

Literature Review and Analysis Documenting the Impact of Scientific Workforce Diversity on the Scientific Enterprise and the Public Good

Evidence in Medical Research

This report summarizes literature about the effects of workforce diversity in the biomedical and behavioral science fields. The report is a compilation of 60 studies that were collected from medical and science journals and other unpublished medical sources.

The empirical literature shows strong support for the finding that a diverse healthcare workforce improves access and quality of care for poor, minority, and underserved populations, thereby reducing health disparities (Komaromy, Grumbach, & Drake, 1996; Saha et al., 2000; Okunseri et al., 2008; Saha & Shipman, 2008). Okunseri et al. (2008) found a relationship between the racial background of physicians and the likelihood of accepting new Medicaid patients. In particular, minority dentists were significantly more likely than White dentists to accept Medicaid patients. Research also indicates that minority physicians were more likely than non-Hispanic White physicians to practice in areas with fewer primary care physicians per capita, areas with high poverty rates, or and areas with a high proportion of minority residents. Moreover, minority physicians were more likely than non-Hispanic White physicians to care for minority patients, which was particularly true for African-American physicians. African-American physicians were also more likely than other physicians to care for patients insured by Medicaid, and Hispanic physicians were more likely than physicians of other ethnic groups to care for uninsured patients (Komaromy et al., 1996). Saha and Shipman (2008) reviewed 21 studies published since 1985 related to providers' patterns of service to the underserved;¹ they concluded that underrepresented minority health professionals had consistently been more likely than those from disadvantaged socioeconomic backgrounds or the National Health Service Corps participants to deliver health care to the underserved.

Teal and Street (2008) suggest that improving the cultural competence of physicians is one means of responding to demographic changes in the US to reduce health disparities. The authors presented a model of culturally competent physician communication that integrated existing frameworks for cultural competence in patient care with models of effective patient-centered communication. Other researchers have also recommended the importance of integrating cultural competence into the curricula of schools of health care professions (Shaya and Gbarayor, 2006). The authors stated that the curricula should focus on the reality of evidence-based health disparities among racial and ethnic minority populations and on the importance of providing

¹ Disadvantaged racial/ethnic minority groups (African Americans, Latinos, and American Indians/Alaska Natives), Medicaid recipients, the poor, the uninsured, and people living in federally designated Health Professional Shortage Areas (HPSAs) or Medically Underserved Areas (MUAs).

culturally competent care and communication to meet the health needs of diverse patient populations.

These findings were also important in an IOM report (2004) that focused on diversity of the nation's health care workforce. That study's four commissioned papers reviewed the literature on the impact of diversity on the practice of medicine and made procedural and policy recommendations for higher education institutions and for health professionals.

Numerous studies demonstrated that African-Americans suffer from a variety of health problems at disproportionately higher rates than Whites do. The infant mortality rate among African-Americans is double that of Whites, and African-Americans can expect to live six fewer years, on average, than Whites. African-Americans die from complications of diabetes at three times the rate of Whites, and experience higher incidences of breast, colorectal, and lung cancers, and have the highest death rates from all cancers combined (Noah, 2003).

The National Institutes of Health (NIH) strongly encourages researchers to explore the causes of varying rates of disease among different races and ethnicities, and the growing scientific interest in the inclusion of racial and ethnic minorities in research has led to a new wave of clinical trials that focus exclusively on the health needs of certain minority populations. However, studies suggest that a variety of barriers prevent underrepresented minorities from participating in clinical trials. Such barriers include African Americans' mistrust of the medical field as a result of situations in which African-Americans felt the medical community had engaged in ethnically suspicious behavior, namely, the Tuskegee Institute experiments. In addition, many individuals from disadvantaged backgrounds (based on socioeconomic status, disability, or race/ethnicity) have lower levels of health literacy, which may be a reason why physicians are less likely to refer these patients to clinical trials (Noah, 2003). However, other researchers show that racial or ethnic minority group members are in fact willing to participate in clinical research despite the negative historical events that may have discouraged participation of these groups (Katz et al., 2008).

Exclusion of minority groups from medical research potentially deprives the medical community of essential information about the safety and efficacy of various therapies for these groups; such exclusion may play a role in perpetuating racial inequalities in health. Noah (2003) suggests that there is a need for a considered approach to the inclusion of racial and ethnic minorities in clinical trials, taking into account relevant cultural and scientific factors, which would ultimately ensure that medical innovation will benefit people of all races.

Researchers endorse the idea that diversity in biomedical research communities should address a wider range of scientifically relevant questions, particularly those that are related to advances in medical treatments and to health disparities. In particular, Cohen (1997) argues that diversity in student bodies, faculties, and the workforce improves the quality of medical education, and accelerates advances in medical and public health research. Studies also suggest that the underrepresentation of URMs in the healthcare professions has profound negative effects on public health, including serious racial and ethnic health disparities that can be reduced through increased recruitment of URM medical students, faculties, and administrators to help expand the medical research agenda, among other benefits (Taylor et al., 2008; Beckerle, 2006).

Because of the underrepresentation of URM researchers in biomedical and behavioral science fields, it is still not clear how diversity changes the way researchers prioritize research. Diversity is often hypothesized to have an impact on the choice of research topics via the mechanism of personal experience. The diverse backgrounds of researchers and the diverse life experiences and contexts in which they find themselves are taken to be a “natural” explanation for the topics that they choose to pursue.

Few sources reviewed subjected this common hypothesis to empirical testing. However, a number of other literature sources could serve as models for how to determine the extent to which diversity affects the choice of research topics. Much of the evidence asserts the veracity of the hypothesis is not quantitative but rather qualitative and anecdotal. Researchers who study the history of science, technology, and medicine provided descriptive analyses to support the hypothesis that diversity affects the choice of research topics. Given the manner in which the search associated with this review was conducted, with an emphasis on identifying the empirical literature, this historical or largely qualitative collection of literature was not thoroughly explored, but could be a source for building an argument that diverse points of view enhance the medical research enterprise.

Whitla, D. K., Orfield, G., Teperow, C., Howard, C., & Reede, J. (2003). Educational Benefits of Diversity in Medical School: A Survey of Students. *Academic Medicine*, 78(5), 460-466.

639

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

Among the three segments of the community (i.e., peers, basic science faculty, and clinical faculty), 88 percent of students felt that the diversity of their peers was the most important element in their education. The importance of a heterogeneous clinical faculty was considered a close second by 83 percent of the students. The need for variety among basic science faculty was ranked third among the groups by 58 percent of students. Researchers sampled the students' opinions on the extent to which discussions with students from different racial and ethnic backgrounds had affected their thinking about the equity of the health care delivery system, access to medical care for the underserved, cultural competency issues in treating a variegated population, and priority areas for future research. Students stated that their concerns in these areas were significantly enhanced by the different backgrounds of students. Indeed, they reported that having a diverse student body increased their concern for treating a heterogeneous population (84 percent), the equity of the delivery system (78 percent), and the access to care for the underserved (76 percent). The concern for priority in research areas (46 percent) was also significant but received less support from students. They were also asked whether schools should admit more underrepresented minority (URM) students. Over 90 percent of respondents indicated that admission policies seeking URM students should be strengthened (43 percent) or maintained (47 percent). Less than 3 percent of students said such policies (i.e., affirmative action) should be discontinued.

Lakhan, S. E. (2003). Diversification of U.S. medical schools via affirmative action implementation. *BMC Medical Education*, 3, 6.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This paper examined the consequences of affirmative action implementation in medical schools. The author cited literature arguing that affirmative action is more effective in achieving diversity, compared to race-blind policies. Racial/ethnic diversity in medicine is beneficial because it creates more universal health care, and increased medical practice in underserved areas. Additionally, diversity helps sustain the progression of biomedical advancements through systemic research, bridges the language and cultural gaps that prevent individuals from seeking medical attention, and inhibits discrimination while promoting tolerance within medical school bodies. The author argued that by continuing to implement race-conscious affirmative action programs, the disparities among different groups will continue to decrease. This review/debate paper also provided review of race-blind policies such as percentage plan and class-based alternatives and their effectiveness on improving racial/ethnic heterogeneity in medical fields.

