# Appendix D: Data Sources and Statistical Methods

## Section A: Data Sources

### *USSC Monitoring Datasets*

The Commission publishes annual datasets on all federal felony and serious misdemeanor criminal cases sentenced under the guidelines and reported to the Commission in each fiscal year. Pre-SRA cases sentenced under the "old law" and petty offenses are not included in these datasets. Each federal court is required by law to transmit several sentencing-related documents to the Commission. Presentence reports, judgement of conviction forms, statements of reasons, and plea agreements are received for the vast majority of felony and serious misdemeanor cases. Staff in the Commission's Monitoring Unit assign each case a unique identifier and enter information on over 200 variables involving guideline applications, offender characteristics, and case processing factors. Expansion of the dataset has added elements through the years. A research codebook, which defines the variables and lists the years for which each variable was coded, is maintained by the Office of Policy Analysis. Beginning in 1995, the Commission prepared and released a separate Appeals dataset, which tracks appellate review of sentencing decisions.

Data records in the monitoring dataset are established on a per offender/per sentencing basis; that is, each record is a consolidated sentencing of a single defendant. Multiple defendants in a single docketed case each appear as a separate record. Multiple counts and multiple indictments constitute a consolidated sentencing if all counts of conviction were sentenced at the same time and if a single PSR and guideline range were produced for the defendant. Defendants may appear in more than one record in a given fiscal year if they were subject to more than one consolidated sentencing.

Additional information about the annual datasets and information about how to obtain the datasets and codebooks is found in the Commissions' *Guide to Publications and Resources* (USSC, 2001), which can be obtained from the Commission or online at:
http://www.ussc.gov/publicat/Cat2004.pdf.

### *FPSSIS*

The Federal Probation Sentencing and Supervision Information System [FPSSIS] was administered by the Administrative Office of the U.S. Courts from 1984 through 1990. Data were collected by probation officers assigned to perform presentence investigations and to supervise offenders on probation and parole. When the Sentencing Commission put its own monitoring system in place, FPSSIS was renamed FPSIS and revamped to eliminate sentencing information now collected by the Commission and emphasize information relevant to supervision. Additional information on the FPSSIS dataset and on the use of these data to investigate trends in the rate of imprisonment during the early years of guidelines implementation can be found at http://ssdc.ucsd.edu/ssdc/icp09845.html (last visited October 12, 2004).

***Intensive Study Samples***

The Commission has instituted a periodic program of data collection to supplement the monitoring data routinely collected on all cases. These Intensive Study Samples [ISS] were collected on random samples of cases sentenced in fiscal years 1995 and 2000. Over 200 additional variables were collected on each offender. Additional information on drug trafficking cases was collected on a larger sample of cases [called the DSS].

The1995 ISS is a five percent random sample of all offenders consisting of 1,922 cases. The DSS is a stratified random sample of drug cases, including a 10 percent sample of cases primarily involving powder cocaine, a 50 percent sample of cases involving methamphetamine, and a 20 percent sample of all other drug types. The DSS consists of 2,767 cases. Information collected included details of up to thirty criminal history events, including the types of prior offenses committed by the offender, the date, location, and jurisdiction of the offenses, the sanctions that were imposed, the offender's supervision history, and the effects of the prior convictions on the determination of the guidelines' criminal history score for the current offense. Offender characteristics collected include the defendant's family situation, both at the time of sentencing and as a youth, the defendant's education and employment history, drug or mental health problems, and other potentially mitigating factors. For drug cases, information was also collected on the types and amounts of drugs distributed in various time periods, weapons and victims involved in the offense, the nature of any organization of which the defendant was a part, the defendant's primary and most serious function within the organization, and other measures of the defendant's culpability. Information was also collected on the law enforcement techniques used in the case, the charges that were initially brought against the defendant as well as the ultimate charges of conviction, and the defendant's legal responsibility for any weapons involved in the offense.

The 2000 ISS is a 20 percent random sample of all cases sentenced that fiscal year. Data collected includes most of the same information collected for the 1995 ISS. For drug cases, somewhat less information on the types and amounts of drugs distributed at various times was collected.

Information on the offense in the ISS is based on the probation officer's description of the offender's real offense conduct. This is generally accepted as the most accurate information available to researchers on offenders' true criminal conduct, because probation officers can look beyond the conduct described in indictments and are not legally bound by factual stipulations contained in plea agreements made by the parties. They are directed by Judicial Conference policy to report to judges complete descriptions of offenders' actual criminal conduct as supported by all reliable evidence. In so far as the probation officer's report relies on information supplied by the parties or on information supplied by the case agent, it may understate or overstate the criminal conduct that might be proven to a jury beyond a reasonable doubt.

