No. 88086-7

SUPREME COURT
OF THE STATE OF WASHINGTON

STATE OF
WASHINGTON,

Respondent,

v.

ALLEN EUGENE GREGORY

Appellant.

BRIEF OF SOCIAL SCIENTISTS AND RESEARCHERS CATHERINE GROSSO, JEFFREY FAGAN, ET AL., AS AMICI CURIAE IN SUPPORT OF APPELLANT

(FULL LIST OF AMICI PROVIDED ON NEXT PAGE)

PACIFICA LAW GROUP LLP
1191 Second Avenue, Suite 2000
Seattle, WA 98101-3404
(206) 245-1700

Paul J. Lawrence, WSBA # 13557
Nicholas Brown, WSBA #33586
PACIFICA LAW GROUP LLP

Attorneys for Amicus Social Scientists and Researchers

AMICI CURIAE

Frank Baumgartner
Richard J. Richardson
Distinguished Professor
of Political Science
University of North Carolina at
Chapel Hill

Robert Brame
Professor of Criminology and
Criminal Justice
University of South Carolina

Shari Seidman Diamond
Howard J. Trienens
Professor of Law and
Professor of Psychology
Northwestern University Pritzker
School of Law

Jeffrey Fagan
Isidor and Seville Sulzbacher
Professor of Law and
Professor of Epidemiology
Columbia University

David Greenberg
Professor of Sociology
New York University

Samuel Gross
Thomas and Mabel Long Professor
of Law
University of Michigan Law School

Catherine Grosso
Associate Professor of Law
Michigan State University College
of Law

Joseph Kadane
Leonard J. Savage Professor of
Statistics and Social Sciences
Carnegie Mellon University

Barbara O'Brien
Associate Professor of Law
Michigan State University College
of Law

Glenn Pierce
Director of the Institute for Security
and Criminal Justice Policy
Northeastern University

Michael Radelet
Professor of Sociology
University of Colorado

George Woodworth,
Professor Emeritus of Statistics
and Actuarial Science
University of Iowa

TABLE OF CONTENTS

I. IDENTITY AND INTEREST OF AMICI 1

II. STATEMENT OF THE CASE 1

III. ARGUMENT 4

A. The decision by Beckett and Evans to include multiple sentencing proceedings is an appropriate one. 4

B. The size of the dataset is sufficient to conduct regression analyses with probative results. 9

C. The Beckett and Evans Report shows significant racial discrimination. 16

IV. CONCLUSION 20

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178 Wn.2d 34 (Wash. 2013) 20

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A BAYESIAN INTRODUCTION (2004) 10

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I. IDENTITY AND INTEREST OF AMICI

Amici are professors and social science researchers who have published extensively in the field of statistical studies of the death penalty and criminal justice. They have backgrounds in advanced statistical methods, epidemiology, and criminal law. They are leaders in the research fields of criminal justice and discrimination.

As leading scholars in the area of statistics and social science and on the administration of capital punishment, Amici are interested in the appropriate and methodologically sound application of statistical research to criminal justice policy and legal questions. They aim to provide additional empirical context and background to the methodological questions posed in this litigation.

II. STATEMENT OF THE CASE

Appellant Allen Gregory, a black man convicted of the murder of a white woman, challenges his death sentence by alleging that the death penalty as administered in Washington is racially discriminatory. This claim rests on a rigorous and thorough study of the role of race in prosecutorial charging and jury sentencing in Washington's death penalty system conducted by Professors Katherine Beckett and Heather Evans, University of Washington researchers. Thanks to a relatively unusual directive in Washington that has required trial courts since 1981 to report

information about all aggravated murder cases, Beckett and Evans were able to gather all data from the vast majority of aggravated murder cases. Beckett and Evans Report, at 13 (citing RCW 10.95.130(2)(b)). After coding and analyzing the data reported by trial judges, Beckett and Evans issued their report in 2014, THE ROLE OF RACE IN WASHINGTON STATE CAPITAL SENTENCING, 1981-2014 (herein Beckett and Evans report).

