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**The relationship between employment, jail admission, and
social welfare: An assessment of twenty-four urban counties in
Michigan, 1980–1986**

Senese, Jeffrey David, Ph.D.

Michigan State University, 1992

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THE RELATIONSHIP BETWEEN EMPLOYMENT, JAIL ADMISSION, AND
SOCIAL WELFARE: AN ASSESSMENT OF TWENTY-FOUR URBAN COUNTIES
IN MICHIGAN 1980-1986

By

Jeffrey D. Senese

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

The School of Criminal Justice

1991

ABSTRACT

THE RELATIONSHIP BETWEEN EMPLOYMENT, JAIL ADMISSION, AND SOCIAL WELFARE: AN ASSESSMENT OF TWENTY-FOUR URBAN COUNTIES IN MICHIGAN 1980-1986

By

Jeffrey D. Senese

This study attempts to shed light on the impact labor force changes have on criminal justice system behavior. Specifically, the research conducted in this study examines the relationship between the fluctuations in employment rates and incarceration rates of local jails in twenty-four Michigan urban counties, with differing structures of commerce, between 1980 and 1986. The fluctuation in social welfare payments for those counties for that time period has also been included to test the possible impact social welfare payments may have on mitigating the impact of economic fluctuations and possible subsequent jail incarceration rates. The major findings of this research indicate that there is in fact a relationship between jail and social welfare rates and the fluctuation of the labor force at the local level, although it is different across certain "types" of counties.

Dedicated in loving memory to my brother Christopher Abraham Senese

I see your smile, and feel your presence . . . but miss your company.

ACKNOWLEDGMENTS

I would like to acknowledge the guidance, patience, and valuable time which Dr. Tim Bynum, Dr. Bruce Pigozzi, and Dr. June Thomas have given toward the completion of this project. I would like to especially acknowledge the chairperson, friend, and mentor of this project Dr. Dave Kalinich, without whom this project would not have been possible. I would also like to thank Susan Herman of the Michigan Department of Corrections for facilitating access to the jail data. In a similar vein, I would like to thank Mr. George Mecham and Mr. Ronald McGraw of the Michigan Employment Securities commission for their assistance with accessing the employment data. I would also like to acknowledge the support of the School of Criminal Justice and its staff for their assistance and patience. Last, and certainly not least, I would also like to thank my parents Fred and Mary Senese for their unending support throughout the process of my education.

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CHAPTER 1

INTRODUCTION

This study attempts to examine the extent to which changes in employment rates impact upon the utilization of criminal justice system resources. Specifically, the research conducted in this study examines the relationship between the fluctuations in employment rates and incarceration rates of local jails in twenty-four Michigan urban counties, with differing structures of commerce, between 1980 and 1986. The fluctuation in social welfare payments for those counties for that time period has also been included to test the possible impact social welfare payments may have on mitigating the impact of economic fluctuations and possible subsequent jail incarceration rates. In addition to the research conducted in this thesis, an examination of the extensive literature which examines the impact of the economic conditions on crime is provided to furnish an overview of the theories and debate on this topic.

Over the past centuries there has been a recurring concern among scholars with the fluctuations of the economy and its potential effects on the labor force and society.

For example, economists have approached the study of labor markets from a production or capital standpoint, whereas others have examined alienation, or motivation in the labor force. Additionally, there has been a consistent concern with the relationship between legitimate economic activity and criminality. One might assume that this concern began during the industrial revolutions in Europe and North America. The literature, however, clearly shows the issue predates that period. The present work is a study in the relationship between employment and incarceration rates. It is general in the sense that it provides a very comprehensive analysis of the literature including the research examining the connection between economic factors and incarceration. It is specific in the sense that the relationship between employment, welfare and jail incarceration rates in individual counties are examined, over time, in the State of Michigan.

Curiosity about the effect of economic conditions on crime and imprisonment is, of course, not new. The following section briefly reviews the historical thinking and inquiry into the effects of economic conditions on criminality. The review is also followed by a brief discussion of contemporary work on this subject. The brief historical sojourn and current look at scholarly thinking on this topic set the stage for a review of the literature. The pertinent literature from the areas of economics, crime, and

incarceration produced by economists, sociologists, and criminologists will be considered.

Historic Viewpoints on Criminality and Economic Conditions. The history of studies of the relationship between crime and economic conditions has been lengthy despite recent suggestions (Parker and Horowitz, 1986; and Chiricos, 1987) to the contrary. One can trace these considerations to Plato's "Republic" in which he maintains that in every society where there is poverty, there also will be criminals (Hamilton, 1951).

The earliest trace of broad scholarly concern or argument that employment fluctuations lead to similar changes in criminality can be found in the late 1840's. This roughly coincides with the beginnings of the industrial revolution in the United States, with large increases in urbanization, and the beginnings of consideration by scholars who were interested in social problems. Bonger claims that Ducpetiaux is the first scholar to discover the relationship between hard times and crime (Bonger, 1916). Ducpetiaux did not publish his work until 1850 and there were a few authors before that time who suggested there was a relationship between economic conditions and criminality.

Most of the early literature deals with European rather than United States populations. Although there may have been similar theoretical musings in the United States, reports of empirical tests of the relationship were specific

to Europe, and primarily in England. One scholar (Fletcher) suggested that the connection between the economic situation, shown by the cost of living, or surviving, could be directly in proportion to the response to government controls (through penal sanctions). Fletcher, relying on data for 1810 through 1847 (in England), discovered "an immediate connection . . . between the price of food and the amount of commitments, every access to the former being followed by an access to the latter" (Fletcher, 1849, p. 167). As the prices for food increased commitment rates to penal institutions increased, and therefore, he concluded that the two measures were associated. It is significant that the conceptual strength of these earlier works, not to mention their use of statistical analysis, is appropriate given the development of research methodology at the time.

Early in the theoretical specification there was a foreshadowing of the future conceptual conflict. For example a few years after Fletcher reported his results, Clay supposed that economic downturns "may add a few cases to the sessions calendars and that 'good times' greatly aggravate summary convictions; that the increase to the sessions consists of the young and thoughtless who, when thrown into idleness, are liable to lapse into dishonesty; and that the increase in summary cases arises from the intemperance which high wages encourage among the ignorant and sensual" (Clay, 1855, p. 79). Clay suggested that in

effect good times increase the court calendars at a greater rate than bad for minor crime convictions. Thus, Clay was suggesting that the connection between crime and the economic situation is not wholly inverse. This argument also holds that the relationship between favorable economic times and criminality can be direct in certain instances. Walsh correctly pointed out that Clay's use of total commitments was an inaccurate measure of criminality and showed there was an inverse relationship between crime and economic conditions. Clay's rebuttal, however, shows no change in understanding (Walsh, 1857, p. 37). Thus, the basic interpretation of empirical results into a dichotomy of theories of an existence/non-existence of a relationship between economic change and criminality can be found at this early date.

Another early theorist posited: "During periods of industrial depression crime of almost all grades is increased in volume. The difficulty of demonstrating this

. . . To any full extent lies in the fact that our criminal statistics are given for periods and not year by year . . . We should find that the lines of crime rise and fall as the prosperity of the country falls and rises (Wright, 1893, p. 774).

The data were collected every ten years across the period that Wright examined, although the data were occasionally collected for shorter cycles. Wright also

asserts " . . . all idleness, whether induced by economic conditions or by a lack of inclination to work . . . leads directly to crime - not, of course, in all cases but such conditions aggravate and irritate and drive men to criminal courses" (Wright, 1893, p. 776).

In 1907 Mayo-Smith suggested "Hard times increase the number of crimes, especially of crimes against property. A general rule has been laid down that as the price of food increases, crimes against property increase, while crimes against person decrease . . . " (Mayo-Smith, 1907, p. 277). Many of the early studies suggest the relationship between crime and economic change was specific to property crime.

The theoretical basis of these early scholars seems specific to a micro-economic approach than is the case in more recent research of this topic. These early studies focused on the effects of factors like the price of food on criminality instead of the general indicators of employment or unemployment.

In 1916 Bonger suggested "When we sum up the results that we have obtained it becomes plain that economic conditions occupy a much more important place in the etiology of crime than most authors have given them" (Bonger, 1916, p. 667). Although the basic premise about the causes of the connection between criminality and economic conditions seem Marxian, these theorists were more akin to the positivistic approach to changing social

conditions rather than radical socio-political changes. It is significant to note at this point that although many early theorists suggest such a radical perspective, they clearly offer positivistic solutions. For example, Bonger suggested that the solutions are to widen employment opportunities within the context of the current society (Bonger, 1916).

The study of the relationship between crime and economic factors in the United States was largely ignored until urbanization and rises in crime rates occurred. The development of the study of criminal justice and criminology also created an interest in such studies. An early attempt to examine the relationship between crime and economic conditions in the United States was undertaken by Davies (1922). Davies contended there is a direct relationship between the costs of goods and the response of the government to those pushed out of the economy due to reductions in the demands for labor. Therefore, to test his propositions, he correlated for the 1896-1915 period the indexes of wholesale prices published by the Bureau of Labor Statistics with the annual admissions to the state prisons of New York. At the turn of the century it may have been plausible to suggest a price index prison admission relationship, given the proportion of daily individual budget required for survival during that time. In contemporary society such an argument may be tenuous at best

and is likely to be negligible. For most people individual expenditures seem to have declined for basic cost of living items (e.g., costs of food), as a proportion of individual budgets, although such a relationship may still hold true for certain "marginal" groups in contemporary society.

Ogburn, and Thomas also examined the issue when they analyzed several economic indicators with the number of convictions for criminal offenses in the State of New York. Their observation of the curve of crime statistics and its fluctuations around the trend line shows that in most depressions the number of convictions is above the normal and most of the periods of prosperity the number of convictions is less. They conclude that although the crime indexes they relied on are not sufficient, there "does appear to be some negative correlation between convictions for crime and the business cycle" (Ogburn & Thomas, 1922, p. 340). In addition, other scholars determined "much, if not the majority, of the thievery, forgery, robbery, and other crimes against property . . . (is) committed under the pressure of absolute economic necessity" (Simpson, 1923, p. 316-317).

The early criticisms of scholarly work were based on the presumption that the data were not amenable to showing the theoretical relationship. Thomas suggested:

The criminologists seem to me to be the worst offenders in their treatment of economic influences on

social life. They have made no real attempt to measure the relative effect of economic influences upon crime. They use and abuse statistics outrageously, presenting short series, frequently of less than ten years, and claiming general causality from such comparisons as could be made with these short series. A review of the literature on the subject suggests that discussions of the relations of crime and economic conditions are still in the realm of metaphysics (Thomas, 1927, p. 37).

Winslow softens, but does not negate, Thomas's attack when she suggests that her findings " . . . are fairly conclusive with reference to the tendency for crimes against property, and vagrancy, to increase during period of economic depression and decrease during prosperity . . . Other groups of offenses are apparently affected only slightly or irregularly" (Winslow, 1927, p. 269). Sellin suggests that Thomas's study was " . . . the first anywhere to apply to the fullest extent modern statistical techniques . . . " to the relationship between economic conditions and criminality (Sellin, 1937, p. 37). However, there seems to have always been a dissenting voice. For example, in 1929, Woytinsky provided contradictory evidence to Thomas's study (Woytinsky, 1929). He found a correlation between non-violent property crimes and changes in a price index, which he attributes to his economic index.

Another examination in 1929, studied the cycles of crime (Phelps, 1929). This analysis grouped the commitment rates by the types of offense, and a poverty index based on the use of both private and public sources of welfare. Phelps also suggested that a rise in welfare would show hard times, and vice versa (Phelps, 1929). He further suggests that although his results are not conclusive there is a need for further research into " . . . the social and economic conditions which operate to make these cycles" (Phelps, 1929, p. 120).

During the depression the Report of the Crime Problem Advisory Committee of California asserted: "All over the world it is found that the crime wave goes up when unemployment is prevalent. Hungry men, women, and children become desperate. Men will steal rather than watch their children go hungry" (Report of the Crime Problem Advisory Committee of California, 1932, p. 62). Simpson found "If unemployment causes crime one would expect to find consistent increases in the number of yearly admissions to prison during or immediately following periods of marked business depression" (Simpson, 1932, p. 907). In 1933 a national study of prostitution determined "When economic depression came to be felt generally throughout the country, several rather unusual types of prostitutes cropped up in the larger cities . . . The prostitution underworld called these new comers 'depression girls'" (Bascom & Kinsie, 1933,

p. 484). In addition Bichham claimed "unemployment sets the stage for mercenary crime . . . It creates the economic urge, it develops the social resentments at the current economic injustices and the presence of abundance of wealth and food in the community, and offers the incentive and the opportunity for the worker to embark upon his crime career" (Bichham, 1933, p. 70).

Simpson provides further contradictory evidence in 1934 when his results suggested that crime and good times may be positively related (Simpson, 1934). In 1935, he determined "the evidence presented here seems to suggest at least that the depression has tended to stop the so-called crime wave rather than to initiate it" (Simpson, 1935, p. 128).

Therefore, even in 1937, Sellin could postulate "The assumption is old that the criminality of a community is to some degree influenced by economic conditions." Many arguments to that effect might be culled from the literature of the last four centuries and especially from the studies pursued in the last hundred years with statistical tools and other diagnostic instruments known to the social scientist (Sellin, 1937, p. 1). These studies still have been limited to examining the criminality of certain "classes" of people, rather than the effects of economic changes on individuals or groups of individuals. In addition, Sellin also argued "Outside of the studies of the last-mentioned type the question of the effect of economic crises on criminality has

received scant attention" (Sellin, 1937, p. 1). Sellin also claims that studies of the relationships between economic fluctuations and crime:

. . . Should aim to show the effect of economic crises on the conduct norms and the penal sanctions of the law, and their relationship, whether harmonious or conflicting, to the conduct norms of various social groups within the state studied . . . and to the extent to which the introduction of new norms with old labels or the modification of prior legal norms affect the offense rates requires investigation (Sellin, 1937, p. 18).

In the late 1930's Sellin suggested that there were several different ways to study the effects the depression had on criminality:

1. A comparison of the rise and fall of crime with the business cycle (Sellin, 1937).
2. Comparison between areas which, while similar in most respects, are different in terms of the degree of effects the economic downturn may have had.
3. One can study the effects an economic crises has on different social classes.
4. The degree of economic fluctuation can be assessed over time.

An interesting claim which Sellin suggested was that these questions can be "secured" only through quantitative

analysis and specifically by correlating indexes of crime with indexes of economic conditions (Sellin, 1937, p. 20).

Hobbs also suggested the relationship between criminality and economic fluctuations could be

Definitely established or definitely rejected if the total amount of crime, or the total amount of certain types of crime, could be compared with the vibrations or cycles in actual economic conditions or in certain aspects of economic conditions, but neither criminality nor economic phenomenon are measured directly (Hobbs, 1943, p. 5).

As is true of the earlier research Hobbs questioned the reliability of the data relied on to test the existence of the relationship between crime and economic phenomenon. Hobbs studied 10,386 cases for the years 1791-1810 in Philadelphia. He found a very weak correlation between court cases and consumer price indexes he relied upon. He suggests "there are many obvious weaknesses involved in formulating conclusions based on such data, yet do not these same weaknesses attach to many of the other studies which seem to fortify the belief that the amount of criminality, or of certain types of criminality, is a function of economic conditions?" (Hobbs, 1943, p. 10). Although his point is that his findings are similar to those in the past, it does not address the issue of whether all the past analyses were reliable or valid.

Contemporary Perspective: Criminality and Economic Conditions. It is significant that there is a wide gap in the literature that corresponds to the second world war and the post war period. During these somewhat stable economic periods of general and sustained growth, and nearly full employment, and the intense focus of energy on world wide conflict, the study of the connection between crime and economic conditions waned. In addition, the unemployment rates were at their lowest rates in history during the war (Duboff, 1975). It was not until Becker's seminal article in 1968 that the interest in the relationship resumed. Although Fleisher studied the influences of unemployment before Becker, it was the latter work that revived the study of the relationship between employment and criminality (Fleisher, 1963). Becker presumed an economic approach to the relationship between crime and employment. For instance, he attempted to show the quantity of punishment that should be used to enforce different statutes. He also believed one could gain insights into apprehension, punishment, and the responses of offenders to the criminal justice system through an economic approach. From a purely theoretical approach he attempted to show that crime is influenced by criminal justice system resource (punishment) allocation rather than external economic conditions.

There is a ground-swell of literature directly linked to Becker and Ehrlich's (A student of Becker) work. The

commonality in much of this literature is a level of quantification that obscures the essence of the relationship to those lacking competence in advanced mathematics or econometrics. Therefore, their retrofitting of these "high-tech" approaches to the same basic relationships, and data, seems to provide limited further, or improved, understanding of the relationship. In addition, the rebirth of the concern for the relationship between economic factors and criminality followed the same theoretical line as in the past.

During the 1970's the trend in studying the crime and economics relationship moved toward prescriptive analyses of the problem of unemployment and criminality, deterrent capacity being a primary focus. Although there were certain analyses of the relationship between crime and economic change (Hemley & McPheters, 1974; Phillips & Votey, 1974; Phillips, Votey, Maxwell, 1972), the orientation of this research was toward the development of specific programs. These theories also simultaneously considered employment opportunities and the concept of deterrence through legal sanctions. Inequality in society was also of general concern in the literature on the relationship between crime and economic factors. Another area which experienced something of a resurrection was the Marxist perspective on the relationship between crime and economic change. Again, it is significant to note that in the earlier literature

(1800's and early 1900's) the theoretical arguments for a Marxist approach pursued positivistic (functional), change through existing social conditions, or approaches; whereas in the 1970's the Marxist perspectives suggested more radical changes in social structure.

In the 1980's there has been renewed debate of the economic factors and crime relationship, although little change from the conceptual approaches of the past. For example Joubert, Picou, and McIntosh determined that social structure predicts crime that in turn predicts criminality (Joubert, Picou, and McIntosh, 1981). Crime is related to the current economic and social conditions. Another contemporary scholar repeats the suggestions made in the 1800's using modern econometric language:

Longitudinal economic cycles or regional capitalism shifts mandate that the state must control marginalized populations while simultaneously facilitating the labor force entry, or re-entry of cheap labor to meet new investment needs (Wallace, 1981, p. 59).

Wallace also suggests that penal practices fluctuate according to changes in the late capitalist economy's need for labor, indexed by labor force participation rates (Wallace, 1981). In addition, the work of Becker and Ehrlich receives continued attention. Shavell, for example, builds on Becker's analysis through examining the use of fines and imprisonment and their deterrent abilities, and

concludes that an individual will engage in the activity if his/her private gain exceeds the expected sanction (Shavell, 1984, p. 91).

Another interesting aspect of the study of the relationship in the 1980's is the considerations of the federal government of the United States. In a National Institute of Justice supported project, Thompson et al., suggested that through careful consideration of "both theoretical work and empirical data" they could:

Clarify the theoretical assumptions that may or may not support a policy emphasis on employment initiatives as part of a crime control strategy. Identify more clearly the types of people in high crime neighborhoods and in the criminal justice system for whom enhanced employment would be likely to avert crime. Identify periods in the individual's life cycle during which this form of intervention would be more likely to succeed. Identify more clearly the kinds of economic and social-psychological processes through which enhanced employment would have to work on the community and individual levels in order to be effective as a crime control mechanism. Describe more fully the kinds of work that are valued and the process by which such work is found and work histories are established in high crime neighborhoods. Describe how information of this kind can be used to shape the design, planning,

conduct and evaluation of employment programs in such communities. (Thompson, et al., 1981).

In the end, they suggest that their study reviews social science theories and empirical findings to summarize what is known, or the "state-of-the-art," concerning employment and crime relationships. The claims of these researchers appear overly broad in reference to a more complete exploration of the literature and research that has been conducted in the past.

There have also been recent studies that question the results of past analyses. It is apparent that the claim of no relationship between employment and crime is not based on a wide search of the literature before Becker's article in 1968. McDonald suggests that Becker did not "consider alternative notions of the nature of the function describing social welfare" and he suggested a number of extensions of Becker's theory involving an appropriate social welfare function (McDonald, 1987, p. 245). It is also significant that Ehrlich, developed approaches that moved beyond Becker's basic theories to consider the relationship in a more realistic way (Ehrlich, 1981: also Harris, 1970). In addition, there have been several of theorists who have questioned the "utilitarian" basis of Becker's theories (Nozick, 1974; Stigler, 1970). Parker and Horowitz, based on a less than complete study of the literature suggest "despite the widespread acceptance of the notion that during

periods of economic downturn, higher levels of unemployment lead to higher levels of crime and imprisonment, the research literature reveals very little consistent support for the existence of such a relationship" (Parker & Horowitz, 1986). The problem with Parker and Horowitz's approach is that although it is empirically sound as many other analyses, and their conceptual basis is rather weak. Their conceptual basis that there is no reason to believe there is a relationship between employment and crime rates also seems implausible, based on a wider examination of the literature on the topic.

In the end, it is impossible to deduce any definitive conclusions regarding economic crisis and criminality and incarceration. The general impression one can gain from the literature is that crime has steadily increased despite economic changes. The reason it has been impossible to establish any clear relationship between crime and the economic situation may of course be due to the reality that such a relationship does not exist. However, the explanation also could be that the data in question may be differentially unreliable, or the analytical methods employed have been unsuitable for showing a relationship.

Theoretical Debate. The theoretical arguments can be classified into two distinct perspectives. On the one hand there are authors (such as Becker, 1968; Ehrlich, 1976; and to some extent Block & Lind, 1975; Sjoquist, 1973; Block &

Heineke, 1975; etc.) that argue there is a relationship between economic factors (income and employment), and the phenomenon of crime (crime and incarceration rates). Under the guidance of the economic paradigm and the concept of "rational man" these theorists assert that the relationship between economic cycles and criminality is the result of rational decision making by law breakers. These theories suggest that the utilitarian arguments of balancing a punishment with a crime and the premeditation of the criminal results in either a criminal or a non-criminal depending on the decision consciously undertaken to commit a crime or to remain law abiding. Recently, as Osberg suggests, there is some argument that these "utility-maximizing" models may apply across several generations rather than merely to individual choices (Osberg, 1984, p. 259).

There are also a group of scholars that are opposed to the former group. This second group of authors asserts there are no demonstrated relationships between economic conditions and crime rates (Parker & Horowitz, 1986; Tittle, 1969; Gasmick, Jacobs, & McCollom, 1983). This latter group suggests that the empirical investigations to date have not shown, with any degree of consistency, there is a relationship between economic cycles (or employment) and crime or incarceration rates. Although the group which contends there is no relationship is dominated by

sociologists and criminologists (whereas the former is dominated by economists and political scientists) it is equally plausible given there is an inconsistency in the attempts to provide empirical validation to the relationship.

Given that this theoretical classification is the overriding theme in the literature there are several attendant issues that should also be considered. First, there are a few theorists, mainly "radical" political scientists & criminologists, who suggest that the "critical" or "new" criminology best explains the relationship between the economic situation and crime in the United States. This argument, although rarely supported by empirical evidence, is nonetheless conceptually sound, and could be considered in the examination of the relationship between economics and crime. The so-called "radical" approach may aid in the explanation of the relationship between the economic situation and criminality or incarceration.

Second, there are also theorists who discuss the issue of deterrence and the use of the criminal justice system as a means to that end. These theorists postulate that the "rational" man, in the economic sense, can be controlled via the sanctions imposed by the criminal justice system. This idea is derived from the classical school of criminology of the late eighteenth century (Bentham, 1789; and Beccaria, 1963) in which they postulated that criminals would consider

the consequences of their actions before committing an act. Besides these early utilitarians, Karl Marx, and William Bonger have also discussed the relationships between economics and crime, but have been largely ignored by recent generations of economists (most likely due to their radical orientations) (Sullivan, 1973, p. 139). Although this issue seems tangential to the relationship between unemployment, social welfare and jail rates it is central to any discussion of the relationship between economic factors and criminal indicators. This perspective holds that the mind set of criminals is both rational and considered.

Third, it is suggested here that unemployment is simply one relevant factor in the economic situation. Crime rates are similarly limited indicators of the alleged social harms that are the supposed results of economic downturns and their effects on individuals. It is possible that an assessment of the relationship between the changes in the labor market situation and criminality and/or incarceration would be more enlightening. Moreover, based on the realistic limits of time or cognitive ability, one limits the number and types of "other" social factors that may be considered. One can, therefore, suggest that a more holistic approach to the examination of the relationship between labor force changes over time and criminality or incarceration should consider changes in the "correlates" of criminality such as education, income, age, and gender

relationships as those factors may be affected by economic conditions and labor market structure.

Most of the past research in these areas focuses on both official unemployment and crime rates. The study of the relationship between crime and unemployment by both researchers and government officials has been tested by those measures. There has been a persistent fascination with the economy, especially the way it structures employment opportunities for different individuals. However, the typical approach has merely examined the intercorrelations between the official measures of crime and unemployment, and has rarely considered other issues. Although in the national context this is almost the only way to complete such an analysis, it provides a somewhat limited depiction of both local areas and the actual concepts measured. Both official crime and unemployment rates may not be accurately measuring what one supposes. For instance the official crime rates simply measure what crimes have been labelled by the police. What can be said of crimes that escape their knowledge? It is entirely possible that the crimes not counted may be the crimes that are most influenced by changes in employment or economic cycles. Moreover, given that the police are typically engaged in (eighty to ninety percent of the time) service activities, it behooves one to question the reality of these crime measures (Newman, 1986). Similarly, the official

unemployment index does not measure unemployment, but a temporary and/or relative quality of those out of work (Thurow, 1975). Only those who are still searching for work, and reporting to an official agency, are considered to be unemployed. This raises questions about where those discouraged from collecting unemployment or those who have begun illegitimate or other legitimate means of generating income fit into the relationship.

In the early 1960's the federal government of the United States readdressed the issues surrounding unemployment in this country. Many of these programs focused on those populations that were most likely to come into contact with the criminal justice system. To that end, the National Institute of Justice (NIJ) decided to look closely at the relationships between employment and crime and to develop a context of knowledge within which to assess accomplishments and future policies and programs in this area (Thompson, et al., 1981, p. 2). The Vera Institute was contracted to carry out a long-term study of the problem. The general objective of the study was to:

. . . Consider carefully the empirical and theoretical reasons for the contention that experiences of employment and unemployment are related to criminal behavior, and to increase understanding of the various ways in which these relationships may be manifested (Thompson, et al., 1981, p. 3).

Consistent with most of the studies in the realm of the economic perspective (below) the NIJ study presumes that criminal actors behave rationally, and consciously weight the costs and benefits of criminal actions. The specific focus of the Vera study was to address the practical issues of policy making and to address the problems of employment and the criminality of the unemployed.² The general approach to the study was a multidisciplinary search of the literature. Although the specific theoretical focus may suffer the same difficulties as the strict economic approaches, it does provide a more extensive orientation to the concepts of human capital and its influence on the relationship between employment and crime.

The literature cited in the NIJ study seems to show there are many arguments both supporting and disputing the relationship between unemployment and crime from several different perspectives. In the most general sense most of the different perspectives seem to show there is almost no conclusive evidence that a cogent relationship exists. Within each perspective there are those who contend that such a relationship does exist and there are those who contradict this assertion. First, the typical theory of the economic perspective assumes that criminals behave in a rational and calculated manner, in that they consider the punitive results, and risks associated with criminal activities. The general assumption of rational man pervades

every economic study, but there has been no conclusive evidence that the relationship is clearly demonstrated. The empirical evidence from the economic studies leans toward supporting the relationship between crime and unemployment.

Monzingo argues:

Of all the social scientists the economists have been most successful in selling the idea that they are the most scientific: their methods of model-building, their adaptations of mathematical and statistical analyses, and their procedures for hypothesis-testing more closely approximate those of the physical sciences, and where they do not, economists design analysis and predictive techniques that facilitate our understanding of how society works and of how government policies should be changed to achieve specific goals (Monzingo, 1977, p. 261).

Although this argument seems plausible, the conceptual basis for the economic theories is no better, nor worse, than any other in the social sciences. The validity of the economic argument, therefore, remains to be seen, but one must acknowledge the quantity of direct effort at discerning the relationship between crime and employment that has been done. The basis for the interface between criminal justice and criminology and the study of the labor force have been suggested on three grounds: philosophy, theory, and methodology. Orsagh (1981) suggests that the basic

philosophy of the economists has a rich tradition, a high quality of theories, and innovative empirical methodologies that have made substantial contributions to the understanding of the relationships between crime and economic issues.

There are several sociological theories that presume to examine the relationship between crime and unemployment. Although the results of these studies are, again, a mixed-bag, they apparently show a lack of support for the relationship.

A key issue that is apparent in the literature is that most of the empirical studies to date have examined the connection between crime and employment variables by relying on the "official" indicators of unemployment and crime. Although this analysis attempts to move beyond the consideration of unemployment through examining the social welfare system and its relationship to imprisonment at the county level, it largely relies on similar types of data. There is limited work in the consideration of social welfare as an indicator of social problems (Jankovic, 1977).³ It is somewhat apparent that the issue of social welfare is crucial to the relationship between unemployment and crime and/or incarceration. The use of social welfare may compensate for the increases in unemployment, possibly showing why the relationship has been unclear to date, and it also allows one to develop alternatives to the economic

models of Becker and others that suggest that the decision to be criminal is one that is rational. It is plausible to suggest that when the economy is in a recession and the employment levels are decreasing over time the unemployed have limited choices. Among these choices, after unemployment benefits expire, are the social welfare system (ie., food stamps, general welfare, etc.), the secondary labor market (ie., McDonald's, laborers, etc.), and the illegal/opportunistic labor market (ie., running numbers, theft, etc.). If the last option is selected, crime would increase, and, after some time period, incarceration rates should also increase.

Purpose of the Study. Instead of iterating the traditional research on unemployment and crime rates this research attempts to determine the current change, if any, in governmental responses to unemployment, specifically in the supportive social control mechanism of social welfare payments and the coercive social control mechanism of incarceration. In addition, this research focuses on individual counties rather than using aggregate state or national data. Further, the counties selected, while all urban, differ in degree and kind of industry and commerce, allowing a consideration of the possible varied response to unemployment between greater and lessor industrialized areas.

This analysis proceeds in two general areas. First, there is a consideration of the labor force indicators and their relationship to jail populations. This is accomplished through the assessment of "official" employment statistics that can be selected on a county basis and matched with similar jail incarceration rates. Several theorists have suggested that as the economy experiences downturns the criminal justice system will respond with a proportional rate of incarceration (Fletcher, 1849; Davies, 1922; Ogburn & Thomas, 1922; Simpson, 1932; and Wallace, 1981). First, changes in the labor force would be reflected in changes in the local correctional population in a more apparent manner than would be the case from a wider (state level) consideration. Second, the relationship between jail commitment and social welfare data also will be assessed. This latter analysis represents somewhat of a departure from most prior research in that it presumes the specific function of social control also may be accomplished through the greater application of social welfare programs besides the more formalized means of control through criminal justice sanctions. Although Phelps suggested, as early as 1929, that social welfare can be an indicator of penal commitments at the local level (Phelps, 1922), this relationship has been neglected in contemporary studies.

The basic issues to be addressed in this study focus on incarceration rates, social welfare, and labor force

participation in an urban context in the State of Michigan (See Map 1 for Urban Counties in the State of Michigan), with the intention of expanding the knowledge the relationship between economic change and the use of incarceration and social welfare.

This study provides a comprehensive analysis of the fluctuations in social welfare, labor force, and jail population rates for seven years, by month, and for all urban counties (Bureau of the Census definition), in the State of Michigan. It is further anticipated that a classification schema will be developed given the population differences, in the urban counties selected, in which the comparisons can be specified for similar jail populations in other counties or in other areas of the country. The logical connection between these specific indicators and the empirical analyses are that they allow one to assess the fluctuations in jail populations and the reliance on the welfare payment system, and to some extent, the secondary labor markets.

The practical outcome of this type of analysis would be to assist local jail administrators to understand the linkages between the labor force fluctuations and their effects on the jail population. Moreover, through such an analysis one can develop a much clearer understanding of the relationship between the social welfare system and the local correctional system. Ultimately, the product of this

research is to both define and extrapolate the conceptual linkages between participation in legitimate economic system through both labor force and social welfare participation and the resulting rates of incarceration at the local level.

CHAPTER 2

LITERATURE REVIEW

The literature review is a detailed assessment of the theoretical debate that has been discussed above. The purpose of this chapter is to develop the conceptual framework of this research. Second, the criminological and sociological theories will be discussed. Finally, it will discuss the literature on employment and the use of incarceration.

In recent times many social scientists, government officials and other criminal justice and social service administrators have focused considerable attention on the interrelationships between the economy and the persistence and control of crime. Although many traditional avenues of research pursued by sociologists and criminologists (i.e., The study of the family, the peer group, or mental capacity, etc.) have been considered, one area of particular current interest is the study of the characteristics and relationships of crime and employment. Moreover, much of the theoretical and empirical work in this area can be attributed to the development of statistical technologies that can accommodate complex econometric questions.

The Economic Perspective. A key perspective in examining the relationship between employment, social welfare, and local incarceration is the economic perspective. The economic perspective maintains that the behavior of criminals is the direct result of rational and considered thought about the potential consequences, both negative and positive, of anticipated criminal actions. Under this perspective a criminal is logical and contemplates his/her actions, as well as the likelihood of apprehension and conviction before the actual commission of a crime. Thus, criminals are normal and rational people who calculate and attempt to maximize their preferences subject to given constraints of specific situations (Sullivan, 1973, p. 140). Moreover, economists do not claim that offenders are "sick" (in a psychological sense), only that they pursue activities that yield the most satisfaction to them within their available alternatives (Reynolds, 1985, p. 7), and their psychological or social status. In addition, the economic perspective implies that the search in the criminological literature for causes of crime that are assumed to result from deviant behavior, and the search for reasons for criminal activity in deviant factors, is misdirected (Ehrlich, 1973, p. 521).

The laws of society will not be universally maintained if there are those who see advantage in not following their direction. One also can argue there will always be these

types of people. Besides the inevitability of individuals who do not conform to society's rules there are those who specifically maintain their livelihood by such deviance. The result of these two general forms of deviance necessarily must be some form of action by society. This action typically takes the form of sanction as manifest in either incarceration, fine, or a variety of community dispositions to remunerate the practice of deviance.

In addition to these general precepts there is an inference of hedonism that is suggested by the economic perspective. Stated simply the economic perspective suggests that people are hedonistic and therefore, they attempt to maximize their pleasures and minimize pain on an individual basis. Although there are clear differences between individuals in terms of desires and tastes, there is a general motivation to maintain pleasurable activities. The economic explanation of criminality asserts that the individual contemplates:

. . . all practical opportunities of earning legitimate income, the amounts of income offered, the incomes offered by various illegal methods, the probability of being arrested if he acts illegally, and the probable punishment should he be caught (Sullivan, 1973, p. 141).

Thus, the criminal is considered somewhat rational, normal, and calculating individual. Therefore, the solution to

crime is to increase the cost by increasing probability of being caught as well as the severity of punishment. The key point of the basic assumptions of the economic perspective is that in the contemporary market system, such as that of the United States and many other Western industrialized nations, there is an unequal distribution of resources, and therefore, all desires for economic "goods" or pleasures are not equally available. If these assumptions are accurate it would be evident that when legitimate employment is less available one should see increases in both the jail and welfare populations at the local level. Sullivan asserts that the economic argument overrides the sociological theories of deviance and socialization and should be forsaken for increased allocations of resources to apprehend and incarcerate offenders.

Although many political economists and theorists in the 18th and 19th centuries such as Adam Smith, Jeremy Bentham, Caesar Beccaria, and Karl Marx addressed the connection between employment and crime, they have not been recognized or considered in contemporary research. In addition, it is unlikely that the link between employment and crime and/or imprisonment could have been widely studied before the industrial revolution in the Western world. It also would be unlikely given the structure and function of labor before that time. It is even more significant that the reanalysis of many early theories by contemporary scholars has

unwittingly occurred. There also is little reference to these primary sources in contemporary research. During the harsh economic times in the late 1930's and early 1940's there was a somewhat renewed interest in the potential relationship between crime and employment, but World War II and the resulting "full-employment" apparently pushed such concerns and analyses from the forefront. Beginning with the publication of Becker's key research article in 1968 on crime and employment, there has been a substantial increase in contemporary interest in the relationships between the labor force and crime.

Classical Economic Theory and Crime. The application of traditional economic theory to crime and the explanation of criminal behavior has increased in the past two decades. A primary contention of this perspective is that " . . . if, in a given period, the two activities (legal and illegal employment) were mutually exclusive, one would choose between them by comparing the expected utility associated with each alone" (Ehrlich, 1967, 1973; Becker, 1968). It does not seem likely that the choice to engage in either criminal activity or to maintain legitimate ties is simply a choice between these two, but is complex.

The arguments offered by the economists are also somewhat similar to the subcultural perspective (See Wolfgang & Ferracutti, 1967; Gastil, 1971). They express the choice for criminal over legitimate employment in terms

of a set of opportunities and preferences that are unique to the criminal group and neighborhood. Ehrlich contends "rather than resort to hypotheses regarding unique personal characteristics and social conditions affecting respect of the law, a penchant for violence, a preference for risk, or a general preference for crime, one may separate the latter from measurable opportunities and see to what extent illegal behavior can be explained by the effect of opportunities given preferences" (Ehrlich, 1973, p. 522). This perspective also seems to borrow conceptual wisdom from Cohen's opportunity theory or Sellin's hypotheses about neighborhoods and crime. Although the economic perspective is a restatement of these theories in monetary values, the essence of each is apparent. The relationship between employment and crime or incarceration can be framed in the "classical" perspective. The individual calculates a balance between legitimate and illegitimate sources of income. If opportunity for one source of income decreases, the other will be used more readily.

There have been various attempts to construct models that test the idea that crime is rational behavior. In specific, Sjoquist tests the hypothesis "that under some conditions, criminals can be treated as rational economic beings, assumed to behave in the same economic manner as any other individual making an economic decision under risk" (Sjoquist, 1973, p. 439). Although his test is limited to

property crimes, it seems to consider the economic and crime theories' main arguments of choice between legitimate and illegitimate work activities. However, he errs when he assumes that the gain from illegitimate activity is "generated with certainty" and that the "wage rate for crime is constant" (Sjoquist, 1973, p. 439). Thus, a key problem with the economic theorists' perspective is the use of unrealistic assumptions. If one decided to commit a crime it is not a certainty that a wage will be forthcoming and the "wages" of certain crimes are significantly different from each other. For example there is a clear difference in the returns to someone who chooses to embezzle as opposed to a street robber.

Becker's theory, although basic in explaining crime, provided the preliminary forum for examining the linkages between economic theory and crime in a contemporary context. He suggests that the main purpose of his essay was to answer certain questions about the relationship between the law and crime, and to discover " . . . how many resources and how much punishment should be used to enforce different kinds of legislation?" (Becker, 1968, p. 170). Becker contended there is some balance, or that one can discern whether there is such a balance, between the crime that is committed and the necessary level of punishment instilled. Yet, he does not recognize that when " . . . punishment exceeds what are considered reasonable levels or is applied without

selectivity, criminal acts may become politicized and thereby increase in frequency" (Harris, 1970, p. 167). The Becker-Ehrlich model also has little to say regarding the losses from unjust punishment given what has been shown to be "typical" police behavior of directing extra effort at low-income, poorly dressed individuals who are ethnic minorities (Harris, 1970, p. 170). The Becker-Ehrlich model is consistent with conservative position that government is capable of providing fair governance despite the social status or spatial location of its citizens.

In addition, their model may only consider a "rational perspective" based on limited empirical observations instead of the broader social considerations. Davies (1922) argued over forty years ago, that the reason economists neglect sociological and criminological variables is that these variables do not lend themselves to economic modeling as do the economic indicators, and that they may not lead to immediately practical conclusions or applications. It is also appropriate to point out that local responses, in jail and welfare payments, to changing employment patterns have not been widely examined.

Becker also suggests that an economic theory of criminal behavior could:

. . . dispense with special theories of anomie,
psychological inadequacies, or inheritance of special

traits and simply extend the economist's analysis of choice (Becker, 1968, p. 170).

