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The Impact of Minority and Women Leaders on Health Care Employee Satisfaction

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THE IMPACT OF MINORITY AND WOMEN LEADERS ON HEALTH CARE EMPLOYEE SATISFACTION

BY

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A doctoral project submitted to the faculty of the Medical University of South Carolina in partial fulfillment of the requirements for the degree Doctor of Health Administration in the College of Health Professions

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A preponderance of research suggests that the presence of minorities on the front lines of health care can improve access, satisfaction, and quality of care for minority patients, in addition to mitigating health care disparities. Yet, there is little evidence of the utility of diversity efforts focused on the upper echelons of health care. By examining employee satisfaction scores from 58 hospitals across the United States, this study explored the relationship between the presence of women and minority managers and executives and two key indicators—representation of minority employees and employee satisfaction. Quantitative analyses showed that gender and racial diversity in health care leadership has a positive impact on minority employee representation and a mixed impact on satisfaction. Furthermore, a token number of minority managers had a depressive effect on minority staff satisfaction while a critical mass of minority managers had a positive effect that increased as minorities in management increased. These findings help legitimize calls to increase diversity in the leadership of health care organizations.

Dedication

You took your last breath before I could write my last page, but this dissertation has always been for you, Mammaw.

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CHAPTER 1

INTRODUCTION

Background and Need

Evolving Demographics and Evolving Paradigms

The United States is in the midst of an unprecedented demographic evolution. Within the nation's 100 largest metropolitan areas, racial and ethnic minorities made up 98% of the population growth between the 2000 and 2010 U.S. Census, and 22 of these areas now hold "majority minority" population status (Frey, 2011b). The 2010 Census also revealed that racial and ethnic minorities represented 49.8% of babies under the age of one in 2010 (Frey, 2011a). In essence, racial and ethnic minority populations in America are growing at a rate higher than that of non-Hispanic whites and are expected to represent the majority of the population by 2042 (Vincent & Velkoff, 2010). In addition to the surge in minority populations, of the nation's 307 million residents, 12.5% (38.5 million) are foreign-born (U.S. Census Bureau, 2010).

As the United States has become more diverse, so have the organizations within its borders. As this transformation progressed in the latter part of the 20th century, American corporations, academic institutions, and government entities alike engaged in a flurry of activities that sought to grapple with or study this new reality. During this period, the research on organizational diversity evolved in several key areas—from legal compliance to advancing organizational effectiveness, from recognizing diversity more generically to understanding diversity in the context of an organization, and from changing individuals to changing organizations (Jackson & Joshi, 2001, pp. 206-230). These shifts represent an evolution beyond

early rationales for diversity in organizations, popularized by advocates of affirmative action, which asserted that diversity was necessary to rectify past discrimination. Newer research stems from an understanding of diversity as inevitable and, therefore, an organizational characteristic worthy of understanding and leveraging.

Diversity in the Health Care Workforce

Despite their mounting numbers in the general population, racial and ethnic minorities are significantly underrepresented in most health care professions (U.S. Department of Health and Human Services, 2003, pp. 47-55). This lack of demographic mirroring between the general population and the health care workforce has proven to carry some dire consequences. In 2003, the Institute of Medicine (IOM) released *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, which documented the widespread health and health care disparities impacting minority populations in the U.S. The lack of minorities in clinical professions was cited as being among the many root causes of these disparities, and the authors recommended various efforts to rectify this deficiency (Smedley, Stith, & Nelson, p.14). For example, racial and ethnic minority health care providers tend to be more likely to care for minority patients in underserved communities (Komaromy et al., 1996, pp. 1305-1310). In terms of patient experiences, minority patients who receive care from racially concordant providers report higher satisfaction and self-rated quality of care (Saha, Komaromy, Koepsell, & Bindman, 1999, pp. 997-104), and they experience their physicians' decision-making styles as more participatory (Cooper-Patrick et al., 1999, pp. 583-589). In 2004, the IOM issued a second landmark publication entitled *In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce*, which built upon the 2003 findings and recommendations in *Unequal Treatment.*

This latter publication compiled literature documenting the case for a more diverse healthcare workforce and painstakingly assessed various strategies for advancing this agenda (Smedley, Butler, & Bristow, 2004). These IOM reports legitimized the resources being devoted to help close the gap in minority representation in health care professions. In 2009, the Susan G. Komen for the Cure Foundation and the American Society of Clinical Oncology partnered on a $4 million program to increase the number of minority oncologists across the nation (Schmidt, 2009, p. 224). In 2010, the National Institutes of Health (NIH) devoted $10 million to fund research that would increase the number of minority workers in biomedical, clinical, behavioral, and social sciences (Mervis, 2010, pp. 1566-1567).

Despite the considerable resources being poured into programs designed to increase the number of minorities entering healthcare professions, some scholars have pointed to ongoing barriers. Hill-Briggs, Evans, and Norman (2004) cited the lack of access to reliable race and ethnicity information of professionals within the psychology and neuropsychology fields as a barrier to understanding the effectiveness of diversity initiatives. Using the fluctuating longitudinal numbers of underrepresented minorities in medical school, Cohen (2003) argued that premature abandonment of affirmative action programs in medical schools has been a major hurdle in achieving diversity (pp. 1143-1149).

In recent years, these calls for diversity within the front lines of the clinical workforce have begun to spill over into calls for diversity within the leadership of health care organizations since racial and ethnic minorities, in particular, are widely regarded as being underrepresented in health care operational leadership (Schmieding, 2000, pp. 120-127; Larson, 2006, pp. 13-19) as well as among hospital board members (Drevna, 2008, p. 4). Despite gains in recent years, women still remain significantly less likely than men to hold hospital CEO positions, and male

health care leaders out earn their female counterparts by 18% overall (American College of Healthcare Executives, 2006, p 1). Similarly, whites are much more likely to hold CEO positions than their minority counterparts, and, even when controlling for educational level and years of health care management experience, white males out earn their minority male counterparts by between 14% and 22%, depending on the minority group (ACHE, 2008, pp. 2-3). Lantz (2008), in her overview of the myriad ways that women continue to experience disparities in career attainment in health care administration despite being overrepresented among clinical staff and patients, points to the problem of leadership stereotypes that negatively impact the perceptions of women in these roles (pp. 291-301).

In light of these gaps, more and more health care organizations and institutions of higher learning are devoting resources and energy to this pursuit (Richman, Morahan, Cohen, & McDade, 2001, pp. 271-277; Moon, 2007, pp. 15-16; Drevna, 2008, p. 4)—a trend that is mirrored by a broader groundswell in corporate America (Miller, 2005, p. 4; Ford, 2010, p. 6). These calls for diversity in health care leadership have gained more mainstream footing of late in light of an initiative that has been launched by several powerful national organizations within the health care industry—the American Hospital Association, the American College of Healthcare Executives, the National Association of Public Hospitals and Health Systems, the Association of American Medical Colleges, and the Catholic Health Association of the United States. As part of this alliance's "National Call to Action to Eliminate Health Care Disparities," three major priorities have been identified—increase the collection and use of race, ethnicity, and language preference data; increase cultural competency training among clinical workers; and increase diversity in health care leadership ("Equity of Care," 2011). Rather than originating from research on the topic, these calls tend to emerge from one of two unsubstantiated rationales.

Leadership diversity is either touted as inherently positive or its advocates follow an extension of logic—that is, if diversity among clinical workers is positive, then so too is diversity among health care leaders. As an example, although Cohen (2003) cited research for all of the other major points in his article, the section entitled "Diversity among managers of healthcare organizations makes good business sense" failed to include any research supporting this point (pp. 1144-1145). Similarly, Castillo and Guo (2011) argue that the lack of diversity within health care leadership is a major barrier to the provision of culturally competent care to minority patients, yet they fail to cite any empirical evidence to support this assertion (p. 208). Although the value of a diverse group of health care leaders may seem intuitive and obvious for some, making bold claims about its overall utility in the absence of academic investigation may be misrepresenting or overpromising the impact that leadership diversity can and will ultimately have on health care organizations in the real world.

Problem Statement

Despite the widespread attention and resources that have been devoted to increasing minorities on the front lines of patient care, there is virtually no quantitative evidence to suggest that the benefits of these efforts extend to diversity within the leadership of health care organizations. This study will fill this void in the research by answering the question of whether the conventional wisdom about the positive role of diversity in health care leadership can be substantiated. The objective of this study is to understand whether an increased presence of racial and ethnic minorities and/or women on the management and executives levels of health care organizations is associated with two key organizational indicators—the presence of minorities among clinical staff and employee satisfaction scores.

Research Hypotheses

The focus of this research is on the impact of diversity within the leadership of health care organizations on minority employee representation as well as staff satisfaction. Thus, several separate null hypotheses will be tested against alternative hypotheses as follows:

Impact of Women Managers and Executives on Minority Employee Representation

As a result of the increased presence of women in *management*:

- Null Hypothesis 1: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 1: There is an increase in representation of minority staff.

As a result of the increased presence of women among *executives*:

- Null Hypothesis 2: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 2: There is an increase in representation of minority staff.

Impact of Minority Managers and Executives on Minority Employee Representation

As a result of the increased presence of racial and ethnic minorities in *management*:

- Null Hypothesis 3: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 3: There is an increase in representation of minority staff.

As a result of the increased presence of racial and ethnic minorities among *executives*:

- Null Hypothesis 4: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 4: There is an increase in representation of minority staff.

Impact of Women Managers and Executives on Satisfaction Composite Scores

As a result of the increased presence of women in *management*:

- Null Hypothesis 5: There is no difference in satisfaction composite scores or a decrease in the satisfaction composite scores.
- Alternative Hypothesis 5: There is an increase in satisfaction composite scores.

As a result of the increased presence of women among *executives*:

- Null Hypothesis 6: There is no significant difference in satisfaction composite scores or a decrease in satisfaction composite scores.
- Alternative Hypothesis 6: There is an increase in satisfaction composite scores.

Impact of Minority Managers and Executives on Satisfaction Composite Scores

As a result of the increased presence of racial and ethnic minorities in *management*:

- Null Hypothesis 7: There is no difference in satisfaction composite scores or a decrease in overall staff satisfaction scores.
- Alternative Hypothesis 7: There is an increase in satisfaction composite scores.

As a result of the increased presence of racial and ethnic minorities among *executives*:

- Null Hypothesis 8: There is no difference in satisfaction composite scores or a decrease in satisfaction composite scores.
- Alternative Hypothesis 8: There is an increase in satisfaction composite scores.

Impact of Women Managers and Executives on Minority Satisfaction Composite Scores

As a result of the increased presence of women in *management*:

- Null Hypothesis 9: There is no difference in minority satisfaction composite scores or a decrease in minority satisfaction composite scores.
- Alternative Hypothesis 9: There is an increase in minority satisfaction composite scores.

As a result of the increased presence of women among *executives*:

- Null Hypothesis 10: There is no difference in minority staff satisfaction composite scores or a decrease in minority staff satisfaction composite scores.
- Alternative Hypothesis 10: There is an increase in minority staff satisfaction composite scores.

Impact of Minority Managers and Executives on Minority Staff Satisfaction Composite Scores

As a result of the increased presence of racial and ethnic minorities in *management*:

- Null Hypothesis 11: There is no difference in minority staff satisfaction composite scores or a decrease in minority staff satisfaction composite scores.
- Alternative Hypothesis 11: There is an increase in minority staff satisfaction composite scores.

As a result of the increased presence of racial and ethnic minorities among *executives*:

- Null Hypothesis 12: There is no difference in minority staff satisfaction composite scores or a decrease in minority staff satisfaction composite scores.
- Alternative Hypothesis 12: There is an increase in minority staff satisfaction composite scores.

Impact of Critical Mass of Minorities in Management on Satisfaction Composite Scores for Employees of the Same Minority Group

- Null Hypothesis 13: There is no difference between the satisfaction composite scores of minority employees at hospitals with a small number of minority management staff and the satisfaction composite scores of minority employees at hospitals with a critical mass of minority management staff.
- Alternative Hypothesis 13: There is a difference between the satisfaction composite scores of minority employees at hospitals with a small number of minority management staff and the satisfaction composite scores of minority employees at hospitals with a critical mass of minority management staff.

Population

The study population includes health care employees who participated in 2009 and 2010 employee satisfaction surveys at 58 hospitals, which collectively make up 12 hospital systems across the United States. The data set contained 50,237 records from the 2009 survey and 39,668 records from the 2010 survey. For the purposes of this study, 22,537 records were excluded from 2009 and 16,587 records were excluded from 2010 because employee gender, race/ethnicity, or position data were missing from these records. These exclusions narrowed the total number of records for both survey years to 50,781.

Definition of Terms

This study references specific terms to mean the following:

- Diversity: In organizational literature, the term "diversity" can be generally understood as differences among people. These differences can include groups or classifications, such as job function, organizational level, organizational tenure, educational background, socio-economic status, personality, age, gender, race, ethnicity, sexual orientation, etc. Milliken and Martins (1996) proposed one obvious way to categorize these differences is to distinguish between differences that are visible (e.g. age, gender, race) and those that are not visible (e.g. educational background, socio-economic status, organizational tenure), because visible differences may be more likely to induce bias-based reactions (pp. 403-404). While acknowledging the significance that non-visible differences may play in interpersonal interactions, team dynamics, and organizational outcomes, this research will be focused on visible dimensions of difference and specifically racial, ethnic, and gender variation. Thus, unless otherwise specified, "diversity" can be generally understood from here forward as referring to racial, ethnic, and gender differences.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Since this research focuses on the convergence of employee satisfaction, diversity, and health care leadership, this literature review takes several paths. First, several facets of diversity research are examined in order to establish a broader empirical framework through which the research at hand can be understood. Specifically, research surrounding diverse teams, the role of leaders in relation to diverse teams, and the impact of diversity among leaders is reviewed in order to understand the current body of knowledge and identify gaps in the research where they exist. Secondly, studies surrounding the causes as well as the effects of employee satisfaction, with an emphasis on those performed in health care settings, are reviewed to understand the relationship between employee satisfaction and other health care priorities. These two paths of inquiry will help establish the foundation for the Leadership Diversity Impact Model, which will be presented as a conceptual framework for this research.

Diverse Teams

The differences among people and their impacts on the dynamics of a group have been areas of great interest for researchers from a variety of academic realms. Although diversity within teams has been researched extensively in the laboratory setting, scholars acknowledge the general dearth of research assessing the impact of diversity within actual organizational settings (Williams & O'Reilly, 1998, pp. 77-140; Richard, Kochan, & Mcmillan-Capehart, 2002, pp. 284-

291). Despite advocates from the corporate world who claim the positive value of diversity, studies of diverse teams reveal that differences among team members produce mixed results, and gender and race differences, in particular, have produced overwhelmingly negative results (Milliken & Martins, 1996, pp. 402-433). For example, Tsui, Egan, and O'Reilly (1992), in a study of 151 work groups across three organizations, found that greater work unit level gender and racial heterogeneity was associated with lower commitment, less likelihood to stay at the organization, and higher absenteeism for both minority groups (women and racial and ethnic minorities) and majority groups (men and whites) (pp. 549-579). Kochan et al. (2003) examined the relationships between race and gender diversity and business performance within four large corporations. The research found very little positive or negative direct impacts of diversity on performance metrics at the business unit level (pp. 3-21). In acknowledging the incongruity between the industry rhetoric asserting the business case for diversity and the empirical research, Jayne and Dipboye (2004) call for a shift away from an emphasis on the business case for diversity and, instead, a focus on effective management of a diverse workforce so as to amplify the positive effects of diversity while mitigating its detrimental aspects (pp. 409-424). Certainly, the lessons afforded by research within the laboratory and corporate America on the consequences of diversity have meaning for health care organizations, as these organizations can be assumed to have similar demands for performance at the business unit level. At the same time, workforce diversity carries a significantly more complex set of implications for health care organizations.

Research of diverse groups in the health care environment has generally focused on comparing the work experiences of minority employees to that of white employees. Using a Likert survey of 2,217 respondents, Glymour, Saha, and Bigby (2004) found significant racial and ethnic variations in job stress and job satisfaction among minority physicians as compared to their

white counterparts (pp. 1283-1294). Nivet (2009), using an analysis of the literature on the topic, concluded that professional isolation and a lack of mentoring and professional development of minority faculty were the primary reasons for their underrepresentation in academic medicine (pp. 53S-58S). Dreachslin, Hunt, and Sprainer (2000) produced the only study found through this literature review that examined the overall team dynamics of racially and ethnically diverse health care teams. Using qualitative findings from focus groups, Dreachslin et al. concluded that conflict and miscommunication were higher among racially diverse nursing care teams (pp. 1403-1414). Clearly, although health care disparities research extols the patient benefits of a racially and ethnically diverse health care workforce, studies of this workforce indicate troubling phenomena in terms of the work experiences of minority workers as well as overall team dynamics.

