IN THE SUPREME COURT
OF THE STATE OF WASHINGTON

STATE OF WASHINGTON, Respondent, v. ALLEN EUGENE GREGORY, Appellant.	NO. 88086-7 SUBMISSION OF THE STATE'S EXPERT'S CURRICULUM VITAE AND REPORT ON THE RELIABILITY OF THE METHODOLOGY AND CONCLUSIONS OF THE BECKETT REPORT ON THE ROLE OF RACE IN WASHINGTON CAPITAL CASES

COMES NOW, the State of Washington, as represented by the Pierce County Prosecuting Attorney's office, by and through Deputy Prosecuting Attorneys Kathleen Proctor and John Neeb, and respectfully submits an expert report in compliance with the Commissioner's ruling dated May 20, 2016. The report, dated July 7, 2016, is entitled *Evaluation of the "Role of Race in Washington State Capital Sentencing 1981-2014"* by Nicholas Scurich, Ph.D. The curriculum vitae of Dr. Scurich is also being submitted. Both the report and the curriculum

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vitae are being submitted to the court electronically at the same time as this pleading and are incorporated by reference as appendices to this pleading.

DATED: July 7, 2016.

MARK LINDQUIST
Pierce County
Prosecuting Attorney

Kathleen Proctor

KATHLEEN PROCTOR
Deputy Prosecuting Attorney
WSB # 14811

JOHN M. NEEB
Deputy Prosecuting Attorney
WSB # 21322

Certificate of Service:
The undersigned certifies that on this day she delivered by ~~U.S. mail~~ and/or ABC-LMI delivery to the attorney of record for the appellant and appellant c/o his or her attorney true and correct copies of the document to which this certificate is attached. This statement is certified to be true and correct under penalty of perjury of the laws of the State of Washington. Signed at Tacoma, Washington, on the date below.

7/8/16 [signature]
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- **Security**

July 6, 2016

Dear Ms. Proctor,

I have appended to this email my evaluation of the report by Beckett and Evans entitled, "The Role of Race in Washington State Capital Sentencing, 1981-2014." I have also included my curriculum vita.

Please let me know if you have any questions.

Regards,

Nicholas Scurich

Nicholas Scurich, Ph.D.
Department of Psychology & Social Behavior
Department of Criminology, Law & Society
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Subject: State v. Allen Gregory--88086-7

RE-SUBMITTED TO INCLUDE SERVICE TO OPPOSING COUNSEL

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Attached please find:

1. Submission of the State's Expert's Curriculum Vitae and Repot on the Reliability of the Methodology and Conclusions of the Beckett Report on the Role of Race in Washington Capital Cases
2. Dr. Scurich's Cover Letter
3. Dr. Scurich's Report
4. Dr. Scurichs' Curriculum Vitae

Heather Johnson
Legal Assistant to the Appellate Unit

Evaluation of "The Role of Race in Washington State Capital Sentencing, 1981-2014"

Prepared by Nicholas Scurich, Ph.D.

July 7, 2016

Contents

Executive Summary

On February 21, 2016, I conducted an evaluation of the methodology and statistics used by Professor Katherine Beckett and Heather D. Evans in their report entitled, "The Role of Race in Washington State Capital Sentencing, 1981-2014." I did not have access to their data file at the time I conducted my evaluation. On June 1, 2016, I was provided with a data file entitled, "WA Death Penalty Adults 1981-2014.xlsx," a codebook entitled, "WA Capital Sentencing Data Codebook.pdf," and a memorandum entitled, "memorandum 5 26 16.pdf." I was asked to provide a data audit to verify the accuracy of the values reported in "The Role of Race in Washington State Capital Sentencing, 1981-2014" (hereinafter "Report"). I was also asked to evaluate the inferences that Beckett and Evans deduced from the models described in their Report.

There are two caveats to my analysis. First, I have not done an independent verification that the data file is inclusive of all death penalty-eligible cases in the state of Washington from 1981-2014. If cases are missing from the data file, it is possible that the results of my analysis would materially change. Second, the Report does not provide an estimate of the reliability with which the variables were coded within the file. My analysis assumes that the variables were coded with perfect reliability. This assumption, however, is untenable since several coding errors were detected. These errors materially altered the findings. In the absence of a numeric estimate of reliability, the Report would likely be rejected for publication in peer-review.

The data audit yielded mixed results. Several of the variables described in the Report were not included in the data file or codebook and needed to be recreated. Many of the values in the Report could not be replicated exactly. The principal finding that black defendants are more likely to receive a death sentence than non-black defendants was approximately replicated, though the exact numbers were different and other aspects of that particular model did not replicate. However, this finding did not replicate once a different functional form of two other variables was used in the model. The Report and the Memorandum equivocate what variables were actually included in the model. The inability to verify the values and substantive findings described in the Report would cause any reasonable journal editor to retract the Beckett and Evans report, if it were in fact published in the first place.

Four model variants tested the sensitivity of the finding that black defendants are more likely to receive a death sentence than non-black defendants. First, when black defendants are compared to white defendants and other-race defendants individually, as opposed to white and other-race defendants combined, the race of the defendant is not related to receiving a death sentence. Second, when the race of the victim as well as the race of the defendant is included in the model, neither the race of the victim nor the defendant is related to receiving a death sentence. Third, when redundant cases are removed from the dataset, thus satisfying a basic assumption of logistic regression, the race of the defendant is not related to receiving a death sentence. Fourth, once three coding errors were corrected, the race of the defendant is not related to receiving a

death sentence. Although one could debate what predictor variables are appropriate to include in the regression model, there is no question that known coding errors or data redundancies should not be included in the model. The finding that black defendants are more likely to receive a death sentence than non-black defendants disappears once such errors are corrected.

In my opinion, the Report furnishes no evidence that black defendants are more likely to receive a death sentence than non-black defendants in the State of Washington. In the first place, the corrected data do not show this effect. Other errors in the data file likely exist, and there is simply no way to estimate the prevalence of such errors or what affect they might have on the findings. Secondly, the Report alludes to numerous other analyses that were conducted but not reported in the document, so-called "model testing." The American Statistical Association recently denounced the practice of model testing, saying that it renders the statistical significance test estimates "essentially uninterpretable" and "should be vigorously avoided." The Report should play no part in reasoned discussion about the role of race in the imposition of the death penalty in the State of Washington.

Background

On February 21, 2016, I conducted an evaluation of the methodology and statistics used by Professor Katherine Beckett and Heather D. Evans in their report entitled, "The Role of Race in Washington State Capital Sentencing, 1981-2014." This evaluation appears in Appendix C. I did not have access to their data file at the time I conducted my evaluation.

On June 1, 2016, I was provided with a data file entitled, "WA Death Penalty Adults 1981-2014.xlsx," a codebook entitled, "WA Capital Sentencing Data Codebook.pdf," and a memorandum entitled, "memorandum 5 26 16.pdf." I was asked to provide a data audit to verify the accuracy of the values reported in "The Role of Race in Washington State Capital Sentencing, 1981-2014" (hereinafter "Report"). I was also asked to evaluate the inferences that Beckett and Evans deduced from the models described in their Report.

This report proceeds in three sections. Section I describes the results of my data audit. The Report contains seven tables with statistical information. I have copy and pasted those tables into text, and I note directly beneath the table what values I was able to verify and what values I was not able to verify. Appendix A contains supplemental explanation and unaltered output of the statistical program (IBM SPSS Statistics 23) that I used to conduct the audit, where necessary. Section II tests the sensitivity of the primary finding that black defendants are more likely to receive the death penalty than non-black defendants. This is accomplished by testing four model variants to see if the finding holds in light of minor alterations to the model specifications. In Section III, I offer my expert evaluation of the validity of the Beckett and Evans report in light of the data audit, the sensitivity analyses, and the methodology more generally.

It is important to acknowledge from the outset that my evaluation does not speak to the institution of capital punishment in any particular case or in general, and I take no position on whether the death penalty is or is not a desirable policy. The scope of my evaluation is limited to the statistical analyses reported by Beckett and Evans and the inferences that can be legitimately deduced from them.

Qualifications

My curriculum vita is attached to this report. I am an assistant professor (tenure-track) at the University of California, Irvine with a joint appointment in the Department of Criminology, Law and Society, and the Department of Psychology and Social Behavior. My degrees include a B.A., M.A., and Ph.D. – all in psychology – from the University of Southern California.

My research broadly concerns statistics and quantitative reasoning in legal settings. I am the author of over 35 peer-reviewed journal articles, book chapters, and law review articles. Nearly half of my scholarly articles concern the legal use of actuarial (statistical) models to assess the risk of violent and sexual recidivism. My research has been funded by state and federal agencies, and my research has been recognized by awards from several scholarly societies. I am on the

editorial board of *Law and Human Behavior*, a leading interdisciplinary law and social science journal. In this capacity, I regularly review empirical articles as part of the peer-review process.

As a faculty member, I have taught courses on research methods to doctoral students in psychology and criminology. I have also taught courses at the graduate level that examine both the substantive and methodological issues raised in the Report. In summary, I am qualified to provide an expert opinion regarding the methodology used and conclusions reached by Beckett and Evans. Any opinions described herein are my own and do not represent any organization with which I am affiliated.

Caveats

There is an extremely important caveat that must be addressed before delving into the data. I have not done an independent verification that the datafile is a.) inclusive of all death penalty-eligible cases in the state of Washington from 1981-2014 or b.) that the variables are reliably coded within the file.

With regard to the first issue, the codebook states, "These data are derived from trial reports pertaining to aggravated murder cases filed with the Washington State Supreme Court…A total of 331 trial reports were ultimately made available (p. 3)." It remains to be seen whether the number of reports "made available" is equal to the number of "cases filed" or whether the number of "cases filed" is equal to the total number of capital cases in Washington State from 1981-2014. If cases are missing, it is possible that the results would materially change.

With regard to the second issue, the codebook states, "The primary investigators developed a coding protocol and supervised two undergraduate research assistants at the University of Washington in coding each trial report, thereby creating this dataset (p. 3)."[1] No information regarding the efficacy of coding is provided. Failing to provide a numerical estimate of the degree to which the coding by different raters is in agreement is not consistent with contemporary social science standards.[2] This manuscript would very likely be rejected for publication in peer-review in the absence such information.

The import of this information cannot be overstated. Errors unwittingly and inevitably occur when coding files,[3] especially when the files are lengthy and complex and the variables require a

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[1] However, the Report states, "This coding protocol was developed and implemented in consultation with attorneys Lila Silverstein and Neil Fox" (page 14). It appears that unnamed attorneys also played a role in coding the data. For instance, with regard to whether a defendant was black (i.e., D_RaceB), the codebook states, "if missing, data was [sic] supplemented by attorneys from other court documents where possible" (page 16).

[2] Cooper, H. (2016). *Research synthesis and meta-analysis: A step-by-step approach* (5th ed). Sage Publications.

[3] For instance, if black defendants are to be coded as "2", it is possible that an occasional error could cause a black defendant to be coded as "1", the code for a white defendant. Such a mistake would go undetected unless every single variable code for every single case were independently verified (and even then such errors can get overlooked). However, such an error could completely alter the results, in that it treats a black defendant as a white defendant in the data analysis. There is evidence that this actually occurred in the analysis predicting whether blacks are more likely than non-blacks to receive the death penalty (see section 2.4). Since there was no attempt to estimate inter-rater reliability (consistency), we simply have no idea how often such errors occurred in the current data file.

degree of subjectivity in interpretation.[4] The following analyses implicitly operate on the assumption that no coding errors occurred. In other words, the results are valid if, and only if, one makes the assumption that the data were coded with 100% reliability. This assumption is undoubtedly false. Indeed, as discussed in Section 2.4, several coding errors were detected. These errors materially altered the findings.

1.0 Data Audit

This section describes the results of the data audit. The tables reported in Beckett and Evans' report are pasted into this document and a summary of my findings appears below. I deliberately eschewed a lengthy and technical explanation of the statistical analyses/models; this information is contained in Appendix A, along with the code and raw output of the statistical program that I used to conduct the analyses. This approach was used to ensure maximum transparency.

[4] As an example, consider "Extensive publicity," which was a significant predictor of whether prosecutors sought the death penalty (Table 5, page 27). Extensive publicity (as opposed to non-extensive publicity) is never defined in the text of the document. The coding manual describes the variable Publicity_Factor as "extensive publicity was a factor in the case/trial" and "Data source(s): Trial report" (p. 49). This raises more questions than it answers. For instance, was the extensive publicity variable coded yes if, and only if, the trial report explicitly states "extensive publicity was a factor in the case/trial"? If not, how was this determined and by whom? If this was a subjective determination, of course, one would not expect such judgments to be consistent 100% of the time across different raters. But that is precisely what is implicitly assumed by the authors of this report.

1.1 Table 1 (page 20).

Table 1. Proportion of Aggravated Murder Cases with Death-Eligible Defendants in which Death was Sought and Imposed, by County, December 1981 - May 2014				
County	Proportion of Aggravated Murder Cases in which Death Notices were Filed	Proportion of Aggravated Murder Cases in which Death Penalty was Imposed	Average Number of Victims	Average Number of Affirmed Aggravators
Thurston	67% (4/6)	33% (2/6)	1	2
Clallam	50% (3/6)	33% (2/6)	2	2
Kitsap	48% (10/21)	10% (2/21)	1	2
Pierce	45% (24/53)	21% (11/53)	3	2
Spokane	40% (8/20)	5% (1/20)	1	2
Snohomish	23% (7/31)	16% (5/31)	1	2
King	22% (16/72)	8% (6/72)	3	2
Clark	18% (4/22)	14% (3/22)	1	3
Benton	13% (1/8)	13% (1/8)	2	2
Whatcom	17% (1/6)	17% (1/6)	1	2
Cowlitz	13% (1/8)	0% (0/8)	1	1
Skagit	0% (0/5)	0% (0/5)	1	2
Okanogan	0% (0/8)	0% (0/8)	1	1
Yakima	0% (0/9)	0% (0/9)	2	1
All Washington State Counties	29% (86/297)	12% (35/297)	2	2

Note: Counties with five or more aggravated murder cases are individually identified.

*I was able to verify the numbers in the "death notices were filed" column.

*I was able to verify the numbers in the "death penalty was imposed" column. However, as I noted in my previous report (footnote 53), the denominators that appear in this column are logically incorrect. There were 86 cases in which a death notice was filed (bottom of "death notices were filed" column). The death penalty can only be imposed if a death notice is filed. Thus, the relevant denominator for the "death penalty was imposed" column is 86, not 297. This significantly alters the percentages within the "death penalty was imposed" column.

*I was not able to verify the numbers in the "average number of victims" column. This variable does not appear in the datafile or the codebook. It is also not explicitly defined in the Report, leaving it unclear as to what the average refers to exactly (e.g., average number of victims per defendant, per case, etc.). There is a variable indicating the number of victims (Vics_Num), and a version of this variable decomposed into three ordinal categories (Vics_NumOrdinal). However, neither of these variables give the "average number of victims" (see appendix A1 for the number of victims per county).

*I was not able to verify the numbers in the "average number of affirmed aggravators" column. This variable does not appear in the datafile or the codebook. It is also not explicitly defined in the Report. There are two variables that are potentially relevant (i.e., the number of alleged aggravating circumstances (AllegedAggCir_Num) and the number of aggravating circumstances found by the judge to have been applicable (AAppliedAggCir_Num)), but neither is defined as "affirmed" and neither present the "average."

1.2 Table 2 (page 20).

Table 2. Capital Sentence Outcomes among Death-Eligible Washington State Aggravated Murder Defendants, December 1981 – May 2014, by Race of Defendant			
Defendant Race	Death Notice Filed	Death Penalty Imposed	Death Penalty Retained
White	32% (60/188)	12% (22/188)	4% (8/188)
Black	25% (14/57)	16% (9/57)	7% (4/57)
Other Race	22% (11/51)	8% (4/51)	2% (1/51)
All	29% (86/296)	12% (35/296)	4% (13/296)

Note: Defendant race is unknown in one case.

*I was able to verify the numbers in the "death notice filed" column. However, note that the numerator frequencies reported in the column sum to 85, not 86 (as reported), because "defendant race is unknown in one case."

*I was able to verify the numbers in the "death penalty imposed" column. Again, however, the denominators that appear in this column are incorrect. The appropriate denominator is 86 (the number of cases in which a death notice was filed), not the total number of cases (296), since the death penalty cannot be imposed if a death notice is not filed.

*I was not able to verify the numbers in the "death penalty retained" column, since this variable does not appear in the data file or the codebook.

1.3 Table 3 (page 22).

Table 3. Capital Case Outcomes among Death-Eligible Washington State Aggravated Murder Defendants, December 1981 - May 2014, by Race of Defendant and Race of Victim			
Defendant/Victim Race	Death Notice Filed	Death Penalty Imposed	Death Penalty Retained
Black Defendant/ White Victim	28% (7/25)	20% (5/25)	8% (2/25)
Black Defendant/ Black Victim	20% (1/5)	20% (1/5)	0% (0/5)
White Defendant/ White Victim	28% (33/117)	7% (8/117)	3% (3/117)
White Defendant/ Black Victim	0% (0/0)	0% (0/0)	0% (0/0)

Note: Figures include only black and white "death eligible" defendants with one white or black victim.

*There are no variables in the data file or codebook that decompose defendant race (black or white) by victim race (black or white). Therefore, I had to use other variables in the data file to verify the numbers in Table 3. This process is described at length in Appendix A2i.

*The unaltered output of the attempt to replicate the "death notice filed" column appears here:

D_RaceOrdinal * Vics_Races Crosstabulation

Count

		Vics_Races				Total
		1	2	3	4	
D_RaceOrdinal	1	54	0	3	3	60
	2	10	2	2	0	14
	3	5	0	5	0	10
Total		69	2	10	3	84

Note that according to the Codebook (page 28), the values in Vics_Races are: 1= all white victims; 2= all Black victims; 3 =all victims of an other [sic] race; 4 = all victims of multiple races, and the values in D_RaceOrdinal are: 1= white or Caucasian; 2= Black or African American; 3 = Other race (page 17). Further note that these latter values are consistent with the frequencies in Table 2 (i.e., 60 white defendants; 14 black defendants; 10 other race defendants).

There appear to be 54 white defendants with all white victims; Table 3 reports there are 33 such cases. There appear to be 10 cases with a black defendant and all white victims; Table 3 reports that there are 7 cases. There appear to be 2 cases with black defendants and all black defendants; Table 3 reports only a single case with a black defendant and black victims. In short, I was not able to replicate the numbers in the "death notice filed" column of Table 3.

Notice the note associated with Table 3 states that the figures pertain to defendants with one white or one black victim. It is possible (but highly unlikely) that the replication effort above is inconsistent with Table 3 because Vics_Races refers to cases in which "all victims" were of a particular race, while Table 3 refers to the race of only a single victim.[5]

There is a variable in the datafile/casebook regarding the race of victim one (V1_RaceW and V1_RaceB for white and black victims, respectively). I used these variables in conjunction with the defendant's race (D_RaceOrdinal) to ascertain the relevant figures. A comprehensive description of this process along with the unaltered output of this effort appears in appendix A2ii. This newly-created variable is labeled "DefRaceXVicRace."

*Again, I was not able to replicate the figures in the "death notice filed" column of Table 3. The unaltered output of this analysis is pasted below.