The report documented large racial disparities among defendants in Washington's capital punishment system. Most significantly, it found that after controlling for other potential explanatory factors, black defendants are over four times as likely than similarly-situated white defendants to be sentenced to death by juries. Beckett and Evans Report at 33. Following oral argument in the case, the Court appointed a Supreme Court Commissioner Narda Pierce (herein Commissioner) to conduct fact findings regarding the study. With the agreement of the parties, the Commissioner set out a process for discovery, production of a responsive report by an expert retained by the State, Professor Nicholas Scurich, interrogatories from the court, and additional responsive filings by both Beckett and Evans and Scurich. After almost two years of additional submissions and analyses, on November 21, 2017, the Commissioner filed a thoughtful and extensive Findings and Report Relating to Parties' Expert Reports (herein Comm. Report). The Commissioner noted that she herself

is not trained in statistical methods and had considered appointment of a technical, statistical advisor. After review of the submissions, she decided to proceed without such an advisor and ultimately made her findings based on her own research into secondary materials and articles and the parties' submissions. Comm. Report, at 3.

As discussed more below, the Commissioner noted that the parties disagreed about the appropriate universe of cases for the analysis of jury sentencing. She requested that Becket and Evans run analyses using four models, one for each possible case universe. Comm. Report at 67. The finding of discrimination proved to be robust. Each model showed an increased odds ratio of approximately four times for black defendants of being sentenced to death by a jury:

Figure 1. Model Variations

	D1 (n=81)	D2 (n=78)	D4 (n=77)	D5 (n=74)
Includes the 3 resentencing proceedings	Yes	Yes	No	No
Includes the 4 sentencings proceedings w/ state stipulations	Yes	No	Yes	No
Estimated Odds Ratio for Black Defendants	**4.568**	**4.001**	**4.072**	**3.558**

See Comm. Report at 68.

In her report to this Court, the Commissioner identified a number of areas that she believed required the Court's judgment to resolve.

Several of these are methodology questions for which Amici seek to provide additional background in this brief.

III. ARGUMENT

A. The decision by Beckett and Evans to include multiple sentencing proceedings is an appropriate one.

One research methodology question referred by the Commissioner for resolution is whether Beckett and Evans appropriately included multiple sentencing proceedings for the three Washington death row prisoners in the analysis of jury sentencing. *See* Comm. Report, p. 38. Each of these three individuals had trial reports for two sentencing proceedings: a first sentencing proceeding in which a death sentence was imposed and later reversed, and a second sentencing proceeding. *See* Comm. Report, p. 31. As shown below, both statistical theory and established practice in field literature support this decision to include both proceedings.

Scurich, the State's expert, criticizes the decision of Beckett and Evans to include the original trials in their analysis and refers to them as "duplicate[s]" and redundant cases. Scurich Report at 25. This characterization is plainly incorrect. The cases, although involving the same defendant, refer to two separate sentencing proceedings with two separate decision makers (juries), and two separate outcomes. *See* Trial Reports 216 & 312 (Gregory); 7 & 31 (Rupe); 180 & 281 (Davis).

The Commissioner appropriately asks whether the similarities in the cases involving the same defendant are substantial enough to cause concern about the independence of the cases. Comm. Report at 35. A true lack of independence may lead to an overestimation of Type I error in regression analysis. Type I errors refer to rejecting the null hypothesis when it is true (a false positive), and Type II errors refer to retaining the null hypothesis when it is false (a false negative). Raymond Nickerson, *Null Hypothesis Significance Testing: A Review of an Old and Continuing Controversy*, 5 PSYCH. METHODS 231, 243 (2000). In this instance, a Type II error means not recognizing racial discrimination when it in fact exists, versus a Type I error of finding discrimination when it may not.

The parties' experts did not provide the Commissioner with a survey of the literature regarding this question. On her own, the Commissioner researched and found a single death penalty study, one of multiple New Jersey studies of race in capital sentencing, where the investigators used only one of the trials per defendant in the regression analysis and argued that two proceedings for the same defendant were too related to be included. *See* Comm. Report at 34-35. On the other hand, she turned to a methodology primer on studies of race in capital charging and sentencing practices, which contends that inclusion of both sentencing proceedings is appropriate because they are sufficiently independent, as

they involve different decision makers (jurors). *Id*. at 35-37. The Commissioner concludes based on these sources that there is "support" for each of the differing views of Beckett and Evans and Scurich.

