CAPITAL PUNISHMENT

JUSTICE AS A FUNCTION OF RACE

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TABLE OF CONTENTS

INTRODUCTION

The issue of capital punishment is perhaps one of the most polarizing topics in the United States today. Most people recognize that one human being taking the life of another is unethical, but many make an exception when it comes to our country as a whole. The United States judicial system has the power to sentence citizens to death, and it is in the interests of all concerned that this process is conducted in an unbiased manner. In this paper we will examine the prisoners on death row with a specific focus on racial differences.

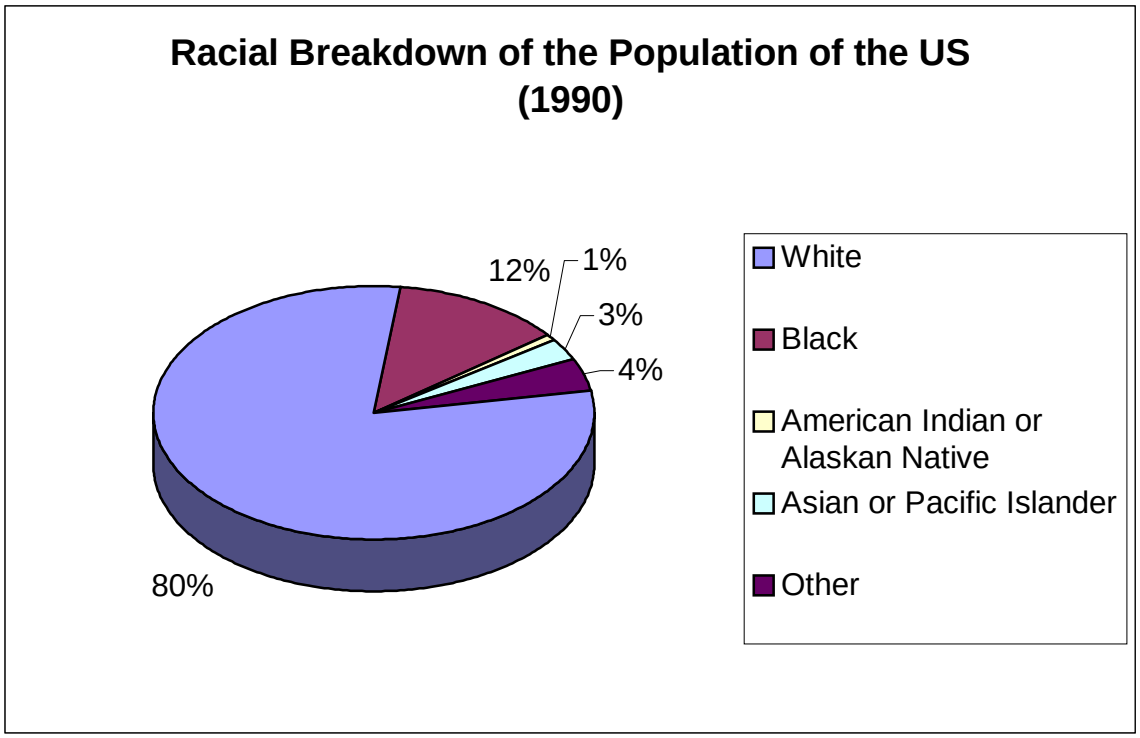
In order to get a better perspective of the situation, we have to examine the context. The members of death row represent a subset of all prisoners, which is a subset of those arrested, which is a subset of the population of the United States. The specific focus will be on the death row prisoners themselves, but ignoring these other populations would potentially obscure many important problems specific to racial bias. With this interest in mind, three additional datasets were used for the Background section. The vast majority of the statistical analyses however, come solely from the dataset provided for the assignment.

It is not the intent of this paper to put a slant on the situation by using only data that suggest racial differences. There are sections that both support and refute the issue of justice as a function of race, and even in the seemingly insignificant data can we learn a great deal. The methods included were not done so because of the results they produced. Rather, they were chosen based on how important one might consider them when thinking about the problem empirically.

BACKGROUND: THE POPULATIONS

POPULATION 1: THE UNITED STATES POPULATION (252,730,369 people)

The country is extremely diverse in both culture and ethnic background. Every ten years, the United States takes a census describing many aspects of the population. When looking at these data, it is important to remember that the last census was taken in 1990 while the rest of the prisoner data presented is as recent as 1997. Because of this discrepancy, there will be no formal statistical analyses performed between the two datasets. The population does not vary wildly from year to year so this should provide a fair estimate, however the exact numbers are probably no longer reliable.