DefRaceXVicRace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White def, white vic	54	62.8	81.8	81.8
	Black def, white vic	10	11.6	15.2	97.0
	Black def, black vic	2	2.3	3.0	100.0
	Total	66	76.7	100.0	
Missing	System	20	23.3		
Total		86	100.0		

The output table indicates that there were 54 cases with a white defendant and white victim, 10 cases with a black defendant and a white victim, and 2 cases with a black defendant and black victim.[6] However, again, Table 3 from the Beckett and Evans report indicates that there were 33 cases with a white defendant and white victim, 7 cases with a black defendant and a white victim, and 1 case with a black defendant and black victim.

[5] If this is correct, it is not clear how 54 white defendants had 'only' white victims, but, according to Table 3, 33 white defendants had at least 'one' white victim. "Only" white victims is a subset of "at least one" white victim.
[6] These numbers were corroborated by comparing them to another variable (Vic_White_Def_Blk) included in the data file. See Appendix A2iii for a detailed explanation.

It is worth reflecting on the percentages associated with these categories of defendant/victim race. Table 3 in the Beckett and Evans report provides percentages based on the total number of "death-eligible" cases (presumably 297). But the columns in Table 3 only include cases in which a death notice was filed, the death penalty was imposed, or the death penalty was retained. It is inappropriate and misleading to use a denominator associated with all cases when the columns in the table refer to a truncated sample.

The germane percentages would be based upon 66 cases (recall that the total number of cases in which a death notice was filed is 85; 66 cases involve a black/white defendant/victims). Thus, 54/66 or 88% of cases in which a death notice was filed had a white defendant and a white victim; 10/66 or 15% of cases had a black defendant and a white victim; and 2/66 or 3% had a black defendant and a black victim.

These percentages are substantially different from the percentages reported by Beckett and Evans. Most notably, Beckett and Evans report that 28% of cases had a black defendant and white victim; however the appropriate percentage is 15%, as noted above. Similarly, Beckett and Evans report that 28% of cases had a white defendant and a white victim; the appropriate percentage is 88%, as noted above. Finally, Beckett and Evans report that 20% of cases had a black defendant and a black victim; however, only 3% of cases in which a death notice was filed had a black defendant and a black victim, as noted previously.

* I was <u>not</u> able to replicate the figures in the "death penalty imposed" column. The unaltered output of this analysis is pasted below.

DefRaceXVicRace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White def, white vic	19	54.3	73.1	73.1
	Black def, white vic	6	17.1	23.1	96.2
	Black def, black vic	1	2.9	3.8	100.0
	Total	26	74.3	100.0	
Missing	System	9	25.7		
Total		35	100.0		

Recall that there were 35 cases in which the death penalty was imposed. This output table reflects those cases.

Table 3 of the Beckett and Evans report indicates that there were 5 cases with a black defendant and white victim, 1 case with a black defendant and black victim, and 8 cases with a white

defendant and white victim. However, the raw output indicates that there were 6 cases with a black defendant and white victim, 1 case with a black defendant and black victim, and 19 cases with a white defendant and white victim. Thus, I could verify the value in Table 3 associated with the single case of a black defendant and black victim; however, the value associated with a black defendant and white victim was off by one case, and the value associated with white defendant and white victim was off by 12 cases.

The associated percentages are drastically different than the percentages reported in Table 3 of the Beckett and Evans report. Most notably, Table 3 indicates that 7% of all death-eligible cases that resulted in a death sentence involved a white defendant and white victim. However, 54% (19/35) of cases that resulted in a death sentence involved a white defendant and a white victim.

* I was not able to verify the numbers in the "death penalty retained" column of Table 3, since this variable does not appear in the data file or the codebook.

To recap:

-Overall, there were 66 cases in which a death notice was filed with either black or white defendants and black or white victims; 26 of these cases resulted in a death sentence.

-There were 54 cases in which a death notice was filed with a white defendant and a white victim, of which 19 resulted in a death sentence.

-There were 10 cases in which a death notice was filed with a black defendant and a white victim, of which 6 resulted in a death sentence.

-There were 2 cases in which a death notice was filed with a black defendant and a black victim, of which 1 resulted in a death sentence.

1.4 Table 4 (page 25).

Table 4: Impact of Case Characteristics on Prosecutorial Decisions to File Death Notices in Eligible Aggravated Murder Cases, December 1981 - May 2014				
N= 284	Death Notice Filed			R^2 = 0.0914
Variable	Coefficient	Statistical Significance	Odds Ratio	Referent (Compared to)
Prior Convictions	0.118	**	1.1	
One Victim	-0.493		0.7	Five or more victims
Two-Four Victims	-0.112		0.9	Five or more victims
Alleged Aggravators	0.258	***	1.3	
Sex Crime	0.740	**	2.1	Not Indicated
Law Enforcement Officer	1.486	***	4.4	Non-police victims
* significant at α = .10	** significant at α = .05		*** significant at α = .01	

*I re-ran this model. The complete, unaltered output appears in Appendix A3.

*I was able to approximately[7] replicate the following significant findings: alleged aggravators; sex crime; and law enforcement officer.

*I was able to replicate the following non-significant findings: one victim; two-four victims

*I was not able to replicate the effect for prior convictions. The effect was not even close to reaching statistical significance (i.e., the p-value is .917), and thus the failure to replicate is unlikely to be due to a "rounding error" or something related.

[7] It is readily apparent in comparing the tables that most of the values reported by Beckett and Evans did not exactly replicate. One might expect minor differences due to rounding errors or slightly different computer algorithms used to calculate the values. However, many of these differences are sufficiently large as not to be caused by rounding or minor differences in computer algorithms. Nonetheless, these differences do not materially alter interpretation of the model. I explicitly note when failure to replicate the effect of specific variables does substantively or materially alter interpretation of the model.

1.5 Table 5 (page 27).

Table 5. Impact of Case Characteristics and Social Factors on Prosecutorial Decisions to File Death Notices in Eligible Aggravated Murder Cases, December 1981 – May 2014				
N= 265	Death Notice Filed			R^2 = 0.2063
Variable	Coefficient	Statistical Significance	Odds Ratio	Referent (Compared to)
Case Characteristics				
Prior Convictions	0.182	***	1.2	
1 Victim	-0.106		0.9	Multiple victims
Alleged Aggravators	0.271	**	1.3	
Sex Crime	0.901	*	2.5	
Law Enforcement Officer	1.540	**	4.7	Non-police victim(s)
Social Factors				
Black Defendant	-0.549		0.6	Non-black defendants
Extensive Publicity	1.356	***	3.9	No extensive publicity
Victim Characteristics				
White Victim(s)	0.596		1.8	Non-white victims
Female Victim(s)	-0.192		0.8	Males/both sexes
Stranger Victim(s)	-0.437		0.6	White defendants
Child Victim(s)	0.482		1.6	Adult victim(s)
County Characteristics				
Percent Republican	0.019		1.0	
Population Density	0.606		1.8	
Percent Black	0.222	***	1.2	
Per Capita Revenue	-0.401		0.7	

* significant at α = .10 ** significant at α = .05 *** significant at α = .01

There were 15 variables included in this model. Some of these variables do not appear in the data file or codebook. Below, I list all of these variables along with whether or not they were included in the data file. If they were not, I describe how I computed them.

1. Prior Convictions: included.
2. 1 Victim (vs multiple victims): not included. This variable had to be created. See appendix A4.
3. Alleged Aggravators: included.
4. Sex Crime: included. However, note this variable is binary (yes/no), despite the fact Table 5 does not specify the reference category.
5. Law Enforcement Officer: included

6. Black Defendant: included.
7. Extensive Publicity: possibly included. I will assume "extensive publicity" refers to the Publicity_Factor variable.[8]
8. White victim(s): included.
9. Female Victim(s): included.
10. Stranger Victim(s): included.
11. Child Victim(s): I assume this refers to the variable: Vics_Under18
12. Percent Republican: included.
13. Population Density: included.
14. Percent Black: included.
15. Per Capita Revenue: I assume this refers to CountyRevA, which is defined as "County revenue per capita at time of arrest (page 10)."

*I ran a logistic regression with the above-noted variables. The complete, unaltered output appears in appendix A5.

*I was able to approximately replicate the following significant findings: alleged aggravators; sex crime; law enforcement officers; extensive publicity; percent black.

*I was able to replicate the following non-significant findings: 1 victim; black defendant; white victim(s); female victim(s); stranger victim(s); child victim(s); percent republican; population density; per capita revenue.

*I was not able to replicate the finding for "prior convictions." Again, the p-value did not approach statistical significance (i.e., p=.355), suggesting this is not the result of a rounding error.

[8] The variable Publicity_Factor is described on page 9 of the codebook as "Publicity was a factor in the trial." On page 49, the codebook states "Extensive publicity was a factor in the case/trial."

1.6 Table 6 (page 30).

Table 6. Impact of Case Characteristics on Capital Sentencing Outcomes in Death Eligible Cases, December 1981 – May 2014				
N= 77	Death Penalty Imposed			R^2 = 0.2117
Variable	Coefficient	Statistical Significance	Odds	Referent (compared to)
Prior Convictions	-0.049		1.0	
1 Victim	-0.711		0.5	Multiple victims
Pled Guilty	-0.382		0.7	Pled not guilty
Applied Aggravators	0.406	*	1.5	
Mitigating Circumstances	-0.312	**	0.7	
Defenses	-0.874	**	0.4	
Victim Held Hostage	1.122	*	3.1	Not held hostage

* significant at α = .10 ** significant at α = .05 *** significant at α = .01

*I re-ran this model. The complete, unaltered output appears in Appendix A6.

*I was able to approximately replicate the following significant findings: applied aggravators; defenses; victims held hostage.

*I was able to replicate the following non-significant findings: prior convictions; 1 victim; pled guilty.

*I was not able to replicate the finding for mitigating circumstances. The p-value did not approach statistical significance (i.e., p=.973), suggesting this is not the result of a rounding error. [9]

[9] The variable I used for "mitigating circumstances" was MitCircum_Total, which the codebook describes as "Total mitigating circumstances (coded by legal consultant)" (page 9). Note that the companion Table E2 in the appendix (page 42) of the Beckett and Evans report uses the term "total mitigating circumstances" to describe the variable that was included in the model, as opposed to "mitigating circumstances." Therefore, it is highly likely that I used the appropriate variable, which did not replicate.

1.7 Table 7 (page 31).

Table 7. Impact of Case Characteristics and Defendant Race on Capital Sentencing Outcomes in Death Eligible Cases, December 1981 - May 2014				
N= 76	Death Penalty Imposed			Pseudo R^2 = .2473
Variable	Coefficient	Statistical Significance	Odds	Referent (Compared to)
Prior Convictions	-0.085		0.9	
1 Victim	-0.812		0.4	Multiple victims
Applied Aggravators	0.494	*	1.6	
Mitigating Circumstances	-0.257		0.7	
Defenses	-0.967	**	0.4	
Victim Held Hostage	0.999	*	2.7	Not held hostage
Black Defendant	1.499	*	4.5	Non-black

* significant at α = .10 ** significant at α = .05 *** significant at α = .01

*I re-ran this model. The unaltered output appears in Appendix A7.

*I was able to approximately replicate the following significant findings: applied aggravators; defenses; black defendant.

*I was able to replicate the following non-significant findings: prior convictions; 1 victim; mitigating circumstances.

*I was not able to replicate the finding for victim held hostage.[10]

[10] Note that the effect size is in the same direction (i.e., "odds ratio" = 2.7 in Table 7; the Exp(B) = 2.305 in Appendix A7), suggesting that the inconsistency is not due to a coding error.

1.8 Table 7 Redux: Same predictor variables but with a different functional form

The "statistical models" section of the Beckett and Evans Report states:

> Diagnostics also showed that three variables were heavily skewed. These included: number of prior convictions, number of mitigating circumstances, and per capital revenue. Logging these variables normalized their distribution (page 18-19).

The Report never indicates that a logarithmic transformation ("logging") of these variables was included in the regression models.[11]

The Memorandum sent by Katherine Beckett and Heather Evans (dated May 26, 2016) adds to the confusion. The Memorandum states that "several of the standard errors shown in Table D3 of our report actually reflect the coefficient value." A table describing the results of the "model presented in Report" and a "corrected model" appears in the memorandum. I copy and pasted this table into Appendix A7i, along with the original table (Table D3, page 41) from the Report. Notice that "(ln)" appears behind "prior convictions" and "per capita revenue" in the Memorandum but not in Table D3 from the original report. [The notation "ln" usually refers to a logarithmic transformation.] Thus, it appears that Beckett and Evans used a logarithmic transformation of these variables but never disclosed this fact in the Report, nor did their Memorandum mention the error.

I re-ran the model that appears in Table 7, except that I used a logarithmic transformation of prior convictions and number of mitigating circumstances. The complete, unaltered output of the analysis appears in Appendix A7ii.

*I was able to approximately replicate –from Table 7 – the following significant findings: applied aggravators; defenses; victims held hostage.

*I was not able to replicate the effect for black defendant ($p=.256$). This p-value does not even approach statistical significance (i.e., $p<.05$), suggesting that the effect is not due to a rounding error.

[11] The sole exception is a table that appears in the Report appendix notes "Priors(logged)" was included in the model (page 40). This is odd because the in-text companion table (Table 7, above) does not state that the variable included in the regression model was the logarithmic transformation of number of prior convictions. It simply states "prior convictions" was included in the model.

Conclusions of data audit

It is not uncommon for peer-review journals to require authors to make their data available so that others can verify the accuracy of the reported results.[12] Beckett and Evans made their data file available, along with a 57-page codebook describing their variables. I made an assiduous effort to verify the accuracy of the reported values. I was not able to replicate several of their reported findings. Simply put, many of the values they claim to be true could not be substantiated from their own data file.

The replication effort was mixed with respect to the principal finding that black defendants are disproportionately likely to receive the death penalty vis-à-vis non-black defendants. The analysis in section 1.7 approximately replicated the principal finding, though the exact numbers were different and other aspects of that model did not replicate. However, this finding did not replicate once a different functional form of two other variables was used in the model (section 1.8).

Myriad reasons could underlie the failure to replicate. It is possible that, despite my best effort to recreate the original models, a mistake was made in creating variables or specifying the models, since some of the variables in the Beckett and Evans Report were not included in the data file or codebook (see section 1.3). At peer-review journals, however, the onus is on the authors to provide an intelligible data file and coding manual so that others may verify the accuracy of the reported findings.[13] It is also possible, and there is some evidence to support this contention, that the variables included in the regression models were inaccurately described in the Report (and Beckett and Evans were aware of this but did not directly address it).[14]

Regardless of the particular reason, inability to verify the values reported in a manuscript is grounds for a published study to be retracted and stricken from the record.[15] In my opinion, the results of my data audit would cause any reasonable journal editor to retract the Beckett and Evans report, if it were in fact published in the first place.

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[12] See, e.g., the requirements at *Science*: http://www.sciencemag.org/authors/science-editorial-policies or *PLoSONE Journal*: http://journals.plos.org/plosone/s/data-availability

[13] See Id. ("After publication, all data and materials necessary to understand, assess, and extend the conclusions of the manuscript must be available to any reader of Science. All computer codes involved in the creation or analysis of data must also be available to any reader of Science.") ("PLOS defines the "minimal data set" to consist of the data set used to reach the conclusions drawn in the manuscript with related metadata and methods, and any additional data required to replicate the reported study findings in their entirety.")

[14] See, e.g., section 1.8

[15] http://publicationethics.org/files/retraction%20guidelines.pdf

2.0 Sensitivity of the Race of Defendant Effect

Econometric models are notoriously fragile in the sense that minor alterations to such models can lead to tremendously different results.[16] Below, I test the robustness of the effect that black defendants are more likely to receive the death penalty than non-black defendants. In particular, I test four models that are a minor variant of the original (reported in table 7): one examines white vs. black vs. other-race defendants individually (as opposed to white and other-race defendants combined); one includes the race of the victim (a theoretically relevant variable); one excludes multiple responses from the same individuals (a basic assumption of regression models); and one corrects three coding errors. In all four alternative models, the effect for the race of the defendant is not "statistically significant."

Before turning to the models, it is necessary to comment on the notion of "statistical significance" and how it should be assessed. Beckett and Evans state:

> By convention, social scientists often identify statistical significance when there is a 5 percent or less chance of finding this result by chance (noted as p-value $\leq .05$). However, when samples are small or hypotheses are directional (e.g., the researcher expects covariates to increase and not decrease the probability of receiving the death penalty) a cut off of p-value $\leq .10$ is used instead. For this reason, we report the p-values of covariates that are statistically significant at both the .05 and .10 levels. (page 16)

As noted in my previous report, no authority is cited to support the assertion that $p \leq .10$ is an acceptable threshold in the social sciences.[17] However, consider an official statement recently released by the American Statistical Association (ASA) on statistical significance and p-values.[18] Among other things, the ASA stated:

> 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. (Page 131)

Instead, the ASA advised the use of other methods:

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[16] For instance, in analyzing the empirical evidence on whether the death penalty has a deterrence effect on homicide, Donohue and Wolfers –two leading empirical legal scholars –concluded: "We find that the existing evidence for deterrence is surprisingly fragile, and even small changes in specifications yield dramatically different results" (page 794). Donohue III, J. J., & Wolfers, J. (2006). Uses and abuses of empirical evidence in the death penalty debate. *Stanford Law Review, 58*, 791-846.

[17] See footnote 43 of my original report (citing voluminous authorities who claim that $p<.05$ – not $p\leq.10$ – is the conventional threshold used in social science.)

[18] Wasserstein, R.L., & Lazar, N.A. (2016). The ASA's statement on p-Values: Context, process, and purpose. *The American Statistician*, 70(2), 129-133.

> These include methods that emphasize estimation over testing, such as confidence, credibility, or prediction intervals; (Page 132)

Beckett and Evans do not report confidence intervals. However, the following analyses all include confidence intervals around the estimate of the effect size, which appears in the column "Exp(B)." The Exp(B) refers to the exponentiation of the logarithmic (natural log) beta parameter. In short, it is an odds ratio. A ratio greater than 1 indicates the increase in odds of an outcome (e.g., death sentence) associated with a one unit increase in a given predictor.[19] If the 95% confidence interval for Exp(B) contains the value 1, it indicates that the associated odds ratio could be 1:1. In other words, the variable neither increases nor decreases the likelihood of the dependent variable. Thus, when a confidence interval includes the value of 1, the variable is interpreted as not being "significantly" predictive of the dependent variable.

2.1. Compare white vs. black vs. other-race defendants

I ran the same model reported in Table 7, but I included the variable D_RaceOrdinal, a variable created by Beckett and Evans. D_RaceOrdinal categorizes the race of the defendant into white, black, or other, as opposed to black defendants versus all others. The complete, unaltered output appears in Appendix B1. The output table reporting the model parameters is pasted here:

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.074	.071	1.071	1	.301	1.077	.936	1.238
	Victim1_vs_mult(1)	-.720	.590	1.492	1	.222	.487	.153	1.546
	AppliedAggCir_Num	.406	.221	3.379	1	.066	1.500	.973	2.313
	MitCircum_Total	.047	.147	.101	1	.751	1.048	.785	1.398
	Defenses_Num	-.996	.432	5.322	1	.021	.369	.158	.861
	Vics_AnyHostage(1)	.842	.581	2.103	1	.147	2.321	.744	7.243
	D_RaceOrdinal			4.574	2	.102			
	D_RaceOrdinal(1)	-.216	.826	.068	1	.794	.806	.160	4.065
	D_RaceOrdinal(2)	1.409	1.006	1.961	1	.161	4.092	.569	29.402
	Constant	-.866	.934	.859	1	.354	.421		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, D_RaceOrdinal.

