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The Impact of Contextual Factors on the Decision to Imprison in Large Urban Jurisdictions: A Multilevel Analysis

Robert R. Weidner
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This study examines the influence of social and legal contextual factors on the processing of individual felony cases in large urban jurisdictions for 1998. Results of hierarchical logistic regression analyses that control for the effects of individual case-level factors show that three jurisdictional characteristics—use of sentencing guidelines, level of crime, and racial composition—influence the decision to imprison. These findings suggest that the type of sentence one receives and the reason one receives it partially depend on where it is meted out. This research demonstrates the importance of accounting for case-level factors in studies of cross-jurisdictional differences in punitiveness.

Keywords: *contextual factors; county sentencing variations; multilevel modeling; prison sentences*

In 2002, more than two million individuals were incarcerated in the United States (Harrison & Karberg, 2003, p. 2); however, this unprecedented penal harshness belies great variation across jurisdictions. The current study seeks to contribute to the body of research that explains interjurisdictional differences in prison use and the impact of jurisdictional factors on sentencing decisions by determining the effect of county-level contextual factors on the processing of individual felony cases. This research uses felony court

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case processing data for 1998 from a sample of 39 large urban counties located in 17 states to examine the determinants of variation in sentence severity, defined as the likelihood of a convicted felon receiving a prison sentence. It controls for many case-based legal and extralegal factors underlying punishment severity, while accounting for social and legal contextual factors that have been examined in prior sentencing research and found to be salient in studies that use states and counties as the unit of analysis.

BACKGROUND

Much research has been conducted to determine the influence of legal and extralegal factors on individual sentencing outcomes, defined alternatively as sentence length, likelihood of receiving a custodial sentence (i.e., jail or prison), and the likelihood of receiving a prison term. Perhaps most prominent in this area of inquiry is the study of whether racial and ethnic minorities are treated differently than Whites (Chiricos & Crawford, 1995; Spohn, 2000). Research has found minority status to be a factor by itself (e.g., Kautt & Spohn, 2002; Steffensmeier & Demuth, 2000, 2001), in interaction with gender (e.g., Crawford, 2000; Spohn & Spears, 1997), and gender and age (e.g., Spohn & Holleran, 2000; Steffensmeier, Ulmer, & Kramer, 1998). Studies controlling for relevant case characteristics also have shown female offenders to be sentenced less severely (e.g., Spohn, 1999; Spohn & Beichner, 2000) and unemployed individuals to be punished more severely (Chiricos, 1991). Furthermore, prior research supports the idea that previous decisions in the justice process (i.e., whether to detain) affect sentencing outcomes (Albonetti, 1991; Mears, 1998). Empirical support for the effect of other factors, such as victim impact statements (Davis & Smith, 1994), is more qualified.

Research on Contextual Influences on Sentencing Decisions

A substantial body of research has examined case-level-sentencing decision making across jurisdictions to ascertain the effects of contextual factors on sentencing decisions (e.g., Eisenstein, Fleming, & Nardulli, 1999; Eisenstein & Jacob, 1977; Myers & Talarico, 1987; Ulmer, 1997; Ulmer & Kramer, 1996). Such research has been spurred by the recognition that sentencing may be influenced by the cultural, political, economic, and social contexts in which courts operate—that the effects of legal variables (e.g., criminal history) may vary according to contextual factors (Dixon, 1995).¹

They represent an improvement over most studies of sentencing, which focus exclusively on case-level data (Mears, 1998).

Prior research examining contextual impacts on sentencing decisions can be divided into three broad categories. First, cross-jurisdictional studies compare sentencing decisions across a small number of jurisdictions (Britt, 2000). These studies typically involve within-jurisdiction analyses of case-level legal and extralegal factors and consider how the effects of these factors vary according to the type of jurisdiction in which the court is located. For example, some cross-jurisdictional studies (e.g., Eisenstein et al., 1999; Eisenstein & Jacob, 1977) have examined the impact of size of jurisdiction on sentencing decisions; other studies (e.g., Ulmer, 1997; Ulmer & Kramer, 1996) looked at the differences in sentencing decisions across rural, suburban, and urban jurisdictions. Although the small number of jurisdictions considered in these studies is a strength in that it allows for more detailed comparisons of court communities, consideration of just a few jurisdictions precludes the systematic study of the impact of jurisdictional characteristics on sentencing decisions. As is the case with studying a single jurisdiction, focusing on a small number of jurisdictions runs the risk of arriving at results that are the product of idiosyncratic features that may not be representative of other courts from a similar jurisdiction or state.

The second category of studies examining the impact of contextual factors on sentencing decisions typically has used pooled statewide sentencing data to allow for the simultaneous study of numerous jurisdictions. Using this approach, researchers have examined the direct effects of jurisdictions' contextual characteristics on individual sentencing decisions (Britt, 2000, p. 709). For example, Dixon (1995) examined sentencing outcomes in 73 Minnesota counties, Myers and Talarico's (1987) study was based on a sample of felons from all of Georgia's counties, and Steffensmeier, Kramer, and Streifel's (1993) study was based on Pennsylvania sentencing guidelines data from all 67 of that state's counties. Studies using this approach have found several contextual factors to have a direct effect on sentencing decisions, including crime rate (Huang, Finn, Ruback, & Friedmann, 1998; Myers & Talarico, 1987), racial composition (Crawford, Chiricos, & Kleck, 1998; Myers & Talarico, 1987; Steffensmeier, et al., 1993), political conservatism (Huang et al., 1998; Steffensmeier, et al., 1993), urbanization (Myers & Talarico, 1987; Steffensmeier, Kramer, 1993), and level of bureaucratization (Dixon, 1995). Findings from many of these studies support the idea that the sentencing decisions of criminal justice actors, including judges, are influenced by three focal concerns: blameworthiness of the defendant, protection of the community (related to incapacitation) and contextual, and individual practical constraints and consequences of sentencing decisions, for

example, making sentencing decisions that ensure the stable flow of cases (see Steffensmeier, et al., 1998, pp. 766-767).