For crimes that can be proved to be strictly economic and premeditated in nature it is plausible to suggest that may be the case. However it is also unlikely that the sociological and the criminological theories are totally inapplicable as Becker suggests. For example how would such a model explain the recent increases in the mentally ill being handled by the criminal justice system instead of the mental health system, or that some people are simply . . . more emotional than others, or that people often are unsure of the consequences of their behavior, or that they do not always make careful calculations about their next action. It seems unlikely that individuals choose, explicitly or implicitly, in crime as they do in other activities (Reynolds, 1985, p. 7). Conversely, situations which elicit violence are not beyond choice, and substitute actions exist for the settlement of disputes (Wolpin, 1978, p. 815). There are many situations where the individual does not, or is incapable, of exercising a choice on whether to commit a criminal act.

The model Becker proposed was one that supposed there is some "optimal" level of crime control based on behavior and costs of actions.⁵ These costs range from the costs of the offense to the attendant cost of apprehension and conviction. Clearly, he was referring to a utilitarian

schedule by which the effects of criminal actions are to have attendant societal costs and thereby require directed actions.

Becker begins his analysis with a discussion of the concept of crime. The contention is presented that crime is simply the net loss to society minus the gain to the individual criminal. He also asserts that the effects of most crime can be measured in monetary terms. The problem is that this aspect of the model does not account for the mental anguish that is often an effect of many physical crimes, as well as the lack of a definable cost for acts that are "victimless." Whether or not a utilitarian punishment schema could be developed, is moot, for it is unlikely that it would have wide application or remain static over time.

In further specification of his model Becker asserts that punishment is a supply-side manipulator. It seems apparent that punishment determines, in whole or in part, how much further criminality will be committed by the individual. His theory, as well as that of many scholars of employment and crime, is that criminals simply weight the utility of committing an offense against the likelihood of punishment as well as the degree of punishment. This theory also holds that criminals only consider the degree and likelihood of the effects of the criminal justice system and little else before committing a criminal act. Although

Becker's insights seem profound and somewhat accurate in certain situations, there are many criminal cases that cannot be construed to conform to a cost benefit analysis in the mind of the offender. A considerable proportion of homicides are intra-familial in nature, and occur in the "heat-of-passion," and that many violent crimes such as rape, and robbery are based on the exploitation of an immediate opportunity of the situation rather than on preconceived consideration of any long-term consequence of said criminal actions (Newman, 1986). This theory would allow one, as in the present study, to suppose that both local corrections and welfare allocations are responses applied to influence the decisions of offenders.

Ehrlich (a student of Becker) claims to go beyond Becker's theories in suggesting a model that considers the costs and gains from both legitimate and illegitimate activities, rather than punishment alone, and attempts to identify their empirical counterparts. He also considers occupational choice of illegitimate and legitimate activities. In addition, he purports to examine the interaction between crime and the enforcement of the law through the courts and the police (Ehrlich, 1973, p. 522-523). Like the Becker model, choice is presumed to be rational and based on some utilitarian consideration of future consequences of current criminal activity. Ehrlich's model also maintains a similar presumptive restriction of a

constant wage from crime. Ehrlich, however, refines the question through the consideration of both legitimate and illegitimate employment and the interactions of enforcement and criminal choice. Thus, Ehrlich's developments would allow one to suggest that a relationship should exist between not only employment and crime but also between employment and incarceration and welfare.

Besides the consistency with the economic perspective, there are problems with the conceptual application of Ehrlich's theory. One assumption offered by Ehrlich proposes to establish a link between crimes against person and choice. He contends that it is appropriate to consider crime against the person as nonmarket activities that directly meet certain non-pecuniary needs. He also argues that crime against persons can be examined in a similar context to the probability of the severity of punishment as can the property crimes. Clearly many crimes against persons are not readily amenable to the severity of punishment hypothesis in a similar manner to property crimes. There is often little, if any, consideration of the consequences in most personal crimes in that many are not premeditated acts. The assumption of rationality is most inappropriate for personal crimes, or any criminal activity that is characteristic of non-cognitive input (i.e., Victimless crimes such as drug use, child molestation, voyeurism, etc.).

Another argument that is presented (in the Becker-Ehrlich model) is the suggestion that the criminal justice system can be made more rational through the application of monetary fines to specific crimes. Although Becker strongly recommends the use of fines instead of imprisonment, he contends that the main contribution of his work is "to demonstrate that optimal policies to combat illegal behavior are part of an optimal allocation of resources." (Becker, 1968, p. 209) Becker suggests, therefore, that the cost of punishments can be made comparable by converting them into their monetary equivalent or worth. However, it is unlikely that this can be substantiated for the wide number of criminal acts both personal and property in addition to the individual differences in offenders. It also is unlikely that any, but limited static, monetary conversions can be accomplished, and where they could be established it would be difficult to apply these to individual crime situations and victims. The structure of monetary conversion seems inapplicable unless it contemplates each criminal as an individual and her/his perceived gains and losses as well as the monetary equivalent of the pain caused to the victim and his/her immediate associations and the damage to society. Clearly even if such a schema could be developed its application would be extremely cumbersome and static.

A general concept that pervades the economic studies is that criminals consider the possibility of apprehension as

well as the probable attendant punishment (Ehrlich, 1967, 1973; Ehrlich & Becker, 1967; Becker, 1968). Whether current sentencing relies on probation or counseling or incarceration is not the issue, but the probable outcome. Although this acknowledgement of both potential apprehension and disposition is necessary, it is not clear that offenders' base decisions on such factors, or there is a broad consistency with the "optimality analysis" (Becker, 1968, p. 190). Becker states that " . . . if the costs of apprehending, convicting, and punishing offenders were nil and if each offense caused more external harm than private gain, the social loss from offenses would be minimized by setting punishment high enough to eliminate all offenses" (Becker, 1968, p. 191). Yet, it is apparent that these attitudes are individualistic perceptions by both the criminal and the victim of an incident. How could such concepts be legislated? It also seems unlikely that poor offenders who steal for legitimate economic goods, or illegitimate goods such as drugs, would fit into this hypothesis. Can they be effected by either level of apprehension or conviction? One could argue that they would not, given their general perception that they will not be caught and their generalized need which "must" be met.

Ehrlich concludes that "the basic thesis underlying our theory of participation in illegitimate activities is that offenders, as a group, respond to incentives in much the

same way that those who engage in strictly legitimate activities do as a group" (Ehrlich, 1973, p. 559). It is apparent that beyond the aggregate test of his model, he generalizes to individual behavior. Is choice based on aggregate fluctuation as shown by multiple regression analyses?

Block and Lind offer another economic alternative to the Becker-Ehrlich models. They claim to proceed similarly when they rely on economic theory to explain crime and they also cite several inconsistencies in the Becker-Ehrlich model. Specifically, they state that the Becker-Ehrlich model:

. . . is not always true, as Becker asserts, that the effects of crime and punishment can be represented in terms of monetary equivalents. Second, we indicate why, even if a fine equivalent to a prison sentence exists, his result that suggests that prison terms always be set is misleading. Finally, we prove that the limits of the criminal sanction discussed by Becker (and Ehrlich) do not depend on risk preference or institutional considerations but follow directly from the boundedness of the utility function and the expected-utility theorem (Block & Lind, 1975, p. 242).

Apparently there has been a less than strict interpretation and application of the utility models. Block and Lind argue for a variation of the Becker-Ehrlich model that is

essentially similar, although there are refinements in the derivative formulations. However, they do contend that it is not always possible to attach a monetary equivalent to criminal acts as does the earlier model. They suggest that their model is a major alteration of the Becker-Ehrlich model that adjusts for less than rational consideration of the contemplation of criminal acts. They cite the following as an example:

Suppose, for example, that a multimillionaire is contemplating the murder of a hated rival. It is quite possible that he would be unwilling to accept any amount of additional wealth as a substitute for the death of his rival. However, if confronted with a choice between murder accompanied by a simultaneous reduction in wealth to the level of subsistence and foregoing murder and retaining his present wealth, he might well choose the latter. This behavior is not inconsistent (Block & Lind, 1975, p. 244).

Therefore, individuals may select the behavior that may not necessarily be the most economical, but is the most desired.

A clarification of the issue of the substitution of monetary fines for incarceration is also suggested by Block and Lind. They suggest that, it is possible to avoid the payment of a fine (given lack of resources) whereas, it is difficult to avoid incarceration (barring death, and lack of apprehension) (Block & Lind, 1975). One could suppose that

there are social costs attendant to the collection of fines. There is also a problem with attaching fines instead of incarceration given the high incidence of lower income individuals committing crime.

Additionally, Block and Lind suggest that for any punishment in which the penalty is not preferred to the legal alternative, there exists a probability of conviction less than unity and it is sufficiently high to deter all crimes (Block & Lind, 1975, p. 246).

Intuitively our results suggest that there does not exist a punishment severe enough to deter completely any crime, be it pickpocketing or treason. On the other hand, there very likely exists a probability of punishment less than one that will completely deter any crime. Moreover, for any crime, beyond some point in terms of the severity of punishment, it is not possible to keep deterrence constant by trading off harsher punishments against a lower probability of punishment (Block & Lind, 1975, p. 246).

They are suggesting that the rational application of punishment cannot be either static or applied to effect crime rates through deterrence.

Block and Lind conclude that the use of more effective apprehension is most likely to lead to a greater deterrent effect, as well as adequate punishment. The typical economic argument of the deterrent power of potential

punishments is not sufficient to deter, but effective apprehension is also a necessary component of a more effective criminal justice system.

Many economic theories assert that they can provide an explanation for the deterrent effect of punishment on the commission of criminal acts. Although Becker attempts to assert that criminals are normal, in their decision making and in anticipation of committing a criminal act, and that they prefer taking risks, others assert that criminals are similar to the remainder of the population.

There have also been several criticisms of the Becker-Ehrlich model from a basic disagreement about the nature of the underlying social function (McDonald, 1987) to problems with the data relied on (Brier & Fienberg, 1980).

Therefore, these theorists suggest that major limitations of these theories are the basic assumptions upon which the theory rests. First, the assumption that the individual selects between only legitimate and illegitimate labor markets is somewhat simplistic. It is likely that people who live their lives at the margins of economic stability would be free to participate in both the labor market and collect social welfare, as well as receive subsidized training. Although legitimate opportunities are more restricted for formerly convicted offenders, one cannot uphold the contention that these restrictions are the sole determinate of future criminal activity.⁶ The present study

examines the effects of these rational theories. The approach assesses whether a change in employment level results in a similar change in the use of local incarceration or the granting of welfare.

Another more specific examination of theory of employment and crime was provided by Brier & Fienberg (1980). Although their study centers on the question of whether "marginal deterrence" effects shifts in subsequent criminal behavior, it is directed at the economic assessments of the relationship between deterrence and rational criminal choice. The tact that is taken is a critique of the misspecifications in concepts and empirical verifications that the economists have suggested to date.

One primary criticism that Brier and Fienberg offer is that the aggregation assumptions typically rest on the contention that the parameters used to specify the relationship between crime and employment are constant across individuals, or that the parameters are stochastic coming from some common distribution (Brier & Fienberg, 1980, p. 155). Given the statistics relied on by most of the studies done to date, it is unlikely that either of these contentions can be maintained with any degree of confidence. Although the Uniform Crime Reports summarize the individual criminal acts to arrive at an "index" of crime, it is clearly inappropriate to apply such a total count to individual decisions.

Urban Labor Markets. In the general realm of economic theory another variant that seems particularly cogent to this analysis is the concept of urban labor markets. In a general sense this theory postulates there are several sectors of the labor markets within the urban scene. Each labor market refers to a specific group or population and there are barriers to the entry into each. Thompson et al., (1981) suggest that these theories hold that a person, when confronting a range of choices about alternative behavior, will select that mix of activities that maximizes his or her utility, and that utility can be either in the form of maximizing monetary or non-pecuniary income (Thompson et al., 1981, p. 22). The general theme of this theory is a basic decision between work and non-work. For instance, the economic argument suggests that balance between work and non-work is direct and considered. The costs of non-work are reflected by work participation in the form of wages.

The theories that have been developed to date assert that there are two distinct markets:

The primary market offers jobs which possess several of the following traits: high wages, good working conditions, employment stability and job security, equity and due process in the administration of work rules, and chances for advancement. The other, or secondary sector, has jobs which, relative to those in the primary sector, are decidedly less attractive.

They tend to involve low wages, poor working conditions, considerable variability in employment, harsh and arbitrary discipline, and little opportunity to advance (Piore, 1977, p. 94).

Therefore, one could imply that there are barriers to the entrance into the primary market from the secondary market based on qualifications, work history, or other situational factors. The segmented labor market theorists also assert that the barriers to entry into the primary market can be based on racial or sex discrimination, or other forms discrimination.

Harrison has developed an application of this theory that moves beyond the simple "either-or" model of primary versus secondary labor markets to assert there are five different sectors of the labor market.⁷ He proposes a "synthesis according to which the urban economy is stratified into a 'core' and a 'periphery', with the latter in turn segmented into four interacting sectors" (Harrison, 1972, p. 6). He asserts that individuals move among various activities in the economic "periphery" with relative ease and frequency, while mobility into the primary sector is severely constrained (Thompson, 1981, p. 62).

A primary advance in the theory of economics and crime is the consideration of the existence of a collection of labor possibilities, or markets. Ehrlich postulates that:

Multiple-job holding also entails various costs of movement between jobs that may offset potential gains due, say, to the increased returns on time spent in each. Specialization in a single market activity may thus be optimal, at least during periods of intensive training. Nevertheless, in the case of market activities involving a large measure of risk, there may be an incentive for diversifying resources among several competing activities (Ehrlich, 1973, p. 524 (note 2)).

Thus the choice of illegitimate activities does not seem to limit the individual to exclusive participation in that market. In addition, there may be simultaneous participation in many different income generating activities, within the restrictions of time available to develop in each market or simultaneous markets.

The segmented labor market theory seems to conform to and support the general tenets of the traditional approach, although it further specifies the relationship between employment and crime. Thompson et al., state that although labor market theories emphasize the role of organizational features of the economy, they concur with the notion of a predominantly economic motivation (Thompson et al., 1981, p. 67). The difference between the two labor market theories and traditionally economics is in their means to economic success not in the competitive or rational ideals

of the theory. Labor market theory also suggests that welfare is another source of "labor." Although the present study does not address the use of illegitimate labor markets it does provide an examination of the relationship between the legitimate and welfare sectors.

Human Capital and Urban Labor Markets. Within the labor market formulation there are distinct and identifiable urban labor markets that consider the level of economic contribution that is required for entry into each. There are certain requirements for entry into employment in the various labor markets. Although the theories of human capital were not developed to explain the relationship between crime and employment, they provide a forum for such an assessment. Moreover, in the perpetration of crime there are certain skills that are prerequisite to the commission of particular criminal acts (i.e., Knowledge of the opportunity to commit a crime, how to go about committing a certain crime, etc.), and that "qualifications" to entry do not only apply to legitimate labor markets. In an attempt to clarify the application of choice theory to the study of illegal or criminal activities Block and Heineke summarily explain the economic perspective. They purport that the commission of crimes requires an expenditure of effort, which may in turn increase the criminal's relative wealth, that also could result in criminal sanction (Block & Heineke, 1975). In Becker's formulation of human capital

theory self-investment decisions are oriented toward expected changes in income over a lifetime (Becker, 1975).

Thus the notion of self-improvement embedded in the theory of human capital attempts to explain the productivity (and lack of productivity) of workers, as well as the rewards (and lack of rewards) of the labor market. Thompson et al., suggest that:

A simple human capital model is a schooling model which hypothesizes a direct, positive relationship between the extent of schooling and the level of earnings (Thompson et al., 1981, p. 27).

Business Cycles and Crime. There have also been studies of relationships between crime and economic indicators from a macro-economic perspective. The main distinction here is an analysis of aggregate economic "cycles" and the potential interactions with aggregate crime rates. Although many theorists above have approached their analyses similarly, these theorists assert there is some order to the mutual fluctuations of each the crime rates and the employment over time.

In one early attempt to assess the relationships between social problems and fluctuations in the business cycles Davies examined several issues. Although he specified a very general objective of analyzing " . . . the economic data most closely related to human motives and well being," he provides a strong conceptual discussion of the

relationships. In his conclusion he determined "While there are certain crimes which are intensified by prosperity, yet crime as a whole is decidedly an accompaniment of depression" (Davies, 1922, p. 114).

In a more recent analysis Cook and Zarkin suggest that the business cycle has a pervasive effect on the structure of economic opportunity and on behavior, and that it seems unlikely that crime is excluded from such a relationship (Cook & Zarkin, 1985, p. 115). They suggest that in a general sense the fluctuations in the economy have a direct effect on social behavior, and given the nature of the market system in the United States, it is unlikely that such a major aspect of American life (crime) should not be linked to these cycles. They also list the possibilities for the explanation of the connection between crime rates and the economic cycles; these being legitimate opportunities are procyclical and that recessions reduce criminal opportunities, that the use of certain criminogenic commodities (alcohol, handguns, etc.) increases in good times, and that changes in the economic cycle could have wide effects on criminal justice system budgets. On both a non-parametric and parametric basis Cook and Zarkin allege to substantiate the connection between robbery and burglary and the recession and recovery cycles of the economy. They also determined that for homicide there is little consistent connection between the business cycles and the crime rate.

Their conclusions are more than a bit pessimistic; however, they suggest that the only "clear" answers researchers can produce are concerning short-run fluctuations in economic conditions alone (Cook & Zarkin, 1985, p. 128). The present study does not assess the relationship of general economic fluctuations and crime. However, the patterns between employment and local incarceration and welfare allocation allows an examination of the similarities and differences in utilization over time.

Unemployment and Crime. In a very general sense the theorists in this specific economic theory assert that unemployment influences the crime rate. Gurr suggests that:

Mild unemployment will motivate a few to crime, moderate unemployment will push more across the threshold, and very high unemployment is likely to cause large segments of society to become involved in crime (Gurr, 1970).

Thus, the suggestion here is that there are direct responses in terms of crime to increasing, and by inference, decreasing levels of unemployment.

Swisher also contends that there are several explanations that clarify the link between unemployment and crime:

1. Unemployed persons turn to crime to meet pressing economic needs.

2. Crime offers greater reward and requires less effort than being employed and represents an acceptable risk to otherwise unemployed individuals.
3. Unemployed juveniles and youths turn to crime for "kicks" and "pocket" money.
4. Unemployment tends to precipitate criminal behavior of persons who have a predisposition or prior history of delinquency or crime.
5. Unemployed persons are subjected to additional stress which exacerbates other interpersonal conflicts, and leads to an increase in the probability that arguments or despondency will erupt into violent offenses against family members or other acquaintances.
6. Unemployment undermines the stability of participation in primary social and economic institutions reducing the capacity of such institutions for instilling and reinforcing self-esteem and social values that tend to be associated with lower crime rates (Swisher, 1975).

Spector examined the relationship between violent crime and unemployment in 103 Standard Metropolitan Statistical Areas through a multiple regression design, and determined that there was no "significant relationship between unemployment rates and violent crime rates" (Spector, 1975). This finding does not seem at odds with the typical economic

theory in that it does not examine the use of crime to generate an economic gain, but specifically examines irrational violent crime, which one should not anticipate (at least in a direct way) to show a relationship with employment changes.

In a study done in Atlanta, Georgia, Kvalseth (1977) found that urban unemployment was positively related to burglary and larceny, that the male unemployment rate is also positively associated with robbery, and that both the male and female unemployment rates were positively associated with the rate of rape.

Nagel also determined that unemployment may result in minor crimes that may not necessarily result in imprisonment. Given the determination of a positive correlation of (.517) between unemployment and crime rate there was "little or no relationship between a state's crime rate and its incarceration rate (.214)" (Nagel, 1977). A significant problem with Nagel's study is that he used point-in-time data instead of than the more appropriate use of longitudinal data.

In their study Walsh and Viets determined that less than half the pre-trial offenders surveyed were unemployed (46%), and that the unemployed were most likely to be young, black, or female (Walsh & Viets, 1977). Although it is not clear whether unemployment contributed to the criminality

cited in their study, it does suggest that pre-trial offenders are often unemployed.

Criminology & Sociological Perspective. Many early theories in criminology and sociology have considered the relationship between economic fluctuations and crime in the United States. For example Durkheim suggested "severe economic problems could generate widespread social instability and therefore anomie" (Durkheim, 1950). Thus he implies that a generalized economic downturn and the attendant disorganization, manifested in changes in housing tenure, decreased vacancy rates, urban blight, etc., could expedite a more criminogenic environment. Merton emphasized Durkheim's concept of anomie, and its relationship to the economic situation when he explained that:

The emphasis in American society on goals (e.g., possession of material goods) and not means (e.g., access to high-paying jobs) causes strain when the means are unavailable for achieving the prevailing success goals . . . crime is, then, a reaction to culturally induced strains and not a product of rational choice (Merton, 1957).

Merton asserts that the basic premise of the economists are inaccurate; criminals do not make rational choices considering the costs and benefits of committing crime, but are cajoled into crime by their situational needs and the environmental constraints. The strain toward innovation

(developing alternative sources of income) is strongest according to this theory among those of lower socioeconomic status because their means to achieve success goals are so limited that they are often tempted to employ culturally proscribed means (such as crime) in the pursuit of the culturally prescribed success goals (Tittle, 1983, p. 337). In the end certain assumptions must be met to allow for anomie theory to explain the relationships between crime and socioeconomic status. Tittle suggests that these assumptions can be summarized into three basic areas (Tittle, 1983, p. 339):

1. Lower class people are a result of less effective socialization.
2. Lower class people envy the upper class and want to behave like them.
3. Upper class people will rarely aspire beyond their means.

Similarly Guttentag claims that anomie, the lack of stable neighborhood norms, lack of stable values, leads to higher criminality. For instance, she postulates that economic conditions, as reflected in the employment levels, play a direct role in the population shifts that lead to anomic conditions:

If we examine conditions of employment throughout the world, we will see that depending on the differential effects on population mobility and social change,

employment patterns are related to both rises and declines in the rate of delinquency in different countries. It is possible to predict the direction of the effect by following the consequences of the employment pattern on the stability of the population . . . High delinquency rates follow conditions of unemployment, when, for example, job patterns change so that the poor must shift from place to place, often from urban center to urban center, in search of work. The resulting instability and anomie of the poor under these conditions will be reflected in high delinquency rates (Guttentag, 1968, p. 112).

Thus she implies that one can specifically assess, or possibly monitor, the changes in an area that lead to the situation of anomie. Unemployment then, is an indicator of social problems that influences the tendency to commit crime to meet basic economic needs. There have also been theorists who focus on the defective psychological development issue of the anomie theory. These theorists suggest that certain familial traits produce criminogenic environments (Alexander & Healy, 1935; Cortes & Gatti, 1972; Glueck & Glueck, 1950, 1968; Healy & Bonner, 1931; Nettler, 1984). The natural result of psychologically defective socialization, according to these theories, is the use of crime to satisfy perceived or actual needs.

In "Delinquency and Opportunity," Cloward and Ohlin expanded on this "environmental influence" theme when they suggested: "A person recognizing that he does not have access to legitimate opportunity structure, such as vocational training or lucrative job, which are necessary to satisfy institutionalized success goals, might reject legitimate means in favor of an illegitimate opportunity structure open to him" (Cloward & Ohlin, 1961). Therefore, given the environmental constraints to legitimate employment, the delinquent pursues an illegitimate career to obtain a desired standard of living. Even these early theories suggest that although the environment is the major cause of criminality it applies to each perceptual situation offered to explain the relationship between crime and the economic situation differently. Holzman postulates that even these theorists did not believe crime to be freely chosen. They did implicitly acknowledge property crime as livelihood, albeit a livelihood well apart from the marketplace of the greater society (Holzman, 1982, p. 238).

The subcultural theories of crime causation also can be claimed to assist in the explanation of the relationships between crime and the employment situation. In a very general sense these theories suggest that certain groups or areas have distinctly different sets of values and norms which sanction criminality for survival. Miller suggests that the social classes are differentiated with respect to

their crime relevant "values" or "focal concerns," with the lower classes being characterized by "a distinctive tradition many centuries old with an integrity of its own" featuring focal concerns about trouble, toughness, smartness, excitement, fate, and autonomy (Miller, 1958). Similarly Sutherland proposed that differential association theory is a variant on the subcultural perspective. DeFleur and Quinney state:

Overt criminal behavior has as its necessary and sufficient conditions a set of criminal motivations, attitudes, and techniques, the learning of which takes place where there is an exposure to criminal norms in excess of exposure to corresponding anti-criminal norms during symbolic interaction in primary groups. (DeFleur & Quinney, 1966).

Another variant on the subcultural argument is the community ecological (Tittle, 1983) theory. In a similar conceptualization to the subcultural theory, this perspective suggests there are distinct areas within urban areas that are concentrations of lower class attitudes, physical appearance, and value systems. Shaw and McKay postulate there are two main features in these areas: Physical deterioration, and economic depression (Shaw & McKay, 1969). Thus, given these features certain areas are unable or cannot control the influences of successful criminality in perpetuating future criminality.

In addition, labeling theory also fits this conceptualization of criminality. Once the environment encourages a crime-as-a-career choice, society reinforces that choice with certain restrictions to other labor markets. The likelihood of legal processing and labeling is thought to be greatest for those individuals with the least power and resources to resist labeling " . . . the powerless, or disadvantage, include, especially, members of minority groups and those of lower socioeconomic status" (Gove, 1980). In addition, Lemert suggests that the labeling process "restricts but does not destroy free choice," in effect conferring a certain marginality on the individual (Lemert, 1951, p. 193-195). Labeling theory, therefore, asserts that although there are restrictions to moving from illegal activities, the choice is not a matter of rational choice.

The approach of both the criminologists and sociologists have been to postulate that crimes are linked with an individual's position in the social structure. The most frequently hypothesized relationship is negative. Criminal behavior is seen to vary inversely by social status with particular concentration in the lowest socioeconomic levels of society (Tittle, 1983, p. 335). Many general attributes of society that are indicative of poor environments are linked to the existence of the lower socioeconomic classes. Tittle argues "Discussion of the sad

state of the poor, with allegation that such undesirable consequences as sickness, vagrancy, crime, and hopeless despair go far back into antiquity" (Tittle, 1983, p. 335). Additionally, Schafer provides a review of the literature that shows "Hardly any of the thinkers of the causes of criminality omitted poverty or economic conditions from their catalog of crime factors, and thus an endeavor to present those who have treated this issue would mean to list almost all who treated the problem of crime" (Schafer, 1969, p. 255).

There are also theorists who posit that unemployment can be used as an indicator of incarceration rates (Cox, 1975; Waldron, 1975, etc.). Although Parker and Horowitz claim that there " . . . have been few studies that have specifically focused on the impact of unemployment on crime and imprisonment . . . ," they have not adequately searched the literature (See Cox, 1975; Waldron, 1975; Polinsky & Shavell, 1984; Bowker, 1981). In addition, Parker and Horowitz further their fallacious argument by citing only the work of Radzinowicz from the 1930's (Radzinowicz, 1939). This is particularly inappropriate in that government expenditures on social control agencies are not as sensitive to the fluctuations of the economy as they may have been when Radzinowicz's formulated his theory.

Criminological and Sociological View of Unemployment and Crime. Similar to the economists, several

criminological have examined the relationship between the criminal justice system and employment in the economy (Bonger, 1916; Rushe & Kirchheimer, 1968; Turk, 1969; Chambliss, 1964, 1976; and Quinney, 1977). The results of the analyses in this area have been mixed. Several studies that have reported no significant relationships between labor force participation and crime (Jones, 1974; Wellford, 1974; Pogue, 1975; and Loftin & McDowall, 1982; Swimmer, 1974; and Land & Felson, 1975). More specifically (Danziger & Wheeler, 1975; Spector, 1975; and Block, 1979) did not find support for a relationship between unemployment and crime. The use of time-series techniques to examine fluctuations in employment and criminality have been similarly accused of showing a lack of relationship when other factors are controlled (Fox, 1978; Bartel, 1979; Orsagh, 1981).

Conversely, there have been researchers that have reported a positive relationship between the economic conditions and crime (Greewood & Wadycki, 1973; and Fox, 1979; Cook & Zarkin, 1985). Parker and Horowitz suggest that there is little consistency in what type of crime is or is not associated with unemployment, with the exception that burglary rates often likely follow elevated rates of unemployment (Parker & Horowitz, 1986, p. 752). Although Parker and Horowitz assert that there is little evidence of a relationship between crime and/or imprisonment and

unemployment, the evidence in the literature seems otherwise. It is possible that crime and imprisonment are practically related, if not empirically substantiated. A recession always provides police chiefs with a comfortable explanation for their failure to prevent increases in the crime rate (Cook & Zarkin, 1985, p. 115).

Although Parker and Horowitz claim to go beyond the limitations of the past work on the relationship between unemployment and crime, they do not significantly alter the data that has been relied on in the past. They assert that the aim of their study is to overcome, in part, the limits of most previous research on unemployment, crime rates, and imprisonment rates through examination of state level data from 1974 through 1979 (Parker & Horowitz, 1986, p. 754). Yet they do not recognize the inherent problems associated with "officially" measured unemployment, or the Uniform Crime Reports. One can easily argue that their analysis has merely mirrored the specification errors of the past in that both official unemployment and official crime rates are problematic measures of either crime or unemployment. In addition, they also fail to recognize that yearly reports of crime for large aggregate areas (states) may tend to mask intra-year fluctuations in the data. Economists have argued (Thurow, 1975) that employment has a considerable intra-year variation and that specific areas may disproportionately influence the state levels. It is puzzling that Parker and

Horowitz cite that most researchers have not heeded their criticisms about differences across social groups, or crime types and yet have specified a state-level model.

Certain theorists, in a more general sense, posit that the business-cycle has a pervasive effect on the structure of economic opportunity and therefore on behavior. Cook and Zarkin suggest that it would be "surprising indeed if crime rates were immune to general business conditions, and certainly the conventional wisdom asserts that 'street' crime is countercyclical" (Cook & Zarkin, 1985, p. 115). In addition, Cook and Zarkin provide a clear conceptual explanation for the possible linkages between business conditions and crime. These possibilities are summarized under four main headings:

1. Legitimate Opportunities: The quality and quantity of legitimate employment opportunities are procyclical.
2. Criminal Opportunities: Recession may discourage crime by reducing the quality of criminal opportunities.
3. Use of Criminogenic Commodities: Alcohol consumption, handgun sales may increase in good times, and therefore crime will tend to increase.
4. The Criminal Justice System's Response to Crime: There may be a reduction of budgets and therefore effort in recessions.

In the early part of this century Bonger, Van Dan, Sellin and others attempted to assess the applicability of these postulates. In that regard Thomas determined that the detrended measures of crime with an indicator of business conditions for the period of 1857 to 1913 was correlated with certain property crimes (burglary & larceny) and the economic climate of the time (Thomas, 1927). Henry and Short find similar correlations at the metropolitan level (Henry & Short, 1954).

Radical Criminology and Economic Theory. Another cogent perspective that considers the relationship between general economic conditions and the amount of crime present in society is what has been variously called "New Criminology, Radical Criminology, Critical Criminology" (Tittle, 1983). An early theorist who specifically discussed the relationships between economic conditions and crime (Marx did not directly address this issue) was Bonger. He maintained that a capitalist economic system is necessarily based on competition and exploitative exchange, the inherent product of which is demoralization of humans and rampant egoism (in Turk, 1969). Bonger further asserts that the proletariat are "inclined" toward crime for several reasons: the actions of the bourgeoisie are not defined as criminal, the bourgeoisie have legitimate means of income generation, and the social disorganization in the environments of the proletariat renders them less attuned to

the values of lawful behavior set by the bourgeoisie (Bonger, 1916). Therefore, a capitalistic system creates a disproportionate amount of crime among the lower classes because their desperate economic circumstances provides strong incentives for committing criminal acts. The employment situation provides a demoralization of these classes through competition and exploitation and the lower classes have no legitimate alternative.

This perspective hypothesizes that current criminality is based on past and present economic conditions, and that the response to crime (by the criminal justice system) will be based on these past economic relationships (Surette, 1985, p. 47). Quinney states that:

The criminal justice system, on the other hand, serves more explicitly to control that which cannot be remedied by available employment within the economy or by social services for the surplus population. The police, the courts, and the penal agencies - the entire criminal justice system - expands to cope as a last resort with the problems of surplus population. The criminal justice system as well as a control and corrective agency (Quinney, 1977, p. 109).

The conflict perspective has been the only criminological or sociological theory that has acknowledged the existence of rational economic choice by criminals, however, they blame the socio-political environment for this

choice. Reckless suggests that poverty is generated by the economic exploitation inherent in capitalism and is fundamental in an individual's choice to commit crimes (Reckless, 1961, 42-45). Thus for these theorists, criminality is a specific response to the exploitation encouraged by society. In addition, the behavior that is deemed criminal by the ruling class may be perceived as legitimate by those without power (Vold, 1958).

Liska, Chamlin, and Reed suggest that the conflict perspective presumes a variety of conceptualizations linking crime control to group conflict, stratification, and power (Liska, Chamlin, & Reed, 1985, p. 121). In a more general sense there have been theorists who argue that economic inequality also may stress economic conflict and by that influence the need for social control techniques (law enforcement, incarceration, welfare, etc.). Chambliss and Seidman assert, "The more economically stratified a society becomes, the more it becomes necessary for the dominant groups in society to enforce (through coercion) the norms of conduct which guarantee their supremacy" (Chambliss & Seidman, 1982). In addition, Jacobs asserts that the political power is based on a claim that income inequality increases the relative power of dominant groups; and that the punishment of crime, especially property crime, is more in the interest of dominant than other groups, and that income inequality should increase the level of crime control

(Jacobs, 1978). Tittle's conclusion that these "analysts are not all of one cloth and most eschew a general theory about criminal behavior in favor of specific analyses which attempt to link crime in particular historical or cultural epoches to variations in the relationship between categories of persons and the means of production" seems apparent (Tittle, 1983, p. 345).

Unemployment and Imprisonment. Most of the research in this area concentrates on state and federal imprisonment rather than local jail use. Although the primary focus of this research is to assess the correlations between the populations of correctional institutions and unemployment, a secondary goal is to be able to forecast future trends in the prisons' populations. During a conference on the "Economics of Crime and Punishment" it was stated that the rational assumptions of economic theory are not intended to describe the world; but as analytical instruments to generate testable implications (Public Policy Research, 1973, p. 2). This report goes further to postulate that:

. . . the search for statistical association and for sequences of probabilities is not useless. People rationalized that eating spoiled food was often followed by distress long before they knew anything about bacteria or toxins (Public Policy Research, 1973, p. 13).

In a study done for the Subcommittee on Penitentiaries of the Senate Judiciary Committee requested by the Congressional Research Service it was determined there was some indication of a correlation between prison populations and unemployment rates (when unemployment rates are up, prison populations are up) (Robinson, Smith, & Wolf, 1974). This time-series analysis further showed that the changes in the prison populations lagged about one year behind the changes in the unemployment rates. In a similar study by Frank he found that the lags between unemployment and prison populations were about fifteen months (Frank, 1975).

Cox also examined the relationship between unemployment and imprisonment. He explains that:

. . . using the time period of January, 1967 to December, 1974, monthly prison populations figures show a pattern of annual fluctuations until early in 1972, when the population began to grow steadily to its presently overcrowded size. During these same two years, the number of unemployed showed a departure from annual cycles and paralleled the dramatic upsurge in the number of state offenders (Cox, 1975, p. i).

The approach taken by Cox is similar to those of the other theorists, although he only examines the problem for the State of Georgia. In addition Cox's analysis departs from most research in that he determined there was almost no lag between onset of unemployment changes and state prison

population changes. One could suggest that his results, although methodologically sound, may be an artifact of the State of Georgia.

In other similar studies (Armbust and Deloney, 1977; Brenner, 1976; Crago & Hromas, 1976; Greenberg, 1977) determined that changes in the national employment rates are consistently related with the number of admission to prisons.

Waldron, Pospichal and Briggs have determined there are significant positive relationships between unemployment rates and incarceration rates over the 1971 to 1978 period; however, when they used point-in-time analysis by year they found no significant correlation (Waldron, Pospichal & Briggs, 1975, p. 16).

In a study that was done in Iowa that examined the relationship between unemployment rates and prison populations. Their analyses showed that age was more significant than unemployment as an indicator (or predictor) of prison populations. Turpin, Fisher and Powers did suggest that,

One objective factor probably stands out above the others as a predictor of criminality: failure to become satisfactorily and permanently established in the working world early in life. (Turpin, Fisher, & Powers, 1975).

In an analysis that was both national and regional, Brenner evaluated the relationship between economic indicators and unemployment. He determined there was a significant relationship between unemployment and imprisonment across the nation as well as within each region. He postulated that for each state a one percent change in employment rates, which were continuous over a six year period, would result in an attendant increase in state prison admissions of 3,340 inmates across the country (Brenner, 1976).

Crago and Hromas analyzed the relationship between unemployment and imprisonment in an attempt to forecast future trends in prison populations. They assessed the relationship between inmate populations, unemployment rates, population at risk (males 18-24 years of age), and court commitments. They concluded that when unemployment is lagged about three months before court commitments there is a high correlation between the two (Crago & Hromas, 1976).

In analyzing the relationship between unemployment and prison admissions in a Canadian sample Greenberg determined there is a very high correlation between the two ($r = .92$) for the period 1945-1959. He also found some evidence that prison admissions lag behind unemployment, as was found in the American studies (Greenberg, 1977).

Jankovic determined that for the period 1926-1974 there were significant positive correlations between unemployment

rates and both prison population levels and prison admissions (at the state level) (Jankovic, 1977).

In an analysis of federal prison populations Waldron determined there was a moderate correlation between monthly court commitments to the Federal Bureau of Prisons and monthly unemployment rates ($r = .44$) (Waldron, 1977). He further suggested that court commitments may be effected before the repercussions on prison populations. The social events that lead to unemployment, first seem to have an influence on court commitments to the Federal Prisons, instead of a direct relationship with the prison populations themselves.

In an interesting analysis that attempted to disaggregate the national and state economic cycles or trends Marenin, Pisciotta, and Juliani (1983) examine the interaction between unemployment and incarceration during the 1958-1978 period. Although they claim that the relationship between employment and crime is undefined or that the " . . . precise impact of changes in business cycles on crime has not been clearly established." (p. 43). They contend that the relationship between unemployment and incarceration has been empirically supported. Their specific purpose was to examine further the relationship between incarceration and unemployment with the intention of uncovering significant fluctuations at the state level that may not appear in the national (aggregate) analyses. They

conclude that the disaggregated relationship between unemployment and incarceration " . . . reveals the interaction of unemployment, crime, and incarceration is less direct and more complex than many empirical studies and theoretical interpretations suggest" (Marenin, Pisciotta & Juliani, 1983, p. 46).

Finally, they make four specific recommendations for further study that seem particularly on point to what is anticipated in the present analysis (see methods below). They suggest that the research on the relationship between economics and crime should be "context specific" (in concentrating on a discrete geographic area). Furthermore, the indices of unemployment, crime and social control need to be improved, imprisonment should not be the only measure of social control, and "reductionist" and "simplistic formulations" and specifications (as happens to be the case to date) should be reconsidered instead of the myriad of interactions in the relationship between economics and crime (Marenin, Pisciotta & Juliani, 1983).

The literature suggests that the relationship between unemployment and incarceration exists. The local unemployment rate will first be reflected in the local jail admissions and welfare rates, and subsequently at the state prison level which reflects unemployment and criminality. When an individual is first arrested they will be initially housed in jails (jail admission rate).

Summary

The economic perspective posits that crime is a rationally considered behavior. Within this perspective it is further suggested that the offender considers the costs and benefits involved in the commission of a criminal act and that the goal is to achieve the most advantageous balance between the potential gains from criminality and the potential loss for being apprehended and incarcerated. The underlying assumption is that people are hedonistic as they calculate the potential pleasure from criminal activity and simultaneously attempt to avoid the pain of apprehension and conviction. In the end, the solution to the problem of criminality for the economists is to increase the costs of engaging in crime.

The rational economic perspective also maintains that the wage for crime is constant; therefore, there are little variations in the benefits side of the equation. Although this theory seems viable, there is some question about its practical significance. There are costs that are not measurable (i.e., victims loss of sense of security, society's loss, etc.). The "utilitarian" presumptions of the economists have questionable application to understanding criminality. The economic analyses simply claim there is a relationship between unemployment and criminality, based on the reasoning of "classical" criminological theory.

