Characteristics of offenders arrested for aggravated assault: a test of Easterlin's hypothesis

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CHARACTERISTICS OF OFFENDERS ARRESTED
FOR AGGRAVATED ASSAULT: A TEST OF
EASTERLIN'S HYPOTHESIS

A THESIS
SUBMITTED TO THE FACULTY OF ATLANTA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS

BY
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DEPARTMENT OF CRIMINAL JUSTICE ADMINISTRATION

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ABSTRACT
CRIMINAL JUSTICE

VARNEDOE, ARNITA D. B.S. SOUTH CAROLINA STATE COLLEGE, 1985

CHARACTERISTICS OF OFFENDERS ARRESTED FOR AGGRAVATED ASSAULT: A TEST OF EASTERLIN'S HYPOTHESIS

Advisor: Dr. K.S. Murty
Thesis dated May, 1987

This thesis examines the relationship of aggravated assault to three variables: age, cohort, and time period over a 20-year period, 1965-1984. The researcher also tests Richard Easterlin's hypothesis: that large cohorts generate higher crime rates within a given population than small cohorts regardless of age and time period.

This work has two major limitations. Though aggravated assault is a highly personalized crime, the statistical analysis does not deal with the personal and social characteristics of either the perpetrator or the victim. Second, the displacement effect is not controlled for the multicollinearity between two or more criminal offenses. Moreover, the statistical analysis was limited to the Uniform Crime Reports.

Employing regression analysis, the researcher determined the relative impact of age, time period and cohort on the arrest rates of aggravated assaults from 1965 through
1984. The data source is the Uniform Crime Reports. The findings disclose: (1) the variable age alone has a more significant relationship to aggravated assault arrest rates than either period or cohort; (2) the variable age and period (together) are more significantly related to aggravated assault arrest rates than are age and cohort (together). Therefore, Easterlin's hypothesis is rejected. Large cohorts do not necessarily generate higher crime rates than small cohorts.
ACKNOWLEDGEMENTS

The writer wishes to acknowledge the One who made the completion of this thesis possible, without God "Almighty" I would not have accomplished the task.

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CHAPTER I
INTRODUCTION

Statement of the Problem

This thesis examines the statistical relationship of four variables: age, period, cohort and race to aggravated assault rates reported in the Uniform Crime Reports from 1964-1985.

Researchers have indicated that the fluctuations in the age composition of a population have a significant impact on crime ratios (Wolfgang et al., 1972; Bonger, 1943). The relative significance of these four variables is in question; i.e., at what level of significance does age, period, cohort and race influence crime rates?

There are no specific longitudinal studies that examine the statistical relationship of these four variables to crime rates for specific offenses; i.e., aggravated assault, homicide, burglary, etc. The research herein focuses primarily on the relationship of age, period and cohort to aggravated assault; secondarily, race is examined for the year 1985.

Aggravated assault is considered to be a very serious crime in the United States, second only to homicide in its impact upon a society which is very much concerned (if not preoccupied) with violent crimes (Criminal Victimization.

**Data Source**

For the purpose of data retrieval, the writer utilized the Uniform Crime Reports for 1964 through 1985, made available through the United States Department of Justice, Washington, D.C.

**Purpose and Objective of the Study**

The purpose of this study is two-fold: first, to study the trends of aggravated assault over the 20-year period and second, to test Easterlin's hypothesis in relation to cohort. This hypothesis postulates that large cohorts generate higher crime rates within a given population than small cohorts. A cohort is a band or group of persons who experience the same thing at the same time. Age specific rates are seen as ages 12 to 65+. There are 21 age categories listed as follows: 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25-59, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65+. 
Limitations of the Study

Aggravated assault is a highly personalized crime. We do not deal with either the personal or social characteristics (other than age, cohort, period and race) of either the perpetrator or the victim. We reasoned from past studies that a young population, large cohorts and certain time periods would generate higher aggravated assault rates in a population than the older populations, small cohorts and certain time periods. Certainly personality characteristics are pertinent to aggravated assault, but we do not consider them.

Secondly, we do not control for the displacement effect; i.e., it is the lack of control of multicollinearity between two or more variables. A person may be arrested for aggravated assault when in reality he simultaneously committed offenses such as drug abuse. Additionally, a person could initially be charged with aggravated assault and later charged with homicide should the victim die. Furthermore, a person could be charged with aggravated assault and later through the plea bargaining process have this charge reduced to simple assault or battery.

Thirdly, this longitudinal study is limited to the years 1965 to 1984.

Fourthly, the statistical analysis is limited only to the Uniform Crime Report Data.
Finally, aggravated offenses are not frequently reported to the police because those who assault usually know their victims and their victim will not report them.

**Definition of Terms**

The essential terms that need to be defined are aggravated assault, cohort, displacement effect, longitudinal study, multiple regression, Pearson's correlation and regression analysis.

"The UCR (1985) defines aggravated assault as an unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily harm. This type of assault is usually accompanied by the use of a weapon or by means likely to produce death or great bodily harm. Attempts are included since it is not necessary that an injury result when a gun, knife, or other weapon is used which could, and probably would, result in serious personal injury if the crime were successfully completed."

A cohort is an aggregate of individual elements, each which experiences a significant event in its life history during the same chronological interval. Displacement effect is the lack of multicollinearity between two or more variables. A person may be arrested for aggravated assault when in reality he simultaneously committed offenses such as drug abuse. Longitudinal studies are designed to observe
certain trends in the cohort; i.e., age over a period of time. An advantage of a longitudinal study is that a variable can be studied over a period of time to see if there is a change rather than by being studied for one year and the outcome changes the next year.

Multiple regression uses more than one independent variable to predict the value of the dependent variable. Pearson's correlation is an inferential statistical measure which measures the magnitude and direction of association between two variables. The magnitude of association can be between: (1) independent and dependent variables; (2) independent and independent variables; (3) dependent and dependent variables. Therefore, this analysis helps to determine the relationship between the independent variables, as well as between the independent and dependent variables.

