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Statistical Analysis and Jury Size: Ballew v. State of Georgia

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STATISTICAL ANALYSIS AND JURY SIZE: *Ballew v. State of Georgia**

INTRODUCTION

In 1973, Claude Ballew, manager of the Paris Art Adult Theatre in Atlanta, was brought to trial in the Criminal Court of Fulton County after being charged in a two-count misdemeanor accusation for distributing obscene materials. Ballew moved that the court impanel a twelve-person jury after a jury of five persons had been selected and sworn. The Georgia Constitution, however, provided for misdemeanor cases in this criminal court[1] to be tried before juries of five persons. Ballew contended that a jury of only five was constitutionally inadequate to assess the contemporary standards of the community, and that the sixth and fourteenth amendments required a jury of at least six members in criminal cases.[2] The motion was overruled, Ballew was convicted, and the court imposed a sentence of one year and a $1000 fine on each count. Ballew took an appeal to the Georgia Court of Appeals and there argued that the use of a five-member jury deprived him of his sixth and fourteenth amendment rights to a trial by jury. His contentions were rejected because a constitutional minimum number of jurors had not been established by the United States Supreme Court. The Supreme Court of Georgia denied certiorari and Ballew petitioned for certiorari to the United States Supreme Court. There petitioner raised three issues, but since the Court found that the five-member jury did not satisfy the jury trial guarantee of the sixth amendment as applied to the states through the fourteenth amendment, it did not reach the other issues.

I. DEVELOPMENT OF THE CONCEPT OF TRIAL BY JURY AS IT EXISTS TODAY

A. *Constitutional Guarantee for Jury Trial*

The right to trial by jury for criminal offenses is provided for

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* This article was completed before the unanimity requirement for six person juries was established in Burch v. Louisiana, 99 S. Ct. 1623 (1979).

[1] " 'The proceedings [in the Criminal Court of Atlanta] after information or accusation, shall conform to the rules governing like proceedings in the Superior Courts, except that the jury in said court, shall consist of five' . . . ." Ballew v. Georgia, 98 S. Ct. 1029, 1032 n.5 (1978).

[2] The Court in Williams v. Florida, 399 U.S. 78 (1970), held that a jury of six members did not violate the constitutional guarantee to trial by jury, but made no determination as to a jury of lesser number. *Id.* at 91 n.28.

in the Constitution.[3] Over the years the United States Supreme Court has struggled with questions concerning the meaning of certain phrases such as "all crimes" and "all criminal prosecutions," the requirements of due process, the essential elements of a jury trial, and the meaning of the term "jury." To further complicate matters, passage of the fourteenth amendment guaranteed that the privileges and immunities of citizens of the United States would not be abridged by the states and that due process of law would be extended to state actions.[4] This has generated such questions as: What are the privileges and immunities of citizens of the United States and which requirements of due process must the states provide?

B. *Judicial Interpretation of the Constitutional Guarantee*

Before discussing the Court's opinion in *Ballew v. Georgia,*[5] it would be helpful to review the cases which have shaped "trial by jury" as it exists or is interpreted today.

1. Serious or Non-Petty Crimes

In 1888, in *Callan v. Wilson,*[6] the Court held that except for those petty offenses which according to the common law could be proceeded against summarily, the guarantee of a jury trial in a criminal prosecution conducted either in the name or under the authority of the United States was secured to the defendant. Eighty years later in *Duncan v. Louisiana,*[7] the Court reaffirmed the long-established view that there were certain petty offenses which could be tried without a jury, citing several cases going back to *Callan.*[8] Thus, the words of the Constitution are not to be taken literally; rather, the guarantee of a right to trial by jury pertains only to "serious" or "non-petty" crimes. *Duncan* clarified one question only to raise another: What determines whether or not a crime is to be classified as petty or serious?

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[3] "The Trial of all Crimes, except in Cases of Impeachment, shall be by Jury . . . ." U.S. CONST. art. III, § 2, cl. 3. "In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury . . . ." U.S. CONST. amend. VI.

[4] "No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law . . . ." U.S. CONST. amend. XIV, § 1.

[5] 98 S. Ct. 1029 (1978).

[6] 127 U.S. 540, 557 (1888).

[7] 391 U.S. 145 (1968).

[8] *Id.* at 159 n.31.

