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I. THE PROBLEM OF RACIAL DISPROPORTIONALITY IN PRISONS

One of the most distressing and troublesome aspects of the operation of the criminal justice system in the United States is the severe disproportionality between blacks and whites in the composition of prison populations. Although blacks comprise roughly one-eighth of the population, they represent about one-half of the prison population. Thus, the race-specific incarceration rates (the ratio of prisoners to population within each racial group) are grossly disproportionate. This disproportionality has been a source of major concern, largely because it suggests the possibility of gross injustice in the criminal justice system.

The racial differences in imprisonment are reflected in Table 1, which presents demographic-specific incarceration rates (in units of prisoners per 100,000 persons within each indicated demographic group) in state prisons (not including federal prisons or local jails) for blacks and whites and their total.[1] This table highlights the great sensitivity of in-

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[1] The data on age, race, and sex of the prisoners were obtained from a survey of state prison inmates conducted in 1979 by the Bureau of the Census for the U.S. Bureau of Justice Statistics. From that survey, for example, there were estimated to be 74,150 black males in their twenties in state prisons. The ratio of this number to the corresponding U.S. population (2,384,000 black males in their twenties) is the incarceration rate of 3068 per 100,000. Population data were obtained from U.S. BUREAU OF CENSUS, 1980 CENSUS OF POPULATION SUPPLEMENTARY REPORT NO. PC80-31-1, AGE, SEX, RACE, AND SPANISH ORIGIN OF THE

carceration rates to the demographic variables of sex and age as well as race. The group with the highest incarceration rate, black males in their twenties, suffer an incarceration rate that is twenty-five times that of the total population. On any given day, one can expect to find over three percent of that group in state prisons. In view of the relatively low likelihood of imprisonment generally (about one person per 800 of the total population is in a state prison on any day), finding as many as one person out of thirty-three from any demographic group in prison is strikingly high and represents a source of considerable concern.[2]

TABLE 1

DEMOGRAPHIC-SPECIFIC INCARCERATION RATES[a] IN U.S. STATE PRISONS[b]

Demographic Group	Total[c]	White	Black	Black/White Ratio
Total Population	124	72	493	6.9
Males	233	142	1012	7.1
Males, 20-29	755	425	3068	7.2

(a)   The "demographic-specific incarceration rate" is the ratio of prisoners in the indicated demographic group to the population within that demographic group, in prisoners per 100,000 population.

(b)   The estimates of state prisoners within each demographic group is derived from a survey of state prisoners conducted in 1979 by the Bureau of Justice Statistics.[3] The estimates of the population within each demographic group are obtained from the United States Bureau of the Census.[4]

(c)   The totals for both prisoners and population are based only on black and white groups. Other races are omitted from the calculations.

POPULATION BY REGIONS, DIVISIONS, AND STATES: 1980 (1981) [hereinafter cited as 1980 CENSUS OF POPULATION REPORT].

   [2] If one includes federal prisons and local jails, this incarceration rate would reach about 4.5%. Lawrence Greenfeld, in Measuring the Application and Use of Punishment, a paper presented at the American Society of Criminology meeting (Nov. 12, 1981), explored the prevalence (i.e., the fraction ever to have served) of "confinement" in a juvenile or adult prison or jail, and the racial differences in that prevalence. He found that 18.2% of black males would expect to serve in such an institution sometime in their lives, whereas only 2.7% of white males would have a similar expectation. The black/white ratio of these prevalence expectations is 6.7, fairly close to the ratio of 7.1 for the male race-specific incarceration rates shown in Table 1. Greenfeld also found that the confinement recidivism probability (i.e., the chance of one or more additional commitments for those once committed) was very similar for blacks and whites. This finding of major differences between the races in prevalence and very similar recidivism probabilities is consistent with the Blumstein and Graddy results found for index arrests in large U.S. cities. Blumstein & Graddy, *Prevalence and Recidivism in Index Arrests: A Feedback Model Approach*, 16 LAW & SOC'Y REV. 265 (1981-82).

   [3] U.S. Bureau of Just. Statistics, Bureau of the Census, State Correctional Populations and Facilities, 1979—Advance Report (unpublished report) [hereinafter cited as State Correctional Populations and Facilities].

   [4] 1980 CENSUS OF POPULATION REPORT, *supra* note 1.

Combining this very large incarceration rate for blacks (and especially for the young black males) with a gross disproportionality of about seven to one between black and white incarceration rates raises a serious moral challenge. These figures generate a deep concern that the disproportionality may be a consequence of profound racial discrimination within the criminal justice process. Indeed, that concern was reflected in a letter[5] that Alan Breed, the Director of the National Institute of Corrections, circulated widely in convening a seminar to address these issues. In his letter, Breed asked "whether a democratic society can continue to tolerate the flagrant racism apparently demonstrated"[6] by the racial disproportionality of prison populations. Dunbaugh[7] and Christianson[8] invoke the existence of the racial disproportionality as providing evidence of the "racism" and "discrimination" in the criminal justice system. Christianson and Dehais[9] conclude that "it is likely that racial discrimination in the criminal justice process may be a significant factor in determining why blacks are sent to prison so much more than whites."[10]

If the racial disproportionality in prisons is directly attributable to criminal justice officials' discrimination on the basis of race, a massive legal and political effort should be mobilized to redress that evil. If, however, the disproportionality results predominantly from some legally relevant difference between the races, such as a corresponding differential involvement in crime, then the charge of "racism" would not be justified. Indeed, it could be more harmful than helpful. The charge would wrongly strain even further the already troubled race relations in U.S. society. Perhaps most important, directing attention to a secondary issue rather than to the primary issue may well leave the primary problem unaddressed. This paper explores the racial disproportionality of prison populations to discern, in at least a preliminary way, the degree to which it is likely to have emerged as a consequence of racial discrimination in the criminal justice system compared to the alternative explanation that the racial disproportionality might have emerged as a consequence of disproportionate involvement in criminal activity, and particularly in the kind of criminal activity that is most likely to lead to imprisonment and to longer sentences.

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[5] Letter from Alan Breed (Dec. 7, 1979).

[6] *Id.*

[7] Dunbaugh, *Racially Disproportionate Rates of Incarceration in the United States*, 1 PRISON LAW MONITOR 205 (1979).

