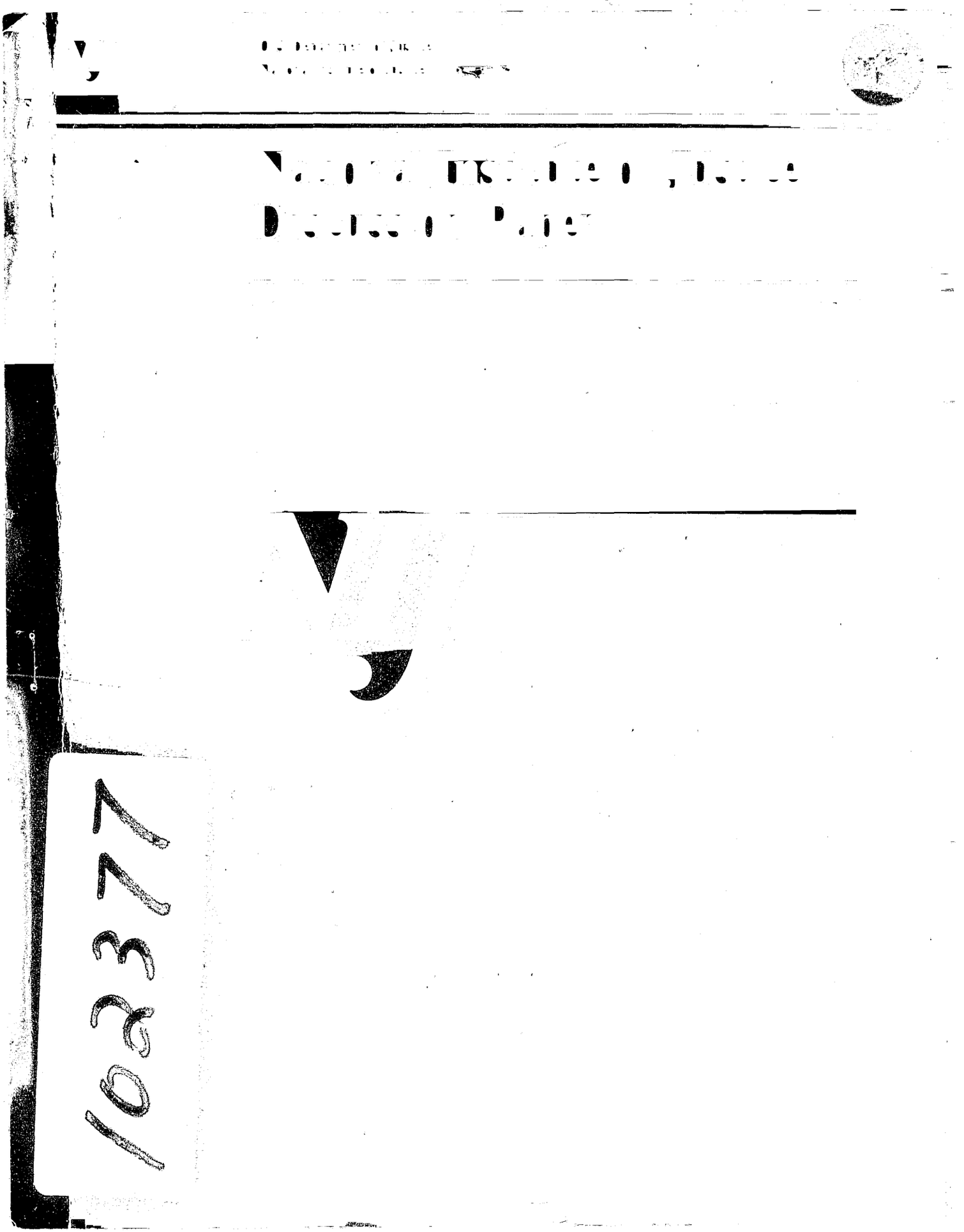

Cohort Criminality: An Exploratory Analysis of Age Group Crime Trends

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Discussion Paper 2-85

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ABSTRACT

Crime and arrest statistics from the FBI's Uniform Crime Reports were combined with Bureau of the Census population statistics to produce indicators of crime trends over the period 1963 - 1983. These indicators were used to explore the effects of changing age composition in the United States on crime rates and to assess the changes in criminality that occurred in specific age groups, particularly youth populations. These assessments were exploratory in that they helped explain why crime rates changed but offered little insight into why criminality changed as it did.

Two principal findings were reached:

(1) Crime grew over the 1963 - 1983 period because of a growth in criminal tendencies across all ages, not just among youth populations. Youth propensities for violence grew more rapidly than adult propensities, but growth in property crime rates was nearly constant across all ages.

(2) Changes in age composition exerted small and gradual effects on crime trends over the twenty year period. Changes in criminal propensities accounted for the majority of growth in serious crime.

The paper concludes with an examination of trends in other social indicators that are often associated with crime.

INTRODUCTION

American crime rates, as reported in the FBI's Uniform Crime Reports (UCRs), increased rapidly over the 1960's through the 1970's. The FBI's Part I crime rate index stood at 1.9 per 100 inhabitants in 1961 and peaked at 5.9 in 1980. These long-term trends reversed in 1981 when the crime index dropped to 5.8; it fell lower to 5.2 by 1983. The two components of the total crime index, violent and property crimes, exhibited similar patterns to that of overall crime.