Although this direct-effects approach allows for the analysis of multiple jurisdictions simultaneously, the ability of such studies to account for contextual factors is hindered by their use of ordinary least squares (OLS) and logistic regression techniques to study sentence length and incarceration decisions, respectively. Even when they include interaction terms, these single-level statistical procedures are inadequate for addressing the multilayered quality of punishment decisions because they cannot account for the possibility that the effects of legal variables at the individual level (e.g., criminal history) could vary according to jurisdictions' cultural context and/or organizational constraints (Mears, 1998). As Kautt (2002) explained, single-level studies of sentencing outcomes artificially constrain

the potential sphere of influence to that single level of analysis. While such unilevel investigations are useful in identifying the influential factors at that level . . . the evidence suggests that they do not reflect the complete picture of how sentences are reached. (p. 644)

The third category of sentencing studies uses hierarchical (or multilevel) modeling to better specify the effects of contextual and individual-level factors on sentencing decisions. We are aware of four studies (Britt, 2000; Kautt, 2002; Ulmer & Johnson, 2004; Weidner, Frase, & Pardoe, 2004) that demonstrate hierarchical modeling's utility as it relates to this area of research. Britt (2000) used 1991-1994 Pennsylvania sentencing guidelines data for all 67 of Pennsylvania's counties to examine the link between social context and racial disparities in punishment decisions. Britt (2000) controlled for four contextual factors—urbanization, racial threat, economic threat, and crime control—and found convincing evidence of variation in punishment severity by race across jurisdictions but that measures of social context explain little of this variation (p. 707). Kautt (2002) used three-level modeling on federal sentencing data to examine the impact of circuit-level, district-level, and case-level factors on variations in sentence length for individuals convicted of drug trafficking. She found that disparity between circuits and districts exists despite the federal sentencing guidelines' goal of uniform sentences.

Ulmer and Johnson (2004) used Pennsylvania sentencing guidelines data from 1997 to 1999 to examine the impact of county-level and individual-level factors on the decision to incarcerate as well as sentence length. Their results indicate that contextual factors such as court caseload pressure and organizational culture, along with ethnic and racial composition of jurisdictions, "affect sentencing outcomes, either directly and in interaction with individual level factors" (Ulmer & Johnson, 2004, p. 137). Their findings

lend support to the idea that the focal concerns of sentencing, as they are embedded in the contexts of court communities, are key to understanding jurisdictional variations in sentencing practices. Finally, Weidner et al. (2004) used Bayesian hierarchical logistic modeling to examine the impact of legal, extralegal, and contextual variables on the decision to sentence felons to prison in a multistate sample of large urban counties in 1996. None of the four contextual variables that they considered—level of crime, unemployment rate, racial composition, and region—increased the likelihood of a prison sentence; however, 10 individual-level factors, both legal and extralegal, and several cross-level interaction terms were influential.

Contextual Factors

The current study was designed to assess the impact on sentencing decisions of contextual factors that have been found to be influential in prior studies on sentencing and in aggregate-level studies of prison use. The impact of six contextual factors is assessed: whether a jurisdiction operates under sentencing guidelines, availability of alternative (intermediate) sanctions, level of crime, political conservatism, racial composition, and prevalence of the economically disadvantaged. Below, these factors and the hypotheses that relate to them are discussed.

Sentencing guidelines. To account for cross-jurisdictional statutory differences in sentencing, we included a variable indicating whether the state in which a jurisdiction is located has any form of sentencing guidelines, mandatory or voluntary. Guidelines vary greatly across states in terms of purpose and scope (Frase, 1999), and even within states with a sentencing guidelines system there can be marked interjurisdictional variation in sentence severity (see Britt, 2000; Ulmer & Johnson, 2004). Nonetheless, research has shown that states with sentencing guidelines systems have experienced slower prison growth (Marvell, 1995) and that sentencing guidelines of all varieties are correlated with lower imprisonment rates relative to nonguidelines states (Sorensen & Stemen, 2002). Based on these findings, we hypothesized that the likelihood of an individual receiving a prison sentence will be lower in jurisdictions that operate under a sentencing guidelines system.

Availability of alternative sanctions. To examine whether the availability of noncustodial sanctioning options has a negative impact on percentage imprisoned, we included in our analyses an additive index of the number of different types of intermediate sanctions—which are more intrusive than conventional probation but less severe than imprisonment (Morris & Tonry,

1990)—that are available in a given jurisdiction. At least one prior study of counties' use of imprisonment found such a relationship (Weidner & Frase, 2003). Wooldredge and Gordon (1997) suggested that a judge's ability to use alternatives to incarceration might have less to do with availability of alternative sanctions and more to do with state-sentencing policies designed to reduce judicial-sentencing discretion. On the other hand, several states' sentencing guidelines (including at least two, Pennsylvania and Washington, that are sampled in the current study) permit courts to mete out noncustodial sanctions as alternatives to incarceration (Engen, Gainey, Crutchfield, & Weis, 2003, p. 100). Although this analysis does not control for the degree to which a jurisdiction's structured sentencing scheme precludes the use of alternative sanctions, we believe it is still reasonable to hypothesize that jurisdictions with a wider array of intermediate sentencing options will be less likely to sentence convicted felons to prison.

Level of crime. Prior research consistently has found that a jurisdiction's crime rate is positively associated with its rate of imprisonment. By contrast, research on the impact of level of crime on sentencing decisions has yielded mixed results. Based on OLS and logistic regression analyses, Myers and Talarico (1987) found that crime rate did not have an effect on the decision to incarcerate but was related to longer sentence lengths. However, none of the studies that used hierarchical modeling techniques found level of crime to be significant. For example, Britt (2000) found that crime rate had no effect on the decision to incarcerate and that violent crime rate did not affect mean sentence length. Similarly, neither Ulmer and Johnson (2004) nor Weidner et al. (2004) found level of crime to have an effect on the sentencing decisions that they examined. Although none of these three studies found level of crime to affect individual sentence outcomes, it is nonetheless important to control for this factor for two reasons. First, two of the three prior multilevel studies (Britt, 2000; Ulmer & Johnson, 2004) were based on analyses of counties from a single state (Pennsylvania). Second, level of crime has been found to be related to punishment severity in sentencing research that does not use hierarchical modeling and in most studies on interjurisdictional differences in punishment.

