SELECTIVE COLLEGE ADMISSIONS AND THE GENDER GAP: THE IMPLICATIONS OF INSTITUTIONAL DECISION-MAKING

by
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(Under the Direction of James C. Hearn)

ABSTRACT

Women have been the majority gender in American undergraduate college populations for more than 30 years. In 2004-5, they represented 56 percent of the 5.1 million undergraduates aged 25 and under. However, the nation's elite institutions have enrollments that are much closer to an even split by gender.

As such, a debate has begun on whether elite colleges are favoring men in the admissions process to keep their student populations from skewing "too far" female. This has been a contentious topic in popular periodicals, but has not been addressed specifically in the scholarly literature.

This dissertation discusses how colleges perceive and address the "gender gap" in enrollments. Following an institutionalist framework, colleges make decisions in an attempt to fit a particular paradigm image held by current and potential resource providers, and part of that image is having a balanced student population with roughly equivalent numbers of male and female students. Institutions with such balance are thought to be appealing both to male and female potential students—if there are too many women, then the college may be unattractive to students of either gender, thus threatening the flow of tuition revenue and donations from displaced alumni.

I begin with the following hypothesis: To the extent they are able, colleges attempt to balance their incoming classes between male and female students. To set the context, I provide a descriptive analysis of two national datasets to evaluate the evidence for a "gender gap" in college enrollment and admissions. Next, I test the hypothesis using a quantitative model evaluating whether the gender of a student offers an advantage in competitive college admissions Finally, I conclude with a short set of qualitative interviews discussing the issue with deans of selective colleges.

This analysis finds strong evidence of a gender gap over all in college admissions, and it also finds that being male offers a statistically significant advantage in admissions at elite institutions, all other factors being equal. This suggests a number of theoretical and practical considerations for both scholars and policymakers in higher education.

INDEX WORDS: American higher education, Students, Gender, College admissions, History of higher education

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and I hope that this work inspires each of them to find what inspires them and to chase it with all of their hearts, all their minds and all their strength, regardless of the hurdles placed before them.

David Welch Suggs, Jr.

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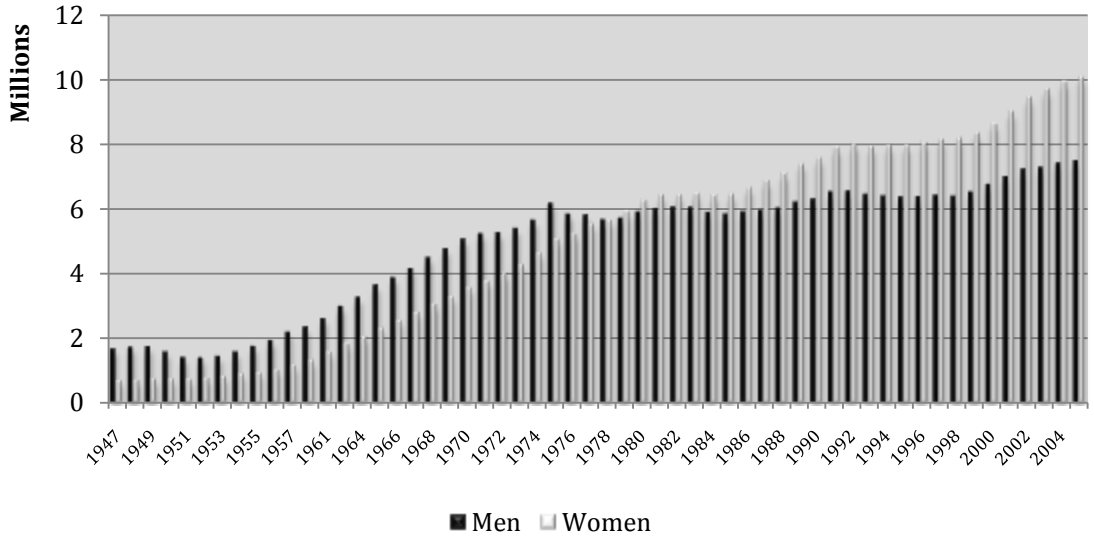
CHAPTER 1

Introduction

The biggest story in American higher education in the post-World War II era has been the enormous growth in enrollment. In 1947 approximately 2.4 million people were enrolled in U.S. colleges and universities. By 2005, that number had grown to 17.5 million—an increase of nearly 650 percent (National Center for Education Statistics, 2008). An initial surge of growth took place between 1957 and 1967, as veterans on the G.I. Bill crossed paths with the original "baby boom" generation, followed by an "echo boom" between 1998 and the present:



SOURCE: National Center for Education Statistics, 2008

Figure 1 The American population attending college, 1947-2005

Rapid demographic changes in the college-going population help explain the dramatic increase in the number of students going to college, but Figure 1 demonstrates an equally significant phenomenon: Especially in this later, "echo boom" period, the growth in college attendance has occurred largely among women. Female students became the majority gender in American colleges in 1978. Similar trends have occurred in other developed and developing countries (Kelly & Slaughter, 1990), but the dynamics among American institutions have made this a topic of controversy among journalists and policy makers, if somewhat less so among researchers (Conlinson, 2003; Koerner, 1999; Lewin, 1998; Vickers, 2006).

For the vast majority of American colleges, the gender makeup of student populations is of little concern. They depend on tuition and per-capita state funding to cover their operating expenses, and one more student means more dollars from both sources. Thus, the gendered nature of the massive growth in higher education is of little consequence, and at institutions across many segments—historically black colleges and universities, two-year institutions, regional public universities, liberal-arts colleges, and even many flagship institutions—the proportion of women surpasses 60 percent of the undergraduate student population.

Nonetheless, this "gender gap" in higher education enrollments has become a topic of policy discussions. In the past four years, the American Association of University Women, the American Council on Education, and the National Center on Education Statistics have released reports on gender issues in college student populations (Corbett, Hill, & St. Rose, 2008; King, 2006; Peter & Horn, 2005). Both the ACE and NCES reports (King and Peter & Horn respectively) show that traditional-aged undergraduate cohorts tend to have more men, proportionately, and that women significantly outnumber men in community colleges and for-profit institutions, more so than among public and private four-year institutions. The AAUW report (Corbett, et al.), argues that "girls' successes don't come at boys' expense."

All three reports focus on variations in gender disparities among different ethnic groups and socioeconomic groups. Women outnumber men in college enrollment more significantly among African-Americans and to a lesser extent among Hispanic and Native American students. Women from families with lower income also are more likely to attend college. The AAUW uses these statistics to argue that the disparities favoring women exist only among these groups and nontraditional students (i.e. those 25 or older), and "the gender gap in college attendance is almost absent among those entering college directly after graduating from high school" (p. 2).

However, if these reports had offered any granularity about enrollment patterns among different types of institutions, they would have revealed that as institutional prestige increases—whether defined by admissions selectivity, prestige, or institutional wealth—the proportion of women tends to decrease. At the 924 four-year colleges that in 2004 had more than $10 million in overall endowments, the undergraduate population was 55 percent female, according to data extracted from IPEDS, the Integrated Postsecondary Education Data System (National Center for Education Statistics, n.d.). The colleges with endowments of $100 million (272 of them) or more had an aggregate student body that was 53 percent female, and the 37 with $1 billion or more were 50 percent female as a group.

Why aren't female students flooding high-resource institutions to the same degree they are at other institutions? It's not as if there are fewer men in the pipeline to postsecondary institutions than there were in 1970; there are simply far more women. Is the pool of qualified male and female applicants at elite universities more balanced than the broad pool of college applicants, or are relatively fewer women interested in these institutions, or are these colleges and universities working proactively to ensure some level of gender balance in their incoming classes?

There is at least a little evidence to support an answer of "yes" to the final question. Several admissions directors have stated quite bluntly that their institutions make an effort to keep their

student populations from having "too many" women and thus becoming less attractive both to male and female students. The Kenyon College dean of admissions even wrote an op-ed in *The New York Times* titled "To All the Girls I've Rejected," bemoaning her daughter's travails in the admissions process and the dilemma her own college has faced with more women than men among its strongest applicants (Delahunty-Britz, 2006). The practice of favoring men in admissions has become an ugly point of contention in popular media, framed as "affirmative action for C+ white guys," as InsideHigherEd.com titled a story on the phenomenon (Jaschik, 2006). The dean of admissions at another selective college has admitted to giving men a break in the admissions process, and the University of Georgia used to give points to men in an admissions formula struck down by a federal appeals court (Kirp, 2003; Johnson v. Board of Regents of the University System of Georgia, 2001).

The institutions in question each have unique and subtle processes for assessing applications, but their policies share some broad characteristics. Each application is read and evaluated based on the student's academic qualifications as well as her personal story, which is found both in demographic statistics and the qualitative information submitted, such as personal essays and letters of recommendations. Among the nonacademic variables cited are the student's location (where distance from the college can be a plus factor, as can being from high-growth areas), race/ethnicity, being in the first generation of one's family to attend college, other socioeconomic factors, and—for less-wealthy institutions—the student's ability to pay. Many institutions create an academic rank consisting of test scores and high school grades (weighted for the rigor of courses, usually) to help guide their work, but the overall process often can be highly subjective. Deans of admissions report establishing broad goals in concert with their presidents or provosts, but do not create "hard targets" for numbers of students with particular characteristics to attract. However, they are sensitive to the need to attract students from a broad range of backgrounds, and several describe an iterative process whereby if the initial round of decisions does not look like it will yield sufficient diversity,

some decisions may be adjusted. Colleges examine their decisions as a group and make predictions on their yield and discount rate—the aggregate characteristics of the class likely to attend, and net tuition revenue following awards of financial aid rate, respectively—based on historical trends. Students are notified of decisions, usually around April 1 for the regular time of applications, and make their own decisions accordingly.

The competitive college admissions "game," as it is presented in the media and popular guidebooks (Arenson, 2007; Buskirk, 2007; National Public Radio, 2007), is an integral part of a process used by colleges to reproduce themselves in the image of what prospective applicants believe the ideal institution to be. In the modern era, that picture is one of diversity on many axes, including those of ethnicity of the student body but also of available majors and courses. It is also one of familiar "landmarks"—new or updated recreational facilities, a visible emphasis on sustainability, a campus quad of old buildings and leafy trees. As regards admissions, the task is to present a vision to prospective students of the kind of place they and their parents would feel comfortable spending four years (and a significant sum of money), and part of that is what might be described as a Goldilocks strategy as regards male and female students—not too few of one, not too few of the other, but just the right balance. As one dean of admissions put it in an interview discussed later,

> as you strive to build a well-rounded community, particularly as you strive to developed a well rounded coeducational community, you do want to ensure that there is adequate—however you want to define adequate—representation, um, at the institution because that is a part of the appeal. ...[a magazine] interviewed some current students as well as part of the process and they talked about wanting the ability, or the opportunity if they chose, to date. I think there is a lot of development that takes place in college, both not just intellectual, but also personal and social, and I think we do to some degree have an obligation to provide students with that kind of social environment, as well as intellectual environment (Interview 2).

"We live in our reality," said this dean, and the need to present an environment that was attractive to students of both genders was necessary, leading to an institutional policy of admitting a

higher percentage of male applicants than females. It also leads to a number of secondary efforts, such as maintaining and strengthening men's sports programs and producing marketing literature intended to be attractive to prospective male students. All these are attributes of an attempt to conform to idealized notions of what the institution is supposed to be, according to resource providers and other power brokers.

From this perspective, I present this hypothesis: **To the extent they are able, colleges attempt to balance their incoming classes between male and female students.** Following this introduction and a discussion of the literature on women in higher education and selective college admissions, I address this question using three approaches: First, I analyze current descriptive data on male and female students in higher education and their demographic and academic characteristics to ascertain whether and where gender-based enrollment disparities exist, analyzing racial and socioeconomic groups as well as students at different levels of academic achievement. This is done to evaluate the position of authors who reject the validity or existence of such disparities. Second, I specify a model for college admissions decisions to measure the significance of the applicant's gender in the context of academic and demographic characteristics, taking institutional information into account as well. I use data from the Education Longitudinal Study of 2002, which includes admissions decisions for students applying to college for the fall of 2004. Third, I present findings from a qualitative analysis of interviews done with deans or directors of admissions at five selective colleges in which the validity of the model and the issue of gender in admissions decisions are discussed.

The controversy surrounding this issue is reason enough to study it. The status of women in higher education is a longstanding topic of concern, and even if women are the majority of degree recipients in this country, the question of them being shut out of elite educational opportunities unfairly calls out for a systematic, unbiased effort to find an answer.

Assessing the role of gender in admissions decisions must be framed in the context of the history of selective college admissions. Histories of elite higher education (Karabel, 2005; Lemann, 1999) describe a process by which admissions has shifted away from a process designed to reinforce connections between Harvard, Yale, and Princeton and the white Anglo-Saxon Protestant social elite of New England and the mid-Atlantic to one that is generally more welcoming of students from diverse backgrounds by using evidence of scholastic achievement, rather than social connections, as a primary (but by no means exclusive) criteria for admissions. Other studies (Bowen, Kurzweil, & Tobin, 2005; Hearn, 1984; Karen, 1990) find that "ascriptive," or personal characteristics, of applicants play a role in determining whether an applicant enrolls, but that academic credentials are much more significant. Enrollment decisions are, of course, separate from institutional decisions on admissions, but studies of the former are much more common than those on the latter.

Even though they enroll a small fraction of American college students, elite colleges serve as important gateways to future careers in fields with enormous private (and sometimes public) returns—medicine, science, law, business, and so on (Zhang, 2008). Moreover, these institutions are the most prominent in the vast landscape of American higher education. When politicians criticize colleges for not spending enough of their endowment income or raising tuition too quickly, these are the institutions they have in mind (Grassley, 2008). These institutions garner the lion's share of research and other forms of grant funding. They also sponsor huge numbers of degree programs, small classes with more professors and fewer research assistants in teaching roles than other colleges, study-abroad programs on every continent, and a dizzying array of amenities and activities for students to enjoy. Thus, it is unsurprising that places at such institutions are extraordinarily scarce. The top 100 colleges, as measured by 2005-6 raw endowments, admitted only 45 percent of their applicants that year, while the top 10 accepted about 20 percent, or 38,000 of more than 180,000 applications, according to IPEDS data. As such, slots in each incoming class of

undergraduates (as well as many graduate programs) are so sought-after that many students apply to 10 or more of them, and their parents hire private counselors to help them improve their test scores, burnish their other credentials, and shepherd their applications through the process.

The question of why the pool of women qualified for college has grown so much larger than the pool of qualified men is a serious policy issue for communities, states, and primary and secondary schools as well as colleges and universities, and demands a much broader examination. To contribute to that policy discussion, this project seeks to provide an explanation for how colleges have responded to the gender imbalance presented to them.

CHAPTER 2

Review of the Literature

This literature review consists of four sections. First is a short historiography of women in higher education. Understanding college policies toward women in the 19th and 20th centuries is crucial to understanding what gender means in collegiate policies in the 21st century, even though the role of higher education has expanded so dramatically in American society. The second part is a discussion of the current literature on gender differences in enrollment patterns in higher education. The third is analysis of histories and formal studies of selective college admissions, which always has operated with different preference systems in place but in recent years has become a much more complex web of competing preferences in the face of institutional needs. Finally, the fourth section is a review of literature based on Salancik and Pfeffer's theory of resource dependency (1974), which will form the basis of my theoretical perspective in the next chapter.

Women in American higher education

Prior to the Civil War, women had very few points of access to what would be considered higher education in the United States. Standard texts on the history of American higher education all mention Lucinda Foote, who in 1783 or 1784 presented herself for admission to Yale and was found qualified in all respects except for her sex (Rudolph, 1962; Thelin, 2004; Woody, 1929). Oberlin College in Ohio was the first coeducational college to offer places to women, in 1837, roughly contemporaneous with the founding of the first "college" expressly for women, George Female

College, which is now Wesleyan College in Macon, Ga. (Rudolph, 1962). There is some dispute about whether the curriculum at the college's inception was as rigorous as what would have been offered to men, as will be discussed later in this chapter.

The standard histories, such as Rudolph's and Thelin's, devote comparatively little attention to the gradual evolution of higher education for women throughout the 19th century. Rudolph confines his examination of women's history to a single chapter, mentioning women's higher education in only one other chapter to describe Vassar as "not the first college that women might attend, but the first college to make the world take notice of the neglect which had long characterized the higher education of women. Vassar College established the collegiate rights of women, at the time the largest and most underprivileged of American minority groups." (p. 244) This is typical, if somewhat more questionable, of Rudolph's portrayal of women's education as a matter of breaking down stereotypes and suspicions about women's lack of intellectual ability.

He blames the slow evolution of women's postsecondary education on "mental rigidity of college governing boards, from the inability of those who controlled higher education to think beyond the classical course of study" (p. 312). Noting that sending women away to college during the 19th century was considered to be subversive, but that women might be sent away because they were very bright; because they had been "bitten by some of the reform bugs" and felt a calling to teach in a city high school; because they needed a finishing-school experience to fill a social role; or because they needed "the finest in Christian nurture." He depicts Midwestern flagship universities as heroic for accepting women in the years before (in the case of Iowa) or immediately after the Civil War, attributing an equal view of the sexes as having been achieved in the ordinary work of the farm. The growth of women in Midwestern education was remarkable; Rudolph cites a U.S. Commissioner of Education study to show that in 1870, Michigan had 1 women and 429 men

among undergrads; in 1898 that jumped to 588 women and 745 men. At the end of the century, 53 percent of Ann Arbor bachelor's degrees went to women.

While many elementary and secondary schools in the Midwest and South were coeducational from their inception, Rudolph argues that Eastern schools, particularly private schools attracting upper-class students, were much more segregated and that collegiate coeducation was not deemed valuable. Vassar, Smith, and Wellesley set out to offer women the same kind of education as that given to men to allow women to prove the fitness of their sex, while elite all-male colleges promoted "coordinate" programs, such as the Harvard Annex, which became Radcliffe. He also celebrates the traditional hilltop colleges maintaining all-male enrollments; it was nearly 20 years after the publication of *The American College and University, A History* before Rudolph's own Williams College would accept women.

Thelin integrates the history of women in higher education into the broader sweep of the history of American colleges generally, but instead of presenting Rudolph's largely triumphal story of coeducation, cites other research to note that while coeducation was celebrated, women often segregated and prevented from taking part in particular courses or extracurricular activities. In response, women created parallel programs and succeeded in preprofessional programs. Thelin pegs the number of colleges as offering college-level study for women between 1800 and 1860 at 14.

A significant factor in the growth of women's higher education in the latter half of the 19th century identified by Thelin was the demand for teachers brought on by the growth of compulsory public schooling. "Normal" schools and departments at coeducational schools grew rapidly during this period, although Thelin notes that many coeducational institutions would only let women enter the normal department and did not permit them in other classes. Eastern coordinate colleges allowed serious development for women without objections from male students; with Pembroke

College (as the coordinate of Brown University) developing an early focus on civic engagement, for example.

Both Thelin and Rudolph draw heavily on the 1,254-page, two-volume *History of Women's Education in the United States*, published by Thomas Woody in 1929. Woody discusses all levels of education and formally identifies the three separate streams of women's postsecondary education that began in the mid-1830s: coeducation (as at Oberlin, which gave women the option of a Ladies' Course or studying for a bachelor's degree alongside men); women's colleges like Georgia Female College; and coordinate colleges, such as those that developed at Harvard/Radcliffe, Columbia/Barnard, and Brown/Pembroke. Georgia Female College had some properties of a classical college, but he judges the first "standard" college for women to be the Tennessee and Alabama Female Institute at Winchester, Tennessee, founded in 1850, renamed Mary Sharp College in 1853, and disbanded in 1896. The founding of Wells, Smith, and Mount Holyoke Colleges marked the beginning of the modern era in women's education, in Woody's estimation, as they aspired to produce in parallel the kind of education offered at other Eastern colleges for men.

Woody is very specific about Colonial and Early American attitudes toward women's education, citing Daniel Webster on the need not to raise a woman "above the duties of her station" and describing in great detail the fears that education would ruin 19th century women's chances of being married. He cites quotes from M. Carey Thomas, president of Bryn Mawr as well as Marion Talbot, and others who saw themselves as facing social disgrace for pursuing higher education. Several studies in the late 19th century indicated that women with bachelor's degrees did marry and have children at lower rates than other women, but Woody points out that such studies did not take into account the prevalence of upper-class women entering college and the fact that it was more acceptable for women in that class to put off marriage and child-rearing until later in life. He also notes fears that coeducation would "coarsen" women and that they would "feminize" higher

education as reasons cited by educators to ban or restrict women's choices at state institutions. And, he cites examples of professors worrying about what effect women would have on male students: "college boys want their fling and don't wish to be refined," said one. "They prefer congenial savagery" (Woody, 1929, vol. 2, p. 249).

However, demand from women; the daunting cost of operating separate postsecondary systems (particularly in the weakened economy as it existed following the Civil War); the decline in male-oriented religious doctrine, an interest in innovative institutions; and a generally-acknowledged inferiority of women's institutions to major state universities prompted the surge in women's enrollment following the Civil War, Woody claims. This, however, inaugurated an era of significant contentiousness about the role of female students in predominantly male institutions. Iowa may have been "coeducational" from its opening in 1856, but women were restricted to its normal department. In 1857 Wisconsin regents discussed opening the school to women, saying it is "a question now much agitated whether the liberal culture of the female mind is an end most appropriately attained under the existing agency of separate educational establishments," (p. 239), but that doing so would double the number and quadruple the expense of public higher education. Woody quotes President Henry Simmons Frieze of Michigan, alluding to fears of loss of reputation and caste among universities if women were admitted.

Frieze's successor, James Burrill Angell, is quoted as saying that opposition to coeducation was due to fears of turning men away, that women's health would suffer, women would not be able to master the "severer" studies, and that "embarrassments might arise from the lack of thoughtfulness and discretion on the part of some of the young men and young women, left largely to themselves and away from home." (p. 246) Angell, a proponent of coeducation, noted that women had done superior work in all areas and emerged healthy and marriageable.

As coeducation spread, in some areas (namely the South) more slowly than others, women began to outperform men in the classroom on a regular basis, as Angell suggested. In a study of 13 colleges in 1907, nine had more women than men enrolled. At Boston University and the University of Chicago, more women than men were elected to Phi Beta Kappa by the turn of the century. And at many colleges, the success of women produced a backlash from men. At Chicago, William Rainey Harper, the university's founding president, initially allowed women to enroll in the full range of courses, but as they began to outperform men, he restricted them to what was known as the "junior college." (Woody, 1929)

Chicago was by no means the only institution to struggle with whether and to what degree to allow women into its programs. Writing a generation after Woody, Newcomer (1959) ties the growth of women's enrollment in coeducational institutions to three forces—the growth of the free elective system in the 19th century; the need of institutions to supplement declining enrollments during and after major wars; and growth in public demand for higher education. The Morrill Act, she argues, created a greater public demand for higher education for all students, and for opportunities closer to students' homes. She cites an 1870 report from the U.S. Commissioner of Education finding 11,000 women enrolled in some form of postsecondary education (about 20 percent of all students), but only about 3,000 of them were enrolled at institutions granting bachelor's degrees.