[19] Tabachnick, B.G. & Fidel, L.S. (2013). *Using multivariate statistics* (6th ed.) at 463.

As is apparent, the main effect for race of defendant is not statistically significant (p=.102), nor are the individual contrasts (ps = .794 and .161). The 95% confidence intervals (CIs) all include the value of 1. Thus, while Beckett and Evans purportedly detected an effect for black vs. all other defendants combined, it appears that black defendants are not more likely to receive a death sentence than white or other-race defendants individually.

2.2. Inclusion of the race of the victim in the model

The Report by Beckett and Evans notes "Studies published during this period consistently reported that defendants convicted of killing whites were more likely to be sentenced to death than other defendants, over and above any differences in case characteristics. Indeed, this finding was 'remarkably consistent across data sets, states, data collection methods, and analytic techniques'" (pages 6-7). This statement is followed by a paragraph describing several studies which find a race-of-victim effect. This section of the Report ends by concluding that "most studies report that the race of the victim has a significant impact on capital case outcomes, and some find that the race of the defendant also influences the administration of capital punishment" (page 9).

Despite the apparent import of accounting for victim race, the regression model predicting whether or not a defendant received a death sentence did not include the race of the victim. I re-ran the exact model reported in Table 7, except that I included a variable that took into account the race of the defendant *as well as* the race of the victim (DefRaceXVicRace).

The complete, unaltered output appears in Appendix B2. The output table reporting the model parameters is pasted here:

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.022	.073	.087	1	.768	1.022	.886	1.179
	Victim1_vs_mult(1)	-.615	.651	.895	1	.344	.540	.151	1.934
	AppliedAggCir_Num	.416	.234	3.158	1	.076	1.516	.958	2.398
	MitCircum_Total	.071	.151	.223	1	.637	1.074	.799	1.444
	Defenses_Num	-.936	.442	4.489	1	.034	.392	.165	.932
	Vics_AnyHostage(1)	.535	.628	.726	1	.394	1.708	.499	5.848
	DefRaceXVicRace			3.432	2	.180			
	DefRaceXVicRace(1)	1.490	.831	3.218	1	.073	4.438	.871	22.612
	DefRaceXVicRace(2)	1.166	1.653	.498	1	.481	3.208	.126	81.833
	Constant	-.961	.990	.941	1	.332	.383		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, DefRaceXVicRace.

The effect for the variable representing the race of the defendant and the race of the victim is not statistically significant (p=.180; all 95%CIs include the value of 1). Thus, once the race of the victim is accounted for in the model, there are no racial effects – for either the victim or the defendant –with respect to the imposition of the death penalty.

2.3. Remove redundant cases from the model

There are apparently several instances in the data file in which particular individuals contributed multiple responses. This fact is never disclosed in either the Report or the codebook. A central assumption of logistic regression is that each observation is independent. As a leading text on multivariate statistics[20] put it:

> Logistic regression assumes that responses of different cases are independent of each other. That is, it is assumed that each response comes from a different, unrelated case. (page 445)

This assumption is plainly violated when one individual contributes multiple 'cases' to the datafile.[21]

Appendix B3 contains a list of the last name of the 35 defendants who received a death sentence. There are two cases for Gregory (case ID# 216, 312), Rupe (case ID# 7, 31), and Davic/Davis (case ID #180, 281). The difference in the spelling of the latter case appears to be a mistake; they both refer to an individual named Cecil Emile Davis with a date of birth of September 1, 1959. I assume case ID #180 and 281 refer to the same person.

These duplicate cases were removed and only the most recent death sentence information was retained (i.e., removed case ID# 180, 216, 7). I re-ran the exact model reported in Table 7. The complete, unaltered output appears in appendix B3i, and the table reporting the results of the model parameters appears below.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Step 1[a] D_Priors	.079	.073	1.147	1	.284	1.082	.937	1.249

[20] Tabachnick, B.G. & Fidel, L.S. (2013). *Using multivariate statistics* (6th ed.)

[21] Id at 445. "The effect of non-independence in logistic regression is to produce overdispersion," and "this results in an inflated Type I error rate for tests of predictors." In short, the reported p-value will be an underestimate of the 'true' p-value.

	Victim1_vs_mult(1)	-.673	.586	1.320	1	.251	.510	.162	1.609
	AppliedAggCir_Num	.378	.210	3.230	1	.072	1.459	.966	2.202
	MitCircum_Total	.008	.154	.002	1	.960	1.008	.745	1.362
	Defenses_Num	-.934	.425	4.818	1	.028	.393	.171	.905
	Vics_AnyHostage(1)	.911	.583	2.439	1	.118	2.487	.793	7.803
	D_RaceB(1)	1.441	.771	3.491	1	.062	4.224	.932	19.148
	Constant	-1.052	.823	1.632	1	.201	.349		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, D_RaceB.

The effect for the variable representing the race of the defendant is not statistically significant (p=.062; the 95%CI includes the value of 1). Thus, the finding that black defendants are more likely than non-black defendants to receive the death penalty vanishes once these three duplicate defendants were removed.

2.4. Correct three instances of miscoding

In consultation with Kit Proctor on June 9, 2016, the following coding errors were detected and corrected:

1.) Jack Owen Spillman (ID# 167) was incorrectly coded as having "received the death penalty"; he was re-coded as not having received a death sentence.

2.) Gary Michael Benn (ID# 75) was incorrectly coded as an "other race" defendant; he was re-coded as "white."

3.) Richard Blake Pirtle (ID# 132) was incorrectly coded as "did not receive a death sentence"; he was re-coded as having received a death sentence.

I re-ran the exact model reported in Table 7 with these errors corrected. The complete, unaltered output appears in appendix B4, and the table reporting the results of the model parameters appears below.

Variables in the Equation

								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	D_Priors	.031	.066	.228	1	.633	1.032	.907	1.174
	Victim1_vs_mult(1)	-.541	.563	.920	1	.337	.582	.193	1.757
	AppliedAggCir_Num	.496	.233	4.509	1	.034	1.642	1.039	2.594
	MitCircum_Total	-.024	.148	.026	1	.872	.976	.730	1.306

Defenses_Num	-.718	.396	3.290	1	.070	.488	.224	1.060
Vics_AnyHostage(1)	.598	.569	1.102	1	.294	1.818	.596	5.549
D_RaceB(1)	1.456	.751	3.757	1	.053	4.288	.984	18.693
Constant	-1.147	.816	1.975	1	.160	.318		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, D_RaceB.

The effect for the variable representing the race of the defendant is not statistically significant (p=.053; the 95%CI includes the value of 1). Thus, correcting coding errors associated with three defendants was sufficient to make the race of the defendant effect vanish.

Conclusions of sensitivity analyses

The finding that black defendants are more likely to receive a death sentence than non-black defendants depends heavily on the details of the model specification. Slight alterations to the model render this finding moot, suggesting that the effect exists under only very specific conditions (and even then is quite fragile) or simply that the effect does not exist at all. There are at least two reasons to believe the latter possibility is accurate.

First, the basic rationale of using regression techniques in this context is to unconfound the factors that affect death sentences.[22] Beckett and Evans spend over 2 pages describing "numerous other studies" [23] that "fairly consistently report that victim-race (along with numerous other legal and extra-legal factors) continues to influence the administration of capital punishment."[24] Yet, they did not include the race of the victim in their model. Once the race of the victim is included in their model, neither the race of the victim nor the race of the defendant was related to the imposition of the death penalty.

Second, although one could debate what predictor variables are appropriate to include in the regression model, there is no question that known coding errors or data redundancies should not be included in the model. Again, the finding that black defendants are more likely to receive a death sentence disappears once such errors are corrected.

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[22] Baldus, D.C., & Woodworth, G. (2003). Race discrimination and the death penalty: An empirical and legal overview. In Acker, J.R., Bohm, R.M., & Lanier, C.S. (eds.) *America's Experiment with Capital Punishment* (2nd ed.)) ("There are several methods for calculating adjusted race disparities. The most commonly used is a regression coefficient for the race of the defendant or victim, computed in a logistic multiple regression analysis, which estimates the extent to which, on average, a defendant's odds of being charged capitally or sentenced to death are enhanced by virtue of the race of the victim or defendant in the cases, after controlling for other legitimate case characteristics." (page 513))

[23] Beckett and Evans, Pages 6-8.

[24] Id at 7.

3.0. Conclusions Regarding Race and the Death Penalty

In my previous report, I noted that "the ultimate question concerns the reliability of Beckett and Evans' main finding that blacks are more likely than non-blacks, ceteris paribus, to be sentenced to death in the state of Washington,"[25] and I stated, "there is good reason to be highly skeptical of this finding."[26] Having now audited the raw data and conducted sensitivity analyses, I am even less confident of the reliability of that effect. In fact, the data do not show the purported effect. *In my opinion, the Beckett and Evans report furnishes no evidence that black defendants are, ceteris paribus, more likely to receive a death sentence than defendants of another race in the State of Washington from 1981-2014.*

Below, I discuss the major bases for this opinion, in order of importance. These are not the only issues I have with the analyses or the Report; there are many others, however the three discussed below devastate the study and the inferences that can be drawn from it.

3.1 P-hacking invalidates reported p-values

The Beckett and Evans report refers to numerous regression analyses that were conducted but not reported in their document. For instance, the Report states, "as a precaution, we conducted careful analyses of our models, including and excluding case county characteristics to gauge their impact on the overall results."[27] Later, the Report states, "Model testing suggested that the only social factor that was consistently relevant to the outcome is the race of the defendant."[28] These are not the only "model tests" that were conducted but not reported in the Report.[29]

Here is what the American Statistical Association (ASA) recently had to say about the practice Beckett and Evans refer to as "Model testing":

> Proper inference requires full reporting and transparency. P-values and related analyses should not be reported selectively. Conducting multiple analyses of the data and reporting only those with certain p-values (typically those passing a significance threshold) renders the reported p-values essentially uninterpretable. Cherrypicking promising findings, also known by such terms as data dredging, significance chasing, significance questing, selective inference, and "p-hacking," leads to a spurious excess of statistically significant results in the published literature and should be vigorously avoided. One need not formally carry out multiple statistical tests for this problem to arise: Whenever a researcher chooses what to present based on statistical results, valid interpretation of

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[25] Scurich, 2016, page 16.
[26] Id.
[27] Beckett & Evans, page 17
[28] Beckett & Evans, page 18
[29] ("In a separate analysis, we found that the number of prior violent convictions similarly increases the likelihood that prosecutors will seek the death penalty." Page 26) ("We also tested the significance of a concomitant sex crime and whether the victim was a law enforcement officer; neither of these factors was found to be a significant predictor of sentencing outcomes and are not included in the model shown below." Page 29) ("When replaced with number of priors, number of violent priors was also statistically significant. However, including number of priors resulted in a slightly better model fit. We therefore present the model including the total number of priors." Page 41)

> those results is severely compromised if the reader is not informed of the choice and its basis. Researchers should disclose the number of hypotheses explored during the study, all data collection decisions, all statistical analyses conducted, and all p-values computed. Valid scientific conclusions based on p-values and related statistics cannot be drawn without at least knowing how many and which analyses were conducted, and how those analyses (including p-values) were selected for reporting (pages 131-132)

There is no doubt that what Beckett and Evans call "model testing" is incongruent with this proviso. As noted, numerous analyses were conducted but not included in the final analyses or the Report, and no information was provided regarding how many analyses were actually conducted, the specific variables/configuration of the analyses, or any theoretical rationale for including or excluding variables other than they were not "consistently relevant to the outcome."[30] Although "model testing" sounds legitimate, in the words of the ASA, "[it] renders the reported p-values essentially uninterpretable."[31] To put it bluntly, "model testing" invalidates the statistical evidence that black defendants were more likely to receive a death sentence than non-black defendants in the State of Washington (1981-2014).

3.2. Unreliable data

Assuming, *arguendo*, that the analyses do show that black defendants are disproportionality likely to receive a death sentence, the data on which this finding is based are too unreliable to draw any conclusions. Simply put, there are coding errors in the data file, and we have no idea of the extent of the problem. The potential errors are neither trivial nor inconsequential, as demonstrated in section 2.4. Indeed, some of the errors pertained to the race of a defendant[32] and whether or not a particular defendant received a death sentence.[33]

Since the number of individuals sentenced to death (i.e., ~35) is small for the purpose of conducting statistical analyses,[34] and the number of black defendants is even smaller (i.e., ~9; see section 1.2), even a single error can have a significant impact on the results. Without some estimate of the frequency with which coding errors occur, we cannot know whether the data accurately reflect the real world phenomenon they are intended to represent. Of course, data that do not reflect the real world are uninformative. I see no reason to assume the data are valid when there is concrete evidence to the contrary.

---

[30] Page 18

[31] ASA at 131-132.

[32] Benn (case ID# 75) was coded as 3 but should have been 1. There were several other cases where the coding of the defendant's race was potentially inappropriate or inconsistent, too. For instance, the trial report for Marshall (case ID# 181) states his race is "Caucasian/Native American;" his race was coded as "other" in the data file. The trial report for Campbell (Case ID# 9) states his race is "White (some Hawaiian Ancestry);" he is coded as "white" in the data file. It is at least debatable as to whether these individuals should both be classified as white. As mentioned previously, there is no description of how this judgment was made or by whom.

[33] Pirtle (case ID# 132) was coded as 0 (no death sentence) but should have been 1 (death sentence). Spillman (case ID# 167) was coded as 1 but should have been 0.

[34] See Section 3.4 of my previous report (discussing the notion and importance of statistical power.)

3.3. The corrected data do not indicate black defendants are more likely to receive a death sentence than non-black defendants

A cursory review of the data revealed three instances of multiple responses from the same individuals and three coding errors (see sections 2.3 and 2.4, respectively). When these issues are addressed, and the same regression model is conducted, the finding that black defendants are more likely than non-black defendants to receive the death penalty vanishes. To reiterate this point: *once multiple responses from the same individuals are removed and three instances of miscoding are corrected, the data do not indicate that black defendants are more likely than non-black defendants to receive a death sentence in the State of Washington.*

As mentioned above, the errors that were detected could be just the tip of the iceberg. Since the cases that were reviewed were not randomly sampled, they cannot be used to estimate the overall rate at which coding errors occurred. Other errors, if detected and remediated, could affect the results in a variety of ways, perhaps demonstrating that black defendants are more likely to receive a death sentence than non-black defendants. But the data, as they currently stand, do not show this effect. Any claim to the contrary cannot be legitimately based on this dataset.

Summary Comment

My overall view of Beckett and Evans' report and the accompanying data file is that both are unacceptably sloppy and untrustworthy. I had previously concluded that "if I were reviewing this manuscript as part of the peer review process, my recommendation would be to reject this manuscript..."[35] My confidence in this conclusion has been amplified exponentially after viewing the data file. In my judgment, Beckett and Evans' report should play no part in reasoned discussion about the role of race in the imposition of the death penalty in the State of Washington.

[35] Id. at 18.

Appendix A

A1.

County * Vics_Num Crosstabulation

Count

		Vics_Num								
		1	2	3	4	5	6	14	48	Total
County	Asotin	1	0	0	0	0	0	0	0	1
	Benton	6	0	2	0	0	0	0	0	8
	Chelan	3	0	0	0	0	0	0	0	3
	Clallam	2	4	0	0	0	0	0	0	6
	Clark	16	5	1	0	0	0	0	0	22
	Cowlitz	8	0	0	0	0	0	0	0	8
	Douglas	1	1	0	0	0	0	0	0	2
	Franklin	1	0	0	0	1	0	0	0	2
	Grant	1	1	0	0	0	0	0	0	2
	Grays Harbor	2	1	0	0	0	0	0	0	3
	Island	0	1	0	0	0	0	0	0	1
	King	40	17	7	4	0	1	2	1	72
	Kitsap	18	3	0	0	0	0	0	0	21
	Klickitat	0	0	2	0	0	0	0	0	2
	Lewis	1	0	0	0	0	0	0	0	1
	Mason	2	1	0	0	0	0	0	0	3
	Okanogan	5	3	0	0	0	0	0	0	8
	Pend Orielle	1	0	0	0	0	0	0	0	1
	Pierce	33	15	3	0	2	0	0	0	53
	Skagit	5	0	0	0	0	0	0	0	5
	Skamania	1	0	0	0	0	0	0	0	1
	Snohomish	18	11	2	0	0	0	0	0	31
	Spokane	12	8	0	0	0	0	0	0	20
	Thurston	4	2	0	0	0	0	0	0	6
	Whatcom	5	1	0	0	0	0	0	0	6
	Yakima	6	1	0	2	0	0	0	0	9
Total		192	75	17	6	3	1	2	1	297

County * Vics_NumOrdinal Crosstabulation

Count

		Vics_NumOrdinal			
		1	2	3	Total
County	Asotin	1	0	0	1
	Benton	6	2	0	8
	Chelan	3	0	0	3
	Clallam	2	4	0	6
	Clark	16	6	0	22
	Cowlitz	8	0	0	8
	Douglas	1	1	0	2
	Franklin	1	0	1	2
	Grant	1	1	0	2
	Grays Harbor	2	1	0	3
	Island	0	1	0	1
	King	40	28	4	72
	Kitsap	18	3	0	21
	Klickitat	0	2	0	2
	Lewis	1	0	0	1
	Mason	2	1	0	3
	Okanogan	5	3	0	8
	Pend Orielle	1	0	0	1
	Pierce	33	18	2	53
	Skagit	5	0	0	5
	Skamania	1	0	0	1
	Snohomish	18	13	0	31
	Spokane	12	8	0	20
	Thurston	4	2	0	6
	Whatcom	5	1	0	6
	Yakima	6	3	0	9
Total		192	98	7	297

A2i.

The data file was first restricted to cases in which a death notice was filed (i.e., 86), and then the frequencies of the defendant's race were examined:

```
GET
  FILE='C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
USE ALL.
COMPUTE filter_$=(DP_DeathNoticeFiled=1).
VARIABLE LABELS filter_$ 'DP_DeathNoticeFiled=1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
FREQUENCIES VARIABLES=D_RaceOrdinal
  /ORDER=ANALYSIS.
```

D_RaceOrdinal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	69.8	70.6	70.6
	2	14	16.3	16.5	87.1
	3	11	12.8	12.9	100.0
	Total	85	98.8	100.0	
Missing	System	1	1.2		
Total		86	100.0		

Note that according to the codebook (page 17), the values in D_RaceOrdinal are: 1= white or Caucasian; 2= Black or African American; 3 = Other race. Further note that these values are consistent with the frequencies in Table 2.

Next, I decomposed the race of the defendant by the race of the victim:

D_RaceOrdinal * Vics_Races Crosstabulation

Count

		Vics_Races				Total
		1	2	3	4	
D_RaceOrdinal	1	54	0	3	3	60
	2	10	2	2	0	14

	3	5	0	5	0	10
Total		69	2	10	3	84

Note that according to the codebook (page 28), the values in Vics_Races are: 1= all white victims; 2= all Black victims; 3 =all victims of an other [sic] race; 4 = all victims of multiple races

Thus, there appears to be 54 white defendants whose victims were all white and no white defendants whose victims were black. There appears to be 10 black defendants with all white victims and 2 black defendants who victims are all black.

A2ii.