Table 1. Index of Crime, United States 1961-1983*
Rate per 100,000 Inhabitants

Year	Total	Violent	Property
61	1,906.1	158.1	1,747.9
63	2,180.3	168.2	2,012.1
65	2,449.0	200.2	2,248.8
67	2,989.7	253.2	2,736.5
69	3,680.0	328.7	3,351.3
71	4,164.7	396.0	3,768.8
73	4,154.4	417.4	3,737.0
75	5,281.7	481.5	4,800.2
77	5,062.0	468.4	4,593.6
79	5,548.1	540.2	5,007.9
80	5,931.3	587.3	5,344.0
81	5,841.0	585.0	5,265.0
82	5,596.1	562.1	5,024.0
83	5,158.6	529.1	4,629.5

*From 1975 and 1983 Uniform Crime Reports, Table 2.

Population growth declined concurrently with the downturn in crime rates. Annual population growth averaged 11.6 per 1,000 population between 1960 and 1980; yet from 1980 through 1983, the average annual growth rate per thousand dropped to 9.9. This decline supported arguments that demographic factors were significant contributors to the current decline in crime rates.

Blumstein, Cohen and Miller (1980), for instance, forecasted future prisoner populations by demographically-based projections of crime rates. Yet the extent to which population composition impacts crime rates appears to be relatively small.[1]

Demographics are not the only relevent trends, however. At the same time crime rates started dropping and population growth declined, sentencing policy in the United States stiffened. The number of prisoners held in state and federal institutions had fallen from 213.0 thousand in 1960, to a low point in 1970 at 196.4 thousand. But by 1980, the number of prisoners had risen to 316.0 thousand and within the next three years the number climbed to 417.7 thousand, reflecting a higher probability of imprisonment. Perhaps high risks of imprisonment better explain why the crime rate fell.

This paper presents an exploratory analysis of how the criminality of specific age groups changed over a period of time and what socioeconomic factors contributed to the recent downtrend in crime rates. The reason for exploring these trends is to identify significant variations in criminal tendencies of age groups over time and to determine whether specific cohorts were more criminal than others. Some possible attributions of this criminal behavior to demographic and socioeconomic factors are explored.

DATA AND METHODOLOGY

Data used in this analysis consisted of annual national arrest and crime statistics for Part I crimes[2] covering the years 1963-1983.[3] Population figures were gathered from reports published by the Bureau of the Census.[4] Criminality trends investigated in this paper were measured by (1) the percent of Part I crimes attributable to each age group F and (2) age group crime commission rates L. The former measure assessed the relative involvement of various age groups in crime. The latter measure assessed age group criminality for each year while controlling for the effect of changes in populational sizes.

Separate attributions were performed for violent and property[5] crimes for each year. Violent and property arrest statistics were aggregated into 5-year intervals for ages 10 to 49, plus an interval for over-50-year olds. Arrests for youths under 10 were combined into the 10 - 14 group. Intervals could be collapsed further, if desired, into youth and adult components. For each year, the total number of arrests A for each age group and crime category was divided by the total arrests for all ages for that category. Assuming that arrest risk is roughly constant across ages, the statistic F measures how much each age group contributed to crime over the years. For youths ages 10-19 in 1963,

$$F\ (10\text{-}19)_{1963} = \frac{A\ (\text{Property } 10\text{-}19)_{1963}}{A\ (\text{Property all ages})_{1963}};\ \text{or}$$

$$F = \frac{359650}{470337} = 0.63,\ \text{or } 63\ \text{percent.}$$

Crime commission rates L for specific age groups indicate which age groups are more "criminal" by normalizing age-group crimes by age-group populations. The result is an estimate of crimes committed per person within an age category. Crimes attributed to each age group for each year were calculated by multiplying F for each group by the total number of reported crimes C for each year. This product was then divided by the population P of that age group to factor out the effects of populational shifts. For 10-14 year old property crime in 1963,

$$L(10\text{-}14)_{1963} = \frac{F(10\text{-}14)_{1963} * C(\text{Property})_{1963}}{P(10\text{-}14)_{1963}};\ \text{or}$$

$$L = \frac{(.2395) * (3792500)}{18128000} = 50.1\ \text{per } 1000.$$

To compare criminality relative to other age groupings, crime commission rates within each year were normalized by setting the over 40 age group L equal to 100. Thus, for example, 10-14 year olds in a given year can be compared not only relative to over-40-year olds in the same year, but also in some sense to their peers relative to 40-year-olds in other years. The normalization index N is given by

$$N = \frac{L(10\text{-}14)}{L(40+)} * 100.$$

In order to make clearer the factors that account for crime trends, the percent of change in crime volume between two years was decomposed into three components.[6] The total percentage change (r) in crime from year a to year b was subdivided into populational factors (x) and criminological factors (y) by the formulas below. An interaction component z, can be determined by subtraction: z = r-x-y. Formulas for the primary components are shown below.