## Section B: Analyses in Chapter Two

The following section describes the variables and procedures used in preparing the longitudinal graphs contained in Chapter Two. FPSSIS data for the years 1984-1990 and USSC monitoring data for the years 1991-2002 were used for these analyses. In addition, trends were checked by using data on sentences imposed obtained from the Administrative Office of the United States Courts [AO], which is available for all years but does not contain information on sentencing options. The sentence imposed trends were consistent with the general trends observed using the FPSSIS and monitoring data. (Results of the analysis using AO data are not reported here, but can be found in Hofer & Semisch, 1999.)

***Determining Type of Sentence Imposed***

The FPSSIS dataset does not contain just a single variable describing the type of sentence imposed on an offender. Instead, it contains over ten variables relevant to sentencing options: one describing the amount of prison time imposed, one describing the amount of probation time imposed, another containing the amount of supervised release imposed, and several more indicating the imposition of community confinement, mandatory substance abuse treatment, community service, fines, and restitution. All cases in which either only prison time or some prison time was imposed were placed in the *imprisonment/split sentences* category. All cases in which only probation was ordered were placed in the *probation only* category. All cases in which some form of intermittent confinement was imposed in addition to a term of probation were placed in the *probation and alternatives* category. Offenders who were ordered to participate in a substance abuse treatment program or pay restitution or perform community service as a condition of their probation, but for whom no confinement was ordered, were placed in the probation only category. A separate fine only category was created, and these cases were excluded from the charts due to the small number of cases involved.

The USSC Monitoring dataset does contain a single variable, SENTIMP, which differentiates among the basic sentencing options displayed in our graphs. The variable provides for four separate categories: No prison or probation (fine only), prison only & prison with confinement conditions (imprisonment and split sentences), probation & confinement conditions (intermediate and alternative sanctions), and probation only. For the sake of comparability to the FPSSIS categories and to previous Commission analyses, fines were excluded from the graphs, and prison only and prison with alternatives were combined into a single imprisonment/split sentence category. Probation with alternatives and probation only were used as defined in the monitoring codebook. Intermediate sanctions include the community and intermittent confinement conditions captured by the FPSSIS data, and also home confinement sentences from the monitoring dataset. Home confinement was not available prior to 1989. Note that graph totals in a given year may not sum to 100% due to rounding.

Table 1
Sentence Type and Adjustments in the Time Served Algorithm

| Sentence Type | SENTSTAT CODE | Minimum Time Served | Good Conduct Time | Parole Eligible |
|---|---|---|---|---|
| 18 Sec. 4205(a)[1] | 0 | One-third | Pre-Guideline | Yes |
| 18 Sec. 4205(b)(2) | 2 | None | Pre-Guideline | Yes |
| 18 Sec. 4205(f) | A | Half | Half | No |
| 18 Sec. 5010(a)[2] | 3 | None | None | No |
| 18 Sec. 5010(b) | 3 | None | Two Years | No |
| 18 Sec. 5010(c) | 4 | None | Two Years | Yes |
| Federal Juvenile Delinquency Act 1974 | 5 | None | Pre-Guideline | Yes |
| 18 Sec. 4253(a)[3] | 6 | None | Pre-Guideline | Yes |
| 18 Sec. 3575[4] | B | One-third | Pre-Guideline | Yes |
| Sentencing Guidelines | G | None | Guideline | No |
| Anti-Drug Abuse Act 1986 | H | None | Pre-Guideline | No |

Notes:
1. 18 USC 4205 specifies the time of eligibility for release on parole for non-guideline cases.
2. 18 USC 5010 (repealed October 12, 1984) provided for the imposition of a suspended sentence or sentence to the custody of the Attorney General in the case of youthful offenders.
3. 18 USC 4253(a) refers to the conditions in which an addicted offender can be committed to a treatment facility.
4. 18 USC 3575 provided for an increased sentence for dangerous special offenders.

Table 2
Good Conduct Time for Non-Guideline Sentences

| Sentence Length (Months) | Good Conduct Time per month (Days) |
|---|---|
| Less than 6 | 1.5 |
| 6 to 11 | 6.5 |
| 12 to 35 | 7.7 |
| 36 to 59 | 8.7 |
| 60 to 119 | 9.1 + 36.5 days |
| 120 or more | 11.1 + 36.5 days |

***Determining Mean Prison Sentences Imposed***

Offenders who received no imprisonment whatsoever were excluded from calculations of mean imprisonment terms. While including non-imprisonment sentences as zero would arguably give a better picture of the overall severity of punishment for various types of crime in any given year, it would underestimate imprisonment length for offenders who are sent to prison, particularly for offenses in which substantial portions of offenders receive probationary sentences. Readers are cautioned to interpret the mean sentences in conjunction with the data on rates of imprisonment. All offenders who received any prison term were counted, including terms that were part of split sentences.