[8] Christianson, *Our Black Prisons*, 27 CRIME & DELINQ., 364 (1981).

[9] Christianson, & Dehais, The Black Incarceration Rate in the United States, a Nationwide Problem, (Draft Report) (Training Program in Criminal Justice Education, Graduate School of Criminal Justice, State University of New York at Albany (Aug., 1980)).

[10] *Id.* at 35.

The sex ratio in prisons, for example, is far more disproportionate even than the race ratio. Ninety-six percent of prisoners are male and only four percent are female.[11] As a result, the sex-specific incarceration rates are in the ratio of twenty-four to one, more than three times the ratio between the races. Very few people, however, would argue that this disproportionality results primarily from discrimination against males (or in favor of females, even though there might well be some degree of such discrimination). It is generally accepted that males do engage in a disproportionately larger amount of crime and especially of the more serious crimes. If it is true that the very large disproportionality of males in prison compared to females fairly reflects their greater propensity to engage in serious criminal activities, then it would be unreasonable to argue that the disproportionality is unjust or discriminatory. The differential involvement might reflect sex differences in socialization, in the economic demands they face, or in other "causal factors" associated with male criminality that could explain their different propensity to commit crime. If the differential representation in prison were fully explained by the differential involvement in crime, and if one were concerned about the prison disproportionality, then one would have to focus on the causes of the differential involvement in crime rather than on discrimination in the criminal justice system as the primary means for reducing the disproportionate representation in prison.

It is fully as important—perhaps even more so in view of the inflammatory potential of the issue—that the factors associated with the racial disproportionality in prison are responsibly identified. If blacks are relatively more involved in crimes as compared to whites, and if this difference is most pronounced in the more serious crimes of homicide and robbery, then it is important to discern how much of the differential incarceration is attributable to this differential involvement. These crimes do have a greater risk of apprehension and conviction (in part at least because of the ability to develop and identify suspects). Also, because these crimes are viewed by society as being the more serious, persons convicted of these offenses are more likely to go to prison and to receive more severe sentences.

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[11] For example, on December 31, 1979, there were 301,080 male prisoners and 12,926 female prisoners in U.S. state and federal prisons. U.S. DEP'T OF JUST., NATIONAL PRISONER STATISTICS, PRISONERS IN STATE AND FEDERAL INSTITUTIONS (1979) [hereinafter cited as PRISONERS IN STATE AND FEDERAL INSTITUTIONS].

II. Isolation of Discrimination Effects from Other Factors Influencing Prison Populations

Ideally, a pure test for discrimination within the criminal justice system would involve finding pairs of cases that are identical except for the race of the defendant. One might then process them through the criminal justice system in parallel, and compare the consequences of that processing. Because such controlled experiments are typically not possible, other means must be used. Some investigators have used statistical techniques, such as multiple regression analysis, that control for crime type and other case and offender attributes, and seek to discern whether a detectable effect is attributable to the race variable (i.e., whether there is a statistically significant coefficient associated with the offender's race in the presence of the other relevant variables). The issue is complicated by the fact that race is correlated with other possibly relevant variables (e.g., employment status) which might legitimately enter a sentencing decision for reasons other than racial discrimination.

In one review of twenty such studies, Hagan[12] concluded that "while there may be evidence of differential sentencing, knowledge of extra-legal offender characteristics [of which race was a principal one] contributes relatively little to our ability to predict judicial dispositions."[13] Somewhat different findings have emerged from the work of Lizotte,[14] who found that the provision of bail (and hence, economic status) had a significant influence on sentencing outcome, but that black laborers fared somewhat better than white laborers.

A review of these studies indicates the complexity of the question and the difficulty of using such statistical approaches to measure the presence—let alone the magnitude—of discrimination. The absence of an effect in the aggregate could be a result of mutually compensating discrimination, some of which may help a black suspect and some of which may penalize him. Discrimination at early stages of the criminal justice process could well mask discrimination at later stages. Much richer statistical models and individually based longitudinal data through the various processing stages of the criminal justice system will be required to be able to estimate through such statistical approaches the nature and magnitude of discrimination in the criminal justice process.

Another approach to this issue is through consideration of the con-

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12 Hagan, *Extra-Legal Attributes and Criminal Sentencing: An Assessment of Sociological View-point*, 8 LAW & SOC'Y REV., 357 (1974).

13 *Id.* at 379.

14 Lizotte, *Extra-Legal Factors in Chicago's Criminal Courts: Testing the Conflict Model of Criminal Justice*, 25 SOC. PROBS. 564 (1977).

sequences on prison populations of the racially differential involvement in arrest. If there were no racially differential treatment of arrestees anywhere in the criminal justice system after arrest—including prosecution, conviction, commitment to prison, and time served—then one would expect to find the racial distribution of prisoners who were sentenced for any particular crime type to be the same as the racial distribution of persons arrested for that crime type. Thus, for example, if there were no discrimination after arrest, one would expect the black fraction of prisoners charged with murder to be the same as the black fraction of persons arrested for murder. Then, the expected black fraction in prison in the absence of post-arrest discrimination can be estimated by aggregating over the various crime types based on their relative presence in prison.

A few symbols will help clarify the formula. B_j denotes the fraction of persons arrested for crime type j who are black, and F_j represents the fraction of prisoners who are serving time for crime type j. If there were no racial discrimination after arrest, one would expect that a fraction $R_j = B_j F_j$ of the prisoners will be prisoners who are black and are sentenced for crime type j. Then, by summing up the crime types represented in prison, R $(= \Sigma_j R_j)$ is the expected fraction of all the prisoners who would be black if there were no discrimination after arrest.

This approach assumes that the crime-type distribution in prison, F_j, does not itself result from a discriminatory process, i.e., that it reflects the frequency of arrest, the probability of imprisonment given arrest, and the time served given imprisonment for each particular kind of crime, and that these parameters emerge as a result of a process that is not in itself racially biased. Thus, this assumption would be challenged by those who believe that the punishment for murder or robbery (say, in terms of the expected person-years of prison per arrest) is unduly severe *because* these crime types involve a disproportionate number of blacks—rather than because of the relative ease of conviction and the perceived seriousness of the crime itself.[15]

Thus, if the race ratios of arrests based on crime type (the B_j's) and the crime-type distribution in prison (the F_j's) are known, an estimate may be made of the expected racial distribution in prison (R is the expected black fraction) in the absence of discrimination subsequent to arrest. The degree to which R calculated in this way approximates the actual black fraction in prison is an indication of the degree to which black disproportionality in prison derives from the racially differential involvement in arrest rather than from post-arrest discrimination.

