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1.0. INTRODUCTION

Communities and families figure prominently whenever crime and crime control are discussed. While there is broad consensus about the beneficial effects of strong communities on containing crime there is much less consensus about how weak communities can be strengthened and strong communities preserved (Bursik and Grasmick, 1993; Taylor, 1999; Skogan and Maxfield, 1981; Sampson, Radenbush and Earls, 1997). The role of criminal justice agencies in community building and preservation is a matter of particular controversy (Moore, 1992; Skogan, 1990; Lynch and Sabol, 2000; Taylor, 1999, 2001). Some see the police, courts and correctional agencies as playing a crucial role in this process by removing or controlling persons who disrupt constructive interaction in communities (Wilson and Kelling, 1982). This is the assumption that underlies the Weed and Seed program begun in the early 1990s (Dunworth and Mills, 1999). Community policing rests on similar assumptions as well as the assumption that co-production of police services can empower communities and thereby strengthen them (Moore, 1992). In contrast, others maintain that the police and other criminal justice agencies (especially correctional organizations) undermine the legitimacy of community institutions. In the case of the police this occurs because they essentially ignore community institutions in the performance of the agencies' task. This results in the perception that community institutions are not effective and that the business of social control must be left to public agencies. This, in turn, leads to the withdrawal of participation in community institutions. The negative effects of incarceration are alleged to occur because members of communities are removed (sometimes for long periods) and the roles that they performed in communities and families are not assumed by others. As a result these familial and communal institutions are weakened to the point where they cannot perform their social control function (Lynch and Sabol, 2000; Rose and Clear, 2000; Travis, Solomon, and Waul, 2001).

There is relatively little research that informs these issues directly (Lynch and Sabol, 2000). The vast majority of research on communities and crime have focused on the role of community in controlling crime and not the contribution of criminal justice policy to the building and maintenance of community (Skogan and Maxfield, 1981; Taylor, 2001). Evaluations of community policing have emphasized crime reduction, fear reduction and citizen satisfaction but not community organization per se (Skogan, 1990; Trojanowicz, 1982)[1]. These studies have often included only a few communities. Moreover those few studies that have examined the effects of coercion on communities in a large number of areas over a long period of time have failed to take account of the problems of nested data and simultaneous equation bias that often afflict these data(Rose and Clear, 1998).[2] As a result, their estimates of the effects of coercion on community organization are confounded with the effects of crime on communities.

This report contributes to our understanding of the role of criminal justice policy in building and maintaining communities by directly examining the effects of police arrest policies and incarceration policies on communities in 30 neighborhoods in Baltimore over a ten year period. By examining relatively large number of communities over a long period of time, we are more likely to detect effects of patterns of coercion on community organization, if there are any. Hierarchical Linear Models (HLM) and two stage least squares are employed to take account of statistical problems resulting from nested data and simultaneous equation bias.

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[1] Throughout this discussion the term community organization is used to refer to persistent patterns of interaction among community residents and the positive sentiments toward and attachments to the area that flow from these interactions.

[2] For a discussion of the problems posed by nested data, see Bryk and Raudenbusch (1993). For a useful approach to handling simultaneous equation bias, see Leavitt (1995).

2.0. CRIME, COERCION, AND COMMUNITIES

Researchers have examined extensively the link between communities and crime (e.g., Shaw and McKay, 1942, 1969; Reiss and Tonry, 1986; Bursik and Grasmick, 1993) and the link between coercion and crime (e.g., Blumstein et al, 1978; Cameron, 1988; Levitt, 1996, 1998; Nagin, 1998). Much less has been done to understand the effects of coercion on community. Some recent work has addressed the impact of coercion on communities (e.g., Rose and Clear, 1998; Nightingale and Watts, 1996) but this work is largely speculative and focuses exclusively on incarceration policies. Evaluations of community policing shed some light on the effect of police policies on fear and citizens satisfaction but not community organization per se.

2.1. Crime and Communities

A great deal of very good work has been done to demonstrate that communities organization can affect the level of crime in a geographical areas. Human ecologists in the Chicago school demonstrated that major social structural changes such as urbanization and immigration created areas with major cities wherein social control was weak and crime was high (Shaw and McKay, 1942). These macro social forces resulted in certain communities being populated by mobile and heterogeneous populations who could not negotiate an acceptable social order. The result of this "social disorganization" was high crime rates.