Political conservatism. The contention that liberalism is associated with lower levels of punishment, and conservatism with higher levels, is largely supported by prior research. Several studies that used single-level analytical techniques to assess contextual factors' effects on individuals' felony sentence length have found political conservatism—defined as the proportion of residents who voted for the Republican candidate in presidential elections—

to have a positive impact (Huang et al., 1996; Kritzer, 1979; Nardulli, Fleming, & Eisenstein, 1988). Similarly, two studies using a national sample of county court data aggregated to the state level (Bowers, 1998; Bowers & Waltman, 1993) found that conservatism was generally associated with longer prison sentences; another study of variations in counties' use of imprisonment found conservatism to have a positive effect on prison use (Weidner & Frase, 2003). By contrast, the only prior study using multilevel statistical techniques that accounted for this factor found that it did not have an effect (Ulmer & Johnson, 2004). On balance, findings from prior studies prompt us to hypothesize that political conservatism will be positively related to an individual's likelihood of receiving a prison sentence.

Racial composition. Inclusion of this factor allows us to examine the conflict theory-rooted proposition that subordinate and culturally dissimilar groups are perceived to threaten the interests of the politically and economically powerful, who use the criminal justice system as a mechanism to control them (Arvanites, 1992). More specifically, culture conflict theorists, such as Turk (1969), suggested that culturally or racially dissimilar groups are often perceived to be threatening to the economically and politically powerful. Racial composition, which typically is defined as the percentage of the population that is African American, commonly has been considered in research on contextual effects of sentencing decisions (e.g., Huang et al., 1996). Some previous research has found that racial composition had no effect on sentence severity (Steffensmeier, et al., 1993; Ulmer & Johnson, 2004; Ulmer & Kramer, 1996; Weidner et al., 2004). Other research has found that all offenders were at greater risk of incarceration in counties with proportionately larger African American populations but that sentences in these counties tended to be shorter (Britt, 2000; Myers & Talarico, 1987). Given these findings, along with attitudinal research that has found prejudice among Whites to increase as the African American population expands (Taylor, 1998), we hypothesized that prison sentences will be more likely in jurisdictions with higher percentages of African Americans.

Prevalence of the economically disadvantaged. Many studies have considered the impact of economic variables on punitiveness to test the hypothesis that punishment will be more severe for those offenders perceived as posing a threat because of their economic circumstances (Mears & Field, 2000). The two economic factors that have been considered most commonly in prior research are levels of poverty and unemployment. Findings regarding the

impact of each have been inconsistent across studies. As for poverty, in their multilevel sentencing study, Ulmer and Johnson (2004) found that poverty did not affect either an individual's likelihood of incarceration or sentence length. Arvanites (1992) and Taggart and Winn (1993) found it to have a positive effect on states' rate of imprisonment. Neither McCarthy (1990) nor Weidner and Frase (2001) found poverty to have a significant impact on prison use in their county-level analyses.

Unemployment has been the more frequently examined of the economic factors, and findings regarding its impact on rates of imprisonment also have been inconclusive (Arvanites, 1992). Regarding research on contextual factors' influence on sentencing decisions, Britt (2000) concluded from the results of his multilevel analyses that unemployment levels did not have an effect either on the decision to incarcerate or on sentence length, whereas Myers and Talarico (1987) found a positive relationship between unemployment and likelihood of incarceration.

Based on this previous research, to account for the prevalence of economic hardship in a jurisdiction, we created an additive index of percentage of the population living in poverty and percentage unemployed.

DATA AND METHODS

Data

We tested our hypotheses using a combination of county-level contextual data and individual-level sentencing data from a national sample of criminal trial court cases in 1998. Individual-level information is from the Bureau of Justice Statistics' (BJS) State Court Processing Statistics (SCPS) program, a biennial collection of data on felony defendants in state courts in 39 of the nation's 75 most populous counties, located in 17 states in all regions of the United States (Bureau of Justice Statistics, 2002). Information collected for this program includes demographic characteristics, criminal history, pretrial processing, disposition, and sentencing of felony defendants. For 1998, the SCPS program collected data for 15,909 felony cases filed during May 1998, 9,586 of which resulted in a conviction. We linked these individual-level data to county-level variables using an identifier that is commonly included as a data element in federally collected data, the Federal Information Processing Standards (FIPS) code. After excluding cases with missing information, 6,626 convicted individuals from 39 counties remained.

Dependent Variable

Imprisonment (yes/no). The current study's outcome measure is the likelihood of receiving a prison sentence. This variable is coded 1 if the offender received a prison sentence and coded 0 if the offender was sentenced to jail or received a noncustodial sentence. The use of either sentence length or incarceration as an outcome measure was infeasible. The former was inappropriate because the current study's data are from a multistate sample; variations in the proportion of time served across states precludes valid cross-state analysis. The latter was inappropriate because incarceration combines jail sentences with prison sentences when it is highly likely that the factors influencing a decision to sentence to jail are markedly different from those affecting the decision to sentence to prison (Holleran & Spohn, 2004).