[15] In more technical terms, the basic assumption is that F_j and B_j are independent, so that if B_j were to increase (holding total arrests for j constant), F_j would not also increase.

The distribution of offense types in prison (the value of F_j) is available from a survey of state prison inmates.[16] The survey recorded for each of the state-prison inmates in the sample the most serious offense for which he was serving time in prison. In that distribution, presented here as Table 2, it is seen that the three most common offenses are robbery, burglary, and murder. Their presence reflects a combination of considerations: numbers of arrests (high for burglary), probability of arrest leading to imprisonment (especially high for murder and robbery), and the time served in prison (highest for murder).

The corresponding data on the race distribution in arrests based on crime type (the values of B_j) can also be obtained from official statistics. The 1974 *Uniform Crime Reports* provides the number of white and black[17] adult (eighteen or over) arrests for each of these crime types.[18]

TABLE 2

DISTRIBUTION OF OFFENSES AMONG STATE PRISONERS: 1974 SURVEY

Crime Type	Number	Percent
TOTAL	187,500	100
VIOLENT		
Murder and Attempted Murder	25,000	13.8
Manslaughter	8,200	4.4
Sexual Assault	9,600	5.1
Robbery	42,400	22.6
Assault (other than sexual)	9,000	4.8
PROPERTY		
Burglary	33,800	18.0
Larceny	12,200	6.5
Auto Theft	3,200	1.7
Forgery, Fraud or Embezzlement	8,100	4.3
DRUG (major)	8,000	4.3
OTHER	27,200	14.5

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[16] The data were obtained from U.S. DEP'T OF JUST., NATIONAL PRISONER STATISTICS REPORT NO. SD-NPS-SR-2, SURVEY OF INMATES OF STATE CORRECTIONAL FACILITIES, 1974: ADVANCE REPORT (1976). More detailed information from that survey is available in U.S. DEP'T OF JUST., NATIONAL PRISONER STATISTICS SPECIAL REPORT NO. SD-NPS-SR-4, PROFILE OF STATE PRISON INMATES: SOCIODEMOGRAPHIC FINDINGS FROM THE 1974 SURVEY OF INMATES OF STATE CORRECTIONAL FACILITIES (1979) [hereinafter cited as 1974 PROFILE].

[17] U.S. DEP'T OF JUST., UNIFORM CRIME REPORTS, 1974, 193 (1975) [hereinafter cited as UNIFORM CRIMINAL REPORTS].

[18] 1974 PROFILE, *supra* note 16, at 193. To be more precise, earlier years' arrest statistics should be used. If the distribution of time that prisoners of each crime type had already served were available, then each of the previous years' black arrest percentage should be

These two groups of numbers provide the basis for developing Table 3, which indicates for each of the crime types the number of white arrests, the number of black arrests, their sum (the "black + white arrests"), and the black arrest percentage (the percentage of black arrests to the total arrests). Then, if there were no other sources of differential treatment after arrest within the criminal justice system because of race, the expected proportion of total prisoners who are black and are imprisoned for each of the crime types (R_j) is obtained by multiplying the black arrest percentage for that crime type (B_j) by the fraction of the prison population associated with that crime type (F_j). This is the percentage indicated in the last column of Table 3. Thus, for example, since 59.0% of those arrested for murder or attempted murder are black, and since 13.8% of all the persons in prison were convicted of murder or attempted murder, then, if there were no post-arrest discrimination, we would ex-

TABLE 3

ESTIMATION OF BLACK PERCENTAGE IN PRISON, ASSUMING NO POST-ARREST DISCRIMINATION

Crime Type	White Arrests	Black Arrests	Black + White Arrests	Black Arrest Percentage (B_j)	Offense Distribution Among State Prisoners (F_j)	Expected Percentage of Prisoners (by crime type) that are black (R_j)
VIOLENT						
Murder & Attempted Murder	4,457	6,407	10,864	59.0	13.8	8.1
Manslaughter	1,468	417	1,885	22.1	4.4	1.0
Sexual Assault	6,339	5,865	12,204	48.1	5.1	2.5
Robbery	22,728	37,043	59,771	62.0	22.6	14.0
Assault (other than sexual)	186,831	117,668	304,499	38.6	4.8	1.9
PROPERTY						
Burglary	94,339	48,621	142,960	34.0	18.0	6.1
Larceny	225,710	118,848	344,558	34.5	6.5	2.2
Auto Theft	25,784	14,892	40,676	36.6	1.7	0.6
Forgery, Fraud or Embezzlement	80,236	56,833	117,069	31.5	4.3	1.4
Drug	239,673	75,276	314,949	23.9	4.3	1.0
Other	2,022,306	741,046	2,763,352	26.8	14.5	3.9
TOTAL						42.7 = R

included, weighted by the fraction of prisoners whose time served began in that year; also, an extra year should be subtracted to account for the time from arrest until the sentence begins. The arrest fractions (the values of B_j) in the major crime types are sufficiently stable from year to year that this correction is not likely to change any of the results appreciably.

pect 59.9% of the 13.8%—or 8.1% (the value shown in the last column of Table 3)—of all prisoners to be blacks imprisoned for murder or attempted murder.

Summing these percentages over the crime types provides an estimate (R) that 42.7% of the 1974 prison population was *expected* to be black as a result simply of the differences in arrest involvement, even if there were *no* race-related differential treatment of arrestees throughout the rest of the criminal justice system. This value of 42.7% is somewhat below the ratio of 48.3% that is reported in the 1974 survey as the black fraction of the white and black 1974 prison populations,[19] but it is certainly much closer to the actual percent black than the expected rates based merely on the racial distribution of the general population.

