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Can We Calculate Fairness and Reasonableness? Determining What Satisfies the Fair Cross-Section Requirement of the Sixth Amendment

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NOTE

CAN WE CALCULATE FAIRNESS AND REASONABLENESS? DETERMINING WHAT SATISFIES THE FAIR CROSS-SECTION REQUIREMENT OF THE SIXTH AMENDMENT

Colleen P. Fitzharris*

The Impartial Jury Clause of the Sixth Amendment requires that the venire from which the state and the defendant draw a twelve-person petit jury be a fair cross-section of the community. The Supreme Court announced a three-prong test in Duren v. Missouri to help courts determine whether there has been a Sixth Amendment violation: (1) whether a distinctive group in the community was excluded; (2) whether the venire was not a fair and reasonable representation of the county population as a whole; and (3) whether that underrepresentation was the result of systematic exclusion. When evaluating the second prong, courts routinely turn to statistical measurements. The four statistical tests that courts have used, including the disparity-of-risk test that the Michigan Supreme Court recently employed in People v. Bryant, fall short of adequately addressing the second prong. This Note proposes two solutions. First, courts should consider the comparative-disparity-of-risk test, borrowed from the medical malpractice loss-of-chance doctrine, as the best measure of whether underrepresentative venires are not fair and reasonable in relation to the community. Second, judges should consider whether a distinctive group in the community has systematically been excluded before turning to the question of whether an underrepresentative venire is fair and reasonable in a given community. After considering whether a distinctive group has been excluded, courts may employ the statistical tests as part of their analysis but should not use thresholds to determine what is fair and reasonable.

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INTRODUCTION

For over 16 months, a computer error in Kent County, Michigan, excluded nearly 75% of the county’s eligible juror population from jury service.¹ Of the 454,000 Kent County names and addresses on the master list of those eligible for jury service, only 118,000 potential jurors received summonses.² Of those people who received jury summonses, the majority of recipients were from zip codes outside the Grand Rapids metro area, excluding a high percentage of the county’s black population that lives in Grand Rapids.³ If the computer program had been working properly and Kent County had mailed jury summonses to the whole population for the first 3 months of 2002, then 322 summonses would have been sent to black people.⁴ Instead, only 163 black people received jury summonses—half the expected number.⁵ The black population of Kent County as a whole is approximately 8.25% of the county’s total population.⁶ Four percent of the veniremembers in Kent County were black.⁷

1. Doug Guthrie & Kyla King, *Kent [County, Michigan] Admits Glitch in Jury Selection*, GRAND RAPIDS PRESS, July 30, 2002, available at <http://www.freerepublic.com/focus/f-news/724777/posts>.

2. *Id.*

3. Amicus Curiae Brief of Criminal Defense Attorneys of Michigan at 2–3, *People v. Bryant*, 822 N.W.2d 124 (Mich. 2012) (No. 141741), 2011 WL 5893816 at *2–3.

4. *Id.* at 3.

5. *Id.*

6. *Id.* at 4.

7. *Id.*

In January 2002, a jury selected from 45 veniremembers⁸—1 black, 1 Latino, and 43 white—convicted Raymond Lee Bryant,⁹ a black man.¹⁰ During the selection of the petit jury,¹¹ Bryant’s attorney noticed the venire’s skewed composition and made a timely objection,¹² arguing that the venire was not reasonably representative of the community¹³ as required by the Sixth Amendment.¹⁴ The trial court denied the motion—a decision that ultimately reached the Michigan Supreme Court.¹⁵

The Michigan Supreme Court concluded that Bryant had not established a violation of the fair cross-section requirement.¹⁶ Its decision rested on the second prong of the *prima facie* fair cross-section test: whether the excluded group’s representation in the venire was “fair and reasonable in relation to the number of such persons in the community.”¹⁷ The court considered four statistical tests to determine whether the representation of black people was fair and reasonable, including a test that no other court had previously applied—the disparity-of-risk test.¹⁸ This Note argues that each of these four prevailing statistical tests for underrepresentation is unworkable, and it proposes two solutions.

Part I examines the history and purpose of the fair cross-section requirement. Part II describes and explains the strengths and weaknesses of the four statistical tests courts use to determine whether a venire is fair and reasonable and argues that the existing approaches are insufficient because they are not broadly applicable and do not comport with the purposes of the fair cross-section requirement. Part III proposes two new approaches. Section III.A argues that courts should consider the comparative-disparity-of-risk test because it is a better measure of the effect of the State’s systematic exclusion of a distinctive group. Section III.B argues that relying exclusively

8. A “veniremember” is a person who serves on a “venire.” For the purposes of this Note, a “venire” is a larger group of jurors from which the 12-member jury is selected through *voir dire*.

9. *People v. Bryant*, 822 N.W.2d 124, 128 (Mich. 2012), *cert. denied*, 133 S. Ct. 664 (2012).

10. Biographical Information of Raymond Lee Bryant, MICH. DEPARTMENT CORRECTIONS, <http://mdocweb.state.mi.us/OTIS2/otis2profile.aspx?mdocNumber=396520> (last visited May 17, 2013).

11. A “petit jury” is the group of 12 people who ultimately hear the evidence presented and render a verdict.

12. *Bryant*, 822 N.W.2d at 128.

13. A venire is “representative” when it contains roughly proportionate numbers of people from each distinctive group in the county. “Community” refers to all the people in the relevant county who are eligible to serve as jurors according to state law.

14. *Taylor v. Louisiana*, 419 U.S. 522, 537 (1975).

15. *Bryant*, 822 N.W.2d at 126.

16. *Id.* at 145, 147.

17. *Id.* at 135, 145 (quoting *Duren v. Missouri*, 439 U.S. 357, 364 (1979)) (holding that there was no dispute that black people are a distinctive group and that the computer glitch resulted in the systematic exclusion of black veniremembers).

18. *Id.* at 138–45, 142 n.92. The other tests considered were the absolute-disparity test, the comparative-disparity test, and the standard-deviation test. *Id.*

on statistical tests and thresholds is inappropriate for determining whether or not venires are underrepresentative in relation to the community. Thus, it recommends that courts first look to whether the defendant has proven that the jury-selection process systematically excluded a distinctive group in the community before considering whether there was fairness and reasonableness. Only then should courts consider the various statistical tests to guide—but not determine—the outcome of a defendant’s fair cross-section claim.

I. THE FAIR CROSS-SECTION REQUIREMENT

This Part examines the purposes of the fair cross-section requirement that guides the jury-selection process. Section I.A explains the origins of the requirement and how a defendant may bring a *prima facie* challenge regarding the composition of the venire. Section I.B explores the underlying rationales for the fair cross-section requirement and suggests that any test that courts employ to determine whether there has been a violation of the Sixth Amendment should serve this purpose.

A. *The Fair Cross-Section Test*

The fair cross-section requirement derives from the Constitution’s guarantee of an impartial jury. The Sixth Amendment states that “[i]n all criminal prosecutions, the accused shall enjoy the right to . . . an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law.”¹⁹ The Supreme Court has long held that the Impartial Jury Clause requires that the veniremembers be “drawn from a fair cross section of the community.”²⁰

To prove a fair cross-section violation, the defendant must demonstrate that a systematic exclusion of a distinctive group resulted in an unreasonable underrepresentation of that group in his venire.²¹ The Court has set forth a three-part test, known as the *Duren* test, to establish a *prima facie* violation of the fair cross-section requirement:

- (1) that the group alleged to be excluded is a “distinctive” group in the community;
- (2) that the representation of this group in venires from which juries are selected is not fair and reasonable in relation to the number of such persons in the community; and
- (3) that this underrepresentation is due to systematic exclusion of the group in the jury selection process.²²

Courts usually focus on race and gender when they address the first prong and determine whether the system of summoning jurors excludes a “distinctive group.”²³ The second prong, which is the subject of this Note,

19. U.S. CONST. amend. VI.

20. *Taylor v. Louisiana*, 419 U.S. 522, 527 (1975).

21. The requirement applies to venires, not petit juries. *Id.* at 538.

22. *Duren v. Missouri*, 439 U.S. 357, 364 (1979).

23. The Equal Protection Clause requires strict scrutiny when groups are classified on the basis of race, *e.g.*, *Parents Involved in Cmty. Schs. v. Seattle Sch. Dist. No. 1*, 551 U.S. 701,

asks whether the underrepresentation is too large—unfair and unreasonable—in relation to the demographic composition of the community.²⁴ The Court has provided no further guidance regarding the second prong of the *Duren* test.²⁵ Finally, to prove that a distinctive group was “systematically excluded” for the test’s third prong, the defendant does not need to show invidious discrimination or discriminatory intent.²⁶ Rather, the question is whether the cause of the underrepresentation was “inherent in the particular jury-selection process utilized.”²⁷

Once the defendant has presented sufficient evidence to satisfy these three prongs and establish a *prima facie* violation, the state then bears the burden of demonstrating that the policy or procedure resulting in the disproportionate exclusion of a distinctive group is appropriately tailored to a significant state interest.²⁸

B. *Purposes of the Fair Cross-Section Requirement*

The justifications for the fair cross-section requirement are intertwined with the benefits of jury trials. The jury is important to the American justice system for three reasons. First, the jury is a check on the government’s exercise of power; it is an “inestimable safeguard against the corrupt or overzealous prosecutor and against the compliant, biased, or eccentric judge.”²⁹ Second, it serves three communitarian functions by providing (1) a mechanism to include public participation in the judicial process, (2) a means to educate the public on the workings of the criminal justice system,³⁰ and (3) a

720 (2007), and intermediate scrutiny when the classification is by sex, *see, e.g.*, *United States v. Virginia*, 518 U.S. 515, 531 (1996). When determining whether a group is a “distinctive group” within the meaning of the fair cross-section requirement, courts have limited their scope to race and sex. *E.g.*, *United States v. Orange*, 447 F.3d 792, 797–98 (10th Cir. 2006) (holding that Asians are a distinctive group); *United States v. Jackman*, 46 F.3d 1240, 1246 (2d Cir. 1995) (“There is little question that both Blacks and Hispanics are ‘distinctive’ groups in the community for purposes of [the fair cross-section] test.”); *United States v. Hafen*, 726 F.2d 21, 23 (1st Cir. 1984) (citing *Peters v. Kiff*, 407 U.S. 493, 498–99 (1972)) (holding that blacks are a *per se* distinctive group under the first prong of *Duren*); Stephen E. Reil, Comment, *Who Gets Counted? Jury List Representativeness for Hispanics in Areas with Growing Hispanic Populations Under Duren v. Missouri*, 2007 BYU L. REV. 201, 209–14.

24. In *Taylor*, the Court found that when women comprised 53% of the population but only 10% of the venire, the jury pool failed to be reasonably representative of the community as a whole. 419 U.S. at 524, 537–38. Similarly, in *Duren*, the Court held that when women comprised 54% of the population but only 15% of the venire, the venire was not a fair and reasonable representation of the community. 439 U.S. at 364–66.

25. *Berghuis v. Smith*, 130 S. Ct. 1382, 1393 (2010).