Independent Variables

Individual-level measurements. We selected individual-level variables based on their salience in findings from the extensive body of studies that use single-level analytic techniques (e.g., regression and logistic regression). Regarding legally relevant case characteristics, we included two criminal history dummy variables that indicate whether the offender's most serious prior conviction was a felony or misdemeanor, as opposed to no prior conviction. We measured type of offense with five dummy variables indicating whether the offender's most serious conviction charge was (a) murder, rape, or robbery; (b) assault or other violent crime;² (c) drug trafficking; (d) drug possession or other drug offense; or (e) a property offense, including burglary and theft.³ The reference category for these dummy variables consisted primarily of weapons offenses, driving-related offenses, other public order offenses, and felony cases that resulted in a misdemeanor conviction. We also considered several extralegal factors. We accounted for whether an individual was detained (held in custody) prior to his or her disposition. Case disposition is measured by two dummy variables indicating whether the case was disposed via bench trial or jury trial, as opposed to a guilty plea.⁴ Finally, we considered three demographic factors: the individual's age in years, sex, and whether he or she is African American.⁵

County-level measurements. Contextual factors are operationalized as follows. A jurisdiction was classified as operating under sentencing guidelines if the state in which it is located had either mandatory or voluntary guidelines as of 1998.⁶ The availability of alternative sanctions was assessed with a 7-point summative index of alternative sanctioning options in a juris-

TABLE 1: Descriptive Statistics

Variable	M	SD
Individual level ^a		
Most severe prior conviction: Felony	.47	.50
Most severe prior conviction: Misdemeanor	.20	.40
Charge: Murder, rape, or robbery	.05	.21
Charge: Assault, other violent	.09	.28
Charge: Property	.26	.44
Charge: Drug trafficking	.15	.36
Charge: Drug possession, other drug	.18	.39
Detained before trial	.44	.50
Bench trial	.03	.17
Jury trial	.02	.13
Age at arrest	31.15	10.03
Male	.81	.39
African American	.54	.50
Prison sentence	.31	.46
County level ^b		
Sentencing guidelines	.36	.49
Alternative sanctions availability	1.26	1.23
Index crime rate per 10,000	587.33	219.84
Percentage voting for Bush	38.23	13.26
Percentage African American	20.17	14.54
Economic disadvantage	-.27	1.91

a. Statistics based on a sample of 6,626 cases.

b. Statistics based on a 39-county sample.

diction, using information from the Bureau of Justice Statistics' *Annual Survey of Jails* (2001).⁷ A jurisdiction's Uniform Crime Reports (UCR) Index crime rate per 10,000 residents for 1998 served as an indicator for level of crime. Political conservatism is defined as the percentage of a county's electorate who voted for George W. Bush, the Republican candidate in the 2000 presidential election.⁸ Racial composition was defined as the 1998 Census estimate of the percentage of a county's population that was African American. Finally, the additive index of the percentage of the population living in poverty (from the Census) and the percentage unemployed (from the Bureau of Labor Statistics) was constructed using these variables' standardized values (Z scores).⁹ Descriptive statistics for all model variables are presented in Table 1.

Analytical Strategy

To analyze these data, we used a hierarchical logistic regression model, also referred to as a multilevel model. The use of hierarchical modeling is

advantageous for several reasons. First, in contrast to single-level logistic regression, this statistical method accounts for the lack of independence across levels of nested data (i.e., individuals nested within counties). When data are nested, dependence among individual responses from the same county is likely, which can lead to biased parameter estimates and unrealistic notions of precision; single-level multivariate techniques are likely to underestimate standard errors, thereby exaggerating the significance of parameter estimates. Second, single-level logistic regression assumes that the impact of an explanatory variable is the same in all counties. To relax this assumption and allow these factors' effects to vary across counties, a hierarchical modeling approach is required. Because hierarchical models permit this variation, they more accurately estimate model parameters, with more precise standard errors (Weidner et al., 2004).¹⁰ Third, employing multilevel models allows one to partition the overall conditional variance into components for each level (i.e., individual level and county level). The partitioning of the variance provides the ability to calculate the intralevel correlation coefficient, which measures the strength of nesting within the data hierarchy. Finally, hierarchical techniques allow for the modeling of heterogeneity across individuals while still preserving the degrees of freedom (in single-level models, fixed effects may not be an option if degrees of freedom are limited). Although tests of contextual-level null hypotheses will be biased in single-level logistic regression models because these tests are based on the number of individuals (rather than counties) in such models, this is not an issue with hierarchical modeling; it avoids this problem by adjusting the degrees of freedom to reflect the number of contextual-level units (Ulmer & Johnson, 2004). In summary, the utility of multilevel models lies in their capacity to aggregate cases by group membership and to test simultaneously for individual and group effects on the dependent variable (Britt, 2000).

To examine the decision whether to sentence a convicted felon to prison (prison, yes/no), we employed a hierarchical logistic regression model. The general form of the two-level logistic model is presented below:¹¹

$$\log[p_{ij}/(1 - p_{ij})] = \beta_{0j} + \beta_{1j}X_{1ij} + \dots + \beta_{kj}X_{kij}, \text{ where} \quad (1)$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W_1 + \dots + \gamma_{0m}W_m + u_{0j}, \quad (2)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}W_1 + u_{1j}, \text{ and} \quad (3)$$

$$\beta_{kj} = \gamma_{k0} + \gamma_{km}W_m + u_{kj} \quad (4)$$

$$= \gamma_{00} + \gamma_{01}W_1 + \dots + \gamma_{0m}W_m + (\gamma_{10} + \gamma_{11}W_1 + u_{1j})X_{1ij} + \dots \quad (5) \\ + (\gamma_{k0} + \gamma_{km}W_m + u_{kj})X_{kij} + u_{0j}$$

Equation (1) represents the individual-level (Level 1) analysis examining the log odds of imprisonment for offender i in county j . β_{kj} in this equation is the impact of variable k on the dependent variable for each county j , and X_{kij} represents the value of the explanatory variable X for offender i in county j .¹² Equations (2) through (4) represent the county level (Level 2) of analysis—the portion that specifies the random components and county-level independent variables in the model. W_m represents the values of the county-level variables included as predictors of the individual-level intercept or slope, and γ_{km} represents the effects of these variables on the Level 1 coefficient β_{kj} for variable k and county j . Although all Level 2 variables are utilized to predict differences in the average likelihood of incarceration (i.e., the Level 1 intercept β_{0j}), just two theoretically relevant Level 2 variables are included as predictors of different individual-level slopes β_{kj} . Finally, note that this model includes an error term, u_{kj} , representing the random component for the effects of variable k for county j . Substituting Equations (2) through (4) into Equation (1) yields Equation (5). This is estimated using HLM software, which is designed for conducting hierarchical analyses (Raudenbush, Bryk, Cheong, & Congdon, 2001).