1. Rate of change in crime C between years a and b:

$$r = \frac{C_b - C_a}{C_a}.$$

2. Populational component (x):

$$x = \frac{\text{Sum (over age groups i) } L_{ia} * P_{ib}}{C_a} - 1.$$

3. Criminality component (y) :

$$y = \frac{\text{Sum (over age group i) } L_{ib} * P_{ia}}{C_a} - 1.$$

Example: Property crime growth between a = 1963, b = 1964.

$\text{Sum}(L_{ia} * P_{ib}) = 3908682$; $\text{Sum}(L_{ib} * P_{ia}) = 4074250$

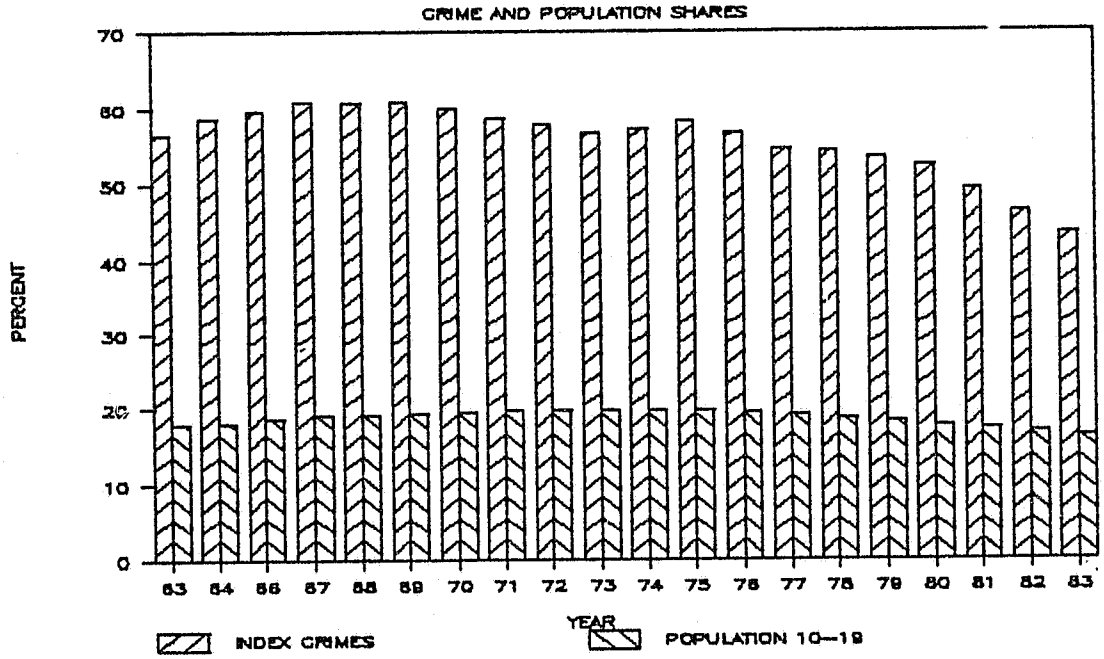
$C_a = 3792500$; $C_b = 4200400$.

x = 3.0%; y = 7.4%; z = 0.3%; r =10.7%.

FINDINGS

The analysis was conducted in order to formulate hypotheses rather than to test hypotheses on crime rates. Trends in the constructed variables were plotted and the departures that occurred were compared to various indicators of social and economic change. Key departures from trends are discussed in this section. Dynamics underlying unemployment, work force participation and school drop-out rates are discussed in a later section in an attempt to provide clues to understanding the complexities of interactions. Figure 1 depicts trends in youth crime as measured by F, the percent of crimes attributable to youth populations.

FIGURE 1. YOUTH TRENDS 1963–1983



It is evident that the role of youth in property crime has diminished. Youths aged 10-19 accounted for as much as 67.8% of the property crimes reported in the 1960's and 1970's. In 1975 a shift started to occur as adults began rapidly to account for larger portions of property crimes. Adults accounted for 38.1% of the crimes and youths accounted for 61.9% at that time. By 1981, youths and adults were each responsible for approximately half of the property crimes. By 1983 youths accounted for only 46.2% of the property crimes in the United States. Part of this pattern is undoubtedly accounted for by changes in age composition. In 1963, youths aged 10-19 represented 17.8% of the U.S. population. This age group population percentage peaked at 19.7% in 1971, and declined to 15.8% in 1983. Table 2 illustrates the criminality of cohorts measured by crime commission rates L, which remove the effects of age group size. A table depicting crime commission rates for every year is given in Appendix A.

Table 2. Age Group Crime Commission Rates

Year	10-14	15-19	20-24	25-29	30-34	35-39	40+
			Violent Crimes per 100 Age Group Population				
63	0.1	0.4	0.5	0.4	0.3	0.2	0.1
68	0.2	0.8	0.8	0.6	0.5	0.4	0.1
73	0.3	1.2	1.1	0.8	0.6	0.5	0.1
78	0.3	1.4	1.2	0.9	0.6	0.5	0.2
83	0.3	1.5	1.4	1.0	0.7	0.5	0.2
			Property Crimes per 100 Age Group Population				
63	5.1	9.6	4.1	2.4	1.6	1.2	0.4
68	7.9	13.7	5.3	3.1	2.1	1.5	0.5
73	8.2	15.7	7.0	3.6	2.4	1.8	0.6
78	9.6	19.2	8.4	5.0	3.1	2.3	0.8
83	8.5	18.2	9.8	6.5	4.6	3.0	1.1

Violent criminality appears to at least doubled for every age group since 1963. The most dramatic increase occurred over the 15-19 year age category from 0.4 per 100 in 1963 to a peak at 1.8 per 100 in 1980. Although the crime commission rate for 15-19 year olds had declined by 1983, it remains larger than all other age group rates at 1.5 per 100.