26. *Barber v. Ponte*, 772 F.2d 982, 989 (1st Cir. 1985) (citing *Duren*, 439 U.S. at 366).

27. *Duren*, 439 U.S. at 366.

28. *Id.* at 367–68, 370.

29. *Duncan v. Louisiana*, 391 U.S. 145, 156 (1968).

30. Alexis de Tocqueville most clearly expressed these first two communitarian functions of jury service in *Democracy in America*:

way to ensure the community's confidence in the outcome of criminal trials.³¹ Finally, juries express the community's values and the populist viewpoint.³² The benefits of having diverse viewpoints to express the will of the community are most apparent when the jury votes to acquit a defendant because the jurors believe the law is unjust or unconstitutional.³³ The fair cross-section requirement protects the jury's utility and all of its functions.

First, where juries are intended to serve as a check on the government's exercise of power, the fair cross-section requirement assures that the state cannot "stack the deck" in its favor by eliminating certain groups it believes are predisposed to favor the defendant.³⁴ While the risk that peremptory challenges may result in a less impartial jury is well known,³⁵ the risks inherent in the rules and mechanisms for compiling the jury list are also significant.³⁶ The Sixth Amendment goes further than the Equal Protection Clause's protection against intentional discrimination³⁷: it protects the defendant from *unintentional* discrimination—like the computer glitch in

[T]he institution of the jury raises the people itself, or at least a class of citizens, to the bench of judicial authority. . . . [It] invests the people, or that class of citizens, with the direction of society.

. . . .

. . . The jury . . . invests each citizen with a kind of magistracy; it makes them all feel the duties which they are bound to discharge towards society; and the part which they take in the Government. By obliging men to turn their attention to affairs which are not exclusively their own, it rubs off that individual egotism which is the rust of society.

. . . .

I do not know whether the jury is useful to those who are in litigation; but I am certain it is highly beneficial to those who decide the litigation; and I look upon it as one of the most efficacious means for the education of the people which society can employ.

ALEXIS DE TOCQUEVILLE, 1 *DEMOCRACY IN AMERICA* 334–37 (Henry Reeve trans., Schocken 1st ed. 1961).

31. George C. Harris, *The Communitarian Function of the Criminal Jury Trial and the Rights of the Accused*, 74 *NEB. L. REV.* 804, 808 (1995). The Court expressly endorsed the view that participation in jury deliberations increases the community's confidence in the outcome of verdicts in *Balzac v. Porto Rico*: "One of its greatest benefits is in the security it gives the people that they, as jurors actual or possible, being part of the judicial system of the country can prevent its arbitrary use or abuse." 258 U.S. 298, 310 (1922).

32. AKHIL REED AMAR, *THE BILL OF RIGHTS* 83–88 (1998).

33. *Id.* at 98.

34. *Holland v. Illinois*, 493 U.S. 474, 481 (1990). The petit jury is intended "to guard against the exercise of arbitrary power—to make available the commonsense judgment of the community as a hedge against the overzealous or mistaken prosecutor and in preference to the professional or perhaps overconditioned or biased response of a judge." *Taylor v. Louisiana*, 419 U.S. 522, 530 (1975).

35. See, e.g., Robin Charlow, *Tolerating Deception and Discrimination After Batson*, 50 *STAN. L. REV.* 9 *passim* (1997).

36. *Developments in the Law—Race and the Criminal Process* (pt. V), 101 *HARV. L. REV.* 1557, 1562–63 (1988).

37. U.S. CONST. amend. XIV, § 1 ("No State shall . . . deny to any person within its jurisdiction the equal protection of the laws.").

Bryant's case³⁸—for the benefit of the individual defendant, the jurors, and the criminal process as a whole.

Representative juries also advance the communitarian functions of juries by ensuring that the community believes that the proceedings are fair and impartial and by bolstering community confidence in the verdict. Jury composition influences the observers' and participants' perception about the fairness of the criminal proceeding.³⁹ To ensure that the public and the accused believe that the proceedings are fair, the jury must “be a body truly representative of the community’ . . . and not the organ of any special group or class.”⁴⁰ Indeed, the statement “[t]he defendant was tried by an all-white jury” conjures disturbing images of some of the abuses of the criminal justice system.⁴¹ If a defendant never had a chance at a representative jury, then the process of empaneling a petit jury from an underrepresentative group will likely raise doubts in the minds of the accused and the public about the fairness of the proceedings. Moreover, the exclusion of groups in the community could substantially undermine faith in the judicial system as a whole.

Finally, the fair cross-section requirement recognizes that the ultimate goal of the Impartial Jury Clause and its protections is to select an impartial petit jury that protects and expresses the collective knowledge, wisdom, and values of the community. Adequately representing community values requires diversity because such values are the result of the interplay between the different groups that make up the community as a whole.⁴² Although the fair cross-section requirement does not *compel* a representative petit jury,⁴³ it recognizes that a representative petit jury is more likely when it is drawn from a representative venire and thus more likely to reflect the interplay of the ideas and values in the community. If the fair cross-section requirement is to have any teeth, then it must take into account the ways in which diverse viewpoints create a more impartial jury. All-white juries are more prone to

38. Amicus Curiae Brief of Criminal Defense Attorneys of Michigan, *supra* note 3, at 2, 2011 WL 5893816, at *2.

39. Nancy J. King, *The Effects of Race-Conscious Jury Selection on Public Confidence in the Fairness of Jury Proceedings: An Empirical Puzzle*, 31 AM. CRIM. L. REV. 1177, 1183–84 (1994) (noting that the composition of the jury is a procedural feature that affects the public's perception of the fairness of the proceedings, and when proceedings are deemed fair, those involved are more likely to accept the outcome).

40. *Taylor v. Louisiana*, 419 U.S. 522, 527 (1975) (quoting *Glasser v. United States*, 315 U.S. 60, 85–86 (1942)).

41. Albert W. Alschuler, *Racial Quotas and the Jury*, 44 DUKE L.J. 704, 704 (1995).

42. *Taylor*, 419 U.S. at 531–32.

43. *Holland v. Illinois*, 493 U.S. 474, 483 (1990) (quoting *Taylor*, 419 U.S. at 538).

convict black, Hispanic, or Native American defendants.⁴⁴ “[T]he mere expectation of participating in a racially diverse jury can be influential.”⁴⁵ Diversity on a jury allows “a group to consider a wider range of perspectives and information.”⁴⁶

Any consideration of the fair-and-reasonable-representation prong of the fair cross-section requirement must consider these three underlying purposes of the fair cross-section requirement and their grounding in the Impartial Jury Clause: providing a check on governmental power, ensuring communal confidence in the outcome of a jury verdict, and guaranteeing that the verdict will reflect the values of the community as a whole.

II. STATISTICAL PROOF OF UNFAIR AND UNREASONABLE VENIRES

The second prong of the *Duren* test suggests a statistical comparison between the distinctive group’s proportional representation in the venire and its proportional representation in the population.⁴⁷ Since *Duren*, lower courts have struggled to find an appropriate statistical measure for underrepresentation.⁴⁸ Four tests have emerged: the absolute-disparity test, the comparative-disparity test, the statistical-deviation test, and the disparity-of-risk test. This Part explores each of these tests in turn. Section II.A describes the absolute-disparity test and concludes that threshold application of the test protects the principles of the fair cross-section requirement insufficiently because it treats differently situated communities similarly and thereby allows for distinctive groups to be entirely excluded from the master lists. Section II.B addresses the comparative-disparity test and suggests that it is unsatisfactory because it overstates the magnitude of the underrepresentation for very small groups in the community. Section II.C explains the standard-deviation test and agrees with other scholars that the test is not an appropriate measure for the second prong of the fair cross-section test because it only highlights flaws in the selection process but does not provide any information about how the venires compare to the community. It concludes that the standard-deviation test is the most appropriate for determining whether a jury-selection process has systematically excluded distinctive groups. Section II.D addresses and critiques the newest test the courts have

44. Samuel R. Sommers, *On Racial Diversity and Group Decision Making: Identifying Multiple Effects of Racial Composition on Jury Deliberations*, 90 J. PERSONALITY & SOC. PSYCHOL. 597, 599 (2006).

45. *Id.* at 598–99.

46. *Id.* at 600.

47. *Duren v. Missouri*, 439 U.S. 357, 364 (1979) (“[T]he representation of this group in venires from which juries are selected is not fair and reasonable *in relation* to the number of such persons in the community” (emphasis added)).

48. *Berghuis v. Smith*, 130 S. Ct. 1382, 1393 (2010) (“[N]either *Duren* nor any other decision of this Court specifies the method or test courts must use to measure the representation of distinctive groups in jury pools. The courts below have noted three methods Each test is imperfect.”).

used, the disparity-of-risk test, and concludes that it, like the absolute-disparity test and the comparative-disparity test, is an unsatisfactory measure of the fairness and reasonableness of a venire in relation to the community.

A. *The Absolute-Disparity Test*

The most widely accepted test for underrepresentation, and by far the simplest test, is the absolute-disparity test.⁴⁹ It measures the distinctive group's underrepresentation by subtracting the percentage representation of that group on the average venire from the percentage representation of that group in the overall community.⁵⁰ The following simple equation expresses the absolute-disparity test:

$$\text{Absolute Disparity} = p - v,$$

where:

p = proportion of the distinct group in the population

v = proportion of the distinct group on the average venire.

To calculate v , the defendant would select some period over which to sample venires.⁵¹ This might be the time period during which some defect existed—like the computer glitch—or it might be an arbitrary period of time. Suppose the period is 6 months.⁵² One would look at each 45-person venire during that period—say 20 venires for a total of 900 veniremembers.

49. See *Delgado v. Dennehy*, 503 F. Supp. 2d 411, 425–26 (D. Mass. 2007) (surveying the cases).

50. Richard M. Ré, Commentary, *Jury Poker: A Statistical Analysis of the Fair Cross-Section Requirement*, 8 OHIO ST. J. CRIM. L. 533, 544–45 (2011); Peter A. Detre, Note, *A Proposal for Measuring Underrepresentation in the Composition of the Jury Wheel*, 103 YALE L.J. 1913, 1917 (1994).

51. For the purpose of this Note, all calculations will assume that a court must examine the demographic composition of venires over time, as the Michigan Supreme Court held in *People v. Bryant*, 822 N.W.2d 124, 136–37 (Mich. 2012), cert. denied, 133 S. Ct. 664 (2012) (“[W]hen considering whether representation is fair and reasonable, *Duren* requires a court to evaluate the composition of venires over a significant time period rather than just the defendant’s individual venire.”). The Michigan Supreme Court’s holding is consistent with that of many other courts. See, e.g., *United States v. Allen*, 160 F.3d 1096, 1103 (6th Cir. 1998) (“Appellants . . . must show more than that their particular panel was unrepresentative.”); *United States v. Miller*, 771 F.2d 1219, 1228 (9th Cir. 1985) (“It appears to us that the Supreme Court’s use of the plural in setting up the *Duren* test is a clear indication that a violation of the fair cross-section requirement cannot be premised upon proof of underrepresentation in a single jury.”).

