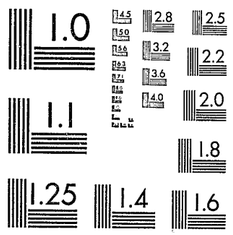

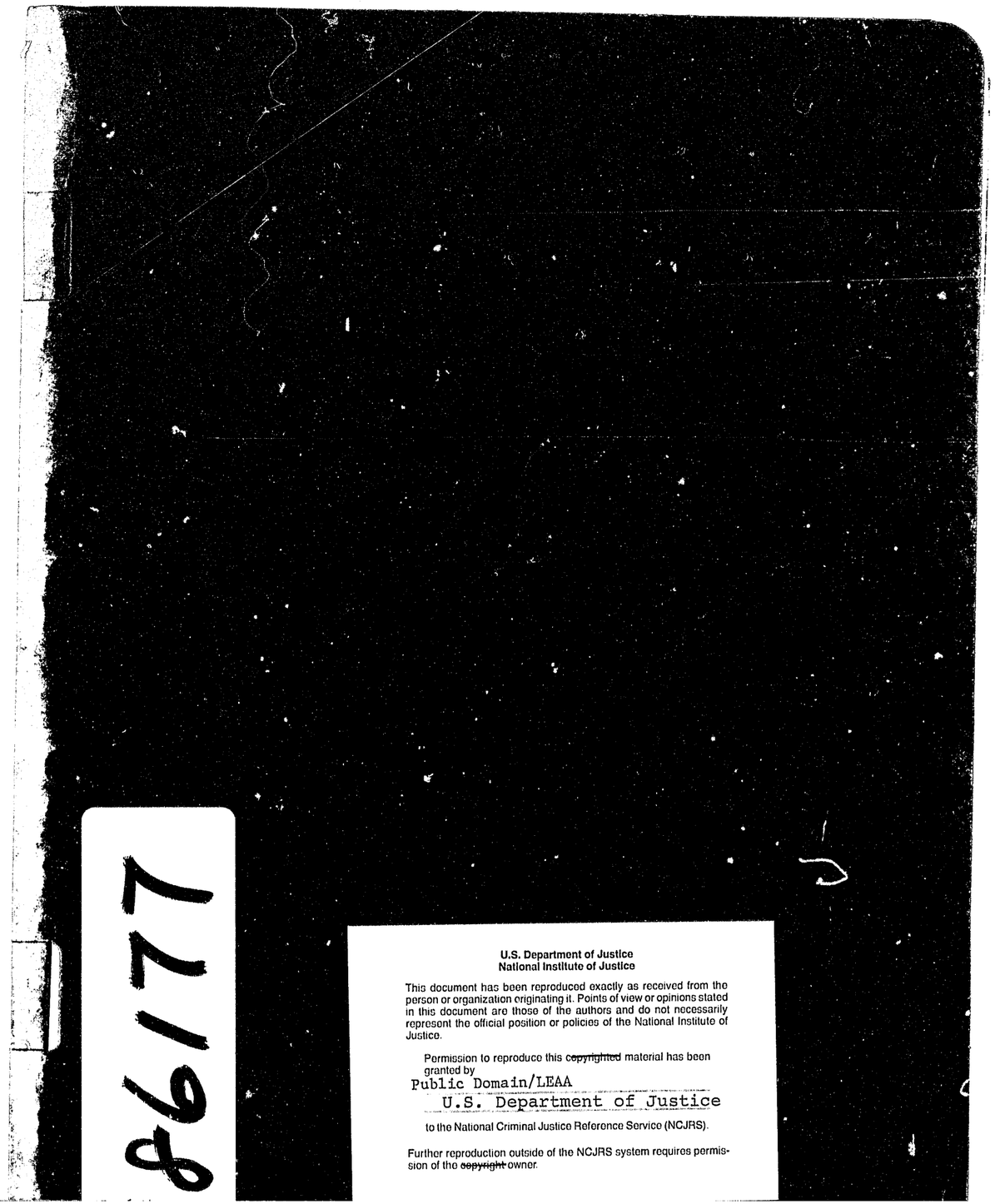

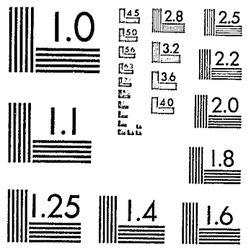

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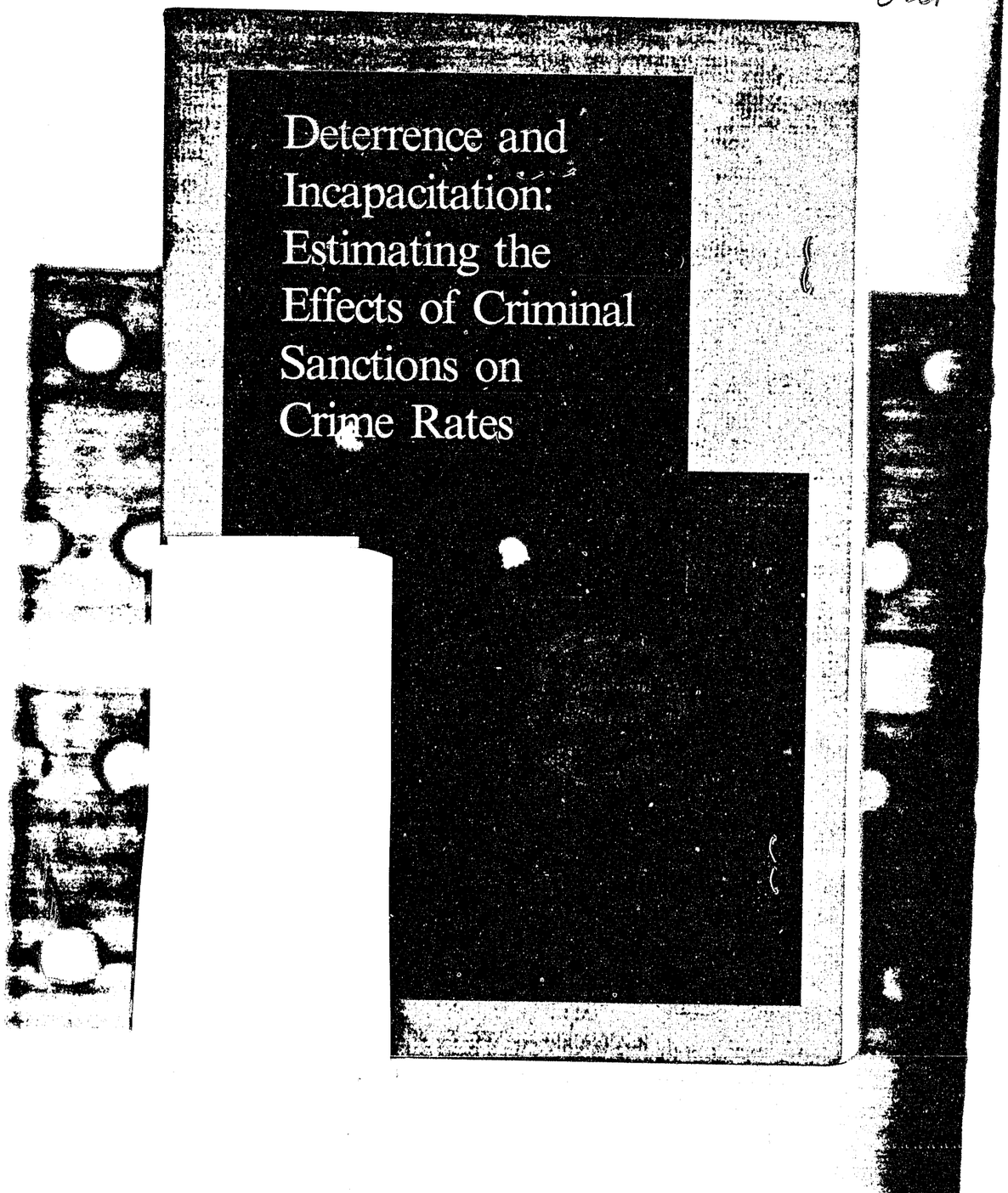

Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates

Alfred Blumstein, Jacqueline Cohen,
and Daniel Nagin, *Editors*

PANEL ON RESEARCH ON DETERRENT
AND INCAPACITATIVE EFFECTS

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Contents

Participation in Illegitimate Activities: Ehrlich Revisited

WALTER VANDAELE

I. INTRODUCTION

Since the publication of Ehrlich's work on the economics of crime (see Ehrlich 1970, 1973, 1975b), there has been a surge of interest in the economics of crime and punishment in general and in the validity of Ehrlich's empirical results in particular.

In this paper we will re-analyze the cross-section data used by Ehrlich in his 1973 article, "Participation in Illegitimate Activites: A Theoretical and Empirical Investigation." The objective of this study is to re-examine the data to judge, within the context of the theoretical model developed by Ehrlich, whether the deterrent effects of punishment are real or an artifact of a particular model specification.

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Any conclusions reached in this paper are valid only within the context of Ehrlich's theoretical model and for the data set on hand, and they should not be casually carried over to data sets for a different time period or a different country. In addition, they do not preclude the possibility that alternative ways of looking at the criminal process might result in models that could lead to a different conclusion.

The paper is divided into five parts. In Section II, the data are briefly discussed. In Section III we have reproduced Ehrlich's model specification and subsequently corrected for apparent estimation mistakes. Section IV contains the results of different model specifications and the effects of omitting certain states from the analysis. The conclusions are contained in Section V. The appendixes give graphs of some variables as well as a list of the actual data used.

II. DATA SET

The data available[1] for the present investigation are for crimes in 1960 in 47 states of the United States (New Jersey,[2] Alaska, and Hawaii were excluded). For each state, the reported crime rate (Q_i/N) was studied for each of the seven FBI index crimes[3] with i referring to the types of crime: murder, rape, assault, larceny, robbery, burglary, and auto theft—in addition to two sanction variables: P_i, the probability of prison commitment (the probability of imprisonment), and T_i, the average time served in prison when sentenced for a particular crime (the severity of punishment). Of these crimes, murder, rape, and assault will be referred to as violent crimes (crimes against the person) whereas the remaining four, robbery, burglary, larceny, and auto theft, are considered property crimes. Eleven variables of socioeconomic status have also been used: family income (W), income distribution (X), unemployment rate for urban males in the age group[4] 14-24 (U) and in the age group 35-39 (U_{35-39}), labor force participation rate (LF), educational level (Ed), percentage young males (Age) and percentage nonwhites (NW) in the population, percentage of the population in Standard Metropolitan Statistical Areas ($SMSA$), sex ratio ($Males$), and place of occurrence (a Dummy variable for the north and south of the United States, with south $=1$, $Dummy$). In addition, per capita police

[1] We are indebted to I. Ehrlich for making the 1960 cross-section data available.

[2] The state of New Jersey was omitted because there were no data available on the number of commitments to state prisons.

[3] For a definition of these index crimes, see Appendix A.

[4] The unsubscripted variables U, LF, and Age refer only to the age-group 14-24.

expenditure in each state for 1960 (*Exp*) and for 1959 (Exp_{59}) have been used to describe the resources available to combat crime.

An extensive literature exists on the inadequacies of the available crime data and the possible effects of these on the values of the estimated coefficients (see, e.g., Ehrlich 1973 [Appendix]; Nagin [in this volume]; Vandaele 1975 [Ch. 4 and Appendix 4]; Bowers and Pierce 1975). The major difficulties result from the failure to report crimes and from the inaccuracies in the sanction measures.

III. EHRLICH REVISITED

Since the early 1960's, there have been a number of empirical analyses investigating the effects of punishment on the crime rate. (For a review of the literature see, e.g., Nagin [in this volume]; Vandaele 1975 [Ch. 1 and 3].) A negative association between the level of punishment and the crime rate was found by all studies except that of Forst (1976), which used 1970 cross-sectional data for the United States. The elasticity of the crime rate to changes in the probability of imprisonment[5] has generally been larger in absolute value than the time-served elasticity.

We first re-analyzed Ehrlich's (1973) model in order to clarify the specifications used in the published results. In Appendix C, Tables 1 to 5 contain the empirical results as published (Ehrlich 1973, 1974; Tables 2 to 6), whereas Tables 6 to 10 report our results. Comparing[6] the two sets of tables we observe:

1. The point estimates obtained by OLS of the coefficients in the All Offenses equation are different (see Tables 1 and 6).
2. The coefficients of determination, R^2, are different in the two sets of tables. These differences cannot be explained by the mere fact that the coefficients of determination in Tables 1 to 5 are adjusted for degrees of freedom but those in Tables 6, 7, and 8 are not. In the latter tables, the R^2 is the simple correlation coefficient between the observed weighted dependent variable and the forecasted weighted dependent variable.
3. The Seemingly Unrelated Regression estimates (SUR) as reported by Ehrlich, Tables 3 and 4, could not be reproduced.

[5]The x-elasticity of y, or the elasticity of y with respect to x, is defined as the percentage change in y divided by the percentage change in x. Mathematically this is equal to $(dy/y)/(dx/x)$ or equivalently $d\ln y/d\ln x$.

[6]In Tables 3, 4, and 5 the ratio of the point estimate to its standard error is given in parentheses, whereas in the recalculated tables the standard error itself is reported.

4. We observed the presence of several typographical errors in Table 3 and, in particular, Table 5. The reported results in Table 5 have been extended to include the estimates of all the coefficients rather than just those for unemployment rate (U), labor force participation rate (LF), and *Age* (Tables 8, 9, and 10).
5. In calculating the weighted ordinary least-squares estimates (columns 4, 5, and 6 of Table 5), Ehrlich incorrectly used $N^{1/4}$ instead of $\sqrt{N}$ as weights in the model. In addition, there was an error in the labor force participation data, and therefore this part of the table is not reproduced.
6. Unlike the results published in Ehrlich (see Table 7), the weighted 2SLS results[7] reported in Table 5 show the unemployment rate elasticity in the larceny equation to be positive. After introducing the unemployment rate (U), the labor force participation rate (LF), and the age distribution (*Age*) variables (see Tables 7 and 10), we found that the weighted 2SLS estimates of the elasticities of the probability of imprisonment (P_l) and of the time served (T_l) were essentially unchanged despite the introduction of these additional variables.

In the course of the recalculation of Ehrlich's tables, we discovered several additional inaccuracies in the data or the model specification.

7. In the calculation of the 2SLS weighted estimates, we discovered that in the first stage (the reduced form stage), the *Dummy*, being one of the reduced form variables, had not been weighted with $\sqrt{N}$, the square root of the state population size. This problem was brought to Ehrlich's attention, and the coefficients of production function of law enforcement activities, equation (4.5) in Ehrlich (1973), were corrected in the 1974 reprint. Unfortunately, no corrections had been made in the other equations.
8. As mentioned above, there was an error in the labor force participation rate data. Figure 1 shows that the labor force participation rate in Rhode Island amounted to 266 percent, whereas the correct labor force participation rate in that state was 53.1 percent. The corrected data is plotted in Figure 2. As a result, all the estimates in Table 5 and the new Tables 8, 9, and 10 must be recalculated.

[7]In reporting the 2SLS results we have put a "hat" over the endogenous variable on the right-hand side to indicate that in the second stage of the estimation procedure we have used the predicted value of the endogenous variable based on the reduced form, a regression of that variable on all the exogenous variables in the model.

Tables 11 to 15 give the results after correcting both for the *Dummy* weighting and the Rhode Island labor force participation rate. The 2SLS weighted estimates (see Tables 7 and 11) show smaller deterrence elasticities in absolute magnitude than previously reported, except for auto theft and the probability of imprisonment elasticity in the murder equation. Comparing the unweighted 2SLS results, Tables 9 and 14, the point estimates of the coefficients of unemployment rate, labor force participation rate, and age distribution are substantially changed, on occasion even in algebraic sign. However, within the model specification analyzed, the effect of these variables remains inconclusive because of the large confidence intervals.

The weighted 2SLS point estimates, as reported in Table 15, were again different from those of Ehrlich's tables, and from our recalculated results in Table 10. After correcting the labor force participation for Rhode Island and using a proper weighting scheme, the effect of *LF* is no longer consistently negative and significantly different from zero for specific crimes against the person. Indeed, for rape the effect of *LF* is positive, although with very broad confidence intervals. For all offense categories, except murder, the introduction of *U*, *LF*, and *Age* had virtually no effect on the probability of imprisonment and the severity of punishment elasticities.

9. It can also be seen in Figure 3 that there are states with none[8] of their population living in Standard Metropolitan Statistical Areas (SMSAS). These states are Georgia, Idaho, Vermont, and Wyoming. We are surprised that Georgia is among these states, as its capital (Atlanta) is an SMSA.

IV. MODEL SPECIFICATIONS

This section forms the core of this paper and contains the results of introducing several changes in the model specification. Before embarking on making changes, the need for using a weighted regression estimation procedure was evaluated. The estimated residuals in different equations estimated by OLS or 2SLS showed a negative correlation between the absolute value of the estimated residuals and the population size. A similar finding was reported by Ehrlich. Therefore, it was decided to evaluate the different model specifications only after weighting all the variables with the square root of the population size.

[8]Because the model specification used by Ehrlich required that logarithms be taken from this variable, the value zero was replaced by .10 before taking the logarithms.

A. EFFECT OF URBAN-RURAL AND NORTH-SOUTH VARIABLES

Several authors have suggested that such variables as percentage of the population living in SMSAS and the southern state Dummy variable *(Dummy)* be included in the crime rate function (see, e.g., Nagin [in this volume], Forst 1976). Ehrlich was aware that this was a possible model specification (see Ehrlich 1973, pp. 548 and 563).

Table 16 contains the OLS results of including either the *Dummy* or the *SMSA*. To focus attention on the deterrence issue, only the elasticities for imprisonment and time served, in addition to the coefficient of either the *Dummy* or the *SMSA*, are reported. Comparing Table 16 with Table 6, we see that there were really no major differences either in the point estimates or in the standard error of the estimates, although there is a tendency for the point estimate of the coefficient of time served to be smaller in absolute value. We therefore concluded that the inclusion of these variables in the model specification would not alter the basic conclusions of Ehrlich's paper.

B. CHANGES IN THE REDUCED FORM SPECIFICATION

The Identification Issue

In the most recent deterrence analyses, simultaneous equation models (SEM) have been built to analyze the economics of crime. (See Phillips and Votey 1972; Ehrlich 1973; Greenwood and Wadycki 1973; McPheters and Stronge 1974; Vandaele 1975; Forst 1976.) The deterrence hypothesis states that sanction variables such as the probability of imprisonment, P, and the time served in prison, T, will be negatively related to the crime rates. In general, both P and T are determined by the public's allocation of resources to law enforcement activities. These, in turn, are likely to be affected by the crime rate itself[9] and the resulting social losses. It is specifically in order to analyze these interactions that a simultaneous equation model is used.