Reichert, W. M. (2006). A success story recruiting & retaining underrepresented minority doctoral students in biomedical engineering. *Liberal Education*, 92(3), 52-55.

13

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This article provided a narrative of Duke University's efforts to integrate more URM students into its Biomedical Engineering doctoral program. The author relayed the success of the department in recruiting a nucleus of students, providing mentoring within the department, and subsequently seeing these students graduate. The author concluded with recommendations on how to effectively mentor URM students, and how to recruit and retain them in STEM fields.

Thurmond, V. B., & Kirch, D. G. (1998). Impact of minority physicians on health care. *Southern Medical Journal*, 91(11), 1009-13.

0

0

Annotated Summary:

The authors conducted a literature review that investigated the relationship between opportunities for URM students in medical education, and the role of minority physicians in access to health care for underserved populations. Their analysis indicated that minority physicians provided a disproportionately large share of health care services to underserved groups. The authors concluded, therefore, that judicial or legislative actions intended to curtail affirmative action in medical education could have significant negative effects on the quality of health care of underserved groups.

Rabinowitz, H. K., Diamond, J. J., Veloski, J. J., & Gayle, J. A. (2000). The impact of multiple predictors on generalist physicians' care of underserved populations. *American Journal of Public Health*, 90(8), 1225-1228.

2,199

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The purpose of the study was to examine the relative and incremental importance of multiple predictors of generalist physicians' care of underserved populations. Data from a 1993 national survey of allopathic and osteopathic generalist physicians, who graduated from medical school in 1983 or 1984, were analyzed. The study found four independent predictors of the provision of care to underserved populations: 1) being a member of an underserved ethnic/minority group, 2) having participated in the National Health Service Corps (NHSC), 3) having strong interest in practicing in an underserved area prior to attending medical school, and 4) growing up in an underserved area. The authors suggested that the more these predictors existed in the lives of the physicians, the more likely they were to care for the underserved. The authors also noted that 3 of the 4 predictors (whether the physician was a member of an underserved minority, grew up in an underserved area, and had a strong interest in practicing in an underserved area before medical school) can be determined prior to admission into medical school, which could aid in the selection process, and substantially increase the number of physicians caring for the underserved.

Saha, S., Taggart, S. H., Komaromy, M., & Bindman, A. B. (2000). Do patients choose physicians of their own race? *Health Affairs*, 19(4), 76-83.

3,789

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This study examined whether minority Americans tend to see physicians of their own race as a matter of choice, or simply because minority physicians were more conveniently located within predominantly minority communities. Using data from the Commonwealth Fund 1994 National Comparative Survey of Minority Health Care, the authors found that Black and Hispanic Americans sought care from physicians of their own race, because of personal preference and language, not solely because of geographic accessibility. The authors suggested that disproportionate racial pairing is attributable in part to the fact that many Black and Hispanic physicians locate their practices in predominantly Black and Hispanic communities. However, their analysis also demonstrated that it could also be attributable to the choices of minority health care consumers.

Traylor, A., Schmittiel, J., Mangione, C., & Subramanian, U. (2010). Adherence to Cardiovascular Disease Medications: Does Patient-Provider Race/Ethnicity and Language Concordance Matter? *Journal of General Internal Medicine*, 25(11), 1172-1177.

131,277

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

According to the authors, Black patients who had Black physicians and Spanish-speaking patients who had Spanish-speaking physicians were more likely to adhere to their cardiovascular disease medication (glucose controlling, lipid lowering and BP lowering) than Black patients who did not have Black physicians or Spanish-speaking patients who did not have Spanish-speaking physicians. There were no observable differences among Hispanic (non-Spanish speaking), Asian and White patients.

Guey-Chi, P., & Nunez-Smith, M. (2010). Professional Experiences of International Medical Graduates Practicing Primary Care in the United States. *Journal of General Internal Medicine*, 25(9), 947-953.

25

3-Negative ("diversity has negative effect on outcome")

0

Annotated Summary:

In an effort to characterize the professional experiences of non-US born International medical graduates (IMGs) from limited-resource nations practicing primary care in the US, the authors conducted in-depth interviews with 25 currently practicing IMGs. Despite diversity in professional background and demographic characteristics, IMGs in this study reported common experiences in the transition to and practice of medicine in the US. Findings suggest that both workforce and workplace interventions are needed to enable IMG physicians to sustain their essential and growing role in the US healthcare system. Finally, commonalities with experiences of other minority groups within the US healthcare system suggest that optimizing IMGs' experiences may also improve the experiences of an increasingly diverse healthcare workforce.

Noah, B. A. (2003). The Participation of Underrepresented Minorities in Clinical Research. *American Journal of Law & Medicine*, 29, 221-45.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This author explored the exclusionary history of racial minorities from clinical trials. The authors provided several reasons for the disparities, such as mistrust of the medical field by African Americans that resulted from events such as the Tuskegee experiment. Noah also discussed how physicians' attitudes toward Black subjects have led to exclusion. The author argued that the limited participation of minorities in clinical studies has affected their treatment of various diseases. The author concluded with recommendations to the government and the National Institutes of Health for the implementation of diversity into clinical trials. The author noted that as clinical trial populations become more genetically homogeneous, as they focus on particular genetic groups, they risk the marginalization of small genetic subgroups. If such subgroups were comprised primarily of racial or ethnic minorities, the author concluded, then the disparities in health status between the races could worsen.

Ross, L. F., & Walsh, C. (2003). Minority Children in Pediatric Research. *American Journal of Law & Medicine*, 29, 319-36.

0

2-Null/No Effect ("diversity has no effect on outcome")

0

Annotated Summary:

The researchers analyzed all articles in Pediatrics, Journal of Pediatrics, and Archives of Pediatrics and Adolescent Medicine from July 1999 through June 2000. From those 526 articles, they formulated criteria that studies contain (1) at least one U.S. researcher; (2) U.S. subjects; and (3) some prospective data collection. 114 studies met the criteria; survey data provided additional or new information on 25 studies for a total of 128 original studies. Only 67 percent of the studies reported race/ethnicity data, which translated to 84,323 subjects with race/ethnicity data from the total of 110,942 subjects (76%). The literature sample indicated that African American children were overrepresented in medical research. By contrast, White and Hispanic children were underrepresented.

Pendelton, D., & Graham, B. (2010). The role of the dental school environment in promoting greater student diversity. *Journal of Dental Education*, 74(10S), S98-S109.

0

2-Null/No Effect ("diversity has no effect on outcome")

0

Annotated Summary:

The article used a retrospective description of the steps that the University of Illinois at Chicago Dental School took to recruit and retain minority students over the last decade. The authors encouraged institutional transformation, and focused on strategies that ought to be used to bring about change in dental schools. These included authoring a strategic plan for diversity; participation in university-wide diversity initiatives; creating an administrative infrastructure for underrepresented minority student support; and establishing mentoring and counseling programs for URM students.

Mullan, F., Chen, C, Kolsky, G., Spagnola, M., & Petterson, S. (2010). The Social Mission of Medical Education: Ranking the Schools. *Annals of Internal Medicine*, 152(12), 804-811.

60,043

3-Negative ("diversity has negative effect on outcome")

0

Annotated Summary:

The authors sought to develop a metric called the Social Mission Score to evaluate medical school output related to three dimensions. The contribution of medical schools to the social mission of medical education varied substantially. Three historically black colleges had the highest social mission rankings. Public and community based medical schools had higher social mission scores than private and community-based schools. National Institutes of Health fundings were inversely associated with social mission scores. Medical schools in the northeastern United States and in more urban areas were less likely to produce primary care physicians and physicians who practice in underserved areas.

Jeste, D., Twamley, E., Cardenas, V., Lebowitz, B., & Reynolds, C. (2009). A Call for Training the Trainers: Focus on Mentoring to Enhance Diversity in Mental Health Research. *American Journal of Public Health*, 99(S1), S31-S37.

