1977

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THE EFFECT OF THE AGE STRUCTURE OF A STATIONARY POPULATION ON CRIME RATES

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Demographers have recently investigated the demographic changes required to reach a stationary population in the United States and described the characteristics of this nongrowing stable population.[1] Those who object to a zero population growth rate assert that the resulting higher proportion of older persons would hinder economic production and ". . . would have a strong tendency toward nostalgia and conservatism."[2] The first objection is groundless, since the age structure of a stationary population in the United States would include a higher proportion of persons in the productive ages. Davis counters the second objection by pointing out that ". . . there seems to be no correlation between the age structure and political outlook."[3] Day, who discusses extensively the social consequences of a stationary population, concludes that ". . . the concomitants of stationary population are far more likely to be de-

sirable than undesirable—both for the society and for the individual."[4]

One important social consequence of a stationary population which Day and others have neglected is the effect of its age structure on the crime rate. A number of studies have demonstrated that the recent increase in the crime rate of the United States can be partially explained by the increase in the proportion of young people in the population—particularly in the 15–24 age categories.[5] Since most serious crime in the United States is committed by young people, we can expect that, other things being equal, as the United States approaches a stationary population, the resulting lower proportion of young people would have the effect of lowering the overall crime rate, even though the age-specific rates remain the same. The purpose of this paper is to show: (a) the amount of reduction in the overall crime (arrest) rate when the 1970 age-specific rates are applied to the age structure of a projected stationary population and (b) the change in total volume of crime (arrests) expected for several alternative projections of population size in the U. S., including those for a stationary population. It should be clear that what is intended here is to show the effect of demographic changes on the crime rate when other factors are held constant. Many factors can influence the crime rate which cannot, of course, be predicted.

ANALYSIS

The estimates for the age distribution of a stationary population for the United States yield an al-

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[1] Coale, *Alternative Paths to a Stationary Population,* in RESEARCH REPORTS OF THE COMMISSION ON POPULATION GROWTH AND THE AMERICAN FUTURE 589 (C. Westoff & R. Parke, Jr. eds. 1972); Davis, *Zero Population Growth: The Goal and the Means,* in THE NO-GROWTH SOCIETY 15 (M. Olson & H. Landsberg eds. 1973); Enke, *Zero Population Growth—When, How and Why,* 5 SOCIOECONOMIC PLANNING SCIENCE 263 (1971); Frejka, *Demographic Paths to a Stationary Population: the U.S. in International Comparison,* in RESEARCH REPORTS OF THE COMMISSION ON POPULATION GROWTH AND THE AMERICAN FUTURE 659 (C. Westoff & R. Parke, Jr. eds. 1972); Frejka, *Reflections on the Demographic Conditions Needed to Establish a U.S. Stationary Population Growth,* 22 POPULATION STUDIES (1968); U.S. BUREAU OF THE CENSUS, ILLUSTRATIVE POPULATION PROJECTIONS FOR THE UNITED STATES: THE DEMOGRAPHIC EFFECTS OF ALTERNATE PATHS TO ZERO GROWTH, CURRENT POPULATION REP., Series P-25, No. 480 (1972); U.S. BUREAU OF THE CENSUS, PROJECTIONS OF THE POPULATION OF THE UNITED STATES, BY AGE AND SEX: 1970–2020, CURRENT POPULATION REP., Series P-25, No. 470 (1971).

[2] Coale, *Should the United States Start a Campaign for Fewer Births?,* 34 POPULATION INDEX 471 (1968).

[3] Davis, *Zero Population Growth: The Goal and the Means,* in THE NO-GROWTH SOCIETY 15, 19 (M. Olson & H. Landsberg eds. 1973).

[4] Day, *The Social Consequences of a Zero Population Growth Rate in the United States,* in RESEARCH REPORTS OF THE COMMISSION ON POPULATION GROWTH AND THE AMERICAN FUTURE 673 (C. Westoff & R. Parke, Jr. eds. 1972).