A common problem in a simultaneous equation model is the identification of the parameters. This problem has been discussed extensively in the econometric literature (see, e.g., Fisher 1966; Johnston 1972, Chapter 12). Usually, identification of a particular equation is guaranteed by imposing *a priori* restrictions on the model specification, such

[9]Some authors have argued that since budgets are established prior to the start of the year, it seems plausible to model the expenditure on law enforcement equation as a function of last year's crime rate. However, given that the focus of this paper is on the deterrence effects, this last equation has not been re-analyzed.

as the restriction that certain variables present in some equations of the model are not part of that particular equation. This is justified if variables excluded from this equation do not directly affect the dependent variable.[10] Therefore, if the estimates differ depending upon the variables in the equation, the model builder should justify carefully the choice of included and excluded variables.

In examining the identification problem of the crime function within the context of Ehrlich's model, several routes are possible. We could delete from the model some variables not included in the crime function, or we could include in the crime function additional variables that are already part of the model. The first identification analysis, therefore, involves making changes in the reduced form of the model and no changes in the crime equation itself, whereas the second type of analysis results in no changes in the reduced form, but an increase in the number of variables that are part of the crime function.

Properly defined, identification can only be addressed within the context of a theoretical model. The aim of this section, however, is to determine whether or not different types of identification lead to significantly different parameter estimates. If so, we should not attempt to draw the conclusion that one identification specification is better than another, but that there is a serious need for re-examination of the model specification. If, on the contrary, the data do not produce different estimates, then we can conclude that the analysis of the data is not sensitive to a particular model specification and, as a result, there is some flexibility in the structure of the theoretical model.

Table 17 contains the results of introducing changes in the reduced form of the model. In order to concentrate on the deterrence issue, only the imprisonment and time-served-in-prison elasticities are reported. The first two columns in Table 17, called Reduced Form 1, correspond to results previously reported in Table 11 and make use of the reduced form of the results reported by Ehrlich. Reduced Form 2 was obtained by deleting three variables from the model: lagged police expenditure (Exp_{59}), unemployment rate for adults (U_{35-39}), and sex ratio (Males). In Reduced Form 3, three other variables were deleted: urbanization (SMSA), education (Ed), and population size (N). Table 17 shows that the effect of these changes on the point estimates and standard error of the estimates is minimal. However, the point estimates of the deterrence elasticities tend to be larger in absolute value.

[10]Using the terminology of a simultaneous equation model, the variables are mainly grouped into two categories, endogenous and exogenous variables. Basically, endogenous variables are those variables that are determined by the equations of the model, whereas exogenous variables affect the model but are not in turn affected by it.

The second identification analysis is reported in the first two columns of Table 21. Recall that Ehrlich excluded the following variables from the crime equation: Exp_{59} (per capita police expenditures in 1959), $(Q_i/N)_{59}$ (reported crime rate in 1959), N (the state population size), U_{35-39} (unemployment rate for urban males 35-39 years of age), *Age* (percentage of young males), *SMSA* (percentage of population in SMSA), *Males* (sex ratio), *dummy* (location dummy), and *Ed* (educational level). For all but the first two variables, the exclusion of these variables from the crime equation seems somewhat arbitrary.

Underlying Ehrlich's model specification is the assumption that the last seven variables have a causal relationship with any of the other two endogenous variables in the model, the probability of imprisonment or the per capita police expenditure, but not with the endogenous crime rate itself. Our proposition, therefore, is to re-estimate an enlarged model in which the crime equation includes these seven exogenous variables. As a result, the only exogenous variables that are part of the SEM model, but are not in the crime equation, are Exp_{59} and $(Q_i/N)_{59}$. In other words, the excluded variables from the crime equation are Exp_{59} and $(Q_i/N)_{59}$. We define this equation to be identified with the variables Exp_{59} and $(Q_i/N)_{59}$.

Comparing these estimates with the results obtained when these exogenous variables were not part of the equation (Table 11) or with an intermediate specification in which unemployment rate, labor force participation rate, and age distribution were included (Table 15), we observe in Table 21 that for all crime types the imprisonment elasticity is larger in absolute value. The changes in the elasticity of the time served are not always in the same direction: some point estimates show an increase, others show a decrease in absolute value. The elasticity of the time served for murder became positive, although with a broad confidence interval.

In a third modification in the model specification, we make no changes in the crime function itself, but identify the equation only with the variable Exp_{59}. We claim that there is only one additional exogenous variable in the SEM besides the ones already in the crime function; therefore, the reduced form of this specification contains the following variables: constant, $\ln T_i$, $\ln W$, $\ln X$, $\ln NW$, and $\ln Exp_{59}$. The results of this analysis are reported in the first two columns of Table 22. As compared to the basic model (Table 11), we immediately observe that almost all point estimates of the deterrence elasticities are larger in absolute value. This is in contrast with results reported in Table R-15 of Ehrlich (1970). In the latter table, Ehrlich used the basic model as was used in Table 11, but excluded $(Q_i/N)_{59}$ from the reduced form equation

and found that the deterrence elasticities were smaller in absolute value.

C. OMITTING CERTAIN STATES

Careful examination of the data brought to light several apparent inconsistencies in the probability of imprisonment. Recall that P_i is computed as the ratio of the number of persons committed in a given year to state (and, in the case of auto theft, also federal) prisons to the number of offenses known to have occurred in that same year. Not all those convicted are committed to prisons; some (especially young offenders) are sent to correctional institutions or released on probation. Also, the year of commitment to prisons is not necessarily the year in which the crime was committed. Therefore, the data on the probability of imprisonment serve only as an approximate measure of the objective probability of imprisonment.[11] In Figures 4 to 8 we have plotted the data for several probabilities of imprisonment. Notice that several of these so-called probabilities are larger than one, notably for the following offenses and states:[12]

Figure 4:	Vermont	*P*	(assault):	156%
Figure 5:	Utah	*P*	(murder):	111%
	Vermont	*P*	(murder):	100%
Figure 6:	Vermont	*P*	(rape):	222%
	Wisconsin	*P*	(rape):	129%
Figure 7:	Vermont	*P*	(murder and rape):	210%
	Wisconsin	*P*	(murder and rape):	104%
Figure 8:	Vermont	*P*	(person):	175%

Therefore, although there are no mistakes in the data, the way the data are reported poses serious questions as to the validity of this data series as a proxy for the objective probability of imprisonment.

As a result, we propose to delete the states with these data abnormalities. If the results of the analysis are a trustworthy representation of the underlying processes, the values of the estimated coefficients should not be influenced by the specific states chosen for the analysis. Thus, serious doubt would be cast on the validity of the empirical results if deletion of the observations for some states substantially

[11]Also, the theoretically relevant variable in Ehrlich's model is the average offender's subjective probability that he will be apprehended and punished by imprisonment for his engagement in a specific crime in a given year. It is assumed that the objective probability of imprisonment, as suggested by the available data, is a good proxy (see Ehrlich 1974, p. 124).

[12]The data on imprisonment for rape really refer to the category Sex Offenses.

affected the values of the coefficients associated with the measures of deterrence.[13]

The results of a recalculation of Ehrlich's basic model after omitting the state of Vermont are reported in Table 18. We initially omitted only this state because most of its probabilities of imprisonment for crimes against the person were larger than 100 percent. Comparing Table 18 with Table 11, the results show that all coefficients retain the same algebraic sign and the same magnitude of the standard error. The maximum change in the point estimate, 13 percent, occurred for the coefficient of the probability of imprisonment in the burglary equation.

D. IDENTIFICATION AND STATE EFFECT

Because changing the identification (see Section B) and deleting Vermont (Section C) produced some, but in general minor, changes in the basic empirical results obtained by Ehrlich, we undertook a more extensive analysis in which the identification was altered and the states with a probability of imprisonment larger than 100 percent were deleted. The results are reported in Tables 19 to 24.

Let us first concentrate on the property crimes. Since the probability of imprisonment for property crimes was nowhere larger than 100 percent, we expected no major differences between results of analyses in which all states were included, in which Vermont was omitted, and in which Utah, Vermont, and Wisconsin were omitted. The results confirm this expectation. When the crime equation was only identified with ln Exp_{59}, there were few differences from the previous analyses (see Tables 22, 23, and 24), whereas when this equation was identified both with ln Exp_{59} and ln $(Q_i/N)_{59}$, there are some larger differences, but only for burglary and larceny (see Tables 19, 20, and 21).

Because of the outlying observations in the probabilities of imprisonment for some of the crimes against the person (see Figures 4 to 8), differences were expected after the deletion of the states Utah, Vermont, and Wisconsin. In the initial evaluation of these outliers by omitting only Vermont with no changes in the identification, the differences appeared to be minor (see Table 18). However, as soon as the crime equation was identified differently, either with ln Exp_{59} or ln Exp_{59} and ln $(Q_i/N)_{59}$, differences were observed (see Tables 19 to 24). When the crime equation was only identified with lagged police ex-

[13]It can be argued that the whole analysis should have been done by leaving out some randomly selected states and building the model based on the remaining states. Then, to validate the model, the crime rates in the omitted states could have been predicted.

penditure, ln Exp_{59}, the results for murder and assault became unstable, possibly due to multicollinearity. In the murder equation, the point estimates for the coefficients of the deterrence variables change in algebraic sign, although with broad confidence intervals. For other crimes against the person, the differences due to the change in the identification restrictions and the omission of states are minor. When the equations for crime against the person were identified by the exclusion of both lagged police expenditure (ln Exp_{59}) and lagged crime rate [ln $(Q_i/N)_{59}$], the apparent instability disappeared, although there were still substantial differences in the results for the murder equation. Here the point estimate of time-served-in-prison elasticity became positive, and the imprisonment elasticity almost doubled in magnitude.

Based on this analysis, we have to conclude that with the exception of the instability in both the murder and assault crime equation, the results obtained within the framework of Ehrlich's model are not sensitive to modifications in the identification or the states included in the analysis.

E. LOG-LINEAR SPECIFICATIONS

Economic theory is capable of indicating which variables should be included in a model. However, the theory does not define the exact functional form to be used in an empirical analysis. Ehrlich used a log-log relationship in order to verify the negative relationship between the deterrence variables and the crime rate. Table 25 reports the results of a study of the following log-linear model

$$\ln(Q_i/N) = \alpha_0 + \alpha_1 P_i + \alpha_2 T_i + \alpha_3 W + \alpha_4 X + \alpha_5 NW.$$

In order to facilitate the comparison with the 2SLS results reported in Table 11, the elasticities calculated at the mean value of the right-side variables are reported. Larger elasticities were generally found when the model was estimated in the log-linear functional form. There were exceptions. For assault and auto theft, the elasticity of the time served decreased drastically, although the point estimates had large confidence intervals.

To facilitate the choice of whether the log-log or log-linear form of the model was preferable, the coefficient of determination was calculated using OLS. Little difference was observed, although the R^2 was slightly larger for the log-log form.

V. CONCLUSION

In this paper we have re-analyzed the 1960 cross-sectional data for crimes across different states used in Ehrlich's (1973) paper. The re-examination of the data indicated inaccuracies in the data as well as in the reported results. Section III contains a re-analysis of Ehrlich's model to correct for the data inaccuracies.

The results of the analyses of different model specifications, reported in Section IV, in general indicated negative point estimates for the elasticities of the probability of imprisonment and the time served. The magnitudes of these elasticities were similar across the different specifications.

The only large changes in the point estimates occurred in the murder and assault equation when these equations were only identified with lagged police expenditures and the lagged crime rate and certain states were omitted. However, in this situation the estimates were very unstable, possibly due to excessive multicollinearity. It appears, therefore, that with the available data and within the present model, the negative relationship between the crime rate and the probability of imprisonment and between the crime rate and the time served is not spurious.

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APPENDIX A: CLASSIFICATION OF CRIME INDEX OFFENSES

Definitions[14] of crime classifications used are

1. *Murder* (Criminal homicide): Murder and non-negligent manslaughter: all willful felonious homicides as distinguished from deaths caused by negligence. Excludes attempts to kill, assaults to kill, suicides, accidental deaths, and justifiable homicides. Justifiable homicides are limited to: (a) the killing of a person by a peace officer in line of duty; and (b) the killing by a private citizen of a person in the act of committing a felony.
2. *Rape* (Forcible rape): Rape by force, assault to rape, and attempted rape. Excludes statutory offenses (no force used—victim under age of consent).
3. *Robbery* Stealing or taking anything of value from the care, custody, or control of a person by force or violence or by putting that person in fear, such as strong-arm robbery, stickups, armed robbery, assault to rob, and attempts to rob.
4. *Assault* (Aggravated assault): Assault with intent to kill or for the purpose of inflicting severe bodily injury by shooting, cutting, stabbing, maiming, poisoning, scalding, or by the use of acids, explosives, or other means. Excludes simple assault, assault and battery, fighting, etc.
5. *Burglary* (Breaking or entering): Burglary, housebreaking, safecracking, or any breaking or unlawful entry of a structure with the intent to commit a felony or a theft. Includes attempts.

[14]U.S. Department of Justice, Federal Bureau of Investigation. *Crime in the United States: Uniform Crime Report 1970*, p. 61.

6. *Larceny* Theft (except auto theft): Fifty dollars and over in value; thefts of bicycles, automobile accessories, shop lifting, pocket-picking, or any stealing of property or article of value that is not taken by force and violence or by fraud. Excludes embezzlement, "con" games, forgery, worthless checks, etc.
7. *Auto Theft* Stealing or driving away and abandoning a motor vehicle. Excludes taking for temporary or unauthorized use by those having lawful access to the vehicle.

APPENDIX B: SYMBOLS AND SOURCES OF THE VARIABLES[15]

Age Age distribution: the percentage of males aged 14-24 in the total state population.

Dummy Dummy variable distinguishing place of occurrence of the crime (south = 1). The southern states are: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Ed Educational level: the mean number of years of schooling of the population, 25 years old and over.

Exp Police expenditure: the per capita expenditure on police protection by state and local government in 1960. Also available is the per capital expenditure in 1959: Exp_{59}. Sources used are *Governmental Finances in 1960* and *Governmental Finances in 1959*, published by the U.S. Bureau of the Census.

LF Labor force participation rate of civilian urban males in the age-group 14-24.

Males The number of males per 100 females.

N State population size in 1960 in hundred thousands.

NW Nonwhites: the percentage nonwhites in the population.

[15]All the data relate to calendar year 1960 except when explicitly stated otherwise.

P_i The probability of imprisonment: the ratio of the number of commitments to state (and, in the case of auto theft, also federal) prisons in a given year to the number of offenses[16] known to have occurred in that same year. The data on the number of commitments are obtained from the *National Prisoner Statistics* bulletins of the Federal Bureau of Prisons and refer to prisoners received from court by state institutions for adult felony offenders during calendar year 1960. Also, the data on rape relates to sex offenses in general.

(Q_i/N) The crime rate: the number of offenses known to the police per 100,000 population in 1960. Also available is $(Q_i/N)_{59}$, the crime rate in 1959. The source is the *Uniform Crime Report* of the Federal Bureau of Investigation.

SMSA The percentage of the state population living in Standard Metropolitan Statistical Areas.

T_i Time served: the average time served in months by offenders in state prisons before their first release.

U Unemployment rate of urban males in the age-group 14-24, as measured by census estimate.

U_{35-39} Unemployment rate of urban males in the age-group 35-39.

W Wealth as measured by the median value of transferable goods and assets or family income.

X Income inequality: the percentage of families earning below one-half of the median income.

[16]The subscript i refers to a specific crime.

APPENDIX C: TABLES

TABLE 1 OLS (Weighted) Regression Estimates of Coefficients Associated with Selected Variables in 1960, 1950, and 1940: Crimes against the Person and All Offenses (Dependent Variables Are Specific Crime Rates)[a]

Offense and Year	Estimated Coefficients Associated with Selected Variables: a Intercept	b_1 with $\ln P_i$	b_2 with $\ln T_i$	c_1 with $\ln W$	c_2 with $\ln X$	e_1 with $\ln NW$	Adj. R^2
Murder							
1960	−0.6644[a]	−0.3407	−0.1396[a]	0.4165[a]	1.3637[a]	0.5532	.8687
1950[b]	−0.7682[a]	−0.5903	−0.2878	0.6095[a]	1.9386	0.4759	.8155
Rape							
1960[b]	−7.3802[a]	−0.5783	−0.1880[a]	1.2220	0.8942[a]	0.1544	.6858
Assault							
1960	−13.2994	−0.2750	−0.1797[a]	2.0940	1.4697	0.6771	.8282
1950	−0.7139[a]	−0.4791	−0.3839	0.5641[a]	0.9136[a]	0.5526	.8566
1940	−0.2891	−0.4239	−0.6036	0.7274[a]	0.5484[a]	0.7298	.8381
Murder and Rape							
1960[b]	−1.8117	−0.5787	−0.2867	0.6773[a]	0.9456	0.3277	.6948
Murder and Assault							
1950[b]	1.0951[a]	−0.7614	−0.3856	0.3982[a]	1.1689[a]	0.4281	.8783
Crimes against Persons							
1960[b]	−4.1571[a]	−0.5498	−0.3487	1.0458	0.9145	0.4897	.8758
All Offenses							
1960	−7.1657	−0.5255	−0.5854	2.0651	1.8013	0.2071	.6950
1950	−1.5081[a]	−0.5664	−0.4740	1.3456	1.9399	0.1051	.6592
1940	−5.2711	−0.6530	−0.2892	0.5986	2.2658	0.1386	.6650

NOTE: The absolute values of all regression coefficients in Tables 1 and 2, except those marked [a], are at least twice those of their standard errors; [b] indicates regressions in which the absolute difference $(b_1 - b_2)$ is at least twice the value of the relevant standard error $S(b_1 - b_2)$.

[a]Reprinted with permission from I. Ehrlich, Participation in illegitimate activities: a theoretical and empirical investigation, *Journal of Political Economy* 81(3):525-65, 1973 (University of Chicago Press).

TABLE 2 OLS (Weighted) Regression Estimates of Coefficients Associated with Selected Variables in 1960, 1950, and 1940: Property Crimes (Dependent Variables Are Specific Crime Rates)[a]

Offense and Year	Estimated Coefficients Associated with Selected Variables: a Intercept	b_1 with $\ln P_i$	b_2 with $\ln T_i$	c_1 with $\ln W$	c_2 with $\ln X$	e_1 with $\ln NW$	Adj. R^2
Robbery							
1960[b]	−20.1910	−0.8534	−0.2233[a]	2.9086	1.8409	0.3764	.8014
1950[b]	−10.2794	−0.9389	−0.5610	1.7278	0.4798	0.3282	.7839
1940	−10.2943	−0.9473	−0.1912[a]	1.6608	0.7222	0.3408	.8219
Burglary							
1960[b]	−5.5700[a]	−0.5339	−0.9001	1.7973	2.0452	0.2269	.6713
1950	−1.0519[a]	−0.4102	−0.4689	1.1891	1.8697	0.1358	.4933
1940	−0.6531[a]	−0.4607	−0.2698	0.8327[a]	1.6939	0.1147	.3963
Larceny							
1960	−14.9431	−0.1331	−0.2630	2.6893	1.6207	0.1315	.5222
1950	−4.2857[a]	−0.3477	−0.4301	1.9784	3.3134	−0.0342[a]	.5819
1940	−10.6198	−0.4131	−0.1680[a]	0.6186	3.7371	0.0499[a]	.6953
Auto Theft							
1960	−17.3057	−0.2474	−0.1743[a]	2.8931	1.8981	0.1152	.6948
Burglary and Robbery							
1960	−9.2683	−0.6243	−0.6883	2.1598	2.1156	0.2565	.7336
1950	−3.0355[a]	−0.5493	−0.4879	1.3624	1.6066	0.1854	.5590
Larceny and Auto Theft							
1960	−14.1543	−0.2572	−0.3339	2.6648	1.8263	0.1423	.6826
1950	−3.9481[a]	−0.3134	−0.4509	1.9286	2.9961	−0.0290[a]	.5894
Property Crimes							
1960	−10.1288	−0.5075	−0.6206	2.3345	2.0547	0.2118	.7487
1950	−2.8056	−0.5407	−0.4792	1.5836	2.2548	0.0755	.6253

NOTE: Same references as in Table 1.