In order to indicate the fraction of the racial disproportionality in prison that is accounted for by the disproportionate representation in arrests, the following ratio may be formulated:

$$X = \frac{\text{ratio of expected black-to-white incarceration rates based only on arrest disproportionality}}{\text{ratio of black-to-white incarceration rates actually observed}}$$

If all the prison disproportionality were accounted for by the differential arrest involvement, X would be 1.0. We can let Q represent the *actual* black percentage in prison and R represent the *expected* black percentage in prison under the post-arrest discrimination-free assumption (as calculated above). For convenience of development, we define the following variables:

P = total number of black and white prisoners
N = total population
b = black percentage of the total population.

Then, the ratio X can be written as a percent as follows:

$$X = \frac{\text{expected (black incarceration rate/white incarceration rate)}}{\text{actual (black incarceration rate/white incarceration rate)}} \times 100$$

or that:

$$X = \frac{\dfrac{RP}{bN} \Big/ \dfrac{(100-R)P}{(100-b)N}}{\dfrac{QP}{bN} \Big/ \dfrac{(100-Q)P}{(100-b)N}} \times 100$$

From that formula $X = 100 \ (R(100-Q)/(100-R)Q)$. Applying this formula to the present case, where R = 42.7%, and Q = 48.3%, we find that X = 80.0%, indicating that 80% of the actual racial

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[19] *Id.* at 45. There the estimated state-prison populations were 95,000 white and 88,628 black, for a black percentage of 48.3%.

disproportionality in incarceration rates is accounted for by the differential involvement in arrest. Thus, racial differences in arrests alone account for the bulk of the racial differences in incarceration.

III. ACCOUNTING FOR THE OTHER TWENTY PERCENT

The question remains about the nature of the remaining 20%. Even though this is a small component of the total racial disproportionality in prison, it does not represent a small amount of differential imprisonment. In Table 1, the total-population black/white incarceration-rate ratio is indicated as 6.9. Twenty percent of this figure is a ratio of 1.4 that remains to be explained. Thus, even though 1.4 is small compared to 6.9, it does represent an excess of 40% in black incarceration rate beyond that accounted for by arrest. In other terms, among the 187,500 persons in state prisons in 1974, the difference between 42.7% and 48.3% is 10,500 prisoners to be accounted for on the basis of considerations other than differential involvement in arrest. This is certainly not a trivial number of prisoners. If it were all attributable to discrimination, that would still be a distressing level of discrimination.

Legitimate race-related variation in process through the criminal justice system that has not been accounted for in the calculations displayed in Table 3 may account for part of the remaining 20%. For example, just as blacks are disproportionately represented in the most serious offense *types*, it *may be* that they are also disproportionately represented among the more serious versions *within* each of the offense types (e.g., in the *stranger-to-stranger* homicides, in the *armed* robberies, etc.). Further exploration is needed on these issues of intra-crime-type distribution of seriousness.

Black offenders may also individually accumulate longer criminal records; this could occur, for example, even in the absence of discrimination, if the period during which they continue to be criminally active were longer. The criminal justice system treats more harshly those offenders who have prior convictions. This possibility is suggested by the observation that the peak incarceration rate for blacks occurs at a later age than for whites. *If* length of prior offense record is a significant factor distinguishing whites and blacks, then it would be important to discern whether that difference might be attributable to the lingering effects of discrimination in earlier years, even if discrimination is not a significant factor currently. Research on the nature of individual patterns of offending, or "criminal careers," is needed to shed light on these issues.

There are also aspects of discrimination in the criminal justice process which might work in the opposite direction, resulting in black of-

fenders receiving more favorable treatment than white offenders. LaFree,[20] for example, has shown the importance in one city of the race of the victim in determining the outcome of rape cases involving black defendants. Because less certain and less severe punishment results when the victim is black, and because the victims of black offenders more often *are* black, this could result in black defendants being treated *less* severely than white defendants. Thus, this act of discrimination against black *victims* could result in discrimination in favor of the black *offenders*. In LaFree's study, the race of the victim strongly influenced the punishment received by blacks who were accused of rape.[21] Since a prior relationship between the offender and victim is sometimes taken as a mitigating factor, and since such relationships are more likely to occur in intra-racial than in inter-racial situations, it is possible that part of the influence of the victim's race could also be reflecting consideration of a prior relationship. In LaFree's study, the leniency displayed in intra-racial rapes were approximately balanced by the harshness displayed in the inter-racial ones, and so the net effect on black offenders approximately balanced out.[22] The complex interaction among these various factors highlight the difficulty of isolating with precision all the factors that could be contributing to racially different treatment within the criminal justice system.

Another factor that would favor black defendants could result from the regional differences in the imposition of sanctions. Blacks, for example, comprise a larger fraction of city arrests and a relatively smaller proportion of rural arrests. In 1980, arrests for the violent crime types (murder, forcible rape, robbery, and aggravated assault) were composed of 48.7% blacks in the cities, 30.4% in the suburban counties, and 25.1% in the rural counties.[23] The situation is similar for the property crimes (burglary, larceny, and vehicle theft), where the corresponding ratios are 32.5%, 22.6%, and 13.4%.[24] If punishment is the least severe in the urban areas and the most severe in the rural areas, then, even in the absence of racial discrimination *within* any of these regions, aggregation across the regions would provide an appearance of greater leniency toward blacks compared to whites arrested for the same offense.

An arguable but understandable basis for differential treatment might also be associated with the degree to which prosecutors or judges attempt to predict an offender's recidivism on the basis of his education

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[20] LaFree, *The Effect of Sexual Stratification by Race on Official Reactions to Rape*, 45 AM. SOC. REV. 842 (1980).

[21] *Id*. at 851-52.

[22] *Id*. at 848.

[23] UNIFORM CRIMINAL REPORTS (1980), *supra* note 17, at 216, 228, 240.

[24] *Id*.

or other socioeconomic factors that are often associated with an offender's ability to function effectively within the legitimate economy. Because many such indicators are correlated with race, they could also be contributing to the remaining 20% of the disproportionality.

Even after taking into account all factors that are at least arguably legitimate and that could explain the racial disproportionality in prison, it would certainly not be surprising to find a residual effect that is explainable only as racial discrimination. The literature on discrimination and prejudice[25] suggests that such an effect will exist, and could probably be discerned with a sufficiently sensitive instrument. The previous analysis by no means argues that no discrimination exists, but it does indicate that the predominant fraction of the racial disproportionality in prison is attributable to differential involvement in arrest, leaving a much smaller residue that may be attributable to racial discrimination.