The table below examines the race of the defendant as a function of whether there was one white victim (for cases in which a death notice was filed):

D_RaceOrdinal * Vics_RaceW Crosstabulation

Count

		Vics_RaceW		
		0	1	Total
D_RaceOrdinal	1	6	54	60
	2	4	10	14
	3	5	5	10
Total		15	69	84

Note that, according to the codebook (page 17), the values in D_RaceOrdinal are: 1= white or Caucasian; 2= Black or African American; 3 = Other race. The values for V1_RaceW are: 0= no [not white]; 1= yes (page 24).[36] Accordingly, there were 54 cases in which there was a white

[36] There are several other variables related to the race of the victim (from page 6-7 of codebook): Vics_RaceW ("All victims White"); Vics_RaceSame ("All victims were the same race as the defendant."); Vics_Races ("Victims' race ("categorical measure"). There are other variables, too. However, none of them can be used to derive the values in Table 3, since Table 3 includes "defendants with only one white or black victim (p. 22; emphasis added)" and these variables all potentially include more than a single victim which may be white, black, or other. It was necessary, therefore, to use V1_RaceW and V1_RaceB, which refer to the race of the first victim. This ensures that at least the classification is based on a single victim. Of course, it is possible that the first victim was a different race from the second victim. The codebook does not specify how the order of victims was determined.

defendant with a white victim, and 10 cases in which there was a black defendant with a white victim.

The table below examines the race of the defendant as a function of whether there was one black victim (note that the values associated with V1_RaceB indicate: 0=no [no black victim]; 1=yes (page 25)) :

D_RaceOrdinal * Vics_RaceB Crosstabulation

Count

		Vics_RaceB		
		0	1	Total
D_RaceOrdinal	1	60	0	60
	2	12	2	14
	3	10	0	10
Total		82	2	84

It appears there were no cases in which there was a white defendant and a black victim but there were 2 cases in which there was a black defendant and a black victim.

Create a new variable "DefRaceXVicRace"

DefRaceXVicRace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White def, white vic	54	62.8	81.8	81.8
	Black def, white vic	10	11.6	15.2	97.0
	Black def, black vic	2	2.3	3.0	100.0
	Total	66	76.7	100.0	
Missing	System	20	23.3		
Total		86	100.0		

Note that I unsuccessfully tried to replicate the values in Table 3 using several of the other variables related to the race of the victim and the race of the defendant. Not only where the values different from Table 3, but other inconsistencies arose. For instance, a cross tabulation of defendant's race (D_RaceOridnal) and victim's race (Vics_Races) indicated that there were 14 cases in which there was a black defendant and a black victim. The variable I created "defRaceXVicRace" (described in the document below) indicates there were 15 such cases.

As one can see, there are 54 cases with a white defendant and a white victim; 10 cases in which there was a black defendant with a white victim; 2 cases in which there was a black defendant and a black victim; and zero cases in which white defendant and a black victim. Thus, this newly-created variable contains values that accurately reflect the original values from which it was created.

A2iii.

The codebook states that variable Vics_White_Def_Blk refers to "Black defendant with all white victims" (page 28). It also notes that there are 31 such cases (page 28). Here is the unaltered output of a cross tabulation of those cases decomposed by whether or not a death notice was filed (note 1=yes; 0=no):

Vics_White_Def_Blk * DP_DeathNoticeFiled Crosstabulation

Count

		DP_DeathNoticeFiled		
		0	1	Total
Vics_White_Def_Blk	0	190	76	266
	1	21	10	31
Total		211	86	297

The table indicates that a death notice was filed in 10 of the 31 cases in which there was a white victim and a black defendant. This figure is consistent with the numbers reported in the DefRaceXVicRace cross tabulation with DP_NoticeFiled.

A3.

The last table in the unaltered output below directly speaks to Table 4 (above) is pasted here (note that the "odds ratio" column in Table 4 is labeled "Exp(B)" and "statistical significance" is labeled "sig." in the raw output):

Logistic Regression

Notes

Output Created	02-JUN-2016 11:05:50

Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	297
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VARIABLES DP_DeathNoticeFiled /METHOD=ENTER D_Priors Vics_NumOrdinal AllegedAggCir_Num Sex_Crime Vic_Police /CONTRAST (Vics_NumOrdinal)=Indicator /CONTRAST (Vic_Police)=Indicator(1) /CONTRAST (Sex_Crime)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	284	95.6
	Missing Cases	13	4.4
	Total	297	100.0
Unselected Cases		0	.0
Total		297	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value

0	0
1	1

Categorical Variables Codings

		Frequency	Parameter coding (1)	Parameter coding (2)
Vics_NumOrdinal	1	184	1.000	.000
	2	94	.000	1.000
	3	6	.000	.000
Vic_Police	0	269	.000	
	1	15	1.000	
Sex_Crime	0	230	.000	
	1	54	1.000	

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			DP_DeathNoticeFiled		Percentage
	Observed		0	1	Correct
Step 0	DP_DeathNoticeFiled	0	200	0	100.0
		1	84	0	.0
	Overall Percentage				70.4

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.868	.130	44.517	1	.000	.420

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	.094	1	.759
		Vics_NumOrdinal	1.451	2	.484
		Vics_NumOrdinal(1)	1.449	1	.229
		Vics_NumOrdinal(2)	1.345	1	.246
		AllegedAggCir_Num	15.974	1	.000
		Sex_Crime(1)	8.948	1	.003
		Vic_Police(1)	4.291	1	.038
	Overall Statistics		27.655	6	.000

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	27.261	6	.000
	Block	27.261	6	.000
	Model	27.261	6	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	317.652[a]	.092	.130

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Classification Table[a]

	Observed	Predicted

			DP_DeathNoticeFiled		Percentage
			0	1	Correct
Step 1	DP_DeathNoticeFiled	0	190	10	95.0
		1	62	22	26.2
	Overall Percentage				74.6

a. The cut value is .500

Variables in the Equation

								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	D_Priors	-.002	.021	.011	1	.917	.998	.958	1.039
	Vics_NumOrdinal			1.664	2	.435			
	Vics_NumOrdinal(1)	-.682	.898	.576	1	.448	.506	.087	2.940
	Vics_NumOrdinal(2)	-.341	.906	.142	1	.707	.711	.120	4.201
	AllegedAggCir_Num	.289	.102	8.106	1	.004	1.335	1.094	1.629
	Sex_Crime(1)	.821	.347	5.594	1	.018	2.272	1.151	4.484
	Vic_Police(1)	1.476	.557	7.017	1	.008	4.374	1.468	13.032
	Constant	-1.228	.894	1.887	1	.170	.293		

a. Variable(s) entered on step 1: D_Priors, Vics_NumOrdinal, AllegedAggCir_Num, Sex_Crime, Vic_Police.

A4.

I had to recode this variable (Vics_NumOrdinal) to create a variable representing 1 victim vs multiple victims, which was included in the model:

Vics_NumOrdinal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	192	64.6	64.6	64.6
	2	98	33.0	33.0	97.6
	3	7	2.4	2.4	100.0
	Total	297	100.0	100.0	

Into:

Victim1_vs_mult

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single victim	192	64.6	64.6	64.6
	Mult victim	105	35.4	35.4	100.0
	Total	297	100.0	100.0	

A5.

Logistic Regression

Notes

Output Created		02-JUN-2016 14:02:31
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	297
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing

Syntax		LOGISTIC REGRESSION VARIABLES DP_DeathNoticeFiled /METHOD=ENTER D_Priors AllegedAggCir_Num Sex_Crime Vic_Police Victim1_vs_mult D_RaceB Publicity_Factor Vics_RaceW Vics_Female Vics_Stranger Vics_Under18 VoteRep_P DenselyPop BlackCountyA_P CountyRevA /CONTRAST (Vic_Police)=Indicator(1) /CONTRAST (Sex_Crime)=Indicator(1) /CONTRAST (Victim1_vs_mult)=Indicator(1) /CONTRAST (D_RaceB)=Indicator(1) /CONTRAST (Publicity_Factor)=Indicator(1) /CONTRAST (Vics_RaceW)=Indicator(1) /CONTRAST (Vics_Female)=Indicator(1) /CONTRAST (Vics_Stranger)=Indicator(1) /CONTRAST (Vics_Under18)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	265	89.2
	Missing Cases	32	10.8
	Total	297	100.0
Unselected Cases		0	.0
Total		297	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

		Frequency	Parameter coding (1)
Vics_Under18	0	219	.000
	1	46	1.000
Vic_Police	0	251	.000
	1	14	1.000
Victim1_vs_mult	Single victim	176	.000
	Mult victim	89	1.000
D_RaceB	0	214	.000
	1	51	1.000
Publicity_Factor	0	71	.000
	1	194	1.000
Vics_RaceW	0	66	.000
	1	199	1.000
Vics_Stranger	0	180	.000
	1	85	1.000
Vics_Female	0	150	.000
	1	115	1.000
Sex_Crime	0	212	.000
	1	53	1.000

Block 0: Beginning Block

Classification Table[a,b]

		Predicted		
		DP_DeathNoticeFiled		Percentage
	Observed	0	1	Correct

Step 0	DP_DeathNoticeFiled	0	188	0	100.0
		1	77	0	.0
	Overall Percentage				70.9

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.893	.135	43.526	1	.000	.410

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	.536	1	.464
		AllegedAggCir_Num	15.391	1	.000
		Sex_Crime(1)	10.544	1	.001
		Vic_Police(1)	3.145	1	.076
		Victim1_vs_mult(1)	.809	1	.368
		D_RaceB(1)	.079	1	.779
		Publicity_Factor(1)	10.547	1	.001
		Vics_RaceW(1)	5.042	1	.025
		Vics_Female(1)	2.325	1	.127
		Vics_Stranger(1)	.041	1	.840
		Vics_Under18(1)	4.051	1	.044
		VoteRep_P	.014	1	.906
		DenselyPop	7.434	1	.006
		BlackCountyA_P	5.063	1	.024
		CountyRevA	4.653	1	.031
	Overall Statistics		55.405	15	.000

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	61.537	15	.000
	Block	61.537	15	.000
	Model	61.537	15	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	257.872[a]	.207	.296

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			DP_DeathNoticeFiled		Percentage
	Observed		0	1	Correct
Step 1	DP_DeathNoticeFiled	0	175	13	93.1
		1	44	33	42.9
	Overall Percentage				78.5

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.021	.022	.856	1	.355	1.021	.977	1.067
	AllegedAggCir_Num	.300	.123	5.923	1	.015	1.350	1.060	1.718
	Sex_Crime(1)	.883	.471	3.519	1	.061	2.417	.961	6.079
	Vic_Police(1)	1.656	.659	6.311	1	.012	5.237	1.439	19.059
	Victim1_vs_mult(1)	.192	.374	.265	1	.607	1.212	.583	2.522

	D_RaceB(1)	-.409	.442	.853	1	.356	.664	.279	1.582
	Publicity_Factor(1)	1.303	.413	9.949	1	.002	3.679	1.638	8.267
	Vics_RaceW(1)	.632	.430	2.162	1	.141	1.881	.810	4.368
	Vics_Female(1)	.027	.383	.005	1	.944	1.027	.485	2.174
	Vics_Stranger(1)	-.257	.352	.533	1	.465	.773	.388	1.542
	Vics_Under18(1)	.519	.424	1.495	1	.221	1.680	.731	3.861
	VoteRep_P	.006	.021	.076	1	.782	1.006	.966	1.047
	DenselyPop	.523	.527	.983	1	.322	1.687	.600	4.741
	BlackCountyA_P	.229	.082	7.846	1	.005	1.257	1.071	1.475
	CountyRevA	-.001	.001	3.673	1	.055	.999	.998	1.000
	Constant	-4.393	1.384	10.070	1	.002	.012		

a. Variable(s) entered on step 1: D_Priors, AllegedAggCir_Num, Sex_Crime, Vic_Police, Victim1_vs_mult, D_RaceB, Publicity_Factor, Vics_RaceW, Vics_Female, Vics_Stranger, Vics_Under18, VoteRep_P, DenselyPop, BlackCountyA_P, CountyRevA.

A6.

Logistic Regression

Notes

Output Created		08-JUN-2016 09:45:19
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	297
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing

Syntax		LOGISTIC REGRESSION VARIABLES DP_Death /METHOD=ENTER D_Priors Victim1_vs_mult Plea_Guilty AppliedAggCir_Num MitCircum_Total Defenses_Num Vics_AnyHostage /CONTRAST (Victim1_vs_mult)=Indicator /CONTRAST (Plea_Guilty)=Indicator(1) /CONTRAST (Vics_AnyHostage)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	78	26.3
	Missing Cases	219	73.7
	Total	297	100.0
Unselected Cases		0	.0
Total		297	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

		Parameter coding
	Frequency	(1)

Vics_AnyHostage	0	52	.000
	1	26	1.000
Plea_Guilty	0	64	.000
	1	14	1.000
Victim1_vs_mult	Single victim	47	1.000
	Mult victim	31	.000

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 0	DP_Death	0	45	0	100.0
		1	33	0	.0
	Overall Percentage				57.7

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.310	.229	1.831	1	.176	.733

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	4.897	1	.027
		Victim1_vs_mult(1)	1.825	1	.177
		Plea_Guilty(1)	.414	1	.520
		AppliedAggCir_Num	4.845	1	.028
		MitCircum_Total	1.785	1	.182

	Defenses_Num	6.315	1	.012
	Vics_AnyHostage(1)	3.782	1	.052
Overall Statistics		17.471	7	.015

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	20.204	7	.005
	Block	20.204	7	.005
	Model	20.204	7	.005

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	86.074[a]	.228	.307

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 1	DP_Death	0	36	9	80.0
		1	16	17	51.5
	Overall Percentage				67.9

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.098	.071	1.863	1	.172	1.102	.958	1.268
	Victim1_vs_mult(1)	-.605	.558	1.174	1	.278	.546	.183	1.631
	Plea_Guilty(1)	-.512	.734	.486	1	.486	.600	.142	2.526
	AppliedAggCir_Num	.312	.189	2.726	1	.099	1.366	.943	1.978
	MitCircum_Total	-.005	.149	.001	1	.973	.995	.743	1.333
	Defenses_Num	-.883	.411	4.609	1	.032	.414	.185	.926
	Vics_AnyHostage(1)	.985	.560	3.092	1	.079	2.677	.893	8.025
	Constant	-.632	.801	.622	1	.430	.532		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, Plea_Guilty, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage.

A7.

Logistic Regression

Notes

Output Created		08-JUN-2016 09:56:29
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	297
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing

Syntax		LOGISTIC REGRESSION VARIABLES DP_Death /METHOD=ENTER D_Priors Victim1_vs_mult AppliedAggCir_Num MitCircum_Total Defenses_Num Vics_AnyHostage D_RaceB /CONTRAST (Victim1_vs_mult)=Indicator /CONTRAST (Vics_AnyHostage)=Indicator(1) /CONTRAST (D_RaceB)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	77	25.9
	Missing Cases	220	74.1
	Total	297	100.0
Unselected Cases		0	.0
Total		297	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

		Frequency	Parameter coding (1)
D_RaceB	0	63	.000

	1	14	1.000
Vics_AnyHostage	0	51	.000
	1	26	1.000
Victim1_vs_mult	Single victim	47	1.000
	Mult victim	30	.000

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 0	DP_Death	0	44	0	100.0
		1	33	0	.0
	Overall Percentage				57.1

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.288	.230	1.561	1	.212	.750

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	4.960	1	.026
		Victim1_vs_mult(1)	2.203	1	.138
		AppliedAggCir_Num	4.565	1	.033
		MitCircum_Total	1.603	1	.205
		Defenses_Num	6.823	1	.009
		Vics_AnyHostage(1)	3.528	1	.060

D_RaceB(1)	3.208	1	.073
Overall Statistics	20.998	7	.004

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	24.975	7	.001
	Block	24.975	7	.001
	Model	24.975	7	.001

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	80.193[a]	.277	.372

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 1	DP_Death	0	37	7	84.1
		1	13	20	60.6
	Overall Percentage				74.0

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.075	.072	1.078	1	.299	1.078	.936	1.241
	Victim1_vs_mult(1)	-.752	.582	1.670	1	.196	.471	.151	1.475
	AppliedAggCir_Num	.399	.217	3.388	1	.066	1.491	.974	2.280
	MitCircum_Total	.042	.146	.084	1	.772	1.043	.784	1.389
	Defenses_Num	-1.014	.428	5.605	1	.018	.363	.157	.840
	Vics_AnyHostage(1)	.835	.578	2.086	1	.149	2.305	.742	7.156
	D_RaceB(1)	1.596	.747	4.563	1	.033	4.933	1.141	21.333
	Constant	-.993	.817	1.477	1	.224	.371		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, D_RaceB.

A7i

Table from Memorandum:

Table D3. Impact of Case Characteristics and Social Factors on Prosecutorial Decisions to Seek the Death Penalty in Eligible Aggravated Murder Cases, 1981-2014, N=265						
	Model Presented in Report Death Penalty Sought R^2=0.2063			Corrected Model Death Penalty Sought R^2=0.2067		
Variable	Coefficient	Std. Error	P-value	Coefficient	Std. Error	P-value
Case Characteristics						
Prior Convictions(ln)	0.182***	0.069	0.008	0.183***	0.069	0.008
1 Victim	-0.106	0.380	0.780	-0.168	0.381	0.568
Alleged Aggravators	0.271**	0.121	0.026	0.267 **	0.121	0.028
Sex Crime	0.901*	0.473	0.057	0.906 *	0.472	0.055
Black Defendant	-0.549	-0.549	0.221	-0.556	0.449	0.216
Extensive Publicity	1.356***	1.356	0.001	1.353***	0.418	0.001
White Victim(s)	0.596	0.596	0.172	0.602	0.435	0.166
Female Victim(s)	-0.192	0.092	0.813	-0.074	0.389	0.850
Stranger Victim(s)	-0.437	0.437	0.222	-0.425	0.356	0.233
Child Victim(s)	0.482	0.482	0.261	0.464	0.429	0.280
Police Officer Victim(s)	1.540**	1.540	0.022	1.545**	0.675	0.022
Percent Republican	0.019	0.019	0.350	0.019	0.020	0.349
County Densely Populated	0.606	0.606	0.243	0.602	0.519	0.247
Percent Black	0.222***	0.222	0.007	0.222***	0.083	0.007
Per Capita Revenue(ln)	-0.401	-0.401	0.375	-0.412	0.452	0.363
Intercept	-2.932	3.090	0.343	-2.832	3.099	0.361

* significant at α = .10 ** significant at α = .05 *** significant at α = .01

^ 32 cases or 10.8% dropped from the analysis due to missing data

+When replaced with number of priors, number of violent priors was also statistically significant.

Original Table from Report (page 41):

Table D3. Impact of Case Characteristics and Social Factors on Prosecutorial Decisions to Seek the Death Penalty in Eligible Aggravated Murder Cases, 1981-2014				
N= 265	Death Penalty Sought			R^2 = 0.2063
Variable	Coefficient	Std. Error	P-value	Referent (Compared to)
Case Characteristics				
Prior Convictions	0.182***	0.069	0.008	
1 Victim	-0.106	0.380	0.780	Multiple victims
Alleged Aggravators	0.271**	0.121	0.026	
Sex Crime	0.901*	0.473	0.057	
Social Factors				
Black Defendant	-0.549	-0.549	0.221	Non-Black defendants
Extensive Publicity	1.356***	1.356	0.001	No extensive publicity
Victim Characteristics				
White Victim(s)	0.596	0.596	0.172	Non-White victims
Female Victim(s)	-0.192	-0.092	0.813	Males/both sexes
Stranger Victim(s)	-0.437	-0.437	0.222	White defendants
Child Victim(s)	0.482	0.482	0.261	Adult victim(s)
Police Officer Victim(s)	1.540**	1.540	0.022	Non-police victim(s)
County Characteristics				
Percent Republican	0.019	0.019	0.350	
County Densely Populated	0.606	0.606	0.243	
Percent Black	0.222***	0.222	0.007	
Per Capita Revenue	-0.401	-0.401	0.375	
Intercept	-2.932	3.090	0.343	

* significant at $\alpha = .10$ ** significant at $\alpha = .05$ *** significant at $\alpha = .01$

^ 32 cases or 10.8% dropped from the analysis due to missing data

+When replaced with number of priors, number of violent priors was also statistically significant. However, including number of priors resulted in a slightly better model fit. We therefore present the model including the total number of priors.

