A Statistical Analysis of Racial and Gender Bias in "Stand Your Ground" Cases in Florida, 2006-2013

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Abstract

In the U.S., "stand your ground" laws have been adopted by most states with the supposed intention of empowering self-defense, yet critics argue these laws re-enforce white supremacy in the public sphere and male supremacy in the home. This research note presents the first statistical test for racial and gender bias in the enforcement of "stand your ground" laws which also controls for a wide variety of other factors frequently cited to justify observed outcomes. I find evidence of racial and gender bias in "stand your ground" cases in Florida from 2006-2013. The probability of conviction for a white defendant against a white victim is found to be fairly high at around 90% but with a large margin of error while the probability of conviction for a black defendant is nearly 100% with a very small margin of error. The probability of conviction for a male defendant in a typical domestic case was found to be about 40%, but for a female defendant in an otherwise objectively equivalent case the probability of conviction increases dramatically to 80%. This research has important implications for legal scholars, lawmakers, judges, and activists because it provides new evidence that in practice "stand your ground" laws may contribute to the legal institutionalization of racism and sexism. In particular, statistical simulations suggest the probability George Zimmerman was going to be found guilty of murdering unarmed black teenager Trayvon Martin in 2012 was marginally greater than 50% but would have been about 98% if Trayvon Martin had been white. On the other hand, black female Marissa Alexander who fired a physically innocuous warning shot to deter her husband in 2010 faced a probability of conviction marginally greater than 50%, but the probability of conviction for a male defendant in an otherwise objectively equivalent situation would have been a mere 12%. Thus the findings are especially important for currently-open and future cases such as Marissa Alexander's in which sexism or racism could independently lead to incorrect convictions. [1]

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"Stand your ground" (SYG) laws, which empower individuals to use any force necessary to defend themselves against anyone they believe to be an imminent threat, have become one of the most polarizing legal institutions in the United States. Supporters of SYG laws argue that they empower self-defense and deter crime (Lott 2013), however, a more critical view suggests that SYG laws enforce white supremacy over people of color and male supremacy over female domestic partners, as SYG laws appear more frequently to benefit white people relative to people of color (Hundley, Martin, and Humburg 2012; Martin, Hundley, and Humburg 2012) and to only infrequently benefit females (Carmon 2014) or female survivors of domestic violence in particular (Flatow 2014).

This article presents the first systematic statistical analysis of racial and gender bias in the outcome of SYG cases to control for a wide variety of contextual factors. The data is gathered from the Tampa Bay Times website, which reports a wealth of information on 237 cases from the state of Florida in which an SYG defense was claimed.[2] Additionally, I have made available all of the code and data which are necessary to reproduce the analyses of this article.[3]

Two results from the analysis are notable. First, the SYG defense has *nearly zero* probability of succeeding when the victim is white and the defendant is a person of color. This finding remains true after accounting for more than ten objective factors related to the crime, suggesting that the racial disparity is not due to any commonly suspected objective factor correlated with race.

Background and Literature Review

"Stand your ground" laws, adopted by most US states, are laws which suggest that individuals have no duty to retreat from any place they have lawful right to be and may use any type of force to defend themselves, including lethal force, if they reasonably believe they face an imminent threat of bodily harm. Two recent legal

[2] See the section below on Data and Method for details.

[3] All the data and code required to reproduce this article are available in the code repository at j.mp/syg_repository. In particular, all of the code for processing the raw Tampa Bay Times data I scraped from the web is at j.mp/clean_syg; the full, final spreadsheet of all variables for all 237 cases made available by the Tampa Bay Times is at j.mp/syg_data; the subset of cases used in the analyses below can be found at j.mp/model_data; and the source materials for reproducing this article in particular can be found at j.mp/syg_analysis.

cases dramatize the criticism of SYG laws. In the trial for the murder of black male teenager Trayvon Martin, George Zimmerman (an Hispanic male of 28 years) asked for immunity on SYG grounds. Although this request was not granted, George Zimmerman was acquitted by a jury and it has been shown that Florida's SYG laws helped Zimmerman's prospects throughout the legal process, from the initial police response to the wording of jury instructions (Coates 2013). On the other hand, Marissa Alexander (a 31-year-old black woman) was convicted of aggravated assault with a deadly weapon for shooting one warning shot to defend herself against her abusive husband, despite her claims to self-defense under the same SYG laws which assisted George Zimmerman toward his acquittal.

The Tampa Bay Times has organized a wealth of information regarding all the cases they could find in which someone from the state of Florida has claimed a "stand your ground" defense since 2006 ("Florida's Stand Your Ground Law" 2013). The Tampa Bay Times produced several analyses of their data, however, their analyses only look at descriptive cross-sections of the data. They explore the data revealing, but because they do not control for other possible explanations their analyses remain vulnerable to common conservative retorts. In particular, it is commonly argued that bias in outcomes may be due to objective differences which are merely correlated with race, and that people of color are more likely to be convicted simply because they are more likely to engage in violent gun crime (Lott 2013). As the Tampa Bay Times must concede, "The Times analysis does not prove that race caused the disparity between cases with black and white victims. Other factors may be at play (Martin, Hundley, and Humburg 2012)."

