THE CONCEPT OF SUBSTANTIAL PROPORTIONALITY IN TITLE IX ATHLETICS CASES

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I. INTRODUCTION

In the past several years, four federal court decisions interpreting Title IX[1] have sent tremors through the collegiate athletic establishment.[2] In all of

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1. Title IX of the Educational Amendments of 1972, *as amended* by the Civil Rights Restoration Act of 1987, 20 U.S.C. § 1681 (1994). The Act provides that "[n]o person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance . . . ." 20 U.S.C. § 1681(a). Since Title IX was amended by the Civil Rights Restoration Act of 1987, Title IX applies to all of an institution's programs if *any* part of an educational institution receives federal funds; thus an athletics program need not be the direct recipient of federal funding in order to be subject to Title IX requirements.

Title IX specifies that its proscription of gender discrimination in athletics should not be "interpreted to require any educational institution to grant preferential or disparate treatment to the members of one sex on account of [a gender] imbalance" between the persons participating in the program and the total number of persons in the relevant community. 20 U.S C. § 1681(b). However, subsection (b) also provides that it "shall not be construed to prevent the consideration in any . . . proceeding . . . of statistical evidence tending to show that such an imbalance exists with respect to the participation in, or receipt of the benefits of, any such program or activity by the members of one sex." *Id.*

2. Roberts v. Colorado State Univ., 814 F. Supp. 1507 (D. Colo.), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied,* 114 S. Ct. 580 (1993); Favia v. Indiana Univ. of Pa., 812 F. Supp. 578 (W.D. Pa.), *aff'd,* 7 F.3d 332 (3d Cir. 1993); Cook v. Colgate Univ., 802 F. Supp. 737 (N.D.N.Y. 1992), *vacated and remanded,* 992 F.2d 17 (2d Cir. 1993); Cohen v. Brown Univ., 809 F. Supp. 978 (D.R.I. 1992) (issuing preliminary injunction), *aff'd,* 991 F.2d 888 (1st Cir. 1993) (preliminary injunction), *aff'd on reh'g,* 879 F. Supp. 185 (D.R.I. 1995).

In the wake of several of these decisions, a number of cases were settled. In Sanders v. University of Tex. at Austin, No. A-92-CA-405 (W.D. Tex. filed Nov. 10, 1992) (order approving settlement agreement of Oct. 24, 1993), the University agreed to move its participation rate from the current 23% to 44% over a period of five years and to raise the portion of the financial aid going to women athletes to 42%. Diane Heckman describes how in Kiechel v. Auburn Univ., No. CV-93-V-474-E (M.D. Ala. filed Apr. 14, 1993), the plaintiffs settled for $460,000 in damages plus $80,000 for legal fees, the formation of a soccer team for at least five years, with a budget of $400,000 for 1993–94 and 1994–95 combined, four scholarships for 1993–94, and adequate practice and game facilities. Prior to the suit, 45% of the students and 25% of the athletes were women and only 7–11% of the university's athletics budget was spent on women's teams. Diane Heckman, *The Explosion of Title IX Legal Activity in Intercollegiate Athletics during 1992–1993: Defining the "Equal Opportunity" Standard,* 1994 DET. C.L. REV.

these cases, the courts found the universities to have failed to provide effective accommodation for the athletic interests and abilities of their women students, as required by the regulations issued pursuant to Title IX.[3] Although the regulations state that such accommodation is only one of the factors to be considered in determining compliance with Title IX, it was because of deficiencies in this area that courts found the institutions in violation of the statute. In particular, courts asserted that the universities did not provide participation opportunities to women and men in numbers "substantially proportionate" to their respective enrollments. Unfortunately, the courts failed to supply guidance as to the precise meaning of "substantially proportionate." This Article suggests a statistical framework for such guidance.

II. STATUTORY BACKGROUND

A. The Title IX Statute and Regulations

Title IX of the Education Amendments of 1972 requires that institutions not discriminate on the basis of sex in their athletics programs, including intercollegiate athletics.[4] When Congress originally enacted Title IX, it provided that the Department of Health, Education, and Welfare issue regulations that would assist educational institutions in complying with the statute.[5] After the Title IX regulations were promulgated, the Office for Civil Rights (OCR) of the Department of Education issued a Policy Interpretation Manual to aid schools in understanding the regulations.[6] The Policy Inter-

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953, 990. In the case of James v. Virginia Polytechnic Inst. & State Univ., No. 94–0031-R (W.D. Va. filed Jan. 25, 1994), which was a class action lawsuit with 18 named plaintiffs, the University also settled.

A trio of lawsuits was filed in state courts against various campuses of the California State University, alleging violation of Sections 89240 and 89241 of the California Education Code. CAL. EDUC. CODE §§ 89240–89241 (West 1983). The plaintiffs also alleged violations of the equal protection clause of the California State Constitution. CAL. CONST. art. I, § 7 (West 1983 & Supp. 1996). *See, e.g.*, California Nat'l Org. of Women v. Evans, No. 728548 (Cal. App. Dep't Super. Ct. filed February 3, 1993). The dispute in California Nat'l Org. of Women v. Bd of Trustees for the Cal. State Univ., No. 949207 (Cal. App. Dep't Super. Ct. Oct. 20, 1993) (consent decree) was settled with a consent decree for all of the system.

Under threat of suit, the University of Oklahoma, the College of William and Mary, the University of New Hampshire, the University of California at Los Angeles, and the University of Massachusetts at Amherst restored women's teams that had been eliminated due to budget cuts. Jill K. Johnson, *Title IX and Intercollegiate Athletics: Current Judicial Interpretation of the Standards for Compliance*, 74 B.U. L. REV. 553, 584 n.195 (1994) (citing Andrew Blum, *Athletics in the Court: New Wave of Title IX School Bias Suit Hit*, NAT'L L.J., Apr. 5, 1993, at 1, 30); John Bannon, *Title IX*, USA TODAY (Arlington, Va.), Aug. 23, 1993 at 9C. Cornell University settled a lawsuit by reinstating women's teams in gymnastics and fencing. Robert M. Thomas, Jr., *Cornell Reinstates Two Women's Sports*, N.Y. TIMES, Dec. 9, 1993, at B26.

But cf. Arnot v. Ramo, No. 92–0551, (D.N.M. July 19, 1992) (bench decision), *appeal dismissed*, No. 92–2151 (10th Cir. Nov. 3, 1992) (original action dismissed March 9, 1993) (upholding the University of New Mexico's elimination of its women's gymnastics team and declaring that a program-wide, rather than sport-specific analysis was required under Title IX).

3. 20 U.S.C. § 1681(a).
4. *See supra* text accompanying note 2.
5. Later, the Department of Education took over this responsibility.
6. Title IX of the Education Amendments of 1972; A Policy Interpretation; Title IX and

pretation delineates three areas of inquiry[7] to test an institution's compliance with Title IX in Athletic Programs. These are

(1) Athletic Financial Assistance (Scholarships);[8]
(2) Equivalence in Other Athletic Benefits and Opportunities;[9] and
(3) Effective Accommodation of Student Interests and Abilities.[10]

The OCR measures compliance in the third area of effective accommodation by applying a three-prong test:

> (1) Whether intercollegiate level participation opportunities for male and female students are provided in numbers substantially proportionate to their respective enrollments; or
> (2) Where the members of one sex have been and are underrepresented among intercollegiate athletes, whether the institution can show a history and continuing practice of program expansion which is demonstrably responsive to the developing interest and abilities of the members of that sex; or
> (3) Where the members of one sex are underrepresented among intercollegiate athletes, and the institution cannot show a continuing practice of program expansion such as that cited above, whether it can be demonstrated that the interests and abilities of the members of that sex have been fully and effectively accommodated by the present program.[11]

Although compliance with the effective accommodation requirement can be satisfied by meeting any one of the three prongs, only the first truly provides a "safe harbor" for institutions. If the representation of men and women among the athletes is "substantially proportionate" to their represen-

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Intercollegiate Athletics, 44 Fed. Reg. 71,413 (1979). In *Cohen*, the First Circuit held that the regulations promulgated pursuant to Title IX should control. This degree of deference is appropriate because Congress "explicitly delegated to the agency the task of prescribing standards for athletic programs under Title IX." Cohen v. Brown Univ., 809 F. Supp. 978 (D.R.I. 1992), *aff'd*, 991 F.2d 888 (1st Cir. 1993), *aff'd on reh'g*, 897 F. Supp. 185 (D.R.I. 1995). Additionally, the Policy Interpretation, the court continued, warrants "substantial deference" because it is a "considered interpretation" of the agency's own regulations. *Cohen*, 991 F.2d at 896–97.