The economic perspective does discuss the urban labor market theory in a specific way. It purports that the urban labor market can be subdivided into the primary and secondary labor markets. The primary market consists of "good jobs at good wages," whereas the secondary market is one in which the quality of the employment is largely of mere subsistence levels. The secondary market jobs typically pay minimum wages, provide little job security, and little chance for advancement. In an extension of the labor market theory Harrison supposed that the labor market could be further divided into four sectors. The labor market theory allows one to examine the basic structure of employment in the urban area. It also permits one to suggest that criminality results from lack of participation in the primary labor sector.

Certain theories that presume to examine the relationship between business cycles and crime have also been examined. These analyses study the interrelationships between the macro-economic conditions and criminality. In a very general sense these analyses appear to have found similarities in patterns of crime and business cycles in the United States.

The criminologists have relied largely on deterrence theory, and suggest there is no exclusive empirical relationship between criminality and economic conditions, as it has currently been tested. Most of the early theorists

suggested that criminality is the result of several factors, labor force participation merely being one of these. The social problems that lead to crime are broader, for these scholars, than what the economic perspective would presume. For example Durkheim believed that economic depression may lead to individual and collective "anomie" that in turn may lead to greater levels of criminality. The relationship between the labor market and criminality, at least for these theorists, seems indirect.

In addition there have been several theorists that have examined the relationship between the level of labor force participation, most typically unemployment rates, and the imprisonment rates. The overwhelming majority of the studies in this area suggested that there is a relationship between the unemployment and imprisonment. Although there is no consensus about the response time of the incarceration rate (e.g., some suggest no lag period whereas others suggest as much as a 15 month lag), it is clear that most of these studies have found a significant relationship.

In summary then, the majority of the literature acknowledges that the relationship between criminality and the economic situation is possible, although for different reasons. The economic perspective is clearly of a "classical" orientation, whereas as the criminological perspective is "positivistic" in orientation. The

differences come in terms of approach to analysis or empirical verification.

Conclusion and Conceptual Framework

The results of this review of the literature demonstrates that there has been consistent disagreement among scholars on the relationship between economic factors and crime. Economists reason that there is a relationship between employment and crime. This contention is based on classical economic theory. This theory assumes that individual criminals consider the costs and benefits of committing a criminal act, and offenders balance the likelihood of both apprehension and punishment against the benefit of committing an offense. It is important to note that the costs of committing a crime vary for different individuals. For those who are unemployed, or marginally employed, the costs would appear to be less (they have less to lose) than for those who are employed. Although this point is generally ignored in the literature it may be responsible for the inconsistencies in much of the crime and unemployment rate literature.

However, criminologists assert that any relationship between employment and criminality is limited or non-existent. These theorists suggest that although employment may be a factor in the relationship it is not the only, or most important, factor. As stated above, these theorists claim that crime is caused by a number of factors.

This analysis examines the relationship between employment and incarceration rates. The research literature on unemployment and incarceration has consistently found a relationship between incarceration and unemployment. There has been virtually no conflicting results in the research which has examined the relationship between incarceration rates and unemployment rates. Additionally, the examination of the relationship between unemployment rates and incarceration rates seems important from a policy perspective. The relationship between employment and incarceration does have specific implications for correctional practice. One could argue that if the jail admission rate increases proportionately with the unemployment rate that during labor market atrophy jail administrators may need to develop alternative programs to reduce the utilization of their jails. Jails are also the main processing agency in local criminal justice systems. Increased demands placed on such agencies and facilities, without altering their capacities, will also directly affect the ability of the courts to sentence.

In addition, incarceration rates may be a more appropriate unit of analysis than UCRs as crime rates can vary across jurisdiction and are often more a function of quirks and needs of police organizations than actual crime rates (McCleary, Nienstedt, and Erven, 1982). Crime rates are not accurate measures of criminal justice system

response to changing conditions or changes in the economic situation. Jail admission rates, however, are a specific indicator of how a major component of the criminal justice system responds, in an official way, to changes in its environment.

The research literature examining unemployment and incarceration rates focused almost entirely on prison populations. Jail populations, specifically jail admission rates have never been used as the unit of analysis in similar research. The focus of research on jails has been neglected in much of the research literature in criminal justice and criminology (Klofas, 1987; Welch, 1989; Mays and Thompson, 1988; Stojkovic, Pope, and Feyerherm, 1987). Klofas quite perceptively argues "despite the obvious social significance of the jail, few explanations of its neglect in the criminal justice research are available" (Klofas, 1987, p. 403). This oversight is an important one. Given that a greater number of people are processed through our nation's jails than through the prison system (Kalinich, 1990), it seems rather ill-advised to ignore these agencies and facilities.

It is also important to note the significant differences between jails and prisons. Prisons are run by the state and incarcerate felons. Moreover, the typically term of incarceration in state prisons is one year or more. Prisons draw their budgetary support from the state and have

a number of programs and activities. Jails, on the other hand, are local facilities. Jails house both individuals who have been sentenced and those who are awaiting trial. The typical jail does not house an individual over one year and provides a physical location for incarceration sentences for misdemeanants. Jails draw their financial support from the local county governments and, therefore, generally have few programs or activities for inmates. Moreover jails have been suffering severe overcrowding and demands during the recent return to a more punitive ideology in sentencing (Goodstein & Hepburn, 1985).

The number of citizens that are processed through jails in this country is quite large. In 1984, the average daily population in this nation's jails was estimated to be 223,552 but over 8 million offenders were admitted to jails that year (Bureau of Justice Statistics, 1984). Although prisons had a population of 419,820 in 1984, (Bureau of Justice Statistics, 1984) the rate of release from prisons is much less than jails due to determinate sentencing and parole policies (Duffee, 1989, p. 38) turnover in inmates as in jail. In addition, jails tend to have a more rapid turnover in their population because of shorter sentences and releases after booking.

The distinction between jails and prisons is crucial to the analysis of the relationship between criminal justice response and employment and social welfare. Jails process

individuals prior to their long-term prison incarceration, and they also process misdemeanants who would not normally go to prisons. Hence, the jail admission rates are a more direct measure of the criminal justice system response for the majority of individuals who come in contact with the criminal justice system. In fact, prisons reflect only a small part of crime due to the criminal justice screening process (Cole, 1990).

On the other hand almost all individuals arrested will be booked into the local jail. Moreover, the key indicator of the criminal justice system response are the jail admission rates. Although criminal justice system response will eventually be reflected in the prison populations, it is more direct and immediate at the jail level. These rates show the response to both felons and misdemeanants in a dynamic manner. Total jail population counts would not provide a response measure as they are constrained by the capacity of the jails and any court orders which restrict such populations.

This analysis also attempts to contribute to the literature which has been developed in the past by adding the considerations of labor market theory. The use of social welfare rates adds another important dimension to the relationship between jail incarceration and employment. The social welfare rate may also contribute to the possible social response mechanisms available to the state. The

legitimate labor market responds to changes in demand for labor by reducing production through unemployment. This surplus labor market is then more available for illegal and quasi-legal labor as well as having more leisure time to engage in domestic violence. The local government and criminal justice system, through the use of incarceration in the local jail and the payment of social welfare, would also respond to the growth of the surplus labor market. Therefore, one can argue that both jail incarceration and social welfare rates should vary inversely with the employment rates across different areas. The state can respond to unemployment, at the local level, through either increasing its incarceration, possibly increasing its attempt to deter, and/or it can provide an increased level of social welfare benefits and payments.

The present research utilizes a time-series design. This approach is necessary given that the focus here is to examine the effects of changes in jail admission and social welfare rates and whether they coincide with changes in employment rates across twenty-four urban counties from 1980 through 1986. The sample selected is twenty-four urban counties. Urban counties were selected given that the jail populations and social welfare rates were sufficiently variable, and the sample sizes were large enough to provide meaningful results. In addition, these counties, although all defined as urban, are clearly different in terms of

their employment bases. They allow an examination of the hypothesis that there are differential jail and social welfare utilizations (in response to employment changes) across different types of areas. This allows one to consider the potential differences or similarities in employment basis in different types of county criminal justice system responses to changes in the labor market.

This research, therefore, will examine the relationship between fluctuations in employment rates, social welfare rates, and jail admission rates in 24 urban counties in Michigan between 1980 and 1986. The counties selected are all urban and all have some level of industrial production. Utilization of counties with differing commerce and industrial qualities also will allow the research to examine the extent to which the degree and kind of industry and commerce may effect the change in employment or the criminal justice response. The relationships that are anticipated are that as employment rates decrease, jail admissions and social welfare will increase.

CHAPTER 3

METHODS

Introduction. This analysis examines the interrelationships between labor force participation rates and jail admission and social welfare rates. The employment, jail, and social welfare rates for each of twenty-four urban counties in the State of Michigan will be examined in a qualitative, graphical, and statistical manner. The qualitative information is based on the "types" of economic base in each county, from manufacture based economies to diverse economies with manufacture, government, and services based on economics. Once these characteristics have been assessed, each of the three indicators will be examined graphically. Finally the interrelationship of the employment rate with both the jail and social welfare rates will be assessed. The relationships that are anticipated are that as the labor force participation increases jail admission rates will decrease. Similarly, the social welfare index would also respond in an inverse fashion to the labor force changes. Thus, the jail admission and social welfare rates are being examined as dependent upon the employment rate over time in twenty-four urban counties

in the State of Michigan. This analysis also examines the similarities and differences in the relationship across a classification of counties.

Research Questions. The literature and conceptual framework result in the following research questions:

Question One: To what extent is there a relationship between employment rates and jail admission rates in twenty-four urban Michigan counties between 1980-1986?

Question Two: To what extent is there a relationship between employment rates and social welfare rates in twenty-four urban Michigan counties from 1980 through 1986?

Question Three: To what extent is there a relationship between jail admission rates and social welfare rates in twenty-four urban Michigan counties from 1980 through 1986?

Definition of Terms: The following section describes the relevant terms from the research questions listed above.

Jail Admission Rates: The jail admission rate is the number of individuals that are admitted each month to the local jail as the result of being arrested and formally processed to the number of all individuals that have been incarcerated in the jail during each month. The admission rates were divided by the total jail populations in order to control for overall jail utilization (ie., number admitted/total jail population = jail admission rate). Individuals that are formally process may be released on bond status immediately, or shortly after being formally processed, and hence, do not necessarily become a part of the incarcerated population. The division of the number

admitted by the total jail population also allows a more appropriate comparison of the admission rates across the twenty-four jails given that the total jail utilizations are somewhat different.

The incarcerated jail populations were stable about their means from 1980 through 1986 for all counties in the study. The use of the incarcerated jail population as the base for the rate, therefore, provides a consistent base over time. Although the total jail populations were consistent over time, the differences across the twenty-four counties was controlled for through the calculation of the jail admission rates.

In addition, the United States Bureau of the Census yearly county population estimates show that the general populations in the counties studied increased by between 2 and 3 percent during the time period of the study. Therefore, due to the stability in the incarcerated jail populations and the general populations, it can be assumed that the number of individuals brought into the local jails and formally processed is not substantially affected due to changes in the general populations of the counties.

Employment Rate: The employment rate is the proportion of individuals in the civilian labor force of each county that are employed. Individuals are employed if they are contributing to unemployment compensation benefits. The civilian labor force is the total number of adults over the

age of sixteen which make up the county's potential labor force. The number of employed individuals is then divided by the total number of members of the civilian labor force, for each month. The employment rate is the proportion of the civilian labor force that is employed each month in each county from 1980 through 1986.

Employment rates are relied on instead of unemployment rates. Employment is assumed to be a more appropriate measure of the labor force than official measures of unemployment. Official unemployment simply measures those individuals who have signed-up for unemployment benefits. It does not include those who have stopped looking for work, or fail to sign-up (discouraged workers). The employment figures on the other hand, are based on the rate of compensation paid to the Michigan Employment Securities Commission by the businesses for workmen's compensation and reports the MESC (Michigan Employment Securities Commission Report, 1988). Therefore, the latter indicator is much more precise than unemployment. Although the county employment rate could be affected by in-migration, cohort ages, or populations that reside outside the county, one can argue that it is a much more valid indicator than the unemployment rate.

Social Welfare Rate: The social welfare rate is a combination of general assistance and Aid to Families with Dependent Children Unemployed (AFDCU). These programs are

measures of the proportion of the people receiving general assistance and/or AFDCU out of the total number of individuals in the civilian labor force. General assistance is given to single individuals who have no income, whereas AFDCU is given to families with children where the provider(s) are unemployed. Therefore, the social welfare rate is a measure of the proportion of individuals in each of the twenty-four counties, by month, that are collecting either general assistance or AFDCU.

Question Four: Are there differences in the relationships between employment rates, jail admission rates, and social welfare rates between counties with differing commerce and industrial bases?

This question examines whether the relationship is viable in the very urban heavy manufacturing counties and less so in the more diversified, and less dense, counties. The counties that have been included in this analysis, although all urban under the United States Bureau of Census Definition, can be further classified through an assessment of their population densities and economic activities.

The classification of the twenty-four counties results in a three level typology (See Analysis Section). Moreover, although most counties in the State of Michigan derive their economic production from manufacturing, there are differences in the intensity of that activity including less manufacture based, or "service," activities. The first type of counties are the highly urban, heavy manufacturing

counties. These counties are labeled "Dense Urban Factory Counties." In these counties there is a very high population density (relative to the other counties in the sample), the primary economic activity is that of manufacturing, although there are other economic activities. These "Dense Urban Factory Counties" have over 3% of the state population each. The total percent of the state population is 9%. The second type of counties are those that have moderate to high population densities, and have somewhat more diverse economic activities than in the Dense Urban Factory counties. This second group of counties are labeled "Urban Diversified Counties." Although this second type of county possesses substantial manufacture activities, they have several other, and more diverse, employment as well. Additionally, this second group of counties have between 2% and 3% of the state population.

The third type of counties in this study are those counties with relatively lower population densities (within the sample). These counties have been labeled "Suburban Primary Industry Counties." Although these counties also have some manufacturing, their economies are not always based primarily on that activity. These counties have a primary economic activity and a few lessor industries or activities. This third group of counties has less than 2% of the state population.

Analysis. The analysis that will be used in this study is both qualitative and quantitative. Basic descriptive assessments of the counties involved in this study will be done in addition to a time-series modeling of the relationships. The first step in this analysis is to describe each county involved in the sample. This is done to bind the graphical and statistical analyses in the practical reality of the economic phenomenon of labor force participation. Through an assessment of the jail admission and social welfare rates, each county will be studied for a relationship between the two measures of state social response and labor force participation.

Second, the initial data analysis step will be to identify the past patterns in the data. This can be accomplished, initially, through visual presentation of the past series. Although visual inspection alone may not always be sufficient to discern underlying patterns in the data, it provides nonetheless a logical starting point in the analysis.

Third, the series will be estimated to minimize error and estimate the parameters over time. The observed series will be modeled, to control for spurious influences and to examine the "pure" relationships between the labor market participation and the jail admission.

Fourth, regression models will be estimated based on the observed values, and the fit of the model. The values

will be generated based on the formula (model) and certain assessments can then be made about the relative contribution or effects of labor force participation on social welfare, and jail incarceration. Last, the accuracy of the dynamic process also will be evaluated and estimated.

This analysis will use a procedure that corrects the ordinary least squares linear regression approach for the effects of serial correlations in the observations. The Yule-Walker method, relied on herein, is selected because it performs an estimation of the parameters with an application of the generalized least squares method that is more appropriate to time-series data than the linear approach (Gottman, 1984).

The years selected were for practical and conceptual purposes. In order to construct a consistent data set across the three governmental sources 1980 was selected as the initial year in which all three data sets were consistently recorded. In addition, the urban counties were selected because the jail populations in less urban counties would not provide a sufficient number or variation to examine their potential response to employment over time.

Study Sample. The sample of counties that is used in this analysis is based on the United States Bureau of the Census definition of an urban aggregation called the Standard Metropolitan Statistical Area (See Map 1). This concept is the most discrete level of aggregation for

classification of the 83 counties at the state level, into urban and non-urban areas.⁷ Moreover, two urban counties were excluded due to the lack of data. Wayne County was excluded because the jail population data was unavailable for the period studied. In addition, Monroe County was also excluded because of its proximity and inclusion in the Toledo metropolitan area, in addition to the lack of data for social welfare and jail rates across the study period (See Map 1). The urban counties were selected because they contain 80% of the population of the State of Michigan. Although an urban versus non-urban comparison would be informative, and perhaps an extension of the examination of the social response theory constructed above, it does not further the analysis of local corrections populations or social welfare rates and their function with local labor force participation rates.

Insert Map 1

In summary then there is a diverse selection of urban counties in the study sample. The counties are a mixed ranging from agricultural, to manufacturing, to service based economies. It is particularly useful at this point to focus on the description of the sample, in the attempt to summarize the different types of counties involved in the sample.

Data Collection. The data employed in this analysis were from three different agencies in the State of Michigan. To link jail populations with both employment and social welfare rates over-time the jail populations 1980 through 1986, by month, were selected. First, the jail rates were collected from the Michigan Department of Corrections. Each jail in the State of Michigan is required to supply monthly population reports (since 1979) to the State Department of Corrections. Although these counts contain various statistics regarding categories of the jail populations (e.g., general housing counts, holding counts, etc.), the most relevant statistics in the present analysis are the monthly admission counts and the total monthly counts. These are the main indicators of intra-month change in these populations. That is, they are purported to allow assessments of the fluctuations in jail utilization and the relationship to employment in the various urban counties. These rates were standardized using the total monthly jail population of each jail across time.

The employment data that is relied on are taken from the Michigan Employment Securities Commission. The total civilian labor force as well as the unemployment and employment rates were collected for the twenty-four counties in the sample. Finally, the social welfare data was provided by the Michigan Department of Social Services Data Reporting Section. The data included here consisted of "Aid

to Families with Dependent Children: Unemployed" (ADCU), and "General Assistance" (GA). The ADCU program component includes families in which both parents are present but the children are deprived because of the parent's unemployment. The ADCU transfer payments are issued bimonthly after a two-week period. One final note regarding the ADCU payments is that it is an indicator of both state and national economic transfer in that 50% is from the federal financial sources and 50% is from the state level sources.

General Assistance is a program intended to provide financial aid primarily to unemployed single adults, widows and childless couples. In some situations; however, needy families may not qualify for AFDCU, e.g., the children are neither deprived or living with a specified relative, and may be eligible for GA. These family cases account for less than 10% of the GA caseload. The Michigan GA transfer payments are also bimonthly allotments. The count that is relied on here is the "official" GA caseload used for departmental budgeting and legislative appropriation. Last, GA payments are 100% state funded programs.

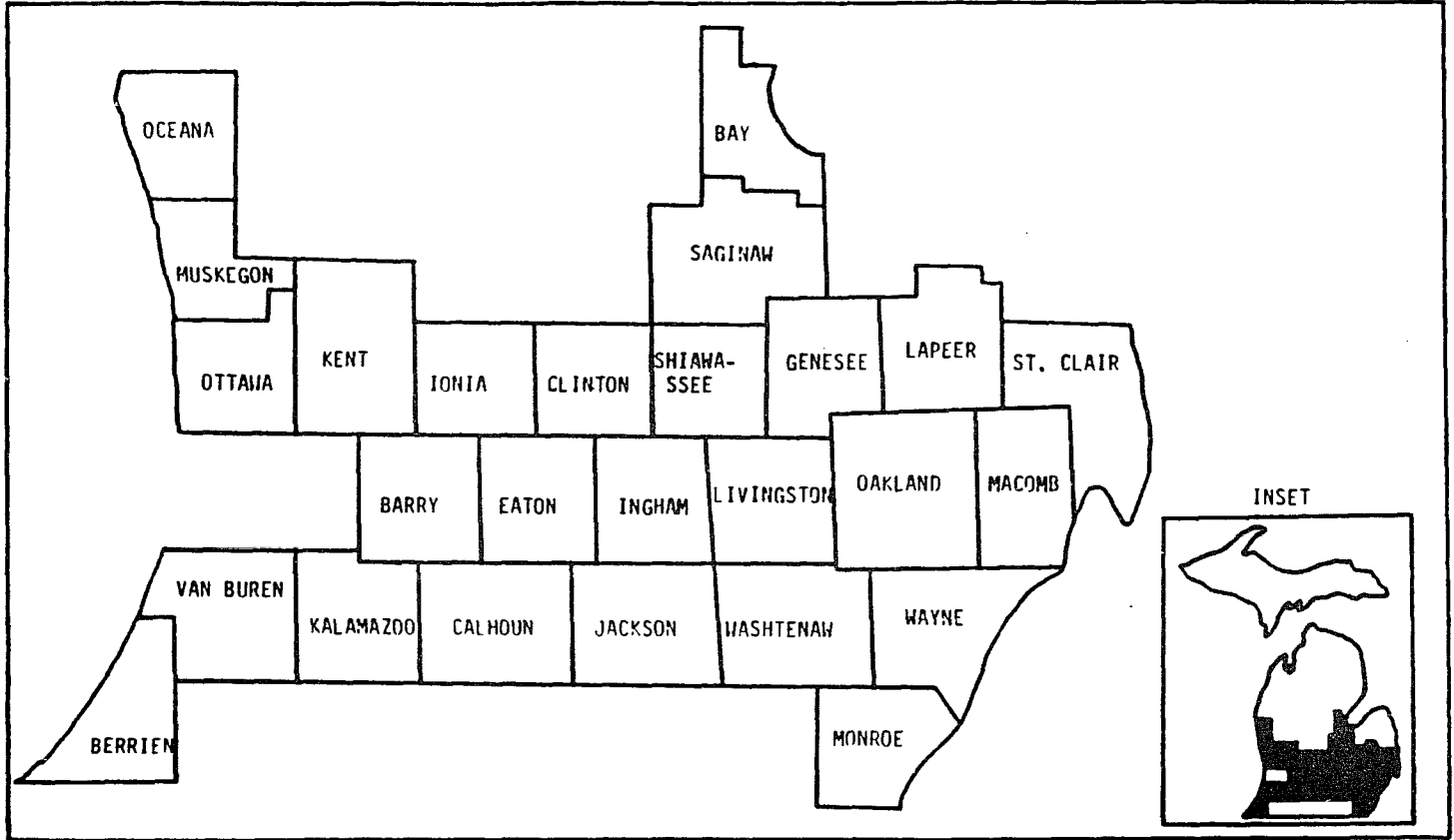
Summary. Given the somewhat limited data that has been relied on in the past, this analysis improves the examination of the aggregate relationships between incarceration and the economic situation. As stated above, the reliance on the Uniform Crime Reports has been somewhat universal in the past, yet the potential problems, or

possibilities for improvement, of the measures of criminality have not been considered.

This analysis focuses on the relationship between changes in the employment rate and changes in jail admissions. This study examines the influences, and counter-influences, of the labor market situation and the relationship with the need for social response, in the form of local incarceration and social welfare payments is assessed between 1980-1986 in twenty-four urban counties in Michigan.

Map 1

Urban Counties in the State of Michigan



CHAPTER 4

RESULTS

The results of this study will be presented at this point. The plots of the individual county rates, for jail admittance, employment, and social welfare, will be discussed followed by a test of the hypothesized relationships which will allow the assessment of the relationship between the patterns in the jail and social welfare rates and labor force participation. For each individual county the initial presentation of the results will be a qualitative description of the county. That is, each of the twenty-four counties will be described in terms of its labor force. This section will be followed by a graphical presentation of the employment, social welfare and incarceration rates, and finally a description of the results of the regression analyses for each county.

Individual County Results. Prior to a general discussion of the modeling approach utilized, each county will be examined individually. This is deemed necessary in order to establish a more cogent presentation of the types of counties involved in this analysis. In addition to the basic description, the counties are also classified based on

their main economic activities in order to more discretely describe each county and the relationships between the three major indicators in this study. The actual reports on which much of the information is gained are listed in Appendix A. Table 1 was also constructed to provide a summary of the following more specific descriptive analyses of the sample of twenty-four counties.

Insert Table 1 about here

Barry County. Barry County was organized in 1839 and was named for William T. Barry of Kentucky who was the Postmaster General under President Andrew Jackson. The primary agricultural activities in Barry County are dairying and the production of poultry, sheep, cattle, as well as the farming of corn, hay, wheat, and oats. Although Barry County is landlocked it has many lakes and resorts and has one of the largest state natural recreational areas. While Barry County is included in the sample (given that the United States Bureau of the Census defines it as an urban county), it is clearly not a densely populated county. In fact the total population of the county in 1980 was only 45,781. Table 1 demonstrates that a large proportion of the economic activity in Barry County is manufacture in nature, followed by service, retail trade, government, farming, finance, construction and forestry & fishing respectively.

The principal employers in Barry County range from automotive parts to archery products (See Appendix A). Although there is apparently a wide range of economic activity in Barry County, it ranks fourth in the sample in farming activities as well as fourth in the percentage employed in finance and fifth in the sample in forestry & fishing activities. Barry County is a Suburban Primary Industry County in that its economic activities are primarily farming and manufacture and the population is relatively less dense (there are fewer cities) than the other counties in the study.

Figure 1 shows the plots for the jail admission, employment, and social welfare rates for the 84 study months (January 1980 through December 1986) for Barry County.

Insert Figure 1 about here

The general patterns indicated by this graph are that they meanders about a mean rate. There appears to be little overall seasonal, cyclic, or trend variations in these rates. The pattern in the jail admission rate appears to fluctuate about an average of approximately 8% of the total monthly population. Although the overall perceptions one gleans from an examination of the jail admission plot seem to suggest little in terms of significant trends there is clearly a cyclical fluctuation based on yearly cycles. That

is, there appears to be, within each year, a rise to mid-year and then a subsequent decrease to years-end. Although the magnitude is dissimilar across the seven years, this pattern is somewhat consistent. The employment rate, interestingly enough, appears to have two basic trends. First, the employment rate, in Barry County, is decreasing from approximately 92% (of the Civilian Labor Force) employed in 1980 to 79% employed in April of 1984. The second trend can be described as a rise from 79% in April of 1984 to approximately 92% in 1986. It is very interesting to note that although the jail rates appear to be somewhat stable over the study period, the largest peak in the rates is shortly after the largest drop in employment (in 1983) in the study period. The social welfare rates provide virtually a mirror image of the employment rate, although they seem to be a bit more stationary than the employment rate. The response (or the changes in the patterns) in the social welfare rate seems to be similar to the decrease in employment in 1983. The trend in the social welfare clearly compensated for the drop in employment between month 22 and 50, yet it was approximately stable about the mean beyond that period. The overall impression of Figure 1 is that in Barry County the patterns in the jail admittance rate and the employment and social welfare rates are somewhat similar. In addition, relative to other counties Barry county appears to have lower than average jail admission

(JAIL), employment (EMP), and social welfare (SW) rates. The regression analyses of each the jail admission (JAIL) and social welfare (SW) rates will be discussed. Equation 1 indicates that although the data fit the model, the employment rate only explains approximately 1% of the variation in the jail admittance rate (See Table 5 for summary of all regression equations).

$$(1) \text{ JAIL} = -1.64 + (-.4841 \text{ EMP lag 1}) + (-.3023 \text{ EMP lag 2})^* \\ (.1144) \qquad \qquad \qquad (.1279)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

EMP lag 2 = Employment Rate at a two month lag.

In addition there are significant negative parameters at one and two month lags. The relationship demonstrated here is that when employment rates increase the jail rate decreases at both one and two months. The model is, therefore, consistent with the postulated social response relationship. That is, employment is negatively associated with local incarceration rates.

For social welfare rates in Barry County the employment rate explains nearly 14% of the variation, over time (See Table 5).

$$(2) \text{ SW} = -.21 + (-.2683 \text{ EMP}) + (-1.1545 \text{ EMP lag 1})^* \\ (.0772) \qquad \qquad \qquad (.1135)$$

*SW = Social Welfare Rate.

EMP = Direct Employment Rate parameter.

EMP lag 1 = Employment Rate a one month lag.

This result indicates that there is a direct response in the social welfare rate and employment. That is, when employment increases social welfare decreases slightly, and in the second month of increases in employment, social welfare decreases dramatically. Once again this result is consistent with the state social response function postulated above.

The analysis of the influence of employment rates and social welfare rates indicates that there is a direct influence of social welfare on employment rates such that the model explains approximately 18% of the variation in the employment rate. In addition, there is a significant lag parameter at one month, which indicates that as employment increases the combination of both measures will decrease at a one month interval.

$$(3) \text{ EMP} = .76 + (-.5759 \text{ SW}) + (-.9613 \text{ JAIL/SW lag } 1)^* \\ (.1540) \quad (.1153)$$

*EMP = Employment Rate.

SW = Social Welfare Rate

JAIL/SW lag 1 = Interaction Effect of Jail Admission and Social Welfare Rates at a one month lag.

Based on this result one could state that changes in state social response may influence the employment rate over time.

Bay County. Bay County was organized in 1857, and named after the fact that it encircles the lower Southwestern portion of Saginaw Bay (Michigan Department of Commerce, 1986). In addition the county is know as one of

Michigan's two major potato producing counties and one of the top four for sugar beets. In addition, Bay County also ranks high in the production of beans, and the major grain crops are corn and wheat. Bay City (the largest city in Bay County) has a economic base which is rather diverse which includes: manufacturers of petroleum, cement, chemicals, potato chips, beet sugar, automotive parts and heavy machinery in addition to being an international seaport (Michigan Department of Commerce, 1986).

The principal economic base employers in the Bay County area appear to be of five basic types; automotive, specialized machinery, health, chemical, and clothing. In addition, based on the employment by sector it is clear that Bay County is largely a service employment area followed by manufacture, retail trade, government, finance, wholesale trade, farming, construction, forestry & fishing, and mining respectively. Bay County ranks third in the percentages in all counties in this study for both retail and wholesale trade employment, as well as second for the percentage employed in mining. Hence, the general employment characteristics of Bay County are apparently oriented toward its location on Saginaw Bay and the availability of the opportunity for service and trade which that location provides. Last, Bay County ranks fifteenth in the sample in total percentage employed. Bay County is a Suburban Primary Industry County in that it has a relatively low population

density and a somewhat not overly diverse, and the population density is low relative to the other counties in the sample.

The patterns for the jail admittance, employment and social welfare rates for Bay county are shown in Figure 2. The jail admittance rate indicates that there is a general downward, albeit wildly variable, trend, although it is difficult to assert with any confidence that the visual pattern is significant. However, there does appear to be a cyclical pattern in the admittance rate in that during the study period (excluding 1981) the rate rises to a peak at mid-year and then decreases in the second half of the year.

Insert Figure 2 about here

The employment rate over the study period appears to be consistent with the pattern demonstrated in the jail admittance rate for 1982 to 1985. There is a cyclical similarity in the employment rate with the jail admittance rate. The general trend in the employment rate for Bay county demonstrates a consistent upward trend over the past seven years with an apparent stabilization of employment in 1986. The social welfare rate in Bay County, however, is rather interesting in that it is inconsistent with the patterns of jail admission rates or employment rates. While jail admittance and employment demonstrate a repeating

cyclical pattern, the social welfare rate decreases from 1980 to 1981, fluctuates wildly from 1981 to about 1985, and stabilizes 1985 through 1986. The overall patterns for the three rates in Bay county are somewhat unclear in a relative sense. Given the somewhat consistent fluctuations in each of the three rates from 1980 through 1986, one cannot readily discern, by ocular examination whether the changes in either employment or social welfare are reflected in similar changes in the jail admittance rates. Relative to the remaining 22 counties in the study, however, Bay county has a higher than average jail admittance rate, a higher than average social welfare rate, and a lower than average employment rate.

The results of the regression analyses for Bay County is shown below. The model which specifies jail admission rates as a dependent variable demonstrates that only .02% of the variation in the jail admission rate can be explained by the employment rate (See equation 4). There is a significant lag parameter at one month which indicates that as employment increases the jail admission rate decreases.

$$(4) \text{ JAIL} = 3.91 + (-.4519 \text{ EMP lag } 1)^* \\ (.1145)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

Therefore, for every unit increase in the jail admission rate there is a -.4519 decrease, at one month lag, in the

employment rate. The theory that employment rates influence state social response is therefore supported by this result. The response of the local criminal justice correctional system, as measured by jail admission, is consistent with the direction of the relationship found and postulated in theory.

The model of the social welfare rate and employment indicates that employment has two significant parameters. Equation 5 also explains approximately 7% of the variation in the social welfare rate to be explained by the employment rate. Unlike Barry County, the relationship for Bay County indicates that there is a direct relationship with employment followed by a negative relationship at a one month lag. That is, as employment rates increase social welfare increases, followed in the second month by a significant negative relationship between the two.

$$(5) \text{ SW} = 6.39 + (.2034 \text{ EMP}) + (-1.2052 \text{ EMP lag } 1) \\ (.0857) \quad (.1121)$$

*SW = Social Welfare Rate.

EMP = Employment Rate.

EMP lag 1 = Employment Rate at a one month lag.

The model in this case is somewhat inconsistent with what is presumed conceptually. The social welfare rate in this case appears to be similar to the employment rate in good times, and then responds with approximately a six times greater rate of service at a one month lag. One would expect both partial correlations to be negative in direction.

The model with employment dependent upon the two measures of state social response allows the explanation of 4% of the variation in employment. There is also a significant lag parameter at one month, which indicates that as employment increases the use of state social response decreases.

$$(6) \text{ EMP} = -3.65 + (-.8072 \text{ JAIL/SW lag } 1) \\ (.1175)$$

*EMP = Employment Rate.

JAIL/SW = Interaction effects of Jail Admission and Social Welfare Rates at a one month lag.

This model indicates a consistency with that proposed by the theory of state social response: as employment increases jail admission, and social welfare rates decrease. In addition, it makes intuitive sense that the jail admission rates and the social welfare rates lag behind the employment changes by at least one month.

Berrien County. Berrien county was organized in 1831 and was named after John M. Berrien of Georgia, who was the Attorney General under President Andrew Jackson. The climate advantages of the Berrien County area, near Lake Michigan and its Southern location in the State have made it a prime location for the growing of fruit. According to the Michigan Department of Commerce Berrien County ranks in the top two in Michigan for grapes, the top three for apples and top four for tart cherries, and is among the state's leading producers of blueberries and sweet cherries. Berrien County

also has a rich historical tradition of prominence in the region in that it was under the rule of four nations (Spanish, French, British, and the United States). Of particular note is that the Southern part of the county has at its doorstep the cultural (sic) and entertainment facilities of the entire South Bend-Mishawaka area with its four universities and lecture, drama, music, and arts activities (Michigan Department of Commerce, 1986). The principal economic base employers are dominated by appliances, automotive parts, and electronic equipment (computers).

Table 1 demonstrates that employment in Berrien County is largely in manufacturing, followed by service, retail trade, government, farming, financial, wholesale trade, construction, forestry & fishing and mining respectively. Berrien County ranks sixth in the sample for forestry & fishing employment in addition to ranking fifth in mining and fourth in wholesale trade employment. Finally, Berrien County ranks tenth in the sample in the proportion of the civilian labor force in the entire sample in that county.

A final comment about Benton Harbor (one of the principal cities in Berrien County) is that it has suffered somewhat severe economic setbacks in recent times given the movement of industry to more "attractive" climates and areas. Although the city of Benton Harbor has been the cite of intense revitalization efforts, the effects of these

activities have yet to materialize in substantive changes in the bleak economic outlook for that city. Berrien County is a Suburban Primary Industry County. The main urban area, Benton Harbor/St. Joseph, is primarily a manufacturing center in the county with the remainder of the county engaged in lessor economic activities. The population density of the county is also low relative to the other counties in the sample.

Figure 3 shows the patterns in the three rates for Berrien county. The jail admittance rate for the study period indicate that there appears to be both a cyclical and a trend pattern in the data. There is a rise from the beginning of each year to a peak at mid-year followed by a decrease to years end. Although this pattern is not as clearly demonstrated as in Bay and Barry counties, it is nonetheless appears to be present. In addition, the cyclical patterns seem to be decreasing in magnitude over the seven year period from a high rate of approximately 7% in 1980 to a low of 5% in 1986. The employment rate rises through October 1981, decrease through January 1983, and increases through December 1986. Although the employment rate does not seem to be similar to the jail admittance rate, in terms of cyclical patterns, the general trends are inverse; as employment has risen, in general, since 1980 the jail admittance rate has decreased, which is consistent with the postulates of the economic and incarceration theories.

The social welfare rate indicates a very stable pattern over the study period. Although there is a drop in 1981, coinciding with the rise in employment in that same year, it is a stable downward trend over the past seven years. However, the social welfare rate appears to be somewhat high relative to the Civilian Labor Force (CLF).

Insert Figure 3 about here

The three patterns seem to indicate the employment and incarceration rate relationship. That is, as employment generally increases jail admission decreases, and social welfare decreases. Relative to the other counties in this study Berrien county has a higher than average jail admittance and social welfare rate and a lower than average employment rate.

The results of the regression analyses indicate that while the model fits the data, employment explains merely .03% of the variation in the jail admission rates. Although the model fits the data one cannot be reassured by such less than robust indicators.

$$(7) \text{ JAIL} = 5.27 + (-.3378 \text{ EMP lag } 1) \\ (.1138)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

This equation indicates that for every unit increase in the employment rate there is a $-.3378$ decrease in the jail admission rate one month latter. Clearly the jail admission rate is the dependent variable, in this case, and therefore it would appear that the model is consistent with the state social response hypothesis. In addition, The model for social welfare and employment was not significant. It would appear that the state social response function for Berrien County is somewhat weak. The reciprocal relationship between employment and the two measures of state social response explains approximately 3% of the variation in labor force participation.

$$(8) \text{ EMP} = -.80 + (-.8847 \text{ JAIL/SW lag } 1) \\ (.1156)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

For every unit increase in social response there is a $-.8847$ decrease in employment. This result also appears to be consistent with the theory, although somewhat weakly.

Calhoun County. Calhoun County was organized in 1833 and was named for Vice President John C. Calhoun. Calhoun county ranks in the third twenty percent in the United States for the total value added by manufacture. There are only 87 counties in the country which are in this class (Michigan Department of Commerce, 1986). The primary manufacture of note is in the Battle Creek area. In

addition to its being the center of the nation's cereal industry it is the home of various other manufacturers. The principal economic base employers are quite diversified (See Appendix A). The main employer is the Kellogg Company of Battle Creek followed by Defense Logistics Service Center of Battle Creek, and a number of service and manufacturing activities. Calhoun County ranks twelfth in the sample in percentage of employment as well as sixth in financial employment. The major activities in Calhoun county are manufacture, followed by service, government, retail trade, finance, farming, construction, wholesale trade, forestry & fishing, and mining respectively. Although the Kellogg Corporation is the main employer, a very diverse economic base is clearly present. Along with the Defense Logistics Service Center there are a number of major hospitals, Kellogg Community College, and the headquarters for State Farm Insurance. Calhoun County is a Suburban Primary Industry County by virtue of both its population density and the extent of limited diversified industry. Although Calhoun County possesses the urban area of Battle Creek, the majority of the county is more of a rural nature, therefore, this county is a suburban type as opposed to a urban county.

The three patterns for Calhoun County are demonstrated in Figure 4. The pattern of the jail admittance rate appears to demonstrate an overall downward trend from 1980 through 1986. In addition, there appears to be a cyclical

nature in the yearly admittance rates, although somewhat different from that of the counties described above. There appears to be sub-cycles within each year although the seven years conform to the rise to mid-year and decrease to years-end, there are sub-cycles of increase and decrease within the years. The patterns in the employment rate indicates that the employment rates decrease through approximately 1982 and then steadily increased through 1986.

It is interesting to note that during the 24 (1981) through 36 (1982) month period there is a similarity in the increases in jail admittance with decreases in employment. The social welfare rate in Calhoun County appears, on the face to be rather symmetrical to employment. It increases through 36 months (1983) and then decreases through 84 months (1986). Although it somewhat mirrors the employment rate, it appears to be much more stable for 1980 through 1981, and 1985 through 1986.

Insert Figure 4 about here

The overall patterns in the three rates indicate, albeit weakly, a consistency with the theory that the pattern in employment rates correlates with the pattern in jail admission rates. There is a general downward trend in the jail admittance rates and an upward trend in the employment rate over the seven years examined. Relative to

the other counties in the study Calhoun County has a lower than average jail admission rate, a lower than average employment rate, and a higher than average social welfare rate.