The only previous statistical test of bias in the enforcement of "stand your ground" laws which sought to control for alternative explanations at the individual level was an analysis by gun advocate John Lott submitted in testimony to the US Senate Judiciary Committee (Lott 2013). Using the data collected by the Tampa Bay Times, Lott conducts two logistic regression analyses on the probability a defendant will be convicted when SYG is argued. On the basis of these two regression analyses, Lott submits that there is no evidence of racial bias in SYG cases. However, Lott's statistical analysis is problematic in several important ways. The first problem is that the analysis does not provide any discussion of how the Tampa Bay Times data were pre-processed for analysis. As will become clear in the section below on Data and Method,

organizing the Tampa Bay Times data for statistical analysis requires the analyst to make several non-trivial and non-obvious decisions. However, the analysis submitted in the US Senate testimony provides no such discussion. As only one example, the Tampa Bay Times provides several categories for the legal outcome of cases, including "conviction" but also "plea", "acquittal", "immunity", etc. The distinction between what should be counted as "conviction" and "not conviction" is far from obvious and, as with all statistical analysis, requires reasoned argument and transparency from the analyst. Yet, Lott provides no discussion. Second, his models only include as many as 78 of the total 237 cases. Because there is no discussion of the data cleaing process, it is unclear why the analysis is conducted on less than one third of the total cases, but it leaves open the significant question of whether one might find different results if more cases were to be included. Third, both of his two regression models are overfit, with each one having at least one case completley determined by the predictors. Regression analysis assumes that the dependent variable is a function of several predictors and some error term or, in other words, it assumes a systematic and stochastic component in the process that generated the dependent variable. Overfitting means that for some cases there is no error or stochastic component; it is a problem because it effectively means that some of the predictors in the model are interpreting error (noise) as a systematic association with predictors (signal). For this reason, overfit models are known to have poor predictive performance. Fourth, he does not include several variables recorded by the Tampa Bay Times which are plausible predictors of outcomes, such as gender and age of victims and defendants, the county in which the incident occurred, weapon used by defendant, or whether the victim died.

Most published academic studies of SYG laws have focused on the effect of SYG laws on homicide rates rather than possible racism in enforcement. For instance, Cheng and Hoekstra (2013) find that SYG laws fail to deter burglary, robbery, or assault but increase murder rates by about 8 percent on net. McClellan and Tekin (McCellan and Tekin 2012) also find that SYG laws lead to an increase of homicides but that the victims are disproprtionately white males.

The only previous study which focuses on the effect of SYG laws on racial disparities in legal outcomes is one by Roman (2013), which uses data from the Federal Bureau of Investigations Supplementary Homicide Report to model the ruling of justified homicides. Roman reports robust evidence of racial bias, finding that, compared to

white-on-white homicides, black-on-white homicides have about half the odds of being ruled justified and that this disparity is worse in states with SYG laws.(Roman 2013, 9) While Roman's findings appear robust, that study has two key limitations. The first is that the effect of SYG laws is only considered at the state level as a factor which shapes individual rulings of justifiable homicide. For this reason the analysis does not give us direct insight into the subset of cases which specifically involve SYG claims. The second shortcoming is that Roman is unable to control for important facts related to the specific cases. This is crucial because–as many conservative pundits argue and Roman rightly acknowledges–*if* white-on-black homicides are more likely to be legitimate cases of self-defense than black-on-white homicides, then racial disparity in rulings of justifiable homicide may not reflect racism but rather objective differences in crime rates across racial groups. Because the Tampa Bay Times data contains information on precisely such contextual factors, the present study allows us to control for several of the non-racial reasons for this racial disparity.

Data and Methodoloy

To test for the possibility of racial bias in SYG cases, I gathered all the available data made available on the Tampa Bay Times website ("Florida's Stand Your Ground Law" 2013).[4] The final result was a data matrix of 175. The data matrix contains indicators for all the following factors related to each case, with the names I assigned each variable in parentheses.[5]

- Did the victim initiate the incident? (Victim Initiated)
- Could the defendant retreat? (Defendant Could Retreat)
- Did the defendant pursue the victim? (Defendant Pursued)
- Did the defendant have a gun? (Defendant Gun)
- Did the incident take place on the defendant's property? (Defendant's Property)

[4]I began by downloading a spreadsheet made available on the Tampa Bay Times website, which included only a small subset of the relevant variables included elsewhere on their website. To supplement this spreadsheet with the other factors available only through the separate webpages for each individual case, I used Import.IO to crawl and scrape the webpage of each case automatically. I then merged, cleaned, and pre-processed the spreadsheet made available by the Times and the spreasheet of scraped information. See also Footnote 3.

[5]The specific data matrix used for the regression models can be found at http://j.mp/model_data. See also Footnote 3.

- Was the victim killed? (Deaths)
- How old was the victim and defendant? (Victim Age, Defendant Age)
- Was there physical evidence? (Physical Evidence)
- Was there at least one witness? (Witness)
- Was the victim committing a crime? (Victim Crime)
- Were the victim and defendant white or non-white? (Victim Race, Defendant Race)[6]
- Were the victim and defendant female or male? (Victim Male, Defendant Male)[7]
- Was the incident a domestic dispute? (Domestic)
- Which county did the incident occur in?
- Is there a time trend?

For the present analysis, conviction refers to any case in which the defendant received a guilty verdict or took a plea deal; non-convictions refer to any case in which the defendant was acquitted, dismissed, granted immunity, or not charged.[8]

Many variables included different categories to indicate uncertainty, such as "disputed", "unknown", or "unclear." In these cases, I adopted a principle of giving "benefit of the doubt" to the individual, counting any uncertainty noted by the Tampa Bay Times as not applying to the individual (whether victim or defendant). For instance, the variable *Witness* is coded such that, if there is not *clearly* at least one witness confirmed by the Tampa Bay Times, then it takes a value of "No clear witness(es)" and otherwise takes a value of "Clear witness(es)." Likewise, the variable *Victim*

[6]The decision to consider Black and Hispanic people together is imperfect and arguable, but seems to me justified by two concerns. First, this seems theoretically justified given that the concept of white supremacy suggests the primary racial distinction is between white and non-white groups. Second, considering that the analysis is already concerned with multiple interactions and the sample of data is not exceedingly large, considering Black and Hispanic people together simplifies an already complex analysis and saves limited degrees of freedom. Future research may explore whether disaggregating the race variables leads to different results.