0

0

Annotated Summary:

Jeste et al. (2009) reviewed literature on the importance of mentoring for underrepresented minority (URM) researchers in the mental health field. The authors argued that there was a scarcity of mentors for URM students. Therefore, it was suggested that universities, medical schools, and funding agencies should implement national and local-level programs to develop and reward mentors of junior scientists from ethnic minority groups. They also indicated that community-based research and prevention-oriented research may be popular fields among URMs, because of their experiences with racism and health care disparities. URMs face various obstacles to research careers in the mental health field. One of the potential barriers discussed by the authors was that many current researchers are not aware of the potential advantages of diversity.

Yanagihara, R., Chang, L., & Ernst, T. (2009). Building infrastructure for HIV/AIDS and mental health research at institutions serving minorities. *American Journal of Public Health*, 99(Suppl1), S82-S86.

0

2-Null/No Effect ("diversity has no effect on outcome")

0

Annotated Summary:

In this article the authors discussed barriers and obstacles that confronted institutions as they initiated programs intended to increase diversity. According to the authors, such inclusion programs have resulted in research infrastructure improvements and moderate increases in the pool of URM students and junior faculty at resource-poor institutions that serve minorities. The authors used the University of Hawaii at Monoa, which serves a largely Asian and Pacific Islander population, in their analysis and employed lessons learned there for the benefit of other institutions. The authors identified barriers, e.g. a lack of mentors, weak research culture, scarce resources for faculty development, inter alia. The authors also briefly discussed potential solutions that could help overcome the barriers, such as models for effective leveraging of research funds.

Katz, R. V., Kressin, N. R., Green, B. L., & Kegeles, S. S. (2006). The Tuskegee Legacy Project: Willingness of Minorities to Participate in Biomedical Research. *Journal of Health Care for the Poor and Underserved*, 17(4), 698-715.

1,133

2-Null/No Effect ("diversity has no effect on outcome")

0

Annotated Summary:

The broad goal of the Tuskegee Legacy Project (TLP) study was to address, and understand, a range of issues related to the recruitment and retention of Blacks and other minorities in biomedical research studies. The specific aim of this analysis was to compare the self-reported willingness of Blacks, Hispanics, and Whites to participate as research subjects in biomedical studies, as measured by the Likelihood of Participation (LOP) Scale and the Guinea Pig Fear Factor (GPFF) Scale. The Tuskegee Legacy Project Questionnaire, a 60 item instrument, was administered to 1,133 adult Blacks, Hispanics, and non-Hispanic Whites in 4 U.S. cities. The findings revealed no difference in self-reported willingness to participate in biomedical research, as measured by the LOP Scale, between Blacks, Hispanics, and Whites, despite Blacks being 1.8 times as likely as Whites to have a higher fear of participation in biomedical research on the GPFF Scale.

Katz, R. V., Kressin, N. R., Green, B. L., & Claudio, C. (2007). Willingness of minorities to participate in biomedical studies: Confirmatory findings from a follow-up study using the Tuskegee Legacy Project Questionnaire. *Journal of the National Medical Association*, 99(9), 1052-60.

0

0

Annotated Summary:

The purpose of this study was to compare the self-reported willingness of Blacks, Puerto-Rican Hispanics, and Whites to participate as research subjects in biomedical studies, and to determine the reliability of the Tuskegee Legacy Project questionnaire (TLP). The TLP questionnaire was initially administered in a four-city study in 1999-2000 within a random-digit dial telephone survey. The questionnaire, a 60-item instrument, contains two validated scales: the Likelihood of Participation (LOP) Scale and the Guinea Pig Fear Factor (GPFF) scale. This study used the same methodology and survey over three additional cities and random-digit dialing samples on a random, stratified sample. Adjusting for age, sex, education, income, and city, the LOP Scale was not significantly different for the racial/ethnic groups (ANCOVA, $p = .87$). The GPFF Scale statistics were significantly higher for Blacks and Hispanics as compared to Whites (adjusted ANCOVA, $p < 0.001$). The findings from the current study, as well as from the prior study, were similar and reinforced the conclusion that Blacks and Hispanics self-report that, despite having a high fear of participation, they are just as likely as Whites to participate in biomedical research.

Saha, S., & Shipman, S. (2008). Race-Neutral Versus Race-Conscious Workforce Policy To Improve Access To Care. *Health Affairs*, 27(1), 234-245.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

Access to care for racial and ethnic minority groups, low-income populations, and the un- and underinsured has been problematic despite expansion in the health care workforce. Workforce policies that improve access to care are needed, as is funding to support them. This paper reviewed 21 articles representing 19 unique studies from 1985 through 2006, and concluded that underrepresented minority health professionals had consistently been more likely than those from low socioeconomic backgrounds or the National Health Service Corps to deliver health care to the underserved. These findings had implications for policies and programs that might leverage the workforce to better meet the needs of disadvantaged patients.

Taylor, V., Nivet, M., Strelnick, A., Butts, G., & Herbert-Carter, J. (2008). Diversity in Academic Medicine No. 1: Case for Minority Faculty Development Today. *Mount Sinai Journal of Medicine*, 75(6), 491-498.

123,280

0

Annotated Summary:

The authors presented their case through a combination of historical trends and future projections. The authors argued that the underrepresentation of URMs in healthcare professions could have a profoundly negative effect on public health, including serious racial and ethnic health disparities. They contended that such disparities can be reduced through increased recruitment, and development, of URM medical students and URM medical school faculty and administrators. The authors discussed barriers, for which there is evidence, to URM faculty development. They concluded that if such barriers can be overcome, the rewards could include improvements in public health; expansion of the medical research agenda; and improvements in the teaching of minority students.

Kim, M. J., Holm, K., Gerard, P., & McElmurry, B. (2009). Bridges to the Doctorate: Mentored Transition to Successful Completion of Doctoral Study for Underrepresented Minorities in Nursing Science. *Nursing Outlook*, 57(3), 166-71.

17

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

In this article, the authors described a five-year program at the University of Illinois at Chicago (UIC) called "Bridges." The program was designed to assist URM masters students in their transition to, and completion of, their PhD. Four master's students from two partner schools were recruited and assigned UIC faculty advisors. Administrative and financial support was provided during transition and doctoral study. Seventeen Bridges students were appointed to the Bridges program: 12 were admitted to the UIC PhD program since 2004 and one graduated in 2007. Mentored transitions from master's through doctoral programs, and administrative and financial support for students, were key factors in program success. Faculty research dyads enhanced the research climate in partner schools. The Bridges program at the UIC College of Nursing provided the research training and mentoring needed for URM nursing students to move successfully from master's to doctoral programs, and to complete the work for their PhDs.

Magnus, S., & Mick, S. (2000). Medical Schools, Affirmative Action, and the Neglected Role of Social Class. *American Journal of Public Health*, 90(8).

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The authors suggested that race-based affirmative action should be supplemented with class-based policies in medical schools. The authors reviewed published literature on the following topics: medical students' socioeconomic (SES) background, the impact of social class on medical treatment, physician-patient communication, and correlations between physician's SES origin and their patterns of service. The authors suggested that there is a compelling public policy justification for using class as a criterion for admission. One argument was that recruiting more physicians from less advantaged backgrounds may improve access to health care and quality of care (i.e., communication, cultural awareness) for disadvantaged patients, because a large number of such physicians would open practices in their neighborhoods or cities of origin. Proponents of this approach also believe that SES-disadvantage is a present "handicap," instead of a disadvantage that occurred over generations, as is the case with racial oppression. An SES disadvantage can be examined and assessed at the individual level, and not at the aggregate level. The authors suggested that more research is needed on the SES and demographic backgrounds of medical students to inform medical schools' admission policies.

Stinson, M., & Thurston, N. (2013). Racial Matching Among African-American and Hispanic Physicians and Patients. *Journal of Human Resources*, 37(2).

9,745

0

Annotated Summary:

The authors examined how physician location, practice type, and specialty decisions contribute to racial matching. They concluded that the most important cause of racial matching was physicians' choice of location.

