Job Opportunities in Health Care for Minorities under the Affordable Care Act

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ABSTRACT

The health care industry has been an engine of job growth, and the Affordable Care Act of 2010 (ACA) is expected to stimulate further growth. We present descriptive statistics the racial/ethnic mix of the health care industry using the American Community Survey (ACS). Using the National Employment Matrix and a proprietary microsimulation model, we project that the health care industry could add 4.6 million jobs over the next decade. If we assume that the current racial/ethnic distribution of the health care workforce persists, we would expect that minorities will comprise at least one-third of all future health care jobs.

Introduction

The health care industry has been an engine of job growth in the U.S. economy over the last several decades, and the Affordable Care Act of 2010 (ACA) is expected to further stimulate job growth within health care (Spetz 2012). As insurance coverage expands under ACA, people will increasingly access health care services, particularly primary care services. A corresponding increase in the supply of health care workers is likely to be necessary to meet the increase in the demand for health care services. This growth will produce new job opportunities for many Americans in health care occupations, ranging from entry-level positions to highly trained professions.

Estimates of the future demand for and supply of health workers are produced by two government agencies. The U.S. Bureau of Labor Statistics (BLS) produces 10-year projections of job growth on a biennial basis. The National Center for Health Workforce Analysis in the Health Resources and Services Administration commissions detailed reports to evaluate the current supply and pipeline for specific occupations, such as physicians, nurses, and pharmacists. While these sources are valuable to assess the demand for and supply of health care labor, the projections fail to provide a comprehensive view of the racial and ethnic diversity of the health care workforce. The diversity of the health workforce is important for two reasons. First, a growing body of research has demonstrated that increased diversity of the health care workforce is associated with greater access to and quality of patient care (BHPR 2006, Cohen et al. 2002, IOM 2004, Mitchell and Lassiter 2006). Second, growth in health care occupations is often

linked to greater career opportunities for diverse populations (Gitterman et al. 2004, Zacker 2011).

This study focuses on historical and future job trends in the health care industry by race and ethnicity, and identifies job opportunities that will grow more rapidly due to the ACA. It begins with an inventory of health care jobs occupied by minorities and the changes in occupation mix over time. The study then presents projections for job growth and potential opportunities for minorities; these projections are based on a combination of BLS job projections and a model developed by Health Systems Innovation Network to predict changing demand for health care services under the ACA. The goal of this study is to provide knowledge that can help foster and enhance racial/ethnic diversity of the health care workforce

Data and Sample

American Community Survey

We begin our study by comparing the racial/ethnic mix and associated demographic characteristics of current employees in the health care industry versus other industries. We extract data from the 2008 and 2011 American Community Survey (ACS), which provides detailed information on demographics, industry, and occupation, among other individual- and household-level details (Ruggles et al. 2010). The ACS has the largest cross sectional samples of the population, which allows for disaggregation of occupations by detailed minority groups; an

alternative data source, the Current Population Survey, does not have a large enough sample size to do this same disaggregation.

The Census Bureau administers this household survey annually since 2000. ACS replaces the long form of the Decennial Census. ACS aims to provide a national census by surveying approximately 3 million people on a rotating basis throughout each decade. The sample size in 2011 was 3,028,981 individuals (unweighted). This analysis uses stratified sample probability weights to make the sample nationally representative, such that the total number of individuals represented in the 2011 ACS is 242,303,207.

Given our interest in health care jobs held by minorities, we categorize our sample into six racial/ethnic groups: (1) White non-Hispanic; (2) Black non-Hispanic; (3) Hispanic (any race); (4) Asian or Pacific Islander; (5) American Indian or Alaska Native; and (6) other or mixed race. We define minorities to include all categories except non-Hispanic Whites.

We focus our analyses on individuals in the labor force, which we define as a non-institutionalized, civilian population 16 years old and older who had a job or looked for work during the previous week. Those in the labor force may be either employed or unemployed; people who are unemployed are assigned an industry and occupation code based on their most recent job. The ACS definition of "labor force" is consistent starting in 2008. In the ACS, the subset of the population that is in the labor force is 65% of the weighted sample.

We define the "health care industry" using the 2007 North American Industry Classification System (NAICS) codes that commonly identifying health care: 621 Offices of health care practitioners, 622 Hospitals, and 623 Nursing care facilities and residential care. We expand the definition to include 3391 Medical equipment supplies and manufacturing and 44611 Pharmacies and drug stores. We report the racial/ethnic mix of each sector within the health care industry. We also look at the demographic characteristics of each racial/ethnic group working in the health care industry, and compare the demographics with other sectors of the economy.

We define "health care occupations" using the 2000 Standard Occupational Classification (SOC) system. Our study concentrates on health care practitioner, technical and support occupations (SOC 29-0000 and 31-0000 series). We also included life and physical scientists (SOC 19-1000 and 19-2000, respectively) medical and health services managers (SOC 19-1111), personal care aides (SOC 39-9021), information and records clerks (SOC 43-4000) secretaries and administrative assistants (SOC 43-6010), and medical, dental, and ophthalmic laboratory technicians (SOC 51-9080). We report on the most common occupations held by minorities within the health care industry and by specific sectors. Our final reporting sample intersecting NAICS and SOC codes is 19,016,515 individuals in 2011.

Education and Training

In order to examine the pipeline of health care workers available to take on future health care jobs, we use the Integrated Postsecondary Education Data System (IPEDS) developed by the U.S. Department of Education. IPEDS provides race/ethnicity data about students who

completed postsecondary education programs that receive federal funding. The data include vocational schools, private colleges and universities, and public colleges and universities in the United States. Health occupation programs can be identified, as can the "level" of the award; levels include programs of less than one year, programs of 1-2 years, associate degree programs, programs of 2-4 years, baccalaureate degree programs, and categories for graduate degrees. One limitation of IPEDS is that the occupation categories do not directly align with the SOC system.

Estimation

Estimating the Odds of Working in Health Care

Using 2011 ACS data, we conduct a logistic regression to determine the odds of each minority group of appearing in each of the ten most common health care occupations. We are interested in whether race/ethnicity drives the reason why an individual enters an occupation versus other demographic factors. The dependent variable is whether the individual enters into the specific health care occupation or not conditioned on working in the health care industry. The primary independent variable is a racial/ethnic categorical variable with "White, Non-Hispanic" as the reference group. We control for demographic characteristics including gender, age, education, and region in which the individual lives. We test for interactions between race and education.

