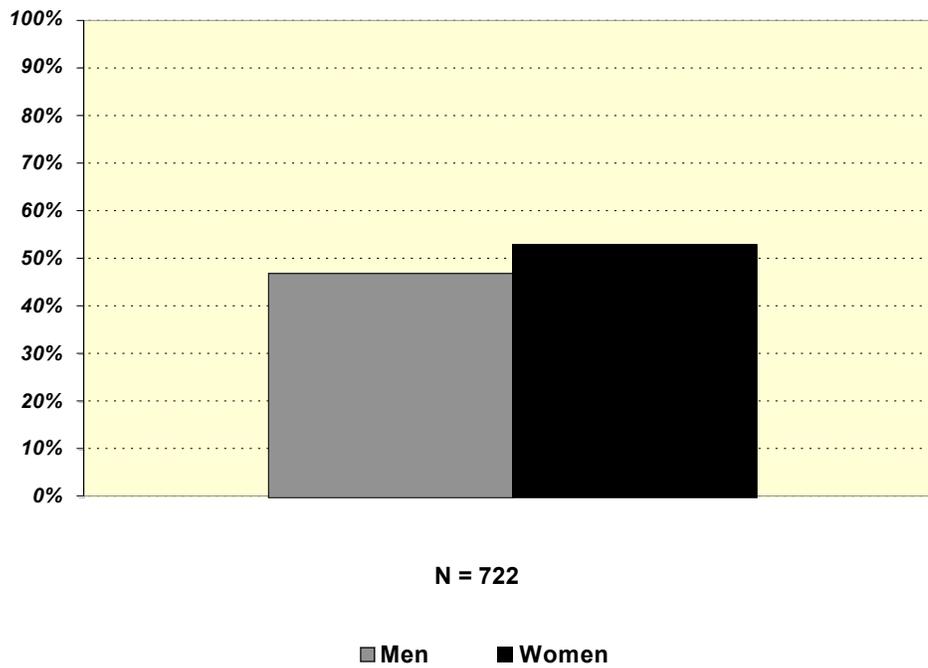
The field of radiography is relatively easy to enter if one meets the basic requirements. Public and private education programs are relatively well-distributed around the state. Although these limited data do not allow for a regional analysis, one might expect that the race and ethnicity of this workforce and student pipeline fairly closely mirror local populations.

### **Respiratory Therapy**

Figures 56 and 57 describe 2005 graduates of respiratory therapy programs in California. There are currently 33 Respiratory Therapy programs in the state. Roughly 50% of the programs are in the community college system, while the remaining half are nearly all private, for-profit, 2-year programs. There are two public, adult vocational programs.

Two distinct, primary credentials define the profession of respiratory therapy; the entry-level, certified respiratory therapist (CRT) and the advanced-level, registered respiratory therapist (RRT). Correspondingly, there are two levels of education programming: the entry-level program and the advanced-level program. Graduates of an entry-level program are eligible to take the CRT exam, but not the RRT exam. Graduates of an advanced-level program, after earning the entry-level CRT credential, are then eligible to take the RRT exam. According to the accrediting body responsible for oversight of respiratory therapy education, only five of California's 33 programs still offer the entry-level training. California law requires an associate's degree to receive license to practice respiratory therapy in the state.