The Role of Leaders in Moderating the Dynamics of Diverse Teams

A review of the literature revealed one interesting facet of the research surrounding the complexities of diverse teams related to the role of leadership. Some studies highlighted the impact that managers and leaders can have on moderating some of the inherent dysfunctions of diverse teams. Nishii and Mayer (2009), in their research of employees within 348 supermarket departments, found that group leaders who exhibit patterns of inclusion have a moderating effect on the positive correlation between work team diversity and employee turnover (pp. 1412-1426). Kearney and Gebert (2009) found that transformational leadership better maximized the potential of teams that were diverse in age, nationality, and education while decreasing the problems typically associated with this type of heterogeneity (pp. 77-89). Rupert, Jehn, van Engen, and de Reuver (2010) performed a cross-sectional survey study of 102 workers in a Dutch multinational

electronics company to understand the commitment of cultural minority and majority employees in organizations. While the primary finding was that cultural minorities exhibited a higher level of organizational commitment than majority employees, they also found that task-oriented leadership increased minority employee commitment (pp. 25-37). These studies supply several significant insights. First, they support the common-sense notion that leaders play a vital role in determining the functionality of a team, particularly when a team is diverse. Secondly, they reveal which leadership patterns are most likely to maximize the potential of a diverse team. Finally, these findings align well with the Jayne and Dipboye's earlier recommendations that organizations and leaders should recognize diversity's inevitability and focus on understanding how to unlock diversity's advantages and assuage its shortcomings (pp. 409-424)

In keeping with Jayne and Dipboye's reasoning, Pittinsky (2010) proposed a two-dimensional model of intergroup leadership which offers a precise methodology for accentuating the positive aspects of diverse groups and mitigating their negative consequences. Specifically, this model suggests that leaders should unite diverse individuals in a manner that preserves their subgroup identities rather than pursuing an assimilation approach whereby subgroups identities are subverted. Pittinsky posits that a sense of unity can be created by promoting positive intergroup attitudes, reducing negative intergroup attitudes, and encouraging positive interactions among subgroups without supplanting their individual identities (pp. 194-200). While Pittinsky's model has not been tested, it offers a promising pathway for future research seeking to analyze the precise circumstances under which the promise of diverse teams is fully realized. Nonetheless, all the research in this review that examines the roles of leaders in moderating the dynamics of diverse teams fails to consider whether leaders from a particular demographic group may be more adept at deploying the leadership styles or management techniques necessary to allow diverse

teams to flourish. Thus, an exploration of the impact of minority and women leaders may reveal that these leaders are more skillful at managing diverse teams because of their potential sensitivity to subgroup identities.

Diversity within Leadership

A thorough review of the literature revealed that scholarly exploration of diversity within leadership has been limited (Eagly and Chin, 2010; Ayman and Korabik, 2010), and the majority of the existing research has been focused on gender diversity, with much less examining the impact of racial or ethnic diversity on leadership. Many of these studies have been laboratory experiments in the Psychology and Sociology fields; however, research within actual organizations is sparse and particularly limited within the health care services realm. Nonetheless, the studies that have been conducted provide a range of worthwhile knowledge about the complexities surrounding diversity in leadership and lend an additional layer of insight to the area of inquiry for this research.

Barriers to Diversity in Leadership

Some research in the leadership diversity arena attempts to unpack the interplay between diversity and leadership and, in doing so, to explain the underrepresentation of minorities and women in leadership from a theoretical perspective. For example, in an exploration of predominant North American leadership models, Ayman and Korabik (2010) conclude that both gender and culture have significant impacts on leadership. These dimensions of difference influence leadership style, values, and effectiveness in a variety of intricate ways (pp. 157-167). This research highlights the need to exercise caution with conceptual models of leadership that

fail to consider how dimensions of difference, particularly those such as gender, race, or ethnicity, can impact leadership style and approach.

Eagly and Chin (2010) provide a holistic discussion of the intersection between diversity and leadership. Their exploration extends beyond the structural explanations of racial and gender gaps in leadership, such as disparities in education and work experience, and, instead, details how unconscious biases against women as well as racial, ethnic, and sexual minorities contribute to disparities in achievement for these groups. They also explain how cultural traits of these groups may violate the prevailing societal archetype of leadership, thus limiting their group members' perceived legitimacy or effectiveness by others, regardless of their actual competence. On the other hand, Eagly and Chin argue that leadership in modern organizations requires a much broader set of skills and core competencies, many of which are more associated with the socialization behaviors of women and minorities (pp. 216-222). Since it has been determined that certain leadership styles and behaviors are more effective at maximizing the potential of diverse teams (Nishii and Mayer, 2009; Kearney and Gebert, 2009; Rupert et al., 2010), additional research is needed to understand whether Eagly and Chin's suppositions are true—that women and minorities are better prepared to manage in modern organizations.

Sanchez-Hucles and Davis (2010) argue that women leaders can fill an emerging gap in leadership being created by the retirement of baby boomers, yet women continue to be confronted with barriers that can be likened to an organizational labyrinth rather than a direct line to the top. The authors also emphasize how multiple identities—that is, different personas through which social reality is experienced (e.g. being minority and female)—may compound the layers of complexity for women leaders of color (pp. 171-179). Cheung and Halpern (2010) contend that women bring a variety of unique traits to their leadership roles, including a greater emphasis on

work-family balance and different leadership styles, which, in turn, point to an alternative model of leadership and, as the authors term it, a "culture of gender" (pp. 182-192). In this way, Cheung and Halpern point to the positive aspects of having women in leadership roles and shift their focus away from the problems that women experience in leadership.

Regardless of the actual leadership capabilities of women or minorities, their perceived legitimacy as leaders may be marred by stereotypes. For example, Cook and Glass (2009) focused on factors external to the organization by examining whether the race/ethnicity of newly appointed CEOs impacted stock market prices immediately following the appointment announcement. Minority CEO appointments were significantly associated with negative market reactions, and majority CEO appointments were significantly associated with positive market reactions (pp. 1183-1202). These findings underscore a troubling phenomenon that could prove particularly detrimental for minorities who seek to lead. Specifically, negative stereotypes about non-majority leaders could, through no fault of the leaders themselves, become a self-fulfilling prophecy.

Leadership Perspectives of Minorities and Women

Prindeville (2003) performed personal interviews with 50 Native American and Hispanic women who were public officials and grassroots leaders in order to understand the influence of race/ethnicity and gender identity on their political ideologies and motivations as leaders. Both Native American and Hispanic leaders wanted to empower members of their communities, and both groups showed gender consciousness—that is, an identification with and sense of connectedness to other women. Racial/ethnic identity was also identified as being of central importance to the vast majority of women in the study, and 80% used their political activism to

address problems associated with racism. In addition, both Native American and Hispanic women leaders shared experiences of sexism and were interested in replacing current paternalist social archetypes with systems that allowed for greater equality and participation from women (pp. 591-608). Although themes identified in Prindeville's research of minority women leaders in politics and grassroots activism cannot be assumed to be fully transferable to minorities and women within health care leadership, her findings present clues as to the saliency with which women and minorities may experience their gender, racial, and ethnic identities. More importantly, this research offers some insights as to the unique motivations and approaches that women and/or racial/ethnic minorities may bring to their leadership roles. Specifically, individuals who are not a part of the majority culture of an organization may be more likely to challenge or work to eradicate traits of an organization's culture that fail to promote inclusion and equality.

Other research suggests that minorities may feel undervalued as leaders by their organizations. Based on the results of a survey of 1,601 college degreed professionals in the United States which oversampled for minorities, Hewlett, Luce, and West (2005) argued that, as compared to their white counterparts, minority professionals take on substantially more leadership roles outside of work. Yet, these important skill-building experiences have not generally been recognized by their employers. The authors argue that this dynamic leads to an underutilization of minority professionals' leadership potential as well a feeling among these professionals that their lives outside of work are invisible to employers (pp. 74-82). This research raises questions about the potential consequences that prolonged underutilization and the inability to bring one's "full self" to work may have on racial and ethnic minorities and their overall ability to contribute to the organization's success.

Critical Mass

One important consideration in the discussion of women and minorities in leadership is the symbolism which their presence in the higher ranks of an organization may carry for those inside the organization. More specifically, a small amount of literature within the leadership diversity space has been grappling with the notion of critical mass. In general, these explorations have focused on the impact of a critical mass of women in leadership roles, with less attention having been paid to the impact of a critical mass of minorities. Kanter (1977), in her book *Men and Women of the Corporation*, introduced the concept of "tokenism" to refer to a circumstance when one or a small number of social minorities are in a work group populated by a majority group. In an organization whose leaders were overwhelmingly men, Kanter documented the variety of consequences for token women in leadership roles including being viewed as representatives of all women by men, scrutiny by women in lower ranks, excessive performance pressures, informal isolation, and stereotyping about the types of roles they should play in a work group, among other things. The author suggested that even two-token situations were not enough to counterbalance the negative consequences of tokenism and that larger number of women would be needed to allow women to transition away from being a token to being a full-fledged part of the work group (pp. 206-242).

While Kanter's discussion on tokenism focused primarily on the costs of tokenism for the women who occupied these token roles, Ely (1994) focused attention on the implications of tokenism at the top for women in the lower ranks. She compared the perceptions of women who worked in firms with a high representation of women in leadership with the perceptions of women in firms whose leadership was dominated by men with only a small number of women in

leadership. Women staff members who worked in firms with few women at the top were less likely to perceive those women leaders as role models. In terms of peer relationships, women staff members in these same firms generally saw their female peers as competitors who were unsupportive. Meanwhile, lower ranking women at firms with high proportions of women leaders were more likely to view these leaders as role models with legitimate authority and more likely to see their female peers as supportive (pp. 203-238). This study is particularly meaningful for the research at hand because it provides insight into how a critical mass of leaders belonging to a minority group—in this case, women—can not only change how employees from this same demographic see these leaders, but also each other. Thus, it stands to reason that women and racial and ethnic minorities alike may behave differently in organizations with a critical mass of members of leadership who look like them, where they believe they have greater access to vertical mobility and power.

More recent research has begun to investigate the connection between critical mass and organizational performance. Catalyst organization has found that American corporations with the highest percentages of women holding board of director seats financially outperform those organizations with the lowest percentages of female board members (Catalyst, 2007, p. 1). Similarly, as compared to firms with the lowest representation of women in senior management, organizations with the highest representation of women on top management teams had better financial performance, with higher return on equity by 35% and higher total return to shareholders by 34% (Catalyst, 2004, p. 2). Another study examined employee perceptions of organizational performance along nine dimensions, such as capability, leadership, and innovation. The survey involved 115,000 employees at 231 institutions around the world and found that organizations with at least three or more women on their senior management teams ranked higher on all nine

dimensions than companies with no women in senior management (Desvaux, Devillard-Hoellinger, & Meaney, 2008, pp. 27-34)

Despite the attention paid to the concept of critical mass in the literature, there was little clarity as to what specific proportion of a group constitutes a critical mass. In her book, *Women Lead the Way*, Tarr-Whelan (2009) suggests that modern governments and corporations alike would benefit from what she terms "the 30% solution," that is, 30% or more of women on all governing bodies, and she cites several examples of the positive outcomes experienced by organizations and government bodies that have embraced the idea of ensuring roughly one-third of leadership roles are occupied by women (pp. 15-30). Despite the lack of academic rigor that has been applied to understanding the tipping point at which tokenism collapses, Tarr-Whelan provides a sound rationale for the 30% solution and, in doing so, points to a promising new path for future leadership diversity research.

Health Care Leadership

Dreachslin and Hobby (2008) focus their discussion of diversity and leadership more narrowly on the health care field. They refer to "diversity leadership" as a *type* of decisions made rather than *who* is actually making them. Specifically, the authors argue that diversity sensitivity within leader actions in the areas of policies, procedures, physical environment, technology, and people will play a particularly important role in helping to minimize racial and ethnic disparities in health care and health outcomes (pp. 8-13). Dreachslin and Hobby fall short of making the claim that the increased presence of women and minorities on the executive levels of health care organizations ensures better "diversity leadership." Like many scholars in this field, though, they do cite the barriers for minorities and women to advance in health care organizations as a

significant problem and recommend employer efforts such as mentoring programs and affinity groups to foster a more supportive environment for diverse staff. Rosenburg (2008) attempted to explain racial and ethnic disparities in mental health services as being a result of differing perceptions between minorities and whites regarding opportunities for advancement into leadership (pp. 125-127). Yet, as with so many other publications in this area, the author fell short of providing any direct evidence to suggest that these arbitrary findings were related.

Impacts of Health Care Employee Satisfaction

Employee satisfaction is clearly a central area of concern for the health care industry, with roughly three-fourths of health care human resources executives reporting in a national survey that they measure employee satisfaction through surveys and 62% performing these surveys annually (Collins, Collins, McKinnies, & Jensen, 2008, pp. 248-250). This industry-wide interest is likely attributable to the fact that employee satisfaction is, quite simply, one of the greatest single harbingers for many major agendas in health care: patient satisfaction, clinical quality, customer loyalty, employee retention, and profitability. The research testifying to these dynamics is increasingly vast, and much of it is either focused on or inclusive of two key constituencies within the health care team—physicians and nurses.

Physicians

Using the survey responses of 166 physicians and 2,620 patients, Haas, Cook, Puopolo, Burstin, Cleary, and Brennan (2000) found that patients of general internists were more likely to report higher overall satisfaction with their health care as well as their most recent physician visit if they were in the care of physicians who rated themselves as having very high workplace

satisfaction levels (p. 122). Using a cross-sectional survey of physicians, Williams, Rondeau, Xiao, and Francescutti (2007) tested myriad hypotheses surrounding the pathways between physician satisfaction and certain variables, such as individual physician performance, patient care quality, absenteeism, turnover intentions, and organizational performance. With the exception of absenteeism, the authors found significant linkages between satisfaction and these other variables (p. 266), suggesting that physician satisfaction has numerous downstream impacts on patients as well as the organizations for which these physicians work. As the apex of the health care team, it is not surprising that physician satisfaction levels can have a significant ripple effect on other organizational goals, in addition to their impact on patient experiences.

Nurses

Research also suggests that nurse satisfaction contributes to health care organizational goals. Atkins, Marshall, and Javalgi (1996), using a survey of 700 patients and 200 nursing staff members in a tertiary care hospital, found that there was a strong correlation between nurses' satisfaction and patients' perceptions of their health care quality. When outliers were removed, the researchers also found a strong, positive correlation between nursing staff satisfaction and patients' intention to recommend the hospital to others as well as their intention to return to the hospital in the future (pp. 15-21). Vahey, Aiken, Sloane, Clarke, and Vargas (2004) found higher satisfaction scores among patients when they were cared for by nurses with lower levels of burnout (pp. 57-62). Using a systematic literature review, MacDavitt, Chou, and Stone (2007) found that nurses' perceptions about the organizational climate influenced their satisfaction, level of burnout, likelihood to turnover, patient satisfaction, and, to some extent, patient outcomes (pp. 45-55). In a study of primary care physician practices in Germany, researchers found a higher

correlation between the satisfaction of non-physician staff (nurses and secretaries) and patient satisfaction than the correlation between physician and patient satisfaction (Szecsenyi, Goetz, Campbell, Broge, Reuschenbach, & Wensing, 2011, pp. 508 -514). These findings underscore the pivotal role that the satisfaction of nurses and other staff, in addition to that of physicians, plays in determining key organizational outcomes such as patient self-rated quality of care, patient satisfaction and loyalty, and employee turnover.

Organizational Performance

Research that expands its reach beyond the health care industry corroborates the vital importance that employee satisfaction has on organizational performance. Harter, Schmidt, and Hayes (2002) performed a meta-analysis of results of The Gallup Association's Gallup Workplace Audit to examine the relationships between employee satisfaction and business-unit level outcomes across 32 independent companies and organizations. The study revealed a positive correlation between overall employee satisfaction and customer satisfaction/loyalty, profitability, productivity, employee turnover, and safety outcomes (pp. 268-276).

Considered holistically, the research surrounding the impact of staff satisfaction on outcomes that are generally recognized as important to health care organizations is resounding. There is a clear and fundamental link between staff satisfaction and a variety of factors within the employee, patient, and organizational domains. Factors within the employee domain include individual employee performance, absenteeism, burnout, and turnover. Within the patient domain, factors influenced by staff satisfaction include patient satisfaction, patient self-rated quality of care, patient outcomes, patients' intention to recommend the health care organization to others, and patients' intention to return to the hospital in the future. Finally, the organization can

be influenced as well through profitability, safety, and overall organizational performance. Arguably, the research in this area makes a compelling case that the long-term viability of a health care organization rests in its ability to ensure the satisfaction of its employees.

Causes of Health Care Employee Satisfaction

Because employee satisfaction has been established in the literature as a significant indicator of key outcomes that are of great importance to health care organizations, it is imperative to determine what factors actually *influence* health care employee satisfaction. In general, it can be understood as a complex phenomenon stemming from a confluence of conditions on the organizational, unit, and individual levels, and the research supports this multifaceted conceptualization of employee satisfaction.