[5] Chilton & Spielberger, *Is Delinquency Increasing? Age Structure and the Crime Rate,* 49 SOCIAL FORCES 487 (1971); Ferdinand, *Demographic Shifts and Criminality: an Inquiry,* 10 BRIT. J. CRIM. 169 (1970); Sagi & Welford, *Age Composition and Patterns of Change in Criminal Statistics,* 59 J. CRIM. L.C. & P.S. 29 (1968); Welford, *Age Composition and the Increase in Recorded Crime,* 11 CRIMINOLOGY 61 (1973); PRESIDENT'S COMMISSION ON LAW ENFORCEMENT AND THE ADMINISTRATION OF JUSTICE, TASK FORCE REPORT: CRIME AND ITS IMPACT—AN ASSESSMENT (1967).

TABLE 1

1970 U.S. POPULATION REVISED ACCORDING TO THE AGE STRUCTURE OF A STATIONARY POPULATION

Age Category	1970 Population		Revised 1970 Population		Per Cent Change
	Number	Per Cent	Number	Per Cent	
Total	203,211,926	100.00	203,211,296	100.00	0.0
Median Age	27.9		37.3		+33.7
0–14	57,900,052	28.49	41,231,700	20.29	−28.8
15–19	19,070,348	9.38	13,676,163	6.73	−28.3
20–24	16,371,021	8.06	13,615,199	6.70	−16.8
25–29	13,476,993	6.63	13,533,914	6.66	+0.4
30–39	22,537,287	11.09	26,803,653	13.19	+18.9
40 and over	73,856,225	36.34	94,351,297	46.43	+27.8

most constant percentage for each year of age up to the age of 40. This percentage distribution is independent of the total size of the population for alternative projections.[6] Applying the percentage distribution of a stationary population to the 1970 U. S. population results in a rather sharp decrease in the numbers of people in ages up to 24 years, resulting in an increase of median age from 27.9 to 37.3 years.

The 1970 arrest rate for each group (the number of arrests divided by the number of persons in a particular age group multiplied by 100,000) is utilized to yield the expected number of arrests for each age group and each type of offense. This is calculated by multiplying the arrest rate by the number of persons in each age group of the revised population with the stationary age distribution. The results for each of the Index crimes and for the aggregate of all Index crimes are shown in Table 2. The expected number of arrests for each Index crime decreased for the three categories under 25 years and increased for the other categories. The total reduction in Index crime arrests for the 1970 revised population is 202,221. This represents a reduction of 15.9 per cent in the overall arrest rate from 626.83 to 527.25 per 100,000. The variability in per cent reduction for arrests is considerable, ranging from 0.01 per cent for criminal homicide to 21 per cent for auto theft. For all crimes, however, including Index crimes, the reduction in the overall arrest rate is only 4.6 per cent, from 3,233.00 per 100,000 to 3,115.57 per 100,000 population. See Table 3. This means that there would be an increase in the number of arrests for non-Index crimes for an older, stationary population of the same size as that of 1970.

[6] U.S. BUREAU OF THE CENSUS, ILLUSTRATIVE POPULATION PROJECTIONS FOR THE UNITED STATES: THE DEMOGRAPHIC EFFECTS OF ALTERNATE PATHS TO ZERO GROWTH, CURRENT POPULATION REP., Series P-25, No. 480 (1972).

While the arrest rates for a stationary population would decrease, the total number of arrests might increase appreciably depending on the size of the population. A number of alternative estimates of size are available for a U. S. population approaching a stationary state at approximately the year 2050.[7] The various estimates presented in Table 4 are based on different fertility assumptions but all of these assume a yearly immigration of 400,000. When the overall age-adjusted arrest rate (*i.e.* for a stationary population) is applied to these estimates there are increases in the total number of arrests over the 1970 figures, ranging from 19.4 per cent for estimate Y to 46.2 per cent for estimate T for Index crimes. For all crimes the increase in number of arrests ranges from 36.8 per cent to 67.4 per cent. This means that even for the lowest size estimate for a stationary population, in 2050 there would be slightly more than one additional arrest for every three arrests in 1970. For the highest estimate it would mean better than two additional arrests for every three in 1970, even with an older, stationary population.