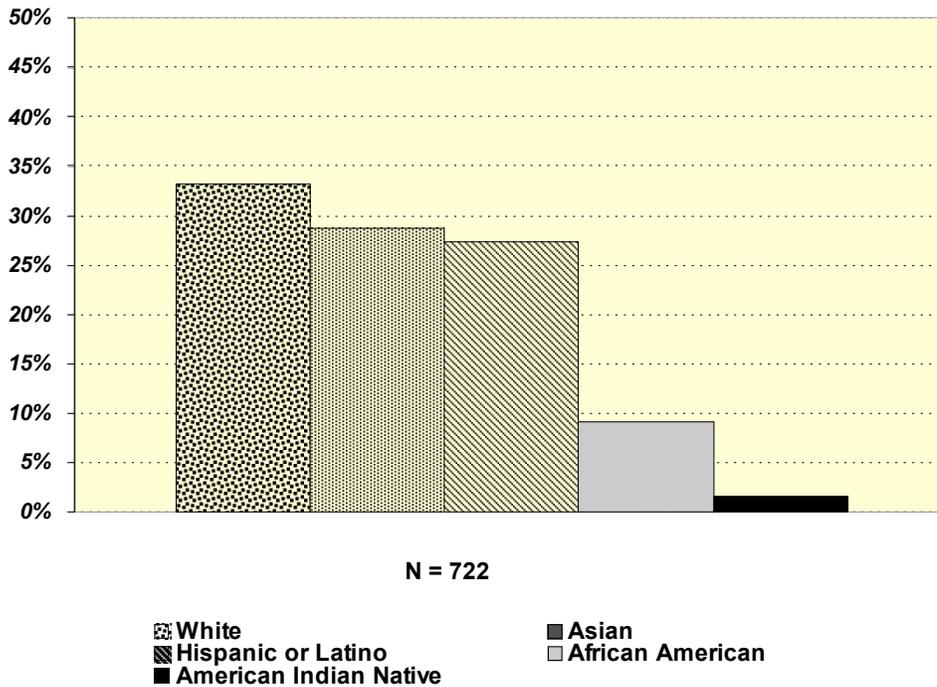
**Figure 56. 2005 Composition of Graduates of Respiratory Therapy Programs in California by Gender**



Source: Integrated Postsecondary Education Data System (IPEDS)

The gender composition of respiratory therapy graduates is comparatively balanced. In 2005, women represented roughly 53% of graduates; men represented roughly 47% of graduates.

**Figure 57. 2005 Composition of Graduates of Respiratory Therapy Programs in California by Race/Ethnicity**



Source: Integrated Postsecondary Education Data System (IPEDS)

Proportional representation by race and ethnicity was comparatively balanced among graduates of California’s respiratory therapy programs in 2005. Estimates of the current workforce indicate that well over half of practicing respiratory therapists are White (roughly 58%). By contrast, only a third of respiratory therapy graduates in 2005 were White.

**Summary of Respiratory Therapy Education in California**

Data describing respiratory therapy programs are limited to graduates and because of quality issues, only data from 2005 were used. Analysis of data not shown here indicates that total output from California’s respiratory therapy programs has fluctuated significantly over the past decade. These fluctuations are frequently attributed to state regulations introduced in 2000 requiring an associate degree for licensure. In the wake of regulatory changes, three respiratory therapy programs closed. However, in the past several years eight new programs opened. The lack of reliable data makes trend analysis of proportional representation by race and ethnicity impossible. However, assuming that data from 2005 is indicative of recent trends, the student body of respiratory therapy programs is currently much more diverse compared with the current respiratory therapy workforce.

## **VII. Summary of Findings**

### **Population Demographics**

The analysis presented in this report reveals a partial picture of the complex set of relationships that determine the demographic composition of California's health professions workforce. First, there is the state's population whose makeup is undergoing dramatic changes that one expects will significantly impact the health professions workforce. Although it will happen more or less quickly depending on geographic region, at some future point Hispanic or Latino Californians will become a majority group in the general population. Considering their comparatively young median age and high fertility rates among young women, if current trends continue uninterrupted, several decades from now 6 out of every 10 participants in the labor force could be Hispanic or Latino.

This phenomenon is joined by the aging of California's population. Twenty years from now, projections estimate there will be a million more people over the age of 80 and 4.5 million more people of retirement age (over 65) living in the state than there are currently. This will dramatically alter the ratio of working age population to retirement age population. Another result of this shift is that for decades to come, most of California's graying population will be White while the labor force becomes increasingly Hispanic or Latino. This has important implications for the health professions workforce as one would expect these phenomena to impact patterns of healthcare delivery and consumption, including for whom and by whom it is delivered.

### **Current Health Professions Workforce**

In the current workforce for the selected professions and occupations, there is wide variation in how each is composed demographically. Each profession has a unique set of factors that interact to determine the workforce composition by age, gender and race and ethnicity. However, certain general patterns can be discerned. In terms of race and ethnicity, the workforce for professions that have high barriers to entry (e.g. medicine, dentistry, and pharmacy) is concentrated in two groups: White and Asian. Current estimates indicate that roughly nine out of every ten physicians, dentists and pharmacists in California are either White or Asian. As professional barriers decrease, the workforce becomes increasingly diverse. Among healthcare support occupations, where opportunity is greatest (and wages lowest), one in three workers is Hispanic or Latino and proportional representation of African Americans is nearly twice its size in the working age population.