Regression analysis is used to measure the impact of independent variables on dependent variables. However, regression analysis cannot fully be substituted for correlation analysis since it cannot indicate the direction of association (negative or positive) but it can compliment the correlation coefficients. In regression analysis one can have a number of independent variables, but only one dependent variable. Regression techniques are of several types: simple, multiple and step-wise regression. For the
present study multiple linear regression was used.

Organization of the Thesis

This thesis consists of five chapters. Chapter I consists of the introduction, statement of the problem, purpose and significance of the study, limitations of the study, definition of terms and the organization of the thesis. Chapter II includes a review of selected literature on aggravated assault. Chapter III consists of the theoretical framework and the methodology. Chapter IV deals with data analysis and Chapter V gives the findings, summary and conclusions and discusses the implications.
CHAPTER II

REVIEW OF LITERATURE

This chapter examines studies on aggravated assault in relationship to four variables: age, cohort, period and race. Racial data are not available for the longitudinal study (1965-1984). The relationship of race to aggravated assault is examined for one year, 1985. Comparable Uniform Crime Report data are not available for other years.

Though we use the Uniform Crime Report’s (1985) definition of aggravated assault, the definition of assault varies from jurisdiction to jurisdiction and from country to country. Several studies have dealt directly with the relationship of aggravated assault to age, sex, period, race and cohort. Criminologists have been concerned with the relationship between age and crime ever since the pioneering investigation of the subject by Adolphe Que’telet in the early nineteenth century (Kadish, 1983).

Pittman and Handy (1965) studied aggravated assault patterns from the arrest records of a random sample of 25 percent of the 965 offenders arrested for aggravated assault by the St. Louis Metropolitan Police Department from January 1, 1961 to December 31, 1961. Sample cases totaled 241. Copies of the offense reports for each sampled case were obtained as well as the arrest records of the offender and
the victim involved.

They found that an act of aggravated assault was more likely to occur on a weekend than during the week specifically between 6:00 p.m. Friday and 6:00 a.m. Monday; with peak frequency on Saturday, between 10:00 p.m. and 11:00 p.m. This type of assault peaks in the months of July and August. The crime occurs on a public street or in a residence. If a female is the offender, the act will occur indoors, if a male offender, outdoors. When offender and victim are related, the act will more likely occur in a residence than anywhere else.

It was also found that in most cases both men and women will use a knife, with a gun as the second choice. Generally, the act will be reported to the police by the victim. More than 75 percent of the aggravated assault cases will be cleared by arrest within one hour after the crime occurs. Both the offender and victim will be of the same age group, usually between the ages of 20 and 35, with the offender being older.

Pittman and Handy (1965) also compared aggravated assault to the findings with those of Wolfgang (1958) on criminal homicide and found that for both aggravated assault and homicide, occurrences were higher on Saturdays than any other day. Summer months accounted for a higher percentage of crime than any other month. Also, for both homicide and
aggravated assault, the majority of the victims had no prior arrest record, while the majority of the offenders did. Both crimes occurred more often on a public street than any other location.

The weapon most often used differed between homicide and aggravated assault; a pistol was most common in homicides, while a knife was most common in aggravated assaults. The injection of alcohol was more common in homicide than assault. Verbal arguments preceded both crimes, but alcohol was involved in the arguments in homicide situations more often than in aggravated assault cases. Lastly, for both crimes, the victim and offender were typically of the same age and sex.

Luckenbill (1984) found that assaults typically involve adolescents and young adults. Mulvihill, et al., (1969) analyzed FBI data from 1965-1969 on aggravated assault arrests and found that the patterning of offenders by age was quite similar to that of those arrested for homicide. The age group 18-24 had a much higher arrest rate for aggravated assault than the age group 15-17. From ages 25-34 assault arrests rates were about the same as the 18-24 age group. After age 35 the arrest rates for aggravated assault began to decline significantly.

Luckenbill compared the UCR (1982) with other Western countries, i.e., England, Wales, Denmark, Finland, Italy,
and Canada, and found that 43 percent of those arrested for aggravated assault ranged from 25 to 34 years of age, and that the average age of arrestees is 28 years of age. When looking at the time period in 1981, Luckenbill (1984) found that the 1981 aggravated assault rate had increased 23 percent from 1976, 57 percent from 1971, 133 percent from 1966, and 228 percent from 1961. These rates were substantially higher than those of most other highly industrialized nations (Luckenbill, 1984). Luckenbill (1984) found that males were involved in most assaults. When women were involved, they usually participated with men. Wolfgang (1967) notes that every study of assaultive crimes has found a low rate of female involvement as compared to the male rate.

It was also found was the Southern and Western regions exceed the Northeastern and North Central regions in rates of assault. The more urbanized an area, the higher the rates of assault. In assaults, the offender and victim often have a personal relationship. Lastly, assaults typically involve persons who have a history of crime, often of a violent nature.

Blacks constitute about 12 percent of the population. They are involved in nearly one-half of all assaults (Luckenbill, 1984). In 1985, blacks accounted for 40.4 percent of those arrested for aggravated assault. In a
study of violent crimes in seventeen large American cities, the National Commission on the Causes and Prevention of Violence found that 66 percent of its aggravated assault cases involved blacks assaulting blacks and 24 percent involved whites assaulting whites; only 10 percent of the cases were interracial (Mulvihill and Tamin, 1969).

According to the *Uniform Crime Reports* (1985) there were 231,620 arrests for aggravated assault in 1984. Thirty-one percent of these arrestees were aged 18-24, 19 percent were aged 25-29 and 32 percent were aged 30-34.