But notwithstanding the single New Jersey case, the vast majority of the published body of work regarding charging and sentencing capital studies has adopted the view that subsequent trials are independent events and should both be included. In over thirty years of research of capital charging and sentencing, investigators have repeatedly included both the original and resentencing trials in their regression analyses and published studies. *See* Baldus, D., et al., *Evidence of Racial Discrimination in the Use of the Death Penalty: A Story From Southwest Arkansas (1990-2005) with Special Reference to the Case of Death Row Inmate Frank Williams, Jr*., 76 TENN. L. REV. 555, 563 n.15 (2009) ("In contrast, jury death sentencing decisions are 'independent' of each other because the jurors are different in each case. For this reason, the inclusion of both the first and second prosecution for these cases in an analysis of death sentencing outcomes is methodologically sound."); Barnes, K., et. al., *Place Matters (Most): An Empirical Study of Prosecutorial Decision-Making in Death-Eligible Cases*, 51 ARIZ. L. REV. 305, 374-75 (2009) ("These (trial and retrial) cases are counted as two cases because they involve two independent charging decisions by a prosecutor."); Stauffer, A., et al., *The*

Interaction Between Victim Race and Gender on Sentencing Outcomes in Capital Murder Trials: A Further Exploration," 10 HOMICIDE STUDIES 98, 103 (2006) (including retrial and resentencing cases in the regression analysis); David C. Baldus, et al., *Racial Discrimination in the Administration of the Death Penalty: The Experience of the United States Armed Forces (1984-2005)*, 101 J. CRIM. L. & CRIMINOLOGY 1227, 1251 (2012) (same); David C. Baldus, et al., *Arbitrariness and Discrimination in the Administration of the Death Penalty: A Legal and Empirical Analysis of the Nebraska Experience (1973-1999)*, 81 NEB. L. REV. 486 (2002) (same); David C. Baldus, et al., *Racial Discrimination and the Death Penalty in the Post-Furman Era: An Empirical and Legal Overview, With Recent Findings From Philadelphia*, 83 CORNELL L. REV. 1683 (1998) (same); Barbara O'Brien, et. al., *Untangling the Role of Race in Capital Charging and Sentencing in North Carolina, 1990-2009*, 94 N.C. L. REV. 1997 (2016) (same); Raymond Paternoster & Robert Brame, *Reassessing Race Disparities in Maryland Capital Cases*, 46 CRIMINOLOGY 971 (2008) (same); Raymond Paternoster, et al., *Justice by Geography and Race: The Administration of the Death Penalty in Maryland, 1978-1999*, 4 U. OF MD. L. J. OF RACE, RELIGION, GENDER AND CLASS 1, 8 n.29 (2004) (same); Isaac Unah, *Empirical Analysis of Race and the Process of Capital Punishment in North Carolina*, 2011 MICH. ST.

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There are sound theoretical reasons for treating the separate sentencing proceedings as independent events, as illustrated by the three cases in the Beckett and Evans study. First, and most significantly, the proceedings were adjudicated by entirely separate juries in entirely separate sentencing proceedings. The second sentencing proceedings were separated by significant time from the first trials (11 years in the case of Allen Gregory, 10 years in Cecil Davis, and 3 years for Mitchell Rupe), had new defense counsel (Gregory, Davis), and/or a new judge (Rupe). The mitigation found differed in the trial judge reports for the Gregory cases. *Compare* Gregory Report 216 *with* Report 312 (no mitigation in 2001 trial, but finding lack of prior violence a mitigating factor in 2012). The aggravation differed in the Davis (one additional prior conviction at the time of the new sentencing) and Gregory cases (3 prior convictions had been vacated by the time of the new sentencing). In light of the different decision makers and other differences between re-sentencings, the researchers' determination that the subsequent sentencing proceedings are substantially independent of the first proceedings was appropriate.

B. The size of the dataset is sufficient to conduct regression analyses with probative results.

The Commissioner also referred to the Court the question of what probative value to apply given the size of the data set. Comm. Report at 69. Scurich makes a number of indefensible assertions with respect to sample size and power, suggesting that regression analyses are not possible given the size of the data set and that any results that are not statistically significant beyond the 0.05 level must be disregarded. Scurich, 89-92. The study size was adequate to detect, and indeed, did detect, significant racial disparities. Beckett and Evans Report, at 33.