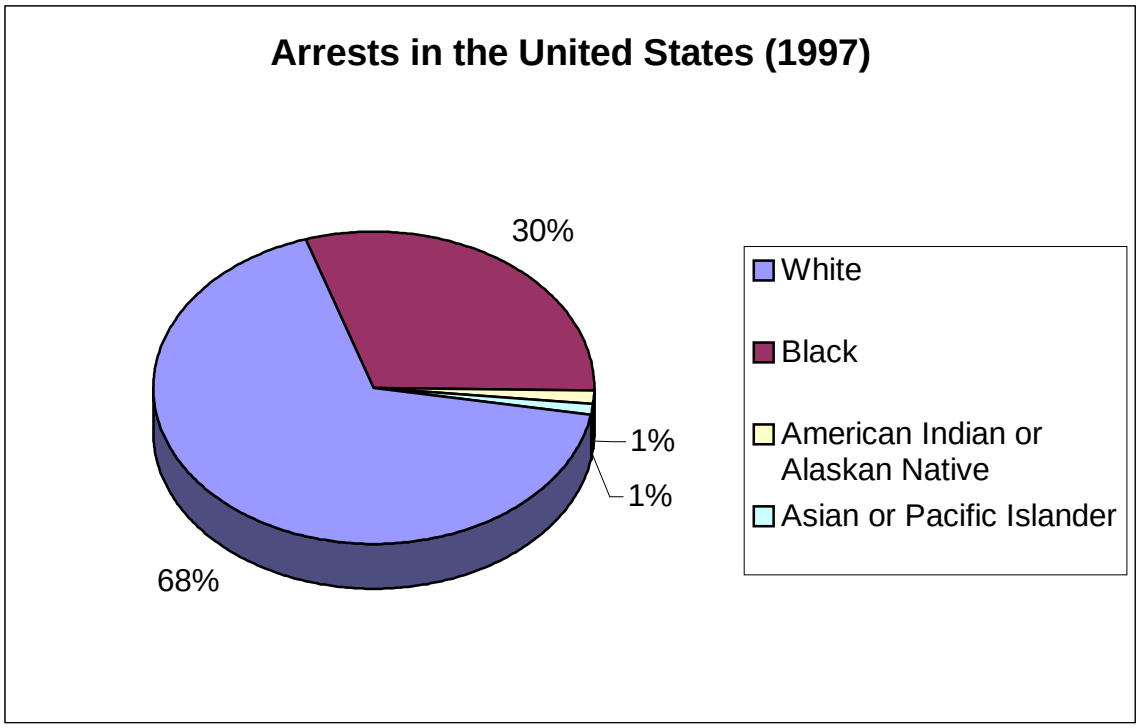
Source: United States Census Bureau[1]

All of the datasets presented use similar categories for describing race. Not all have an option for "Other" like the Census does, but the four major categories are preserved for the most

part. This particular chart depicts how the population breaks down by race, and it clearly shows that the country is predominantly white. In addition, whites outnumber blacks by a factor of six.

POPULATION 2: ARRESTS (10,516,707 people)

In 1997, the Federal Bureau of Investigation's Uniform Crime Reporting (UCR) program collected all of the information about arrests in that year. The program itself has a notably high level of law enforcement participation, and the data collected is regarded as the most complete source of arrest information available. The following chart displays a breakdown of the population of those arrested by race.