The regression results for Calhoun County is shown below. The result of the analysis of the employment rate and the jail admission rate allows one to explain .44% of the variation in the latter measure based on the former measure. In addition there are significant parameters at one month and four month lags in the employment rate. Subsequent to an increase in the jail admission rate there is a increase in the employment rate, and at four months after an increase in the jail admittance rate there is a decrease in the employment rate.

$$(9) \text{ JAIL} = -4.19 + (.0874 \text{ EMP lag } 1) + (-.2742 \text{ EMP lag } 4) \\ (.1532) \quad (.1148)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

EMP lag 4 = Employment Rate at a four month lag.

There appears to be an inconsistency with the theory that jail admission rates are inversely related to the employment rates in a social response function. The jail admissions are positively associated with employment at a one month lag, and then four months latter the relationship is negative. One would expect that the relationship would be inverse in both cases.

The result of the modelling of social welfare and employment rates explains 2% of the variation in state social response. In this instance the result is consistent with the state social response theory in that for every unit increase in employment there is a significant decrease in the social welfare rate.

$$(10) \text{ SW} = 2.36 + (-1.2933 \text{ EMP lag } 1) \\ (.1134)$$

*SW = Social Welfare Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

This demonstrates that social welfare is, in Calhoun County, dependent upon the employment rates.

The relationships between employment and the two measures of social response are illustrated in equation 11. The two measures explain only approximately .5% of the variation in the employment rate.

$$(11) \text{ EMP} = .57 + (-.6448 \text{ JAIL/SW lag } 1) \\ (.1198)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Although the model is significant, it accounts for very little of the variation of the employment rate. Once again there is a consistency with the proposed model in that state social welfare response is a negative predictor of employment.

Clinton County. Clinton County was founded in 1839 and was named in honor of DeWitt Clinton, the governor of New York and the builder of the Erie Canal. The "flat-to-rolling" topography appear to be well suited for dairy and farming which occurs (Michigan Department of Commerce, 1986). Clinton County is another county which is an anomaly of the U.S. Bureau of Census definition of urban county. There are a few urban areas in the county; moreover, the majority of the county appears to be rural or somewhat suburban. It is significant to note that Clinton County has the sixth highest median household income in the State of Michigan as well as one of the lowest percentages of poverty. Although the major economic activity is in the service sector, Clinton County is similar to Barry County in that a large percentage of its employment is generated through farming. Table 1 demonstrates that Clinton County's employment is in farming, followed by service, government, retail trade, manufacture, construction, finance, and forestry & fishing. Clinton County ranks twenty-second in the sample for total employment yet it ranks second in the percentage of farming employment, third in forestry & fishing and second in construction employment. Clinton County is a Suburban Primary Industry County. Clinton County is primarily given the designation of urban by virtue of its being adjacent to Ingham County. It also appears to

have a few "primary" economic industries although some diversity also exists.

The patterns for Clinton county are shown in Figure 5. In a very general sense they seem somewhat inconsistent with the counties which have been described to this point. All three rates are extremely stable over the study period. The jail admittance rate appears decrease over the study period, albeit with fluctuation. The jail admittance rates decrease from a high of approximately 22% in 1980 to a low of about 8% in 1986. The employment rate for the time period studied presents a rather curious finding. They are consistently high, that is at or above 90% of the CLF, and they appear not to fluctuate as wildly as most of the other counties. The social welfare rate also fluctuates very little over the time period examined. The rates appear to mildly fluctuate about 10% of the CLF over the 84 month period examined herein. The general impression one gleans from Figure 5 is that there is a downward trend in the jail incarceration rates whereas there is little change in the employment or social welfare rates. In comparison to the other counties in the study Clinton county has a lower than average jail admission and social welfare rates, and a higher than average employment rate.

Insert Figure 5 about here

The regression results for Clinton County will now be described. The jail rates are significantly predicted by a direct relationship with the employment rate, and a lag parameter for employment at one month. Both significant parameters are negative, thus this result is consistent with what was anticipated. More significant than this, however, is that the variance in the jail rate which is explained by employment is 46% (the highest explained variance in the study). It appears that there is a direct response and an somewhat equal, though diminishing, response at a lag of one month.

$$(12) \text{ JAIL} = .16 + (-.6727 \text{ EMP}) + (-.5767 \text{ EMP lag } 1)^* \\ \quad \quad \quad (.0921) \quad \quad \quad (.1185)$$

*JAIL = Jail Admission Rate.

EMP = Employment Rate

EMP lag 1 = Employment Rate at a one month lag.

The employment rate explains 69% of the variation in the social welfare rates in Clinton County. As was the case for jail admission and employment, the employment rate is directly related to the social welfare rate and there is also a significant lag parameter at a 1 month lag. This relationship is quite consistent with the theory that social welfare is a state social response function. One would anticipate the social welfare rate to be inversely related to the employment rate, and that given the types of transfer payments involved, that a direct relationship is quite possible.

$$(13) \text{ SW} = 3.34 + (-1.0195 \text{ EMP}) + (-.9141 \text{ EMP lag } 1) \\ (.0778) \quad (.1131)$$

*SW = Social Welfare Rate.

EMP = Employment Rate.

EMP lag 1 = Employment Rate at a one month lag.

In equation 14 (below), the relationship between employment and the state social response measures allows the explanation of 74% of the variation in employment. It is interesting to note that although the individual models suggest that employment is a better predictor of both measures of social response, the model that presumes to predict employment from the jail and social welfare rates fits even better. There are direct negative relationships between the jail and Social Welfare rates, and as is true above social welfare is approximately two times the strength of the jail rate as a predictor.

$$(14) \text{ EMP} = 1.65 + (-.2627 \text{ JAIL}) + (-.4780 \text{ SW}) \\ (.0887) \quad (.0846) \\ + (-.9646 \text{ JAIL/SW lag } 1) \\ (.1134)$$

*EMP = Employment Rate.

JAIL = Jail Admission Rate.

SW = Social Welfare Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Eaton County. Eaton County is largely rural in its Southern and Western Townships, although it is a bit more urban in its Northeast section where it adjoins Ingham County, and the state capital in Lansing (See Map 1).

Although the principal economic base employers are somewhat diversified, they seem to be primarily manufacture in nature. The recent unemployment rate in Eaton County has been as low as 6% of the Civilian Labor Force. Table 1 demonstrates the relative employment by sector of the economy. It is apparent that the employment is divided, in descending order by service, retail trade, manufacture, government, farming, finance, construction, wholesale trade, forestry & fishing, and mining respectively. In addition, Eaton County ranks seventeenth in the sample in percent of civilian labor force as well as first in employment in the finance sector. Eaton County appears to be a Suburban Primary Industry County in that its population density is relatively low, and its rather small somewhat diversified employment market. The rates for jail admittance, employment, and social welfare for Eaton county are demonstrated in Figure 6. The jail admittance rates shown a pattern of wild fluctuation, but also indicate a downward trend over the 84 months. In 1980 the jail admittance rate is approximately 10% of the total jail population. This rate decreased through about 1984 when it seems to have stabilized about a 7% rate, although it seems to have increased in the latter part of 1986. The employment rate in Eaton county is not consistent with either the other counties (described to this point) or the jail admittance rate just described. There appears to be a strong decrease

in employment in 1980, 1982, and 1984. From a high in 1980 of 93% employed the rate dropped to a low of 87% (a 6 percent drop in one year). In 1982 the employment rate dropped from a high of 93% to a low of 85% or a decrease of 8 percent. In 1984 the rate dropped from 93% to 86% (a total of 7% decrease). From the end of 1984 the employment rate seems to have an increasing pattern. The social welfare rates for Eaton county from 1980 through 1986 appear to be somewhat of a mirror image of the employment rates. What is clear upon examination of the rates in Eaton county is that the jail admittance rate appears to respond little to the employment or social welfare rates, in fact, it appears to run counter to the theory that employment and/or social welfare patterns may help explain the patterns of incarceration. The relative standing of Eaton county on the three rates is that there is a lower than average jail admission and social welfare rates, and a higher than average employment rate.

Insert Figure 6 about here

The results of the application of the regression models for Eaton County shows that the prediction of jail rates indicates that only about 1% of the variation can be explained from the knowledge of the employment rate (See

Table 2). The beta coefficient indicates that at a one month lag there is a decrease in the jail admission rate.

$$(15) \text{ JAIL} = -1.84 + (-.2362 \text{ EMP lag } 1)^* \\ (.1141)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The ability of the employment rate to predict the social welfare rate in Eaton county indicates that only 1% of the variation in that rate is explained. In addition there is a one month lag in the employment rate and the coefficient is negative and is nearly five times as large as the beta for the jail rate. It appears, therefore, that the model of the social welfare function is somewhat more cogent.

$$(16) \text{ SW} = 2.19 + (-1.1506 \text{ EMP lag } 1) \\ (.1146)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the reciprocal model indicate that there is a significant lag parameter at one month predicting the employment rate. That is, the combination of jail and social welfare rates as predictors indicates that for every unit increase in the social response rates there is a -.8750 decrease in the employment rate.

$$(17) \text{ EMP} = .67 + (-.8750 \text{ JAIL/SW lag } 1) \\ (.1142)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effects of Jail Admission and Social Welfare Rates at a one month lag.

Genesee County. Genesee County was founded in 1836 and takes its name from the Iroquoian word meaning "beautiful valley." It was given this name after a valley in Western New York from which many of the early settlers to the Flint area came. It also "ranks in the second 20 percent of all counties in the United States for total value added by manufacture; only 35 counties in the entire nation are in this class" (Michigan Department of Commerce, 1986). The principal economic base employers in Genesee County are almost exclusively related to the automotive industry (See Appendix A). Given this concentration, it is not very difficult to understand why Genesee County has had unemployment rates in certain areas of the county (primarily the city of Flint) approaching 25% in the most recent recession. Table 1 demonstrates that the primary employment activities in Genesee County are in manufacture, followed by service, retail trade, government, wholesale trade, finance, construction, farming, forestry & fishing, and mining. Genesee County ranks fourth in the percentage of civilian labor force of the sample as well as first in the state in the percentage of manufacturing employment. Genesee County is an Urban Factory County. That is approximately 5% of the

state population resides in Genesee County, and the economy is nearly singularly based in the manufacture of automobiles and attendant manufactures.

The patterns for Genesee county also seem rather unique in comparison to those in the counties described to this point, and those which will be examined. The Genesee county jail has been the subject of two federal court orders mandating decreases in their population. The jail admittance rate clearly demonstrates the compliance of the jail to these two occasions. In 1982 and 1985 the release rates (those released from jail) (not shown) were at a high of approximately 20% and 35% respectively. The great turnover in populations at this time would hardly be reflected in the economic indicators. Other than these two particularly volatile times the jail admittance rate appears to be quite stable about a quite moderate rate of 5 percent. The employment rate for Genesee county indicates downward cycles in 1980, 1982, and 1983. Following 1983, however the employment rate appears to rise to a high of nearly 90% in 1986. As is the case in many of the 24 counties examined in this study the social welfare rates in Genesee county mirror the employment rates, and they increase when the employment rate decreases and vice-versa. The overall impression one gains from an examination of Figure 7 is that the jail admittance rate does not seem to change in a similar pattern to the employment or social welfare rates. In comparison to

the other counties in this study Genesee county has a lower than average jail admittance rate, a lower than average employment rate, and a higher than average social welfare rate.

Insert Figure 7 about here

The results of the regression analyses for Genesee County will now be illustrated. In the model of the jail rate and employment rate, the employment rate explains approximately 2% of the variation in the jail rate. The model indicates that for every percentage change in the employment rate there is a -.5709 decrease in the jail admission rate.

$$(18) \text{ JAIL} = .45 + (-.5509 \text{ EMP lag } 1) \\ (.1167)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The model for the social welfare rates and the employment rate allows one to explain only .12% of the variation in the social welfare rates (See Table 3). Thus for every unit increase in the employment rates there is a -.6648 decrease in the social welfare rate.

$$(19) \text{ SW} = .34 + (-.6648 \text{ EMP lag } 1) \\ (.1138)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results for the model of employment as the dependent variable and the state social response variables as independent indicates that state social response explains only .44% of the variation in the employment rate. The model indicates that for every unit increase in state social response there is a -1.1649 decrease in the employment rate, at a one month lag.

$$(20) \text{ EMP} = .66 + (-1.1649 \text{ JAIL/SW lag } 1) \\ (.1161)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Ingham County. Ingham County is the site for the state capital of Michigan. As is true of many other state the state capitals it is not located in the largest city in the state but in the fourth largest (Lansing). In addition, the urban area within Ingham county is more-or-less concentrated in the Northwest corner of the county with the remainder of the county being rural in nature. The economic base of Ingham County indicates that there is a diversity of activities within the county. The three primary areas are government, education (Michigan State University), and automotive manufacture. Although the state government is not considered an economic base activity (one which brings economic return) it employs 49,701 people in Ingham County, and is therefore a significant portion of the employment of that county. Table 1 indicates that the largest employment

sector is in fact the government sector, followed by service, manufacture, retail trade, finance, wholesale trade, construction, farming, forestry & fishing, and mining respectively. Last, Ingham County ranks fifth in the sample in percentage size of civilian labor force, as well as first in the state in the concentration of government employment in the state, and fifth in the proportion employed in the finance sector. Ingham County is an Urban Diversified County. The population density is relatively larger than the suburban type counties, and the economic activities in the county are quite diverse and relatively stable over time. The patterns for Ingham County are illustrated in Figure 8. There appears to be no readily discernable pattern in the jail admission rate in Ingham county. On the face it appears that the fluctuations are generally increasing, albeit at a very moderate rate. The employment rate in Ingham county, in general, appears to be increasing. There are, however, significant decreases in 1982 and 1984. The social welfare rate appears to be, again in a general sense, decreasing over the seven year study period. There are significant increases in the rates which coincide with the decreases in the employment rate in 1982 and 1984. The general impression one garners from an examination of these three graphs is that there are little similarities in the patterns of employment or social welfare and that of jail admission rates. In comparison with the other counties in

this study Ingham county has a lower than average jail admission rate, and a higher than average employment and social welfare rates.

Insert Figure 8 about here

The regression results for Ingham County illustrate that 4% of the variation in the jail rates can be explained by the employment rate. There are significant parameters at one and two month intervals. The lag at two months is slightly greater than half the magnitude of the lag at one month. For every unit increase in the employment rate there is a -.5007 decrease at one month and a -.2953 decrease at two months.

$$(21) \text{ JAIL} = a + \underset{(.1133)}{(-.5007 \text{ EMP lag } 1)} + \underset{(.1301)}{(-.2953 \text{ EMP lag } 2)}$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

EMP lag 2 = Employment Rate at a two month lag.

The results of the model for the social welfare rates for Ingham County does not fit the data. The reciprocal model of the employment rate indicates that 5% of the variation in the employment rate can be explained by the jail rate. There is a direct relationship, no lag, between the jail rate and the employment rate. That is for every unit increase in the jail rate there is a .1098 increase in the employment rate.

$$(22) \text{ EMP} = a + (.1098 \text{ JAIL})^* \\ (.0554)$$

*EMP = Employment Rate.
JAIL = Jail Admission Rate.

Ionia County. Ionia County was founded in 1837 and was named after a province in Greece. Ionia ranks seventh in the state for dairying, and other products of farm and orchard include apples, corn, hay soybeans, wheat, oats, hogs, cattle, poultry, and dry beans. In addition Ionia County has the highest concentration of prisons in the State of Michigan and perhaps the United States. The primary economic base employers for the county are the Michigan Department of Corrections as well as a number of automotive and non-automotive manufacturers (See Appendix A).

Table 1 indicates that employment is concentrated in manufacture, followed by government, retail trade, service, farming, finance, wholesale trade, and construction. Ionia County ranks twenty-first in the twenty four counties for size of civilian labor force, and is ranks sixth in proportion of farming and also ranks fourth in government employment across the sample. Ionia County is a type three county in that its population density is very low relatively to the other counties in the sample.

In addition the orientation of employment is toward employment in the Michigan Department of Corrections and a few small manufacturers which does not approach the diverse

economies of the type two counties. In Figure 9 the three rates for Ionia county are shown. The jail admittance rate appears to follow the earlier described pattern wherein there are intra-year cycles or an increase which peak and then decreases through years end. The general pattern is very consistent in Ionia county. There appears to be a stable fluctuation about a 10% to 15% rate. There appear to be no significant trends, cycles, or seasonality in the overall pattern of the jail admittance rates. The employment rate in Ionia county seems somewhat inconsistent with the social response model of the jail admittance rate. A lead lag situation exists in certain months in Ionia county. For example in there is a decrease in 1980 (at years end) which is reflected in a increase in the jail admittance pattern. In general there appear to be some inverse relationships between employment and jail admittance. The social welfare rates appears to be generally increasing the across the seven years. There seems to be somewhat of a response in the social welfare rates to the employment rates, although it is clearly not direct. The jail admittance rate for Ionia county appear to correspond to the patterns in the employment rate in the expected, or theoretical way. That is, there is an inverse relationship between incarceration and employment, and social welfare also corresponds to the anticipated conceptual relationships in that its patterns are similar to

those of the jail admittance rate. In comparison to the other counties in the study Ionia county has a greater than average jail admittance rate, and a lower than average employment and social welfare rate.

Insert Figure 9 about here

The results of the application of the regression models for Ionia County are presented below. The result of the model for the jail rate indicates that .39% of the variation in the jail rate can be explained by the employment rate. In addition, the model indicates that for every unit change in the employment rate there is a $-.4870$ decrease in the jail rate.

$$(23) \text{ JAIL} = 1.79 + (-.4870 \text{ EMP lag } 1) \\ (.1143)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The model for the social welfare rate demonstrates that 2% of the variation in the social welfare rate can be explained from the knowledge of the employment rate. Moreover, for every percent increase in the employment rate there is a 1.7770 increase, at a one month lag, in the social welfare rate.

$$(24) \text{ SW} = 6.46 + (1.7770 \text{ EMP lag } 1) \\ (.1135)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the reciprocal model indicate that 3% of the variation in the employment rate can be explained by the indicators of state social response. The model also indicates that at a one month lag for every percentage increase in the measures of social response there is a -.5918 decrease in the employment rate.

$$(25) \text{ EMP} = .59 + (-.5918 \text{ JAIL/SW lag } 1) \\ (.1155)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effects of Jail Admission and Social Welfare Rates at a one month lag.

Jackson County. Jackson County is located Southeast of Lansing and is the home of the largest "walled" prison in the free world. The principal economic base employers are varied heavy and light manufacturing, although, as is true in many of the counties described so far, much of the main industries tend to be automotive, or service the automotive industry. Table 1 indicates that in Jackson County the major employment is in service followed by manufacture, retail trade, government, finance, wholesale trade, farming, construction, mining, and forestry & fishing respectively. Jackson County ranks first in the sample in the proportion of employment in mining employment, and fifth in wholesale trade. It also ranks thirteenth in the percentage size of

the civilian labor force across the sample. Jackson County is a Suburban Primary Industry County. Relative to the other counties in the sample the population density is rather low. Moreover, the economy is based on the Department of Corrections and some manufacture which is not characteristic of the diversification found in the Urban Diversified Counties.

Figure 10 demonstrates the graphs for Jackson county. The jail admittance rate for Jackson county indicates that there is a rise from 1980 through 1981 and then a decrease to 1982 and a stable, but fluctuating, rate thereafter. The employment rate in Jackson county shows a general decrease through about 1982 and then an increase through 1986. The social welfare rate increases through 1983 and then decreases through 1986. The general impression one gains from these graphs is that the jail admission rate does not exhibit the anticipated pattern of an inverse relationship with employment nor a positive relationship with the social welfare rate. In reference to the other counties in the study Jackson county has a higher than average (for all the urban counties) jail admittance and social welfare rates. Conversely, the employment rate is lower than average.

Insert Figure 10 about here

The results of the regression model for Jackson County show that 13% of the variation in the jail admission rates can be explained by the employment rate. In addition, for every percentage increase in the employment rates there is a 1.8364 increase in the jail rates.

$$(26) \text{ JAIL} = 1.24 + (1.8364 \text{ EMP}) \\ (.5462)$$

*JAIL = Jail Admission Rate.
EMP = Employment Rate.

The test of the model for the social welfare rates indicates that approximately 12% of the variation in the social welfare rates can be explained from the knowledge of the variation in the employment rates. In addition, there are significant parameters in the direct and lag periods. The direct parameter demonstrates that for every percentage increase in the employment rate there is 4.7783 increase in the social welfare rate. In the second month, however, for every percentage increase in the employment there is a - .3359 decrease in the social welfare rate. The reciprocal model for Jackson County was not statistically significant, or more conceptually, the model did not fit the data.

$$(27) \text{ SW} = 1.31 + (4.7783 \text{ EMP}) + (-.3359 \text{ EMP lag } 1) \\ (1.5297) \quad (.1157)$$

*SW = Social Welfare Rate.
EMP = Employment Rate
EMP lag 1 = Employment Rate at a one month lag.

Kalamazoo County. Kalamazoo County was founded in 1830 and it derives its name from an Indian word, "Kikalamazoo," which is translated variously as the "mirage or reflecting river", "boiling water", "beautiful water", "stones like otters", or "it smokes" (Michigan Department of Commerce, 1986). Additionally, Kalamazoo County ranks in the third 20 percent of all U.S. counties for value added by manufacture and only 87 counties in the entire country are in this class. An examination of the principal economic base employers in the county reveals that the employment in Kalamazoo County tends toward the service sector and the automotive industry. Table 1 indicates that the largest employment sector in the county is manufacturing, followed by service, retail trade, government, finance, wholesale trade, construction, and farming. Kalamazoo County ranks seventh in the sample in total civilian labor force, and also ranks second for all twenty-four counties in the proportion in the service sector of the economy. Kalamazoo County is a Urban Diversified County. It has a relatively high population density as well as a very diverse economy. Kalamazoo County's jail admittance, employment, and social welfare rates are demonstrated in Figure 11. The top graph indicates that the jail admittance rate is somewhat stable about a 5% rate over the eighty-four months examined. Although there appears to be some seasonal variations, the pattern is consistent throughout the study period. The

employment rate in Kalamazoo County decreases from 1980 through approximately 1983 and then increases through 1986. The social welfare rate seems to have a peak between 1981 and 1983 and is declining in the subsequent years in the study. Once again the general impression of these graphs is that there is little similarity in the pattern of the jail admittance and social welfare rates with that of employment and social welfare. In reference to the other counties in the study Kalamazoo County appears to have a lower than average jail admittance and social welfare rate, as well as a higher than average employment rate.

Insert Figure 11 about here

The results of the regression analysis for Kalamazoo County are described below. The results of the model of the jail admission rates was not significant for Kalamazoo County. That is, the model did not fit the data. The model of the social welfare rate indicates that approximately 20% of the variation in the social welfare rates can be explained by the employment rates. In addition, the test indicates that there is a significant direct parameter such that for every percentage increase in the employment rate there is a .1427 increase in the social welfare rate. There is also a significant lag parameter which indicates that for

every percentage increase in the employment rate there is a
-.9588 decrease in the social welfare rate.

$$(28) \text{ SW} = .56 + (.1427 \text{ EMP}) + (-.9588 \text{ EMP lag } 1) \\ (.0330) \quad (.1145)$$

*SW = Social Welfare Rate.

EMP = Employment Rate.

EMP lag 1 = Employment Rate at a one month lag.

The reciprocal model explains approximately 8% of the variation of the employment rate based on the variation in the jail and social welfare rates. The model also demonstrates that for every percentage increase in the social welfare rate there is a direct increase .2719 in the employment rate. In addition, there is a significant lag for the state social response function such that for every percentage increase in state social response there is a -.2436 decrease in employment.

$$(29) \text{ EMP} = .45 + (.2719 \text{ SW}) + (-.2436 \text{ JAIL/SW lag } 1) \\ (.1374) \quad (.1145)$$

*EMP = Employment Rate.

SW = Social Welfare Rate.

JAIL/SW lag 1 = Interaction effects of Jail Admission and Social Welfare Rates at a one month lag.

Kent County. Kent County was organized as a county in 1836 and was named after Chancellor James Kent, a celebrated New York jurist. It ranks in the third twenty percent of all counties in the country for total value added by manufacture. Additionally, Kent County has a the second largest urban area in the State of Michigan in Grand Rapids.

The principal economic base employers in Kent County are quite diverse. Kent County is a center for the manufacture of office furniture, although there are automotive manufacturing firms in the county (See Appendix A). Table 1 demonstrates that a major employment sector in Kent County is manufacture followed by service, retail trade, government, wholesale trade, finance, construction, farming, forestry & fishing, and mining sectors respectively. One unique aspect about the types of manufacture in Kent County is that it appears to be much less sensitive to the economic shifts which are inevitable in the automotive industry employment counties. In the sample Kent County ranks third overall for proportion of civilian labor force, in addition to being first in wholesale trade, fifth in retail trade and third in service sector employment. Kent County is an Urban Factory County by virtue of its population density and its manufacturing orientation. Although this is the case it is also apparent that Kent County has a much more diverse economy than the other Urban Factory Counties found in the Detroit metropolitan region. Kent County's jail admittance, employment, and social welfare rates are demonstrated in Figure 12. The top graph indicates that the jail admittance rate is stable about a 4% rate over the eighty-four months examined. The employment rate in Kent county decreases from 1980 through approximately 1983 and then increases through 1986. The social welfare rate seems to have a peak between

1981 and 1983 and is somewhat stable in the other five years in the study. Once again the general impression of these graphs is that there is little similarity in the pattern of the jail admittance rate and that of employment and social welfare. In reference to the other counties in the study Kent County has a lower than average jail admittance and social welfare rates, as well as a higher than average employment rate.

Insert Figure 12 about here

The results of the application of the regression models for Kent County are shown below. The model for the jail rate allows one to explain approximately 2% of the variation in the jail admission ate based on the knowledge of the employment rate. There is one significant parameter such that for every percentage increase in the employment rate there is a -.2384 decrease in the jail admission rate.

$$(30) \text{ JAIL} = .34 + (-.2384 \text{ EMP lag } 1) \\ (.1129)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The employment model also fits the data for Kent County. The model allows for 16% of the variation in the employment rate to be explained by the measures of state social response. The significant parameter demonstrates

that at a one month lag, as the percentage of state social response increases the employment rate decreases -1.0004.

$$(31) \text{ EMP} = a + (-1.0004 \text{ JAIL/SW lag } 1) \\ (.3188)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Lapeer County. Lapeer County was organized in 1835 and takes its name from the French, as a derivation of "La Pierre", meaning "stone" or "flint." The principal agricultural activities are dairying and cattle raising as well as the production of hay, wheat, oats, and corn. Lapeer County's principal employers range from automotive parts to pickles to bathroom fixtures (See Appendix A). Additionally, Lapeer County has no concentration of urban settlements, it is classified as urban based on its proximity to Genesee County.

Table 1 shows that the proportions of employment in the seven selected areas. Lapeer County appears to have a major portion of people employed in governmental activities, followed in proportion by manufacture, retail trade, service, farming, finance, construction, wholesale trade, forestry & fishing, and mining. Lapeer County is a Suburban Primary Industry County. There is a relatively low population density, and the economy is primarily based in government employment. The three graphs for Lapeer County are illustrated in Figure 13. One very striking feature

about this graph is the extreme shifts in the monthly jail populations. Across the seven years involved in this study the jail admittance (and release which is not shown) approach 30% of the total jail population. The jail admission rate decreases through 1982 and then fluctuates through approximately 1983 and seems to increase through 1986. The employment rate in Lapeer County seems to wildly fluctuate through 1983 and increases through 1986 (at least back to its 1980 level). The employment rate seems to be a rough approximation of the jail admittance rate. The social welfare rate in Lapeer County increases through 1983 and then decreases through 1986. The overall impression one is left with from an examination of these graphs is that there is some similarity between the employment rate and the jail admittance rate, although it is inconsistent with what has been supposed (conceptually) for the employment and incarceration relationship. In addition, the social welfare rate seems to be quite dissimilar from the jail admittance rate. As is stated above Lapeer County has jail admittance rate which is higher than average (in fact it is the highest in the sample of counties). Moreover, both the employment and social welfare rates in Lapeer County are below the average of all other counties.

Insert Figure 13 about here

The results of the regression model for Lapeer County are shown below. The result of the model testing the jail admission and employment rate indicates that approximately 3% of the variation in the jail rate can be explained from the knowledge of the employment rates. In addition, the model indicates that there is a significant parameter at a one month lag. That is, as the employment rate increases the jail rate decreases -.6997 one month latter.

$$(32) \text{ JAIL} = 4.06 + (-.6997 \text{ EMP lag } 1) \\ (.1144)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the application of the model to the employment model rates indicates that the state social response rates account for 4% of the variation. There is also a significant parameter at a one month lag. This model indicates that as the level of state social response increases there is a -.8645 decrease in employment.

$$(33) \text{ EMP} = -1.28 + (-.8645 \text{ JAIL/SW lag } 1) \\ (.1151)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Livingston County. Livingston County was organized in 1836 and its name was taken from the Honorable Edward Livingston of Louisiana, who was the Secretary of State under Andrew Jackson. Livingston County is one of the top

ten sheep counties in the State of Michigan and ranks in the upper third in milk production. One of the county's best known agricultural products is the Howell melon (cantaloupe) (Michigan Department of Commerce, 1980). The principal economic base employers in 1986 were in the areas of automotive, insurance, health, metal working and fabrication, and packaging (See Appendix A for detailed listing). The employment in Livingston County is concentrated in retail trade. In fact the employment in retail trade in Livingston County is the highest proportion across the sample of the 24 counties. That is, the greatest percentage of employment is in the area of retail trade. The proportion employed in retail trade are followed (in magnitude) by service, government, manufacturing, finance, construction, farming and wholesale trade (See Table 1). In comparison to the other counties in the sample Livingston County, in addition to having the highest proportion of retail trade employment, is third in construction, second in financial services proportions of employment.

Additionally, Livingston County ranks sixteenth in the twenty-four counties in the size of employed labor force. The general perception one can gain from this examination of the employment base is that the employment tends to be trade and service oriented with some supplemental automotive industry. In addition the unemployment rate tends to be below 10%. Livingston County is a Suburban Primary Industry

County. It has a relatively low population density in addition to being a retail center followed by service employment. Figure 14 demonstrates the graphs for Livingston County. The jail admittance rates indicate a intra-year cyclical pattern. That is, within each of the seven years there appears to be a rise to mid-year followed by a decrease through year's end. There also appears to be a decreasing trend from 1980 through 1986. The employment rate for Livingston County decreases through 1983 and increase through the remainder of the study period. One can suppose, albeit without assurance, that these two patterns (jail admittance and employment) are consistent with the theoretical supposition that employment should be inversely related to jail admission. The social welfare rate further supports this postulate in that the basic directions are somewhat similar to that of the jail admittance rate. The overall impression here is that there may be a consistency of the three graphs with that which is supposed in the theories which purport to explain the relationship between incarceration and employment. In addition, Livingston County has a higher than average jail admittance and employment rate, and a lower than average social welfare rate.

Insert Figure 14 about here

The results of the application of the data to the hypothesized regression model are described below. The model of the jail admission rates and the employment rate indicates that only .01% of the variation in the jail rate can be accounted for by the variation in the employment rate. The significant parameter indicates that for every percentage increase in the employment rate there is a -.1997 decrease in the jail admission rate.

$$(34) \text{ JAIL} = -.11 + (-.5997 \text{ EMP lag } 1) \\ (.1132)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the application of the observed data to the model of social welfare rate and employment did not fit the model. The model of employment as dependent on state social response reveals that the measures of social response account for 5.5% of the variation in the employment rate. In addition, there are significant parameters for the social welfare rate, at one month lag, and at a two month lag. That is, there is a direct relationship between the social welfare rate and employment in Livingston County such that as social welfare increases the employment rate decreases at a rate of -.7221. The lag parameters indicate that there is a consistent, negative association, between the measures of social response and the employment rate after both one month and two month time intervals.

$$\begin{aligned}
 (35) \text{ EMP} = & -.09 + (-.7221 \text{ SW}) + (-.5997 \text{ JAIL/SW lag 1}) \\
 & \quad (.3760) \quad \quad (.1154) \\
 & + (-.4003 \text{ JAIL/SW lag 2}) \\
 & \quad (.1313)
 \end{aligned}$$

*EMP = Employment Rate.

SW = Social Welfare Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

JAIL/SW lag 2 = Interaction effect of Jail Admission and Social Welfare Rates at a two month lag.

Macomb County. Macomb County was organized in 1818 and was named after General Alexander Macomb, and officer in the War of 1812. Macomb County also ranks in the second 20 percent of all United States counties for total value added by manufacture. Only 25 counties in the entire country are in this class (Michigan Department of Commerce, 1980). The principal economic base employers tend to be heavily concentrated in the automobile industry. Out of the top ten such industries every one is automotive or automotive related. Moreover, Macomb County appears to serve as the research base for the General Motors Corporation as fully 30,000 employees in Macomb County are employed at the General Motors Technical Center, in addition to 1,800 employed at the Modern Engineering in Warren.

Clearly, the majority of the employment in Macomb County is in the area of manufacture and is concentrated in the automotive industry. The next highest proportions are in service, retail trade, government, finance, construction, wholesale trade, farming, forestry and fishing, and mining

(See Table 1). Macomb County ranks second in the sample for the proportion of employment, as well as being third in the sample in manufacture employment, and sixth in the sample in retail trade employment. Macomb County is an Urban Factory County. That is, there is a very high population density, and the primary economic activity is the manufacture of automobiles and attendant parts. The graphs for Macomb County are illustrated in Figure 15. The jail admittance rate indicates that there is a decrease from a 9% level in 1980 to a fluctuation of around 5% through 1986. The employment rate demonstrates that there is a general increasing trend throughout the study period. Conversely, the social welfare rate increases through about 1983 and then decreases through 1986. Overall it appears that these graphs demonstrate that Macomb County is not consistent with the theoretical postulation that employment and incarceration are similarly patterned. In addition Macomb County has a lower than average jail admission, employment and social welfare rates over the seven year period in comparison to the other 23 counties.

Insert Figure 15 about here

The results of the regression models indicate that the observed data for both the jail admission and social welfare rates and employment do not fit the data. That is there is

not a statistically significant model for either of these equations based on the sample relied on.

The reciprocal model of the employment rate, however, indicates that approximately 6% of the employment rate can be explained by the variation in state social response (See Table 2). In addition, there are significant parameters at one and two month lags. After one month the for every percentage increase in the level of state social response there is a $-.5775$ decrease in employment, and at two months the decrease is $-.3506$.

$$(36) \text{ EMP} = 5.69 + (-.5775 \text{ JAIL/SW lag } 1) \\ (.1132) \\ + (-.3506 \text{ JAIL/SW lag } 2) \\ (.1343)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

JAIL/SW lag 2 = Interaction effect of Jail Admission and Social Welfare Rates at a two month lag.

Muskegon County. Muskegon County acquired its name for the river traversing the area. Muskegon is derived from a Chippewa word meaning "rive with marshes." The official name of Muskegon was adopted into law by the state legislature in 1859. Approximately 26% of Muskegon County's land use is devoted to agriculture and the principal products are tart and sweet cherries, blueberries, and apples with dairy products accounting for the major non-crop products (Michigan Department of Commerce, 1980). The top

ten principal economic base employers in Muskegon County are dominated by automotive industry support (specializing in the production of turbines). However, there are also firms which produce paper, furniture, ball bearings, communication systems, and bowling equipment. The highest proportion of employment in Muskegon County is in manufacture, followed by service, retail trade, government, construction, finance, wholesale trade, framing, forestry & fishing, and mining (See Table 1). Muskegon ranks eleventh in the twenty-four counties in employment, as well as fourth in employment in manufacture, and fourth in employment in service activities. The employment rate was about 10% in 1986. Muskegon County is a Suburban Primary Industry County. Although the economic activities would appear to qualify this county to be a Urban Diversified County, the population density is below 2% of the state total.

Figure 16 shown the graphs for Muskegon County. The jail admittance rate shows somewhat of the intra-yearly cycles which have been described for the other counties, although it is not as clear as some of the aforementioned counties. In 1980 there is a great fluctuation in jail admission from a high of 7% to a low of 3%. In 1981, 1982, 1985, and 1986 there is a rise and fall over each of these years, albeit slight. In 1984 and 1985 there the intra-yearly cycles are most prominent for Muskegon County. The employment rate drops through 1983 and then increases

through 1986. Once again this is not consistent with the theory that jail admission is inversely related to the employment situation. The social welfare rate is also similar to the employment rate rather than what has been hypothesized.

Insert Figure 16 about here

The results of the regression models for Muskegon County indicate that the observed data for the jail admission rate and employment do not fit the data. That is, there is not a statistically significant model for this equation based on the sample relied on. The model of the social welfare rate and employment indicates that slightly over 1.5% of the variation in social welfare rate can be explained by the employment rate, and that at a one month lag, for every increase in the percentage employed there is a -1.4360 decrease in social welfare.

$$(37) \text{ SW} = 8.84 + (-1.4360 \text{ EMP lag } 1) \\ (.1147)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

The model of the employment rates indicates that approximately 2% of the employment rate can be explained by the measures of social response. There is also a significant parameter at a one month lag. This parameter

indicates that for every percentage increase in the measures of social response, there is a $-.7889$ decrease in employment.

$$(38) \text{ EMP} = -1.35 + (-.5997 \text{ JAIL/SW lag } 1) \\ (.1132)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Oakland County. Oakland County is a one of the members of the Detroit Metropolitan area, and is the focus of much of the growth in that area, as well as the State of Michigan. The principal economic base employers range from automotive assembly, communications industries, health care, retail, to cement products. As can be seen in Table 1 the majority of the employment in Oakland County is derived from the service sector, in fact, Oakland County ranks first in the sample for employment in the service sector. The service employment is followed by retail trade, manufacturing, government, finance, wholesale trade, construction, forestry & fishing, farming, and mining. Oakland County ranks first across the sample in the proportion employed in the sample, as well as second the proportions of wholesale and retail trade and third in financial services employment.

Oakland County is an Urban Factory County. There is a very high population density (the greatest in the sample), and although the largest employment sector is the service

sector, it is apparent that there is a strong economic structure in this county. Oakland County appears to be more similar to Kent County rather than the other Detroit Metropolitan counties. In Oakland County the jail admittance rate decreased from a high in 1980 of 12% to a low of 2.5% in 1981 and then increases through 1986 (See Figure 17). The employment rate for Oakland county decreases through 1983 and then increases to 1986. Conversely, the social welfare rate increased through 1983 and decreases through 1986. The anticipated inverse pattern between employment and jail admittance rates seems to be plausible through 1981 for this county; however, after that time the patterns are not consistent with the employment incarceration hypothesis. The three rates in Oakland County compare to the other counties in the following ways: the jail admittance rate is lower than average across the 24 counties, the employment rate is higher than the average, and the social welfare rate is lower than the average.

Insert Figure 17 about here

The results for Oakland County and the regression models will now be described. The model of the jail admission rates indicates that approximately 1.5% of the variation can be explained based on the knowledge of the employment rates. In addition, there is a significant

parameter at a one month lag. This parameter indicates that for every percentage increase in the employment rate there is a $-.8147$ decrease in the jail admission rate.

$$(39) \text{ JAIL} = -1.91 + (-.8147 \text{ EMP lag } 1) \\ (.1128)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The observed data for the social welfare rates in Oakland County do not fit the model. The employment model indicates that the knowledge of state social response levels allows one to explain 2.5% of the variation in the employment rate. In addition, there is a significant lag parameter at one month such that every increase in the level of measured state social response there is a $-.7984$ decrease in the employment rate.

$$(40) \text{ EMP} = -.11 + (-.5997 \text{ JAIL lag } 1) \\ (.1132)$$

*EMP = Employment Rate.

JAIL lag 1 = Jail Admission Rate at a one month lag.

Oceana County. Oceana County is located on the East shore of Lake Michigan North of Muskegon County. It is primarily an rural county although it does conform to the Bureau of the Census definition of urban given its proximity to the city of Muskegon.

The principal economic base employers are primarily in the food processing industries and in metal products. The highest proportion of employment is in the farming industry,

followed by government, retail trade, service, manufacturing, finance, construction, forestry & fishing, wholesale trade, and mining. Oceana County ranks last in the twenty-four counties in the sample in labor force. Although Oceana County is the smallest in terms of the proportion employed, it ranks first across all counties in those employed in farming and forestry & fishing as well as third in the proportion in construction employment, and fifth in the proportion in government employment. The unemployment rate, however, in Oceana County was 13.3% in 1986.