As the Commissioner recognizes, Scurich first errs by attempting to impose sampling strategy considerations on this study, which is comprised not of a sample, but of the entire universe of the study population. *See* Comm. Report at 69-70; Scurich Report at 89-90. Sampling analyses are intended for studies that seek to draw a representative sample from a much larger population. In those instances, researchers can and should ask whether the planned sample is large enough to detect the expected outcome, because they are appropriately concerned with whether the study may miss or over-report findings based on the size of the sample and the operation of chance.

Here, in contrast, the researchers have included all possible cases of the full study population. There is no concern that the sample size is inadequate to reflect the population. *See generally* George Woodworth, BIOSTATISTICS, A BAYESIAN INTRODUCTION 283-295 (2004) (describing the purpose of sampling analyses and rejecting hard cut-offs for sampling size estimates); Robert Riffengurgh, STATISTICS IN MEDICINE 11 (2d ed. 2006) (no need for sampling when capturing the entire population); Alan Agresti and Barbara Finlay, STATISTICAL METHODS FOR SOCIAL SCIENCES 5-7 (3d ed. 1997) (no need to sample if the entire population is included).

Relatedly, the purpose of conducting power analyses is to determine whether the anticipated sample size is sufficiently large for a given effect size to draw population inferences. *Cf.* Kenneth Rothman, Sander Greenland, & Timothy Lash, MODERN EPIDEMIOLOGY (2008), at 160 ("In analyzing data, however, it is always preferable to use the information in the data about the effect to estimate it directly, rather than to speculate about it with study-size or power calculations.").

Scurich is also wrong to suggest that there is no authority that a *p*-value less than 0.10 is acceptable as an indicator of significance in social sciences. *Compare* Scurich Report, 22, *with* FEDERAL JUDICIAL CENTER, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (3d. ed. 2011) at 573 (the criterion for setting "significance" is "somewhat arbitrary"); 577-78

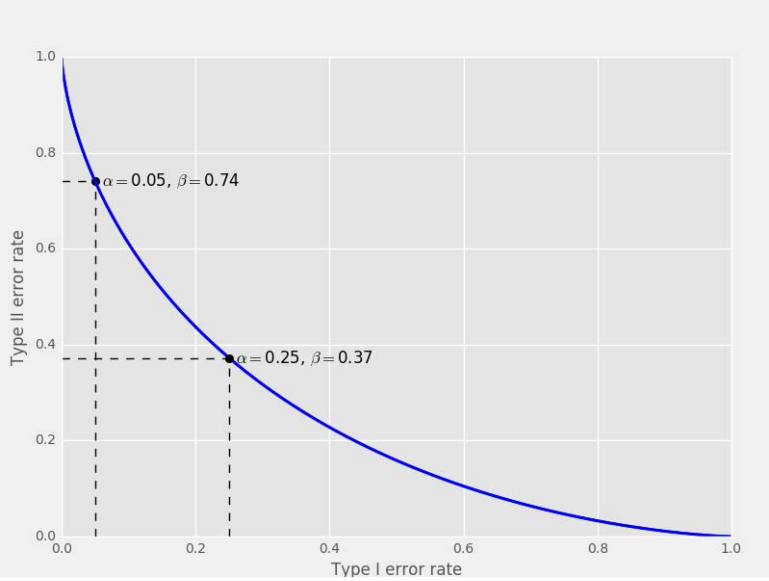
(noting that "although 0.05 is often the significance level selected, other levels can and have been used," and citing a number of studies with 0.10 set as the level for significance); *Kadas v. MCI Systemhouse Corp*. 255 F.3d 359, 362 (7th Cir. 2001) (significance level of 0.05 is arbitrary and inappropriate for litigation). Although some social science researchers in the past have required *p*-values at or below 0.05 as evidence of association or to support publication, as Scurich himself concedes, the field has evolved to reject application of a hard cut-off for *p*-values. *See* Scurich Report at 22; Wasserstein, R.L. & Lazar, N.A., *The ASA's statement on P-Values: Context, Process, and Purpose,* 70 THE AM. STATISTICIAN 129, 131-32 (2016). The American Statistical Society has specifically rejected the use of p-values in the way suggested by Scurich:

> Scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold. Practices that reduce data analysis or scientific inference to mechanical "bright-line" rules (such as "$p < 0.05$") for justifying scientific claims or conclusions can lead to erroneous beliefs and poor decision making. A conclusion does not immediately become "true" on one side of the divide and "false" on the other.