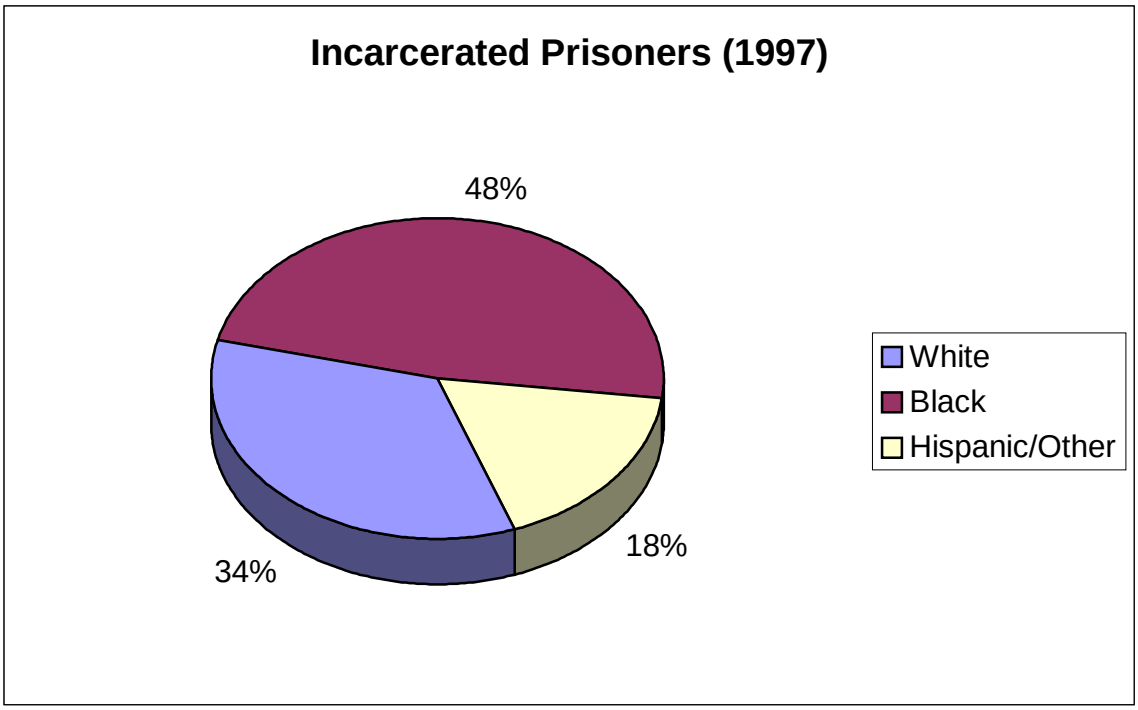
Source: The United States Department of Justice, Bureau of Justice Statistics[2]

There is an interesting shift in the racial differences in this section of people. The proportions for American Indians and Pacific Islanders are largely the same as in the US population, but blacks and whites changed significantly. As previously mentioned, precise statistical methods

would not be appropriate here because the populations are from different times, however the trends that we notice now may show themselves important later on.

POPULATION 3: PRISONERS (1,100,500 people)

There are currently over one million people in prison – a small fraction of which are on death row. The Department of Justice conducted a study of all prisoners at years end 1997. The following chart shows the breakdown of prisoners by race. These data represent only those prisoners under a sentence of one year or more. Omitting the short-term inmates provides us the ability to focus on more major crimes and not have the data get cluttered with information about all of the smaller crimes today.



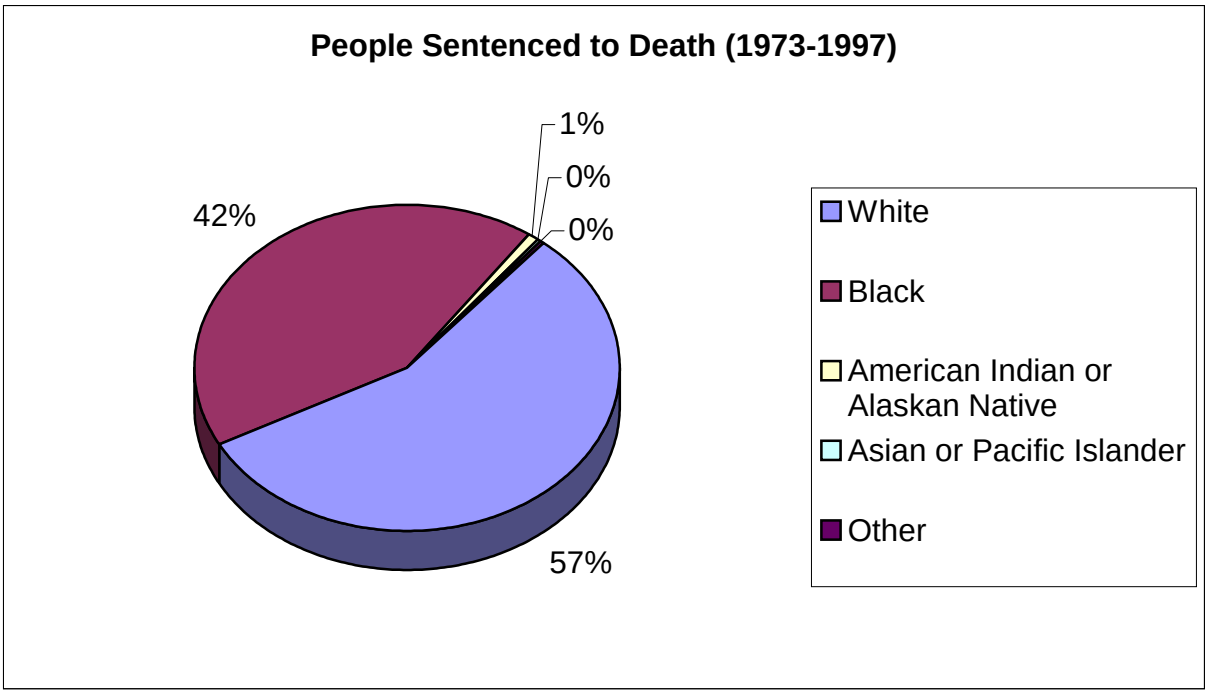
Source: United States Department of Justice: Office of Justice Programs[3]