Nonetheless, the rise in women's enrollment was not entirely well-received by administrators and faculty members. After women became half the student population at Wisconsin during the Civil War, President Paul Ansel Chadbourne in 1867 established a separate women's college with a downgraded curriculum from that available to men. Colleges also required prospective female students to prove themselves prior to entrance: According to Newcomer, by 1870 the Universities of California, Indiana, Iowa, Kansas, Michigan, Missouri, and Wisconsin were admitting women, but

only Iowa, Kansas, and Minnesota admitted them as freshmen, while the others accepted only transfers.

While early objectors worried that women would "pull down the standards and impair the the quality of the men's education," (p. 26) Newcomer suggests that women earned honors disproportionate to their numbers, causing colleges to ration the number of women accepted to Phi Beta Kappa chapters and given other awards. Elite universities (including Harvard, Columbia, Tufts, Western Reserve, and Rochester) were quick to deem coeducation a failure, and as such created coordinate colleges, permitting faculty to teach in them but having separate administrations and degree programs, and often forbidding women from attending undergraduate courses at the "male" institution until the 1920s.

Solomon (1985) offers a more specific history of coeducation at elite colleges. Yale began admitting women to graduate programs in the 1890s. Princeton created a coordinate arrangement with Evelyn College in 1887, which endured for only 10 years. Pressure on Harvard to offer opportunities for women grew to the point where in 1874 the university began offering examinations to women and awarding degrees through what was called the Harvard Annex. In 1882, leading women in Boston incorporated the Society for Collegiate Instruction for Women, which provided an opportunity for women to study in close proximity to Harvard, but not as part of it. In 1892, President Charles William Eliot suggested that the Society raise an endowment of $250,000 to incorporate itself into the university; while this did not happen, Radcliffe College was chartered in 1894, with the Harvard Corporation acting as a board of visitors and Eliot and his successors signing degrees. At Columbia, the faculty would not permit coeducation, leading to the creation of the coordinate Barnard College in 1889, with its own faculty and administration. These and other coordinate colleges, Solomon argues, were means to avoid coeducation. The creation of Flora Mather College at Western Reserve University enabled the president to end a coeducational

program, and Brown, Rochester, and Tufts followed a similar pattern. Wesleyan University was founded as an all-male institution, instituted coeducation in 1872, ended it in 1912, and restored it in 1970. Stanford University created a cap on female enrollment of 500 in 1899 amid fears that it would become a women's college. The quota on women was raised to 40 percent of the student body in 1932 and lasted until the university was sued in 1972 (Pfeiffer & Loya, 2003).

The backlash against women was in full force by the last decade of the 19th century, according to Solomon. Boston University, which was coeducation when it opened in 1869, ran a series of advertisements calling for more men, and a professor created male-only scholarships. At Wisconsin, Chadbourne developed what he called the "theory of sex repulsion"—as soon as one sex dominated numerically, fear of competition drove the other out, although the theory apparently applied only to the numerical domination of women (Solomon, 1985).

Solomon uses this incident as an example of "female students [becoming] scapegoats for faculty frustration at a time when the release of students from a required, set curriculum gave professors and administrators less control over students' academic direction." As higher education multiplied and diversified beyond the traditional classical core curriculum, some institutions chose to welcome women and to create programs (such as home economics) that would appeal to them, while others, notably elites, maintained restrictive models that allowed women only into certain areas of the university.

Eisenmann (2006) takes this premise and expands it by charting the more recent history of women's programs begun in the years following World War II that welcomed women into mainstream institutions of higher education, but kept them on the perimeter. While women were a third of the student population in the years following World War II, they were viewed as "incidental students" in the 1945-65 period. Minnesota, Michigan, Radcliffe, and Sarah Lawrence all started programs designed to reintroduce women to higher education after child-rearing, and devoted

significant resources to these programs despite doing little to help women integrate into full-time undergraduate programs.

Other histories of women in higher education are generally confined to specific eras or types of institutions. McCandless (1999) notes that despite the early innovation of institutions like Wesleyan and Mary Sharp Colleges, Southern states were slow to encourage the higher education of women. Women were barred from state universities in the region in the 1890s, and only by the 1920s was coeducation permitted in every state. Even so, as in other regions of the country, women were confined to academic departments for teaching and home economics.

Women's access to higher education did not become a political issue until the early 1970s. While the 1947 Truman Commission devoted only three paragraphs to the status of women (Eisenmann, 2006), in 1973 the Carnegie Commission on Higher Education published a book-length report calling for equal treatment of women throughout education and the work force. Its epigram describing women demanding equality of treatment as the "second fundamental revolution in human history" (Carnegie Commission on Higher Education, 1973). It warned that while the demand for "superior intelligence" was growing, a great portion of it was being lost because women did not have the same opportunities as men to develop their intellectual capacities. It found that women's test scores were being valued less than men's in the admissions process both to undergraduate and graduate programs, even though test scores underpredicted women's grades in college.

It also noted that women outpaced men in high school graduation rates, but lagged in postsecondary enrollment, from 1900 to 1970, and in fact projected that women would continue to lag men in postsecondary enrollment until at least 2000. Following the Korean War, the report noted, many more women from poorer socioeconomic backgrounds began attending college, while women of higher socioeconomic status gained parity in college-going rates. It cited a higher

enrollment rate for black men than black women, though both rates were rising quickly, and suggested that the returns to higher education might be higher for women than men.

The divides separating men and women in the late 19th and early 20th century remained in place to some degree, however. The Carnegie report noted that a career-preparation tool, the Strong Vocational Interest Blank, did not score women on traditional male vocations, and vice versa. It suggested that high-school girls were discouraged from pursuing college-prep curricula, even in the 1960s, even as women continued to prove their proficiency in all subjects—stronger results on verbal tests than men, better grades in math and science classes despite doing worse on math and science aptitude tests. It noted that some universities, especially elites, had specific policies on the number of women. In 1971, the ratio of Harvard to Radcliffe students was 3.7 to 1, "but reducing the ratio to 2.5 to 1 is now under consideration if space for additional students can be found" (p. 51). It also said that Stanford and Cornell "have been said over the years to pursue policies that held down the number of women to be admitted" (p. 52). Women were much better represented in lower tiers of Carnegie classifications (table, p. 52) than higher at each level (i.e., Research II vs. Research I), although only about 41% of two-year college students were female at that point. Female students were more prevalent in public than private institutions, although the report suggests that that may be because many public institutions are former teachers' colleges or offer more teacher training offerings.

Modern literature on gender and higher education student populations

The Carnegie Commission report reflected a remarkably swift change in attitudes toward women in colleges and careers. During the 1970s, the Equal Rights Amendment was passed by Congress before failing to win approval by the states; Title IX was passed as part of the 1972 amendments to the Higher Education Act, forbidding sex discrimination at institutions receiving federal funds; many of the remaining elite male institutions merged with their coordinates or began

accepting women; and women became the majority of college students overall. While all four issues were the fruit of years of activism and progress of women into the mainstream of American education and the work force, the legislation and the Carnegie report represented an official and explicit recognition that women ought to have the same educational opportunities as men. As such, the literature on gender issues in higher education in the years since has largely consisted of examinations of persistent inequities, primarily in the frame of the "gender gap."

The term "gender gap" usually refers to significant differences between men and women in terms of pay (Goldin, 2002) or voting behavior (Smeal, 1984). In higher education, the gap refers to differing enrollment patterns for men and women—different rates, types of institutions, or enrollment in particular disciplines. Most studies of student gender populations have focused, unsurprisingly, on students and gender differences in factors related to college enrollment.

Goldin and colleagues attribute the numerical surge of women into postsecondary institution to women's changing expectations of labor force participation (Goldin, Katz, & Kuziemko, 2006). Women had been entering the work force in increasing numbers since before World War II, but changes in the social and legal climate regarding women working accelerated the pace in the 1970s. In the 1950s and 1960s, attending college helped women economically in two ways, Goldin argues in this work and elsewhere: preparing women not only for the labor market but also for the marriage market and the "Mrs." degree. This effect was greatly diminished by the mid-1970s, she says, by the migration of women into career-preparatory fields, namely business.

Cho (2007) adds that by the late 1970s, girls' high school performances had largely caught up to boys', particularly in terms of math and science courses taken. High school girls also are less likely to be disciplinary problems and to be diligent about homework, both of which are predictors of college matriculation. Cho estimates that more than half of the gender gap is explained by high school achievement.

Heckman and LaFontaine come up with a similar finding through a rigorous attempt to determine actual high school graduation rates (Heckman & LaFontaine, 2007): Contrary to many other reports, they found that such rates declined significantly among American high schools from 1960 to 2000, but virtually all of the drop is due to a 7-percentage-point decline among male students, while female students had a drop of only 1 percentage point. Heckman and LaFontaine argue that roughly half the gender gap in college attendance can be explained by differing rates of high school graduation, which is interesting considering that women were graduating at higher rates than men as early as 1870 (Jacobs, 1996). Buchmann, et al. add that the effects of parental social capital on college attendance rates are greater for daughters than sons, although there is not a strict linear relationship (Buchmann, DiPrete, & Powell, 2003).

Throughout most developed countries, more women than men enroll in postsecondary education (Charles & Bradley, 2002). However, Charles and Bradley indicate most of those women tend to be clustered in institutions of lower rank, such as two-year colleges as opposed to four-year institutions; regional universities as opposed to flagships; private institutions as opposed to publics. Their findings mirror those of the Carnegie Commission a generation earlier, which noted greater representation of women in the lesser of each of its pairs of Carnegie Classifications. However, Charles and Bradley say that these examples of vertical segregation are not as durable as patterns of horizontal segregation, whereby women and men separate by academic field or department. Education, consumer economics, and nursing remain overwhelmingly female, for example, while the hard sciences and engineering attract more men. Even within the sciences, women gravitate to biology and health-related fields while men pursue physics (Charles & Bradley, 2002). Frehill (2006) adds that in academic science, vertical segregation has diminished significantly, while horizontal segregation has increased moderately.

An important point to be made here is that there is very little literature dealing with the choices colleges make in accepting groups of students, presumably because to this point little data have been available matching student characteristics with the colleges to which they applied and the results of such decisions. There is, however, an ample literature discussing students' choice of colleges and factors affecting such choices.

That literature demonstrates that there tend to be fewer women at elite institutions and more women at less-elite ones, regardless of the definition or metric used for elite. Jacobs (1996) finds that women are slightly overrepresented in colleges with high acceptance rates, lower standardized test scores, lower tuition and fees, and lower faculty/student ratios (i.e., small liberal-arts colleges). Jacob (sic, not Jacobs) finds that non-cognitive skills, such as discipline and maturity may explain a large fraction of the gender gap, men still attend higher-quality colleges than women (Jacob, 2002). He attributes this to the fact that the men who attend college come from a slightly higher point on the distribution of abilities on average, assuming that the ability distribution for high-school graduates is roughly equivalent for men and women. The higher number of men scoring in the upper echelons of standardized tests in math and science also may lead more of them to attend colleges that are more heavily oriented toward math, science, and engineering—many of which tend to be elite.

Hearn (1984) places this trend in the context of "tracking" students into curricula, a phenomenon usually associated with primary and secondary schools, but given that college quality is related to a number of postcollegiate measures of success, such as earnings, community involvement, and so on, the college admissions process creates a paradigm where the "academically and sociologically 'rich' become richer" (p. 28). Even more significantly, Hearn creates a set of academic characteristics crucial for success in admission to selective colleges and a set of "ascriptive" characteristics—race, gender, parental income and education levels, and siblings. While academic characteristics are critical for admission, ascriptive characteristics play a nontrivial role,

including gender: *ceteris paribus*, women are less likely to attend more selective institutions, and much less likely to attend more expensive institutions. This typology is extended in Hearn (1991), which notes the durability of institutional stratification along lines of selectivity, which are tied inextricably to prestige. Hearn offers three hypotheses for selective college admissions—a model of strict equity, which would exclude both academic and ascriptive characteristics; meritocratic equity, which would exclude ascriptive characteristics; and redemptive equity, which would take both into account in an attempt to "level the playing field." The first hypothesis is not supported by the data, the second one is supported, and the third slightly supported. As in the previous study, women were found to be less likely to attend more-selective institutions, all other things being equal, but race and gender disparities were much smaller than those between individuals from different socioeconomic backgrounds.

Karen finds similar trends in two different studies (1991; 2002). In the first, a study of Harvard admissions standards finds a significant role for ascriptive characteristics. However, the role of gender among these turned out to be minimal because men's test scores turned out to be generally higher than women, providing a neutral or merit-based explanation for larger numbers of male students. However, women from privileged backgrounds were more likely to be admitted than men from similar backgrounds or applicants of either gender from lower socioeconomic groups, which Karen theorizes may be due to their being better able to acquire poise and self-assurance and other attributes of cultural capital. In 2002, Karen replicated Hearn's 1991 study and found that, again, net of other factors, women were significantly less likely to attend elite institutions, and in fact that the importance of ascriptive characteristics may have grown. This suggests a countermobilization of male and other elite status groups to preserve traditional advantages, Karen argues.

Jacobs, Cookson and Persell, and Davies and Guppy all present similar findings about gender and institutional stratification, and Baum and Goodstein find that men actually receive a preference in admissions at former women's colleges, although not at other small liberal-arts colleges (Davies & Guppy, 1997; Jacobs, 1999; Persell & Cookson, 1985). Monks finds that the need to comply with Title IX in athletics has created a preference for male students as a means of restricting the female population to proportions that can be matched among athletes (Monks, 2005).

Elite colleges and "meritocracy"

The history of women in coeducational colleges covers roughly the same period of time as the history of selective admissions. That is, as women began to enter colleges alongside their brothers and cousins and neighbors, a segment of institutions—both coed and single-sex—began to experience the happy problem of having more applicants than positions available in incoming classes. This imbalance, along with the qualms about the ethnic background of some candidates, created a framework for an elaborate yet inscrutable process for considering which applicants to admit to elite institutions.

Little, if any, scholarship exists on the evolution of admissions processes at public institutions or private colleges and universities, but a great deal has been written about the history of selectivity at Harvard, Yale, and Princeton. These three, the elite of the elite, at first depended on examinations—the original "college boards" from which the College Board derives its name—to maintain a steady flow of graduates from elite prep schools, which were among a handful of secondary institutions offering Greek and Latin (Karabel, 2005; Lemann, 1999; Synnott, 1979). Karabel (1984) depicts this as a process of social closure—elites ensuring continued access to the career and social opportunities provided by elite colleges. Yale, for example, instituted an explicit policy granting preference to children of alumni in 1925, according to Karabel. The pattern was challenged, but strengthened, by a dramatic increase in the number of qualified Jewish applicants in

the first three decades of the 20th century. Concerned that Jews, whom they perceived as ethnically and socially inferior, would squeeze out white Anglo-Saxon Protestants by outperforming them in the classroom, leaders at Harvard, Yale, and Princeton used both overt and covert means to exclude Jewish applicants.

Karabel (2005) and Synnott (1979) use primary sources to document the profound anti-intellectualism at all three institutions in the early years of the twentieth century. Both literature and correspondence associate serious study with the handful of students outside the predominant social whirl, such as those from rural background and, in greater numbers, Jews. In the late 19th century, elite colleges had imported from boarding schools both in America and England the notion of "muscular Christianity," the belief that Christians (especially Christian men) needed to replace the leisurely life of the gentry with a program to strengthen themselves vigorously to spread the Gospel (Putney, 2001). This, Karabel and Putney and others have noted, became tied into the eugenics movement of the early 20th century and the belief that if white Anglo-Saxon Protestants did not take steps to protect their race, they would be overrun by people from the Mediterranean region and farther South. This context explains the heavy emphasis on the extracurricular aspects of these institutions, the strong regard for "character" and "leadership" in evaluating applicants, and as the 20th century progressed, the troubling nature of the "Jewish problem" for university leaders.

Around the turn of the century, Harvard was relatively diverse for the day, with 45 percent of its students from public schools and 15 percent either Catholic or Jewish, and by the early 1920s, the student body was more than 20 percent non-Protestant (Karabel, 2005). In 1922, Harvard's president Abbott Lawrence Lowell openly advocated a quota of about 15 percent. In 1924, Yale adopted a quota of 10 percent. These did not stand as formal policies for long, if ever, but the policies that Harvard, Yale, and Princeton did adopt had much the same function. In 1923, Harvard imposed a limit of 1000 students per freshman class, enabling the university to use discretion among

its standards. It also began requesting letters of recommendation and a personal interview to ascertain personal qualities. All three universities widened their national recruiting to bring in students from outside the Northeast—which is where the majority of American Jews lived (Karabel, 2005).

As the century progressed, Karabel and Lemann (1999) describe an evolution in which the rhetoric from elite colleges about admissions came to focus more on merit and less on selecting leaders from traditional sources. James Bryant Conant, who served as president of Harvard for 30 years, called for admissions based on talent, not family background; need-blind, full-aid admissions; reliance on a standardized test (the SAT), and National Scholarships, designed to attract outstanding students from across the nation study at Harvard without worry about making ends meet. At the same time, according to Karabel, he sent messages of reassuring to the traditional social sets of Boston and New York that sent their children to Harvard, keeping ceilings on Jews and the number of "strivers" and permitting only two or three African-American students to enroll per year, and continuing to admit virtually all applicants from the "St. Grottlesex" coterie of elite prep schools.

The tension between maintaining channels for traditional applicants and opening up competition to all continued throughout the 20th century and remains an issue today; indeed, it is at heart of most if not all of the literature on admissions at elite institutions. In the years following World War II, the attempt to evaluate soldiers' mental capacities began to influence how deans and staff at Harvard, Yale, and Princeton saw their applicant pool, and the first third of Lemann's book *The Big Test* is an account of how Henry Chauncey, an assistant dean at Harvard, helped found the College Board to establish the SAT as a means of selecting the most promising students for education at elite institutions (Lemann, 1999). Taking it a step farther, R. Inslee (Inky) Clark Jr. revolutionized admissions at Yale in the late 1960s, visiting more than a thousand high schools nationwide, admitting more public-school students, and reducing the representations of legacies

from 20 percent of the incoming class to 12 percent. While Yale's president Kingman Brewster reined Clark in somewhat, the civil-rights and women's rights movements were changing the nature of admissions. According to Karabel, the flexibility and discretion that universities had retained to favor the privileged now were being deployed openly to bring African-Americans and other minorities into elite higher education. This move to diversity in fact delegitimated the preferences for prep-school students, apart from traditional legacies (Karabel, 2005). By the mid-1970s, all quotas and restrictions on women, Jews, and minorities were gone, and a preference system was firmly in place for athletes, legacies, and minorities. The new opportunities for women combined with a reluctance on the part of colleges and universities to increase class size rapidly made admissions much more competitive, as did the increase in the size of the population of college-eligible graduates nationwide.

The flexibility of the admissions system also has permitted elite institutions to stave off challenges, such as that mounted by Asian-Americans in the mid-1980s. Harvard increased the number of Asian-American students admitted, and largely quenched a government challenge to the autonomy of its admissions process, according to Karabel.

"At certain historical moments," he writes, "especially in periods of social crisis when the legitimacy of the system itself is in question—the elite colleges will reach out beyond the privileged to the disenfranchised. They do so not because the visible presence of previously excluded groups adds to the diversity of their students' educational experience, but because it reinforces a belief—crucial to the presence of the social order—that success in America is a function of individual merit rather than family background." (p. 545)

Having said that, the direct literature on modern competitive college admissions tends to support the basic meritocratic belief—that academic achievement is the primary factor in college admissions, with some gray areas around the edges for minorities, legacies, and athletes. Hearn

(1984), as noted earlier, finds that academic characteristics are critical for attendance, with ascriptive characteristics playing a less-significant but nontrivial role. Braxton and Nordvall (1985) describe the linkage between quality of education and selectivity of a given institution as "folklore," but find support for it in a study of classroom exams. Hearn (1991) notes that academic characteristics exert a direct effect on attendance likelihood, while ascriptive characteristics work indirectly. However, Hearn also notes that socioeconomic status positively influences attendance at elite institutions, indicating that richer students have access to cultural capital in ways that poorer ones do not and/or that parents and school officials may steer students of lower socioeconomic status away from elite institutions.

Karen (2002) notes the tension between arguing for access for an underrepresented group of students and arguing for access for a particular student, and also notes that despite the links between income and attendance at elite institutions, elite institutions enroll such a small proportion of the population that they "can only be facilitators of life change, not major reproducers of the class structure of society" (p. 137). Carnevale and Rose rephrase the dilemma slightly—as one between selecting students to meet institutional needs as opposed to selecting them for their ability to benefit from institutional resources and contribute to the broader society (Carnevale & Rose, 2003).

In one of the comparatively few studies of admissions likelihood, Espenshade, et al. (2005) find support for five hypotheses:

- *Ceteris paribus*, the applicant with greater academic merit has a better chance of getting in.
- Absent merit information, students from better high schools have a better chance of getting in.
- If students have comparable merit, the student from the better school has a *smaller* chance of admission than the one from the inferior school.
- That negative effect of schoolwide achievement is mitigated among outstanding students.
- Information about the high school academic environment makes a significant contribution to understanding elite college admissions.
-

They describe this as the "frog pond syndrome": simply put, it's better to be a big frog in a small pond (i.e., a small or mediocre high school) than the same-sized frog in a much bigger pond. Whether colleges are actively selecting for diversity of school background or for some quality that happens to correlate with such diversity—such as ethnicity or athleticism—a student with middling credentials at a traditional feeder institution will not fare as well as one with similar credentials at a different school.

This is linked to the findings of Bowen, Kurzweil, and Tobin (2005): Lower socioeconomic status represents a statistically insignificant disadvantage in the admissions process, all else being equal, while being a member of the top income quartile represents a significant disadvantage, according to their study. Moreover, being a member of an underrepresented minority group presents a sizable advantage for applicants over similarly-situated nonminorities, much more so than legacies and almost as much so as athletes.

Stampnitzky, a student of Karabel's, conducted a separate analysis of Harvard's admissions policies in the years following World War II (Stampnitzky, 2006). She characterizes the conflict as one between faculty who wanted objective admissions criteria and the admissions office, which wanted a multifactor policy to "defend the university against what they saw as a potential excess of meritocracy" (p. 3). In the 1950s, rather than shifting to a true meritocracy, Harvard shifted its preference system from what amounted to an old-boy network to an evaluation of personality and character; Stampnitzky attributes this to a fear that too much of an emphasis on academics would deprive the institution of access to traditional sources of money and influence.

Alon and Tienda (2007) note that the handful of institutions admitting less than 50 percent of their applicants get a quarter of all college applications annually, reinforcing the stratification of postsecondary institutions. Test scores have risen in importance as a means of sorting these

truckloads of applications, but not uniformly: Class rank appears to have become more important than test scores for African-American and Hispanic applicants.