Organizational Culture

Much of the literature surrounding the drivers of employee satisfaction in health care explores the extent to which various organizational conditions or aspects of an organization's culture serve as contributing factors to employee experiences at work. Kangas, Kee, and McKee-Waddle (1999) found no differences in nursing satisfaction across different organizational structures and different nursing care models. Instead, nurses' perceptions of a supportive work environment served as the main influence on nurses' satisfaction levels (pp. 32-42). The potential implications of this study are somewhat limited, though, by the relatively small sample size of 92 survey respondents across three hospitals. Tzeng, Ketefian, and Redman (2002) identified a strong link between employee satisfaction and employees' perception of the strength of the

organizational culture—that is, the extent to which employees view the organization as having a clearly defined set of expectations, guiding principles, values, and other components necessary for team members to have effective communication with one another (pp. 79-84). In a study of 3,912 employee satisfaction surveys designed to understand which specific facets of employee satisfaction are most directly linked with overall employee satisfaction, the level of pride felt for the organization and the communication by administration were found to be the two most significant factors (Kaldenberg & Regrut, 1999, pp. 9-12).

Role of Management

Still other research supports the notion that managers play a central role in staff experiences. McNeese-Smith (1999) found that a manager's motivation for power, while being positively correlated with patient satisfaction, is negatively correlated with staff nurse satisfaction. Meanwhile, "managers motivated for achievement" was found to be positively correlated with staff nurse satisfaction as well as productivity and organizational commitment (pp. 243-259). Kaldenberg and Regrut also found that "respect shown by manager," "manager's response to problems," and "new ideas accepted by manager" were among the top five employee satisfaction surveys items most closely linked with overall employee satisfaction (pp. 9-12). Although it made use of a small sample size, a study of 15 emergency department nurse managers found that nurse managers who used a transformational leadership style trended toward lower staff turnover rates (Raup, 2004, pp. 403-409). Meanwhile, Lorden, Coustasse, and Singh (2008) found that use of a balanced scorecard framework was associated with a decrease in satisfaction among supervisors and directors, presumably because of lack of senior leadership support and buy-in for

the concept (pp. 145-155). These findings underscore the important role that leaders can play in shaping employee experiences for good or for bad.

Work Design and Workload

Other factors related to workload or how staff members' work is organized may also play a role in impacting employee satisfaction. For example, Goode (1995) found that use of a tool for organizing and mapping patient care plans for inpatients had a significant positive impact on the satisfaction of the multi-disciplinary care team (pp. 337-361). Another study found that electronic medical record scribes used in an ambulatory urology practice enhanced physician satisfaction (Koshy, Feustel, Hong, and Kogan, 2010, pp. 258-262).

In addition to how the work is structured, the sheer amount of work is also a vital factor in driving employee satisfaction. Williams et al. (2007) found that elevated physician workloads generated perceptions of stress which, in turn, decreased physician satisfaction (p. 265). Even in some research where employee satisfaction is not the central area of inquiry, it is still instructive to note which dynamics tend to accompany factors that may be associated with low satisfaction levels. For example, Vahey et al. found that inadequacy of staffing, lack of administrative support for nursing, and poor relationships between nurses and physicians were all linked to nurses' sense of emotional exhaustion and an intention to leave—two signs of burnout (pp. 61-63). In a study of 84 hospital units designed to examine the relationship between organizational conditions and unit-level patient satisfaction levels, Riiskjær, Ammentorp, Nielsen, and Kofoed (2011) found that the lowest patient satisfaction scores were found on units that were characterized as having higher occupancy rates, higher acute rates, greater employee absenteeism,

and staff perceptions of high workload and poor experiences of professionalism (pp. 284-290). Not surprisingly, employees are sensitive to the environments in which they work, and multiple areas of dissatisfaction appear to have a cumulative negative effect that employees tend to pass along to patients. In addition, organizations that fail to address these concerns will likely be punished with higher turnover rates, which can be expected, in turn, to cause low patient satisfaction scores.

Individual Characteristics

Because employee satisfaction can be understood as a transaction between employees and various elements within their work environments, it is useful to note the extent to which individual employee characteristics may play a role in shaping their experiences at work. Weng et al. (2011) performed an observational study using face-to-face interviews with 110 internists and 2,872 patients. They found that higher self-rated emotional intelligence among physicians was significantly correlated with higher job satisfaction and lower burnout. Less burnout was, in turn, associated with higher patient satisfaction (pp. 835-842). The Weng et al. findings challenge the conventional notion that employee satisfaction is largely driven by the health care organization and its managers and, instead, suggest that certain employees may be predisposed to be more satisfied than others. Because the literature is overwhelmingly focused on external drivers of employee satisfaction, such as organizational dynamics and experiences with management, more research is needed to understand how individual employee characteristics interface with these external dimensions that have been traditionally associated with employee satisfaction.

Conclusion

The field of health care employee satisfaction research is rich with evidence revealing the powerful nature of employee satisfaction in predicting organizational outcomes. Considered in its entirety, this literature tells the story of the inherent complexity of health care employee satisfaction in terms of its causes as well as the ramifications when it is missing. Yet, no research to date has directly explored the relationship between health care employee satisfaction and diversity within health care leadership.

In sharp contrast to the literature surrounding employee satisfaction, the field of diversity within leadership is an evolving area of research that has a strikingly small number of voices. Much of the literature discussed in this integrated review suggests that there continues to be a multitude of barriers to diversity within leadership, both from a research standpoint and also a practical standpoint. In addition, much of the minimal research in this field is preoccupied with theoretical frameworks but fails to shed light on the pragmatic implications of leadership diversity in terms of how it impacts major organizational indicators. Meanwhile, the more pragmatic scholarship in this area posits the value of diversity in leadership as being axiomatic based on an "if-then" trail of logic, e.g., if minorities on the front lines of patient care improve important health care indicators, then minorities on the leadership levels of health care organizations must be helpful as well. Yet, these arguments fall short of explaining the *actual* impact, be it positive or negative, of the presence of racial, ethnic and gender diversity within the leadership levels of a health care organization on important organizational outcomes, such as patient satisfaction, employee satisfaction, profitability or quality. Nonetheless, the stature of the entities advocating for diversity in health care leadership and the increasing intensity of this interest beg for an empirical foundation. In light of the gaining momentum of the health care leadership diversity

agenda, this study is needed to help bridge the gap between industry rhetoric and scholarly knowledge. In doing so, this research can inform the health care industry about the overall utility of efforts to diversify health care leadership teams, and, in turn, pave the way for a research agenda that seeks to better describe the complexities of demographic diversity within the health care setting.

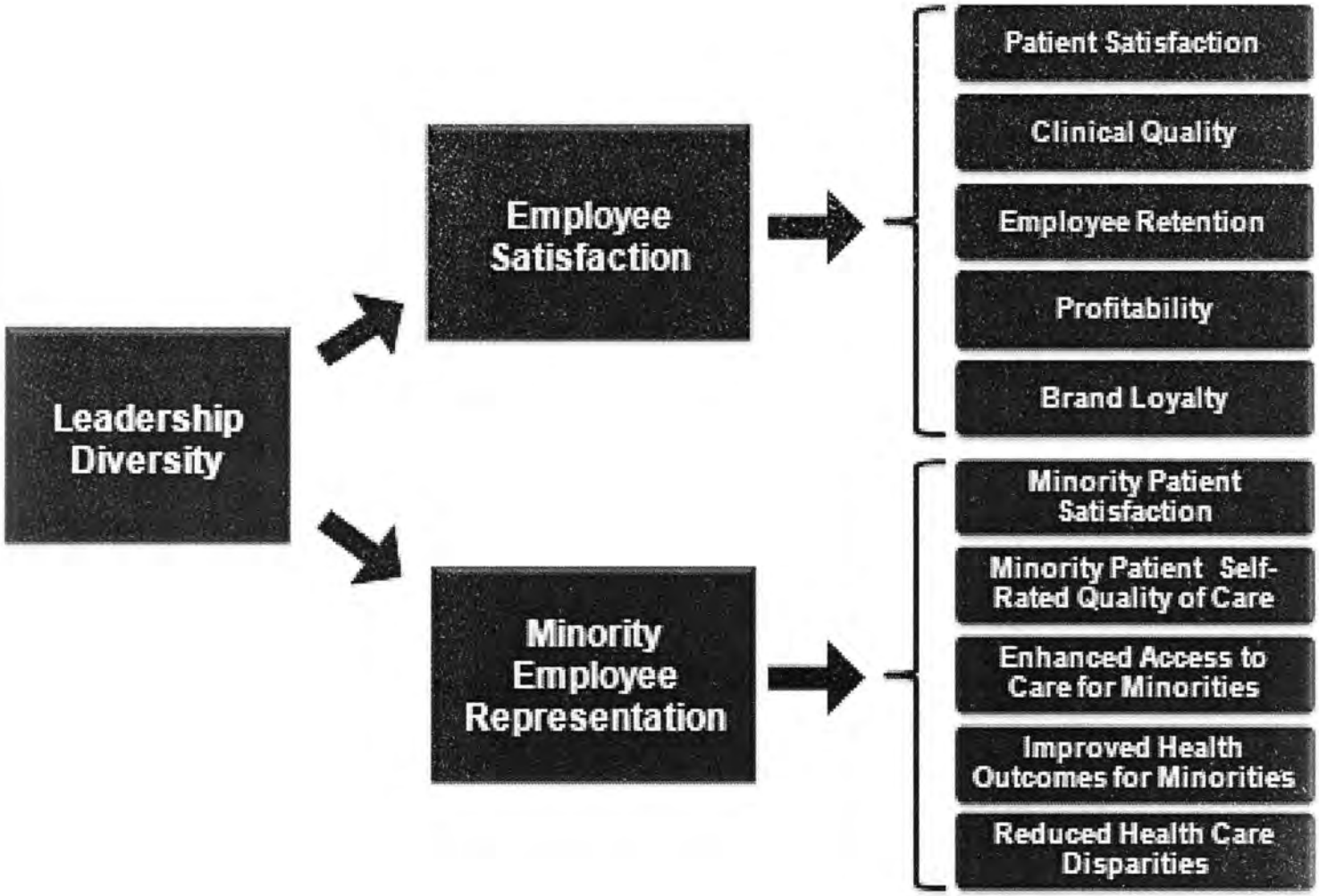
Conceptual Model

This literature review has examined several independent areas of scholarship within the organizational and health care services domains in order to describe the potential connections among diversity, leadership, and staff satisfaction. In doing so, this review has also found that these connections, in turn, have relationships to broader health care organizational priorities. These new intersections, which have been previously unexplored in the research, call for a conceptual model that incorporates these historically unrelated concepts into one cohesive framework.

The Leadership Diversity Impact Model integrates the research on the effects of staff satisfaction as well as the research on the effects of minorities among the front lines of the clinical workforce and relates how diversity within health care leadership may cause a two-part chain reaction. Specifically, this model proposes that diversity in the upper echelons can be assumed to be linked to health care employee satisfaction as well as minority employee representation. These two results are, in turn, linked to a variety of desirable phenomena within the health care realm, based on the literature.

Figure 1

Leadership Diversity Impact Model



CHAPTER III

METHODOLOGY

Study Design

This study is a retrospective analysis of secondary cross-sectional employee satisfaction survey data from employees in 58 hospitals. A series of statistical analyses were used to test the relationship between the presence of women and/or racial and ethnic minorities at management and executive levels of the organizations and three variables—the representation of minority employees, the satisfaction of front-line staff as a whole, and the satisfaction of minority front-line staff.

Sample

This study used de-identified secondary survey data supplied by Morehead Associates, a for-profit national employee satisfaction survey vendor. The data were randomly selected from the company's National Integrated Health System Average, which includes survey data from 2009 and 2010 for 30 distinct health systems representing nearly 300,000 employee responses. The data set used for this research was derived through a random sample of the health systems and their hospitals. All non-hospital entities, such as foundations and health plans, were removed from the data set before making this random selection. The resulting data set represented 15 distinct health systems and 58 hospitals.

The data set contained demographic information and survey responses for employees who participated in their employers' annual employee satisfaction surveys. These employees participated in the surveys voluntarily and with assurances of anonymity. The data set contained

independent cross-sections of either 2009 and 2010 survey data from different health systems, but no single health system or hospital had both years of data represented, rendering any longitudinal inquiries impossible. In total, the data set contained 89,905 records.

Description of Variables

Descriptive variables for each record were Health System, Individual Hospital, Survey Year, Census Region as well as the position, gender, and race/ethnicity of each survey respondent. The data set did not, however, contain any identifying information of employees such as names or employee identification numbers. In addition, each record contained individual survey response scores to the following questions:

1. I am proud to tell people I work for this organization.
2. I would recommend this organization to family and friends who need care.
3. I would like to be working at this organization three years from now.
4. I would stay with this organization if offered a similar job elsewhere for slightly higher pay.
5. I would recommend this organization as a good place to work.
6. Overall, I am a satisfied employee.

All survey questions are positively worded and scored on a 1 – 5 scale where 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree.

Data Collection

Morehead Associates owns the data and considers it proprietary information, and this data set was supplied to the principal investigator by the company for the purposes of this research.

The vendor gathers this data as a service to its customers in order to track employee satisfaction levels over time. Morehead Associates holds confidentiality agreements with all its customer hospitals. For this reason, the data set was delivered with the health care system names and the individual hospital names de-identified and replaced with generic names such as System A (health care system) and Entity A_1 (individual hospital). Some of Morehead Associate's customers tracked the race/ethnicity and gender of survey respondents through a voluntary self-identification model, which resulted in some fields containing responses such as "prefer not to answer." Meanwhile, for other customers, Morehead Associates cross-referenced survey responses with individual employee records in order to ascertain employee demographic data; however, this process was carried out in a manner that protected the anonymity of individual survey respondents. In addition, some of the vendor's customers tracked only gender information or only race/ethnicity information, and other systems did not track either category.

Procedures for Readying Data Set for Analysis

In order to prepare the data set for analysis, all records with missing position, race/ethnicity, or gender values were removed since these variables were of primary interest in this study. In addition, any records containing demographic or position fields in which the respondent selected an option such as "prefer not to answer" were also deleted. In total, 39,126 records were deleted, and the resulting data set contained 50,779 records. Since certain health systems did not track demographic data of respondents, this deletion resulted in the removal of four health systems and all their respective hospitals, leaving nine health systems and 34 hospitals remaining in the data set.

Then, in close consultation with the survey vendor to ensure accuracy, a new position variable was created containing four broad categories: clinical staff, non-clinical staff, management, and executive. Determining precise position definitions from the survey vendor for individual health systems was essential for this stage of the process because some health systems defined the same position code differently. For example, one health system may have lumped all executives, directors, managers, and supervisors into a single "management" category, whereas other systems may have tracked survey responses in more granular categories that delineated all four position types separately. In a small number of cases, certain health systems had to be excluded from certain statistical analyses because of these differences.

For analyses involving different hierarchical levels, the clinical and non-clinical records were combined to create a "staff" group. In order to be included in the clinical staff or non-clinical staff categories, employees could not hold a management or supervisory role. In addition, regardless of their clinical or non-clinical affiliation, all employees with management or supervisory responsibilities were categorized as "management." Finally, the executive category contained all senior level professionals including vice presidents, chief executive officers, and senior administrators. Appendix A provides a more detailed description of the position recoding assignments.

Because different health systems had slight variations in the exact race/ethnicity labels used for their employees, a new race/ethnicity variable was created that collapsed similar race/ethnicity labels into broader, more uniform categories. Appendix B provides a detailed description of the race/ethnicity recoding assignments.

In terms of satisfaction survey responses, most of the analyses in this research used a satisfaction composite score as the dependent variable. This variable was derived by generating a mean of the six satisfaction survey questions included in the data set for each record.

Data Analysis

Once the data set had been organized and recoded accordingly, a variety of descriptive statistics were used to describe the composition of the data set, including hospital-level frequencies by census region, survey year, health system, and hospital and individual respondent-level frequencies by management level, position, gender, and race/ethnicity. Cross-tabulations were then run that stratified mean responses for each survey question by each of the individual-level variables.

In order to test hypotheses related to minority employee representation, Pearson Correlation Coefficients were used to test the relationship between the representation of minority staff members and the representation of minority management and executives as well as the representation of women managers and executives. In these cases, the units of analysis were individual hospitals. The relationship between diversity within the management and executive ranks and the gender representation among front line staff members was not a primary unit of interest in this study because women make up an overwhelming percentage of the frontline health care workforce in general, a phenomenon which held true for this sample.

In order to ascertain whether the presence of women or minorities among managers and executives impacts front-line employee satisfaction, a series of multivariate regression analyses were used. With this set of analyses, satisfaction composite scores for all employees were the dependent variables, and women and minority managers and executives were the independent

variables, adjusting for analysis-relevant covariates (e.g., system, job type of respondent). A similar set of multivariate regression analyses were carried out using minority employee satisfaction composite scores as the dependent variable.

Finally, a separate series of multivariate regression analyses were used to examine how different concentrations of minority managers impacted the satisfaction composite scores of the same group of minority employees. With this set of analyses, a separate series of regressions was created for all minorities, blacks, Hispanics, and Asian/Pacific Islanders. Within each series, a separate regression model was built for each of the following concentration levels of managers from each specific race/ethnicity group: less than 10%, 10% to 20%, above 20%, and above 30%.