***Estimating average time likely to be served***.

Changes in average sentences *imposed* tell us little about historic shifts in sentencing and correctional policy. Prior to the SRA, decisions about when offenders would be released were made in the majority of cases by the U.S. Parole Commission. Offenders typically served between 40 to 70 percent of their prison term, depending in part on the type of crime, the length of the prison term that had been imposed by the court, and the amount of good time the offender earned while incarcerated. Under the SRA, parole was abolished and offenders generally serve between 87 to 100 percent of the sentence imposed, depending largely on the amount of good time they earn while in prison. Early release to reward participation in a residential drug treatment program or due to a serious and terminal medical condition can reduce this time somewhat for a minority of offenders.

In order to ensure comparability between estimates of time likely to be served for offenders sentenced before the SRA with those sentenced after, an estimate for offenders in each group was computed based on separate algorithms. The time that old law offenders were likely to serve was estimated using algorithms developed by Commission staff that replicate the operation of the pre-SRA rules for earning the maximum allowable good time and the operation of the parole guidelines. The time that new law offenders were likely to serve was estimated also assuming that each offender received the maximum allowable good-time. For both old law and guideline offenders, the effects of any mandatory minimum prison terms were also taken into account.

Table 1 on the preceding page summarizes the different types of offenses and how each was treated in the algorithm for computing time served. The algorithm first determined preguidelines good time for cases where this was required (SENTSTAT=0,2,5,6,B,H). The rules used for determining preguidelines good time are provided in Table 2. For example, sentences of one month were eligible for 1.5 days of good conduct time, while sentences of two months received 1.5 x 2= 3 days. At the high end, sentences of 120 months received 11.1 days per month plus 36.5 days. Thus a defendant receiving a 10-year sentence was eligible to receive 1,369 days of good conduct time (about 3 years and 9 months).

Following the computation of good conduct time, the time served calculation for old law defendants convicted under the Anti Drug Abuse Act of 1986 (SENTSTAT=H) was calculated as

the prison sentence length less good time, because these individuals were not eligible for parole. Next, for all but one of the offenses eligible for parole in addition to good time (SENTSTAT=2,5,6,0,B), the estimated time served was taken as the earliest possible release date after considering both good conduct time and the parole guidelines. Finally, for 18 USC § 5205 and 18 U.S.C. § 3575 sentences (SENTSTAT=0 OR B), the time served was corrected to be one-third of the original prison sentence if the above calculations had decreased the time served below one-third. In cases where both the upper and lower parole guidelines were missing for cases which were eligible for parole, the parole guidelines were set to missing as well. The effect of this was to set the estimated time served to the original sentence less the good conduct time. When the lower guideline was missing but not the upper, the lower value was set to zero and the value of the parole guideline (PAL) was set at half the upper guideline. When the upper guideline was missing but not the lower, then the upper value was assumed to be four years more than the lower value resulting in a value of the PAL which was two years larger than the lower guideline. The 18 U.S.C. § 5010 sentences had two variants, section 5010(a) sentences which were under six months and had no good time corrections, and sentences of 72 months. In the latter case, the good time was 24 months. The section 5010(c) sentences also had a two-year good time requirement. Once the good time was computed, then the parole guideline code was invoked similarly to the sentences described earlier.

For new law guideline sentences (SENTSTAT='G'), the good time discount of 13 percent was applied by reducing the sentence by 365/419 for sentences between 13 months and life. This was followed by computing time served with alternatives (OTHERDET), if any, and adding this time to prison. This procedure was followed for the section 4205(f) sentences, where the time served was set equal to half the prison term. For probation cases (SENTSTAT='C'), the time served was equal to the imprisonment for sentences up to six months, otherwise time served was set equal to missing. Finally, if SENSTAT was not equal to any of the above categories, time served was set equal to missing.

Cases for which a term of imprisonment is ordered but the length is indeterminable are excluded. Prior to fiscal year 1993, the Commission defined life sentences as 360 months. However, to more precisely reflect life expectancy of federal criminal defendants and to provide more accurate length of imprisonment information, life sentences are now defined as 470 months.