In sum, there are three streams of literature informing this project. The first is the history of women in higher education, which is primarily a history of deficit—fewer women, limited opportunities, continued forms of discrimination, all informed by multiple theories. The second is the current status of women in higher education, which is also primarily a literature of deficit in chronicling persistent challenges to women in terms of salaries, career opportunities, and entry into high-prestige or high-value fields. The third is the literature on college access, which is primarily focused on challenges to members of underrepresented groups, generally defined by social class or race/ethnicity. The question of how, where, and why women are succeeding and not succeeding in the applications process is largely left unanswered. The next chapter provides a theoretical background for framing a research hypothesis to begin tackling these issues.

Chapter 3

Theoretical Framework

As has been noted, the history of female students in American higher education can be seen as a long, uneven, and as-yet incomplete assimilation into a system originally devised for educating men. While some disparities favoring men remain, women are more than competent as a whole at navigating the system. The numerical dominance of women among student populations and among degree-earners is proof enough of that.

Within the topic of institutional populations of students, the key question remaining is why women have not become the dominant gender at elite institutions, as they have among all other sectors of higher education. To answer this question, I pose this hypothesis: To the extent they are able, colleges will attempt to balance the number of male and female students in their incoming classes. Of course, they may not be able to: The need to yield a class of students able to pay a certain net tuition revenue may trump all demographic concerns, or the need for students from minority backgrounds or those whose parents did not attend college may be viewed more pressing than admitting more women. Or they may have a set of academic programs, such as a heavy base in the physical sciences or one in the humanities, that attracts a predominance of students of one gender or another. But absent these considerations, if this hypothesis is true, then there should be a demonstrable effort to admit more men than would qualify on a purely academic basis.

This theoretical stance owes most to the school of neoinstitutionalism. Institutionalist theory predicts a pattern of behavior by which individuals, units, and organizations behave in such a way as to maintain legitimacy with resource providers. Meyer and Rowan describe products, services, techniques, policies, and programs as functioning as "power myths," commanding a reified sense of importance no matter what they contribute to organizational efficiency (Meyer & Rowan, 1977). Educational organizations are loosely coupled, with gaps between formal structure and the actual work, creating tension between ceremonial conformity to institutional policies and efficiency. There are two contexts for rationalized formal structures: the demands of the local relational networks encourage the development of structures to coordinate and control activities, and the collective organization of society creates a highly institutionalized context that determines the acceptable account of organizational activities. Meyer and Rowan describe a continuum between "production organizations" and "institutional organizations": The former are characterized by strong output controls and depend on the successful management of relational networks, while the latter depend on maintaining confidence and stability with resource providers based on conformance to institutional rules. Institutions are "natural systems"—they are collectivities whose participants are pursuing multiple interests, both disparate and common, but who recognize the value of perpetuating the organization as an important common goal (Scott, 2001).

Karabel (1984) explains the behavior of Harvard, Yale, and Princeton toward the admission of Jewish students through the lenses of resource dependency and status-group struggle: Claiming to be training the elite, the three institutions maintained ties to their supporters in the white Anglo-Saxon Protestant power structure by guaranteeing admission to their children while closing themselves for the most part to Jewish (and other minority) applicants, no matter how meritorious. But the actions Karabel and others describe almost could be lifted from Meyer's and Rowan's description of institutionalized organizations' responses to external criticisms. By decoupling

processes from rhetoric, the organization transfers important activities to professionals outside of managerial supervision; goals are made ambiguous and categorical; and inspection and evaluation are ceremonialized. In the 1920s, colleges began declaring their ideals of character and leadership to important criteria in the evaluation of applicants, while in fact using photos, letters of recommendation, limiting the size of the class, and creating new lines of access to WASP prep schools to limit the number of Jewish students (Karabel, 2005; Lemann, 1999; Synnott, 1979). The admissions process became a "black box" of confidential evaluations of candidates, enabling the institutions to preserve their integration into the network of national leaders, both political and social. Then, in the 1960s, this type of decoupling permitted these universities to admit minority students in larger numbers as a means of dealing with national fears of social unrest and addressing the demands of the civil-rights movement. More recently, it has given these universities cover to address accusations of limiting the number of Asian-American students (Karabel, 2005). As Karabel argues, Harvard was able to neutralize a federal investigation against preference systems disfavoring Asian-Americans as a means of preserving institutional autonomy, specifically in the form of not allowing the government to claim regulation of its admissions policies. This would seem to support Meyer and Rowan's theory that organizations that are able to ceremonialize inspection and create their own rationales for action are more legitimate, successful, and likely to survive, while organizations whose claims to support are based on evaluation—and thus are subject to a sudden loss of resources—should be less likely to survive.

In studying institutionalism in elite institutions, it is important to remember that Harvard, Yale, and Princeton are the sources of the myths and mores that define higher education, much more so than the recipients of such institutional memes. Karabel (2005) provides an account of administrators at the three institutions fearing to meet the same fate as Columbia University and the University of Pennsylvania, which lost their ability to attract socially elite students in the Progressive

Era after their populations of Jewish students rose. For the Big Three, maintaining the top position in the hierarchy of higher education always has been the *summum bonum*, and in the modern era, this has translated into having the strongest measures of selectivity in the admissions process—the most applications, the highest scores on standardized tests for incoming students, and, in recent decades, the highest levels of ethnic diversity among succeeding classes. Colleges and universities wishing to attract students with the same elite attributes must then present as compelling a picture of themselves as the Big Three, whether it be through promises of exposure to outstanding professors and small classes or offers of opulent student amenities. Thus, the isomorphism of neoinstitutionalism is transmitted down the prestige ladder (DiMaggio & Powell, 1983).

There is one important caveat here. Only a relative handful of colleges and universities will be competing for these socially elite students; Alon and Tienda (2007) note that the 60 or so institutions that accept less than half their applicants receive more than 25 percent of the total number of college applications annually. While some other colleges with higher acceptance rates will recruit elite students, often with promises of merit-based financial aid, the majority serve students from lower socioeconomic backgrounds and with lower academic profiles (Hearn, 1984). Thus, the kind of isomorphism described by Powell and DiMaggio or Greenwood and Hinings (1996) does not extend uniformly through all sectors of higher education (Kraatz & Zajac, 1996).

How, then, does an institutionalist view of higher education explain the relatively small numbers of women at elite colleges and universities? First would be the attempts of offices of admissions and publicity attempting to present an image of an ideal college to prospective students. College may or may not be the venue for young people meeting each other and marrying that it once was, but the social aspect of college life always has been an extremely important factor in attendance (Rudolph, 1962; Solomon, 1985; Thelin, 2004). Having a student population closer to 50-50 male-female may be thought to create a more attractive environment for both male and female students, a

motive hinted at in some contemporary descriptions of the issue but without apparent foundation in research. That would be cause enough to give men a break in the admissions process.

Thus, in this theoretical framework, we would expect to find the institutions that have the most control over their applicant pools (i.e., the ones with the most and best-qualified applicants) to limit the number of female students who attend, even if it means enrolling some male students with lower academic profiles than some women who are rejected. Institutions that have fewer applicants relative to the number of spaces in their incoming class, and as such a need to admit more students, would be more likely to focus on enrolling all the students they can manage without regard to gender.

In sum, institutionalism predicts that individuals and groups within an organization will take steps to maximize organizational status through closer adherence to idealized standards, which are developed both within the organization and throughout its organizational field. In the case of college admissions, to the extent (and only to the extent) that resources allow, colleges attempt to select students to create cohorts that are diverse and balanced on a number of different scales. One of those scales is gender, and based on the anecdotal evidence reviewed here, keeping the proportions of male and female students balanced appears to be an institutionl ideal. Thus, thanks to their numbers, women are valued less in the admissions process.

This fits both modern and historical patterns of inequality disfavoring women identified by a number of theorists. Some of these theorists identify themselves as feminists and some do not, but the historical evidence cited in the previous chapter is striking. Women were excluded from American higher education for essentially the first two centuries of its existence, dating back to the founding of Harvard. Thereafter, women's participation was limited amid criticism that higher education would make women unfit for marriage; that the energy required for intellectual work would deprive bloodflow to their reproductive organs; and when they were allowed into

postsecondary institutions, most of their experiences up to the end of the 19th century were limited to finishing schools and teacher preparation (Woody, 1929). When women began to excel in academics at Chicago and Wisconsin, among others, they were forced out of male courses of study amid complaints that such programs would be "feminized" or that women were taking over programs that should be reserved for men, who would become leaders in society and the economy (Newcomer, 1959; Woody, 1929). Women were welcomed by colleges during the World Wars, but following the return of male troops, female applicants were admitted in much smaller numbers to make way for men (Eisenmann, 2006; Newcomer, 1959; Solomon, 1985). And only amid the legal and social changes of the 1960s and 1970s did women begin to gain access to colleges and universities in large numbers. Thus, across the 370-plus-year history of American higher education, the vast majority of women's progress in attaining access to postsecondary education has come in the past 40 years.

The American experience fits into a global pattern. According to Kelly and Slaughter, fifteen industrialized countries had more women than men involved in postsecondary education by 1986, but women were concentrated disproportionately in nonelite settings in all systems (Kelly & Slaughter, 1990). As women access higher education in greater numbers, sex segregation by academic field increases (Ibid.). And given that private institutions in the United States tend to be more elite than publics, the shift of resources from the public sector to the private has increased inequality for women, who tend to be in lower-status public institutions. In the same volume, Ethington, et al. note that women's participation in nonscience, male-dominated fields requires tremendous social capital—family affluence, institutional selectivity, and the ability to find employment in the private sector all are factors improving the likelihood of enrolling in such disciplines (Ethington, Smart, & Pascarella, 1991).

"Vertical" segregation for men and women in institutions at different prestige levels has diminished over time, but "horizontal" segregation among academic fields has not, according to Charles and Bradley (2002). In large part, the authors argue, this is due to the fact that "women's status" is not a one-dimensional variable that moves along a steady scale, but is manifest in a number of factors and contexts. Even among "developed" countries where raising the status of women and in particular their access to higher education has been an ongoing concern, women have found the typification of certain academic fields to have been feminized and granted lower status, creating structures that exacerbate the segregation of women even as access increases. This has created an ironic situation, as the diversity of postsecondary education may increase both vertical and horizontal inequities. Moreover, expanding junior-college or other lower-status opportunities may attract women who otherwise would not have pursued higher education, but it may also "cool out" women who would have pursued bachelor's degrees if two-year degrees may not have been available.

The concerns about "feminization" voiced by Chicago administrators at the turn of the 19th century seem to have been borne out in the work of later analysts. Pfeffer and Davis-Blake find that the prestige of university administrative positions (as proxied by salary) is linked to the percentage of women in a given role (Pfeffer & Davis-Blake, 1987). As more women enter a given job category, it declines in prestige until a tipping point is reached, below which it will not sink. Within academe, the experiences of female professors appear to be shaped by similar conditions. Perna (2001; 2003) finds that even when controlling for human capital characteristics (i.e. years of work, publication records, tenure, type of institution), women suffer a wage penalty compared to men. While the overt pay gap is explained in part by human capital—fewer women have terminal degrees, they publish fewer articles, and they are underrepresented at higher-profile institutions—an institutional understanding of how women's work is valued is necessary to understand the pay gap of about 8 percent that

remains after such characteristics are controlled. Moreover, women and minorities are more likely to be employed at lower-profile institutions, such as two-year colleges. Toutkoushian and Conley also find that the portion of the wage gap unexplained by human-capital characteristics has decreased over time, but is still most prevalent at institutions with the highest levels of research and in fields dominant by men, such as the hard sciences (Toutkoushian & Conley, 2005).

Slaughter (1993) also argues for the inability of human capital theory to explain the movement of colleges and universities to favor fields with close ties to the marketplace, especially marketplaces influenced by governmental actions, such as the recruitment of scientists. In a period of retrenchment, institutions favor academic fields positioned close to the market, such as science, business, medicine, and law, while disfavoring other fields that might have fewer students pursuing majors or less-explicit ties to corporations, such as the humanities and social sciences—fields that are predominantly female. Even when such fields have strong career orientations, such as nursing or education, they are not protected in times of retrenchment, and humanities fields with large numbers of women who are successful after college, could not escape cuts. Furthermore, the concept of the market itself may be gendered, so that men who pursue agendas closely tied to market objectives without competing family responsibilities have advantages over women, thus recreating historical patterns of privilege (Metcalfe & Slaughter, 2007).

In this framework, institutions that are able to select their students carefully are likely to preserve opportunities for men who are deemed more capable of success in the market and reflecting glory (and donations) back to the university. Moreover, elite institutions are more likely to invest heavily in high-prestige departments, such as the hard sciences and in particular physics and engineering, that have traditionally low enrollment for female students. Thus, institution-level structures are in place to steer even talented women away from truly elite institutions and toward small liberal-arts colleges, flagship universities, and other second-tier institutions.

Taken together, institutionalism and theories of women's work create a model for predicting female enrollment that predicts a narrowing of opportunities for women to pursue undergraduate studies relative to those available to men as we move up the prestige scale. Such opportunities are controlled first and foremost by an institutional effort to preserve admissions opportunities for men to meet institutional needs for specific kinds of students and to prevent the institution from enrolling such a high proportion of women that future applicants of both sexes find it undesirable. Moreover, fields associated with women—nursing, education, the humanities to some extent—are not favored at elite institutions, while those associated with men, the so-called "STEM" fields and others, are.

However, there is the possibility that other factors could be at work in men's favor without being tied specifically to gender. While in most psychological studies, within-gender variation in intellectual skills and abilities tend to be much greater than between-gender variation (Hyde, 2007), other studies also have found more variability, especially for men, at the high end of the abilities distribution, which represents the talent pool from which elite institutions draw. Halpern et al. explore both scientific and social-scientific literature on this point and arrive at similar conclusions, and also point out that at the high end of the ability distribution, more males than female demonstrate an ability "tilt"; that is, they have very strong visual-spatial and/or mathematical abilities but poor verbal abilities (Halpern D. F., Benbow, Geary, Gur, Hyde, & Gernsbacher, 2007). This, they suggest may create different psychological profiles that manifest themselves in differing patterns of academic and career choices. Rosenbloom, et al. identify "occupational personalities," or personality characteristics associated with individuals in particular fields, and conclude that once such traits are controlled, then sex disparities in the field of information technology disappear (Rosenbloom, Ash, Dupont, & Coder, 2008). They caution that sex discrimination could be a factor,

but that personality traits found more often in men may contribute to career choice in this particular field.

With these factors in mind, a model of college admissions with gender being one predictive factor begins to emerge. Administrators at a given university with the resources to be selective in its admissions process want to create an environment that matches the notion of the ideal college campus in the minds of their preferred students (and their parents), and among many other characteristics, that includes a critical mass, but not an overabundance, of students of both genders. At the same time, they may add or enhance programs related to the market or to prestige, such as business and the hard sciences, and such fields tend to attract more men, for reasons based either on traditional patterns of male careerism or particular intellectual traits. This would tend to increase the applicant pool of men, enabling the college to achieve gender parity in enrollment.

To flesh out this model requires three levels of examination: an understanding of the landscape of gender-based enrollment patterns in American higher education, a quantitative model that is able to weigh gender in the presence of other variables to determine effects on a student's admissions chances, and a sense of the policy and psychology of those making decisions on whether or not to admit a specific applicant.

Chapter 4

Data and methods

The previous chapter chronicled the long and tortuous history of the integration of women into American higher education, as well as the evolution of selective college admissions at the country's most elite institutions. While women have at least nominal access to virtually all postsecondary educational opportunities available today, the competitive admissions process spread across a multitude of universities appears to steer proportionately more men into elite colleges and universities than their academic credentials would suggest. The literature on college admissions detailed above creates a frame to view the gender issue in light of a long history of colleges using the admissions process to create student populations that best serve institutional needs.

To understand how gender is operationalized as a variable in the modern college admissions process, I offer a descriptive study for context, a quantitative study to test the hypothesis, and a small qualitative study to validate the findings of the quantitative part. The descriptive analysis will accomplish two specific goals. First, it will address a persistent yet superficial disagreement in the literature about the mere existence of a gender gap in college enrollment after controlling for demographic and socioeconomic factors. Second, it will provide important context for the main body of the study in the form of contemporary statistics on male and female college enrollment patterns.

The quantitative analysis will test the hypothesis by examining personal factors impacting the chances of a student's acceptance at a given college, such as academic and ascriptive characteristics.

Controlling for these and employing a fixed-effects model to control for characteristics inherent to the institution to which the student is applying, the model tests whether being male is a significant factor in the likelihood of admission.

Descriptive analysis

That there are more women than men in the aggregate in higher education and at most of the 4,500 or so institutions in the United States is undeniable, but the question of whether such disparities are meaningful is a topic that has been politicized in recent policy and media conversations. I explore the following points:

- Among college students, there are significantly more women than men in every aggregate population, including those consisting of members of any particular racial, ethnic, socioeconomic, or age group, even though such groups are generally split evenly between male and female among the general U.S. population.
- Such gaps are wider among low-income students, those from minority groups underrepresented in higher education, and older students, but still significant among rich, white, and traditionally-aged student populations.
- Such gaps exist throughout the hierarchy of institutions of higher education.
-

These statements will be tested as hypothesis, but using only descriptive statistics. As implied in the discussion of the first point above, prominent studies and policy briefs have dismissed the topic of the gender gap as unworthy of study based on the assertion that the college-going population has skewed female simply because so many more minority women than men are going to college (Corbett, Hill, & St. Rose, 2008; King, 2006). This assertion is not proven in these studies, nor are references provided to other studies. Thus, it must be proven or disproven to lay the groundwork for the broader analysis. Moreover, descriptive statistics can provide a compelling context for that analysis, along with a better understanding of the parameters on which models are built.

This section will consist of a step-by-step breakdown of populations relevant to this study by gender and discussion of gender disparities in each:

- The country's general population
- The age group of traditional college attendees
- Students enrolled in college, as derived from the Integrated Postsecondary Education Data System (IPEDS)
- Racial/ethnic groups of students enrolled in college (IPEDS)
- Socioeconomic groups of students, as derived from the Education Longitudinal Study of 2002, which will be described in more depth later in this study.
- Students as grouped by standardized-test data
- Students at different types of institutions, as organized by intrinsic and extrinsic measures of admissions selectivity
-

All colleges and universities that receive federal aid under most programs authorized by Title IV of the Education Amendments of 1972 are required to submit a broad range of institutional data annually, including institutional financial information, student demographics, employment data, and institutional characteristics (http://nces.ed.gov/IPEDS/about/ipeds_history.asp). That information is maintained in an online database searchable for a wide range of purposes.

The next two steps in the analysis consist of a quantitative and qualitative study of the admissions process and role of gender. These will differ from prior studies of both topics in two respects. First, while an ample literature exists on differences in choice of careers and fields of study by gender, no such studies can be found on differences in choice of college. Second, most prior studies are devoted to studying college destination—that is, which institutions students ultimately attend. This is manifest in the models presented in Hearn (1984) and Karen (2002), which use the selectivity of the college attended as the dependent variable to examine academic and ascriptive variables. To study *institutional* choices regarding students, the dependent model must be whether or not the institution accepted the student. More broadly, the overall research agenda requires some understanding of institutional policies as regards admissions decisions. For that reason, this study will include an analysis of a series of interviews conducted with admissions executives to discuss

how the quantitative findings reflect—or do not reflect—policies at their institutions and similar ones, and more generally, how gender is viewed in the context of admissions decisions at their institutions.

Quantitative analysis

The goal of this section is to address two secondary research questions:

- Do selective colleges grant men preferences in the admissions process to increase male enrollment?
- Is gender (and potentially other demographic characteristics) "drowned out" in the admissions process by meritocratic characteristics in the form of academic and personal achievements, or by other institutional goals?
-

The first is suggested by the institutionalist and feminist theoretical perspectives discussed in the previous chapter. Colleges must continually legitimate themselves by conforming to the myth or image of the ideal form of themselves as a means of appealing to supportive constituencies, and part of that is having a student population that would be appealing to an applicant of either gender to join. At the same time, the dramatic rise in the number of women interested and qualified for college since the 1970s has prompted a level of concern to maintain males' access to valuable places in the educational system. These forces combine to create pressure on admissions departments to balance the genders in the student body, to the extent they are able.

The second assesses the priority of gender among institutional priorities. The overall academic achievements of prospective students may drowns out other characteristics in the analysis, or other goals, such as geographic or racial/ethnic diversity, may be more important than balancing gender in the incoming class.

Quantitative analyses can begin to discuss these questions in the light of the results of the admissions process, but they cannot identify actual policies. Instead, individuals must reveal both *de*

facto and *de jure* policies and how informal rules and processes in admissions offices help shape incoming classes. These must be obtained through qualitative research.

In this study, this research will be limited to a small set of interviews with individuals identified as officials from a representative random sampling of institutions. Their responses will be used to identify relevant institutional policies and practices that have been adopted in response to the contours of the applicant pool from which students are recruited, evaluated, and selected for admission. These take the form of elite interviews designed to elicit in-depth informational about institutional policies and personal experience (Marshall & Rossman, Designing Qualitative Research, 2006).

Quantitative methodology

The goal of this chapter is to specify a model that correctly predicts the likelihood of a student *x* being admitted to college *y* given the set of parameters *X*. *X* consists of two subsets of parameters—academic and ascriptive characteristics (Hearn, 1984; Karen, 2002). There also may be a set of unobserved characteristics specific to the institution to which the student is applying. Are an individual's chances of admission significantly affected by institutional needs, such as the graduation of particular students or the need to enhance a particular population, such as those from minority groups or oboe players? These issues cannot be measured, but they must be taken into account.

Data for the models to be specified in this section will be drawn primarily from the Education Longitudinal Study (ELS:2002). ELS:2002 is a longitudinal study based on a sample consisting of 8,089 male and 8,108 female students surveyed first as 10th-graders in 2002, again as 12th-graders in 2004, and most recently in what for most is the second year after high school in 2006. More recent waves of data collection have been freshened to better reflect the population as a whole (National Center for Education Statistics, n.d.). Data are taken from student questionnaires as well as questionnaires filed by parents and teachers and transcript information provided by secondary

and postsecondary schools. In this study, ELS information is primarily from the first and second follow-up data collections, recording student demographic data, information about high school records and transcripts, and details of the college application process.

The ELS database permits analysts to treat applications, rather than students, as the unit of analysis. This dramatically expands the sample size by permitting each of a student's applications to count as a single observation (and students applied to as many as 15 different institutions), although it raises issues regarding the independence of observations that must be addressed. The study will consist of a series of binary response models using logistic regression, with the dependent variable having the values of accepted (1) and not accepted (0). Logistic regression methods allow us to dispense with the assumption that the response probability is linear given the set of parameters used and assess the relative effects of each parameter on the probability that $y=1$ (Wooldridge, 2006).