RESULTS

The first step in hierarchical modeling is to run a fully unconditional imprisonment model—one made up of intercepts only. The results of this preliminary analysis, presented in Table 2, show that significant variation exists across counties.¹³ Based on these results, we determined that it was appropriate to examine fixed and random effects of the Level 1 coefficients.

Level 1 Fixed Effects

Fixed effects are similar to logistic regression coefficients in that they indicate whether an individual-level factor, on average, is related to the log of the odds of receiving a prison sentence (Kautt, 2002). The fixed effects for the Level 1 random coefficients are presented in Table 3a. This information shows that only one of the three coefficients for individual-level demographic factors, male, is statistically significant; the odds ratio for this coefficient indicates that male offenders have a 59% increased chance of receiving a prison sentence after controlling for other individual-level factors. By com-

TABLE 2: Unconditional Model

	<i>Coefficient</i>	SE	<i>t Ratio</i>	df	<i>p Value</i>
Fixed effects (unit-specific model)					
Intercept, BO					
Intercept, GOO	-.973	.121	-8.061	38	.000
	<i>Variance</i>	SD	χ^2	df	<i>p Value</i>
Random effects					
Level 2, u_0	.518	.720	662.307	38	.000

parison, the coefficients for all of the other case characteristics are significant ($p < .001$) and are associated with at least doubled odds of an individual's receiving a prison sentence. The two exceptions are the bench trial coefficient, which is negative; its odds ratio indicates that individuals whose cases are disposed through a bench trial have a 60% reduced odds of receiving a prison sentence than those who plead guilty. In addition, the coefficient for prior misdemeanor conviction is not significant.

Level 1 Random Effects

Random effects show whether the impact of specific individual-level factors changes across counties (Kautt, 2002). Table 3b gives information about the extent to which the effects of Level 1 variables differ across counties. The significant ($p < .05$) variance component for this model's intercept indicates that the probability of being sentenced to prison varies across counties after controlling for Level 1 factors. A significant variance component for a specific variable indicates that the impact of that factor (its coefficient) varies across counties. Table 3b shows that the effects of the jury trial dummy variable ($p < .05$) and four of the five charge variables ($p < .01$) vary significantly across jurisdictions. Put another way, these factors' coefficients have distinct values within different counties. Given that a very high percentage of all sampled individuals convicted of murder, rape, or robbery receive a prison sentence, it is not surprising that the effect of this variable does not vary across counties.

Full Model

Table 4 presents the results of the full model, which includes all Level 1 and Level 2 coefficients. The main effects of the six county-level variables, estimated at Level 2, reflect how differences in these factors correspond to

TABLE 3a Fixed Effects Model (N = 6,626)

Variable	Imprisonment (yes/no)		
	Coefficient	SE	Odds Ratio
Intercept	-3.781	.234	—***
Most severe conviction: Felony	1.412	.087	4.11***
Most severe conviction: Misdemeanor	-.126	.108	.88
Charge: Murder, rape, or robbery	3.154	.173	18.32***
Charge: Assault or other violent	1.804	.133	6.08***
Charge: Property	1.503	.103	4.49***
Charge: Drug trafficking	2.340	.114	10.38***
Charge: Other drug	1.046	.115	2.85***
Detained before trial	1.194	.073	3.30***
Bench trial	-.908	.216	.40***
Jury trial	1.405	.247	4.08***
Age at arrest	-.005	.004	1.00
Male	.356	.091	1.59***
African American	-.016	.072	1.07

TABLE 3b Level 1 Random Effects^a Model

Variable	Imprisonment (yes/no)		
	Variance	df	χ^2
Most severe conviction: Felony	.32	13	8.40
Most severe conviction: Misdemeanor	.18	13	7.01
Charge: Murder, rape, or robbery	1.38	13	16.65
Charge: Assault or other violent	1.44	13	30.61**
Charge: Property	1.42	13	45.39***
Charge: Drug trafficking	1.59	13	43.54***
Charge: Other drug	2.23	13	63.63***
Detained before trial	.25	13	14.85
Bench trial	.94	13	16.28
Jury trial	1.22	13	24.67*
Age at arrest	.00	13	16.45
Male	.07	13	7.61
African American	.05	13	14.13
Intercept Level 2, u_{0j}	1.96	13	23.35*

a. Chi-square values are based on 14 counties that had sufficient data for computation.
* $p < .05$. ** $p < .01$. *** $p < .001$.

differences in the y intercepts across the individual-level models estimated for each county in the sample. In other words, each y intercept reflects an adjusted mean outcome for all cases in a county when the effects of the case-level variables have been controlled.