The population has shifted considerably further than before. Whites constitute a minority in the prison system, and blacks make up almost half. This shift does not suggest a problem in the way justice is carried out in this country, but it does suggest that there is a relationship between race and

incarceration. If there was no relationship, we would expect to have seen the distributions remain relatively unchanged.

POPULATION 4: DEATH ROW INMATES (6,819 people)

The final population is also the most important. It is this dataset that will constitute the majority of the statistical analyses in the pages to come. It represents the entire population of those sentenced to death between 1973 and 1997, and as such will require no statistical inference to a greater population. The following chart, similar to each of the others, is a breakdown of the population of death row inmates according to race.



Source: The United States Department of Justice, Bureau of Justice Statistics: ICPSR 2737

The information presented in this chart is not entirely surprising given the trend that appeared across the other populations. Whites represent a little over half of the inmates, and whites and blacks together represent approximately 99% of the population. The ratio between blacks and whites specifically is not as skewed as the prisoner data, but it is still significantly different than the census data would have lead us to expect. It is also important to note that not all states have a death

penalty, so the population from which this population is drawing is not exactly that of the entire United States.

SUMMARY

The purpose of this background section was to establish some perspective about how citizens of death row compare to the rest of our society. Each member made the progression from normal citizen, to being arrested, to being sent to incarceration. The progress through these populations reveals an increasing percentage of blacks, which signifies there is a relationship somewhere along the line. A random draw of one million people out of the United States population would generate a group of people with much different racial backgrounds than the one million people in prison. The cultural reasons for why this might be are limitless, but it would be unwise to overlook the relationship between incarceration and racial background.

When we analyze the death row inmates in detail, it will be important to keep these facts in mind. If there is some form of racism involved (which would be impossible to prove with the given data) it may either stem from or be related to the same source that caused the proportions to skew to begin with. It will not be possible for us to do anything but hypothesize what might be causing these results. At the very least we will be able to tell the extent to which these results are not produced by chance.

RACIAL DIFFERENCES ON DEATH ROW

TIME SPENT ON DEATH ROW

One of the quantitative comparisons we can make between the races is how long they usually are on death row for. In addition to this analysis we will want to take a look at why they left death row, as it requires a third variable to distinguish between those who were actually executed and those who were not. If any one race tends to get out of being executed or to stay on death row for a longer amount of time than others might suggest some unfairness in the legal system.

The following boxplot breaks up the time (in days) spent on death row by race. The x-axis displays the numbers 1-5, which represent the different races. These numbers translate as follows: 1-White, 2-Black, 3-American Indian or Alaskan Native, 4-Asian or Pacific Islander, 5-Other. A table describing the values for each entry in the chart is provided in the Appendix (Table 1).