52. In *Bryant*, the Michigan Supreme Court concluded that the reviewing court must consider the composition of multiple “venires over a significant time period” when considering the second prong of *Duren*. *Bryant*, 822 N.W.2d at 136–37. The court did not provide guidance about what a “significant time period” is for the purposes of evaluating venires. See *id.* The court relied on the data in Kent County over a 3-month period. *Id.* at 138. The 6-month period used here is intended to illustrate the process without arguing that courts should always consider data from a 6-month range.

Suppose 45 of those veniremembers were black. To arrive at ν , or the proportion of blacks on the average venire, one would then take the ratio of the total number of black veniremembers against the total number of veniremembers. So, in this example, ν is 5 percentage points. If the black population of a county comprises 15% of the community, then the absolute disparity would be 10 percentage points (15% minus 5%).

The Table below illustrates the practical consequences of various absolute disparities. It shows the black population in several Michigan counties. It then indicates the number of black veniremembers that would end up on the average 45-person venire if the absolute disparity was 0, 5, 10, and 20 percentage points. Most of the figures indicate a range if the expected number of black veniremembers falls between two integers. Note that it is impossible to have an absolute disparity greater than the proportion of black people in the community. Thus, in Alger County, for example, there are no figures for absolute disparities in the 10% and 20% columns.⁵³

TABLE 1.
HYPOTHETICAL BLACK VENIREMEMBERS IN 45-PERSON VENIRES
AT VARIOUS ABSOLUTE DISPARITIES

County	Actual Proportion of Blacks in Community	Hypothetical Absolute Disparities			
		0%	5%	10%	20%
Wayne County	40.3%	18–19	15–16	13–14	9–10
Genesee County	20.9%	9–10	7–8	4–5	0–1
Alger County	6.6%	2–3	0–1	N/A	N/A
Marquette County	1.8%	0–1	N/A	N/A	N/A

The absolute-disparity test is attractive because of its mathematical simplicity and because the Court tacitly accepted this approach in *Duren*.⁵⁴ If courts employ the absolute-disparity test to find significant underrepresentation, one question remains: How much of the distinct group's population may be excluded before a violation of the Sixth Amendment has

53. All data used for Table 1 are based on data collected in *State and County QuickFacts*, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/index.html> (last visited May 17, 2013). For Wayne County, see *State and County QuickFacts: Wayne County, Michigan*, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/states/26/26163.html> (last updated Mar. 11, 2013, 2:14 PM). For Genesee County, see *State and County QuickFacts: Genesee County, Michigan*, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/states/26/26049.html> (last updated Mar. 11, 2013, 2:14 PM). For Alger County, see *State and County QuickFacts: Alger County, Michigan*, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/states/26/26003.html> (last updated Mar. 11, 2013, 2:14 PM). And for Marquette County, see *State and County QuickFacts: Marquette County, Michigan*, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/states/26/26103.html> (last updated Mar. 11, 2013, 2:14 PM).

Readers conducting their own calculations will note that the actual result for hypothetical absolute disparities for Wayne County is 18.135. Table 1 shows ranges when the result of the calculation would result in a partial juror sitting on the hypothetical venire.

54. See *Duren v. Missouri*, 439 U.S. 357, 365–66 (1979).

occurred? In *Duren*, the Court noted the “gross discrepancy” between the percentage of women in the community (54%) and the number of women on jury venires (15%),⁵⁵ but it did not provide any further guidance.⁵⁶ Lower courts have struggled with this question and have settled on a 10-percentage-point threshold to find that the underrepresentation of the group is sufficiently significant to cause constitutional harm,⁵⁷ but they have provided very little reasoning beyond citing other courts to explain why this threshold satisfies the fair cross-section requirement or serves its underlying purposes.⁵⁸

Thresholds are understandably attractive from the perspective of judicial efficiency because they allow for consistent and predictable results, as rules often do. While these benefits are apparent, the jury system is inherently inefficient—perhaps intentionally so.⁵⁹ It would certainly be efficient to avoid the jury system altogether. Summary convictions by a judge or a jury of state-sympathizers would also be efficient. But the Impartial Jury Clause should bind the state when it is inclined to make judgments that undermine the fairness of the proceeding to benefit its own goals, including the desire for efficiency.

The use of thresholds and bright-line rules in conjunction with statistical tests is dangerous. It treats counties with very different demographic compositions similarly. For example, the absolute-disparity test, as applied with a 10-percentage-point threshold, is a blunt instrument that makes claims particularly hard for defendants who reside in districts with small minority populations.⁶⁰ In Wayne County, where 40.3% of the population is

55. *Id.* at 365–66 & n.23.

56. *See id.* at 366.

57. *United States v. Ashley*, 54 F.3d 311, 314 (7th Cir. 1995) (“[A] discrepancy of less than ten percent alone is not enough to demonstrate unfair or unreasonable representation of blacks on the venire.”); *People v. Bryant*, 822 N.W.2d 124, 138 (Mich. 2012) (“Courts have generally required an absolute disparity of more than 10 percent to indicate that the representation of the distinct group was not fair and reasonable.”), *cert. denied*, 133 S. Ct. 664 (2012).

58. *See United States v. Weaver*, 267 F.3d 231, 243 (3d Cir. 2001) (citing *Thomas v. Borg*, 159 F.3d 1147, 1151 (9th Cir. 1998)); *United States v. Royal*, 174 F.3d 1, 10–11 (1st Cir. 1999) (concluding that an absolute disparity of 2.97%, when the total black population was 4.86% and the representation on venires was only 1.89%, was not significant) (citing *United States v. Suttiswad*, 696 F.2d 645, 648–49 (9th Cir. 1982) (accepting an absolute disparity of 7.7%)); *United States v. Shinault*, 147 F.3d 1266, 1273 (10th Cir. 1998) (“Courts generally are reluctant to find that second element of a prima facie Sixth Amendment case has been satisfied when the absolute disparities are less than 10%.” (citing *United States v. Rioux*, 930 F. Supp. 1558, 1570 (D. Conn. 1995))); *United States v. Armstrong*, 621 F.2d 951, 955–56 (9th Cir. 1980) (holding that an absolute disparity of 2.83% when the black population was 4.2% was not sufficient).

59. *Cf. Taylor v. Louisiana*, 419 U.S. 522, 530 (1975) (“[The petit jury] guard[s] against the exercise of arbitrary power—to make available the commonsense judgment of the community as a hedge against the overzealous or mistaken prosecutor and in preference of the professional or perhaps overconditioned or biased response of a judge.”).

60. *Weaver*, 267 F.3d at 242 (“[A]bsolute disparity . . . has its share of critics. Some courts have found that the absolute disparity calculation ‘understates the systematic representational deficiencies’ in cases such as the one before us, where . . . the groups at issue comprise

black, a defendant would only have a cognizable fair cross-section claim if the percentage of black veniremembers in the venire dropped below 30.3%. In Alger County, where the black population is small (6.9%) but not insignificant, this 10% threshold would allow for the absence of any black veniremembers without violating the fair cross-section requirement.

This result does not adequately protect the principles of the fair cross-section requirement. In particular, it undermines the communal goals of jury service. The test allows the jury-selection processes to eliminate entire subsections of the community from master lists. As a result, the excluded distinctive groups do not receive the educational benefits of jury service. Further, a jury list that excludes an entire group—or a substantial proportion, at least—from the community cannot yield a petit jury that fully represents the community's values and judgments.⁶¹ Such a result simply cannot fulfill the Constitution's requirement of impartiality.

These inadequacies are not remedied by merely adjusting the threshold to a different level. If a 10% threshold can effectively bar sizeable minority groups from a fair cross-section claim, then a higher threshold would exacerbate the problem. Selecting a lower threshold, say 5%, would still tolerate removing some distinctive groups from jury venires completely. For instance, a defendant in a county where the black population is 4.9% would never prevail in a fair cross-section claim, even if 0% of veniremembers were black. This threshold does not capture the fact that the underrepresentation in the venire is so severe that it has eliminated the possibility that the defendant could have a member of the excluded distinctive group on his petit jury. As a result, that jury would not adequately reflect the community's values and judgment, and the communal benefits of having a jury would be lost.

Moreover, lower thresholds would exaggerate the underrepresentation of larger distinctive groups. If the threshold were set at 1%, for example, it might be better at protecting smaller minority groups, but it would allow for recovery when the distinctive group is larger. Take Wayne County, for example, where the black population is 40.3%. If 39.3% of veniremembers were

small percentages of the population.” (quoting *United States v. Rogers*, 73 F.3d 774, 776 (8th Cir. 1996)); *United States v. Rogers*, 73 F.3d 774, 777 (8th Cir. 1996); *United States v. Jackman*, 46 F.3d 1240, 1247 (2d Cir. 1995) (“[T]he absolute numbers approach is of questionable validity when applied to an underrepresented group that is a small percentage of the total population, because an underrepresentation of such a group that can be ‘remedied’ by adding only one or two members to a typical venire can lead to the selection of a large number of venires in which members of the group are substantially underrepresented or even totally absent.”); *Ré*, *supra* note 50, at 545. Indeed, the Supreme Court acknowledged this deficiency in *Berghuis v. Smith* and declined to adopt the 10% threshold proposed by Michigan to establish a prima facie violation of the fair cross-section violation. 130 S. Ct. 1382, 1394 n.4 (2010). The Court did not hold that one statistical threshold would satisfy the requirements of the fair cross-section requirement. It instead held that the Sixth Circuit erred by holding that by applying a threshold, the Michigan courts had reached a decision that was “contrary to, or involved an unreasonable application of, clearly established Federal law, as determined by the Supreme Court of the United States.” *Berghuis*, 130 S. Ct. at 1392 (quoting 28 U.S.C. § 2254(d)(1)).

61. See *infra* Section I.B.

black, then this would satisfy the 1-percentage-point threshold. There is, however, a difference between eliminating or substantially reducing the chance of seating members of a distinctive group on a petit jury and very slightly reducing the defendant's odds of a perfectly representative petit jury. The fair cross-section does not demand that venires be mirror images of the community.⁶²

B. *The Comparative-Disparity Test*

A variation on the absolute-disparity test is the comparative-disparity test, which some courts use. Courts calculate the comparative disparity by dividing the absolute disparity by the percentage of the distinctive group in the community.⁶³ The equation for the comparative-disparity test, using the notation from Section II.A above, is as follows:

$$\text{Comparative Disparity} = \frac{p-v}{p},$$

where:

p = proportion of the distinct group in the population

v = proportion of the distinct group on the average venire.

To use the initial example, if the total black population is 15% of a community's total population and the representation of such persons on venires is 5%, then the absolute disparity is 10 percentage points. The comparative disparity is the absolute disparity (10%) divided by the percentage of the group in the community as a whole (15%), which is 66.7%.