Because these estimates assume that offenders earn all available good time credits, they underestimate the time that will actually be served by offenders who misbehave while incarcerated. Comparability of time periods is assured, however, because the identical assumption was made for both old- and new law cases. These estimation methods provide a reasonably accurate portrait of changes in policies regarding time to be served throughout our study period. It more accurately represents changes in policy than do data from "release cohorts"—*i.e.*, "average time served until first release" for groups of offenders released from prison during a given year. These data suffer from several well-known biases if used to draw conclusions about changes in sentencing policy. *See* Albert Biderman, Statistics of Average Time Served Are Fallacious Indicators of the Severity of Punishment. (Paper presented at the 1995 Annual Meeting of the American Society of Criminology in Boston, MA.)

Estimates of time likely to be served are inferior to data on how long prisoners actually spend behind bars. But obtaining such data requires a very lengthy follow-up time, given that many offenders receive long sentences. A recent BJS *Special Report* does the next best thing by calculating actual time served for offenders who were released during the study period, which included 72 percent of the offenders in the study. For old law offenders that remained imprisoned, estimates of the time likely to be served were made using data from release cohorts who committed similar types of crime. However, these will necessarily be underestimates, particularly for offenders convicted of serious crimes, because many of these offenders remained incarcerated at the end of the study period. For new law offenders, the BJS study estimated time likely to be served by multiplying the sentence imposed by .87—the same as our algorithms. For comparisons of the BJS estimates with the policy-based algorithms used in this report, *see* Hofer & Semisch (1999). Although the general trends are largely the same, the two estimates do not perfectly match, even for new law offenders. This probably reflects differences in definitions and in the populations studied; the BJS report utilized the BOP Sentry datafile, while our estimates were based on USSC data.

***Determining the Primary Offense Category***

Offenses were classified into primary offense categories using the method common to recent AO and Sentencing Commission reports, *i.e.*, according to the crime type of the statute of conviction carrying the lengthiest *maximum* statutory penalty. In cases of ties, the length of any *minimum* terms are used, followed by the highest permissible fines. In the small number of cases still tied after applying these rules, the offense type that best represented the nature of the criminal behavior is chosen by the coders in the Commission's Monitoring Unit.

The Commission has used this method for classifying primary offenses since 1991. Prior to that point the Commission and the AO used similar but slightly different coding schemes. Therefore, in order to compare the AO's pre-1991 FPSSIS data to post-1991 USSC monitoring data, the FPSSIS data was recoded into new offense categories. These new categories were based on similar rules as those described in the preceding paragraph and resulted in categories as close as possible to those used in the post-1991 data. What variation does exist between the two codes stems mostly from the changing statutory definitions and coverage, as well as the sparse documentation for the pre-1991 data files.

The *aggregated offense categories* used in Chapter Two were formed by combining the primary offense categories into relevant groupings in the following manner:

> *Drug Trafficking* includes drug distribution/manufacture, drug distribution/ manufacture-conspiracy, continuing criminal enterprise, drug distribution-employee under 21, drug distribution near school, drug import/export, drug distribution to person under 21, and establish/rent drug operation.
>
> *Economic Crimes* includes larceny, fraud, embezzlement, forgery/counterfeiting, and tax offenses

*Immigration* includes smuggling, transporting, or harboring an alien, as well as unlawfully entering or remaining in the United States

*Firearm trafficking and possession* includes all firearm trafficking offenses as well as illegal possession and use of a firearm

*Violent crimes* include 1st and 2nd degree murder, manslaughter, kidnapping, sexual abuse, assault, bank robbery, and arson.

*Sexual abuse, exploitation, and transportation* include sexual abuse of a minor, sexual abuse of a ward, criminal sexual abuse, abusive sexual contact, sexual exploitation, and transportation across state lines for the purpose of engaging in illegal sex acts.

More detailed offense categories used in thumbnail graphs were defined as follows:

*Murder* includes first degree murder, felony with death resulting, second degree murder, and conspiracy to murder (with death resulting).

*Manslaughter* includes both involuntary and voluntary manslaughter, as well as negligent homicide in the period covered by the FPSSIS dataset.

*Kidnapping/Hostage* includes ransom taking and hostage/kidnaping.

*Sexual Abuse* includes sexual abuse of a minor, sexual abuse of a ward, criminal sexual abuse, and abusive sexual contact.

*Sexual exploitation* includes the production, distribution, and possession of pornography as well as other forms of sexual exploitation

*Assault* includes attempt to murder, assault with intent to murder, threatening communication, aggravated assault, conspiracy with attempt to murder, obstructing or impeding officers, minor assault, and conspiracy that includes assault with attempt to murder.

*Bank Robbery* includes both bank and aggravated bank robbery.

*Personal or postal robbery*, includes those crimes plus car-jacking and other robberies.