TABLE 4: Hierarchical Model

	<i>Coefficient</i>	<i>SE</i>	<i>Odds Ratio</i>
Contextual			
Sentencing guidelines	-.802	.303	.448*
Alternative sanctions availability	-.047	.105	.954
Index crime rate per 10,000	-.002	.001	.998**
Percentage voting for Bush	.015	.012	1.016
Percentage African American	.062	.014	1.064***
Economic disadvantage	-.058	.100	.944
Individual			
Most severe conviction: Felony ^a	1.513	.090	4.539***
Most severe conviction: Misdemeanor ^a	-.109	.111	.897
Charge: Murder, rape, or robbery ^a	3.078	.181	21.716***
Charge: Assault or other violent	1.881	.208	6.557***
Charge: Property	1.517	.192	4.561***
Charge: Drug trafficking	2.234	.224	9.334***
Charge: Other drug	1.047	.249	2.850***
Detained before trial ^a	1.238	.076	3.450***
Bench trial ^a	-.781	.220	.458**
Jury trial	1.407	.325	4.085***
Age at arrest ^a	-.006	.004	.994
Male ^a	.379	.093	1.460***
African American ^a	-.031	.074	.969

a. Based on findings from Level 1 analyses (i.e., the impact of this factor does not vary significantly across counties), this factor is fixed (see Table 3b).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Regarding Level 1 coefficients, one must specify whether each Level 1 attribute will have random or fixed effects across each contextual (i.e., county) equation (Kautt, 2002). If one hypothesizes that, say, the impact of criminal history varies randomly across counties, then the model must allow the error variance to vary randomly. In contrast, if the researcher hypothesizes that the effect of this factor is constant across jurisdictions, then its error variance must be set at zero (i.e., fixed). Bryk and Raudenbush (1992) suggested that factors with nonsignificant random effects in preliminary analyses should be modeled as having fixed effects. Therefore, we fixed such factors in this final model (Kautt, 2002).

The information presented in Table 4 shows that three of the six county-level explanatory variables affect cross-county variations in sentencing in the manner that we hypothesized. First, an individual's likelihood of receiving a prison sentence is lower in jurisdictions that operate under sentencing guidelines ($p < .05$); its odds ratio indicates that the presence of sentencing guidelines decreases the likelihood of imprisonment by 55%. Second, racial

composition is also significantly related to imprisonment ($p < .01$) in the hypothesized direction; a one percentage point increase in percentage African American is associated with a 6.4% increase in the odds that an individual will receive prison. Index crime rate is also statistically significant ($p < .001$).

As was the case with the results of our Level 1 fixed effects model (Table 3a), with the exceptions of prior misdemeanor conviction and bench trial, all of the case-characteristic factors are significant and positively related to imprisonment. Many of these have a strong impact. For example, the odds ratio for jury trial indicates that cases disposed via jury trial are more than 4 times as likely to result in a prison sentence relative to those disposed by a guilty plea. By contrast, male is the only significant individual-level demographic factor; neither of the others, age or race, is significant.

DISCUSSION

The results of the current study demonstrate that, not surprisingly, individual-level legal and extralegal factors are important determinants of whether an offender receives a prison sentence. However, these results also support the idea that county-level factors affect sentence severity—characteristics of the context in which the sentencing decision is made can also influence sentencing outcomes.

Contextual Factors

Three of the six contextual factors considered here were negatively related to the decision to imprison. In support of our hypothesis, the presence of sentencing guidelines was associated with a decreased likelihood of an individual's receiving a prison sentence. This finding supports the notion that jurisdictions with sentencing guidelines are more parsimonious in their use of prison sentences and is consistent with an explicit objective of sentencing guidelines systems: to avoid prison overcrowding by controlling prison population growth (Frase, 1995). It is also consistent with prior research (Marvell, 1995; Sorensen & Stemen, 2002).

The finding that crime rate has weak negative impact on the decision to sentence to prison is inconsistent with other multilevel contextual sentencing studies—neither Britt (2000), Ulmer and Johnson (2004), nor Weidner et al. (2004) found level of crime to affect sentence severity. Findings from these multilevel sentencing studies are contrary to those of most aggregate-level studies, which have found level of crime to have a positive effect on states'

imprisonment rates (e.g., McGarrell, 1993). The inconsistency of results across study types (i.e., using geographic vs. individual units of analysis) could be the product of distinct operationalizations of punitiveness. Aggregate-level studies typically define prison use as inmate population per capita. Given that the level of crime and the prison population are measures of case volume, it is not surprising that aggregate-level studies have consistently revealed a positive relationship between the two. In contrast, contextual sentencing studies' outcome measure is the individual defendant's likelihood of receiving a prison or custodial sentence. In such a model, level of crime would only be expected to have an indirect positive effect on prison use: Judges may be more likely to sentence offenders to prison in an effort to lower the crime rate if higher crime rates exist. The finding of a negative relationship between crime rate and prison use could be explained by the idea, proffered by Tonry (1999), that jurisdictions with higher crime rates may have a higher tolerance for crime. As an alternative, it could be that decision makers in jurisdictions with higher crime rates treat felony cases less harshly because the high case volume overwhelms the system; caseload pressure precludes them from being as severe as they otherwise would (Dixon, 1995).

One contextual factor, percentage African American, was positively related to prison use. This finding is consistent with the idea that prison sentences will be more likely in jurisdictions with greater proportions of African Americans. However, support for the racial threat theory is mitigated by the finding that the individual race variable is not significant. This challenges the idea that African Americans are punished more severely because of the so-called symbolic threat that they pose, as some prior sentencing research (e.g., Crawford et al., 1998; Steffensmeier, et al., 1993) has found. The finding of a racial composition effect is consistent with some prior contextual sentencing studies. Specifically, two studies found that all offenders were at greater risk of incarceration in counties with proportionately larger African American populations; however, sentences in these counties tended to be shorter (Britt, 2000; Myers & Talarico, 1987). By contrast, in neither of two other multi-level contextual sentencing studies was the racial composition main effect significant (Ulmer & Johnson, 2004; Weidner et al., 2004).