[a]Reprinted with permission from I. Ehrlich, Participation in illegitimate activities: a theoretical and empirical investigation, *Journal of Political Economy* 81(3):525-65, 1973 (University of Chicago Press).

TABLE 3 2SLS and SUR (Weighted) Regression Estimates of Coefficients Associated with Selected Variables in 1960: Crimes against the Person and Total Offenses[a]

Offense	Coefficient (β) Associated with Selected Variables					
	a Intercept	b_1 with $\ln \hat{P}_i$	b_2 with $\ln T_i$	c_1 with $\ln W$	c_2 with $\ln X$	e_1 with $\ln NW$
	A. 2SLS Estimates					
Murder						
$\hat{\beta}$	0.316	−0.852	−0.087	0.175	1.109	0.534
$\hat{\beta}/S\hat{\beta}$	(0.085)	(−2.492)	(−0.645)	(0.334)	(1.984)	(8.356)
Rape						
$\hat{\beta}$	−0.599	−0.896	−0.399	0.409	0.459	0.072
$\hat{\beta}/S\hat{\beta}$	(−0.120)	(−6.080)	(−2.005)	(0.605)	(0.743)	(0.922)
Murder and Rape						
$\hat{\beta}$	2.703	−0.828	−0.350	0.086	0.556	0.280
$\hat{\beta}/S\hat{\beta}$	(0.732)	(−6.689)	(−3.164)	(0.172)	(1.188)	(5.504)
Assault						
$\hat{\beta}$	−7.567	−0.724	−0.979	1.650	1.707	0.465
$\hat{\beta}/S\hat{\beta}$	(−1.280)	(−3.701)	(−2.301)	(2.018)	(2.111)	(3.655)
Crimes against the Person						
$\hat{\beta}$	1.635	−0.803	−0.495	0.328	0.587	0.376
$\hat{\beta}/S\hat{\beta}$	(0.380)	(−6.603)	(−3.407)	(0.570)	(1.098)	(4.833)
All Offenses						
$\hat{\beta}$	−1.388	−0.991	−1.123	1.292	1.775	0.265
$\hat{\beta}/S\hat{\beta}$	(−0.368)	(−5.898)	(−4.483)	(2.609)	(4.183)	(5.069)
	B. SUR Estimates					
Murder						
$\hat{\beta}$	−1.198	−0.913	−0.018	0.186	1.152	0.542
$\hat{\beta}/S\hat{\beta}$	(−0.033)	(−3.062)	(−1.710)	(0.361)	(2.102)	(8.650)
Rape						
$\hat{\beta}$	0.093	−0.930	−0.436	0.333	0.425	0.065
$\hat{\beta}/S\hat{\beta}$	(0.019)	(−6.640)	(−2.318)	(0.502)	(0.692)	(8.841)
Assault						
$\hat{\beta}$	−6.431	−0.718	−0.780	1.404	1.494	0.460
$\hat{\beta}/S\hat{\beta}$	(−1.103)	(−4.046)	(−2.036)	(1.751)	(1.871)	(3.801)

NOTE: The underlying regression equation is

$$\ln\left(\frac{Q}{N}\right) = a + b_{1i}\ln \hat{P}_i + b_{2i}\ln T_i + c_{1i}\ln W + c_{2i}\ln X + e_{1i}\ln NW + \mu_i.$$

[a]Reprinted with permission from I. Ehrlich, Participation in illegitimate activities: a theoretical and empirical investigation, *Journal of Political Economy* 81(3):525-65, 1973 (University of Chicago Press).

TABLE 4 2SLS and SUR (Weighted) Regression Estimates of Coefficients Associated with Selected Variables in 1960: Property Crimes[a]

Offense	Coefficient (β) Associated with Selected Variables					
	a Intercept	b_1 with $\ln \hat{P}_i$	b_2 with $\ln T_i$	c_1 with $\ln W$	c_2 with $\ln X$	e_1 with $\ln NW$
	A. 2SLS Estimates					
Robbery						
$\hat{\beta}$	−11.030	−1.303	−0.372	1.689	1.279	0.334
$\hat{\beta}/S\hat{\beta}$	(−1.804)	(−7.011)	(−1.395)	(1.969)	(1.660)	(4.024)
Burglary:						
$\hat{\beta}$	−2.121	−0.724	−1.127	1.384	2.000	0.250
$\hat{\beta}/S\hat{\beta}$	(−0.582)	(−6.003)	(−4.799)	(2.839)	(4.689)	(4.579)
Larceny						
$\hat{\beta}$	−10.660	−0.371	−0.602	2.229	1.792	0.142
$\hat{\beta}/S\hat{\beta}$	(−2.195)	(−2.482)	(−1.937)	(3.465)	(2.992)	(2.019)
Auto Theft						
$\hat{\beta}$	−14.960	−0.407	−0.246	2.608	2.057	0.102
$\hat{\beta}/S\hat{\beta}$	(−4.162)	(−4.173)	(−1.682)	(5.194)	(4.268)	(1.842)
Larceny and Auto						
$\hat{\beta}$	−10.090	−0.546	−0.626	2.226	2.166	0.155
$\hat{\beta}/S\hat{\beta}$	(−2.585)	(−4.248)	(−2.851)	(4.183)	(4.165)	(2.603)
Property Crimes						
$\hat{\beta}$	−6.279	−0.796	−0.915	1.883	2.132	0.243
$\hat{\beta}/S\hat{\beta}$	(−1.937)	(−6.140)	(4.297)	(4.246)	(5.356)	(4.805)
	B. SUR Estimates					
Robbery						
$\hat{\beta}$	−14.800	−1.112	−0.286	2.120	1.409	0.345
$\hat{\beta}/S\hat{\beta}$	(−2.500)	(−6.532)	(−0.750)	(2.548)	(1.853)	(4.191)
Burglary						
$\hat{\beta}$	−3.961	−0.624	−0.996	1.581	2.032	0.230
$\hat{\beta}/S\hat{\beta}$	(−1.114)	(−5.576)	(−4.260)	(3.313)	(4.766)	(4.274)
Larceny						
$\hat{\beta}$	−10.870	−0.358	−0.654	2.241	1.785	0.139
$\hat{\beta}/S\hat{\beta}$	(−2.52)	(−2.445)	(−1.912)	(3.502)	(2.983)	(1.980)
Auto Theft						
$\hat{\beta}$	−14.860	−0.409	−0.233	2.590	2.054	0.101
$\hat{\beta}/S\hat{\beta}$	(−4.212)	(−4.674)	(−1.747)	(5.253)	(4.283)	(1.832)

NOTE: Same reference as in Table 3.

[a]Reprinted with permission from I. Ehrlich, Participation in illegitimate activities: a theoretical and empirical investigation, *Journal of Political Economy* 81(3):525-65, 1973 (University of Chicago Press).

TABLE 5 Alternative Estimates of Elasticities of Offenses with Respect to Unemployment and Labor-Force Participation of Young Age Groups in 1960 (Dependent Variables Are Specific Crime Rates)[a]

	Ordinary Least-Squares (OLS)						Two-Stage Least-Squares (2SLS)					
	Unweighted			Weighted			Unweighted			Weighted		
Crime Category	d_1	d_2	e_2	d_1	d_2	e_2	d_1	d_2	e_2	d_1	d_2	e_2
Robbery												
$\hat{\beta}$	0.148	−0.346	—	−0.297	−0.431	—	−0.634	−0.793	—	−0.749	−0.920	—
$\hat{\beta}/S\hat{\beta}$	(−0.383)	(−1.145)	—	(−0.838)	(−1.208)	—	(−1.281)	(−2.006)	—	(−1.968)	(−1.754)	—
Burglary												
$\hat{\beta}$	−0.078	0.059	0.909	−0.084	0.216	—	−0.306	−0.136	—	−0.033	0.334	—
$\hat{\beta}/S\hat{\beta}$	(−0.333)	(0.301)	(1.415)	(−0.380)	(0.944)	—	(−1.115)	(−0.559)	—	(−0.154)	(1.107)	—
Larceny												
$\hat{\beta}$	0.186	0.573	—	0.091	0.430	—	0.214	0.487	—	−0.103	−0.033	—
$\hat{\beta}/S\hat{\beta}$	(0.955)	(2.056)	—	(0.326)	(1.395)	—	(0.711)	(1.188)	—	(−0.306)	(−0.067)	—

Auto theft												
$\hat{\beta}$	0.147	0.435	1.062	−0.137	0.373	—	0.516	0.401	—	−0.315	0.174	—
$\hat{\beta}/S\hat{\beta}$	(0.534)	(1.984)	(1.328)	(−0.553)	(1.360)	—	(0.188)	(1.396)	—	(−0.365)	(0.519)	—
Murder												
$\hat{\beta}$	−0.132	−0.656	1.803	−0.178	−0.602	1.622	−0.151	−1.510	2.072	−0.324	−0.822	1.293
$\hat{\beta}/S\hat{\beta}$	(−0.388)	(−2.264)	(1.875)	(−0.636)	(−2.018)	(2.043)	(−0.268)	(−2.456)	(1.298)	(−0.227)	(−1.966)	(1.698)
Rape												
$\hat{\beta}$	0.238	−0.728	1.339	0.222	−0.654	1.605	0.286	−0.851	1.430	0.209	−0.576	2.043
$\hat{\beta}/S\hat{\beta}$	(0.853)	(−3.232)	(1.660)	(0.828)	(−2.363)	(2.080)	(0.428)	(−3.366)	(1.603)	(0.774)	(−1.902)	(2.583)
Assault												
$\hat{\beta}$	−0.073	−0.325	2.792	−0.083	−0.314	2.164	−0.132	−0.162	3.403	−0.389	−0.168	1.345
$\hat{\beta}/S\hat{\beta}$	(−0.219)	(−1.044)	(2.885)	(−0.268)	(−0.903)	(2.431)	(−0.283)	(−1.370)	(2.492)	(−0.938)	(−1.272)	(1.938)
All Offenses												
$\hat{\beta}$	0.037	0.159	1.044	0.049	0.275	1.157	−0.129	−0.481	1.386	−0.169	0.004	—
$\hat{\beta}/S\hat{\beta}$	(0.172)	(0.768)	(1.709)	(0.262)	(1.264)	(2.051)	(−0.421)	(−1.288)	(1.606)	(−0.806)	(0.012)	—

NOTE: d_1: coefficient of ln U; d_2: coefficient of ln LF; e_2: coefficient of ln Age.

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TABLE 6 OLS (Weighted)[a] Estimates[b]

Crime Category	Intercept	$\ln P_i$	$\ln T_i$	$\ln W$	$\ln X$	$\ln NW$	R^2
Murder	−0.666	−0.341	−0.140	0.417	1.364	0.553	0.940
	(3.192)	(0.138)	(0.105)	(0.436)	(0.466)	(0.054)	
Rape	−7.381	−0.578	−0.188	1.222	0.894	0.154	0.947
	(4.078)	(0.099)	(0.169)	(0.561)	(0.540)	(0.066)	
Assault	−13.300	−0.275	−0.180	2.094	1.469	0.677	0.982
	(4.160)	(0.079)	(0.230)	(0.598)	(0.600)	(0.075)	
Murder and Rape	−1.814	−0.579	−0.287	0.678	0.946	0.328	0.975
	(3.197)	(0.094)	(0.101)	(0.438)	(0.420)	(0.050)	
Robbery	−20.194	−0.853	−0.223	2.909	1.841	0.376	0.976
	(4.811)	(0.120)	(0.227)	(0.682)	(0.652)	(0.071)	
Burglary	− 5.570	−0.534	−0.900	1.797	2.045	0.227	0.994
	(3.289)	(0.096)	(0.211)	(0.445)	(0.407)	(0.052)	
Larceny	−14.942	−0.133	−0.263	2.689	1.620	0.132	0.989
	(3.776)	(0.069)	(0.222)	(0.523)	(0.521)	(0.062)	
Auto Theft	−17.307	−0.247	−0.174	2.893	1.898	0.115	0.991
	(3.228)	(0.066)	(0.134)	(0.455)	(0.446)	(0.051)	
Burglary and Robbery	− 9.269	−0.624	−0.688	2.160	2.115	0.257	0.995
	(2.977)	(0.099)	(0.178)	(0.421)	(0.388)	(0.049)	
Larceny and Auto Theft	−14.155	−0.257	−0.334	2.665	1.826	0.142	0.994
	(3.029)	(0.068)	(0.162)	(0.424)	(0.421)	(0.049)	
Crimes against the Person	− 4.158	−0.550	−0.349	1.046	0.915	0.490	0.989
	(3.609)	(0.088)	(0.127)	(0.489)	(0.454)	(0.064)	
Property Crimes	−10.129	−0.508	−0.621	2.335	2.054	0.212	0.996
	(2.707)	(0.088)	(0.173)	(0.377)	(0.354)	(0.044)	
All Offenses	− 7.674	−0.552	−0.640	2.020	1.806	0.232	0.997
	(2.783)	(0.099)	(0.177)	(0.375)	(0.349)	(0.042)	

[a]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.
[b]Between parentheses is the standard error of the estimate. Degrees of freedom: 41.

TABLE 7 2SLS[a] (Weighted)[b] Estimates[c] (Incorrect Weighting Scheme)

Crime Category	Intercept	$\ln \hat{P}_i$	$\ln T_i$	$\ln W$	$\ln X$	$\ln NW$
Murder	0.317	−0.852	−0.087	0.175	1.109	0.534
	(3.736)	(0.342)	(0.125)	(0.524)	(0.559)	(0.064)
Rape	−0.597	−0.896	−0.399	0.408	0.459	0.072
	(5.005)	(0.147)	(0.199)	(0.675)	(0.618)	(0.078)
Murder and Rape	2.704	−0.828	−0.350	0.086	0.556	0.280
	(3.693)	(0.124)	(0.111)	(0.503)	(0.468)	(0.055)
Assault	−7.568	−0.724	−0.979	1.650	1.707	0.465
	(5.957)	(0.196)	(0.425)	(0.818)	(0.809)	(0.127)
Robbery	−11.025	−1.303	−0.372	1.689	1.278	0.334
	(6.110)	(0.186)	(0.266)	(0.858)	(0.770)	(0.083)
Burglary	−2.121	−0.724	−1.127	1.384	2.000	0.250
	(3.647)	(0.121)	−(0.235)	(0.487)	(0.427)	(0.055)
Larceny	−10.664	−0.371	−0.602	2.229	1.792	0.142
	(4.859)	(0.150)	(0.311)	(0.643)	(0.599)	(0.070)
Auto Theft	−14.959	−0.407	−0.246	2.608	2.057	0.102
	(3.594)	(0.097)	(0.146)	(0.502)	(0.482)	(0.055)
Larceny and Auto Theft	−10.093	−0.547	−0.626	2.226	2.166	0.155
	(3.904)	(0.129)	(0.220)	(0.532)	(0.520)	(0.060)
Crimes against the Person	1.636	−0.803	−0.496	0.328	0.559	0.376
	(4.306)	(0.122)	(0.145)	(0.576)	(0.509)	(0.078)
Property Crimes	−6.278	−0.797	−0.915	1.883	2.132	0.243
	(3.241)	(0.130)	(0.213)	(0.444)	(0.398)	(0.051)
All Offenses	−1.388	−0.991	−1.123	1.292	1.775	0.265
	(3.773)	(0.168)	(0.251)	(0.495)	(0.424)	(0.052)

[a]The reduced form variables are: constant, $\ln Age$, $Dummy$, $\ln Ed$, $\ln Exp_{38}$, $\ln X$, $\ln(Q_i/N)_{39}$, $\ln Males$, $\ln NW$, $\ln N_i$, $\ln SMSA$, $\ln T_i$, $\ln W$, $\ln U_{35-39}$. The equations are identified with the following variables: $\ln Age$, $Dummy$, $\ln Ed$, $\ln Exp_{38}$, $\ln(Q_i/N)_{39}$, $\ln Males$, $\ln N$, $\ln SMSA$, $\ln U_{35-39}$.
[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{\mu N}$, with N the state population size in 1960.
[c]Between parentheses is the standard error of the estimate. Degrees of freedom: 41.

TABLE 8 OLS—(Unweighted) Estimates[a] Including Unemployment and Labor Force Participation of Young Age Groups in 1960 (Labor Force Participation Variable in Error)

Crime Category	Intercept	ln P_t	ln T_t	ln W	ln X	ln NW	ln U	ln LF	ln Age	R^2
Murder	− 6.230	−0.562	−0.434	0.399	0.231	0.431	−0.132	−0.656	1.803	0.848
	(6.435)	(0.192)	(0.170)	(0.659)	(0.679)	(0.075)	(0.340)	(0.290)	(0.961)	
Rape	− 9.366	−0.472	0.138	0.715	−0.352	0.103	0.237	−0.728	1.338	0.693
	(5.337)	(0.099)	(0.125)	(0.580)	(0.585)	(0.058)	(0.278)	(0.225)	(0.806)	
Assault	−20.534	−0.331	−0.135	1.909	0.770	0.485	−0.073	−0.325	2.797	0.858
	(6.122)	(0.100)	(0.234)	(0.653)	(0.702)	(0.079)	(0.334)	(0.311)	(0.970)	
Robbery	−19.649	−0.740	−0.008	2.614	1.273	0.350	−0.147	−0.346	—	0.789
	(5.167)	(0.147)	(0.221)	(0.747)	(0.775)	(0.070)	(0.385)	(0.302)		
Burglary	− 8.350	−0.401	−0.599	1.581	1.009	0.192	−0.078	0.059	0.909	0.651
	(5.258)	(0.118)	(0.215)	(0.463)	(0.443)	(0.043)	(0.235)	(0.197)	(0.643)	
Larceny	−10.796	−0.049	−0.276	2.267	1.214	0.107	0.186	0.573	—	0.551
	(3.784)	(0.095)	(0.201)	(0.526)	(0.577)	(0.053)	(0.284)	(0.279)		
Auto Theft	−22.294	−0.097	−0.162	3.182	1.380	0.129	0.147	0.435	1.062	0.676
	(4.959)	(0.076)	(0.138)	(0.532)	(0.568)	(0.050)	(0.275)	(0.258)	(0.799)	
All Offenses	−10.267	−0.388	−0.546	1.917	1.061	0.194	0.037	0.159	1.044	0.696
	(4.040)	(0.136)	(0.201)	(0.433)	(0.420)	(0.041)	(0.215)	(0.207)	(0.611)	

[a]Between parentheses is the standard error of the estimate. Degrees of freedom: 39 (38 if ln Age is part of the equation).