Projection Model

We projected job growth using two methodologies. The first focused on the projected occupation-industry growth rates provided by BLS. The projection methods are detailed elsewhere but, in brief, the BLS has published estimates of job growth from 2010 through 2020 (BLS 2013). The BLS projections were completed after the ACA passed, so the projections take into account the ACA but the exact methodology is not published.

ACS and the Bureau of Labor Statistics use different sampling frameworks that result in slightly different baseline weighted population estimates. Given the large sample size of ACS, we use the ACS to study current demographic, industry, and occupation trends. BLS has a sophisticated labor projection methodology that accounts for various exit and entry factors of labor force participation. Rather than recreate our own labor projections, we rely on the BLS estimates to project occupational trends, a method that results in us using their estimates on the number of people holding each occupation in the baseline year. Due to the different sample frameworks, the baseline year estimates are likely to vary to some degree between ACS and BLS.

In order to identify the share of job growth that can be attributed to the ACA, as compared with previously established trends, we used a microsimulation model, the ARCOLA model, which is designed to estimate the impact of health policy proposals at federal and state levels. The model predicts individual adult responses to proposed policy changes, such as expansions of Medicaid programs and subsidies for the purchase of private health insurance, and generalizes to the U.S. population with respect to health insurance coverage and the financial impact of the proposed changes. The ARCOLA model first was used for the Office of the

Assistant Secretary for Planning and Evaluation (ASPE) of the Department of Health and Human Services (DHHS) to simulate the effect of the Medicare Modernization Act of 2003 (MMA) on take-up of high-deductible health plans in the individual health insurance market (Feldman, Parente, Abraham et al. 2005). The model later was refined to incorporate the effect of prior health status on health plan choice.

ARCOLA includes private insurance market factors including the use of claims data trends information to update premium pricing for microsimulation. The model also includes Medicare and Medicaid simulation factors as well as the inclusion of supply prices from the physician and medical technology industries.The latest model also uses insurance expenditures from actual claims data to refine premiums and then predict choices again with the new premiums. The claims data include about 15 insurance plans from across the U.S. The model then iterates until premiums and choices converge to an equilibrium state. A subsequent change to the model permitted state-specific predictions of policy changes as well as the total federal health policy impact.

For a recent study, the ARCOLA model was used to estimate the effects of the ACA in expanding private and Medicaid coverage and shifting consumers from one type of plan to another. The effect of the change in coverage on the demand for health care services was then estimated using insurance claims data from 2008. The utilization of services by type of insurance plan was estimated for physician office visits (which include visits to nurse practitioners and physician assistants), inpatient admissions to hospitals (including mental health and specialty hospitals), outpatient services provided at hospitals (emergency department visits,

laboratory/radiology, ambulatory surgery, etc.), prescriptions, durable medical equipment, sub-acute care, and home health visits (see **Appendix Table 1** for crosswalk to ACS industry categories). For example, the ARCOLA model does not predict changes in long-term and residential care utilization, because these services are not part of the claims data. The ACA, however, does not have any substantial provisions that would be expected to affect demand for long-term care, so we assume the ACA has no effect on this demand, and the BLS projections are based on pre-existing trends and projected demographic changes.

Results: Current Inventory of Health Care Jobs

Demographic Trends in the Health Care Industry versus Other Industries

In 2011, the health care industry was the largest labor sector of the U.S. economy, employing 12% of the total labor force. The industry has maintained high employment rates, even throughout the Great Recession that began in late 2007. The unemployment rate in the health care industry in 2011 was 5%, less than half that of the non-health-care sector of economy (11%) (**Table 1**). There was some variation in unemployment within the health care industry, with the lowest unemployment rate in the private hospital sector (3%) and the highest rate in home care (10%).

In the U.S. labor force overall, males represent 53% of workers. But in health care women represent 75% of workers, compared to 44% in the non-health-care economy. The proportions of women in the prescription drug (59%) and devices (44%) sectors are more similar

to the rest of the economy. The proportion of women is highest in the home health services sector, at 89%.

Education levels in the health care industry are slightly higher than in other industries, with more individuals holding an associate's degree or a professional school/doctoral degree. Not surprisingly, physician offices have the highest proportion of individuals with a professional school or doctoral degree. On the other end of the education spectrum, the sub-acute care and home health care sectors have lower-than-average education levels, with greater shares of workers without any college education.

Workers in the health care industry tend to be slightly older than individuals in other industries. For some sectors, such as offices of health practitioners, the older age distribution is likely related to higher educational attainment. In other sectors, such as home health, the relatively older age distribution is not likely related to education. Age distributions in the pharmacy and sub-acute care sectors are similar to the rest of the economy.

Minorities within Health Care Sectors

According to the most recent ACS data, minorities represented about one-third of the total U.S. population as well as the U.S. labor force in 2011 (**Table 2**). Shares are similar in the health care industry, although a larger share of Blacks approximately offsets a smaller share of Hispanics. There are notable differences in racial and ethnic diversity across sectors of the health care industry. Nearly half of workers in the long-term/residential care services and home health

care services are minorities. In both of these sectors, Blacks represent more than one-quarter of workers. Blacks also are slightly overrepresented in private hospitals (14.9%) and outpatient ambulatory services (14.2%), but are notably underrepresented in offices of practitioners (5.3%) and medical devices (6.3%). In home health, Hispanics are more prevalent (15.3%) than in the health care industry in general (10.8%), as are American Indians and Alaska Natives (1.0% in home health versus 0.5% in health care overall). Hispanics are underrepresented in all other health sectors. Asians and Pacific Islanders are found more often in the medical device sector (12.2%), pharmacies and drug stores (9.5%), and hospitals (7.8%) than in other health care sectors.

These demographic patterns have not changed much since 2008, but we note a few trends. Employment in private hospitals declined for all races and ethnicities between 2008 and 2011, except for American Indians/Alaska Natives and "other race/ethnicity." The shares of Whites and American Indian/Alaska Natives declined in practitioner offices, and the share of American Indians/Alaska Natives also declined in nursing/residential care. There was growth in the share of workers who were minorities in the outpatient services sector, and also increases in the shares of Whites, Blacks, and Asian/Pacific Islanders in home health services. All the sectors except home health saw an increase in the share of Hispanic workers and a decline in the proportion of Whites. The percent of Blacks declined in hospitals, outpatient services, and nursing/transitional care services, while Blacks' representation increased within the medical devices and home health services sectors. There also was growth in the share of American Indians/Alaska Natives in the device and pharmacy sectors.