## Health Professions Education

The data describing health professions education suggest that for all but the most competitive programs, small shifts in demographic composition are taking place. Registered nursing education is an important example. In recent years there have been targeted efforts to intervene in specific ways to effect changes in the size and racial and ethnic composition of RN student bodies. The State of California *Nurse Workforce Initiative*, begun in 2002, and The California Endowment funded *Central Valley Nursing Diversity Workforce Initiative*, begun in 2001, along with many other local and regional efforts over the past several years have focused specifically on increasing the supply and expanding the diversity of nurses in California. It is clear from the data that these efforts have had an impact on the state's capacity to produce new registered nurses. Education data also indicate that in the past six years, pre-license RN education programs in the Central Valley region have experienced the most substantial shift in proportional representation by race and ethnicity of any region in the state, and that this shift has been driven by very large increases in the annual number of Hispanic/Latino, Filipino and African American graduates.

Programs in medicine and dentistry have not expanded in the last decade, which combined with the fact that these programs are highly competitive, makes it challenging to address issues of student diversity. First-year enrollment slots in pre-license registered nursing, by contrast, have increased substantially in the past several years. This coincides with trends that indicate that student diversity is beginning to increase in specific regions of the state. Other programs that have expanded output in recent years are masters in social work programs, masters in public health programs, and both radiography and respiratory therapy programs. These increases in output have also coincided with increasingly diverse student bodies.

There have been three new pharmacy education programs established in recent years, although the data in this report do not fully reflect this expansion due to the length of time to program completion. Even with the expanded number of slots, the student body in pharmacy education lacks racial and ethnic diversity.

Data indicate that programs in clinical and counseling psychology at either the masters or doctoral level have experienced both a downturn and recovery in program output in recent years. It isn't clear to what extent these fluctuations correlate with student body diversity.

In allied health education, data indicate that the pool of potential entrants to the workforce in recent years has been relatively well-balanced in terms of race and ethnicity. In master's level programs in social work and psychology, the data show that graduates are predominantly women, which mirrors the gender composition of the current workforce. However, they also show that Hispanic or Latino women represent a growing proportion of the student body. The student make-up of education programs in medicine, dentistry and pharmacy, however, remain predominantly White and Asian.

## **Data Limitations**

The analysis undertaken in this report is meant to shed light on a complex set of relationships that determine the demographic composition of the health professions workforce. But it also serves as an opportunity to highlight the challenges of conducting such a project. The lack of available data is arguably the most pressing issue in this respect. In many instances, it isn't possible to produce reliable estimates to describe a specific profession or occupation in any kind of detail, even at a state-wide level. And analysis of the workforce at a regional geographic level is almost never an available option. Tracking groups of students as they proceed through educational training and into the workforce is rarely done. The inability to compare different groups across these different segments of population, professional workforce and educational programs severely limits the confidence with which one can draw conclusions and offer recommendations.

## VII. Recommendations

In order to conduct research into the kinds of issues raised by this report at the level of detail required to make informed decisions, stakeholders need to invest in a coordinated and coherent effort to design and maintain data collection systems that contribute to our knowledge about the healthcare workforce, students in the healthcare workforce pipeline, and state and regional populations.

The following recommendations do not include cost considerations, nor are they listed in order of priority.

1. The state should make investments that make it possible to conduct systematic and ongoing health care workforce research and analysis. This will improve our understanding of the complex issues that determine workforce demographics and our ability to track and describe important features of diversity in the health care workforce.
2. The state should require health professional licensing boards to regularly collect and maintain a public-use database containing information that describes licensees by race/ethnicity practice specialty, practice location, locale, and characteristics of the patient population served. The Medical Board of California offers a model of a similar data collection process already underway.
3. It is critical that state organizations involved in data collection (licensing boards, educational institutions, and others) use consistent race/ethnicity categories. This will allow for more meaningful comparisons across professions and across sources of data.
4. Health professions schools should better track race/ethnicity information in describing cohorts of applicants, enrollees, graduates and non-completers. This will allow for more detailed analysis of interventions and targeted efforts to recruit a more diverse student body in the health professions education and would be invaluable when evaluating the success of such efforts.
5. Research on cohorts of underrepresented students could help us understand the process of application, enrollment, graduation, and success in gaining entry into the health professions workforce. For example, a recent bill introduced in the California legislature, AB 2366 by Assembly Member Portantino, would link data from student educational achievement to labor market data. These types of data would provide a means of tracking outcomes from programs such as health career academies.