TABLE 9 2SLS—(Unweighted[a]) Estimates[b] Including Unemployment and Labor Force Participation of Young Age Groups in 1960 (Labor Force Participation Variable in Error)

Crime Category	Intercept	ln $\hat{P}_{1,}$	ln T_i	ln W	ln X	ln NW	ln U	ln LF	ln Age
Murder	0.824	−2.124	−0.710	−0.763	−1.043	0.202	−0.151	−1.510	2.072
	(11.122)	(0.771)	(0.308)	(1.210)	(1.262)	(0.161)	(0.563)	(0.615)	(1.597)
Rape	−5.019	−0.759	0.094	0.090	−0.816	0.021	0.286	−0.851	1.430
	(6.101)	(0.150)	(0.139)	(0.679)	(0.668)	(0.071)	(0.308)	(0.253)	(0.892)
Assault	−18.300	−0.932	−0.927	1.686	1.216	0.190	−0.132	−0.162	3.403
	(8.566)	(0.238)	(0.414)	(0.913)	(0.988)	(0.145)	(0.466)	(0.437)	(1.366)
Robbery	−11.541	−1.373	−0.272	1.338	0.563	0.271	−0.634	−0.793	—
	(6.818)	(0.273)	(0.282)	(0.999)	(0.970)	(0.089)	(0.495)	(0.395)	
Burglary	0.542	−0.792	−1.026	0.739	1.052	0.223	−0.306	−0.136	—
	(4.177)	(0.209)	(0.298)	(0.577)	(0.507)	(0.050)	(0.275)	(0.243)	
Larceny	−10.332	−0.096	−0.321	2.222	1.284	0.107	0.214	0.487	—
	(4.125)	(0.191)	(0.256)	(0.551)	(0.628)	(0.054)	(0.410)	(0.301)	
Auto Theft	−17.596	−0.169	−0.229	2.967	1.610	0.131	0.052	0.401	—
	(3.683)	(0.112)	(0.140)	(0.526)	(0.584)	(0.051)	(0.289)	(0.275)	
All Offenses	−3.930	−1.207	−1.328	0.994	1.168	0.212	−0.129	−0.481	1.386
	(6.098)	(0.357)	(0.402)	(0.694)	(0.589)	(0.057)	(0.307)	(0.373)	(0.863)

[a]The reduced form variables are: constant, ln *Age*, *Dummy*, ln *Ed*, ln Exp_{1s}, ln *X*, ln $(Q_i/N)_{1s}$, ln *LF*, ln *Males*, ln *NW*, ln *N*, ln *SMSA*, ln T_i, ln *U*, ln *W*. The equations are identified with the following variables: *Dummy*, ln *Ed*, ln Exp_{1s}, ln $(Q_i/N)_{1s}$, ln *Males*, ln *N*, ln *SMSA* and, if ln *Age* is not part of the equation, also with ln *Age*.

[b]Between parentheses is the standard error of the estimate. Degrees of freedom: 39 (38 if ln *Age* is part of the equation).

TABLE 10 2SLS[a] (Weighted[b]) Estimates[c] Including Unemployment and Labor Force Participation of Young Age Groups in 1960 (Labor Force Participation Variable in Error and Incorrect Weighting Scheme)

Crime Category	Intercept	ln $\hat{P}_t$	ln T_t	ln W	ln X	ln NW	ln U	ln LF	ln Age
Murder	−7.284	−0.852	−0.042	0.457	0.860	0.501	−0.324	−0.822	1.293
	(4.903)	(0.330)	(0.126)	(0.506)	(0.539)	(0.063)	(0.264)	(0.419)	(0.761)
Rape	−10.347	−0.842	−0.375	0.886	0.147	0.047	0.209	−0.576	2.043
	(5.356)	(0.128)	(0.181)	(0.612)	(0.596)	(0.074)	(0.270)	(0.384)	(0.791)
Assault	−13.696	−0.749	−0.968	1.745	1.271	0.438	−0.389	−0.167	1.344
	(7.907)	(0.211)	(0.481)	(0.851)	(0.900)	(0.133)	(0.414)	(0.617)	(1.210)
Robbery	−12.158	−1.400	−0.419	1.522	1.099	0.294	−0.748	−0.920	—
	(6.029)	(0.197)	(0.269)	(0.868)	(0.784)	(0.087)	(0.380)	(0.525)	
Burglary	−2.949	−0.661	−1.051	1.486	1.978	0.256	−0.033	0.334	—
	(3.554)	(0.117)	(0.230)	(0.475)	(0.422)	(0.054)	(0.214)	(0.301)	
Larceny	−12.074	−0.280	−0.483	2.413	1.749	0.137	0.103	−0.033	—
	(4.902)	(0.155)	(0.321)	(0.607)	(0.589)	(0.069)	(0.336)	(0.487)	
Auto Theft	−16.185	−0.367	−0.231	2.661	1.937	0.115	−0.315	0.177	—
	(3.511)	(0.096)	(0.143)	(0.484)	(0.471)	(0.056)	(0.231)	(0.341)	
All Offenses	−2.718	−0.930	−1.053	1.392	1.745	0.262	−0.169	0.004	—
	(3.657)	(0.165)	(0.241)	(0.479)	(0.415)	(0.052)	(0.210)	(0.310)	

[a]The reduced form variables are: constant, ln *Age*, *Dummy*, ln *Ed*, ln Exp_{20}, ln *X*, ln $(Q_i/N)_{20}$, ln *LF*, ln *Males*, ln *NW*, ln *N*, ln *SMSA*, ln T_t, ln *U*, ln *W*. The equations are identified with the following variables: *Dummy*, ln *Ed*, ln Exp_{20}, ln $(Q_i/N)_{20}$, ln *Males*, ln *N*, ln *SMSA* and, if ln *Age* is not part of the equation, also with ln *Age*.
[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with *N* the state population size in 1960.
[c]Between parentheses is the standard error of the estimate. Degrees of freedom: 39 (38 if ln *Age* is part of the equation).

TABLE 11 2SLS[a] (Weighted[b]) Estimates[c] (Corrected)

Crime Category	Intercept	$\ln \hat{P}_i$	$\ln T_i$	$\ln W$	$\ln X$	$\ln NW$
Murder	0.337	−0.863	−0.086	0.170	1.104	0.533
	(3.757)	(0.346)	(0.126)	(0.527)	(0.562)	(0.064)
Rape	−2.143	−0.824	−0.351	0.594	0.558	0.091
	(4.706)	(0.134)	(0.189)	(0.637)	(0.589)	(0.074)
Murder and Rape	2.130	−0.796	−0.342	0.161	0.605	0.286
	(3.599)	(0.119)	(0.108)	(0.491)	(0.458)	(0.054)
Assault	−7.775	−0.708	−0.950	1.667	1.698	0.473
	(5.853)	(0.191)	(0.416)	(0.804)	(0.796)	(0.125)
Robbery	−12.621	−1.225	−0.346	1.901	1.376	0.342
	(5.766)	(0.171)	(0.255)	(0.811)	(0.736)	(0.079)
Burglary	−3.001	−0.675	−1.069	1.489	2.012	0.244
	(3.525)	(0.114)	(0.227)	(0.472)	(0.418)	(0.053)
Larceny	−11.373	−0.332	−0.546	2.305	1.763	0.140
	(4.586)	(0.134)	(0.290)	(0.612)	(0.577)	(0.068)
Auto Theft	−14.857	−0.414	−0.249	2.595	2.063	0.101
	(3.619)	(0.099)	(0.147)	(0.505)	(0.485)	(0.055)
Larceny and Auto Theft	−10.260	−0.535	−0.614	2.244	2.152	0.155
	(3.839)	(0.125)	(0.215)	(0.524)	(0.513)	(0.059)
Crimes against the Person	−1.123	−0.781	−0.483	0.391	0.590	0.386
	(4.222)	(0.118)	(0.143)	(0.565)	(0.501)	(0.076)
Property Crimes	−6.809	−0.757	−0.874	1.945	2.121	0.239
	(3.124)	(0.122)	(0.205)	(0.429)	(0.387)	(0.049)
All Offenses	−2.168	−0.937	−1.063	1.383	1.779	0.261
	(3.581)	(0.156)	(0.237)	(0.471)	(0.408)	(0.050)

[a]The reduced form variables are: constant, ln *Age*, *Dummy*, ln *Ed*, ln Exp_{25}, ln *X*, ln $(Q_i/N)_{25}$, ln *Males*, ln *NW*, ln *N*, ln *SMSA*, ln T_i, ln *W*, ln U_{25-39}. The equations are identified with the following variables: ln *Age*, *Dummy*, ln *Ed*, ln Exp_{25}, ln $(Q_i/N)_{25}$, ln *Males*, ln *N*, ln *SMSA*, ln U_{25-39}.

[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with *N* the state population size in 1960.

[c]Between parentheses is the standard error of the estimate. Degrees of freedom: 41.

TABLE 12 OLS—(Unweighted) Estimates[a] Including Unemployment and Labor Force Participation of Young Age Groups in 1960 (Corrected)

Crime Category	Intercept	ln P_t	ln T_t	ln W	ln X	ln NW	ln U	ln LF	ln Age	R^2
Murder	−0.162	−0.393	−0.515	0.148	0.370	0.470	0.046	1.366	1.175	0.836
	(7.009)	(0.186)	(0.178)	(0.713)	(0.702)	(0.078)	(0.366)	(0.971)	(0.958)	
Rape	−3.820	−0.413	0.087	0.550	−0.104	0.166	0.481	1.522	0.680	0.641
	(6.017)	(0.105)	(0.137)	(0.645)	(0.625)	(0.064)	(0.315)	(0.839)	(0.843)	
Assault	−20.948	−0.359	−0.267	2.101	1.098	0.469	−0.129	−0.737	2.533	0.856
	(6.403)	(0.103)	(0.209)	(0.676)	(0.683)	(0.085)	(0.353)	0.954)	(0.936)	
Robbery	−19.995	−0.667	0.025	2.762	1.430	0.368	−0.005	0.230	—	0.782
	(5.509)	(0.161)	(0.232)	(0.752)	(0.780)	(0.077)	(0.427)	(1.207)		
Burglary	−7.393	−0.412	−0.590	1.468	0.917	0.198	−0.026	0.485	0.966	0.655
	(4.420)	(0.106)	(0.213)	(0.469)	(0.442)	(0.044)	(0.245)	(0.615)	(0.611)	
Larceny	−5.033	−0.192	−0.440	1.711	1.060	0.141	0.431	1.968	—	0.534
	(4.081)	(0.073)	(0.197)	(0.525)	(0.568)	(0.055)	(0.294)	(0.781)		
Auto Theft	−20.493	−0.200	−0.152	2.873	1.203	0.137	0.259	1.263	1.402	0.674
	(5.303)	(0.069)	(0.138)	(0.559)	(0.572)	(0.051)	(0.290)	(0.794)	(0.769)	
All Offenses	−9.090	−0.432	−0.532	1.741	0.930	0.199	0.095	0.624	1.172	0.700
	(4.187)	(0.116)	(0.201)	(0.437)	(0.422)	(0.041)	(0.224)	(0.589)	(0.582)	

[a]Between parentheses is the standard error of the estimate. Degrees of freedom: 39 (38 if ln *Age* is part of the equation).

TABLE 13 OLS—(Weighted[a]) Estimates[b] Including Unemployment and Labor Force Participation of Young Age Groups in 1960 (Corrected)

Crime Category	Intercept	ln P_t	ln T_t	ln W	ln X	ln NW	ln U	ln LF	ln Age	R^2
Murder	−5.415	−0.328	−0.130	0.542	1.068	0.553	−0.214	0.095	1.032	0.947
	(4.946)	(0.139)	(0.111)	(0.491)	(0.501)	(0.058)	(0.239)	(0.792)	(0.675)	
Rape	−9.145	−0.590	−0.224	1.080	0.314	0.182	0.391	1.339	1.455	0.957
	(5.258)	(0.094)	(0.160)	(0.577)	(0.558)	(0.067)	(0.253)	(0.831)	(0.707)	
Assault	−24.374	−0.299	−0.151	2.654	1.384	0.598	−0.276	−1.846	1.677	0.985
	(5.562)	(0.075)	(0.219)	(0.608)	(0.624)	(0.079)	(0.285)	(0.937)	(0.792)	
Robbery	−22.629	−0.939	−0.287	3.015	1.973	0.335	−0.473	−1.274	—	0.977
	(5.159)	(0.132)	(0.232)	(0.706)	(0.691)	(0.079)	(0.331)	(1.119)		
Burglary	−1.714	−0.549	−0.881	1.383	1.702	0.270	0.078	1.506	—	0.995
	(3.660)	(0.094)	(0.205)	(0.469)	(0.424)	(0.053)	(0.205)	(0.683)		
Larceny	−16.034	−0.125	−0.238	2.767	1.659	0.123	−0.123	−0.284	—	0.989
	(4.577)	(0.076)	(0.238)	(0.577)	(0.578)	(0.069)	(0.295)	(0.919)		
Auto Theft	−15.135	−0.275	−0.153	2.560	1.622	0.143	−0.249	1.009	—	0.992
	(4.028)	(0.067)	(0.132)	(0.518)	(0.468)	(0.054)	(0.225)	(0.799)		
All Offenses	−9.004	−0.544	−0.596	1.977	1.574	0.239	−0.092	0.437	0.468	0.997
	(4.054)	(0.101)	(0.183)	(0.421)	(0.391)	(0.047)	(0.187)	(0.614)	(0.533)	

[a]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.

[b]Between parentheses is the standard error of the estimate. Degrees of freedom: 39 (38 if ln *Age* is part of the equation).

TABLE 14 2SLS—(Unweighted[a]) Estimates[b] Including Unemployment and Labor Force Participation of Young Age Groups in 1960 (Corrected)

Crime Category	Intercept	ln $\hat{P}_i$	ln T_i	ln W	ln X	ln NW	ln U	ln LF	ln Age
Murder	6.151	−1.283	−0.726	−0.538	−0.152	0.335	0.046	1.146	0.831
	(9.613)	(0.572)	(0.257)	(0.988)	(0.940)	(0.127)	(0.463)	(1.236)	(1.230)
Rape	2.449	−0.779	0.024	−0.254	−0.626	0.065	0.563	1.530	0.649
	(7.260)	(0.177)	(0.159)	(0.794)	(0.741)	(0.082)	(0.363)	(0.964)	(0.968)
Assault	−22.336	−1.059	−1.116	2.079	1.668	0.092	−0.381	−2.196	3.421
	(9.533)	(0.271)	(0.412)	(1.005)	(1.032)	(0.174)	(0.530)	(1.493)	(1.420)
Robbery	−15.911	−1.604	−0.458	1.730	1.160	0.204	−1.009	−3.228	—
	(7.656)	(0.386)	(0.357)	(1.085)	(1.069)	(0.118)	(0.676)	(2.023)	
Burglary	0.779	−0.738	−0.969	0.769	1.043	0.228	−0.220	0.386	—
	(4.098)	(0.172)	(0.277)	(0.532)	(0.497)	(0.050)	(0.272)	(0.694)	
Larceny	−2.151	−0.418	−0.718	1.541	1.519	0.160	0.681	2.269	—
	(4.753)	(0.135)	(0.257)	(0.591)	(0.670)	(0.062)	(0.349)	(0.882)	
Auto Theft	−12.084	−0.435	−0.308	2.428	1.717	0.149	0.257	2.122	—
	(4.765)	(0.117)	(0.160)	(0.621)	(0.667)	(0.059)	(0.328)	(0.967)	
All Offenses	−3.446	−0.970	−1.171	1.178	1.213	0.225	−0.013	0.402	1.005
	(5.593)	(0.237)	(0.335)	(0.580)	(0.537)	(0.052)	(0.283)	(0.471)	(0.731)

[a]The reduced form variables are: constant, ln *Age*, *Dummy*, ln *Ed*, ln Exp_{sa}, ln *X*, ln $(Q_i/N)_{sa}$, ln *LF*, ln *Males*, ln *NW*, ln *N*, ln *SMSA*, ln T_i, ln *U*, ln *W*. The equations are identified with the following variables: *Dummy*, ln *Ed*, ln Exp_{sa}, ln $(Q_i/N)_{sa}$, ln *Males*, ln *N*, ln *SMSA* and, if ln *Age* is not part of the equation, also with ln *Age*.

[b]Between parentheses is the standard error of the estimate. Degrees of freedom: 39 (38 if ln *Age* is in the equation).

TABLE 15 2SLS[a] (Weighted[b]) Estimates[c] Including Unemployment and Labor Force Participation of Young Age Groups in 1960 (Corrected)

Crime Category	Intercept	ln $\hat{P}_i$	ln T_i	ln W	ln X	ln NW	ln U	ln LF	ln Age
Murder	−5.455	−0.527	−0.109	0.500	1.031	0.539	−0.257	−0.142	0.977
	(5.078)	(0.277)	(0.117)	(0.506)	(0.516)	(0.061)	(0.251)	(0.861)	(0.697)
Rape	−4.486	−0.839	−0.393	0.457	−0.073	0.117	0.344	1.357	1.594
	(5.911)	(0.129)	(0.182)	(0.658)	(0.620)	(0.076)	(0.276)	(0.904)	(0.771)
Assault	−20.096	−0.810	−1.055	2.332	1.809	0.334	−0.597	−2.683	1.566
	(8.401)	(0.212)	(0.455)	(0.910)	(0.939)	(0.149)	(0.439)	(1.423)	(1.178)
Robbery	−17.191	−1.420	−0.489	2.094	1.669	0.252	−0.878	−2.721	—
	(6.152)	(0.199)	(0.274)	(0.854)	(0.804)	(0.094)	(0.398)	(1.353)	
Burglary	1.149	−0.702	−1.063	1.031	1.644	0.290	0.050	1.575	—
	(3.927)	(0.112)	(0.222)	(0.501)	(0.439)	(0.056)	(0.212)	(0.706)	
Larceny	−11.998	−0.336	−0.566	2.421	1.905	0.126	0.141	−0.467	—
	(5.586)	(0.153)	(0.328)	(0.666)	(0.650)	(0.075)	(0.361)	(1.012)	
Auto Theft	−9.722	−0.495	−0.222	1.933	1.649	0.147	−0.187	1.826	—
	(4.964)	(0.111)	(0.152)	(0.629)	(0.529)	(0.061)	(0.255)	(0.951)	
All Offenses	−1.214	−0.943	−1.058	1.235	1.625	0.277	−0.127	0.536	—
	(4.090)	(0.159)	(0.240)	(0.513)	(0.445)	(0.055)	(0.215)	(0.716)	

[a]The reduced form variables are: constant, ln *Age*, *Dummy*, ln *Ed*, ln Exp_{20}, ln *X*, ln $(Q_i/N)_{20}$, ln *LF*, ln *Males*, ln *NW*, ln *N*, ln *SMSA*, ln T_i, ln *U*, ln *W*. The equations are identified with the following variables: *Dummy*, ln *Ed*, ln Exp_{20}, ln $(Q_i/N)_{20}$, ln *Males*, ln *N*, ln *SMSA* and, if ln *Age* is not part of the equation, also with ln *Age*.