IV. TIME TRENDS AND SENSITIVITY ANALYSIS

The previous analytical results showing that 80% of the racial disproportionality in prison is attributable to differential involvement in arrest were based on a particular year's prison population and arrest distribution. In order to guard against the possibility that 1974 may have been an anomalous year in some respects or that the situation that prevailed in 1974 has changed appreciably since then, it is desirable to include other years in the analysis. This should be done to assure that the results do not hinge on special conditions in 1974, and also to detect changes that may have occurred since then.

Fortunately, the Bureau of Justice Statistics, through the Census Bureau, conducted a second survey in 1979[26] similar to the one in 1974. Table 4 lists the distributions of crime types of the prisoners interviewed in the two surveys. Despite the fact that the number of persons in state prisons increased by 46% from 187,500 in 1974 to 274,600 in 1979, the distribution across the offenses is strikingly stable. As a sensitivity check, the 1979 crime-type distribution could be used to estimate the expected fraction R of prisoners who would be black based on the 1974 race distribution of arrestees developed in Table 3. Furthermore, this same approach could be applied to the arrests for any year, using the two years' estimates of the crime-type distribution in prison (the F_j's) and the arrest ratios obtained from the *Uniform Crime Reports* (the B_j's) for each year. Thus, two estimates of R are obtained for each year, one based on the

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25 See, e.g., Crosby, Bromley & Saxe, *Recent Unobtrusive Studies of Black and White Discrimination and Prejudice: A Literature Review*, 37 PSYCHOLOGICAL BULL. 546 (1980), for a review of that literature.

26 State Correctional Populations and Facilities, *supra* note 2. The data used in Table 4 were taken from Table 4 of the Jan. 28, 1981 Review Draft.

1974 distribution of crime types in prison and one based on the 1979 distribution. These results are shown in Figure 1.

TABLE 4

PERCENT DISTRIBUTION OF OFFENSES AMONG STATE PRISONERS
1974 AND 1979 SURVEYS

| Crime Type	1974	1979
VIOLENT		
Murder and Attempted Murder	13.8	13.6
Manslaughter	4.4	4.0
Sexual Assault	5.1	6.2
Robbery	22.6	24.9
Assault (other than sexual)	4.8	6.4
PROPERTY		
Burglary	18.0	18.1
Larceny	6.5	4.8
Auto Theft	1.7	1.9
Forgery, Fraud or Embezzlement	4.3	4.4
DRUG (major)	4.3	5.7
OTHER	14.5	10.1
TOTALS	100.0	100.0
NUMBER OF PRISONERS	187,500	274,564

Figure 1 certainly reflects the fact that the changes in the distribution of crime types in prison between 1974 and 1979 were of no significance in influencing the racial distribution of offenders. The two distributions shown in Table 4 are sufficiently close that the results are insensitive to any differences that do exist. Figure 1 also indicates a slight downward trend in the expected black fraction in prison, but that trend might be an artifact of changes in the arrest reporting process. Reporting on arrests to the *Uniform Crime Reports* is less complete than is the more familiar reporting of "crimes known to the police." During the period 1970 to 1979, as shown in Table 5, the jurisdictions reporting represented a population that ranged from 142,000,000 in 1970 to 206,000,000 in 1978 with a striking drop in 1974[27] to 125,000 and a slight drop in 1979 to 204,000,000. If the jurisdictions that were included for only a portion of the decade (probably the smaller communities) had disproportionately white populations, then their participation

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[27] In 1974, the UNIFORM CRIMINAL REPORTS reporting system switched from annual police department reporting to monthly reporting, and that transition may account for the large drop in participation.

in the later years may account for the observed slight decline from 1971 in the expected fraction of prisoners who are black.

FIGURE 1

EXPECTED BLACK PERCENT IN PRISON BASED ON RACE RATIOS IN ARREST AND DISCRIMINATION-FREE PROCESSING AFTER ARREST
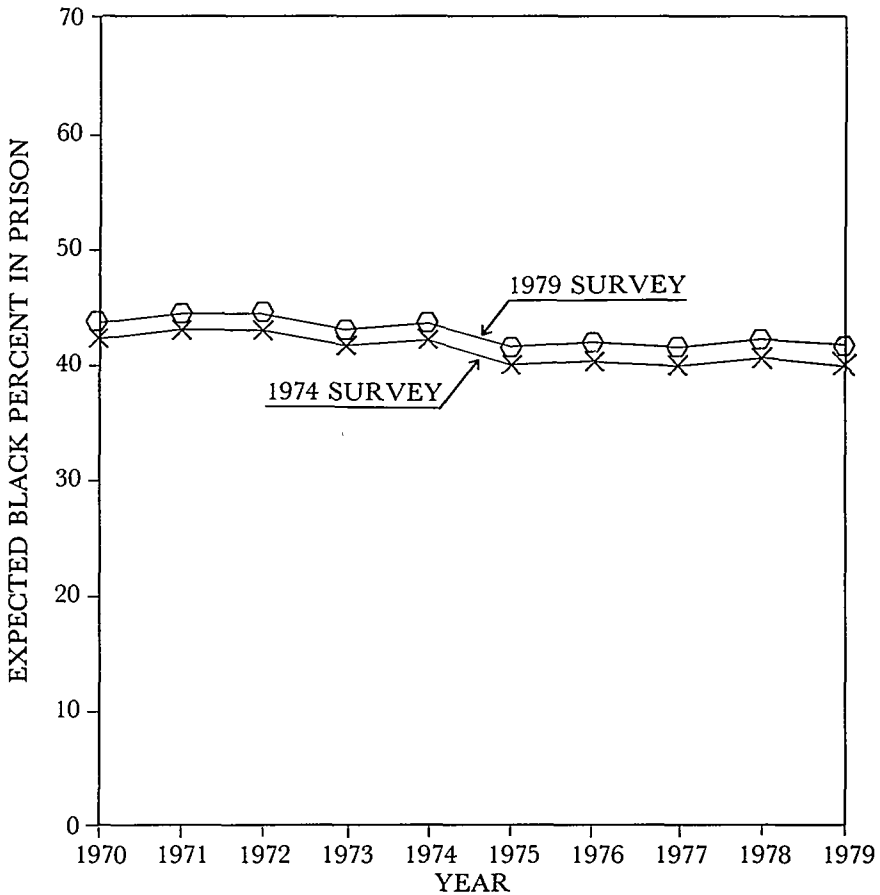
The principal observation from Figure 1 is that the expected fraction of black prisoners, R, is very stable, ranging from 44% to 39% over the ten years. The average value of R over the ten years, and averaged over the two surveys is 42.1%. This figure can be compared with 47.7%, which is the actual black fraction in prison the Bureau of Justice Statistics reported for 1978, and 47.4% reported for 1979.[28] Thus, here again, the expected black fraction based on arrest ratios accounts for 80% of the racial disproportionality in the actual prison populations.