[7]Transgender identities were not gauged

[8]The inclusion of plea deals with guilty verdicts is not ideal because those who take pleas are not necessarily guilty. I considered removing plea deals row-wise but, given that they are almost as frequent as guilty verdicts (33, and 40, respectively), it does not seem that the improvement of the measure would be so great as to outweigh the loss of information from row-wise deletion. Furthermore, including plea deals with guilty verdicts is theoretically sensible because pleas are likely driven by the expectation that the defendant would be found guilty if tried. Of course, racial identity might shape whether a defendant fears they will be found guilty (innocent or not), but if that is the case then that is precisely why it is best to keep that information in the category of conviction.

Crime takes a value of "Victim was committing a crime" in unambiguous cases but a value of "Victim was not clearly committing a crime" whenever the Times noted uncertainty.

After scraping, cleaning, and merging the data from the Tampa Bay Times website, I conducted a series of logistic regression analyses modeling the odds of conviction as a function of the independent variables listed above. Logistic regression analysis allows one to estimate the relationship between multiple independent variables on some dichotomous outcome.

If perceived racial or gender bias is simply due to the fact that one racial group or gender commits more or worse crimes, or because one racial group or gender more often has to defend itself from certain types of crimes, then the coefficients related to race and gender should be statistically indistinguishable from zero while objective factors related to the incident should be statistically significant predictors of conviction (e.g., if the victim initiated the incident and was armed, this should be associated with a lower likelihood of conviction).

Analysis

Table 1 presents the results from three logistic regression analyses. Model 1 is a baseline model with all independent variables of interest included separately, whereas Models 2 and 3 introduce interaction terms to test whether race and gender condition the independent effects of certain primary variables. Each coefficient reflects the average change in log-odds of conviction associated with each corresponding independent variable. Specifically, each coefficient reflects the expected change in log-odds of conviction associated with the independent variable taking the value indicated by the variable's name, relative to the absence or opposite of that value. Standard errors in parentheses reflect the statistical uncertainty of the coefficients. Starred coefficients are those which are very unlikely to be observed merely by chance, according to conventional cutoffs. For instance, the coefficient for *Victim Initiated* in Model 1 suggests that, on average, a situation which the victim initiates has a log-odds of conviction 3.18 less than if the victim did not clearly initiate, assuming all the other independent variables are equal to their modal values. Because log-odds are not conveniently interpretable in terms of substantive effects, I postpone discussion of effect sizes for

the following subsection.

First, a series of objective factors related to the incident appear to have clear and intuitively sensible effects on the likelihood of conviction. Victim initiation appears to have a relatively large and highly significant negative effect on the likelihood of conviction, robust across all three models. On the other hand, also intuitively sensisble, a clear ability for the defendant to retreat is associated with a significantly greater likelihood of conviction in all three models. Similarly, death of the victim appears, as we might expect, to significantly and robustly increase the probability of conviction. Perhaps surprisingly, however, defendants armed with a gun are significantly less likely to meet conviction. This is especially interesting given that conservative critics sometimes suggest that racial disparities in outcomes are spurious evidence of racism because people of color may be more likely to use guns in violent crimes (Lott 2013), the assumption being that guns rather than colored skin tend toward convictions. Although it is purely speculative, one might hypothesize that the negative association between guns and conviction is due to the fact that other types of weapons (and unarmed assaults) require the defendant to engage in overtly active behavior toward the victim, whereas those armed with guns can assault a victim without obviously, actively moving toward the victim.

Several independent variables appear to have no relationship with the likelihood of conviction. It is interesting that, given SYG laws are often associated with the defense of homes, incidents taking place on the defendant's property do not appear any less likely to end in conviction. Witnesses and physical evidence also have no clear effect on the probability of conviction.

What do the models say about the key variables of interest, race and gender? In the baseline Model 1, white defendants appear to face a significantly lower likelihood of conviction (compared to black defendants) and white victims appear to increase the likelihood of conviction (compared to black victims), even after controlling for all of the objective factors considered already. However, if one considers how the race of both defendants and victims interact (Model 2), the race of the defendant per se does not appear to have any independent effect on the probability of conviction. However, crucially, Model 2 suggests that the extra likelihood of conviction in cases of white victims is significantly greater for defendants of color compared to white defendants.[9]

[9]The statistically significant coefficient of 9.90 for *Victim White* reflects the expected change in

Model 2 also suggests that the extra likelihood of conviction in cases of white victims is significantly greater for female relative to male victims.[10]

The coefficients for *Domestic* in Models 1 and 2 suggest that in general, domestic disputes which involve SYG claims are less likely to result in conviction. But to test the claim that SYG laws are biased against women in cases of domestic violence (Flatow 2014), Model 3 introduces the interaction terms *Domestic X Male Defendant* and *Domestic X Male Victim* to identify whether the domesticity of an incident depends on the gender of the victim or defendant. The statistically significant and negative coefficient for *Domestic X Male Defendant* suggests that the tendency of defendants to escape conviction in domestic cases is significantly greater for male defendants compared to female defendants. Furthermore, as evidenced by the coefficient for *Domestic* in Model 3, the effect of domesticity on conviction is statistically indistinguishable from zero when the defendant is female. The gender of the victim, however, has no discernable conditioning effect on the relationship between domesticity and conviction.

log odds of conviction for when the victim is white compared to when the victim is a person of color, *while* the defendant is a person of color. The negative and significant coefficient for *White Victim X White Defendant* suggests that the coefficient of 9.90 associated with a white victim decreases by an average of 4.24 for white defendants. See below for more conveniently interpretable effect sizes.)