7. The factors to consider in this inquiry, listed in 34 C.F.R. § 106.41(c)(1)-(10) (1995) are the following:

> (1) Whether the selection of sports and levels of competition effectively accommodate the interests and abilities of members of both sexes;
> (2) The provision of equipment and supplies;
> (3) Scheduling of games and practice time;
> (4) Travel and per diem allowance;
> (5) Opportunity to receive coaching and academic tutoring;
> (6) Assignment and compensation of coaches and tutors;
> (7) Provision of locker rooms, practice and competitive facilities;
> (8) Provision of medical and training facilities and services;
> (9) Provision of housing and dining facilities and services;
> (10) Publicity

34 C.F.R. § 106.41(c)(1)-(10).

8. 34 C.F.R. § 106.37(c).
9. 34 C.F.R. § 106.41(c)(2)-(10).
10. 34 C.F.R. § 106.41(c)(1).
11. 44 Fed. Reg. 71,418, 71,483.

tation in the undergraduate student body as a whole, no further inquiry need be undertaken in this area. However, interpretation of the requirements of this prong is crucial. If "substantially proportionate" is taken to mean that the percentage of women among an institution's athletes must be within a few percentage points of the percentage of women in the undergraduate student body, then nearly every institution in the country with a major athletics program would fail this prong of the test for Title IX compliance.[12]

The interpretation of "substantially proportionate" is obviously important to the observance of the statute. Without guidance from the courts on this definition, institutions have had no indication of how to reach this "safe harbor" of Title IX compliance. Unfortunately, the recent court decisions have not made clear either what constitutes equal treatment of female and male athletes. This Article contains a proposal for an appropriate statistical measure of substantial proportionality for universities and the NCAA to consider in their quest to bring athletic programs into compliance with Title IX. Other statistical issues that arise in Title IX college athletics cases will also be discussed.

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12. While a majority of students at Division I schools are women, female athletes only receive 35% of the athletic scholarship money. Debra E. Blum, *Slow Progress on Equity: Survey of Division I College Show Little Has Changed for Female Athletes*, CHRON. HIGHER EDUC. (Washington, D.C.), Oct. 26, 1994, A45. Those institutions which have football teams face particular difficulties because squads may have as many as 145 players, and the NCAA permits 85 scholarships for football. *See* Johnson, *supra* note 2, at 586 n.203. The largest team for women is generally lacrosse, where teams may have 28 players. 1992 FINAL REPORT OF NCAA GENDER-EQUITY TASK FORCE (July 26, 1993) (on file with the *Duke Journal of Gender Law & Policy*) (recommending guidelines to promote gender-equity). The next largest number of NCAA-allowed scholarships is 18 for men's ice hockey and 16 for women's cross country/track. *See* Johnson, *supra* note 2, at 586 n.203. Coaches claim that a football squad must be very large because of injuries and transfers. *Id.* at 587 n.206. However, teams in the National Football League make do with rosters of less than 50 players. *Id.* at 587 n.206.

In Blair v. Washington State Univ., 740 P.2d 1379, 1382 (Wash. 1987), the Washington Supreme Court held that the trial court had abused its discretion when it excluded football from consideration in a claim brought under the state's Equal Rights Amendment. WASH. CONST. art. 31, §§ 1–2. The claim was also brought under the Washington Law Against Discrimination. WASH. REV. CODE ANN. § 49.60.030 (West 1990 & Supp. 1996). The Washington Supreme Court declared that there is no exemption from the Equal Rights Amendment for football, but the court allowed revenue earned by athletic teams to be taken into account when comparing budgets for men's and women's athletic programs. *Blair*, 740 P.2d at 1383. In the wake of *Blair*, Washington State University became one of the few universities in the country clearly in compliance with the "substantially proportionate" requirement of the Title IX Effective Accomodation regulations. Mary Jordan, *Only One School Meets Gender Equity Goal Series: Twenty Years of Title IX*, WASH. POST, June 21, 1992, at D1. At the Georgia Institute of Technology, where the student body is only 26% female, 27% of the athletes are women, demonstrating that one way to comply is to have relatively few women in the student body. R. Lindsay Marshall, *Cohen v. Brown University: The First Circuit Breaks New Ground Regarding Title IX's Application to Intercollegiate Athletics*, 28 GA. L. REV. 837, 850 n.102 (1994).

Football is not the only problem, however. At Georgetown University, a Division I competitor that at the time did not have a Division I football team, in 1993–94 52.1% of the undergraduate students were women, but only 37.2% of the athletes were women; on the other hand, 47.7% of the athletics scholarship money went to women. *Fact File: Athletics Participation and Scholarships at 257 NCAA Division I Institutions, 1990–91 and 1993–94*, CHRON. HIGHER EDUC. (Washington, D.C.), Oct. 26, 1994, at A48.

B. Interpretation of Title IX in Case Law

1. *Effective Accommodation.* The first of the recent Title IX cases applied an individualistic approach to Title IX enforcement when deciding whether the interests and abilities of a school's female students were being effectively accomodated. In this approach, the court viewed the treatment of a specific group of women as compared to a similarly situated group of men to determine whether the institution was in compliance with Title IX. This approach focused upon the quality of treatment granted to each group, and ignored quantitative comparisons.

Colgate University funded a men's varsity ice hockey team with a budget of $238,561 plus $327,616 for financial aid in 1990–91.[13] The women's hockey team had only club status and received a mere $4,600 from the University. Further, the women's team members had to provide $25 each in membership dues. The women also had to pay for their own skates, skate sharpening, the use of the university van for road trips, and additional expenses. Other disparities to the disadvantage of the women existed in practice times, facilities, and coaching. The team members repeatedly requested the University to upgrade the women's ice hockey team from club to varsity status in order to correct these differences. For example, in 1988 the women hockey players requested varsity status and a budget of $18,000, and were turned down. Coincidentally, in that same year, the men's hockey-stick budget was raised to $12,000.[14]

Women team members brought suit in federal court,[15] alleging that Colgate's treatment of them was discriminatory and that the University was not in compliance with Title IX. That their team did not have varsity status meant, they claimed, that the athletic interests and abilities of Colgate women were not being fully and effectively accommodated by the University.[16] Colgate in response argued that they were providing such accommodation and that the team should not be granted varsity status because

> 1) Women's ice hockey is rarely played at the secondary level;
> 2) A women's championship is not sponsored by the NCAA at any intercollegiate level;
> 3) The game is only played at approximately fifteen colleges in the east;
> 4) There is a lack of general student interest in women's ice hockey;
> 5) The members of the women's ice hockey club lack sufficient ability; and
> 6) Hockey is expensive to fund, and would heavily impact a total intercollegiate program by requiring increased locker room space, a large budget, a full-time coach, a trainer, increased training room load, increased equipment room size, heavy laundry demand, and coach-supported financial aid.[17]

Colgate also argued that rather than comparing the treatment of the two ice hockey teams, the court should consider the school's overall athletic pro-

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13. Cook v. Colgate Univ., 802 F. Supp. 737, 744 (N.D.N.Y. 1992), *vacated and remanded*, 992 F.2d 17 (2d Cir. 1993).
14. Heckman, *supra* note 2, at 968.
15. *Cook*, 802 F. Supp. at 737.
16. *Id.* at 741.
17. *Id.* at 746–50.

gram.[18] However, the overall budget for men's varsity sports was $654,909 and the women's budget was $218,970, making it unclear that such a general examination would have been helpful to the defense. The District Court for the Northern District of New York rejected all of Colgate's arguments and held that it was appropriate to look only at the treatment of men and women ice hockey players. The court reasoned that Title IX is intended to protect not only a class of persons, but individuals, such as the Colgate women's ice hockey players.[19]

2. *Comparison with Title VII.* In employment discrimination litigation under Title VII of the Civil Rights Act of 1964[20], two different types of discrimination are prohibited. The first, "disparate treatment," consists of treating similarly situated women and men differently on the basis of their sex.[21] The second prohibited behavior, "disparate impact" discrimination, occurs in certain circumstances when a facially neutral policy affects people of different genders differently. For example, a minimum height requirement would have a disparate impact on women. If the requirement is found to be unrelated to the duties of the job, it would violate Title VII even if the employer did not intend to discriminate by instituting the requirement.[22]

In contrast, organizing collegiate athletics necessarily involves a specific gender classification. However, if an institution decides to eliminate a team consisting solely of members of one gender, it is difficult to understand how it could not have intended the foreseeable outcome of discrimination against the unfavored gender.[23] Courts have consistently held, similarly to employment disparate impact cases, that a specific intent to discriminate is not required in order to establish a violation of Title IX.[24]

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18. *Id.* at 742.

19. 20 U.S.C. § 1681(a) states "[n]o *person* . . . shall, on the basis of sex, be excluded . . . be denied . . . or be subjected to discrimination . . . ." (emphasis added). In addition, the Title IX regulations permit consideration of "the failure to provide necessary funds for teams for one sex in assessing equality of opportunity for members of each sex." 34 C.F.R. § 106.-41(c).

20. 20.42 U.S.C. §§ 2000e-20004a (1994).