A number of researchers have argued that crude rates of crime and delinquency are a function of a population's age pyramid. That is, given constant age-specific rates, the overall crude rates will fluctuate in concert with the proportion of individuals in age groups with the differing age-specific rates (Maxim, et al., 1980). Richard Easterlin, however, has suggested that it is unreasonable to expect age-specific rates to remain constant in the face of fluctuating population distributions. Specifically, it is suggested that many social phenomena, such as crime rates, will fluctuate according to the relative size of the age cohort considered (Easterlin, 1984). This hypothesis was tested by Maxim (1980) using official delinquency statistics from the Province of Ontario, Canada, for the years 1952-1981. The data suggest that Easterlin's hypothesis is
Easterlin (1984) argues that there is an increase in aggravated assault as a direct result of the coming of age during the "baby boom" of the 1960s. He explained that the population has a profound affect on the percentage of aggravated assault. Most research on the cohort size seems to have been motivated by the perceived relationship between crime and the post-war "baby boom." Few researchers have focused on the primary problem posed by the "baby boom" - that of increased cohort size. Norman Ryder, wrote that "a cohort's size relative to the size of its neighbors is a persistent and compelling feature of its lifetime environment. As the new cohort reaches each major junction in the life cycle, the society has the problem of assimilating it." Ryder also notes that the cohort entering adulthood in the late 1960s had the misfortune to be raised in crowded housing, crammed together in schools, and faced with the bad labor market primarily because of their large size.

Easterlin notes that if a given cohort begins committing crimes at the age of fifteen and continues doing so at the same rate in subsequent years, this implies that the cohort experiences no age effect because its crime rate remains constant as the cohort grows older. On the other hand, if from one year to the next each subsequent cohort of
fifteen years old has a higher crime rate than the one before it - a rate which remains constant as the cohort grows older - then in any given year, older cohorts will be committing crimes at lower rates than younger cohorts. This may create a false impression that involvement in crime diminishes with age.

The foregoing studies disclose that the typical age of those arrested for aggravated assault ranged from ages 18 to 34 years with 28 being the median age. Males are much more likely to be involved in aggravated assaults than females. The Southern and Western regions exceed the Northeastern and North Central Regions in rates of assault. The more urbanized an area, the higher the rate of assault. It was also found was that assaults typically involve persons who have a history of crime of a violent nature.
CHAPTER III

THEORETICAL FRAMEWORK, HYPOTHESIS AND METHODOLOGY

This chapter formulates a systematic conceptual scheme of the relationship between the specific independent variables of the study and show how these variables are correlated with aggravated assault. It also discusses the methods used to analyze the impact of age, period and cohort on aggravated assault. In order to test the hypotheses proposed in Chapter I, the relevant data was obtained on age, period and cohort variables. Criminologists have long known that age is one of the most significant variables in predicting the rates of official crime and delinquency (Nettler, 1978).

Figure 3.1

Conceptual Framework Between Age, Period and Cohort

AGE

PERIOD — AGGRAVATED ASSAULT

COHORT

Figure 3.1 - This conceptual framework shows the theoretical relationship between age, cohort, time period and aggravated assault.
As shown in Figure 3.1 this study infers a theoretical relationship between three independent variables; age, cohort and time period and the dependent variable aggravated assault. This type of relationship inferred is a linear one.

**Hypotheses**

This study tests the relationship between age, time period, and cohort to aggravated assault. Three hypotheses are tested:

**H1:** There is a significant relationship between age and aggravated assault as measured by the rates of arrests for aggravated assaults reported in the *Uniform Crime Reports* from 1965 to 1984.

**H2:** There is a significant relationship between time period and aggravated assault as measured by the rates of arrests for aggravated assaults reported in the *Uniform Crime Reports* from 1965 to 1984.

**H3:** There is a significant relationship between cohort groups and aggravated assault as measured by the rates of arrests for aggravated assaults reported in the *Uniform Crime Reports* from 1965 to 1984.

**Measurement of Variables**

The independent and dependent variables used in this study are measured as follows:
1. Age: The common practice of measuring age is in terms of completed years by a given individual. Survey research study is primarily based on sample respondents. Age is computed in single years (Duncan, 1972; Luckenbill, 1984; to cite a few). Alternately, this study is based on completed populations counts such as the census. Age is measured in terms of conventional age groups (Example: 0-4, 5-9, 10-14, 15-19, etc.). Maxim (1980) adopted this method to measure the effect in Canada. The present study utilizes a combination approach. We examine the assault rates for each year and for each age category during the year 1965-1984. Age data is available in the Uniform Crime Reports (1985). Uniform Crime Reports (1985) provides the rate of arrestees of various types of crimes by the following age categories: less than 10, 12, 13, 15, 16-25, 30, 40, 45, 50, 55, 60, 65+.

2. Cohort: This study utilizes cohort based on two events; age and time period. The cohort of a given time at "t" will be one year older at time 't+1' and two years older at time 't+2' and so on.

3. Period (time): Maxim (1980) uses specific time points with an equal interval of five years to
measure the impact of age groups on the crime rate in Canada. In other words, Maxim used five year age group intervals. However, this study uses continuous calendar years from 1965 to 1984 for statistical purposes.

4. Aggravated Assault: This study considers the arrest rates for aggravated assault in a given calendar year for a given age group. Arrest rates by age and year are taken from the Uniform Crime Reports (1985).

Figure 3.2 provides a diagrammatic representation of the relationship between age, period and cohort groups across 21 age groups in 20 time periods. This chart reveals two major processes: (1) there are 20 age cohorts and 20 period cohorts which total 40 cohorts of the population; (2) the chart illustrates how the cohort advance in their age, as they move from one time period to another.