Minorities within Health Care Occupations

The most common occupation in the health care industry as of 2011 is registered nurse (RN) (14%), followed by nursing, psychiatric, and home health aides (12%) (**Table 3**). Other occupations each account for significantly smaller shares of the overall health care workforce. For example, the third-most-common occupation is physicians and surgeons, who represent 4% of the total health care workforce. RNs and aides are the top two occupations for Whites, Blacks, American Indians/Alaska Natives, and other races; the shares in each racial/ethnic group vary. For example, among Whites, 16% are RNs and 8% are aides, while among Blacks 26% are aides and 9% are RNs. Among Hispanics, the two most common health care occupations are aides and medical assistants/other health care support occupations; RN is the fourth-most-common occupation. The most common occupations among Asians are RN and physician/surgeon.

The demographic characteristics of each ethnic/racial group within the health care industry vary, as presented in **Table 4**. Whites and Asians employed in health care tend to have higher education levels than other racial/ethnic groups, with 19% of Whites and 32% of Asians having graduate degrees. In contrast, only 6% of Native Americans/Alaska Natives, 8% of Blacks, and 9% of Hispanics have graduate degrees. Hispanics working in the health care industry tended to be much less educated than average, with 39% having no more than a high school diploma; among Blacks, this share is 36%, and among American Indians/Alaska Natives 33%. Hispanics working in the health care industry tend to be younger than the overall health care worker population, while Whites tend to be older. There is also variation in unemployment rates across racial/ethnic groups. The groups with higher average education levels (Whites and

Asians) have the lowest unemployment rates (4% each), while the groups with lower education levels have higher unemployment rates, with Blacks and American Indians/Alaska Natives at 9%.

The prevalence of specific occupations varies across sectors of the health care industry. **Table 5** presents the two most common occupations within each sector for each racial/ethnic group. The most common jobs and the rank order are relatively consistent across racial and ethnic groups within hospitals, pharmacies, medical devices, and home health care services. There is variation across racial/ethnic groups in the most common occupations in other sectors, and the differences are consistent with patterns of educational attainment. For example, in offices of practitioners, the most common occupation for racial/ethnic groups with higher average education levels – Whites and Asians – is physicians and surgeons. Among Asians, the second-most-common occupation is dentist. However, among Hispanics, Blacks, and American Indians/Alaskan Natives, who have a relatively high share of workers who have not pursued postsecondary education, the most common occupations include dental assistants, medical assistants, and information and records clerks.

In long-term/residential care, the most common occupation across all racial/ethnic groups is that of aide; the second-most-common occupation for Whites and Asians is registered nursing; for all other groups it is personal care aide. In ambulatory care settings, similar patterns of correlation are evident between educational attainment and the most common occupations. Of particular note across many sectors is the prominence of clerks, personal care aides, and technicians among the most common jobs; these jobs often are entry-level positions, requiring

relatively little prior training, and can provide a foundation for future education and advancement in the health care occupations.

A Note on Low Representation by Race/Ethnicity

Each racial and ethnic group is represented to some degree in every health care occupation except for American Indian/Alaska Natives and other races, most likely due to sample sizes. American Indian/Alaska Natives were 1% or less of the population within each occupation. Within each and every occupation, other races were 3% or less of the population with the exception of radiation therapists, which was at 5%. Zero percent may not necessarily mean that no individuals of that race/ethnicity work in that occupation, but rather that the given sampling frame was not able to detect the small sample. Given the large White population in the U.S., Whites represented more than half of every occupation except for nursing, psychiatric, and home health aides as well as personal care aides. **Appendix Table 2** lists the occupations with 3% or less representation by Blacks, Hispanics, and Asian/Pacific Islanders.

Odds of Minorities Holding Health Care Occupations

In the descriptive statistics, we see that minorities are highly represented among low skilled jobs. When controlling for other demographic factors, we find that Blacks and American Indian/Alaska Natives have more than two times higher odds than Whites of working as a personal care aide as well as a counselor (**Table 6)**. Asian/Pacific Islanders followed by Hispanics also have higher odds than Whites to work as a personal care aide; Hispanics also have

higher odds than Whites to work as a counselor while Asian/Pacific Islanders are considerably less likely to work as a counselor than Whites. Blacks have more than two and half times higher odds than Whites of working as a home health aide, compared to other races which have about one and a half times higher odds than Whites. For all of the other ten rapidly-growing occupations, Whites have statistically significant higher odds of holding these jobs than all of the other racial/ethnic groups, with the exception of pharmacy technicians where Asian/Pacific Islanders have a 1.6 higher odds compared to Whites. Blacks tend to have the lowest odds among all the racial groups for these occupations, which is of concern given that these are also more highly skilled positions with potentially higher wages.

Diversity of New Entrants to the Health Professions

The IPEDS data show that 978,213 awards were granted in health occupations in 2011 (**Table 7**). The greatest numbers of awards were granted for the fields of registered nursing (184,975 awards; 18.9% of the total), medical/clinical assistant (140,461 awards; 14.4%), licensed practical nursing (61,647 awards; 6.3%), nursing assistant/aide (50,298 awards, 5.1%), social work (40,067 awards; 4.1%), emergency medical technician (EMT)/paramedic (26,536 awards; 2.7%), dental assistant (25,043 awards; 2.6%), pharmacy technician (24,822 awards; 2.5%), and medical insurance coding (23,122 awards; 2.4%). With the exception of social work, all of these occupations are below the baccalaureate degree level (although some occupations such as registered nursing also have baccalaureate entrants).

New graduates of health occupation education programs are generally more diverse than the current workforce. In 2011, 34.8% of health workers were minorities (**Table 2**), compared to 44.8% of new graduates (**Table 7**). There is a close association between the diversity of each occupation and its educational requirements – occupations with lower educational requirements tend to be more diverse. In general, the assistive occupations, such as medical assistant and dental assistant, which require less than one year of postsecondary education, if any, have greater shares of Black and Hispanic graduates. The administrative occupations, such as medical insurance coding and billing specialist, are among the most diverse; these also require relatively little if any postsecondary education. In the practitioner fields, such as registered nursing, medicine, pharmacy, and physical therapy, minorities are underrepresented among graduates. These occupations typically require at least an associate's degree, and many demand a graduate degree. Graduates in the technician occupations, which often require one or two years of postsecondary education, are more diverse than are practitioners but less so than assistants.