CHAPTER IV

RESULTS

Introduction

The primary purpose of this study was to analyze the relationships between the presence of women and minorities on the management and executive levels of health care organizations and front line staff satisfaction and minority front line staff. In addition, this study sought to explore the extent to which the presence of women and minority executives and managers was associated with the presence of minorities on the front line staff levels of these organizations.

This chapter presents an analysis of the data that were examined as a means to assess these potential relationships. First, in order to understand the overall sample used for analysis, a detailed description of the data set is provided, including the hospital-level variables of census region, health system, and entity as well as the individual respondent-level variables of position, gender, race/ethnicity, and survey question responses. Pearson Correlation Coefficients are presented to ascertain entity-level relationships between the presence of women and minorities at various levels of health care organizations and several key variables of interest related to staff satisfaction and minority employee representation. Then, multivariate regression analyses are used to demonstrate individual-level relationships.

Entity-Level Frequencies

After completion of the data preparation process, the remaining health systems varied in terms of number of hospitals and numbers of employees. In addition, some systems had survey data from 2009 while the remaining systems' data were from 2010. The records from health systems in the South - South Atlantic census region were overrepresented in the data set, making up 52.2% of all records. The West - Pacific census region had the second highest representation (24.19%). Three other census regions, Midwest - East North Central, Northeast - Middle Atlantic, South - East South Central, made up the remaining quarter of the data set (4.57%, 7.78%, and 11.25%, respectively). Table 1 provides an overview of the number of hospitals, survey year, census region, number of records, and overall percentage of the data set that each health system represents.

Table 1:

Description of Health Systems by Number of Hospitals, Survey Year, Census Region, and Number of Survey Records

Health System	Hospitals	Survey Year	Census Region	Frequency	Percent	Cumulative Frequency	Cumulative Percent
System B	5	2009	South – South Atlantic	9456	18.62	9456	18.62
System C	3	2010	South - South Atlantic	5771	11.36	15227	29.99
System E	5	2010	South - South Atlantic	4451	8.77	19678	38.75
System F	5	2009	South - East South Central	5715	11.25	25393	50.01
System H	2	2009	Northeast - Middle Atlantic	3950	7.78	29343	57.79
System J	4	2010	South - South Atlantic	6830	13.45	36173	71.24
System K	5	2009	West - Pacific	6257	12.32	42430	83.56
System L	3	2010	West - Pacific	6028	11.87	48458	95.43
System O	2	2009	Midwest - East North Central	2321	4.57	50779	100.00

Frequencies of Demographics

The data set contained a richly diverse group of employees in terms of gender and race/ethnicity. Females made up 80.18% of respondents. As Table 2 indicates, employees in the data set were very diverse in terms of race/ethnicity, with whites making up the majority of survey respondents (57.7%). Of the minority groups, blacks had the highest representation (21.02%), followed by Asian/Pacific Islanders (10.38%), and Hispanics (7.19%).

Table 2

Race/Ethnicity of Survey Respondents

Race	Frequency	Percent	Cumulative Frequency	Cumulative Percent
American Indian or Alaska Native	187	0.37	187	0.37
Asian/Pacific Islander	5272	10.38	5459	10.75
Black	10674	21.02	16133	31.77
Hispanic	3650	7.19	19783	38.96
Other	1699	3.35	21482	42.30
White	29297	57.70	50779	100.00

In terms of hierarchical level, only 75 executives were in the entire data set, making up only 0.15% of all survey respondents. With 3,145 respondents, management made up 6.19% of the sample. Meanwhile, front line staff comprised an overwhelming majority of survey respondents (93.66%) with 47,559 respondents. Of these front line staff members, 64.46% were clinical, and the remaining 35.54% were non-clinical staff.

As Tables 3 and 4 indicate, the diversity of survey respondents varied by hierarchical level. Although women made up the majority of executives in this sample (54.67%), executives were the least diverse in terms of race/ethnicity. Of executive survey respondents, the overwhelming majority (81.33%) were white. Among management staff, women were overwhelmingly represented (72.02%). As compared to executives, managers were more diverse in terms of race/ethnicity. Whites still made up the vast majority of management survey respondents (68.65%), while blacks were the second largest group of managers (16.79%), followed by Asian/Pacific Islanders (6.42%). Men made up a small minority of staff (19.24%).

This group was the most diverse in terms of race/ethnicity, with racial and ethnic minorities making up 43.07% of the entire staff cohort. Blacks made up the largest portion of minorities (21.33%), followed by Asian/Pacific Islanders (10.65%), and Hispanics (7.28%).

Table 3

Gender by Hierarchical Level

	Staff		Management		Executives	
Gender	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Female	38410	80.76	2265	72.02	41	54.67
Male	9149	19.24	880	27.98	34	45.33

Table 4

Race/Ethnicity by Hierarchical Level

	Staff		Management		Executives	
Race/Ethnicity	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
American Indian or Alaska Native	181	.38	6	.19	0	0.00
Asian/Pacific Islander	5067	10.65	202	6.42	3	4.00
Black	10142	21.33	528	16.79	4	5.33
Hispanic	3460	7.28	186	5.91	4	5.33
Other	1632	3.43	64	2.03	3	4.00
White	27077	56.93	2159	68.65	61	81.33

Frequencies of Survey Scores

As Table 5 indicates, survey scores varied by race/ethnicity, with American Indian or Alaskan Natives and Other employees trending lower on most survey questions than other race/ethnicity groups. Meanwhile, Table 6 indicates that there were virtually no major differences between the response scores of women and men.

Table 5

Survey Scores by Race/Ethnicity

Race/Ethnicity	Proud	Recommend for care	Three Years	Stay for Pay	Recommend for Work	Overall Satisfaction
American Indian or Alaska Native	4.24	4.25	3.94	3.47	4.11	4.05
Asian/Pacific Islander	4.44	4.35	4.25	3.83	4.26	4.18
Black	4.27	4.18	4.19	3.77	4.16	4.04
Hispanic	4.44	4.35	4.31	3.83	4.29	4.17
Other	4.24	4.15	4.04	3.57	4.01	3.85
White	4.37	4.33	4.24	3.70	4.18	4.10

Table 6

Survey Scores by Gender

Gender	Proud	Recommend for care	Three Years	Stay for Pay	Recommend for Work	Overall Satisfaction
Female	4.36	4.30	4.23	3.72	4.19	4.09
Male	4.35	4.30	4.23	3.74	4.18	4.09

As evidenced in Table 7, satisfaction scores also varied considerably among different hierarchical levels. For all survey questions, executives scored higher than managers, and managers scored higher than front-line staff. Essentially, satisfaction increases as span of control increases. In addition, Table 8 indicates that differences were also found between survey scores for clinical staff and non-clinical staff, with non-clinical staff reporting lower scores for all six survey questions.

Table 7

Survey Scores by Hierarchical Level

Hierarchical Level	Proud	Recommend for care	Three Years	Stay for Pay	Recommend for Work	Overall Satisfaction
Executive	4.82	4.78	4.67	4.30	4.69	4.57
Management	4.64	4.58	4.55	4.08	4.49	4.40
Staff	4.34	4.28	4.21	3.70	4.17	4.07

Table 8

Survey Scores by Position

Position	Proud	Recommend for care	Three Years	Stay for Pay	Recommend for Work	Overall Satisfaction
Clinical Staff	4.33	4.27	4.17	3.64	4.13	4.04
Non-Clinical Staff	4.42	4.35	4.34	3.89	4.29	4.19

Statistical Analysis Results

This study examined how the presence of women and/or racial and ethnic minorities in the executive and management levels of health care organizations impacted employee satisfaction as well as minority employee representation. The following section presents the analysis of the data that were used to determine the answers to the research questions central to this investigation.

Impact of the Presence of Women and Minority Managers and Executives on Minority Employee Representation

In order to test Hypotheses 1-4, Pearson Correlation Coefficients were used. The results of these tests are as follows:

Hypothesis 1

As a result of the increased presence of women in *management*:

- Null Hypothesis 1: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 1: There is an increase in representation of minority staff.

As presented in Table 9, tests for correlation between the presence of women in management and minority staff representation reveal there is a moderately positive relationship with a correlation coefficient of 0.368. This finding was statistically significant ($p = 0.03$) and provides evidence in support of Alternative Hypothesis 1.

Table 9

Pearson Correlations between Minority Employee Representation and Representation of Women in Management, Minorities in Management, Women among Executives, and Minorities among Executives

Simple Statistics						
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**
Women Managers	34	66.61765	67.12901	2265	7.00000	303.00000
Women Executives	34	1.20588	1.82208	41.00000	0	8.00000
Minority Managers	34	29.00000	54.53995	986.00000	0	298.00000
Minority Executives	34	0.41176	0.95719	14.00000	0	4.00000
Minority Staff Percentage	34	39.16950	21.18423	1332	2.46305	79.45946

Pearson Correlation Coefficients, N = 34 Prob > |r| under H0: Rho=0					
	Women Managers	**Women Executives**	**Minority Managers**	**Minority Executives**	**Minority Staff Percentage**
Women Managers	1.00000	0.60145	0.84817	0.59533	0.36763
		0.0002	<.0001	0.0002	0.0324
Women Executives	0.60145	1.00000	0.69372	0.76653	0.20302
	0.0002		<.0001	<.0001	0.2495
Minority Managers	0.84817	0.69372	1.00000	0.65185	0.53156
	<.0001	<.0001		<.0001	0.0012
Minority Executives	0.59533	0.76653	0.65185	1.00000	0.34814
	0.0002	<.0001	<.0001		0.0436
Minority Staff Percentage	0.36763	0.20302	0.53156	0.34814	1.00000
	0.0324	0.2495	0.0012	0.0436	

Hypothesis 2

As a result of the increased presence of women among *executives*:

- Null Hypothesis 2: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 2: There is an increase in representation of minority staff.

As indicated in Table 9, correlation testing between the presence of women among executives and minority staff representation showed a moderately positive relationship with a correlation coefficient of 0.203; however, this finding was not statistically significant (p = 0.2495). Thus, null hypothesis 2 is not rejected at the 0.05 level of significance.

Hypothesis 3

As a result of the increased presence of racial and ethnic minorities in *management*:

- Null Hypothesis 3: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 3: There is an increase in representation of minority staff.

Results in Table 9 indicate a strong positive correlation between the presence of minorities in management and minority staff representation with a correlation coefficient of 0.532 which was statistically significant (p = 0.001). This finding provides evidence in support of Alternative Hypothesis 3.

Hypothesis 4

As a result of the increased presence of racial and ethnic minorities among *executives*:

- Null Hypothesis 4: There is no difference in representation of minority staff or a decrease in minority employee representation.
- Alternative Hypothesis 4: There is an increase in representation of minority staff.

As shown in Table 9, a correlation coefficient of 0.348 was rendered on correlation testing between the presence of racial and ethnic minorities among executives and minority staff representation, thus demonstrating a moderately positive relationship. This finding provides evidence in support of Alternative Hypothesis 4 at a 0.04 level of significance.

Impact of the Presence of Women and Minority Managers and Executives on Satisfaction Composite Scores

The primary measure of interest in the remaining hypotheses was the satisfaction composite score, which was an average of all six survey questions contained in the data set for each record. In order to understand the relationship between the presence of women and minority managers and executives and the satisfaction composite scores, several multivariate regression models were constructed. The results of these analyses are as follows:

Hypothesis 5

As a result of the increased presence of women in *management*:

- Null Hypothesis 5: There is no difference in satisfaction composite scores or a decrease in satisfaction composite scores.
- Alternative Hypothesis 5: There is an increase in satisfaction composite scores.

Hypothesis 6

As a result of the increased presence of women among *executives*:

- Null Hypothesis 6: There is no difference in satisfaction composite scores or a decrease in satisfaction composite scores.
- Alternative Hypothesis 6: There is an increase in satisfaction composite scores.

Hypothesis 7

As a result of the increased presence of racial and ethnic minorities in *management*:

- Null Hypothesis 7: There is no difference in satisfaction composite scores or a decrease in the satisfaction composite scores.
- Alternative Hypothesis 7: There is an increase in satisfaction composite scores.

Hypothesis 8

As a result of the increased presence of racial and ethnic minorities among *executives*:

- Null Hypothesis 8: There is no difference in satisfaction composite scores or a decrease in satisfaction composite scores.
- Alternative Hypothesis 8: There is an increase in satisfaction composite scores.

In order to test Hypotheses 5-8, two multivariate regression models were constructed to examine how employees as a whole would respond in terms of satisfaction composite scores to different leadership demographic compositions. The first model, the results of which are shown in Table 10, sought to explore the impact on the satisfaction composite scores of all staff resulting

from exposure to *any* minority or women executives and managers. This model was statistically significant and consisted of the following control variables: System C, System E, System H, System J, System L, minority status, and non-clinical staff. System K was removed from the model because the overall satisfaction survey question was not included in the data set for this system. Gender status and exposure to a woman manager were removed from the model because these variables were not statistically significant.

The variables of interest in this model were exposure to minority executives, exposure to minority managers, and exposure to women executives. Exposure to minority women executives was also included as an additional variable to ascertain whether the combined status of being both minority and female mirrored the status of being either a woman or a minority. As Table 10 indicates, while exposure to minority managers had a negative effect on satisfaction composite scores, this finding was not statistically significant ($p = 0.402$). Exposure to minority executives had a positive effect on the satisfaction composite scores for all staff but was not statistically significant ($p = 0.064$). Meanwhile, exposure to women executives as well as exposure to minority women executives had a depressive effect on the satisfaction composite scores for staff as a whole, and these findings were highly significant ($p < .0001$).

An additional multivariate regression model was constructed to determine the potential incremental impact of each additional minority executive, minority manager, woman executive, woman manager, minority woman executive, or minority woman manager on satisfaction composite scores. This model was also statistically significant and consisted of the same variables as the previous model; however, exposure to women managers was retained in this model because it did not detract from the model's statistical significance. As shown in Table 11, exposure to each additional woman executive accounted for a 0.025 decline in satisfaction

composite scores for all staff, and this finding was highly significant (p <.0001). Exposure to each additional woman manager accounted for a negligible decline of 0.001, which was also a highly significant finding (p <.0001).

Because woman manager status had to be removed from the first model and had a depressive effect in the second model, the null hypothesis for hypothesis 5 was not rejected. Since exposure to women executives had a depressive effect in both models, the null hypothesis for hypothesis 6 was not rejected. These findings were particularly notable in light of the fact that women made up the majority (54.67%) of executives and of managers (72.02%) in this sample. Thus, while the individual effect of any single woman leader is not notable, the cumulative effect of women executives and women managers on the satisfaction composite scores could be notable for hospitals with a high proportion of women in leadership roles.

As evidenced in Table 11, the second model indicated that exposure to each additional minority executive would account for a 0.072 increase in satisfaction composite scores of all staff, and exposure to each additional minority manager would account for a 0.007 increase. Both of these findings were highly significant (p <.0001). Although there was a negative finding in the first model as a result of general exposure to minority managers, the positive finding in the second model as a result of incremental exposure to minorities in management does offer evidence in support of alternative hypothesis 7. In addition, both models show positive impacts of exposure to minority executives and, therefore, offer evidence in support of alternative hypothesis 8.

Table 10

Satisfaction Composite Score for All Employees Predicted by Presence or Absence of Minority and Women Managers and Executives in Hospital (Presence = 1; Absence = 0)

Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	4.25500	0.04141	102.74	<.0001
Minority Executives	0.03814	0.02060	1.85	0.0641
Minority Managers	-0.03221	0.03840	-0.84	0.4016
Women Executives	-0.09595	0.01896	-5.06	<.0001
Women Minority Executives	-0.12349	0.02002	-6.17	<.0001

Notes: Number of Observations: 34,438; F Value = 67.72; Pr > F = <.0001; R-Square = 0.0212;
Adj R-Square = 0.0209; DF for all values = 1
*See Appendix D for full model

Table 11

Satisfaction Composite Score for All Employees Predicted by Each Additional Minority or Woman Manager and Executive in the Hospital (None = 0; Each Additional = 1)

Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	4.23273	0.01723	245.70	<.0001
Minority Executives	0.07224	0.01794	4.03	<.0001
Minority Managers	0.00660	0.00130	5.08	<.0001
Women Executives	-0.02460	0.00619	-3.98	<.0001
Women Managers	-0.00072394	0.00016278	-4.45	<.0001
Women Minority Executives	-0.16424	0.03111	-5.28	<.0001
Women Minority Managers	-0.00926	0.00212	-4.36	<.0001

Notes: Number of Observations: 34,438; F Value = 59.49; Pr > F = <.0001; R-Square = 0.0220;
Adj R-Square = 0.0216; DF for all values = 1
*See Appendix E for full model

Impact of the Presence of Women and Minority Managers and Executives on Minority Employee Satisfaction Composite Scores

As a means to discern a relationship between the presence of women and minority managers and executives and minority employee satisfaction composite scores, several multivariate regression models were created. The results of these analyses are as follows:

Hypothesis 9

As a result of the increased presence of women in *management*:

- Null Hypothesis 9: There is no difference in minority staff satisfaction composite scores or a decrease in minority staff satisfaction composite scores.
- Alternative Hypothesis 9: There is an increase in minority staff satisfaction composite scores.