In regard to period cohorts, Figure 3.2 indicates that as new cohorts enter the initial age group, old cohorts disappear at the terminal age group; i.e., in 1984 C40 enters at ages 12 and 19 but disappear at 65+ since they were already in age groups in the present time period.
FIGURE 3.2

DIAGRAMMATIC REPRESENTATION OF THE RELATIONSHIP
BETWEEN AGE, PERIOD AND COHORT GROUPS

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<td>C3</td>
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<td>C18</td>
<td>C19</td>
<td>C20</td>
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</tbody>
</table>
Methodology Utilized by the Uniform Crime Reports

Section I explains the methodology that was used by the UCR to obtain age-specific arrest rates and to compute median age at arrest. Section 2 outlines the methodology adopted for this study and included here are dummy variables, dummy years, dummy cohorts and dummy age groups. Multiple regression analysis is the statistical tool used to measure the effect of two or more independent variables on the dependent variable.

Arrest data using the UCR was obtained from the Uniform Crime Reporting Program covering a 20-year period, 1965-1984. UCR arrest data as they relate to age-specific arrest rates have undergone the following historical changes:

1. With respect to the classification of age, the categories "10 and under" and "11 and 12" were used through 1979. Starting in 1980, these categories were replaced by the age groups "under 10" and "10 through 12."

2. UCR arrest data were gathered annually until 1973. In 1974, monthly reporting of arrest data was implemented.

3. In 1980, the "age not known category" was dropped. The impact of this action was negligible as the category constituted only a fraction of one percent of total arrests.

In order to make the classification age data prior to 1974 comparable with that published in succeeding years, the
two categories involving individuals up to the age of 12 were combined into a "12 and under" category. No attempt was made to estimate or include arrest data for agencies reporting statistics for 11 months or less. The number of agencies represented in this report and their respective populations are listed in Table 3.1.

An age-specific arrest rate refers to the number of arrests made of 100,000 inhabitants belonging to a prescribed age group. The size of the population pertaining to a prescribed age group was computed for each year by distributing the UCR contributors population through the use of age distributions derived from U.S. Census publications. The source of population data used is from the Current Population Report Series as listed below.

1965-1969 Series P-25, No. 519
1970-1979 Series P-25, No. 917
1980-1982 Series P-25, No. 929
1983 Series P-25, No. 949
1984 Series P-25, No. 946

According to the Uniform Crime Report, the UCR arrest data can be divided into age groups. Some are single-age categories (e.g., 20-year olds) while others are multiple-age categories (e.g., 20-24 year olds). Below is the method for computing the average age of arrestees.

Let \((x,x')\) denote the age interval \((x_1,x')\). For example
<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF UCR CONTRIBUTORS</th>
<th>UCR CONTRIBUTORS POPULATIONS</th>
<th>TOTAL U.S. POP.</th>
<th>PERCENT OF U.S. POP. COVERED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>4,047</td>
<td>126,564,000</td>
<td>193,526,000</td>
<td>65</td>
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<tr>
<td>1966</td>
<td>4,048</td>
<td>132,390,000</td>
<td>195,576,000</td>
<td>68</td>
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<tr>
<td>1967</td>
<td>4,302</td>
<td>138,481,000</td>
<td>197,457,000</td>
<td>70</td>
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<tr>
<td>1968</td>
<td>4,533</td>
<td>136,647,000</td>
<td>199,399,000</td>
<td>69</td>
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<tr>
<td>1969</td>
<td>4,510</td>
<td>138,705,000</td>
<td>201,385,000</td>
<td>69</td>
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<tr>
<td>1970</td>
<td>5,073</td>
<td>145,014,000</td>
<td>203,984,000</td>
<td>71</td>
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<tr>
<td>1971</td>
<td>5,490</td>
<td>149,491,000</td>
<td>206,827,000</td>
<td>72</td>
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<tr>
<td>1972</td>
<td>6,264</td>
<td>160,997,000</td>
<td>209,284,000</td>
<td>77</td>
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<tr>
<td>1973</td>
<td>5,946</td>
<td>156,356,000</td>
<td>211,256,000</td>
<td>74</td>
</tr>
<tr>
<td>1974</td>
<td>6,279</td>
<td>145,584,000</td>
<td>213,343,000</td>
<td>68</td>
</tr>
<tr>
<td>1975</td>
<td>7,528</td>
<td>156,854,000</td>
<td>215,465,000</td>
<td>73</td>
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<td>1976</td>
<td>7,253</td>
<td>164,566,000</td>
<td>217,563,000</td>
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<td>1977</td>
<td>7,479</td>
<td>163,288,000</td>
<td>219,760,000</td>
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<td>1978</td>
<td>9,213</td>
<td>187,544,000</td>
<td>222,095,000</td>
<td>84</td>
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<tr>
<td>1979</td>
<td>9,833</td>
<td>183,941,000</td>
<td>224,567,000</td>
<td>82</td>
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<tr>
<td>1980</td>
<td>8,178</td>
<td>169,439,000</td>
<td>227,202,000</td>
<td>75</td>
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<td>1981</td>
<td>10,382</td>
<td>183,013,000</td>
<td>229,348,000</td>
<td>80</td>
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<tr>
<td>1982</td>
<td>9,832</td>
<td>187,346,000</td>
<td>231,534,000</td>
<td>81</td>
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<tr>
<td>1983</td>
<td>10,827</td>
<td>200,692,000</td>
<td>233,981,000</td>
<td>86</td>
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<tr>
<td>1984</td>
<td>10,696</td>
<td>199,475,000</td>
<td>236,158,000</td>
<td>84</td>
</tr>
</tbody>
</table>
the UCR age group "25-29" is expressed as 25,30. Let \( x_0, x_1, (x_1, x_2), (x_2, x_3) \), be consecutive age intervals, and \( f(x) \) be a quadratic function of the form \( f(x) = 3ax^2 + 2bx + c \). It is required that the function \( f(x) \) satisfied the following conditions: \( x_1 \) \( \int f(x)dx = D \) \( x_2 \) \( \int f(x)dx = E \), and \( x_3 \) \( \int f(x)dx = F \).

Where \( D, E, \) and \( F \) represent the number of UCR arrests for the consecutive age intervals \([x_0, x_1], [x_1, x_2], \) and \([x_2, x_3] \).