In *Baldwin v. New York,*[9] the Court examined the criteria to be used in determining whether or not a crime is in fact "petty." Ideally, a court should use "objective criteria" whenever possible in order to indicate the seriousness with which society regards the offense.[10] The criteria that have been set out by the Supreme Court at various times are: the existing laws and practices in the nation,[11] the severity of the maximum authorized penalty,[12] the severity of the penalty actually imposed in the absence of an authorized maximum,[13] and the nature of the offense.[14] In the federal court system, a petty offense is defined as a misdemeanor, for which penalties do not exceed imprisonment for a period of six months or a fine of not more than $500, or both.[15]

2. Essential Elements of Trial by Jury

Until *Williams v. Florida,*[16] the essential elements of trial by jury, at least for the federal system, were assumed to be: a jury consisting of twelve members, neither more nor less; the presence and supervision of a judge having the power to instruct the jury as to the law and to advise them regarding the facts; and a unanimous verdict.[17] Prior to *Williams,* all of the cases which considered the problem stated that the right to trial by jury meant a jury as it existed at common law and included all the essentials as they were recognized when the Constitution was adopted.[18] Until *Williams* (and arguably even to this day),[19] the right of trial by jury guaranteed by the Constitution was interpreted to mean for all non-petty ofenses trial by a jury as it existed at common law when the Constitution was adopted. But this conclusion ap-

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[9] 399 U.S. 66 (1970).

[10] *Id.* at 68.

[11] 391 U.S. at 161.

[12] Frank v. United States, 395 U.S. 147, 148 (1969).

[13] *Id.* at 149.

[14] District of Columbia v. Colts, 282 U.S. 63, 73 (1930).

[15] 18 U.S.C. § 1(3) (1976).

[16] 399 U.S. 78 (1976).

[17] Patton v. United States, 281 U.S. 276, 288-89 (1930) (citing Capital Traction Co. v. Hof, 174 U.S. 1, 13-16 (1899); Thompson v. Utah, 170 U.S. 343, 350 (1898); American Pub. Co. v. Fisher, 166 U.S. 464, 468 (1897)).

[18] *E.g.,* Patton v. United States, 281 U.S. 276 (1930); Maxwell v. Dow, 176 U.S. 581 (1900); Thompson v. Utah, 170 U.S. 343 (1898).

[19] Justice Harlan, concurring in *Williams,* found that the necessary consequence of the Court's decision was that 12-member juries were not *"constitutionally* required in *federal* criminal trials either." 399 U.S. at 118 (Harlan, J., concurring) (emphasis in original).

plies only to the federal judicial system; what about the right to trial by jury as it applies to the state courts?

3. Right to Trial by Jury in the State Courts

The right to trial by jury was not always extended to criminal defendants in the state courts.[20] In *Maxwell v. Dow*,[21] the Court stated that the right to trial by jury in a state court for a state offense was not included in the privileges and immunities of a citizen of the United States. In other words, the right to trial by jury was not among the rights extended to defendants in state courts by the fourteenth amendment.[22] The Court went so far as to say that trial by jury had never been affirmed to be a requirement of due process of law.[23]

It was not until 1968, in *Duncan v. Louisiana*,[24] that the Court recognized the right to trial by jury as one extended to the citizens of the states through the fourteenth amendment. The finding by the Court which allowed this turnabout was that trial by jury was a fundamental right essential to a scheme of "ordered liberty."[25] A look at history convinced the Court that although the Framers of the Constitution did not intend for the sixth amendment to bind the states to jury trial, the fourteenth amendment was adopted specifically to put limitations on the states.[26] *Duncan* thus extended to criminal defendants in the state courts the right to trial by jury for those crimes for which defendants would be afforded a jury trial were they tried in a federal court.[27] After *Duncan*, a defendant accused of any serious crime was entitled to a jury trial whether in state or federal court.

4. Essential Elements of Trial by Jury in the State Courts

Although *Duncan* established the right to jury trial in state

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[20] Trial by jury was not guaranteed in the state courts by the United States Constitution; however, the right was provided in many states by state constitutions.

[21] 176 U.S. 581 (1900).

[22] *Id.* at 595.

[23] *Id.* at 603.

[24] 391 U.S. 145 (1968).

[25] "Because we believe that trial by jury in criminal cases is fundamental to the American scheme of justice, we hold that the Fourteenth Amendment guarantees a right of jury trial in all criminal cases [covered by the Sixth Amendment]." *Id.* at 149.

[26] For a discussion of the fourteenth amendment and incorporation, *see* Fairman, *Does the Fourteenth Amendment Incorporate the Bill of Rights? The Original Understanding*, 2 STAN. L. REV. 5 (1949); Morrison, *Does the Fourteenth Amendment Incorporate the Bill of Rights? The Judicial Interpretation*, 2 STAN. L. REV. 140 (1949).