[10]The negative and significant coefficient for *White Victim X Male Victim* suggests that the coefficient of 9.90 associated with a white victim decreases by an average of 6.05 for male victims relative to female victims.)

Table 1: Logistic Regressions for Dependent Variable *Conviction*

	Model 1	**Model 2**	**Model 3**
Victim Initiated	−3.20***	−3.30***	−3.50***
	(0.79)	(0.85)	(0.86)
Victim Crime	−0.44	−1.20	−0.18
	(0.98)	(1.10)	(1.00)
Victim Unarmed	0.83	1.50*	0.72
	(0.64)	(0.77)	(0.66)
Defendant Pursued	−0.29	−0.33	−0.45
	(0.67)	(0.72)	(0.72)
Defendant Could Retreat	1.70**	2.00***	2.00***
	(0.69)	(0.74)	(0.74)
Defendant Gun	−1.80***	−1.90***	−2.00***
	(0.68)	(0.74)	(0.75)
Deaths	2.60***	2.70***	2.90***
	(0.71)	(0.79)	(0.77)
Witness	−0.32	−0.12	−0.21
	(0.63)	(0.71)	(0.68)
Physical Evidence	−0.95	−0.96	−0.91
	(0.60)	(0.63)	(0.62)
Defendant's Property	−0.13	0.36	−0.14
	(0.71)	(0.81)	(0.77)
Domestic	−1.70*	−2.40**	3.60
	(0.88)	(1.00)	(3.00)
Victim White	2.10***	9.90**	1.80**
	(0.77)	(3.90)	(0.77)
Victim Male	−1.40	4.50	−1.70
	(1.30)	(3.80)	(2.10)
Victim Age	0.02	0.04	0.03
	(0.02)	(0.03)	(0.03)
Defendant White	−1.90**	−0.13	−2.70
	(0.78)	(1.90)	(1.70)
Defendant Male	0.17	5.50	1.10
	(0.94)	(4.10)	(1.70)
Defendant Age	0.001	−0.01	−0.0002
	(0.02)	(0.02)	(0.02)
White Victim X White Defendant		−4.20**	
		(1.80)	
Male Victim X Male Defendant		−6.10	
		(4.00)	
White Victim X Male Victim		−6.00*	
		(3.50)	
White Defendant X Male Defendant		0.53	0.86
		(1.80)	(1.70)
Domestic X Male Defendant			−4.30**
			(2.10)
Domestic X Male Victim			−2.30
			(3.00)
N	175	175	175
Log Likelihood	-58.00	-52.00	-55.00
AIC	208.00	204.00	207.00

***p < .01; **p < .05; *p < .1

County and year variables included in the models but not displayed. Robust (Huber-White) standard errors in parentheses.

Figure 1 illustrates the key estimate of interest from Model 2 in terms of probability. As the graph reveals, the probability of conviction is rather high in general when all the variables in Model 2 are assumed to be at their modal values, but the probability of conviction for non-white defendants against white victims *approaches 1* and shows a strikingly smaller margin of error at a 95% confidence level. In other words, white defendants against white victims have, on average, about a 90% chance of conviction, but nonetheless there is a significant class of such defendants who are more likely to escape conviction; whereas, for non-white defendants in otherwise equivalent cases, there are no cases which are more likely to escape conviction. As Model 2 reveals, this difference is substantial enough that there is less than a 5% probability we would observe this difference due to random chance alone.

Figure 2 illustrates the key estimate of interest from Model 3 in terms of probability. As the graph indicates, male defendants in domestic cases are significantly less likely to be convicted than female defendants in otherwise equivalent domestic cases. With respect to domestic cases, the gender bias is even more pronounced than the racial bias indicated in Figure 2. In otherwise comparable cases, the probability of conviction for male defendants is less than 40% whereas the probability of conviction for female defendants is greater than 80%.