Hypothesis 10

As a result of the increased presence of women among *executives*:

- Null Hypothesis 10: There is no difference in minority staff satisfaction composite scores or a decrease in minority staff satisfaction composite scores.
- Alternative Hypothesis 10: There is an increase in minority staff satisfaction composite scores.

Hypothesis 11

As a result of the increased presence of racial and ethnic minorities in *management*:

- Null Hypothesis 11: There is no difference in minority staff satisfaction composite scores or a decrease in minority staff satisfaction composite scores.

- Alternative Hypothesis 11: There is an increase in minority staff satisfaction composite scores.

Hypothesis 12

As a result of the increased presence of racial and ethnic minorities among *executives*:

- Null Hypothesis 12: There is no difference in minority staff satisfaction composite scores or a decrease in minority staff satisfaction composite scores.
- Alternative Hypothesis 12: There is an increase in minority staff satisfaction composite scores.

In order to test Hypotheses 9-12, two multivariate regression models were built to determine how different leadership demographic compositions would impact the satisfaction composite scores of minority employees. The variables of interest within both of these models had problems with statistical significance, likely because of sample size. As with the all-staff regression models, the first model was designed to assess how exposure to any minority or women executives and managers impacted satisfaction composite scores of minority staff. This model was statistically significant and consisted of the following control variables: System C, System E, System H, System J, System L, and non-clinical staff. As in the previous models, System K was removed because of the inability to establish satisfaction composite scores. Minority status, gender status, and exposure to women managers were removed from the model because these variables were not statistically significant.

As Table 12 indicates, exposure to minority executives and exposure to women executives had a depressive effect on satisfaction composite scores for minority staff, but neither of these

findings were statistically significant ($p = 0.199$ and $p = 0.488$, respectively). The finding for exposure to minority female executives was very similar to that of exposure to women executives in general. Exposure to minority managers produced a positive effect on satisfaction composite scores for minority staff, but this finding was not statistically significant ($p = 0.488$).

An additional multivariate regression model was constructed to determine the impact of each additional minority executive, minority manager, woman executive, woman manager, minority woman executive, or minority woman manager on the satisfaction composite scores for minority employees. This model was also statistically significant and consisted of the same variables as the previous model. As illustrated in Table 13, exposure to women managers had virtually no effect on the satisfaction composite scores for minority employees, and this finding was not statistically significant ($p = 0.193$). This finding, combined with the fact that exposure to women managers had to be removed from the previous model, does not provide evidence in support of alternative hypothesis 9, so null hypothesis 9 failed to be rejected. Table 13 also shows that exposure to each additional woman executive accounted for a 0.030 decline in the satisfaction composite scores for minority employees, and this finding was statistically significant ($p = 0.016$). As a result of this finding, combined with the lack of statistical significance surrounding the exposure to women executives in the previous model, the null hypothesis for hypothesis 10 failed to be rejected. Exposure to minority women managers and exposure to minority women executives also had depressive effects on the satisfaction composite scores for minority employees, but neither of these findings was statistically significant.

Exposure to minority managers had a slight positive effect of 0.005 on satisfaction composite scores for minority employees, but this finding was not statistically significant ($p = 0.065$). Although findings in both models for exposure to minority managers lacked statistical

significance, both models showed positive parameter estimates for the satisfaction composite scores for minority staff. These results offer evidence in support of alternative hypothesis 11. Exposure to each additional minority executive accounted for a 0.028 increase in the satisfaction composite scores for minorities, but this finding was not statistically significant ($p = 0.496$). Although the previous model showed a negative reaction to general exposure to minority executives, the second model's finding that incremental exposure to minority executives produced a positive impact does offer evidence in support of alternative hypothesis 12.

Table 12

Satisfaction Composite Score for Minority Employees Predicted by Presence or Absence of Minority and Women Managers and Executives in Hospital (Presence = 1; Absence = 0)

Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	3.98346	0.25326	15.73	<.0001
Minority Executives	-0.08925	0.06950	-1.28	0.1991
Minority Managers	0.17437	0.25122	0.69	0.4876
Women Executives	-0.02130	0.03764	-0.57	0.5715
Women Minority Executives	-0.02108	0.06843	-0.31	0.7581

Notes: Number of Observations: 13,754; F Value = 21.93; Pr > F = <.0001; R-Square = 0.0157;
Adj R-Square = 0.0150; DF for all values = 1
*See Appendix F for full model

Table 13

Satisfaction Composite Score for Minority Employees Predicted by Each Additional Minority or Woman Manager and Executive in the Hospital (None = 0; Each Additional = 1)

Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	4.20076	0.03549	118.35	<.0001
Minority Executives	0.02809	0.04123	0.68	0.4956
Minority Managers	0.00461	0.00250	1.84	0.0653
Women Executives	-0.03008	0.01247	-2.41	0.0158
Women Managers	-0.00038828	0.00029800	-1.30	0.1926
Women Minority Executives	-0.08103	0.08030	-1.01	0.3130
Women Minority Managers	-0.00676	0.00412	-1.64	0.1009

Notes: Number of Observations: 13,754; F Value = 21.93; Pr > F = <.0001; R-Square = 0.0157; Adj R-Square = 0.0150; DF for all values = 1
*See Appendix G for full model

Impact of Critical Mass of Minorities in Management on Satisfaction Composite Scores for Employees of the Same Minority Group

In order to understand whether different concentrations of minority managers had different impacts on satisfaction composite scores for employees from those same minority groups, several statistical analyses were used. The results of these analyses are as follows:

Hypothesis 13

- Null Hypothesis 13: There is no difference between the satisfaction composite scores of minority employees at hospitals with a small number of minority management staff and the satisfaction composite scores of minority employees at hospitals with a critical mass of minority management staff.

- Alternative Hypothesis 13: There is a difference between the satisfaction composite scores of minority employees at hospitals with a small number of minority management staff and the satisfaction composite scores of minority employees at hospitals with a critical mass of minority management staff.

In order to test Hypothesis 13, several series of multivariate regression models were constructed (see Appendixes H – K to view all models). Varying concentrations of all minority managers combined, black managers, Hispanic managers, and Asian/Pacific Islander managers were used in separate sets of regression models in order to understand whether different concentrations of these managers produced different effects on satisfaction composite scores for employees of that same respective minority group (see Appendix C for profiles of management by hospital and by race/ethnicity). Regression models were not built for the American Indian/Alaska Native management group or the Other management group because there were no hospitals in the data set that had a critical mass of either of these groups; however, both these groups were contained in the all-minority regression models.

Regression models were built for the following concentration of managers from each minority group: *less than 10% concentration*, *10 to 20% concentration*, *greater than 20% concentration*, and *greater than 30% concentration*. It should be noted that the *greater than 20% concentration* grouping contained the hospitals with *greater than 30% concentration* in order to achieve greater statistical power. Control variables varied by regression model, but all regressions contained the following control variables: System C, System E, System H, System J, System L, and non-clinical staff. In addition, the specific minority management group that was the focus of each regression model contained a control variable for that specific minority status.

For example, if the dependent variable of a regression model was the satisfaction composite scores of black employees at a hospital with less than 10% black management, then black status was used as a control variable. All regression models constructed to explore critical mass were significant.

Table 14 illustrates the results of the regression models built for varying concentrations of all minority managers. The *less than 10% minority management* grouping had the most negative effect on satisfaction composite scores for minority staff with a parameter estimate of -0.029; however, this finding was not statistically significant. The *10 to 20% minority management* grouping produced a slight negative effect of -0.002, but this finding was not statistically significant. Conversely, the *greater than 20% minority management* grouping produced a positive effect on the satisfaction composite scores for minority staff that was statistically significant ($p = 0.030$), with a parameter estimate of 0.0378. The *greater than 30% minority management* grouping produced a slightly higher positive effect that was also statistically significant ($p = 0.009$), with a parameter estimate of 0.049.

Table 14

Parameter Estimates from Multivariate Regression Models for Satisfaction Composite Scores for Minority Employees at Organizations with Varying Proportions of Minority Management

Variable	Parameter Estimate	P Value for Variable	R-Square	Adj R-Square	F Value
Less Than 10% Minority Managers	-0.02945	0.2922	0.0177	0. 0.0174	68.74
10% to 20% Minority Management	-0.00193	0.9132	0.0167	0.0165	65.05
Greater than 20% Minority Management	0.03782	0.0303	0.0180	0.0177	69.94
Greater than 30% Minority Management	0.04872	0.0090	0.0169	0.0167	65.92

Notes: Pr > F for all models = <.0001
*Full models are provided in Appendix H

As shown in Table 15, regression models constructed for varying concentrations of black managers followed a similar pattern of progressively more positive results as concentrations of black management increased. The *less than 10% black management* grouping had the most negative effect on satisfaction composite scores for black staff with a parameter estimate of -0.0497, and this finding was statistically significant ($p = 0.025$). Parameter estimates for this cluster of regression models became positive at the *10% to 20% black management* grouping with a parameter estimate of 0.022; however, this finding was not statistically significant ($p = 0.265$). The *greater than 20% black management* group and the *greater than 30% black management* group produced parameter estimates of 0.057 and 0.061, respectively, but neither of these results were statistically significant ($p = 0.064$ and $p = 0.062$, respectively).

Table 15

Parameter Estimates from Multivariate Regression Models for Satisfaction Composite Scores for Black Employees at Organizations with Varying Proportions of Black Management

Variable	Parameter Estimate	P Value for Variable	R-Square	Adj R-Square	F Value
Less Than 10% Black Managers	-0.04968	0.0245	0.0183	0.0180	71.28
10% to 20% Black Management	0.02234	0.2651	0.0195	0.0192	75.98
Greater than 20% Black Management	0.05652	0.0643	0.0173	0.0170	67.37
Greater than 30% Black Management	0.06120	0.0620	0.0170	0.0168	66.20

Notes: Pr > F for all models = <.0001
*Full models are provided in Appendix I

Results of regression models for varying concentrations of Hispanic managers are shown in Table 16. A regression model was not designed for the *greater than 30% concentration of Hispanic management* grouping because there were no hospitals in the data set with a

concentration this high. In addition, the model built for the *greater than 20% Hispanic management* grouping only contained one hospital, thus lacking statistical power. As with both the all-minority cluster and the black management cluster, the regression models reveal that the *10 to 20% Hispanic management* grouping shows an improvement over the *less than 10% Hispanic management* grouping, with the former parameter estimate being -0.036 and the latter parameter estimate being 0.161. While the finding for the *less than 10% Hispanic management* grouping was not statistically significant ($p = 0.261$), the finding for the *10 to 20% Hispanic management* grouping was statistically significant ($p = 0.001$). The finding for the *greater than 20% Hispanic management* grouping produced a negative effect with a parameter estimate of -0.066, but this finding was not statistically significant ($p = 0.103$) and suffered from sampling problems, since this finding only represented results from one hospital (See Appendix C).

Table 16

Parameter Estimates from Multivariate Regression Models for Satisfaction Composite Scores for Hispanic Employees at Organizations with Varying Proportions of Hispanic Management

Variable	Parameter Estimate	P Value for Variable	R-Square	Adj R-Square	F Value
Less Than 10% Hispanic Managers	-0.03642	0.2605	0.0170	0.0167	66.09
10% to 20% Hispanic Management	0.16079	0.0014	0.0169	0.0167	65.87
Greater than 20% Hispanic Management	-0.06621	0.1025	0.0173	0.0170	67.17
Greater than 30% Hispanic Management	N/A	N/A	N/A	N/A	N/A

Notes: Pr > F for all models = <.0001
*Full models are provided in Appendix J

As shown in Table 17, the findings for the *less than 10% Asian/Pacific Islander management* grouping was in keeping with that of other minority groups in that a negative effect

was observed. The parameter estimate for this group was -0.0127, although this finding was not statistically significant ($p = 0.661$). The *10% to 20% Asian/Pacific Islander management* grouping experienced a shift to a positive parameter estimate of 0.053, but this finding was also not statistically significant ($p = 0.133$). The *greater than 20% Asian/Pacific Islander management* grouping also had a positive impact on the satisfaction composite scores for Asian/Pacific Islander employees, with a parameter estimate of 0.046. This finding was not statistically significant ($p = 0.143$), and, as with this same grouping for the Hispanic management cluster of regression models, the finding for this grouping had sampling problems. Only two hospitals made up the *greater than 20% Asian/Pacific Islander management* grouping (See Appendix C).

Table 17

Parameter Estimates from Multivariate Regression Models for Satisfaction Composite Scores for Asian/Pacific Islander Employees at Organizations with Varying Proportions of Asian/Pacific Islander Management

Variable	Parameter Estimate	P Value for Variable	R-Square	Adj R-Square	F Value
Less Than 10% Asian/Pacific Islander Managers	-0.01266	0.6611	0.0210	0.0208	82.20
10% to 20% Asian/Pacific Islander Management	0.05329	0.1331	0.0176	0.0174	77.09
Greater than 20% Asian/Pacific Islander Management	0.04595	0.1434	0.0176	0.0174	68.72
Greater than 30% Asian/Pacific Islander Management	N/A	N/A	N/A	N/A	N/A

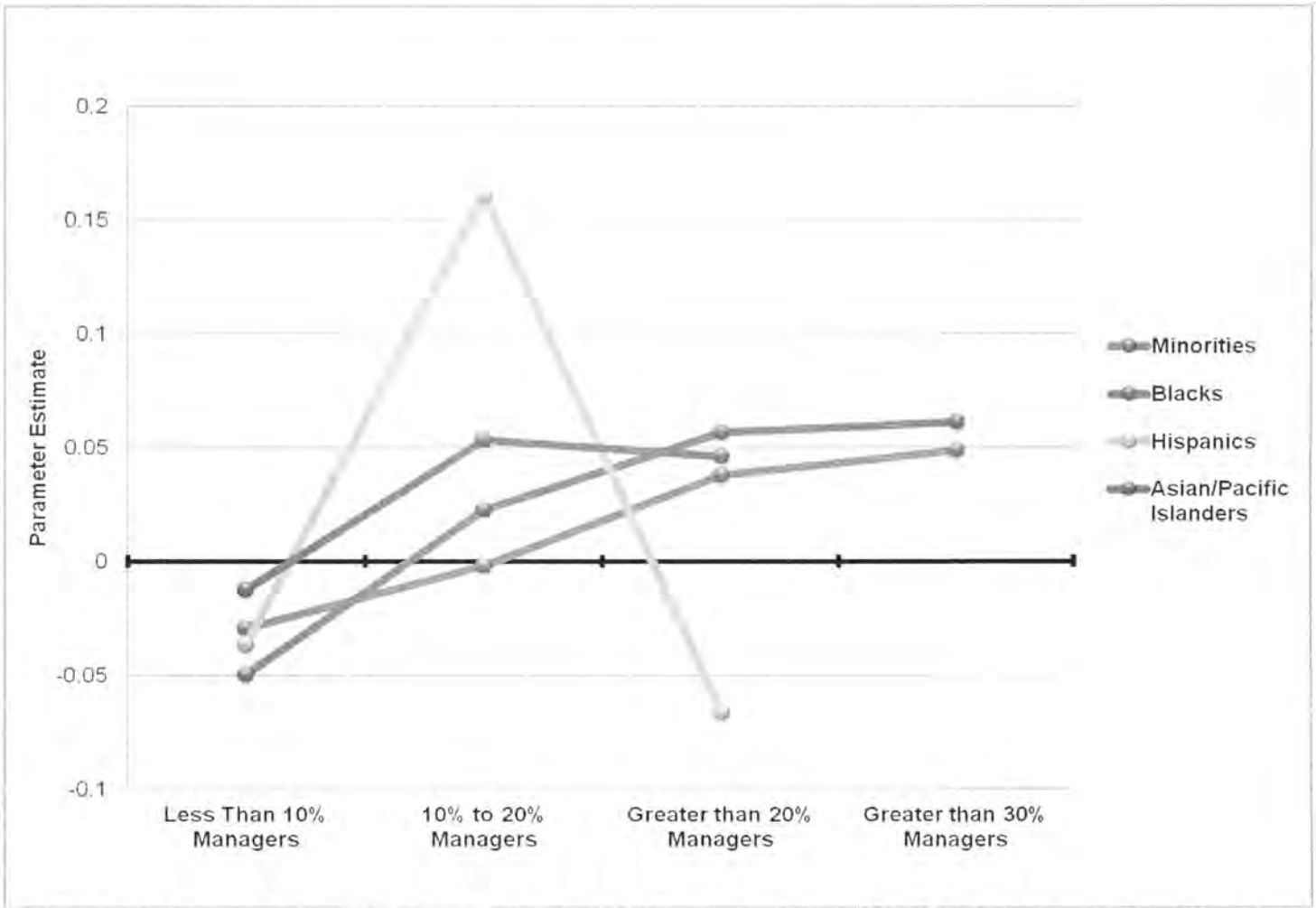
Notes: Pr > F for all models = <.0001
*Full models are provided in Appendix K

As shown in Figure 2, plots of parameter estimates for progressive concentrations of management from each minority group shows a shift from negative to positive at the *10 to 20% concentration level* with the exception of the all-minority grouping, which shifts to positive at the

above 20% concentration level. Parameter estimates for both the all-minority grouping and the black grouping continue to increase as concentrations of the minority management and black management increase, respectively. Because findings for the *greater than 20% Hispanic management* grouping and the *greater than 20% Asian/Pacific Islander management* grouping were subject to sampling problems, few conclusions can be drawn from the results for this concentration level for these two groups.