[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with *N* the state population size in 1960.

[c]Between the parentheses is the standard error of the estimate. Degrees of freedom: 39 (38 if ln *Age* is part of the equation).

TABLE 16 OLS (Weighted[a]) Estimates[b]: North-South Dummy or *SMSA* Included in the Crime Function

Crime Category	ln P_i	ln T_i	*Dummy* (South = 1)	ln P_i	ln T_i	ln *SMSA*
Murder	−0.357	−0.050	0.364	−0.403	−0.138	−0.064
	(0.132)	(0.108)	(0.166)	(0.138)	(0.102)	(0.035)
Rape	−0.591	−0.189	0.057	−0.596	−0.205	−0.040
	(0.110)	(0.170)	(0.205)	(0.101)	(0.169)	(0.041)
Assault	−0.283	−0.091	0.256	−0.277	−0.165	−0.023
	(0.079)	(0.243)	(0.229)	(0.080)	(0.234)	(0.046)
Murder and Rape	−0.601	−0.271	0.108	−0.628	−0.297	−0.068
	(0.100)	(0.104)	(0.158)	(0.092)	(0.096)	(0.031)
Robbery	−0.873	−0.228	0.067	−0.853	−0.224	0.002
	(0.143)	(0.231)	(0.259)	(0.124)	(0.233)	(0.050)
Burglary	−0.560	−0.875	0.200	−0.554	−0.910	−0.027
	(0.097)	(0.210)	(0.153)	(0.100)	(0.212)	(0.033)
Larceny	−0.130	−0.276	−0.046	−0.148	−0.294	0.028
	(0.071)	(0.233)	(0.205)	(0.073)	(0.229)	(0.043)
Auto Theft	−0.251	−0.193	−0.074	−0.278	−0.177	−0.055
	(0.067)	(0.141)	(0.168)	(0.068)	(0.132)	(0.036)
Burglary and Robbery	−0.658	−0.669	0.192	−0.639	−0.682	−0.021
	(0.101)	(0.177)	(0.146)	(0.102)	(0.179)	(0.032)
Larceny and Auto Theft	−0.256	−0.349	−0.041	−0.260	−0.331	−0.015
	(0.068)	(0.174)	(0.164)	(0.068)	(0.164)	(0.033)
Crimes against the Person	−0.580	−0.290	0.243	−0.584	−0.361	−0.058
	(0.090)	(0.133)	(0.178)	(0.088)	(0.124)	(0.035)
Property Crimes	−0.517	−0.602	0.086	−0.517	−0.618	−0.017
	(0.090)	(0.177)	(0.136)	(0.090)	(0.175)	(0.029)
All Offenses	−0.572	−0.619	0.131	−0.563	−0.639	−0.019
	(0.102)	(0.179)	(0.136)	(0.101)	(0.178)	(0.028)

[a]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.
[b]Between parentheses is the standard error of the estimate. Degrees of freedom: 40.

TABLE 17 2SLS (Weighted[a]) Estimates: Effect of Different Reduced Form Specifications[b]—Basic Model

Crime Category	Reduced Form 1[c]		Reduced Form 2[d]		Reduced Form 3[e]	
	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i
Murder	−0.863	−0.086	−0.996	−0.072	−1.525	−0.018
	(0.346)	(0.126)	(0.406)	(0.136)	(0.686)	(0.188)
Rape	−0.824	−0.351	−1.012	−0.477	−0.869	−0.381
	(0.134)	(0.189)	(0.177)	(0.221)	(0.146)	(0.196)
Murder and Rape	−0.796	−0.342	−0.850	−0.355	−0.886	−0.365
	(0.119)	(0.108)	(0.128)	(0.112)	(0.135)	(0.115)
Assault	−0.708	−0.950	−1.103	−1.652	−0.777	−1.073
	(0.191)	(0.416)	(0.349)	(0.713)	(0.212)	(0.457)
Robbery	−1.225	−0.346	−1.313	−0.375	−1.264	−0.359
	(0.171)	(0.255)	(0.185)	(0.268)	(0.177)	(0.261)
Burglary	−0.675	−1.069	−0.883	−1.317	−0.728	−1.131
	(0.114)	(0.227)	(0.147)	(0.269)	(0.120)	(0.234)
Larceny	−0.332	−0.546	−0.394	−0.635	−0.427	−0.681
	(0.134)	(0.290)	(0.159)	(0.324)	(0.170)	(0.340)
Auto Theft	−0.414	−0.249	−0.420	−0.252	−0.601	−0.334
	(0.099)	(0.147)	(0.101)	(0.148)	(0.146)	(0.183)
Larceny and Auto Theft	−0.535	−0.614	−0.535	−0.614	−0.658	−0.739
	(0.125)	(0.215)	(0.125)	(0.216)	(0.159)	(0.257)
Crimes against the Person	−0.781	−0.483	−0.810	−0.499	−0.896	−0.549
	(0.118)	(0.143)	(0.123)	(0.146)	(0.137)	(0.158)
Property Crimes	−0.757	−0.874	−0.790	−0.908	−0.873	−0.992
	(0.122)	(0.205)	(0.128)	(0.211)	(0.143)	(0.229)
All Offenses	−0.937	−1.063	−0.946	−1.073	−1.047	−1.185
	(0.156)	(0.237)	(0.159)	(0.239)	(0.179)	(0.264)

[a]In order to induce homoscedasticity all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960. Between parentheses is the standard error of the estimate. Degrees of freedom: 41.
[b]The crime equation contains the following variables: constant, ln P_i, ln T_i, ln W_i, ln X_i, ln NW_i (see also Table 11).
[c]The reduced form variables are: constant, ln *Age*, *Dummy*, ln *Ed*, ln Exp_{39}, ln X_i, ln $(Q_i/N)_{39}$, ln *Males*, ln NW_i, ln N_i, ln *SMSA*, ln T_i, ln W_i, ln U_{35-39}. These two columns correspond to Table 11.
[d]The reduced form used is as in footnote *c* above, but after omitting the following three variables: ln Exp_{39}, ln U_{35-39}, and ln *Males*.
[e]The reduced form used is as in footnote *c* above, but after omitting the following three variables: ln *SMSA*, ln *Ed*, and ln *N*.

TABLE 18 2SLS[a] (Weighted[b]) Estimates[c]—Vermont Omitted

Crime Category	$\ln \hat{P}_i$	$\ln T_i$
Murder	−0.893	−0.081
	(0.361)	(0.130)
Rape	−0.832	−0.359
	(0.135)	(0.190)
Murder and Rape	−0.808	−0.342
	(0.119)	(0.108)
Assault	−0.716	−0.945
	(0.190)	(0.414)
Robbery	−1.235	−0.336
	(0.174)	(0.259)
Burglary	−0.560	−0.924
	(0.120)	(0.229)
Larceny	−0.325	−0.522
	(0.136)	(0.300)
Auto Theft	−0.415	−0.242
	(0.100)	(0.149)
Larceny and Auto Theft	−0.535	−0.602
	(0.126)	(0.219)
Crimes against the Person	−0.785	−0.468
	(0.117)	(0.141)
Property Crimes	−0.755	−0.862
	(0.123)	(0.207)
All Offenses	−0.931	−1.037
	(0.156)	(0.236)

[a]The crime equation contains the following variables: constant, $\ln P_i$, $\ln T_i$, $\ln W$, $\ln X$, $\ln NW$. The reduced form variables are: constant, $\ln Age$, *Dummy*, $\ln Ed$, $\ln Exp_{59}$, $\ln X$, $\ln (Q_i/N)_{59}$, $\ln Males$, $\ln NW$, $\ln N$, $\ln SMSA$, $\ln T_i$, $\ln W$, $\ln U_{53-59}$. The equation is identified with the following variables: $\ln Age$, *Dummy*, $\ln Ed$, $\ln Exp_{59}$, $\ln (Q_i/N)_{59}$, $\ln Males$, $\ln N$, $\ln SMSA$, $\ln U_{53-59}$.

[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.

[c]Between parentheses is the standard error of estimate. Degrees of freedom: 40.

TABLE 19 2SLS[a] (Weighted[b]) Estimates[c]—Basic Model, Identified by $\ln Exp_{59}$ and $\ln (Q_i/N)_{59}$

	All States		Vermont Omitted		Omitting Utah, Vermont, and Wisconsin	
Crime Category	$\ln \hat{P}_i$	$\ln T_i$	$\ln \hat{P}_i$	$\ln T_i$	$\ln \hat{P}_i$	$\ln T_i$
Murder	−2.944	0.129	−2.961	0.141	−2.812	0.149
	(1.749)	(0.370)	(1.773)	(0.379)	(1.848)	(0.406)
Rape	−1.347	−0.699	−1.350	−0.704	−1.399	−0.541
	(0.274)	(0.304)	(0.276)	(0.306)	(0.313)	(0.310)
Murder and Rape	−1.119	−0.424	−1.121	−0.420	−1.164	−0.385
	(0.182)	(0.140)	(0.182)	(0.139)	(0.230)	(0.157)
Assault	−0.968	−1.412	−0.955	−1.367	−0.834	−1.263
	(0.287)	(0.598)	(0.280)	(0.582)	(0.229)	(0.507)
Robbery	−1.584	−0.465	−1.599	−0.451	−1.440	−0.576
	(0.244)	(0.319)	(0.250)	(0.326)	(0.226)	(0.312)
Burglary	−0.884	−1.317	−0.666	−1.051	−0.599	−1.107
	(0.146)	(0.268)	(0.147)	(0.254)	(0.131)	(0.226)
Larceny	−1.554	−2.287	−1.570	−2.353	−1.704	−2.735
	(0.943)	(1.502)	(0.966)	(1.583)	(1.046)	(1.797)
Auto Theft	−0.880	−0.460	−0.877	−0.449	−0.866	−0.472
	(0.241)	(0.260)	(0.242)	(0.263)	(0.246)	(0.267)
Larceny and Auto Theft	−1.052	−1.135	−1.052	−1.128	−0.992	−1.144
	(0.311)	(0.440)	(0.315)	(0.449)	(0.286)	(0.426)
Crimes against the Person	−1.072	−0.651	−1.063	−0.627	−1.020	−0.662
	(0.174)	(0.188)	(0.169)	(0.183)	(0.165)	(0.189)
Property Crimes	−1.082	−1.205	−1.079	−1.193	−0.962	−1.250
	(0.192)	(0.288)	(0.194)	(0.293)	(0.149)	(0.244)
All Offenses	−1.249	−1.407	−1.241	−1.376	−1.017	−1.056
	(0.230)	(0.327)	(0.229)	(0.326)	(0.285)	(0.441)

[a]The crime equation contains the following variables: constant, $\ln P_i$, $\ln T_i$, $\ln W$, $\ln X$, $\ln NW$. The equation is identified by the exclusion of $\ln Exp_{59}$ and $\ln (Q_i/N)_{59}$.

[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.

[c]Between parentheses is the standard error of estimate. Degrees of freedom: All States—41; Vermont omitted—40; omitting Utah, Vermont, and Wisconsin—38.

TABLE 20 2SLS[a] (Weighted[b]) Estimates[c]—Basic Model + *LF*, *Age*, and *U*, Identified by ln Exp_{59} and ln $(Q_i/N)_{59}$

Crime Category	All States		Vermont Omitted		Omitting Utah, Vermont, and Wisconsin	
	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i
Murder	−3.611	0.219	−3.562	0.213	−4.455	0.378
	(2.648)	(0.520)	(2.593)	(0.514)	(4.493)	(0.866)
Rape	−1.196	−0.634	−1.205	−0.644	−1.258	−0.503
	(0.219)	(0.258)	(0.222)	(0.262)	(0.250)	(0.272)
Murder and Rape	−1.064	−0.407	−1.069	−0.411	−1.093	−0.385
	(0.177)	(0.143)	(0.176)	(0.143)	(0.219)	(0.173)
Assault	−0.922	−1.254	−0.917	−1.232	−0.855	−1.244
	(0.253)	(0.533)	(0.250)	(0.528)	(0.226)	(0.509)
Robbery	−1.701	−0.612	−1.709	−0.599	−1.460	−0.756
	(0.273)	(0.330)	(0.278)	(0.337)	(0.230)	(0.296)
Burglary	−0.862	−1.214	−0.735	−1.050	−0.685	−1.159
	(0.139)	(0.264)	(0.137)	(0.251)	(0.120)	(0.225)
Larceny	−0.943	−1.584	−0.959	−1.634	−1.316	−2.432
	(0.521)	(0.952)	(0.537)	(1.012)	(0.786)	(1.531)
Auto Theft	−0.995	−0.399	−0.993	−0.376	−0.967	−0.431
	(0.293)	(0.312)	(0.294)	(0.313)	(0.294)	(0.326)
Larceny and Auto Theft	−1.121	−1.385	−1.122	−1.375	−1.079	−1.495
	(0.370)	(0.567)	(0.375)	(0.576)	(0.342)	(0.567)
Crimes against the Person	−1.009	−0.602	−1.005	−0.592	−0.969	−0.683
	(0.160)	(0.189)	(0.157)	(0.185)	(0.151)	(0.205)
Property Crimes	−1.038	−1.193	−1.037	−1.178	−0.945	−1.348
	(0.188)	(0.299)	(0.189)	(0.302)	(0.141)	(0.251)
All Offenses	−1.224	−1.363	−1.219	−1.333	−0.974	−0.978
	(0.233)	(0.338)	(0.232)	(0.337)	(0.287)	(0.463)

[a]The crime equation contains the following variables: constant, ln P_i, ln T_i, ln W, ln X, ln NW, ln U, ln LF, ln Age. The equation is identified by the exclusion of ln Exp_{59} and ln $(Q_i/N)_{59}$.
[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.
[c]Between parentheses is the standard error of the estimate. Degrees of freedom: All States—38; Vermont omitted—37; omitting Utah, Vermont, and Wisconsin—35.

TABLE 21 2SLS[a] (Weighted[b]) Estimates[c]—Enlarged Model, Identified by ln Exp_{59} and ln $(Q_i/N)_{59}$

Crime Category	All States		Vermont Omitted		Omitting Utah, Vermont, and Wisconsin	
	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i
Murder	−2.440	0.488	−2.440	0.488	−2.975	0.679
	(1.229)	(0.416)	(1.253)	(0.424)	(1.936)	(0.685)
Rape	−1.270	−0.450	−1.286	−0.457	−1.339	−0.294
	(0.245)	(0.248)	(0.250)	(0.252)	(0.273)	(0.280)
Murder and Rape	−1.110	−0.228	−1.122	−0.229	−1.192	−0.113
	(0.184)	(0.140)	(0.187)	(0.142)	(0.235)	(0.205)
Assault	−0.925	−1.140	−0.922	−1.135	−0.834	−1.170
	(0.295)	(0.574)	(0.295)	(0.575)	(0.259)	(0.551)
Robbery	−1.674	−0.528	−1.676	−0.525	−1.535	−0.662
	(0.281)	(0.333)	(0.285)	(0.340)	(0.273)	(0.334)
Burglary	−0.776	−0.826	−0.619	−0.692	−0.590	−0.871
	(0.122)	(0.226)	(0.130)	(0.216)	(0.120)	(0.212)
Larceny	−1.018	−1.370	−1.025	−1.351	−1.172	−1.712
	(0.558)	(0.855)	(0.567)	(0.884)	(0.683)	(1.119)
Auto Theft	−0.791	−0.289	−0.793	−0.280	−0.782	−0.321
	(0.175)	(0.230)	(0.178)	(0.236)	(0.179)	(0.256)
Larceny and Auto Theft	−0.878	−0.842	−0.880	−0.832	−0.831	−0.929
	(0.236)	(0.355)	(0.239)	(0.365)	(0.220)	(0.371)
Crimes against the Person	−1.150	−0.425	−1.148	−0.413	−1.133	−0.436
	(0.221)	(0.215)	(0.220)	(0.214)	(0.231)	(0.268)
Property Crimes	−0.899	−0.739	−0.897	−0.721	−0.837	−0.967
	(0.141)	(0.230)	(0.143)	(0.234)	(0.118)	(0.226)
All Offenses	−1.113	−0.885	−1.104	−0.847	−0.857	−1.053
	(0.210)	(0.287)	(0.208)	(0.286)	(0.304)	(0.498)

[a]The crime equation contains the following variables: constant, ln P_i, ln T_i, ln W, ln X, ln NW, ln U, ln LF, ln Age, ln $SMSA$, ln $Males$, ln Ed, $Dummy$, and ln N. The variable ln P_i is endogenous. The equation is identified by the exclusion of the following two variables: ln Exp_{59} and ln $(Q_i/N)_{59}$.
[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.
[c]Between parentheses is the standard error of the estimate. Degrees of freedom: All States—33; Vermont omitted—32; omitting Utah, Vermont, and Wisconsin—30.

TABLE 22 2SLS[a] (Weighted[b]) Estimates[c]—Basic Model, Identified by ln Exp_{59}

Crime Category	All States		Vermont Omitted		Omitting Utah, Vermont, and Wisconsin	
	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i
Murder	−0.492	−0.124	−0.497	−0.123	−0.310	−0.187
	(1.421)	(0.180)	(1.488)	(0.192)	(1.150)	(0.188)
Rape	−0.771	−0.316	−0.753	−0.306	−0.766	−0.295
	(0.556)	(0.404)	(0.547)	(0.398)	(0.468)	(0.261)
Murder and Rape	−0.830	−0.350	−0.797	−0.339	−0.881	−0.378
	(0.795)	(0.228)	(0.755)	(0.216)	(0.653)	(0.127)
Assault[d]	3.882	7.216	3.992	7.383	3.174	6.114
	(10.992)	(19.614)	(11.871)	(21.056)	(7.319)	(13.541)
Robbery	−4.223	−1.336	−4.162	−1.260	−4.258	−1.100
	(7.471)	(2.664)	(7.290)	(2.509)	(7.363)	(1.783)
Burglary	−0.445	−0.793	−0.441	−0.782	−0.515	−1.011
	(0.163)	(0.265)	(0.165)	(0.267)	(0.142)	(0.232)
Larceny	−1.441	−2.127	−1.445	−2.169	−1.557	−2.508
	(0.882)	(1.402)	(0.898)	(1.468)	(1.007)	(1.713)
Auto Theft	−0.616	−0.341	−0.841	−0.949	−0.654	−0.383
	(0.239)	(0.205)	(0.205)	(0.273)	(0.251)	(0.218)
Larceny and Auto Theft	−0.940	−1.022	−0.938	−1.013	−0.999	−1.151
	(0.326)	(0.429)	(0.330)	(0.437)	(0.357)	(0.481)
Crimes against the Person	−1.256	−0.758	−1.242	−0.730	−1.280	−0.793
	(0.608)	(0.398)	(0.594)	(0.386)	(0.610)	(0.378)
Property Crimes	−0.845	−0.964	−0.841	−0.950	−0.929	−1.216
	(0.204)	(0.270)	(0.205)	(0.273)	(0.202)	(0.278)
All Offenses	−1.021	−1.156	−1.015	−1.128	−1.069	−1.115
	(0.266)	(0.340)	(0.265)	(0.338)	(0.436)	(0.579)

[a]The crime equation contains the following variables: constant, ln P_i, ln T_i, ln W, ln X, ln NW. The equation is identified by the exclusion of ln Exp_{59} only.
[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.
[c]Between parentheses is the standard error of estimate. Degrees of freedom: All States—41; Vermont omitted—40; omitting Utah, Vermont, and Wisconsin—38.
[d]This equation is unstable, possibly due to multicollinearity.