The results indicated that compared to White non-Hispanics, Hispanics practiced in zip codes with a higher percentage of Hispanics and a higher percentage of Spanish-only speakers. Similarly, Blacks were located in zip codes with higher percentages of Blacks. There were also some differences in practice setting and in specialty choice across racial and ethnic groups. A relatively higher number of Blacks and Hispanics were in primary care specialties, and more Black doctors were in surgical specialties than either Hispanic or White non-Hispanic doctors. However, the differences were not statistically significant. White, non-Hispanic doctors were more likely to be in radiology, pathology, or anesthesiology, although the difference was statistically significant only when compared to Black doctors. Hispanic and Black doctors have marked preferences for racial matching, with 40 percent of Hispanics and 58 percent of Blacks reporting that it was important to them to serve a particular racial group. At the same time, only 11 percent of Whites report such preferences. The researchers concluded that a physician's choice of specialty, practice setting, and location were correlated with race. When controlling for location, specialty, and practice type, the effect of physician race for Blacks and Hispanics was much smaller than previously believed.

Andriole, D. A., Jeffe, D. B., McAlister, R. P., & Brotherton, S. E. (2008). Attrition in residents entering US obstetrics and gynecology residencies: analysis of National GME Census data. *American Journal of Obstetrics and Gynecology*, 199(5), 574e1-6.

1,055

3-Negative ("diversity has negative effect on outcome")

2

Annotated Summary:

The authors sought to identify risk factors for attrition among obstetrics and gynecology residents. They analyzed 2001-2006 American Medical Association Graduate Medical Education (GME) Census data, for all residents who entered obstetrics and gynecology in 2001, to characterize residents who did not complete a 4-year training period in their initial programs ("attrition"). Multivariable logistic regression models identified predictors of attrition from among age, gender, race, Hispanic ethnicity, medical school type, and medical school graduation year. Of 1,055 residents entering obstetrics and gynecology in 2001, 228 (21.6%) were in the "attrition" group (133 changed obstetrics and gynecology programs and/or completed training on atypical cycles; 75 changed specialty; 20 discontinued GME). Residents who were older, from underrepresented minority groups, Asian, osteopathic or international medical school graduates, were more likely to be in the "attrition" group (each $P < .05$). Analysis of a national cohort of obstetrics and gynecology residents identified substantial attrition and demographic risk factors.

Shaya, F., & Gbarayor, M. (2006). The Case for Cultural Competence in Health Professions Education. *American Journal of Pharmaceutical Education*, 70(6).

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This article established a case for integrating cultural competence into the curricula of health professions schools. The authors contended that health profession schools in the U.S. must be able to meet the health care demands of a rapidly growing racial and multiethnic population. One tactic is to develop and implement or expand existing resources and didactic courses to address cultural competence in the curricula of every college and school of pharmacy. The curriculum should require a focus on the reality of evidence-based health disparities among racial and ethnic minority populations; the importance of providing culturally competent care and communication to meet the health needs of diverse patient populations; and exposure to cultural diversity. Students should be grounded in cultural awareness and cultural sensitivity.

Chisholm, M. (2004). Diversity: A Missing Link to Professionalism. *American Journal of Pharmaceutical Education*, 68(5).

0

0

Annotated Summary:

The author expressed concern over the lack of pharmacy students' exposure to diversity during their education. The author suggested that colleges of pharmacy should offer cultural competency training to their students, but argued that additional changes are needed to address the lack of variety within professional health schools and among the professional healthcare community.

Grossman, D., & Taylor, R. (1995).
Working with People: Cultural Diversity
on the Unit. *American Journal of Nursing*,
95(2), 64-67.

0

0

Annotated Summary:

The authors discuss forging working relationship in a multicultural environment requires genuine commitment, empathy, and sensitivity from everyone. Key principles are: 1) Respect individual differences, (2) Get out of the comfort zone, (3) Refrain from making judgments about others until you can obtain sufficient information, (4) Learn to communicate more effectively, and (5) accentuate the positive.

Komaromy, M., Grumbach, K., & Drake, M. (1996). The Role of Black and Hispanic Physicians in Providing Health Care for Underserved Populations. *New England Journal of Medicine*, 334(20).

1,008

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This study had three aims: to examine the distribution of physicians and how it relates to the demographic characteristics of California communities; to examine the relation between the race or ethnic background of physicians and the characteristics of the communities where they practice; and to assess the relation between a physician's race or ethnic group and the racial or ethnic distribution and insurance status of his or her patients. Findings revealed that the supply of physicians in California communities was inversely associated with the proportion of Black and Hispanic residents, whereas it differed only slightly according to the income level of the areas. This suggests that residents of communities with high percentages of minorities may be in special need of health care services and that physicians who choose to practice in these areas fill a critical need.

Townsel, J., & Hood, D. (2000). A Challenge for the New Millennium: Eliminating Health Disparities and Achieving Educational and Workforce Diversity. *Environmental Health Perspectives*, 108(11), A492-A493.

0

0

Annotated Summary:

In this study, the authors asserted that if the United States is to develop an STE workforce by 2050 that reflects the diversity of the population, we must dramatically alter the current trend. Townsel and Hood stated that this challenge deserves our best effort and requires an immediate commitment. They indicated that the NSTC report (2) recommends guidelines that will hold all federal agencies accountable for progress in achieving diversity in the programs that they support. However, the approach to solving the problem is not as straightforward as merely increasing the percentage of underrepresented minorities who receive degrees in these critical areas. The commitment to educational diversity must be shared by a broad spectrum of universities. The authors put forward the idea that relegation of this responsibility to a restricted group of universities would diminish the pedagogical impact of diversity on the greater community of universities.

Guiton, G., Wilkerson, L., & Chang, M. (2007). Student Body Diversity: Relationship to Medical Students' Experiences and Attitudes. *Diversity in Medical Education*, 82(10),

441

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This study was designed to examine student body diversity and school-supported cross-cultural experiences on medical students' attitudes about diversity. Medical students' attitudes about culture and health and their perspectives on societal issues related to diversity were influenced by their medical school experiences. Informal instructional interactions seem to have been most influential in shaping these beliefs. The results suggest that students' experiences with diversity vary across schools. Compositional differences in the student, faculty, and patient populations contribute to these differences and influence students' educational experiences and attitudes about diversity and health care.

Mitchell, DA, & Lassiter, SL. (2006). Addressing health care disparities and increasing workforce diversity: the next step for the dental, medical, and public health professions. *Am J Public Health*, 96(12), 2093-7.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The authors reviewed the literature concerning health care disparities and workforce diversity issues—particularly within the oral health field—and provided a synthesis of recommendations to address these issues. This review was highly relevant to both the medical and public health professions, because they were facing similar disparity and workforce issues. The authors also argued that recently established relationships between oral and certain systemic-health conditions, could elevate oral health promotion and disease prevention as important points of intervention in the quest to improve public health.

Brotherton, S. E., Stoddard, J. J., & Back, M. R. (2000). The respective racial and ethnic diversity of US pediatricians and American children. *Pediatrics*, 105(1), 27-31.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The authors conducted a comparative analysis to examine trends in the racial and ethnic composition of pediatricians vis-a-vis the patient population they serve, including infants, children, adolescents, and young adults. Data on US pediatricians, sorted by racial/ethnic groups, came from Association of American Medical Colleges distribution data. It was based on the cohort of pediatricians graduating from US medical schools between 1983 and 1989, extrapolated to the total number of pediatricians actively practicing in 1996. Data on the demographic diversity of the US child population came from the US Census Bureau. The authors derived pediatrician-to-child population ratios (PCPRs) specific to racial/ethnic groups to measure comparative diversity between and among groups. The results showed that the black PCPR, currently less than one third of the white PCPR, fell from 14.3 pediatricians per 100 000 children in 1996 to 12 by 2025. Similarly, the Hispanic PCPR decreased from 16.9 in 1996 to 9.2 in 2025. On the other hand, for Whites, the PCPR increased from 47.8 to 54.2 during this period. The authors concluded that the racial and ethnic makeup of the US child population is currently far more diverse than that of the pediatricians who provide their health care services. If child population demographic projections hold true, and no substantial shifts transpire in the composition of the pediatric workforce, the disparities will increase substantially by the year 2025.

Johnson, J. C., Williams, B., & Jayadevappa, R. (1999). Mentoring program for minority faculty at the University of Pennsylvania School of Medicine. *Academic Medicine*, 74(4), 376-9.