[27] 391 U.S. at 149.

criminal prosecutions, the Court specifically indicated that there was no reason to assume that the decision would impose the federal requirements of unanimity and twelve members on the states.[28] Since only those aspects and provisions of the Bill of Rights considered to be essential or fundamental rights are incorporated by the fourteenth amendment,[29] only those elements of a jury trial considered to be fundamental would be imposed.

This process of "selective incorporation" pervaded the trio of cases which set the stage for *Ballew v. Georgia.*[30] In *Williams v. Florida,*[31] it was held that a twelve-member panel is not a necessary ingredient of trial by jury,[32] and in *Johnson v. Louisiana*[33] and *Apodaca v. Oregon*[34] the Court held that unanimous verdicts were not required in noncapital trials in state courts. The Court in its holdings on the essentials of trial by jury has progressed from the historical meaning[35] of the term to a functional interpretation of the jury's purpose. In *Williams* the Court maintained that consideration must be given to the function that a particular feature performs and its relation to the purposes of the jury trial.[36] The purpose of the jury trial as noted in *Duncan* and *Williams* is to prevent oppression by the government.[37] The right to be tried by a jury of one's peers gives the accused a safeguard against the "corrupt or overzealous prosecutor and against the compliant, biased, or eccentric judge."[38] The essential feature of a jury according to the *Williams* Court is its interposition between the accused and his accuser of the commonsense judgment of a group of laymen.[39] The number of jurors required is only that number necessary to promote group deliberation, to insulate members from outside influence and intimidation, and to provide a fair chance of having a representative cross section of the community.[40]

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[28] *Id.* at 213 (Fortas, J., concurring).

[29] Morrison, *supra* note 26.

[30] 98 S. Ct. 1029 (1978).

[31] 399 U.S. 78 (1970).

[32] *Id.* at 86.

[33] 406 U.S. 356 (1972).

[34] 406 U.S. 404 (1972).

[35] For a discussion of the historical meaning of trial by jury, *see* Williams v. Florida, 399 U.S. 78, 86-99 (1970).

[36] *Id.* at 99-100.

[37] *Id.* at 100.

[38] 391 U.S. at 156.

[39] 399 U.S. at 100.

[40] *Id.*

Applying its new-found functional criteria to the number of jurors required, the Court in *Williams* intuitively determined that there was little reason to think that the purpose and function of the jury would "in any meaningful sense" be less likely to be achieved with a jury of six than with a jury of twelve.[41]

In analyzing whether or not a unanimous verdict was required to satisfy the purpose of a jury, the Court in *Apodaca* and *Johnson* found that a nonunanimous verdict did not impair the function of the jury. The dissenting opinion contended that a minority view on the jury could be ignored unless the minority was substantial enough to preclude the majority from obtaining the necessary number of votes,[42] a result which essentially defeats the effective representation of a cross section of the community. Further, if a sufficient majority was obtained on the first ballot not only would deliberation not be promoted, but deliberation need not take place at all. To these objections the majority merely said that no presumption could be made about the jurors and that there was no reason to think that they would not take seriously their reponsibility for the liberty of the defendant. Although the majority's view on juror behavior may be correct more often than not, a knowledge of human nature would indicate that there will be exceptions to these responsible juries.

II. EFFECTS OF JURY SIZE ON THE RIGHT TO TRIAL BY JURY

In *Williams v. Florida* the Court conjectured that there was no discernible difference between the results obtained by the two different sized juries based upon the few experiments that had been conducted.[43] However, the Court did not critically analyze the "experiments" it relied upon. In *Colgrove v. Battin*,[44] the Court found "convincing empirical evidence" in four studies which confirmed the conclusion in *Williams*.[45] But, again, the studies relied upon did not really prove what the Court indicated they did. As Richard Lempert suggests in his study of the Court's failure to find any difference due to jury size, the majority in those cases was looking for evidence which would support its intuitive assumption that jury size had no relation to jury ver-

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[41] *Id.*

[42] 406 U.S. at 388-89 (Douglas, J., dissenting).

[43] 399 U.S. at 101 n.48.

[44] 413 U.S. 149 (1973).