A7ii

Logistic Regression

Notes

Output Created		12-JUN-2016 13:45:40
Comments		
Input	Data	C:\Users\Nick\Desktop\court case\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	DP_DeathNoticeFiled=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	86
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VARIABLES DP_Death /METHOD=ENTER Log_priors Victim1_vs_mult AppliedAggCir_Num Log_mitigating_circum Defenses_Num Vics_AnyHostage D_RaceB /CONTRAST (Victim1_vs_mult)=Indicator /CONTRAST (Vics_AnyHostage)=Indicator(1) /CONTRAST (D_RaceB)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

[DataSet1] C:\Users\Nick\Desktop\court case\WA Death Penalty Adults 1981-2014.sav

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	55	64.0
	Missing Cases	31	36.0
	Total	86	100.0
Unselected Cases		0	.0

Total	86	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

		Frequency	Parameter coding (1)
D_RaceB	0	47	.000
	1	8	1.000
Vics_AnyHostage	0	36	.000
	1	19	1.000
Victim1_vs_mult	Single victim	34	1.000
	Mult victim	21	.000

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 0	DP_Death	0	36	0	100.0
		1	19	0	.0
	Overall Percentage				65.5

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.639	.284	5.079	1	.024	.528

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Log_priors	6.174	1	.013
		Victim1_vs_mult(1)	.189	1	.663
		AppliedAggCir_Num	2.284	1	.131
		Log_mitigating_circum	.002	1	.965
		Defenses_Num	3.835	1	.050
		Vics_AnyHostage(1)	4.199	1	.040
		D_RaceB(1)	.989	1	.320
	Overall Statistics		15.961	7	.025

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	20.402	7	.005
	Block	20.402	7	.005
	Model	20.402	7	.005

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	50.503[a]	.310	.428

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 1	DP_Death	0	32	4	88.9
		1	7	12	63.2
	Overall Percentage				80.0

a. The cut value is .500

Variables in the Equation

								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	Log_priors	.820	.454	3.269	1	.071	2.271	.933	5.523
	Victim1_vs_mult(1)	-.295	.734	.162	1	.688	.745	.177	3.136
	AppliedAggCir_Num	.509	.271	3.532	1	.060	1.663	.978	2.827
	Log_mitigating_circum	.855	.642	1.774	1	.183	2.351	.668	8.268
	Defenses_Num	-1.288	.563	5.240	1	.022	.276	.092	.831
	Vics_AnyHostage(1)	1.524	.734	4.310	1	.038	4.590	1.089	19.346
	D_RaceB(1)	1.076	.947	1.291	1	.256	2.933	.458	18.771
	Constant	-3.332	1.280	6.779	1	.009	.036		

a. Variable(s) entered on step 1: Log_priors, Victim1_vs_mult, AppliedAggCir_Num, Log_mitigating_circum, Defenses_Num, Vics_AnyHostage, D_RaceB.

Appendix B

B1

Logistic Regression

Notes

Output Created		09-JUN-2016 16:52:48
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	DP_DeathNoticeFiled=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	86
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VARIABLES DP_Death /METHOD=ENTER D_Priors Victim1_vs_mult AppliedAggCir_Num MitCircum_Total Defenses_Num Vics_AnyHostage D_RaceOrdinal /CONTRAST (Vics_AnyHostage)=Indicator(1) /CONTRAST (Victim1_vs_mult)=Indicator /CONTRAST (D_RaceOrdinal)=Indicator /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	76	88.4
	Missing Cases	10	11.6
	Total	86	100.0
Unselected Cases		0	.0
Total		86	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

			Parameter coding	
		Frequency	(1)	(2)
D_RaceOrdinal	1	53	1.000	.000
	2	14	.000	1.000
	3	9	.000	.000
Vics_AnyHostage	0	50	.000	
	1	26	1.000	
Victim1_vs_mult	Single victim	46	1.000	
	Mult victim	30	.000	

Block 0: Beginning Block

Classification Table[a,b]

		Predicted		
		DP_Death		Percentage
	Observed	0	1	Correct

Step 0	DP_Death	0	43	0	100.0
		1	33	0	.0
	Overall Percentage				56.6

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.265	.231	1.308	1	.253	.767

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	4.569	1	.033
		Victim1_vs_mult(1)	1.982	1	.159
		AppliedAggCir_Num	4.287	1	.038
		MitCircum_Total	1.534	1	.216
		Defenses_Num	6.312	1	.012
		Vics_AnyHostage(1)	3.276	1	.070
		D_RaceOrdinal	3.182	2	.204
		D_RaceOrdinal(1)	2.304	1	.129
		D_RaceOrdinal(2)	3.041	1	.081
	Overall Statistics		20.227	8	.010

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	23.991	8	.002
	Block	23.991	8	.002

	Model	23.991	8	.002

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	80.048[a]	.271	.363

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 1	DP_Death	0	36	7	83.7
		1	13	20	60.6
	Overall Percentage				73.7

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.074	.071	1.071	1	.301	1.077	.936	1.238
	Victim1_vs_mult(1)	-.720	.590	1.492	1	.222	.487	.153	1.546
	AppliedAggCir_Num	.406	.221	3.379	1	.066	1.500	.973	2.313
	MitCircum_Total	.047	.147	.101	1	.751	1.048	.785	1.398
	Defenses_Num	-.996	.432	5.322	1	.021	.369	.158	.861
	Vics_AnyHostage(1)	.842	.581	2.103	1	.147	2.321	.744	7.243
	D_RaceOrdinal			4.574	2	.102			
	D_RaceOrdinal(1)	-.216	.826	.068	1	.794	.806	.160	4.065
	D_RaceOrdinal(2)	1.409	1.006	1.961	1	.161	4.092	.569	29.402
	Constant	-.866	.934	.859	1	.354	.421		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, D_RaceOrdinal.

B2.

Logistic Regression

Notes

Output Created		09-JUN-2016 16:57:35
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	DP_DeathNoticeFiled=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	86
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VARIABLES DP_Death /METHOD=ENTER D_Priors Victim1_vs_mult AppliedAggCir_Num MitCircum_Total Defenses_Num Vics_AnyHostage DefRaceXVicRace /CONTRAST (Vics_AnyHostage)=Indicator(1) /CONTRAST (Victim1_vs_mult)=Indicator /CONTRAST (DefRaceXVicRace)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	60	69.8
	Missing Cases	26	30.2
	Total	86	100.0
Unselected Cases		0	.0
Total		86	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

			Parameter coding	
		Frequency	(1)	(2)
DefRaceXVicRace	White def, white vic	48	.000	.000
	Black def, white vic	10	1.000	.000
	Black def, black vic	2	.000	1.000
Vics_AnyHostage	0	38	.000	
	1	22	1.000	
Victim1_vs_mult	Single victim	39	1.000	
	Mult victim	21	.000	

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 0	DP_Death	0	36	0	100.0
		1	24	0	.0
	Overall Percentage				60.0

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.405	.264	2.367	1	.124	.667

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	1.364	1	.243
		Victim1_vs_mult(1)	2.063	1	.151
		AppliedAggCir_Num	3.624	1	.057
		MitCircum_Total	.250	1	.617
		Defenses_Num	3.646	1	.056
		Vics_AnyHostage(1)	1.447	1	.229
		DefRaceXVicRace	2.170	2	.338
		DefRaceXVicRace(1)	2.000	1	.157
		DefRaceXVicRace(2)	.086	1	.769
	Overall Statistics		13.066	8	.110

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	15.313	8	.053
	Block	15.313	8	.053
	Model	15.313	8	.053

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	65.448[a]	.225	.305

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 1	DP_Death	0	30	6	83.3
		1	12	12	50.0
	Overall Percentage				70.0

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.022	.073	.087	1	.768	1.022	.886	1.179
	Victim1_vs_mult(1)	-.615	.651	.895	1	.344	.540	.151	1.934
	AppliedAggCir_Num	.416	.234	3.158	1	.076	1.516	.958	2.398
	MitCircum_Total	.071	.151	.223	1	.637	1.074	.799	1.444
	Defenses_Num	-.936	.442	4.489	1	.034	.392	.165	.932
	Vics_AnyHostage(1)	.535	.628	.726	1	.394	1.708	.499	5.848
	DefRaceXVicRace			3.432	2	.180			

	DefRaceXVicRace(1)	1.490	.831	3.218	1	.073	4.438	.871	22.612
	DefRaceXVicRace(2)	1.166	1.653	.498	1	.481	3.208	.126	81.833
	Constant	-.961	.990	.941	1	.332	.383		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, DefRaceXVicRace.

B3i.

```
USE ALL.
COMPUTE filter_$=(DP_Death=1).
VARIABLE LABELS filter_$ 'DP_Death=1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
FREQUENCIES VARIABLES=D_LastName
  /ORDER=ANALYSIS.
```

Frequencies

Notes

Output Created		06-JUN-2016 09:43:20
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	DP_Death=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	35
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.

	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=D_LastName /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.00

Statistics

D_LastName

N	Valid	35
	Missing	0

D_LastName

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bartholomew	1	2.9	2.9	2.9
	Benn	1	2.9	2.9	5.7
	Brett	1	2.9	2.9	8.6
	Brown	1	2.9	2.9	11.4
	Campbell	1	2.9	2.9	14.3
	Clark	1	2.9	2.9	17.1
	Cross	1	2.9	2.9	20.0
	Davic	1	2.9	2.9	22.9
	Davis	1	2.9	2.9	25.7
	Dodd	1	2.9	2.9	28.6
	Elledge	1	2.9	2.9	31.4
	Elmore	1	2.9	2.9	34.3
	Finch	1	2.9	2.9	37.1
	Gentry	1	2.9	2.9	40.0
	Gregory	2	5.7	5.7	45.7
	Harris	1	2.9	2.9	48.6
	Hazen	1	2.9	2.9	51.4
	Jeffries	1	2.9	2.9	54.3

	Lord	1	2.9	2.9	57.1
	Luvene	1	2.9	2.9	60.0
	Mak	1	2.9	2.9	62.9
	Marshall	1	2.9	2.9	65.7
	Rice	1	2.9	2.9	68.6
	Roberts	1	2.9	2.9	71.4
	Rupe	2	5.7	5.7	77.1
	Sagastegui	1	2.9	2.9	80.0
	Scherf	1	2.9	2.9	82.9
	Schierman	1	2.9	2.9	85.7
	Spillman	1	2.9	2.9	88.6
	Stenson	1	2.9	2.9	91.4
	Thomas	1	2.9	2.9	94.3
	Woods	1	2.9	2.9	97.1
	Yates	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

Remove duplicates (use only most recent convictions):

1. Davis/Davic (ID#180)

2.Gregory (ID#216)

3. Rupe (ID#7)

D_LastName

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bartholomew	1	3.1	3.1	3.1
	Benn	1	3.1	3.1	6.3
	Brett	1	3.1	3.1	9.4
	Brown	1	3.1	3.1	12.5
	Campbell	1	3.1	3.1	15.6
	Clark	1	3.1	3.1	18.8
	Cross	1	3.1	3.1	21.9

Davic	1	3.1	3.1	25.0
Dodd	1	3.1	3.1	28.1
Elledge	1	3.1	3.1	31.3
Elmore	1	3.1	3.1	34.4
Finch	1	3.1	3.1	37.5
Gentry	1	3.1	3.1	40.6
Gregory	1	3.1	3.1	43.8
Harris	1	3.1	3.1	46.9
Hazen	1	3.1	3.1	50.0
Jeffries	1	3.1	3.1	53.1
Lord	1	3.1	3.1	56.3
Luvene	1	3.1	3.1	59.4
Mak	1	3.1	3.1	62.5
Marshall	1	3.1	3.1	65.6
Rice	1	3.1	3.1	68.8
Roberts	1	3.1	3.1	71.9
Rupe	1	3.1	3.1	75.0
Sagastegui	1	3.1	3.1	78.1
Scherf	1	3.1	3.1	81.3
Schierman	1	3.1	3.1	84.4
Spillman	1	3.1	3.1	87.5
Stenson	1	3.1	3.1	90.6
Thomas	1	3.1	3.1	93.8
Woods	1	3.1	3.1	96.9
Yates	1	3.1	3.1	100.0
Total	32	100.0	100.0	

B3ii.

Logistic Regression

Notes

Output Created		08-JUN-2016 14:53:20
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav
	Active Dataset	DataSet1
	Filter	DP_DeathNoticeFiled=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	83
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VARIABLES DP_Death /METHOD=ENTER D_Priors Victim1_vs_mult AppliedAggCir_Num MitCircum_Total Defenses_Num Vics_AnyHostage D_RaceB /CONTRAST (Victim1_vs_mult)=Indicator /CONTRAST (Vics_AnyHostage)=Indicator(1) /CONTRAST (D_RaceB)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	73	88.0
	Missing Cases	10	12.0
	Total	83	100.0
Unselected Cases		0	.0
Total		83	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

		Frequency	Parameter coding (1)
D_RaceB	0	61	.000
	1	12	1.000
Vics_AnyHostage	0	48	.000
	1	25	1.000
Victim1_vs_mult	Single victim	44	1.000
	Mult victim	29	.000

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 0	DP_Death	0	43	0	100.0
		1	30	0	.0
	Overall Percentage				58.9

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.360	.238	2.290	1	.130	.698

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	3.860	1	.049
		Victim1_vs_mult(1)	2.245	1	.134
		AppliedAggCir_Num	4.712	1	.030
		MitCircum_Total	1.458	1	.227
		Defenses_Num	5.424	1	.020
		Vics_AnyHostage(1)	3.489	1	.062
		D_RaceB(1)	1.763	1	.184
	Overall Statistics		18.633	7	.009

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	21.821	7	.003
	Block	21.821	7	.003
	Model	21.821	7	.003

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	77.051[a]	.258	.348

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 1	DP_Death	0	36	7	83.7
		1	12	18	60.0
	Overall Percentage				74.0

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.079	.073	1.147	1	.284	1.082	.937	1.249
	Victim1_vs_mult(1)	-.673	.586	1.320	1	.251	.510	.162	1.609
	AppliedAggCir_Num	.378	.210	3.230	1	.072	1.459	.966	2.202
	MitCircum_Total	.008	.154	.002	1	.960	1.008	.745	1.362
	Defenses_Num	-.934	.425	4.818	1	.028	.393	.171	.905
	Vics_AnyHostage(1)	.911	.583	2.439	1	.118	2.487	.793	7.803
	D_RaceB(1)	1.441	.771	3.491	1	.062	4.224	.932	19.148
	Constant	-1.052	.823	1.632	1	.201	.349		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, D_RaceB.

B4.

Logistic Regression

Notes

Output Created		09-JUN-2016 17:39:20
Comments		
Input	Data	C:\Users\nscurich\Desktop\WA Death Penalty Adults 1981-2014.sav

	Active Dataset	DataSet1
	Filter	DP_DeathNoticeFiled=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	83
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VARIABLES DP_Death /METHOD=ENTER D_Priors Victim1_vs_mult AppliedAggCir_Num MitCircum_Total Defenses_Num Vics_AnyHostage D_RaceB /CONTRAST (Victim1_vs_mult)=Indicator /CONTRAST (Vics_AnyHostage)=Indicator(1) /CONTRAST (D_RaceB)=Indicator(1) /PRINT=CI(95) /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.03

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	73	88.0
	Missing Cases	10	12.0
	Total	83	100.0
Unselected Cases		0	.0
Total		83	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

Categorical Variables Codings

		Frequency	Parameter coding (1)
D_RaceB	0	61	.000
	1	12	1.000
Vics_AnyHostage	0	48	.000
	1	25	1.000
Victim1_vs_mult	Single victim	44	1.000
	Mult victim	29	.000

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			DP_Death		Percentage
	Observed		0	1	Correct
Step 0	DP_Death	0	43	0	100.0
		1	30	0	.0
	Overall Percentage				58.9

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.360	.238	2.290	1	.130	.698

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	D_Priors	1.935	1	.164
		Victim1_vs_mult(1)	2.245	1	.134
		AppliedAggCir_Num	6.424	1	.011
		MitCircum_Total	1.458	1	.227
		Defenses_Num	3.342	1	.068
		Vics_AnyHostage(1)	1.867	1	.172
		D_RaceB(1)	1.763	1	.184
	Overall Statistics		15.999	7	.025

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	18.572	7	.010
	Block	18.572	7	.010
	Model	18.572	7	.010

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	80.300[a]	.225	.303

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Classification Table[a]

		Predicted		
		DP_Death		Percentage
	Observed	0	1	Correct

Step 1	DP_Death	0	36	7	83.7
		1	14	16	53.3
	Overall Percentage				71.2

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D_Priors	.031	.066	.228	1	.633	1.032	.907	1.174
	Victim1_vs_mult(1)	-.541	.563	.920	1	.337	.582	.193	1.757
	AppliedAggCir_Num	.496	.233	4.509	1	.034	1.642	1.039	2.594
	MitCircum_Total	-.024	.148	.026	1	.872	.976	.730	1.306
	Defenses_Num	-.718	.396	3.290	1	.070	.488	.224	1.060
	Vics_AnyHostage(1)	.598	.569	1.102	1	.294	1.818	.596	5.549
	D_RaceB(1)	1.456	.751	3.757	1	.053	4.288	.984	18.693
	Constant	-1.147	.816	1.975	1	.160	.318		

a. Variable(s) entered on step 1: D_Priors, Victim1_vs_mult, AppliedAggCir_Num, MitCircum_Total, Defenses_Num, Vics_AnyHostage, D_RaceB.

Appendix C

Evaluation of "The Role of Race in Washington State Capital Sentencing, 1981-2014."

Prepared by Nicholas Scurich, Ph.D.

February 21, 2016

Contents

1.0 Background

I was retained by Counsel on January 27, 2016 to evaluate a report prepared by Professor Katherine Beckett, Ph.D. and Heather Evans, M.A. entitled, "The Role of Race in Washington State Capital Sentencing, 1981-2014." I have limited the scope of my evaluation to issues related to the statistics and methodology described in the report. My evaluation does not speak to the institution of capital punishment in any particular case or in general, and I take no position on whether the death penalty is or is not a desirable policy.

1.1 Qualifications

My curriculum vitae is attached to this report. In brief, I am an assistant professor (tenure-track) at the University of California, Irvine with a joint appointment in the Department of Criminology, Law and Society, and the Department of Psychology and Social Behavior. My degrees include a B.A., M.A., and Ph.D. – all in psychology – from the University of Southern California.

My research broadly concerns statistics and quantitative reasoning in legal settings. I am the author of over 30 peer-reviewed journal articles, book chapters, and law review articles. Nearly half of my scholarly articles concern the legal use of actuarial (statistical) models to assess the risk of violent and sexual recidivism. My research has been funded by state and federal agencies, and my research has been recognized by awards from several scholarly societies. I am on the editorial board of Law and Human Behavior, a leading interdisciplinary law and social science journal. In this capacity, I regularly review empirical articles as part of the peer-review process.