The comparative disparity expresses the absolute disparity as a percentage of the distinctive group's overall representation in the community. It says, in the above example, that 66.7% of eligible black jurors were excluded from the average venire. Table 2 below shows how the comparative-disparity test calculates underrepresentation of distinctive groups in 45-person venires in relation to the community as a whole.⁶⁴

62. *Taylor v. Louisiana*, 419 U.S. 522, 538 (1975) ("It should also be emphasized that in holding that petit juries must be drawn from a source fairly representative of the community we impose no requirement that petit juries actually chosen must mirror the community and reflect the various distinctive groups in the population.").

63. *Detre*, *supra* note 50, at 1917–18.

64. For a comparison of the comparative-disparity results for other tests discussed in this Note, see Table 6. In Table 2, for Wayne County, see *State and County QuickFacts: Wayne County, Michigan*, *supra* note 53. For Genesee County, see *State and County QuickFacts: Genesee County, Michigan*, *supra* note 53. For Alger County, see *State and County QuickFacts: Alger County, Michigan*, *supra* note 53. For Marquette County, see *State and County QuickFacts: Marquette County, Michigan*, *supra* note 53. Please note that in Table 2, N/A signifies impossible results because it requires dividing zero by p .

TABLE 2.
COMPARATIVE DISPARITIES GIVEN VARIOUS
ABSOLUTE DISPARITIES

County	Actual Proportion of Blacks in the Community	Absolute Disparity			
		2%	5%	10%	20%
		Comparative Disparity			
Wayne County	40.3%	4.9%	12.4%	24.8%	49.6%
Genesee County	20.9%	9.5%	23.9%	47.8%	95.7%
Alger County	6.6%	30.3%	75.75%	N/A	N/A
Marquette County	1.8%	111.1%	N/A	N/A	N/A

The test's usefulness is limited because, despite providing meaningful analysis for medium-sized distinctive groups, it fails to do so when the distinctive groups are large (95% of the population) or small (2% of the population). And most federal courts of appeals reject the comparative-disparity test for that reason.⁶⁵ The comparative-disparity test is a particularly poor indicator of underrepresentation because it tends to exaggerate underrepresentation when the distinctive group's representation in the community is low.⁶⁶ For example, a 2-percentage-point absolute disparity in Alger County yields a 30.3% comparative disparity because the black population in Alger County is a small percentage of the county's total population. The comparative-disparity test becomes more meaningful, however, when the population of the distinctive group is larger, and it can be particularly meaningful when the group comprises between 10% and 20% of the total community.⁶⁷ Once the distinctive group's population exceeds 20%, however, the comparative-disparity test seems to underrepresent the extent of the exclusion.

In addition to its limited usefulness at the margins, the comparative-disparity test engenders two further problems. First, it is nearly impossible to pick a clear threshold using the comparative-disparity test that works with the unique circumstances of each jurisdiction.⁶⁸ It only measures how much of the distinctive group has been eliminated from the community, not how well the venire reflects the community as a whole. This may explain courts' reluctance to use the comparative-disparity test.

65. *E.g.*, *Thomas v. Borg*, 159 F.3d 1147, 1150 (9th Cir. 1998); *United States v. Hafén*, 726 F.2d 21, 24 (2d Cir. 1984). The Second Circuit revisited the question in 1999 and declined to adopt the comparative-disparity test. *United States v. Royal*, 174 F.3d 1, 7 (2d Cir. 1999).

66. *Detre*, *supra* note 50, at 1921–22.

67. *See supra* Table 2.

68. For example, in *United States v. Weaver*, when faced with 40.01% and 72.98% comparative-disparity figures for blacks and Hispanics respectively, the Third Circuit nonetheless concluded that the venires were "fair and reasonable" because both groups were such a small percentage of the community. 267 F.3d 231, 243 (3d Cir. 2001).

Second, courts have been tempted to use the comparative-disparity test in conjunction with the absolute-disparity test,⁶⁹ but in practice they have not successfully integrated the two tests. When courts attempt to use both the absolute-disparity and comparative-disparity tests, they usually fall back on the absolute-disparity test, concluding that the distinctive group is too small.⁷⁰ The two tests are difficult to harmonize because they produce outcomes that are at odds with one another. Wayne County and Alger County help illustrate this problem. If only 20.3% of veniremembers are black in Wayne County, then absolute disparity between the black population in the community and the percentage of black jurors is 20%,⁷¹ whereas the resulting comparative disparity is 49.6%.⁷² In Alger County, that same approximate comparative disparity of 50% would result if only 3.9% of veniremembers were black⁷³ (a 3% absolute-disparity).⁷⁴ These two situations are very different in terms of the impact the underrepresentation would have on the composition of the defendant's petit jury. Rather than relying on these faulty statistical tests, therefore, courts should focus on the effect that the underrepresentative⁷⁵ venire has on the defendant's chances of drawing a representative petit jury.⁷⁶

C. *The Standard-Deviation Test*

Although the standard-deviation test is more statistically involved than either the absolute-disparity test or the comparative-disparity test, it nonetheless provides very little help in determining whether a venire is fair and reasonable in relation to the community. No court has adopted the standard-deviation test as the sole measure of *Duren's* second prong.⁷⁷ The test is a better mechanism to measure the fair cross-section requirement's third prong: whether there has been systematic exclusion of a distinctive group in the community. Yet, some courts, like the Michigan Supreme Court, use it as

69. *E.g.*, *United States v. Orange*, 447 F.3d 792, 798–99 (10th Cir. 2006) (considering statistical evidence of both the comparative-disparity and absolute-disparity tests); *Weaver*, 267 F.3d at 243 (“Because we think that figures from both [the comparative-disparity and absolute-disparity tests] inform the degree of underrepresentation, we will examine and consider the results of both in order to obtain the most accurate picture possible.”).

70. *See supra* text accompanying note 68.

71. $40.3\% - 20.3\% = 20\%$

72. $\frac{40.3\% - 20.3\%}{40.3\%} = 49.6\%$

73. $\frac{6.9\% - 3.9\%}{6.9\%} = 43.5\%$

74. $6.9\% - 3.9\% = 3\%$

75. “Underrepresentative” means a venire or petit jury with less than the expected number of jurors of the distinctive group given the population of the community as a whole.

76. *See Ré*, *supra* note 50, at 546; *see infra* Section II.D.

77. *Berghuis v. Smith*, 130 S. Ct. 1382, 1393 (2010) (citing *United States v. Rioux*, 97 F.3d 648, 655 (2d Cir. 1996)).

one of the many tests they consult to evaluate the fairness and reasonableness of the underrepresentation.⁷⁸

The standard-deviation test employs a statistical technique known as hypothesis testing.⁷⁹ Specifically, the standard-deviation test is a hypothesis test that compares one data set to a hypothesis.⁸⁰ The aim of the test is to ascertain whether the observed result is the result of random chance.⁸¹ In this case, there were fewer black veniremembers than expected in comparison to the community.

To apply the standard-deviation test, a court must find three values: the number of total veniremembers observed (n), the expected probability that a veniremember is a member of the distinctive group (p), and the expected probability that a veniremember is not a member of that group ($1-p$)⁸² The standard deviation is the square root of the product of those three values.⁸³ The common mathematical formulation of this equation is as follows:

$$\text{Standard deviation } (\sigma) = \sqrt{np(1-p)}.$$

To illustrate, take Wayne County, which has a black population of 40.3%. If there were 50 venires over a 6-month period, there would be 2,250 total veniremembers ($50 \cdot 45$), of which 40.3% or 907 would be black if the venires are perfectly representative of the community.⁸⁴ The number of venires observed, n , in this case is 50. The probability that a veniremember would be black, p , is 40.3%, and the expected probability that they would not be black ($1-p$) is 59.9%. Thus, the standard deviation is 3.468 (the square root of $50 \cdot 40.3\% \cdot 59.7\%$). Therefore, a venire that is within 1 standard deviation from the mean would have between 36.832% and

78. See *People v. Smith*, 615 N.W.2d 1, 9–10 (Mich. 2000).

79. A standard deviation is the yardstick by which statisticians measure variability within a data set. The pattern of deviations from the mean is expressed through standard deviations. See e.g., *Standard Deviation*, U. NEW ENG. SCH. PSYCHOL. (2000), http://www.une.edu.au/WebStat/unit_materials/c4_descriptive_statistics/standard_deviation.htm. In a binary distribution, half of the data points lie on either side of the mean. This means that 68.2% of the data points should lie within one standard deviation from the mean. The second standard deviation includes 95.4% of the results. The third standard deviation captures 99.7% of the results. Thus, two or three standard deviations from the mean are considered suspect. See, e.g., MICHAEL O. FINKELSTEIN & BRUCE LEVIN, *STATISTICS FOR LAWYERS* 113 (2d ed. 2001).

Consider the following example: If a data set reflects the results of flipping a coin twice, where the result can either be heads or tails and where the set of 2 tosses is completed 1,000 times, then the expectation is that over time, half the results of the 2 tosses would be 1 heads and 1 tails. One-quarter of the results would be 2 heads, and the final quarter would be 2 tails. The expected mean is 50. If the results vary from the expected results, then there is cause to believe that the coin is flawed in favor of one side or the other.

80. See DAVID P. DOANE & LORI E. SEWARD, *ESSENTIAL STATISTICS IN BUSINESS AND ECONOMICS* 321–28 (2008).

81. See FINKELSTEIN & LEVIN, *supra* note 79, at 20–21.

82. Ré, *supra* note 50, at 549.

83. FINKELSTEIN & LEVIN, *supra* note 79, at 115; Ré, *supra* note 50, at 549.

84. This expected number of black veniremembers is the “mean” for the purposes of this discussion because that is expected to be the most common result.

43.768% black veniremembers. A result that is more than two standard deviations from the mean is considered statistically significant.⁸⁵

Now, in the same county mentioned above, suppose court administrators only observed 457 black veniremembers, yielding a 20.3% average representation (457 divided by 2,250). To determine whether the observed result deviates significantly from what one could expect in a well-functioning system, the court would need to find the test statistic (z), or the normal random score. The test statistic measures the number of standard deviations that the sample proportion is from the expected result. This measurement provides a way to compare data sets. Find the test statistic by dividing the difference between the observed number of black veniremembers and the expected number of black veniremembers by the standard error, which is the standard deviation divided by the square root of n :⁸⁶

$$z = \frac{M - \mu}{SE},$$

where:

M = number of observed successes

μ = number of expected successes

SE = standard error, and

$$SE = \frac{\sigma}{\sqrt{n}}$$

σ = standard deviation

n = number of observations.

Continuing the example from above, if veniremembers were selected from a representative master list, we would expect 907 black veniremembers in 50 venires of 45 people (40.3% of 2,250). If the court clerk observes only 457 black veniremembers, then the total percentage of black veniremembers for 20 venires is 20.3%. The standard deviation calculated above is 3.468. Find the standard error by dividing the standard deviation (3.468) by the square root of n , the number of observations (50). Therefore, the standard error is 0.490. Find the test statistic (z) by dividing the difference between 40.3% and 20.3% by the standard error, 0.490.⁸⁷ That result is -0.408. This means that this particular set of venires would be 0.408 standard deviations *below* the expected mean of 40.3% black veniremembers.