Listwise deletion was used for missing data in each model, resulting in different sample sizes that will be noted. Each model uses unweighted data; while the ELS data include a number of different weights to allow for valid studies of the national population, but the weights apply to the individuals as opposed to the applications and thus it was unclear as to how these weights would apply in this student. In any case, limited testing did not indicate that weights made a significant difference in the results. Robust standard errors were used to eliminate potential clustering effects and other forms of heteroskedasticity.

Each of the models to be discussed herein uses the same dependent variable: the acceptance (1) or rejection (0) of the student's application, and each includes the focal variable, the student's gender (expressed as the binary male=0 or male=1).

The models will be assessed on categories of admissions selectivity assigned by *Barron's* selectivity measures for 2005, which include ratings between "noncompetitive" and "most competitive." It is important to recognize that the category is really relative to the entire breadth of

American institutions of postsecondary institutions, which in 2008 numbered more than 4,300 (National Center for Education Statistics, 2009)[1]. *Barron's* includes only about 1,200 institutions it considers to have an even slightly competitive admissions process. Thus, Barron's may deem a college "very competitive" even if it accepts 75 percent of its applicants; while this may seem absurd on its face, such an institution is very competitive compared to the broad mass of American institutions of higher education.

A breakdown of the rankings, excluding single-sex institutions and those with missing data listwise, looks like this:

Index	**Ranking**	**No. of institutions**	**Selectivity**	
			% of apps. accepted	Apps. per matriculant**
0	Noncompetitive	42	84%	3.1
1	Competitive	157	73%	4.0
2	Somewhat Competitive*	538	72%	3.9
3	Very Competitive*	268	71%	4.3
4	Highly Competitive*	96	58%	5.9
5	Most Competitive	61	31%	9.1
	Total	1,162	69%	4.4

SOURCE: *Barron's* and IPEDS

* *Barron's* divides each of these categories into two, with the base category as listed following by a "plus" category, e.g. Very Competitive Plus. These categories proved meaningless in the models as specified, so they are combined here for brevity.

Figure 2: Barron's rankings and measures of institutional selectivity

This strategy, used by Zhang (2008) addresses the fact that most previous studies used very broad categories, such as institutional type (e.g., public/private, two-year/four-year), an approach

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[1] This includes only institutions receiving Title IV funds from the U.S. Government. The absolute total is usually reckoned closer to 6,000.

that does not permit the observation distinct circumstances confronting the small sliver of colleges deemed elite. Barron's does not provide a formula for its categories, but defines "most competitive" colleges as those accepting applicants in the top "10% to 20%" of their high school classes, having a GPA of 3.5 to 4.0, having a median SAT score of 655 or higher, and accepting a "third or fewer" of their applicants. The 62 colleges and universities in the "most competitive" category are by any definition elite; in terms of admissions, they comprise the group admitting about 53 percent of their applicants or fewer in 2003-4. Those in the "very" and "highly" competitive categories are defined by Barron's as accepting up to three-quarters of their applicants, and having significantly lower standardized-test and grade-point requirements. IPEDS indicates they admit anywhere between about 25 percent and 80 percent of their applicants. A full list may be found in Appendix A, but as a point of reference, here are the members of all three groups in the state of Illinois:

Most competitive:	**Highly competitive:**	**Very competitive:**
Northwestern University	Illinois Institute of Technology	Augustana College
University of Chicago	Illinois Wesleyan University	Illinois State University
	University of Illinois at Urbana-Champaign	Knox College
	Wheaton College	Bradley University
		DePaul University
		Illinois College
		Lake Forest College
		Loyola University of Chicago
		McKendree College
		North Central College
		Rockford College
		Roosevelt University
		Trinity Christian College

Figure 3: Illinois institutions ranked by *Barron's*

The first set of models to be tested will be bivariate models exploring the influence of the MALE variable on the likelihood of admission at institutions in each selectivity category. The next model uses only evidence from the student's high-school record, including grades, standardized test scores, and extracurricular activities. The second model, which is most similar to Hearn's and Karen's, adds a block of ascriptive characteristics to form a preference model, on the theory that elite colleges seek students from nonmainstream demographic groups when possible to enhance the

diversity of the student body. The third model is specified to deal with the fact that many applications are going to the same institutions, so there may be some unexplained variance in the model resulting from that. The third model addresses this second point by employing a fixed-effects framework to control for institutional characteristics and account for that source of variance. Equations for each model can be found with the findings in Chapter 6.

The highly and very competitive groups are intended to serve as a control or comparison group for the elite institutions in the most competitive group. While the differences in the following models between the very competitive and the highly competitive institutions are relatively small (and as such they are combined), the differences between those groups and the most competitive group are stark. The implications for the results from these groups are somewhat separated, as will be seen in the final chapter.

Qualitative data

While the above citations refer to the growing body of literature on admissions patterns based on race/ethnicity and socioeconomic status (though few that focus on gender), they are primarily on econometric analyses of available data and patterns. None of them, and no other studies that could be found, include substantive discussions with decision-makers about how colleges handle the applications process and how admissions officers view ascriptive characteristics such as gender. The closest is Mitchell Stevens' account of spending a year "embedded" in an admissions office at a selective college in the Northeast (2007) and journalists' and nonfiction writers' periodic discoveries of the challenges of selective admissions (Golden, 2006; Toor, 2002). In turn, none of these include data used in any meaningful way to analyze institutional decision-making.

A purposive sample of institutions was selected, and admissions deans contacted from each by email. After repeated telephone and email attempts, a sample of five deans was constructed.

Interviews consisted of a semistructured set of questions designed to elicit information about institutional policies, with the goal of testing whether the subject's perceptions about his institution and its peers support the initial hypothesis and reflect the evidence garnered from the quantitative study. The interviews included scripted questions about these hypotheses (in plain language, without reference to theory) and about the role of gender in admissions, leading to open-ended discussions about the subject's reaction to the findings, discussions of how admissions policies have evolved in the years, and the role of gender and other ascriptive characteristics.

Transcripts of the interviews were read on a cross-case basis to elicit themes that emerge from the groups as a whole as answers to identical or similar questions (Patton, 2002), specifically as to the beliefs, attitudes, and experiences of participants with regard to the gender makeup of the college applications they receive and the students they accept. The transcripts then were analyzed to determine the prevalence of such beliefs and experiences within the aggregate interview population and in particular to distinguish between the most-selective group and the next-most-selective group.

Taken together, these three stages provide a detailed analysis of the competitive college admissions process that provides important information at a three levels of debate—media and everyday conversations; policy and institutional discussions, and scholarship. The descriptive and qualitative data lend themselves well to nontechnical discussions, while the quantitative and qualitative data, taken together, contribute a new perspective to the literatures on gender and college selection.

Chapter 5

Descriptive Findings

The previous chapter articulated a three-stage method for evaluating the question of whether elite colleges are controlling the number of female applicants to keep a balance between male and female populations. This chapter tackles the first of those stages—testing the hypothesis that disparities in male and female enrollments exist across ethnic and other demographic groups throughout higher education; such gaps are widest among underrepresented minority groups, but still present and significant among better-off, white, and traditionally-aged populations; and that they exist throughout the hierarchy of institutions of higher education, except the most elite.

The significance of such gaps is contested by Sax (2008) and others, who claim that the predominance of women has come from growth in minority, nontraditional-aged, part-time and low-income populations, all of which tend to be female. Once that is controlled for, they argue, the disparity in gender enrollments disappears.

It is important to resolve this point for several reasons. First, the question of gender ratios in student populations is only of interest as a research topic if, in fact, an imbalance in favor of one gender or the other exists independently of other demographic characteristics. Second, the institutions at which the ratio of women to men is becoming a topic of concern tend to be relatively elite and thus dominated by students from "traditional" backgrounds—that is, those whose families have the means and social capital to encourage them strongly to go to college immediately after graduating from high school. These are the institutions that are the primary subject of this study, so

it is necessary to establish that their gender gaps are not rooted in socioeconomics for this topic to have heft.

Third, the sheer lack of scholarly work on the gender gap of higher education is striking. Virtually all studies of gender issues involving college student populations examine imbalances in particular academic disciplines, and particularly those favoring men. The fact that the college student population has skewed female at most American institutions has escaped significant study thus far. As such, it is important to break down gender gaps across demographic populations simply to get such statistics on the record. Fourth, and finally, if the basic hypothesis is true and a gender gap exists independent of racial and socioeconomic characteristics, then the next logical questions are why such gaps exists and how they are manifest at different kinds of institutions, and these are the topics of the following chapters.

Descriptive statistics are the most appropriate way to begin this analysis because they provide the simplest means of testing the hypothesis. Dating back to William of Ockham and the *lex parsimoniae,* there is a long tradition in Western thinking that the simplest explanation that takes into account all of the facts is the most likely to be accurate. Moreover, descriptive statistics tend to be more salient in making arguments for policy than findings derived from regressions or other techniques, and as such they deserve weight in establishing the context for the other findings in this dissertation.

Background: the counterclaim

Particularly in the realm of primary education policy, there is a growing debate about why boys are failing at greater rates than girls at all levels (Mortenson, 1999; Tyre, 2008; Whitmire, In press). However, as noted above, the studies that focus on American college populations and disparities in the number of male and female students dismiss the subject *prima facie* as a product of

other demographic forces, notably the influx of women from backgrounds of lower socioeconomic status. For example, a report published by the American Association of University Women asserts that "the gender gap in college attendance is almost absent among those entering college directly after graduating from high school" and that "Among traditional-age students (under age 24), the gender gap favoring women earning an undergraduate degree appears only among students from low- and middle-income families" (Corbett, Hill, & St. Rose, 2008, pp. 58-59). Among dependent students, "as family income rises, the gender gap favoring women diminishes to the point where it disappears." (ibid., 59-60) Linda Sax, in a book titled *The Gender Gap in College*, asserts that the overall population gender gap is simply due to the predominance of women among the Hispanic, over-25, and lower socioeconomic status and thus is of interest only insofar as it indicates that men and women are having increasingly different college experiences because of differing demographics (Sax, 2008). Mead dismisses the notion of a "creeping Wellesleyfication" of American colleges and asserts that more men are attending and graduating from college than ever, and that the disparity in enrollments is due to the fact that men are slightly less like to attend college directly out of high school and much more likely to drop out of college than women (Mead, 2006, pp. 11-12).

The statistics

The study to follow is a cross-sectional examination of the class of 2004, and as such is not intended to examine historical trends in the manner that Mead does. With that caveat in mind, the following conditions need to be true to validate hypothesis 1:

- More women than men are found in student populations from most or all racial backgrounds.
- More women than men are found in student populations from all age groups.
- More women than men are found in student populations from all socioeconomic backgrounds.
-

First, in terms of broader background, the U.S. Census Bureau estimates that the country's 2005 population consisted of 150.4 million women and 146.0 men, with an overall population that was 50.7 percent female. The 18- to 24-year-old population included 14.1 million women and 15.0 million men (48.5% female). In all age categories, men have higher mortality levels than women, and there are slightly more men than women in younger age groups before the percentage flips in late middle age (U.S. Census Bureau, Population Division, 2008).

As we begin to slice the data, these overall figures suggest a pattern that will repeat itself throughout the descriptive data: As we move from the mode we associate with the traditional college experience—the full-time degree-seeking student enrolled immediately after college—to a nontraditional experience, such as part-time, nondegree, and/or nontraditional age, the divide between male and female students opens up. However, the divide remains even among those involved in the traditional collegiate experience, and differs significantly from the population at large. According to the *Digest of Education Statistics: 2005*, we can break down enrollment figures by age and attendance status as follows (National Center for Education Statistics, 2006):

Age	Total	Male	Female	Pct Female
18 to 24	9,628,069	4,379,158	5,248,911	55%
25 and older	4,694,024	1,762,471	2,931,553	62%
Total*	14,963,964	6,408,871	8,555,093	57%

* Includes students of unknown age.

Figure 4: Total undergraduate population by age

Status	Total	Male	Female	Pct Female
Full-time	9,446,430	4,200,863	5,245,567	56%
Part-time	5,517,534	2,208,008	3,309,526	60%
Total	14,963,964	6,408,871	8,555,093	57%

Figure 5: Total undergraduate population by attendance status

	Total	Male	Female	Pct Female
Total	7,563,283	3,464,506	4,098,777	54%

SOURCE: National Center for Education Statistics, http://nces.ed.gov/programs/digest/d06/tables/dt06_178.asp

Figure 6: Full-time, traditional-aged undergraduate population

As we can see from figures 5-7, women are indeed more prevalent in older and part-time undergraduate student populations. But it is not true at all that men and women are at parity in enrollment among traditionally-aged and full-time students. Appendix B contains a rigorous analysis of the differences among these groups, but what we see from the rightmost column in each of these charts is that while differences may be lower as we move toward the traditionally-aged, full-time population, a significant gap remains between the enrollment of men and their numbers in the population as a whole. Thus, arguments that such gaps are not worthy of further analysis are difficult to make.

Different types of institutions enrolled varying percentages of women as undergraduates, as the following graphs demonstrate:

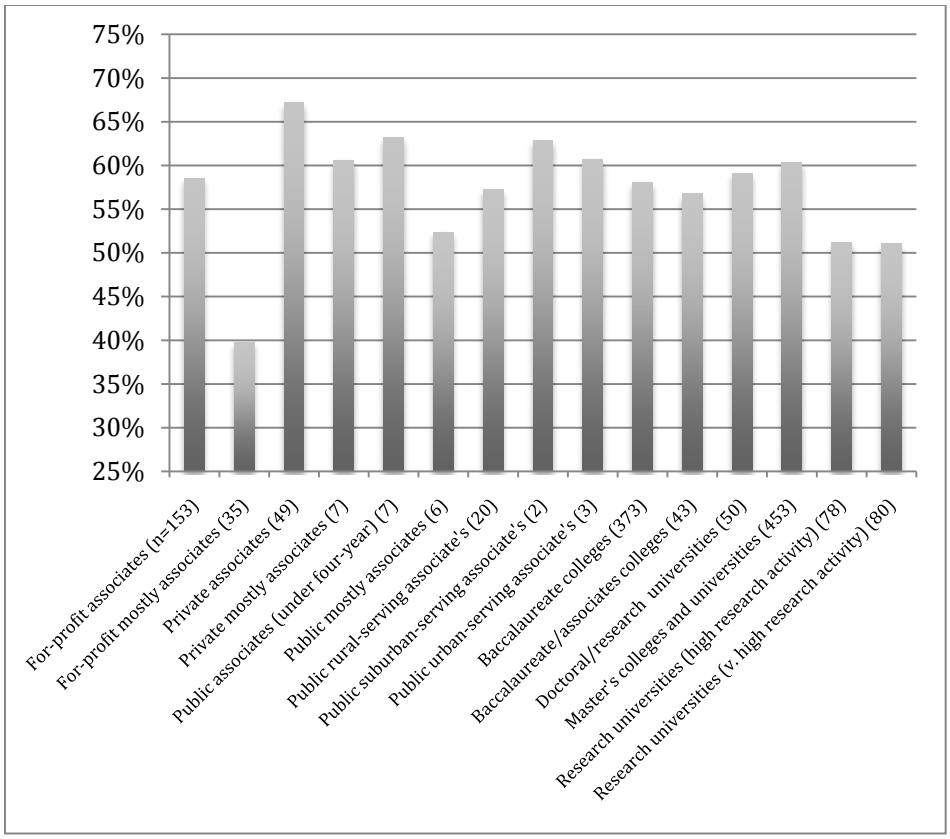


Figure 7: Percentage of women enrolled by 2005 Carnegie classification, 2004 data

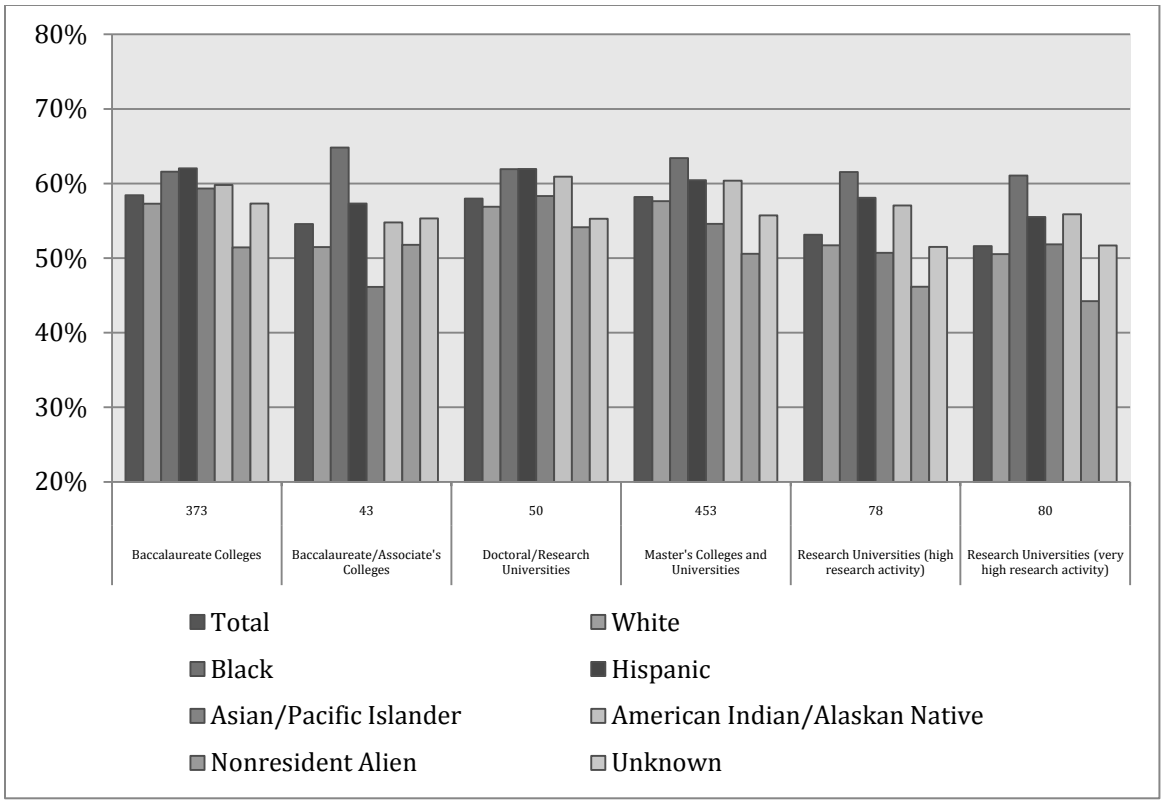
While we see that the gender gap is reduced considerably at research universities with high research activity (and is reversed among for-profit colleges with limited bachelor's enrollments), undergraduate enrollments exist at all and many are skewed significantly female.

The next category to consider is race/ethnicity. Following is a breakdown of enrollments:

Demographic	Total	Women's share
American Indian/Alaskan Native	49,834	
Men	20,550	
Women	29,284	58.8%
Asian/Pacific Islander	376,483	
Men	176,195	
Women	200,288	53.2%
Black	667,614	
Men	248,170	
Women	419,444	62.8%
Hispanic	578,441	
Men	235,105	
Women	343,336	59.4%
Nonresident alien	143,201	
Men	73,954	
Women	69,247	48.4%
White	3,921,467	
Men	1,775,977	
Women	2,145,490	54.7%
Unknown race	332,906	
Men	150,807	
Women	182,099	54.7%
Grand total	6,069,946	
Men	2,680,758	
Women	3,389,188	55.8%

Figure 8: Female representation by race/ethnicity, 2004

In the aggregate, minority groups have many more women in college than men, particularly African-Americans and Hispanics, but the gender gap remains even among white and Asian-American populations. This remains consistent across types of institutions. As the following graph shows, the only institutional demographic groups where women are not in the majority are Asian-American students at baccalaureate/associate colleges and white students at research universities:



SOURCE: IPEDS

Figure 9: Racial gender gaps broken down by 2005 Carnegie Classification (institutions with primarily four-year enrollment; undergraduate populations; 2004 data)

As for socioeconomic status, of the roughly 14,000 students with valid responses in the ELS dataset, a look at students who had enrolled in postsecondary education at least once as of 2006 reveals the following:

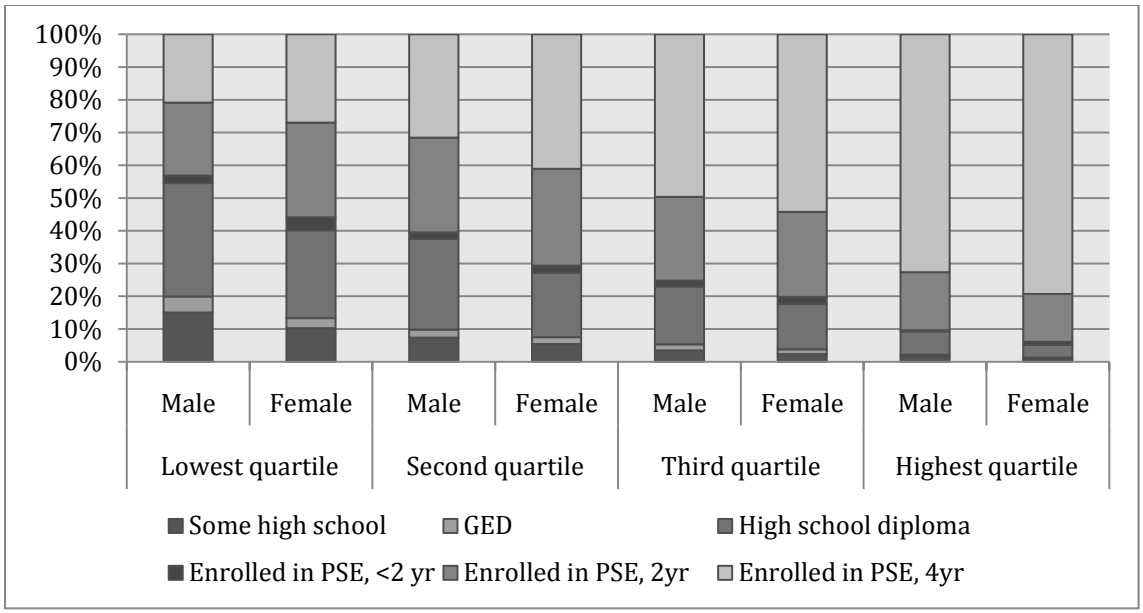


Figure 10: Highest education level attended, by gender and socioeconomic status (ELS:2002; nonvalid responses deleted)

The top section of each column sections show that more women than men are enrolled in four-year institutions in each socioeconomic quartile (computed on the basis of parental occupational status and family income). Males outnumber females in the slivers of those whose highest education is some high school and those with only GEDs or high school diplomas, and in the highest socioeconomic quartile, males outnumber females in two-year colleges. But in each socioeconomic quartile, women outnumber men at the most prestigious educational outcome observed.

These statistics provide ample *prima facie* support for hypothesis 1 that gender gaps do exist across all demographic components of college and university enrollments. This can be seen even more clearly on an institution-by-institution basis.