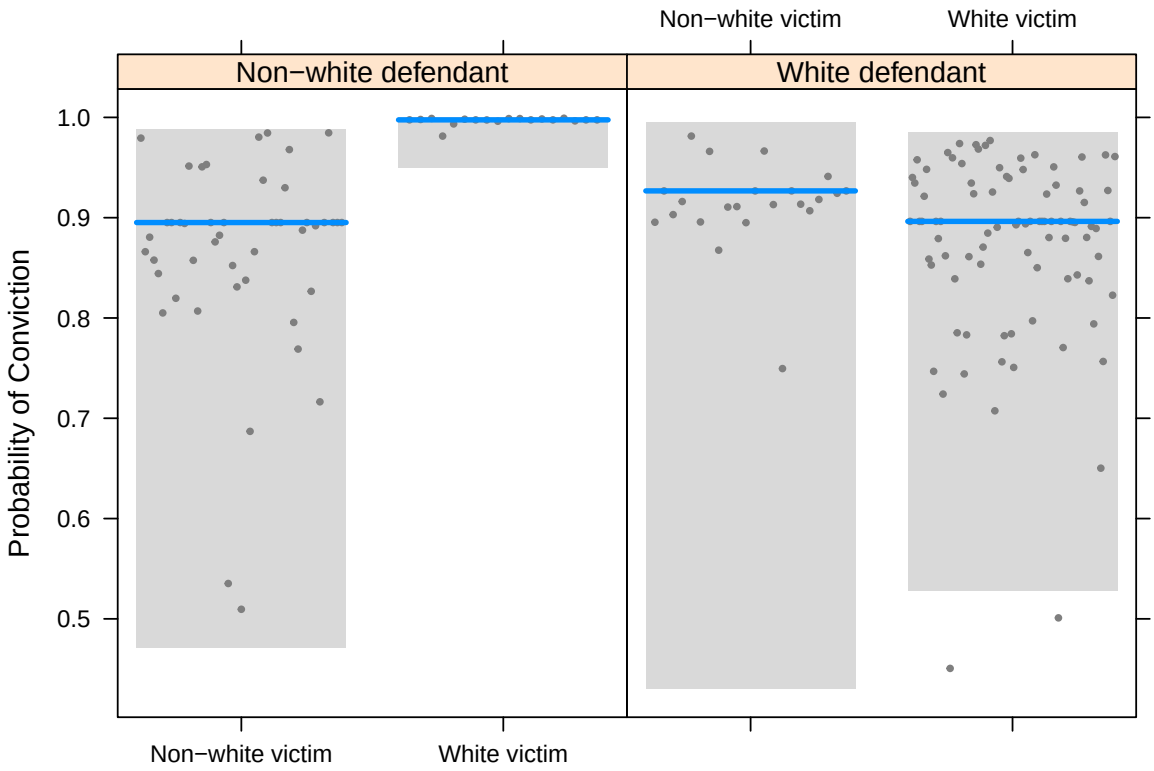
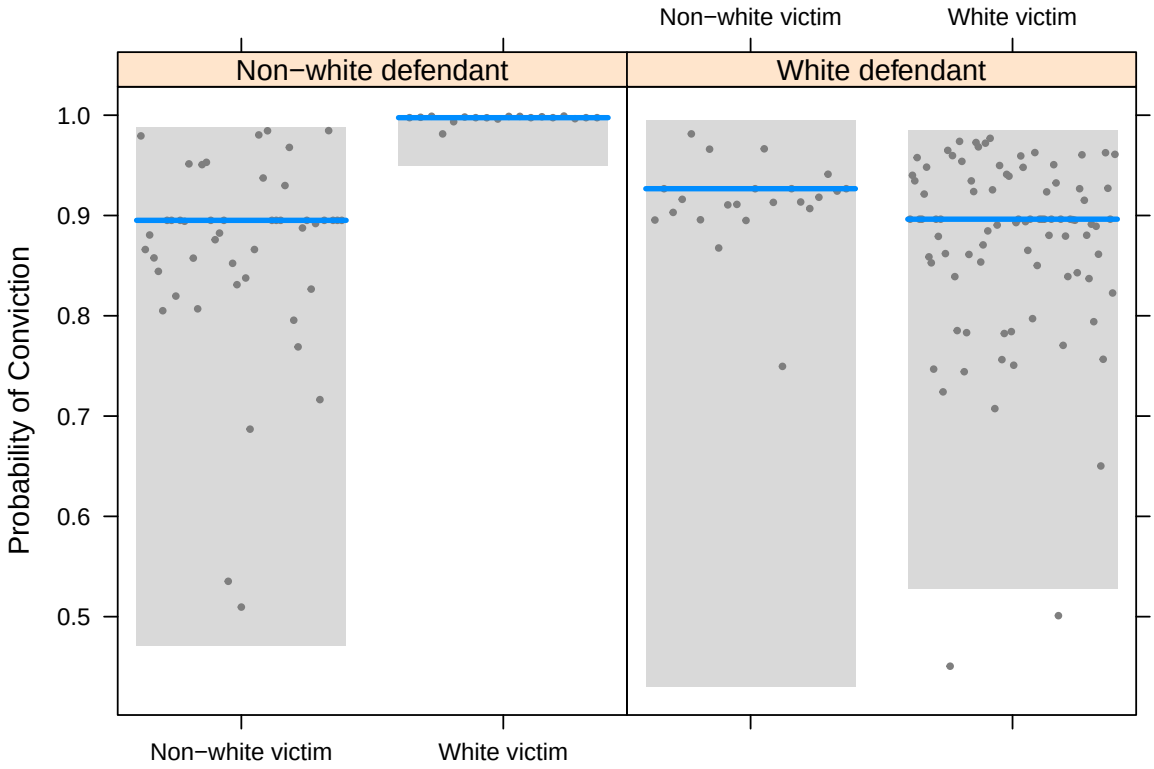


Figure 1: Effect of Victim's Race on Probability of Conviction for White and Non-White Defendants (95% Confidence Intervals and Partial Residuals in Grey)


Non−white victim
White victim
Non−white defendant
White defendant
Probability of Conviction
1.0
0.9
0.8
0.7
0.6
0.5
Non−white victim
White victim