The education programs with the greatest shares of Blacks are medical/clinical assistant, medical office assistant/specialist, pharmacy technician, and all of the administrative occupations. The lowest shares graduated from physical therapy, EMT/paramedic, medicine, and pharmacy programs. Hispanics were most represented among the graduates of medical/clinic assistant, dental assistant, pharmacy technician, medical insurance billing specialist, and medical administrative assistant programs. They had comparatively low shares among graduates in pharmacy, physical therapy, health care administration, and medicine. The programs with the highest shares of Asian/Pacific Islanders were medicine, pharmacy, pharmacy technician, and physical therapy, and the lowest shares were from medical/clinical assistant, medical office

assistant/specialist, EMT/paramedic, surgical technology, medical insurance coding, and medical administrative assistant programs.

Results: Future Outlook of Health Care Jobs

Projecting Growth in Health Worker Demand Due to Insurance Expansions

The projections in the demand for services attributed to the ACA, based on the ARCOLA model, are presented in **Table 8**. Growth in demand for some health care services – specifically, long-term and residential care, drug stores, and home health – is anticipated to be high with or without the ACA. The ACA will likely lead to notable increases in the demand for office visits. Note that the ARCOLA model does not at this time estimate utilization of non-hospital outpatient services, such as physical therapy in freestanding centers, non-hospital radiology and laboratory tests, and ambulatory surgery in freestanding surgery centers. For this analysis, we assume that the rate of growth in these services will be proportional to the rate of growth of office visits.

Occupations That Will Have Significant Future Growth

We used the demand growth rates from Table 8 to break down the employment growth rates projected by BLS (**Table 9**) into "baseline" growth and ACA-driven growth. To calculate the share of occupation growth that would arise from the ACA, we use the Bureau of Labor Statistics National Employment Matrix, which breaks down industry-level employment growth

into occupations within each industry. The aggregate results for the 20 largest occupations are presented in **Table 10.**

The ACA will have heterogeneous effects on the employment growth of occupations. Some occupations, such as those primarily employed in the long-term care and home health industries, will not likely see much of their employment growth spurred by the ACA. Many of these occupations already had high projected growth, and the ACA's provisions should not create much additional demand. Other occupations, including registered nurses, health practitioner support technicians, medical assistants, medical secretaries, diagnostic technicians, pharmacy technicians, and pharmacists, are likely to see at least one-third of their growth come from demand changes in the ACA.

As the ACA is implemented some occupations may experience slower demand due to task shifting, such as from dental hygienists to dental assistants, or reductions in the duplication of services. In addition, if the ACA achieves real improvements in preventive care and public health, the demand for workers in acute and tertiary care services may decline. New incentives in the ACA to foster innovations in care delivery teams also will impact these estimates of future demand for health workers. It is too early, however, to rigorously assess what those changes might be and how they would affect the estimates presented here.

Discussion

The number of jobs available does not necessarily equal the number of qualified individuals available to fill these positions. There must be enough entrants to each occupation to not only fulfill growing overall demand, but also to replace retiring workers and those who choose to pursue a different occupation. The projected growth rates for many health occupations are higher than that anticipated for the economy as a whole. In order to ensure an adequate supply of new health workers, education and training programs will need to maintain their sizes and possibly need to grow.

We noted that the health occupations that require relatively lower education levels are also those in which minorities are more prominently represented. Similarly, the education and training programs that require less than one year of postsecondary study are the most diverse demographically. Some of the lower-skill occupations, such as personal care and home health aides, medical secretaries, pharmacy technicians, and medical assistants, are among those anticipated to grow most rapidly over the next decade. Some high-growth occupations, however, require at least an associate's degree, and some demand a graduate degree (**Table 11**). Such opportunities include occupational and physical therapy assistants, dental hygienists, physical therapists, occupational therapists, mental health counselors, optometrists, mental health and substance abuse social workers, and diagnostic related technicians.

A challenge to increasing the diversity of these higher-education health occupations is the variation in high school completion rates by race/ethnicity. Though the national high school dropout rate declined from 12.1% in 1990 to 7.4% in 2010 (NCES 2012), some racial/ethnic groups still have relatively high rates. The Hispanic dropout rate, at 15.1%, is nearly three times

that of Whites (5.1%). The rate for Blacks is 8%, and for American Indian/Alaska Natives 12.4%. Overall, a rising number of people across all demographic groups are prepared to pursue health careers, but relatively lower shares of Hispanics, American Indian/Alaska Natives, and Blacks are ready to enter postsecondary education programs.

Some employers have responded to this challenge by developing "career ladder" programs, in which workers in lower-skill occupations are given opportunities to obtain additional training on the job, or through an affiliated education program, so they can enter another profession "on the ladder." A common example is found in nursing. There is a logical progression from working as a nursing assistant, which requires no formal post-high-school education, to becoming certified as a nursing assistant (less than three months of training), to becoming a licensed vocational nurse (12-18 months), to becoming a registered nurse (associate's degree).These programs can help workers who might not have been prepared for college when they first entered the labor market to attend college with support from their employers. Employers benefit from improving the skills of their employees and from the lower turnover rates they often enjoy in association with these programs.

Conclusions

Over the next decade, the health care sector could add 4.6 million jobs, a 31% increase from current employment. Projections of job growth by race and ethnicity rely on assumptions about changes in educational attainment and retirement rates, among other societal trends. This study does not aim to project exact future employment by race/ethnicity, but rather focuses on

trends among occupations commonly held by minorities. If we assume the current racial and ethnic distribution of the health care workforce persists, we would expect that in the future at least one-third of the total health care workforce will be made up of minorities. This estimate is almost certainly lower than what will occur, because many minorities – especially Blacks and Hispanics – are in occupations that are among the fastest growing in the U.S. These low- and mid-skill occupations, such as medical and dental assistants, home health and personal care aides, and diagnostic and treatment technicians, have been growing rapidly even prior to implementation of the ACA, due to an aging population and a growing prevalence of chronic diseases. The ACA will amplify the growth of many of these occupations by increasing demand for primary care services, incentivizing preventive care and screening, and supporting team-based care. These trends suggest growing opportunities for minorities.