Property crime commission rates increased for all ages groups up through 1978. This rise continued through 1983 for all adult age groups. Sometime between 1978 and 1983, youth property crime commission rates began to decline. The criminality of youths in property crime, peaked in 1980 at 9.7 offenses per 100 for the 10-14 year age category and 22.6 per 100 for 15-19 year olds. The following year, youth crime commission rates began to decline. By 1983, youth criminality declined to 8.4 per 100 10-14 year olds and 18.6 per hundred 15-19 year olds. Adult property criminality peaked a year later in 1981.

Despite the fact that crime commission rates for youths remained high in absolute terms between 1963 and 1983, results in table 3 indicate that, by the measure of N as an indicator of criminality relative to over-40-year olds within a cohort, youths became less criminally violent and committed less property crimes relative to older age groups. Youths aged 10-14 declined from a relative N of 223 in 1978 to 202 in the 1983 violent crime index, and 15-19 year olds relative violence fell from 925 to 910.

Similar declines relative to over-40-year-olds occurred in property crimes.

Table 3. Normalization Index by Age Group
(Age 40+ = 100)

Year	10-14	15-19	20-24	25-29	30-34	35-39	40+
				Violent Crime			
63	123	556	671	538	396	300	100
68	191	771	748	575	420	314	100
73	204	818	799	560	424	330	100
78	223	925	821	602	423	332	100
83	202	910	857	652	468	335	100
				Property Crime			
63	1175	2241	963	551	383	277	100
68	1511	2620	1018	586	397	288	100
73	1293	2464	1094	574	382	277	100
78	1137	2274	1003	594	364	269	100
83	773	1650	886	590	417	275	100

Despite their declines in criminality, youth aged 15-19 are still the most crime-prone by any measure. Even though the recent declines offer cause for optimism, they are likely to remain as a concern to law enforcement officials for the near future.

Perhaps more disturbing, however, is the gradual increase in violence in adults. Violent crime rates for groups aged 20-40 have increased through 1982 in absolute terms (see Appendix A). They have increased relative to both youth and over-40 rates through 1983. Property crime profiles appear to be relatively stable for older age groups, the prominent declines occuring in the 10-24 year range. Whether these changes in criminality profiles have been caused by an increase in the number of career

criminals or simply by greater fractions of older populations participating in violent crime is an issue beyond the exploratory scope of this paper.

The extent to which populational and criminological factors account for crime trends are displayed in Table 4. A complete table appears in Appendix B. It appears that the rate of change in crime accounted for by the populational component x is stable and gradual, as are changes in age composition. In contrast, changes in the criminological component y, which account for most of the annual change r, are somewhat volatile. The interaction component z is negligible, which suggests that changes in y are not significantly related to the changes in x.

Table 4. Percent Change in Crime Between Consecutive Years

	Violent Crime			
Years	x	y	z	r
1963-64	2.3	12.3	0.3	14.9
1968-69	2.4	8.6	0.2	11.2
1973-74	2.1	9.0	0.2	11.3
1978-79	1.3	9.9	0.1	11.3
1980-81	0.7	0.6	0.0	-2.9
1981-82	0.3	-3.2	0.0	-2.9
1982-83	0.1	-5.0	0.0	-4.9
	Property Crime			
Years	x	y	z	r
1963-64	3.1	7.4	0.3	10.8
1968-69	2.3	7.7	0.2	10.2
1973-74	1.5	16.6	0.2	18.3
1978-79	0.3	8.7	0.1	9.1
1980-81	0.2	0.1	0.1	0.0
1981-82	-0.5	-3.0	0.1	-3.4
1982-83	-0.6	-6.3	0.1	-6.9

Two other points seem noteworthy. One is that demographic trends have worked for the most part to exacerbate changes in criminality over the twenty-year period; however, demographics have accentuated the recent decline in property crimes. The second is that trends in violent and property crime components are not entirely similar because underlying tendencies to commit violent and property crimes differ with age. A gradually aging population has shifted more people into their late 20's and 30's. However, the increases in violence in these age groups have been offset by the declines in youth violence. On the other hand, declines in youth populations have reinforced declines in youth criminality in the case of property crimes.

OTHER SOCIAL INDICATORS

This section offers a simple exploratory view of a number of issues that are intricately related. The discussion gives an indication of the pairwise relationships between possible underlying social factors and youth and adult crime. The social indicators identified are reviewed qualitatively in the face of the relatively small influence of populational shifts on crime rates. Quantitative, and more synthesized, reviews of contributing factors are beyond the scope of the this paper.