Figure 1: Time on Death Row by Race

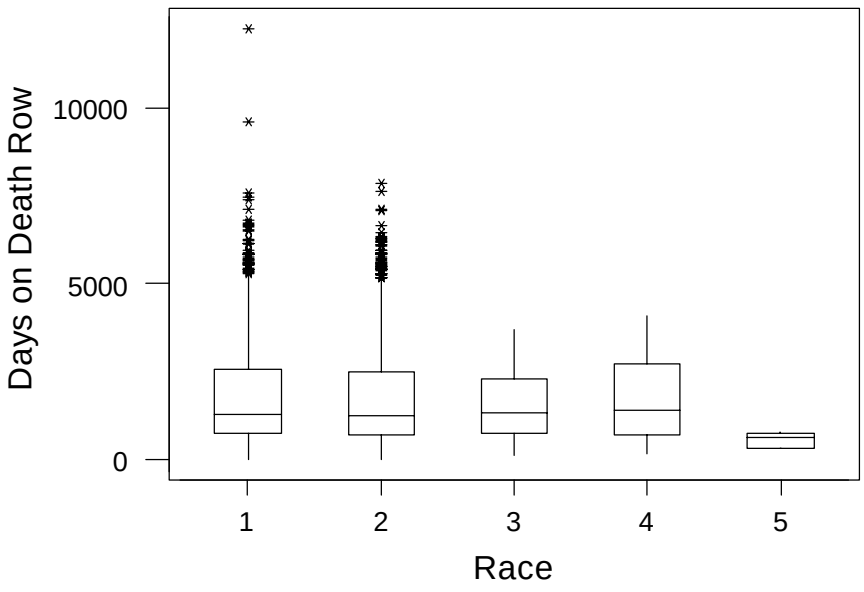


Figure 1 above reveals that for the majority of cases, the time spent on death row does not vary wildly. The medians for the first four categories are all at very similar levels with the exception of the "Other" category. The "Other" category has a much smaller standard deviation, and a median time is about half that of the rest. At first glance it appears egregious. However, as Table 1 indicates, there are only 8 observations that fit this category. That fact doesn't mean that the data are invalid, but without more observations we should be hesitant to consider the results indicative of a real problem.

The specific problem which we have been tracing – differences between whites and blacks – does not appear to present itself here. The interquartile ranges differ by fewer than 100 days in either direction, and a difference of means test produces a p-value of 0.43 (see Table 2, Appendix). Our conclusion therefore is that these results could have been obtained purely by chance.

A more interesting approach might be to break up the data not only by race but also by outcome. In the interest of not wasting time or space, the focus will be purely on the differences between white and black prisoners. The impact caused by taking the outcome into consideration is substantial. Those who were executed (across both races) spent significantly less time on death row than those who were not. A Chi-Square analysis (Table 3, Appendix) reveals that we can be more than 97% confident that this difference is not due to chance alone.

Performing a Difference of Means tests allows us to determine whether or not the racial differences are statistically significant. Performing this test on those who were eventually executed reveals a noteworthy discrepancy in the times spent on death row (Table 4-Appendix). The average number of days a black prisoner who is ultimately executed spends on death row is 3,709. White prisoners on the other hand, spend a full 518 days less. The p-value in this case is .0004, which qualifies as significant for even very conservative confidence intervals. The comparison for prisoners who aren't ultimately executed does not reveal a significant difference across races.

The implications of these analyses are puzzling. It stands to reason that when the outcome is execution, the time prisoners spend on death row is lower. Precisely because nothing interferes with the course of events laid out after the trial, the time the course takes to run is expedited. The difficult part to explain is how racial background has a significant impact on how much time is spent on death row. We would expect that if this were a racial problem, the same results would appear in cases when the person is not ultimately executed. One hypothesis that could explain this difference is that during the prisoner's stay in jail, the issues that extend their time in jail when the outcome is not execution are the same issues that reduce the racial differences during their stay.

CRIMES COMMITTED BY DEATH ROW PRISONERS

Capital punishment is a feasible sentence for a very small percentage of the total number of crimes committed in the United States. In each case, there is always the option of not assigning the perpetrator to death and we would hope that the judicial system fairly evaluates which cases warrant the death penalty and which don not. Here we take a look at the types of crimes committed by death row prisoners and compare them across the races. Ideally, we would have data describing how many people were convicted of these crimes in order to determine what percentage were sentenced to death, but that data is not available.

Table 5 depicts the Chi-Square analysis for the relationship between race and capital crime. Once again the "Other" category proves misleading because of its lack of samples. A quick glance at the data suggests that those of a race not defined by the first four groups are more likely to be sentenced to death for kidnapping. Empty squares in the table make producing an accurate p-value an impossible task. Furthering the analysis of whites versus blacks, by performing a Chi-Square test on only those crimes they have in common (murder, kidnapping, and rape; aggravated assault is ignored because there are so few instances) we get a p-value of less than .0001. We can conclude with a high degree of certainty that there is a relationship between race and being sentenced to death

for the same crimes. Specifically, whites are more likely to be sentenced to death for committing murder whereas blacks are more likely to be sentenced to death for kidnapping or rape.