The diversity within occupations remained relatively consistent between 2008 and 2011. But graduation rates from postsecondary education are trending upward among minorities. This suggests that, in addition to increased employment in low- and mid-skill occupations, minorities may have opportunities over time to move into more high-skilled professions that are not currently among the most commonly held. The increasing diversity of the U.S. workforce and increased educational opportunities will surely provide more opportunities for career advancement among minorities in the health professions.

Rapid growth in many health care occupations will demand a well-prepared workforce across all skill levels. And there is an important trend toward increasing on-the-job training opportunities, which support the upward mobility and career advancement of workers who enter

the health care industry with low skills. In order to ensure that future generations are able to meet health care needs we have a few policy recommendations. First, secondary schools should implement programs that educate youth about job opportunities in the health care industry and the educational path to achieve these opportunities. Second, community college and university funding for health care occupation programs should be bolstered. Because community colleges are such an important source of educational opportunity for minorities, and also provide training in many health occupations, it will be essential to maintain funding for these institutions. Third, health care industry employers will benefit greatly by developing on-the-job training programs that encourage promotion and support retention of workers. In addition, they should offer tuition support for their workers to pursue postsecondary education in high-demand health care occupations such as registered nurse, licensed practical/vocational nurse, social worker, diagnostic technician, and dental hygienist. Fourth, Workforce Investment Boards, community colleges, and high schools can establish health-occupations-focused career guidance and mentorship programs that support mid-career movements into emerging job opportunities. Fifth, Federal, state, and local agencies, as well as private organizations that support scholarships and job training, should identify and address barriers that prevent individuals from pursuing higher education.

The Affordable Care Act will provide health insurance to millions of Americans who have previously been uninsured or underinsured. Improved access to health care services – particularly preventive and primary care – will increase the need for well-prepared, compassionate health workers, across all skill levels. The job opportunities that will be afforded will cut across educational, economic, and racial/ethnic populations. Policies and strategies to

maximize the capacity of the population to pursue growing career opportunities and provide needed services will be essential to ensure better health outcomes in the United States.

TABLE 1 Demographics of Health Care Industry versus Non–Health Care Industries, 2011

	Non–health care industries	Health care industries							
		All	Offices of health practitioners	Private hospitals	Outpatient / ambulatory	Drug stores	Medical devices	Long-term / residential care	Home health
Female	44%	75%	78%	76%	73%	59%	44%	81%	89%
Unemployed	11%	5%	5%	3%	5%	7%	6%	8%	10%
Education									
Less than high school	12%	5%	2%	3%	3%	5%	6%	11%	15%
high school diploma or equivalent	27%	19%	18%	14%	16%	22%	25%	31%	29%
Some college	24%	24%	25%	21%	24%	24%	21%	30%	25%
Associate's degree	8%	15%	15%	19%	14%	7%	10%	12%	12%
Bachelor's degree	19%	21%	13%	26%	23%	25%	26%	12%	14%
Master's degree	8%	8%	6%	8%	13%	7%	10%	4%	4%
Professional school/ doctorate degree	3%	9%	22%	9%	7%	10%	3%	1%	1%
Age									
16 to 24	15%	9%	8%	6%	8%	17%	6%	15%	8%
25 to 34	22%	22%	22%	23%	24%	24%	19%	21%	20%
35 to 44	21%	23%	23%	23%	25%	22%	25%	20%	23%
45 to 54	23%	24%	24%	26%	24%	20%	28%	23%	25%
55 to 64	15%	18%	18%	19%	16%	13%	20%	17%	19%
65 to 74	4%	4%	5%	3%	3%	3%	3%	4%	5%
75 and over	1%	1%	1%	0%	0%	1%	0%	1%	1%

Source: Ruggles S., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010), *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.

TABLE 2 Race/Ethnicity Distribution Across Industries, 2011 (column percentages)

Race/ethnicity	Total population	Total labor force	Health care industries							
			All	Offices of health practitioners	Private hospitals	Outpatient / ambulatory	Drug stores	Medical devices	Long-term/ residential care	Home health
White, non-Hispanic	66.3%	65.5%	65.2%	74.8%	65.8%	65.0%	66.2%	66.8%	58.7%	50.4%
Black, non-Hispanic	11.6%	11.5%	15.0%	5.3%	14.9%	14.2%	10.7%	6.3%	25.5%	26.4%
Hispanic, any race	14.8%	15.6%	10.8%	12.2%	9.4%	11.8%	11.7%	13.1%	9.2%	15.3%
Asian/Pacific Islander	5.1%	5.2%	6.9%	6.1%	7.8%	6.4%	9.5%	12.2%	4.2%	5.2%
American Indian/ Alaska Native	0.6%	0.6%	0.5%	0.2%	0.5%	0.7%	0.4%	0.4%	0.6%	1.0%
Other race/ethnicity	1.6%	1.6%	1.6%	1.4%	1.7%	1.8%	1.6%	1.3%	1.7%	1.8%

Source: Ruggles S., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010), *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.

TABLE 3 Top 10 Most Common Health Care Occupations, by Race/Ethnicity, 2011

	Race/ethnicity													
Occupation	**All**		**White, non-Hispanic**		**Black, non-Hispanic**		**Hispanic**		**Asian/Pacific Islander**		**American Indian/ Alaska Native**		**Other race/ ethnicity**	
	Rank	**Share**	**Rank**	**Share**	**Rank**	**Share**	**Rank**	**Share**	**Rank**	**Share**	**Rank**	**Share**	**Rank**	**Share**
Registered nurses	1	14.1%	1	16.2%	2	9.1%	4	7.0%	1	17.9%	2	8.9%	2	12.0%
Nursing, psychiatric, and home health aides	2	11.8%	2	8.5%	1	26.2%	1	13.8%	3	7.9%	1	15.4%	1	14.6%
Physicians and surgeons	3	4.4%	3	4.6%	9	1.5%	9	2.3%	2	12.4%	10	1.2%	3	5.5%
Information and records clerks	3	4.4%	4	4.3%	6	3.4%	3	7.1%	5	3.0%	4	4.1%	4	4.9%
Medical assistants and other health care support occupations, except dental assistants	4	4.0%	7	3.6%	5	4.2%	2	7.5%	5	3.0%	5	3.5%	5	4.5%
Secretaries and administrative assistants	5	3.5%	5	4.0%	7	2.5%	7	3.3%	10	1.7%	5	3.5%	8	2.8%
Licensed practical and licensed vocational nurses	6	3.3%	8	3.2%	4	5.1%	10	2.2%	9	1.9%	6	3.2%	9	2.7%
Medical and health services managers	7	3.2%	6	3.7%	8	2.3%	9	2.3%	8	2.2%	8	2.2%	7	3.3%
Personal care aides	8	3.0%	10	2.2%	3	5.4%	5	4.2%	5	3.0%	3	7.8%	6	4.2%
Health diagnosing and treating practitioner support technician	9	2.4%	9	2.3%	8	2.3%	8	2.7%	7	2.3%	7	2.3%	11	1.9%
Clinical laboratory technologists and technicians	10	1.7%	2	1.6%	9	1.5%	11	1.4%	6	2.9%	8	2.2%	12	1.8%