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[28] PRISONERS IN STATE AND FEDERAL INSTITUTIONS (1978 and 1979), *supra* note 11.

V.   CRIME-TYPE-SPECIFIC RATES

The previous analyses, which examined the aggregate racial composition in prison, found that 80% of the black disproportionality was attributable to differential involvement in arrest and recognized that the other 20% could be based on some combination of discrimination and legitimate factors not adequately addressed in the estimates. A sharper focus on some of these issues might result from exploring the racial distribution in arrest and in imprisonment for each individual crime type.

TABLE 5

POPULATION IN POLICE JURISDICTIONS REPORTING ARRESTS TO THE
UNIFORM CRIMINAL REPORTS

Year	Reporting Populations (millions)
1970	142
1971	147
1972	151
1973	145
1974	125
1975	169
1976	173
1977	197
1978	206
1979	204

Preliminary data on the racial distribution of prisoners based on crime type were made available from the 1979 inmate survey. These are presented in the first two columns of Table 6, using the crime-type classification reported in that survey. The next two columns of Table 6 report the corresponding number of arrests in the 1978 *Uniform Crime Reports*.[29] Thus, these four columns permit the estimation for each crime type of the actual black percentage of prisoners and of the black percentage of arrests. This latter number is also the *expected* black percentage of prisoners for that crime type if there is no post-arrest discrimination. These actual and expected black fractions in prison are also displayed in Table 6. It can be seen that, for all crime types but one,[30]

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[29] For the crime types in the inmate survey that do not correspond to the UNIFORM CRIMINAL REPORTS' arrest categories, arrests for "other violent" offenses were based on the UNIFORM CRIMINAL REPORTS' categories of "other assault" and arson; "other property" were based on the sum of arrests for forgery and counterfeiting, fraud, embezzlement, and stolen property; "public order" arrests were based on the sum of arrests for vandalism, weapons offenses, and sex offenses; and "other" were based on the categories not otherwise counted.

[30] The only exception is the "other" offenses; the uncertainty over the specific crime types involved, as well as the small absolute numbers, make this category of minor relevance.

the black fraction in prison is larger than the black fraction in arrest.

These two columns provide the basic data to enable us to estimate the percentage of the crime-type-specific racial disproportionality in prison that is explained by differential involvement in arrest. For this, we use the formula developed in Section II, $X = 100 \ R (100-Q)/(100-R)Q$, where the values in the formula now are crime-type-specific.[31] The last column of Table 6 contains for each crime type the complement of X, the racial disproportionality in prison that arrest does not explain. The aggregate amount unexplained is the familiar 20.5%. Some of the crime types are composed of aggregates, and their composition is sufficiently ambiguous that we would be reluctant to attribute very much to their structure; these are the offenses of "other violent," "other property," "public order," and "other." These offenses of ambiguous content account for only 14.2% of the prison population, and so a focus on the other defined offenses, whose definition at arrest and in prison is less ambiguous, does account for 86% of the prison population.

It is interesting to list these offenses in order of the fraction of disproportionality remaining unexplained by arrest alone:

homicide	2.8%
aggravated assault	5.2%
robbery	15.6%
aggregate	*20.5%*
forcible rape	26.3%
burglary	33.1%
larceny/auto theft	45.6%
drugs	48.9%

This ordering suggests that the magnitude of this unexplained disproportionality seems directly related to the discretion permitted or used in handling each of the offenses, which tends to be related to offense seriousness—the less serious the offense, the greater the amount of the disproportionality in prison that must be explained on grounds other than differences in arrest. Homicide, aggravated assault, and robbery, three of the most serious offenses, which together account for a majority (51.1%) of the prison population, display very small values of disproportionality unaccounted for (2.8%, 15.6%, and 5.2% respectively). Arrest accounts for a much smaller fraction of the disproportionality, however, for the more discretionary offenses of forcible rape (26.3%), burglary (33.1%), larceny and auto theft (45.6%), and drug offenses (48.9%). Thus, the magnitude of the disproportionality unaccounted for

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[31] More precisely, the formula should read $X_j = 100 \ R_j \ (100 - Q_j)/(100 - R_j) \ Q_j)$, where X_j, R_j, and Q_j refer to the respective ratios for crime-type j.

TABLE 6

COMPARISON OF CRIME-TYPE-SPECIFIC PERCENTAGES OF BLACKS IN PRISON AND IN ARRESTS

Crime Type	Prisoners		Arrests		Crime Type Distribution in Prison (Fj)	Black Percentage		Percent Disproportionality Unexplained (100−Xj)
	Black	White	Black	White		Prisoners (Actual=Qj)	Arrests[a] (Expected=Rj)	
Murder & Non-negligent Manslaughter	24,577	22,399	8,413	7,882	17.7	52.3	51.6	2.8
Forcible Rape	6,261	4,852	11,134	11,709	4.2	56.3	48.7	26.3
Robbery	41,022	26,003	51,401	38,604	25.2	61.2	57.1	15.6
Aggravated Assault	9,193	12,516	85,236	123,210	8.2	42.3	41.0	5.2
Other Violent	2,924	3,310	237,932	370,621	2.3	46.9	39.1	27.3
Burglary	20,383	27,765	74,676	152,396	18.1	42.3	32.9	33.1
Larceny/Auto Theft	8,678	8,916	235,519	445,710	6.6	49.3	34.6	45.6
Other Property	7,313	13,239	127,464	240,986	7.7	35.6	34.6	4.3
Drugs	5,966	9,141	110,518	331,629	5.7	39.5	25.0	48.9
Public Order	4,028	6,413	81,331	183,938	3.9	38.6	30.7	29.5
Other	234	592	452,870	889,380	.3	28.3	33.7	−28.7
Total	130,579	135,146				49.14	43.45[b]	20.5

[a]The black percentage of arrests is also the *expected* black fraction in prison if there is no post-arrest discrimination.