The work of the Chicago School demonstrated the importance of community in the process of social control. This tradition gave rise to intervention programs such as the Chicago Area Project which were based upon the rebuilding and preservation of community institutions that contributed to social control (Short, 1971). These strategies featured community organizing as a method for institution building in these communities.

During the late 1950s and 1960s interest in community gave way to an interest in race and class as the organizing principles of criminological theory and crime control strategies based on same. Merton's (1968) classic work on structural strain theories as well as sub-cultural theories of crime all took social inequality as the their point of origin. The concept of community as mediating the effects of inequality were largely forgotten.

In the 1980s the interest in the role of community in crime prevention was resurrected. Bursik and Webb (1982) demonstrated that the geographical distribution of crime in Chicago that was observed thirty years earlier by Shaw and Mackay persisted. While there was some disruption of this pattern in the 1960s with the demise of the dual housing market based upon race, the pattern was quickly re-established.

The interest in community as an important factor in crime control was rejuvenated and scholars began to investigate in a very detailed manner how community institutions contributed to crime control. Ralph Taylor and his colleagues explored the inter-relationship between the physical environment, community attachments, fear of crime and criminal victimization (Taylor, Gottfredson, and Brower, 1984; Covington and Taylor, 1991; Perkins, Brown, and Taylor, 1996). Their emphasis was on understanding the process by which communities effected crime and crime affected communities. Skogan and Maxfield (1981) examined how communities responded to the crime problem and specifically how community responses to crime reduced both crime and the fear of crime.

In the early 1990s Bursik and Grasmick (1993) developed a theory for understanding the role of community in the production and control of crime. This theory went beyond those of the earlier human ecologists by not only acknowledging the role of community on crime control but by situating community within a larger system of social control. Bursik and Grasmick (1993) identified three major sources of social control—private controls, parochial controls and state controls. Private controls referred to intimate groups such as the family. Parochial controls referred to other face-to-

face groups that were not intimates and specifically community. State control referred to actions taken by state agencies such as the police or schools. In their framework, social control referred not only to crime control but to all manner of self determination. They adopted Janowitz's (1975) view that social control was the ability of groups to set and achieve collective goals. So private, parochial and state controls promoted the consensual order required to set and achieve collective goals.

A number of empirical studies conducted in the eighties provided empirical support for the importance of Bursik's parochial controls in reducing crime. DuBow and Emmons (1981) describe communities with a stronger sense of solidarity, more positive social interactions, and where satisfaction with one's community is high, as being be those areas with more effective informal social control. These stronger ties and more effective social controls build community cohesion and reduces both crime and fear of crime. It is the empowerment of community members which enables them to take responsibility for their property and personal protection, to solve local disputes, and to reduce both crime and fear.

At the same time other research was examining in great detail the process by which these parochial controls were weakened and strengthened in neighborhoods. Taylor (1999), for example, explicitly tested the very popular notion that signs of decay in the physical environment contributed to social disorganization in urban neighborhoods (Wilson and Kelling, 1982; Skogan, 1990). He found little support for this notion. He did, however, find that fundamental social structural change did affect social disorganization in neighborhoods.

More recently Sampson, Radenbush and Earls (1997) focused more narrowly on crime control and specifically on the ability of community to mediate the effects of class on the distribution of crime. In their study of some 300 neighborhoods in Chicago they found that the social organization of community was related to lower crime rates even in neighborhoods with concentrations of poverty. Sampson, et al. (1997) looked specifically at what they called "collective efficacy" which is the willingness of community residents to enforce the norms of the community—to control the behavior of children, to stop or otherwise intervene in criminal events. Communities that were high on collective efficacy had lower crime rates than those who did not. This was even the case in communities with high concentrations of poverty.

The cumulation of the work on community and crime, then, demonstrates clearly that community affects crime. Organized communities will have lower crime rates than disorganized communities. Much of the reason for these lower crime rates is the robustness of parochial controls operating in these neighborhoods and particularly the willingness of residents to engage in informal social control. This work has also contributed to our understanding of the process of community building and community preservation, but the evidence is mixed. Theories that community organization could be bolstered simply by the manipulation of the physical environment (directly or indirectly) have been challenged by recent findings with the result that there is some uncertainty over how to build and bolster institutions of social control in neighborhoods (Taylor, 1999).