85. FINKELSTEIN & LEVIN, *supra* note 79, at 113, 120. The Supreme Court has also suggested that results that are two or more standard deviations from the mean are significant in the equal protection context. See *Castaneda v. Partida*, 430 U.S. 482, 496 n.17 (1977).

86. FINKELSTEIN & LEVIN, *supra* note 79, at 115.

87. $z = \frac{0.203 - 0.403}{\frac{3.468}{\sqrt{50}}} = -0.408$

The court would then take the test statistic, -0.408, and calculate the standard normal cumulative distribution function.⁸⁸ The cumulative normal standard distribution is the probability that a random score will be less than or equal to the test statistic. The standard normal cumulative distribution of -0.408 is 0.342%,⁸⁹ meaning that there is only a 0.342% chance that the observed disparity between the average venire and the community as a whole happened by chance—a very unlikely result. In the employment discrimination context, courts have suggested that when the observed result only has a 5% chance of occurring randomly, it raises an inference that the result is due to a discriminatory flaw in the selection system.⁹⁰

The standard-deviation test is not a good method to determine whether venires are fair and reasonable in relation to the community. Instead, the results of the test answer the third *Duren* question: whether there is a flaw in the venire-selection system that systematically excludes a distinctive group.⁹¹ The standard-deviation test provides an indication that the *master list* is biased.⁹² It is a test to analyze whether there are flaws in the selection system; the test helps determine whether to reject the null hypothesis that the venire reflects the community. The standard-deviation test reveals whether there is a flaw in the system causing the underrepresentation and whether the underrepresentative master lists are the result of random chance.⁹³ If the underrepresentation is not the result of random chance, then that suggests systematic exclusion. Courts and commentators have properly concluded that the standard-deviation test is not a proper test for the second prong, which looks at the fairness and reasonableness of the venire in relation to the community.⁹⁴

D. *The Disparity-of-Risk Test*

Recently, the disparity-of-risk test has emerged as an alternative to the three tests described above. Two scholars, Richard M. Ré and Peter A. Detre, advocate for courts' use of the disparity-of-risk test instead of the existing statistical methods,⁹⁵ and recently, the Michigan Supreme Court became the first court in the country to consider the disparity-of-risk test to determine

88. This can be done by using spreadsheet software like Microsoft Excel. The Excel function is “=norm.s.dist(z, TRUE).” The “TRUE” value Excel function returns the cumulative distribution, which reflects the likelihood of having 72 or fewer black veniremembers on 20 venires over the designated 6-month period.

89. See generally DOANE & SEWARD, *supra* note 80.

90. *Contreras v. City of Los Angeles*, 656 F.2d 1267, 1273 & n.3 (9th Cir. 1981).

91. *Duren v. Missouri*, 439 U.S. 357, 364 (1979).

92. Ré, *supra* note 50, at 550–51.

93. See *id.*

94. See, e.g., *United States v. Chanthadara*, 230 F.3d 1237, 1257 (10th Cir. 2000); Ré, *supra* note 50, at 549–51.

95. See Ré, *supra* note 50, at 535–40; Detre, *supra* note 50, at 1931–37.

whether underrepresentation in the jury venire resulted in an unfair cross-section of the community.⁹⁶

Proponents of the disparity-of-risk test make two arguments in favor of applying this test to determine whether the composition of a venire is fair and reasonable in relation to that of the community. First, they argue that, unlike the other measures of fairness and reasonableness, the disparity-of-risk test measures how the underrepresentation in the venire has undermined impartiality of the defendant's jury. It does so by measuring the amount by which the defendant's chance of having a representative petit jury has decreased as a result of the underrepresentation on venires.⁹⁷ Thus, the test is a mechanism to determine whether the underrepresentation has undermined the goal of the fair cross-section requirement: to ensure that the defendant has an *impartial jury*. One of the markers of an impartial jury is that it provides the defendant the opportunity to draw a representative petit jury from a representative venire.⁹⁸ The goal is not to ensure that the defendant's venire or petit jury includes one token member of each distinctive group in the community.⁹⁹ Rather, the Constitution's fair cross-section requirement seeks to eliminate defects in the process of summoning veniremembers to serve on jury duty in a way that harms the defendant's ability to seat a fair and impartial petit jury.¹⁰⁰ Proponents of the disparity-of-risk test argue that this test measures the factor most relevant to serving this goal.

Proponents of the disparity-of-risk test point out that unlike the absolute-disparity and comparative-disparity tests, the disparity-of-risk test does not distort the results when the representation in the community is either very large or very small.¹⁰¹ The disparity-of-risk test is more complex than the absolute-disparity test or the comparative-disparity test.

To calculate the disparity of risk, the first step is to determine the expected number ($E(n)$) of distinctive group members—in this case, black veniremembers—that would be on a petit jury if randomly drawn from a perfectly representative venire. One calculates this number by multiplying the proportion of distinctive group members in the community by the number of people on the petit jury:¹⁰²

96. *People v. Bryant*, 822 N.W.2d 124, 142–45 (Mich. 2012), *cert. denied*, 133 S. Ct. 664 (2012).

97. *See Detre*, *supra* note 50, at 1930–32; Ré, *supra* note 50, at 537–38.

98. *Holland v. Illinois*, 493 U.S. 474, 480 (1990).

99. *See id.*

100. *See id.*

101. *Detre*, *supra* note 50, at 1935–36.

102. For our purposes, the number of jurors on a petit jury will always be 12.

$$E(n) = p \cdot 12,$$

where:

$E(n)$ = expected number of petit jurors from a distinct group

p = percentage of the distinct group in the population.

When the resulting number is less than a whole number, such as 4.8, one should round up to the nearest whole number. Round up if the number is more than 0.5, and down if it is less than 0.5.¹⁰³ For example, if the venire is perfectly representative in Wayne County, where the black population is 40.3%, then the expected representation of black jurors on a randomly selected¹⁰⁴ petit jury would be 5 ($0.4 \cdot 12 = 4.8$ rounded up to 5).¹⁰⁵

Next, calculate two probabilities. These are the probabilities, or “risks,” of getting an underrepresentative jury—a jury with less than the expected number of jurors of the distinctive group. First, calculate the risk that a defendant would get an underrepresentative jury *even if the master list were perfect*. Next, calculate the risk that the defendant would get an underrepresentative jury *given that the master list is underrepresentative*.

One can calculate these probabilities using the cumulative binomial distribution function.¹⁰⁶ Fortunately, it is not necessary to have a high-level understanding of mathematics to calculate these probabilities; cumulative

103. Proponents of the disparity-of-risk test have used integers in their calculations. See, e.g., Ré, *supra* note 50, at 539. The function used to calculate these probabilities uses factorials. See *id.* To take a factorial of a decimal requires using a complex function called a gamma function. See *Gamma Function*, WOLFRAM MATH WORLD, <http://mathworld.wolfram.com/GammaFunction.html> (last visited Sept. 17, 2013). This raises an interesting question about whether courts should round up or down as a normative matter. It also raises the question of how courts should treat an expected number of 4.5.

104. Petit jurors are not randomly selected. This test—and the fair cross-section requirement—does not take into account other variables, such as peremptory challenges or jurors the court excuses for cause or hardship.

105. See *supra* Table 1.

106. The following is the binomial probability mass function, which provides the probability of seating exactly x number of black petit jurors:

$$b(x; n, P) = \left(\frac{n!}{x!(n-x)!} \right) \cdot P^x \cdot (1 - P)^{(n-x)},$$

where:

x = the expected number of black petit jurors in a representative jury (successes)

n = the number of jurors on a petit jury (trials) (for our purposes, it will always be 12)

P = the probability that any particular petit juror is black (probability of successes).

The above formula only provides a probability; one needs to sum the probabilities of seating any number of black petit jurors less than the representative amount. Thus, one must apply an adaptation of the cumulative binomial distribution function:

binomial calculators are readily available online.¹⁰⁷ To calculate the first probability, use the cumulative binomial calculator and enter the expected number of petit jurors from the distinctive group into the field usually called “successes.” In Wayne County, where the black population is 40%, this number is 4.8 (40% of 12). Then enter the “probability of success” (40%) of getting 4.8 black petit jurors. Finally, enter 12 into the “trials” field to represent the 12 petit jurors. The first probability calculated is 44%, which means that there is a 44% probability of drawing a petit jury with fewer than 5 jurors.¹⁰⁸

Next, one can determine the probability of having a petit jury with fewer than 5 black jurors when the average venire is underrepresentative. For example, in Wayne County, the average venire had only 25% black veniremembers—a 15% decrease from the expected percentage of black veniremembers in a representative venire. Using the cumulative binomial probability calculator, estimate the probability of getting fewer than 5 black jurors given 25% representation (i.e., successes = 5; probability of success = 0.25; trials = 12). The second probability here is 84%, which means that there is an 84% probability of drawing a petit jury with fewer than 5 black jurors when the percentage of black veniremembers has decreased by 15%.¹⁰⁹

Finally, calculate the difference between these two risks by subtracting the risk of a bad outcome given a representative master list from the risk of a bad outcome given an underrepresentative master list:

$$\text{Absolute Disparity of Risk} = P(u) - P(r),$$

where:

$P(u)$ = the probability of drawing an underrepresentative petit jury from the underrepresentative venire

$P(r)$ = the probability of drawing an underrepresentative jury from a representative venire.

$$B(x; n, P) = \sum_{y=0}^{x-1} \left(\frac{n!}{y!(n-y)!} \right) \cdot P^y \cdot (1-P)^{(n-y)}$$

For those unfamiliar with mathematical terms, the sigma function (symbolized by Σ) adds all of the probabilities of seating 0, 1, 2, and so on up to $x-1$ black petit jurors. $X-1$ is the highest number of seated black petit jurors in an underrepresentative petit jury. So, if x is 4.8, then the above formula determines the cumulative probability of seating 0 to 4 black petit jurors. To avoid confusion, y replaces x in the probability formula because the y value changes for each iteration to be summed up to the limit of $x-1$. To put it another way, y represents 0, 1, 2, and so on up to $x-1$.