It is suggested, however, that because of the assumptions involved, these estimates "are in some cases highly unrealistic."[8] A set of four "official" population projections are provided for the year 2020, ranging in size from somewhat over 307 million to 447 million with corresponding median ages from 27.0 to 35.7 respectively.[9] These medians, it should be noted, indicate a younger population when compared with the 37.3 median age of a stationary population. Applying the 1970 age-specific arrest rates to the age distribution for these projections yields an age-adjusted overall crime rate of 3156.20 per 100,000 for the lowest size projection, Series E, which represents a 47.7 per cent increase in number of crimes over 1970. The highest esti-

[7] *Id.*
[8] *Id.*
[9] *Id.*

TABLE 2

REVISED NUMBER OF ARRESTS, 1970 BASED ON AGE-SPECIFIC ARREST RATES, 1970 APPLIED TO AGE STRUCTURE OF STATIONARY POPULATION

Index Crimes	Number of Arrests, 1970	Age-Specific Rates of Arrest, 1970	Revised Number of Arrests, 1970	Number of Arrests	
				Net change	Per Cent Change
All Index Crimes					
Total	1,273,665		1,071,443	−202,221	−15.9
0–14	256,755	443.336	182,842	− 73,913	−28.8
15–19	490,008	2,569.523	351,408	−138,600	−28.3
20–24	219,839	1,342.856	182,830	− 37,009	−16.8
25–29	104,787	777.525	105,230	+ 443	+ 0.4
30–39	105,182	466.708	125,096	+ 19,914	+18.9
40 and over	97,094	131.464	124,038	+ 26,944	+27.8
Criminal Homocide					
Total	15,850		15,848	− 2	−0.01
0–14	228	0.394	162	− 66	
15–19	2,994	15.700	2,147	− 847	
20–24	3,685	22.509	3,065	− 620	
25–29	2,514	18.654	2,525	+ 11	
30–39	2,994	13.285	3,561	+ 567	
40 and over	3,435	4.651	4,388	+ 953	
Forcible Rape					
Total	15,409		13,785	− 1,624	−10.5
0–14	634	1.095	452	− 182	
15–19	4,880	25.590	3,500	− 1,380	
20–24	4,426	27.036	3,681	− 745	
25–29	2,387	17.712	2,397	+ 10	
30–39	2,062	9.149	2,452	+ 390	
40 and over	1,020	1.381	1,303	+ 283	
Robbery					
Total	87,667		73,434	− 14,233	−16.2
0–14	9,695	16.744	6,904	− 2,791	
15–19	33,968	178.123	24,360	− 9,608	
20–24	23,847	145.666	19,832	− 4,015	
25–29	10,210	75.759	10,253	+ 43	
30–39	7,051	31.286	8,386	+ 1,335	
40 and over	2,896	3.921	3,699	+ 803	
Aggravated Assault					
Total	125,946		123,802	− 2,144	− 1.7
0–14	6,767	11.687	4,819	− 1,948	
15–19	25,436	133.382	18,241	− 7,195	
20–24	26,307	160.693	21,878	− 4,429	
25–29	18,809	139,564	18,888	+ 79	
30–39	24,330	107.956	28,936	+ 4,606	
40 and over	24,297	32.898	31,040	+ 6,743	
Burglary					
Total	285,398		229,738	− 55,660	−19.5
0–14	65,491	113.111	46,638	− 18,853	
15–19	122,123	640.393	87,580	− 34,543	
20–24	49,478	302.230	41,149	− 8,329	
25–29	21,212	157.394	21,302	+ 90	
30–39	17,518	77.730	20,835	+ 3,317	
40 and over	9,576	12.966	12,234	+ 2,658	
Larceny					
Total	616,060		514,210	−101,850	−16.5
0–14	154,775	267.314	110,219	− 44,556	
15–19	230,116	1,206.691	165,027	− 65,089	
20–24	91,866	561.151	76,401	− 15,465	
25–29	41,796	310.128	41,973	+ 177	
30–39	45,085	200.049	53,621	+ 8,536	
40 and over	52,422	70.979	66,969	+ 14,547	
Auto Theft					
Total	127,335		100,627	− 26,708	−21.0
0–14	19,165	33.100	13,648	− 5,517	
15–19	70,491	369.643	50,553	− 19,938	
20–24	20,230	123.572	16,824	− 3,406	
25–29	7,859	58.314	7,892	+ 33	
30–39	6,142	27.253	7,305	+ 1,163	
40 and over	3,448	4.669	4,405	+ 957	