As a faculty member, I have taught courses on research methods to doctoral students in psychology and criminology. I have also taught courses at the graduate level that examine both the substantive and methodological issues raised in the Beckett and Evans report. In summary, I am qualified to provide an expert opinion regarding the methodology used and conclusions reached by Beckett and Evans. Any opinions described herein are my own and do not represent any organization with which I am affiliated.

2.0 Overview of the Beckett and Evans Report

2.1 Summary of the Beckett and Evans Report

The report principally examined what effect race has in the imposition of capital punishment in the State of Washington since the current death penalty statute was enacted in 1981. From December 1981 through May 2014, there were 297 death-penalty eligible cases; prosecutors sought the death penalty in 86 of these cases, and the death penalty was imposed in 35 cases. Binary logistic regression models were used to determine whether, ceteris paribus, the race of the defendant or the race of the victim influenced whether prosecutors sought the death penalty or whether juries imposed the death penalty. The analyses revealed that neither the race of the defendant nor race of the victim influenced whether prosecutors decided to seek the death penalty. However, the race of the defendant was related to whether juries decided to impose the death penalty. The odds increase by 4.5 that a black defendant received the death penalty vis-à-vis a defendant of any other race. The report concludes that this finding furnishes evidence that "race-blindness" does not exist with respect to the imposition of capital punishment in the State of Washington.

2.2 Caveat Emptor

I have not had access to the data file that Beckett and Evans used to conduct their analyses. I base my evaluation strictly on the numbers reported in the document. I can neither affirm nor deny that those numbers are accurate; if they are inaccurate, then some of my calculations and criticism could be potentially inaccurate as well. Furthermore, I did not verify that the sample utilized by Beckett and Evans does in fact include every single death penalty eligible case in the State for Washington from 1981-2014. If cases are missing, the reported results might also change, in which case my evaluation would potentially need to be modified.

3.0 Statistical and Methodological Issues with the Beckett and Evans Analyses

3.1 Unknown reliability of coding

The Beckett and Evans report describes the results of a "study [that] analyzes data derived from trial reports pertaining to aggravated murder cases filed with the Washington State Supreme Court between December 1981 and May 31, 2014 for which a trial report is available, a total of 330 cases."[1] Two University of Washington students coded the trial reports "according to a detailed coding protocol,"[2] and the students' coding "was periodically audited by the authors to ensure reliability."[3] Information was also gathered from other sources and included in the study. Appendix C provides a list of the variables included in the study.[4] No other information regarding the coding procedure or the operational definition[5] of the variables is provided.

It is customary in social science research to provide an estimate of the degree to which independent evaluators agree when coding observations.[6] This can be accomplished by selecting a subset of the total cases, and having two trained coders individually evaluate each of the selected cases. The degree to which the coding is in agreement is known as *interrater reliability.*[7] It is crucial to know the degree of reliability because reliability of measurement sets an upper bound limit on the validity of any results.[8] Thus, if measurement lacks reliability, any inferences based upon that measurement could be spurious.

The Beckett and Evans report provides no estimate of interrater reliability. An implicit assumption might be that the two coders were always in perfect agreement – i.e., no clerical errors were made – when coding observations from the trial reports. There is no empirical evidence provided to support this assumption. Moreover, some of the variables appear to require a degree of subjectivity in interpretation. For instance, "extensive publicity" was a significant predictor of whether prosecutors sought the death penalty (i.e., filed a death notice).[9] Exactly what constitutes "extensive" publicity as opposed to 'non-extensive' publicity about the trial is never explained in the text, and Appendix C simply states that this variable was "coded: 1 =Yes; 0= No."[10]

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[1] Beckett & Evans at 13.
[2] Beckett & Evans at 14. Footnote 55 indicates that the protocol was developed in consultation with two attorneys, Lila Silverstein and Neil Fox.
[3] Beckett & Evans at 14.
[4] Beckett & Evans at 37-38.
[5] An operational definition refers to the official definition used in a particular study.
[6] Rosenthal, R., & Rosnow, R.L. (1991). *Essentials of behavioral research: Methods and data analysis* (2nd ed) at 46-65.
[7] Kazdin, A.E. (2003). *Research design in clinical psychology* (4th ed.) at 359. There are other metrics of interrater reliability besides the percentage of agreement, such as Kappa or Pearson product-moment correlations.
[8] While reliability basically refers to the consistency of measurement, validity basically refers to whether one is measuring the construct of interest accurately. Rosenthal & Rosnow, supra note 6, at 46. Reliability is necessary but not sufficient for validity.
[9] Beckett & Evans at 27.
[10] Beckett & Evans at 38.

The same concern applies to other, ostensibly more objective variables. For example, defendant race – the focal point of the study—was classified into one of three categories: white, black, or other race.[11] It is not clear whether this classification was made strictly on the basis of information provided in the trial report or if other sources were consulted to make this determination. There is also no explanation of how potentially ambiguous cases were handled; for example, whether mixed-race defendants classified as "other race" or not. Of course, similar questions apply to the race of the victim, the other focal point of the study, as well as many of the other variables that were included in the statistical models.

In summary, the Beckett and Evans report fails to provide basic information regarding how the variables of interest were operationally defined, how and from what sources the variables were measured, or any indicia of interrater reliability. This information is fundamental to evaluating the inferences that can be deduced from the data. The well-known aphorism "garbage in, garbage out" aptly describes this issue.[12] Whether garbage, as it were, went in to the models or not cannot be ascertained from the Beckett and Evans report.

3.2 Model goodness of fit test statistics are not reported

An authoritative text on multivariate statistics notes, "a common first step in any analysis is to ask if the predictors, as a group, contribute to prediction of the outcome. In logistic regression, this is the comparison of the constant-only model with a model that has the constant plus all predictors. If no improvement is found when all predictors are added, the predictors are unrelated to outcome."[13] Similarly, *the* authoritative text on logistic regression notes, "The guiding principle with logistic regression is the same: Compare observed values of the response variable to predicted values obtained from models with and without the variable in question."[14]

The Beckett and Evans report describes the results of four logistic regression models.[15] No information is reported on the model goodness of fit test statistics. That is, no information is provided to indicate that the model including the predictor variables improves the model goodness of fit over the constant-only model. In the absence of such information, it is inappropriate to draw inferences about the individual predictors included in the model.

The Beckett and Evans report does report "R^2" for each logistic regression model, which is described as the "proportion of variation in outcomes explained."[16] This is an appropriate description of "R^2" (R-squared) for linear regression but not logistic regression. As others have noted, "numerous formulas have been devised to yield an equivalent of this concept for the logistic model. None, however, renders the meaning of variance explained. Furthermore, none corresponds to predictive efficiency and none can be

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[11] Beckett & Evans at 37.
[12] http://www.worldwidewords.org/qa/qa-gar1.htm
[13] Tabachnick, B.G. & Fidel, L.S. (2013). *Using multivariate statistics* (6th ed.) at 460.
[14] Hosmer, D.W., & Lemeshow, S. (2000). *Applied logistic regression* (2nd ed.) at 12.
[15] Beckett & Evans at 23-31.
[16] Beckett & Evans at 27.

tested in an inferential framework."[17] Thus, statements by Beckett and Evans such as "adding social factors to the model more than doubles the proportion of variation in outcomes explained (to 20%)"[18] are plainly incorrect.

In summary, again, the report fails to provide basic information that is essential to evaluating the statistical models. Indeed, no information is provided to suggest that the predictors – as a group — improve the fit of the model over the constant-only model. If the predictors do not improve the model fit, then it is inappropriate to interpret the individual predictors, even if they are "statistically significant."

3.3 Type-I errors and "p-hacking"

Null hypothesis significance testing is the most commonly method used to analyze data in social science.[19] In a nutshell, this method tests whether the observed data support rejecting "the null hypothesis." The null hypothesis is that there is zero effect, or no difference between treatment conditions on some variable of interest. Rejection of the null hypothesis provides some corroboration of the converse hypothesis, generally that an effect exists or that differences between treatment conditions are not due to random variation. There is, of course, always a possibility that one would inappropriately reject the null hypothesis, a so-called "Type-I error," thereby falsely corroborating the hypothesis that differences exist between treatment conditions. The probability of this occurring is known as a "p-value." By convention, a p-value of 5% or less is considered acceptable to reject the null hypothesis in social science studies.[20]

The use of Null Hypothesis Statistical Tests (NHSTs) has been a source of controversy in the social science for decades.[21] The controversy has arisen again, this time in response to empirical evidence demonstrating that published findings based on NHSTs fail to replicate at an alarming rate.[22] One well-known cause of this problem is known as *publication bias*, which refers to the tendency to publish only "significant" effects (i.e., findings that reject the null hypotheses) while "non-significant" findings do not get published.[23] If the p-value threshold is 5%, then one would expect to reject the null hypothesis 1 time

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[17] Peng, C. Y. J., & So, T. S. H. (2002). Logistic regression analysis and reporting: A primer. *Understanding Statistics: Statistical Issues in Psychology, Education, and the Social Sciences*, 1(1), 31-70 at 45. (Internal citations omitted.) The authoritative book on logistic regression also explicitly recommends against using R^2: "we do not recommend routine publishing of R^2 values with results from fitted logistic regression models." Hosmer & Lemeshow, supra note 14, at 167.

[18] Beckett & Evans at 27.

[19] See generally Nickerson, R. S. (2000). Null hypothesis significance testing: a review of an old and continuing controversy. *Psychological Methods*, *5*(2), 241-301.

[20] This decision criterion or threshold is technically known to as "alpha." Nickerson, supra note 19, at 242. For the sake of clarity in discussion, I will use the term "p-value threshold" to refer to alpha herein.

[21] See Cohen, J. (1994). The earth is round (p<. 05). *American Psychologist, 49*, 997–1003.

[22] Pashler, H., & Wagenmakers, E. J. (2012). Editors' introduction to the special section on replicability in psychological science: A crisis of confidence?. *Perspectives on Psychological Science*, *7*(6), 528-530; Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, *349*(6251), aac4716. (finding that about 2 in 3 experimental and correlation studies replicated)

[23] Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin, 86,* 638–641.

in 20 tests (when the null hypothesis is true) just by chance alone; it is feared, then, that this rejection is the one that gets published, while the other 19 never get mentioned.

More recently, scholars have demonstrated that reported p-values can be highly inaccurate and misleading as a result of myriad practices conducted by social scientists.[24] The formal logic of NHST requires that all hypotheses, models, variables, level of measurement, and comparisons be specified *a priori*, before the data are observed by researchers. Searching through data *ex post*, modifying levels of measures, including and removing variables from models/comparisons, and selectively reporting "significant results" undermines the observed p-value.[25] This practice is referred to as "p-hacking" and it has been empirically demonstrated that engaging in such practice "can allow researchers to get most studies to reveal significant relationships between truly unrelated variables."[26] Consequently, there has been a movement encouraging researchers to preregister their study methodology and planned data analysis before actually analyzing their data.[27]

The Beckett and Evans report openly admits to running numerous analyses with different variables that are not reported: "As a precaution, we conducted careful analyses of our models, including and excluding case county characteristics to gauge their impact on the overall results. We present models that include theoretically and substantively important variables and findings that ensure across various model specifications."[28] The report also notes various transformations (of levels of measurement) that were conducted but ignored because doing so did not contribute to the model: "The number of defenses and aggravators also showed some signs of skew, but after testing, the model fit was better (assessed by comparing pseudo R^2 scores) when these variables were not logged."[29] Relatedly, certain variables were inexplicably re-categorized when included in the model. For example, defendant race was originally classified as one of three types (black; white; or other), yet all of the regression models combined 'white'

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[24] See generally Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2014). P-curve: A key to the file-drawer. *Journal of Experimental Psychology: General, 143*(2), 534-547; Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*(11), 1359-1366.

[25] Simmons et al., 2011, supra note 24; Gelman, A., & Loken, E. (2014). The statistical crisis in science: Data-dependent analysis—a "garden of forking paths"—explains why many statistically significant comparisons don't hold up. *American Scientist.* Available at: https://www.americanscientist.org/issues/pub/2014/6/the-statistical-crisis-in-science/1

[26] Simonsohn et al 2014, supra note 24, at 535.

[27] E.g., http://www.apa.org/science/about/psa/2015/08/pre-registration.aspx; and https://osf.io/8mpji/wiki/home/

[28] Beckett & Evans at 17. Another example appears on page 29: "(We also tested the significance of a concomitant sex crime and whether the victim was a law enforcement officer; neither of these factors was found to be a significant predictor of sentencing outcomes and are not included in the model shown below)." Another example appears in the footnote of table D3 (in the Appendix, page 41): "When replaced with number of priors, number of violent priors was also statistically significant. However, including number of priors resulted in a slightly better model fit. We therefore present the model including the total number of priors."). This list is by no means exhaustive. Beckett and Evans allude to other variables that were tested – but ultimately not reported – at numerous points throughout the report.

[29] Beckett & Evans at 19. It is important to note that transformations are appropriate if doing so will lead the data to satisfy basic assumptions of the statistical model. However, the decision to transform variables should not depend on whether it leads to a desirable result.

and 'other' defendants and compared this group to black defendants. The rationale underlying this decision is never articulated.[30]

There were also numerous variables that were coded but not included in the regression models. For example, the table in Appendix C lists 34 variables;[31] the regression model examining the decision to seek the death penalty has 15 variables[32] and the regression model examining the decision to impose the death penalty has 7 variables.[33] With regard to the latter model, Beckett and Evans do note that the reduced sample size (n = 76 cases) necessitates a reduction in the number of predictors that can be included in the model,[34] but they provide no explanation or rationale for why certain variables were included and others were not.

It is worth further commenting on the death-penalty-imposed regression model, as it forms the crux of the report and is the only model in which race appears to have any effect. Beckett and Evans ran two separate regressions, the first included 7 "case characteristics": prior convictions; 1 victim; pled guilty; applied aggravators; mitigating circumstances; defenses; victim held hostage (table 6).[35] The second regression model includes "case characteristics" and added "defendant race" for a total of 7 variables: prior conviction; 1 victim; applied aggravators; mitigating circumstances; defenses; victim held hostage; black defendant (table 7).[36] The second model omitted the "pled guilty" variable. Therefore, it is inappropriate to conclude, as Beckett and Evans do,[37] that an increase in "the amount of variation explained" is solely attributable to the addition of defendant race in the model (since the second model omitted a variable in addition to adding one).[38] Perplexingly, Beckett and Evans justify the decision to omit the "pled guilty" variable in the second model by stating: "In order to accommodate the addition of defendant-race, we did not include the nature of the defendants' plea in this model."[39]

The exact p-value associated with the major finding that "black defendants are four and one half times more likely than similarly situated non-black defendants to be sentenced to death..."[40] is not reported in the main body of text. Table 7 states that a single asterisk indicates the result is "significant at $\alpha = .10$." This implies that the p-value is not larger than 0.10.[41] Beckett and Evans state that, "By convention, social scientists often identify statistical significance when there is a 5 percent chance or less of finding this

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[30] Note that lumping together other race and white defendants creates a group with 81% of the total sample compared to black defendants which constitute 19% of the sample (see Appendix D).
[31] Beckett & Evans at 37-38.
[32] Beckett & Evans at 27.
[33] Beckett & Evans at 31.
[34] Beckett & Evans at 29.
[35] Beckett & Evans at 30.
[36] Beckett & Evans at 31.
[37] Beckett & Evans at 30.
[38] In other words, "the models must be nested to be compared; all components of the smaller model must be also be in the bigger model." Tabachnick & Fidell, supra note 13, p 448. Two additional points are worth noting. First, the change in "the amount of variation explained" between the two models was not tested statistically (or at least the results of any such test are not reported). Second, as noted in section 3.2, contrary to the authors' assertion, an R^2 value associated with logistic regression is "not the amount of variance explained."
[39] Beckett & Evans at 30.
[40] Beckett & Evans at 30.
[41] Table E3 in the Appendix (page 43) appears to indicate that the associated p-value is .055.

result by chance (noted as p-value $\leq .05$.) However, when samples are small or hypotheses are directional (e.g., the researcher expects covariates to increase and not decrease the probability of receiving the death penalty) a cut off of p-value $\leq .10$ is used instead."[42] No authority is cited to support these latter assertions. Comments by leading authorities in social science research methodology suggest the opposite.[43]

In summary, the regression models reported by Beckett and Evans are not the only models they tested. Rather, other models were apparently conducted and then modifications were made with regard to what variables to include or exclude in the model and how the variables were categorized or scaled. With all of this contorting of the data, the resulting p-value was merely "significant at $\alpha = .10$." Even if one accepts the unsupported assertion that "$p \leq .10$" is an acceptable threshold in the social sciences, in reality, the true p-value is likely to be much greater given the amount of p-hacking that occurred.

3.4 Type-II errors and statistical power

As previously noted, one type of error associated with NHST is *inappropriately rejecting* the null hypothesis; that is, declaring an effect or difference between treatment conditions exists when it does not. A second type of error is *inappropriately failing to reject* the null hypothesis; that is, failing to appreciate a relationship between variables or differences between treatment conditions, a so-called Type-II error. 1 minus the Type-II error rate equals *statistical power* – or simply "power." Power is the probability of correctly rejecting the null hypothesis.[44] It is essential to estimate power before conducting a study that involves inferential statistics: if a study is completely underpowered, it could not detect an effect even if such an effect exists. Power equal to or greater than 80% is conventionally considered acceptable in the social sciences.[45]

Power is a function of three variables: the sample size (n); the p-value threshold; and the effect size.[46] This latter entity basically refers to the size of the relationship between variables or how large of a difference there is between groups. All else being equal, power increases as sample size increases, as the p-value threshold increases, and as the effect size increases. Rather than estimate power, researchers developing a study design are often more interested in determining the minimum required sample size.

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[42] Beckett & Evans at 16.

[43] Kazdin, supra note 7, at 440 ("Tradition has led us to use alphas of $p < .05$ and .01 of decision making."); Cohen, J. (1992). A power primer. *Psychological Bulletin,* 112(1), 155-159, at 156 ("The risk of mistakenly rejecting the null hypothesis and thus committing a Type I error…unless otherwise stated (and it rarely is), it is taken to equal .05 (part of the Fisherian legacy)."; Cohen, J. (1990). Things I have learned (so far). *American Psychologist, 45*, 1304-1312, at 1307 ("[C]onsider the sanctified (and sanctifying) magic .05 level. This basis for decision has played a remarkable role in the social sciences and in the lives of social science."); Rosenthal & Rosnow, supra note 6, at 255 ("It may not be an exaggeration to say that many Ph.D. students have come to perceive the .05 alpha [p-value] as axiomatic (i.e., a universal rule…"); Karl Pearson – a seminal figure in the development of NHST– apparently had doubts about the p-value threshold of .10 (Cowles, M., & Davis, C. (1982). On the origins of the. 05 level of statistical significance. *American Psychologist, 37*(5), 553-558, at 555).

[44] Rosenthal & Rosnow, supra note 6, at 439.

[45] Cohen (1992), supra note 43, at 156; Kazdin, supra note 7, at 441 ("A convention has been proposed an generally accepted –namely, that power in a study ought to be .80 when alpha = .05.")

[46] Cohen (1992), supra note 43, at 156.