107. E.g., *Cumulative Binomial Probability Calculator*, DANIELSOPER.COM, <http://www.danielsoper.com/statcalc3/calc.aspx?id=71> (last visited May 17, 2013).

$$108. \quad B(5; 12, .4) = \sum_{y=0}^{x-1} \left(\frac{12!}{y!(12-y)!} \right) \cdot P^y \cdot (1-P)^{(12-y)} = .44$$

$$109. \quad B(5; 12, .25) = \sum_{y=0}^{x-1} \left(\frac{12!}{y!(12-y)!} \right) \cdot P^y \cdot (1-P)^{(12-y)} = .84$$

In the Wayne County example from above, this calculation yields an absolute disparity of risk of 40% (84% risk of getting less than 5 black jurors from the underrepresentative master list minus a 44% risk of getting 5 black jurors from a representative master list).¹¹⁰ Table 3 below shows the risk of drawing an underrepresentative petit jury when the jury list has no underrepresentation and when there is underrepresentation by 5%, 10%, and 20%.¹¹¹

TABLE 3.
PROBABILITIES OF DRAWING A REPRESENTATIVE PETIT JURY

County	Actual Proportion of Black People in the Community	Expected Number of Black Petit Jurors from Perfectly Representative Venire	<i>R</i>	<i>U</i> (underrepresented by 5%)	<i>U</i> (by 10%)	<i>U</i> (by 20%)
Wayne County	40.3%	5	43.0%	57.4%	71.6%	92.3%
Genesee County	20.9%	3	52.7%	70.4%	86.5%	100%
Alger County	6.6%	1	42.4%	79.4%	100%	100%

Using the probabilities calculated above, Table 4 shows the absolute disparity-of-risk values when the venire is underrepresentative by 5%, 10%, and 20%. This calculation is not limited to determining the defendant's risk of getting zero black veniremembers; it evaluates the risk of drawing fewer than the expected number of black petit jurors from a perfectly representative venire.¹¹² Contrary to the views of the Michigan Supreme Court and

110. $.84 - .44 = .40$

111. Marquette County is not included in Table 3 and the remaining Tables because the expected number of black petit jurors is less than 1 and would result in uninformative values. In Table 3, for Wayne County, see *State and County QuickFacts: Wayne County, Michigan*, *supra* note 53. For Genesee County, see *State and County QuickFacts: Genesee County, Michigan*, *supra* note 53. And for Alger County, see *State and County QuickFacts: Alger County, Michigan*, *supra* note 53.

112. Detre notes that the further the number tested gets from the expected number of black petit jurors, the greater the disparity of risk gets. Detre, *supra* note 50, at 1934. Detre suggests that the disparity-of-risk test shows the extent of the injury and that the injury is greatest when the risk is highest. *See id.* at 1933–34. Ré limits his disparity-of-risk analysis to the chance of drawing fewer than 1 or 2 black petit jurors from an underrepresentative venire. *See Ré*, *supra* note 50, at 539. Ré ultimately argues that the disparity-of-risk threshold should focus on how the defendant's chances of obtaining zero black petit jurors have been affected by the underrepresentative venire, asserting that this is the most defendant-friendly approach. *Id.* at 540 n.28. Citing Ré, the Michigan Supreme Court limited its inquiry into the disparity of risk between the ideal and underrepresentative venires to a defendant's chances of receiving no black petit jurors. *People v. Bryant*, 822 N.W.2d 124, 144 n.100 (Mich. 2012) (“We consider the disparity between the ideal risk and the actual risk for having no African Americans on a randomly selected 12-person jury because it is the largest disparity. Thus, it represents where

Ré,¹¹³ this is the best way to consider the effect that the venire's underrepresentation has on the petit jury. The question should not be whether the defendant's expectation of drawing at least one black petit juror was affected but how the defendant's chances of drawing a *representative* petit jury have been affected.¹¹⁴

TABLE 4.
DISPARITY-OF-RISK RESULTS

County	Actual Proportion of Black People in the Community	U-R Bias = 5%	U-R Bias = 10%	U-R Bias = 20%
Wayne County	40.3%	14.4%	28.6%	49.3%
Genesee County	20.9%	17.7%	33.8%	47.3%
Alger County	6.6%	37.0%	57.6%	57.6%

This analysis prompts the following question: Under the disparity-of-risk test, what is the threshold to determine whether a venire is not a fair and reasonable cross-section of the community at large? Detre, who first proposed the use of the disparity-of-risk test, does not advocate for a particular threshold that would establish whether a venire is underrepresentative.¹¹⁵ Instead, he uses the 10% absolute-disparity threshold to illustrate how the disparity-of-risk test would make up for the absolute-disparity test's shortcomings.¹¹⁶ Detre emphasizes, however, that 10% was a mere suggestion and that courts should decide which normative line to draw to determine whether the underrepresentation in the venire is unfair and unreasonable.¹¹⁷ He does not suggest that the line be drawn *above* a 10% absolute disparity.¹¹⁸

the underrepresentation most affected the expectations of a particular result." (citing Ré, *supra* note 50, at 540 n.28)), *cert. denied*, 133 S. Ct. 664 (2012).

113. *Bryant*, 822 N.W.2d at 144 n.100; Ré, *supra* note 50, at 540 n.28.

114. To see a comparison between the disparity-of-risk results with other test results discussed in this Note, see Table 6. In Table 4, for Wayne County, see *State and County QuickFacts: Wayne County, Michigan, supra* note 53. For Genesee County, see *State and County QuickFacts: Genesee County, Michigan, supra* note 53. And for Alger County, see *State and County QuickFacts: Alger County, Michigan, supra* note 53.

115. See Detre, *supra* note 50, at 1936.

116. See *id.* at 1936–37. Unlike the absolute-disparity test, the disparity-of-risk test would not break down when the proportion of distinctive members in the community was very large or very small. *Id.*

117. *Id.* at 1937 (“Courts need not, however, adopt a thirty-seven percentage point line for the disparity of risk measure simply because this figure corresponds to a ten percentage point absolute disparity in a certain situation.”).

118. *Id.* (“Courts may find that an increased risk significantly lower than thirty-seven percentage points substantially affects a defendant's chances. . . . [T]his question must be left to the courts to determine, preferably courts armed with accurate data concerning the impact

Ré and the Michigan Supreme Court set a threshold to determine when the disparity-of-risk test results show that there has been legally significant underrepresentation in the venire. Their argument is that the disparity-of-risk test establishes the cause of the legal harm, namely an underrepresentative petit jury. Ré therefore argues for a 50% threshold, like a preponderance of the evidence standard, which “would parallel the commonplace legal rule that claimants are entitled to no relief when they fail to show it is more likely than not that they have been wronged.”¹¹⁹

The Michigan Supreme Court adopted Ré’s proposed 50% threshold. The court found that if the disparities of risk exceed 50% percent, then the underrepresentation is not fair and reasonable, failing the second prong of *Duren*.¹²⁰ The Michigan court reasoned that this is the “logical normative line because when measuring a defendant’s probabilistic injuries, a risk disparity of 50% or lower shows that, more likely than not, removing the underrepresentation would not alter the composition of a defendant’s jury.”¹²¹

Looking back at Table 4, only a defendant in Alger County could obtain relief when the black population was underrepresented on venires by 10% and 20%. In Wayne County, even if absolute underrepresentation reached 20%, a defendant would not be able to successfully raise a fair cross-section requirement under the disparity-of-risk test, even when it would satisfy the maligned absolute-disparity test.

This result would also undermine the purposes of the fair cross-section requirement: providing a check on governmental power, serving the communitarian functions of the jury system, and allowing juries to reflect the whole community’s values and judgments.¹²² Any test that would tolerate the inadvertent elimination of one-fifth of the community is a poor check on the government’s power because it does not work to constrain the government’s ability to “stack the deck” against the defendant. Such a test also significantly undermines the defendant’s and the community’s confidence in the verdict by setting such a high bar for what will count as underrepresentative. Finally, it cannot properly reflect the community’s values and

that a given degree of underrepresentation would have on the defendant’s right to a jury chosen from a fair cross-section of the community.”).

119. *Id.* at 542.

120. *People v. Bryant*, 822 N.W.2d 124, 144 (Mich. 2012) (“We believe the normative line should be drawn at 50 percent. That is, disparities of risk that exceed 50 percent should be deemed unfair and unreasonable.” (footnote omitted)), *cert. denied*, 133 S. Ct. 664 (2012). This opinion and Ré’s article could be improperly read to imply that the test asks whether the defendant’s chances of seating one black petit juror were affected by the underrepresentation in the venire. *Cf. id.* at 144 (“[W]hen considering the likelihood that a defendant’s 12-person jury would contain no African-Americans the disparity of risk was 24.39 percent.”); Ré, *supra* note 50, at 543 (“[The defendant’s] risk of drawing one or fewer distinctive group members . . . does rise to a mathematically comparable extent, from 16% to 66%.”). In *Bryant*, however, the expected number of black petit jurors was 1 because the black population of Kent County was 8.25% ($0.0825 \cdot 12 = 0.99$), *Bryant*, 822 N.W.2d at 138. Properly applied, the inquiry should use the expected number of black petit jurors, not 1, as the baseline.

121. *Bryant*, 822 N.W.2d at 144.

122. *See supra* Section I.B.

judgments when so many people from the community are excluded. Therefore, even though the disparity-of-risk test avoids some of the problems of understating or overstating the degree of underrepresentation, given the group's size in comparison to the rest of the community as a whole,¹²³ it does little to protect defendants from underrepresentative petit juries drawn from venires that most courts agree are underrepresentative.

Most importantly, proponents of the disparity-of-risk test incorrectly understand what the test captures. Both Ré and the Michigan Supreme Court assert that a disparity of risk above 50% means that the risk of getting an underrepresentative petit jury is probably related to the state's bad action—in this case, the systematic exclusion of black veniremembers.¹²⁴ That is an inaccurate description of what the disparity-of-risk results actually mean.

The disparity-of-risk results merely show how the probabilities of drawing representative or underrepresentative juries have changed. It does not show how the underrepresentation in the venire caused underrepresentation on the petit jury. The disparity of risk represents the change in all probable jury outcomes. Section III.A focuses on how to find to what extent the risk of seating an underrepresentative petit jury is caused by an underrepresentative venire.

This conceptual error is one that courts have committed and repeated in the context of medical malpractice and the loss-of-chance doctrine.¹²⁵ Courts employ statistical reasoning in medical malpractice cases when the plaintiff claims that a doctor failed to diagnose or treat a condition sooner, which led to a reduction in the chance of survival.¹²⁶ For example, if a patient has a 40% chance of dying before a doctor commits medical malpractice, and as a result of the malpractice, the patient's risk of mortality increases to 85%, it is often mistakenly argued that, because the patient's mortality rate has increased by 45%, there is only a 45% likelihood that malpractice was the cause of an eventual death. But that is incorrect.¹²⁷ Instead, to determine to what extent malpractice affected the outcome, look at

123. Detre, *supra* note 50, at 1935 (“Disparity of risk is not open to the criticisms that have been leveled at the measures currently used by courts. This is not surprising, since those criticisms were based on the fact that the measures did not always accurately reflect the underrepresentation that the fair cross-section guarantee was concerned with in all cases: The criticisms generally took the form of an example in which substantial underrepresentation seemed self-evident, but the measure showed only a small disparity, or conversely, an example in which the measure showed a large disparity despite seemingly minimal underrepresentation.”).

124. See *Bryant*, 822 N.W.2d at 144 (Mich. 2012); Ré, *supra* note 50, at 541–44.

125. See generally Lars Noah, *An Inventory of Mathematical Blunders in Applying the Loss-of-a-Chance Doctrine*, 24 REV. LITIG. 369 (2005). The loss-of-chance theory in a medical malpractice case looks at the plaintiff's lost chance of survival as the harm in fact. *Id.* at 371. As it was initially proposed, it would have required that the plaintiff prove by a preponderance of the evidence (about 50%) that the defendant's negligence caused that lost chance of survival. *Id.*

126. *Id.* at 401.