*Forgery/counterfeiting* includes unlawful production or alteration of bank checks, currency, or other documents

*Firearm Possession* includes unlawful possession of firearms or ammunition.

*Firearm Trafficking* includes unlawful trafficking in firearms/explosives.

*Burglary/Breaking & Entering* includes post office burglary, burglary of DEA premises (pharmacy), burglary of other structure, bank burglary, and burglary of a residence.

*Larceny* includes bank larceny, theft from benefits plans, other theft-mail/post office, receipt/possession of stolen property (not auto), other theft-property, larceny/theft-mail/post office, larceny/theft-property (not auto), and theft from labor union.

*Fraud* includes odometer laws and regulations, insider trading, and fraud and deceit.

*Embezzlement* includes property embezzlement, embezzlement from labor unions, postal embezzlement, embezzlement from benefit plans, and bank embezzlement.

*Tax offenses* includes tax evasion, filing of fraudulent tax returns, and other tax offenses.

*Smuggling, transporting, or harboring an alien* includes all offenses associated with the trafficking of illegal aliens into the United States.

*Unlawfully entering or remaining* includes illegal entry, illegal re-entry, and illegal residence in the United States

***Contribution of the guidelines to average time served for drug trafficking offenses***

In order to estimate the relative contribution of statutory minimums and guideline increases above those minimums to the average sentence for drug trafficking cases, special analyses were conducted using all drug trafficking cases sentenced in fiscal year 2001. Of the 24,038 offenders sentenced for drug trafficking, 2,439 cases were excluded due to missing values. In addition, cases in which the defendant received the statutory safety valve were excluded, because the safety valve negates both the mandatory minimum and the original guideline minimum. Of the remaining 15,764 cases, 8999 were non-departure cases and 6765 were departure cases. For all of these cases, the statutorily required minimum sentence was subtracted from the actual guideline sentence imposed. This difference was treated as the guideline contribution to sentence length above and beyond the amount required by the statutory minimums.

## Section C: Analyses for Chapter Three

### *Hierarchical Linear Modeling*

A multilevel hierarchical model was developed to examine the effect of region upon sentences imposed in federal cases. A standard ordinary least squares regression model would allow only limited partitioning of variance-covariance components. By incorporating the nested structure of the federal court system (*i.e.*, judges within courts, courts within districts, districts within circuits), multilevel hierarchical models allow for the computation of robust standard errors and the apportionment of variance between the different levels of the data structure.

Three hierarchical models were developed and tested on federal sentencing data from fiscal year 2001. The first model was an unconditional three-level model, using prison length imposed as the dependent variable. The individual case occupied level one. The sentencing judge occupied level two and the federal district occupied level three. (Because visiting judges are not nested in this way, the small number of cases handled by visiting judges were excluded from the analysis.) No fixed effects were added to the model and variance components were computed for each level. Hierarchical models can be created using any number of commercially available software packages including SAS, Stata, HLM, and Mlwin. The analyses described in this report were conducted using HLM version 5.0.

The second hierarchical model included the presumptive sentence (*i.e.*, the guideline minimum or the trumping mandatory minimum, whichever is higher) as a fixed effect at level one. Since all level-1 predictor variables contemplated or used during this experiment had meaningful values at X=0, the Natural X Metric was employed to center predictor variables. The explanatory power of this fixed effect was computed by comparing the overall explanatory power of the conditional and unconditional models.

The third model took as its dependent variable departure rates, rather than sentence lengths imposed, and included a district level nested within a circuit level. No fixed effects were included as control variables. About one-quarter of the variation in rates was attributable to the circuits, while three-quarters was attributable to districts

### *Regression Analysis of the Contribution of Different Mechanisms to Sentence Variation*

Ordinary least squares (OLS) regression techniques were used to calculate the amount of variance explained by the four mechanisms described in Chapter Three—the three types of departure and placement within the guideline range—using data from fiscal year 2001. The effects of the guidelines and mandatory minimum statutes were first incorporated into the model using the presumptive sentence. (Use of the presumptive sentence as a variable to control for legally relevant factors is discussed further in Section D below.) Dummy variables were then added to the model indicating whether the offender received any of the three types of departure or a sentence above the minimum of the guideline or statutory range. All cases with a particular type of departure were coded as one, all other cases were coded as zero. Among non-departure cases, all cases sentenced

above the guideline or statutory minimum were coded as one, and all other cases were coded as zero. Cases with missing values were excluded from the analysis.

The results of this analysis can be used to apportion the contribution of each of the four mechanisms to sentence variation that is not accounted for by the presumptive sentence. The portion of this variance that is unwarranted, however, cannot be determined, because of a lack of data measuring factors that may legitimately determine the extent of departure or placement within the guidelines range.