98

3-Negative ("diversity has negative effect on outcome")

0

Annotated Summary:

This article discussed two questionnaires distributed at the University of Pennsylvania School of Medicine, in an attempt to understand and improve the mentoring experiences of URM faculty. Sixty-six Division and Department chiefs with mentoring programs were surveyed about their perceptions of the mentoring programs on their campus. Thirty-two assistant professors were surveyed about their mentoring experiences. Results prompted the establishment of mentoring and networking programs for minority faculty.

Olson, S., & Fagen, A. (2007).
Developing a Research Agenda. In P.
Whitacre (Ed.), *Understanding
Interventions that Encourage Minorities
to Pursue Research Careers* (pp. 38-54).
Washington, DC: National Academies
Press.

0

0

Annotated Summary:

This article described the research presented at the conference on Understanding Interventions that Encourage Minorities to Pursue Research Careers. The conference detailed how the representation of minorities, within the Ph.D. and research pipeline, dropped at each successive educational level. The authors asked: 1) what are the probabilities that an individual with a given set of characteristics will make the transition from one stage to another, 2) why do people with different characteristics make the decisions that they do, and 3) how can these probabilities be changed? Major challenges to reaching a solution were discussed, such as the role of time scales. The authors and conference participants agreed that a lot of time is required to effectively assess an intervention's outcomes. Thus, intermediate measures are needed to assess the program's effectiveness.

Shavers, V. L., Fagan, P., Lawrence, D, & McCaskill-Stevens, W. (2005). Barriers to Racial/Ethnic Minority Application and Competition for NIH Research Funding. *Journal of the National Medical Association*, 97(8), 1063-77.

160

2-Null/No Effect ("diversity has no effect on outcome")

0

Annotated Summary:

In this article the authors argued that, despite recognition of the need to increase the pool of racial/ethnic minority investigators, racial/ethnic minority representation among National Institutes of Health (NIH)-funded investigators has remained low. Identification of barriers to successful minority competition for NIH funding, and suggested strategies to overcome them, were derived by the authors through concept mapping and a meeting between minority investigators and investigators from minority-serving institutions. Concept mapping is a mixed-methods planning approach that integrates common data collection processes with multivariate statistical analyses, was used in this exploratory project. A group of 160 minority NIH investigators or investigators from minority-serving institutions participated in the brainstorming and ranking exercises. A subset of the group (n=35) attended an in-person meeting to discuss the results of the concept-mapping exercise with NIH-NCI staff. Nine barriers to minority investigators' competition for NIH funding were identified through concept mapping. The identified barriers included inadequate mentoring, institutional bias in NIH policies, and an unfair competitive environment, inter alia. The data and analysis suggested the need for a multilevel approach to increase minority representation among funded NIH investigators. Specifically, the authors argued, the NIH should use strategies that overcome barriers at the home institution, within NIH and at the investigator level.

...

The authors proposed using neutral admissions policies that may be important for several reasons: (1) they are required by federal law; (2) they help directly advance institutional diversity goals associated with mission-driven aims, fostering more inclusive and heterogeneous faculties and student bodies without triggering strict scrutiny; (3) they may be used in jurisdictions where race, ethnicity and gender are not considered. The authors suggested using a record of inclusive conduct and multicultural skills or socio-economic status as key racial, ethnic and gender-neutral criteria. The authors argued that inclusive conduct and multicultural skills generate a tolerant, productive and creative environment with individuals from a range of cultures, backgrounds, and experiences, including but not limited to different races and genders. On page 32, the authors listed examples of specific life experiences and conduct that could be considered under the inclusive conduct or multicultural skills criterion. The authors also indicated that it may be in an institution's interest to build a faculty and student body that has multicultural skills as diverse individuals are needed to expand opportunities for excellence in research and teaching in a broadly diverse society.

Further, the authors discussed federal constitutional and statutory provisions, along with corresponding legal principles regarding the consideration of race, ethnicity and gender in educational programs that govern many student diversity efforts at institutions of higher education. These include the Equal Protection Clause of the U.S. Constitution, Title VI, and Title IX.

AAMC. (2007). The Diversity Research Forum: Exploring Diversity in the Physician Workforce: Benefits, Challenges, and Future Decisions. In *The Diversity Research Forum*. Association of American Medical Colleges.

0

0

Annotated Summary:

The AAMC report covered several topics, including key strategies for expanding access to care for underserved populations. It also addressed the challenges of increasing minority representation in the medical field; and ensuring that all physicians are skilled in the delivery of culturally competent care. Other studies have documented the role of diversity in increasing access for underserved populations, and improving patients' satisfaction with care, among a host of other benefits. To examine the current state of research on diversity in the physician workforce, and identify the challenges of conducting such research, the AAMC's Division of Diversity Policy and Programs (DDPP) convened a panel of researchers and funders to present findings on the impact of diversity in medicine. They also discussed the implications of public policy on the ability of these efforts to both proceed and create change.

Sewell, J., Hawley, N., Kingsley, K., O'Malley, S., & Ancajas, C. (2008). Recent Admissions Trends at UNLV-SDM: Perspectives on Recruitment of Female and Minority Students at a New Dental School. *Journal of Dental Education*, 72(11), 1261-1267.

30

0

Annotated Summary:

The purpose of this study was to assess the current and historical trends in diversity among dental school applicants and enrollees at a new dental institution, the University of Nevada, Las Vegas, School of Dental Medicine (UNLV-SDM). Applicant and enrollment data for the first four cohorts (2002-2005), sorted by gender and ethnicity, were retrieved and summarized by the Office of Admissions and Student Affairs at UNLV-SDM. Minorities were classified, as defined by UNLV, as students or applicants of Black (African American), Native American/American Indian/Alaska Native, Hispanic, and Asian or Pacific Islander descent. The means of the applicants and enrollments for specific demographic groups (males, females; minorities, non-minorities) were analyzed using t-tests and t-distributions. The null hypothesis was that no significant differences would be found between the means of these groups, based upon either gender or ethnicity. All samples were measured using two-tailed t-tests. The principal findings of this analysis were that enrollment of females at UNLV-SDM was relatively consistent during this time interval, although significantly lower than the U.S. average of all dental schools. The enrollment of minorities at UNLV-SDM, however, was consistent and comparable to the U.S. average, although these percentages were disproportionately smaller than the percentage of minorities in the general population. Based upon these findings, a new model for outreach and recruitment of females and minorities was suggested, based in part upon evidence of successful strategies by dental educators at other institutions, in order to increase the enrollment of female and underrepresented minority students.

Okunseri, C., Bajorunaite, R., Abena, A., Self, K., & Lacopino, A. (2008). Racial/ethnic disparities in the acceptance of Medicaid patients in dental practices. *Journal of Public Health Dentistry*, 68(3), 149-153.

4,301

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The authors analyzed data from the 2001 Wisconsin Dentist Workforce Survey. They used descriptive statistics and logistic regression analysis to examine the factors associated with the outcome variable. Racial/ethnic minority dentists were twice as likely as White dentists to accept new Medicaid patients. Dentists in larger practices were also significantly more likely than those in smaller practices to accept new Medicaid patients. These findings suggest that increasing dental workforce diversity to match the diversity of the general US population can potentially improve access to dental care for poor and minority Americans, and may serve as an important force in reducing disparities in dental care.

Friedemann, M., Pagan-Cross, H., & Mayorga, C. (2008). The Workings of a Multicultural Research Team. *Journal of Transcultural Nursing*, 19(3), 266-273.

7

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This study deals with transcultural nurse researchers who confront the challenge of developing and maintaining a multiethnic team. With the example of a multicultural research study of family caregivers, conducted in the Miami-Dade area, the authors summarize the steps involved in developing a culturally competent and effective team. Pointing out challenges and successes, the authors illustrated team processes and successful strategies relative to recruitment of qualified members, training and team maintenance, and evaluation of team effectiveness. With relevant concepts from the literature applied to practical examples, the authors demonstrated how cultural team competence grows in a supportive work environment.

Yancey, A. K., Ortega, A. N., & Kumanyika, S. K. (2006). Effective Recruitment and Retention of Minority Research Participants. *Annual Review of Public Health, 27*, 1-28.