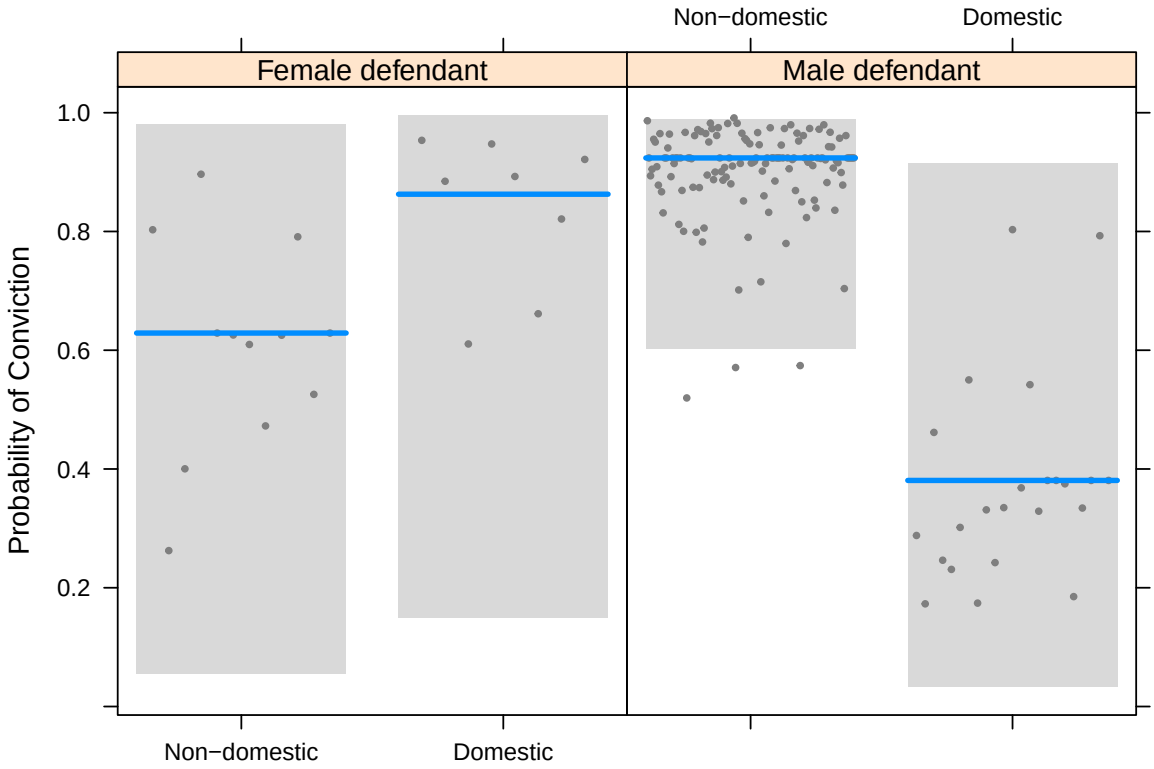


Figure 2: Effect of Domesticity on Probability of Conviction for Male and Female Defendants (95% Confidence Intervals and Partial Residuals in Grey)

How do these statistical findings speak to the justice of past and future legal cases? With caution, the analyses presented here can be used to consider how legal outcomes would be expected to change, on average, given different racial and gender identities for defendants and victims. To make the findings more substantively interpretable in light of publicly well-known cases, I consider two counterfactual questions. First, how would George Zimmerman's probability of conviction change had Trayvon Martin been white but all the other other objective factors of the case had been the same as they were? Second, with respect to Marissa Alexendar's currently on-going appeal against her previous conviction, how would her probability of conviction change had she been a male defendant in an otherwise equivalent case?

To consider the case of George Zimmerman, I conducted 1000 simulations of Model 2 to estimate the probability distribution of conviction in a 2012 case where the defendant is non-white, the defendant is 28 years old, the victim is non-white, the victim is 17 years old, the victim died, the defendant clearly had a gun, the victim was clearly unarmed, the victim was not clearly comitting a crime, the defendant

actively pursued the victim, the defendant could have retreated, the defendant was not clearly on their own property, the victim did not clearly initiate, there were no clear witnesses, the defendant and victim were both male, and they were engaged in a non-domestic incident. Based on the results of the simulation, it is estimated that George Zimmerman's *ex ante* probability of conviction was 0.7 (sd = 0.22). In other words, according to Model 2, *ex ante* George Zimmerman was marginally more likely to be convicted than not, but with a notable margin of error which made his odds not very much better than those of a coin flip.[11] In a hypothetical case in which all of these factors are exactly the same except the victim is white, the expected probability of conviction is 0.98 (sd = 0.05). In summary, had Trayvon Martin been white, George Zimmerman's *ex ante* probability of conviction would have changed by an average of 0.28 (sd=0.2).

To consider the case of Marissa Alexander, I conducted 1000 simulations of Model 3 to estimate the probability distribution of a defendant being convicted in a 2010 case where the defendant is non-white, the defendant is 31 years old, the victim is non-white, the victim is 34 years old, the victim did not die, the defendant clearly had a gun, the victim was clearly unarmed, the victim was not clearly comitting a crime, the defendant did not clearly pursue the victim, the defendant could have retreated, the defendant was not clearly on their own property, the victim did not clearly initiate, there was at least one clear witness, and a female defendant and male victim were engaged in a domestic incident. Based on the results of this exercise, the *ex ante* expected probability of conviction for Marissa Alexander given the objective facts of her case was an estimated 0.61 (sd = 0.28). In other words, according to Model 3, *ex ante* Michelle Alexander was marginally more likely to be convicted than not but with a margin of error which made her odds statistically indistinguishable from those of a coin flip.[12] In a hypothetical case in which all of these factors are exactly the same except the defendant is male, the expected probability of conviction becomes 0.11 (sd = 0.12). In summary, had Marissa Alexander been male, her *ex ante* probability of conviction would have changed by an average of -0.5 (sd=0.28).

[11] For a more precise graphical illustration of the full distribution of expected outcomes, see Figure 4 in Supplementary Information following the main text.

[12] For a more precise graphical illustration of the full distribution of expected outcomes, see Figure 5 in Supplementary Information following the main text.