6. Health professions schools should attempt to track employment of program graduates, particularly in those professions where there are multiple possible career tracks; psychology, social work, the Master's prepared public health workforce.
7. The health care industry including hospitals, community clinics, long term care, and public health departments should collect and report workforce demographic data in a coordinated manner. This would provide much needed access to data describing the current workforce and would be invaluable in conducting workforce planning.

## IX. Appendix A – Race/Ethnicity Categories used by Data Source

Data Source	Racial and Ethnic Categories
2005 American Community Survey Public Use Microdata Sample (PUMS) <sup>a</sup>	White, Asian, African American, Hispanic/Latino, Native American/Alaskan, Native Hawaiian, Other Pacific Islander, Multirace, Some other race
Medical Board of California Re-licensing Survey <sup>b</sup>	White, African American, Hispanic/Latino, Native American/Alaskan, Asian, Native Hawaiian/Other Pacific Islander, Some other race
CA Board of Registered Nursing 2006 Survey of Registered Nurses	White, African American, Hispanic/Latino, Asian (non-Filipino/Indian), Filipino, Asian Indian, Native Hawaiian/Other Pacific Islander, Native American/Alaskan, Multirace, Some other race
Association of American Medical Colleges <sup>c</sup>	White, Asian, African American, Hispanic/Latino, Native American/Alaskan, Native Hawaiian/Other Pacific Islander, Multirace, Some other race
CA Board of Registered Nursing Annual Schools Report	White, Asian non-Filipino*, Filipino, African American, Native American/Alaskan, Hispanic/Latino
Integrated Postsecondary Education Data System (IPEDS)	White, Asian*, African American, Native American/Alaskan, Hispanic/Latino
Association of American Colleges of Pharmacy	White, Asian*, African American, Native American/Alaskan, Hispanic/Latino
American Dental Association	White, Asian*, African American, Native American/Alaskan, Hispanic/Latino
California Department of Finance	White, African American, Hispanic/Latino, Asian, Native American/Alaskan, Native Hawaiian/other Pacific Islander, Multirace

\* Includes Native Hawaiian and other Pacific Islander

<sup>a</sup> The 2005 American Community Survey data can also be used to describe Asian and Hispanic/Latino by more detailed groups. For example, Asians can be further described as Chinese, Korean, Japanese, Vietnamese, Filipino, Thai, Indonesian, etc. Hispanics or Latinos can further be described as Central American by specific country, South American by specific country, Mexican Puerto Rican, Cuban, etc. Using these descriptive categories requires adequate sample counts.

<sup>b</sup> The Medical Board of California Re-licensing survey also collects data that can be used to describe the physician/surgeon workforce in greater racial and ethnic detail. Tables using these detailed, descriptive categories are presented in the section on the current physician/surgeon workforce.

<sup>c</sup> Association of American Medical Colleges collects data that can be used to describe medical school students in greater racial and ethnic detail. The principal data used to conduct analysis for this report did not include such detail. However, certain tables presented in this report, which are based AAMC data published elsewhere, do include these more detailed groups.

**X. Appendix B – 2005 American Community Survey PUMS for California:  
Observations and Weighted Counts by Profession**

<b>Profession</b>	<b>Sample Size</b>	<b>Weighted Count (size of workforce)</b>
Physicians/Surgeons	1045	98,261
Dentists	302	28,772
Pharmacists	293	25,990
Psychologists*	332	26,745
Social Workers*	298	26,899
Respiratory Therapy	118	12,699
Diagnostic-related Technologists & Technicians	270	29,389
Healthcare Support Occupations	3199	339,955

Source: 2005 American Community Survey, Public Use Microdata Sample for California

\*Analysis is limited to workforce holding a Master's degree or higher.

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