These results to not necessarily suggest a problem in the assignment of penalties to the different racial groups. Without detailed information about how many people in each group were found guilty of these crimes, it is not possible to assess the fairness with which the sentences were delivered. What we do know is that there is a significantly disproportionate number of black people and white people on death row with respect to the different crimes. If we were to assume that justice is indeed delivered in an impartial manner, then we would be led to believe that certain ethnic groups are more likely to commit certain crimes.

Murder is by far the most common crime for which people are put on death row. Due to the large number of samples, a detailed analysis would probably prove more accurate than one performed on kidnapping or rape, where there are only 40 or 50 occurrences. Table 6 shows the data generated by a Chi-Square analysis of persons convicted of murder broken down by race and reason for leaving death row. Once again, the p-value indicates that the results are statistically significant.

The most blatant difference between the two groups in this case is the breakdown between the reasons people left death row. For both groups, the most common reason was having the sentence overturned and the second most common reason was having the conviction overturned. It is the third most common reason over which the two groups differ. Black prisoners leave death row more frequently because of constitutionality issues than actual executions. White prisoners are more frequently executed. The implications generated by these observations are unclear. Once again we have determined that race plays a role in determining the outcome of death row prisoners, but why?

Without having a better understanding of how the system works it is difficult to find real explanations for the correlation. Confounding variables abound, as every possible outcome relies on

several things to happen in order for it to take place. For example, if one were to have their sentence overturned, they would need to have either a lawyer or a substantial knowledge of the law. In order to get a lawyer, the prisoner would need to have a sizable amount of money. In order to have a sizable amount of money… you get the picture. The bottom line is that there are so many different things that contribute to the arrival at any given outcome that controlling for them would require more information than provided in the dataset.

ESCAPES AND TRANSFERS

Figure 2: Chi Square Race vs. Escapes and Transfers

	Neither Escaped nor Transferred	Escaped/Transferred	All
Whites	99.76	0.24	100
	56.89	50	56.87
	56.73	0.13	56.87
	3812	9	3821
Blacks	99.69	0.31	100
	43.11	50	43.13
	43	0.13	43.13
	2889	9	2898
All	99.73	0.27	100
	100	100	100
	99.73	0.27	100
	6701	18	6719

Chi-Square = 0.347, DF = 1, P-Value = 0.556

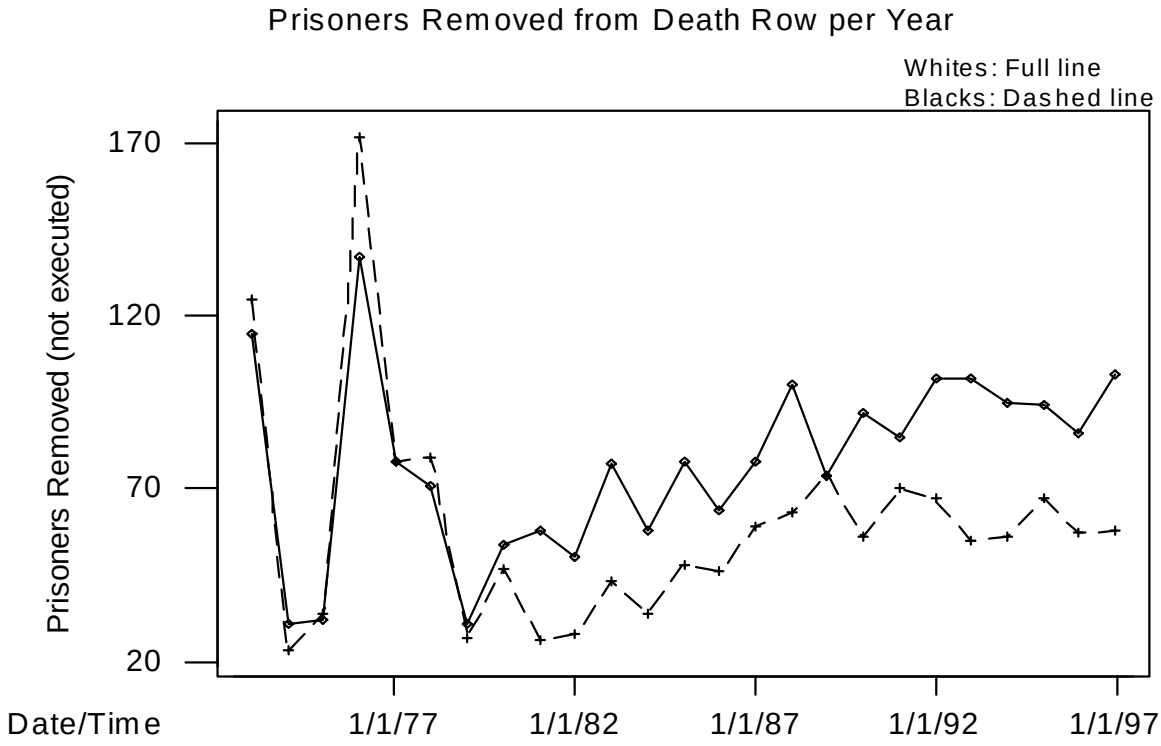
Here is one instance where race does not seem to have an impact. Escapes and transfers make up a very small percentage (.24% of white prisoners and .31% of black prisoners) of the total population. With a p-value of .556, there does not appear to be a relationship between race and escapes and transfers.