21. Discrimination on the basis of race, religion, or ethnic origin is also prohibited. *Id.*

22. Relying solely on Scholastic Aptitude Test (SAT) scores for the award of scholarships has been found to have a disparate impact on women and certain minorities. *See, e.g.*, Sharif v. New York State Educ. Dep't, 709 F. Supp. 345, 361–62 (S.D.N.Y. 1989) (granting preliminary injunction based on disparate impact of defendant's sole reliance on SAT scores in awarding scholarships because SAT scores are not reliable indicators of success in college).

23. *See, e.g.*, Haffer v. Temple Univ., 678 F. Supp. 517, 527 (E.D. Pa. 1987), *vacated as moot and remanded*, 992 F.2d 17 (2d Cir. 1993) ("[T]he 'intent' that Temple urges does not exist is provided by Temple's explicit classification of intercollegiate athletic teams on the basis of gender.").

24. *Id.* at 539–401; *see also* Roberts v. Colorado State Univ., 814 F. Supp. 1507, 1511 (D. Colo.), *aff'd in part and rev'd in part, sub nom.* Roberts v. Colo. State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied*, 114 S. Ct. 580 (1993). Title IX was modeled on Title VI of the Civil Rights Act of 1964, *supra* note 20, which requires discriminatory intent. *See* Guardians Ass'n v. Civil Serv. Comm'n, 463 U.S. 582, 608 n.1 (1983) (Powell, J., concurring). In *Roberts*, the University argued that because Title IX was modeled on Title VI of the Civil Rights Act, proof of a Title IX violation must therefore also require intentional discrimination. *Roberts*, 998 F.2d at 832. Rejecting this argument, the Tenth Circuit pointed out that *Guardians* had actually validated disparate impact style regulations promulgated under Title VI. *Id; see also Haffer*, 678

In Title VII cases, if the plaintiff makes a prima facie showing of disparate treatment or disparate impact, then the burden shifts to the defendant to justify these differences by showing that the disparate treatment was based on factors other than sex.[25] In the case of disparate impact, the defendant must show that the facially neutral policy which disparately impacts a certain class is a business necessity. The defendant must also establish that no less restrictive policy can serve this business purpose adequately. If the defendant offers a justification for the business policy, the burden shifts back to the plaintiff to show that the employer's proffered justification for the practice is pretextual.

In contrast, a plaintiff-athlete in a Title IX case simply argues that the athletic interests and abilities of women are not being accommodated, and the defendant-institution argues in response that such interests are met. To return to the *Colgate* case, although the court analyzes Colgate's justifications in a manner similar to that found in Title VII cases,[26] the justifications are much like those of other Title IX defendants. Colgate, like other institutions,[27] asserted that there was insufficient interest on the part of women to justify sustaining the programs at a higher level, and that in any event, the financial resources of the institution forced the cutbacks in the offerings for women. In *Cook*, the court found that all the reasons proffered by Colgate were pretextual, except for problem of the University's financial considerations. Picking up the refrain from earlier Title VII cases, the court declared, "[i]t is clear that financial concerns alone cannot justify gender discrimination."[28] Unfortunately, other institutions did not heed the lesson in *Cook*, and they continued to argue unsuccessfully that it simply would be too costly to meet any of the three alternative tests for compliance with Title IX.[29]

F. Supp. at 539–40. The Tenth Circuit has also held that "disparate impact" is sufficient to establish discrimination under Title IX. Mabry v. State Bd. of Community Colleges & Occupational Educ., 813 F.2d 311, 316–17 n.6 (10th Cir.), *cert. denied*, 484 U.S. 849 (1987).

25. *See, e.g.*, Texas Dept. of Community Affairs v. Burdine, 450 U.S. 248, 249–50 (1981); McDonnell Douglas Corp. v. Green, 411 U.S. 792, 801 (1973).

26. The *Cook* court applied the Title VII burden-shifting analysis of *Burdine*, 450 U.S. at 252–56, in stating:

> [T]he plaintiffs, in order to establish a prima facie case, must demonstrate the following: (1) that the athletic department at Colgate is subject to the provisions of Title IX; (2) that they are entitled to the protection of Title IX; and (3) that they have not been provided "equal athletic opportunities." If plaintiffs prove a prima facie case, they will have established a rebuttable presumption that Colgate has violated Title IX. This presumption, however, will disappear from the case if Colgate comes forward with legitimate nondiscriminatory reasons for its decision not to upgrade the women's ice hockey team to varsity status. Once Colgate has introduced such evidence, in order to prevail, the plaintiffs must prove that Colgate's proffered reasons are merely a pretext.

Cook, 802 F. Supp. at 743–44.

27. *See, e.g.*, Cohen v. Brown Univ., 809 F. Supp. 978, 988 (D.R.I. 1992) ("[A]ccording to the defendants, any disparities which exist . . . is [sic] merely a reflection of the varying interests and abilities of the students."), *aff'd*, 991 F.2d 888 (1st Cir. 1993), *aff'd on reh'g*, 879 F. Supp. 185 (1995).

28. *Cook*, 802 F. Supp. at 750 (quoting Haffer v. Temple Univ., 678 F. Supp. 517, 530 (E.D. Pa. 1987), *vacated as moot and remanded*, 992 F.2d 17 (2d Cir. 1993)).

29. *See, e.g.*, Roberts v. Colorado State Univ., 814 F. Supp. 1507, 1518 (D. Colo.) ("[T]he primary reason the women's softball team was eliminated was to reduce the budget shortfall

The district court in *Cook* ordered Colgate to grant varsity status to the women's ice hockey program starting with the 1993–94 school year and to provide equivalent athletic opportunities for the women ice hockey players. However, the court declined to award damages, reasoning that the plaintiffs were aware of the circumstances of the women's ice hockey team when they entered Colgate. In the view of the court, "the players reaped benefits which outweighed any losses," making the experience "worth the money."[30] The court also found the evidence regarding actual damages vague and insufficient.[31]

The Second Circuit vacated this judgment as moot since the plaintiffs would graduate before the order could take effect.[32] But this decision is nonetheless important because it has led subsequent plaintiffs to take pains to frame their complaints as class actions in order to perpetuate the cause of action beyond the graduation of the named plaintiffs.[33] Even though the Second Circuit vacated the judgment, the case is important for understanding the pattern of other Title IX litigants and courts.

3. *Substantial Proportionality.* In contrast to the focus of the *Cook* court upon the differneces in the accomodation of the individual female ice hockey players compared to male ice hockey players at Colgate, other courts have focused upon the disparity between the women in athletic programs and universities as a whole when determining whether the interests and abilities of female athletes have been effectively accomodated. This latter approach is referred to as the substantial proportionality test, and is a quantitative rather than qualitative determination.

In 1991, Indiana University of Pennsylvania cut two men's and two women's varsity sports from its athletics program. This increased the already wide disparity between the percentage of women in the student body and the percentage of women among student athletes from 18% to 19.1%. The female athletic participation rate was 36.51%, though women made up 55.61% of the student body after the cuts. The displaced women athletes brought suit against the school under Title IX.[34] The court found that with a difference of 19.1% between women's participation and enrollment rates, the representation of women among the athletes could not be said to be "substantially proportionate" to their representation in the student body, so

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in CSU's athletic department."), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied*, 114 S. Ct. 580 (1993); Favia v. Indiana Univ. of Pa., 812 F. Supp. 578, 582 (W.D. Pa.) ("[T]he thrust of the testimony . . . for the university was that the cuts were necessitated by budget problems."), *aff'd*, 7 F.3d 332 (3d Cir. 1993).

30. *Cook*, 802 F. Supp. at 751.

31. *Id.*

32. Cook v. Colgate Univ., 992 F.2d 17, 20 (2d Cir. 1993).

33. *See, e.g.*, Pederson v. Louisiana State Univ., No. CV94–247-A-MI, 1996 WL 18956, at *1 (M.D. La. Jan. 12, 1996); James v. Virginia Polytechnic Inst. & State Univ., No 94–0031-R (W.D. Va. filed Jan. 25, 1994).

34. Favia v. Indiana Univ. of Pa., 812 F. Supp. 578, 579–80 (W.D. Pa.), *aff'd*, 7 F.3d 332 (3d Cir. 1993).

the University had failed the first prong of the effective accomodation test.[35] Indiana University of Pennsylvania also failed to meet the second prong of the regulations, which entails showing a pattern of continuing expansion of women's programs.[36] Although the University claimed to have plans to add women's sports in the near future, the court noted "[y]ou can't replace programs with promises."[37] Thus the court established that "continuing expansion" would be judged by *measurable results*. This gives even more import to the need for a statistical measure of how an institution can meet the "substantially proportionate" prong of the Regulations.