The system of equation (1) can be solved for the unknowns \( a, b, \) and \( c \). Using the notations:

\[
G =
\begin{bmatrix}
  x_3 & x_3 & x_3 & x_3 & x_2 & x_2 & x_2 & x_2 & x_1-x_0 \\
  3 & 2 & 1 & 0 & 1 & 0 & 1 & 0 & 1-x_0 \\
  2 & 1 & 0 & 1 & 1 & 2 & 1 & 2 & x_1-x_2 \\
  1 & 0 & 1 & 0 & 2 & 1 & 2 & 1 & x_2-x_1 \\
  3 & 2 & 1 & 0 & x_2 & x_2 & x_2 & x_2 & x_3-x_2 \\
  3 & 2 & 1 & 0 & 2 & 1 & 2 & 1 & x_3-x_2 \\
  0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{bmatrix} \quad H =
\begin{bmatrix}
  x_2 & x_2 & x_2 & x_2 & x_3-x_0 \\
  2 & 1 & 0 & 1 & 0 & 1 & 0 & 1-x_0 \\
  1 & 0 & 1 & 0 & 2 & 1 & 2 & 1 & x_1-x_2 \\
  2 & 1 & 0 & 1 & 1 & 2 & 1 & 2 & x_2-x_1 \\
  3 & 2 & 1 & 0 & x_2 & x_2 & x_2 & x_2 & x_3-x_2 \\
  3 & 2 & 1 & 0 & 2 & 1 & 2 & 1 & x_3-x_2 \\
  0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{bmatrix}
\]

\[
I =
\begin{bmatrix}
  Dx_3^3 - x_3^3 & x & x \\
  1 & 0 & 0 & 1 & 0 & 1 & 0 & 1-x_0 \\
  2 & 1 & 0 & 1 & 1 & 2 & 1 & 2 & x_1-x_2 \\
  1 & 0 & 1 & 0 & 2 & 1 & 2 & 1 & x_2-x_1 \\
  3 & 2 & 1 & 0 & x_2 & x_2 & x_2 & x_2 & x_3-x_2 \\
  3 & 2 & 1 & 0 & 2 & 1 & 2 & 1 & x_3-x_2 \\
  0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{bmatrix} \quad J =
\begin{bmatrix}
  x_3^3-x_3 & x_2^3-x_2 & x_2^3-x_2 & D \\
  3 & 2 & 1 & 0 & 1 & 0 & 1 & 0 & 1-x_0 \\
  2 & 1 & 0 & 1 & 1 & 2 & 1 & 2 & x_1-x_2 \\
  1 & 0 & 1 & 0 & 2 & 1 & 2 & 1 & x_2-x_1 \\
  3 & 2 & 1 & 0 & x_2 & x_2 & x_2 & x_2 & x_3-x_2 \\
  3 & 2 & 1 & 0 & 2 & 1 & 2 & 1 & x_3-x_2 \\
  0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{bmatrix}
\]
The solution for (1) is expressed as (2) \( a = \frac{H}{G}, \ b = \frac{I}{G}, \) and \( c = \frac{J}{G}. \)

The distribution \( f(x)/E, x_1 \leq x \leq x_2 \) is applied to obtain the average age of arrestees on the interval \([x_1, x_2);\)

\[
\sum_{x_1}^{x_2} x f(x)/E dx = \left[ \frac{9(x - x_1)H + 8(x - x_2)I + 6x - J}{12EG} \right]
\]

Therefore, the average age is represented by the weighted sum over all age intervals.

**Analytical Procedures**

The analytical procedures used in this study are of two types: First, the dummy variable conversion is used to lay out the data set in a final usable form to conduct multiple regression analysis. Second, the inferential statistical procedures, correlation and multiple regression are used to test the hypothesis proposed in Chapter I.

**Dummy Variable Conversion Procedures**

Sometimes X variables desired for inclusion in a regression model are not continuous. Such variables can either be ordinal or nominal. Ordinal measurements represent variables with an underlying scale. An example
would be the severity of a burn. It can be classified as mild, moderate or severe. But these burns are commonly called first-, second-, and third-, degree burns. The $X$ variable representing these categories may be code 1, 2, or 3, respectively. This method looks at the underlying order of the data. Thus, we assume that equal values are placed between intervals. An example would be that we assume that there is a difference between first-degree and second-degree and third-degree burns. In this section we will use one or more nominal $X$ variables in regression analysis.

An example would be, suppose the dependent variable $Y$ is yearly income in dollars and the independent variable $X$ is the sex of the respondent (male or female). To represent sex we create a dummy variable $D=0$ if the respondent is male and $D=1$ if the respondent is female. The sample regression equation can then be written as $Y=A+BD$. The value of $Y$ is $Y=A$ if $D=1$ and $Y=A+B$ if $D=1$.

Nominal measurements are a level of measurement describing a variable whose different attributes are only different. Sex would be an example of a nominal measure.

The present study involves the conversion of a dummy variable beyond two categories. The study converts all the independent variables into dummy variables so that any possible effect in the conversion procedures can be controlled. The following are the specific dummy
categories of each independent variable in the present study.

a. **Age:** The *Uniform Crime Reports* are made available on arrestees for the 21 age groups. In an attempt to set the data base for computer analysis, the dummy categories for each of these age groups are required. Therefore, the dummy age categories were created for each age group by using an SPSSX logical command. For example, the first dummy age category utilized the logical command "If (ZAGE = 1) DAGE 1=1." For the second category it is "If (ZAGE = 2) DAGE 2=1." Similar logical commands were used until all 21 age groups were exhausted.

"See Appendix A for more details on computer programs"

b. **Cohort:** The *Uniform Crime Reports* also made the data available on arrestees for 40 dummy cohorts. In an attempt to set the data base for computer analysis, the dummy categories for each of these cohort groups were required. Therefore, the dummy age categories were created for each cohort group by using an SPSSX logical command. For example, the first dummy cohort category utilizes the logical command "If (COHORT EQ 1) = DCOH1=1." For the second category it is "If (COHORT EQ 2) = DCOH1=1." Similar logical commands were used until all 40 cohort groups were exhausted.