[45] *Id.* at 159-60 n.15.

dicts.[46] The studies that have been published regarding the Court's finding of "convincing empirical evidence" and "no discernible difference" in these two cases indicate that an elementary knowledge of statistics and behavioral science should point out to those analyzing the problem that jury size does have an appreciable effect on at least some of the Court's stated jury functions. Some of these studies have pointed out problems which exist when conducting research in this area; therefore, care must be taken when interpreting or relying on any conclusions drawn from such research.[47] But the research, once analyzed for validity, should be used when available. Sophisticated analysis is not required to show that the Court has allowed the right to trial by jury to be fundamentally altered by its holdings beginning with *Williams*. The right to trial by jury as it exists today differs in both form and function from that which existed at common law at the time the Constitution was adopted.

The amazing point about the Court's holding in *Ballew v. Georgia* is that it cites numerous "scholarly works" on jury size,[48] most of which deal with the significant differences between six- and twelve-member juries, yet the Court tries to use these studies to conclude that the purpose and functioning of the jury in a criminal trial is seriously impaired, and to a constitutional degree, by a reduction in size below six members.[49] At the same time the Court reaffirmed the holding in *Williams*, a case which much of this scholarly work tends to criticize. The fact that these studies show a difference in six- and twelve-member juries would seem to indicate that the Court's decision in *Williams* was erroneous, since the rationale relied upon was that the two juries would not function differently. But instead, the Court takes the information and tries to use it to show that a further reduction in jury size to five impairs the functioning of the jury to a constitutional degree. Thus, what the Court is essentially doing in *Ballew* is using studies and data comparing six- and twelve-

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[46] Lempert, *Uncovering "Nondiscernible" Differences: Empirical Research and the Jury-Size Cases*, 73 MICH. L. REV. 645, 649 n.9 (1975).

[47] *See, e.g.*, Lempert, *supra* note 46 at 647-48; Zeisel, . . . *And Then There Were None: The Diminution of the Federal Jury*, 38 U. CHI. L. REV. 710, 714 (1971); Zeisel & Diamond, *"Convincing Empirical Evidence" on the Six Member Jury*, 41 U. CHI. L. REV. 281 (1974).

[48] 98 S. Ct. at 1034-35 n.10.

[49] *Id.* at 1034-38.

member juries and applying it to show that a five-member jury is undesirable. This is analagous to performing a physics laboratory experiment with a twelve pound weight and a six pound weight, then using the information gathered from their behavior to determine the behavior of a five pound weight. It might be possible to determine the direction of any change in performance with relative certainty, but to be able to determine anything about the magnitude of the change much more information would be required. Here the Court is doing essentially the same thing. The Court has decided that a reduction in jury size from six to five is of constitutional proportion based upon the evidence obtained by comparing twelve- and six-person juries. Certainly one would have to agree with the direction of the difference, but the Court really needed more information before determining that the magnitude of the change was of constitutional significance. In fact, the opinion gave no indication as to the magnitude of the change other than it brought the issue to that part of the "slippery slope" which had become too steep.[50] Admittedly there is a relationship between the decrease in jury size from twelve to six members and the decrease from six to five members, but without information as to the magnitude of the change how could the Court determine that it was of constitutional significance? To use intuitive judgment when there is significant information available seems to be a naive approach to the problem.

If the essential elements of the jury function, as stated in *Williams*,[51] are analyzed with respect to the twelve- and six-member juries, it can be seen that the Court did not apply its own test properly; that in fact there is a discernible difference between these two juries. Further analysis can then be used to show the change that could be expected by decreasing the jury size from six to five.

A. *Cross Section of the Community and Minority Representation Considerations*

The most popularly analyzed aspect of jury size reduction concerns minority representation on different sized juries. This relates to the Court's requirement that the jury should be large enough to provide for a fair representation of the community. The

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[50] *Id.* at 1038.

[51] *See* note 40 *supra* and accompanying text.

degree to which minorities are included on juries determines in part the degree to which community representation is being attained.

The likelihood that a particular jury of a specified size will contain a given number of minority members can be obtained by the use of the binomial distribution.[52] The only additional information needed is the percent of the population from which the jury will be drawn who exhibit the minority characteristic in question.[53] Table I indicates the likelihood that any particular jury will *not* contain any minority members for different sized juries and different levels of minority representation in the community.