Education

Wiechman (1978), in a cross-state analysis, compared various

indicators of educational achievement to indicators of crime. The results showed significant relationships between educational measures such as the school dropout rates and both the total crime index and the property crime index. School dropout rated did in fact track consistently with crime trends. In 1970, when the crime rates were increasing rapidly, approximately 12.2% of the 14-24 year old population were high school dropouts.[7] That fraction fell to 12.0% in 1980 and to 11.7% in 1981--the same time that the crime rates began to fall. Thus, greater school retention rates may have had a beneficial influence on crime even though the effect may be small because dropout rates change so gradually.

Risk

Imprisonment rates per capita[8] for state and Federal institutions were 11.0 inmates per 10,000 population in 1965. By 1970 that ratio had dropped to 9.7. This index rose to 13.9 in 1980 and 17.8 inmates per 10,000 population in 1983. On a per crime basis,[9] there were 4.4 prisoners per 100 Part I crimes in 1965. This ratio fell to 2.1 per 100 in 1970 and remained relatively constant for a decade. The ratio rose from 2.3 in 1980 to 3.5 in 1983. Thus both population and crime-based statistics indicate that imprisonment risks have increased recently. Yet the average time (in months) served in prisons nationally is less in 1983 than it was in 1965. In 1965 an average of 19.9 months was served in prisons nationally.[10] In 1983 the average time spent

in prison had decreased to 15.9 months. These data indicate that certainty of imprisonment acts as a deterrent, even in the face of declining severity. This could indicate that reduced imprisonment risks were contributing factors in the trend of adult crime commission rates for the past two decades.

Employment

Unemployment has frequently been mentioned as a contributing factor in crime.[11] However, the data are frequently at odds with this contention. Unemployment rates[12] declined from 4.4% in 1965 to 3.7% in 1970; yet this period of low unemployment was accompanied by rapid increases in crime rates. However, this period between 1970 and 1980 was a decade of both rising unemployment and crime rates. By 1980, the unemployment rate had risen to 6.8%. It increased still further to 11.9% by 1983. These were the same years during which crime rates receded.

Labor force participation rates[13] are sometimes viewed as measures of economic opportunity, or legitimate alternatives to crime. Higher labor force participation rates imply lower crime rates because would-be criminals participate in legitimate opportunities rather than criminal activities. Nonetheless, overall labor force participation rates increased during the past decade, which was also characterized by a rising crime rate. In 1970 60.4% of the population was in the labor force; by 1980 participation increased to 63.8%. As of 1983, the labor force

had increased to 64.0% of the population 16 years and older.

Part of this anomolie can be accounted for by the offsetting effects of female labor force participation vis-a-vis male labor force participation. Female labor force participation rates increased from 43.3% of the female population over 16 in 1970 to 52.9% in 1980. Female youth participation rates increased from 44.0% in 1970 to 51.5% in 1980 and declined since 1983 to 50.8% of the female youth population. Labor force participation rates for males declined over this past decade, from 79.7% to 76.4% in 1983. Male youth rates in 1983 were 56.2% of the male youth population; the 1970 rate was 56.1. As measured by this indicator, economic opportunities for males have either stagnated or declined over the past fifteen years.

Drug Abuse

Use of drugs has frequently been mentioned as a contributing factor to certain types of crime.[14] Reported drug use among high school seniors in the United States from 1975 through 1982 declined.[15] Other statistics on drug use are scattered and cover only recent classes. They do, however, exhibit similar declines to youth crime and overall crime. Use of marijuana increased from 40.0% of the class of 1975 to 50.8% in the class of 1979. The class of 1982 reported a 44.3% use among high school seniors. Cocaine use declined from 12.3% in 1980 to 11.5% in 1982.

Family Stability

Stability within family households has been studies as to its effect on crime. Parental or adult supervision, as measured by trends in single parent households, supposedly contributes or diminishes the likelihood of juvenile involvement in crime. Yet in the face of declining crime rates, the percent of male and female householders with no spouse present has increased.[16] Male householders with no spouse present rose from 27.8% in 1970 to 36.6% in 1983. Similarly, female householders with no spouse present increased from 52.0% of all households in 1970 to 60.4% in 1983. Interesting to note is that the percent of all family households headed by married couples has declined from 55.8% in 1970 to 50.2% in 1983.

Quality of family life, measured by divorce rates or the number of children involved in divorces, may also contribute to youth criminality. Divorce rates increased in the 1960's and first half of the 1970's, but then slowed in subsequent years. Divorce rates increased from 2.5 per 1,000 population in 1965 to 5.0 in 1976. In 1979 the divorce rate stood at 5.3 per 1,000 population. This growth in divorce occurred during periods of increasing crime rates--particularly in adult crime commission. Since 1979 the rate has remained at 5.3--during a period of decline in the crime rate and property crime rate for youths. The average number of children involved in divorces[17] also declined throughout the 1965-1981 period.