Additionally, at Indiana University of Pennsylvania, there were women athletes of sufficient ability who had been on the eliminated teams, who had competed adequately. The *Favia* court considered these two factors especially significant when it determined that Indiana University of Pennsylvania had failed to comply with the third prong of the full and effective accommodation test.[38]

Defendants in Title IX cases have complained that the third prong of this test would require a university to start up a new team for any woman who expresses a desire to compete, once the university has been shown to have failed the "substantially proportionate" prong of the test.[39] However, in the Title IX cases discussed in this Article,[40] all that was at issue was the accomodation of either teams that had previously been competing effectively and were eliminated or reduced from varsity to club status, or existing teams in club status that the plaintiffs sought to have upgraded. The presence of the players on these teams and their desire to continue competing

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35. *Id.* at 584–85; *see also* 44 Fed. Reg. 71,413, 71,418 (laying out this first of the three prongs for meeting the effective accomodation test for Title IX compliance).

36. *Favia*, 812 F. Supp. at 585; *see also* 44 Fed. Reg. at 71, 418 (laying out this second of the three prongs for meeting the effective accomodation test for Title IX compliance).

37. *Id.* at 585.

38. *Id.* at 585; *see also* 44 Fed. Reg. 71,418 (laying out this third of the three prongs for meeting the effective accomodation test for Title IX compliance).

39. *See, e.g.*, Cohen v. Brown Univ., 879 F. Supp. 185, 208 n.47 (D.R.I. 1995). Universities also express fear that there will be wholesale elimination of non-revenue-producing men's sports in order to bring the athletics programs into compliance with Title IX (or that football will be "ruined" by being forced to operate with smaller squads). Male athletes who seek restoration of eliminated teams have had little success in court, not having disparate participation rates upon which to rely. *See, e.g.*, Gonyo v. Drake Univ., 837 F. Supp. 989, 994 (S.D. Iowa 1993) ("Title IX does not establish a right to participate in any particular sport in one's college and there is no constitutional right to participate in intercollegiate or high school athletics."). The *Gonyo* court held that to drop men's wrestling was not a Title IX violation where males were 75.3% of the athletes and only 42.8% of the undergraduates. *Id.* at 992, 996; *see also* Kelley v. Bd. of Trustees, 35 F.3d 265, 269 (7th Cir. 1994), *cert. denied*, 115 S. Ct. 938 (1995) (holding that University's decision to terminate the men's swim team but not the women's swim team did not violate Title IX where men were 76.6% of the athletes and only 56% of the undergraduate student body).

40. Cook v. Colgate Univ., 802 F. Supp. 737 (N.D.N.Y. 1992), *vacated as moot and remanded*, 992 F.2d 17 (2d Cir. 1993); Favia v. Indiana Univ. of Pa., 812 F. Supp. 578 (W.D. Pa.), *aff'd*, 7 F.3d 332 (3d Cir. 1993); Roberts v. Colorado State Univ., 814 F. Supp. 1507 (D. Colo.), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied*, 114 S. Ct. 580 (1993); Cohen v. Brown Univ., 809 F. Supp. 978 (D.R.I. 1992), *aff'd*, 991 F.2d 888 (1st Cir. 1993), *aff'd on reh'g*, 879 F. Supp. 185 (D.R.I. 1995).

was deemed sufficient to show that the third prong was not satisfied.[41] These are hardly the extreme cases about which the defendants complain.

Since these cases present dedicated athletes with fairly high levels of competency, thus far it is not clear what minimum level of interest and abilities, or what assurance of effective competition, needs to be demonstrated by a plaintiff in order for Title IX to mandate the establishment of a completely new team. The settlement in *Sanders v. University of Texas at Austin*[42] mandated the creation of new teams when female students demonstrated that interests and abilities were present to a large enough extent to force the University to establish varsity teams in soccer, softball, and field hockey. The women athletes could demonstrate this through the existence of club and intramural teams and the growth of competition in these sports in Texas high schools in recent years. *The Office for Civil Rights Investigator's Manual* suggests that an on-campus survey be used to learn what new sports might be added by schools seeking to comply with Title IX.[43] This technique has been used, for example, prior to a settlement in *Kiechel v. Auburn University*;[44] the plaintiffs demonstrated that 1,300 women undergraduates at Auburn University had signed a petition expressing their interest in participating in women's varsity soccer.[45]

The *Favia*[46] court became the first federal court explicitly to adopt and embrace the provisions of the OCR Policy Interpretation that set forth the three prong test for determining whether the interest and abilities of women are being effectively accomodated. It did so by granting an injunction reinstating the women's gymnastics and field hockey teams at Indiana University of Pennsylvania after arguments by the plaintiffs that rested upon this interpretation. The University subsequently moved to modify the injunction by replacing women's gymnastics with women's soccer, a move that would have increased the female participation rate, but would have decreased the percentage of the athletics budget going to women's sports. The Third Circuit upheld the district court's refusal to modify the injunction.[47]

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41. It is generally established that plaintiffs bear the burden of proof for the effective accommodation prong of the test. The district courts in *Cohen* and *Roberts* improperly assigned the burden of proof for this prong to the defendant, but the circuit courts of appeal have found those mistakes to be harmless errors, as the records were adequate to carry what should have been the plaintiffs' burdens. Roberts v. Colorado State Bd. of Agric., 998 F.2d 824, 831 (10th Cir.), *cert. denied*, 114 S. Ct. 580 (1993); Cohen v. Brown Univ., 991 F.2d 888, 903–04 (1st Cir. 1993), *aff'd on reh'g*, 879 F. Supp. 185 (D.R.I. 1995).

42. Sanders v. University of Tex., No. A-92-CA-405 (W.D. Tex. filed Nov. 10, 1992) (order approving settlement agreement on Oct. 24, 1993).

43. VALERIE M. BONNETTE & LAMAR DANIEL, OFFICE FOR CIVIL RIGHTS, U.S. DEPT. OF EDUC., TITLE IX ATHLETICS INVESTIGATOR'S MANUAL 27 (1990).

44. Kiechel v. Auburn Univ., No. CV-93-V-474-E (M.D. Ala. filed April 14, 1993).

45. *Id.*

46. Favia v. Indiana Univ. of Pa., 812 F. Supp. 578 (W.D. Pa.), *aff'd*, 7 F.3d 332 (3d Cir. 1993).

47. Favia v. Indiana Univ. of Pa., 7 F.3d 332, 344 (3d Cir. 1993).

4. *All Three Alternatives.* In May 1991, Brown eliminated University funding for the varsity women's gymnastics and volleyball teams, as well as the men's golf and water polo squads.[48] A class action suit was brought on behalf of all present and future Brown University women students and potential students who participate, seek to participate, and/or are deterred from participating in intercollegiate athletics funded by Brown. A preliminary injunction reinstated the women's gymnastics and women's volleyball teams to university-funded varsity status and prohibited the elimination or reduction in status or funding of any other existing women's varsity teams.[49]

In upholding the injunction, the Court of Appeals for the First Circuit stressed that an institution could not be found in violation of Title IX unless it failed to satisfy *any* of the alternative tests promulgated in the OCR regulations. That is, the plaintiffs first must show that the participation rates and enrollment rates are not substantially proportionate to succeed in a Title IX suit.[50] The defendants also then must fail to show that there is a pattern of continuing expansion, *and* fail to show that the institution is fully and effectively accommodating the interests and abilities of the women students in order for a court to find a violation of Title IX.[51]

Following the First Circuit's decision, a trial was held on the merits of the plaintiff's claim. Although the heart of the suit was Brown's alleged failure effectively to accommodate the interests and abilities of its women students, the plaintiffs cited disparate treatment in a number of areas covered by the Title IX regulations.[52] These treatment issues were settled by the parties after the First Circuit decision leaving only the issue of effective accommodation for the district court to try.

In the 1993–94 seasons 61.87% of the 897 varsity athletes at Brown were men and 38.13% were women.[53] In contrast, 48.86% of the 5,772 undergraduates were men and 51.14% were women.[54] This data led the district court to find that Brown failed to meet the "safe harbor" of substantial proportionality, the first of the three prongs of the Title IX Regulations regarding the Effective Accomodation area of inquiry.[55]

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48. After originally calling the demoted teams "club varsities," Brown renamed them "intercollegiate clubs" and then introduced a new classification of sports - donor-funded varsity. Cohen v. Brown Univ., 879 F. Supp 185, 189 n.6 (D.R.I. 1995). These teams were expected to compete at the varsity level but without any university funds and with few university privileges. *Id.* at 189. The men's donor-funded teams, drawing on a base of a half century or more of alumni participants, were able to raise more money than the women's donor-funded teams, which operated at a much lower-funded level than either the men's donor-funded or the university-funded teams. *Id.* at 189–90.

49. Cohen v. Brown Univ., 809 F. Supp. 978, 1001 (D.R.I. 1992), *aff'd*, 991 F.2d 888 (1st Cir. 1993, *aff'd on reh'g*, 879 F. Supp. 185 (D.R.I. 1995).

50. Cohen v. Brown Univ., 991 F.2d 888, 897–98 (1st Cir. 1993), *aff'd on reh'g*, 879 F. Supp. 185 (D.R.I. 1995).

51. *Id.* at 898.