TABLE 23 2SLS[a] (Weighted[b]) Estimates[c]—Basic Model +*LF*, *Age*, and *U*, Identified by ln Exp_{59}

Crime Category	All States		Vermont Omitted		Omitting Utah, Vermont, and Wisconsin	
	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i	ln $\hat{P}_i$	ln T_i
Murder	−4.012[d]	0.261[d]	−13.494[d]	1.265[d]	−0.622	−0.167
	(249.566)	(26.528)	(3221.25)	(341.358)	(5.534)	(0.797)
Rape	−1.281	−0.692	−1.270	−0.688	−1.183	−0.474
	(0.696)	(0.523)	(0.689)	(0.519)	(0.550)	(0.322)
Murder and Rape	−0.974	−0.380	−0.961	−0.379	−0.970	−0.386
	(0.485)	(0.191)	(0.471)	(0.187)	(0.493)	(0.156)
Assault[e]	—	—	—	—	—	—
Robbery	−1.490	−0.528	−1.495	−0.515	−1.488	−0.763
	(0.560)	(0.353)	(0.569)	(0.357)	(0.560)	(0.330)
Burglary	−0.583	−0.873	−0.582	−0.863	−0.621	−1.084
	(0.139)	(0.245)	(0.140)	(0.246)	(0.125)	(0.224)
Larceny	−1.474	−2.455	−1.473	−2.507	−1.592	−2.926
	(0.847)	(1.527)	(0.854)	(1.591)	(0.973)	(1.888)
Auto Theft	−0.825	−0.329	−0.827	−0.310	−0.843	−0.383
	(0.350)	(0.279)	(0.353)	(0.280)	(0.367)	(0.301)
Larceny and Auto Theft	−1.008	−1.248	−1.008	−1.237	−1.061	−1.471
	(0.352)	(0.528)	(0.356)	(0.537)	(0.380)	(0.602)
Crimes against the Person	−1.091	−0.655	−1.086	−0.644	−1.078	−0.751
	(0.402)	(0.312)	(0.395)	(0.306)	(0.394)	(0.320)
Property Crimes	−0.853	−0.989	−0.852	−0.975	−0.899	−1.293
	(0.179)	(0.270)	(0.180)	(0.272)	(0.162)	(0.262)
All Offenses	−1.060	−1.178	−1.060	−1.155	−0.965	−0.968
	(0.247)	(0.335)	(0.247)	(0.335)	(0.382)	(0.548)

[a]The crime equation contains the following variables: constant, ln P_i, ln T_i, ln W, ln X, ln NW, ln U, ln LF, ln Age. The equation is identified by the exclusion of ln Exp_{59} only.
[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.
[c]Between parentheses is the standard error of estimate. Degrees of freedom: All States—38; Vermont omitted—37, omitting Utah, Vermont, and Wisconsin—35.
[d]This equation is unstable, possibly due to multicollinearity.
[e]Possibly due to multicollinearity, the results obtained for assault were nonsensical.

TABLE 24 2SLS[a] (Weighted[b]) Estimates[c]—Enlarged Model, Identified by ln Exp_{59}

Crime Category	All States		Vermont Omitted		Omitting Utah, Vermont, and Wisconsin	
	ln $\hat{P}_t$	ln T_t	ln $\hat{P}_t$	ln T_t	ln $\hat{P}_t$	ln T_t
Murder[d]	2.178	−0.482	2.074	−0.462	0.963	−0.365
	(19.940)	(4.207)	(18.994)	(4.019)	(12.214)	(3.250)
Rape	−2.979	−1.240	−2.921	−1.212	−1.691	−0.368
	(6.972)	(3.276)	(6.787)	(3.189)	(1.618)	(0.488)
Murder and Rape	−2.709	−0.411	−2.619	−0.399	−1.444	−0.052
	(9.521)	(1.156)	(8.970)	(1.088)	(1.418)	(0.418)
Assault[d]	3.851	5.754	3.892	5.812	4.170	6.220
	(17.263)	(25.004)	(17.997)	(26.057)	(18:698)	(27.734)
Robbery	−1.109	−0.357	−1.112	−0.354	−1.224	−0.617
	(0.507)	(0.288)	(0.514)	(0.294)	(0.475)	(0.282)
Burglary	−0.416	−0.547	−0.416	−0.535	−0.485	−0.797
	(0.148)	(0.225)	(0.149)	(0.227)	(0.130)	(0.214)
Larceny	−1.231	−1.637	−1.237	−1.619	−1.348	−1.950
	(0.680)	(1.036)	(0.691)	(1.069)	(0.796)	(1.298)
Auto Theft	−0.650	−0.246	−0.654	−0.238	−0.660	−0.286
	(0.202)	(0.197)	(0.206)	(0.203)	(0.202)	(0.222)
Larceny and Auto Theft	−0.862	−0.828	−0.865	−0.820	−0.898	−0.990
	(0.279)	(0.373)	(0.284)	(0.383)	(0.296)	(0.432)
Crimes against the Person	−2.546	−1.006	−2.546	−0.990	−2.349	−0.718
	(3.759)	(1.637)	(3.797)	(1.642)	(2.975)	(0.916)
Property Crimes	−0.739	−0.626	−0.743	−0.611	−0.797	−0.936
	(0.154)	(0.208)	(0.156)	(0.213)	(0.148)	(0.228)
All Offenses	−1.043	−0.824	−1.049	−0.800	−0.783	−0.985
	(0.282)	(0.321)	(0.283)	(0.324)	(0.452)	(0.577)

[a]The crime equation contains the following variables: constant, ln P_t, ln T_t, ln W, ln X, ln NW, ln U, ln LF, ln Age, ln $SMSA$, ln $Males$, ln Ed, $Dummy$, and ln N. The equation is identified by the exclusion of ln Exp_{59}.

[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with N the state population size in 1960.

[c]Between parentheses is the standard error of estimate. Degrees of freedom: All States—33; Vermont omitted—32; omitting Utah, Vermont, and Wisconson—30.

[d]This equation is unstable, possibly due to multicollinearity.

TABLE 25 2SLS[a] (Weighted[b]) Estimates—Log-Linear Model[c]

Crime Category	Intercept	$\hat{P}_i$	T_i	W	X	NW
Murder	−1.204	−2.007	−0.00163	0.000262	8.991	0.0500
	(1.421)	(0.735)	(0.000920)	(0.000126)	(3.436)	(0.00797)
		[−0.929]	[−0.251]	[1.376]	[1.744]	[0.505]
Rape	−1.001	−1.920	−0.0119	0.000430	8.894	0.00767
	(1.652)	(0.436)	(0.00630)	(0.000157)	(3.898)	(0.00960)
		[−0.779]	[−0.460]	[2.259]	[1.725]	[0.0776]
Murder and Rape	0.248	−1.954	−0.00524	0.000308	7.237	0.0306
	(1.232)	(0.314)	(0.00144)	(0.000116)	(2.905)	(0.00667)
		[−0.846]	[−0.432]	[1.618]	[1.404]	[0.309]
Assault	−0.452	−9.309	−0.00921	0.000530	8.841	0.0512
	(3.927)	(5.935)	(0.0243)	(0.000371)	(8.819)	(0.0242)
		[−0.879]	[−0.238]	[2.784]	[1.715]	[0.518]
Robbery	−0.983	−10.010	−0.0114	0.000652	12.428	0.0290
	(2.072)	(1.763)	(0.00747)	(0.000202)	(4.890)	(0.0106)
		[−1.476]	[−0.453]	[3.425]	[2.411]	[0.293]
Burglary	3.661	−27.977	−0.0443	0.000349	10.741	0.0294
	(1.300)	(5.641)	(0.0111)	(0.000122)	(2.810)	(0.00825)
		[−0.949]	[−0.996]	[1.834]	[2.083]	[0.297]

Larceny	0.188 (1.174)	−9.828 (5.685) [−0.288]	−0.0224 (0.0151) [−0.424]	0.000662 (0.000116) [3.478]	11.530 (3.095) [2.237]	0.0152 (0.00815) [0.154]
Auto Theft	0.542 (1.275)	−11.773 (4.718) [−0.410]	−0.00404 (0.00804) [−0.078]	0.000539 (0.000136) [2.832]	9.580 (2.913) [1.858]	0.0118 (0.00708) [0.119]
Larceny and Auto Theft	2.729 (1.785)	−37.124 (13.243) [−1.153]	−0.0408 (0.0189) [−0.770]	0.000425 (0.000185) [2.233]	12.917 (4.158) [2.506]	0.0269 (0.0118) [0.272]
Crimes against the Person	2.309 (2.839)	−6.656 (1.835) [−1.167]	−0.00853 (0.00455) [−0.542]	0.000313 (0.000271) [1.644]	5.695 (6.330) [1.105]	0.0362 (0.0159) [0.366]
Property Crimes	3.714 (1.412)	−33.512 (7.858) [−1.201]	−0.0367 (0.0121) [−0.865]	0.000432 (0.000139) [2.270]	12.261 (3.120) [2.378]	0.0322 (0.00954) [0.325]
All Offenses	4.230 (1.460)	−24.992 (5.854) [−1.177]	−0.0390 (0.0117) [−1.038]	0.000440 (0.000132) [2.312]	10.268 (3.117) [1.992]	0.0356 (0.00928) [0.360]

[a]The model $\ln (Q_i/N) = \alpha_0 + \alpha_1 P_i + \alpha_2 T_i + \alpha_3 W + \alpha_4 X + \alpha_5 NW + \mu$ with $\ln (Q_i/N)$ and P_i endogenous. The reduced form variables are: constant, *Age*, *Dummy*, *Ed*, Exp_{25}, *X*, Males, *NW*, *N*, *SMSA*, $U_{35\text{-}39}$, *W*, $(Q_i/N)_{-1}$, and T_i. The equations are identified with the following variables: *Age*, *Dummy*, *Ed*, Exp_{25}, $(Q_i/N)_{-1}$, *Males*, *N*, *SMSA*, and $U_{35\text{-}39}$.
[b]In order to induce homoscedasticity, all variables in the regression, including the constant, are multiplied with $\sqrt{N}$, with *N* the state population size in 1960.
[c]Between parentheses are the standard errors of the estimate; between brackets are the elasticities calculated at the mean value of the right-hand-side variables. Degrees of freedom: 41.

APPENDIX D: FIGURES

The horizontal scale in all the figures in this appendix represents the code numbers of the states. These are:

Code	*State*	*Code*	*State*
1	Alabama	25	Nebraska
2	Arizona	26	Nevada
3	Arkansas	27	New Hampshire
4	California	28	New Mexico
5	Colorado	29	New York
6	Connecticut	30	North Carolina
7	Delaware	31	North Dakota
8	Florida	32	Ohio
9	Georgia	33	Oklahoma
10	Idaho	34	Oregon
11	Illinois	35	Pennsylvania
12	Indiana	36	Rhode Island
13	Iowa	37	South Carolina
14	Kansas	38	South Dakota
15	Kentucky	39	Tennessee
16	Louisiana	40	Texas
17	Maine	41	Utah
18	Maryland	42	Vermont
19	Massachusetts	43	Virginia
20	Michigan	44	Washington
21	Minnesota	45	West Virginia
22	Mississippi	46	Wisconsin
23	Missouri	47	Wyoming
24	Montana		

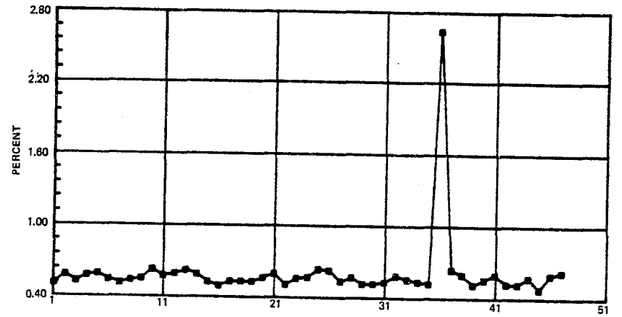

FIGURE 1 LF: labor force participation rate (uncorrected).

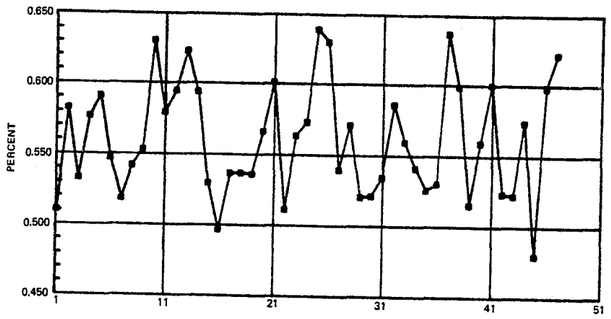

FIGURE 2 LF: labor force participation rate (corrected).

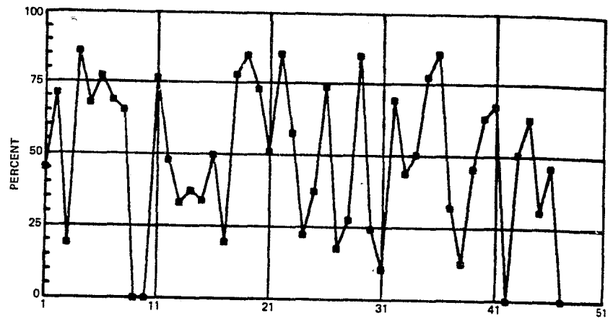

FIGURE 3 SMSA: percentage of population living in standard metropolitan statistical areas.

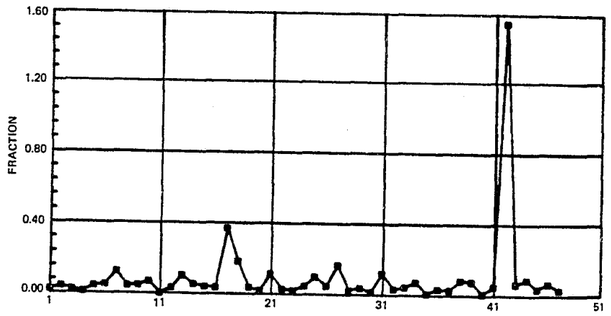

FIGURE 4 Probability of imprisonment for assault.

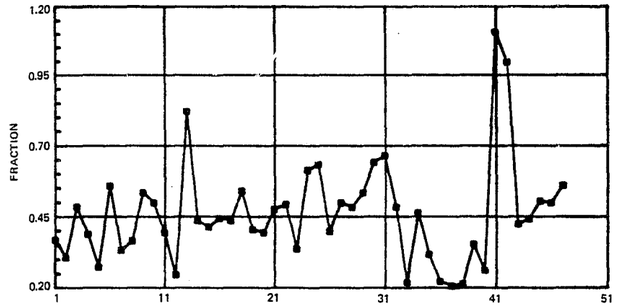

FIGURE 5 Probability of imprisonment for murder.

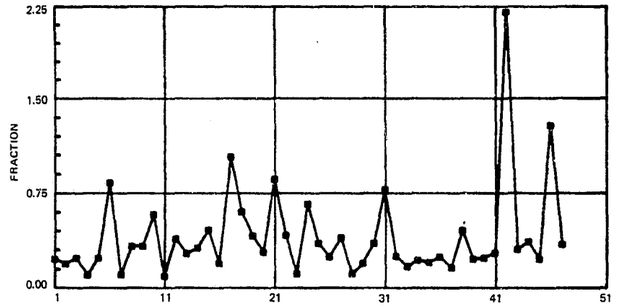

FIGURE 6 Probability of imprisonment for rape.

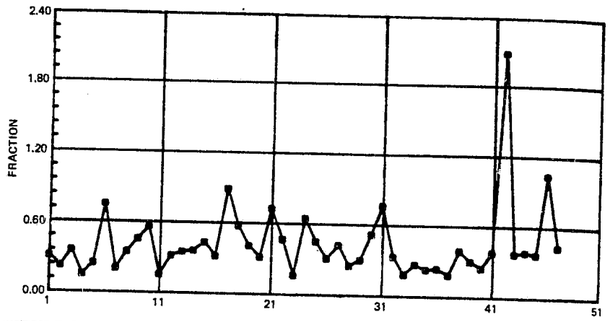

FIGURE 7 Probability of imprisonment for murder and rape.

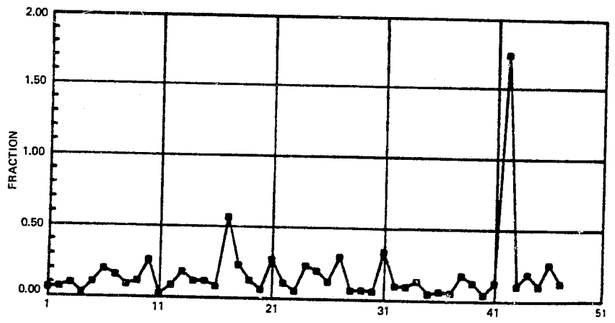

FIGURE 8 Probability of imprisonment for crimes against the person.

APPENDIX E: DATA

The data given in this appendix have been obtained by exponentiating the logarithmic transformed data. Therefore, some rounding errors were encountered.