Wasserstein, ASA Statement, 70 THE AM. STAT. at 131.

Figure 2 illustrates the different error probabilities and risks associated with different levels of significance.[1] *See* Michelle M. Burtis et al., *Error Costs, Legal Standards of Proof, and Statistical Significance*, University of Pennsylvania, Institute for Law and Economics Working Paper No. 17-22, 7-14, 2017, https://ssrn.com/abstract=2956471 (discussing Type II error).

Figure 2. Type I/Type II Error Rate Tradeoff Curve



Significance levels (*p*-values) set low, at the 0.05 level, have low Type I error rates, but correspondingly higher Type II error rates. The illustration above shows that a *p*-value of 0.05 for a Type I error rate will

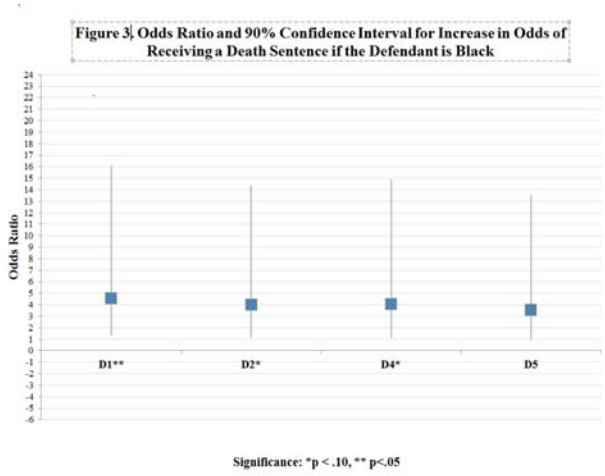
[1] Jonah Gelbach, HYPOTHESIS TESTING IN THE SHADOW OF TYPE II ERRORS: USING KNOWN STATISTICAL PRINCIPLES TO IMPROVE GENERAL CAUSATION EVIDENCE, Presented at the Third Annual Quantlaw Conference, University of Arizona Law School, February 15, 2017.

necessarily yield a Type II error rate of 0.74. By demanding *p*-values at no greater than 0.05, researchers necessarily privilege Type I errors, and create a risk that existing bias will go undetected due to Type II errors. Decision makers must balance the two different errors rates to seek a reliable and meaningful conclusion. Considering results with *p*-values between 0.05 and 0.10 allow for estimation under assumptions that more appropriately fit the data and research design. The field of applied statistics and empirical now strongly favors reporting as relevant information the detected significance levels (or the observed *p*-value). *See* Wasserstein, *The ASA Statement*, 70 THE AM. STAT. at 131.[2]

The Commissioner requested regression analyses using each of the four model variations proposed by Beckett and Evans and by Scurich for the jury sentencing proceedings. *See* Comm. Report at 67-68. As noted in Section A, Beckett and Evans disagree with Scurich over whether to include the retrial proceedings. In the model favored by Beckett and

[2] The fields of applied statistics and epidemiology have moved towards reporting confidence intervals to communicate the probability of random error in addition to p-values. *See generally* Kenneth Rothman, Sander Greenland, & Timothy L. Lash, MODERN EPIDEMIOLOGY (3d ed. 2008) 157-165 (noting that confidence intervals also convey the direction and magnitude of the underlying association as well as the random variability of the point estimate); REFERENCE MANUAL ON SCIENTIFIC EVIDENCE at 579 (calculation of confidence intervals "permit a more refined assessment of appropriate inferences").

Evans, D1, the odds ratio for black defendant is 4.57, with a *p*-value of 0.048, which is statistically significant at the level of less than 0.05, with a 90% confidence interval of 1.29 to 16.1. Responses to Interrogatories at 5-6.[3] In the model with those proceedings removed, D2, the odds ratio for black defendant is 4.00, with a *p*-value of 0.076, which is statistically significant at the level of less than 0.10. Comm. Report at 68, Responses to Interrogatories, at 8. The 90 percent confidence interval for this model is 1.11 to 14.4. *Id.* Both models show very similar findings, although the second model's statistical significance level is slightly higher. Indeed, as shown below in Figure 3, the direction, estimation and confidence intervals of effects are largely similar across the model variations with different significance levels.