0

0

Annotated Summary:

The authors identified 95 studies published between January 1999 and April 2005 that describe methods of increasing minority enrollment and retention in research studies, more than three times the average annual output of scholarly work in this area during the prior 15-year period. Ten themes emerged from the 75 studies that were primarily descriptive: (a) attitudes toward and perceptions of the scientific and medical community, particularly among African Americans; (b) sampling approach; (c) study design; (d) disease-specific knowledge and perceptions of prospective participants; (e) prospective participant psychosocial issues such as self-efficacy, depressiveness, distress, hostility, social support, and readiness to change; (f) study incentives and logistics; (g) community involvement; (h) sociodemographic characteristics of prospective participants; (i) participant beliefs, e.g., religiosity; and (j) cultural adaptations or targeting. The major distinctions between studies were related to: (a) study design—observational versus intervention, with the latter posing greater challenges; and (b) sampling approach—probability versus no probability, with the former proving more difficult and more expensive. The remaining 20 studies, which directly analyzed the efficacy or effectiveness of recruitment/retention strategies, were examined in detail and provided useful insights related to four of the ten factors: sampling approach/identification of targeted participants; community involvement/nature and timing of contact with prospective participants; incentives and logistical issues; and cultural adaptations. The authors then characterized the current state of this literature, discussing implications for future research needs and directions.

	Sample Size	Direction of Effect	Effect Size
Ginther, D. K., Schaffer, W. T., Schnell, J., & Masimore, B. (2009). <i>Diversity in Academic Biomedicine: An Evaluation of Education and Career Outcomes with Implications for Policy</i> . National Institutes of Health, University of Kansas, Lawrence. Retrieved From http://www2.ku.edu/~kuwpaper/2009Papers/201006.pdf	3,825	1-Positive ("diversity has a positive impact on outcome")	0

Annotated Summary:

The authors examined the educational transition rates in the biomedical sciences by gender, race, and ethnicity, from high school to academic career outcomes. Using a number of educational databases, the authors investigated gender and racial/ethnic representation at typical educational and career milestones, en route to faculty careers in biomedicine. Multivariate regression methods were employed to examine faculty career outcomes using the National Science Foundation's Survey of Doctorate Recipients. The authors found that while transitions between milestones varied by gender and race/ethnicity, those between high school and college - and between college and graduate school - were critical points at which underrepresented minorities have been lost from the biomedical pipeline. The authors concluded that specific targets for policy intervention were needed.

King, T. E., Dickinson, T. A., DuBose, T. D., Flack, J. M., & Hellmann, D. B. (2004). The case for diversity in academic internal medicine. *American Journal of Medicine*, 116(4), 284-289.

0

0

Annotated Summary:

In this opinion piece developed by the Association of Professors of Medicine (APM) Diversity Task Force, the authors provided reasons to support the rationale that diversity enhances the ability of academic medicine to improve medical education. The authors argued that heterogeneity improves awareness and appreciation of cultural differences among racial or ethnic groups (i.e., cultural competence), promotes research that is inclusive of the need and concern of minority groups, and improves the care delivered to minority and medically underserved groups. The authors also laid out challenges to achieving more inclusion in academic medicine, including the limited number of minority faculty and mentors available for minority medical students, and discussed factors that explain why minorities do not enter or choose to leave academic medicine careers.

Brown, T. T., Scheffler, R. M., Tom, S. E., & Schulman, K. A. (2007). Does the Market Value Racial and Ethnic Concordance in Physician–Patient Relationships?. *Health Services Research, 42*(2), 706-726.

12,886

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The author provided literature on racial/ethnic concordance, using a range of data from the Community Tracking Study Physician Surveys and Household Surveys, the U.S. Census, and the Area Resource File. The aim was to determine whether or not area-level racial/ethnic patient-physician concordance affected physicians' per-hour earnings. It was found that both Hispanic and Asian physicians earned premiums in areas they were underrepresented relative to their respective racially/ethnically concordant populations. However, Hispanic physicians were, on average, underrepresented relative to the Hispanic population; and Asian physicians were, on average, overrepresented relative to the Asian population. There were no significant findings for Black physicians in this study.

Saha, S., Burgess, D., Van Ryn, M., & Dovidio, J. (2007). Reducing Racial Bias Among Health Care Providers: Lessons from Social-Cognitive Psychology. *Journal of General Internal Medicine*, 22(6), 827-887.

0

0

Annotated Summary:

The authors presented a set of evidence-based recommendations to guide interventions that are aimed to combat unintentional bias among health care providers. They sought to provide a framework that outlined certain strategies and skills that were designed to enhance internal motivation to reduce bias, and enhance providers' confidence in their ability to successfully interact with socially dissimilar patients, inter alia. The authors synthesized lessons from social-cognitive psychology in the development of their recommendations, but cautioned that much of the reviewed research was not performed in health care settings. The authors concluded that their discussion was merely a starting point for the task of reducing racial bias in healthcare.

Curry, W. T., & Barker, F. G. (2009). Racial, ethnic and socioeconomic disparities in the treatment of brain tumors. *Journal of Neurooncology*, 93(1), 25-39.

0

0

Annotated Summary:

In this article, the authors reviewed the differences and disparities between incidence; pathobiology; processes and outcomes of care; and survival, based on social factors for brain tumors of all histologies. They outlined types of studies that clarified their understanding of disparities (or lack thereof) in brain tumor incidence, biology, and outcomes. The authors suggested that to overcome disparities in care delivery a multi-faceted approach must be employed. It involves dedicated efforts to increase the number of minority physicians with specialty training in neurooncology, continued study of outcomes and care for brain tumor patients from underserved and vulnerable populations, tactical outreach to underserved communities, and enhanced fluency in cultural competence for all physicians. Evaluation of quality measures, including equity in health care delivery, should be a continuous and purposeful endeavor for organized and academic neurooncology.

Saha, S., Beach, M. C., Cooper, L. A., Johnson, R. L., & Arbelaez, J. J. (2004). Racial and ethnic differences in patient perceptions of bias and cultural competence in health care. *Journal of General Internal Medicine*, 19(2), 101-110.

6,299

3-Negative ("diversity has negative effect on outcome")

0

Annotated Summary:

That authors sought to determine: 1) whether racial and ethnic differences exist in patients' perceptions of primary care provider (PCP) and general health care system-related bias and cultural competence; and 2) whether these differences are explained by patient demographics, source of care, or patient-provider communication variables. Most racial/ethnic differences in perceptions of PCP bias and cultural competence were explained by demographics, source of care, and patient-physician communication variables. In contrast, racial/ethnic differences in patient perceptions of health care system-wide bias and cultural competence persisted even after controlling for confounders: African Americans, Hispanics, and Asian Americans remained more likely than Whites ($P < .001$) to perceive that: 1) they would have received better medical care if they had belonged to a different race/ethnic group (Pr 0.13, Pr 0.08, Pr 0.08, and Pr 0.01, respectively); and 2) medical staff judged them unfairly or treated them with disrespect based on race/ethnicity (Pr 0.06, Pr 0.04, Pr 0.06, and Pr 0.01, respectively) and how well they spoke English (Pr 0.09, Pr 0.06, Pr 0.06, and Pr 0.03, respectively).

Teal, C. R., & Street, R. L. (2009). Critical elements of culturally competent communication in the medical encounter. *Social Sciences and Medicine*, 68(3), 533-543.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The authors presented a model of culturally competent communication (CCC) as a framework for the study of cultural competence 'in action.' First, they described four critical elements of culturally competent communication in the medical encounter, i.e. communication repertoire, situational awareness, adaptability, and knowledge about core cultural issues. They presented a model of culturally competent physician communication that integrated existing frameworks for cultural competence in patient care, with models of effective patient-centered communication. The culturally competent communication model included five communication skills and utilized four critical elements to define skills and apply contextually appropriate communication behaviors to engage with culturally different patients in complex interactions. The model was designed to foster maximum physician sensitivity to cultural variation in patients as the foundation of physician-communication competence in interacting with patients. The CCC model adds to the current literature by integrating CC with patient-centered communication, and identifying specific communication issues that relate to ways in which culture may manifest in clinical encounters. The CCC model, according to the authors, optimized a physician's communication repertoire, self and situational awareness, adaptability and cultural knowledge within each skill component. Through their definition and explanation of the model, the authors' sought to provide a step towards the evaluation of the model's impact on health care.