Note: Full ranking by race/ethnicity available upon request. Shares are based on all occupation categories within the health industry. Rankings are based on the subset of health care occupation categories. Missing rankings are as follows: Black, non-Hispanics: Rank 10 Diagnostic Related Technologists and Technicians; Hispanic: Rank 6 Dental Assistants; Asian/Pacific Islander: Rank 4 Pharmacists; American Indian/Alaska Native: Rank 7 Dental Assistants (tied), Rank 9 Diagnostic Related Technologists and Technicians; other race/ethnicity: Rank 10: Dental Assistants.
Source: Ruggles S., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010), *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.

TABLE 4 Demographics by Race/Ethnicity Within the Health Care Industry

	Race/ethnicity						
	All	**White, non-Hispanic**	**Black, non-Hispanic**	**Hispanic**	**Asian/Pacific Islander**	**American Indian/ Alaska Native**	**Other race/ethnicity**
Female	75%	76%	79%	75%	64%	79%	74%
Unemployed	5%	4%	9%	7%	4%	9%	8%
Education							
Less than high school	5%	3%	8%	14%	4%	8%	5%
High school diploma or equivalent	19%	18%	28%	25%	8%	25%	18%
Some college	24%	22%	31%	29%	13%	34%	30%
Associate's degree	15%	17%	12%	12%	9%	13%	15%
Bachelor's degree	21%	22%	14%	12%	34%	13%	17%
Master's degree	8%	9%	5%	4%	10%	4%	7%
Professional school/doctorate degree	9%	10%	3%	5%	22%	2%	9%
Age							
16 to 24	9%	8%	9%	14%	6%	12%	14%
25 to 34	22%	20%	24%	28%	25%	24%	30%
35 to 44	23%	21%	26%	24%	29%	22%	23%
45 to 54	24%	25%	24%	20%	21%	22%	19%
55 to 64	18%	20%	14%	11%	15%	17%	11%
65 to 74	4%	4%	3%	2%	3%	4%	2%
75 and over	1%	1%	0%	0%	0%	0%	0%

Source: Ruggles S., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010), *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.

TABLE 5 Top Two Occupations by Health Care Sector and by Race/Ethnicity

Health care sector	Rank	Race/ethnicity						
		All	**White, non-Hispanic**	**Black, non-Hispanic**	**Hispanic**	**Asian/Pacific Islander**	**American Indian/ Alaska Native**	**Other race/ethnicity**
Offices of health practitioners	1	Physician and surgeons	Physician and surgeons	Medical assistants and other health care support	Dental assistants	Physician and surgeons	Dental assistants	Physician and surgeons
	2	Information and records clerks	Information and records clerks	Dental assistants	Medical assistants and other health care support	Dentists	Information and records clerks	Dental assistants
Private hospitals	1	Registered nurses	Registered nurses	Registered nurses	Registered nurses	Registered nurses	Registered nurses	Registered nurses
	2	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Physician and surgeons	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides
Outpatient/ ambulatory	1	Registered nurses	Registered nurses	Nursing, psychiatric, and home health aides	Medical assistants and other health care support	Physician and surgeons	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides
	2	Nursing, psychiatric, and home health aides	Medical and health services managers	Registered nurses	Nursing, psychiatric, and home health aides	Registered nurses	Information and records clerks	Registered nurses
Drug stores	1	Health diagnosing and treating support technicians	Health diagnosing and treating support technicians	Health diagnosing and treating support technicians	Health diagnosing and treating support technicians	Pharmacists	Health diagnosing and treating support technicians	Pharmacists
	2	Pharmacists	Pharmacists	Pharmacists	Information and records clerks	Health diagnosing and treating support technicians	Medical assistants and other health care support	Health diagnosing and treating practitioner support technicians

Source: Ruggles S., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010), *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.

TABLE 5 Top Two Occupations by Health Care Sector and by Race/Ethnicity (continued)

Health care sector	Rank	Race/ethnicity						
		All	**White, Non-Hispanic**	**Black, Non-Hispanic**	**Hispanic**	**Asian/Pacific Islander**	**American Indian/ Alaska Native**	**Other Race/Ethnicity**
Medical devices	1	Medical, dental, and ophthalmic laboratory technicians	Medical, dental, and ophthalmic laboratory technicians	Medical, dental, and ophthalmic laboratory technicians	Medical, dental, and ophthalmic laboratory technicians	Medical, dental, and ophthalmic laboratory technicians	Medical, dental, and ophthalmic laboratory technicians	Medical, dental, and ophthalmic laboratory technicians
	2	Information and records clerks	Information and records clerks	Information and records clerks	Information and records clerks	Physical scientists	Secretaries and administrative assistants	Information and records clerks
Long-term/ residential care	1	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides
	2	Registered nurses	Registered nurses	Personal care aides	Personal care aides	Registered nurses	Personal care aides	Personal care aides
Home health	1	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Nursing, psychiatric, and home health aides	Personal care aides	Nursing, psychiatric, and home health aides
	2	Personal care aides	Personal care aides	Personal care aides	Personal care aides	Personal care aides	Nursing, psychiatric, and home health aides	Personal care aides

Source: Ruggles S., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010), *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.