TABLE 3

OVERALL ARREST RATE, 1970 AND AGE-ADJUSTED RATE,
1970 BASED ON AGE STRUCTURE OF STATIONARY
POPULATION, FOR INDEX CRIMES AND ALL CRIMES

Crime Category	1970 Arrest Rate	1970 Age-Adjusted Arrest Rate	Per Cent Change
Index Crimes	626.82	527.25	−15.88
All Crimes	3,233.00	3,115.57	− 4.63

TABLE 4

EXPECTED NUMBER OF ARRESTS AND PER CENT CHANGE
FROM 1970 FOR INDEX CRIMES AND ALL CRIMES AT
APPROXIMATE TIME OF STATIONARY POPULATION, YEAR
2050

Alternative Estimates for Stationary Population (Year 2050)	Total Population (in thousands)	Expected Number of Arrests (in thousands)			
		Index Crimes Number	Per Cent Change from 1970	All Crimes Number	Per Cent Change from 1970
T	353,146	1,862	+46.2	11,002	+67.4
V	296,157	1,561	+22.5	9,227	+40.4
W	320,094	1,688	+32.5	9,973	+51.8
X	335,267	1,768	+38.8	10,445	+59.0
Y	288,567	1,521	+19.4	8,991	+36.8

mate, Series B, produces an overall arrest rate of
3222.19 per 100,000, giving an increase in number
of arrests of 119.2 per cent over 1970.

DISCUSSION

As mentioned in the introduction, opponents to
zero population growth and the population sta-
tionarity it would ultimately bring about have cen-
tered their arguments around the possible negative
consequences which the age structure of such a
population might have. The fact that these argu-
ments are based on mere speculation and the in-
creased awareness in recent years of the many prob-
lems accompanying continued population growth
have led many to investigate the possible positive
consequences of the age structure of a stationary
population. The best discussion of such positive
consequences can be found in an article by Day.[10]
We feel, however, that the defenders of zero popu-
lation growth have neglected to investigate one of

[10] Day, *The Social Consequences of a Zero Population
Growth Rate in the United States,* in RESEARCH REPORTS
OF THE COMMISSION ON POPULATION GROWTH AND THE
AMERICAN FUTURE 673 (C. Westoff & R. Parke, Jr. eds.
1972).

the most important benefits resulting from the age
structure of a stationary population: its effect on
crime rates.

The data presented here indicate a substantial
reduction of almost 16 per cent over 1970 in the ar-
rest rate for serious crimes resulting from the age
structure of a stationary population in the United
States. The reduction in the arrest rate for all crimes
is substantially less. Since, however, even under the
most optimistic projections the U. S. population will
not reach a stationary state for several decades to
come, the total volume of arrests can be expected to
increase in the meantime. The actual volume, how-
ever, will depend on the size of the population when
stationarity is reached. We have shown that using
1970 arrest rates, the increase in the volume of
arrests for Index crimes may range from 19.4 to
46.2 per cent, and for all crimes from 36.8 per cent
to 67.4 per cent. While a substantially lower arrest
rate can be expected from population stationarity, a
substantial increase in the *number* of arrests can
be expected at the same time.