"See Appendix B for more details on computer programs"
c. **Period:** The Uniform Crime Reports also made the data available on arrestees for 20 years. In an attempt to set the data base for computer analysis, the dummy categories for each of these years were created for each year by using an SPSSX logical command. For example, the first dummy year category utilized the logical command "If (ZYR EQ 1) DYR1=1." For the second category it is "If (ZYR EQ 2) DYR2=1." Similar logical commands were used until all 20 years were exhausted.

"See Appendix B for more details on computer programs"

**Multiple Regression**

The best statistical method known to predict the value of a dependent variable is regression analysis. This analysis is founded on the axiom: a dependent variable when correlated with the independent variable(s) represents a basic pattern which can be used to predict the range of the values of the dependent variable that should occur if the trend continues; e.g., the assault arrests vary by X units given Y units of change in age.

There are two types of regression analysis: simple regression and multiple regression. We are concerned with multiple regression. This type of regression can be divided into either linear or nonlinear regression. Linear multiple regression has more than one variable and is used to predict
the value of its dependent variable. The data falls along a straight plane. Nonlinear regression has more than one variable and is used to predict the dependent variable. The data falls along a curved plane.

The calculations of the multiple regression are as follows:

Dependent Variable = Constant + Beta X independent variable 1 + independent variable 2 +......+ Beta independent N + e ............ (EQ 1)

A.A. = C + B1 X age + B2 + Period + B3Co + e ...... (EQ 2)

Where;

A.A. = aggravated assault rate
A = age of arrestees
P = period or the year of arrestees
Co = Cohort (#of arrestees in a given calendar year)
C = Constant
B1, B2, B3 = Beta Coefficients

Since this study intends to test two different hypotheses, the above multiple regression equation (EQ 2) is divided into the following two independent regression equations.

A.A. = C = Bi Aid + Bi Pid + e.........................(EQ 3)

Where;

Aid = dummy age variable of i=th age category (where i varies from 2 to 21)
Pid = dummy variable of i-th year (where i varies from 2 to 21)

The remaining notations are the same as in equation 2 (EQ 2).

\[ A.A. = C = B_i C_{oid} + e \] (EQ 4)

Where;

\[ C_{oid} = \text{dummy cohort variables of i-th cohort category} \]
\[ i \text{ varies from 2 to 40} \]

The remaining notations are the same in equation 2. The empirical results of equation 3 and 4 were obtained from the DEC 20 computer at Atlanta University Computer Center utilizing the SPSSX package.

This chapter provided an outline of conceptual framework, measurement of variables, methodology by the Uniform Crime Report (1985) and analytical procedures using dummy variable conversion and inferential statistical procedures.
CHAPTER IV

DATA ANALYSES

The purpose of this chapter is to explain various procedures adopted in analyzing the data and to present the results. This analysis discloses the empirical relationship between aggravated assault rates and age, period and cohort that permits the testing of the three hypotheses postulated in Chapter III. Racial aggravated assault rates are presented for 1985 because studies have found a significant relationship between aggravated assault and race. In 1985, out of 262,228 aggravated assaults, 58.0 percent were white, 40.4 percent were black and 1.6 percent were other. In 1985, blacks accounted for 12.3 of the total United States population.

The analytical procedures discussed in this section are organized into three subsections:

(1) Patterns of aggravated assault
(2) Correlation analysis
(3) Regression analysis

**Patterns of Aggravated Assault**

Figure 4.1 clearly illustrates the average age of arrestees for aggravated assault during the 20-year period (1965-1984). This figure clearly shows that the median
FIGURE 4.1

AVERAGE AGE OF ARRESTEES FOR AGGRAVATED ASSAULT
1965-1984
average age of those arrested was 28 years of age. The age of those arrested for aggravated assault declined at a constant rate between 1965-1971. There was a sharp decline during this period: 28.76 in 1973 to 28.08 in 1979. Between 1980 and 1984 age was on the climb. Within the four-year span, age went from 28.08 to 28.96. Overall trends disclose that the average age of those arrested for aggravated assault increased between 1980 and 1984 and continues to rise. These results may be attributed to age and period problems that were faced in the 1960s. The turbulent 1960's high rate of poverty, Civil Rights Movements, racial riots, campus turmoil and youth drug culture could be a solution to the high age rates in the 1960s.

**Correlation Analysis**

This section looks at how the three variables age, cohort, and period are related to other offenses. Correlation analysis is seen as an inferential statistical measure which measures the magnitude and association of direction between: (1) independent and dependent variable; (2) independent and independent variables; and (3) dependent and dependent variables. Therefore, this analysis helps to determine the relationship among the independent variables as well as between the independent and dependent variables.
Table 4.1 provides the zero order correlation coefficients and their significance level between aggravated assault, the independent variables of the study, as well as other offenses. This table indicates that all of the variables are significantly associated. With the exception of age, all are positively associated.

**TABLE 4.1**

**CORRELATION BETWEEN AGGRAVATED ASSAULT, AGE, COHORT, AND OTHER OFFENSES**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>.2477*</td>
</tr>
<tr>
<td>Age</td>
<td>-.5649*</td>
</tr>
<tr>
<td>Murder</td>
<td>.8457*</td>
</tr>
<tr>
<td>Rape</td>
<td>.8595*</td>
</tr>
<tr>
<td>Robbery</td>
<td>.7890*</td>
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<td>Burglary</td>
<td>.0155*</td>
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<tr>
<td>Larceny</td>
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<td>Auto Theft</td>
<td>.0580*</td>
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<tr>
<td>Arson</td>
<td>.4771*</td>
</tr>
<tr>
<td>Drug</td>
<td>.4442*</td>
</tr>
</tbody>
</table>

* = Significance level = less than or equal to .05
As the time period changes from 1961 to 1964, there is a change in aggravated assault. Also the involvement in aggravated assault increases the probability of a person being involved in other offenses. The inverse relationship between age and aggravated assault shows that the younger person are more prone to be arrested than the older. This finding is in agreement with those found in other studies (Kadish, 1983; Mulvihiill et al., 1969; Luckenbill, 1984).