As for patterns of student achievement, we see some identifiable differences between male and female students in quantifiable areas. As the following table shows, weighted data from ELS indicates that male students have higher mean and median test scores than female students, but also they have greater variance in their results:

Sex		GPA	SAT (comp)	SAT-M	AP-Biology	AP-Chemistry	AP-Literature	AP-Language	AP-Calculus AB	AP-Calculus BC
Male	Median	2.37	1000.00	510.00	3.00	3.00	3.00	3.00	3.00	4.00
	Mean	2.39	1003.17	511.00	3.07	2.73	2.95	2.81	3.22	3.71
	Std. Deviation	0.90	211.97	115.66	1.36	1.31	1.08	0.99	1.37	1.38
Female	Median	2.84	990.00	480.00	3.00	3.00	3.00	3.00	3.00	3.00
	Mean	2.78	985.11	486.10	3.01	2.61	2.93	2.89	2.87	3.31
	Std. Deviation	0.86	200.54	106.32	1.32	1.29	1.07	1.08	1.49	1.54
Total	Median	2.61	990.00	500.00	3.00	3.00	3.00	3.00	3.00	4.00
	Mean	2.59	993.46	497.63	3.04	2.68	2.94	2.86	3.06	3.54
	Std. Deviation	0.90	206.11	111.43	1.33	1.30	1.07	1.04	1.43	1.46

NOTE: SAT composite and math scores actually are the highest standardized test score (SAT or ACT) recoded in terms of SAT.

Figure 11: Medians, Means, and Standard Deviations for Grades and Test Scores, ELS:2002 (weighted sample)

The AP test results may have slightly less validity because only a handful of students relative to the entire ELS sample participate. However, the consistency of the pattern of higher means/medians for men across tests and higher standard definitions are striking. F-tests confirm the differences in the male and female samples.

When we examine the data graphically, another trend emerges. Grade point averages for women are skewed left, particularly in comparison to males. On the composite SAT, on the other hand, the score distribution looks much more like males, although the weighted distribution makes it appear that many more women took the test than men:

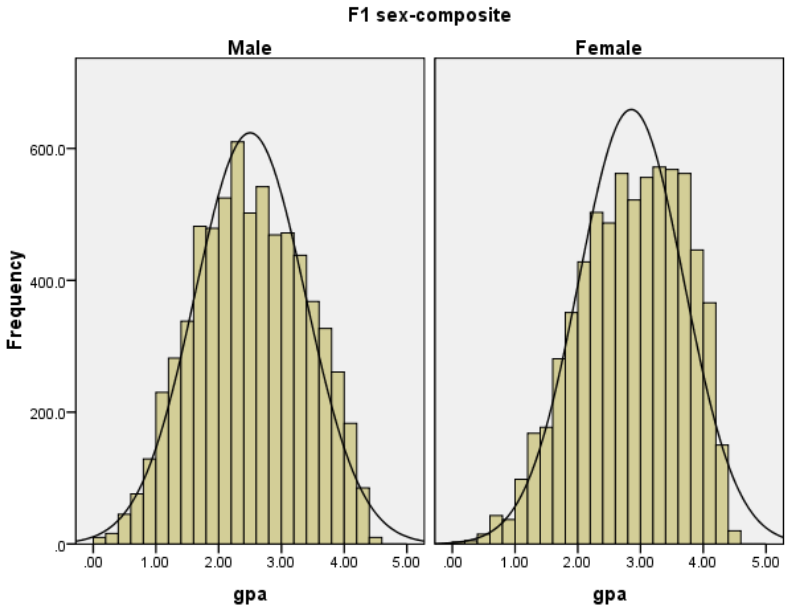


Figure 12: Grade point average distributions by sex (ELS:2002, weighted)

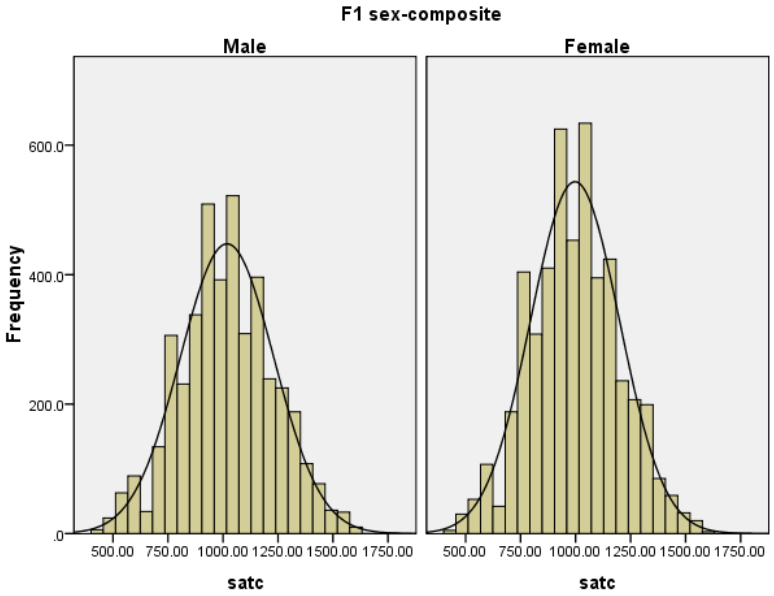


Figure 13: SAT composite score distributions by sex (ELS:2002, weighted):

Math scores on the SAT show a slight bump on the very high end for men and a bigger bump on the lower end for women, but otherwise the graph looks much the same as the composite SAT:

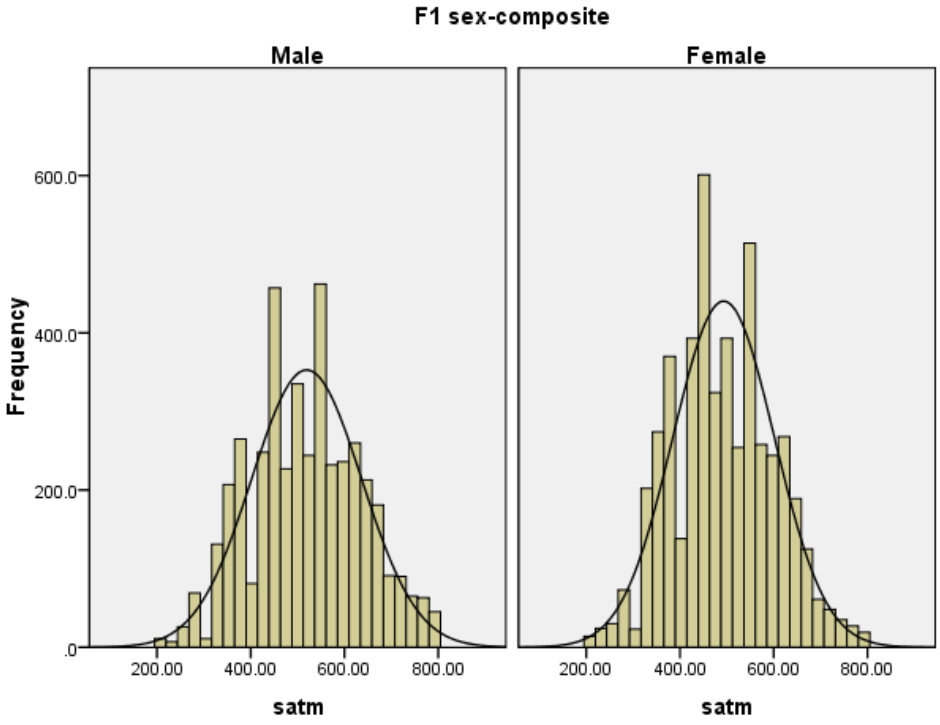


Figure 14: SAT math score distributions by gender (ELS:2002, weighted)

What we learn from this information is that in the aggregate, there does appear to be a significant, measurable difference in ability distributions (as measured by tests) by gender. Many reasons could explain this difference, including inherent problems with the tests themselves. However, the point of presenting these data is not to explore such questions, but merely to assess differences in metrics that we know are major factors in the admissions process, certainly at selective institutions. The observable differences in the male and female populations provide some initial support for the idea that there may be a better representation of men at the top end of the ability spectrum than across the entire ability spectrum of men, and that this could account for the relatively high proportions of men at elite institutions. However, especially given the process of weighting the data, it is impossible to make definitive conclusions from these descriptives.

What we can see, from data and charts alike, is that there are significant differences between the pool of male and female students currently enrolled in college, as well as those in the ELS:2002 sample. There are more women than men enrolled in college across socioeconomic backgrounds as well as racial and ethnic backgrounds. Women and men differ significantly in test-taking results and high school grade point averages, but the question remains how such differences are operationalized in the decisions colleges make. This is the subject of the next two chapters, beginning with a quantitative analysis of a large number of such decisions made mostly in the spring of 2004.

Chapter 6

Quantitative Findings

Having seen ample evidence of the gender gap in higher education, we turn now to a particular situation where evidence appears to be going the other way. As noted in the previous chapter, colleges in *Barron's* most-competitive category have a lower proportion of women, in the aggregate, than other types of colleges. The question is whether this is happening because colleges are accepting more men purposefully or if other factors at work.

Put simply, the applicant pool for virtually all institutions contains more qualified women than men on almost any axis. Consider applicants' high-school grade-point averages and test scores in the following table. If an applicant's scores are between the 25th and 75th percentiles of the institution's incoming class on the given test, then the score is classified as "midrange." If the score is above the 75th percentile, it is classified as high. All data are taken from ELS:2002 and compared to published intraquartile ranges from the Integrated Postsecondary Education Data System:

Barron's category	**Test**	**Percentage of male applicants scoring midrange**	**Percentage of male applicants scoring high**
Total	Verbal (SAT or ACT)	43.6%	43.1%
Total	Math (SAT or ACT)	43.7%	54.3%
Noncompetitive	Math	43.9%	47.9%
Noncompetitive	Verbal	46.9%	32.8%
Somewhat competitive	Math	41.8%	46.3%
Somewhat competitive	Verbal	40.0%	38.6%
Competitive	Math	42.7%	51.9%
Competitive	Verbal	43.8%	42.7%
Very competitive	Math	42.6%	55.7%
Very competitive	Verbal	43.0%	44.1%
Highly competitive	Math	43.8%	60.0%
Highly competitive	Verbal	43.7%	42.8%
Most competitive	Math	49.6%	59%
Most competitive	Verbal	45.5%	46.1%

Figure 15: Verbal and math scores by gender and institutional selectivity

In every segment except for high math scorers at elite institutions, there are many more women than men. Similar trends can be seen in grade-point averages, where more than 60 percent of the students applying to each category of institution with GPAs above 4.0 are women. More than 60 percent of those with GPAs above 3.5 applying to each category also are women, with the exception of most-competitive institutions, where they represent only 57 percent of the applicant pool.

The primary hypothesis, again, is that selective colleges will attempt to balance genders in their incoming classes to the extent they are able. For the purposes of this quantitative section, this can be translated as: Because there are more women than men in the aggregate applicant pool, selective colleges will find ways to admit more men to balance genders in incoming classes as much as possible.

Logistic regression

All of the models considered in this chapter will be specified as logistic regression models with the dependent variable being whether or not the applicant was accepted. Binary response models do not require the assumption that that all coefficients are linear across all observations; because the dependent variable is either 0 or 1, a model that allows for other variables makes little sense.

The basic equation underlying these models is

$$P(accepted = 1 \mid x) = G(\beta_0 + x\beta)$$

where G is a function taking on values strictly between 0 and 1. The logistic function, the cumulative distribution function for a standard logistic variable specifically takes on the form

$$G(z) = \frac{\exp(z)}{1 + \exp(z)}$$

(Wooldridge, 2006). The cumulative distribution function also can be rewritten as the odds ratio in favor of acceptance—the ratio of the probability of the application being accepted over the probability of it *not* being accepted (Gujarati, 2007). This, in turn, can be related to each of the coefficients for the independent variables in the model, which can themselves be expressed as the percent change in the odds for acceptance turning from 0 to 1, or vice versa. For example, an odds ratio of 1.02 can be interpreted as a 2% increase in the odds of admission, while an odds ratio of 0.98 can be interpreted as a 2% decrease in the odds of admission.

Bivariate models

First, what affect does being male have on an applicant's chances of admission, leaving out all other variables? For the entire sample, 76 percent of applications were accepted, and 44 percent

of them came from men. By Barron's classification, we can see that while the acceptance rate varies considerably, the percentage of applications coming from men does not. By regressing (logistically) acceptance on gender, we see that being male reduces an applicant's chances of success at most types of colleges, in some cases significantly. However, being male raises the chance of a successful application at the most competitive institutions:

Sample	No. of observations (applications)	Percent accepted (s.d.)	Percent male (s.d.)
Full sample	30,327	75.8% (0.428)	44.0% (0.496)
Very/Highly Competitive	10,204	75.3% (0.431)	43.2% (0.495)
Most Competitive	3,142	40.6% (.491)	44.1% (0.496)

Figure 16: Bivariate models: descriptive statistics

Sample	Odds ratio	Standard error	Pseudo-R^2	% correctly classified
Full	0.907***	0.024	0.0003	75.8%
Very/highly Competitive	0.835***	0.034	0.0013	75.4%
Most Competitive	1.207***	0.088	0.0016	59.4%

*** $p<0.01$

Figure 17: Bivariate model: results of logistic regression of acceptance on being male

In addition to the significant difference in how being male appears to affect applicants' chances at most competitive institutions against the others, this model tells us a few other things about differences in the application process. First, being male does not explain very much of an applicant's chances of success, as evidenced by the pseudo-R^2 results. As such, the high percentages of applicants correctly classified by the model are incidental. Because so many applications are accepted at most types of institutions, the chances of predicting acceptances correctly are fairly high. Indeed, the percent correctly classified are quite close to the mean results for each Barron's classification.

Even so, as we move up the competitiveness scale, the percentage of observations correctly classified decreases. This is unsurprising given that the percentage of students accepted is decreasing significantly at elite institutions, and also suggests that many more factors go into admissions decisions at those institutions.

The merit model

The next model to be tested adds a block of academic information. Hearn and Karen find that academic credentials are the primary variables predicting the type of college a student will attend, and literature from selective colleges emphasize the test scores and high-school grades of their freshman classes as characteristics that set them apart as valuable learning environments (Hearn, 1991; Karen, 2002). As such, it would be reasonable to expect a model based on academic achievement and other forms of merit would be able to predict an applicant's chances of admission fairly well.

Chief among the variables in such a model are high-school grades and test scores. ELS:2002 includes average grades on a 4.0 scale, with the ability to exceed 4.0 if grades are weighted to reflect honors and Advanced Placement courses. Here, grade-point averages are transformed into dummy variables, where grades less than 3.0 are the reference group, mid-range GPAs are defined as 3.01-3.50; high GPAs are those between 3.51 and 4.0, and very high GPAs are those above 4.0. This allows for grouping scores between commonly-used points of demarcation (3.0, 3.5, 4.0) and permits more straightforward interpretation of the results than using the continuous variable.

In the same way as earlier in this chapter, standardized-test scores are transformed into categorical variables as well. Instead of using just the scores to form categories, however, institutional data are incorporated into the variable to create an institutional context for the scores. The use of standardized-test scores in the admissions process has been a topic of great debate for many years, but it is indubitable that admissions officers at colleges consider an applicant's test

scores in relation to the scores of the hundreds or thousands of other applicants. A 600 on the verbal section of the SAT may be exceptional at a regional public university, but marginal at a private college that recruits nationally. This process is proxied by taking the student's SAT verbal and math and ACT English and math scores and comparing them to the 25th and 75th percentiles of all applications to the institution that year. A score below the 25th percentile is classified as low; between the 25th and 75th is mid-range, and above the 75th is high. If the student and the institution have scores for both the ACT and SAT, the lower one is discarded. Advanced Placement achievement is another area widely associated with successful applications to selective process. The total number of tests taken by the student is included here.

School quality is another area that might reasonably be considered to have a bearing on an applicant's credentials. ELS:2002 offers few such indicators except for school control, and so parochial and private school variables are added. So are variables reflecting the percentage of students receiving free- and reduced-price lunch.

Finally, extracurricular activities have been considered only tangentially in relation to college admissions. In *The Game of Life* and *Reclaiming the Game*, William G. Bowen and his co-authors explore the fact that many applicants compete for years on high school and private-club athletic teams to improve their odds of admission—often without the intention of competing seriously for their entire collegiate careers (Bowen and Shulman, 2001; Bowen and Levin, 2003). Dozens of college guides offer similar advice to applicants to use extracurricular activities to improve their "résumés," and studies of the admissions process bemoan the same (Stevens, 2007; Toor, 2002). As such, sports, music, drama, student government, club, and honors societies are included, as are dummy variables to indicate whether the student had a leadership role in each. A dummy variable indicated whether the student participated in community service also is included.

Variable	Mean	Std. Dev.
Accepted	.7722366	.4194177
Male	.4424102	.4967063
Parochial HS	.2653368	.4415425
Private HS	.1423692	.3494523
Participated in sports	.5532177	.4971938
Team captain	.270802	.4444044
Participated in music	.2500342	.433062
Music leadership	.0769231	.2664876
Participated in drama	.1765268	.3812938
Lead role in drama	.0490504	.2159881
Participated in student govt.	.2259872	.4182593
Major office, student govt.	.1127203	.3162722
Participated in clubs	.6453067	.478453
Officer in clubs	.1848613	.3882115
Participated in community service	.8711573	.3350487
HS GPA-midrange	.4388578	.4962815
HS GPA-high	.3242246	.4681164
HS GPA-very high	.1457849	.3529146
Verbal test score-midrange	**.3859817**	**.4868595**
Verbal test score-high	.2065856	.4048832
Math test score-midrange	.3852985	.486699
Math test score-high	.2050827	.4037896
No. of AP tests taken	1.490504	2.218185
HS % of students on free/RP lunch 6-10%	.1037027	.3048953
HS % of students on free/RP 10-19%	.0981008	.2974713
HS % of students on free/RP 20-29%	.0729608	.2600899
HS % of students on free/RP 30-49%	.0912693	.2880114

HS % of students on free/RP 50-74%	.0497336	.2174088
HS % of students on free/RP 75-100%	.0226807	.1488936

Figure 18: Merit model descriptive statistics, very/highly competitive institutions

Variable	Mean	Std. Dev.
Accepted	.4164351	.4930653
Male	.4589123	.4984079
Parochial HS	.1976975	.3983418
Private HS	.2286622	.4200546
Participated in sports	.5680826	.4954414
Team captain	.3009131	.458746
Participated in music	.2667725	.4423603
Music leadership	.1044065	.3058479
Participated in drama	.2310441	.4215842
Lead role in drama	.0873362	.2823832
Participated in student govt.	.2838428	.450951
Major office, student govt.	.1504565	.3575893
Clubs	.7943628	.4042467
Clubslead	.3207622	.4668622
Participated in community service	.9245732	.2641311
HS GPA-midrange	.2302501	.4210765
HS GPA-high	.3648273	.4814773
HS GPA-very high	.3906312	.4879887
Verbal test score-midrange	.3580786	.4795306
Verbal test score-high	.1718936	.3773629
Math test score-midrange	.3755459	.4843597
Math test score-high	.1572052	.3640664
No. of AP tests taken	3.629615	3.059084
HS % of students on free/RP lunch 6-10%	.0901151	.2864035
HS % of	.0774117	.2672966

students on free/RP 10-19%		
HS % of students on free/RP 20-29%	.0492259	.2163823
HS % of students on free/RP 30-49%	.0678841	.2515968
HS % of students on free/RP 50-74%	.0420802	.200812
HS % of students on free/RP 75-100%	.0289798	.1677829

Figure 19: Merit model descriptive statistics, most competitive institutions

Variable	**Beta** **Std. Error**
Male	0.937 -0.0633
Parochial HS	1.282*** -0.108
Private HS	1.663*** -0.178
Participated in sports	1.345*** -0.101
Team captain	1.097 -0.0957
Participated in music	0.918 -0.0796
Music leadership	0.96 -0.145
Participated in drama	1.03 -0.103
Lead role in drama	1.393* -0.26
Participated in student govt.	1.429*** -0.159

Major office, student govt.	0.779
	-0.118
Participated in clubs	1.026
	-0.0712
Officer in clubs	1.14
	-0.107
Participated in community service	1.322***
	-0.117
HS GPA-midrange	2.486***
	-0.236
HS GPA-high	5.401***
	-0.605
HS GPA-very high	12.57***
	-2.404
Verbal test score-midrange	**1.565*** **
	-0.111
Verbal test score-high	1.880***
	-0.214
Math test score-midrange	2.108***
	-0.152
Math test score-high	2.945***
	-0.348
No. of AP tests taken	1.012
	-0.0195
HS % of students on free/RP lunch 6-10%	1.358***
	-0.16
HS % of students on free/RP lunch 11-20%	0.958
	-0.108
HS % of students on free/RP lunch 21-30%	1.209
	-0.16
HS % of students on free/RP lunch 31-50%	1.21
	-0.147
HS % of students on free/RP lunch 51-75%	0.831
	-0.118
HS % of students on free/RP lunch 76-	0.995

100%	
	-0.182
Constant	0.280***
	-0.0371
Observations	7,319
Percent correctly predicted	79.7%

*** p<0.01, ** p<0.05, * p<0.1

Figure 20: Model results, very/highly competitive institutions

Variable	**Beta** **Std. Error**
Male	1.307***
	0.119
Parochial HS	1.108
	0.148
Private HS	1.492***
	0.187
Participated in sports	1.128
	0.123
Team captain	0.942
	0.109
Participated in music	1.100
	0.134
Music leadership	1.050
	0.185
Participated in drama	0.811
	0.107
Lead role in drama	1.310
	0.251
Participated in student govt.	1.109
	0.148
Major office, student govt.	0.809
	0.133
Participated in clubs	1.028
	0.119
Officer in clubs	1.117
	0.113
Participated in community service	1.306
	0.224

HS GPA-midrange	1.135
	0.513
HS GPA-high	1.671
	0.752
HS GPA-very high	2.341*
	1.062
Verbal test score-midrange	1.314***
	0.132
Verbal test score-high	2.547***
	0.356
Math test score-midrange	1.045
	0.107
Math test score-high	1.916***
	0.275
No. of AP tests taken	1.028*
	0.0158
HS % of students on free/RP lunch 6-10%	1.434**
	0.228
HS % of students on free/RP lunch 11-20%	1.080
	0.189
HS % of students on free/RP lunch 21-30%	0.891
	0.184
HS % of students on free/RP lunch 31-50%	1.134
	0.211
HS % of students on free/RP lunch 51-75%	1.287
	0.286
HS % of students on free/RP lunch 76-100%	1.040
	0.295
Constant	0.131***
	0.0603
Observations	2,519
Percent correctly predicted	67.8%

Figure 21: Model results, most competitive institutions

The key finding from this model is the strong and significant results for male applicants, at least at the most competitive institutions. In essence, the results indicate that, *ceteris paribus*, being male offers as much of an advantage in admissions as attending a private school or having a decent verbal score on the SAT. However, the lack of a similar advantage for male students at the very/highly competitive colleges should not be ignored. It is only the most-elite group of institutions that can be so selective as to practice a preference for men. In fact, aggregate admissions statistics from IPEDS for nearly 1,200 four-year institutions indicate that only about 250 colleges accept a higher proportion of male applicants than females for the 2004-5 academic year, when these students would have been applying.