Conclusion

Though many critics argue that "stand your ground" (SYG) laws are characterized by racism and sexism in their outcomes, almost all research on this question has been unable to control for a wide variety of other factors which defenders of SYG laws commonly invoke to explain away the implication of racial or gender bias. The critique of SYG laws has remained vulnerable to the conservative defense that SYG laws are not, but only seem to be, racist or sexist because certain racial or gender types are more or less likely to be involved in certain types of cases which are objectively more or less likely to end in legitimate convictions. Indeed, the only previous statistical analysis which sought to control for a wide variety of objective factors concluded precisely that there is no racial bias in the outcome of SYG cases after controlling for other objective factors relevant to each case (Lott 2013).

This research note provides the first properly documented and systematic, article-length statistical analysis of racial and gender bias in SYG cases which controls for a wide variety of objective factors possibly correlated with race and/or gender. In stark contrast to John Lott's analysis submitted in testimony to the US Senate Judiciary Committee, I find evidence of both racial and gender bias in a sample of Florida SYG cases from 2006-2013 reported by *The Tampa Bay Times* ("Florida's Stand Your Ground Law" 2013).

In particular, the probability of conviction for a white defendant against a white victim in a typical case was found to be high at 90% (though with a relatively large margin of error) but the probability of conviction for a black defendant in an otherwise objectively equivalent case was found to approach 100% (with a relatively small margin of error). The gender bias in domestic cases appears to be even more pronounced. Conviction for a male defendant in a typical domestic case was found to be about 40%, but for a female defendant in an otherwise objectively equivalent case, the probability of conviction was found to be about 80%.

To put the findings in perspective, I also used simulations to consider how the probability of conviction would change in response to changes in racial and gender identities in two well-known and recent cases. In the case of George Zimmerman's killing of unarmed black teenager Trayvon Martin in 2012, I found that if Trayvon Martin had been white the probability of a conviction would have increased by an estimated

0.28, from 0.7 to 0.98. With respect to the case of Marissa Alexander's warning shot against husband Rico Gray in a 2010 domestic dispute, I found that if Alexander had been a male the probability of a conviction would have decreased by an estimated 0.5, from 0.61 to 0.11. This statistical exercise is especially concerning for Michelle Alexander's case because it reveals that she is not only more likely to be convicted than a man would, but that *ex ante* her most likely outcome is qualitatively different than a man's would be in an equivalent case: Alexander was altogether more likely to be convicted than not, whereas a man in an objectively equivalent case would not simply be less likely to be convicted but would also be altogether more likely to go free than be convicted. Thus, the statistical analysis presented here indicates an alarmingly high probability that Marissa Alexander's initial conviction (currently under appeal) was an artifact of institutionalized sexism (i.e. patriarchy).

In summary, the analysis presented here provides striking evidence of both racial and gender bias in the outcomes of Florida cases between 2006-2013 in which "stand your ground" laws are invoked. It reveals fundamental flaws in a previous analysis submitted in testimony to the US Senate Judiciary Committee (Lott 2013) and finds unreliable its conclusions of no racial bias. Finally, this research note informs important public debate about the possibility of racism and sexism in the application of SYG laws, suggesting that lawmakers and judges have paid inadequate heed to the racial and gender implications of "stand your ground" laws.