SUMMARY

This paper reported on an exploratory analysis of how criminality in specific age groups changed over time. It also reviewed selected socioeconomic factors sometimes cited as contributors trends in crime rate. Criminality trends were measured by the percent of Part I crimes attributable to each age group and by age group crime commission rates. The former measure gauged the relative involvement of various age groups in crime; the latter measured age group criminality for each year,controlling for the effects of changes in populations. Violent and property crimes for each year were attributed separately to youths and adults. To compare criminality relative to other age groupings, crime commission rates within each year were normalized by indexing each age group crime commission rate relative to rates estimated for populations over 40 years old. In order to make clearer the factors that account for crime trends, the percentage change in crime volume between two years was decomposed into populational factors, criminological factors and an interaction component. Trends in the constructed variables were plotted and the departures that occurred were compared to various indicators of social and economic change. Key findings are discussed below.

The role of youths in property crime has diminished. Adults began accounting for larger portions of property crimes than youths in 1980. Undoubtedly, part of this pattern is accounted for by changes in age composition.

After removing the effects of age group size, violent criminality appears to have at least doubled for every age group and most dramatically over the 15-19 year age category. Property crime commission rates increased for all age groups through 1980. After 1980, adult property crime commission rates continued to increase and youth property crime commission rates began to decline.

Relative to over-40-year olds, youths became less criminally violent and committed less property crimes compared to older age groups. Despite the decline in criminality, youths aged 15-19 remain the most crime-prone group and thus are likely to remain a concern. In absolute terms, and relative to both youth and over-40 rates, violent crimes commission rates for groups aged 20-40 have increased. Property crime profiles appear to be relatively stable for the older age groups, while the prominent declines occur in the 10-24 year range.

Changes in crime attributable to changes in population and age composition were stable and gradual. Changes in criminality, which accounted for most of the annual change, were somewhat volatile. The interaction component was negligible, suggesting that changes in the criminological component were not related significantly to changes in the populational component. Demographic trends worked for the most part to exacerbate changes in criminality; however, they reinforced the decline in property

crimes in the 1980s. Violent and property crime trends were not entirely similar because peak propensities to commit violent and property crimes occur in different age groups. Increases in violence by adults were offset by the declines in youth violence. Declines in youth populations reinforced declines in youth property criminality.

Dynamics underlying unemployment, work force participation, school dropout rates, divorce rates, imprisonment risk, drug use and family stability were discussed in an attempt to facilitate understanding of the complexities among possible contributing factors. School dropout rates tracked consitently with crime trends yet, because of their slow movement, can not be considered powerful indicators of future crime trends. Data indicates that imprisonment risk acted as a deterrent even in the face of declining severity of punishment. Reduced imprisonment risks were likely contributing factors in trends of adult crime for the past two decades.

The roles of employment opportunity and family stability in crime were unclear. Total labor force participation rates increased, but increases in female labor force participation rates, particularly youths, obscured a decline in male labor force participation. The percent of households headed by single parents increased during a period of declining crime rates, while the average number of children involved in divorces declined.

ENDNOTES

1. See Edwin W. Zedlewski "Youth, Crime, and "Deterrence: What Matters?"; Alfred Blumstein's 1985 remarks; and, the Uniform Crime Reporting Program's "The Impact of Age Composition on the Level of Crime". All three source derive their conclusions from inferences based on age-at-arrest statistics.

2. The FBI revised its time series on Part I crimes in 1984. In order to provide uniform comparability among prior reports, they revised their index crime series from 1964-1983.

3. Crime In The United States. vols. 1963-1983. Washington D.C.: Federal Bureau of Investigation, U.S. Department of Justice, 1964-1984.

4. Population estimates used in this paper are Bureau of the Census provisional estimates published in Current Population Reports, Population Estimates and Projections, Series P-25, No. 519 (April 1974) for 1960-1969, No. 917 (July 1982) for 1970-1979, and No. 949 (May 1984) for 1980-1983.

5. Violent crime and property crimes are as defined in the UCRs. Violent crimes are offenses of murder, forcible rape, robbery and aggravated assault. Property crime are offenses of burglary, larceny-theft and motor vehicle theft. Data are not included for the crime of arson.

6. See The Impact of Age Composition on the Level of Crime, Uniform Crime Reporting Program, for a derivation of the component equations.

7. Statistical Abstract of the United States 1985 (105th edition), U.S. Department of Commerce, Bureau of the Census, p.148

8. Ibid p. 183

9. Imprisonment risk. Prisoners per 100,000 population (Bureau of Justice Statistics Bullentin Prisoners 1925-1981, December 1982, updated by 1982 and 1983 bulletins) divided by UCR index crimes per 100,000 population.