None of the other three contextual factors was significant. First, the availability of alternative sanctions in a jurisdiction was not related to a reduced likelihood of an individual receiving a prison sentence. Thus, the idea that judges who have a wider array of sentencing options between prison and probation will be more likely to use them (Weidner & Frase, 2003) is not supported. Second, the finding that political conservatism does not increase the odds of an individual receiving a prison sentence is contrary to the results of contextual sentencing studies using single-level modeling techniques (e.g.,

Huang et al., 1996) but is consistent with Ulmer and Johnson (2004)—the one other multilevel contextual sentencing study of which we are aware that considered this factor. That two multilevel sentencing studies have not found conservatism to have an impact whereas some single-level studies have, could be a consequence of the single-level studies' committing Type I errors (i.e., incorrectly rejecting null hypotheses) as the result of model misspecification.¹⁴ Third, we found that county-level economic disadvantage does not have an impact on likelihood of imprisonment. This finding contradicts the notion that punishment will be more severe in jurisdictions with greater proportions of individuals perceived as posing a threat because of their economic circumstances (Mears & Field, 2000). Yet this economic threat hypothesis is not consistently supported by empirical research. Although Myers and Talarico (1987) found that higher levels of unemployment increase the likelihood of incarceration, studies using multilevel modeling techniques have found no relationship between economic contextual factors and sentencing decisions. Britt (2000) and Weidner et al. (2004) found that unemployment levels did not have an effect on sentencing decisions. Similarly, Ulmer and Johnson (2004) found that poverty did not affect either the decision to incarcerate or sentence length.¹⁵

Individual-Level Factors

Results regarding individual-level factors are largely consistent with findings from prior studies on sentencing severity. For example, the two violent offense charge variables were influential, increasing the likelihood that an offender would receive a prison sentence 21.7 and 6.6 times, respectively. The high odds ratio for drug trafficking conviction charge (9.3) could be a product of the widespread prevalence of mandatory prison sentencing laws for such offenses. Jury trial had an odds ratio of 4.1, indicating that individuals convicted by trial were more than 4 times as likely to receive a prison sentence as those whose cases were disposed by a guilty plea, perhaps because a nonprison sentence was a component of many plea deals (e.g., Albonetti, 1991; Dixon, 1995; Frase, 1993). Male was the one demographic factor in the final model that was influential; its odds ratio indicates that male offenders have a 46% higher odds of receiving a prison sentence than female offenders, a finding that is consistent with prior research (e.g., Spohn, 1999; Spohn & Beichner, 2000). The finding that pretrial detention had a very strong influence on the decision to imprison (odds ratio of 3.4) is not surprising, given the empirical support for the idea that previous decisions in the justice process (i.e., whether to detain) affect sentencing outcomes (Albonetti, 1991; Mears, 1998).

Findings in regard to two other extralegal factors were somewhat surprising. First, the bench trial coefficient was significant; however, its effect was in the direction opposite of what was expected; we found that defendants who were disposed via bench trial were less likely to receive a prison sentence than those who pleaded guilty. This anomalous finding could be the result of the bench trial factor being highly correlated with some factor for which the model does not control (Kennedy, 1993). Second, the individual-level variable African American was not significant, which is inconsistent with some prior studies (e.g., Steffensmeier & Demuth, 2001) but consistent with others (e.g., Peterson & Hagan, 1984).

CONCLUSION

The current study adds to the growing body of research that demonstrates the utility of multilevel modeling to advance the understanding of how contextual factors affect individual sentencing decisions. The likelihood of receiving a prison sentence varies significantly across counties, and three of the six contextual factors considered here had an impact on the decision to sentence to prison. These findings prompt us to conclude that contextual factors affect sentencing decisions. Put another way, these results lead to the conclusion that the type of sentence one gets, and the reason one gets it, partially depends on where one is sentenced (Ulmer & Johnson, 2004).

When considering these findings—use of sentencing guidelines, crime rate, and racial composition were found to influence the decision to imprison—it is important to reiterate that the analyses conducted herein are on cases sampled from 39 of the 75 most populous counties. This is clearly a distinct group, especially in light of the fact that there are more than 3,100 counties in the United States. Because all of the sampled counties are large and urban, we were unable to control for the effect of urbanization or county size on sentencing decisions, as others have (e.g., Myers & Talarico, 1987; Ulmer & Johnson, 2004). However the inclusion of only the most populous jurisdictions can be seen as advantageous, in that these jurisdictions have a disproportionate impact on the use of criminal justice system resources (e.g., prison bed space) and the number of offenders affected.¹⁶

Aside from urbanization, there are several other contextual factors whose effects on sentencing decisions merit further study, such as court organizational factors (e.g., caseload). This line of research would also be enhanced by considering alternative sentencing outcome measures such as sentence length (or actual time served), and by modeling procedures that allow for examining the use of prison sentences relative to jail sentences—a distinction

that is obscured when these two types of custodial sentence are collapsed into one category. The current study lacked a direct measure of public opinion specifically about prison use. Instead, it interprets findings in regard to factors such as general political conservatism as indicators of public opinion about prison use and its impact. Future research would benefit from the inclusion of a direct measure of public opinion.

Finally, studies in this area would benefit from the use of mixed research methodologies that combine quantitative analysis with findings from observations of court actors or survey data eliciting information on the decision-making rationales of judges, prosecutors, and defense attorneys. To the extent that research on contextual factors' effects on sentencing decisions illuminates the reasons for cross-jurisdictional variations in sentencing, it will be relevant to sentencing theory and policy.

NOTES

1. A parallel body of research has attempted to explain interjurisdictional differences in punitiveness using geographic area (i.e., states or counties) as its unit of analysis and controlling for legal (e.g., level of crime) and extralegal (e.g., racial composition) factors. There have been some consistent findings across the state-level studies, most of which use imprisonment rate as an outcome measure. For example, most have found crime rate to exert a positive influence on prison use (Carroll & Doubet, 1983; Greenberg & West, 2001; McGarrell, 1993; Michalowski & Pearson, 1990; Taggart & Winn, 1993). A host of extralegal factors also have been found to play a key role in explaining severity of punishment: percentage of the population that is African American (Arvanites, 1992; McGarrell, 1993), political conservatism (Greenberg & West, 2001; Taggart & Winn, 1993), and region—Southern states punish more severely (Carroll & Doubet, 1983; Michalowski & Pearson, 1990).