Oceana County is clearly a Suburban Primary Industry County. There is a very low population density, and the primary economic activities are in food processing and agriculture rather than manufacture. The results for Oceana County are shown in Figure 18. The jail admittance rate appears to be somewhat stable about a rate of between four and 8 percent, with a notable exception in 1981. There does not appear to be significant trend or cyclical characteristics to this rate. The employment rate for Oceana County indicates that there is a intra-year cycle across all seven years similar to that found in many of the jail admission rates in other counties. In addition the employment rate seems rather stable. There does not appear to be a significant trend or cycle in employment since 1980. The social welfare rate appears to mirror (the relationship

is inverse) the employment rate in that there are cycles within each of the seven years in the study.

The general impression from these graphs is that there is little similarity in the employment, social welfare rates and that of the jail admittance rates which has been anticipated. Oceana County has a lower than average jail admittance and employment rates, as well as a higher than average social welfare rate.

Insert Figure 18 about here

The results of the testing of the regression models for Oceana County will now be presented. The model of the jail admission rates indicates that only .45% of the variation in jail population can be accounted for by the variation present in the employment rate. There is also a significant parameter at one month lag which indicates that for every percentage increase in employment there is a -.3359 decrease in jail admissions.

$$(41) \text{ JAIL} = 2.89 + (-.3359 \text{ EMP lag } 1) \\ (.1133)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The model for the social welfare rates explains 2% of the variation in those rates based on the employment rates. Moreover, there is a significant lag parameter at one month

which indicates that for every percentage increase in the employment rate there is a -1.3352 decrease in the social welfare rate. The employment as dependent model for Oceana County is not significant.

$$(42) \text{ SW} = 12.63 + (-1.3352 \text{ EMP lag } 1) \\ (.1142)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

Ottawa County. Ottawa County was organized in 1837 and was named after the Indian Tribe that inhabited the territory, the contemporary county is a blend of the natural beauty of Western Michigan and a growing manufacturing base (Michigan Department of Commerce, 1986). According to the 1985 United States Department of Agriculture Statistics, the market value of all agricultural products sold by county farmers was \$160.3 million - the second largest total sales figure of the 83 counties in Michigan.

Ottawa County leads all other Michigan counties in the market value of agricultural products sold for nursery and greenhouse products and livestock, and poultry and their products. Important crops in Ottawa County include corn, hay, wheat, celery, onions, and blueberries (Michigan Department of Commerce, 1986). The principal economic base employers in Ottawa County are quite diverse. There is automotive support industry, heating unit construction,

clock making, food processing, specialty glass, and food service equipment manufacture.

In Ottawa County the highest proportion of the labor forces is employed in manufacture, followed by service, retail trade, government, finance, farming, construction, wholesale trade, forestry & fishing, and mining (See Table 1). Ottawa county ranks second in manufacture employment across the twenty-four counties in the sample, as well as fourth in forestry & fishing, and sixth in construction employment. Ottawa County is a Suburban Primary Industry County. Although Ottawa County meets the economic criteria of a diverse and relatively strong economy for a Urban Diverse County, the population density does not, so it is classified in the suburban category. Figure 19 shows the results for Ottawa County. The jail admittance rate indicates that there is a wild, somewhat stable (between 13% and 5%) pattern over the seven years of the study. The employment rate appears to be of a similar pattern although it does seem to be increasing from 1984 through 1986. The social welfare rate is inverse to that of the employment rate.

The general impression of these graphs is that Ottawa County does not seem to conform to the theory that jail admittance and employment rates would be inversely related, or that social welfare rates would be similar to the jail admission rates. Relative to the other counties Ottawa

County has a lower than average jail admittance rate, and a higher than average employment and social welfare rates.

Insert Figure 19 about here

The results of the regression models for Ottawa County will now be presented. The model of jail admission and employment rates indicates that approximately 4% of the variation in the this measure of state social response can be explained through the knowledge of the employment rate. In addition, there is a significant parameter at a one month lag which demonstrates that as the employment rate increases the jail admission rate decreases at a rate of $-.2567$.

$$(43) \text{ JAIL} = .89 + (-.2567 \text{ EMP lag } 1) \\ (.1143)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The model of social welfare and employment was not significant. That is the data did not fit the model. The analysis of the reciprocal model reveals that the measures of state social response account for 5.6% of the variation in the employment rate. In addition, there is a significant lag parameter at one month such that for every percentage increase in state social response there is a $-.7472$ decrease in employment.

$$(44) \text{ EMP} = 1.08 + (-.7472 \text{ JAIL/SW lag } 1) \\ (.1200)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Saginaw County. Saginaw County was organized in 1835 and takes its name from the Indian "Sac-e-nong" (Sauk Town), referring to the tribe of Sauks that once lived at the mouth of the Saginaw River (Michigan Department of Commerce, 1986). The principal economic base employers in Saginaw County are concentrated in the automotive industry. Fully 18,600 of the civilian labor force is so employed. There are also a number of other major employers in the area of communications, health care, and the food and service industries. Saginaw County ranks eighth in the twenty-four counties in total labor civilian labor force.

In addition, Saginaw County ranks fifth in manufacturing employment and fourth in retail trade employment in the sample. While Saginaw is an automobile manufacturing city, it is only a few miles to farmland whose output of sugarbeets places in the top four in the State of Michigan's production of the crop and is also one of the top five counties in Michigan for dry beans. The concentration of employment in the county is in manufacturing followed by service, retail trade, government, finance, construction, wholesale trade, farming, forestry and fishing, and mining. Saginaw County is a Urban Diversified County. Although the economic activity seems to be concentrated in the

manufacture of automobile, there are a number of other economic activities. In addition, the population of Saginaw County is 2.5% of the state total.

Figure 20 shows the line graphs for Saginaw County. The jail admittance rate indicates there is some intra-year cycles across the seven years; however, the main pattern appears to be one of decreasing admission through 1983 and a moderate increase through 1986. The employment rate for Saginaw county shows a relatively high level of stability over the study period. Although there is a significant decrease in 1982, the employment rate seems to meander about a 89% rate over the study period. In addition there appears to be a slight increase from 1983 through 1986 which corresponds to a similar increase in the jail admission rate for that same period. It is of note to observe that the two significant decreases in employment are corresponded by increase in jail admission through 1984. The social welfare rate appears to increase through 1981 and again in 1983 followed by a decrease through 1986. These line graphs indicate that there is some similarities in the patterns with that anticipated by the employment and incarceration hypothesis. Relative to the other counties in the study Saginaw County has a higher than average jail admittance and social welfare rate, as well as a lower than average employment rate.

Insert Figure 20 about here

The results of the regression models for Saginaw County will now be presented. The model of jail admission rates and employment indicates that fully 13% of the variation in jail admission can be explained by employment. In addition, there are two significant parameters, one which is direct and another at a one month lag. The direct parameter demonstrates that for every percentage increase in employment there is a -1.6794 decrease in the jail rate. The lag parameter shows that for every percentage increase in employment there is a -.3919 decrease in jail admission one month following the employment increase.

$$(45) \text{ JAIL} = 2.59 + (-1.6794 \text{ EMP}) + (-.3919 \text{ EMP lag } 1) \\ (.5454) \quad (.1198)$$

*JAIL = Jail Admission Rate.

EMP = Employment Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the model of social welfare and employment demonstrates that 15% of the variation in social welfare rates can be explained by the employment rate. There are also significant direct and lag parameters in this model. The direct parameter indicates that for every percentage increase in the employment rate there is a -9.6761 decrease in the social welfare rate. The lagged parameter demonstrates that for every percentage increase in

employment there is a $-.3849$ decrease in social welfare one month latter.

$$(46) \text{ SW} = 20.35 + (-9.6761 \text{ EMP}) + (-.3849 \text{ EMP lag } 1) \\ (2.7826) \quad (.1198)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the employment model demonstrates that fully 32% of the employment rate can be explained by the variation in the jail and social welfare rates in Saginaw County. In addition, there is a significant parameter at a one month lag. That is, for every percentage increase in measured state social response there is a $-.9144$ decrease in employment after one month.

$$(47) \text{ EMP} = -.81 + (-.9144 \text{ JAIL/SW lag } 1) \\ (.1149)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Shiawassee County. Shiawassee County was organized in 1837 and bears an Indian name meaning "river that twists about." Shiawassee County is one of Michigan's top four counties for soybeans, and it also produces oats, wheat, corn, cattle and dairy products. The principal economic base employers are medium to heavy manufacture. They range from precision electric motors to small automotive parts, to plastic fabrication (See Appendix A). Employment in Shiawassee County is concentrated in manufacture, followed by service, retail trade, government, farming, finance,

construction, and wholesale trade (See Table 1). Shiawassee County ranks twentieth in the sample in size of civilian labor force. Additionally, Shiawassee County ranks sixth across all counties in the sample in proportion employed in the government sector. Shiawassee County is a Suburban Primary Industry County. The economic activities are primarily in the automotive industry and the population density of the county is relatively low.

The line graphs for Shiawassee County are shown in Figure 21. The jail admittance rate demonstrates a somewhat stable pattern about 15% of the total jail population over the seven years studied. Although there is a large increase in 1983 (to approximately 21%) the rate appears to primarily meander about a 15% rate. The employment rate generally seems to exhibit a decreasing trend through 1983, followed by an increase through 1986. The social welfare rate, exhibits intra-year increases in 1980, and 1983 and then decreases through 1986. The general appearance the these three patterns indicates that the pattern in the jail admission over the 84 months seems to be antithetical to that of employment and social welfare. That is, there is little correspondence between the pattern of the jail rates and what is anticipated if a relationship exists between these phenomenon. Shiawassee County has a higher than average jail admission and social welfare rate, as well as a lower than average employment rate.

Insert Figure 21 about here

The results of the regression analyses for Shiawassee County will now be presented. The model for the jail admission rates and employment allows an explanation of only .08% of the variation in the former measure based on the latter. There is a significant lag parameter at one month such that for every percentage increase in employment there is a -.4045 decrease in jail admissions.

$$(48) \text{ JAIL} = 11.54 + (-.4045 \text{ EMP lag } 1) \\ (.1142)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the model of social welfare and employment indicate that employment allows one to explain only 3% of the variation in the social welfare rate based on the observed values of employment. There is a significant parameter, as has been the case above, at a one month lag. This parameter indicates that for every percentage increase in employment there is a -1.0111 decrease in social welfare.

$$(49) \text{ SW} = 27.27 + (-1.0111 \text{ EMP lag } 1) \\ (.1142)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

The employment model demonstrates that approximately 4% of the variation in the employment rate can be explained through the observed values of state social response. There is also a significant lag parameter, such that for every percentage increase in state social response there is a -.9888 decrease in employment.

$$(50) \text{ EMP} = -1.54 + (-.9888 \text{ JAIL lag } 1) \\ (.1176)$$

* EMP = Employment Rate.
JAIL = Jail Admission Rate.

St. Clair County. St. Clair County was named for General Arthur St. Clair, the first governor of the Northwest Territory. St. Clair ranks in the fourth 20 percent among United States counties for total value added by manufacture. In addition to its industrial output, the rural areas of the county are dotted with fruit orchards and wheat, oat, soybean, and corn production (Michigan Department of Commerce, 1986). The principal economic base employers are metal fabrication, food, paper, axles, automotive accessories, and sheet metal work. The proportion of employment in the ten selected sectors is largely in service employment followed by manufacture, retail trade, government, finance, construction, farming, wholesale trade, mining, and forestry & fishing.

St. Clair County ranks fourteenth in the twenty-four counties for the size of civilian labor force. In addition,

it ranks first across all twenty-four counties in the sample in the proportion of the civilian labor force employed in construction, as well as fourth in mining employment, and sixth in finance employment. St. Clair County is a Suburban Primary Industry County. Like Muskegon and Ottawa Counties St. Clair County has a diverse collection of economic activities, yet its population density is relatively low. The line graphs for St. Clair County are shown in Figure 22. The jail admittance rate fluctuates about a 9% rate, with notable exceptions in 1980 and 1983. In addition there appears to be the intra-year pattern found above in 1980, 1981, 1982, 1983, and 1984 followed by a slight decrease through 1986. The employment rate for St. Clair County indicates a clear intra-year pattern as well as two significant trends. There appears to be a decrease through 1983 followed by an increase through 1986. This pattern is somewhat consistent with the employment incarceration relationship. In addition, although the social welfare rate is a mirror of the employment rate, it is somewhat consistent with the theoretical relationship. In comparison to the other counties in the study St. Clair County's jail admittance and employment rates are lower than average, and its social welfare rate is higher than average.

Insert Figure 22 about here

The regression results for St. Clair County are presented below. The model of the jail rate and employment indicates that 4% of the variation in the jail rate can be explained by the employment rate. There is a significant parameter at a two month lag which indicates that for every percentage increase in the employment rate there is a $-.2859$ decrease in the jail admission rate two months latter.

$$(51) \text{ JAIL} = -1.88 + (-.2859 \text{ EMP lag } 2) \\ (.1117)$$

*JAIL = Jail Admission Rate.

EMP lag 2 = Employment Rate at a two month lag.

The results of the model of social welfare and employment indicate that employment allows one to explain only .79% of the variation in the social welfare rate based on the observed values of employment. There is a significant parameter, at a one month lag. This parameter indicates that for every percentage increase in employment there is a $-.3714$ decrease in social welfare.

$$(52) \text{ SW} = 1.77 + (-.3714 \text{ EMP lag } 1) \\ (.1115)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

The employment model demonstrates that approximately 1.5% of the variation in the employment rate can be explained through the observed values of state social response. There is also a significant lag parameter, such

that for every percentage increase in state social response there is a $-.7125$ decrease in employment.

$$(53) \text{ EMP} = .29 + (-.7125 \text{ JAIL lag } 1) \\ (.1146)$$

*EMP = Employment Rate.

JAIL = Jail Admission Rate at a one month lag.

Van Buren County. Van Buren County was organized in 1837 and was named after Martin Van Buren, then Secretary of State and later President. One of the top three counties in Michigan for apple production, and one of the top two for grapes and blueberries, in addition to being one of the state's leading cherry growing counties. Other agricultural products are poultry, hogs and corn. The principal economic base employers in Van Buren County are largely in food processing, followed by metal products, rubber products, furniture, and paper products. Van Buren County ranks eighteenth in the twenty-four counties in the sample in size of civilian labor force. Moreover, the diversity of employment in the county are not evident elsewhere in the sample (See Table 1). The highest proportion are employed in manufacture followed by service, government, farming, retail trade, construction, finance, wholesale trade, forestry & fishing, and mining. Van Buren County is a Suburban Primary Industry County. The primary activity is the processing of food and the population density is relatively low.

Figure 23 shows the line graphs for Van Buren County. The jail admittance rate shows a very erratic, but stable, pattern over the study period. Although there appears to be a slight upward trend through 1983, there does not appear to be any significant pattern to the fluctuations. The employment rate in Van Buren County indicates somewhat of an intra-year pattern in addition to a decrease through 1983, and an increase through 1986. The social welfare rate shows an increase through 1983 and a decrease through 1986 while exhibiting the intra-year pattern, albeit less clearly than the employment rate. Overall the patterns exhibited indicate little consistency with what was anticipated above. Van Buren County has a higher than average jail admittance and social welfare rate, as well as a lower than average employment rate.

Insert Figure 23 about here

The regression results for Van Buren County will now be presented. The model of the jail rate and employment indicates that 2.9% of the variation in the jail rate can be explained by the employment rate. There is a significant parameter at a one month lag which indicates that for every percentage increase in the employment rate there is a $-.4296$ decrease in the jail admission rate one month latter.

$$(54) \text{ JAIL} = 1.83 + (-.4296 \text{ EMP lag } 1) \\ (.1115)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the model of social welfare and employment indicate that employment allows one to explain only 5% of the variation in the social welfare rate based on the observed values of employment. There are significant parameters, in a direct relationship and at a one month lag. The direct parameter indicates that for every percentage increase in employment there is an immediate decrease of -.1067 in the social welfare rate. Moreover, the lag parameter indicates that for every percentage increase in employment there is a -1.3317 decrease in social welfare.

$$(55) \text{ SW} = 1.51 + (-.1067 \text{ EMP}) + (-1.3317 \text{ EMP lag } 1) \\ (.0529) \quad (.1133)$$

*SW = Social Welfare Rate.

EMP = Employment Rate.

EMP lag 1 = Employment Rate at a one month lag.

The employment model demonstrates that approximately 13% of the variation in the employment rate can be explained through the observed values of state social response. There are significant parameters for the social welfare rate, and at a one month lag. The social welfare parameter indicates that for every percentage increase in social welfare there is a -.6273 decrease in employment. The significant lag parameter indicates that for every percentage increase in

state social response there is a $-.9035$ decrease in employment one month latter.

$$(56) \text{ EMP} = 1.37 + (-.6273 \text{ SW}) + (-.9035 \text{ JAIL/SW lag 1})$$

$$(.2120) \qquad (.1174)$$

*EMP = Employment Rate.

SW = Social Welfare Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Washtenaw County. Washtenaw County was organized as a county in 1826 and derives its name from an Indian word, "Wash-ten-ong," meaning "at or on the river." Washtenaw County ranks in the third 20 percent for total value added by manufacture among all United States counties. At the same time the county is sufficiently rural to be Michigan's leading sheep producer and to rank third in the state for milk production. Apples, wheat, oats, corn, and hay are its leading agricultural products (Michigan Department of Commerce, 1986).

Although the principal economic base employers tend to be dominated by the automotive industry there are also the production of pharmaceuticals, ball bearings, and computers, as well as the University of Michigan and the Ypsilanti State Hospital. Washtenaw County's employment is in government, manufacture, service, retail trade, finance, construction, wholesale trade, and farming. Washtenaw County ranks sixth in the sample for the size of civilian labor force, as well as second in the sample in the

proportion employed in government. Washtenaw County is a Urban Factory County.

The economic activities in Washtenaw County are quite diverse, albeit primarily automotive industry in nature. However, the diversity of activities and the density of population allow it to be classified as a type two county.

The jail admittance rate for Washtenaw County indicates a decrease through 1982 followed by the intra-year cycles, and an increasing trend through 1986 (See Figure 24). The employment rate indicates a stability in employment through 1981 followed by a decrease in that year and a steady increase through 1986. The social welfare rate is stable in 1980 followed by an increase through 1983 and then a somewhat steady decrease through 1986. Overall there is little consistency of these patterns with that anticipated; there is little similarity between the social welfare rate and the jail admission rate, as well as with the employment rate. Relative to the other counties Washtenaw County has a lower than average jail admission and social welfare rate, as well as a higher than average employment rate.

Insert Figure 24 about here

The regression results for Washtenaw County will now be presented. The model of the jail rate and employment indicates that 1% of the variation in the jail rate can be

explained by the employment rate. There is a significant parameter at a one month lag which indicates that for every percentage increase in the employment rate there is a $-.4667$ decrease in the jail admission rate one month latter.

$$(57) \text{ JAIL} = -2.22 + (-.4667 \text{ EMP lag } 1) \\ (.1128)$$

*JAIL = Jail Admission Rate.

EMP lag 1 = Employment Rate at a one month lag.

The results of the model of social welfare and employment indicate that employment allows one to explain only 1.6% of the variation in the social welfare rate based on the observed values of employment. There are significant parameters at a one month and two month lags. These parameters indicate that for every percentage increase in employment there is a $-.2507$ and a $-.2595$ decrease in social welfare at a lag on one and two months respectively.

$$(58) \text{ SW} = -2.13 + (-.2507 \text{ EMP lag } 1) + (-.2595 \text{ EMP lag } 2) \\ (.1132) \quad (.1137)$$

*SW = Social Welfare Rate.

EMP lag 1 = Employment Rate at a one month lag.

EMP lag 2 = Employment Rate at a two month lag.

The employment model demonstrates that approximately 1.2% of the variation in the employment rate can be explained through the observed values of state social response. There is also a significant lag parameter, such that for every percentage increase in state social response there is a $-.9455$ decrease in employment.

$$(59) \text{ EMP} = 1.61 + (-.9455 \text{ JAIL/SW lag } 1) \\ (.1153)$$

*EMP = Employment Rate.

JAIL/SW lag 1 = Interaction effect of Jail Admission and Social Welfare Rates at a one month lag.

Summary of the Individual County Results. The results of the application of the three models to the data are summarized in Tables 2, 3, and 4 (below). The summary of results of the jail admission rate and employment indicates that nearly all counties have a significant lag at one month. That is, for every percentage increase in the employment rate there is a approximately one half percentage decrease in the jail admission rates in the twenty-four counties in this study. In general, all counties, except Jackson, Kalamazoo, Macomb, Muskegon, and Calhoun Counties, are consistent with the postulation that local correctional settings respond to changes in the local labor force participation rates.

In Table 3 the results of the tests show that there is a general congruence with the hypothesized model which is more robust than the jail admission rates. As was found for the jail admission rates nearly all of the counties where there are significant models have a significant lag parameter at one month. However the parameter are generally three time the magnitude of those found for jail admission rates. That is, for every percentage increase in the employment rate there is approximately a one and one half

decrease in the social welfare rate. In addition, there are a number of direct relationships between employment and social welfare rates.

The results of the application of the employment model are indicated in Table 4. Once again the most common significant parameter is at the one month lag, such that for every increase in the use of state social response there is approximately one percentage decrease in employment. This cross-check of the first two models makes sense. Taken individually the social welfare rate seems to allow a better explanation of social response than does the jail admission rate for more counties in the sample. The following section compares the counties by economic base.

Insert Tables 2, 3, and 4 about here

Comparisons of Counties by Economic Base

The twenty-four counties in the sample were further classified in order to assess whether there were significant differences by population densities and industrial base (See Table 5). The result of the classification is a classification scheme with three basic categories. The assessment of the three general types of counties in the study reveal that there are sixteen counties which are of a Suburban Primary Industry, four which are Urban Diversified, and four are Urban Factory. The results of the regression

models for each type of county can be summarized from further consideration of the individual models for each of the counties to provide a more general perspective on the different types of counties in this study. In addition, qualitative comparisons and results can be made explicit based on the earlier findings for the individual counties.

Suburban Primary Industry Counties. The Suburban Primary Industry Counties are counties where there are one or two large employers or a number of small manufacturers and where the population density is relatively low. These counties are more appropriately labeled "suburban" counties given their generally low relative populations as well as the lack of a major urban area or city in the county. The modeling of the social response relationship for these counties revealed that the amount of the variance in the jail admission and social welfare rates which is explained by the employment rate is rather low. In addition, for both the jail admission, and social welfare rates the most common significant parameter is at a one month lag. Thus, for both measures of state response there is a decrease, one month latter, following an increase in employment. For the jail admission rate there are notable exceptions to this pattern in Calhoun, Clinton, and Jackson Counties.

In Calhoun County there is a positive coefficient at a one month lag indicating that as employment rates increase the jail admission rate increases one month latter.

However, there is also a significant lag parameter at a four month lag indicating that as employment increases, jail admission decreases four months latter. In Clinton County there is a significant direct parameter such that as employment increases the jail admission rate directly decreases. By contrast, Jackson County there is a significant positive weight. This indicates that as employment increases there is a direct increase in the jail admission rate. It is particularly significant to note that the overall majority of these counties are consistent with the expected relationship between employment and incarceration and social welfare.

Insert Table 5 about here

It is apparent, based on both the coefficients of determination and the significant coefficients that there are factors outside this model which must be specified in order to more fully understand that nature of the relationship between the labor force and incarceration in these counties.

The significant parameters for the social welfare rates are generally much higher (approximately two times) than those for the jail admission rates. There are also notable exceptions in Barry, Bay, Clinton, Jackson, and Ottawa Counties. In Barry County there is a significant negative

parameter which is direct. In Bay County the direct parameter is also significant yet positive such that as employment increases so does the social welfare rate. Yet at the one month lag there is a significant negative weight which is consistent with the other type three counties. In Clinton County there is a significant direct parameter which is negative. And in Jackson County there is a significant direct parameter which is very high and positive indicating that for every increase in employment there is a direct increase in the social welfare rate.

Urban Diversified Counties. The Urban Diversified Counties are those where the population density is relatively high, where there is a major urban area, and there is a diversification in the economic base of employment in the county (Ingham, Kalamazoo, Saginaw, and Washtenaw Counties). For these type of counties there appears to be no apparent pattern. In Ingham County for example there are significant parameters at one and two month lags which are consistent with the conceptual model which holds that as employment increases jail admission rates decrease. The data for the model for social welfare and employment, however, is not significant. The results of the application of the model to the data for Kalamazoo County is not significant for the jail admission rates; however, there is a significant direct parameter for the social welfare rates, and a significant negative parameter

at a one month lag. For Saginaw County there are significant parameter in the model of the jail admission rates at one and two month lags, such that as employment increases jail admission decreases. In addition there is a significant, and negative, direct parameter for the social welfare rate and a significant lag parameter at one month. Last, for Washtenaw County there is a significant, and negative, lag parameter at two months.

In the model of social welfare for that county there are significant parameters at one and two months. In summary the Urban Diversified counties appear to be consistent with the idea that the jail admission and social welfare rates are negatively associated with the changes in the labor force over time. Given the very wide differences in the four counties in this group; however, it is difficult to assert or discern a pattern.

The individual differences in these counties probably leads to these less than clear results. Ingham County would seem to be must less sensitive to economic fluctuation than any of the other three in this group given its proportion of government employment. Similarly, Washtenaw County would also be somewhat less susceptible to fluctuations given its orientation in employment toward the University of Michigan and the medical field. In Kalamazoo on the other hand, given its manufacturing focus, may be more susceptible to economic "hard times." This has clearly been the case in

Saginaw county. Out of the four counties in this group the economic base of employment in Saginaw County is primarily in the automobile and support industries which are very sensitive to overall changes in the economy. In summary, three of the four counties demonstrate that the model that employment influences the jail admission rates is consistent with the theory. In addition, in both Saginaw and Washtenaw Counties employment also is consistent with the model of social welfare rates in that as employment increases social welfare rates decrease.

Urban Factory Counties. The Urban Factory Counties are characterized as having high population densities, as well as an employment base which is somewhat diverse yet basically manufacturing oriented (Genesee, Kent, Macomb, and Oakland Counties). In these type of counties there is somewhat of a pattern in the model for jail admission and no pattern in the social welfare rates. For the jail admission rates for all four counties there is a significant, negative, lag parameter at one month (although there is also a significant lag parameter at two months for Macomb County, the overall fit of the data to the model is not significant for that county). In the model of the social welfare rates the only significant model is for Genesee County and it is consistent with the hypothesized model.

These counties are consistent with the model, except for Macomb County, that as employment increases jail

admission decreases. Similar to the Urban Diversified Counties the model of the social welfare rates is not salient. Last, the jail admission and social welfare rates do allow a explanation of the employment rates which is consistent with the theory in all four counties.

Summary of Findings. The results of the study of the qualitative aspects and quantitative modeling of the counties in this sample have been, in general, consistent with the conceptual model. The majority of modeled relationships demonstrate that at the local level, for urban counties, the employment rate is inversely associated with both jail admission and social welfare rates.

The descriptive findings indicate that there is quite a variety of counties in the sample from Oceana County's farming orientation to Genesee County's focus on manufacturing . The overall results across these counties, however, is that there is manufacturing (primarily of automobiles or related industries) in all counties. In addition, it is apparent that even in the least dense counties in the sample there are adjacent counties which are highly urban and focused on manufacture alone. The descriptive findings also lead to the classification scheme which is based on population density and employment base. The individual county results indicate a somewhat wide range of differences across the sample.

Although the majority of counties conform to the conceptualization that employment is inversely related to both incarceration and social welfare, there are a number of individual differences across the sample. This categorization resulted in three different groups of counties. Although it is difficult to conclusively force the twenty four counties into three categories, they seem to fit in the typology which has been developed. First, the largest group of counties were those labeled "Suburban Primary Industry Counties." In general the employment based in these counties appears to be focused on a major employer and a few lessor employers. The second criteria is the population density and urban settlement pattern. In general this type of county has a low relative population density and lack a major urban area. The results of the modeling indicates that these suburban counties are most consistent (out of the three categories) with the conceptual model. The second category, "Urban Diversified Counties," indicates that these counties are most consistent with the model for incarceration (Ingham, Saginaw, and Washtenaw Counties), and social welfare (Saginaw and Washtenaw Counties). These results indicate that there are clear individual differences in this category of counties. Similar the Urban Factory Counties demonstrate a general consistency with the proposed model (Genesee, Kent, and Oakland Counties) for jail

admission rates, but social welfare rates do not conform to the model.

Figure 1: Line Graphs for Barry County

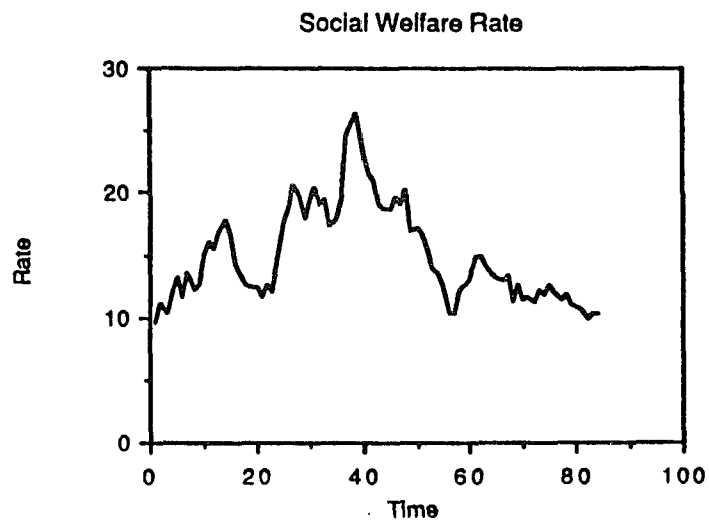
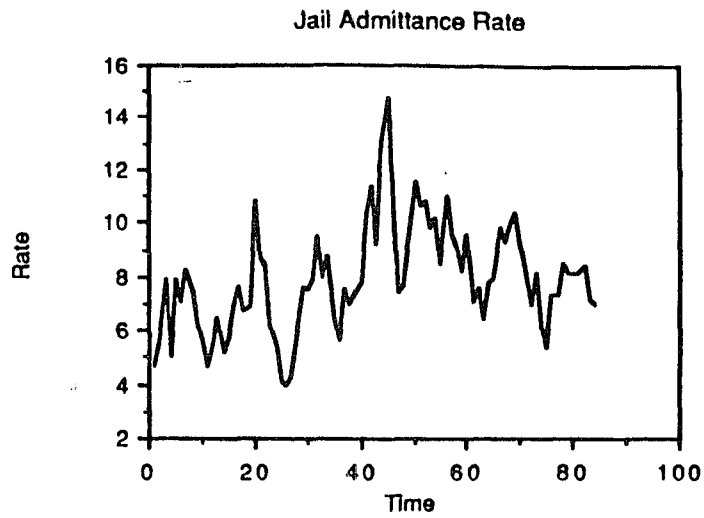


Figure 2: Line Graphs for Bay County

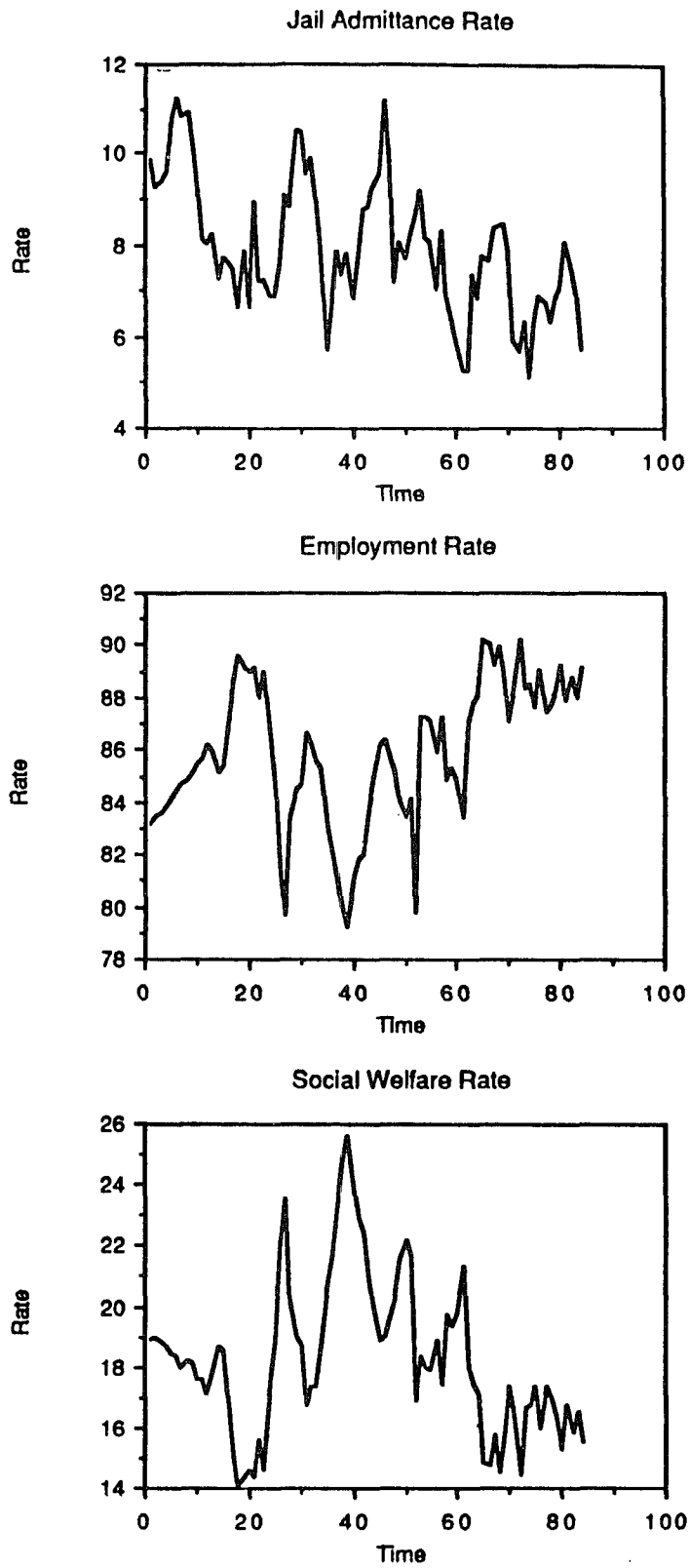


Figure 3: Line Graphs for Berrien County

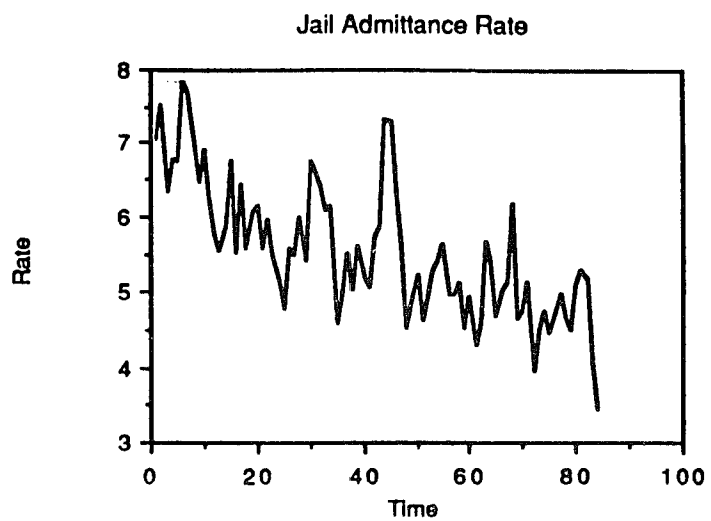


Figure 4: Line Graphs for Calhoun County

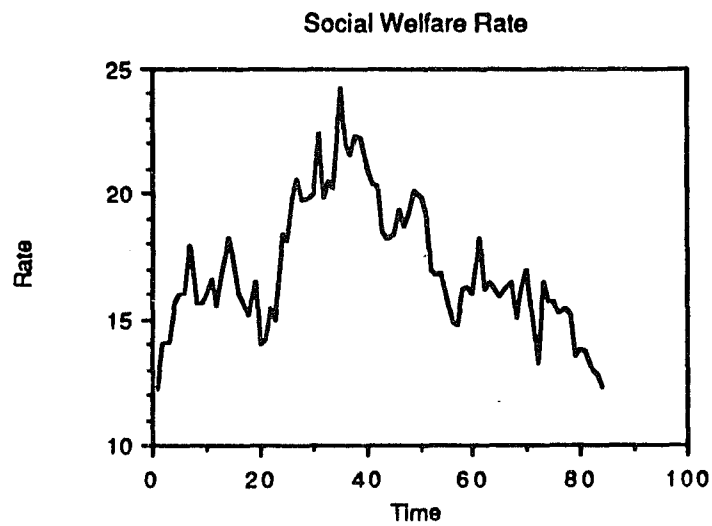
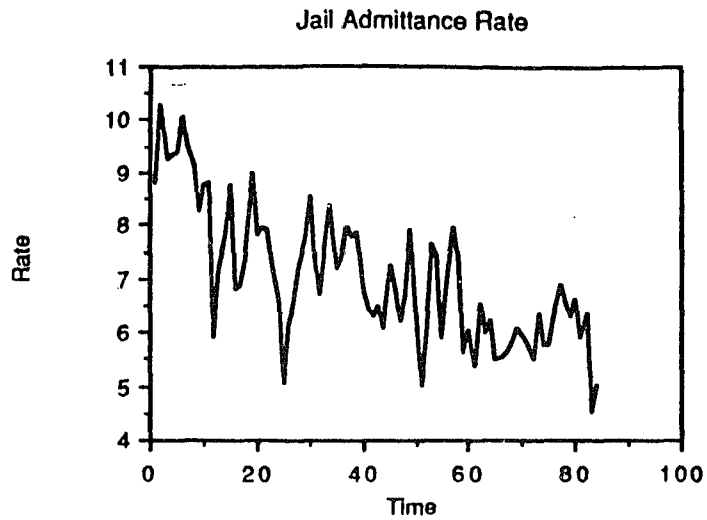


Figure 5: Line Graphs for Clinton County

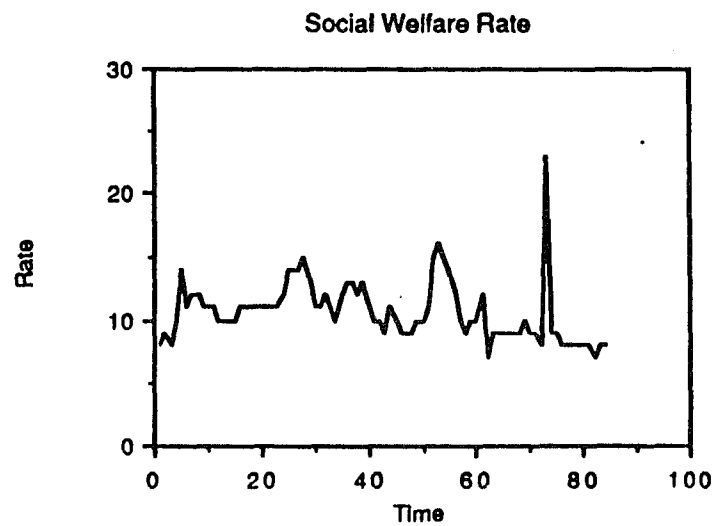
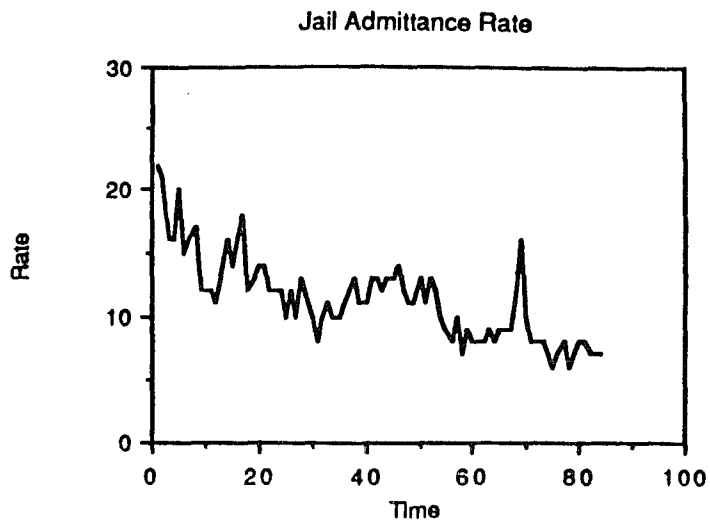