10. Statistical Abstract of the United States 1985 (op.cit.), p. 183.

11. See J.H. Reiman. S. Headlee, "Crime and Crisis" and R.B. Freeman, "Crime and Unemployment".

12. Statistical Abstract of the United States 1985 (op. cit.) p.406.

13. Ibid p.392

14. See P.C. Baridon, "Addiction, Crime, and Social Policy".

15. Statistical Abstract of the United States 1985 (op. cit.), p.118.

16. Ibid p.46

17. Ibid p.80

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APPENDIX A

Percentage of Violent Crime Arrests By Age Group

Year 19--	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
63	5.5	21.4	21.2	14.7	11.2	9.2	6.5	4.2	6.1
64	5.8	21.9	21.2	14.4	11.0	8.9	6.6	4.0	6.2
65	6.8	23.2	21.2	14.0	10.4	8.4	6.2	3.9	5.9
66	7.1	24.2	21.0	13.9	10.0	8.0	6.2	4.0	5.6
67	7.3	25.5	21.5	13.6	9.5	7.4	5.8	3.8	5.5
68	7.4	26.8	22.4	14.0	8.9	6.8	5.3	3.6	4.9
69	7.2	27.1	24.0	13.7	8.5	6.3	5.0	3.4	4.8
70	7.1	27.5	23.8	13.9	8.6	6.3	4.8	3.3	4.8
71	7.1	27.3	24.7	13.8	8.6	6.1	4.6	3.2	4.6
72	7.1	26.8	24.5	14.2	8.9	6.1	4.5	3.2	4.7
73	6.9	27.4	24.0	14.3	9.0	6.0	4.4	3.1	4.8
74	6.4	28.7	24.3	14.8	8.7	5.7	4.1	2.9	4.4
75	6.4	28.7	24.1	15.0	8.7	5.8	4.0	2.9	4.5
76	6.1	28.3	23.9	15.7	8.9	5.7	4.0	2.9	4.5
77	5.9	27.6	24.2	15.7	9.4	5.9	4.0	2.8	4.6
78	5.9	27.7	24.0	15.7	9.6	6.1	4.0	2.7	4.5
79	5.2	27.3	24.9	15.9	9.8	6.0	3.9	2.6	4.4
80	4.7	26.6	25.3	16.4	10.3	6.1	3.8	2.5	4.2
81	4.8	25.1	24.9	17.2	10.8	6.4	4.0	2.6	4.3
82	4.5	23.9	25.1	17.7	11.3	6.7	4.1	2.5	4.2
83	4.7	22.8	24.5	18.1	11.7	7.1	4.3	2.6	4.2

Percentage of Property Crime Arrests By Age Group

Year 19--	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
63	24.0	39.1	13.8	6.8	4.9	3.9	2.7	1.9	3.0
64	25.1	40.1	13.5	6.3	4.5	3.5	2.5	1.7	2.9
65	26.3	39.7	12.9	6.2	4.3	3.4	2.5	1.7	2.8
66	27.7	40.1	12.3	6.1	4.0	3.2	2.4	1.6	2.7
67	26.9	40.3	13.1	6.3	4.0	3.0	2.3	1.6	2.6
68	26.2	40.9	13.7	6.4	3.8	2.8	2.2	1.5	2.5
69	25.3	40.8	14.7	6.5	3.8	2.7	2.1	1.5	2.5
70	23.3	41.1	15.7	6.9	3.9	2.7	2.2	1.6	2.7
71	22.5	41.0	16.7	7.0	3.9	2.6	2.0	1.5	2.7
72	22.4	40.4	16.8	7.3	4.1	2.6	2.0	1.5	2.7
73	22.1	41.4	16.4	7.3	4.1	2.5	1.9	1.5	2.8
74	21.9	42.2	16.5	7.6	3.9	2.4	1.7	1.3	2.5
75	19.6	42/3	17.2	8.2	4.2	2.5	1.8	1.4	2.8
76	18.6	40.9	17.8	9.2	4.5	2.7	1.9	1.5	2.9
77	18.6	40.7	17.6	9.1	4.7	2.8	1 9	1.5	3.1
78	17.9	40.7	17.5	9.2	4.9	2.9	2.0	1.5	3.2
79	16.5	41.1	17.7	9.5	5.3	3.1	2.0	1.5	3.4
80	14.8	39.1	19.2	10.4	6.0	3.3	2.1	1.5	3.5
81	14.1	36.4	19.7	11.4	6.9	3.7	2.4	1.6	3.8
82	13.5	33.7	20.1	12.4	7.7	4.3	2.6	1.7	4.0
83	14.0	32.2	19.8	12.7	8.1	4.6	2.8	1.8	4.1

APPENDIX A (Cont.)

Estimated Violent Crime Commission Rates
(Per 1,000 in Age Group)

Year 19—	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
63	1.05	4.51	5.34	4.22	3.07	2.29	1.63	1.14	0.40
64	1.23	5.16	5.96	4.65	3.47	2.55	1.83	1.21	0.45
65	1.48	5.44	6.02	4.74	3.54	2.64	1.86	1.27	0.46
66	1.71	6.12	6.56	5.06	3.75	2.77	1.98	1.34	0.46
67	2.02	7.52	7.20	5.55	4.11	2.96	2.14	1.46	0.51
68	2.40	9.27	8.58	6.34	4.48	3.27	2.30	1.58	0.52
69	2.58	10.21	9.80	6.60	4.65	3.40	2.47	1.64	0.55
70	2.80	11.29	10.45	7.22	5.09	3.76	2.61	1.75	0.59
71	3.01	12.03	11.39	7.78	5.49	4.09	2.81	1.90	0.62
72	3.06	11.64	11.49	7.62	5.66	4.23	2.92	1.98	0.66
73	3.16	12.28	11.50	7.74	5.69	4.32	3.02	2.05	0.70
74	3.25	14.20	12.67	8.46	5.82	4.40	3.12	2.11	0.69
75	3.48	14.90	12.83	8.65	5.85	4.57	3.27	2.15	0.72
76	3.20	13.75	11.99	8.31	5.77	4.38	3.24	2.19	0.70
77	3.26	13.70	12.04	8.57	5.78	4.51	3.32	2.26	0.73
78	3.58	14.55	12.27	8.77	6.02	4.62	3.44	2.34	0.75
79	3.71	16.18	13.99	9.61	6.51	4.81	3.61	2.52	0.78
80	3.76	17.96	15.62	10.68	7.24	5.27	3.88	2.66	0.81
81	3.82	17.88	15.41	11.11	7.27	5.39	3.95	2.79	0.82
82	3.51	16.85	15.07	10.85	7.51	5.13	3.85	2.64	0.79
83	3.53	15.80	14.03	10.35	7.27	5.04	3.66	2.57	0.76