## Section D: Analyses in Chapter Four

***Controlling for legally relevant factors using the presumptive sentence***

Studies of the effects of discrimination in sentencing must control for the effects of legally relevant differences among groups that may legitimately account for differences in the likelihood of imprisonment or in average sentence length. The most common method for this has been to gather data on as many of the factors deemed relevant to sentencing as possible and to model the separate effects of these factors on sentencing outcomes, using multiple regression analysis. Studies of the type of sentence imposed (e.g., imprisonment, intermediate sanctions, probation), use Tobit, Logit, or Probit analyses to assess the differences among groups in the likelihood of receiving any of these types of sanctions. Studies of variations in sentence lengths have used ordinary least squares (OLS) regression to account for the effects of legally relevant and extra-legal factors on the months of imprisonment imposed.

Before the advent of guidelines, no specific instructions were given to sentencing judges on the weight with which to give particular legally relevant factors. For that reason, statistical models allowed the weight of each factor to be determined empirically by the estimation procedures used in the regression analysis. In addition, as described in Chapter Four, existing studies generally ignore or mis-specify the effects of mandatory minimum penalty statutes that require a minimum term of imprisonment for some classes of offenders. In 2001 researchers studying disparity under the sentencing guidelines of Washington State developed a method that permitted more precise specification of legally relevant factors (Engen and Gainey, 2001). Instead of including separate control variables for every legally relevant factor on which data are available, a single variable—the "presumptive sentence"—controls for the effects of all legally relevant factors taken into account by the guidelines and the statutes and properly specifies the weights and interactions among them. The model simply predicts that all defendants will receive the penalty required by law.

In the Washington State guideline system studied by Engen and Gainey, the midpoint of the recommended guideline range was the presumptive sentence. For the federal system, the guideline minimum is the presumptive sentence, based on empirical evidence that that the majority of cases are sentenced at that point in the range. (*See* USSC, *Sourcebook,* 2002, Tb. 29.) The guideline minimum was calculated taking into account all mandatory minimums and guideline adjustments, including criminal history category. For example, if the guideline calculation was for the offender

to be sentenced to 57 to 63 months, the guideline minimum would be 57 months. If that same offender had a five-year consecutive weapons charge, the guideline minimum would then be 117 months.

***Analysis of the effects of race, ethnicity, and gender***

The study of the effects of race, ethnicity, and gender for offenders sentenced in fiscal years 1998 through 2002 involved a series of analysis using two dependent variables. The first set involved the decision by the court whether to imprison the offender (the "in/out" decision); the second involved the length of time imprisoned offenders would spend incarcerated. For each of these outcomes, there were five separate populations measured: all offenders, drug offenders, non-drug offenders, males only, and females only. The model for all offenders was also run for the combined years of 1998-2002, and for each of the five years separately. Only offenders who were United States citizens and whose guideline and personal information were complete were used in these analyses.

The "in/out" decision was analyzed using logistic regression. The extra-legal predictive variables included in the models were: race/ethnicity of the offender (Black and Hispanic offenders compared to White offenders); the age and the square of the age of the offender; whether the offender had dependents or not; whether the offender attended college or not; and the gender of the offender (males compared to females). The legal factors included in the model were: the presumptive sentence; the type of offense (violent, drug, white collar and "other" offenses compared to property crimes); the criminal history category of the offender (Categories II, III and IV (or "medium" category), and Categories V and VI ("high" category) compared to Category I ("low" category); whether the offender was convicted of a mandatory minimum for a weapon; whether the offender received a Specific Offense Characteristic (SOC) adjustment for weapon use; the type of departure in the sentence (substantial assistance, upward and downward departure compared to no departure); whether the offender went to trial (compared to those who pled); and the zone in the sentencing table the offender's offense level and criminal history score placed them in (Zones B, C, and D compared to Zone A).

Legal factors in addition to the presumptive sentence were included in the model to assess whether judges took these factors into consideration and weighted them *somewhat differently than the guidelines rules themselves*. To accomplish this, the parameter estimate of the presumptive sentence was restricted to a value of 1.0 (Bushway and Piehl, 2002). By doing this, the legally relevant factors that contribute to the presumptive sentence were given the weight assigned to them by the guidelines rules themselves. By including some of the same factors separately in the model, the extent to which courts weighted these factors somewhat differently than the guideline rules could be assessed. Because so many factors influence the presumptive sentence, collinearity with any of the separate legally relevant factors was not a problem.