Among the county-level studies, McCarthy (1990) found in California that violent crime and percentage of the population that is poor were significantly related to prison use and that, among urban counties, unemployment rate also had an effect. Weidner and Frase (2001, 2003) conducted two studies to explain intercounty variation in prison use. In the first, they found three legal variables and two extralegal variables, percentage of the population that is Black and (Southern) region, to have a significant impact on prison use (Weidner & Frase, 2001). In the second, they found political conservatism and Southern region to have a positive impact on prison use (Weidner & Frase, 2003). These aggregate-level studies are limited in that they discount the role that individual court case characteristics might play in determining level of punitiveness.

2. We included this second violent offense category because assaults are much more prevalent than more serious violent offenses; because they are less severe, there is a tendency by the criminal justice system to treat them less harshly. For example, in the 75 most populous counties in 1998, whereas 100% of defendants convicted of murder, 60% of defendants convicted of rape, and 65% of those convicted of robbery received a prison sentence, only 40% of defendants convicted of felony assault received a prison sentence—a lower percentage than for those convicted of burglary (48%; Reaves 2001, p. 30).

3. We recognize that the use of offense category dummy variables is not the preferred way to gauge offense severity (Engen & Gainey, 2000). Unfortunately, data limitations do not permit a

more precise measure. Most other multilevel sentencing studies use data from jurisdictions under a single statutory (sentencing guidelines) system and thus contain a uniform offense severity code (e.g., Britt, 2000). By contrast, because the State Court Processing Statistics (SCPS) sample contains cases from counties located in 17 states and no interstate offense severity code exists, we were unable to use such a measure. Although within-category heterogeneity is probably inevitable, the values of these dummy variables' coefficients (discussed in the Results section) manifest face validity (e.g., the odds ratio for murder, rape, or robbery is by far the highest of the five charge dummy variables).

4. We included a separate dummy variable for bench trials and jury trials in light of empirical evidence that in some counties, bench trials function as an alternate form of negotiated plea (Ulmer, 1997).

5. Missing data precluded more precise racial or ethnic breakdowns (e.g., between Hispanic and non-Hispanic).

6. To determine which states had guidelines systems, we used three sources (Bureau of Justice Assistance, 1996, 1998; Frase, 1999). This definition applied to 14 of 39 sampled counties, from 8 of 17 sampled states (Florida, Maryland, Michigan, Missouri, Ohio, Pennsylvania, Tennessee, and Washington).

7. This variable was formulated based on whether convicted adults under jail supervision, but not confined, were assigned to any of the following in a given county: (a) electronic monitoring, (b) home detention without electronic monitoring, (c) community service, (d) day reporting, (e) weekend programs, (f) other alternative work programs, and (g) alcohol or drug treatment programs. One county (DuPage, IL) was missing this information. Because hierarchical linear modeling (HLM) software does not permit missing information at the contextual level, we assigned to this county the mean score on this variable for the other 38 counties.

8. As reported in Dave Leip's *Atlas of U.S. Presidential Elections* (available at www.uselectionatlas.org/), we chose to use data from the 2000 presidential election instead of 1996 because the most prominent third-party candidate in 2000, Ralph Nader, surely did not divert as many conservatives from voting for the Republican candidate as third-party candidate Ross Perot did in 1996.

9. It was not feasible to include separately these two variables in the multivariate model. The zero-order correlation between them is high (.66), and preliminary analyses revealed multicollinearity to be a problem when they were included simultaneously.

10. As Bryk and Raudenbush (1992) put it, "Aggregation bias can occur when a variable takes on different meanings and therefore may have different effects at different organizational levels" (p. 83).

11. We used a two-level hierarchical model, focusing on the case and county levels. It is not feasible to conduct three-level modeling (i.e., individual cases, counties, states) because many states are represented by only one county in the SCPS sample (Wooldredge, Griffin, & Pratt, 2001).

12. There is some debate as to whether to center variables at their respective grand means to account for differences in caseload composition across the sampled counties. Ulmer and Johnson (2004) used grand mean centering, while Kautt (2002) did not center her independent variables. As Equation (1) reflects, we did not use grand mean centering. In an alternative model (output not presented here), we centered all model variables at their grand means. This step resulted in no substantive differences in findings from the ones reported herein.

13. A limitation of the logistic HLM technique is that one cannot use it "to compare the relative explained variation at each level of analysis" as one can do with HLM (Ulmer & Johnson, 2004, p. 155).

14. "A pooled model will always generate a biased test of the aggregate-level null hypothesis simply because the power of the test is governed by the numbers of individuals, not the number of aggregates" (Wooldredge et al., 2001, p. 214).

15. Given that the strong relationship between the Southern region of the country and imprisonment is widely documented (Chiricos & Crawford, 1995), we considered including geographic region as a contextual factor. Results of preliminary analyses (output not presented here) showed this factor to have a negligible impact. This result was not surprising in light of the strong evidence that at least in regard to punitiveness, the most populous Southern counties are very different than smaller Southern counties. Analysis of another BJS-sponsored data set, the National Judicial Reporting Program (NJRP) supports this point. The NJRP program reports sentences imposed on convicted felons in 344 counties, of all sizes, selected to be nationally representative (Durose, Levin, & Langan, 2001, p. 2). For 1998, NJRP data showed that Southern counties were more likely to use prison (48% compared to 35% elsewhere). However, of the NJRP-sampled counties that were among the 75 most populous (in other words, SCPS counties), Southern counties were actually slightly less likely to sentence to prison than non-Southern counties (40% compared to 41%). Conversely, among smaller counties, those in the South had higher prison sentence percentages (49% in the South compared to 33% in the rest of the country). These comparisons suggest that the so-called South effect found in previous research could be a product of the sentencing practices of the many smaller jurisdictions in that region.

16. In 1998, the 75 populous counties that this sample represented accounted for 37% of the population, 50% of all reported serious violent crime, 45% of all serious reported property crime, and 40% of all felony convictions in the United States (Reaves, 2001, p. 1).

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