Figure 6: Line Graphs for Eaton County

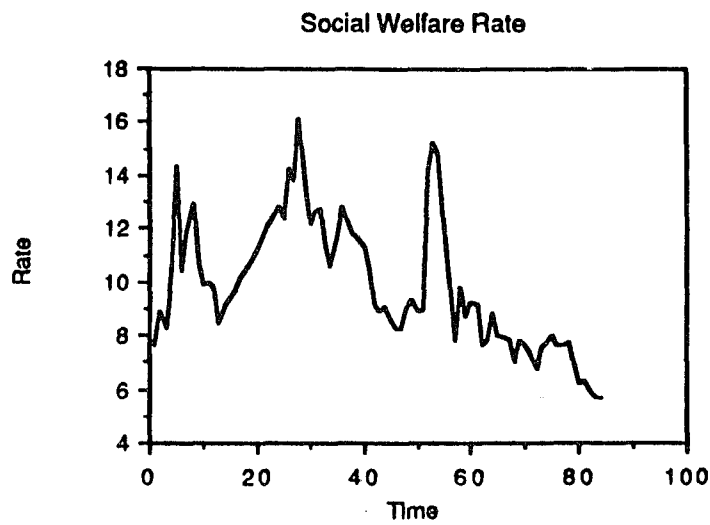
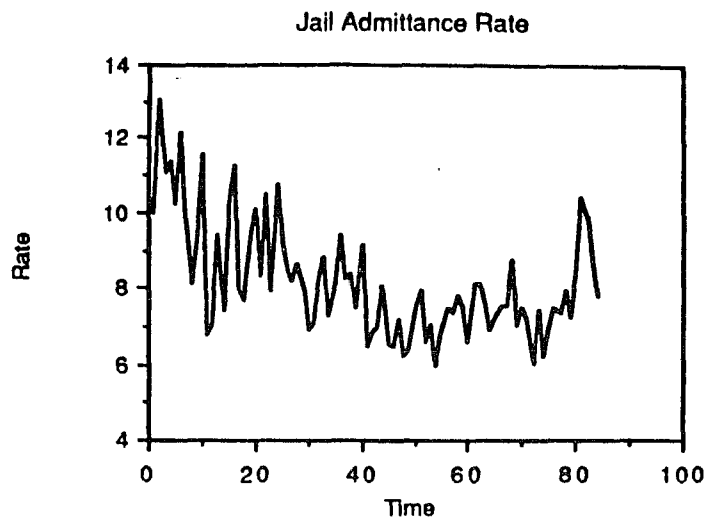


Figure 7: Line Graphs for Genesee County

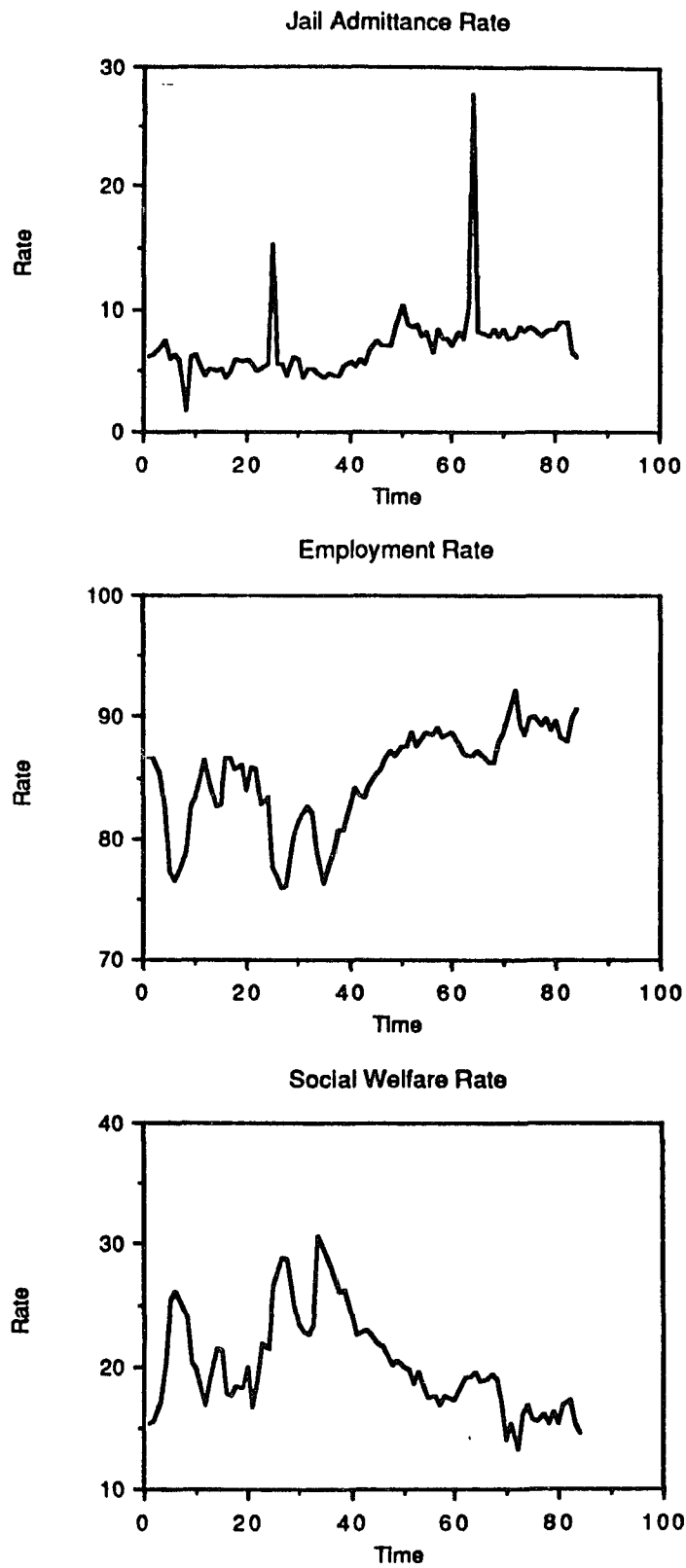


Figure 8: Line Graphs for Ingham County

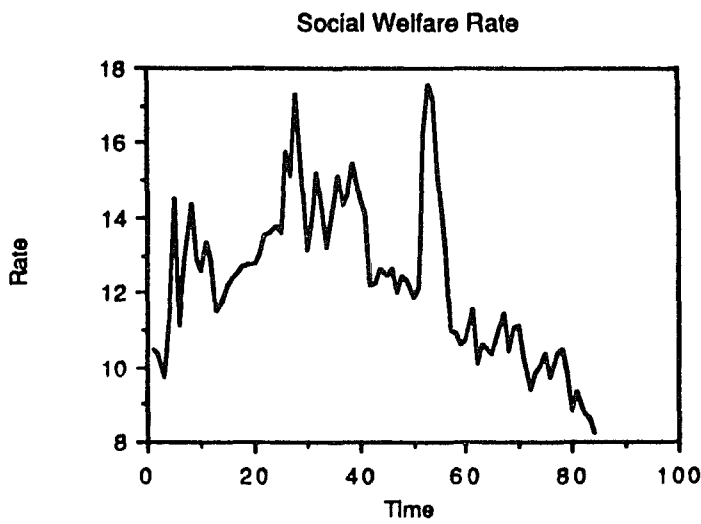
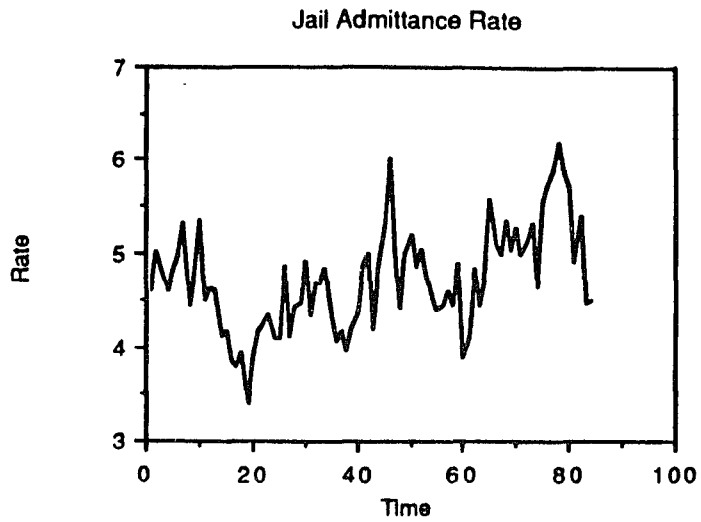


Figure 9: Line Graphs for Ionia County

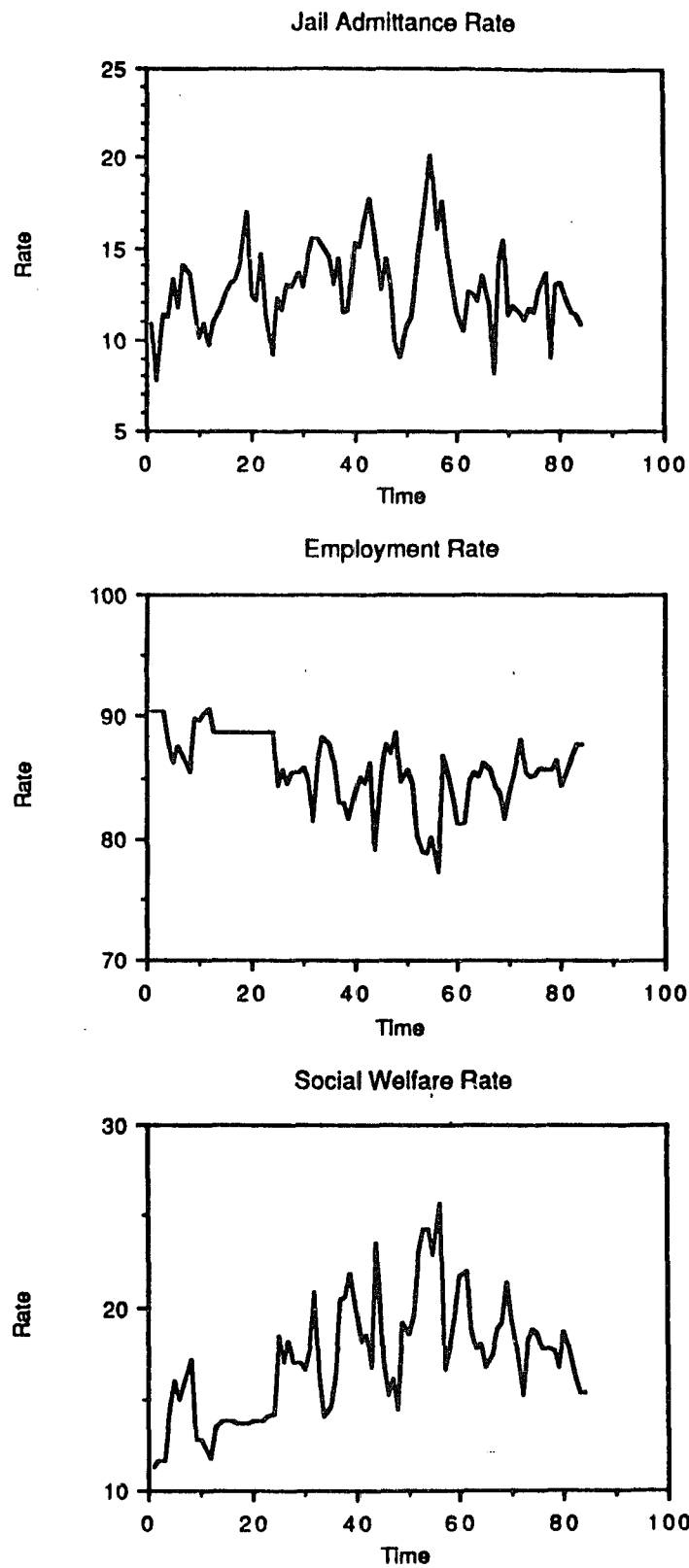


Figure 10: Line Graphs for Jackson County

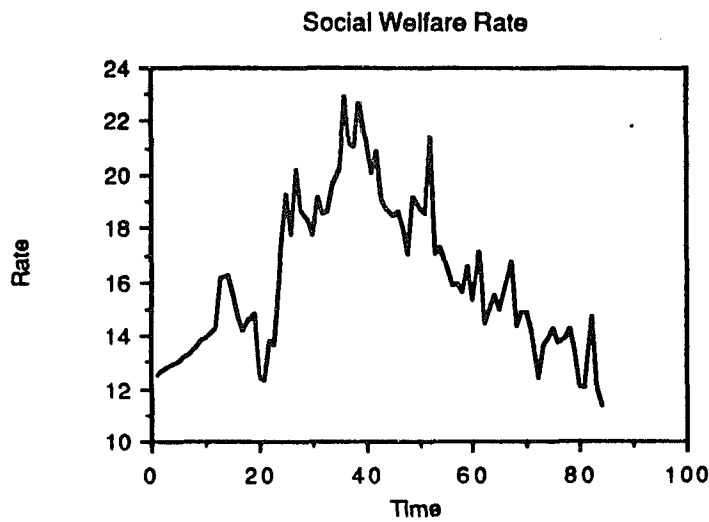
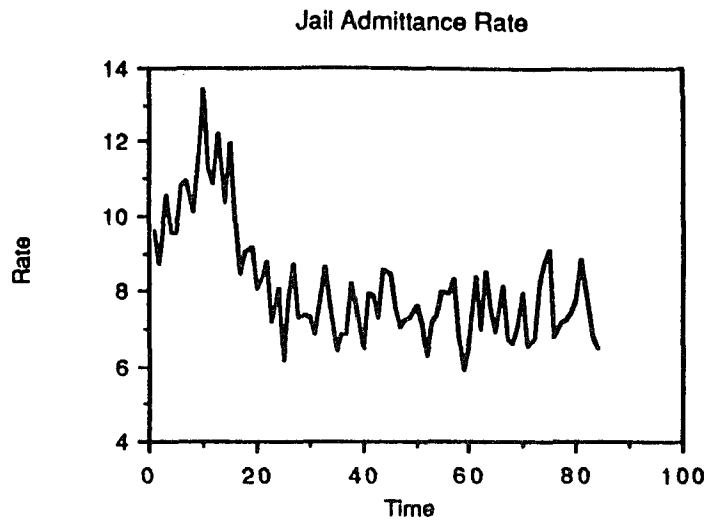


Figure 11: Line Graphs for Kalamazoo County

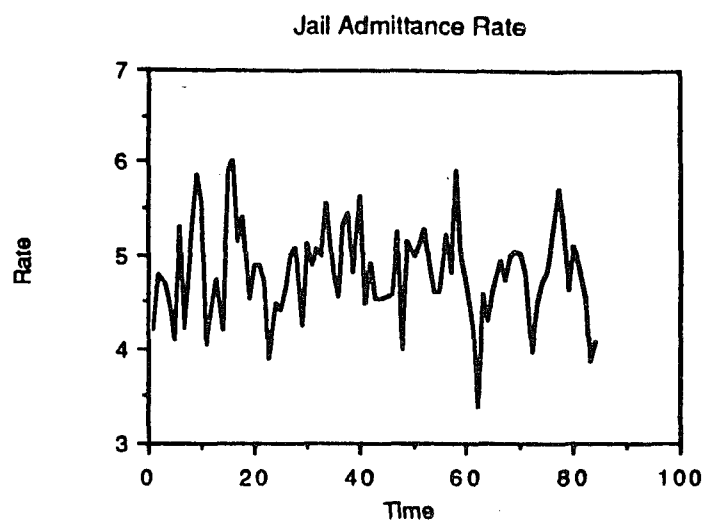


Figure 12: Line Graphs for Kent County

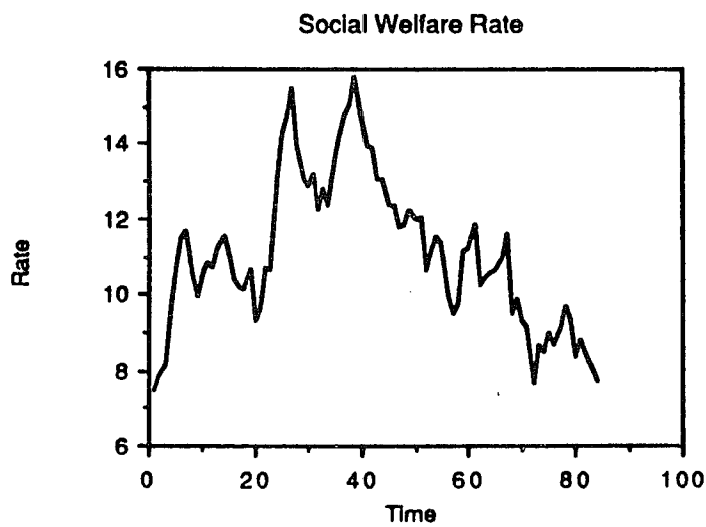
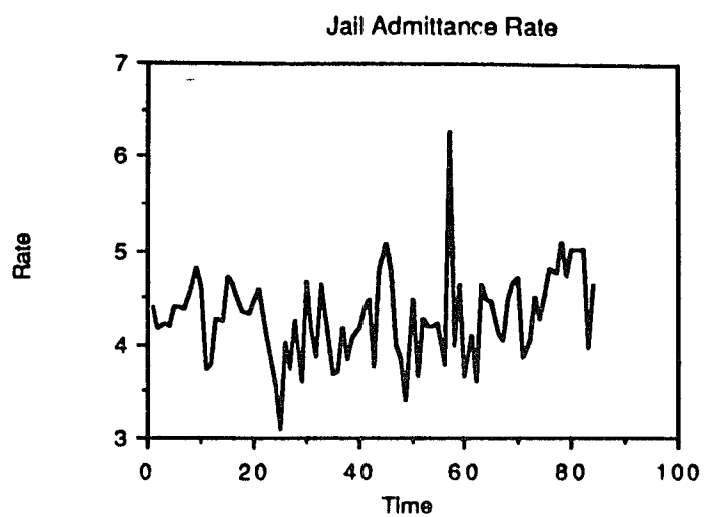


Figure 13: Line Graphs for Lapeer County

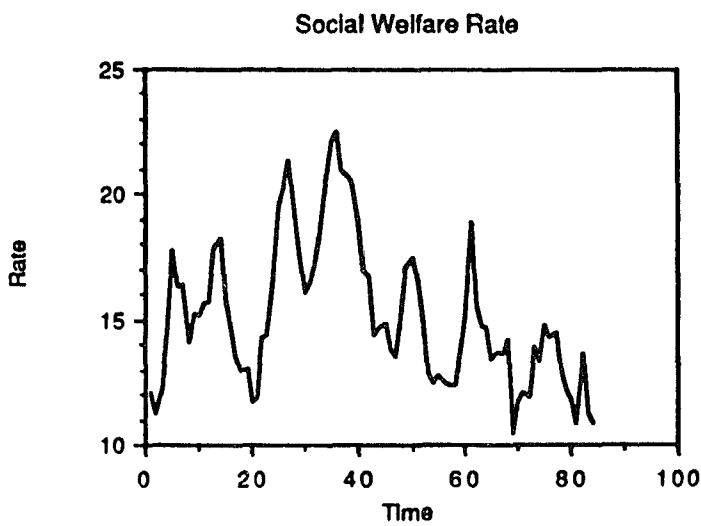
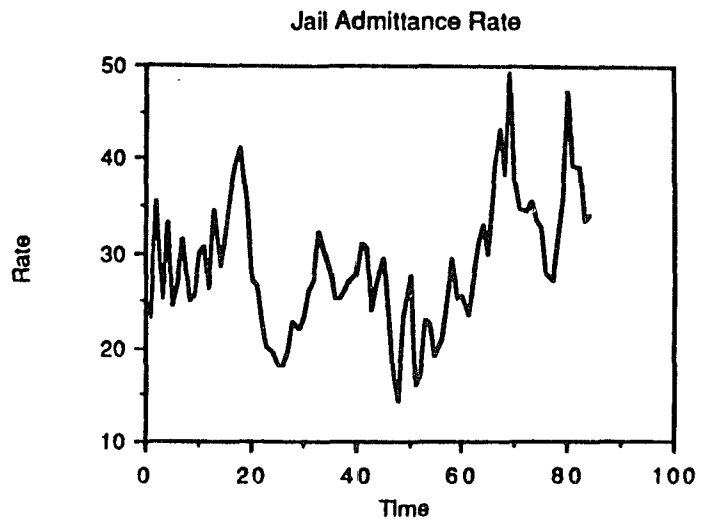


Figure 14: Line Graphs for Livingston County

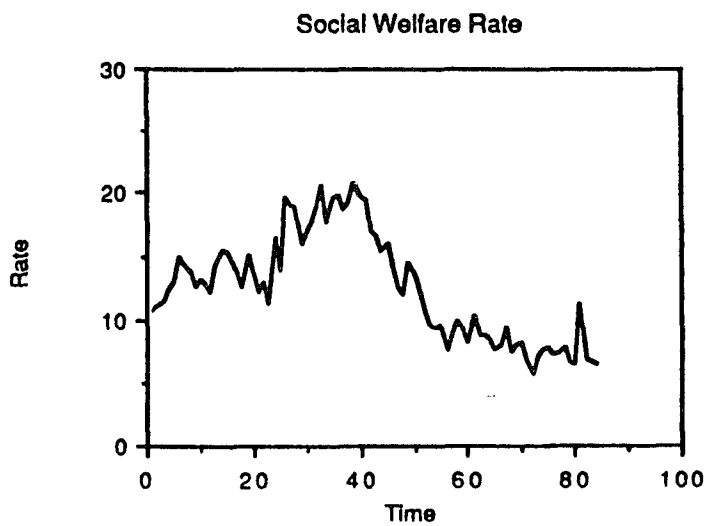
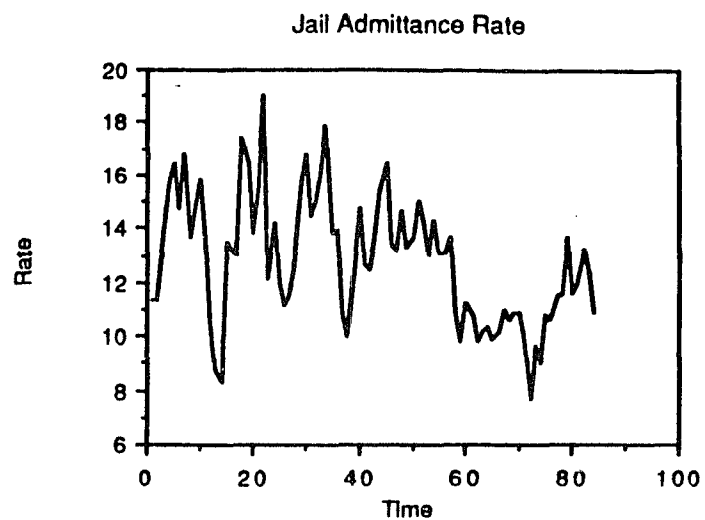


Figure 15: Line Graphs for Macomb County

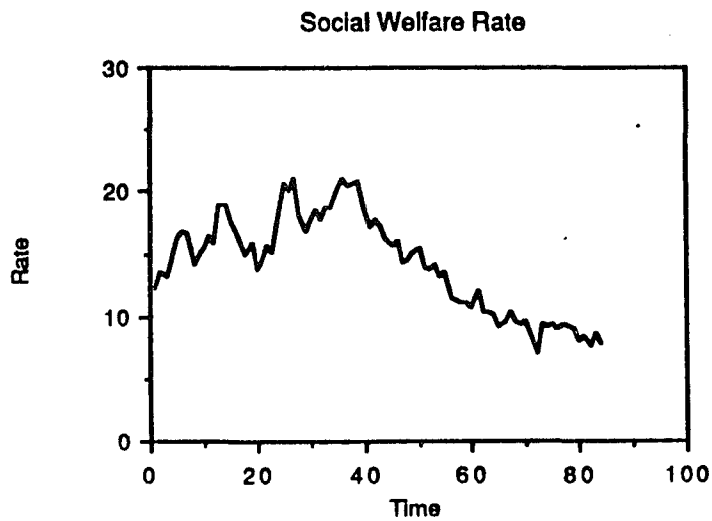
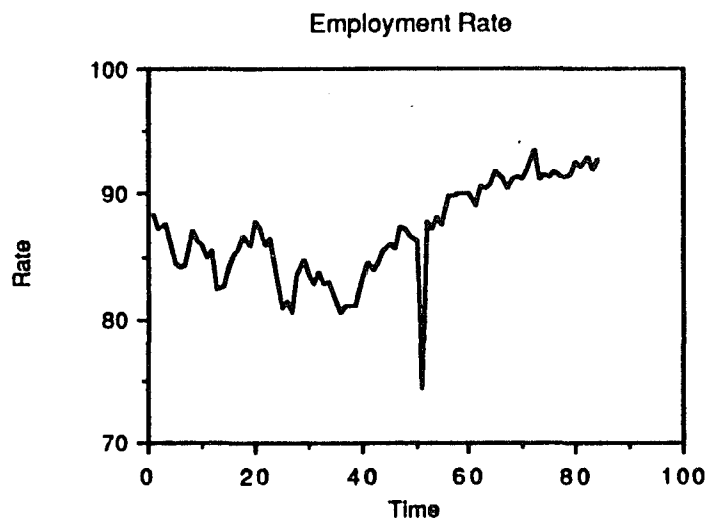
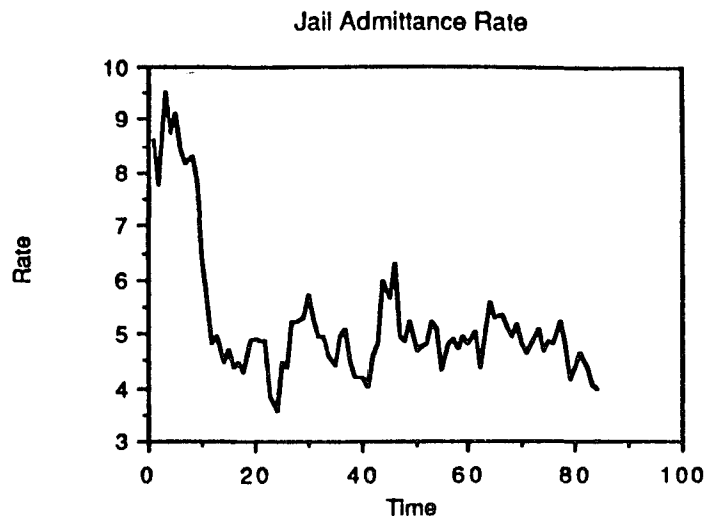


Figure 16: Line Graphs for Muskegon County

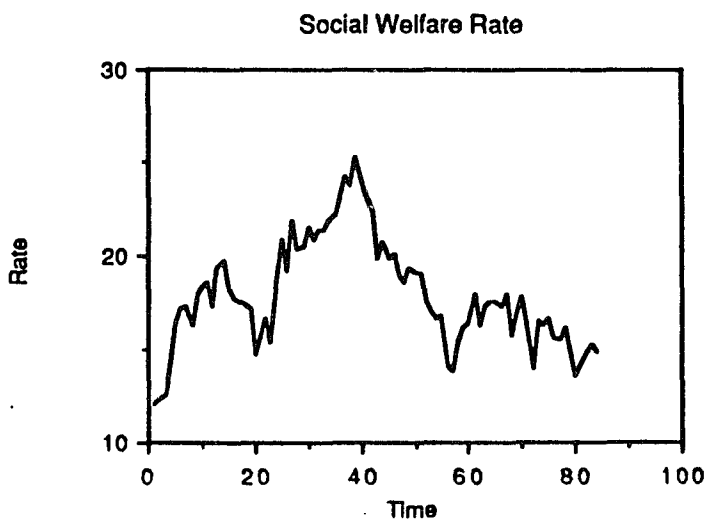
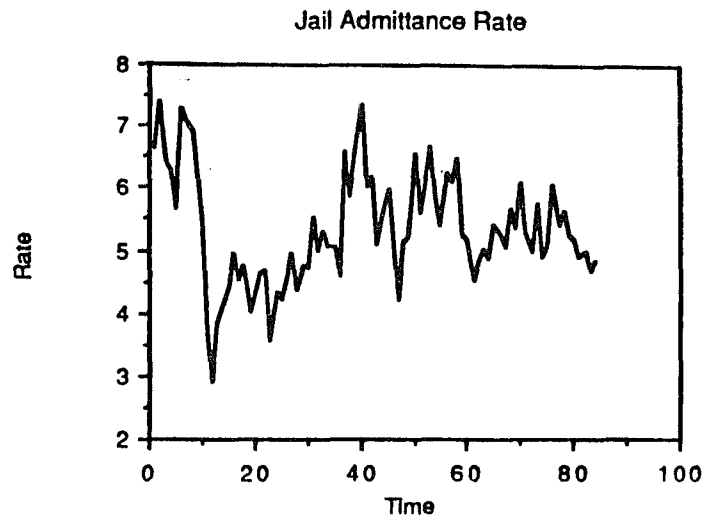


Figure 17: Line Graph for Oceana County

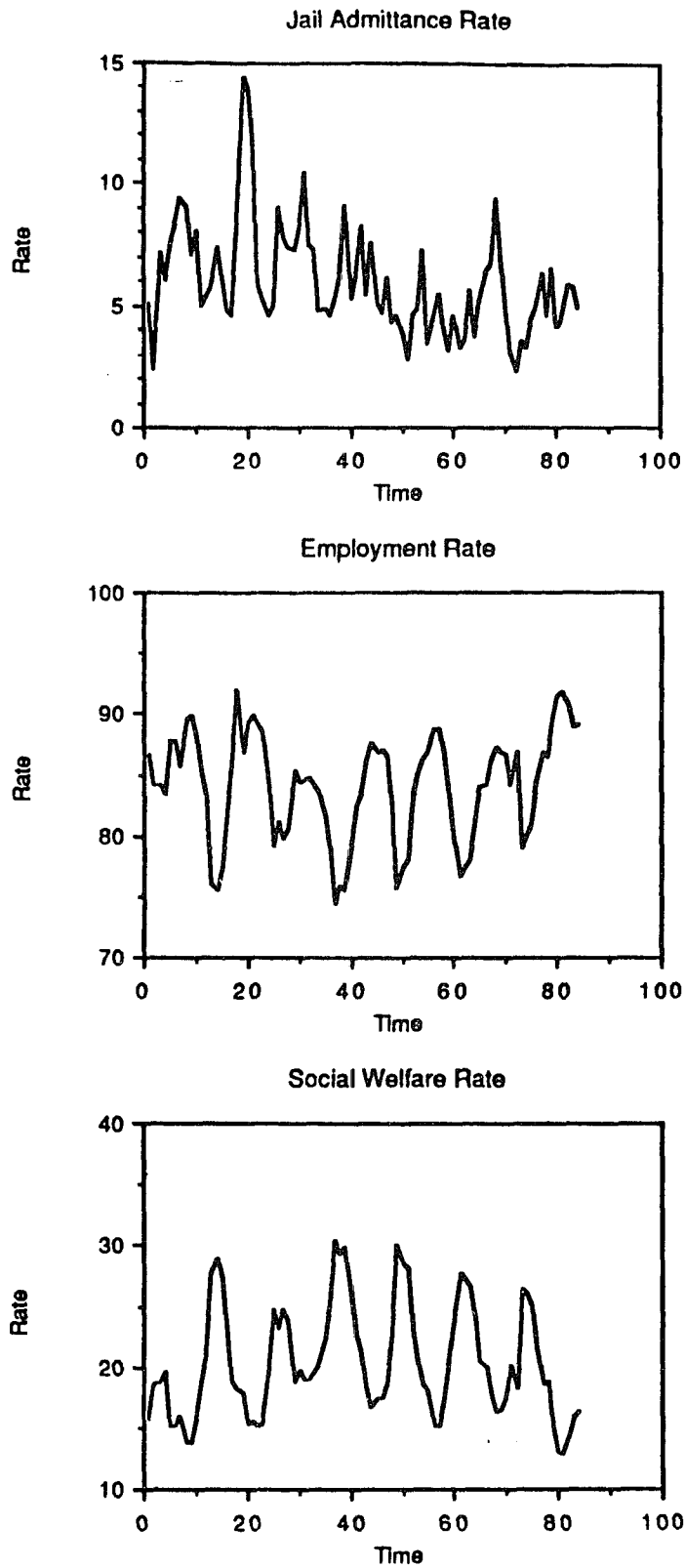


Figure 18: Line Graphs for Oakland County

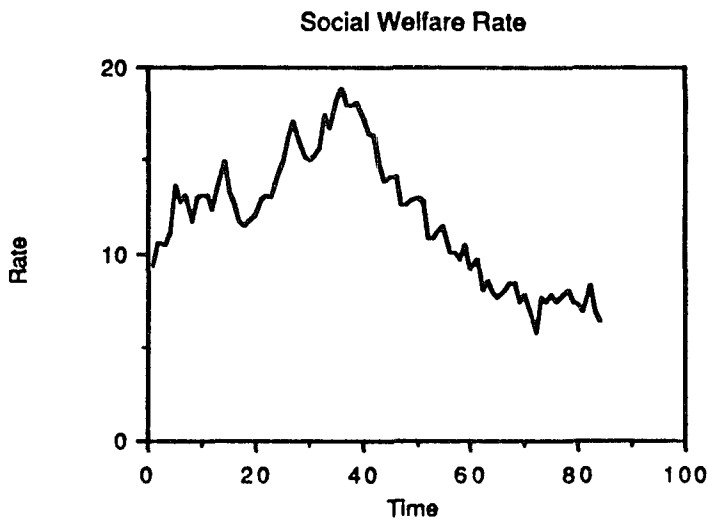
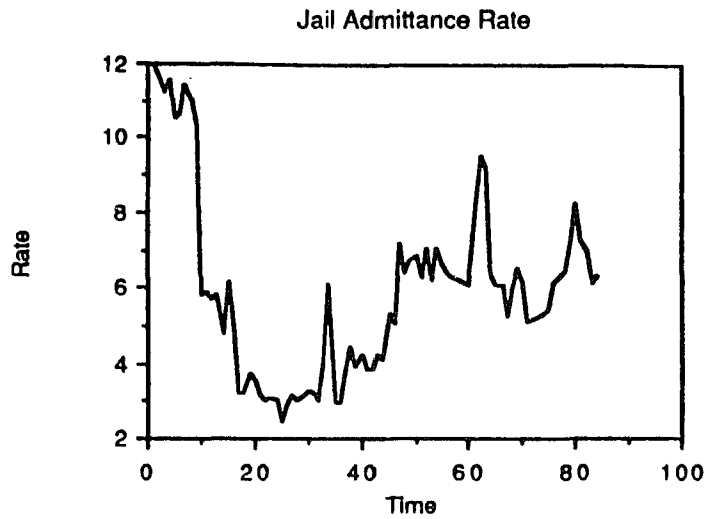


Figure 19: Line Graphs for Ottawa County

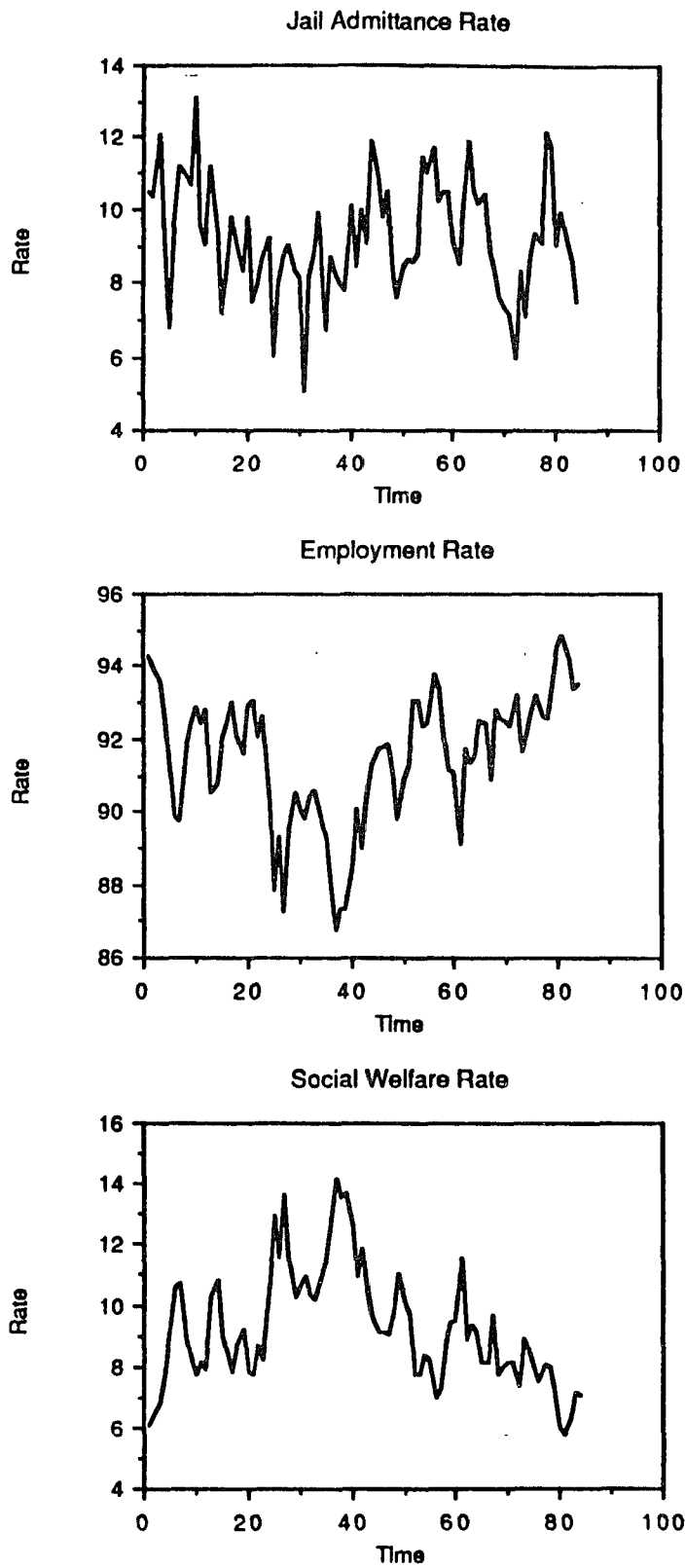


Figure 20: Line Graphs for Shiawassee County

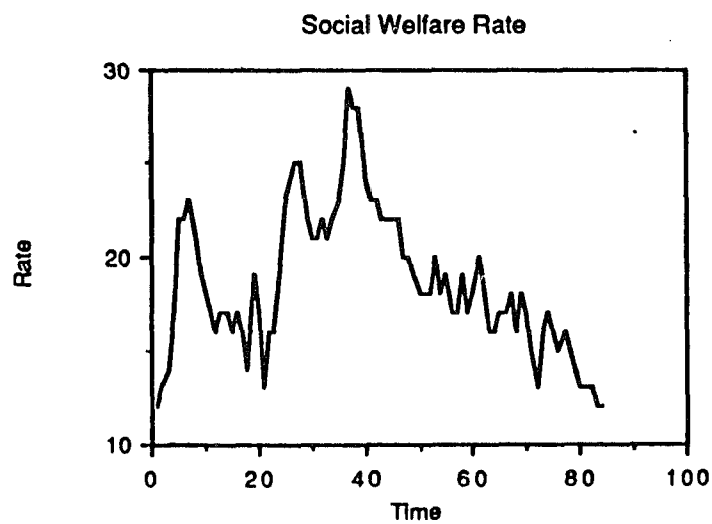
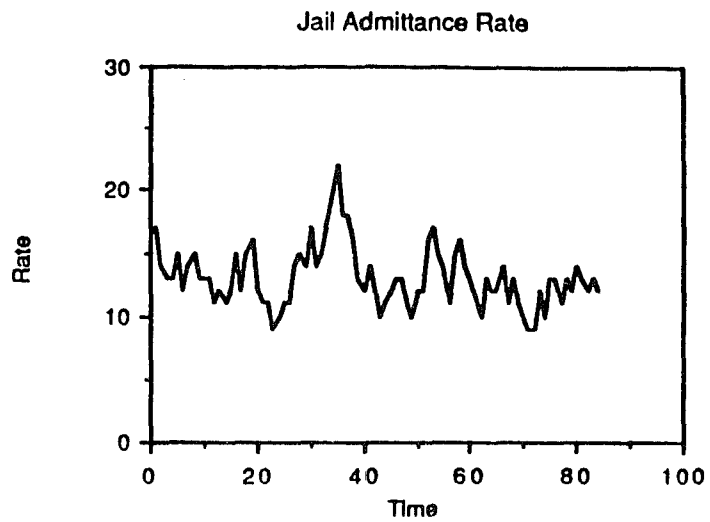