[b]The *expected* black percentage in prison, 43.45%, is calculated by the method used in Table 3.

seems strongly related to the degree to which discretion regarding prosecution and imprisonment is used: serious offenses require vigorous prosecution and certain and severe sentences, whereas the less serious offenses permit more room for discretion and the weighing of considerations other than the offense itself. These other considerations could include socioeconomic considerations like employment which are correlated with race. Also, in these relatively less serious offenses, greater weight is likely to be given to the offender's prior record, and the length of the prior record could be related to race, perhaps because the duration of criminal careers may be related to race, or perhaps because of residual effects of discrimination from an earlier time. And, of course, these other considerations that enter in the decisions in the relatively less serious offenses could also include the illegitimate consideration of race itself.

Much of the earlier research,[32] and especially earlier litigation, on the subject of racial discrimination in the criminal justice system was focused on capital punishment, which is associated with the most serious offenses. Perhaps because of the intensity of those prior efforts, the offenses at that high end of the seriousness scale do not appear to offer major potential opportunity for purging of racial discrimination that leads to imprisonment. The potential, however, does appear to be appreciably greater among the less serious offenses. Subsequent research, therefore, should focus on those offenses to discern the factors contributing to the larger percentage of blacks imprisoned for those offenses compared to the percentage arrested for them.

Clearly, whatever part of the excess black imprisonment in these offenses that is due to discrimination should be eliminated. It must be recognized, however, that accomplishing that will not result in dramatic changes in the racial composition of prisons. Black prisoners charged with drug offenses, larceny and auto theft, burglary, and rape together comprise 15.6% of the 1979 prison population.[33] If the black fraction of the prisoners charged with these offenses were reduced to the black fraction of arrests in each crime type, the black prisoners charged with these offenses would instead comprise 12.2% of the reduced prison population. Such a change would, of course, be most important to the more than 10,000 persons involved, but it would still have only a small influence on the racial mix in prisons: the black fraction of prisoners would be reduced from 49.14% to 47.12%, a reduction of only 2.02 percentage points. This small effect is a consequence of the fact that the

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[32] See, e.g., Johnson, *Selective Factors in Capital Punishment*, 36 SOC. FORCES 165 (1957) and Wolfgang & Reidel, *Race, Judicial Discretion, and the Death Penalty*, 407 THE ANNALS OF THE AM. ACAD. OF POL. AND SOC. SCIENCE 119 (1973).

[33] This total is derived from Table 6 for those four crime types.

offense types involved account for only a small fraction of the total prison population—even though they do account for a large fraction of reported crimes.

VI. RACIAL DIFFERENCES IN ARREST VULNERABILITY

Even if we conclude that the racial differences in prison cannot be predominantly attributable to discrimination after arrest, there could still be a strong racial difference in arrest vulnerability. Differences in arrest vulnerability, leading to inappropriately large values of the B_j's, are, of course, difficult to estimate. While demographic information such as race is reasonably easy to determine for those who the criminal justice system actually arrests and subsequently processes, it is very difficult to obtain the same information for all those who actually commit the crimes. It is well recognized, for example, that there is more police patrol in poorer, more crowded and more crime-prone neighborhoods. This difference in patrol intensity could account for some of the disproportionality in black arrest rates. That difference, however, is much more likely to affect arrests for minor offenses like disorderly conduct which involve on-sight arrests and police discretion than in the more serious cases that appear in state prisons.

To determine the degree of demographic bias in the arrest process, Michael Hindelang compared the demographic characteristics of persons the police arrested with the characteristics of offenders crime victims reported.[34] The results showed a very consistent relationship between the racial distribution reported in police arrest statistics (in the 1974 *Uniform Criminal Reports*) and that reported by victims of robbery, rape, and assault (where there was direct contact with the offender) when they were interviewed in the 1974 Victimization Survey. For robbery, the modal offense in prison, the results were virtually identical; in the National Crime Panel Victimization Survey, 62% of the victims reported that the robber was black, and blacks comprised 62% of the robbery arrestees reported in the *Uniform Criminal Reports*. For rape and aggravated assault, which together comprised 9.0% of the prison population (compared to 22.6% for robbery), there was a difference, with blacks comprising 48% of the arrests for rape (compared to 39% of the victim reports), and 41% of the arrests for aggravated assault (compared to 30% of the victim reports).[35]

These results were consistent with Hindelang's similar comparison

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[34] Hindelang, *Race and Involvement in Common Law Personal Crimes* 43 AM. SOC. REV. 93 (1978).

[35] *Id*. at 100.

of victim reports and arrests based on data from eight individual cities.[36] Here, the results for forcible rape and aggravated assault were very close. (For rape, whites represented 43% of the arrests and 40% of the victim reports, and for aggravated assault, whites were involved in 47% of the arrests and 44% of the victim reports.[37]) This *over*-representation of whites in arrest was even more exaggerated for robbery, where whites comprised 29% of the arrestees but only 19% of the victim reports.[38]

While these results are certainly short of definitive evidence that there is no bias in arrest, they do strongly suggest that the arrest process, whose demographics we can observe, is reasonably representative of the crime process for at least these serious crime types, and that whatever racial bias does exist in the arrest process is far less than sufficient to account for the major contribution that differential involvement in arrest makes in explaining the large disproportionality in prison incarceration rates. If there is no large arrest bias, that would leave differential involvement in crime as the principal factor contributing to the racial disproportionality in prison populations.

VII. CRIME TYPE EMPHASES

The other factor contributing to the high value of the expected black percentage in prison is associated with the F_j distribution and the relatively large representation in prison of the crime types (especially homicide and robbery) for which blacks are most disproportionately arrested. It might be argued that some of the disproportionality in incarceration rates results from the fact that the criminal justice system places more emphasis on the crimes in which blacks tend to predominate, and that the system could or should do more to apprehend and punish offenders who engage in the crimes in which whites are more prevalent. Perhaps the more severe punishment imposed for the more "violent" crimes might be reduced compared to that for the property crimes, for the disproportionate involvement of blacks within the violent crimes is a significant factor in creating their disproportionate representation in prison. This argument would involve a major reconsideration of the seriousness which society attaches to the different offenses, possibly leading to a significant reordering of the severity of punishment assigned to them. The scaling work by Sellin and Wolfgang,[39] and by Rossi, Waite,

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[36] M. HINDELANG, CRIMINAL VICTIMIZATION IN EIGHT AMERICAN CITIES: A DESCRIPTIVE ANALYSIS OF COMMON THEFT AND ASSAULT (1976).