TABLE I

Percentage of individuals sharing characteristic in the population	Jury Size		
	Twelve	Six	Five
10	.282	.531	.590
20	.069	.262	.328
30	.014	.118	.168
40	.002	.047	.078
50	.000	.016	.031

The Court in *Ballew* shows the significant increase in the likelihood that a minority would not be represented on a six-member jury, but what it does not do is to show that the change in the likelihood when going from a six-member to a five-member jury is relatively insignificant. For the case where a minority makes up 10% of the population, 28% of all twelve-member juries would be expected not to have a minority member, whereas 53%

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[52] The binomial distribution assumes independent random sampling with replacement. Since the population from which jurors are selected is so large in comparison to the number of jurors selected for a particular jury, the fact that the replacement assumption does not hold is not significant. The binomial distribution is given by the formula $p(x=k)=\frac{n!}{k!\,(n-k)!}(p)^k(1-p)^{n-k}$ where p is the probability of a member of the population having a particular characteristic, 1-p is the probability of a member not having the particular characteristic, n is the sample size (here the jury size), and k is the number of individuals on a jury having the characteristic.

[53] The percentage of the population which contains a given characteristic may not be the same as the percentage on the jury list which contains the characteristic. In addition to the difference between the population and the jury lists, any selection procedure which does not provide for a random selection of jurors from the list would cause the statistical prediction given by the binomial distribution to be incorrect. Challenges for cause and preemptory challenges also prohibit the jury from being a true random sample. Lempert, *supra* note 46, at 664-66.

of all six-member juries would not be expected to contain any minority members. This seems to indicate a rather significant difference between the two juries. However, with a five-member jury the likelihood only increases to 59%, not a significant increase relative to the change from twelve- to six-member juries. If the Court has held, and reaffirmed its conclusion, that there is no discernible difference between twelve- and six-member juries, can it now say that the difference between six- and five-member juries is significant? This question is raised not to advocate a five-member jury, but to point out the inconsistency in the Court's logic. A move from six to five does not impair the functioning of the jury as significantly as a move from twelve to six, which has been held not to impair the functioning of the jury to a constitutional degree. The move from twelve to six increased the likelihood 88% of not having a minority member on the jury, whereas the move from six to five would only increase this likelihood by 11%.[54]

B. *Reducing the Chance of Obtaining a Hung Jury*

The likelihood of representation of minority members on a jury can also be applied to analyzing the likelihood of obtaining a hung jury in any particular case. A hung jury is favorable to the defendant for several reasons and therefore any decrease in the likelihood of a hung jury would be detrimental to the defendant.[55] It is well recognized that in order for one in the minority to maintain his position it is generally necessary that he have at least one other person supporting his position.[56] Table II shows the likelihood of obtaining juries with at least two members having the minority point of view.

TABLE II

Percentage of individuals sharing characteristic in the population	Jury Size		
	Twelve	Six	Five
10	.341	.114	.081
20	.725	.345	.263
30	.915	.580	.472
40	.980	.767	.663
50	.997	.891	.813

[54] The percentage change may be calculated using the formula $\frac{P_6 - P_{12}}{P_{12}} \times 100$, where P_{12} is the probability of a 12-member jury having no minority members.

[55] Although a hung jury is not equivalent to an acquittal, there is always the chance that the prosecution will not pursue the case, that the defendant will be more capable knowing the prosecution's case, or in civil cases that the plaintiff will not have the resources or inclination to pursue another trial.

[56] Thomas & Fink, *Effects of Group Size*, 60 PSYCH. BULL. 371 (1963).

The likelihood of obtaining at least two members with a minority viewpoint is not particularly favorable when the percentage of individuals in the population sharing that viewpoint is low, regardless of jury size. The problem is even worse than it first appears because if Kalven and Zeisel are correct, even two jurors holding a minority viewpoint will not be sufficient to hang a jury.[57] According to their study, in order to hang a jury there must initially be a "massive minority" of four or five members.[58] The problem with this observation when trying to apply it to smaller sized juries is whether the "massive minority" must be in absolute number or relative size. If the relative or proportional size of the minority is what is important, a minority of two on a six-person jury would be expected to result in a hung jury just as often as a minority of four would result in a hung jury with a twelve-member jury. Since the likelihood of obtaining two out of six jurors with any minority viewpoint is higher than obtaining four out of twelve[59] it would be expected that six-person juries would hang more often than twelve-person juries.[60] However, the available data indicates that the number of hung juries is about one-half for six-person juries as compared to twelve-person juries.[61] If the absolute size of the minority were any larger than two in a six-member jury it would cease to be the minority. So it would seem that the absolute size of the minority plays some role in the inability of a jury to come to a unanimous verdict, and that two cannot perform the same function as four. The fact remains, however, that there is virtually no chance of a hung jury when

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[57] H. KALVEN & H. ZEISEL, THE AMERICAN JURY 462 (1966).