52. Cohen v. Brown Univ., 809 F. Supp. 978, 994–97 (D.R.I. 1992), *aff'd*, 991 F.2d 888 (1st Cir. 1993), *aff'd on reh'g*, 879 F. Supp. 185 (D.R.I. 1995).

53. Cohen v. Brown Univ., 879 F. Supp. at 185, 211 (D.R.I. 1995).

54. *Id.* at 211.

55. *Id.* at 192. The court rejected a number of alternative methods for computing both the

The district court also found that Brown did not satisfy the "continuing expansion" prong of the Effective Accomodation test in the Regulations. Brown had expanded athletic programs for women rapidly in the 1970s after the former women's college, Pembroke, was absorbed into Brown. This indicated a *history* of program expansion, but no new teams had been added since 1982, except for one that was added after the preliminary injunction was issued. Thus it could not be said that Brown had a *continuing practice* of expansion. The court stated:

> Because merely reducing program offerings to the overrepresented sex does not constitute program "expansion," the fact that Brown has eliminated or demoted several men's teams does not amount to a continuing practice of program expansion for women. In any case, Brown has not proven that the percentage of women participating in intercollegiate athletics has increased. Since the 1970s the percentage of women participating in Brown's varsity athletic program has remained remarkably steady.[56]

Holding that reducing program offerings for men cannot satisfy the continuing expansion part of the test was a step forward in Title IX jurisprudence. However, had the number of male participants decreased sufficiently, so that the populations were "substantially proportionate," Brown would have been in compliance under the "safe harbor" test; that is, Brown would not have been in violation of Title IX.[57]

In an attempt to show that the interests and abilities of women athletes were being fully accommodated, Brown presented the results of a survey. Brown had conducted the survey for the purpose of ascertaining what sports currently not offered were of interest to students, and also summarized information as to interests of potential female students that was submitted as part of the Brown admission applications process.[58] But the First Circuit disregarded these studies and affirmed the preliminary injunction issued by the district court. "[Prong three] requires a relatively simple assessment of

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number of "participation opportunities" and the number to which that should be compared for purposes of determining "substantially proportionate." The court chose to count all varsity athletes, university-funded or not, as participants. Secondly, it determined that the opportunities were to be measured by actual participants, not by a hypothetical number which would include filled and "unfilled" slots by counting the maximum size squad ever achieved or counting as women's "opportunities" the number of participants on a men's team if it exceeded the number of participants on a similar women's team. For example, there were 30 members of the men's baseball team compared to 15 on the women's softball team; Brown wanted to count 30 "participation opportunities" for women, even though there was considerable testimony that baseball teams use more players than do softball teams.

Finally, borrowing from Title VII jurisprudence, Brown unsuccessfully contended that rather than comparing the participation rate to enrollment figures, the proper comparison figure was the percentage of women among Brown students or applicants or potential applicants interested in participating in athletics. The court found that determining an appropriate pool would be a logistical nightmare; further, the court stated that these interests were taken into account by allowing universities who fail to meet the first prong of the test to escape sanction by complying with one of the other two.

56. *Id.* at 211 (citations omitted).

57. *Id.* at 202.

58. *Id.* at 206.

whether there is unmet need in the underrepresented gender that rises to a level sufficient to warrant a new team or the upgrading of an existing team"[59] and the level of competition of the club teams was adequate evidence of Brown's failure to accommodate fully the needs of its female students.[60] The district court reiterated this finding in its decision on the merits.[61]

Brown also offered the district court the theory that the full and effective accommodation test was not violated because men also had unmet needs and that women were being accommodated to the same extent as men.[62] The court rejected this argument, stating, "[w]e conclude that [the Department of Education's] Policy Interpretation means exactly what it says. This plain meaning is a proper, permissible rendition of the statute."[63] Thus, the court refused to create a new defense for schools. The unmet needs of male athletes did not excuse the unmet needs of the female athletes. The court also rejected Brown's assertion that the full and effective accommodation test violates the Fifth Amendment's Equal Protection Clause.[64]

The court summarized the burden-of-proof framework for Title IX by stating that, "a Title IX plaintiff makes out an athletic discrimination case by proving numerical disparity, coupled with unmet interest, each by a fair preponderance of the credible evidence, so long as the defendant does not rebut the plaintiff's showing by adducing preponderant history-and-practice evidence."[65] The court thus highlighted the importance of the substantial proportionality test, making it clear that the plaintiff must show that this test is not met in order to proceed with a claim. However, the court did not indicate what level of statistical disparity (between the female athletic participation rate and female undergraduate enrollment) a Title IX plaintiff initially must show to prove a violation.[66]

III. THE USE OF STATISTICS IN TITLE IX LITIGATION

A. Statistical Significance

In *Roberts v. Colorado State University*,[67] the plaintiff-members of the terminated women's varsity softball team argued that "substantially proportionate" means a difference in percentages that is statistically significant.[68] While the court did not rely on this definition, it did refer to it as a mea-

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59. Cohen v. Brown Univ., 991 F.2d 888, 900 (1st Cir. 1993), *aff'd on reh'g*, 879 F. Supp. 185 (D.R.I. 1995). Brown used much the same argument regarding interest levels that had been rejected in consideration of prong one. *See* discussion *supra*, note 55 and accompanying text.

60. *Id.* at 904.

61. Cohen v. Brown Univ., 879 F. Supp. 185, 212 (D.R.I. 1995).

62. *Id.* at 208–09.

63. *Cohen*, 991 F.2d at 900.

64. *Id*; *see* U.S. CONST., amend. V, cl. 2.

65. *Id.* at 902.

66. *Id.*

67. Roberts v. Colorado State Univ., 814 F. Supp. 1507 (D.Colo.), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied*, 114 S. Ct. 580 (1993).

68. *Id.* at 1513.

sure of substantial proportionality.[69] Although the plaintiffs failed to secure a preliminary injunction to stop the termination of their team, both parties stipulated to a stay of the sale of the equipment, continuation of the players' scholarships for the upcoming year, and expedited discovery.[70]

The University argued that in order to find a violation of Title IX, each part of the athletic program had to be found wanting; for example, plaintiffs would have to show that not only were there not enough opportunities for women to participate, but that female participants were treated less well than their male counterparts in areas such as financial aid, scheduling, and in the use of facilities. The court rejected this attempt by the defendant to increase the plaintiff's burden. Instead, the court held that a violation of Title IX may be shown by proof of a substantial violation in any one of the three major areas of investigation set out in the Policy Interpretation, so that a failure to satisfy the three-prong test of substantial proportionality, continuing expansion, and full and effective accommodation would suffice.[71] The court noted that the plaintiffs bear the burden of proving that participation rates among women and men are not substantially proportionate to the undergraduate enrollments.[72] The defendants then bear the burden of proof for the second and third prongs of the three-part test.[73]

Beginning with 1980–81 and ending in 1992–93, the gaps between women's athletic participation rates and their undergraduate enrollment at Colorado State University varied from a 7.5% difference in 1980–81 to 18.6% in 1984–85 and back to 10.6% in 1993.[74] The University argued that a difference of only 10.6% constituted substantial proportionality, pointing out that virtually every other institution in the country had even worse disparities.[75] The court rejected this argument and found that over the past decade, female participation rates at CSU were not substantially proportionate to the enrollment figures, regardless of comparison to other schools.[76] Although the *Roberts* court set no maximum allowable difference, it stated that, "a disparity between female athletic participation and female undergraduate enrollment of 10.6% is not acceptable under Title IX absent a showing by defendants under the second or third prong of the Effective Accomodation Test."[77] *Roberts* and other cases do not state what level of disparity in participation is acceptable under Title IX.

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69. *Id.*

70. *Id.* at 1509–10.

71. *Id.* at 1511.

72. Roberts v. Colorado State Univ., 814 F. Supp. 1507, 1511 (D.Colo.), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied*, 114 S. Ct. 580 (1993).

73. *Id.*

74. *Id.* at 1512.

75. *Id.* at 1513.

76. The court held that the participation rates at other institutions were of no legal consequence. Roberts v. Colorado State Univ., 814 F. Supp. 1507, 1513 (D.Colo.), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied*, 114 S. Ct. 580 (1993).

77. *Id.*

CSU had added eleven varsity sports for women during the 1970s, but by 1992–93, it had only eight women's varsity teams.[78] Further, the participation opportunities had dropped from 183 to 120.[79] But the University nonetheless contended that the 1970s expansion and the fact that the 55-participant men's baseball team was cut at the same time as the 18-participant women's softball team showed a history and continuing practice of program expansion.[80] However, the court noted that over the entire period, the number of male athletes decreased by 20%, whereas the number of female athletes decreased by 34%.[81]

Further, in 1983 the OCR had conducted a Title IX compliance review and had found CSU in violation.[82] The University had agreed to a corrective plan at that time, which required CSU to increase the participation rate of women to 46.5% by 1987–88. But by that time, the participation rate had only reached 33.8%.[83] CSU had further damaged its credibility by submitting a progress report in 1985, claiming a participation rate of 42.9% for that year when the rate was actually 30.7%, and the University also had failed to add the women's teams that it had promised to establish.[84] In light of these failures, the court found "that none of the major goals articulated in defendants' 1983 corrective action were ever attained [and] . . . that over the last twelve years women have shouldered a disproportionate amount of the program contraction efforts at CSU."[85] The court concluded that CSU had not demonstrated a history and continuing practice of program expansion for women.[86] Therefore, CSU failed to meet the second prong of the Effective Accomodation test of the OCR Regulations.