Supplementary Information

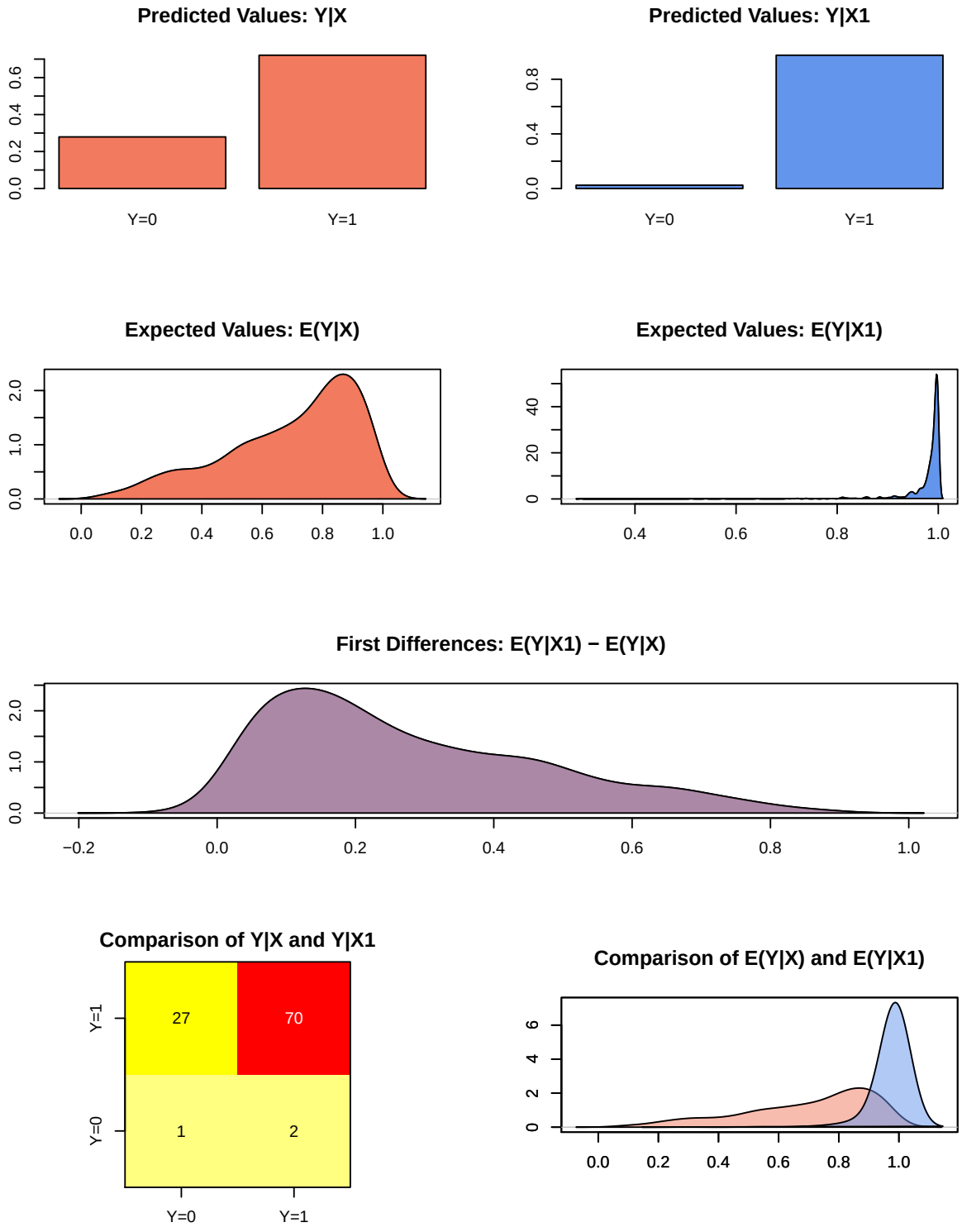


Figure 3: Probability of Conviction (Y) if Trayvon Martin (X) Had Been White (X1)

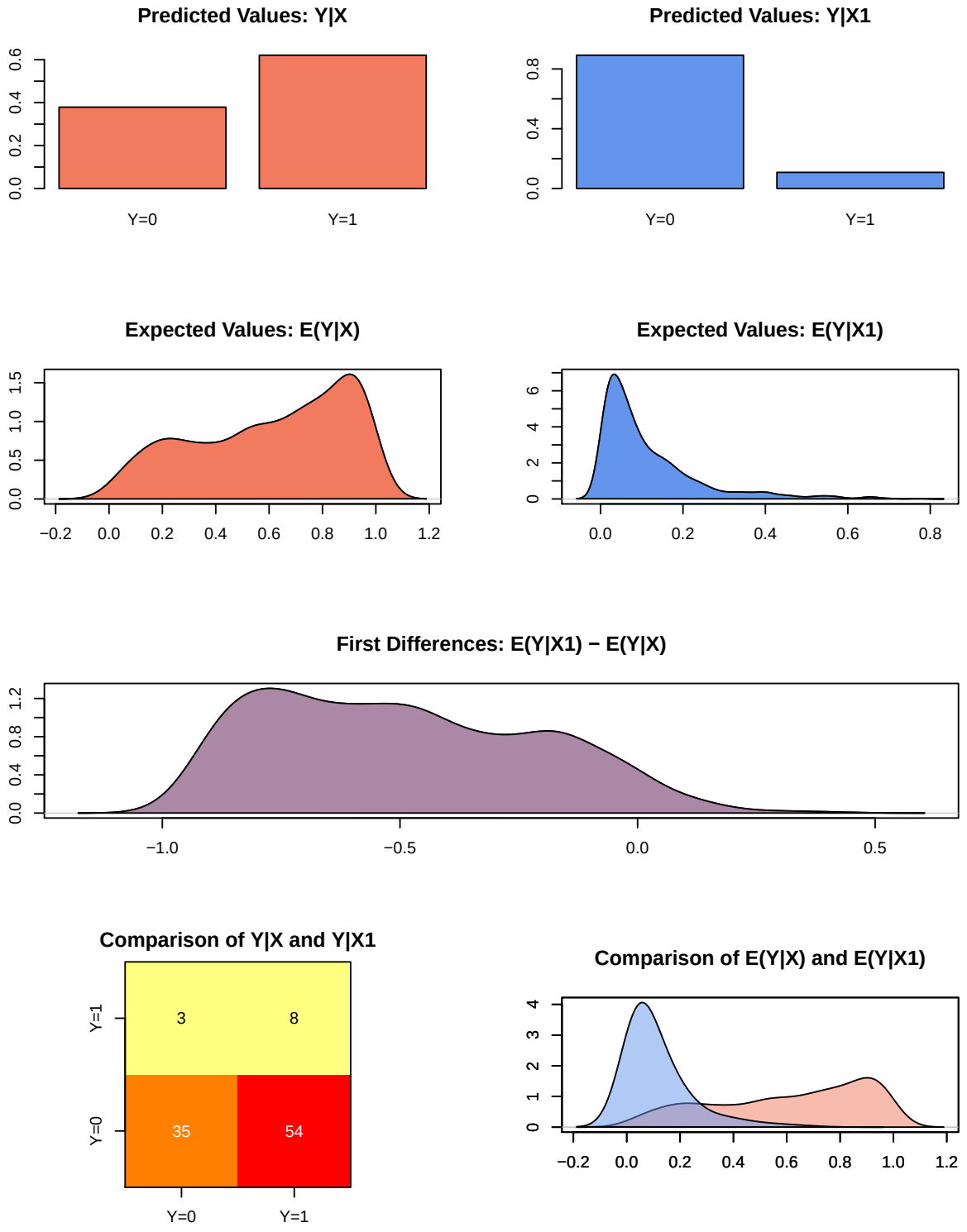


Figure 4: Probability of Conviction (Y) if Marissa Alexander (X) Was Male (X1)

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