Rew, L., Hoke, M. M., Horner, S. D., & Walker, L. (2009). Development of a dynamic model to guide health disparities research. *Nursing Outlook*, 57(3), 132-142.

0

0

Annotated Summary:

This article described the evolution of a conceptual model for the study of health disparities. The model, based on a review of literature, was developed to guide 19 pilot studies funded by the Texas-New Mexico P20 Southwest Partnership Center for Nursing Research on Health Disparities. Reflection on these studies, their respective methodologies, and findings resulted in a revised model to guide further studies of communities experiencing health disparities. The study considered several issues: (1) whether to focus on individuals vs. communities, (2) assets that may initially be unrecognized in communities experiencing health disparities, (3) research strategies for capitalizing on these assets, and (4) the invisibility of the research community in the model. These issues represented four essential facets of the same underlying larger issue, which is that when individuals were viewed within the context of their communities, each varied in risks and barriers, as well as assets. Taken as a group, therefore, there were important assets within individuals in the community and in the overall community that could strengthen the relevance and appropriateness of community-based health promotion interventions. The authors redefined their focus for health disparities from individuals to communities with health disparities. This study expanded the dimensionality of these communities to include community assets as well as predisposing risk factors and barriers.

Reede, J. Y. (2003). A Recurring Theme: The Need for Minority Physicians. *Health Affairs*, 22(4), 91-93.

0

0

Annotated Summary:

Reede discussed the evidence for the need to increase diversity within the physician workforce. The author argued that diversity was needed in order to ensure high-quality medical education, access to health care for the underserved, advances in research, and improved business performance. The author emphasized the need to recruit medical students from diverse populations. The author recommended that inventive efforts were needed to encourage wider engagement in diversity efforts, such as the expansion of financial, regulatory, and community benefit mechanisms.

Grumbach, K., Coffman, J. M., Young, J. Q., Vranizan, K., & Blick, N. (1998). Physician supply and medical education in California - A comparison with national trends. *Western Journal of Medicine*, 168(5), 412-421.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

The authors examined trends in the number of physicians and in medical education in California and the United States between 1980 and 1995, to better formulate workforce policies appropriate to the state's requirements for physicians. They found that California had an ample supply of physicians overall, but too many specialists; too few underrepresented racial/ethnic minority physicians; and poor distribution of physicians across the state. However, they argued that a recent increase in the number of practicing physicians in California was much less dramatic than in the U.S. The state's unusually high rate of population growth enabled California to absorb large growth in the number of practicing physicians and residents between 1980 and 1995, without substantially increasing the physician- to-population ratio. Due to a projected decline in the state's rate of population growth, the supply of physicians per capita in the state was expected to rise steeply in subsequent years, unless the state implemented prompt reductions in the production of specialists. An immediate 25 percent reduction in specialist residency positions was thought to be necessary to bring the state's supply of practicing specialists in line with projected physician requirements for the state by 2020. The authors concluded that major changes were required, if the state's residency programs and medical schools were to produce the mix of physicians the state required. California's medical schools and residency programs needed to coordinate with federal and state government in order to address the imbalance between physician supply and state needs.

Anon. (2008). *Enhancing Diversity in Science: A Leadership Retreat on the Role of Professional Associations and Scientific Societies*.

98

2-Null/No Effect ("diversity has no effect on outcome")

0

Annotated Summary:

The report is based on a one-day workshop held on 2/28/2008, sponsored by the Consortium of Social Science Associations in collaboration with several other organizations: the American Association for the Advancement of Science; American Educational Research Association (AERA); American Psychological Association (APA); American Sociological Association (ASA); Association of American Medical Colleges (AAMC); Consortium of Social Science Associations (COSSA); Federation of American Societies for Experimental Biology (FASEB); Institute for the Advancement of Social Work Research (IASWR); and Society for Research in Child Development (SRCD).

These professional associations and scientific societies shared concern about the future availability of sufficient numbers of scientists, especially those from underrepresented minority groups. The writers concluded that this shared concern could be a starting point for collaboration among associations to develop strategies to intervene and increase minority participation in their respective fields. The workshop included breakout groups, during which these strategies were further discussed (summarized in this report). Not surprisingly, mentoring, role models, financial support, active recruitment, and the like led the list of important mechanisms to address the lack of minorities and women in research careers in the sciences.

Anon. (2008). *The Importance and Benefits of Diverse Faculty in Academic Medicine: Implications for Recruitment, Retention, and Promotion*. Washington DC: Association of American Medical Colleges.

0

0

Annotated Summary:

This report resulted from the meeting convened by Diversity Policy and Programs at the Association of American Medical Colleges (AAMC). The meeting addressed the challenges faced by racial and ethnic minority faculty. Discussion points and solutions included such things as enhancing support around pipeline issues, factors of promotion and tenure, maintaining mentoring relationships, mentoring programs and planning, and sustaining faculty professional development programs. Attendees reiterated the need for institutions to focus on helping racial and ethnic minority students attain admission into medical school, given the low attrition rate of medical school matriculants. With regard to promotion and tenure, attendees stressed the importance of providing faculty with guidance and tools to document their professional progress, in preparation for advancement. Such efforts require support from an institution's leadership, and involve stressing the overall departmental-level benefits versus the individual-level benefits of faculty professional development programs. The attendees also stressed the importance of racial and ethnic minority faculty mentees keeping an open mind when selecting a mentor. Attendees underscored how opened-mindedness with respect to race and ethnicity can yield favorable outcomes in some mentoring relationships. Overall, attendees believed that racial and ethnic minority recruitment, retention and promotion efforts are in need of additional funding, especially to support the salaries of these groups. This type of funding is critical to some institutions' efforts to successfully meet their faculty diversity goals and objectives.

Katz, RV, Kressin, NR, Green, BL, Kegeles, SS, & James, SA. (2007). Awareness of the Tuskegee Syphilis Study and the US Presidential Apology and Their Influence on Minority Participation in Biomedical Research. *American Journal of Public Health*, 98(6), 1137-1142.

1,133

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

Using cross-tabulations, factor analyses and logistic regressions, this study examined the flow out of and into science, mathematics, and engineering (SME) majors of a cohort of African American, American Indian, and Chicano/Latino undergraduate (Ns = 330) and factors associated with persistence in those majors. The targeted minorities experienced greater attrition from SME majors than did White and Asian Americans. Females from targeted groups showed the largest outflow, followed by their male counterparts. Person-organization "fit" and peer values related to campus activism and engagement were negatively associated with SME persistence. The absence of person-organization fit influence among targeted minorities suggests a need for further study on the relevance of established SME, values, educational inequity, self-selectivity, and other factors that limit minority SME representation.

Institute of Medicine. (2004). *In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce*. National Academies of Science.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This study was supported by the National Academy of Science and the W.K. Kellogg Foundation. The results in this book were obtained by the Committee on Institutional and Policy-Level Strategies for Increasing the Diversity of the U.S. Health Care Workforce and Board on Health Science Policy. The Committee sought to assess the potential for institutional and policy-level strategies to increase URM participation in the health professions. The methodology involved research on the pertinent literature, input from interested parties in a series of six workshops, and study of existing models of success, which resulted in a series of recommendations. The committee stated reasons why racial or ethnic diversity was important in health profession fields (i.e., dentistry, medicine, nursing, and psychology) and recommended a set of guidelines on how health profession educational institutions (HPEIs), private foundations, and state and federal government agencies could increase the participation of URM students in health professions careers. The committee also suggested that HPEIs needed to develop a clear mission statement that supported the value of diversity in health education, and guided admission policies based on that mission. In addition, the committee argued that health profession training programs that sought to improve the quality and availability of diverse health professionals should be evaluated, and funds should be allocated to successful programs. Health profession educational institution accreditation bodies needed to develop explicit policies that articulated the value of diversity among health professionals, and monitor the progress of member institutions toward that goal. Finally, the committee suggested additional data collection was required to more thoroughly characterize URM participation in the health professions and in health profession education, and to increase broad stakeholders' understanding regarding steps that should be taken to enhance diversity among health professionals.