Examining the other variables reveals results in line with prior studies. School quality and academic performance, both in the classroom and on standardized tests, matter most. Truly superior performance has a significant effect on the chances of admission at elite schools, while very good performance also has an impact on admission at the second tier of institutions. Coming from a school with a low but nonzero percentage of students receiving free and reduced-price meals helps, but a larger percentage of disadvantaged students does not. Strikingly, the inclusion of extracurricular activities does not produce significant predictive results, perhaps casting doubt on the effectiveness of participating in such activities for the sake of improving one's high school record. However, if we were to specify only the academic characteristics, we would see a weaker model with slightly higher effects on the academic variables, indicating that extracurricular activities do have some bearing on acceptance even if it is not captured well here. Bowen, et al. discuss this in terms of matching a student's abilities (particularly in athletics) to the needs of a particular team at an institution, but the data do not allow for a model with such sensitivity (Bowen & Levin, 2003; Bowen & Shulman, 2001).

The preference model

The texts on the history and current practice of competitive college admissions discuss a process that always has featured preferences for and against certain groups—WASPs from socially prominent families and Jews in the early part of the 20th century, for respective examples (Karabel, 2005; Lemann, 1999; Stevens, 2007). More recently, preference systems have operated to assist African-Americans in the admissions process and possibly to have restricted Asian-Americans (Karabel, 2005), resulting in litigation from white female applicants protesting "reverse discrimination." (e.g., Graumeyer v. Michigan, Johnson v. Board of Regents). As such, racial and ethnic information would seem to belong in the model. Elite colleges also have touted their willingness to accept students from lesser financial backgrounds—often proclaiming their admissions process to be "need-blind" and to find ways to help them finance their attendance. As such, socioeconomic background is relevant. ELS has a formula incorporating parental education and income to generate quartiles to which respondents are assigned.

As we can see from the descriptives below, the applicants to first- and second-tier institutions are not particularly diverse, either from a racial/ethnic or from a socioeconomic standpoint:

Very/highly competitive

Variable	Mean	Standard deviation
Accepted	.7742942	.4180759
Male	.4455951	.4970666
Parochial HS	.2645765	.4411388
Private HS	.1449851	.3521108
Participated in sports	.557384	.4967314
Team captain	.2750745	.4465835
Participated in music	.2516669	.4340016
Lead role in music	.0764647	.2657591
Participated in drama	.1770464	.381735
Lead role in drama	.0488012	.2154676
Participated in student govt.	.224429	.4172353
Major office, student govt.	.1115052	.314779
Participated in clubs	.647184	.47788
Officer in clubs	.1875443	.3903756
Participated in community service	.871613	.334544
HS GPA-midrange	.4382182	.4962035
HS GPA-high	.3262874	.4688871
HS GPA-very high	.1448432	.3519677
Verbal test score-midrange	.3865797	.4870005
Verbal test score-high	.209817	.4072068
Math test score-midrange	.3887076	.4874913
	.2072634	.4053747
Variable	**Mean**	**Standard deviation**
No. of AP tests taken	1.481629	2.217586
HS % of students on free/RP lunch<10%	.1056888	.3074606
HS % of students on free/RP lunch 10-19%	.1004398	.3006068
HS % of students on free/RP lunch 20-29%	.0744786	.2625669
HS % of students on free/RP lunch 30-49%	.0896581	.2857116
HS % of students on free/RP lunch 50-74%	.0488012	.2154676
HS % of students on free/RP lunch 75-100%	.0194354	.1380592
African-American	.0910767	.2877386
Asian-Pacific Islander	.0075188	.0863905
American Indian/Alaskan Native	.0205703	.1419507
Hispanic	.0478082	.2133753
SES-1	.0707902	.2564922
SES-2	.1266846	.332643
SES-3	.2313803	.4217448

Figure 22: Preference model descriptive statistics, very/highly competitive institutions

Variable	Mean	Standard deviation
Accepted	.4200249	.4936651
Male	.4615704	.4986246
Parochial HS	.198172	.3987053
Private HS	.2343166	.4236589
Participated in sports	.5679269	.4954674
Team captain	.3070212	.4613541
Participated in music	.2708766	.4445048
Lead role in music	.105941	.307826
drama	.2384711	.4262372
Lead role in drama	.0905692	.2870551
Participated in student govt.	.2845866	.4513111
Major office, student govt.	.1495638	.3567174
Participated in clubs	.8014125	.3990196
Officer in clubs	.3294558	.4701133
Participated in community service	.9264645	.2610677
HS GPA-midrange	.2280848	.4196847
HS GPA-high	.3647694	.4814655
HS GPA-very high	.3942667	.4887942
Verbal test score-midrange	.3631076	.4809954
Verbal test score-high	.1790611	.3834831
Math test score-midrange	.3797258	.4854194
Math test score-high	.1632738	.3696921
No. of AP tests taken	3.654757	3.075261
HS % of students on free/RP lunch<10%	.0930619	.2905795
HS % of students on free/RP lunch 10-19%	.0793519	.2703434
HS % of students on free/RP lunch 20-29%	.0481928	.2142179
HS % of students on free/RP lunch 30-49%	.0668882	.2498803
HS % of students on free/RP lunch 50-74%	.0415455	.1995896
HS % of students on free/RP lunch 75-100%	.0236809	.1520847
African-American	.0673037	.2505993
Asian/Pacific Islander	.0078936	.0885132
American Indian/Alaskan Native	.0166182	.1278625
Hispanic	.0481928	.2142179
SES-1	.0531782	.2244354
SES-2	.0689655	.2534481
SES-3	.1574574	.3643072
Variable	**Mean**	**Standard deviation**

Figure 23: Preference model descriptive statistics, most-competitive institutions

As the following results show, being male continues to have a significant effect on the chances of admission for applicants at the elite institutions, *ceteris paribus*—but not at the very/highly

competitive group. For the very/highly competitive institutions, though, the magnitude of the effect is much smaller than in the meritocratic model, while it is higher in the most competitive group.

What is striking, though, is the weight given to applicants from minority ethnic backgrounds in the admissions process, particularly at elite institutions. Being African-American more than doubles an applicant's chances of admission, all else being equal, and being Hispanic adds a significant boost. Socioeconomic status does not have a significant effect on admission. These findings are generally in line with previous findings (Bowen & Bok, 1999; Hearn, 1984; Karen, 2002), but the effects of ethnicity are somewhat amplified compared to those studies. Some of this may be due to the difference in the models (applicant choice in previous studies versus institutional choice of admission in mine), but it also may be a result of increased competition for high-performing students from underrepresented groups, a factor alluded to in several of the interviews that will be discussed in the following chapter.

The explanatory power of the preference models is clearly stronger than that of the meritocratic models. The percent of results correctly predicted is higher for both groups, the pseudo-R^2 numbers are higher for both groups, and the findings are in line with prior studies.

Variable	Beta S.E.
Male	0.961
	0.0665
Parochial HS	1.258***
	0.110
Private HS	1.541***
	0.169
Participated in sports	1.323***
	0.103
Team captain	1.125
	0.100
Participated in music	0.919
	0.0814
Lead role in music	0.957
	0.148
Participated in drama	1.061
	0.108
Lead role in drama	1.346
	0.258
Participated in student govt.	1.357***
	0.156
Major office, student govt.	0.788
	0.123
Participated in clubs	1.025
	0.0730
Officer in clubs	1.163
	0.112
Participated in community service	1.313***
	0.119
HS GPA-midrange	2.524***
	0.248
HS GPA-high	5.612***
	0.655
HS GPA-very high	11.83***
	2.306
Verbal test score-midrange	1.547***
	0.113
Verbal test score-high	1.790***
	0.207
Math test score-midrange	2.184***
	0.163
Math test score-high	3.037***
	0.368
No. of AP tests taken	1.016
	0.0202
HS % students on F/RPL 6-10%	1.354**
	0.162
HS % students on F/RPL 11-20%	0.997
	0.115
HS % students on F/RPL 21-30%	1.273*
	0.173
HS % students on F/RPL 31-50%	1.301**
	0.165
HS % students on F/RPL 51-75%	0.805
	0.119
HS % students F/RPL 76-100%	1.040
	0.207
African-American	1.271**
	0.134
Asian/Pacific Islander	1.381
	0.578
American Indian/Alaskan Native	0.651**
	0.123
Hispanic	1.078
	0.151
SES-1	0.760**
	0.0929
SES-2	0.821**
	0.0776
SES-3	0.853**
	0.0675
Constant	0.293***
	0.0430
Observations	7,049
% correctly predicted:	80.1%

Figure 24: Preference model results, very/highly competitive institutions

Variable	Beta S.E.
Male	**1.323***** 0.124
Parochial HS	1.104 0.151
Private HS	1.551*** 0.201
Participated in sports	1.046 0.120
Team captain	1.048 0.127
Participated in music	1.125 0.141
Lead role in music	1.030 0.188
Participated in drama	0.825 0.112
Lead role in drama	1.167 0.229
Participated in student govt.	1.164 0.160
Major office, student govt.	0.786 0.134
Participated in clubs	1.038 0.127
Officer in clubs	1.158 0.121
Participated in community service	1.352* 0.243
HS GPA-midrange	1.692 0.904
HS GPA-high	2.871* 1.551
HS GPA-very high	4.031** 2.194
Verbal test score-midrange	1.395*** 0.146
Verbal test score-high	2.780*** 0.405
Math test score-midrange	1.110 0.120
Math test score-high	2.097*** 0.310
No. of AP tests taken	1.025 0.0163
HS % students on F/RPL 6-10%	1.417** 0.228
HS % students on F/RPL 11-20%	1.084 0.194
HS % students on F/RPL 21-30%	0.860 0.189
HS % students on F/RPL 31-50%	0.954 0.184
HS % students on F/RPL 51-75%	0.977 0.236
HS % students on F/RPL 76-100%	0.889 0.276
African-American	2.739*** 0.550
Asian/Pacific Islander	1.268 0.708
American Indian/Alaskan Native	0.753 0.296
Hispanic	1.820*** 0.405
SES-1	1.453* 0.304
SES-2	1.383* 0.246
SES-3	0.844 0.112
Constant	0.0636*** 0.0353

Observations	2,407	% correctly predicted:	67.0%

Figure 25: Preference model results, most competitive institutions

Additional models and considerations

However, both sets of models suffer from methodological weaknesses. First, there are likely to be unobserved factors inherent to the institutions to which students are applying that affect their chances of admission—yield rates, discount rates, historical patterns of decisions made by prior applicants with similar characteristics and so on. It would be impossible to model all these factors, but it is possible that these factors correlate the error term with the independent variables and thus potentially affect the standard errors and the significance of the variables. To address this, I specify a fixed-effect model for each group where each observation is clustered within the institution to which the student is applying. This technique is designed to reduce coefficient bias; while examining relative effects at members of a group of institutions is potentially valuable, it is beyond the scope of this project.

The results are similar to the preference models specified above and the significance on the male variable does not change. In fact, for most-competitive institutions, the value of the male variable is higher here than it is in the preference model, indicating that the effects in the latter are underestimated: We end up with a model suggesting that at these institutions, all else being equal, a male's chances of admission are 50 percent greater than a female's.

Variable	Beta S.E.
Male	1.016 0.0776
Parochial HS	1.050 0.104
Private HS	1.406*** 0.183
Participated in sports	1.323*** 0.112
Team captain	1.043 0.102
Participated in music	0.923 0.0914
Lead role in music	0.926 0.161
Participated in drama	0.960 0.107
Lead role in drama	1.559** 0.345
Participated in student govt.	1.285** 0.155
Major office, student govt.	0.832 0.138
Participated in clubs	1.164* 0.0916
Officer in clubs	1.200* 0.126
Participated in community service	1.391*** 0.136
HS GPA-midrange	3.034*** 0.338
HS GPA-high	8.886*** 1.211
HS GPA-very high	19.50*** 4.052
Verbal test score-midrange	1.613*** 0.131
Verbal test score-high	1.897*** 0.240
Math test score-midrange	1.974*** 0.166
Math test score-high	2.784*** 0.367
No. of AP tests taken	1.183*** 0.0277
HS % students on F/RPL 6-10%	1.065 0.144
HS % students on F/RPL 11-20%	0.847 0.111
HS % students on F/RPL 21-30%	1.024 0.156
HS % students on F/RPL 31-50%	0.944 0.135
HS % students on F/RPL 51-75%	0.721** 0.119
HS % students on F/RPL 76-100%	0.761 0.183
African-American	1.322** 0.156
Asian/Pacific Islander	1.594 0.659
American Indian/Alaskan Native	0.525*** 0.120
Hispanic	1.472** 0.233
SES-1	0.836 0.114
SES-2	0.801** 0.0872
SES-3	0.812** 0.0709
Observations	6552
Number of unitids	245

Figure 26: Fixed-effects model, very/highly competitive institutions

Variable	Beta S.E.
Male	1.528*** 0.160
Parochial HS	0.928 0.139
Private HS	1.705*** 0.246
Participated in sports	1.084 0.134
Team captain	1.127 0.148
Participated in music	1.169 0.164
Lead role in music	1.121 0.224
Participated in drama	0.881 0.132
Lead role in drama	1.185 0.254
Participated in student govt.	1.255 0.187
Major office, student govt.	0.662** 0.124
Participated in clubs	1.079 0.144
Officer in clubs	1.304** 0.150
Participated in community service	1.066 0.215
HS GPA-midrange	1.587 0.810
HS GPA-high	3.841*** 1.978
HS GPA-very high	7.917*** 4.138
Verbal test score-midrange	1.253* 0.148
Verbal test score-high	2.227*** 0.354
Math test score-midrange	1.118 0.135
Math test score-high	2.109*** 0.346
No. of AP tests taken	1.077*** 0.0199
HS % students on F/RPL 6-10%	1.123 0.206
HS % students on F/RPL 11-20%	0.974 0.196
HS % students on F/RPL 21-30%	0.801 0.198
HS % students on F/RPL 31-50%	1.042 0.223
HS % students on F/RPL 51-75%	0.971 0.261
HS % students on F/RPL 76-100%	0.639 0.215
African-American	3.753*** 0.793
Asian/Pacific Islander	1.813 1.050
American Indian/Alaskan Native	0.736 0.293
Hispanic	1.788** 0.431
SES-1	1.294 0.310
SES-2	1.311 0.262
SES-3	0.725** 0.105
Observations	2407
Number of unitid	61

Figure 27: Fixed-effects model, most competitive institutions

A similar problem exists with the fact that each application belongs to an individual student, and many of the students in this study applied to multiple colleges—in one case 15 different colleges. Yet this cannot be expressed as a nested model. Each observation is an application, each application belongs to an individual student and to an institution, but students are not nested within institutions. This requires a cross-specified model using random-effects for both the student as identified by the ELS student identification number) and the institution (using the IPEDS unitid number). Doing so yields very similar findings again, with maleness being a disadvantage in admissions process at very and highly competitive institutions, but being an advantage at the 99% significance level at most-competitive institutions.

Another type of potential problem for this model is the reliance on *Barron's*'s definitions of competitiveness to judge distinctions between colleges; while the *Barron's* rankings are not arbitrary, the formula used for assigning colleges to ranking groups remains opaque. If standardized-test percentiles are part of the magazine's calculations, then their importance may be overstated for the sake of the model.

Because the theory rests primarily on the relative ability a college has to select its students from a large number of applicants, pure selectivity figures can be used as an alternative. That is, if we take the entire population of colleges, assign them selectivity figures based on the percentage of applicants accepted, and then divide them into deciles based on those figures, we end up with a top decile group consisting of the most prestigious institutions in the country, similar but not identical to the Barrons most competitive group. This results in almost exactly the same coefficient and the same statistical significance for the male variable, whether we use 2004 figures for selectivity or combine admissions statistics from 2001 through 2004.

Of the models, the fixed-effects model is the easiest to understand. Although the percentage of observations where the application's fate was successfully predicted and the R^2 value cannot be

observed, the coefficients in the fixed-effects model are very close to the strategic single-level model, which has the highest rates of success. This suggests that the elements of the fixed-effects model are likely to be as powerfully predictive as those in the strategic model, and do not suffer the same issues of multicollinearity.

Despite flaws such as this one, the models presented in this chapter tell a single, powerful story: At the most-competitive institutions in the country, being male is a distinct advantage in the admissions process, all else being equal. While the model does not specifically indicate that significant numbers of men are being admitted with poorer academic credentials than women who are being rejected, it does provide a basic level of support for the idea that colleges that can afford to are actively seeking men, and are giving them a preference in the admissions process. Those colleges that cannot afford to practice a high level of selectivity in admission—whether through a lack of applicants or a need to recruit as many paying students as possible—do not offer such preferences.

Thus, the ELS data offer some support for the idea that colleges are trying to minimize the gender gap in their student populations in the face of an overabundance of women in their applicant populations. However, it is unclear whether this is an institutional goal in itself or a byproduct of admissions office trying to meet other goals. Assessing that question requires qualitative data from primary sources—that is, the people making admissions decisions.

Chapter 7

Qualitative Findings

Introduction

In the past two chapters, I have documented the existence of gender gaps in higher-education student populations across all racial/ethnic and socioeconomic groups, and I have shown statistical evidence supporting the claim that as a group, selective colleges appear to be granting preferences to male applicants, even after controlling for academic, demographic, and other characteristics. The question remains: Is this a matter of policy, or merely a mechanical outgrowth of a college's decisions to admit applicants based on academic credentials, racial/ethnic diversity, and other factors?

Such questions cannot be answered from a quantitative model, and so in this chapter I shift to a recap of a series of interviews with deans and directors admissions from a cross-section of the country's elite colleges. The goal of these interviews was to learn how admissions directors saw gender as it played out in admissions decisions on their own campuses and to ask them to evaluate my model to determine whether other factors ought to be included. Time precluded me from conducting a full-scale qualitative study, but the information I got from the five interview participants provided helpful context to view both the strength and the limits of the quantitative study.

The purpose of conducting these interviews was to test and corroborate or correct the findings of the logistic regression analysis. Specifically, the purpose of the interview phase of this project was to answer two questions:

- How does the gender of applicants factor into admissions executives' decisions on whether to admit specific candidates and/or overall goals for the class to be admitted?
- Does the quantitative model described in the previous chapter approximate the factors considered by admissions executives?

In this sense, the qualitative portion of the study functions to assist in analyzing the data obtained from the quantitiative model (Miles & Huberman, 1994). At the conclusion of this chapter, I will offer a new version of the quantitative model to conclude the study.

Five interviews were conducted during the month of June, each lasting slightly over half an hour. In each case I used a script that had been preapproved by the University of Georgia's Institutional Review Board as a starting point, deviating from it to explore points raised by the interview participants and to establish a greater rapport with them. Transcriptions (with interview protocols embedded) were produced and edited and then provided to participants for their review. In each case, the participants did not have corrections or requests to have comments deleted, and the transcriptions are provided in full as Appendix C.

The five interviews were conducted with the following individuals:

- The director of admission at a most-competitive (in *Barron's* parlance) small liberal-arts college in the Northeast
- The associate provost for admission and enrollment management at a most-competitive public university in the mid-Atlantic
- The director of admission at a very competitive private liberal-arts college in the South
- The dean of admission at a most-competitive private research university in the South
- The dean of admissions and financial aid at a highly-competitive private research university in the Northeast

These are all "elites" in the sense described by Marshall and Rossman: "influential, prominent, and/or well-informed in an organization or community" (Marshall & Rossman, 2006). All of the participants in these interviews had been in their jobs for a minimum of four

years, and three had been in the same position for more than 10 years. It should be noted that I had a difficult time lining up such interviews, despite the fact I made my requests multiple times during a relatively slow period in the admissions year. The participants in interviews 1 and 4 were known to me from my prior work as a reporter at *The Chronicle of Higher Education*, and the participant in interview 3 had used that work in his own scholarly research. I had no connection with the other participants. Despite these initial difficulties in arranging the interviews, all participants were willing to talk in some depth and frankly about their experiences.

One point to be noted is that none of the interview participants were women. I made an effort to reach out to female deans and directors of admissions in soliciting interviews, but could not get any to return repeated phone calls or emails. It would make sense to think that they would have a somewhat different perspective from male admissions executives, but it is impossible to know whether opinions and attitudes would vary more among women or between men and women in these positions.

Because of the small number of these interviews and their relative brevity, I did not use any kind of computer application to analyze the results but instead relied upon a close reading and categorization of the transcripts. Themes and trends were coded and will be discussed below interspersed with reports on each interview.

Interview 1

The participant in this interview has been director of admission for 25 years at one of the traditional New England liberal-arts colleges. His is one of the most selective institutions in the country, drawing thousands of applicants competing for a few hundred spots to take part in the college's highly-respected academic and extracurricular programs. Like many of the New England colleges, this institution has a very large athletic program, and about a quarter

of students are enrolled in science, technology, or mathematics majors (the college does not have engineering programs).

The director described an admissions process that proceeds according to several dialogues. First, as (and particularly after) applications are received, the admissions office solicits opinions from music, theater, and art departments, along with the athletics department. Departments and teams are not allotted a particular number of admissions slots. Instead, they express those preferences and if the applicant is a "close call" (we did not discuss how this is defined), then the preference may turn into a tipping factor in her favor. Then, as the class of accepted students is tentatively defined, the office uses historical enrollment trends to predict its yield, both to an overall number and to particular groups, such as members of minority groups, low-income students, and first-generation college students. There is a limit on the number of international students because they tend have a higher financial need than domestic students, given that they do not qualify for federal grants or loans.

The director said there were no particular goals for members of any of these groups; merely a desire to have a "critical mass" of minority and low-income students. The college has an "an initiative to try to increase the number of high-ability, low-income students that we get and we think will be successful, so we keep an eye on that, but it's not like we say before we start we have to have 20% of the class be first-generation students," he said. A student's hometown may play a factor if it is in an "unrepresented area, like rural South Carolina or Homer, Alaska, or some place in maybe south Texas," he said.

In the early 2000s, the college had virtually identical application, admission, and yield rates for male and female students. The director said that may have been an anomaly; the most recent class is 54 percent female. But compared to other liberal-arts colleges, this

institution has had a much more balanced student population in terms of gender over the past 25 years. The director said that this was not due to any particular policy; instead, he agreed that the athletics program and the high enrollment in the sciences could play a factor in more men being interested in the college. Moreover, the college was all-male until the early 1970s, and into the 1980s maintained a policy of trying to attract more women. One way it did this was by taking only women off the waiting list when spaces became available. This is no longer the case, of course. A gender balance is "not a part of a stated goal," he said. "I think we got to the point where it was approaching 60-40, you know, there would be, you know, I think there would be pressure to get down to try to at least get down where it was lower."