REMOVAL RATES OVER TIME

Another approach we can take towards analyzing the data is looking at specific trends over the course of the 25-year period. If there appears to be a discrepancy along the path, we would then

be able to come up with theories based on the time period. In order to appropriately gauge the criminal justice system at each period in time, we would want to analyze a variable representative of an action that took place during that time period. Each year, a certain number of prisoners are able to get out of an execution by one of the actions mentioned in earlier sections. We can assume that the judicial system plays a large role in most of these activities, as they deal with sentence commutations and conviction overturns. If in any given year people were highly susceptible to racial bias, we might expect to see fewer inmates in a specific racial group obtain fewer of these overturns.

Figure 3: Time-Series Plot of Prisoners Removed from Death Row



The shapes of the lines in Figure 3 are very similar with the exception being in the late eighties – early nineties where the lines trends differ for a short period. If we were looking for a specific time period that could explain the racial differences, this would probably be our best target. The evidence is not compelling that there is a significant difference between the races at any one

time. It almost appears that there is a consistent trend of higher removal rates among whites because the graph is somewhat deceiving. The higher number of white prisoners removed from death row can be explained simply by the greater number of white prisoners *on* death row. Once again, ignoring the population can lead to misinterpretation of the data.

CONCLUSION

The factor of race is too prominent to be ignored when analyzing capital punishment issues. Although there is very little to offer in terms of concrete explanations, statistical significance has been demonstrated at multiple junctures. Our society continuously stresses the importance of color-blindness in the private sector. What is perhaps more important (and yet overlooked perhaps because it seems so inaccessible) is the problem of racial bias in the criminal justice system. The data were not present to shape any specific arguments against the system. However, the data would be capable of supporting an argument with the addition of more data.

The section about populations was presented in an effort to better the reader's perception of the issue. As the black population proportion grew at each stage of the criminal justice process, it should have become obvious that there are some racial factors at work. Perhaps it is an issue with our culture, or perhaps it is an issue with law enforcement, but either way it is an issue tied strongly to race. The specific analyses of the death penalty population could not answer to any of these potential problems. However, as the inmates of death row represent a subset of the United States population, it would be reasonable to hypothesize that whatever cultural stigma might have been at work would continue to affect the lives of the former free citizens.

APPENDIX

TABLE 1: RACE AND DAYS ON DEATH ROW

Variable	Race	N	N*	Mean	Median	Tr Mean
Days on	1	1944	1877	1772.7	1277.0	1652.2
	2	1492	1406	1733.5	1218.5	1607.1
	3	26	28	1478	1294	1444
	4	13	17	1648	1400	1563
	5	8	8	536.2	608.0	536.2

Variable	Race	StDev	SE Mean	Min	Max	Q1	Q3
Days on	1	1445.3	32.8	0.0	12235.0	730.0	2556.7
	2	1462.3	37.9	0.0	7852.0	669.0	2457.3
	3	933	183	90	3683	707	2289
	4	1229	341	153	4079	670	2709
	5	201.2	71.1	304.0	761.0	304.3	730.5

TABLE 2: DIFFERENCE OF MEANS FOR DAYS ON DEATH ROW

Two sample T for Days on Death Row

Black	N	Mean	StDev	SE Mean
0	1944	1773	1445	33
1	1492	1733	1462	38

95% CI for mu (0) - mu (1): (-59, 137)
T-Test mu (0) = mu (1) (vs not =): T = 0.78 P = 0.43 DF = 3189