Philips, B. U., Mahan, J. M., & Perry, R. R. (1981). Minority Recruitment to the Health Professions: a Matched Comparison Six-Year Follow-Up. *Journal of Medical Education*, 56(9), 742-7.

109

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This article presented the findings from a follow-up study that was conducted six years after a summer program at University of Texas Medical Branch. Surveys were sent to former participants of the program group, as well as a matched comparison group, in order to determine if the program had significant long-lasting results on retaining participants in health-based careers. The summer program aimed to attract minorities to health care professions and increase the number of health care providers in medically underserved areas. The program provided goal-oriented skills, as well as information on combating obstacles to success. The results indicated that the program participants were more likely to be in their first career choice, and more likely to be in healthcare professions, than comparison group participants. Moreover, health professionals were more likely to be employed in the area of their schooling, thus helping to provide medical services in underserved areas.

Thomson, W. A., Ferry, P. G., King, J. E.,
Martinez-Wedig, C., & Michael, L. H.
(2003). Increasing Access to Medical
Education for Students from Medically
Underserved Communities: One
Program's Success. *Academic Medicine*,
78(5), 454-9.

153

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This article addressed the Premedical Honors College (PHC) program, an eight-year program that follows students through college and medical school in Texas. PHC targets a 13-county region, whose population is 81% Hispanic/Mexican American. The shortage of health care in south Texas is attributed to the fact that very few students from its colleges and universities actually enter medical school, therefore decreasing the chances that medical students will return home to work. To assist those who enter the PHC program, each student receives financial assistance through college and medical school. "To date, 1,097 students have applied for admission into the PHC. Of these, 318 have been interviewed, 208 have been accepted, and 159 have matriculated into the program. 71 students have completed the college portion of the program at the University of Texas-Pan American and 60 (84.5%) have matriculated into medical school to date (fall 2002). The 19 students who were accepted to the PHC but did not matriculate cited various reason for declining the offer, including better scholarship offers from other colleges, desire to attend a more prestigious university, or desire to attend school further from home."

Beckerle, M. (2006). Diversity in Science: Lots of Rhetoric, Many Plans, Not Much Progress. *American Society for Cell Biology Newsletter*, 2006(Feb), Retrieved from <http://www.ascb.org/files/0602pres.pdf>

0

0

Annotated Summary:

This study asserted that training of diverse students in science is critical to building an informed citizenry prepared for future decision-making and broad debate. As scientific discoveries affect society and human health more and more, scientific issues are increasingly in the political foreground. The author stated that we need a scientifically astute population to weigh in on issues that affect us all. These include stem cell research, health care access, National Institutes of Health (NIH) funding, immunizations and preventive medicine, global health, genetic information and insurability, and education. Scientific and technological advances have fueled economic growth and improved the health and welfare of the human race. The scientific discoveries of today will result in the cures of tomorrow. Beckerle concluded that we all need to work in our home institutions to insure that the opportunities to participate in science are available to diverse constituents at all levels.

Nickens, H., Ready, T., & Petersdorf, R. (1994). Project 3000 by 2000 -- Racial and Ethnic Diversity in U.S. Medical Schools. *New England Journal of Medicine*, 331(7), 472-476.

0

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

Only 30 years ago, 93 percent of medical students in the United States were men, and 97 percent were non-Hispanic whites. Today, the profile of U.S. medical students has changed dramatically. Forty percent of the 67,000 students in the nation's 126 allopathic medical schools are women, and 31 percent belong to racial or ethnic minority groups. Producing a physician work force that draws on the knowledge and skills of people from all segments of our society has long been a key element of this country's health-manpower policies as well as those of the Association of American Medical Colleges (AAMC). Producing a physician work force that reflects this country's rich diversity is important not only for reasons of social equity, but also to ensure the delivery of health care that is competent both technically and culturally.

Although women have made steady progress toward equitable representation, the enrollment gains of members of racial and ethnic minority groups have been sporadic and uneven. Students of Asian origin have been the most successful and today make up 16 percent of all medical students and more than half of all minority-group students. In contrast, enrollment increases for blacks, Hispanics, and American Indians have been much smaller. The AAMC designated blacks, Mexican Americans, mainland Puerto Ricans, and American Indians as underrepresented in medicine in 1970. In the remainder of this essay, the term "underrepresented minorities" will be used to refer to these four groups. These minority groups, which were severely underrepresented in medicine and throughout higher education in previous decades, remain seriously underrepresented today. Regrettably, this problem persists despite substantial efforts by medical schools, foundations, and the federal government over more than a quarter of a century to make medical education more accessible to students from all segments of our society.

As recently as 1964, only 2.2 percent of the 32,000 students enrolled in the nation's existing 83 allopathic medical schools were black. The two black medical schools, Howard and Meharry, enrolled 76 percent of these students. On average, each of the other 81 schools enrolled only one black student every two years⁴. In 1971, the first year for which there are data on minority groups other than blacks, only 19 Mexican American, 14 mainland Puerto Rican, and 2 American Indian physicians graduated from U.S. medical schools.

1090-1

Sample Size

Direction of Effect

Effect Size

Daley, S., Wingard, D. L., & Reznick, V. (2006). Improving the retention of underrepresented minority faculty in academic medicine. *Journal of the National Medical Association*, 98(9), 1435-40.

112

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

This study dealt with 112 junior faculty members at the University of California San Diego School of Medicine, who participated in a structured mentorship program from 1999-2005. The faculty were surveyed to determine their current positions at UCSD, or other institutions, and to determine whether or not they were still in academic medicine. Results were compared to junior faculty in time periods before and after their participation in the program. A connection was found between increased retention and representation of URM faculty at UCSD, and in academic medicine following the program completion.

Johnson, J. C., Jayadevappa, R., Taylor, L., Askew, A., & Williams, B. (1998).

Extending the pipeline for minority physicians: a comprehensive program for minority faculty development. *Academic Medicine*, 73(3), 237-44.

0

0

Annotated Summary:

The authors described the comprehensive minority faculty development program at the University of Pennsylvania School of Medicine, which involves minority undergraduates, medical students, residents, fellows, and faculty. This program allows the administrative staff and research methodologists to assist trainees at all levels across all departments in the school of medicine. The principal student recruitment program is the undergraduate pre-medicine enrichment program. The medical student component provides general counseling, research development, and activities to enhance performance in the clinical courses. The components for advanced trainees (residents, fellows, and postdoctoral trainees) and faculty consist of training in research methods, mentoring, teaching skills, and scientific writing skills. Through this program, the University of Pennsylvania School of Medicine has increased the number of underrepresented minority faculty by 32% since 1993-94, and created an environment conducive to the professional growth and development of minority faculty.

1094-1

Sample Size

Direction of Effect

Effect Size

Potts, J. T. (1992). Recruitment of minority physicians into careers in internal medicine. *Annals of Internal Medicine*, 116(12), 1099-1102.

0

2-Null/No Effect ("diversity has no effect on outcome")

0

Annotated Summary:

The author provided a narrative on the importance of increasing the number of minority physicians, and provided data on URM students enrolled in U.S. medical schools from 1968-1991. This study described programs at the Massachusetts General Hospital and Harvard Medical School designed to increase the recruitment and retention of minority physicians.

Thom, D. H., Tirado, M. D., Woon, T. L., & McBride, M. R. (2006). Development and evaluation of a cultural competency training curriculum. *BMC Medical Education*, 6, 38.

86

1-Positive ("diversity has a positive impact on outcome")

0

Annotated Summary:

In this study, the authors examined the cultural competence of physicians and other health care providers as a mechanism for reducing health disparities, by improving the quality of care across racial/ethnic groups. The authors used a sample of 53 primary-care physicians at four different practice sites, and 429 patients with diabetes and/or hypertension. Patients completed a baseline survey which included a measure of their physician's culturally competent behaviors. Cultural competency training was then provided to physicians at two of the sites. At all 4 sites, physicians received feedback in the form of their aggregated cultural competency scores compared to the aggregated scores from other physicians in the practice. The primary outcome at 6 months was change in the Patient-Reported Physician Cultural Competence (PRPCC) score; secondary outcomes were changes in patient trust, satisfaction, weight, systolic blood pressure, and glycosylated hemoglobin. The authors did not find evidence of the impacts of cultural competency training on these outcomes.