Figure 2

Satisfaction Composite Scores for Employees at Organizations with Varying Concentrations of Same Race/Ethnicity Group Managers



*Values at the *Greater than 20% Managers* level for Hispanics and Asian/Pacific Islanders were based inadequate sample sizes (two hospitals or less).

Summary of Findings

Significant findings surfaced in several areas in this study. In terms of minority representation, a significant strong positive correlation existed for minority managers, followed by a significant moderate positive correlation for minority executives. A significant moderate positive correlation was detected between the presence of women managers and minority staff, and a weak positive relationship that was not statistically significant existed for women executives.

For staff as a whole, a significant negative effect on satisfaction composite scores occurred as a result of general exposure to minority managers, women managers, and women executives; however, general exposure produced a non-significant positive effect for minority managers. Exposure to each additional minority manager and executive produced a significant positive incremental effect, while exposure to each additional woman executive produced a significant negative incremental effect. Exposure to each additional woman manager produced virtually no effect, and this finding was also significant.

For minority employees, general exposure to minority managers produced a positive effect while general exposure to both women and minority executives produced a negative effect, but none of these findings were statistically significant. Exposure to each additional minority manager and executive produced a non-significant positive incremental effect, and exposure to women managers created virtually no impact. Exposure to each additional woman executive produced a significant negative effect on satisfaction composite scores for minority staff.

Analyses surrounding critical mass found that all minority groups reacted negatively to scenarios in which members of their own specific racial/ethnic group were represented in management at a level of less than 10%. All minority groups generally trended upward as

representation of their respective minority group increased in management; however, sampling problems occurred for Hispanics and Asian/Pacific Islanders at the *above 20% concentration* level.

CHAPTER V

DISCUSSION

Introduction

This chapter presents a discussion of the results of the statistical analyses used to test the research hypotheses of this study. An overview of the significant findings of this study is presented, and these findings are weighed in light of current research. Implications of this study's findings for research and organizational practice are detailed, and guidance for the leadership diversity agenda is discussed. Study limitations are identified, and recommendations for future research are made as a means to pave the way for a new direction within the area of leadership diversity research.

Summary of Findings

This study was designed to fill a research void surrounding the effect of diversity within health care leadership, an idea whose value is frequently asserted by industry rhetoric but with little empirical basis. This discussion is organized by the series of hypotheses that were tested to understand the complexity of diversity within leadership. The first set of hypotheses explored how various leadership demographic compositions were correlated with minority employee representation. The second set of hypotheses examined how various compositions of leadership impacted satisfaction composite scores for all staff as well as minority employees. The final hypothesis focused on the issue of a critical mass of minorities in management and examined its impact on satisfaction composite scores for minority staff.

Impact of Diverse Leadership on Minority Employee Representation

Hypotheses 1-2 sought to determine the extent to which heightened representation of women in management and executive positions were associated with an increased presence of minority employees. A statistically significant, moderately positive relationship was detected between an increased presence of women in management and an increased presence of minority staff. However, a weak positive relationship that was not statistically significant was detected between the increased presence of women executives and minority staff.

Hypotheses 3-4 were designed to determine the relationships between heightened representation of racial and ethnic minorities in management and executive roles and minority representation on the front lines of the health care workforce. There was a statistically significant, strong positive correlation between the heightened presence of minority management and an increased presence of minorities on staff. Similarly, a, moderately positive, significant relationship was found between the presence of minority executives and the presence of minority staff.

Impact of Diverse Leadership on Satisfaction Composite Scores for All Staff

Hypotheses 5 and 6 tested how the increased presence of women among management and executives impacted satisfaction composite scores for staff as a whole. Similarly, hypotheses 7 and 8 tested how the increased presence of racial and ethnic minorities on manager and executive levels impacted satisfaction composite scores for all staff. Women managers were found to have virtually no significant bearing on satisfaction composite scores for all staff. General exposure to

women executives produced a statistically significant negative effect on satisfaction composite scores, and each additional woman executive had an incrementally more negative impact on satisfaction composite scores for all staff.

General exposure to any minority managers was shown to have a negative effect; however, each additional minority manager produced a statistically significant, mildly positive incremental effect on the satisfaction composite scores for all staff. General exposure to any minority executives showed a moderately positive, non-statistically significant impact on satisfaction composite scores; and each additional minority executive produced a statistically significant positive impact on satisfaction composite scores.

Impact of Diverse Leadership on Satisfaction Composite Scores for Minority Staff

Hypotheses 9 and 10 focused on the impact of the presence of women managers and executives on minority staff satisfaction composite scores, and hypotheses 11 and 12 focused on the impact of the presence of minority managers and executives on minority staff satisfaction composite scores. Nearly all the variables of interest in the regression models built for minority staff satisfaction composite scores failed to produce statistically significant findings for the variables of interest—an issue likely due to sample size. The findings surrounding the impact of women managers in this set of regression models mirrored the pattern found for all staff in that women managers had virtually no influence on minority staff satisfaction composite scores. General exposure to women executives, however, produced a negative effect on minority employee satisfaction composite scores. Each additional woman executive was shown to have an incrementally more negative effect on minority employee satisfaction composite scores, and this

finding was the only statistically significant result for the regression models built for minority employee satisfaction composite scores.

An examination of the minority manager variable revealed that both general and incremental exposure to minority managers produced a positive impact on minority employee satisfaction composite scores. General exposure to minority executives produced a negative parameter estimate, but exposure to each additional minority executives produced an incremental, mildly positive effect.

Impact of Critical Mass of Minorities in Management on Satisfaction Composite Scores for Employees of the Same Minority Group

Alternative hypothesis 13 stated that there is a significant difference between the satisfaction composite scores of minority employees at hospitals with a small number of minority management and the satisfaction composite scores of minority employees at hospitals with a critical mass of minority management staff. A series of multivariate regression analyses were used to test how varying proportions of minorities in management impacted the satisfaction composite scores for all minority staff. Results showed that minority employee satisfaction composite scores reacted most negatively to scenarios with less than 10% of minorities in management and a slight negative reaction was detected at hospitals with 10 to 20% of the management being minority. At the *above 20% minority management* level, however, the scores shifted positive and increased again at the *above 30% minority management* level.

This same set of tests was run for blacks, Hispanics, and Asian/Pacific Islanders to examine how each of these groups would react to different proportions of their specific

racial/ethnic group in management. In each regression model, the dependent variable was the satisfaction composite scores of employees from the same specific minority group in question. All tests showed a negative reaction at the *below 10% concentration* level, but all groups shifted to positive reactions at the *10% to 20% concentration* level. Blacks' positive reactions increased at the *above 20% concentration* level and again at the *above 30% concentration* level. At the *above 20% concentration* level, Hispanics slipped to a negative reaction and Asian/Pacific Islanders continued to have a positive reaction. However, both of these latter findings suffered from sampling problems, as they were based on two hospitals or less.

Discussion of Results in Consideration of Current Research

Impact of Diverse Leadership on Minority Employee Representation

The literature supports the notion that the presence of minorities on the front lines of the workforce is a compelling agenda for the American health care system. Most notably, minority health care workers expand access to care for the underserved (Komaromy et al., 1996, pp. 1305-1310), increase satisfaction and self-rated quality of care for minority patients (Saha, Komaromy, Koepsell, & Bindman, 1999, pp. 997-104), and can aid in mitigating health care disparities that have been widely documented for minority patient populations (Smedley, Stith, & Nelson, p.14). Thus, the results of hypotheses 1 through 4 are helpful in understanding the organizational conditions under which minority employee representation is higher. The strongest association with the greatest statistical significance was between the presence of minority management and minority staff. The associations for women managers and minority executives were comparable in terms of their moderately positive relationship with the representation of minority staff, and

both of these findings were statistically significant. However, there was only a weak positive relationship that was not statistically significant between the presence of women executives and the representation of minority staff. What is not clear from these findings, however, is the extent to which the representation of one causes the representation of the other. In other words, do minority managers hire more minority staff or do organizations with more minority staff attract more minority managers? These associations may also be simply a byproduct of an area with more minorities in the labor force overall.

Although a thorough review of the literature failed to render any studies that provided insight into whether minority managers cause the representation of minority staff (or vice versa), one study did examine this issue with women. Specifically, Joy (2008) found that the more women board members that a company had in the past, the more women corporate officers it would have in the future. Essentially, the former was a predictor of the latter (pp. 1-16). In this same fashion, it may be possible that minority managers are a predictor of minority staff. While this research does not answer the question of the predictive value of minorities in management positions, it nonetheless suggests that the presence of minority management and the presence of minority staff are linked.

Impact of Diverse Leadership on Employee Satisfaction for Employees as a Whole and Minority Employees

Although several statistically significant findings surfaced through the regression models built to examine how staff as a whole respond to minority and women executives and managers, the results failed to reveal any major discernible pattern for minority and women managers.

These findings did suggest that the presence of women executives may have a mildly depressive effect on employee satisfaction and the presence of minority executives may have a mildly positive effect on employee satisfaction. Investigations into how different demographic patterns of management impacted minority staff satisfaction generally failed to produce statistical significance, an issue likely attributable to sample size challenges for minority staff within the data set.

It is not clear what phenomenon or phenomena are driving these divergent staff perceptions of women executives and minority executives. One theory is that, while women may have achieved numerical parity in terms of their ability to obtain senior leadership roles (at least for hospitals in this data set), they may not yet have achieved parity in terms of full acceptance by staff members who have been accustomed to seeing men occupy these roles historically. There is some support for this notion in the literature. Eagly and Chin (2010) suggest that the cultural traits of women and minority groups may violate the prevailing societal archetype of leadership, thus limiting their group members' perceived legitimacy or effectiveness by others, regardless of their actual competence (pp. 216-222). Thus, these negative reactions to women in executive roles may be a byproduct of cognitive dissonance for staff members surrounding the relatively recent arrival of women into these roles. If there is any merit to this notion, it stands to reason that these negative associations may diminish over time as front-line staff come to view executive roles as less stereotypically masculine and, instead, as gender-neutral.

Impact of Critical Mass of Minorities in Management on Minority Employee Satisfaction

The analyses surrounding critical mass showed a distinctive pattern. All minority groups analyzed as part of this study (all minorities combined, blacks, Hispanics, and Asian/Pacific

Islanders) showed negative staff satisfaction reactions to low concentration levels of managers of the same race/ethnicity. However, blacks, Hispanics and Asian/Pacific Islanders all shifted to positive staff satisfaction reactions at the *10 to 20% concentration* level. The all-minority group did not shift to positive until *above the 20% concentration* level, and the curve for the all-minority group, in particular, was flatter than that for blacks, Hispanics, and Asian/Pacific Islanders.

Although no studies were found as part of the literature review for this research that articulated this dynamic for racial and ethnic minorities, some studies have noted this phenomenon for women leaders. Kanter (1977) noted the negative consequences of a token number of women in an otherwise all male leadership group of an organization. Because of their relatively low numbers in leadership, Kanter described how token women tended to be singled out and viewed less as individuals and, instead, as symbols of how all women thought or were expected to behave. Because of the representational implications of their behavior, the actions of token women leaders tended to be viewed with a high degree of scrutiny by lower ranking women, a dynamic that served as only one of many performance pressures incurred by token women leaders (pp. 206-242). Similarly, Ely (1994) found that women in the lower ranks of firms with only a few women at the top were less likely to perceive those women leaders as role models and more likely to see their female peers as competitors who were unsupportive. Conversely, lower ranking women at firms with a critical mass of women leaders were more likely to view their female superiors as role models and their female peers as supportive team members (pp. 203-238). Thus, the findings in this study surrounding critical mass mirror the findings in the literature, but this study builds on the current knowledge by suggesting that tokenism implies the same organizational consequences for race and ethnicity status as it does for gender status.

Implications of the Study

This research has added to the current body of knowledge in several ways. First and foremost, this study shows that the demographic makeup of an organization's leadership does have implications for employee satisfaction—a metric which has been shown extensively in the literature to be a powerful indicator for the organizational outcomes that matter most to health care organizations. An organization's leadership composition, as demonstrated by this study as well as previous research, helps to form the lens through which employees view and rationalize their organizational experiences. Specifically, the extent to which employees experience demographic concordance between themselves and members of an organization's upper echelons can help shape how employees relate to their leaders as well as one another, for good or for bad. Thus, health care organizations seeking to optimize organizational performance must pay attention to not only the type of decisions being made at the middle and upper levels of the organizational hierarchy but also to *who* is making those decisions.

Second, the findings that higher proportions of minority staff are correlated with higher proportions of minority management lend support to the common sense notion that diversity flourishes when it is reflected at different levels of the organizational hierarchy. Although this research is not longitudinal and therefore cannot be used to draw conclusions about whether minority staff representation is a cause or an effect of minority management representation, the findings elsewhere in this study surrounding critical mass reveal the affirming quality that higher proportions of minorities in management have for minority staff. In addition, although the sample size for minority executives was low, the statistically significant finding that the presence of

minority executives had a positive effect on the satisfaction scores for all staff is a key discovery. When considered in tandem with the finding that minority staff representation is correlated with minority management representation, these findings offer credence to national efforts to diversify management and executive levels of health care organizations.

The aspect of this study related to critical mass produced several findings that have implications for the diversity leadership research agenda as well as professional practice. First, no study to date has explored the implications of critical mass of racial and ethnic minorities on employee satisfaction. In doing so, this study fills a void in the literature, but it also provides some clarification for the calls sweeping the nation to diversify the leadership of healthcare organizations. Quite simply, these efforts need to become clearer in specifying the precise circumstances under which diversity is helpful and, conversely, when diversity can be counterproductive. Certainly, before there can be many there must be one, so tokenism may be a necessary stage on the path to achieve a critical mass of minorities in leadership positions. Thus, health care organizations that are responding to national calls to diversify leadership must not be content to stop at the early successes and would be well advised to continue pressing toward a critical mass of minority representation. In addition, organizational leaders should be mindful that early efforts to diversify an organization's leadership may not initially bring about the payoffs promised by diversity industry advocates and may instead carry the challenges associated with tokenism that have been well established in the literature and reaffirmed by this study.

Another implication surfaced by this study surrounds the investigation into critical mass. As noted previously, the all-minority group did not shift to positive parameter estimates until the *above 20% concentration* level, and the curve for this group, in particular, was flatter than that for blacks, Hispanics, and Asian/Pacific Islanders. In other words, minority staff as a combined

group showed a more muted reaction to shifts in concentration levels of minorities in management than, for example, black staff had for shifts in concentration levels of black managers. These findings suggest that being a member of the non-dominant culture alone does not facilitate a strong unifying reaction. In essence, general status as a minority may not be experienced with the same degree of saliency as specific minority group affiliation. Thus, increasing levels of all minority groups within an organization's management may not produce as pronounced a staff satisfaction reaction as increasing the representation of the minorities in management who are mostly widely represented among staff roles. While this study does not clarify the nuances of this phenomenon, these findings do offer an implication for professional practice. Specifically, when attempting to diversify the leadership of an organization, health care leaders should engage in a careful analysis of the demographics of front line employees and focus recruitment efforts on mirroring the diversity of these front lines.

Finally, because the satisfaction composite score not only included questions related to satisfaction and pride but also questions related to organizational commitment and the desire to be retained, these findings suggest that the ability to retain minority staff is linked to the extent to which their organizations have a critical mass of individuals who share their same race/ethnicity on the management levels of their organization. Thus, critical mass may not only be a predictor of satisfaction for certain groups of employees but also of retention of those employees.

Study Limitations

There are a number of limitations of this study. First, because the data set that was used for this study was gathered with a very specific non-academic research agenda—that is, to

understand employee satisfaction at each of the respective hospitals featured in the data set—the participation rates among employees at each of these hospitals may have varied based on a variety of factors, such as fears surrounding confidentiality of the survey, organizational climate, or employee disillusionment. Because of this variability, this study may be subject to non-response bias. Thus, it cannot be assumed that the employee satisfaction levels among survey respondents are precisely representative of the entire employee cohort at each of the organizations within the data set.

Second, because some hospital systems within the data set did not track race/ethnicity or gender, the records from these hospitals had to be excluded. Arguably, ensuring the ability to track and analyze employee satisfaction survey results along these demographic lines may be indicative of enlightened leadership. Thus, the necessity to exclude those records presented certain limitations in that the remaining hospitals may have already had a higher degree of concern for diversity than those that were excluded.

Third, because this research makes use of cross-sectional survey data, inferences about causality cannot be made with confidence. This issue applied to the finding of correlation between the presence of minority staff and the presence of minority management. In this case, it was not clear which circumstance caused the other, so it is important not to deduce that associations automatically indicate causation.