TABLE 3: CHI-SQUARE ANALYSIS FOR EXECUTION

Rows: Black Columns: Executed

	0	1	All
0	3556	265	3821
1	2736	162	2898
All	6292	427	6719

Chi-Square = 5.012, DF = 1, P-Value = 0.025

TABLE 4: DIFFERENCE OF MEANS FOR EXECUTED PRISONERS

Two sample T for bExec vs wExec

	N	Mean	StDev	SE Mean
bExec	162	3709	1376	108
wExec	265	3191	1545	95

95% CI for mu bExec - mu wExec: (235, 801)
T-Test mu bExec = mu wExec (vs not =): T = 3.60 P = 0.0004 DF = 370

TABLE 5: CHI-SQUARE ANALYSIS FOR CAPITAL CRIMES

Race	Murder	Kidnapping	Rape	Robbery	Assault	Hit and Run	Burglary	Arson	Stolen Property	All
White	99.35	0.29	0.29	--	0.03	0.03	--	0.03	--	100
	56.53	32.35	19.3	--	25	100	--	100	--	56.03
	55.67	0.16	0.16	--	0.01	0.01	--	0.01	--	56.03
	3796	11	11	0	1	1	0	1	0	3821
Black	97.31	0.76	1.59	0.07	0.1	--	0.1	--	0.07	100
	42	64.71	80.7	100	75	--	100	--	100	42.5
	41.36	0.32	0.67	0.03	0.04	--	0.04	--	0.03	42.5
	2820	22	46	2	3	0	3	0	2	2898
American Indian or Alaskan Native	100	--	--	--	--	--	--	--	--	100
	0.8	--	--	--	--	--	--	--	--	0.79
	0.79	--	--	--	--	--	--	--	--	0.79
	54	0	0	0	0	0	0	0	0	54
Asian or Pacific Islander	100	--	--	--	--	--	--	--	--	100
	0.45	--	--	--	--	--	--	--	--	0.44
	0.44	--	--	--	--	--	--	--	--	0.44
	30	0	0	0	0	0	0	0	0	30
Other	93.75	6.25	--	--	--	--	--	--	--	100
	0.22	2.94	--	--	--	--	--	--	--	0.23
	0.22	0.01	--	--	--	--	--	--	--	0.23
	15	1	0	0	0	0	0	0	0	16
All	98.47	0.5	0.84	0.03	0.06	0.01	0.04	0.01	0.03	100
	100	100	100	100	100	100	100	100	100	100
	98.47	0.5	0.84	0.03	0.06	0.01	0.04	0.01	0.03	100
	6715	34	57	2	4	1	3	1	2	6819

Chi-Square = 66.052, DF = 3

TABLE 6: CHI-SQUARE ANALYSIS FOR LEAVING DEATH ROW

All data refer to instances where murder was the capital crime

Race	Executed	Deceased	Unconstitutional	Commuted	Sentence Overturned	Conviction Overturned	Other	All
White	13.8	6.2	11.25	5.21	39.95	22.45	1.15	100
	62.06	73.46	48.32	62.5	56.61	58.09	52.38	57.57
	7.95	3.57	6.48	3	23	12.92	0.66	57.57
	265	119	216	100	767	431	22	1920
Black	11.45	3.04	16.33	4.24	41.55	21.98	1.41	100

	37.94	26.54	51.68	37.5	43.39	41.91	47.62	42.43
	4.86	1.29	6.93	1.8	17.63	9.33	0.6	42.43
	162	43	231	60	588	311	20	1415
	12.8	4.86	13.4	4.8	40.63	22.25	1.26	100
All	100	100	100	100	100	100	100	100
	12.8	4.86	13.4	4.8	40.63	22.25	1.26	100
	427	162	447	160	1355	742	42	3335

Chi-Square = 38.567, DF = 6, P-Value = 0.000

TABLE 7: TWO SAMPLE T TEST FOR NON-EXECUTED PRISONERS

```
Two sample T for Whites Removed vs Blacks Removed

           N      Mean     StDev   SE Mean
Whites R  25      77.8      26.6       5.3
Blacks R  25      59.7      32.1       6.4

95% CI for mu Whites R - mu Blacks R: ( 1.4,  34.9)
T-Test mu Whites R = mu Blacks R (vs not =): T = 2.18  P = 0.035  DF = 46
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[1] The United States Census Bureau: http://www.census.gov/

[2] The Sourcebook of Criminal Justice Statistics, 1998. http://www.ojp.usdoj.gov/bjs/abstract/scjs98.htm

[3] Beck, Allen J. and Mumola, Christopher J. Prisoners in 1998. Bureau of Justice Statistics Bulletin. August 1999. http://www.ojp.usdoj.gov/bjs/abstract/p98.htm