[37] *Id.* at 197.

[38] *Id.*

[39] T. SELLIN & M. WOLFGANG, THE MEASUREMENT OF DELINQUENCY (1964).

Bose, and Berk,[40] and especially the more recent national survey by Wolfgang,[41] should help to illuminate that possibility. Blumstein and Cohen[42] compared the public's view of the appropriate time to be served by offense and the actual time served. Their results show a strong ordinal consistency between the two times.

More vigorous pursuit of the kinds of crimes more often associated with whites (e.g., fraud, corporate crime, white collar crime, etc.) might serve to redress the disproportionality to some degree. Such crimes, of course, are much more difficult to detect and to solve, but some additional resources could undoubtedly be applied to them. These crimes, however, represent a small fraction of prison populations. For example, fraud, embezzlement, and forgery comprise only 4% of the 1974 prison population and have a black arrest fraction of 31.3%. Thus, even if the number of whites imprisoned for these offenses were *trebled*, their proportion of the white prison population would go from about 2.75% to about 8%, certainly well short of enough white prisoners to revise in any meaningful way the racial composition of prison populations. Furthermore, it is reasonable to anticipate that intensive pursuit of those offenses would serve to deter their commission, since these offenses tend to be more carefully planned and premeditated, and so be more vulnerable to deterrence signals. Any such deterrent response is thus likely to mitigate any intended effect on the prison-population mix.

VIII. EFFECTS OF AGGREGATION

The research approach pursued in this paper involves considerable aggregation across the various processing stages of the criminal justice system and over the United States as a whole. One of the benefits of such an approach is the fact that it avoids the necessity to collect the difficult and often incompatible data that account for the detailed decisions made at all the intermediate processing stages between arrest and prison. On the other hand, this approach cannot discern offsetting racial discrimination, some of which may aid a black defendant and some injure him. Thus, for example, if there were discrimination in the prosecutor's charging decision, it could be partially or fully compensated in the judge's sentencing decision or in the parole board's release decision. These offsetting effects could also result, for example, from discrimination based on the race of the victim; if the black defendant is treated leniently when the victim is black, but harshly when the victim is white,

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40 Rossi, Waite, Bose & Berk, *The Seriousness of Crime: Normative Structure and Individual Differences*, 39 AM. SOC. REV. 224 (1974).

41 Wolfgang, *Crime and Punishment*, N.Y. Times, Mar. 2, 1980, at E21, col. 2.

42 Blumstein & Cohen, *Sentencing of Convicted Offenders: An Analysis of the Public's Views*, 14 LAW & SOC. REV. 223 (1980).

these two effects could well offset each other and mask practice that *is* racially discriminatory. The analyses considered here reflect only the *net* discrimination effect. Thus, they do not preclude the possibility of discrimination at some of the processing stages, or discrimination based on some inappropriate attributes of a case, but with those effects offset by other factors or decisions that could favor black defendants.

Similarly, the aggregation over jurisdictions represents a net national effect. Thus, to the extent that some regions may discriminate against blacks, other regions may be more lenient toward blacks. This effect, for example, could also result from rural-urban differences in sentencing patterns, if sentences in urban areas, which have a relatively larger black population, are more lenient. If that is the case, it is even possible that there could be discrimination against blacks in both urban and rural areas, but that the greater leniency in the urban areas (which would tend to benefit black defendants) could mask the discrimination which injures them. A more detailed and disaggregated analysis of the individual processing stages and jurisdictions than reported in this article should be pursued to test the degree to which compensating discriminatory effects exist.

IX. CONCLUSION

This paper has explored the troubling question of the gross disproportionality between black and white incarceration rates, which stand at a ratio of more than seven to one. It was found that the differential involvement of blacks as arrestees, particularly for the offenses of homicide and robbery, which together comprise a major fraction (over 40%) of prison populations, accounts for 80% of the disproportionality between black and white incarceration rates. These observations hold generally for the race ratios in arrest and the crime-type distributions in prison that prevailed throughout the decade of the 1970's.

The remaining 20% of the disproportionality may be attributable to a variety of other explanations that are at least arguably legitimate, but may also reflect some unknown degree of discrimination based on race. Exploration of crime-type-specific racial distributions at arrest and in prison indicates that, as the seriousness of the offense decreases, blacks are disproportionately represented in prison. This does suggest that blacks become increasingly disadvantaged as the amount of permissible criminal-justice discretion increases, and discrimination must remain a plausible explanation for an important fraction of that effect. Other possible explanations include the greater saliency in such cases of socioeconomic considerations about the defendant, such as his employment status, and the fact that many such factors are correlated with

race. Even if the relatively large racial differences in handling these offenses were totally eliminated, however, that would not result in a major shift in the racial mix of prison populations.

Certainly, so important an issue warrants far more detailed analysis, both to verify the degree to which the arrest process is indeed representative of the crime process, and also to discern any factors that might be contributing to discrimination. Such research requires studies in individual jurisdictions, much more careful tracking of individual cases longitudinally through the criminal justice system, and major emphasis on the relatively less serious offenses like drug offenses, larceny, and burglary that offer more room for discretion and thus, more opportunity for discrimination.

The results presented in this paper certainly do not argue that discrimination is absent from the criminal justice system, or even that the amount of discrimination is negligibly small or unimportant. Nor should the results in this paper provide an excuse for impeding any efforts to discover and to eliminate discrimination wherever it exists. The results do suggest, however, that the finding of racial disproportionality does not by itself demonstrate the existence of discrimination, and further, that attacking the discrimination in the criminal justice system to redress the disproportionality is not likely to have the desired effect on prison populations. Any significant impact on the racial mix in our prisons will have to come from addressing the factors in our society that generate the life conditions that contribute to the different involvement between the races in serious person crimes.