[3] The Responses to Interrogatories report the 90% confidence intervals for the coefficient. This brief reports the confidence intervals for the odds ratio for the ease of comparison to the reported odds ratio point estimates.

With 90% confidence, Figure 3 shows that the models predict troubling and persistent ranges of discrimination for black defendants in Washington's capital sentencing that are similar to the estimates at the $p < 0.05$ level.

The Commissioner's suggestion that MLE and the logistic regression analysis of jury sentencing may be inappropriate because the population size is below 100 should be rejected. Comm. Report 80. She relies upon authority cited by Beckett and Evans, a 2006 text book suggesting caution for MLE for use with fewer than 100 cases. J. Scott Long and Jeremy Freese, REGRESSION MODELS FOR CATEGORICAL DEVELOPMENT VARIABLES USING STATA 65 (2d ed. 2006). This source in turn relies upon a 1997 text book chapter which seems to suggest a hard cut off for MLE analyses of 100. J. Scott Long, REGRESSION MODELS FOR CATEGORICAL AND LIMITED DEPENDENT VARIABLES 54 (1997). In the original authority, the author notes these guidelines "are not hard and fast," and are not based on firm evidence. *Id.* at 53.

MLE analyses are routinely used in cases with populations under 100. *See e.g.*, Baldus, *supra* p. 7, 101 J. CRIM. L. & CRIMINOLOGY at 1239 Fig. 1 and Table 11.[4] They are also appropriately used where, as

[4] Jonathan Comer et al., *Remotely delivering real-time parent training to the home: An initial randomized trial of Internet-delivered parent-child interaction therapy*, 85 J. OF CONSULTING & CLINICAL PSYCHOL. 909 (2017) (Using MLE to compare two types of

here, there is no risk that the study population is an unrepresentative sample. They are also appropriately used where, as here, there is no risk that the study population is an unrepresentative sample. Long, at 53 (for MLE, seek to find consistency as sample size approaches convergence). The textbook author goes on to note that the literature suggests at least five observations per parameter and that at least 10 observations per parameter may be reasonable. Long at 54. In the case of the MLE analyses by Beckett and Evans, this condition was satisfied by which there were over 70 observations with 7 parameters.

C. The Beckett and Evans Report shows significant racial discrimination.

All of the models of capital jury sentencing in Washington show large effects of racial discrimination, with increased odds ratios of approximately four for black capital defendants. *See supra*, Fig. 1; Comm. Report at 68. *See generally* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, at 602 ("The higher the relative risk, the stronger the association and the lower the chance that the effect is spurious."). These odds are comparable to other studies of well-documented risks. *See, e.g.*, Claire H. Kim et al., *Exposure to secondhand tobacco smoke and lung*

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parent-child interaction therapy (n=40)); R. Klingenberg et al., *P1412 Cysteine-rich angiogenic inducer 61 (Cyr61) - a novel biomarker in acute limb ischaemia*, 38 EURO. HEART J. Supp. 1 at ehx502.P1412 (2017) (using MLE to estimate parameters in a population of 81 patients (n=81) in order to evaluate Cyr61 as a potential blood marker for acute limb ischaemia)

cancer by histological type: A pooled analysis of the International Lung Cancer Consortium (ILCCO), 135 INT'L J. OF CANCER 1918, 1922 (2014) (Compared to those who have never smoked or been exposed to secondhand smoke, individuals who have been exposed to secondhand smoke are 3.09 times more likely to develop small cell lung cancer (OR = 3.09, 95% CI: 1.62 - 5.89)); Rachel Isaksson Vogel, et al., *Exposure to Indoor Tanning Without Burning and Melanoma Risk by Sunburn History*, 106 J. OF NAT'L CANCER INST. 1, 2 (2014) (odds ratio of 3.87 for developing melanoma by a person regularly exposed to tanning beds and when compared to a person with no exposure); Ulrik Kesmodel, et al., *Moderate Alcohol Intake during Pregnancy and the Risk of Stillbirth and Death in the First Year of Life*, 155 AM. J. EPIDEMIOLOGY 305, 305 (2002) (Women who drink regularly throughout their pregnancy (> 5 drinks per week) are 2.96 times more likely (95% CI: 1.37, 6.41) to have stillborn babies, as compared to women who consumed <1 drink per week.). In the area of public health, ratios of this magnitude are often significant to justify policy interventions. They are also consistent with judicial findings of causation. *See, e.g.*, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, at 612 (noting that some courts have found causation satisfied when studies document a more than two-fold increased risk).