Given the institution's all-male history, the director contrasted his experiences with other institutions, particularly all female ones. He had some statistics in front of him and cited one formerly all-female college that was admitting more than a third of male applicants, but less than a quarter of female applicants.

He also noted that the strongest applications from minority candidates tended to be from women, and that two-thirds of the African-American students in his incoming class were female, with a comparable proportion of Hispanic students. This has a direct bearing on my model, and suggests that a variable combining race and gender should be created and used as an interaction term.

In general, though, the director said, in essence, that gender was not an issue of great concern, nor was it at most of the institutions he considered peers. Where it was, he thought, was at colleges with a higher percentage of students studying liberal arts and social sciences, and those that had been women's colleges at one time.

Apart from the need to interact race and gender, one key issue raised for my model is the different waves of applications. In this case, the waiting list is an asset that can be used for

institutional goals. While the director did not discuss any current uses for his waitlist, the example he presents from the 1980s of recruiting women from this pool of applicants demonstrates that much-desired colleges such as this one can reach into such lists to select students that meet specific needs.

In sum, the director agreed with the conclusions I had drawn from my model in general, but downplayed the significance of gender in the recruiting/enrollment process at his institution in particular. Thus, one of the themes emerging here is one of distancing oneself and one's institution from the issue of gender gaps, while acknowledging that they could be an issue for other institutions. Another theme is the iterative process of admissions—the back and forth between admissions offices and departments of institutional research or other statistical resources on campus to create yield models based on the students being considered for acceptance. This gives small colleges with traditionally high yields, like this one, a great deal of control and flexibility over the class they bring in each fall.

Interview 2

The second interview was with the associate provost for enrollment management at a prestigious public university in the mid-Atlantic. It is a very competitive institution, having accepted just over a third of its applicants over the 2001-4 period. More recently, it has had a year that threw off all its projections: As a state university, it has a lower tuition for in-state students, and thanks to the economy its yield of local students has been extraordinarily high.

The associate provost identified several specific priorities in the admissions process. As with all these institutions, a somewhat separate process applies to athletes. Apart from that, a key concern for this institution is to keep its enrollment at about two-thirds in-state students. The other key concern is to get its "number"—the overall class size desired. At

present, the number for this institution is between 1,000 and 2,000, which puts it at the large end of the "most competitive" institutions. The institution has other goals, such as racial/ethnic diversity and getting students from a variety of regions both in- and out-of state, but the overall size of the class and the in-state/out-of-state breakdown were crucial.

Another common factor that gives the university some flexibility in the admissions process is its early-decision option. As with all the colleges in this study, the institution requires students to commit to attending if they are admitted via early decision, and although we did not discuss exact percentages, the institution gets a majority of its incoming students from its early-decision applicant pool, giving it more of a chance to select students to meet other goals out of the regular-decision group of applicants.

More so than any of the other interview participants, the associate provost agreed straightforwardly that his institution selects proportionately more men than women from its applicant pool, and that it has good reasons for doing so:

As you strive to build a well-rounded community, particularly as you strive to developed a well-rounded, coeducational community, you do want to ensure that there is adequate—however you want to define adequate—representation, um, at the institution because that is a part of the appeal. …I think there is a lot of development that takes place in college, both not just intellectual, but also personal and social, and I think we do to some degree have an obligation to provide students with that kind of social environment, as well as intellectual environment.

This is akin to the common argument made for affirmative action dating back at least to the case of *Regents of University of California v. Bakke* that race can be considered in educational admissions processes. In his majority opinion in the case, Justice Powell agreed

with the university that the "attainment of a diverse student body…clearly is a constitutionally permissible goal for an institution of higher education" (Regents of University of California v. Bakke, 1978). Diversity in student populations can contribute to the "robust exchange of ideas" and the "atmosphere of 'speculation, experiment, and creation' so essential to the quality of higher education," Powell wrote, noting approvingly admissions programs at Harvard and other elite institutions that allowed the consideration of race/ethnicity as a "tipping factor" or a "plus," as long as quotas were not employed.

In this case, the associate provost framed the gender balance not only as a means of creating a "well-rounded community" and social environment but also as an element of the college's "appeal" to potential students. He cited a national news story from a couple of years earlier that interviewed students at his institution, with women saying men offered a different perspective in the classroom and that they wanted men for social occasions. Simply put, if the gender balance gets too far out of balance, then the institution will have a harder time attracting students of both genders. He identified the tipping point at his institution as 55 percent female, although that is a soft target, so to speak. "It may go to 58," he said. "If that happens, oh, well."

Another factor he cited was older research showing that men donated more to their alma maters than women did, and even widows gave more to their late husbands' institutions. While he said such issues had not been discussed in many years, in a prior tenure at the institution, "in terms of long-term financial viability or stability, I remember that was one of the things [the development office and the alumni association] encouraged us to really think about as we were striving to build the class."

As such, this university admitted a higher percentage of men applying than it did for women during the period being studied, and continues to do so. "We have to deal in our

reality," the associate provost said. However, gender is not a specific target or goal, but rather it functions as a factor in the "holistic" review of applications done by the admissions staff.

> You know, the piece that's hard to quantify as we engage in holistic reviews are really what we call the personal qualities versus the academic qualities. But at the end of the day, we make no, I don't want to say excuses, but in terms of how we engage in our process, we are very deliberate in trying to build a class that is reflective of society to some degree, ensuring we provide an environment that's going to be intellectually challenging but also socially engaging.

In sum, both educational goals and issues of institutional interest are presented as reasons to minimize the gender gap. However, beyond the consideration of gender in reviewing applications, the university has not taken particular actions to make itself more attractive to male students. It has a fairly large and broad-based athletics program, complete with a football team, and recruits about 100 athletes per class. However, it does not compete at the highest level in football or men's basketball, nor has it considered adding men's teams to boost male enrollment. (With 1,400 students in each incoming class, an addition of 20 males, for example, would boost the representation of men by approximately 1.4 percentage points.) Nor has it added academic programs that would be particularly appealing to men. The one thing it has done, according to the associate provost, is to review its marketing materials to make sure they appeal to men.

This interview reinforced the links between application decision-making at colleges and the preparation of boys and girls in the K-12 system. Because of the state-based restrictions on its enrollment, the university deals with a wide variety of public and private schools in its state, and as such its own "reality," as the associate provost put it, is that such schools are presenting many more qualified women than men for the consideration of institutions like his.

Among the other points that emerged in this interview included the notion of a holistic review; at all of the colleges in this study, admissions staffs are large enough to give each application an individual review. Another is something omitted by this director: His college lacks an engineering program, and thus does not have this as a means of attracting men. As shall be shown in subsequent interviews, this can be crucial to maintaining the gender balance. Geography, in the sense of achieving the correct balance between in-state and out-of-state students, is also a key factor. Finally, the college's emphasis on marketing to men should not be missed.

Interview 3

This interview took place with the director of admissions at a very old Southern college that is considered "very competitive" by Barron's (the third-highest classification) and has a smaller endowment and fewer resources than the other institutions considered here, yet it still accepted less than 50 percent of its applicants in the 2001-4 period, according to IPEDS, and had a yield rate over 60%. Acceptance rates for male and female applicants were nearly uniform, but with many more women applying, the student body was 60 percent female at the time.

The overall number of students in the incoming class is the director's top institutional goal for the admissions process, followed by achieving the correct "discount rate." As with most colleges and universities, the college publishes a figure for tuition, room, and board, but then offers qualifying students "discounts" on that tuition based on institutional determinations. Thus, the college needs to identify a target for net tuition revenue, and recruit a class of students willing to pay enough to meet that target as an aggregate. While some elite

institutions with very large endowments, such as the college of the first director interviewed, can be "need-blind" in admissions, most cannot.

These considerations were labeled "shaping goals" by the director. Somewhat parallel to the associate provost in the previous interview, this director identified geography as another shaping goal: The college has identified a desire to recruit more students from out-of-state, but it also has a goal of recruiting 10 percent of its students from another city in its state because foundations in that city make annual grants to the college. Racial and ethnic diversity is another shaping goal, coequal with geography, and gender balance is a goal but not a priority.

The director also explained that while his college has internal historical models to predict yield, it works with an outside firm to build a very specific model to predict both yield and the discount rate. It plugs applicants into that model and uses the results to tweak admissions offers and build its class. Relationships with such firms, which include The Dysart Group, Noel-Levitz, and Royall & Co., are becoming increasing common as colleges attempt to reduce financial risk by improving their ability to predict their incoming classes.

While the process sounds more statistics-driven than those at colleges described earlier, the director at this college asserts that each application is read individually and that he personally makes the final decision on most candidates. Ultimately, he said, he does not grant any preferences to men, and like most other liberal-arts colleges, the men in their applicant pool tend to be less qualified academically than the women they see. However, "I will say that for students on the margins…I can't say that, probably, as I'm making that final decision, that I would not benefit an out-of-state male, particularly over an in-state female," he said. "It's nothing that we've codified; of course our decision-making is very subjective."

They are comfortable with about 60 percent of their students being women; their applicant pool is even more heavily female, but admitted men tend to yield better than admitted women, he said. However, if the class were to drop significantly below 40 percent male, he said there would be more of an issue on campus.

Like the associate provost, the director mentioned that they had been very intentional in crafting marketing materials that would appear more "masculine." "One of the things we always do is, we try to think, how will this play to both men and women," he said. The college also is considering starting a men's lacrosse team, but not a women's team, for the combined goal of attracting more men and wealthier students from the mid-Atlantic and Northeast, where lacrosse is more popular than the South.

A factor that he alone brought up was the fact that the college had a significant population of gay male students, and this was well-known throughout the region and mentioned in college guidebooks. He said he was sure this had something to do with the appeal of the college to prospective students, but had not discussed it directly with applicants and did not know directly how it might translate.

The director had reviewed the findings of a preliminary version of my quantitative model and generally thought it was appropriate. Little in what he said suggested any direct changes to make to the variable or construction of the model, but it did speak to some of the limits. While students' economic background can be taken into account, it would be impossible to replicate the historical data or the predictions made by the outside consulting firm for enrollment yields using ELS/IPEDS data.

Marketing and geography were among the common themes in these interviews that came up in this conversation. Institutional economics, in terms of the discount rate, was

another one. Yield modeling, this time with the external firm, and the impact this has on the admissions decision-making process, also emerged as a key theme.

Interview 4

This interview took place with the dean of admissions of a most-competitive private research university, one of the five or six that has a hospital, extensive graduate programs, a large undergraduate population, and big-time college sports. The university is the one in this sample that admits students separately into liberal-arts and engineering programs, an uncommon but not-unknown practice.

The dean has been in his position for nearly 20 years and has worked with a very stable senior management team, with the same provost and director of institutional research having been in place for a decade and the university president being above the median in job tenure. From his description, there appeared to be a high level of collegiality and close interactions among this group of individuals, certainly in the admissions process he described. This group agrees on characteristics that are important—recruiting students of color, as well as international students and artists. He also identified students not just from outside the university's state but specifically in high demographic growth areas, such as California, Florida, and Texas. "I know they are interested in that, more importantly they know that I'm interested in that…[and] the staff knows those things are important to us," he said. He believes he has a significant level of flexibility and does not have to meet hard targets within each of these areas, but the overall number appears to be important. With well over 1,500 students in each class, the dean said they were typically able to achieve their desired yield number to within five or ten students. He mentioned legacies in passing, but did not dwell on the subject.

As with two other admissions executives, the dean also mentioned that students admitted with ratings in the highest quartile on academic characteristics yielded at a lower rate than those at the bottom quartile. This makes perfectly good sense: students with strong academic profiles will have a larger array of institutions from which to select, and this university might not be their top choice. It is not directly related to my model, which is predicting acceptance rather that yield, but it prompts the thought that at need-sensitive institutions, admissions officers might be more accepting of students in the bottom half of quarter of academic profiles if they bring something else—such as less need for financial assistance, special talent, or, of course, being male at high-female institutions. This university probably is not one of these, but many in this study would fit that profile.

Even more than the director in the first interview, this dean described a highly iterative process design to yield the kind of freshman class desired by the institution. In mid-February, the admissions staff beings making decisions on regular-admission candidates. (The college does have an early-decision option for applicants, but we did not discuss it.) After about a month, the dean will present the class of tentatively-admitted students to the director of institutional research. The director will run the applicants through a yield model to predict the likelihood of them enrolling and will discuss with the dean the likely academic and demographic profile of the incoming class. The admissions staff will then "tweak" the decisions on individual applicants to get to a target profile that accomplishes the institution's goals as closely as possible—the overall number, diversity, significant populations from high-growth areas, and so on.

The dean stated that gender was not a specific concern or goal in the admissions process at his university, and evinced surprise that it would be at colleges other than small liberal-arts schools or public universities. For the years in question, the university admitted

slightly more of its male applicants than female applicants, but the dean said he thought that was just "noise" in the system. Slightly more than half of the university's applications came from women, while the final enrollment was slightly under half female.

The college's strong engineering school certainly helps attract more men, and the dean said the only time he had discussed gender as a factor in applications was in trying to attract enough women to apply to the engineering school. He also agreed that among minorities there were many more female applicants than males applying to selective colleges. He said that at selective institutions (apparently including his), that following the initial round of decisions are made, staff would "sort of see how things look and then go back in particular and ask themselves the question, have we made sure that we've been as responsive as possible to African-American men."

Both this interview and the first provided some *prima facie* evidence for one of the earlier hypotheses that came up in preliminary findings—that the very top echelon of institutions might get enough male applicants so that their candidate, acceptance, and enrollment pools would be close to 50/50 male/female. It was colleges with slightly higher acceptance rates that appeared to be getting the predominance of female applicants and where an expression of preference for men might be more clearly observable. This did not hold true in the final versions of the model, but it suggests a trend that may be worth considering.

This interview provided some key insights regarding how geography plays into admissions pools, as well as additional support for the need to treat engineering colleges as an entity separate from STEM majors in the model. The dean made an interesting point—that both colleges "light" on STEM disciplines and those *perceived* to be light could be viewed as

less attractive by men with strong academic credentials, at least in those areas. He also affirmed the need to interact race and sex in the model.

Interview 5

This dean of admissions and financial aid at a smaller private research university observed that one reason some of his counterparts might have been reticent on this issue was fatigue from dealing with unusually angst-filled parents this year. The usual worries about admissions, he observed, had been compounded by concerns over the economy and parents' job security. This university has a strong reputation, particularly in engineering and the physical sciences, but *Barron's* only ranked it as "highly competitive," or in the second tier of admissions competitiveness.

He confessed that he wasn't sure how much help he would be, as his classes naturally seemed to yield about 50 percent women, without a particular amount of effort on his part. He described the university as "a college of arts and sciences that is completely embedded within a university of engineering," and thus was the kind of place where high-caliber males might be interested. He went on to say, however, that the university's STEM majors were not overwhelmingly male, because women were a majority in the life sciences—a growing trend across the country. This is further evidence that a simple STEM continuous variable in the model is perhaps not as effective.

The dean took some pains to emphasize the fact that his admissions pool was 50-50, and in fact he had been criticized by older female members of his board of trustees, who were suspicious that something must be amiss if most colleges that compete with this university for students were trending female. But he also speculated that if the engineering department were taken out of the mix, his undergraduate population probably would be close to 60/40

female/male. He also noted that in terms of judging the "middle and lower ranges of the class," admissions staffers were going to

> advocate for and find opportunities to admit those [students] that are the most interesting, and when you get into the range of, they've got an A-minus average and a high 12- or low 1300-something SAT, you are going to find there are a lot of girls in there and fewer men. And so the men get a little bit of extra attention, because they are men at that point, they are more likely to strike an average reader as different and probably more likely to cultivate some advocacy.

Male applicants, he said, were more likely to be missing a piece of information, to file their paperwork late, and are "more likely to have an application that feels a little bit haphazard and isn't well put-together." Of course, he also had a high number of hypercompetitive men who would be choosing between his institution and the Ivy League and other elite institutions. But he made it clear that there were some broad differences between his male and female applicant pools, and the implication appeared to be that men were less likely to be penalized for submitting a relatively mediocre application than women. That "middle-to-lower" range of applicants, he said, was about 55 percent female, it sounded as if the women in that pool had a harder time finding advocates than males. This seemed to contradict his earlier point about his enrolling classes "naturally" turning out to be 50-50.

Another salient point that came out of this interview was the issue of minority males. While the dean agreed with the overall trend and said minorities at his institutions had been 65 percent female "forever," this incoming class turned out to be split evenly male/female.

"We're calling it the Obama effect," he said. While this does not have implications for my model, it will bear further monitoring as the President's term continues.

Summary

As will be discussed below, these interviews provided some corrections to the quantitative model. More broadly, they provided limited support for the conclusions I drew from it, particularly the shared belief among these admissions executives that there were colleges that practiced "exclusionary policies," as one put it, to reserve places for men. Of course, most of these individuals insisted that these were other institutions and not their own. They generally agreed that there was a tipping point in the gender balance beyond which their institution would become less attractive to both male and female applicants, and thus they did not want to cross that line. However, they set the line variously at 55 percent female, 60 percent female, and 65 percent female. The dean who said that 55 percent would be his university's tipping point was the only one who announced fairly straightforwardly that he admitted a significantly higher percentage of male applicants than females.

Although they did not express it directly, they all discussed the relationship of the gender balance to the overall characters of their institutions. Academics, extracurriculars, and social life all contribute to a particular image of an institution held by those who work there, and at these fairly to extremely selective institutions, the goal of the admissions process is to find and entice students who will contribute to each and perhaps all of these areas. Especially at the institutions with fewer financial resources, there also is the expectation that those admitted will be able as a group to provide the tuition revenue necessary to meet institutional goals, with better-off students necessarily subsidizing those from less-privileged backgrounds. Geographic and racial/ethnic diversity are also particularly central goals to each of these admissions officers.

Gender, as has been the case throughout the literature on selective colleges, is a secondary consideration in admissions. However, while it may not assume the importance of racial or geographic diversity, it remains an integral factor in the admissions process for institutions that a) can control their yield to a high degree and b) lack significant attractors for men, such as an engineering program.

Revisions of model

Several potential variables emerged as a result of these interviews. The first is inclusion of a geographic variable; from ELS:2002, the easiest one to use is the state in which the student's high school is located (a home state is not included) and compared to the institution's to determine whether the student is applying to an in-state or out-of-state institution. The second is an interaction between minority race (African-American or Hispanic) and the male variable. Others noted here, primarily whether a student applied early or was placed on the institution's waiting list, are not included in the ELS:2002 database.

Including geography and minority male interaction terms does not introduce a great deal of new significance into the model, although applying in-state does appear to give an advantage to applicants in the aggregate, all things considered. The overall significance remains the same: While being male does not offer an advantage at very/highly competitive institutions, it gives applicants at most-competitive institutions a significant leg up in the admissions process:

Variable	Beta Std. Error
Male	1.047 0.0868
Parochial	1.039 0.103
Private HS	1.412*** 0.184
Participated in sports	1.335*** 0.113
Team captain	1.052 0.103
Participated in music	0.914 0.0906
Lead role in music	0.928 0.162
Participated in drama	0.957 0.107
Lead role in drama	1.608** 0.359
Participated in student govt.	1.280** 0.154
Major office, student govt.	0.843 0.140
Participated in clubs	1.171** 0.0923
Officer in clubs	1.209* 0.127
Participated in community service	1.396*** 0.137
HS GPA-midrange	3.016*** 0.336
HS GPA-high	8.892*** 1.213
HS GPA-very high	19.47*** 4.050
Verbal test score-midrange	1.628*** 0.132
Verbal test score-high	1.919*** 0.244
Math test score-midrange	1.971*** 0.165
Math test score-high	2.754*** 0.363
No. of AP tests taken	1.183*** 0.0277
HS % students on F/RPL 6-10%	1.060 0.143
HS % students on F/RPL 11-20%	0.831 0.109
HS % students on F/RPL 21-30%	1.011 0.155
HS % students on F/RPL 31-50%	0.914 0.132
HS % students on F/RPL 51-75%	0.707** 0.117
HS % students on F/RPL 76-100%	0.763 0.183
African-American	1.615*** 0.256
Asian/Pacific Islander	1.589 0.657
American Indian/Alaskan Native	0.515*** 0.118
Hispanic	1.272 0.266
SES-1	0.811 0.111
SES-2	0.792** 0.0866
SES-3	0.797*** 0.0698
In-state	1.173* 0.104
African-American male	0.663* 0.142
Hispanic male	1.388 0.429
Observations	6,552
Number of insts.	245

Figure 28: Regression results, fixed-effects model for very/highly competitive institutions including new variables

Variable	Beta Std. Error
Male	1.521*** 0.168
Parochial HS	0.952 0.144
Private HS	1.779*** 0.258
Participated in sports	1.105 0.138
Team captain	1.127 0.149
Participated in music	1.170 0.165
Lead role in music	1.127 0.226
Participated in drama	0.885 0.133
Lead role in drama	1.199 0.258
Participated in student govt.	1.302* 0.195
Major office, student govt.	0.658** 0.124
Participated in clubs	1.062 0.142
Officer in clubs	1.325** 0.153
Participated in community service	1.089 0.221
HS GPA-midrange	1.547 0.793
HS GPA-high	3.884*** 2.011
HS GPA-very high	8.258*** 4.336
Verbal test score-midrange	1.289** 0.154
Verbal test score-high	2.242*** 0.359
Math test score-midrange	1.087 0.132
Math test score-high	2.087*** 0.345
No. of AP tests taken	1.073*** 0.0200
HS % students on F/RPL 6-10%	1.155 0.213
HS % students on F/RPL 11-20%	0.980 0.199
HS % students on F/RPL 21-30%	0.803 0.198
HS % students on F/RPL 31-50%	1.029 0.221
HS % students on F/RPL 51-75%	0.960 0.259
HS % students on F/RPL 76-100%	0.664 0.224
African-American	3.458*** 1.008
Asian/Pacific Islander	1.953 1.138
American Indian/Alaskan Native	0.712 0.286
Hispanic	1.602 0.541
SES-1	1.280 0.306
SES-2	1.256 0.253
SES-3	0.691** 0.101
In-state	1.807*** 0.252
African-American male	1.152

	0.442
Hispanic male	1.219
	0.575
Observations	2407
Number of insts.	61

Figure 29: : Regression results, fixed-effects model for most competitive institutions including new variables

It must be recalled that this is an extremely preliminary qualitative interview process. It would be strengthened with a larger sample size of interviews and an attempt to elicit more information about academic and extracurricular programs that serve as male attractors, beyond merely engineering. This would help develop a more-specific typology of institutions, where different models could be specified for each type. Those could be strengthened by a more-specific case study approach attempting to derive more institution-level variables to create specific models.

Ultimately, though, the interviews here provide strong evidence for institutional beliefs that a balance of genders in undergraduate populations is on balance a good thing for institutions. Some colleges need to do more to create that balance than others, as became clear in these interviews, and some colleges are more capable than others of doing so. Taken with the quantitative results, this section makes it hard to argue that being male is *not* a beneficial factor to students as they apply to selective colleges.