[58] *Id.*

[59] As long as the minority viewpoint is held by less than 40% of the population. *See* note 60 *infra.*

[60]

Percentage of individuals in the population sharing characteristic	10	20	30	40	50
Probability of obtaining at least four out of twelve jurors with the characteristic	.03	.21	.51	.77	.93
Probability of obtaining at least two out of six jurors with the characteristic	.11	.35	.58	.77	.89

[61] Zeisel, *The Waning of the American Jury*, 58 A.B.A. J. 367, 369 (1972).

there is only one juror with the minority viewpoint present, and the likelihood of obtaining at least two with this viewpoint is decreased with the size of the jury.[62] The decrease in this likelihood when decreasing jury size to five is, however, less than the decrease obtained when decreasing from twelve to six. This again illustrates the inconsistency of *Williams* and *Ballew*; in the former case the Court held what would appear to be a significant decrease in the likelihood not to be of constitutional significance, while the apparently small additional decrease in *Ballew* was deemed constitutionally significant.

C. *The Effects of Jury Size on Verdict Consistency*

Anyone familiar with statistics knows that variability of a sample increases with a decrease in the sample size. Because of this, the relative consistency of verdicts for different sized juries can be measured using the common statistic of dispersion, the standard deviation.[63] Nagel and Neef, using data from *The American Jury*,[64] determined that the average juror had a propensity to convict of .677, meaning that the average juror would vote to convict the average defendant approximately 68% of the time.[65] With randomly selected twelve-member juries, one-half of the juries would have average propensities to convict ranging from 58% to 78%.[66] With a reduction in jury size to six, half of the juries would have average propensities to convict lying in the range 53% to 83%, and with a further reduction to five members the range would be 51% to 85%.[67] Again, as has been shown before, the move from twelve to six has caused a greater change than the move from six to five. The ten percentage point increase in variability

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[62] *See* Table II, *supra*.

[63] The statistic when dealing with the standard deviation of sample means is called the standard error. Here the standard error is the variability of the juries' average propensity to convict. This average is obtained by a simple arithmetic average (mean) of the individual jurors' propensities to convict on a given jury (the sample).

[64] H. KALVEN & H. ZEISEL, THE AMERICAN JURY (1966).

[65] Nagel & Neef, *Deductive Modeling to Determine an Optimum Jury Size and Fraction Required to Convict*, 1975 WASH. U.L.Q. 933, 952, 971.

[66] *Id.* at 971-72.

[67] The standard deviation of the means of the samples (here the average propensity to convict of a jury) is related to the standard deviation of the population by the formula $s = \frac{\sigma}{\sqrt{n}}$, where σ is the standard deviation of the population and n is the sample size (here the jury size). σ can be estimated from Kalven and Zeisel's data on 3,576 juries. By changing the sample or jury size, n, the standard error for 12, 6, and 5-member juries can be calculated, and from this the 50% interval is obtained from tables of the normal distribution.

caused by decreasing the jury from twelve to six members was considered by Nagel and Neef to be significant in both real and percentage terms.[68] The further reduction in size to five, however, only adds four percentage points to the range. Whether or not this is significant is not clear, but what is clear is that it is certainly less significant than the increase allowed by decreasing jury size from twelve to six.

Increased variability of juries not only affects the jury's average propensity to convict, but may also cause juries to reach extreme solutions more often than a jury with less variability. Since jury deliberation often acts as an averaging process, the increased variability of that average for a smaller jury is likely to cause smaller juries to more frequently reach extreme solutions. In civil trials this would take the form of more extreme dollar awards and in criminal trials it could affect compromises on of what offense the defendant was convicted.

D. *Likelihood of Conviction with Smaller Juries and Non-Unanimous Verdicts*

A jury comes to the conclusion it does because of the interaction or combination of three variables: the case itself, the individual jurors and the preconceptions and characteristics they bring with them to the trial, and the deliberation process.[69] It would be incorrect to come to any conclusion as to the effects of jury size based upon its impact on only one of these variables. However, if it could be shown that the other variables would move in the same direction or not be affected by a change in jury size, then a valid conclusion could be reached as to the direction and relative magnitude of any effects. The case itself would not be expected to change with a change in jury size,[70] and a decrease in jury size would be expected to have a detrimental effect on the deliberation process.[71] Therefore, if decreasing jury size could be shown to have a detrimental effect on the defendant due to the individual jurors and their preconceptions and characteristics, then it could be concluded that the overall effect would be detrimental.

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[68] Nagel & Neef, *supra* note 65, at 971-72.