This is accomplished by assuming a fixed level of power (e.g., 80%), a fixed p-value threshold (i.e., 5%), estimating the effect size, and solving for the necessary sample size given the assumptions. Some scientific journals require authors to explicitly state in the manuscript how the sample size was determined or else the journal will not agree to review the submission.[47]

I conducted a series power calculations based on the Beckett and Evans report.[48] The analysis assumes a p-value threshold of 5% and power of 80%, as are convention in social science,[49] and shows the effect of different assumptions about the expected effect size on the requisite sample size.[50] These calculations all make the simplifying assumption that a single binary predictor (e.g., race of defendant: black vs. non-black) is included in the model. Since additional predictors require larger sample sizes, the following values should be considered to be the absolutely minimum number of participants required to obtain power of 80%. Note that some of the odds ratios were selected because they approximate the conventional effect sizes of small (odds ratio = 1.5), medium (odds ratio = 2.5), and large (odds ratio = 4.0) in the social sciences.[51]

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[47] http://www.psychologicalscience.org/index.php/publications/journals/psychological_science/ps-submissions#STAT

[48] This is not post hoc power analysis, which has been castigated for a variety of reasons. See, e.g., Hoenig, J. M., & Heisey, D. M. (2012). The abuse of power. *The American Statistician, 55*(1), 19-24; Levine, M., & Ensom, M. H. (2001). Post hoc power analysis: an idea whose time has passed?. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy, 21*(4), 405-409. Rather, these calculations are akin to the *a priori* power analysis that authors are encouraged to and now sometimes required to conduct before collecting data. (Levine & Ensom at 405: "many research and grant committees and professional journals began to expect investigators to provide details of their sample size estimate when outlining the methods of a clinical trial.")

[49] Cohen (1992), supra note 43, at 156.

[50] All calculations were made using a power calculator that is freely available on Professor Eugene Demidenko's faculty website: http://www.dartmouth.edu/~eugened/power-samplesize.php. The specific algorithms used by the calculator are described in Demidenko, E. (2007). Sample size determination for logistic regression revisited. *Statistics in Medicine, 26*(18), 3385-3397, at 3389.

[51] Cohen (1992), supra note 43, who wrote the authoritative text on power analysis in the social science, uses a metric other than odds ratios to describe effect sizes. He uses "d", the difference expressed in units of the within-population standard deviation (at 157). He notes that "small, medium, and large [effect sizes] are d = .20, .50, and .80." (at 157). Cohen's d can be converted to odds ratios; doing so results in an odds ratio of 1.4373, 2.4766, and 4.2675 for small, medium, and large effect sizes, respectively. Thus, the odds ratio of 1.5, 2.5, and 4.0 will be referred to as small, medium, and large.

Table 1

Power calculations: minimum sample size required for a given estimated effect size (assuming 80% power and a p-value threshold of 5%).

Death Penalty Sought Regression (n = 296)[52]		Death Penalty Imposed Regression (n = 85)[53]	
Effect Size: Odds Ratio	Required Sample Size	Effect Size: Odds Ratio	Required Sample Size
1.5	1,330	1.5	1,410
2.5	250	2.5	283
3.0	176	3.0	203
4.0	115	4.0	138
5.0	90	5.0	112

The power calculations reveal that under optimal assumptions – namely, a single binary predictor and a medium effect size (i.e., odds ratio = 2.5) – the required sample size is 250 participants for the death-penalty-sought regression analyses. The sample size actually utilized was 296. Thus, under these assumptions, the death-penalty-sought analyses were adequately powered to detect a medium-size effect. But no effect for the race of defendant or the race of victim with regard to whether the death penalty was sought was detected. This suggests that the failure to find such effects cannot be explained by a sample size deficiency. In other words, the results in conjunction with the power analysis are consistent with the

[52] Two additional pieces of information regarding the distribution of values are required to conduct the calculation: 1.) p(x=1); and 2.) P(y=1|x=0). Note that x=1 refers to black defendants vs. white and other race defendants combined (i.e., x=0); y=1 refers to a death notice filed (hence y=0 indicates a death notice was not filed). From table 2 (page 21), the relevant values are 1.) 57/296 = .192, and 2.) 71/239 = .297.
[53] Again, the necessary distributional values are: 1.) p(x=1); and 2.) P(y=1|x=0). From table 2 (page 21), the relevant values are: 1.) 14/85 = .165 and 2.) 26/71= .366.

Note that table 2 contains several conceptual and computational errors. Most relevant to this analysis is the fact that the same denominator is used for all three columns, despite the fact that the columns are logically subsumed by each other. Specifically, the second column from the left describes the proportion of eligible cases (n=296) in which a death notice was filed (n=86 but since information was missing, the report only has data on the defendant's race in 85 cases); the third column from the left describes the proportion of cases in which the death penalty was imposed. Since presumably the death penalty can only be imposed when a death notice has been filed, it is appropriate to adjust the denominator to 85 – the number of cases in which a death notice was filed, then examine the number of cases in which the death penalty was imposed (n=35). Finally, the third column notes the proportion of cases in which the death penalty was retained (n=13); this can occur only when the death penalty was imposed (n=35).

proposition that there is no racial disparity in the decision to seek the death penalty in the State of Washington.

Under the same assumption that the effect size is medium (i.e., odds ratio = 2.5), the death-penalty-imposed regression analyses require a sample size of 283, which is over 3 times larger than the 85 cases that were actually used.[54] Even under these unrealistically optimistic assumptions, the Beckett and Evans analyses are hugely underpowered. Indeed, even if one assumes that the effect size for the race of the defendant on the decision to impose the death penalty is large (i.e., odds ratio = 4.0), and hence easier to detect the effect, the regression analyses are still substantially underpowered.

In reality, the effect of the defendant's race on decisions to impose the death penalty is not consistently found in studies examining the imposition of the death penalty in other states or the federal government.[55] Beckett and Evans acknowledge as much in their review of the literature.[56] On a most favorable reading of the existing literature one would have to assume that any such effect, if it does exist, is small or medium at best. This makes the sample size deficiency in the death-penalty-imposed analyses even more pronounced.

It is a mathematical truism that a statistically significant effect detected in a low powered study is unlikely to be a true effect.[57] As noted by one group of scholars, "a study with low statistical power has a reduced chance of detecting a true effect, but [] low power also reduces the likelihood that a statistically significant result reflects a true effect."[58] Moreover, the likelihood that the observed effect is not true increases as the p-value threshold increases.[59] Recall that the decision-to-impose the death penalty model was based on a simple size of 76, and it detected an effect for the race of the defendant on the decision to impose the death penalty ("significant at $\alpha = .10$"). Thus, not only was the sample size small resulting in low power, but the p-value threshold was relatively large. Both of these facts suggest that the race-of-defendant effect reported in the Beckett and Evans report may not be reliable or valid.

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[54] Actually, the sample size for the death penalty imposed regression which included defendant race was based on 76 observations. Beckett & Evans at 31. In a footnote accompanying table E3 in the Appendix (page 43), the authors note "10 cases or 11.6% dropped from the analysis due to missing data." This fact is not mentioned in the main body of text, nor is any information provided about the particular cases that were dropped or how omitting these specific cases affected the distribution of remaining cases.

[55] The Baldus and Woodworth chapter (Race discrimination and the death penalty: An empirical and legal overview. In Acker, J.R., Bohm, R.M., & Lanier, C.S. (eds.) *America's Experiment with Capital Punishment* (2nd ed.)), to which Beckett and Evans repeatedly refer, explicitly makes this point when discussing the United States General Accounting Office (GAO) 1990 report, which synthesized all of the available empirical research bearing on race and capital punishment: "The evidence for the influence of the race-of-defendant on death penalty outcomes was equivocal" (at 518). Baldus and Woodworth subsequently analyzed the published studies following the 1990 report; their conclusion: "The post-1990 results are consistent with those summarized in the GAO report..." (at 518).

[56] Beckett and Evans at 9. ("...some [studies] find that the race of the defendant also influences the administration of capital punishment.")

[57] Button, K.S. et al., (2013). Power failure: Why small sample size undermines the reliability of neuroscience, *Nature, 14*, 365-376, at 366.

[58] Button et al., supra note 57, at 365.

[59] Button et al., supra note 57, at 366.

In summary, power refers to the ability of a study to detect an effect if the effect actually exists. The power calculations above are unrealistically optimistic in that they assume only a single binary predictor is included in the model; additional predictor variables substantially increase the requisite sample size. If only a single variable were included the model, the regression analyses examining the decision to seek the death penalty were adequately powered to detect a medium effect, yet no effect for race of defendant or race of victim was detected. Curiously, the regression analyses examining the decision to impose the death penalty were underpowered, even under optimistic assumptions about the potential effect size or the number of variables included in the model, yet a significant effect for the race of the defendant emerged. However, the low power coupled with the large p-value threshold renders the observed race-of-defendant effect highly suspect.

4.0 Comparing the 1981-2012 Analyses to the 1981-2014 Analyses

I was asked to compare the results of the aforementioned report to an earlier version of the report entitled, "The Role of Race in Washington State Capital Sentencing, 1981-2012*," also authored by Beckett and Evans.[60] This report will be hereinafter referred to as the "2012 Report." The 2012 Report covered the time period of December 1981 through May 2013,[61] whereas the previously-examined report covers the time period of December 1981 through May 2014.[62] The 2012 Report also conducted two sets of logistic regression analyses, one examining the decision to seek the death penalty and the other examining the decision to impose the death penalty. The gist of the results is similar across both reports: neither the race of the defendant nor the race of the victim influenced whether prosecutors sought the death penalty; however, the race of the defendant did influence decisions to impose the death penalty. Indeed, the 2012 Report found that "*juries were three times more likely to impose a sentence of death when the defendant was black than in cases involving similarly situated white defendants.*"[63]

Virtually all of the previously-described methodological and statistical issues apply to the 2012 Report. I will not repeat those criticisms here. Instead, I will point to some – but not all – of the deficiencies in the 2012 Report that make it difficult to interpret and render its conclusions tenuous. Furthermore, directly comparing the analyses in the 2012 Report to the subsequent report ending in 2014 provides some corroboration of the unscrupulous research practices which undermine the findings in both reports.

First, contrary to the title of the 2012 Report, the report covers the time period through May 2013;[64] the subsequent report extends the time period by a single year. The 2012 Report states, "the sample analyzed includes 285 aggravated first-degree murder cases involving adult defendants."[65] The report ending in 2014 includes 297 cases, thus a difference of 12 cases. A close inspection of the numbers reported in the tables, however, makes this and any other comparative inferences dubious.

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[60] Note that the title page indicates the date of January 27, 2014.
[61] 2012 Report at 4.
[62] Beckett & Evans at 4.
[63] 2012 Report at 2. Emphases in original.
[64] I am at a loss to understand why the title of the report states 1981-2012 when page 4 of the 2012 Report states the eligible time frame is "December 1981 [through] May 2013." On page 7 of the report, however, it is suggested that the time period is "1981 [through] 2012."
[65] 2012 Report at 4.

Table 1 in the 2012 Report disaggregates the number of times the death penalty was sought by the county in which the case was prosecuted.[66] The second column from the left indicates that the death penalty was sought 88 times out of a possible 285 cases. This is curious because the corresponding values in Table 1 of the 2014 Report are 86 and 297, respectively.[67] Thus, the additional year seems to indicate that the number of eligible cases increased by 12 (297-285), yet the overall number of times the death penalty was actually sought decreased by two cases. This is simply illogical. Moreover, Table 1 in the 2012 Report states that Skagit County had 5 eligible cases of which 1 was pursued for the death penalty; yet Table 1 of the 2014 report indicates that none of the 5 eligible cases in Skagit County were pursed. Either an error occurred in the 2012 Report or the 2014 Report, but both cannot be accurate. Similar issues recur in Table 2.[68] Notably, however, the number of cases in which the death penalty was imposed (i.e., 35) was consistent between the 2012 and 2014 Reports,[69] suggesting that no person was executed in the interim.

As mentioned, the results of the regression analyses were not substantially different between the reports. Indeed, the primary finding that race of the defendant influenced the decision to impose the death penalty but not the decision to pursue the death penalty is remarkably consistent across the two studies.[70] This finding is particularly remarkable because the variables included in the regression models were different in the two studies. For example, the regression analysis examining the decision to impose the death penalty in the 2012 Report included the following variables: applied aggravators; defenses; pled guilty; victim(s) held hostage; black defendant; other race defendant; white victim(s).[71] The variables included in the same regression analysis in the 2014 Report are: applied aggravators; defenses; victim held hostage; black defendant; prior convictions; 1 victim; mitigating circumstances.[72] Thus, the 2012 Report included pled guilty, other race defendant, and white victim(s) while the 2014 Report did not, and the 2014 Report included prior convictions, 1 victim, and mitigating circumstances while the 2012 Report did not. The same inconsistent use of model predictors occurred with every single logistic regression reported (i.e., Table 4, Table 5, and Table 6) in both the 2012 and 2014 Reports.

No explanation is provided for why certain predictors were included or excluded in a particular model, or whether the decision to include or exclude predictor variables was made *a priori*. In my judgment, the inconsistencies between the models in the two reports are clear evidence of "p-hacking" and seriously undermine the legitimacy of the reported findings in both reports. As noted previously, p-hacking "can

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[66] 2012 Report at 8.
[67] Beckett & Evans at 20.
[68] For example, Table 2 in the 2012 Report states that the death penalty was sought in 15 of the 56 eligible cases involving black defendants; yet Table 2 in the 2014 report states that the death penalty was sought in 14 of the 57 eligible cases involving black defendants. Similarly, the number of times the death penalty was sought for other race defendants decreased by 1 in the 2014 Report compared to the 2012 Report. It is simply illogical for the numerator to decrease when the 2012 Report is subsumed by the 2014 Report.
[69] Beckett & Evans at 21; 2012 Report at 9.
[70] The 2012 Report gives an effect size of 3.251 (at page 15) and the 2014 Report gives an effect size of 4.5 (at page 31) (both "significant at $\alpha = .10$") for the race of the defendant effect with regard to the decision to impose the death penalty. One should note that the sample size for the regression analysis examining the decision to impose the death penalty is *actually smaller* in the 2014 Report than it is in the 2012 Report. In other words, adding the cases from the one year interim actually *reduced* the number of usable cases.
[71] 2012 Report at 15.
[72] Beckett & Evans at 31.

allow researchers to get most studies to reveal significant relationships between truly unrelated variables."[73] In short, the evidence that Beckett and Evans contorted the models to achieve a particular result seems undeniable.

5.0 Conclusions

I have described what I believe are the chief methodological and statistical issues associated with the Beckett and Evans report. My review is by no means exhaustive; I decided to omit discussion of relatively minor issues, given their limited impact in comparison to these more substantial issues. The ultimate question concerns the reliability of Beckett and Evan's main finding that blacks are more likely than non-blacks, ceteris paribus, to be sentenced to death in the State of Washington.[74] *In my opinion, there is good reason to be highly skeptical of this finding.*

First, even if there truly is a racial disparity in the decision to impose the death penalty in the State of Washington, the sample size used in that particular analysis is far too small to detect any such effect. Although an effect was found, the low power resulting from the small sample size coupled with the high p-value threshold ("significant at $\alpha = .10$") make it unlikely that the observed race-of-defendant effect is reliable or valid. To be clear, there could be a racial disparity in the imposition of the death penalty in the State of Washington, but the analysis reported by Beckett and Evans does not legitimately establish this proposition.

Second, it seems obvious that the regression models were configured opportunistically in order to achieve "statistical significance" (setting aside the issue of whether the $p \leq .10$ threshold is legitimate in the first place). Most significantly, variables were included or excluded inexplicably from the statistical models, and Beckett and Evans do not attempt to conceal that this occurred: "We present models that include theoretically and substantively important variables and findings that ensure across various model specifications."[75] However, this repeated testing of different models and configurations violates the basic principle of null hypothesis significance testing and invalidates the reported p-values.[76]

Moreover, with rare exception, no justification – theoretical, substantive, or otherwise – was provided regarding the rationale for including or excluding variables from the regression models. Indeed, some of the most relevant variables were suspiciously omitted without any notification to readers. For example, the race of the victim was included as a predictor variable in the death-penalty-sought regression model but not in the death-penalty-imposed regression model, and no explanation was provided for why this variable was omitted from the latter model. This omission is totally bewildering in light of the ubiquity

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[73] Simonsohn et al., supra note 24, at 535.

[74] Beckett and Evans incorrectly assert on page 33 that "*juries were four and one half times more likely to impose a sentence of death when the defendant was black than in* [sic] *they were in cases involving similarly situated white defendants* (italics in original)." The appropriate comparison is black versus "non-black" defendants since white and other race defendants were combined in that analysis. Beckett and Evans correctly report this comparison group on page 30.

[75] Beckett & Evans at 17. I do not understand what is meant by "ensure across various model specifications."

[76] Button et al., supra note 57, at 365 ("p-values lose their diagnostic value if they are not the result of a pre-specified analysis plan for which all results are reported.")

and robustness of the race-of-victim effect, which Beckett and Evans describe in the introduction of the report.[77] It is not unreasonable, then, to predict that including the race of victim would materially alter the model as well as the specific relations between the predictor variables and the outcome variable.

Another major variable that was not included in the regression models was the geographic location or county in which the death penalty was sought and potentially imposed. Descriptive statistics bearing on this issue are presented in the report, and Beckett and Evans note that the data "suggest that the likelihood that prosecutors will seek and juries will impose death for a given aggravated murder defendant depends in part on the place in which county the case is adjudicated."[78] Importantly, some studies examining racial disparities associated with the death penalty in other states find that racial effects vanish once the geographic location of the prosecution is taken into account.[79] Consistent with this finding, the first set of regressions reported by Beckett and Evans included "county characteristics" and found no race-of-defendant or race-of-victim effect on the likelihood that prosecutors would seek the death penalty.[80] The second set of regression analyses did not include county characteristics in the model, but did report a significant effect for the race of the defendant on decisions to impose the death penalty.[81] Whether the race of the defendant still influences decisions to impose the death penalty after controlling for geographic location cannot be determined without conducting additional analyses, but it seems likely that any potential racial effect would disappear once geographic location were accounted for in the model.

In summary, there might be racial disparities in the decision to impose the death penalty in the State of Washington. However, the data and analyses reported by Beckett and Evans do not legitimately support that conclusion. If I were reviewing this report as part of the peer review process, my recommendation would be to reject this manuscript for all of the reasons outlined above.

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[77] Beckett & Evans at 6-7. ("Studies published during this period consistently reported that defendants convicted of killing white were more likely to be sentenced to death than other defendants, over and above any differences in case characteristics. Indeed, this finding was 'remarkably consistent across data sets, states, data collection methods, and analytic techniques'; it was also found to exist at all stages of the criminal justice process.") It is also noteworthy that there were "race-of-victim effects but no race-of-defendant effects." in 12 of the 18 post-1990 empirical studies reviewed by Baldus and Woodworth, supra note 55, at 519.

[78] Beckett & Evans at 20. I assume the authors mean the "county in which the case is adjudicated", not "the place in which county the case is adjudicated."

[79] Paternoster, R., Brame, R., Bacon, S., Ditchfield, A., Beckman, K., & Frederique, N. (2003). *An empirical analysis of Maryland's death sentencing system with respect to the influence of race and legal jurisdiction.* at 38 (For example, consider one finding from an analysis of the death penalty in Maryland: "when the prosecuting jurisdiction is added to the model, the effect for the victim's race diminishes substantially, and is no longer statistically significant. This would suggest that jurisdiction and race of victim are confounded.") A major study in Nebraska found the same: "with the introduction of controls for the place of prosecution, i.e., a major urban county (Douglas, Sarpy, Lancaster) or in a county of greater Nebraska, the race-of-defendant effect disappeared." (Baldus and Woodworth, supra note 55, at p. 541).

[80] Beckett & Evans at 27.