The symbols used are those given in Appendix B. Also, the first page of Appendix D should be consulted for the code numbers. The remaining pages contain the data on the crime rate (R.), lagged crime rate (L.), probability of imprisonment (P.), and the time served (T.). The second part of each of these four symbols refers to the particular crime involved:

ALL:	All Offenses	M.RP:	Murder and Rape
ASS:	Assault	MUR:	Murder
AU:	Auto Theft	PROP:	Property Crime
BUR:	Burglary	PSON:	Crime against the Person
LAR:	Larceny	RAPE:	Rape
L.AT:	Larceny and Auto Theft	ROB:	Robbery

AGE

1	15.1001	14.3006	14.1994	13.6004
5	14.1004	12.0999	12.7	13.0998
9	15.7006	14.0006	12.4	13.4006
13	12.7994	13.5001	15.2001	14.1994
17	14.3006	13.5001	12.9994	12.4996
21	12.6	15.7006	13.1998	13.0998
25	12.9994	13.0998	13.5001	15.2001
29	11.8995	16.5999	14.0006	12.4996
33	14.6993	12.6	12.3	15.0008
37	17.7006	13.3005	14.9906	14.4993
41	14.7995	14.1004	16.1998	13.6004
45	13.9002	12.6	12.9994	

DUMMY

1	1.	0.	1.	0.
5	0.	0.	1.	1.
9	1.	0.	0.	0.
13	0.	0.	1.	1.
17	0.	1.	0.	0.
21	0.	1.	0.	0.
25	0.	0.	0.	0.
29	0.	1.	0.	0.
33	1.	0.	0.	0.
37	1.	0.	0.	0.
41	0.	0.	1.	1.
45	1.	0.	1.	0.
			0.	

ED

1	9.10023	11.3	8.90043	12.0999
5	12.0999	11.	11.0995	10.9004
9	8.99978	11.8	10.5003	10.7995
13	11.3	11.7001	8.6998	8.80042
17	11.	10.3999	11.5999	10.7995
21	10.7995	8.90043	9.60035	11.5999
25	11.5999	12.0999	10.9004	11.1998
29	10.6995	8.90043	9.29986	10.9004
33	10.3999	11.8	10.2001	10.0001
37	8.6998	10.3999	8.80042	10.3999
41	12.1996	10.9004	9.89965	12.0999
45	8.80042	10.3999	12.0999	

EXP

1	5.77016	10.3202	4.5299	14.85
5	10.8602	11.7705	8.24	11.4799
9	6.47987	7.14991	12.0504	7.54964
13	6.69995	6.24013	5.68028	8.13032
17	6.56991	12.2595	12.8302	11.2898
21	7.44022	4.68001	8.65987	7.82012
25	6.29024	15.9698	6.89986	8.24989
29	16.6299	5.78981	5.52012	8.95042
33	6.26012	9.69975	9.69005	10.8504
37	5.77016	5.12997	6.10007	8.18988
41	7.24999	5.62995	7.52026	9.50959
45	4.58	10.5698	9.04037	

EXP.59

1	5.61028	9.48964	4.36012	14.1102
5	10.0503	11.5098	7.93037	10.8797
9	6.19969	6.78015	11.5502	7.07028
13	6.02008	6.12023	5.35987	7.73999
17	6.31988	11.5098	12.8494	10.5202
21	6.71001	4.38987	8.30037	7.27977
25	5.7002	14.2906	7.09011	7.62018
29	15.6802	5.64991	5.44991	8.14008
33	9.37	9.68037	8.69024	9.82962
37	5.59011	4.65993	5.40001	7.44989
41	6.59031	5.38006	7.00974	9.63979
45	4.06982	9.65041	9.09023	

LF

1	0.510431	0.582707	0.533061	0.577088
5	0.591402	0.547491	0.51897	0.542298
9	0.553258	0.631713	0.58012	0.595282
13	0.624153	0.594818	0.529978	0.497018
17	0.537138	0.53716	0.536489	0.56689
21	0.602119	0.51156	0.564108	0.573739
25	0.640568	0.631132	0.539998	0.571432
29	0.521018	0.52143	0.534539	0.586349
33	0.559708	0.54162	0.525992	0.53089
37	0.638151	0.59929	0.515494	0.559831
41	0.601018	0.523489	0.52227	0.57425
45	0.479668	0.598811	0.623242	

MALES

1	95.0022	101.2	96.902	99.4048
5	98.5043	96.3994	98.1994	96.902
9	95.4975	102.904	96.602	97.2029
13	97.2029	98.6028	98.6028	95.6026
17	97.6998	97.7976	93.4008	98.5043
21	98.396	96.1971	95.2972	103.804
25	98.396	107.104	96.4958	101.799
29	93.8033	97.3001	104.501	96.3994
33	97.2029	98.9981	94.8029	96.3994
37	97.2975	102.401	95.2972	98.1013
41	99.8032	98.7955	99.6038	101.2
45	96.7955	98.8991	104.899	

N

1	32.6714	13.0202	17.8606	157.166
5	17.5403	25.3505	4.45978	49.5212
9	39.429	6.66987	100.806	46.6186
13	27.5802	21.7911	30.3805	32.5703
17	9.69005	31.0097	51.4906	78.2337
21	34.1411	21.7802	43.1983	6.74971
25	14.1102	2.84995	6.07025	9.50959
29	167.821	45.5586	6.31988	97.0572
33	23.2801	17.69	113.194	8.59001
37	23.8289	6.81005	35.6696	95.8035
41	8.91023	3.90009	39.6702	28.5312
45	18.6007	39.5197	3.29993	

NW

1	30.0992	10.2001	21.9003	7.99967
5	2.99996	4.39998	13.9002	17.8
9	28.5998	1.50001	10.6005	5.90028
13	1.	4.6002	7.20014	32.1014
17	0.599997	16.9998	2.4	9.39991
21	1.2	42.3005	9.19997	3.59988
25	2.6	7.69984	0.4	7.9003
29	8.90043	25.3988	2.00001	8.19972
33	9.50008	2.10001	7.59963	2.4
37	34.9005	4.00002	16.5007	12.6
41	1.89999	0.200008	20.801	3.59988
45	4.89983	2.4	2.20001	

SMSA

1	45.2997	71.4002	19.1002	86.4962
5	67.9995	77.6025	68.903	65.6016
9	0.0999999	0.0999999	76.8995	48.1008
13	33.1983	37.4011	34.1001	49.8989
17	19.6996	78.2023	85.1998	73.0979
21	51.3005	85.9014	57.89	22.5989
25	37.5998	74.2027	17.7006	27.5995
29	85.4986	24.5988	10.6005	69.4981
33	43.8994	50.4005	77.898	86.2026
37	32.2011	12.7	45.8007	63.4023
41	67.4981	0.0999999	50.9019	63.0987
45	30.9014	46.2981	0.0999999	

U

1	0.108392	0.096097	0.094043	0.102499
5	0.090754	0.083919	0.096656	0.079389
9	0.081106	0.09951	0.077027	0.083417
13	0.077181	0.077104	0.092153	0.11624
17	0.113915	0.089421	0.078004	0.130081
21	0.101571	0.096743	0.083201	0.142146
25	0.070172	0.101632	0.079516	0.103478
29	0.092098	0.071884	0.13497	0.104895
33	0.075562	0.101693	0.123836	0.087187
37	0.075888	0.098539	0.086061	0.087799
41	0.083643	0.107174	0.07316	0.110825
45	0.135187	0.077918	0.112748	

U_{35-39}

1	4.10005	3.59988	3.29993	3.90009
5	2.00001	2.89997	3.8	3.50013
9	2.79995	2.4	3.50013	3.09999
13	5.5	2.7	4.29994	4.70018
17	3.50013	3.40008	3.40008	5.80025
21	3.29993	3.40008	3.20016	4.20006
25	2.10001	4.10005	2.20001	2.79995
29	3.59988	2.6	4.00002	4.29994
33	2.4	3.50013	4.99981	3.8
37	2.79995	2.7	3.50013	3.09999
41	2.00001	3.69988	2.7	3.69988
45	5.29996	2.5	4.00002	

W

1	3937.1	5568.05	3184.02	6725.76
5	5780.24	6887.07	6196.87	4722.06
9	4207.82	5259.02	6566.26	5798.19
13	5069.01	5294.9	4050.92	4271.84
17	4873.17	6308.79	6272.31	6256.02
21	5573.06	2883.9	5127.12	5402.95
25	4861.97	6735.86	5635.83	5371.17
29	6370.92	3956.04	4530.1	6170.9
33	4619.77	5892.29	5718.72	5589.25
37	3821.12	4250.96	3948.93	4883.9
41	5898.77	4889.77	4964.16	6224.82
45	4571.97	5925.97	5876.99	

X

1	0.261192	0.194407	0.249699	0.167395
5	0.173705	0.125795	0.168099	0.205893
9	0.238998	0.1736	0.170095	0.171804
13	0.206202	0.189607	0.2635	0.246893
17	0.166294	0.165497	0.135498	0.165995
21	0.154401	0.276208	0.226502	0.175608
25	0.196204	0.152103	0.139206	0.21509
29	0.153893	0.236502	0.194808	0.163197
33	0.232608	0.166194	0.157804	0.152896
37	0.253701	0.225102	0.250599	0.227592
41	0.143704	0.169908	0.224495	0.161605
45	0.2491	0.171307	0.160301	

R.ALL

1	791.318	1634.51	577.611	1969.43
5	1233.61	681.502	963.334	1554.64
9	856.111	704.579	1673.71	849.289
13	511.323	663.879	797.674	945.676
17	539.099	929.271	750.47	1224.76
21	742.186	438.605	1215.85	968.356
25	523.219	1993.21	542.201	1215.97
29	1043.05	695.896	372.71	754.081
33	1072.34	922.789	653.407	1272.07
37	830.56	565.777	825.839	1150.56
41	880.069	542.398	823.036	1029.99
45	455.183	508.111	849.119	

R.ASS

1	123.396	119.403	57.5987	118.997
5	40.0008	21.6001	21.501	106.901
9	98.7015	14.7996	126.204	36.1003
13	8.60033	29.0001	50.5013	78.6966
17	10.7995	88.5972	19.4005	94.8029
21	10.2995	65.8975	60.6003	24.2012
25	16.4003	50.5013	4.89983	88.7036
29	73.5011	184.694	5.20021	32.9009
33	35.4988	26.0001	49.2003	19.1998
37	100.605	15.8997	50.2998	110.598
41	25.7002	4.6002	102.197	15.4005
45	34.5014	16.3006	37.9019	

R.AU

1	87.3044	338.39	45.9981	326.588
5	213.791	129.697	161.305	187.598
9	147.393	100.003	353.294	159.605
13	75.9975	87.1996	124.499	190.395
17	117.801	184.104	211.093	177.505
21	136.702	48.2985	184.805	243.496
25	129.399	391.897	57.8007	256.39
29	177.505	77.9993	67.9995	134.599
33	193.098	130.699	120.602	308.709
37	104.7	86.6	121.498	162.195
41	158.793	86.9036	120.097	158.001
45	69.4009	104.397	114.801	

R.BUR

1	349.813	685.467	272.598	910.506
5	569.922	333.386	552.802	807.062
9	392.094	301.388	577.726	428.118
13	231.204	353.683	371.111	387.3
17	245.501	366.391	309.204	589.397
21	349.289	204.601	595.201	396.391
25	231.505	913.515	182.6	454.502
29	335.896	258.501	198.006	344.399
33	523.376	405.694	295.096	510.505
37	576.004	247.894	462.71	596.592
41	410.587	242.112	346.298	487.505
45	234.206	198.601	299.885	

R.L.AT

1	269.589	753.328	205.203	820.571
5	528.689	311.5	339.917	540.99
9	321.212	365.001	738.484	342.51
13	256.288	254.5	331.093	417.214
17	268.191	424.41	395.282	451.195
21	351.215	137.896	450.519	509.179
25	250.911	933.835	146.306	634.984
29	580.39	218.11	160.501	327.602
33	453.82	447.51	265.098	724.876
37	311.407	285.402	271.999	294.217
41	415.382	280.78	331.989	488.09
45	165.108	280.788	446.214	

R.LAR

1	182.308	414.884	159.206	493.983
5	314.914	181.799	178.591	353.4
9	173.799	264.992	385.214	182.893
13	180.296	167.302	206.603	226.807
17	150.4	240.303	184.196	273.691
21	214.498	89.604	265.709	265.709
25	125.499	541.91	88.4998	378.607
29	402.905	140.106	92.4992	193.002
33	260.708	316.809	144.503	416.214
37	206.706	108.8	150.506	231.991
41	256.595	203.894	211.897	330.102
45	95.6983	176.408	331.391	

R.M.RP

1	20.9995	22.1005	17.4005	22.1005
5	17.2999	5.7002	15.0008	18.6996
9	19.4005	9.60035	22.4996	8.99978
13	4.29994	7.9003	12.0999	16.8998
17	6.69995	12.6	6.19969	16.5999
21	3.59988	15.2001	18.9007	11.
25	6.49999	21.4002	5.40001	19.1002
29	9.19997	17.6	2.7	9.10023
33	20.2996	11.8	10.9004	3.29993
37	22.5989	7.49998	13.9002	18.0005
41	7.79982	2.6	17.1998	7.9003
45	8.60033	4.10005	11.8	

R.MUR

1	12.4	6.00024	8.50028	3.90009
5	4.20006	1.59999	6.69995	10.6005
9	11.8995	2.4	4.89983	4.29994
13	0.599997	2.89997	6.69995	8.30037
17	1.7	5.40001	1.4	4.29994
21	1.2	10.0001	4.39998	3.90009
25	2.3	8.80042	1.29999	7.20014
29	2.89997	10.0001	0.499999	3.20016
33	7.49998	2.4	2.6	1.
37	13.1998	2.10001	8.50028	8.60033
41	1.	0.299992	10.0001	2.10001
45	4.39998	1.29999	4.79992	

R.PROP

1	646.906	1492.94	502.603	1828.41
5	1176.27	654.192	926.765	1428.96
9	737.968	680.209	1524.93	804.162
13	498.398	626.971	735.095	850.139
17	521.599	828.072	724.876	1113.43
21	728.291	357.487	1136.26	933.182
25	500.296	1921.38	331.889	1108.21
29	960.256	493.588	364.782	712.087
33	1016.48	885.011	593.3	1249.63
37	707.402	542.398	761.583	1021.98
41	846.576	535.178	703.593	1006.67
45	412.114	487.7	799.431	

R.PSON

1	144.402	141.5	75.0009	141.104
5	57.3	27.3004	36.4995	125.6
9	118.096	24.4004	148.695	45.1008
13	12.8997	36.8996	62.6022	95.6026
17	17.5	101.2	25.6002	111.397
21	13.9002	81.1014	79.5034	35.1984
25	22.8992	71.9017	10.2995	107.802
29	82.6984	202.31	7.9003	42.0013
33	55.8015	37.7997	60.0994	22.4996
37	123.199	23.3992	64.1998	128.599
41	33.4985	7.20014	119.403	23.3011
45	43.099	20.3993	49.6998	

R.RAPE

1	8.60033	16.0997	8.90043	18.1996
5	13.0998	4.10005	8.30037	8.10029
9	7.49998	7.20014	17.6	4.70018
13	3.69988	4.99981	5.40001	8.60033
17	4.99981	7.20014	4.79992	12.3
21	2.4	5.20021	14.4993	7.10004
25	4.20006	12.6	4.10005	11.8995
29	6.29969	7.59963	2.20001	5.90028
33	12.7994	9.39991	8.30037	2.3
37	9.39991	5.40001	5.40001	9.39991
41	6.79984	2.3	7.20014	5.80025
45	4.20006	2.79995	6.99993	

R.ROB

1	27.5004	54.201	24.7989	97.3001
5	77.7034	9.29986	34.1001	80.8989
9	24.6999	13.8004	208.805	33.5991
13	10.9004	18.8008	32.9009	45.5996
17	7.9003	37.3003	20.3993	72.7988
21	27.799	14.9006	90.6042	27.5995
25	17.9	74.0026	2.99996	38.6985
29	44.0004	16.9998	6.29969	40.1009
33	39.299	31.8011	33.0989	14.1994
37	19.9994	9.10023	26.8993	31.0997
41	20.801	2.3	25.2999	31.0997
45	12.7994	8.30037	53.298	

L.ALL

1	750.32	1500.27	558.917	1635.82
5	1184.17	630.87	869.223	1386.03
9	807.788	657.602	1284.85	775.882
13	467.08	629.987	751.897	701.976
17	478.617	893.816	708.111	1077.18
21	593.3	420.397	1018.82	863.678
25	448.317	1915.82	470.502	1170.17
29	962.564	652.884	336.905	656.879
33	863.16	819.423	655.895	1058.17
37	772.012	597.707	821.473	1026.9
41	827.079	366.61	768.315	957.955
45	456.779	428.504	762.117	

L.ASS

1	111.097	93.5971	51.3005	107.404
5	38.7992	25.5005	21.2	116.106
9	101.697	18.6996	91.3958	30.9014
13	8.39973	29.3004	45.3995	46.6
17	12.0999	87.8033	19.4005	89.3982
21	8.10029	82.9967	75.8987	17.8
25	12.7	38.6985	4.79992	58.7975
29	75.8001	182.199	5.40001	31.3998
33	32.2011	21.7998	54.0009	27.0991
37	113.795	14.0006	56.1991	106.997
41	25.8989	2.6	102.105	14.0006
45	31.5004	15.7998	51.5009	

L.AU

1	96.3994	378.115	53.2022	286.689
5	227.102	103.296	171.297	181.708
9	141.698	113.5	281.998	154.996
13	70.0984	80.3025	139.198	161.499
17	102.802	191.502	209.6	175.792
21	115.804	41.0011	170.699	193.098
25	102.596	317.793	73.5967	319.514
29	164.104	71.4002	59.6981	126.697
33	138.297	123.804	116.501	264.595
37	83.4961	100.303	135.694	167.603
41	159.206	75.0984	120.001	170.
45	75.3015	106.399	114.801	

L.BUR

1	321.887	572.378	264.701	718.812
5	539.693	314.191	462.617	701.135
9	351.215	275.311	445.011	382.298
13	219.708	325.903	341.894	283.298
17	219.796	320.794	287.493	509.994
21	271.7	179.092	468.811	351.286
25	202.593	958.625	279.5	418.593
29	302.506	254.195	174.6	287.407
33	391.584	360.9	308.493	442.792
37	343.608	253.991	437.817	489.997
41	368.485	208.096	346.298	445.991
45	225.09	178.895	300.185	

L.L.AT

1	271.103	765.631	199.497	713.869
5	516.306	273.308	348.417	488.481
9	304.387	344.812	594.309	325.805
13	225.405	241.701	324.407	323.209
17	232.293	432.811	379.1	401.698
21	290.586	127.702	385.793	458.793
25	212.597	786.977	173.799	641.175
29	532.19	184.491	147.895	295.007
33	397.184	398.099	248.589	565.212
37	278.495	306.403	287.091	380.391
41	404.884	152.796	331.989	462.71
45	177.097	243.691	446.616	

L.LAR

1	174.705	387.494	146.306	427.22
5	289.195	170.	177.097	306.801
9	162.699	231.296	312.311	170.801
13	155.306	161.402	185.193	161.693
17	129.502	241.29	169.508	225.902
21	174.793	86.704	215.099	265.709
25	110.002	469.186	100.203	321.694
29	368.116	115.103	88.1994	168.292
33	258.889	274.294	132.105	300.606
37	195.	206.108	151.396	212.81
41	245.697	77.7034	212.003	292.686
45	101.799	137.304	331.789	