[69] *Id.*

[70] There has been some conjecture however, that the increased variability of jury verdicts as well as the changed probability of conviction with smaller juries does affect the type of cases defense as well as prosecuting attorneys will bring to jury trial.

[71] Thomas & Fink, *supra* note 56.

In order to compute the likelihood of conviction for an average defendant in an average case with a given community average propensity to convict, the binomial distribution can again be used. Table III gives the likelihood of conviction for unanimous as well as nonunanimous verdict rules. As can be seen, the likelihood of conviction increases as jury size decreases for unanimous verdicts regardless of the community's propensity to convict. The propensity to convict could be thought of as one of the preconceptions a juror brings with him to the trial. It is therefore a distinct disadvantage for the average defendant to have the jury size decreased. Admittedly, individual preconceptions (including the propensity to convict) will not be the sole determinants of a verdict,[72] but even if there were some mellowing of these characteristics by the deliberation process, this input would still affect the end result in the direction indicated. And if the deliberation process is also detrimentally affected by the decrease in jury size, then the effects will combine to decrease the defendant's rights even further.

TABLE III

Average propensity to convict within the community	Vote required for conviction/Jury size					
	12/12	11/12	10/12	9/12	6/6	5/5
.9	.28	.66	.89	.97	.53	.59
.8	.07	.27	.56	.79	.26	.33
.7	.01	.09	.25	.49	.12	.17

The most interesting point to be derived from this table, however, is the likelihood of conviction for nonunanimous verdicts. The Court in *Apodaca* and *Johnson* ruled that ten-out-of-twelve and nine-out-of-twelve majority verdicts do not violate the constitutional right to jury trial, yet a least in this repect, the nonunanimous verdicts are more unfavorable to the defendant than even a five-member jury with a unanimous verdict requirement. Again, consistency seems to be lacking.

E. *The Balancing of Errors*

Although the likelihood of convicting a guilty person is increased as the size of the jury is decreased, so is the likelihood of

[72] However, Kalven and Zeisel suggest that *"with very few exceptions the first ballot decides the outcome of the verdict . . . . [I]f this is true, . . . the real decision is often made before the deliberation begins."* H. KALVEN & H. ZEISEL, *supra* note 64, at 488.

convicting an innocent person. In order to decrease the likelihood of convicting an innocent defendant it would be necessary to increase the jury size, thus increasing the likelihood that a guilty defendant would go free. The goal is, therefore, to somehow balance these two conflicting types of error in order to reach an optimal solution.[73] Traditionally these errors have not been considered to have equal weight. The commonly accepted view, and the one accepted by the Court in *Ballew,* is that the error of convicting an innocent defendant is ten times more significant than the error of letting a guilty defendant go free.[74] Given this weighting and several other assumptions, Nagel and Neef concluded that the optimal jury size is between six and seven members.[75] That is, the number of jurors is such that the weighted sum of the two errors is minimized with that jury size. Changing the weight attached to the errors, however, will have a significant effect on the optimal jury size.[76] It is interesting to note that a weighting of thirteen to one is required to obtain an optimal jury size of twelve.[77] This relationship indicates one of three possibilities: the jury system has been operating under a misconception for centuries, Nagel and Neef's assumptions are incorrect, or this is only one consideration that must go into the selection of an optimal jury size. It is probable that all these and other possible explanations are involved.

F. *The Jury as a Reflection of Community Opinion*

There is one additional sense in which the representativeness

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[73] An optimum solution differs from a maximum solution in that there is a constraint or conflicting goal which must be considered.

[74] 98 S. Ct. at 1036.

[75] Nagel & Neef, *supra* note 65, at 946-48, 956, 975. The model developed by Nagel and Neef conjectured that the probability of a 12-member jury convicting an innocent defendant was .4 and the probability of convicting a guilty defendant was .7, and also assumed that 950 out of 1000 defendants were guilty.

[76] Changing any of the parameters of the Nagel and Neef model will have an effect on the optimal jury size determined. Thus, the Court's reliance on any conclusion as to optimal jury size from this study is questionable at best. Nagel & Neef were not trying to give an empirically determined optimal jury size, but rather they were trying to show that a model could be built to shed some light on the question. The predictions of a model are only as good as the assumptions upon which it is based.