Finally, the testimony of the plaintiffs and other players, bolstered by evidence of softball's growing popularity nationwide and in Colorado high schools, and indications that other sports for which there were no varsity teams also enjoyed wide support among women, convinced the court that the interests and abilities of women were not being fully and effectively accommodated by the University.[87] Thus they held that none of the three alternatives had been satisfied and that Colorado State University was in violation of Title IX.

The Tenth Circuit Court of Appeals found that the district court had misallocated the burden of proof for prong three of the test to the defendant rather than the plaintiffs.[88] However, holding that there was adequate evi-

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78. *Id.* at 1514.
79. *Id.*
80. *Id.*
81. Roberts v. Colorado State Univ., 814 F. Supp. 1507, 1515 (D.Colo.), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied,* 114 S. Ct. 580 (1993).
82. *Id.*
83. *Id.*
84. *Id.*
85. *Id.* at 1516.
86. *Id.*
87. *Id.* at 1517–18.
88. Roberts v. Colorado State Bd. of Agric., 998 F.2d 824, 831 (10th Cir.), *cert. denied,* 114

dence in the record to sustain the plaintiffs' burden to show that the interest and abilities of women athletes at CSU were not being fully and effectively accommodated, the appellate court affirmed the district court ruling.[89]

The *Roberts* case presented one of the best opportunities for a court to adopt a statistical measure of substantial proportionality, since the plaintiffs directly raised the issue of statistical significance in the measurement of the population disparities. But the court deferred the issue. The next section will discuss the appropriateness of such a statistical measure.

B. Measuring Substantial Proportionality

1. *The Use of Statistical Measures in Title IX Cases.* The *Cohen, Roberts,* and *Favia* courts held that 13.01%,[90] 10.6%[91] and 19.1%,[92] respectively, the differences between the female athletic participation rate and the female undergraduate population, were sufficiently large to prevent a finding of substantially proportionate representation; however, none of the courts made it clear how large a difference would be allowable for a university to comply with Title IX. In *Roberts,* the district court suggested that if Colorado State University were to keep its eighteen-member women's varsity softball team, add a twenty-three-member women's varsity soccer team, and add a fifteen-member women's varsity alpine ski team, then the difference would be reduced to an acceptable 1.7%.[93]

S. Ct. 580 (1993).

89. *Id.* at 831.

90. Cohen v. Brown Univ., 879 F. Supp. 185, 211 (D.R.I. 1995) (finding that while 51.14% of the undergraduates were female, only 38.13% of student-athletes were female).

91. Roberts v. Colorado State Univ., 814 F. Supp. 1507, 1513 (D. Colo.), *aff'd in part and rev'd in part sub nom.* Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir.), *cert. denied,* 114 S. Ct. 580 (1993).

92. Favia v. Indiana Univ. of Pa., 812 F. Supp. 578, 585 (W.D. Pa.), *aff'd,* 7 F.3d 332 (3d Cir. 1993) (finding that 55.61% of the undergraduate population was female whereas only 36.51% of the student-athlete population was female).

93. 814 F. Supp. at 1518. The *Investigator's Manual* issued by the OCR in 1990 is remarkably unhelpful:

> If the results are substantially proportionate (for example, if the enrollment is 52% male and 48% female, then, ideally, about 52% of the participants in the athletics program should be male and 48% female), the recipient is effectively accommodating the interests and abilities of both sexes.

BONNETTE & DANIEL, *supra* note 43, at 24 (1990).

The district court in *Cohen* said that "substantially proportionate" must be a standard stringent enough to effectuate the purposes of the statute:

> [S]ubstantially proportionate accounts for the possibility of minor fluctuations in the undergraduate population and in the athletic program on one year to the next. Thus, substantial proportionality is properly found only where the institution's intercollegiate athletic program mirrors the student enrollment as closely as possible. This definition takes into account any small variations that are beyond the institution's ability to control or predict.

Cohen v. Brown Univ., 879 F. Supp. 185, 202 (D.R.I. 1995).

The settlement in *Sanders v. University of Texas at Austin* called for the participation rate to be brought up to 44%, which was within 3% of the enrollment rate at the time of the settlement. It also provided that the share of athletics scholarship money going to women

2. *The Use of Statistical Measures to Determine Discrimination in Jury Selection.* In other contexts, courts also have had to decide how large a deviation must be in order to indicate that something may be amiss[94] and have used a straightforward application of a binomial model to make this determination. That is, a model where each person is either in a given group or not in that group. Although it took many years, the courts have come to recognize the role probability plays in assessing the probative value of statistical evidence. The original cases dealt with discrimination in the selection of a jury. In a typical situation, an African-American was indicted by a grand jury and convicted by a petit jury from which blacks were excluded to varying degrees. The defendant sought the intervention of the federal courts to overturn the resulting state court conviction on the grounds that the state abridged the defendant's right to a trial by a jury of one's peers based upon this exculsion.[95] Later variations involved discrimination against Mexican-American[96] or women jurors.[97]

Originally, state laws excluded African-Americans directly or indirectly, or local officials deliberately excluded them from jury service.[98] When faced with the issue of whether this violated a defendant's constitutional rights, the Supreme Court took the view that courts should examine the difference between the percentage of African-Americans on the grand jury or petit jury panel and their percentage in the local population or on tax or voter lists in making that determination. For example, in *Swain v. Alabama,*[99] African-Americans constituted 26% of the adult population of Talladega County, but only about 10–15% of the grand and petit jury venires.[100] But without proof of discriminatory intent, the Court held that a 10% difference in populations did not establish proof of discrimination.[101]

On the other hand, in *Avery v. Georgia,* the defendant was convicted by a jury selected from a panel of sixty, which was chosen from a box containing tickets with the names of persons on the jury roll.[102] Although the selection from the box was supposedly at random, no African-Americans, who made up 5% of the names in the box, were selected.[103] Thus, although the reduction was only from 5% to 0%, the end result was that there were *no* African-Americans on the panel. In the successful challenge to the convic-

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should be within 2% of the participation rate.

94. For example, courts must decide what difference between the percentage of Chicanos in a jury pool and the percentage of Chicanos in the eligible population is substantial enough to indicate discrimination in jury selection. Castaneda v. Partida, 430 U.S. 482 (1977).

95. *See* Swain v. Alabama, 380 U.S. 202 (1965).

96. *See* Castaneda v. Partida, 430 U.S. 482 (1977).

97. Taylor v. Louisiana, 419 U.S. 522 (1975).

98. *See, e.g.,* Strauder v. West Virginia, 100 U.S. 303 (1879).

99. 380 U.S. 202, 205 (1965).

100. No African-American had ever actually served on a petit jury, and in fact the prosecution had struck the six African-Americans on the panel for Swain's trial. *Swain,* 380 U.S. at 222–23.

101. *Id.* at 208–09.

102. 345 U.S. 559, 560–61 (1953).

103. It also happened that the names of whites were printed on white paper and the names of African-Americans on yellow paper. *Id.,* 345 U.S. at 560.

tion, Justice Frankfurter said, "The mind of justice, not merely its eyes, would have to be blind to attribute such an occurrence to mere fortuity."[104]

In *Whitus v. Georgia*,[105] jury panels were chosen from tax rolls on which 27.1% of those listed were African-Americans, each of whom had a special designation "(c)" attached to her or his name. The chosen grand jury was 9.1% African-American; only 7.8% of the petit jury was African-American.[106] The Court took judicial notice that the likelihood of such an outcome by random selection was six in one million, but specifically said that its decision did not depend on the probability analysis.[107]

Finally, in *Castaneda v. Partida*, the Court acknowledged its reliance on probability in making a prima facie case of discriminatory purpose.[108] In Texas, "key men" in the community were responsible for selecting the jurors. Even though most of the "key men" were themselves Mexican-American, in a county 79.1% Mexican-American, the average jury venire was only 39% Mexican-American over a period of 11 years.[109] The probability of this result would be 1 in 10^{140} if the selection were random.[110] On this basis, the Court overturned the trial court's conviction.

Thus, over a period of 25 years, the Court moved from a discussion of mere percentage differences, which were not necessarily indicative of the likelihood of discrimination, to a discussion of statistically significant differences. The latter is a more telling measure. The composition of the juries reported in *Swain* had one chance in 100 million of occurring if the selection were random, whereas the chance of the result in *Avery* is nearly one in 20. But Swain failed to sustain his claim of discrimination whereas Avery prevailed. Had the Court applied a probability analysis to the *Swain* and *Avery* cases, the results might have been reversed.