TABLE 6 Odds Ratios of Working in Ten Rapidly-Growing Occupations by Race (Baseline: White)

Occupation	Black	Hispanic	Asian/ Pacific Islander	Am Ind/AK Native	Other
Personal care aides	2.05	1.22	1.48	2.04	1.46
Home health aides	2.67	1.20	1.52	1.69	1.64
Occupational & physical therapy assistants	0.54	0.73	0.70	0.54*	0.72*
Medical secretaries	0.52	0.84	0.64	0.55	0.78
Physical therapists	0.37	0.56	0.80	0.49	0.50
Dental hygienists	0.15	0.54	0.43	0.37	0.73*
Counselors	2.49	1.21	0.24*	2.68	1.45
EMTs & paramedics	0.22	0.50	0.18	1.03+	0.56
Optometrists	0.28	0.53	0.60	2.50+	0.44*
Pharmacy technicians	0.78	0.92	1.61	0.97+	0.96+

All significant at $p<0.001$ except "*" is significant at $p<0.05$ and "+" indicates not significant.
NOTE: Reference group: White, Non-Hispanic. Controls: female, education categories, age categories, and region.

TABLE 7 Graduates of the Largest Types of Health Occupation Education Programs, by Race/Ethnicity, 2011

	Race/ethnicity						
	Number of graduates	**White, non-Hispanic**	**Black, non-Hispanic**	**Hispanic**	**Asian/ Pacific Islander**	**American Indian/ Alaska Native**	**Multi-race or unknown**
Total awards	978,213	55.2%	15.8%	14.3%	5.2%	0.8%	7.6%
Assistants							
Medical/clinical assistant	140,461	35.7%	24.4%	26.3%	2.8%	0.8%	9.8%
Nursing assistant/aide	50,298	58.4%	17.1%	13.5%	4.1%	0.9%	5.7%
Dental assistant	25,043	43.2%	17.1%	26.2%	3.0%	0.9%	2.0%
Medical office assistant/specialist	15,434	42.2%	22.7%	17.3%	2.0%	0.7%	14.6%
Practitioners							
Registered nursing	184,975	67.2%	9.7%	8.5%	5.5%	0.7%	7.0%
Social work	40,067	56.7%	18.8%	12.0%	3.1%	1.0%	6.9%
Medicine (allopathic)	17,140	57.9%	6.1%	6.8%	19.3%	0.5%	8.1%
Pharmacy	12,735	59.0%	6.4%	4.4%	21.3%	0.4%	5.5%
Physical therapy	10,054	73.2%	3.4%	4.1%	7.3%	0.5%	10.0%
Technicians							
Licensed practical/vocational nursing	61,647	62.4%	17.6%	9.8%	4.6%	0.7%	4.4%
EMT/paramedic	26,536	70.1%	5.7%	15.5%	1.6%	0.8%	5.9%
Pharmacy technician	24,822	33.5%	22.9%	25.2%	7.3%	0.9%	9.7%
Surgical technology	10,902	55.8%	15.9%	18.5%	2.5%	0.9%	5.8%
Administrative							
Medical insurance coding specialist	23,122	43.2%	27.0%	17.7%	2.9%	0.8%	8.2%
Medical insurance billing specialist	16,840	38.2%	27.4%	20.4%	3.0%	0.7%	10.0%
Medical administrative assistant	15,400	42.0%	22.7%	26.1%	2.3%	0.7%	6.1%
Health care administration	13,421	51.8%	22.2%	6.2%	4.7%	0.5%	19.9%
Health information/medical records technology	11,492	53.6%	20.6%	9.7%	3.3%	1.0%	11.2%

Note: Occupational categories in IPEDS do not rely on the SOC. EMTs: Emergency Medical Technicians.
Source: Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics (NCES), Institute of Education Sciences, U.S. Department of Education.

TABLE 8: Service Demand Growth Forecasts by Health Care Sector, 2010-2020

	Offices of health practitioners	Private hospitals	Outpatient/ ambulatory	Drug stores	Medical devices	Long-term/ residential care	Home health
Overall percentage growth	36.4%	18.7%	36.6%	36.1%	1.6%	26.3%	80.7%
Percentage growth due to ACA	10.1%	0.1%	-0.5%	2.8%	-0.4%	-4.9%	-1.4%

Source: ARCOLA Model.

TABLE 9: Employment Growth Forecasts by Health Care Sector, 2010-2020

	Offices of health practitioners	Private hospitals	Outpatient/ ambulatory	Drug stores	Medical devices	Long-term / residential care	Home health
Baseline (2010)	3,818,200	4,685,300	1,077,100	713,500	301,500	3,129,000	1,080,600
Additional jobs by 2020	1,391,400	878,300	394,100	257,400	4,900	822,000	871,800

Source: U.S. Bureau of Labor Statistics, *National Employment Matrix,* retrieved August 30 2013, from http://data.bls.gov/oep/nioem/empiohm.jsp**.**

TABLE 10 Occupation Projections for 20 Largest Occupations, 2010-2020

Occupation	2010 Employment	Total New Jobs by 2020 (#)	Total New Job Growth by 2020 (%)	New Jobs due to ACA (#)	Share of growth from ACA (%)
Registered nurses	2,737,400	711,900	26.0%	238,475	33.5%
Nursing aides & orderlies	1,505,300	301,900	20.1%	3,804	1.3%
Home health aides	1,017,700	706,200	69.4%	2,800	0.4%
Personal care aides	861,000	607,000	70.5%	1,721	0.3%
Licensed practical / vocational nurses	752,300	168,500	22.4%	-25,309	-15.0%
Physicians/surgeons	691,000	168,300	24.4%	-38,474	-22.9%
Social workers	650,500	161,200	24.8%	19,202	11.9%
Health practitioner support technicians	621,000	183,700	29.6%	79,965	43.5%
Medical assistants	527,600	162,800	30.9%	133,114	81.8%
Medical secretaries	508,700	210,200	41.3%	90,154	42.9%
Diagnostic related techs	345,000	103,000	29.9%	40,350	39.2%
Recreation workers	339,100	64,300	19.0%	6,006	9.3%
Pharmacy technicians	334,400	108,200	32.4%	83,148	76.8%
Clinical laboratory techs	330,600	42,900	13.0%	-34,643	-80.8%
Health care managers	303,000	68,000	22.4%	3,265	4.8%
Dental assistants	297,200	91,700	30.9%	27,932	30.5%
Pharmacists	274,900	69,700	25.4%	40,906	58.7%
EMTs & paramedics	226,500	75,400	33.3%	18,757	24.9%
Physical therapists	198,600	77,400	39.0%	5,505	7.1%
Dental hygienists	181,800	68,500	37.7%	-8,022	-11.7%