As is common in the literature (Spohn, 2004), the analysis of sentence length used the logarithm of the length of the sentence imposed as the dependant variable and the logarithm of the presumptive sentence as a predictor variable (sentences of zero months were assigned a log sentence

of zero). The independent variables were exactly the same as those used in the "in/out" decision, except for two items, except that the zone of the sentencing table in which the offender fell was not used.

When analyzing the five separate populations, there were some slight differences in the model. In the "drug cases only" model, the type of drug that was the driving force behind the sentence imposed was added to the model, and the type of offense variables were excluded. Also, for the "males only" model and the "females only" model, the gender of offender was excluded from the model.

The complete results from the analysis of the "in/out" decision for all years and offenders combined were as follows.

In/Out decision
Overall

The LOGISTIC Procedure

Model Information

| | |
|---|---|
| Data Set | WORK.OPA |
| Response Variable | PRISDUM |
| Number of Response Levels | 2 |
| Number of Observations | 131111 |
| Model | binary logit |
| Optimization Technique | Fisher's scoring |

Response Profile

| Ordered Value | PRISDUM | Total Frequency |
|---|---|---|
| 1 | 1 | 106604 |
| 2 | 0 | 24507 |

Probability modeled is PRISDUM=1.

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics

| Criterion | Intercept Only | Intercept and Covariates |
|---|---|---|
| AIC | 126320.36 | 55930.438 |
| SC | 126330.15 | 56165.249 |
| -2 Log L | 126318.36 | 55882.438 |

R-Square 0.4156 Max-rescaled R-Square 0.6721

Testing Global Null Hypothesis: BETA=0

| Test | Chi-Square | DF | Pr > ChiSq |
|---|---|---|---|
| Likelihood Ratio | 70435.9250 | 23 | <.0001 |
| Score | 66322.8765 | 23 | <.0001 |
| Wald | 23240.5769 | 23 | <.0001 |

In/Out decision
Overall

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

| Parameter | DF | Estimate | Standard Error | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|---|---|
| Intercept | 1 | -1.8523 | 0.1057 | 306.8823 | <.0001 |
| black | 1 | 0.1065 | 0.0263 | 16.3572 | <.0001 |
| hisp | 1 | 0.1889 | 0.0323 | 34.1422 | <.0001 |
| AGE | 1 | -0.00379 | 0.00513 | 0.5467 | 0.4597 |
| age2 | 1 | -0.00020 | 0.000062 | 10.4806 | 0.0012 |
| educ | 1 | -0.1428 | 0.0235 | 37.0131 | <.0001 |
| male | 1 | 0.2492 | 0.0247 | 102.1267 | <.0001 |
| numdep | 1 | -0.1227 | 0.0228 | 29.0296 | <.0001 |
| GLMIN | 1 | 0.0297 | 0.000756 | 1539.4431 | <.0001 |
| violent | 1 | 0.9007 | 0.0850 | 112.3039 | <.0001 |
| drug | 1 | 0.7629 | 0.0444 | 295.0457 | <.0001 |
| whitecoll | 1 | 0.5842 | 0.0396 | 217.7955 | <.0001 |
| othtype | 1 | 0.2788 | 0.0434 | 41.3074 | <.0001 |
| medcat | 1 | 0.8833 | 0.0263 | 1127.3585 | <.0001 |
| highcat | 1 | 1.7462 | 0.0711 | 602.6940 | <.0001 |
| IS924C | 1 | 1.4394 | 0.3456 | 17.3434 | <.0001 |
| WEAPSOC | 1 | 0.2052 | 0.0844 | 5.9085 | 0.0151 |
| subasst | 1 | -3.3542 | 0.0408 | 6772.4954 | <.0001 |
| upward | 1 | 2.1702 | 0.2737 | 62.8744 | <.0001 |
| downward | 1 | -2.8978 | 0.0419 | 4777.5090 | <.0001 |
| NEWCNVTN | 1 | 0.6906 | 0.0890 | 60.2189 | <.0001 |
| zoneb | 1 | 0.8954 | 0.0354 | 641.4404 | <.0001 |
| zonec | 1 | 3.7471 | 0.0482 | 6053.5024 | <.0001 |
| zoned | 1 | 4.7272 | 0.0500 | 8930.7769 | <.0001 |