Fourth, despite the large size of the data set, minority executives were nonetheless underrepresented within the executive cohort. Inferences about the findings surrounding minority executives must be viewed with care since the results pertaining to this group were prone to sampling issues.

Finally, although there is compelling evidence in the literature to suggest that employee satisfaction is a powerful indicator of other key health care organizational outcomes, this study did not track metrics such as employee retention, patient satisfaction, clinical quality, and profitability for these organizations. Thus, the cause-effect themes expressed in the literature surrounding employee satisfaction cannot be assumed to be consistently true for the organizations in this study.

Recommendations for Future Research

There are four recommendations for future research. First, additional research is needed to better understand predictors of minority staff representation, since this representation is of vital importance for the American health care system. Specifically, a longitudinal study is recommended to determine if higher rates of minority managers are a predictor of minority employees or if minority employees are a predictor of more minority managers. Making this determination would allow organizations focused on diversifying their workforce to focus their recruiting resources more appropriately.

Second, further investigation is needed to validate the findings in this study surrounding critical mass and to better understand the nuances of this phenomenon. The results of this study suggest that the positive impacts of diversity among managers can be reached at the 10 to 20% concentration level for any single minority group, yet this finding runs counter to the stance in the literature, which suggests that the tipping point is 30%. Additionally, because of the small sample size of minority executives in this study, it is not clear if this same concentration would have the same impact at the executive level of an organization. Thus, more studies are needed to

determine if critical mass at the executive level has the same impacts on staff satisfaction as critical mass at the management level.

Third, additional research is needed to better understand the findings surrounding the negative perceptions associated with women in executive roles. Particularly with this finding, a longitudinal study is required to determine if this negative perception diminishes over time as front line employees become more accustomed to seeing women occupy these senior leadership positions.

Finally, the finding that racial and ethnic minorities as a whole are less responsive to increases in overall minority representation is an issue worthy of additional investigation. In the discussion section of this chapter, it has been speculated that this finding suggests that simply being a member of the non-dominant culture in an organization is not a unifying factor. A qualitative study that investigates how staff members of one minority group respond to the leadership of members of a different minority group may shed additional light on this dynamic unearthed by this study.

Conclusions

This study explored the impact of minority and women managers and executives on health care employee satisfaction and minority employee representation, and yielded three sets of findings. First, a strong positive correlation was found between the representation of minority managers and the representation of minority staff, and a moderate positive correlation was found between the presence of both minority executives and women executives and minority staff representation.

Second, explorations of the relationship between a composite of several dimensions of employee satisfaction and different compositions of leadership found several themes, but some of these findings were lacking in statistical significance. Exposure to minority executives had a positive impact on this composite score for employees as a whole while exposure to female executives had a negative impact. Meanwhile, general exposure to minority managers created a negative impact, but incremental exposure to each additional minority manager produced a slight positive impact on the composite score. These same investigations for minority staff generally lacked statistical significance, likely because of sample size. Nonetheless, the findings revealed that both general and incremental exposure to minority managers had a positive impact on minority employee composite scores. General exposure to minority executives had a depressive effect, but incremental exposure to minority executives had a slight positive effect on composite scores for minority staff. Both general and incremental exposure to women executives had a depressive effect, but exposure to women managers did not have an impact on the satisfaction scores for minority staff.

Finally, studies on the effect of critical mass of minority employees in management revealed that all minority groups respond negatively to low representation levels of minorities in management. Moreover, specific minority groups (e.g. blacks, Hispanics, Asian/Pacific Islanders) show a positive response when at least 10 to 20% of management includes their specific racial or ethnic group, and this response was amplified at the above 20% mark for blacks and Asian/Pacific Islanders. When combined into a collective, minorities as a whole did not respond positively until the above 20% concentration level for all minorities. These findings suggest that specific racial/ethnic group affiliation may matter more than general status as a minority in terms of how minority employees will respond to evolving demographics of their management teams.

This study demonstrated that the demographic composition of a health care organization's management and executive ranks is a factor that influences employee satisfaction as well as minority employee representation. In addition, this investigation showed that a critical mass of minorities in management is important in realizing the benefits of diversity within leadership. This study has begun to make progress in closing a gap between industry rhetoric and empirical knowledge about diversity in leadership. This research is important because it offers health care organizations insight into the circumstances under which leadership diversity can present challenges and, more importantly, the circumstances under which leadership diversity can be beneficial.

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APPENDIX A: POSITION RECODING ASSIGNMENTS

ORIGINAL POSITION NAME	NEW POSITION CATEGORY
Administrative/Fiscal	Non-Clinical Staff
Clerical	Non-Clinical Staff
Clerical/Office Professional	Non-Clinical Staff
Clerical/Other Admin	Non-Clinical Staff
Clinical Professional	Clinical Staff
Clinical Professional other than RN or physician	Clinical Staff
Clinical Technician	Clinical Staff
Director	Management
Executive	Executive
Executive/Administrative/Managerial*	Management
Finance (NFIN)	Non-Clinical Staff
Healthcare Professional	Clinical Staff
Information Systems (KINF)	Non-Clinical Staff
Information Technology Professional	Non-Clinical Staff
ISD - Info Software - Department (LITD)	Non-Clinical Staff
Leadership Team	Management
Licensed Clinical Technician	Clinical Staff
Licensed Technical	Clinical Staff
LPN (OLPN)	Clinical Staff
LVN	Clinical Staff

Management	Management
Management (MGMT)*	Management
Management Senior Professional	Management
Manager/Supervisor	Management
Medical Practitioner	Clinical Staff
Non-clinical Professional	Non-Clinical Staff
Non-clinical Technician	Non-Clinical Staff
Nurse Practitioner	Clinical Staff
Nursing Assistant	Clinical Staff
Office Support (COFS)	Non-Clinical Staff
Other**	Staff**
Other Clinical Support	Clinical Staff
Other Non-clinical Support	Non-Clinical Staff
Patient Care Technical	Clinical Staff
Pharmacy (JPHR)	Clinical Staff
PhD Faculty	Non-Clinical Staff
Physician	Clinical Staff
Physician Resident	Clinical Staff
Professional	Clinical Staff
Professional - Clinical (GPCL)	Clinical Staff
Professional - Non Clinical (FPNC)	Non-Clinical Staff
Professional Services	Non-Clinical Staff
Professional Support Staff	Non-Clinical Staff

Radiology (IRAD)	Clinical Staff
Registered Nurse	Clinical Staff
RN	Clinical Staff
RN (HRNS)	Clinical Staff
Sales (PSAL)	Non-Clinical Staff
Security Guard	Non-Clinical Staff
Security Officer	Non-Clinical Staff
Senior Management	Executive
Service	Non-Clinical Staff
Service Worker	Non-Clinical Staff
Service/Maintenance**	Staff**
Skilled Crafts	Non-Clinical Staff
Skilled Maintenance	Non-Clinical Staff
Support - Non-Clinical (ASNC)	Non-Clinical Staff
Support Clinical (BSCL)	Clinical Staff
Tech - Clinical (ETCL)	Clinical Staff
Tech - Non Clinical (DTNC)	Non-Clinical Staff
Technical/Para-Professional	Clinical Staff
Technical/Specialist	Non-Clinical Staff

* Excluded for statistics examining different levels of management because this category contains multiple levels of management

** Excluded for statistics comparing clinical staff and non-clinical staff because this category could contain both

APPENDIX B: RACE/ETHNICITY RECODING ASSIGNMENTS

ORIGINAL RACE/ETHNICITY NAME	NEW RACE/ETHNICITY CATEGORY
African American	Black
American Indian or Alaska Native	American Indian or Alaska Native
American Indian or Alaskan Native	American Indian or Alaska Native
American Indian/Alaska Native	American Indian or Alaska Native
Asian	Asian/Pacific Islander
Asian/Pacific Islander	Asian/Pacific Islander
Black or African American	Black
Caucasian	White
Caucasian/White	White
Hispanic	Hispanic
Hispanic or Latino	Hispanic
Hispanic/Latino	Hispanic
Multi-racial	Other
Native Hawaiian or other Pacific Islander	Asian/Pacific Islander
Native Hawaiian/Pacific Islander	Asian/Pacific Islander
Other	Other
Two or more races	Other
Two or more races/ethnicities	Other
White	White

APPENDIX C:
PROFILES OF MANAGEMENT BY HOSPITAL AND BY RACE/ETHNICITY

Minority Managers			
Entity	Frequency	Percentage of All Management in Entity	Concentration Grouping
EntityF_4	45	81.82	Above 30% (also included in Above 20% group)
EntityH_1	301	59.14	
EntityH_2	39	49.37	
EntityF_5	62	47.33	
EntityK_5	19	45.24	
EntityL_2	123	43.31	
EntityL_3	19	39.58	
EntityJ_1	91	37.92	
EntityK_4	19	24.68	Above 20%
EntityF_2	23	24.47	
EntityB_1	38	23.75	
EntityL_1	4	22.22	
EntityF_1	30	21.90	
EntityK_3	2	20.00	10% to 20%
EntityK_2	14	19.72	
EntityC_2	49	18.49	
EntityF_3	14	18.42	
EntityC_1	13	16.88	
EntityE_3	3	16.67	
EntityB_2	5	15.63	
EntityJ_2	26	15.29	
EntityB_4	2	13.33	
EntityJ_3	2	13.33	
EntityK_1	2	13.33	
EntityC_3	6	12.24	
EntityE_1	25	11.36	
EntityE_4	2	11.11	
EntityE_5	3	10.34	
EntityB_3	9	8.82	Below 10%
EntityE_2	2	8.70	
EntityJ_4	2	8.70	
EntityB_5	1	7.14	
EntityO_1	5	6.25	

Black Managers			
Entity	Frequency	Percentage of All Management in Entity	Concentration Grouping
EntityF_4	44	80.00	Above 30% (also included in Above 20% group)
EntityF_5	56	42.75	
EntityJ_1	74	30.83	
EntityH_2	21	26.58	Above 20%
EntityF_2	19	20.21	
EntityH_1	101	19.84	10% to 20%
EntityF_1	26	18.98	
EntityB_1	28	17.50	
EntityE_3	3	16.67	
EntityC_2	43	16.23	
EntityF_3	11	14.47	
EntityC_1	11	14.29	
EntityB_4	2	13.33	
EntityB_2	4	12.50	
EntityL_3	6	12.50	
EntityJ_2	17	10.00	
EntityK_3	1	10.00	
EntityE_2	2	8.70	Below 10%
EntityE_1	19	8.64	
EntityC_3	4	8.16	
EntityB_5	1	7.14	
EntityL_2	20	7.04	
EntityE_5	2	6.90	
EntityB_3	7	6.86	
EntityJ_3	1	6.67	
EntityE_4	1	5.56	
EntityK_4	4	5.19	
EntityJ_4	1	4.35	
EntityK_2	2	2.82	
EntityK_5	1	2.38	

Hispanic Managers			
Entity	Frequency	Percentage of All Management in Entity	Concentration Grouping
EntityH_1	102	20.04	Above 20%
EntityL_1	3	16.67	10% to 20%
EntityK_1	2	13.33	
EntityL_3	6	12.50	
EntityK_5	5	11.90	
EntityK_4	8	10.39	
EntityK_3	1	10.00	
EntityL_2	28	9.86	Below 10%
EntityH_2	7	8.86	
EntityJ_3	1	6.67	
EntityO_1	5	6.25	
EntityE_5	1	3.45	
EntityB_2	1	3.13	
EntityJ_1	7	2.92	
EntityK_2	2	2.82	
EntityJ_2	4	2.35	
EntityE_1	4	1.82	
EntityF_3	1	1.32	
EntityF_2	1	1.06	
EntityF_5	1	0.76	

Asian/Pacific Islander Managers			
Entity	Frequency	Percentage of All Management in Entity	Concentration Grouping
EntityK_5	12	28.57	Above 20%
EntityL_2	61	21.48	
EntityK_2	10	14.08	10% to 20%
EntityH_1	68	13.36	
EntityH_2	8	10.13	
EntityL_3	4	8.33	Below 10%
EntityK_4	6	7.79	
EntityL_1	1	5.56	
EntityJ_4	1	4.35	
EntityJ_1	10	4.17	
EntityC_3	2	4.08	
EntityF_2	3	3.19	
EntityF_1	4	2.92	
EntityB_1	3	1.88	
EntityF_4	1	1.82	
EntityJ_2	3	1.76	
EntityC_2	4	1.51	
EntityF_3	1	1.32	
EntityC_1	1	1.30	
EntityE_1	2	0.91	

APPENDIX D:
GENERAL REGRESSION MODEL FOR ALL EMPLOYEES

Satisfaction Composite Score for All Employees Predicted by Presence or Absence of Minority and Women Managers and Executives in Hospital (Presence = 1; Absence = 0)

The REG Procedure
Model: MODEL1
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	394.54922	35.86811	67.72	<.0001
Error	34426	18235	0.52968		
Corrected Total	34437	18629			

Root MSE	0.72779	R-Square	0.0212
Dependent Mean	4.10698	Adj R-Sq	0.0209
Coeff Var	17.72077		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.25500	0.04141	102.74	<.0001
SystemC		1	-0.17639	0.01934	-9.12	<.0001
SystemE		1	0.09464	0.01467	6.45	<.0001
SystemH		1	-0.09855	0.01624	-6.07	<.0001
SystemJ		1	-0.11679	0.01255	-9.30	<.0001
SystemL		1	0.12520	0.01378	9.09	<.0001
mn_exc	exposed: mn exc	1	0.03814	0.02060	1.85	0.0641
mn_man	exposed: mn man	1	-0.03221	0.03840	-0.84	0.4016
w_exc	exposed: w exc	1	-0.09595	0.01896	-5.06	<.0001
w_mn_exc	exposed: w mn exc	1	-0.12349	0.02002	-6.17	<.0001
minority	Minority	1	-0.01816	0.00889	-2.04	0.0410
non_cln_staff		1	0.12024	0.00913	13.17	<.0001

APPENDIX E:
INCREMENTAL REGRESSION MODEL FOR ALL EMPLOYEES

Satisfaction Composite Score for All Employees Predicted by Each Additional Minority or Woman Manager and Executive in the Hospital (None = 0; Each Additional = 1)

The REG Procedure
Model: MODEL2
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	13	409.33408	31.48724	59.49	<.0001
Error	34424	18220	0.52928		
Corrected Total	34437	18629			

Root MSE	0.72751	R-Square	0.0220
Dependent Mean	4.10698	Adj R-Sq	0.0216
Coeff Var	17.71410		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.23273	0.01723	245.70	<.0001
SystemC		1	-0.10076	0.02609	-3.86	0.0001
SystemE		1	0.10063	0.02290	4.39	<.0001
SystemH		1	-0.09442	0.03762	-2.51	0.0121
SystemJ		1	-0.03811	0.02024	-1.88	0.0597
SystemL		1	0.03971	0.02156	1.84	0.0656
mn_exc_tot	Minority exc total	1	0.07224	0.01794	4.03	<.0001
mn_man_tot	Minority mang total	1	0.00660	0.00130	5.08	<.0001
w_exc_tot	Women exec total	1	-0.02460	0.00619	-3.98	<.0001
w_man_tot	Women mang total	1	-0.00072394	0.00016278	-4.45	<.0001
w_mn_exc_tot	Women minority exec total	1	-0.16424	0.03111	-5.28	<.0001
w_mn_man_tot	Women minority manag total	1	-0.00926	0.00212	-4.36	<.0001
minority	Minority	1	-0.01709	0.00898	-1.90	0.0569
non_cln_staff		1	0.12188	0.00911	13.38	<.0001

APPENDIX F:
GENERAL REGRESSION MODEL FOR MINORITY EMPLOYEES

Satisfaction Composite Score for Minority Employees Predicted by Presence or Absence of Minority and Women Managers and Executives in Hospital (Presence = 1; Absence = 0)

The REG Procedure
Model: MODEL1
Dependent Variable: compst_scr

Number of Observations Read	13754
Number of Observations Used	13754

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	123.72947	12.37295	21.93	<.0001
Error	13743	7754.70302	0.56427		
Corrected Total	13753	7878.43250			

Root MSE	0.75118	R-Square	0.0157
Dependent Mean	4.10287	Adj R-Sq	0.0150
Coeff Var	18.30857		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	3.98346	0.25326	15.73	<.0001
SystemC		1	-0.15783	0.03791	-4.16	<.0001
SystemE		1	0.14180	0.02906	4.88	<.0001
SystemH		1	-0.06137	0.02210	-2.78	0.0055
SystemJ		1	-0.07592	0.02250	-3.37	0.0007
SystemL		1	0.14245	0.02010	7.09	<.0001
mn_exc	exposed: mn exc	1	-0.08925	0.06950	-1.28	0.1991
mn_man	exposed: mn man	1	0.17437	0.25122	0.69	0.4876
w_exc	exposed: w exc	1	-0.02130	0.03764	-0.57	0.5715
w_mn_exc	exposed: w mn exc	1	-0.02108	0.06843	-0.31	0.7581
non_cln_staff		1	0.06811	0.01338	5.09	<.0001