[77] By using Nagel and Neef's information and changing the weights of the errors, the following optimal jury sizes were determined:

Weight ratio	9:1	10:1	11:1	12:1	13:1
Optimal jury size	4	6	8	10	12

of different sized juries can be compared. If it is assumed that the ultimate verdict of a given jury will be in the same direction as that jury's initial majority vote,[78] Table IV gives the probability of conviction for given divisions of community opinion. As a determination of the correctness of a given verdict it could be argued that the verdict that agrees with the opinion of the majority of the community is in some sense the "right" verdict.[79] From the table it can be seen that in all cases where more than fifty percent of the community is in favor of conviction the twelve-member jury is more likely to convict than the six-person jury, but the six-person jury is equally likely to convict as the five-person jury. Where the majority of the community is in favor of acquittal, the twelve-person jury is more likely to acquit, but again, there is no difference between the five- and six-person juries.[80]

TABLE IV

Percent of community that would vote for conviction	10	20	30	40	50	60	70	80	90
Probability that at least three out of five would eventually vote for conviction	.01	.06	.16	.32	.50	.68	.84	.94	.99
Probability that at least four out of six would eventually vote for conviction	.01	.06	.16	.32	.50	.68	.84	.94	.99
Probability that at least seven out of twelve would eventually vote for conviction	.00	.01	.08	.25	.50	.75	.92	.99	1.0

G. *Behavioral Considerations*

The Court's summary of the behavioral considerations of jury size in *Ballew* seems to be a fair assessment of considered opinion.[81] However, this view must be taken for what it is worth.

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[78] According to Kalven and Zeisel only one in ten juries will arrive at an ultimate verdict contrary to the majority in the initial vote. H. KALVEN & H. ZEISEL, *supra* note 64, at 488. *See* note 72 *supra*.

[79] Lempert, *supra* note 46, at 682.

[80] This is due to the fact that a six-member jury may have tie votes initially whereas a five-member jury cannot. Assuming the tie is broken with an even chance for conviction causes the probabilities to be identical.

[81] *See* Thomas & Fink, *supra* note 56; Lempert, *supra* note 46, at 684.

The research which has been conducted on small group performance is far removed from the jury setting, and although there is general agreement on these propositions, there are conflicting studies in some instances. There are probably other factors involved in small group performance other than the number of members in the group. Thus, seemingly conflicting results may exist because the setting or circumstances of the experiments differed, and these differences outweighed the effects of group size. Whether or not the jury setting is one which would confirm the results of small group experiments or contradict them is unknown. In the area of behavioral considerations, therefore, no statement as to the magnitude of the effects can be made, and even a conclusion as to the direction of any size effects is less than certain.

CONCLUSION

Although the preceding analysis has been concerned primarily with the magnitude of differences between different sized juries, there is perhaps a more basic consideration which has to this point been overlooked. Whether or not the magnitude of the differences between twelve- and six-member juries or between six- and five-member juries are significant may not be the relevant question. The question may be whether *any* difference is too much. The Constitution guarantees certain rights, and any diminishing of those rights, however small, would seem to be a violation of those rights. To say that something only violates the Constitution a little bit is not a relevant statement. Either the Consitution has been violated or it has not; large or small, violations are still violations.

Thus, when the Court in *Williams* conjectured that the differences between six-and twelve-member juries were "nondiscernible" and "negligible" based on a functional analysis, it was saying not that the violation of the constitutional right was small, but rather that it was nonexistent. In *Ballew,* however, the Court could no longer conjecture that jury size had no affect on performance, and correctly determined that a five-member jury would impair the jury's functioning. But in light of all the available evidence how could the Court reaffirm its holding in *Williams?* The only plausible answer is that the Court, although recognizing that reduction in jury size was detrimental to a defendant, found an interest of the state which justified the reduction. The problem with this analysis, however, is that it would seem

to be impossible to weigh the costs and the benefits of a reduction in jury size. Comparing dollar savings with the defendant's rights goes against our sense of justice. The gains are relatively small and the costs are speculative.

A quantitative analysis in law, as in any social science, is imprecise. People do not behave in a readily predictable manner as do inanimate objects. But this does not excuse the failure to use those quantitative techniques available when approaching a problem. Although the results may not be precise or certain, they can often give valuable insight to the problem if properly used. Here the Court seems to have failed to use the available tools. The relative change between six- and five-member juries seems so small compared to that in going from twelve- to six-member juries that it seems incredible that the Court found the former to be of constitutional significance whereas the latter was not. The Court should have overturned *Williams* or affirmed *Ballew*; to do neither was inconsistent with the evidence.

If the Court is going to use quantitative methods, and it should where they are appropriate, they should be used consistently and to their full capabilities. To quote H.G. Wells, "Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write." The day has arrived.

Dana Richard Katnik