Estimated Property Crime Commission Rates
(Per 1,000 in Age Group)

Year 19—	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
63	51.11	92.79	40.91	23.77	16.68	12.19	8.84	6.65	2.75
64	57.97	101.14	42.53	24.05	16.97	12.23	8.90	6.46	2.79
65	61.13	99.44	40.87	24.19	17.08	12.64	9.06	6.63	2.79
66	69.20	104.89	41.89	25.28	17.77	13.02	9.38	6.83	2.82
67	73.68	119.57	46.35	28.34	19.51	14.03	10.11	7.48	3.05
68	79.67	135.31	53.06	30.74	20.94	15.25	11.01	7.77	3.29
69	83.22	146.34	60.09	33.31	22.61	16.23	11.62	8.39	3.49
70	81.88	157.03	67.43	36.97	24.92	17.98	13.05	9.23	3.80
71	82.36	162.06	71.81	38.90	25.42	18.31	13.14	9.41	3.94
72	78.13	149.12	69.13	35.78	24.32	17.30	12.31	8.97	3.71
73	82.02	158.10	69.62	36.34	24.04	17.33	12.79	9.25	3.96
74	96.59	188.50	80.95	42.25	25.77	18.86	13.64	9.89	4.04
75	96.73	205.77	90.09	48.46	29.63	21.45	15.75	11.73	4.98
76	95.10	197.89	92.04	51.79	31.46	23.41	17.47	12.63	5.26
77	94.58	189.97	85.11	49.28	29.50	22.09	16.55	12.29	5.16
78	95.71	193.68	84.47	49.62	30.24	22.22	17.09	12.86	5.43
79	98.27	214.41	91.10	54.28	33.97	24.31	18.36	14.16	6.16
80	97.08	226.52	107.49	63.09	39.80	27.46	20.76	15.95	6.71
81	92.65	218.99	108.45	67.23	43.04	29.94	22.62	16.95	7.18
82	86.40	201.84	107.20	68.85	46.91	30.83	23.13	17.21	7.17
83	83.94	186.23	98.82	64.77	45.05	29.36	21.89	16.43	6.73

APPENDIX B

Annual Changes in Violent Crimes (Percent)

Years	X	Y	Z	R
1963-64	2.28	12.33	0.29	14.91
1964-65	2.22	4.04	0.11	6.36
1965-66	2.31	8.48	0.25	11.05
1966-67	2.51	13.45	0.26	16.21
1967-68	2.33	16.28	0.41	19.02
1968-69	2.43	8.56	0.25	11.24
1969-70	2.62	8.78	0.23	11.63
1970-71	2.68	7.63	0.21	10.51
1971-72	2.21	0.08	-0.04	2.25
1972-73	2.15	2.72	0.05	4.91
1973-74	2.09	8.99	0.20	11.28
1974-75	2.01	3.24	0.04	5.29
1975-76	1.91	-5.51	-0.09	-3.69
1976-77	1.40	1.11	0.01	2.52
1977-78	1.35	4.06	0.02	5.43
1978-79	1.27	9.89	0.12	11.29
1979-80	1.15	10.03	0.13	11.32
1980-81	0.65	0.62	0.02	1.30
1981-82	0.28	-3.20	0.01	-2.91
1982-83	0.07	-4.97	0.02	-4.88

Annual Changes in Property Crime (Percent)

Years	X	Y	Z	R
1963-64	3.06	7.43	0.26	10.76
1964-65	3.14	0.49	-0.01	3.61
1965-66	3.20	6.73	0.21	10.14
1966-67	1.96	10.59	0.18	12.73
1967-68	2.20	10.91	0.25	13.36
1968-69	2.27	7.71	0.20	10.18
1969-70	2.45	6.39	0.20	9.04
1970-71	2.40	3.10	0.10	5.61
1971-72	1.83	-6.29	-0.14	-4.60
1972-73	1.67	4.05	0.05	5.78
1973-74	1.49	16.59	0.24	18.32
1974-75	1.23	8.85	0.18	10.25
1975-76	1.02	-0.12	0.04	0.95
1976-77	0.44	-4.15	-0.06	-3.77
1977-78	0.33	1.37	.00	1.69
1978-79	0.31	8.70	0.06	9.07
1979-80	0.26	8.87	0.13	9.26
1980-81	-0.23	0.13	0.10	0.01
1981-82	-0.50	-3.03	0.11	-3.42
1982-83	-0.64	-6.30	0.06	-6.88