APPENDIX G:
INCREMENTAL REGRESSION MODEL FOR MINORITY EMPLOYEES

Satisfaction Composite Score for Minority Employees Predicted by Each Additional Minority or Woman Manager and Executive in the Hospital (None = 0; Each Additional = 1)

The REG Procedure
Model: MODEL2
Dependent Variable: compst_scr

Number of Observations Read	13754
Number of Observations Used	13754

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	12	125.32401	10.44367	18.51	<.0001
Error	13741	7753.10848	0.56423		
Corrected Total	13753	7878.43250			

Root MSE	0.75115	R-Square	0.0159
Dependent Mean	4.10287	Adj R-Sq	0.0150
Coeff Var	18.30802		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.20076	0.03549	118.35	<.0001
SystemC		1	-0.15274	0.04906	-3.11	0.0019
SystemE		1	0.09524	0.05037	1.89	0.0587
SystemH		1	0.01070	0.05003	0.21	0.8306
SystemJ		1	0.00237	0.04234	0.06	0.9554
SystemL		1	0.10863	0.03468	3.13	0.0017
mn_exc_tot	Minority exc total	1	0.02809	0.04123	0.68	0.4956
mn_man_tot	Minority mang total	1	0.00461	0.00250	1.84	0.0653
w_exc_tot	Women exec total	1	-0.03008	0.01247	-2.41	0.0158
w_man_tot	Women mang total	1	-0.00038828	0.00029800	-1.30	0.1926
w_mn_exc_tot	Women minority exec total	1	-0.08103	0.08030	-1.01	0.3130
w_mn_man_tot	Women minority manag total	1	-0.00676	0.00412	-1.64	0.1009
non_cln_staff		1	0.07138	0.01339	5.33	<.0001

APPENDIX H:
CRITICAL MASS REGRESSION MODELS FOR MINORITY EMPLOYEES

LESS THAN 10% MANAGEMENT LEVEL
STAFF SURVEYS
MINORITY

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	328.84463	36.53829	68.74	<.0001
Error	34428	18300	0.53155		
Corrected Total	34437	18629			

Root MSE	0.72908	R-Square	0.0177
Dependent Mean	4.10698	Adj R-Sq	0.0174
Coeff Var	17.75215		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.07789	0.00965	422.51	<.0001
SystemC		1	-0.03255	0.01362	-2.39	0.0169
SystemE		1	0.09720	0.01437	6.76	<.0001
SystemH		1	-0.12361	0.01649	-7.50	<.0001
SystemJ		1	-0.12004	0.01293	-9.28	<.0001
SystemL		1	0.09074	0.01373	6.61	<.0001
non_cln_staff		1	0.12154	0.00912	13.33	<.0001
minority	Minority	1	-0.01538	0.00940	-1.64	0.1019
minor_L10pc	<10% minority mngmnt	1	0.07847	0.01389	5.65	<.0001
mnr_minorL10pc		1	-0.02945	0.02796	-1.05	0.2922

10-20% MANAGEMENT LEVEL
STAFF SURVEYS
MINORITY

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	311.50129	34.61125	65.05	<.0001
Error	34428	18318	0.53206		
Corrected Total	34437	18629			

Root MSE	0.72942	R-Square	0.0167
Dependent Mean	4.10698	Adj R-Sq	0.0165
Coeff Var	17.76056		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.11094	0.00798	515.18	<.0001
SystemC		1	-0.07430	0.01710	-4.35	<.0001
SystemE		1	0.06174	0.01726	3.58	0.0003
SystemH		1	-0.15201	0.01597	-9.52	<.0001
SystemJ		1	-0.15460	0.01349	-11.46	<.0001
SystemL		1	0.06224	0.01303	4.78	<.0001
non_cln_staff		1	0.12561	0.00912	13.78	<.0001
minority	Minority	1	-0.02397	0.01127	-2.13	0.0334
minor10_20pc	10-20% minority mngmnt	1	0.01156	0.01467	0.79	0.4308
mnr_minor10_20pc		1	-0.00193	0.01774	-0.11	0.9132

20+% MANAGEMENT LEVEL
STAFF SURVEYS
MINORITY

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	334.47559	37.16395	69.94	<.0001
Error	34428	18295	0.53139		
Corrected Total	34437	18629			

Root MSE	0.72897	R-Square	0.0180
Dependent Mean	4.10698	Adj R-Sq	0.0177
Coeff Var	17.74942		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.14351	0.00887	466.91	<.0001
SystemC		1	-0.09252	0.01328	-6.97	<.0001
SystemE		1	0.04223	0.01434	2.94	0.0032
SystemH		1	-0.11834	0.01704	-6.94	<.0001
SystemJ		1	-0.15182	0.01185	-12.81	<.0001
SystemL		1	0.09730	0.01436	6.78	<.0001
non_cln_staff		1	0.12300	0.00911	13.51	<.0001
minority	Minority	1	-0.03361	0.01224	-2.75	0.0060
minor20pc	20+% minority mngmnt	1	-0.08605	0.01310	-6.57	<.0001
mnr_minor20pc		1	0.03782	0.01746	2.17	0.0303

30+% MANAGEMENT LEVEL
STAFF SURVEYS
MINORITY

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	315.60737	35.06749	65.92	<.0001
Error	34428	18314	0.53194		
Corrected Total	34437	18629			

Root MSE	0.72934	R-Square	0.0169
Dependent Mean	4.10698	Adj R-Sq	0.0167
Coeff Var	17.75857		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.11725	0.00772	533.49	<.0001
SystemC		1	-0.06383	0.01241	-5.14	<.0001
SystemE		1	0.07007	0.01361	5.15	<.0001
SystemH		1	-0.17915	0.02347	-7.63	<.0001
SystemJ		1	-0.15664	0.01354	-11.57	<.0001
SystemL		1	0.03793	0.02095	1.81	0.0702
non_cln_staff		1	0.12439	0.00911	13.66	<.0001
minority	Minority	1	-0.04177	0.01068	-3.91	<.0001
minor30pc	30+% minority mngmnt	1	-0.00159	0.02029	-0.08	0.9375
mnr_minor30pc		1	0.04872	0.01865	2.61	0.0090

APPENDIX I:
CRITICAL MASS REGRESSION MODELS FOR BLACK EMPLOYEES

LESS THAN 10% MANAGEMENT LEVEL
STAFF SURVEYS
BLACK

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	340.77057	37.86340	71.28	<.0001
Error	34428	18288	0.53121		
Corrected Total	34437	18629			

Root MSE	0.72884	R-Square	0.0183
Dependent Mean	4.10698	Adj R-Sq	0.0180
Coeff Var	17.74637		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.08822	0.00813	502.82	<.0001
SystemC		1	-0.05209	0.01253	-4.16	<.0001
SystemE		1	0.02455	0.01536	1.60	0.1100
SystemH		1	-0.14148	0.01541	-9.18	<.0001
SystemJ		1	-0.13401	0.01210	-11.08	<.0001
SystemL		1	0.01642	0.01300	1.26	0.2064
non_cln_staff		1	0.12272	0.00915	13.41	<.0001
black		1	-0.01838	0.01186	-1.55	0.1213
black_L10pc	<10% black mngmnt	1	0.08186	0.01145	7.15	<.0001
blck_blckL10pc		1	-0.04968	0.02209	-2.25	0.0245

10-20% MANAGEMENT LEVEL
STAFF SURVEYS
BLACK

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	362.79311	40.31035	75.98	<.0001
Error	34428	18266	0.53057		
Corrected Total	34437	18629			

Root MSE	0.72840	R-Square	0.0195
Dependent Mean	4.10698	Adj R-Sq	0.0192
Coeff Var	17.73568		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.16006	0.00898	463.38	<.0001
SystemC		1	-0.03209	0.01282	-2.50	0.0124
SystemE		1	0.03198	0.01424	2.25	0.0248
SystemH		1	-0.13269	0.01538	-8.63	<.0001
SystemJ		1	-0.14252	0.01200	-11.88	<.0001
SystemL		1	0.02425	0.01239	1.96	0.0504
non_cln_staff		1	0.11829	0.00917	12.89	<.0001
black		1	-0.04296	0.01524	-2.82	0.0048
black10_20pc	10-20% black mngmnt	1	-0.09264	0.01005	-9.22	<.0001
blck_blck10_20pc		1	0.02234	0.02004	1.11	0.2651

20+% MANAGEMENT LEVEL
STAFF SURVEYS
BLACK

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	322.38764	35.82085	67.37	<.0001
Error	34428	18307	0.53174		
Corrected Total	34437	18629			

Root MSE	0.72921	R-Square	0.0173
Dependent Mean	4.10698	Adj R-Sq	0.0170
Coeff Var	17.75528		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.11427	0.00746	551.51	<.0001
SystemC		1	-0.06311	0.01241	-5.08	<.0001
SystemE		1	0.07154	0.01360	5.26	<.0001
SystemH		1	-0.17056	0.01534	-11.11	<.0001
SystemJ		1	-0.17259	0.01340	-12.88	<.0001
SystemL		1	0.04807	0.01213	3.96	<.0001
non_cln_staff		1	0.12549	0.00915	13.72	<.0001
black		1	-0.04659	0.01082	-4.31	<.0001
black20pc	20+% black mngmnt	1	0.04157	0.02053	2.02	0.0429
blck_blck20pc		1	0.05652	0.03055	1.85	0.0643

30+% MANAGEMENT LEVEL
STAFF SURVEYS
BLACK

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	316.89218	35.21024	66.20	<.0001
Error	34428	18312	0.53190		
Corrected Total	34437	18629			

Root MSE	0.72932	R-Square	0.0170
Dependent Mean	4.10698	Adj R-Sq	0.0168
Coeff Var	17.75795		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.11371	0.00746	551.62	<.0001
SystemC		1	-0.06318	0.01242	-5.09	<.0001
SystemE		1	0.07149	0.01360	5.25	<.0001
SystemH		1	-0.16224	0.01507	-10.77	<.0001
SystemJ		1	-0.16061	0.01383	-11.62	<.0001
SystemL		1	0.04814	0.01213	3.97	<.0001
non_cln_staff		1	0.12620	0.00915	13.79	<.0001
black		1	-0.04438	0.01074	-4.13	<.0001
black30pc	30+% black mngmnt	1	0.00632	0.02401	0.26	0.7924
blck_blck30pc		1	0.06120	0.03279	1.87	0.0620

APPENDIX J:
CRITICAL MASS REGRESSION MODELS FOR HISPANIC EMPLOYEES

LESS THAN 10% MANAGEMENT LEVEL
STAFF SURVEYS
HISPANIC

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	316.39108	35.15456	66.09	<.0001
Error	34428	18313	0.53192		
Corrected Total	34437	18629			

Root MSE	0.72933	R-Square	0.0170
Dependent Mean	4.10698	Adj R-Sq	0.0167
Coeff Var	17.75819		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.09736	0.00774	529.37	<.0001
SystemC		1	-0.05630	0.01265	-4.45	<.0001
SystemE		1	0.04556	0.01520	3.00	0.0027
SystemH		1	-0.16844	0.01547	-10.89	<.0001
SystemJ		1	-0.18304	0.01447	-12.65	<.0001
SystemL		1	0.02545	0.01365	1.86	0.0624
non_cln_staff		1	0.11652	0.00902	12.92	<.0001
hispanic		1	0.05007	0.02459	2.04	0.0418
hispanic_L10pc	<10% hispanic mngmnt	1	0.04432	0.01159	3.82	0.0001
hspn_hspncL10pc		1	-0.03642	0.03237	-1.13	0.2605

10-20% MANAGEMENT LEVEL
STAFF SURVEYS
HISPANIC

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	315.34385	35.03821	65.87	<.0001
Error	34428	18314	0.53195		
Corrected Total	34437	18629			

Root MSE	0.72935	R-Square	0.0169
Dependent Mean	4.10698	Adj R-Sq	0.0167
Coeff Var	17.75870		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.10774	0.00731	561.92	<.0001
SystemC		1	-0.06674	0.01239	-5.39	<.0001
SystemE		1	0.07131	0.01360	5.24	<.0001
SystemH		1	-0.16501	0.01532	-10.77	<.0001
SystemJ		1	-0.15115	0.01183	-12.78	<.0001
SystemL		1	0.05935	0.01386	4.28	<.0001
non_cln_staff		1	0.11703	0.00902	12.97	<.0001
hispanic		1	0.01053	0.01781	0.59	0.5545
hispanic10_20pc	10-20% hispanic mngmnt	1	-0.06721	0.02430	-2.77	0.0057
hspn_hspnc10_20pc		1	0.16079	0.05045	3.19	0.0014

20+% MANAGEMENT LEVEL
STAFF SURVEYS
HISPANIC

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	321.47276	35.71920	67.17	<.0001
Error	34428	18308	0.53177		
Corrected Total	34437	18629			

Root MSE	0.72922	R-Square	0.0173
Dependent Mean	4.10698	Adj R-Sq	0.0170
Coeff Var	17.75573		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.10671	0.00731	561.60	<.0001
SystemC		1	-0.06575	0.01239	-5.31	<.0001
SystemE		1	0.07134	0.01360	5.24	<.0001
SystemH		1	-0.03141	0.03361	-0.93	0.3499
SystemJ		1	-0.15152	0.01183	-12.81	<.0001
SystemL		1	0.04363	0.01251	3.49	0.0005
non_cln_staff		1	0.11737	0.00902	13.01	<.0001
hispanic		1	0.04554	0.01873	2.43	0.0151
hispanic20pc	20+% hispanic mngmnt	1	-0.15342	0.03666	-4.18	<.0001
hspn_hspnc20pc		1	-0.06621	0.04054	-1.63	0.1025

APPENDIX K:
CRITICAL MASS REGRESSION MODELS FOR ASIAN/PACIFIC ISLANDER EMPLOYEES

LESS THAN 10% MANAGEMENT LEVEL
STAFF SURVEYS
ASIAN/PACIFIC ISLANDER

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	391.90108	43.54456	82.20	<.0001
Error	34428	18237	0.52972		
Corrected Total	34437	18629			

Root MSE	0.72782	R-Square	0.0210
Dependent Mean	4.10698	Adj R-Sq	0.0208
Coeff Var	17.72154		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.15177	0.00852	487.22	<.0001
SystemC		1	0.00276	0.01398	0.20	0.8433
SystemE		1	0.11243	0.01411	7.97	<.0001
SystemH		1	-0.23089	0.01607	-14.36	<.0001
SystemJ		1	-0.08716	0.01341	-6.50	<.0001
SystemL		1	0.01474	0.01275	1.16	0.2477
non_cln_staff		1	0.12217	0.00896	13.64	<.0001
asian		1	0.09311	0.01886	4.94	<.0001
asian_L10pc	<10+% asian mngmnt	1	-0.11828	0.01095	-10.80	<.0001
asian_asanL10pc		1	-0.01266	0.02889	-0.44	0.6611

10-20% MANAGEMENT LEVEL
STAFF SURVEYS
ASIAN

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	327.84544	40.98068	77.09	<.0001
Error	34429	18301	0.53157		
Corrected Total	34437	18629			

Root MSE	0.72909	R-Square	0.0176
Dependent Mean	4.10698	Adj R-Sq	0.0174
Coeff Var	17.75238		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.10445	0.00732	560.66	<.0001
SystemC		1	-0.06867	0.01239	-5.54	<.0001
SystemE		1	0.07079	0.01360	5.21	<.0001
SystemJ		1	-0.15644	0.01186	-13.19	<.0001
SystemL		1	0.03138	0.01280	2.45	0.0143
non_cln_staff		1	0.12667	0.00897	14.12	<.0001
asian		1	0.07862	0.01672	4.70	<.0001
asian10_20pc	10-20% asian mngmnt	1	-0.19454	0.01681	-11.57	<.0001
asian_asan10_20pc		1	0.05329	0.03548	1.50	0.1331

20+% MANAGEMENT LEVEL
STAFF SURVEYS
ASIAN/PACIFIC ISLANDER

The REG Procedure
Model: MODEL3
Dependent Variable: compst_scr

Number of Observations Read	34438
Number of Observations Used	34438

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	328.73617	36.52624	68.72	<.0001
Error	34428	18300	0.53156		
Corrected Total	34437	18629			

Root MSE	0.72908	R-Square	0.0176
Dependent Mean	4.10698	Adj R-Sq	0.0174
Coeff Var	17.75220		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	4.10475	0.00732	560.50	<.0001
SystemC		1	-0.06864	0.01239	-5.54	<.0001
SystemE		1	0.07083	0.01360	5.21	<.0001
SystemH		1	-0.18102	0.01560	-11.60	<.0001
SystemJ		1	-0.15607	0.01187	-13.15	<.0001
SystemL		1	0.01031	0.02046	0.50	0.6142
non_cln_staff		1	0.12568	0.00897	14.02	<.0001
asian		1	0.07447	0.01802	4.13	<.0001
asian20pc	20+% asian mngmnt	1	0.01771	0.02359	0.75	0.4526
asian_asan20pc		1	0.04595	0.03140	1.46	0.1434