Odds Ratio Estimates

| Effect | Point Estimate | 95% Wald Confidence Limits | |
|---|---|---|---|
| black | 1.112 | 1.056 | 1.171 |
| hisp | 1.208 | 1.134 | 1.287 |
| AGE | 0.996 | 0.986 | 1.006 |
| age2 | 1.000 | 1.000 | 1.000 |
| educ | 0.867 | 0.828 | 0.908 |
| male | 1.283 | 1.222 | 1.347 |
| numdep | 0.885 | 0.846 | 0.925 |
| GLMIN | 1.030 | 1.029 | 1.032 |
| violent | 2.461 | 2.084 | 2.907 |
| drug | 2.144 | 1.966 | 2.339 |
| whitecoll | 1.794 | 1.660 | 1.938 |
| othtype | 1.322 | 1.214 | 1.439 |
| medcat | 2.419 | 2.297 | 2.547 |

In/Out decision
Overall

The LOGISTIC Procedure

Odds Ratio Estimates

| Effect | Point Estimate | 95% Wald Confidence Limits | |
|---|---|---|---|
| highcat | 5.733 | 4.987 | 6.590 |
| IS924C | 4.218 | 2.142 | 8.305 |
| WEAPSOC | 1.228 | 1.041 | 1.449 |
| subasst | 0.035 | 0.032 | 0.038 |
| upward | 8.760 | 5.123 | 14.979 |
| downward | 0.055 | 0.051 | 0.060 |
| NEWCNVTN | 1.995 | 1.676 | 2.375 |
| zoneb | 2.448 | 2.284 | 2.624 |
| zonec | 42.399 | 38.580 | 46.597 |
| zoned | 112.975 | 102.425 | 124.612 |

Association of Predicted Probabilities and Observed Responses

| | | | |
|---|---|---|---|
| Percent Concordant | 95.3 | Somers' D | 0.907 |
| Percent Discordant | 4.6 | Gamma | 0.909 |
| Percent Tied | 0.2 | Tau-a | 0.276 |
| Pairs | 2612544228 | c | 0.954 |

The complete results from the analysis of sentence length for all years and offenders combined were as follows.

Regression model
Overall, restrict glmin

The REG Procedure
Model: MODEL1
Dependent Variable: logsent

NOTE: Restrictions have been applied to parameter estimates.

Analysis of Variance

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 19 | 367501 | 19342 | 27845.6 | <.0001 |
| Error | 131091 | 91059 | 0.69462 | | |
| Corrected Total | 131110 | 458560 | | | |

| | | | |
|---|---|---|---|
| Root MSE | 0.83344 | R-Square | 0.8014 |
| Dependent Mean | 2.87151 | Adj R-Sq | 0.8014 |
| Coeff Var | 29.02441 | | |

Parameter Estimates

| Variable | DF | Parameter Estimate | Standard Error | t Value | Pr > \|t\| |
|---|---|---|---|---|---|
| Intercept | 1 | -0.60966 | 0.02487 | -24.51 | <.0001 |
| black | 1 | 0.03744 | 0.00547 | 6.85 | <.0001 |
| hisp | 1 | 0.04366 | 0.00688 | 6.34 | <.0001 |
| AGE | 1 | 0.00865 | 0.00120 | 7.18 | <.0001 |
| age2 | 1 | -0.00014125 | 0.00001495 | -9.45 | <.0001 |
| educ | 1 | -0.05920 | 0.00553 | -10.70 | <.0001 |
| male | 1 | 0.23871 | 0.00632 | 37.79 | <.0001 |
| numdep | 1 | -0.02476 | 0.00486 | -5.10 | <.0001 |
| logmin | 1 | 1.00000 | 0 | Infty | <.0001 |
| violent | 1 | 0.16061 | 0.01452 | 11.06 | <.0001 |
| drug | 1 | 0.12855 | 0.01086 | 11.84 | <.0001 |
| whitecoll | 1 | -0.15266 | 0.01112 | -13.73 | <.0001 |
| othtype | 1 | 0.02484 | 0.01135 | 2.19 | 0.0287 |
| medcat | 1 | 0.27084 | 0.00539 | 50.26 | <.0001 |
| highcat | 1 | 0.35843 | 0.00730 | 49.08 | <.0001 |
| IS924C | 1 | 0.03189 | 0.01357 | 2.35 | 0.0187 |
| WEAPSOC | 1 | 0.07162 | 0.00873 | 8.20 | <.0001 |
| subasst | 1 | -1.06707 | 0.00584 | -182.66 | <.0001 |
| upward | 1 | 0.65144 | 0.02723 | 23.93 | <.0001 |
| downward | 1 | -0.97860 | 0.00732 | -133.64 | <.0001 |
| NEWCNVTN | 1 | 0.13119 | 0.01092 | 12.02 | <.0001 |
| RESTRICT | -1 | -758.54623 | 312.50988 | -2.43 | 0.0152* |

* Probability computed using beta distribution.