Soon after *Castaneda*, the Supreme Court continued its movement towards the use of statistical measures when it decided *Hazelwood School District v. United States*.[111] The Hazelwood School District was accused of discriminating against African-American teaching candidates.[112] The Court computed the expected number of African-American teachers to be employed, based on qualified candidates in the area, compared that with the observed number,[113] and noted a variation by five or six standard deviations.[114] The Court then quoted from *Castaneda*, stating that, "'if the differ-

104. *Id.* at 564 (Frankfurter, J. concurring.)
105. 385 U.S. 545 (1967).
106. *Id.* at 552.
107. *Id.* at 552 n.2.
108. 430 U.S. 482, 495 (1977).
109. *Id.* at 495.
110. *Id.* at 496–97 n.17.
111. 433 U.S. 299 (1977).
112. *Id.* at 303.
113. The observed number here refers to the number of African-American teachers working in the Hazelwood School District.
114. *Id.* at 309. Standard deviation refers to the square root of the sum of the squares of the difference between observations and the mean divided by one less than the number of observations in the sample. It measures the dispersion of sample observations about the mean.

ence between the expected value and the observed number is greater than two or three standard deviations,' then the hypothesis that teachers were hired without regard to race would be suspect."[115] If the number of standard deviations is more than the agreed-upon threshold (or alternatively, the probability is less than the agreed-upon probability value), then the result is said to be *statistically significant* at the agreed upon level, for example at the 5% level.[116]

Unfortunately, there is a huge difference between two and three standard deviations. The probability that the difference will be as large or larger in absolute value than two standard deviations in a sample of size at least 30 is approximately 0.05, whereas the probability associated with three standard deviations is approximately 0.003. This imprecision has caused all sorts of difficulties for lower courts, but has never been clarified by the Supreme Court.[117]

This test of "two or three standard deviations" has been applied to Title VII cases, and defines "gross statistical disparity."[118] Courts have used the

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115. *Hazelwood*, 433 U.S. at 309, 310 n.14 (*quoting* Castaneda v. Partida, 430 U.S. 482, 496--97 n.17 (1977)).

116. Probability analyses are widely used in legal contexts, for example, in evaluating DNA evidence, in antitrust market studies, in assessing whether scientific fraud has been committed, and in computing damages in wrongful death cases. *See generally* I-II JOSEPH L. GASTWIRTH, STATISTICAL REASONING IN LAW AND PUBLIC POLICY *passim* (1988).

117. It has been pointed out by some statisticians that the degree of imbalance required to make out a prima facie Title VII violation, a probability of 1 in 20 or even 3 in 1000, is exceedingly exacting, perhaps better suited to a criminal or quasi-criminal standard of proof than the simple preponderance of the evidence test of civil cases. *See, e.g.*, John M. Dawson, *Are Statisticians Being Fair to Employment Discrimination Plaintiffs?* 21 JURIMETRICS J. 1 (1980).

To compute the number of standard deviations in a binomial model such as this one, we form the statistic

$$z = \frac{p - p_0}{\sqrt{\frac{p_0(1 - p_0)}{n}}}$$

where p0 is the percentage of African-Americans in the population, p is the percentage in the relevant group and n is the size of the relevant group. The statistic Z has an approximately normal (bell curve) distribution when n is at least 30 so that the probability can be read from a normal probability table (or computed using standard software). The larger the number of standard deviations, the smaller the probability of an event occurring randomly. *See, e.g.*, DAVID R. ANDERSON, DENNIS J. SWEENEY, & THOMAS A. WILLIAMS, STATISTICS FOR BUSINESS AND ECONOMICS 199 (5th ed. 1993).

In issuing Title VII guidelines, the Equal Employment Opportunities Commission developed the "4/5 rule." That is, a selection rate for the disfavored groups that is less than 4/5 of the selection rate for the favored group will be considered evidence of discrimination. For example, if 400 of 1000 men pass an exam but only 300 of 1000 women, the selection rate for men is 0.4 and that for women is 0.3. Then .3/.4 = 3/4 < 4/5, so the exam process would be suspect. This has the disadvantage — or advantage, depending upon one's point of view — of not taking into account the size of the samples. If 3 of 10 women and 4 of 10 men pass an exam, the ratio of the selection rates is surely less probative than in the previous case, but the same conclusion would result under the "4/5 rule." However, the first result would be highly statistically significant, but the second would not.

118. *Hazelwood*, 433 U.S. at 309.

term "manifest imbalance" to describe what must be shown to justify affirmative action in the workplace,[119] but the courts have not clarified the issue of whether the test of two or three standard deviations is appropriate to establish such a "manifest imbalance" warranting affirmative action. However, in *Johnson v. Transportation Agency*,[120] the Supreme Court indicated that "manifest imbalance" might be something less than what would support a prima facie case of discrimination against the employer.[121]

3. *The Use of Statistical Measures in Title IX Cases.* A showing of "gross statistical disparity" can establish a prima facie Title VII violation. A demonstration of "manifest imbalance" is a prerequisite for affirmative action. The courts have not explicitly stated which is more stringent; the relationship among these various tests is unclear. But applying this rationale to Title IX, the Regulations of which state that a showing that the number of women in an athletic program is "not substantially proportionate" to the women in the general university population can establish violation of the statute. It appears that a "gross statistical disparity" or a "manifest balance" in the percentages of women athletes and women undergraduates would establish such a violation.

It has been suggested that an analysis similar to Title VII jurisprudence should be employed to determine whether an institution has met the "substantially proportional" test in Title IX cases.[122] Indeed, such an argument was made, and evidence was introduced to prove this in *Roberts*.[123]

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119. *See, e.g.*, Johnson v. Transportation Agency, 480 U.S. 616, 617 (1987).

120. 480 U.S. 616 (1987).

121. *Id.* at 632; *see also* David D. Meyer, Note, *Finding a "Manifest Imbalance": The Case for a Unified Statistical Test for Voluntary Affirmative Action Under Title VII*, 87 MICH. L. REV. 1986, 1999 (1989).

122. *See* Walter B. Connolly, Jr. & Jeffrey D. Adelman, *A University's Defense to a Title IX Gender Equity in Athletics Lawsuit: Congress Never Intended Gender Equity Based on Student Body Ratios*, 71 U. DET. MERCY L. REV. 845, 894 (1994). Connolly was counsel for Brown University; in that case using a probability analysis showed the difference between the participation rate and the enrollment rate of women to be statistically significant. Thus, under the probability analysis Brown would have been found to be in violation of the substantial proportionality requirement, as they were anyway. Plaintiffs presented such evidence, but the court relied upon the actual percentage difference, 13.01%, in finding that Brown failed the "substantially proportionate" test. This percentage difference between female athletes and female students enrolled is more than six standard deviations in magnitude and the probability of such a result occurring by chance is less than one in a million. It should be noted that Brown proposed using some figure other than the percentage of women in the student body as the figure to which the participation rate should be compared; they also wanted to compute the participation rate differently.

123. The author of this Article served as an expert witness during the *Roberts* trial. The court noted her contributions to the case in stating:

> Dr. Gray testified credibly and persuasively that the difference between the proportion of women as undergraduates and their participation rate in athletics at CSU is highly statistically significant, and represents a persistent pattern over the last ten years. The Court agrees with Dr. Gray's conclusion that the disparities between women's enrollment and athletic participation rates at CSU over the last decade could not have occurred merely by chance.

Roberts v. Colorado State Univ., 814 F. Supp. 1507, 1513 (D. Colo.), *aff'd in part and rev'd in*

Although the court there referred to the probability analysis that had been presented, it appeared to base its decision instead on the actual 10.5% difference between the participation rate and the enrollment rate of women.[124] Applying a probability analysis showed that the two rates differed by more than *four* standard deviations in each of the years from 1982–83 through 1991–92, with corresponding probabilities of less than 0.001%, or less than 1 in 100,000.

The problem with employing a probability analysis in Title IX cases, attractive though it may be, is that the selection of athletes is *not* a random process. The number of slots to be filled by each sex is essentially predetermined each year by the coaches.[125] Obviously, there is a certain amount of fluctuation due to last minute transfers and the like, which would also be present in the general student enrollment. That is why no court has held, nor have plaintiffs contended, that the two rates must be exactly equal. Thus, even though the process is not random, there is some chance fluctuation so that using a probability analysis to measure whether the difference is significant seems appropriate. However, if the number of athletes is very large, even a small difference can be statistically significant. Thus it might be wise to combine a test of statistical significance with an actual number to denote a minimum difference considered to be of *practical* significance, perhaps 2% in light of the court's dictum in *Roberts*.[126] In any event, even though other facets of Title VII analysis may be inapposite for Title IX cases, borrowing the concept of statistical significance to interpret what is "substantially proportionate" could provide useful guidance for future Title IX litigants, defendants, and courts.