Figure 21: Line Graphs for Saginaw County

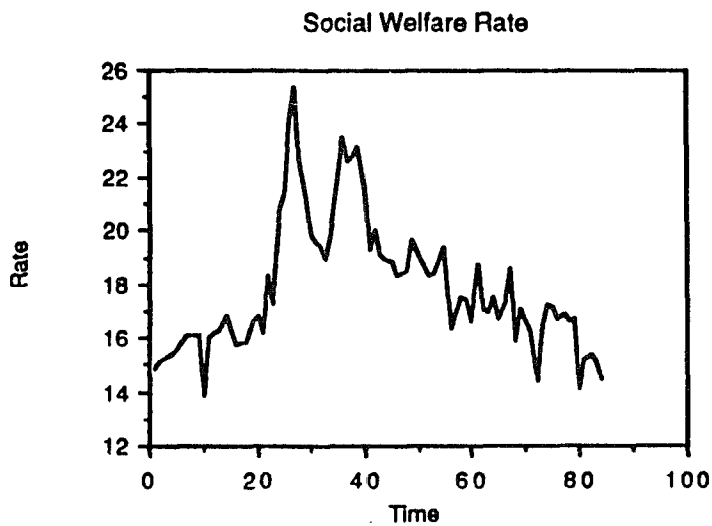
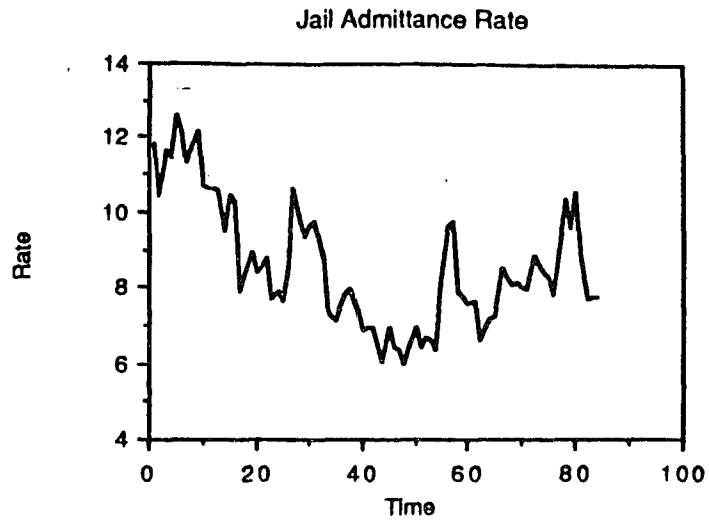


Figure 22: Line Graphs for St. Clair County

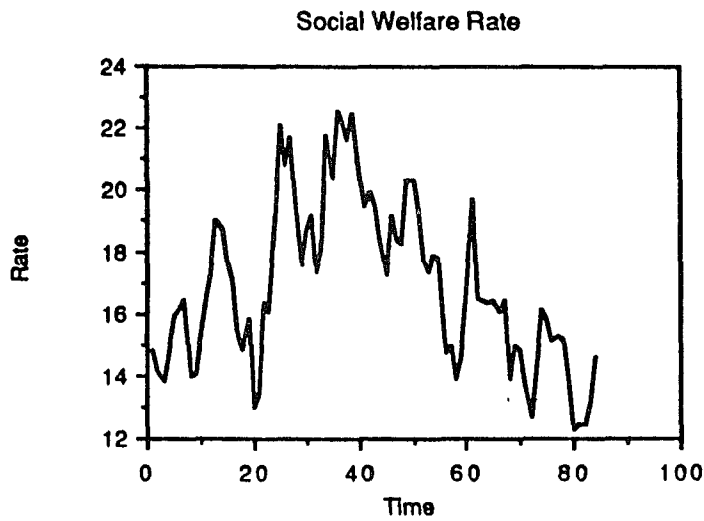
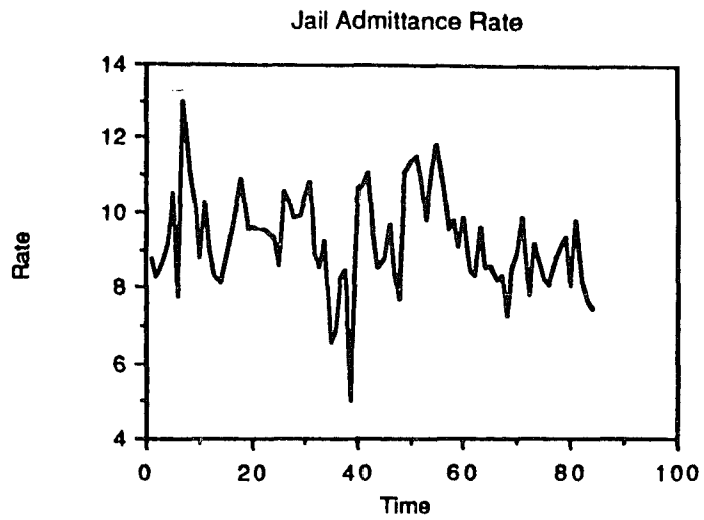


Figure 23: Line Graphs for Van Buren County

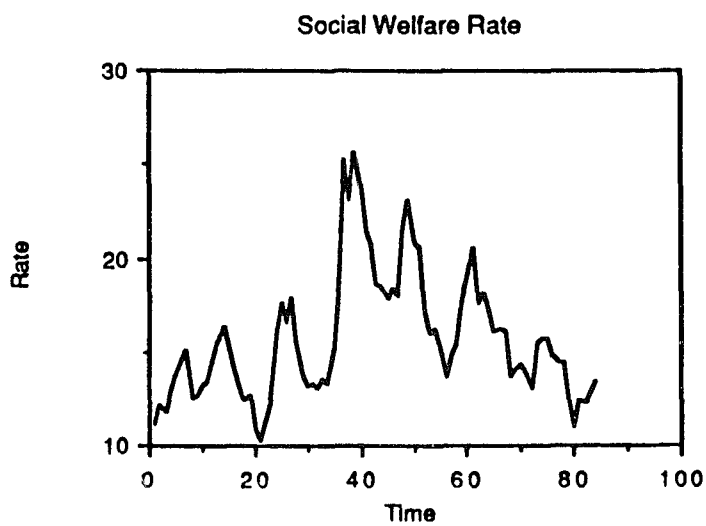
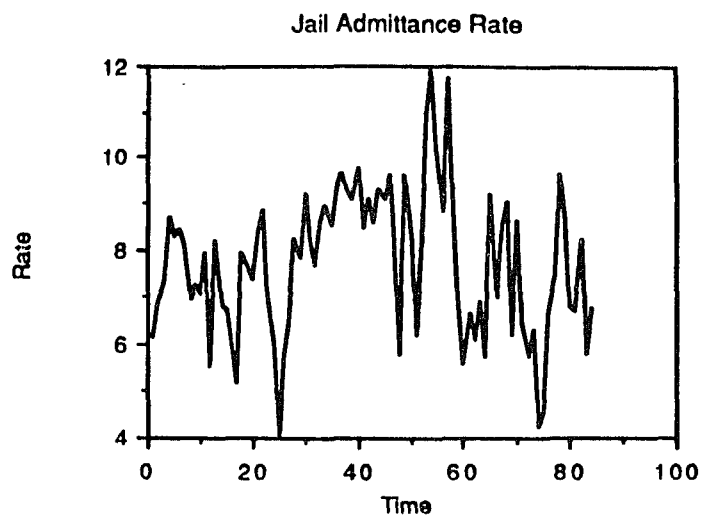


Figure 24: Line Graphs for Washtenaw County

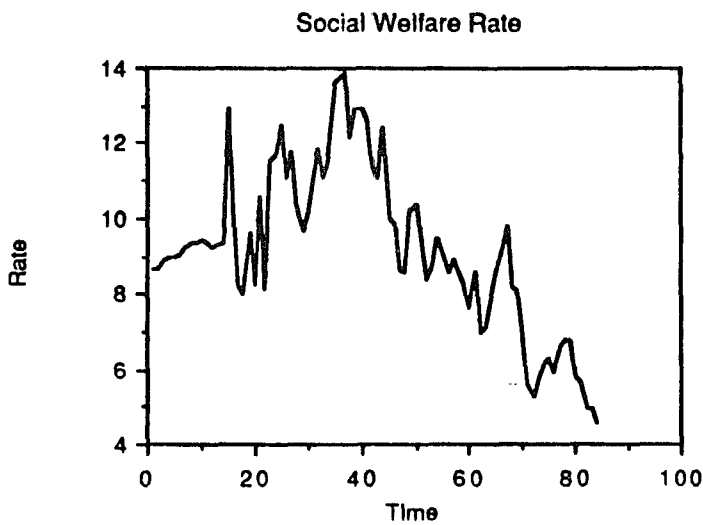
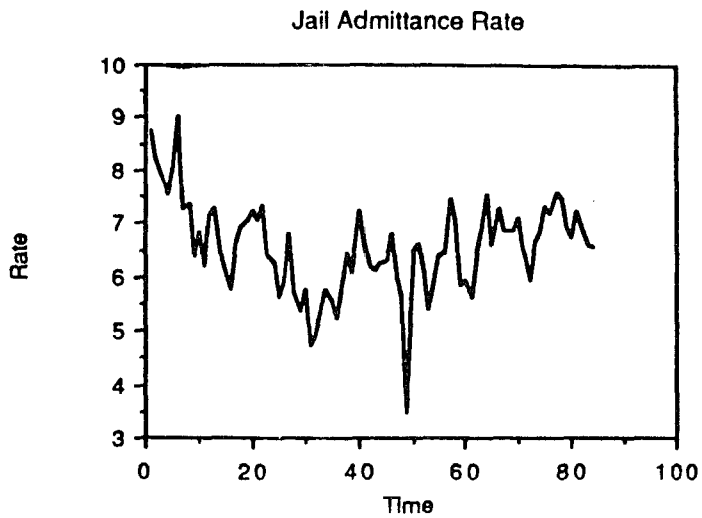


Table 1

Employment in the Twenty-Four Urban Counties: The Civilian
Labor Force in Ten Sectors of the Economy

County	FA	FO	CO	MA	WT	RT	FI	SE	GO*
Bay	5	--	4	22	5	21	6	23	12
Barry	14	--	4	23	--	16	7	20	15
Berrien	6	--	3	29	4	17	5	23	11
Calhoun	3	--	2	21	2	14	6	20	15
Clinton	20	1	6	14	--	16	5	19	18
Eaton	10	--	4	15	3	19	10	23	15
Genesee	--	--	3	36	6	17	5	20	12
Ingham	1	--	3	18	3	15	7	21	31
Ionia	13	--	3	26	2	17	4	15	19
Jackson	4	--	3	22	4	19	6	24	17
Kalamazoo	2	--	3	27	4	17	6	26	16
Kent	1	--	4	27	7	20	6	24	8
Lapeer	13	--	4	15	3	15	5	14	28
Livingston	5	--	5	17	3	23	8	22	17
Macomb	--	--	4	33	3	20	5	20	14
Muskegon	2	--	4	31	3	18	4	24	12
Oakland	--	--	4	19	7	21	8	30	9
Oceana	22	3	5	9	1	17	5	17	18
Ottawa	4	1	4	35	3	16	5	22	9
Saginaw	3	--	3	30	3	21	5	22	12
Shiawassee	11	--	4	21	3	18	5	20	18
St. Clair	5	--	6	22	3	19	6	23	15
Van Buren	16	2	5	18	2	16	4	17	17
Washtenaw	1	--	3	25	2	13	4	23	28

*All data are percentages. The employment sectors are:
FA=Farming, FO=Forestry and Fishing, CO=Construction,
MA=Manufacturing, WT=Wholesale Trade, RT=Retail Trade,
FI=Finance, SE=Service, and GO=Government.

Source: Michigan Department of Commerce, Economic Profiles
of the Counties in the State of Michigan, 1986.

Table 2

Summary of the Regression Models with Standardized
Coefficients for All Counties 1980-1986: Jail Admission as
the Dependent Variable

County	R	TR	EMP	L1	L2**
Barry*	.1377	.9133	-.2683	-1.1545	
Bay*	.0679	.9540	.2034	-1.2052	
Berrien	.0159	.9295		-1.3002	
Calhoun*	.0203	.9567		-1.2933	
Clinton*	.6923	.7611	-1.0195	-.9141	
Eaton*	.0125	.9003		-1.1506	
Genesee*	.0012	.8911		-.6648	
Ingham	.0301	.9354		-1.0921	
Ionia*	.0211	.8360		1.7770	
Jackson*	.1172	.5037	4.7783	-.3359	
Kalamazoo*	.1980	.9353	.1427	-.9588	
Kent	.0001	.9454		-1.3273	
Lapeer	.0047	.9558		-1.4781	.4991
Livingston	.0309	.8163		-.5587	-.3582
Macomb	.4746	.9867	.0644	-1.6083	.6264
Muskegon*	.0168	.9649		-1.4360	
Oakland	.1013	.9867	.1118	-1.6220	.6020
Oceana*	.0202	.8926		-1.3352	
Ottawa	.0308	.9508		-1.4778	.4738
Saginaw*	.1566	.2886	-9.6761	-.3849	
Shiawassee*	.0271	.9331		-1.0111	
St. Clair*	.0079	.5192		-.3714	
Van Buren*	.0508	.8792	-.1067	-1.3317	
Washtenaw*	.0164	.4051		-.2507	-.2595

*Significant models. The data fits the hypothesized model of the autoregressive process ($p > .05$).

**R=r squared (error sum of squares), TR=total r squared (prediction power of structural part of the model), EMP=Employment Rate direct parameter, L1=Employment Rate at a one month lag, and L2=Employment Rate at a two month lag.

Table 3

Summary of the Regression Models with Standardized
Coefficients for All Counties 1980-1986: Social Welfare as
the Dependent Variable

County	R	TR	EMP	L1	L2	L4**
Barry*	.0071	.5604		-.4841	-.3023	
Bay*	.0002	.3099		-.4519		
Berrien*	.0003	.1579		-.3378		
Calhoun*	.0044	.5891		.0874		-.2242
Clinton*	.4629	.5302	-.6727	-.5767		
Eaton*	.0085	.1265		-.2362		
Genesee*	.0193	.6466		-.5086		
Ingham*	.0435	.7929		-.5007	-.2953	
Ionia*	.0039	.2895		-.4870		
Jackson*	.1328	.2061	1.8364			
Kalamazoo	.0079	.0613				
Kent*	.0175	.1894		-.2384		
Lapeer*	.0278	.6792		-.6997		
Livingston*	.0001	.5690		-.5997		
Macomb	.0301	.6321		-.5011	-.3778	
Muskegon	.0117	.6217		-.5241		
Oakland*	.0161	.8304		-.8147		
Oceana*	.0045	.1733		-.3359		
Ottawa*	.0421	.1926		-.2567		
Saginaw*	.1338	.1044	-1.6794	-.3919		
Shiawassee*	.0008	.3822		-.4045		
St. Clair*	.0414	.3866			-.2859	
Van Buren*	.0294	.2606		-.4296		
Washtenaw*	.0119	.3292		-.4667		

*Significant models. The data fits the hypothesized model of the autoregressive process ($p > .05$).

**R=r squared (error sum of squares), TR=total r squared (prediction power of structural part of the model), EMP=Employment Rate direct parameter, L1=Employment Rate at a one month lag, L2=Employment Rate at a two month lag, and L4=Employment rate at a four month lag.

Table 4

Summary of the Regression Models with Standardized
Coefficients for All Counties 1980-1986: Employment Rate as
the Dependent Variable

County	R	TR	JAIL	SW	L1	L2**
Barry*	.1781	.8936		-.5759	-.9613	
Bay*	.0432	.7095			-.8072	
Berrien*	.0297	.8719			-.8847	
Calhoun*	.0049	.7886			-.6448	
Clinton*	.7440	.7171	-.2627	-.4780	-.9646	
Eaton*	.0077	.7178			-.8750	
Genesee*	.0044	.8592			-1.1649	
Ingham*	.0514	.6966	.1098			
Ionia*	.0329	.5005			-.5918	
Jackson*	.0002	.0129				
Kalamazoo	.0779	.1864		.2719	-.2436	
Kent*	.1609	.1205		-1.0004		
Lapeer*	.0392	.7112			-.8645	
Livingston*	.0550	.8689		-.7221	-.5467	-.4003
Macomb	.0591	.7354			-.5767	-.3506
Muskegon	.0234	.8323			-.7889	
Oakland*	.0258	.9242		-.7984		
Oceana*	.0039	.0158				
Ottawa*	.0564	.6850			-.7472	
Saginaw*	.3269	.8234			-.9144	
Shiawassee*	.0393	.7945			-.9888	
St. Clair*	.0152	.5367			-.7125	
Van Buren*	.1310	.7942		-.6273	-.9035	
Washtenaw*	.0122	.7934			-.9455	

*Significant models. The data fits the hypothesized model of the autoregressive process ($p > .05$).

**R=r squared (error sum of squares), TR=total r squared (prediction power of structural part of the model), EMP=Employment Rate direct parameter, L1=Employment Rate at a one month lag, L2=Employment Rate at a two month lag

Table 5

 Classification of Counties: Member Counties for Each Type

 Suburban
 Primary
 Industry
 Counties

 Urban
 Diversified
 Counties

 Urban
 Factory
 Counties

 Barry
 Bay
 Berrien
 Calhoun
 Clinton
 Eaton
 Ionia
 Jackson
 Lapeer
 Livingston
 Muskegon
 Oceana
 Ottawa
 Shiawassee
 St. Clair
 Van Buren

 Ingham
 Kalamazoo
 Saginaw
 Washtenaw

 Genesee
 Kent
 Macomb
 Oakland

CHAPTER 5

SUMMARY AND CONCLUSIONS

Summary. This analysis has examined the relationships between labor force participation rates, jail admission rates, and social welfare rates across twenty-four urban counties in the State of Michigan from 1980 through 1986. There has been an extensive history of scholarly research which has examined the potential for a relationship between economic factors and crime. The current "state-of-the-art" appears to be two opposing perspectives. On the one hand there are a number of theorists who maintain that there is a cogent, and empirically demonstrated, relationship between selected economic factors and criminality. These scholars maintain that the relationship between economic factors and criminality is inverse; as the economic situation of a community deteriorates the criminality will increase in a similar proportion. The other perspective maintains that there is no empirical relationship between economic measures and criminality. Although the latter group of theorists maintain there is no demonstrated relationship, they do acknowledge the conceptual possibility for such a relationship. In summary the relationship between labor

force participation and crime is unresolved. However, in the middle and late 1970's analyses of the relationship between economic indicators and incarceration rates appear to have produced consistent empirical results that there is an inverse relationship. That is, as the economic situation in a geographic area decreases or is in recession, the use of institutional correctional environments would increase. These studies virtually all demonstrate a robust relationship between the economic situation (typically unemployment) and the incarceration rate (usually prison admission rates) across time. Although this approach is related to the assessment of the relationship between employment and crime, it does not address or attempt to resolve the argument that there is an empirical relationship. What this approach does allow; however, is the assessment of the response of the criminal justice system to changes in economic factors. In order to examine the interrelationship between the dimensions of employment, jail admission, and social welfare in the State of Michigan, this study has relied on both qualitative and quantitative techniques. In addition, this analysis has assessed the relationship between local labor force participation rates and the state response to changes in these rates. The local incarceration rate and the social welfare rates were used as measures of state response to the changing employment market at the local level. This was presumed because both the jail

and social welfare rates are logical and empirical measures of the use of government agencies and functions to address a decreasing labor market at the local level. In many of the past analyses the relationship between incarceration and employment has been relegated to the study of aggregate state prison population measures of incarceration. The local labor market and the state's response to changes in that market has never been assessed. Therefore, this analysis is a crucial assessment of the interrelationship between labor markets and local incarceration rates. The use of social welfare adds another significant dimension to the study of the relationship between economic factors and the response of the state. That is, it is difficult to argue that citizens have only two choices in contemporary society; either participating in the local labor force or the commission of crime. Therefore, the factor of social welfare participation rates was included in this analysis. Although one can argue that there are other "labor markets" which are not considered here (i.e., criminal "employment," quasi-legal employment, etc.), the two levels of state response employed in this analysis are presumed to be utilized in the majority of cases. In this analysis four general areas were assessed. First, an assessment was made of the relationship, over-time, between jail admission rates and labor force participation rates across urban counties. Second, there was an assessment of the relationship, over-

time, between social welfare rates and labor force participation across urban counties. Third, there was an examination of the relationship between jail admission, social welfare, and labor force participation rates across the counties. Last, there was an analysis of the similarities or differences across three different types of counties in the sample based on a developed classification scheme.

The results of the analyses indicate that there is consistent evidence for the claim that there is a response in the jail admission and social welfare rates to changes in the labor force participation rates over time. For the jail admission rates it was found that for the majority of counties in the sample that one month after a decrease in the employment rate there was an approximately one-half percentage increase in the jail admission rate. A similar relationship was also found for the social welfare rates although it was not as consistent across the twenty-four counties. In general, for social welfare rates its was determined that for every percentage increase in the labor force participation rates there was approximately a one and one-half percentage decrease in the social welfare rates. There were; however, significant deviations in the social welfare models. That is, in Bay County, where the model was significant there was a direct positive relationship between social welfare and employment; for every increase in the

employment rate there was an increase in social welfare. In addition, in Jackson County there was an extremely high positive relationship between the social welfare rate and the labor force participation rate. Last, in Saginaw County there was an extremely high negative, and direct, relationship. The employment models indicated a consistency with the individual models for both the jail admission and social welfare rates in that there was typically a significant one month lag parameter between employment and jail admission and social welfare. The results of the classification scheme indicate that for the Suburban Primary Industry Counties (relatively low population density and a near primary employment base) are consistent with the model which holds that the reliance on local incarceration and social welfare are inverse to the labor force participation rates. As was found for the majority of the counties, the relationship with the jail admission rates is that for every percentage decrease in the employment rates there is a half of percentage increase in the jail incarceration rates. For social welfare for every percentage decrease in the employment rates there is a one and a half increase in the social welfare rates.

In the Urban Diversified Counties where there are relatively high population densities, in addition to the presents of a moderate to large city area, and where the economy is more diverse that in the Suburban Primary

Industry Counties there is a mixed result in the relationships. Ingham, Kalamazoo, and Washtenaw Counties all have had very stable, somewhat prosperous counties over the study period and are somewhat similar in terms of population and economic viability. For these three counties the relationship between employment and jail admission is consistent with the Suburban Primary Industry Counties for Ingham and Washtenaw Counties and insignificant for Kalamazoo County. In Saginaw County there is a direct percentage increase in the jail admission rate relative to the employment rate. The models of the social welfare rates for the Urban Diversified Counties is also mixed. First, the model for Ingham County is not significant. Second, the models for Kalamazoo, Saginaw, and Washtenaw Counties are all dissimilar to each other. The model for Kalamazoo County indicates there is a direct increase in social welfare with an increase in employment and in the second month of an increase in employment there is a decrease in social welfare. In Saginaw County there is a very intense direct decrease in social welfare for every percentage increase in employment followed by a smaller decrease in the first month. In Washtenaw County there were increases in employment and mild decreases in the social welfare rates at one and two months subsequent to the increases in employment.

In the Urban Factory Counties; Genesee, Kent, Macomb, and Oakland Counties, there relationship between jail admissions and employment which is similar to that found in the Suburban Primary Industry Counties. The significant models for Genesee, Kent, and Oakland Counties indicated that for every percentage decrease in employment there was a half percentage increase in the jail admission rate at a one month lag. The only significant model for the social welfare rates in these counties was found in Genesee County. The model for that county indicates that for every percentage decrease in employment there is a half percentage decrease in social welfare at a one month lag.

Conclusions. The results of this analysis appear to support the contention, in a very general and aggregate sense, that there is a relationship between labor force participation and jail admission and social welfare rates. This analysis does not, however, allow an explanation about the causes for these relationships. One can postulate that the changes in the jail admission rates may be due to changes in capacities (i.e., the construction of new facilities), or to changes in sentencing practice. It is similarly difficult to assert that the changes in the social welfare rates are the sole result of changes in employment rates rather than changes in allocation policies over the seven year study period. What this analysis does provide is an aggregate examination of the changes, all things being

equal, across time. There can be no assertion of any individual explanation of the relationship between criminality and unemployment gleaned through this analysis. One argument which can be postulated to explain the relationships found in the above analyses concerns the relationship between labor force utilization and the use of incarceration in contemporary society. One can argue that a focus on local incarceration in jails is appropriate in that it reflects the types and magnitude of crime which is indicated in a community at any given time. Not only does the admission rate reflect the requirements of the local criminal justice system in terms of response to serious crimes and sentenced populations, but it also provides an indicator of the setting for the myriad of social and domestic problems that would result during changing economic situations. In addition, the local jail population would reflect the official response to increases or decreases in crime in the local context by the criminal justice function. The examination of this relationship demonstrates that there is evidence, albeit preliminary, that as employment decreases the incarceration increases.

Based on the relationship which has been discovered it is plausible to argue that when employment rates are decreasing there would be a group of unemployed individuals in the community, a portion of which would filter into the local correctional setting. Therefore, it is possible to

argue that the portion of "marginal" citizens (e.g., those who are the last to be hired and the first to be laid-off) in the labor force filter into the jail setting in times of economic crises. One of the major characteristics of contemporary market economies in the 1980's, especially in the State of Michigan, and that of other industrial states is the existence of a number of so-called "marginal" persons in the community. Changes in the need in the labor market would necessitate the seeking of alternative means of survival for this group. These marginal individuals can range from those who are sporadically employed, part-time employed, migrant workers, to other forms of discouraged workers. A conclusion which can be offered is similar to the one stated by Jankovic in which he supposed that under conditions which make it advantageous to maintain a permanent oversupply of labor, imprisonment can be used to regulate the size of the surplus labor force (Jankovic, 1977). Although it is quite difficult to assert with any level of confidence that the local criminal justice system response is a planned balancing of the surplus labor market to economic hard times, the assessment of the overall rates over time clearly suggest that such a conceptualization is at least a possibility. This analysis demonstrates that the relationship between jail utilization and employment is apparent. In addition, it has been shown that the relationship is not similar across different "types" of

counties. The conceptualization that employment or changes in the economic situation in the community influence has not focused on such aggregate overall differences. Gary Becker employs aggregate statistics to generalize about individual behaviors.

The present analysis, however, focuses on aggregate conclusions based on aggregate data. It is quite significant to note that the employment and jail admission rate relationship is most significant in the less dense more economically sensitive counties (more sensitive to economic fluctuations). That is, in the Suburban Primary Industry County group it was consistently determined that jail admissions were influenced by the employment rate. In the more dense and economically salient groups (i.e., both Urban Diversified and Urban Factory Counties) the relationship is more varied. These findings suggest the potential that the type of employment base should be considered in assessing the relationship. It is interesting that given the multitude of assessments of aggregate statistical analyses of employment and crime rates or incarceration rates that there has been absolutely no consideration of the possible influences of different bases of employment. For that matter there may be differential relationships based on the type of offender and geographic region. The argument for the relationship between the social welfare system and changes in the employment market is not unlike the one supposed for

the relationship with the jail admission rate. That is, the use of social welfare is used in greater proportion in times of economic crisis than otherwise. This has been supported, and somewhat more strongly, in the present analysis.

Therefore, it can be asserted that the use of the social welfare system is a means of maintaining the marginal populations who exist in industrial society until such time as their labor is needed in production. Moreover, it seems quite likely that there is a significant overlap between the portion of the marginal population which filters into the local correctional setting and those who participate in the social welfare system. Although it is difficult to argue that the jail admission or social welfare rates contribute to a "class society," it is logical to purport that the interrelationships which have been uncovered in this analysis are indicative of the official response of the state to changes in labor force participation at the county level, and therefore, to the needs of specific segments of the population. Certain criminologists have claimed that "the capitalist class survives by appropriating the surplus labor of the working class, and the working class as an exploited class exists as long as surplus labor is required in the productive process: each depends on the other for its character and existence" (Quinney, 1968, p. 38). Although the semantics of this and similar theories are quite Marxist, one can argue that there is support for the

conceptual validity of the general proposal. That is, it was determined in this analysis that the response of the state, i.e., jail admission and social welfare rates, were negatively associated with change in the labor force participation rate, therefore, it appears to be possible that there is some level of "exploitation" and "dependence" in the manner in which jail commitment and social welfare are applied relative to the employment rate in the State of Michigan. Although this analysis clearly does not demonstrate that the state exists " . . . as a device for controlling the exploited class, the class that labors, for the benefit of the ruling class," it does demonstrate that, whether intentional or not, the reality of the situation is that the state adjusts to decreases in the labor force through supplying increased alternative social institutional functions (i.e., jail admission and social welfare). In summary, there appears to be a relationship between the level of employment and the local incarceration and social welfare rates in virtually every type of county. Although the relationships uncovered in this analysis are less than desired, they are consistent and demonstrate that monthly employment changes from 1980 through 1986 are generally inversely related to incarceration in local jails and the participation in social welfare programs.

Recommendations. Further study in this area could be extremely valuable to further discern the interrelationships

between the economy and criminality. One area where this study should continue is increasing the length of time involved in the analysis. Further analysis of both a qualitative and quantitative nature about the trends in the incarceration, social welfare, and employment rates is advised in order to strengthen the scope of the conclusions about these interrelationships at the local level. In addition to increasing the time period examined, certain demographic factors should be included in the analysis. First, measures of the major correlates of crime such as race, gender, education, age, income should be included in the model. Given that the total variation in both jail admission and social welfare rates was relatively small, the addition of certain demographic factors could improve the power of the model. Second, some measure of criminality should also be included in the examination. Although the Uniform Crime Reports appear to be the logical choice, they should not be employed for the assessment of a relationship between the economy and criminality. In addition to the known reliability issues involved, official measures of crime, reported yearly, are inadequate measures of intra-year fluctuation in criminality. The measure of criminality which would seem most amenable to the monthly reporting rates of employment, jail admission, and social welfare, would be police calls for service. Such a measure would also include more subtle increases in the demand for police

service which may occur as a result of the decrease in legitimate employment opportunities.

Last, the addition of other sources of income or "urban labor markets" could also improve the strength of the model. Certain economists have examined the issues of human capital (i.e., the value added through personal training) and the concepts of the urban labor market. However, very few, if any, have examined the relationship of the relationship of these factors to criminality or incarceration rates. In addition to the reliance on legitimate employment and the social welfare system for income, there is also a reliance on illegitimate activities, and those who are investing in human capital through attending school and combinations of these areas. Finally, I believe that we need to know more about the interaction of the economy and criminality in advanced capitalist nations in order to more appropriately address the wants, and needs of the citizens, not to mention the orientation of the criminal justice system toward those individuals who are in those groups which are subject control.

FOOTNOTES

¹This does not suggest that the concern for economic fluctuation and social conditions began at that time, only that the limitations of referencing systems, and reporting, does not allow an effective search prior to that time.

²Through analysis of both individual and aggregate data the Vera research project intended to address: 1) the theoretical assumptions that may or many not support a policy emphasis on employment initiative as part of a crime control strategy; 2) to identify the most efficient use of programs for influencing individual behavior; 3) to identify the most effective point in the life-cycle of individuals for employment assistance; 4) to identify the economic and social-psychological prcesses that the employment programs must work through; 5) description of work histories and the kinds of work valued in high crime areas; 6) describe how information of this kind can be used to shape the design, planning, conduct, and evaluation of employment programs in such communities (Thompson, et.al., 1981, p. 4-5).

³Social welfare can be defined as the collection of both monetary and trasfers that are given to indigent or indigent-like in the United States. In addition, social problems refer to the problematic aspects of local and/or

societal areas which are the result of changes in the economic situation or cycles.

⁴As has been defined by a number of authors the official statistics (i.e., the Uniform Crime Reports and Labor Statistics of the Department of Labor) have a number of limitations (Newman, 1980).

⁵These costs can be divided into five categories: "the relationship between (1) the number of crimes, called 'offenses' in this essay, and the costs of offenses, (2) the number of offenses and the punishments meted out, (3) the number of offenses, arrests, and convictions and the public expenditures on police and courts, (4) the number of convictions and the costs of imprisonments or other kinds of punishments, and (5) the number of offenses and the private expenditures on protection and apprehension."

⁶There is clear evidence that institutionalization can effect personality changes, as well as increase competence in committing crimes. The former convict's social situation is also likely to have changed dramatically since being incarcerated. Stated simply, it is clear that although choosing to commit further criminal acts is one determinant of future criminality, there are collections of social, psychological and political factors which also influence that decision.

⁷Harrison states that there are "four kinds of labor-time-consuming and remunerative activities in urban

economies which display remarkable similar characteristics." He defines these as the secondary labor market, the training sector, the irregular illegal economy, the welfare sector, and the primary labor market. Movement in the first four is virtually unrestricted, however, entrance to the primary labor market is not open.

⁸The Standard Metropolitan Statistical Area includes (Bourne & Simmons, 1978):

- (1) Either one central city with a total population of 50,000 or more, or two contiguous cities constituting a single community with a combined population of 50,000 and a minimum population of 15,000 for the smaller of the two.
- (2) The remainder of the county to which the central city belongs (the central county, and
- (3) Adjacent counties if (a) seventy-five percent or more of the labor force in non-agricultural, and (b) at least fifteen percent of the workers living in the outlying county work in the central county, or twenty-five percent of workers in that county live in the central county, and (c) Either fifty percent of the population resident in that county lives in contiguous minor civil divisions with a population density of 150 persons per square mile or more; or the non-agricultural employment (or workers) equals at least ten percent of the non-

agricultural employment in the central county (or
workers), or it totals 10,000. -

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APPENDIX

PROFILE OF INGHAM COUNTY MICHIGAN
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LOCATION SERVICES:

Clinton-Eaton-Ingham Community Growth Alliance
 510 West Washtenaw
 Lansing, MI 48901

Contact: Jim Jordan
 Phone: 517/487-6340

DISTANCE FROM:

	Miles
Chicago	200
Detroit	60
Cleveland	230
Indianapolis	270
Toronto	330

POPULATION:

1970 Census:	261039
1980 Census:	275520
1985 Estimate:	277663
2000 Projection:	296292
Median Age: (as of 1980):	26.1 years

LABOR FORCE (as of 1986)

Total Labor Force:	151625
Employed:	140550
Total Unemployment:	11050
Unemployment Rate:	7.3%
3-yr. moving average:	7.9%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
General Motors, Olds Div.	17000	Autos and parts
Mich. State University	8834	Higher education
GMC, Fisher Body Div.	4500	Auto bodies
Motor Wheel Company etc.	1000	Automotive wheels,
Federal Drop Forge	380	Steel forging
Dart Container Corp.	347	Styrofoam products
Wyeth Laboratories	332	Infant formula
Dana Corp.	325	Rough steel forgings
Wohlert Corp.	300	Flywheels, etc

EMPLOYMENT:

	1979	1984
TOTAL	179572	173369
Components by Type:		
Wage and Salary	167428	158840
Proprietors	12144	14529
Farm	1427	1360
Nonfarm	10717	13169
Industry:		
Farm	2124	2061
Nonfarm	177448	171307
Private	123803	118226
Agric., For., Fish.	550	753
Mining	377	626
Construction	6761	4570
Manufacturing	35488	30201
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	5094	4304
Wholesale Trade	5775	5274
Retail Trade	25935	24949
Fin., Ins., Real Est.	10932	11436
Services	32891	36113
Government	53645	53081
Federal, Civilian	2242	2605
Military	748	775
State and Local	50655	49701

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF IONIA COUNTY MICHIGAN

LOCATION SERVICES:

Montcalm-Ionia Community Growth Alliance
 227-1/2 West Main Street
 Ionia, MI 48846

Contact: Jamie Phillips
 Phone: 616/527-6252

DISTANCE FROM:

	Miles
Chicago	200
Detroit	130
Cleveland	270
Indianapolis	270
Toronto	320
Lansing	40

POPULATION

1970 Census:	45858
1980 Census:	51815
1985 Estimate:	52800
2000 Projection:	60800
Median Age: (as of 1980):	27. years

LABOR FORCE (as of 1986)

Total Labor Force:	18200
Employed:	15650
Total Unemployment:	2525
Unemployment Rate:	13.9%
3-yr. moving average:	13.6%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1986)

Firm	Employees	Product/Service
Mich. Dept. of Corrections	1650	Corrections
Belding Products Co.	1165	Air conditioners
Diverstech General product	550	Custom-molded plastic
Extruded Metals extrusion	375	Aluminum and brass
TRW	350	Steering linkages
American Bumper	185	Automotive press
Brown Corporation	175	Automotive products
Integral Engr. & Mfg. Corp. accessories	105	Machine Tool

LuVan, Inc.	100	Specialty furniture
Belco Industries, Inc.	85	Paint finishing
equipment		

EMPLOYMENT:

	1979	1984
TOTAL	16853	16141
Components by Type:		
Wage and Salary	13152	12234
Proprietors	3701	3907
Farm	1633	1554
Nonfarm	2068	2353
Industry:		
Farm	2081	2005
Nonfarm	14682	14016
Private	11324	10937
Agric., For., Fish.	0	0
Mining	0	0
Construction	583	458
Manufacturing	4242	4188
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	290	219
Wholesale Trade	571	338
Retail Trade	2687	2715
Fin., Ins., Real Est.	687	657
Services	2264	2362
Government	3358	3079
Federal, Civilian	113	108
Military	114	116
State and Local	3131	2855

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF JACKSON COUNTY MICHIGAN

LOCATION SERVICES:

Jackson Alliance for Business Development
133 West Michigan
Jackson, MI 49201

Contact: Wendell Mason or John O'Neill
Phone: 517/788-4455

DISTANCE FROM:

	Miles
Chicago	200
Detroit	70
Cleveland	180
Indianapolis	240
Toronto	320
Lansing	40

POPULATION:

1970 Census:	143274
1980 Census:	152495
1985 Estimate:	143700
2000 Projection:	150000
Median Age: (as of 1980):	29.5 years

LABOR FORCE (as of 1986)

Total Labor Force:	62400
Employed:	56800
Total Unemployment Rate:	5600
Unemployment Rate:	9.%
3-yr. moving average:	10.7%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Aeroquip Corp. lines/fittings/couplings	1038	Hose
ITT Hancock Eng. Prod. assemblies	435	Auto stampings &
Spartan Corporation	420	Sonobuoys
Mechanical Products devices	400	Circuit protection
Wolverine Technologies	350	Vinyl siding
Wyman-Gordon Co.	340	Induction
Kelsey-Hayes Co.	329	Disc brakes

Camp International, Inc. appl.	260	Orthopedic supprt &
Aeroquip Corp. T-J Div. hydraulic/pneumatic	250	Ind.
Kent Moore Tool Group for trans.	246	Spec. serv. equip.