Chapter 8

Conclusion

Introduction

The basic conclusions of this dissertation should be fairly clear: At the most elite institutions of higher education, being male appears to be advantageous in the admissions process, all other things being equal and assuming the institution does not have a particular bent toward technology and engineering. More fundamentally, selective colleges are discriminating against qualified female students. However, being male does not offer a significant boost at any but the highest tier of institutions based on selectivity. Assuring that a college's population does not skew too heavily female is a concern for most deans of admissions, but as a priority it ranks lower than getting the right number of students over all, assuring enough net tuition revenue, and discriminating on other variables—academic characteristics, racial/ethnic diversity, and geography.

Such forms of discrimination, which also include preferring students based on athletic ability and relationship to former students, are deserving of strong scrutiny in and of themselves. In this particular case, for institutions to prefer men over women raises troubling questions hearkening back to prior eras of overt discrimination.

Such questions, however, deserve careful evaluation and more work in terms of scholarly research, legal evaluation, and public policy dialogue about gendered experiences in primary and secondary education as well as higher education.

Research

As noted earlier, most research heretofore has concentrated on the individual's decision on the institution or type of institution to attend and the implications that decision has on educational and career experiences (Hearn, 1984; Hearn, 1991; Karen, 1993; Karen, 2002; Zhang, 2008). The ELS:2002 database is the first large sample to allow researchers to turn the question around and focus on institutional decisions on applicants.

As such, research questions and strategies had to be adapted from earlier research projects that dealt with individual decision-making. Strategies should evolve to take more careful account of institutional characteristics that could shape admissions decisions, to enable a researcher to reverse-engineer, in essence, and generalize the models used by colleges to predict their yields and net tuition revenue. This might be accomplished by taking more institution-level variables into account in building a model; I attempted to do this but quickly ran into problems with multicollinearity and variance inflation and as such opted for a fixed-effects model to capture institutional differences in the aggregate. It also might be accomplished by taking pairs of students from the ELS database with specific commonalities in academic and extracurricular profiles and comparing their applications' fates when submitted to the same or very similar institutions.

Another point that arose earlier in the research but was not borne out in the final models was the possibility that truly elite institutions appear to have applicant pools nearly evenly split between male and female students, and as such there is little difference in the gender breakdown between their pools of admitted students or those who ultimately enroll.

Consider the following table of colleges:

California Institute of Technology
Case Western Reserve University
Carnegie Mellon University
Massachusetts Institute of Technology
University of Notre Dame
Cornell University-Endowed Colleges
Princeton University
Lafayette College
Stanford University
Harvard University
Washington and Lee University
Rice University
Dartmouth College
University of Pennsylvania

Each of these is in the most-competitive pool, admitted exactly the same percentage of male and female applicants from 2001-2004, and had 50 percent or fewer women (National Center for Education Statistics, n.d.). Obviously, many of these are colleges with a strong engineering focus, but many of them are simply extremely selective. As such, it may well be that there is a grouping of colleges that do not need to offer any particular preference to men; they simply attract a very competitive pool of male applicants, as the director of admissions in the first interview suggested. This could not be demonstrated in the model as specified, but bears further examination.

On the qualitative side, the small size of the interview sample obviously limits generalizability. While further elite interviews and a higher degree of member-checking could yield interesting information about the admissions process at different types of institutions, other qualitative research methods could be brought to bear on this question. The most obvious strategy probably would be a series of case studies. These could be done as ethnographies of the interview process at the collegiate level, much as Stevens did by embedding himself in the admissions office of a college (Stevens, 2007). This might tease out more of the advocacy process for male and female students mentioned by the fifth interview participant. Alternately, a separate set of case studies could be done by looking at the admissions process from the standpoint of a group of students over the

course of their senior years in high school, beginning with the process of deciding on the set of colleges to which they apply, including campus interviews and application materials to the extent possible, and culminating with the receipt of "thick" or "thin" envelopes. While this would yield data about the individuals and the effect of the college-admissions process on them, with a large-enough sample it could yield extraordinarily good information about the colleges to which the students are applying and the characteristics they value most.

Another research agenda that could be carried out both quantitatively or qualitatively would involve more of a longitudinal look at students' experiences and how boys' and girls' experiences appear to affect admissions decisions, not to mention the impact of those admissions decisions on where they opt to attend college and how those decisions impact the ability of colleges to produce qualified, capable graduates, following Zhang (2008) and others. The ELS:2002 database contains a wealth of information about such experiences that could be rendered in different forms, and the qualitative strategies outlined above could be iterated over a period of years to gain similar data.

This study itself has yielded significant information about the role of gender in institutional decision-making as it relates to student populations, but it is really only the beginning of an agenda to consider how competitive-college admissions functions as a high-stakes sorting process. As colleges begin to look more internationally and toward other sources of students, the admissions process will become even more consequential for higher education and the country as a whole.

Policy implications

Many lenses could be used to view the evidence presented in these chapters. One would be to see clear evidence of gender discrimination against women; given the long history of such in American higher education, that colleges would reserve places for less-qualified women would seem objectionable and legally challenging. However, in light of the Supreme Court's decisions in *Bakke*, *Johnson*, and *Gratz*, a legal challenge to any admissions process favoring men is unlikely to be

successful as long as it features an individualized review of applications (Regents of University of California v. Bakke, 1978; Johnson v. Board of Regents of the University System of Georgia, 2001; Gratz, et al. v. Bollinger, et al., 2003). In each of these cases, admissions policies that gave applicants a strict and usually numerical advantage in the process on the basis of race or gender were struck down as not being "narrowly tailored" enough to achieve the state's interest in a diverse student body. However, race (or gender) can be used as a "plus" factor in evaluating an application, as long as all or a sufficient number of applications are reviewed individually (Grutter, et al. v. Bollinger, et al., 2003; Regents of University of California v. Bakke, 1978).

With that legal backdrop, the question for college administrators is whether it's "right" to find ways to admit more men in the face of a predominantly female applicant pool. The frame used by the second and third interview participants and others considering this from the institutional perspective is one of institutional survival—if the college does not make an effort to keep its population from reaching a "tipping point" in its gender population, then it will lose its appeal both to male and female applicants.

Some activities do seem to be beyond the pale, however. Towson University in Maryland operated a program offering special admission to men with poorer academic credentials, promising to give them intensive counseling and other forms of preparation to succeed (Wilson, 2007a). However, the program closed two years later after a reasonably high level of publicity—and after many of the participants flunked out or transferred to community colleges (Tyre, 2008; Wilson, 2007b).

The fact that colleges are adapting their admissions pools as a matter of institutional self-interest is nothing new, as described extensively in chapter 2. Competitive colleges admit many students not based strictly on academic profile, but on a multitude of factors, including some that do

not predict individual aptitude or potential. That gender should be one of those factors should not be surprising.

The larger societal context, however, brings a little more information to this debate. First, as the second interview participant pointed out, growing evidence suggests that boys are being disadvantaged in the K-12 system by the way school is being taught and pressures coming from teachers and systems (Tyre, 2008; Whitmire, In press). The vast majority of colleges thus have to rely on an overwhelming female pool of applicants, and most are not selective enough to advantage men. As a result, women are a growing majority of degree-earners in the American population.

The ramifications of this are being felt today. The popular press pegs the total number of job losses during the 2008-9 recession at 5.1 million as of April 2009, and 80 percent of them have been men losing jobs (O'Conner, 2009). If the educational system as a whole is not preparing men adequately for the working world, then the educational system as a whole needs to consider its options.

Individual colleges, particularly those lacking the ability to select precise mixes of students, have attempted to attract men through cosmetic changes, primarily starting football and lacrosse teams. But they may be better served by working with foundations and K-12 systems to improve educational opportunities for boys long before the college admissions process begins in earnest. One example of such a program is the Posse Foundation; while it does not focus on male students in particular, it recruits urban students and matches them with colleges, providing financial support and resulting in graduation rates of over 90 percent (Pulley, 2000). Other universities and systems have announced "Black Male Initiatives" to increase enrollment and retention rates for African-American males, but little evidence suggests that such programs are having a significant effect (Watson, 2006).

With institutional research and teaching resources, colleges are in a unique position to study and potentially to intervene in K-12 to find ways to help male students learn and adapt to the

educational environment. This could have much more effect in building larger admissions pools of qualified male students than producing new marketing materials, starting football teams, or finding other institution-level ways of dragging more men into higher education.

To engage in this sort of policymaking, however, institutional leaders and scholars need to come to the table with a willingness to examine the disparate trends affecting male and female students fairly and dispassionately. Studying male deficits and means of remedying them must be done without depriving women of resources and opportunities, and those inclined to politicize the trend of colleges finding ways to attract men must recognize that only a tiny handful of institutions have any chance of doing so through the admissions process or even through other means, such as starting football teams or revising marketing materials.

Ultimately, colleges always will be able to admit whomever they choose, and even the most academically-focused institutions will not admit students purely based on academic profile. Institutional interests will always be served to some degree, and gender will continue to be a factor in admissions decisions, much as race/ethnicity and geography have proven to be. However, colleges have the opportunity to reduce the importance of gender and diversity by investing in improving opportunities for young men and women of all races to get the preparation they need long before they start to think about the applications process.

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Appendix A: *Barron's* magazine rankings for colleges with competitive admissions processes

Very/highly competitive

Abilene Christian U.
Adelphi U.
Albany State U.
Albertson College of Idaho
Albion College
Allegheny College
Alma College
American U.
Appalachian State U.
Asbury College
Auburn U. Main Campus
Augustana College
Augustana College
Austin College
Azusa Pacific U.
Baker U. College of Arts And Sciences
Bard College
Baylor U.
Bellarmine College
Beloit College
Bennington College
Berea College
Berry College
Bethany College
Bethel College
Biola U.
Birmingham Southern College
Boston U.
Bradley U.
Brigham Young U.
Brigham Young U.-Hawaii Campus
Bryan College
Bryn Mawr College
Bucknell U.
Butler U.
California Polytechnic State Univ-San Luis Obispo
Campbell U.
Carroll College
Catholic U. of America
Cedarville College
Centenary College of Louisiana
Centre College
Chapman U.
Christendom College
Christian Brothers U.
Christopher Newport U.
Clark U.
Clarkson U.
Clemson U.
Coe College
College of Charleston
College of Saint Benedict
College of Saint Catherine
College of the Atlantic
College of the Ozarks
College of Wooster
Colorado Christian U.
Colorado College
Colorado School of Mines
Colorado State U.
Concordia College
Concordia College at Moorhead
Converse College
Cornell College
Covenant College
Creighton U.
CUNY Bernard M Baruch College
Dallas Baptist U.
David Lipscomb U.
Denison U.
Depaul U.
Depauw U.
Dickinson College
Dillard U.
Dordt College
Drake U.
Drew U.
Drexel U.
Drury College
Duquesne U.
Earlham College
Elmira College
Elon College
Emerson College
Erskine College And Seminary
Fairfield U.
Flagler College
Florida Institute of Technology-Melbourne

Florida International U.
Florida State U.
Fordham U.
Franciscan U. of Steubenville
Franklin And Marshall College
Furman U.
George Fox U.
George Mason U.
Georgetown College
Georgia Institute of Technology-Main Campus
Gettysburg College
Gonzaga U.
Gordon College
Goshen College
Goucher College
Grace College And theological Seminary
Grand Valley State U.
Grinnell College
Grove City College
Guilford College
Gustavus Adolphus College
Hamline U.
Hampden-Sydney College
Hampshire College
Hanover College
Harding U.
Hastings College
Hendrix College
Hillsdale College
Hiram College
Hobart William Smith Colleges
Hofstra U.
Hollins College
Hood College
Hope College
Houghton College
Huntingdon College
Illinois College
Illinois Institute of Technology
Illinois State U.
Illinois Wesleyan U.
Indiana U.-Bloomington
Iona College
Iowa State U.
Iowa Wesleyan College
Ithaca College
James Madison U.
John Brown U.
Juniata College
Kalamazoo College
Kansas State U.
Kansas Wesleyan U.
Kenyon College
King College
Knox College
La Salle U.
Lake Forest College
Lawrence U.
Le Moyne College
Lebanon Valley College
Lehigh U.
Lewis And Clark College
Lindenwood U.
Linfield College
Louisiana State Univ
Loyola College
Loyola Marymount U.
Loyola U. of Chicago
Loyola U.-New Orleans
Luther College
Lyon College
Madonna U.
Maharishi U. of Management
Manhattan College
Marist College
Marlboro College
Marquette U.
Mary Washington College
Maryville College
Maryville U. of Saint Louis
Mckendree College
Mercer U.
Messiah College
Miami U.-Oxford
Michigan State U.
Michigan Technological U.
Mills College
Millsaps College
Moravian College
Mount Holyoke College
Mount Saint Marys College
Muhlenberg College
Murray State U.
Nazareth College of Rochester
New Jersey Institute of Technology
New York Institute of Technology-Old Westbury
North Carolina State U. at Raleigh
North Central College
Northeastern U.
Northwest Nazarene College
Occidental College
Oglethorpe U.
Ohio Northern U.
Ohio State U.-Main Campus
Ohio Wesleyan U.
Oklahoma Baptist U.
Oklahoma City U.
Oklahoma State U.-Main Campus
Ouachita Baptist U.
Pace U.-New York
Pacific Lutheran U.
Pennsylvania State U.-Main Campus
Pepperdine U.
Pitzer College

Point Loma Nazarene College
Polytechnic U.
Presbyterian College
Providence College
Purdue U.-Main Campus
Quinnipiac College
Ramapo College of New Jersey
Randolph-Macon Woman's College
Rensselaer Polytechnic Institute
Rhodes College
Richard Stockton College of New Jersey
Ripon College
Rochester Institute of Technology
Rockford College
Rollins College
Roosevelt U.
Rowan U.
Rutgers U.-Camden
Rutgers U.-New Brunswick
Rutgers U.-Newark
Saint Johns U.
Saint Josephs U.
Saint Louis U.-Main Campus
Saint Marys College
Saint Marys College of California
Saint Marys College of Maryland
Saint Michaels College
Saint Olaf College
Saint Vincent College
Salem College
Salisbury State U.
Samford U.
Santa Clara U.
Sarah Lawrence College
Scripps College
Seattle Pacific U.
Seattle U.
Seton Hall U.
Siena College
Simmons College
Simons Rock College of Bard
Skidmore College
Smith College
Southern Methodist U.
Southwest Texas State U.
Southwestern U.
Spring Hill College
St John's College
St John's College
St Lawrence U.
Stetson U.
Stevens Institute of Technology
Stonehill College
SUNY at Albany
SUNY at Binghamton
SUNY at Buffalo
SUNY at Stony Brook
SUNY College at Fredonia
SUNY College at Geneseo
SUNY College at New Paltz
SUNY College at Oneonta
SUNY College at Purchase
SUNY College of Environmental Science And Forestry
Susquehanna U.
Syracuse U.
Taylor U.-Upland
Tennessee Technological U.
Texas A & M U.
Texas Christian U.
Texas Tech U.
The Masters College
Thomas Aquinas College
Touro College
Towson U.
Transylvania U.
Trinity Christian College
Trinity College
Trinity U.
Truman State U.
Tulane U. of Louisiana
U. of Alabama in Huntsville
U. of Arizona
U. of Arkansas at Fayetteville
U. of California-Davis
U. of California-Irvine
U. of California-San Diego
U. of California-Santa Barbara
U. of California-Santa Cruz
U. of Central Florida
U. of Colorado at Boulder
U. of Connecticut
U. of Dallas
U. of Dayton
U. of Delaware
U. of Denver
U. of Evansville
U. of Georgia
U. of Hawaii at Manoa
U. of Illinois at Urbana
U. of Indianapolis
U. of Iowa
U. of Kansas Main Campus
U. of Louisville
U. of Maryland-Baltimore County
U. of Maryland-College Park
U. of Massachusetts-Lowell
U. of Miami
U. of Michigan-Ann Arbor
U. of Michigan-Dearborn
U. of Minnesota-Morris
U. of Minnesota-Twin Cities
U. of Missouri-Columbia
U. of Missouri-Kansas City
U. of Missouri-Rolla

U. of Missouri-St Louis
U. of New Hampshire-Main Campus
U. of North Carolina at Asheville
U. of North Carolina-Wilmington
U. of North Florida
U. of Oklahoma Norman Campus
U. of Oregon
U. of Pittsburgh-Main Campus
U. of Portland
U. of Puget Sound
U. of Redlands
U. of Rhode Island
U. of Rochester
U. of Saint Thomas
U. of San Diego
U. of San Francisco
U. of Scranton
U. of South Carolina at Columbia
U. of St Thomas
U. of Tampa
U. of Texas at Austin
U. of Texas at Dallas
U. of the Pacific
U. of the South
U. of Tulsa
U. of Vermont And State Agricultural Coll
U. of Washington
U. of West Florida
U. of Wisconsin-Eau Claire
U. of Wisconsin-La Crosse
U. of Wisconsin-Madison
U. of Wisconsin-Stevens Point
Union College
Union U.
Ursinus College
Valparaiso U.
Villanova U.
Wabash College
Wagner College
Warren Wilson College
Wartburg College
Washington And Jefferson College
Washington College
Webster U.
Wells College
Wesleyan College
Western Maryland College
Western Washington U.
Westmont College
Wheaton College
Wheaton College
Whitman College
Whitworth College
Willamette U.
William Jewell College
Wisconsin Lutheran College
Wittenberg U.
Wofford College
Worcester Polytechnic Institute
Xavier U.

Most competitive institutions

Amherst College
Bates College
Boston College
Bowdoin College
Brandeis U.
Brown U.
California Institute of Technology
Carleton College
Carnegie Mellon U.
Case Western Reserve U.
Claremont Mckenna College
Colby College
Colgate U.
College of the Holy Cross
College of William And Mary
Columbia U. in the City of New York
Connecticut College
Cornell U.-Endowed Colleges
Dartmouth College
Davidson College
Duke U.
Emory U.
George Washington U.
Georgetown U.
Hamilton College
Harvard U.
Haverford College
Johns Hopkins U.
Lafayette College
Macalester College
Massachusetts Institute of Technology
Middlebury College
New York U.
Northwestern U.
Oberlin College
Pomona College
Princeton U.
Reed College

Rice U.
Stanford U.
Swarthmore College
the College of New Jersey
Tufts U.
U. of California-Berkeley
U. of California-Los Angeles
U. of Chicago
U. of Florida
U. of North Carolina at Chapel Hill
U. of Notre Dame
U. of Pennsylvania
U. of Richmond
U. of Southern California
U. of Virginia-Main Campus
Vanderbilt U.
Vassar College
Wake Forest U.
Washington And Lee U.
Washington U.
Wellesley College
Wesleyan U.
Williams College
Yale U.

Appendix B: T-test for testing differences in gender breakdowns of given populations

This appendix supplements the descriptive data in Chapter 5 by demonstrating the mathematical differences in the gender breakdowns of the populations described there. The goal is to demonstrate that there is a significant difference in the percentage of male and female students in the following groups from the population as a whole, the population of individuals of the traditional college-going age (18-24 years old), and the college-going population as a whole.

Basically, the null hypothesis is that the mean of the gender in the population in question is the same as the mean of gender in the general population. These means are, for all practical purposes, the proportion of a given gender in the population: Because the number of men and women in the total population is known, we can treat the population as a series of observations from 1...i_{m+f} where variables 1...i_m have the value 1 for the variable MALE and variables i_{m+1}...i_{m+f} have the value 0 for MALE. A two-sample t-test following Welch's adaptation of the Student t-test will determine whether H_0 (M_1=M_2) is true (Welch, 1947). If it is, then there is no significance to differences in the exact proportion of men and women in the given population, which is what is claimed by some analysts (Corbett, Hill, & St. Rose, 2008; Mead, 2006).

In these cases, if the Welch's t-test can demonstrate that the mean of the test population is higher than the general population mean, then we can assert that a significant gender gap exists. This should answer the claim that gender gaps exist only because of the high numbers of women in

particular college-going populations, i.e. older students, part-time students, and students from underrepresented minority backgrounds.

- Variance in gender distribution between the total population and the total college-going population
-

This case establishes the baseline difference in the gender distribution of college undergraduate students in the fall of 2004 compared to the overall U.S. population as of July 1, 2004 ((National Center for Education Statistics, 2008; U.S. Census Bureau, Population Division, 2008):

	Men	Women	n (Total)	Mean	S.D.	Var.	T-test	D.F.
College population	6,408,871	8,555,093	14,963,964	0.43	0.65	0.43	-355.77	18,606,458.14
Total population	144,060,672	148,831,455	292,892,127	0.49	0.70	0.49		

Figure 30: Mean differences test, total population vs. undergraduate population

We can see here that there is a significant difference between the population means (which represent the percentage of men). Thus, we conclude that there is a statistical difference between the proportion of men in the college-going population and that of men in the total population. This point is not in dispute, but it provides a reference for the figures to follow.

- Variance between the college population aged between 18 and 24 and the total population of the same age

This equation assesses whether the gender gap disappears if we look only at the traditional-age population in college. Why compare it to the total population instead of the total college-going population? Because we are trying to ascertain whether the college population in question is unusual compared to the overall population. As posed by Corbett et al., the null hypothesis is whether the

gender gap "disappears" for traditional aged students. At face value, this means that we are comparing traditional-aged students to the population as a whole. Comparing traditional-aged students to all students might tell us whether the gap is greater or lesser, but the goal here is to establish whether it exists at all.

	Men	Women	n (Total)	Mean	S.D.	Var	T-test	D.F.
College population 18-24	4,379,158	5,248,911	9,628,069	0.45	0.67	0.45	-204.63	25,218,129.94
Total population 18-24	14,938,457	14,124,177	29,062,634	0.51	0.72	0.51		

Figure 31: Mean differences test, students 18-24 vs population 18-24

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- Variance between the college population enrolled full-time and the total population

Similarly, this establishes whether the gender gap "disappears" if only full-time students are included in the same.

	Men	Women	n (Total)	Mean	S.D.	Var.	T-test	D.F.
Full-time college population	4,200,863	5,245,567	9,446,430	0.44	0.67	0.44	-210.07	10,817,549.66
Total population	144,060,672	148,831,455	292,892,127	0.49	0.70	0.49		

Figure 32: Mean differences test, full-time students vs overall population

The T-test numbers again show a significant difference between these two populations.

Just for good measure, here is a similar calculation for the 18- to 24-year-old undergraduate population enrolled full time:

	Men	Women	n (Total)	Mean	S.D.	Var.	T-test	D.F.
Full-time 18-24 college population	3,464,506	4,098,777	7,563,283	0.46	0.68	0.46	-133.6897466	8410551.161
Total population	144,060,672	148,831,455	292,892,127	0.49	0.70	0.49		

Figure 33: Mean differences test: full-time traditional-aged students vs. general population

The differences are clearly narrower in this population than in the broad sample of undergraduates, both descriptively and according to the T-test, but they remain significant.