[81] Again, no explanation is provided for why "county characteristics" were not included in the subsequent regression models, especially when the "percent black" was a significant predictor in the previous model.

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RE-SUBMITTED TO INCLUDE SERVICE TO OPPOSING COUNSEL

Kathleen Proctor, WSB No. 14811
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Attached please find:

1. Submission of the State's Expert's Curriculum Vitae and Repot on the Reliability of the Methodology and Conclusions of the Beckett Report on the Role of Race in Washington Capital Cases
2. Dr. Scurich's Cover Letter
3. Dr. Scurich's Report
4. Dr. Scurichs' Curriculum Vitae

Heather Johnson
Legal Assistant to the Appellate Unit

Curriculum Vitae

Nicholas Scurich

Department of Psychology & Social Behavior
Department of Criminology, Law & Society
University of California
Irvine, California 92697

Education

Ph.D. Psychology, University of Southern California, May, 2012.
Dissertation: The Dynamics of Reasonable Doubt
Advisor: Richard S. John

M.A. Psychology, University of Southern California, December, 2009.

B.A. Psychology, University of Southern California, *Cum Laude*, May, 2007.

Work Experience

Assistant Professor, Department of Psychology & Social Behavior (50%), University of California-Irvine, July 2012-

Assistant Professor, Department of Criminology, Law & Society (50%), University of California-Irvine, July 2012-

Assistant Professor, by courtesy, School of Law, University of California-Irvine, February 2014-

Awards and Honors

Saleem Shah Early Career Award, American Psychological Association (Division 41) and American Academy of Forensic Psychology, March, 2015.

Rising star award, Association for Psychological Science, March, 2013.

PhD Achievement Award, USC (university-wide competition), May, 2012.

Oscar M. Ruebhausen Travel Grant to Yale Law School, November, 2010.

Mental Health Law Fellow, Saks Institute for Mental Health Law, Ethics and Policy, Gould School of Law, 2010-11.

USC College of Letters, Arts and Sciences College Merit Fellowship, 2007-12.

USC Undergraduate Symposium for Scholarly and Creative Work in Social Sciences, Honorable Mention, 2007.

Departmental Honors in Psychology, 2007.

Scholarly Articles (* = graduate student)

Dunbar, A.*, Kubrin, C.E., & **Scurich, N.,** (in press). The threatening nature of "rap" lyrics. Psychology, Public Policy, and Law

Greenspan, R.,* & **Scurich, N.**, (in press). The interdependence of perceived confession voluntariness and case evidence. Law & Human Behavior

Scurich, N., Gongola, J.*, & Krauss, D.A., (in press). The biasing effect of the "Sexually Violent Predator" label on legal decisions. International Journal of Law and Psychiatry

Ridinger, G.,* John, R.S., McBride, M., & **Scurich., N.** (in press). Attacker deterrence and perceived risk in a Stackelberg security game. Risk Analysis

Scurich, N. (in press). The assessment of violence risk. In J.P. Singh, S. Bjorkly, & S. Fazel, (eds.) International perspectives on violence risk assessment. New York: Oxford University Press.

Scurich, N. (2016). Structured risk assessment and legal decision making. In M. Miller and B.H. Bornstein (eds.) Advances in psychology and law (pp 159-183). American Psychological Association.

Scurich, N., Nguyen, K.,* & John, R.S. (2016). Quantifying the presumption of innocence. Law, Probability, and Risk, 15(1), 71-86.

Scurich, N., & Appelbaum, P.S., (2016). The blunt-edged sword: Genetic explanations of misbehavior neither mitigate nor aggravate punishment. Journal of Law and the Biosciences, 3(1), 140-157.

Scurich, N., & Monahan, J. (2016). Evidence-based sentencing: Public openness and opposition to using gender, age, and race as risk factors for recidivism. Law & Human Behavior, 40(1), 36-41.

Scurich, N. (2015). The effect of numeracy and anecdotes on the perceived fallibility of forensic science. Psychiatry, Psychology & Law, 22(4), 616-623.

Scurich, N., Krauss, D.A., Reiser, L.*, Garcia, R.* & Deer, L.* (2015). Venire jurors' perceptions of adversarial allegiance. Psychology, Public Policy, and Law, 21(2), 161-168.

Hilton, N.Z., **Scurich, N.,** & Helmus, L.M.* (2015). Communicating the risk of violent and offending behavior: Review and introduction to this special issue. Behavioral Sciences & the Law, 33(1), 1-18.

Appelbaum, P.S., **Scurich, N.,** & Radd, R. (2015). Effects of behavioral genetic evidence on perceptions of criminal responsibility and appropriate punishment. Psychology, Public Policy, and Law, 21(2), 134-144.

Singh, J.P., Yang, S., Mulvey, E.P., **Scurich, N.,** et al. (2015). Reporting guidance for violence risk assessment predictive validity studies: The RAGEE statement. Law & Human Behavior, 39(1), 15-22.

Scurich, N. (2015). Criminal justice policy preferences: Blackstone ratios and the veil of ignorance. Stanford Law & Policy Review (Online), 26, 23-35.

Scurich, N., & Shniderman, A.* (2014). The selective allure of neuroscientific explanations. PLoSONE, 9(9), 1-6.

Scurich, N. & Krauss, D.A. (2014). The presumption of dangerousness in sexually violent predator commitment proceedings. Law, Probability, and Risk, 13, 91-104.

Krauss, D.A. & **Scurich, N.** (2014). The impact of case factors on jurors' decisions in a sexual violent predator hearing. Psychology, Public Policy, and Law, 20(2), 135-145.

Scurich, N. & John, R.S. (2014). Perceptions of randomized security schedules. Risk Analysis, 34(4), 765-770.

Appelbaum, P.S., & **Scurich, N.** (2014). Impact of behavioral genetic evidence on the adjudication of criminal behavior. Journal of the American Academy of Psychiatry & the Law, 42(1), 91-100.

Scurich, N. & John, R.S. (2013). Mock jurors' use of error rates in DNA database trawls. Law & Human Behavior, 37(6), 424-431.

Simon, D., & **Scurich, N.** (2013). The effect of legal expert commentary on lay judgments of judicial decision making. Journal of Empirical Legal Studies, 10(4), 799-816.

Scurich, N. & Krauss, D.A. (2013). The effect of adjusted actuarial risk assessment on mock-jurors' decisions in a sexual predator commitment proceeding. Jurimetrics Journal, 53, 395-413.

Krauss, D.A., & **Scurich, N.** (2013). Risk assessment in the law: Legal admissibility, scientific validity, and some disparities between research and practice. Behavioral Sciences & the Law, 31(2), 215-229.

Simon, D., & **Scurich, N.** (2013). Judicial overstating. Chicago-Kent Law Review, 88(2), 411-431.

Scurich, N. (2013). Questioning child witnesses. The Jury Expert, 25(1), 12-16.

Scurich, N., Monahan, J., & John, R.S. (2012). Innumeracy and unpacking: Bridging the nomothetic/idiographic divide in violence risk assessment. Law & Human Behavior, 36(6), 548-554.

Lyon, T.D., **Scurich, N.**, Handmaker, S., & Blank, R. (2012). How did you feel? Increasing child sexual abuse witnesses' production of evaluative information. Law & Human Behavior, 36(5), 448-457.

Scurich, N., & John, R.S. (2012). A Bayesian approach to the group versus individual prediction controversy in actuarial risk assessment. Law & Human Behavior, 36(3), 237-246.

Scurich, N. & John, R.S. (2012). Constraints on restraints: A Signal Detection analysis of the use of mechanical restraints on adult psychiatric inpatients. Southern California Review of Law and Social Justice, 21(1), 75-107.

Scurich, N., & John, R.S. (2012). Prescriptive approaches to communicating the risk of violence in actuarial risk assessment. Psychology, Public Policy, and Law, 18(1), 50-78.

Lyon, T.D., Ahern, E.C, & **Scurich, N.** (2012). Interviewing children vs. tossing coins: Accurately assessing the diagnosticity of children's disclosures of abuse. Journal of Child Sexual Abuse, 21, 19-44.

Scurich, N., & John, R.S. (2011). Trawling genetic databases: When a DNA match is *just* a naked statistic. Journal of Empirical Legal Studies, 8(s1), 49-71.

Simon, D., & **Scurich, N.** (2011). Lay judgments of judicial decision-making. Journal of Empirical Legal Studies, 8(4), 709-727.

Scurich, N. & John, R.S. (2011). The effect of framing actuarial risk probabilities on involuntary commitment decisions. Law & Human Behavior, 35(2), 83-91.

Scurich, N. (2010). Interpretive arguments of forensic match evidence: An evidentiary analysis. Dartmouth Law Journal, 8(2), 31-47.

Scurich, N., & John, R.S. (2010). The normative threshold for psychiatric civil commitment. Jurimetrics Journal, 50(4), 425-452.

Technical Reports

Burns, W.J., Dillon-Merrill, R., John, R.S., & Scurich, N. (2016). Dynamic aviation risk management solutions (DARMS): Research study to demonstrate a proof-of-concept. Commissioned by the United States Department of Homeland Security (BOA: HSHQDC-15-J-00375). Classified document. Authorship determined alphabetically.

Invited Colloquium Presentations

Istanbul Bilgi University, Department of Psychology (May, 2016)

Columbia University Medical Center, Workshop on Genes, Brains, and Responsibility (May, 2015)

American Psychology—Law Society Conference, Saleem Shah Address (March, 2015)

University of California—Irvine, Center for Psychology & Law, Views by two on the insanity defense with Dr. Park Dietz (February, 2015)

University of Chicago School of Law, Workshop on Judicial Behavior (November, 2012)

Chicago-Kent College of Law, the Supreme Court and the American Public Symposium (November, 2012)

Information Sciences Institute, Behavioral Game Theory Symposium (September, 2012)

USC Gould School of Law, Symposium on Mechanical Restraints (March, 2012)

USC Gould School of Law, Child-interviewing seminar (March, 2010)

Professional Trainings

Transportation Security Authority, Washington DC (December, 2015).

National Association of Criminal Defense Lawyers (NACDL)—Forensic College, Cardozo Law School (June, 2015).

California Board of Parole Psychologists, Forensic Assessment Division (October, 2014)

Technical Briefings/Testimony

Burns, W.J., Dillon-Merrill, R., John, R.S., & Scurich, N. (March, 2016). Modeling uncertainty: Inputs to a DARMs game theoretical approach to passenger screening. (Authorship determined alphabetically.) Presentation to executives at the Transportation Security Authority, Washington DC.

Refereed Research Presentations

Gongola, J.*, Scurich, N. & Quas, J. (March, 2015). Detecting deception in children: A meta analysis. Paper presented at the American Psychology-Law Society Conference, Atlanta, GA.

Gongola, J.*, & Scurich, N. (March, 2015). Effects of the putative confession instruction on perceptions of child veracity. Paper presented at the American Psychology-Law Society Conference, Atlanta, GA.

Reiser, L.*, & Scurich, N. (March, 2015). Jurors' (lack of) sensitivity to false positive evidence regarding DNA identifications. Poster presented at the American Psychology-Law Society Conference, Atlanta, GA.

Dunbar, A.*, Kurbin, C., & Scurich, N. (March, 2015). The influence of rap music stereotypes on inferences of criminal threat. Paper presented at the American Psychology-Law Society Conference, Atlanta, GA.

John, R.S., & Scurich, N. (March, 2015). Jurors' presumption of innocence: Impact on cumulative evidence evaluation and verdicts. Paper presented at the American Psychology-Law Society Conference, Atlanta, GA.

John, R.S., & Scurich, N. (December, 2015). Individual risk assessment for terrorism. Paper presented at the Society for Risk Analysis Conference, Arlington, VA. Symposium on: Aviation security with dynamic risk management.

Scurich, N. (November, 2015). Quantifying the presumption of innocence. Paper presented at the Conference for Empirical Legal Studies, Washington University School of Law School.

Reiser, L. * & Scurich, N. (March, 2015). The impact of narrative consistency on jurors' utilization of DNA error rates. Poster presented at the American Psychology-Law Society Conference, San Diego, CA.

Reiser, L.*, Garcia, R. J. *, Deer, L., Scurich, N., Krauss, D. A. (March, 2015). An empirical examination of venire jurors' perceptions of adversarial allegiance. Paper presented at the American Psychology-Law Society, San Diego, CA

Greenspan, R.L. * & Scurich, N. (March, 2015). The non-independence of perceived voluntariness of confessions. Poster presented at the American Psychology-Law Society Annual Meeting, San Diego, CA.

John, R. S., Nguyen, K.*, & Scurich, N. (March, 2015) Quantifying presumption of innocence. Paper presented at the Bayesian Research Conference, Fullerton, CA.

Reiser, L. * & Scurich, N. (February, 2015). Narrative vs. numeracy in jurors' utilization of DNA evidence. Poster presented at the Society for Personality and Social Psychology Conference, Long Beach, CA.

Scurich, N. & Krauss, D.A. (March, 2014). The presumption of dangerousness in sexually violent predator commitment proceedings. Paper presented at the American Psychology and Law Society Conference, New Orleans, LA.

Javorka, M.*, Cluff, A.*, Jensen, A.*, Krauss, D., & Scurich, N. (March, 2014). Legal and extra-legal factors' influence on SVP civil commitment verdicts. Poster presented at the American Psychology and Law Society Conference, New Orleans, LA.

John, R. S. & Scurich, N. (December, 2013). Public perceptions and trade-offs related to randomized security schedules. Paper presented at the Society for Risk Analysis annual meeting, Baltimore, Maryland.

Scurich, N. (November, 2013). The presumption of innocence and the involuntary bookmaker. Paper presented at the Conference for Empirical Legal Studies, University of Pennsylvania Law School.

John, R. S., Scurich, N., & Lee, R.* (November, 2013). The good, the bad, and the ugly: Quantifying presumption of innocence in relation to criminal stereotypes and types of crime. Poster presented at the Society for Judgment and Decision Making, Toronto, Canada.

Scurich, N. (September, 2013). Judicial overstating. Paper presented at Socio-legal workshop, UCI School of Law.

Krauss, D.A., & Scurich, N. (August, 2013). Risk assessment in the law: Legal admissibility, scientific validity, and some disparities between research and practice. Paper presented at the American Psychological Conference, Honolulu, HI.

Scurich, N. (June, 2013). A normative model of violence risk communication. Symposium presentation at the Canadian Psychological Association Conference, Quebec City, Quebec, Canada.

John, R. S. & Scurich, N. (June, 2013). Public perceptions of randomized security strategies. Paper presented at the Workshop on Human Behavior and Security (SHB-2013), Los Angeles, CA.

Scurich, N. & Krauss, D.A. (March, 2013). The effect of adjusted actuarial risk assessment on mock jurors' decisions in a sexual predator commitment proceeding. Paper presented at the American Psychology and Law Society Conference, Portland, OR.

Scurich, N. (February, 2013) Here's a number, use it maybe. Paper presented at Bayesian Research Conference, Fullerton, CA.

John, R. S. & Scurich, N. (February, 2013). Randomized security: A deal too good to be true. Paper presented at the Bayesian Research Conference, Fullerton, California.

Simon, D., & Scurich, N. (November, 2012) Lay judgments of legal decision-making: The ineffectiveness of legal expert opinions. Paper presented at the Conference for Empirical Legal Studies, Stanford Law School.

John, R. S., Scurich, N. & Scotti, A.* (November, 2012). The effects of database type and forensic laboratory error rates on the probative value of DNA evidence in a cold case. Poster presented at the Society for Judgment and Decision Making, Minneapolis, MN.

Scurich, N., Monahan, J., & John, R.S. (March, 2012) Innumeracy and unpacking: Bridging the nomothetic/idiographic divide in violence risk assessment. Paper presented at the American Psychology and Law Society Conference, San Juan, Puerto Rico.

Scurich, N. & John, R.S. (March, 2012) Constraints on restraints: A Signal Detection analysis of the use of mechanical restraints on adult psychiatric inpatients. Paper presented at the American Psychology and Law Society Conference, San Juan, Puerto Rico

Scurich, N. (January, 2012) I'm not quite sure what doubt means. Paper presented at Bayesian Research Conference, Fullerton, CA.

Scurich, N., & Lyon, T.D. (April, 2011) How did you feel? Increasing child sexual abuse witnesses production of evaluative information. Paper presented at the Western Psychological Association conference. Los Angeles, CA.

Scurich, N. (March, 2011) How "cold hit" DNA matches affect the perception of guilt and the interpretation of non-genetic evidence. Poster presented at the American Psychology and Law Society Conference, Miami, FL.

Scurich, N. (January, 2011) DNA database trawls: Frequentists, Bayesians, and jurors. Paper presented at the Bayesian Research Conference, Fullerton, CA.

Scurich, N., & Simon, D. (November, 2010) Lay judgments of judicial decisions. Paper presented at the Conference for Empirical Legal Studies, Yale Law School.

John, R.S, & Scurich, N. (November, 2010) Trawling genetic databases: When a DNA match is *just* a naked statistic. Paper presented at the Conference for Empirical Legal Studies, Yale Law School.

Scurich, N. (November, 2010) Genetic database trawls and the expectation of corroborating evidence: An account of the Wells Effect. Paper presented at the Society for Judgment and Decision Making, St. Louis, MO.

Scurich, N., Handmaker, S., Blank, R., & Lyon, T.D. (March, 2010) Eliciting evaluative information from child witnesses in sexual abuse prosecution: The effects of question type. Paper presented at American Psychology and Law Society Conference, Vancouver, Canada.

Scurich, N. (January, 2010) Dangerous decisions come from within. Paper presented at Bayesian Research Conference, Fullerton, CA.

Scurich, N. (November, 2009) Actuarial risk assessment, risk communication and involuntary civil commitment decisions. Poster presented at the Society for Judgment and Decision Making, Boston, MA.

Scurich, N., & John, R. (March, 2009) Formal psychiatric civil commitment decisions. Paper presented at American Psychology and Law Society Conference, San Antonio, TX.

Scurich, N. (January, 2009) Bayes says you're probably crazy. Paper presented at Edwards Bayesian Research Conference, Fullerton, CA.

Scurich, N. (May, 2007) Applying values to actuarial predictions of violence. Poster presented at Stanford Undergraduate Psychology Conference, Palo Alto, CA.

Teaching Experience

PSB193e/CLS105: Psychology and Law (undergraduate)
SE195: Field Study (undergraduate)
PSB266/CLS275: Psychology and Law (graduate seminar)
PSB100/CLS100: Forensic Psychology (undergraduate)

P201: Advanced Research Methods (graduate)

Professional Affiliations

American Psychology-Law Society, 2009-
Society for Judgment and Decision Making, 2009-
Society for Empirical Legal Studies, 2009-
The Brunswick Society, 2010-
Western Psychological Association, 2011-

Editorial Experience

Editorial board member:
Law & Human Behavior

Guest editor:
Behavioral Sciences & the Law (special issue on risk communication, 2015)

Ad hoc reviewer for:
National Science Foundation
American Psychology-Law Society
Oxford University Press
Worth Publishers

Criminal Justice & Behavior; Journal of Legal Studies; Child Abuse & Neglect; Sexual Abuse: A Journal of Research and Treatment; Behavioral Sciences & the Law; Law & Human Behavior; Journal of Experimental Social Psychology; Memory; Law, Probability, and Risk; PLoSONE; Psychology, Crime & Law; Clinical Psychological Science; Psychology, Public Policy, & Law; Justice Quarterly; Translational Issues in Psychological Science

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Heather Johnson
Legal Assistant to the Appellate Unit

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Legal Assistant to the Appellate Unit