Further, the findings are consistent with other research of racial bias in Washington's criminal justice system. As a general rule, decision makers can have more confidence in conclusions from statistical evidence that converge with other kinds of evidence and studies. *See generally* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, at 223 ("Convergent results support the validity of generalizations.").

Psychological studies of mock juries find evidence that racial bias undermines decision-making in capital cases. *See* Justin D. Levinson, et al., *Devaluing Death: An Empirical Study of Impact Racial Bias on Jury-Eligible Citizens in Six Death Penalty States*, 89 N.Y.U. L. REV. 513, 564 (2014) (finding that "jury eligible citizens hold specific biases related to race and value of life," and systemically devalue the lives of black Americans); *see also*, Mona Lynch & Craig Haney, *Emotion, Authority, and Death: (Raced) Negotiations in Mock Capital Jury Deliberations*, 40 LAW & SOCIAL INQUIRY 1474, 1747 (2015) ("The findings also shed light on the various ways that white male capital jurors utilize a panoply of powerful emotion-based tactics to sway others to their position in a manner that often contributes to racially biased outcomes."); Samuel R. Sommers, *Race and the Decision Making of Juries*, 12 LEGAL & CRIM. PYSCH. 171, 183 (2007) ("Research on race and legal decision making has

provided compelling evidence that race can exert a causal effect on trial outcomes in some cases.").

Substantial research confirms that Washington's criminal justice system is rife with racial bias. As of 2014, Washington's prison population was 17.9% black, even though the state's population is only 3.6 percent black; overall, black citizens are incarcerated at a rate that is 5.7 times higher than that of whites. *See* Ashley Nellis, *The Color of Justice: Racial and Ethnic Disparities in State Prisons*, THE SENTENCING PROJECT 16–17 (June 14, 2016). These rates are not simply the result of differential crime commission rates: studies have consistently demonstrated a bias against black defendants at virtually all levels of the Washington criminal justice system, from arrest rates to prison admissions and sentencing. *See, e.g.*, Research Working Group & Task Force on Race, the Criminal Justice System, *Preliminary Report on Race and Washington's Criminal Justice System*, 35 SEATTLE U. L. REV. 623, 627–29 (2012) [hereinafter Task Force Report] (finding that Washington defendants of color are treated significantly more harshly than similarly-situated white defendants in arrest rates for delivery of drugs other than marijuana, pretrial release decisions, legal financial obligations, sentencing for felony drug crimes, and overall criminal sentencing when compared to standard sentencing ranges).

One likely contributor to these disparities is implicit bias, which remains pervasive in American society. *See generally* Justin D. Levinson & Robert J. Smith, *Systemic Implicit Bias*, 126 YALE L.J. F. 406 (2017). The criminal justice system is no exception—implicit or unconscious biases have been found to affect not just juries, but prosecutors, judges, and defense attorneys. *State v. Saintcalle*, 178 Wn.2d 34, 44-46 (Wash. 2013) ("[R]acism now lives not in the open but beneath the surface—in our institutions and our subconscious thought processes—because we suppress it and because we create it anew through cognitive processes that have nothing to do with racial animus.").

The Beckett and Evans study merely reaffirms the Task Force's prior finding that racial bias continues to "matter in ways that are not fair, that do not advance legitimate public safety objectives, that produce disparities in the criminal justice system, and that undermine public confidence in our legal system." Task Force Report, 35 SEATTLE U. L. REV. at 629. Nowhere are these concerns more prominent than in capital cases.

IV. CONCLUSION

The question for this Court is not whether there is substantial evidence of racial discrimination: there is. The question is whether this evidence of discrimination warrants legal recourse.

RESPECTFULLY SUBMITTED this 22nd day of January, 2018.

By */s/ Paul J. Lawrence*
Paul J. Lawrence, WSBA # 13557
Nicholas Brown, WSBA #33586

PACIFICA LAW GROUP LLP

Attorneys for Amicus Social Scientists and Researchers

PACIFICA LAW GROUP

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Comments:

Sender Name: Katie Dillon - Email: katie.dillon@pacificalawgroup.com
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