Source: Authors' calculations using ARCOLA and U.S. Bureau of Labor Statistics, *National Employment Matrix*, retrieved August 30 2013, from http://data.bls.gov/oep/nioem/empiohm.jsp**.**

TABLE 11 Top 15 Rapidly Growing Occupations and Education Requirements

Occupation	Growth rate	Education level
Personal care aides	70.5%	Less than high school
Home health aides	69.4%	Less than high school
Occupational & physical therapy assistants	43.8%	Associate's degree
Medical secretaries	41.3%	High school diploma or equivalent
Physical therapists	39.0%	Doctoral or professional degree
Dental hygienists	37.7%	Associate's degree
Mental health counselors	36.2%	Master's degree
Occupational therapists	33.5%	Master's degree
EMTs & paramedics	33.3%	Postsecondary non-degree award
Optometrists	33.1%	Doctoral or professional degree
Pharmacy technicians	32.4%	High school diploma or equivalent
Mental health and substance abuse social workers	31.3%	Bachelor's degree
Medical assistants	30.9%	High school diploma or equivalent
Dental assistants	30.9%	Postsecondary non-degree award
Diagnostic related technicians	29.9%	Associate's degree

Note: Although Audiologists had 36.8% growth, we excluded this given the baseline number was very small at 13,000.

Source: U.S. Bureau of Labor Statistics (2012), "Education and Training Assignments: Table 1.12 Education and Training Categories by Detailed Occupation," retrieved August 30 2013, from http://www.bls.gov/emp/ep_table_112.htm; U.S. Bureau of Labor Statistics, *National Employment Matrix*, retrieved August 30 2013, from http://data.bls.gov/oep/nioem/empiohm.jsp.

APPENDIX

APPENDIX TABLE 1 Crosswalk Between NAICS and ARCOLA Model

NAICS	ARCOLA Model
Offices of health care practitioners[1] NAICS: 6211, 6212, 6213	Office visits
Private hospitals NAICS: 622	Hospitals admissions
Ambulatory outpatient settings[2] NAICS: 6214, 6215, 6219	Outpatient hospital services
Pharmacies and drug stores NAICS: 44611	Prescriptions
Medical equipment supplies and manufacturing NAICS: 3391	Devices
Nursing care facilities and residential care[3] NAICS: 623	Sub-acute care days
Home health care services NAICS: 6216	Home health visits

[1] Includes offices of mental health practitioners excluding physicians; physical, occupational, and speech therapists and audiologists; podiatrists; and other miscellaneous health practitioners.
[2] Includes family planning centers; outpatient mental health and substance abuse centers; HMO medical centers; kidney dialysis centers; free-standing ambulatory surgical and emergency centers; medical laboratories; diagnostic imaging centers; and blood and organ banks.
[3] Includes residential mental retardation; mental health and substance abuse facilities; community care retirement communities; and homes for the elderly.

APPENDIX TABLE 2 Occupations With Low Representation (3% or less), by Race/Ethnicity

Black, non-Hispanics	Hispanics	Asian/Pacific Islanders
Audiologists	Audiologists	Emergency medical technicians and paramedics
Chiropractors	Chiropractors	Massage therapists
Dental hygienists	Occupational therapists	Occupational therapist assistants and aides
Dentists	Podiatrists	Radiation therapists
Dispensing opticians	Recreational therapists	Secretaries and administrative assistants
Health diagnosing and treating practitioners, all other		Speech-language pathologists
Occupational therapists		
Optometrists		
Speech-language pathologists		

Source: Ruggles J., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010), *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota.

References

Bureau of Health Professions (BHPr), Health Resources and Services Administration, U.S. Department of Health and Human Services (2006). "The Rationale for Diversity in the Health Professions: A Review of the Evidence." Retrieved August 30 2013, from http://bhpr.hrsa.gov/healthworkforce/reports/diversityreviewevidence.pdf.

Cohen J.J., Gabriel B.A., and Terrell C. (2002). "The Case for Diversity in the Health Care Workforce." *Health Affairs* 21(5): 90-102, doi: 10.1377/hlthaff.21.5.90.

Feldman R., Parente S.T., Abraham J., Christianson J.B., and Taylor R. (2005). "Health Savings Accounts: Early Estimates of National Take-Up." *Health Affairs* 24(6): 1582-1591, doi: 10.1377/hlthaff.24.6.1582.

Gitterman D., Spetz J., and Fellowes M. (2004). "The Other Side of the Ledger: Federal Health Spending in Metropolitan Economies." Brookings Institution Report. Retrieved August 30 2013, from http://www.brookings.edu/research/reports/2004/09/labormarkets-gitterman.

Institute of Medicine (IOM) (2004). *In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce.* Eds. Smedley B.D., Butler A.S., and Bristow L.R. Retrieved August 30 2013, from http://www.iom.edu/Reports/2004/In-the-Nations-Compelling-Interest-Ensuring-Diversity-in-the-Health-Care-Workforce.aspx.

Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics (NCES), Institute of Education Sciences, U.S. Department of Education.

Mitchell D.A. and Lassiter S.L. (2006). "Addressing Health Care Disparities and Increasing Workforce Diversity: The Next Step for the Dental, Medical, and Public Health Professions." *American Journal of Public Health* 96(12): 2093-2097, doi: 10.2105/AJPH.2005.082818.

National Center for Education Statistics (NCES), U.S. Department of Education (2012). "The Condition of Education 2012 (NCES 2012-045): Table A-33-1." Retrieved May 23 2013, from http://nces.ed.gov/fastfacts/display.asp?id=16.

Ruggles J., Alexander T., Genadek K., Goeken R., Schroeder M.B., and Sobek M. (2010). *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota.

Spetz J. (2012). *Health Reform and the Health Care Workforce*. Houston, TX: James A. Baker III Institute for Public Policy.

U.S. Bureau of Labor Statistics (BLS) (2013). "Employment Projections: About the Numbers." Retrieved August 30 2013, from http://www.bls.gov/emp/nioem/empioan.htm.

Zacker H.B. (2011). "Creating Career Pathways for Frontline Health Care Workers." Jobs to Careers: Transforming the Front Lines of Health Care. Retrieved August 30 2013, from

http://beltlineorg.wpengine.netdna-cdn.com/wp-content/uploads/2013/07/J2C_CareerPathways_011011.pdf.