EMPLOYMENT:

	1979	1984
TOTAL	65635	58068
Components by Type:		
Wage and Salary	58331	49680
Proprietors	7304	8388
Farm	1455	1385
Nonfarm	5849	7003
Industry:		
Farm	1979	1913
Nonfarm	63656	38544
Private	53759	29563
Agric., For. Fish.	180	247
Mining	303	444
Construction	2676	1666
Manufacturing	16759	11859
Non-Durable	---	---
Durable Goods	---	---
Transp. & Utilities	5371	0
Wholesale Trade	1975	2079
Retail Trade	10934	10281
Fin., Ins., Real Est.	2763	2987
Services	12798	12798
Government	9897	8981
Federal, Civilian	464	467
Military	338	323
State and Local	9095	8191

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF KALAMAZOO COUNTY MICHIGAN

LOCATION SERVICES:

Kalamazoo County Economic Expansion Corporation
 130 North Kalamazoo Mall
 Kalamazoo, MI 49007

Contact: John Bright
 Phone: 616/343-1137

DISTANCE FROM:

	Miles
Chicago	150
Detroit	140
Cleveland	270
Indianapolis	270
Toronto	380
Lansing	70

POPULATION:

1970 Census:	201550
1980 Census:	212378
1985 Estimate:	215500
2000 Projection:	219700
Median Age: (as of 1980):	27.8 years

LABOR FORCE (as of 1986)

Total Labor Force:	110600
Employed:	104000
Total Unemployment:	6600
Unemployment Rate:	6.%
3-yr. moving average:	6.9%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Upjohn Company	8000	Pharmaceuticals
General Motors Corp. (BOC)	3682	Body stamping
Western Michigan University	2721	Higher education
Borgess Hospital	2650	Health care
Bronson Hospital	2600	Health care
James River Corporation	2406	Paper products
National Waterlift Company	1200	Aircraft components
Stryker Corporation	921	Hospital equipment
Checker Motors Corporation	865	Automotive parts
Kalamazoo Reg. Psych. Hospital	853	Health care

EMPLOYMENT:

	1979	1984
TOTAL	113198	111721
Components by Type:		
Wage and Salary	102786	99475
Proprietors	10412	12246
Farm	1157	1101
Nonfarm	9255	11145
Industry:		
Farm	1803	1751
Nonfarm	110928	109251
Private	92161	91768
Agric., For., Fish	0	0
Mining	0	0
Construction	5344	
3644		
Manufacturing	30942	
28911		
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	3660	2804
Wholesale Trade	3377	3843
Retail Trade	18766	18816
Fin., Ins., Real Est.	5407	6058
Services	24665	27692
Government	18767	17483
Federal, Civilian	1018	951
Military	478	490
State and Local	17271	16042

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF LAPEER COUNTY MICHIGAN

LOCATION SERVICES:

Lapeer Development Corporation
449 McCormick Drive
Lapeer, Michigan 48446

Contact: Patricia A. Crawford
Phone: 313/667-0080

DISTANCE FROM:

	Miles
Chicago	300
Detroit	60
Cleveland	220
Indianapolis	320
Toronto	230
Lansing	70

POPULATION

1970 Census:	52361
1980 Census:	70038
1985 Estimate:	69300
2000 Projection:	88500
Median Age: (as of):	26.9 years

LABOR FORCE (as of)

Total Labor Force:	34850
Employed:	31300
Total Unemployment:	3550
Unemployment Rate:	10.2%
3-yr. moving average:	10.8%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	
Product/Service		
Durakon Ind.	250	Auto Parts &
accessories		
Lapeer Fabricators Inc.	738	Auto
plastic/imitat. leather		
Vlasic Food Products	198	Pickles
PSI Telecommunications	107	Plastics
Albar Industries, Inc.	215	Plastic
products		
Lapeer Metal Products	163	Metal
stampings		

Trayco, Inc. fixtures	80	Bathroom
Growth & Opportunity	225	
Woodworking/bench working		
Hoover Universal/Johnson Controls automotive	157	Seats for
Howell Industries, Inc. stampings	190	Metal
EMPLOYMENT:		
	1979	1984
TOTAL	20164	20038
Components by Type:		
Wage and Salary	15888	15533
Proprietors	4276	4505
Farm	1652	1573
Nonfarm	2624	2932
Industry:		
Farm	2712	2640
Nonfarm	17246	17398
Private	11530	11896
Agric., For., Fish.	0	138
Mining	0	111
Construction	1017	735
Manufacturing	3223	3042
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	467	510
Wholesale Trade	400	591
Retail Trade	3112	3036
Fin., Ins., Real Est.	972	972
Services	2339	2761
Government	5716	5502
Federal, Civilian	120	124
Military	152	153
State and Local	5444	5225

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF KENT COUNTY MICHIGAN

LOCATION SERVICES:

Grand Rapids Area Chamber of Commerce
 17 Fountain, N.W.
 Grand Rapids, MI 47503

Contact: Joseph D. Powers
 Phone: 616/459-7221

DISTANCE FROM:

	Miles
Chicago	180
Detroit	150
Cleveland	300
Indianapolis	250
Toronto	390
Lansing	60

POPULATION:

1970 Census:	411044
1980 Census:	444506
1985 Estimate:	467800
2000 Projection:	511200
Median Age: (as of 1980):	28.2 years

LABOR FORCE (as of 1986)

Total Labor Force:	245900
Employed:	227100
Total Unemployment:	18800
Unemployment Rate:	7.6%
3-yr. moving average:	8.6%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
General Motors (3 plants)	7000	Auto stampings, etc.
Steelcase, Inc.	8000	Office furniture
Amway Corp.	4500	Home & personal care
Lear Siegler, Inc.	2900	Precision instruments
Wolverine World Wide Inc.	2000	Footwear & leather
products		
Keeler Brass Co.	1800	Automatic & furniture
hardware		
American Seating Co.	1000	Public seating/inst.
furniture		

Lescoa, Inc.	950	Metal stampings
Westinghouse Furn.	800	Office furniture

EMPLOYMENT:

	1979	1984
TOTAL	250425	260228
Components by Type:		
Wage and Salary	226303	231028
Proprietors	24122	29200
Farm	1907	1815
Nonfarm	22215	27385
Industry:		
Farm	3547	3466
Nonfarm	245422	256762
Private	221899	235569
Agric., For., Fish.	0	1262
Mining	0	640
Construction	12418	10564
Manufacturing	74546	68568
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	10390	9757
Wholesale Trade	15131	18063
Retail Trade	43744	50248
Fin., Ins., Real Est.	14262	15376
Services	51408	61091
Government	23523	21193
Federal, Civilian	1752	1772
Military	996	1049
State and Local	20775	18372

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF LIVINGSTON COUNTY MICHIGAN

LOCATION SERVICES:

Jim Thompson

Livingston County Econ. Devel. Office, Inc.

Howell, MI 48843

PH: 313/227-5299 or 517/546-0822

DISTANCE FROM:

	Miles
Chicago	250
Detroit	40
Cleveland	210
Indianapolis	220
Toronto	290
Lansing	30

POPULATION:

1970 Census:	58976
1980 Census:	100289
1985 Estimate:	104600
2000 Projection:	182490
Median Age: (as of 1980):	28.2 years

LABOR FORCE (as of 1986)

Total Labor Force:	48675
Employed:	45625
Total Unemployment:	3050
Unemployment Rate:	6.3%
3-yr. moving average:	8.3%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Cars & Concepts, Inc. specialties	1100	Automotive
Citizen's Insurance	800	Insurance
Tri-State Hospital Supply	300	Hospital supplies
Western Wheel	270	
Kelsey-Hayes Co.	150	Auto braking systems
Bent Tube, Inc.	125	Fabricated tubing
Chem-Trend, Inc.	125	Die lubricants
Master Cast Co. casting	120	Zinc & aluminum die
Refrigeration Research	115	Metal stamping

International Paper Co. containers	95	Corrugated shipping
EMPLOYMENT:		
	1979	1984
TOTAL	24538	25259
Components by Type:		
Wage and Salary	19533	19594
Proprietors	5005	5665
Farm	930	885
Nonfarm	4075	4780
Industry:		
Farm	1219	1176
Nonfarm	23072	23861
Private	18407	19678
Agric., For., Fish.	0	0
Mining	0	0
Construction	1606	1312
Manufacturing	3918	4158
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	468	455
Wholesale Trade	706	629
Retail Trade	5381	5655
Fin., Ins., Real Est.	2253	2096
Services	4075	5373
Government	4665	4183
Federal, Civilian	141	157
Military	213	222
State and Local	4311	3804

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF MACOMB COUNTY MICHIGAN

LOCATION SERVICES:

Macomb County Community Growth Alliance
 115 Grosbeck Highway
 Mt. Clemens, MI 48043

Contact: Ben Giampetroni or John Carroll
 Phone: 313/469-5285

DISTANCE FROM:

	Miles
Chicago	280
Detroit	10
Indianapolis	290
Toronto	250
Lansing	90

POPULATION:

1970 Census:	625309
1980 Census:	694600
1985 Estimate:	689700
2000 Projection:	743800
Median Age: (as of 1980):	29.3 years

LABOR FORCE (as of 1986)

Total Labor Force:	340750
Employed:	311125
Total Unemployment:	29625
Unemployment Rate:	8.7%
3-yr. moving average:	10.%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
General Motors Tech. Center development	30000	Research &
Chrysler Corp.	4600	Stamping & assemblies
Chrysler Corp.	4400	Automobiles
General Motors-Hydrumatic Div	4000	Wheels & transmission
Ford Motor Co.-Axle Plant	4000	Axles
Chrysler Corp.-Stamping	4000	Stamping & assemblies
Ford Motor-Trans/Chass.	2000	Rear axle assemblies
TRW, Inc.-Steering Sus.	1900	Auto parts
Modern Engineering & design	1800	Automotive prototype
General Electric	1400	Machine tools

EMPLOYMENT:

	1979	1984
TOTAL	270872	257353
Components by Type:		
Wage and Salary	243908	224590
Proprietors	26964	32763
Farm	1027	978
Nonfarm	25937	31785
Industry:		
Farm	1764	1720
Nonfarm	269108	255633
Private	232822	221147
Agric., For., Fish.	1512	1508
Mining	309	344
Construction	12669	9406
Manufacturing	98134	83762
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	5530	5723
Wholesale Trade	9054	8077
Retail Trade	52763	49533
Fin., Ins., Real Est.	11389	12456
Services	41462	50338
Government	36286	34486
Federal, Civilian	9649	10524
Military	2413	2545
State and Local	24224	21417

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF MUSKEGON COUNTY MICHIGAN

LOCATION SERVICES:

Muskegon/Oceana Community Growth Alliance
 349 West Webster
 Room 203
 Muskegon, MI 49440

Contact: Phil Schultz
 Phone: 616/722-3751

DISTANCE FROM:

	Miles
Chicago	180
Detroit	170
Cleveland	320
Indianapolis	250
Toronto	420
Lansing	100

POPULATION:

1970 Census:	157426
1980 Census:	157589
1985 Estimate:	156700
2000 Projection:	151600
Median Age: (as of 1980):	29. years

LABOR FORCE (as of 1986)

Total Labor Force:	68200
Employed:	60800
Total Unemployment:	7400
Unemployment Rate:	10.9%
3-yr. moving average:	11.9%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Howmet Turbine Components	4000	Gas turbine components
Sealed Power Corp.	1800	Automotive parts
SD Warren Co/Div. Scott Ppr.	1065	High grade printing paper
Johnson Technology	340	Turbine hardware
Shaw Walker Co.	1300	Office furniture, paneling
Kaydon Corp.	550	Antifriction balls
Teledyne Continental Mtrs.	500	Eng. parts
General Telephone	956	Communication systems

Brunswick Corporation
Muskegon Piston Ring Co.
castings

604
295

Bowling equipment
Piston rings &

EMPLOYMENT:

	1979	1984
TOTAL	66739	62862
Components by Type:		
Wage and Salary	60452	55560
Proprietors	6287	7302
Farm	544	517
Nonfarm	5743	6785
Industry:		
Farm	1075	1051
Nonfarm	65664	61811
Private	57487	54787
Agric., For., Fish.	167	180
Mining	179	156
Construction	3619	2700
Manufacturing	22409	18801
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	3303	2867
Wholesale Trade	2092	1984
Retail Trade	10518	10949
Fin., Ins., Real Est.	2592	2541
Services	12608	14609
Government	8177	7024
Federal, Civilian	426	390
Military	428	413
State and Local	7323	6221

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF OAKLAND COUNTY MICHIGAN

LOCATION SERVICES:

Oakland County Community Growth Alliance
 Executive Office Building
 1200 North Telegraph
 Pontiac, MI 48053

Contact: Jeff Kaczmarek
 Phone: 313/858-0732

DISTANCE FROM:

	Miles
Chicago	290
Detroit	20
Cleveland	190
Indianapolis	300
Toronto	260
Lansing	70

POPULATION:

1970 Census:	907871
1980 Census:	1011793
1985 Estimate:	1014100
2000 Projection:	1133600
Median Age: (as of 1980):	30.4 years

LABOR FORCE (as of 1986)

Total Labor Force:	491925
Employed:	455650
Total Unemployment:	36300
Unemployment Rate:	7.4%
3-yr. moving average:	8.7%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
General Motors Corp. assembly	28100	Autos, truck bodies,
Michigan Bell Telephone	3800	Communications
Providence Hospital	3800	Health care
William Beaumont Hospital	3600	Retail merchandising
K-Mart Corp. Headquarters	3000	Acoustical padding
Allen Industries Operations/Engineering	2000	
Ford Tractor headquarters	1600	Automotive-world

Federal Mogul
National Gypsum Co.

1275
1160

Communications
Cement products

EMPLOYMENT:

	1979	1984
TOTAL	502896	537006
Components by Type:		
Wage and Salary	449319	469912
Proprietors	53577	67094
Farm	702	668
Nonfarm	52875	66426
Industry:		
Farm	1203	1172
Nonfarm	501693	535834
Private	453495	491148
Agric., For., Fish.	2449	3973
Mining	609	1085
Construction	28532	18788
Manufacturing	109322	101795
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	17685	17840
Wholesale Trade	33639	33853
Retail Trade	100282	112137
Fin., Ins., Real Est.	41832	43530
Services	119145	158147
Government	48198	44686
Federal, Civilian	2839	2754
Military	2242	2242
State and Local	43117	39690

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF OCEANA COUNTY MICHIGAN

LOCATION SERVICES:

Muskegon/Oceana Community Growth Alliance

349 West Webster, Room 203

Muskegon, MI 49440

Contact: Phil Schultz Ph 616/722-3751

Oceana County EDC/Resource Center

P.O. Box 168

Hart, MI 49420722-3751

Contact: Lora Swenson PH 616/873-7141

DISTANCE FROM:

	Miles
Chicago	210
Detroit	220
Cleveland	350
Indianapolis	320
Toronto	450
Lansing	120

POPULATION:

1970 Census:	17984
1980 Census:	22002
1985 Estimate:	22500
2000 Projection:	26700
Median Age: (as of 1980):	30. years

LABOR FORCE (as of 1986)

Total Labor Force:	9200
Employed:	7975
Total Unemployment:	1225
Unemployment Rate:	13.3%
3-yr. moving average:	14.7%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Oceana Canning Co. vegetables, etc	250	Canned fruits,
Tempotech Industries, Inc.	250	Fish processor
Stokely USA Inc. vegetables	130	Canned fruit &
Sawyer Fruit & Vegetable processing	130	Fruit & vegetable
Gray & Co.	125	Candied cherries
J. Brandel Farms	38	Truck farming
Kirdziel Iron Industries	90	Grey iron castings
Pentwater Wire Prod.	107	Wire Products

Kysor of Cadillac devices	50	Measuring/controlling
New Era Canning Co. vegetables	200	Canned apples and

EMPLOYMENT:

	1979	1984
TOTAL	6643	6794
Components by Type:		
Wage and Salary	4856	4456
Proprietors	2087	2338
Farm	904	860
Nonfarm	1183	1478
Industry:		
Farm	1537	1497
Nonfarm	5406	5297
Private	4024	4091
Agric., For., Fish.	162	192
Mining	49	54
Construction	297	364
Manufacturing	851	591
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	148	134
Wholesale Trade	158	81
Retail Trade	1115	1152
Fin., Ins., Real Est.	281	376
Services	963	1147
Government	1382	1206
Federal, Civilian	62	60
Military	48	49
State and Local	1272	1097

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF OTTAWA COUNTY MICHIGAN

LOCATION SERVICES:

Allegan Ottawa Development Corporation
 7 East 8th Street
 P.O. Box 912B
 Holland, MI 49423
 Contact: Kenneth J. Rizzio
 Phone: 616/392-2389

DISTANCE FROM:

	Miles
Chicago	150
Detroit	170
Cleveland	300
Indianapolis	230
Toronto	420
Lansing	90

POPULATION:

1970 Census:	128181
1980 Census:	157174
1985 Estimate:	167200
2000 Projection:	204000
Median Age: (as of 1980):	27.6 years

LABOR FORCE (as of 1986)

Total Labor Force:	86825
Employed:	81000
Total Unemployment:	5850
Unemployment Rate:	6.7%
3-yr. moving average:	7.6%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Hart & Cooley Mfg. Co.	659	Registers, grills, diffusers
H. Miller Clock Co.	441	Clocks
Herman Miller, Inc.	2100	Modular office space systems
Bil-Mar Foods, Inc.	1200	Turkeys/processed turkey
Prince Corporation	1450	Auto interiors and die cast
J.S.J. Corporation	1300	Metal stampings, assemblies

Life Savers, Inc.	763	Candy, mints and gum
Donnelly Mirrors, Inc.	1200	Specialty glass
General Motors Corp.	950	Fuel injection parts
Bastian Blessing equipment	460	Comm. food serving

EMPLOYMENT:

	1979	1984
TOTAL	71213	78030
Components by Type:		
Wage and Salary	60396	64901
Proprietors	10817	13129
Farm	1914	1823
Nonfarm	66976	74507
Industry:		
Farm	3602	3523
Nonfarm	66976	74507
Private	59846	67319
Agric., For., Fish.	0	783
Mining	0	97
Construction	5373	3426
Manufacturing	24862	26289
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	2179	2367
Wholesale Trade	2057	2352
Retail Trade	10807	12089
Fin., Ins., Real Est.	3088	3587
Services	11480	16329
Government	7130	7188
Federal, Civilian	291	293
Military	443	459
State and Local	6396	6436

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF SAGINAW COUNTY MICHIGAN

LOCATION SERVICES:

Saginaw County Community Growth Alliance
 301 E. Genesee
 Fourth Floor
 Saginaw, MI 48607
 Contact: Jerry Breen
 Phone: 517/754-8222

DISTANCE FROM:

	Miles
Chicago	320
Detroit	100
Cleveland	270
Indianapolis	340
Toronto	270
Lansing	70

POPULATION:

1970 Census:	219743
1980 Census:	228059
1985 Estimate:	216900
2000 Projection:	224400
Median Age: (as of 1980):	27.9 years

LABOR FORCE (as of 1986)

Total Labor Force:	95775
Employed:	87300
Total Unemployment:	8450
Unemployment Rate:	8.8%
3-yr. moving average:	10.4%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
General Motors	18600	Autos and auto parts
Michigan Bell Telephone	1450	Communications
Saginaw General Hospital	1200	Health care
St. Luke's Hospital	990	Health care
Eaton Corporation	770	Auto parts
Frankenmuth Bavarian Inn	521	Restaurant
Baker Perkins, Inc.	500	Bakery & chemical equipment
Zehnders	420	Restaurant
Vlasic Food dressings	400	Pickles, sauces,

The Pillsbury Co.	375	Grain and dry beans
EMPLOYMENT:		
	1979	1984
TOTAL	103728	93642
Components by Type:		
Wage and Salary	93488	82362
Proprietors	10240	11280
Farm	2416	2300
Nonfarm	7824	8980
Industry:		
Farm	2807	2694
Nonfarm	100573	90948
Private	88833	80030
Agric., For., Fish.	0	311
Mining	0	222
Construction	4004	2823
Manufacturing	35796	26468
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	5033	4424
Wholesale Trade	3151	2718
Retail Trade	17580	18470
Fin., Ins., Real Est.	5762	4880
Services	17507	19714
Government	11740	10918
Federal, Civilian	1262	1338
Military	515	497
State and Local	9963	9083

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF SHIAWASSEE COUNTY MICHIGAN
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LOCATION SERVICES:

Economic Development Corporation of
Shiawassee County
701 South Norton Street
Corunna, MI 48817
Contact: Doug Hoover
Phone: 517/743-3408

DISTANCE FROM:

	Miles
Chicago	240
Detroit	80
Cleveland	250
Indianapolis	300
Toronto	280
Lansing	30

POPULATION:

1970 Census:	63075
1980 Census:	71140
1985 Estimate:	68500
2000 Projection:	78600
Median Age: (as of 1980):	27.9 years

LABOR FORCE (as of 1986)

Total Labor Force:	32300
Employed:	28875
Total Unemployment:	3425
Unemployment Rate:	10.6%
3-yr. moving average:	12.4%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Universal Electric Co. motors	1200	Precision electric
Midland-Ross Corporation brakes	650	Vacuum & hydraulic
Johnson Controls batteries	550	Automotive storage
Toledo Commutator Div. collector rings	280	Commutators &
Motor Products-Owosso Corp. motors	235	Permanent magnet
Electro-Wire Products, Inc.	203	Wiring harnesses

F & E Manufacturing Co. parts	200	Small automotive
Lee L. Woodard Sons, Inc. causal furn.	175	Iron & aluminum
MWA Company wheels/coated abrasive	170	Grinding
Ackco-SVCS, Inc.	144	Plastic fabrications

EMPLOYMENT:

	1979	1984
TOTAL	22212	20052
Components by Type:		
Wage and Salary	17553	15127
Proprietors	4659	4925
Farm	1733	1650
Nonfarm	2926	3275
Industry:		
Farm	2183	2103
Nonfarm	19899	17828
Private	16240	14435
Agric., For., Fish.	0	0
Mining	0	0
Construction	846	708
Manufacturing	5260	4091
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	1312	904
Wholesale Trade	699	613
Retail Trade	3533	3398
Fin., Ins., Real Est.	1020	948
Services	3570	3773
Government	3659	3393
Federal, Civilian	153	149
Military	164	157
State and Local	3342	3087

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF ST. CLAIR COUNTY MICHIGAN

LOCATION SERVICES:

Industrial Development Corporation

511 Fort Street

Port Huron, MI 48060

Contact: Robert L. Patterson, Executive Director

Phone: 313/982-9511

DISTANCE FROM:

	Miles
Chicago	320
Detroit	60
Cleveland	230
Indianapolis	350
Toronto	160
Lansing	120
Flint	70
Pontiac	60

POPULATION:

1970 Census:	120175
1980 Census:	138802
1985 Estimate:	138600
2000 Projection:	159700
Median Age: (as of 1980):	29. years

LABOR FORCE (as of 1986)

Total Labor Force:	69550
Employed:	62550
Total Unemployment:	7000
Unemployment Rate:	10.1%
3-yr. moving average:	10.8%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Mueller Brass	3295	Comp. parts
Riverside Metal Prod.	530	Metal fabrication
Diamond Crystal Salt Co.	475	Salt & condiments
American Tape	390	Pressure sensitive tape
United Technologies	367	Headliners
Port Huron Paper Co.	331	Lightweight publishing
Dunn Paper Co.	287	Lightweight specialty papers
U.S. Manufacturing	250	Axles

Wirtz Manufacturing Co.	250	Battery equipment
Chrysler Corporation	200	Sheet metal work

EMPLOYMENT:

	1979	1984
TOTAL	42942	43412
Components by Type:		
Wage and Salary	35525	35019
Proprietors	7417	8393
Farm	1706	1623
Nonfarm	5711	6770
Industry:		
Farm	2033	1953
Nonfarm	40909	41459
Private	34575	35441
Agric., For., Fish.	150	199
Mining	332	223
Construction	2375	2303
Manufacturing	8841	8776
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	3805	3149
Wholesale Trade	1102	1083
Retail Trade	7800	7750
Fin., Ins., Real Est.	2364	2490
Services	7806	9468
Government	6334	6018
Federal, Civilian	328	326
Military	426	396
State and Local	5580	5296

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF VAN BUREN COUNTY MICHIGAN

LOCATION SERVICES:

Southwest Michigan Community Growth Alliance
 5060 St. Joseph Avenue
 Stevensville, MI 49127
 Contact: Marsha Base
 Phone: 616/983-1529

DISTANCE FROM:

	Miles
Chicago	130
Detroit	160
Cleveland	280
Indianapolis	180
Toronto	400
Lansing	90

POPULATION:

1970 Census:	56173
1980 Census:	66814
1985 Estimate:	66600
2000 Projection:	81300
Median Age: (as of 1980):	29.7 years

LABOR FORCE (as of 1986)

Total Labor Force:	28850
Employed:	25750
Total Unemployment:	3100
Unemployment Rate:	10.7%
3-yr. moving average:	12.2%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Bohn Aluminum & Brass castings	671	Aluminum piston
Coca Cola Foods	350	Canned fruits
Everett Piano Co.	300	Pianos and benches
Duo-Tang Products	290	Looseleaf binders
Du Wel Metal Products	250	Metal die castings
Sherman Dairy, Inc.	200	Milk products
South Haven Rubber Co. products	180	Custom-molded rubber
Burnette Farms Packing	175	Food processor

Controlled Rubber Prod. rubber goods Nursery Corp.	142 330	Molded mechanical Nursery
EMPLOYMENT:		
	1979	1984
TOTAL	21365	20500
Components by Type:		
Wage and Salary	16298	15116
Proprietors	5067	5384
Farm	1952	1859
Nonfarm	3115	3525
Industry:		
Farm	3349	3265
Nonfarm	17736	17235
Private	14469	13782
Agric., For., Fish.	0	343
Mining	0	14
Construction	1267	1017
Manufacturing	4843	3608
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	684	820
Wholesale Trade	505	497
Retail Trade	2872	3142
Fin., Ins., Real Est.	868	874
Services	3430	3467
Government	3267	3453
Federal, Civilian	135	146
Military	145	148
State and Local	2987	3159

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF WASHTENAW COUNTY MICHIGAN

LOCATION SERVICES:

Washtenaw Development Council
 Waterworks Plaza Building
 Suite 300
 3135 South State Street
 Contact: Harry Mial
 Phone: 313/761-9317

DISTANCE FROM:

	Miles
Chicago	230
Detroit	40
Cleveland	160
Indianapolis	250
Toronto	280
Lansing	60

POPULATION:

1970 Census:	234103
1980 Census:	264748
1985 Estimate:	262300
2000 Projection:	312900
Median Age: (as of 1980):	26.6 years

LABOR FORCE (as of 1986)

Total Labor Force:	148300
Employed:	141300
Total Unemployment:	7000
Unemployment Rate:	4.7%
3-yr. moving average:	6.%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
General Motors (2 plants)	15600	Auto assembly
University of Michigan	14441	Higher education
Ford Motor Company	5675	Auto & electronic components
Ford Motor Company	2800	Instrument panels
Ford Motor Company	1019	Automotive plastics
Ypsilanti State Hospital	929	Health care
Chrysler Proving Grounds	850	Automotive testing
Parke Davis & Co.	772	Pharmaceuticals
Hoover NSK Bearing Co.	550	Steel ball bearings
Northern Telecom, Inc.	500	Comp. term.

EMPLOYMENT:

	1979	1984
TOTAL	159241	161450
Components by Type:		
Wage and Salary	146737	145872
Proprietors	12504	15578
Farm	1579	1502
Nonfarm	10925	14076
Industry:		
Farm	2051	1977
Nonfarm	156591	158556
Private	111157	114295
Agric., For., Fish.	0	0
Mining	0	0
Construction	4170	4310
Manufacturing	45572	39000
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	3865	3874
Wholesale Trade	2923	4031
Retail Trade	19119	20059
Fin., Ins., Real Est.	5985	6698
Services	29523	36323
Government	45434	44261
Federal, Civilian	2329	2309
Military	637	649
State and Local	42468	41303

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF GENESEE COUNTY MICHIGAN

LOCATION SERVICES:

Flint Genesee Corporation
 412 South Saginaw Street
 Suite 207
 Flint, MI 48502
 Contact: Anthony Schifano
 Phone: 313/238-7803

DISTANCE FROM:

	Miles
Chicago	280
Detroit	60
Cleveland	230
Indianapolis	300
Toronto	250
Lansing	50

POPULATION:

1970 Census:	445589
1980 Census:	450449
1985 Estimate:	433900
2000 Projection:	445600
Median Age: (as of 1980):	27.8 years

LABOR FORCE (as of 1986)

Total Labor Force:	199200
Employed:	177700
Total Unemployment:	21500
Unemployment Rate:	10.8%
3-yr. moving average:	11.6%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
General Motors (7 plants)	48000	Automobiles
GMC-Metal Fab. Plant	4250	Automotive
General Motors	1000	Parts
Nuvision, Inc.	322	Optical goods
Country Fresh	312	Dairy products
DuPont DeMours, El & Co.	280	Paints, etc.
Creative Foam Corp.	250	Plastic foam and plastic
Lear-Siegler	200	Metal stampings
Carpenter Enterprises	200	Auto parts and accessories

Vemco Industries 200 ?

EMPLOYMENT: -

	1979	1984
TOTAL	206026	188975
Components by Type:		
Wage and Salary	191413	172195
Proprietors	14613	16780
Farm	1190	1136
Nonfarm	13423	15644
Industry:		
Farm	1413	1357
Nonfarm	204083	187614
Private	179300	165356
Agric., For., Fish.	0	410
Mining	0	396
Construction	7358	5180
Manufacturing	80844	66185
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	6141	5052
Wholesale Trade	11259	11289
Retail Trade	31414	31431
Fin., Ins., Real Est.	8911	8854
Services	33373	36559
Government	24783	22258
Federal, Civilian	1370	1373
Military	1012	976
State and Local	22401	19909

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF EATON COUNTY MICHIGAN

LOCATION SERVICES:

County of Eaton
 Economic Development
 1045 Independence Blvd.
 Charlotte, MI 48813
 Contact Person: Roger Clinard
 Phone: 517/487-6340

Growth Alliance
 Commerce

DISTANCE FROM:

	Miles
Chicago	200
Detroit	90
Cleveland	210
Indianapolis	220
Toronto	330
Lansing	20

POPULATION:

1970 Census:	68892
1980 Census:	88337
1985 Estimate:	89900
2000 Projection:	112200
Median Age: (as of 1980):	28.4 years

LABOR FORCE (as of 1986)

Total Labor Force:	49150
Employed:	46200
Total Unemployment:	2950
Unemployment Rate:	6.%
3-yr. moving average:	8.%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Owens-Illinois Glass Co.	800	Glass containers
Hoover Ball & Bearing Co.	683	Aluminum extrusions
General Aluminum Prod. houses	274	Portable screen
Eaton Stamping Co.	250	Small motors
Airway Mfg. Co.	200	Hydraulic fittings
Green Bay Food Co.	150	Pickled food products
Michigan Packaging Co.	100	Corrugated paper
Johnson Iron Industries counterweights	95	Grey iron

Maeward, Inc.	95	Hydraulic &
mechanical tube		
Roberts Corp.	78	Material-handling
equipment		

EMPLOYMENT:

	1979	1984
TOTAL	18827	20712
Components by Type:		
Wage and Salary	13298	14287
Proprietors	5529	6425
Farm	1807	1720
Nonfarm	3722	4705
Industry:		
Farm	2181	2096
Nonfarm	15898	18616
Private	12727	15601
Agric., For., Fish.	101	87
Mining	0	18
Construction	1019	845
Manufacturing	3546	3139
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	360	318
Wholesale Trade	0	530
Retail Trade	3172	3846
Fin., Ins., Real Est.	1194	2087
Services	3335	4731
Government	3171	3015
Federal, Civilian	130	134
Military	192	199
State and Local	2849	2682

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF CALHOUN COUNTY MICHIGAN

LOCATION SERVICES:

Calhoun-Barry Growth Alliance

c/o Calhoun-Barry Area Development Office

632 North Avenue/Battle Creek, MI 49017

Contact: Bob Quadrozzi Ph 616/965-3020

Battle Creek Unlimited, Inc.

4950 West Dickman Road/Battle Creek, MI 49015

Contact: James F. Hettinger 616/962-7526

DISTANCE FROM:

	Miles
Chicago	170
Detroit	115
Cleveland	250
Indianapolis	200
Toronto	360
Lansing	50

POPULATION:

1970 Census:	141963
1980 Census:	141557
1985 Estimate:	136500
2000 Projection:	135800
Median Age: (as of 1980):	30.5 years

LABOR FORCE (as of 1986)

Total Labor Force:	63400
Employed:	57800
Total Unemployment:	5600
Unemployment Rate:	8.8%
3-yr. moving average:	9.9%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Kellogg Company	5000	Cereals
Defense Logistics Serv. Ctr intelligence	4500	Federal supply
General Foods/B&B F Div.	2500	Cereals
VA Hospital	1460	Health Care
Kellogg Comm. College	800	Higher education
Hayes-Albion	661	Malleable iron
Eaton Corp.	600	Power steering pumps
State Farm Insurance Co.	600	Regional headquarters
Leila Hospital	500	Health care
Community Hospital	500	Health care
American Fibrit	835	Automotive dashboards

EMPLOYMENT:

	1979	1984
TOTAL	68191	59248
Components by Type:		
Wage and Salary	61389	51760
Proprietors	6802	7488
Farm	1665	1584
Nonfarm	5137	5904
Industry:		
Farm	2189	2112
Nonfarm	64286	57136
Private	53800	46532
Agric., For., Fish.	228	196
Mining	0	180
Construction	2235	1691
Manufacturing	20664	13981
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	2597	2373
Wholesale Trade	0	1315
Retail Trade	10106	9273
Fin., Ins., Real Est.	4722	4221
Services	13248	13302
Government	10486	10604
Federal, Civilian	3555	4035
Military	355	345
State and Local	6576	6224

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF CLINTON COUNTY MICHIGAN

LOCATION SERVICES:

Clinton Area New Development Organization
 1003 S. Oakland
 St. Johns, MI 48879
 Contact: Bill Dutton
 Phone: 517/224-6761

DISTANCE FROM:

	Miles
Chicago	220
Detroit	100
Cleveland	290
Indianapolis	290
Toronto	340
Lansing	10

POPULATION:

1970 Census:	48492
1980 Census:	55893
1985 Estimate:	55300
2000 Projection:	62300
Median Age: (as of 1980):	27.8 years

LABOR FORCE (as of 1986)

Total Labor Force:	30625
Employed:	28600
Total Unemployment:	2025
Unemployment Rate:	6.6%
3-yr. moving average:	8.3%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Intercept Security systems	1025	Private security
Federal Mogul	550	Ball bearings
ITT Hancock	350	Auto seats
John Henry Co.	350	Printing
Sealed Power	320	Piston rings
Michigan Milk Producers	100	Milk products
Franchino Mold	75	Industrial molds
Saylor Beal Mfg. Co.	45	Compressors
Schmelter Corp.	35	Stampings
Maco Tool & Engineering etc.	33	Tools, dies, jigs,

EMPLOYMENT:

	1979	1984
TOTAL	11616	12524
Components by Type:		
Wage and Salary	7676	8774
Proprietors	3940	3750
Farm	1970	1875
Nonfarm	1970	1875
Industry:		
Farm	2332	2239
Nonfarm	8431	9264
Private	6483	7278
Agric., For., Fish.	0	156
Mining	0	0
Construction	666	631
Manufacturing	1493	1552
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	214	361
Wholesale Trade	0	0
Retail Trade	1970	1820
Fin., Ins., Real Est.	597	617
Services	1543	2141
Government	1948	1986
Federal, Civilian	127	136
Military	127	301
State and Local	1694	1549

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF BERRIEN COUNTY MICHIGAN

LOCATION SERVICES:

Southwest Michigan Community Growth Alliance
 Berrien County Area Development Office
 Dan Pelton
 5060 St. Joseph Avenue
 Stevensville, MI 49127
 Phone: 616/429-0611

DISTANCE FROM:

	Miles
Chicago	90
Detroit	180
Cleveland	300
Indianapolis	160
Toronto	430
Lansing	125

POPULATION:

1970 Census:	163940
1980 Census:	170982
1985 Estimate:	163800
2000 Projection:	163800
Median Age: (as of 1980):	29.6 years

LABOR FORCE (as of 1986)

Total Labor Force:	75200
Employed:	68400
Total Unemployment:	6800
Unemployment Rate:	9.0%
3-yr. moving average:	10.6%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Whirlpool Corporation	2200	Washers & dryers
Bendix Corporation	1450	Auto parts
Heath Co.	1200	Electronic equipment
National Standard specialty wire	1050	Reinforcing &
Simplicity Pattern	1045	Dress patterns
Leco Corporation instruments	525	Analytical
Auto Specialties Mfg. Co.	450	Malleable castings

Watervliet Paper Co. paper	450	Coated and specialty
EMPLOYMENT:		
	1979	1984
TOTAL	78489	70455
Components by Type:		
Wage and Salary	67858	58695
Proprietors	10631	11760
Farm	2292	2182
Nonfarm	8339	9578
Industry:		
Farm	3830	3730
Nonfarm	74659	66725
Private	65840	58978
Agric., For., Fish.	406	548
Mining	278	256
Construction	2943	2269
Manufacturing	25062	20020
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	2640	2757
Wholesale Trade	2774	2642
Retail Trade	12647	11546
Fin., Ins., Real Est.	3411	3354
Services	15679	15586
Government	8819	7747
Federal, Civilian	464	461
Military	401	378
State and Local	7954	6908

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF BARRY COUNTY MICHIGAN

LOCATION SERVICES:

Calhoun-Barry Growth Alliance
 c/o Calhoun-Barry Area Development Office
 632 North Avenue
 Battle Creek, MI 49017
 Contact: Bob Quadrozzi
 Phone: 616/965-3020

DISTANCE FROM:

	Miles
Chicago	150
Detroit	130
Cleveland	230
Indianapolis	240
Toronto	380
Lansing	40

POPULATION:

1970 Census:	38166
1980 Census:	45781
1985 Estimate:	46900
2000 Projection:	55500
Median Age: (as of 1980):	30. years

LABOR FORCE (as of 1986)

Total Labor Force:	20900
Employed:	19050
Total Unemployment:	1850
Unemployment Rate:	8.9%
3-yr. moving average:	10.%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Hastings Mfg. Co. replacement parts	675	Automotive
Flex-Fab, Inc. ducts	300	Flexible hose and
Viking Corporation	196	Car seals, sprinklers
Hastings Aluminum Prod.	160	Building products
G & R Felpausch	150	Food items
E. W. Bliss Company	118	Presses
Hastings Fiberglass Prod	75	Fiberglass products
J-Ad Graphics, Inc. commercial	75	Newspapers,

Hastings Reinf. Plastics equipment	38	Corrosion-resistant
ProLine Company	35	Archery products

EMPLOYMENT:

	1979	1984
TOTAL	11833	11377
Components by Type:		
Wage and Salary	8760	8021
Proprietors	3073	3356
Farm	1280	1219
Nonfarm	1793	2137
Industry:		
Farm	1600	1541
Nonfarm	9993	9623
Private	8188	7984
Agric., For., Fish.	57	105
Mining	0	0
Construction	430	406
Manufacturing	3149	2532
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	274	223
Wholesale Trade	0	0
Retail Trade	1726	1822
Fin., Ins., Real Est.	604	748
Services	1948	2148
Government	1805	1639
Federal, Civilian	84	86
Military	98	103
State and Local	1623	1450

Zero values indicate confidential information or fewer than 10 employees.

PROFILE OF BAY COUNTY MICHIGAN

LOCATION SERVICES:

Bay County Growth Alliance
 Arca Development Office
 301 Washington Avenue
 P.O. Box 369
 Bay City, MI 48708
 Contact: Mike Brandon
 Phone: 517/893-5596

DISTANCE FROM:

	Miles
Chicago	300
Detroit	100
Cleveland	280
Indianapolis	360
Toronto	280
Lansing	80

POPULATION:

1970 Census:	117339
1980 Census:	119881
1985 Estimate:	115300
2000 Projection:	115000
Median Age: (as of 1980):	28.8 years

LABOR FORCE (as of 1986)

Total Labor Force:	52675
Employed:	46525
Total Unemployment:	6175
Unemployment Rate:	11.7%
3-yr. moving average:	12.6%

PRINCIPAL ECONOMIC BASE EMPLOYERS (as of 1987)

Firm	Employees	Product/Service
Bay City Chevrolet	1900	Small auto parts
Bay Medical Center	1100	Health services
Dow Chemical	500	Plastic wrap
Prestolite	464	Small auto parts
AP Parts/Northern Tube systems	300	Automotive exhaust
Wolverine Knitting Mills	290	Loungewear
Newcor, Inc.	259	Welding machinery
RWC, Inc.	255	Welding machinery
Stalker Corp.	160	Machine Tools
Auburn Diecast/Walbro	115	Custom die castings

EMPLOYMENT:

	1979	1984
TOTAL	42330	39453
Components by Type:		
Wage and Salary	36179	32809
Proprietors	6151	6644
Farm	1478	1408
Nonfarm	4673	5236
Industry:		
Farm	1928	1861
Nonfarm	40402	37592
Private	35161	33086
Agric., For., Fish.	165	208
Mining	102	272
Construction	1790	1396
Manufacturing	10513	8457
Non-Durable Goods	---	---
Durable Goods	---	---
Transp. & Utilities	1936	1670
Wholesale Trade	1824	2040
Retail Trade	8230	8104
Fin., Ins., Real Est.	2251	2261
Services	8350	8678
Government	5241	4506
Federal, Civilian	285	274
Military	748	775
State and Local	50655	49701

Zero values indicate confidential information or fewer than 10 employees.