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part sub nom. Roberts v. Colorado State Bd. of Agric., 998 F.2d 824 (10th Cir. 1993), *cert. denied*, 114 S. Ct. 580 (1993).

124. *Id.* The Tenth Circuit read the decree below as relying in part on the statistical significance of the disparities. *Roberts* at 830.

125. It is interesting to note that athletics has been by far the most active area of Title IX litigation. Although many engineering programs still have single-digit representation of women, no one has claimed that this is evidence of a Title IX violation. That there are no unmet needs for engineering studies for women may well be true, but as in the case of athletics, the perceived lack of interest may simply be due to lack of efforts to encourage women. *See* Cohen v. Brown Univ., 879 F. Supp. 185, 207 (D.R.I. 1995). What has made athletics virtually unique is the segregation by sex. The issues in the single sex admission cases, United States v. Virginia, 44 F.3d 1229 (4th Cir.), *cert. granted*, 116 S. Ct. 281 (1995) and Faulkner v. Jones, 51 F.3d 440 (4th Cir.), *cert. dismissed as moot*, 116 S. Ct. 331, *and cert. denied*, 116 S. Ct. 352 (1995), concern constitutional issues, not Title IX. There is an increasing trend to institute girls-only mathematics and science classes in coeducational schools or boys-only "academies" within inner city schools. Some such initiatives have been halted by Title IX considerations. Jane Gross, *To Help Girls Keep Up: Math Class Without Boys*, N.Y. TIMES, Nov. 24, 1993, at A1.

126. 814 F. Supp. at 1518 (D. Colo. 1993). Although the regulations and policy interpretation are silent on prescribing a fixed participation ratio, some athletic conferences have instituted their own regulations. For example, Big Ten schools must have women constituting 40% of their athletic participants by 1997. Catherine Pieronek, *A Clash of Titans: College Football v. Title IX*, 20 J.C. & U.L. 351, 369 (1994). The Southeastern Conference requires that two more women's than men's teams be supported. *Id.* at 370. The NCAA has developed a self-policing certification process that looks at gender equity in the treatment of athletes, but does not require substantial proportionality between participation and enrollment rates. *Id.* at 367.

C. Other Statistical Issues

Although the Investigator's Manual is silent on the subject of the use of probability to measure "substantially proportionate" participation, it does introduce statistical tests to identify disparate impact in the distribution of financial aid. Unfortunately, they are not properly formulated.[127] Although not employed in the cases on which this Article has thus far focused, a properly formulated statistical test can and should be used to judge whether athletic financial assistance is being distributed in a nondiscriminatory fash-

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127. First the manual describes the difference in proportions test. BONNETTE & DANIEL, *supra* note 43, at 153. Z refers to the number of standard deviations. *Id.* Let p1 denote the proportion of successes in sample 1 (where success might be a head turns up when a coin is tossed, a person is hired, etc.), p2 the proportion of successes in sample 2, and n1 and n2 the size of the respective samples. Then we form the statistic:

$$z = \frac{p_1 - p_2}{\sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}}}$$

For sufficiently large n1 and n2, this statistic has an approximately normal distribution and measures the number of standard deviations by which the two proportions differ.

This statistic would be used, for example, in a case where 20 of 100 men and 23 of 100 women were selected for some job, and we want to know whether the difference is statistically significant. However, the manual uses it to measure the difference between the percentage of athletes who are women and the percentage of athletic financial aid going to these women. The second sample size is taken to be the number of dollars of financial aid. Clearly this makes little sense. Dollars are a purely arbitrary unit — quite different values for Z will result if cents are used, or units of $100 or units of scholarships, where the value of the scholarships is, for example, $10,000 each. It is people and dollars, not apples and oranges, which are being compared, but it might as well be the latter as the result is equally inappropriate.

The second test propounded by the manual is used more or less correctly, although not formulated exactly correctly. The test statistic t is formed by

$$t = \frac{\bar{x}_2 - \bar{x}_1}{\sqrt{\frac{\Sigma(\bar{x}_1 - \bar{x}_{1i})^2}{\frac{n_1 - 1}{n_1}} + \frac{\Sigma(\bar{x}_2 - \bar{x}_{2i})^2}{\frac{n_2 - 1}{n_2}}}}$$

where X1 is the average scholarship amount for men, X2 is the average scholarship amount for women, n1 is the number of men athletes, n2 is the number of women athletes, Xli is the amount of scholarship awarded to each man (i = 1, . . . ,n1), and X2i is the amount of scholarship awarded to each woman (i = 1, . . . ,n2). (The manual incorrectly uses n1 and n2 instead of n1–1 and n2–1 in the denominator.) The statistic t measures the number of standard deviations by which the average amounts of scholarships for men and women differ. BONNETTE & DANIEL, *supra* note 43 at 156.

The manual implies that Z tests are used for proportions and t tests are used for means (averages). *Id.* at 153. In fact, for sufficiently large n1 and n2, both have a Z (normal) distribution. The t test is used for means when the sample size is small. *Id.* at 153. Thus the first test should be scrapped and the second, properly denoted, used to measure whether the average scholarships for men and women differ significantly.

ion. It is tempting to try to analyze the rest of the athletics budget by comparing average expenditures per man and per woman. The problem, however, is that, unlike the case with scholarships, there is no way of attributing expenditures to individual athletes other than by taking an average. This would, however, result in a standard error (the denominator in the expression for t) of zero, and, of course, division by zero is not possible.[128]

Another approach would be to consider the expenditures by sport and compare the average expenditure per sport, or average expenditure per sport per athlete, for men and for women. This is not very satisfactory because there are many legitimate, nondiscriminatory reasons why some sports are more expensive than others. Thus simply looking at the budgets for men and women and making some qualitative comparison seems to be the best approach for evaluating equivalence in other athletic benefits and opportunities.

Unlike the four cases detailed above, in which minimal references are made to funding inequalities, *Haffer v. Temple University*, a suit which the plaintiffs had brought under both Title IX and the Equal Protection Clause of the Fourteenth Amendment,[129] focused heavily on each of three areas in a more quantitative analysis:

> (a) the extent to which Temple affords women students fewer "opportunities to compete" in intercollegiate athletics;[130]
> (b) the alleged disparity in resources allocated to the men's and women's intercollegiate athletic programs;[131] and
> (c) the alleged disparity in the allocation of financial aid to male and female student athletes.[132]

In its motion for summary judgment, Temple made the interesting argument that in spite of large differences in expenditures on coaching, equipment, and facilities favoring men, the women's teams had a higher winning percentage so that women were not adversely affected by any spending disparities.[133] Temple also argued that its spending policies did not hurt female athletes because their cumulative grade point averages were higher than those of the male athletes. In response, the court stated that, "the fact that women student athletes have a higher mean cumulative grade point average has no relevance to the issue of whether unequal expenditures violate the equal protection clause."[134] It was only because the plaintiffs did not submit evidence of inferior tutoring services that the court granted sum-

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128. 34 C.F.R. § 106.41(c)(2)-(10).

129. U.S. CONST. amend. XIV, § 1.

130. Haffer v. Temple Univ., 678 F. Supp. 517, 521. See the approach used *supra* note 128 and accompanying text.

131. *Id.* Here a simple comparison of average per capita expenditures seems most appropriate. *See supra* note 126 and accompanying text.

132. *Id.* Once again, asking whether the difference between the average award for males and the average award for females is statistically significant is a good measure of the probability that there is discrimination.

133. *Id.* at 528.

134. *Id.*

mary judgment to Temple on this claim.[135] But the court denied Temple's motion for summary judgment on other claims, such as inferior participation opportunities.[136]

IV. CONCLUSION

Universities need further guidance from the courts or an appropriate regulatory body in order for them to understand what is necessary to comply with Title IX in the important area of effective accommodation. Universities cannot be expected each year to match exactly the percentage of women among athletes with the percentage of women in the undergraduate student body to reach the safe harbor of "substantially proportionate" participation. Yet, to assure equality of opportunity, schools must be held to a strict standard, allowing only for unpredictable fluctuation which plagues both athletic program enrollment and general student enrollment. Accounting for these normal variations is exactly the reason why employing a probability analysis in determining whether female participants and enrollment numbers are "substantially proportionate" would be useful. In each of the cases discussed, the outcome would have been the same, but potential plaintiffs would know that only demonstrating a statistically significant disparity would be enough to establish a violation of the requirement of substantially proportionate participation of male and female athletes and institutions would have a measure that would help them achieve the "substantially proportionate" participation goal to stave off such Title IX suits. The demonstration of a statistically significant disparity would establish a violation of Title IX if the other two prongs of the test, continuing expansion and effective accommodation, could not be shown by the defendant-institution. Adopting such an easily computable test would move the opportunities for women athletes further in the right direction.

135. *Id.* at 533.
136. *Id.* at 527.