127. *Id.*

the relative change to determine the attributable risk.¹²⁸ Malpractice was the cause of 45% of the patient's 85% risk of mortality; if the patient dies, there will have been a 52% chance (0.45 divided by 0.85) that the death was the result of malpractice. To put it another way, if there were 85 identical patients who died, malpractice would have caused the deaths in 52% or 44 of those cases.¹²⁹

The advantage of the disparity-of-risk test is that, in theory, it focuses more directly on how the defendant's chances of receiving an *impartial jury*—that which the Constitution explicitly guarantees—have been affected by the state's wrongful conduct, namely systematically excluding members of a distinctive group in the community. It is not, however, an appropriate tool to determine whether the venires over time are fair and reasonable in relation to the community because it is logically and legally flawed.

III. A PROPOSAL TO IMPROVE CONSIDERATION OF WHAT “FAIR AND REASONABLE” MEANS FOR THE FAIR CROSS-SECTION REQUIREMENT

Each method used for determining whether the resulting underrepresentation of a distinctive group due to systematic exclusion from jury venires is fair and reasonable inadequately serves the purposes of the Impartial Jury Clause. This Part proposes two alternatives to the four statistical tests discussed in Part II. Section III.A argues that, to the extent that courts and lawyers rely on statistical tests to analyze the second prong of the fair cross-section requirement, they should use the comparative-disparity-of-risk test because it is a better measure of whether underrepresentation in the venires causes underrepresentation in the petit jury. Section III.B argues that, given the inherent limitations of statistics in the judicial process, courts should reorder the typical application of the *Duren* test and address the fairness and reasonableness of underrepresentation after, rather than before, they determine whether there has been systematic exclusion of a distinctive group. Then, in addressing the fairness and reasonableness of the underrepresentation as the final prong in the *Duren* test, courts may consider statistical measures but should rely on their discretion to determine the fairness and reasonableness of the underrepresentation.

A. *The Comparative-Disparity-of-Risk Test*

Courts should use the comparative-disparity-of-risk test to determine whether a defendant has shown that an underrepresentative venire is not fair and reasonable in relation to the community. The disparity-of-risk test¹³⁰ does not accurately reflect the effect that the underrepresentation of a distinctive group on the venire has on the petit jury, because the test mistakes

128. *Id.*

129. *Id.* at 374 n.21.

130. *See supra* Section II.D.

the percentage of total jury probabilities for a percentage of the possibility of drawing an underrepresentative jury and suggests that the test shows a causal relationship between the underrepresentative venire and an underrepresentative petit jury. Assuming there must be a causal link between underrepresentation in the venire and underrepresentation on a petit jury to satisfy the second prong of *Duren*,¹³¹ the most appropriate test should be a test that this Note will refer to as the comparative-disparity-of-risk test. It is a statistical test commonly used in the field of medical malpractice to prove proximate causation when the plaintiff claims that the malpractice resulted in a lost chance of survival.¹³² The comparative-disparity-of-risk test measures the likelihood that the state's bad act—in this case, the systematic exclusion of black jurors from jury lists—results in an unfavorable result, namely an underrepresentative petit jury.

To calculate the comparative disparity of risk, use the disparity-of-risk value found by subtracting the risk of drawing an underrepresentative jury from a perfectly representative venire (r) from the risk of drawing an underrepresentative petit jury from an underrepresentative venire (u) and then dividing that difference by u . It is essential to divide by u to determine what percentage of the probability of drawing an underrepresentative jury is attributable to the underrepresentative venire:¹³³

$$\text{Comparative Disparity of Risk} = \frac{u-r}{u},$$

where:

u = probability of drawing fewer than the expected number of black petit jurors from an underrepresentative venire

r = probability of drawing fewer than the expected number of black petit jurors from a perfectly representative venire.

To use the example of Wayne County again, where the total black population is 40.3%, one would expect for there to be 5 black petit jurors in a perfectly representative petit jury. Using the cumulative binomial calculator, find the chance of having fewer than 5 black petit jurors when they are

131. This assumption is supported by the text of the Sixth Amendment guaranteeing an impartial jury and the purposes of the fair cross-section requirement. *See supra* Section I.B. The core of the fair cross-section requirement is the premise that to ensure that a defendant can select an impartial jury, he must be able to select petit jurors from a representative venire. *See Ré, supra* note 50, at 537.

132. *Cf. Noah, supra* note 125, at 393–403 (discussing how courts find the “attributable risk” to determine whether or not a doctor’s negligent failure to diagnose a disease probably caused the ultimate injury—the lost chance of survival).

133. *Cf. id.* at 400 (noting that in medical malpractice cases, some courts mistakenly assume that the absolute disparity of risk alone provides information about how the negligence impacted the risk of mortality and suggesting that to identify the attributable risk requires dividing the absolute disparity of risk by the risk of mortality after the defendant’s negligence).

drawn from a perfectly representative venire. That chance is 43%. If, however, only 30.3% of veniremembers are black (a 10% underrepresentative venire), then the chance of drawing a petit jury with fewer than 5 black jurors increases to 71.6%.¹³⁴ The disparity between those two chances is 28.6%.¹³⁵ To find whether the underrepresentation of the petit jury is the result of the underrepresentation of the venire, divide that number, 28.6%, by 71.6%, which is 39.9%.¹³⁶ Therefore, there is a 39.9% probability that the resulting underrepresentative petit jury was caused by the underrepresentation on the venire. Table 5 provides the results of the comparative-disparity-of-risk test for Wayne, Genesee, and Alger Counties when the venires are underrepresentative by 5%, 10%, and 20%.¹³⁷

TABLE 5.
COMPARATIVE-DISPARITY-OF-RISK RESULTS

County	Actual Proportion of Black People in the Community	U-R Bias = 5%	CDR Bias = 5%	U-R Bias = 10%	CDR Bias = 10%	U-R Bias = 20%	CDR Bias = 20%
Wayne County	40.3%	14.4%	25.1%	28.6%	39.9%	49.3%	53.4%
Genesee County	20.9%	17.7%	25.1%	33.8%	39.1%	47.3%	47.3%
Alger County	6.6%	37.0%	46.6%	57.6%	66.6%	57.6%	57.6%

^a— This is the same as the absolute disparity. For the purposes of consistency, however, it is represented here to conform to the comparative-disparity-of-risk equation.

The advantages of applying the comparative-disparity-of-risk test are similar to those articulated in support of the disparity-of-risk test, except that the comparative-disparity-of-risk test does not contain a mathematical error: the disparity-of-risk test confuses the reduced number of petit jury compositions with the probability that the underrepresentativeness of the venire caused that reduction. And unlike the standard-deviation test, which

134. Once again, use the cumulative binomial calculator. In this case, enter 30.3% in the “probability of successes” field to indicate the chance of drawing a black veniremember, 5 in the “successes” field because that is the expected number of black jurors if the venire is representative, and 12 in the “trials” field because there are 12 petit jurors:

$$B(5; 12, 0.303) = \sum_{y=0}^{x-1} \left(\frac{12!}{y!(12-y)!} \right) \cdot 0.303^y \cdot (1 - 0.303)^{(12-y)} = 0.716$$

135. $.716 - .43 = .286$

136. $\frac{.716 - .43}{.716} = .399$

137. “Underrepresentative” here means that the absolute disparity is equal to the percentage given. Thus, the venires have 5%, 10%, and 20% fewer black persons than the black population of the county as a whole. To see a comparison between the comparative-disparity-of-risk results with other test results discussed in this Note, see Table 6. In Table 5, for Wayne County, see *State and County QuickFacts: Wayne County, Michigan*, *supra* note 53. For Genesee County, see *State and County QuickFacts: Genesee County, Michigan*, *supra* note 53. And for Alger County, see *State and County QuickFacts: Alger County, Michigan*, *supra* note 53.

helps courts identify whether the master list itself is underrepresentative of the community,¹³⁸ the comparative-disparity-of-risk test provides information about whether that underrepresentation in the venires might have caused the *petit jury* to be underrepresentative. The comparative-disparity-of-risk test is the best statistical test considered to date because it looks at how the defendant's chances at a representative, impartial petit jury are affected by problems with the venire and how substantial that effect is.

As with the other statistical tests discussed in this Note, this result raises the following question: When does the comparative-disparity-of-risk test indicate that the venire is not fair and reasonable in relation to the community? A threshold based on the preponderance of the evidence standard, as advocated by Ré¹³⁹ and adopted by the Michigan Supreme Court,¹⁴⁰ should not be the constitutional test. That threshold suffers from the same problems as the absolute-disparity test and all thresholds generally.¹⁴¹ The preponderance threshold would not adequately protect the values embodied in the fair cross-section requirement: it allows those summoning jurors to exclude large segments of the community from jury service; it does not adequately ensure community confidence in the outcome of verdicts; and it diminishes the defendant's chances of receiving an impartial jury.¹⁴²

B. *A Proposal Without Thresholds*

1. Thresholds Should Be Abandoned

Neither courts, nor parties, nor statisticians can quantify fairness and reasonableness. There is certainly a normative appeal in adopting a one-size-

138. See *supra* Section II.C.

139. Ré, *supra* note 50, at 542–44.

140. *People v. Bryant*, 822 N.W.2d 124, 144 (Mich. 2012), *cert. denied*, 133 S. Ct. 664 (2012).

141. See *supra* Section II.A.

142. If courts are going to use the comparative-disparity-of-risk test and impose a threshold, the threshold could more closely reflect the substantial-factor test and the loss-of-chance doctrine that are used in medical malpractice. The substantial-factor test relieves a plaintiff of the nearly impossible burden of proving “but for” causation when there are a variety of factors that could have decreased the plaintiff's chances of survival. 22A AM. JUR. 2D *Death* § 38 (2003). Twenty-five percent is the threshold courts use when applying the substantial-factor test. See Noah, *supra* note 125, at 405. In other words, the plaintiff prevails if the malpractice was about 25% likely to be the cause of the plaintiff's earlier death. See *id.*

The substantial-factor test might be better at recognizing the inherent harm that results from any proven systematic exclusion of distinctive group members because of its impact on the defendant's and community's perceptions of the legitimacy of the verdict. But the substantial-factor test also recognizes that there needs to be some causal link between the state's bad act and harm to the neutrality of the criminal process before overturning a conviction.

fits-all approach to these cases,¹⁴³ but bright-line thresholds treat communities that are demographically different exactly the same. Justice Stevens crystallized the problem with all of these tests when he posed the following question to the Michigan solicitor general during oral argument in *Berghuis v. Smith*: “Should we treat all areas the same, depending [on] the disparity between a jurisdiction which has only 3 or 4 percent of a minority [versus] a jurisdiction where they have 30 or 40 percent?”¹⁴⁴ Under a threshold system, the same rule applies to Alger County, where the black population is 6.9%, as Wayne County, where the black population is 40.3%. In Alger County, all of the proposed tests, except for the comparative-disparity test, would allow the government to exclude the entire black population from jury service without committing a constitutional violation.¹⁴⁵

That is, indeed, a troubling standard to accept if the fair cross-section requirement means anything. And it was an issue that troubled many members of the Court when it last considered the standards for the fair cross-section claim.¹⁴⁶ The United States is rapidly becoming a country without majority and minority populations according to the most recent census data.¹⁴⁷ If the country is increasingly comprised of distinctive groups that fall below these proposed thresholds, then the fair cross-section requirement will cease to be a meaningful protection.