An obvious caveat concerning these observations
involves the application of the 1970 arrest rates to
population projections. But projecting arrest rates
would be tenuous at best. First, arrests are under-
reported: in 1970 the agencies reporting arrests
covered about 75 per cent of the U. S. population.
Second, arrest rates underestimate the total volume
of "actual" offenses. Third, while improvements are
underway, there is still great variability among
police jurisdictions in recording and reporting prac-
tices, which raises questions concerning the validity
and reliability of crime statistics. It is instructive,
however, to attempt to look at the future, murky as it
may be, in terms of the situation which existed in
1970. Factors other than the age structure and the
size of the population, of course, could affect crime
and arrest rates. Changes in legal definitions of crime
and also in police practices would be influential.
Further, given the urban-rural variations in numbers
and types of crimes, shifts in the proportion of the
population in metropolitan areas could have marked.
effects.

But these points require a bit more elaboration.
The 1970 age-specific arrest rates have been used in
our projections; given recent increases in such rates
and in the total volume of crimes, this might seem
somewhat unrealistic. While we are very skeptical
about projecting arrest rates, it would be reasonable
to expect that the persistence of present patterns of
criminality will increase the load on the criminal
justice system. This must be the case, especially in

view of the fact that, for the short run, the population is not aging sufficiently for crime rates to decrease because of age structure. With continued increases in total numbers of people in the population, the volume of crime (arrests) must increase. If the present trend of lowered fertility persists, the population will slowly increase in median age, thus providing fewer young people and, therefore, reduced crime (arrest) rates. But even with reduced rates the total number of crimes will increase because of the greater size of the population.

Furthermore, the crime problem is to a large extent an urban phenomenon. If urban areas continue to contain, as they do at present, proportionately greater numbers of ethnic minorities, the poorly educated, the impoverished, and the young—those segments of the population most at risk for committing Index crimes—the estimates on volume of crime given in this paper would be too low. Since current local and national efforts in dealing with education, employment and other urban problems have not been successful, we have little reason to be optimistic concerning changes in urban life conducive to reduced crime rates. Furthermore, given the present tax burden in most urban areas, the outlook for greater support for expansion of personnel and services of the criminal justice system is also not optimistic.

Thus, while an increasingly aging population will tend to reduce crime rates, the effect of the increasing size of the population is to increase volume. The continuation of present trends in urbanization and the characteristics of the urban population will also tend to increase both crime rates and the volume of crimes. In our view there will have to be marked changes in susceptibility to criminal behavior and strong public support for social policies directed at reducing criminality and improving the criminal justice system in order to affect the crime problem in this country.

In view of this analysis, tentative though it may be, the outlook for the load on the system of criminal justice in this country is bleak at best. Jails and prisons are currently overcrowded and the courts are mired in vast backlogs of cases awaiting trial. Even with reduced crime rates, the situation will deteriorate if current practices and present levels of facilities and resources in the law enforcement and criminal justice system continue. The situation could be mitigated by adoption of recommendations for changes presently under consideration by the separate states. These include proposals for diversion from the criminal justice system of minor offenses and first offenders, for speedier trials and for more flexible community-based programs for offenders.[11] But these and other recommendations for better facilities, health services and rehabilitation programs for offenders will require great increases in personnel and expenditures. It is likely that crime and its concomitants will be an increasing burden to society for many years to come. A stationary population, even with somewhat reduced crime rates, will not reduce that burden and cannot counterbalance the influence of other factors tending to increase the amount of crime.

[11] NATIONAL ADVISORY COMMISSION ON CRIMINAL JUSTICE STANDARDS AND GOALS, A NATIONAL STRATEGY TO REDUCE CRIME (1973).