L.M.RP

1	21.2	20.3993	18.1996	21.9003
5	17.1998	4.39998	11.3	18.6996
9	24.0011	7.40015	16.6999	8.80042
13	4.39998	8.39973	12.0999	12.0999
17	5.80025	11.4995	5.7002	15.4994
21	3.29993	16.8004	15.4994	11.8995
25	8.50037	24.9008	5.7002	14.5997
29	9.19997	17.1004	4.20006	8.6998
33	17.7006	10.5003	11.7001	2.99996
37	20.899	8.30037	13.6004	18.8008
41	8.99978	1.80001	16.0997	8.10029
45	10.3999	4.20006	11.3	

L.MUR

1	12.8997	5.20021	10.3999	3.29993
5	5.40001	1.29999	4.10005	10.2001
9	13.4006	2.3	4.5001	3.40008
13	1.4	2.4	5.29996	5.7002
17	1.50001	4.39998	1.2	4.20006
21	1.	11.3999	5.80025	4.00002
25	2.79995	7.79982	2.7	6.00024
29	2.99996	8.90043	0.499999	3.20016
33	6.69995	2.20001	2.5	0.900001
37	12.1996	2.10001	6.99993	9.60035
41	1.	0.499999	8.80042	1.89999
45	4.39998	1.1	4.29994	

L.PROP

1	618.131	1386.17	489.41	1506.43
5	1128.22	600.883	836.729	1251.25
9	682.116	631.628	1176.74	736.198
13	454.092	592.529	694.575	643.293
17	460.817	794.49	683.072	972.334
21	581.785	320.698	927.414	833.889
25	427.391	1852.15	459.988	1096.74
29	877.608	453.593	327.308	616.773
33	813.3	787.135	590.282	1028.03
37	637.21	575.305	751.823	900.995
41	792.11	362.201	703.593	935.892
45	415.092	430.394	800.39	

L.PSON

1	132.304	114.	69.4981	129.295
5	56.0027	29.9012	32.4987	134.801
9	125.7	26.0991	108.105	39.702
13	12.7994	37.7015	57.5009	58.6977
17	17.9	99.2954	25.1008	104.899
21	11.3999	99.8032	91.3958	29.6986
25	20.9995	63.5992	10.5003	73.3983
29	85.0042	199.298	9.60035	40.1009
33	49.8989	32.301	65.7	30.0992
37	134.693	22.3003	69.7976	125.801
41	34.9005	4.39998	118.203	22.1005
45	41.9006	19.9994	62.8028	

L.RAPE

1	8.30037	15.2001	7.79982	18.6007
5	11.8	3.09999	7.20014	8.50028
9	10.6005	5.09979	12.1996	5.40001
13	2.99996	6.00024	6.79984	6.40001
17	4.29994	7.10004	4.5001	11.3
21	2.3	5.40001	9.69975	7.9003
25	5.49974	17.1004	2.99996	8.60033
29	6.19969	8.19972	3.69988	5.49974
33	11.	8.30037	9.19997	2.10001
37	8.6998	6.19969	6.6002	9.19997
41	7.99967	1.29999	7.30019	6.19969
45	6.00024	3.09999	6.99993	

L.ROB

1	25.1008	48.202	25.1989	73.8031
5	72.1971	13.4006	25.7002	61.6023
9	26.4988	11.4995	137.401	28.1009
13	8.99978	24.9008	28.3011	36.8001
17	8.6998	40.8988	16.5007	60.6003
21	19.4997	13.9002	72.7988	23.8003
25	12.1996	106.602	6.69995	36.8996
29	42.9012	14.9006	4.79992	34.4015
33	24.5007	28.1009	33.1983	19.9994
37	15.1001	14.9006	26.8993	30.6
41	18.6996	1.29999	25.2999	27.1995
45	12.8997	7.79982	53.5974	

P.ALL

1	0.084602	0.029599	0.083401	0.015801
5	0.041399	0.034201	0.0421	0.040099
9	0.071697	0.044498	0.015201	0.031201
13	0.045302	0.0532	0.0691	0.052099
17	0.076299	0.119804	0.019099	0.034801
21	0.0228	0.089502	0.0307	0.041598
25	0.069197	0.041698	0.030099	0.038201
29	0.0234	0.075298	0.041999	0.042698
33	0.049499	0.040799	0.0207	0.0069
37	0.045198	0.053998	0.047099	0.038801
41	0.0251	0.088904	0.054902	0.0281
45	0.056202	0.046598	0.052802	

P.ASS

1	0.0226	0.043101	0.0233	0.0105
5	0.047	0.052897	0.125005	0.0465
9	0.0491	0.070701	0.0039	0.0333
13	0.101703	0.057	0.044401	0.036301
17	0.371398	0.187196	0.039999	0.020101
21	0.116799	0.031401	0.024101	0.0491
25	0.099103	0.048602	0.166693	0.026101
29	0.039601	0.0189	0.121202	0.037202
33	0.047198	0.073903	0.0106	0.0364
37	0.029599	0.083301	0.079198	0.0109
41	0.052403	1.5556	0.0643	0.0913
45	0.039	0.068303	0.032001	

P.AU

1	0.0491	0.0325	0.065802	0.0085
5	0.033101	0.018201	0.030599	0.0364
9	0.087598	0.027	0.0072	0.022199
13	0.0749	0.051602	0.054498	0.0184
17	0.0289	0.019799	0.0059	0.0252
21	0.016901	0.097999	0.0232	0.021301
25	0.0362	0.050102	0.0085	0.052099
29	0.01	0.088602	0.032601	0.037299
33	0.020199	0.035901	0.0091	0.0008
37	0.0309	0.017001	0.041798	0.018
41	0.019099	0.056	0.029399	0.0297
45	0.0248	0.028799	0.1029	

P.BUR

1	0.0628	0.018701	0.0708	0.0081
5	0.029101	0.025699	0.036502	0.025499
9	0.060199	0.041798	0.0136	0.024299
13	0.0224	0.038898	0.044498	0.051401
17	0.055899	0.057602	0.011599	0.019799
21	0.013101	0.062599	0.022199	0.035098
25	0.054199	0.027201	0.0307	0.022999
29	0.011799	0.078402	0.0304	0.0516
33	0.040498	0.0307	0.0156	0.008
37	0.0323	0.0362	0.0211	0.0299
41	0.0186	0.0434	0.042299	0.017799
45	0.0491	0.034701	0.035402	

P.L.AT

1	0.079803	0.0221	0.070397	0.0061
5	0.0242	0.0133	0.021801	0.0258
9	0.044299	0.0246	0.0048	0.019
13	0.037501	0.035402	0.055498	0.028699
17	0.040401	0.071999	0.0061	0.0304
21	0.0163	0.088204	0.023899	0.024699
25	0.0345	0.031902	0.0101	0.029801
29	0.0111	0.058601	0.025599	0.0251
33	0.039199	0.023499	0.0085	0.0006
37	0.027201	0.0335	0.050701	0.028201
41	0.012699	0.038801	0.031201	0.024101
45	0.0384	0.018701	0.042801	

P.LAR

1	0.094496	0.013699	0.071697	0.0045
5	0.018101	0.0098	0.0138	0.020199
9	0.0079	0.023799	0.0027	0.016201
13	0.021701	0.026901	0.056101	0.037399
17	0.0494	0.112096	0.0063	0.0338
21	0.015801	0.083001	0.024399	0.027901
25	0.032699	0.0188	0.0112	0.0147
29	0.011599	0.041798	0.020501	0.016599
33	0.0532	0.0184	0.0081	0.0006
37	0.0254	0.040701	0.057902	0.035299
41	0.0088	0.031401	0.0322	0.021501
45	0.048301	0.0128	0.021899	

P.M.RP

1	0.312985	0.226502	0.36009	0.154201
5	0.248304	0.756903	0.209004	0.351587
9	0.458699	0.562502	0.161395	0.322195
13	0.35289	0.364182	0.4348	0.320588
17	0.8906	0.5765	0.411799	0.317112
21	0.731703	0.469701	0.166693	0.648599
25	0.456498	0.311486	0.4242	0.254107
29	0.303189	0.5194	0.764701	0.334105
33	0.188209	0.272695	0.229099	0.2414
37	0.189191	0.392201	0.306512	0.251503
41	0.385698	2.10001	0.375401	0.387701
45	0.371101	1.044	0.435901	

P.MUR

1	0.369502	0.307709	0.486801	0.389602
5	0.274008	0.561002	0.333304	0.366191
9	0.537299	0.499999	0.3947	0.247511
13	0.823501	0.437499	0.4146	0.4444
17	0.437499	0.541702	0.4054	0.395201
21	0.476199	0.4954	0.338612	0.615402
25	0.636399	0.4	0.499999	0.485299
.1	0.536499	0.642499	0.666697	0.485498
3	0.218406	0.465101	0.31851	0.222195
7	0.207008	0.214295	0.354304	0.263105
41	1.1111	1	0.4253	0.442599
45	0.506202	0.499999	0.562502	

P.PROP

1	0.072898	0.021899	0.076002	0.0096
5	0.031701	0.022299	0.035299	0.029299
9	0.059701	0.032801	0.012399	0.0237
13	0.0343	0.041798	0.055001	0.0441
17	0.050002	0.073498	0.0128	0.027299
21	0.016201	0.077398	0.0264	0.031101
25	0.049302	0.035	0.025299	0.030101
29	0.015801	0.075103	0.0321	0.0335
33	0.0424	0.029599	0.0155	0.0046
37	0.031201	0.036301	0.0352	0.0325
41	0.0184	0.043101	0.041598	0.0229
45	0.0485	0.0281	0.040901	

P.PSON

1	0.064803	0.071697	0.101601	0.033002
5	0.107604	0.199408	0.159502	0.092098
9	0.116205	0.263791	0.027701	0.0009
13	0.185909	0.122996	0.1199	0.086397
17	0.568002	0.235793	0.130798	0.0643
21	0.276402	0.113302	0.057902	0.236289
25	0.200609	0.126806	0.301586	0.066298
29	0.068797	0.062399	0.340003	0.1015
33	0.0985	0.136	0.050297	0.066997
37	0.058901	0.182391	0.128401	0.044498
41	0.130406	1.75001	0.109099	0.192492
45	0.104999	0.261505	0.128003	

P.RAPE

1	0.231309	0.196204	0.238998	0.103498
5	0.240196	0.835003	0.1081	0.332505
9	0.333304	0.583302	0.097004	0.3917
13	0.274501	0.321101	0.460101	0.200709
17	1.0417	0.602697	0.413702	0.289993
21	0.864201	0.419601	0.114796	0.666697
25	0.355902	0.248998	0.4	0.115003
29	0.197899	0.356508	0.7857	0.251704
33	0.170606	0.229907	0.201493	0.249999
37	0.164392	0.425998	0.232004	0.240797
41	0.278705	2.22221	0.306603	0.367512
45	0.230801	1.2936	0.34781	

P.ROB

1	0.132496	0.059499	0.178298	0.052502
5	0.101297	0.199209	0.151299	0.089896
9	0.253599	0.054502	0.0356	0.065102
13	0.209297	0.182903	0.168807	0.123304
17	0.194796	0.245293	0.159693	0.068797
21	0.0547	0.1821	0.066198	0.091401
25	0.193709	0.170606	0.4444	0.114098
29	0.107496	0.238401	0.249999	0.118304
33	0.104999	0.103003	0.069697	0.082003
37	0.073402	0.129005	0.120706	0.136997
41	0.129704	0.555598	0.168301	0.085803
45	0.168099	0.186504	0.056801	

T.ALL

1	26.2011	25.2999	24.3006	29.9012
5	21.2998	20.9995	20.6993	24.5988
9	29.4001	19.5994	41.6	34.2984
13	36.2993	21.501	22.7008	26.0991
17	19.1002	18.1996	24.9008	26.401
21	37.5998	37.0994	25.1989	17.6
25	21.9003	22.1005	28.4999	25.8006
29	36.7009	28.3011	21.7998	30.9014
33	25.5005	21.6997	37.4011	44.0004
37	31.6995	16.6999	27.3005	29.3004
41	30.0001	12.1996	31.9999	30.0001
45	32.5996	16.6999	16.0997	

T.ASS

1	27.5995	20.3993	22.7008	34.1991
5	21.501	16.4003	13.0998	21.2998
9	23.3992	16.0002	45.2997	40.1009
13	29.4001	26.7999	25.7002	22.4996
17	11.9999	12.4	21.6997	25.7002
21	27.798	27.8992	37.4985	28.7001
25	26.3008	16.3006	12.3	29.3004
29	31.3998	22.3988	18.3	28.1009
33	15.8997	19.5994	26.999	63.803
37	26.3008	23.9005	29.0001	38.2981
41	38.7992	13.5001	21.7998	37.4985
45	35.4988	18.9007	14.3996	

T.AU

1	22.2002	18.3	7.99967	22.3003
5	9.89965	16.6999	10.0001	20.6995
9	20.2996	18.9993	33.7001	24.9008
13	27.0991	24.5988	13.3005	17.7006
17	10.0001	12.1996	17.1004	17.6
21	23.3011	22.2002	18.5005	7.49998
25	20.3993	18.3	18.9998	25.0006
29	29.3004	15.2001	18.6996	24.2012
33	23.9005	12.0999	26.0001	23.5
37	7.9003	25.0006	27.0991	19.4997
41	28.4999	7.99967	19.4997	23.2011
45	29.4001	15.4005	17.4005	

T.BUR

1	22.7008	20.2003	23.5	26.8993
5	16.3007	17.2999	14.9006	23.5989
9	26.999	16.3006	30.7995	29.7997
13	34.6016	21.2998	18.4009	22.8009
17	15.4994	18.9007	20.2003	22.2002
21	25.2999	27.3004	20.899	13.9002
25	21.4002	16.6999	21.2998	22.4009
29	33.7001	22.4009	16.3006	25.3988
33	21.2998	18.9007	32.4014	24.7989
37	29.5003	14.3006	29.4001	25.7002
41	24.3006	13.0998	30.1987	26.0001
45	25.0006	16.6999	15.2001	

T.L.AT

1	20.899	18.9993	15.4005	22.7008
5	12.6	16.6999	10.2995	19.9994
9	20.2996	18.0998	31.8998	25.3988
13	26.401	20.6993	12.8997	18.0998
17	10.6005	11.0995	16.9998	18.9007
21	24.7989	21.2	16.3006	10.9004
25	18.5005	17.6	5.7002	23.9005
29	27.1995	16.0997	19.1002	23.5
33	15.8997	14.1004	27.0991	22.1005
37	16.5007	15.4994	20.2996	19.9994
41	27.5995	6.99993	23.0992	23.5
45	27.8992	15.3007	16.6999	

T.LAR

1	20.6002	20.2996	17.4005	23.2011
5	16.0002	16.8004	10.9004	19.1002
9	20.6002	17.7006	27.3988	26.0001
13	25.2999	16.8998	12.7	18.3
17	10.9004	10.9004	16.8998	19.4997
21	25.8989	20.6002	14.7996	13.3005
25	15.4003	16.9998	16.9998	21.1006
29	26.401	17.1998	19.5994	22.4996
33	13.7001	15.7006	28.1009	20.6993
37	21.7998	13.8004	16.4003	20.2003
41	26.4988	6.29969	25.0006	23.7006
45	27.3004	15.2001	15.6705	

T.M.RP

1	78.5001	86.2974	64.0011	67.3027
5	79.5034	65.7987	80.6001	61.1971
9	95.2019	36.5983	126.697	99.0971
13	122.095	73.2003	87.6981	64.3026
17	55.902	56.7014	65.3005	71.4002
21	101.099	101.504	83.196	62.2028
25	98.2977	56.098	74.4033	77.7968
29	138.795	92.601	50.6987	133.7
33	124.499	69.7	65.3985	96.902
37	166.801	71.9017	92.2959	66.5997
41	101.697	49.6998	73.6998	68.903
45	85.3461	27.6991	102.197	

T.MUR

1	89.604	139.798	75.6033	93.7002
5	198.006	222.294	109.596	74.4033
9	106.901	126.204	196.099	178.306
13	272.19	139.7	114.4	78.6022
17	303.809	77.2001	185.991	140.597
21	354.391	122.904	117.202	101.301
25	163.4	65.0984	206.706	97.6998
29	216.61	111.598	235.993	217.892
33	214.305	118.404	115.7	250.51
37	207.203	283.496	100.003	65.2026
41	208.701	210.103	84.5041	97.3975
45	94.8029	97.6022	181.	

T.PROP

1	25.5005	21.2998	21.6997	29.6986
5	17.9	18.0005	17.2999	25.8003
9	26.2011	17.8	36.8001	32.7991
13	32.9998	23.5989	19.4997	23.0992
17	14.3006	18.6007	21.9991	22.8992
21	28.1994	26.701	23.3011	13.7001
25	23.0001	18.0998	19.9994	24.4004
29	35.3006	22.1005	18.4009	27.6991
33	22.1005	18.6996	33.8995	26.701
37	25.1989	14.7996	27.9999	26.999
41	29.6008	10.5003	31.5004	27.0991
45	29.0001	16.8998	19.1002	

T.PSON

1	63.4023	52.8998	56.7014	58.3991
5	61.7998	55.4011	49.4024	44.1018
9	69.7976	33.1983	116.898	81.8018
13	98.4025	56.3003	69.2	49.7993
17	78.0994	50.8989	55.3015	59.1687
21	78.1008	64.9022	68.6966	57.3975
25	72.7988	45.3995	58.102	62.0972
29	85.8978	74.597	43.999	103.4
33	91.3958	50.9987	58.7975	81.5976
37	109.104	57.0028	61.701	60.6973
41	82.3024	29.0001	47.4986	59.0982
45	70.5979	25.8989	85.4986	

T.RAPE

1	38.9002	45.8007	36.2993	45.7001
5	32.4014	19.1998	7.99967	36.8001
9	53.3994	42.3005	50.8002	78.6022
13	44.7997	19.5994	41.3015	27.8992
17	23.3011	36.4011	27.799	35.3996
21	32.9009	41.6	44.7997	40.5988
25	30.7012	55.4011	23.7006	31.8998
29	45.5996	45.2997	16.5999	38.9002
33	43.7985	47.5984	40.1009	35.4988
37	63.1998	32.1014	66.1021	48.202
41	38.0005	26.0006	41.4008	49.2003
45	59.6981	15.8997	14.3006	

T.ROB

1	70.0984	37.1997	34.5014	40.6013
5	29.6008	23.9005	36.4995	31.3998
9	36.4011	38.6019	43.5996	68.903
13	57.0997	40.6013	44.7012	34.6986
17	28.5998	43.099	27.5995	35.7983
21	49.4024	48.2985	41.4008	26.0991
25	40.2013	21.501	30.4992	30.9014
29	47.6985	39.0015	24.3006	40.1009
33	53.1012	32.7008	43.6019	34.9983
37	58.6	12.1996	56.0027	50.9019
41	48.701	18.9993	58.2977	46.4
45	53.298	23.0001	48.2985	

END