This analysis does not distinguish between independent and dependent variables; thus, we cannot measure the amount of effect that age and period have on aggravated assault. Therefore, regression analysis has been conducted to measure such impact.

Regression Analysis

The purpose of this analysis is primarily to test the analysis proposed in Chapter III. The regression analysis will be in two stages. The first stage will be to test the impact of age and time period on aggravated assault. The second, will test whether a cohort has a significant impact on the level of crime. The related information on regression coefficients are included in Tables 4.2 and 4.3.

The first and second hypotheses proposed in this study for testing are age and time period. Will age and time period have a significant impact on aggravated assault? In
### TABLE 4.2.

AGE EFFECTS ON AGGRAVATED ASSAULT

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>BETA</th>
<th>SE</th>
<th>T</th>
<th>SIGN.T</th>
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</thead>
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<td>7.8708E-04</td>
<td>2.053</td>
<td>.0083</td>
</tr>
<tr>
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* = Significant at less than or equal to .05
order to determine the outcome dummy variable multiple linear regression was implemented. See Table 4.2.

In looking at the age groups, all of the age categories had a direct significance in determining the effects of age on the offender. The levels of significance ranged from .008 at the age of 12 to .0157 at the age of 60. The year 1977 seemed to be the most significant year because of the rise in criminal activity. More people were born in that year, therefore, there was a rise in crime. From the above analysis, the hypothesis was not confirmed that age has a significant impact on the aggravated assault.

The third hypothesis to be tested is that of cohort. Will cohort have a significant impact on the level of crime? In order to fulfill this objective a dummy variable multiple linear regression was implemented. These results can be found in Table 4.4.

When looking at the cohorts from cohort 2 to 40, the researcher found that cohort 13 was the only one of significance. This was also in relation to the year 1977 in age and time period. This was probably the year the cohort had a rise in crime activity. More people were born in cohort 13 and that meant a rise in criminal activity. From Cohorts 2 to 12 the insignificant levels remained high. It also remained high from Cohorts 14 to 40. Therefore, the above finding does not confirm Hypothesis II; i.e., the
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* = Significant at less than or equal to .05
cohort does not have a significant impact on the level of crime.

A model estimate was done in Table 4.5 by using multiple $R^2$; i.e., the proportion of variance that can be explained in aggravated assault by each model. Model I, which is age and period, is more significant than Model II, which is cohort. Model I shows a 47% level of crime in age and period. Model II shows a 26% level of crime in cohort.

These findings are inconsistent with Easterlin's hypothesis, who proposed that cohort will have a more significant impact on the level of crime than age and period.

In this chapter, the researcher looked at patterns of aggravated assault, correlation analysis and regression analysis and found that Hypothesis I, which is age and period, shows a constant positive relationship between age and aggravated assault and no significant relationship between time period and aggravated assault. Furthermore, the analysis showed no relationship between cohort and aggravated assault arrest rates. Therefore, the first hypothesis was confirmed and the last two were not confirmed.
TABLE 4.5.

MODEL ESTIMATES

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CHAPTER V

SUMMARY, FINDINGS AND CONCLUSIONS

The purpose of this study was to test Richard Easterlin's hypothesis: that large cohorts generate a higher crime rate within a given population than smaller cohorts regardless of age and time period. To accomplish this purpose the researcher examined the trends of aggravated assault in relationship to age, cohort, and period from the years 1965 through 1984.

The literature review disclosed that age was more significant in its relationship to aggravated assault than period or cohort. For example, Luckenbill (1984) found in the arrests for aggravated assault comparing the United States to other Western countries that the typical age of those arrested for aggravated assault ranged from ages 18 to 34 years (with 28 being the median age). He also found that males were universally involved in more assaults than females; that when women were involved they usually participated with men; that the more urbanized an area, the higher the rates of assault; and that assailters typically had violent crime histories.

Pittman and Handy (1965) examined aggravated assault patterns from the arrest records of a random sample of 25 percent of the 965 offenders arrested for aggravated assault.
by the St. Louis Metropolitan Police Department from January 1, 1961 to December 31, 1961. They found that an act of aggravated assault was more likely to occur on a weekend than during the week specifically between 6:00 p.m. Friday and 6:00 a.m. Monday; peak frequencies were on Saturdays between 10:00 p.m. and 11:00 p.m.; that in most cases both men and women assaulters used knives (guns were the second choice).

Findings related to three hypotheses are as follows:

**H1:** There is a significant relationship between age and aggravated assault as measured by the rates of arrests for aggravated assaults reported in the Uniform Crime Reports from 1965-1984. This hypothesis was confirmed.

**H2:** There is a significant relationship between time period and aggravated assault as measured by the rates of arrests for aggravated assaults reported in the Uniform Crime Reports from 1965-1984. This hypothesis was not confirmed.

**H3:** There is a significant relationship between cohort groups and aggravated assault as measured by the rates of arrests for aggravated assaults reported in the Uniform Crime Reports from 1965-1984. This hypothesis was not confirmed.

The researcher found that the variable age alone has a
more significant relationship to aggravated assault arrest rates than either period or cohort. The combination of age and period (together) is more significantly related to aggravated assault arrest rates than that of age and cohort (together). Therefore Easterlin's hypothesis not acceptable for aggravated assaults. That is, large cohorts do not necessarily generate higher arrest rates for aggravated assault than small cohorts.