There is little justification for having courts and lawyers play with statistical formulations when the task at hand is subjective. Courts and juries regularly evaluate reasonableness without the aid of mathematical calculations. When assigning tort liability, judges and juries assess the reasonableness of a defendant’s actions.¹⁴⁸ Similarly, in criminal law, the extent of the punishment often depends on what type of activity an objectively reasonable person would have known could cause harm to others.¹⁴⁹ In Fourth Amendment search and seizure jurisprudence, the reasonableness of an officer’s

143. Justice Scalia noted that very appeal in the oral argument in *Berghuis v. Smith*. Transcript of Oral Argument at 13, *Berghuis v. Smith*, 130 S. Ct. 1382 (2010) (No. 08-1402), available at http://www.supremecourt.gov/oral_arguments/argument_transcripts/08-1402.pdf.

144. *Id.* at 7.

145. See *supra* Part II; *supra* Section III.A.

146. After hearing the Michigan solicitor general state that the standard in the lower courts has been a 10% absolute disparity threshold, Justice Ginsburg remarked, “That would mean that a district is free to just disregard all the people who are under 10 percent of the population.” Transcript of Oral Argument, *supra* note 143, at 9. Justice Sotomayor expressed similar dismay: “Well, I don’t think that [] any court has suggested that the complete absence of the protected group in that kind of number [under 10% of the population] wouldn’t give rise to a fair representation claim.” *Id.* at 10–11.

147. E.g., Michael Cooper, *Census Officials, Citing Increasing Diversity, Say U.S. Will Be a ‘Plurality Nation’*, N.Y. TIMES, Dec. 13, 2012, at A20, available at http://www.nytimes.com/2012/12/13/us/us-will-have-no-ethnic-majority-census-finds.html?_r=0.

148. See, e.g., RESTATEMENT (THIRD) OF TORTS: GENERAL PRINCIPLES (DISCUSSION DRAFT) § 4 (1999) (“An actor is negligent in engaging in conduct if the actor does not exercise reasonable care under all the circumstances.”).

149. JOSHUA DRESSLER, UNDERSTANDING CRIMINAL LAW 142 (5th ed. 2009) (defining the mens rea for negligence as a deviation from the standard of a reasonable person).

actions is the linchpin of the analysis.¹⁵⁰ For each of these inquiries, courts do not apply statistical formulas to arrive at their conclusions; they do what judges do best: make judgments after carefully considering a variety of factors.

Furthermore, courts are not good at applying math to legal principles. Time and time again, in volume after volume of federal reporters, judges and lawyers make a mess of statistical analysis, which consequently subverts the goals of the relevant legal principles.¹⁵¹ The fair cross-section requirement should not also be subverted due to slavish adherence to statistical thresholds.

2. A Proposal for Analyzing Whether the Underrepresentation in Venires Is Fair and Reasonable in Relation to the Community

How should judges think about the fairness and reasonableness of underrepresentation without thresholds? First, courts should move the fairness and reasonableness prong to the end of the analysis so that the *Duren* test reads as follows: (1) if a distinctive group in the community is (2) systematically excluded from venires, and (3) the venires are not fair and reasonable in relation to the community, then the defendant has established a prima facie case that a fair cross-section violation occurred. The standard-deviation test may help courts determine whether the system for summoning veniremembers systematically excludes a distinctive group.¹⁵²

The *Duren* test should be altered in this way because switching the order of the second and third prongs ensures that the fairness and reasonableness inquiry is properly contextualized. If a county's venire selection has already been found to cause systematic exclusion, then that places the question of whether such underrepresentation is fair and reasonable in a different light. Then, the fairness and reasonableness inquiry ensures that the defendant gets relief when it matters. In *Berghuis v. Smith*, the Court signaled that courts may look to whether systematic exclusion has been proven before considering the second prong of *Duren*.¹⁵³ Lower courts should follow this advice.

150. See, e.g., 1 JOSHUA DRESSLER & ALAN C. MICHAELS, UNDERSTANDING CRIMINAL PROCEDURE 79–80 (5th ed. 2010).

151. Michael I. Meyerson & William Meyerson, *Significant Statistics: The Unwitting Policy Making of Mathematically Ignorant Judges*, 37 PEPP. L. REV. 771 (2010) (arguing that judges' mathematical illiteracy has subverted the presumption of innocence in paternity cases, improperly allocated risk error in securities fraud cases, and injected racial and gender bias into DNA analysis and the assessment of damages in tort suits). Indeed, Justice Breyer acknowledged his own struggle to understand and apply statistical analysis during the *Berghuis* oral argument: "So you see why I—I'm at sea, as soon as you tell me to be a statistician. I even got a book called Statistician for Lawyers. That didn't help me very much." Transcript of Oral Argument, *supra* note 143, at 14.

152. See *supra* Section II.C.

153. See 130 S. Ct. 1382, 1393–94 (2010); Natalie A. Pifer, Comment, *Berghuis v. Smith: Continuing Ambiguity in Fair-Cross-Section Claims*, 44 LOY. L.A. L. REV. 1035, 1046 (2011).

Second, statistics should only be one of several factors courts consider when conducting the fairness and reasonableness inquiry. For some communities, an exclusively statistical approach is strikingly incomplete.¹⁵⁴ Rather than rely on statistics, judges should consider how a ruling honors the principles embodied in the fair cross-section requirement as they relate to the community in which the defendant is tried: jury impartiality, perceived fairness, community participation, and representation of the community's values.¹⁵⁵ This analysis would require judges to consider and respond to the parties' arguments about whether a failure to find a violation of the fair cross-section requirement would threaten one or more of these principles.

Third, once courts reach the fairness and reasonableness prong, they should weigh the statistical evidence presented, consider the purposes of the fair cross-section requirement, and make common-sense judgments about the fairness of the underrepresentation. A judge should, when possible, consider the various statistical tests, but she should not rest her decision on a bright-line threshold. These tests provide the court with information to help guide its judgment; the tests should not, however, determine the outcome. The absolute-disparity test shows the extent to which venires do not reflect the community.¹⁵⁶ The comparative-disparity test clarifies how much of the distinctive group's population did not receive summonses for jury service as a result of the systematic error.¹⁵⁷ And the comparative-disparity-of-risk test tells the judge the probability that the underrepresentative venire affected the expected representativeness of the defendant's petit jury if jurors are randomly selected.¹⁵⁸ The comparative-disparity-of-risk test is the best measure among the tests discussed in this Note. Courts should abandon the disparity-of-risk test because it does not provide any useful information.¹⁵⁹

For example, if Marquette County systematically—albeit inadvertently—excluded all of its black citizens from master lists, a judge could still find a fair cross-section violation by noting that the complete or near elimination of the distinctive group, which makes up 1.9% of the community, would undermine the community's confidence in the verdict because the jury would not fully reflect the community's values and judgments. Moreover, the judge could conclude that the complete absence of black veniremembers caused the defendant's jury to be less impartial because of

154. See Devon Knowles, Note, *From Chicken to Chignik: The Search for Jury Impartiality in Rural Alaska Native Communities*, 37 COLUM. HUM. RTS. L. REV. 235, 252 (2005) (arguing that the traditional methods for analyzing the second prong of the *Duren* test do not adequately consider Alaska's unique cultural and geographical divisions and, therefore, do not give sufficient weight to the purpose of the fair cross-section requirement).

155. See *supra* Section I.B.

156. See *supra* Section II.A.

157. See *supra* Section II.B.

158. See *supra* Section III.A.

159. See *supra* Section II.D.

the indirect effects that the mere possibility of having a black petit juror could have on the outcome.¹⁶⁰

This more comprehensive approach to judging a fair cross-section claim is a standard, rather than a rule, and thus suffers and benefits from the advantages and deficiencies judges and scholars often reference in the familiar battle between rules and standards.¹⁶¹ But this Note posits that a constitutional standard is more desirable in this context because a defendant's liberty is on the line, the communitarian values of the impartial jury are so important, and the demographics of the United States are so different state by state and county by county that a definitive rule would be insufficient to account for these differences while simultaneously protecting the values of the Impartial Jury Clause.

CONCLUSION

The fair cross-section requirement of the Impartial Jury Clause both protects defendants from arbitrary exercises of government power and preserves the most important principles of the criminal jury system. Courts have used four statistical tests and thresholds to evaluate fair cross-section claims, and in so doing, they have undermined the policy considerations of the Impartial Jury Clause. The four tests—the absolute-disparity test, the comparative-disparity test, the standard-deviation test, and the disparity-of-risk test—are deficient because they all fail to protect those underlying principles. Courts should instead use the comparative-disparity-of-risk test because it provides information about how a group's underrepresentation on a venire negatively impacts the composition of the petit jury. Fairness and reasonableness, however, cannot be calculated or quantified. Courts should abandon thresholds and instead make a finding about systematic exclusion before engaging in what courts have always done: consider all the facts presented, weigh the evidence, and make a well-considered judgment about how the outcome fits within the Impartial Jury Clause.

160. See Shamena Anwar et al., *The Impact of Jury Race in Criminal Trials* 21 (Nat'l Bureau of Econ. Research, Working Paper No. 16366, 2010), available at <http://www.nber.org/papers/w16366> (“[O]ur primary results imply that the black–white conviction gap declines by an average of 16 percentage points in all trials in which there is at least one black member of the jury pool.”).

161. E.g., Kathleen M. Sullivan, *The Supreme Court, 1991 Term—Forward: The Justices of Rules and Standards*, 106 HARV. L. REV. 22 *passim* (1992).

APPENDIX¹⁶²

TABLE 6.
COMPARISON OF FOUR TEST RESULTS

County	Actual Proportion of Black People in the Community	Absolute Disparity	Comparative Disparity	Disparity of Risk	Comparative Disparity of Risk
Wayne County	40.3%	5%	12.4%	14.4%	25.1%
		10%	23.9%	28.6%	39.9%
		20%	75.75%	49.3%	53.4%
Genesee County	20.9%	5%	24.8%	17.7%	25.1%
		10%	47.8%	33.8%	39.1%
		20%	N/A	47.3%	47.3%
Alger County	6.6%	5%	49.6%	37.0%	46.6%
		10%	95.7%	57.6%	66.6%
		20%	N/A	57.6%	57.6%

162. In Table 6, for Wayne County, see *State and County QuickFacts: Wayne County, Michigan*, *supra* note 53. For Genesee County, see *State and County QuickFacts: Genesee County, Michigan*, *supra* note 53. And for Alger County, see *State and County QuickFacts: Alger County, Michigan*, *supra* note 53.