The limitations that the researcher found in this study were as follows: (1) aggravated assault is a highly personalized crime. We do not deal with either the personal or social characteristics (other than age, cohort, period and race) of either the perpetrator or the victim; (2) the displacement effect is not controlled for the multicollinearity between two or more criminal offenses; (3) this longitudinal study is limited only to the Uniform Crime Report data; (4) finally, aggravated assault arrest rates do not actually measure the total volume of assaults because they are underreported to the police.

Policy and Research Implications

These findings concerning age and aggravated assault disclose the target group for treatment and preventive measures; that is, ages 18 to 34 years (median age 28). The researcher is not a treatment person, however, she suggests
several broad measures to policy makers and treatment personnel (psychologists, psychiatrists, social workers, clergymen, and the like).

The high-risk groups for aggravated assault disclosed in this study (18-34) probably share a subculture of poverty. Empirical data from other studies indicate that high aggravated assault and homicide rates occur consistently among certain social groups where there are close contacts between offenders and victims: young, under-educated and uneducated, under-employed and unemployed, unskilled, lower-class, underprivileged, ghetto dwellers. Values promoting violence are frequently found among such groups. Assuming that such a subculture of poverty exists among these groups, it is suggested that the greater the degree of integration of the individual into this subculture of poverty, the higher the probability that his behavior will often be violent - thereby leading to aggravated assault in many cases. The model of being a "man" is often a "macho man" in such a subculture. Those males who adopt this role model are prone to violence in the process of problem solving.

It is likely that persons who carry this subculture have been segregated both physically and socially from mainstream society. Their environment is characterized by housing segregation, poor housing, high unemployment,
low-wage earnings, and inadequate coping resources necessary for any climb into the mainstream of society. There is a constant struggle to survive from day to day. Many feel that they are entrapped in their environment, therefore they have little stake in supporting the value system of the middle class. Individuals in our society who are reared under these conditions usually learn behavior patterns that are not a part of the norms and values of mainstream society. Many authors suggest that this subgroups, system condones violence and physical aggression.

Certainly this membership must learn to expect and cope with violence in their daily lives. Such people are probably not violent by nature but rather a group that is the victim of circumstance and economic deprivation. Stripped of self respect and lacking respect for others, many are likely to turn upon one another. Some do not have the necessary skills to solve their problems in non-violent ways; i.e., they are not able to articulate and negotiate. Moreover, those who do have problem-solving negotiating skills may eschew non-violent measures to settle disputes as "sissy." Perhaps these isolated people should be re-educated and dispersed into neighborhoods where non-violent values obtain.

In the meantime, young males from birth should be taught (by parents, teachers, clergymen, community leaders,
counselors, etc.) that the utilization of violence in problem solving (or for that matter in other activity) is non productive and damaging to the perpetrator as well as the victim. In brief, the "macho" man as metaphor or role model is detrimental to the individual and to society.

**Other Research Implications**

The researcher could not conclude the same results for any specific group because of the paucity of data broken down by race, sex, social class and region. Furthermore, the study would have benefited if the time series data had been available for other socioeconomic characteristics such as education, income level and rural or urban residence.
Age: The following 21 dummy age categories are used for constructing age groups.

Computation of DAGE 1 THROUGH DAGE 21 are as follows:

IF (ZAGE EQ 1) DAGE 1=1
IF (ZAGE EQ 2) DAGE 2=1
IF (ZAGE EQ 3) DAGE 3=1
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IF (ZAGE EQ 21) DAGE 21=1
Time period: The following 20 dummy time period groups (YR) are used for constructing age groups.

Computation of DYR 1 through DYR 20 are as follows:

\[
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\text{IF (Zyr EQ 1) DYR1 } &= 1 \\
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\]
Cohort: The following 40 dummy cohort groups (DCOH) are used to construct the cohort variables.

Computation of DCOH 1 through DCOH 40 are as follows:

IF (COHORT EQ 1) DCOH1 =1
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IF (COHORT EQ 3) DCOH3 =1
IF (COHORT EQ 4) DCOH4 =1
IF (COHORT EQ 5) DCOH5 =1
IF (COHORT EQ 6) DCOH6 =1
IF (COHORT EQ 7) DCOH7 =1
IF (COHORT EQ 8) DCOH8 =1
IF (COHORT EQ 9) DCOH9 =1
IF (COHORT EQ 10) DCOH10 =1
IF (COHORT EQ 11) DCOH11 =1
IF (COHORT EQ 12) DCOH12 =1
IF (COHORT EQ 13) DCOH13 =1
IF (COHORT EQ 14) DCOH14 =1
IF (COHORT EQ 15) DCOH15 =1
IF (COHORT EQ 16) DCOH16 =1
IF (COHORT EQ 17) DCOH17 =1
IF (COHORT EQ 18) DCOH18 =1
IF (COHORT EQ 19) DCOH19 =1
IF (COHORT EQ 20) DCOH20 =1
IF (COHORT EQ 21) DCOH 21=1
IF (COHORT EQ 22) DCOH 22=1
IF (COHORT EQ 23) DCOH 23=1
IF (COHORT EQ 24) DCOH 24=1
IF (COHORT EQ 25) DCOH 25=1
IF (COHORT EQ 26) DCOH 26=1
IF (COHORT EQ 27) DCOH 27=1
IF (COHORT EQ 28) DCOH 28=1
IF (COHORT EQ 29) DCOH 29=1
IF (COHORT EQ 30) DCOH 30=1
IF (COHORT EQ 31) DCOH 31=1
IF (COHORT EQ 32) DCOH 32=1
IF (COHORT EQ 33) DCOH 33=1
IF (COHORT EQ 34) DCOH 34=1
IF (COHORT EQ 35) DCOH 35=1
IF (COHORT EQ 36) DCOH 36=1
IF (COHORT EQ 37) DCOH 37=1
IF (COHORT EQ 38) DCOH 38=1
IF (COHORT EQ 39) DCOH 39=1
IF (COHORT EQ 40) DCOH 40=1
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