2.2. Coercion and Crime

The role of coercion on crime generally has been extensively examined (e.g., Blumstein et al, 1978; Levitt, 1996; Nagin, 1998). The results of these studies are mixed largely because the tests of deterrence and incapacitation have been conducted on a wide variety of punishments using many different data sources. In reviewing the work done on deterrence Nagin (1998) concludes that the weight of the evidence points to a deterrent or incapacitation effect generally. He cautions that this does not mean that all forms of punishment will have these effects in every circumstance. It will depend upon the nature of the punishment, the implementation of that punishment, the target behavior and the social context in which it is applied.

Much of the work linking punishment to crime reduction has examined the effects of incarceration, but there have been a number of studies that have addressed the effects of police activity and specifically arrest. Wilson and Boland (1978) assessed the effects of aggressive patrol practices, e.g. stopping and searching for minor crimes, on crime rates. They found that aggressive traffic enforcement was associated with lower robbery rates in 35 cities. Sampson and Cohen (1988) also found a negative effect of aggressive arrest policies for vice and other minor crimes on robbery in 171 cities.[3] Other studies of specific programs support the argument that aggressive patrol practices including arrest will reduce some forms of crime. Sherman (1992) describes a quasi-experiment in which three different patrol styles were used-one without aggressive field interrogations, one with aggressive field interrogations and one with interrogations conducted by specially trained officers (Boydstun, 1975). The areas with field interrogations had no change in their crime rate while the area without field interrogations experienced an increase in crime. Consistent results were found in the short run for intensive drug enforcement programs (Sherman, 1992).

While the evidence for the effects of aggressive enforcement and incarceration on crime seem persuasive, the process by which coercion reduces crime is less clear. Wilson and Boland (1978) attribute the negative effect of aggressive patrol practices to the deterrent effects of increased surveillance. Sampson and Cohen acknowledge the role of deterrence but allow for other process such as the re-emergence of informal social control. Unfortunately, they could not disaggregate the crime reduction effects into those due to deterrence and those attributable to the rise of informal social control. As Nagin points out in his general review of deterrence, it is important to understand the process by which punishment reduces crime. If the deterrent effect of punishment is due to the activation of informal social control (in his discussion of stigmatization), then there may be a point at which or a context in which the application of punishment will inhibit or retard informal social controls and thereby increase rather than decrease crime. Understanding the relationship between coercion in the form of police arrest practices and community organization, then, is crucial to evaluating the wisdom of the practices.

It is also important to note that most of the empirical tests of the deterrent or incapacitation effects of coercion on crime have been done at very high levels of geographic aggregation such as the state, county or city. It is not clear how applicable these results are to the neighborhood level. Given that neighborhoods are small areas, the likelihood that crimes may be perpetrated in one neighborhood and the offender live in another is much higher than in a city, county or state. Hence there may indeed be a negative effect of incarceration on crime but not in the neighborhood in which the incarcerated offender lived.

2.3. Coercion and Communities: Policing Policies

Most of the work addressing the inter-relationship of communities and crime has devoted very little attention to the effects of state controls on communities . Bursik and Grasmick (1993) discuss the importance of state controls as does Sampson (1995), but they do not investigate these effects empirically. The growing literature on community policing can shed some light on the issue of

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[3] There is some reason to be skeptical that the results of these studies can be applied directly to residential neighborhoods. First, crime reductions in the Wilson and Boland and the Sampson and Cohen work were observed for robbery but not for burglary. Robbery is largely a commercial area crime. It occurs in and around "bright light districts", public transportation and other non-residential areas and many of its victims are commercial establishments and not person. These areas are more accessible to police patrol and manipulation than crimes that occur in more residential areas. Second, both studies were conducted at the city level and it is unclear just how applicable these results may be to small and more communal entities like neighborhoods. So, while the is some evidence that aggressive police arrest polices reduce robbery on a city-wide basis, it is not clear that they will have the same effect on other types of crime and at the neighborhood level.

whether police arrest policies reduce crime at the neighborhood level and whether that reduction occurs because of deterrence or because of the re-emergence of informal social control. Many of these studies have focused more on the effects of police strategies on fear of crime and citizen perceptions of the community and the police than they have on crime reduction per se (Moore, 1992). Skogan (1990) compared community policing initiatives in Houston and Newark with special attention to the how the police contributed to citizen fear, perceptions of disorder and satisfaction with the community. There was variation in the organization of policing within and between the cities with some areas emphasizing outreach and intensive policing (including aggressive arrest policies). In both cases these police practices increased satisfaction with the area, but the programs that mixed outreach with enforcement had more beneficial effects on perceptions of the police and awareness of police activity. Consequently, these studies suggest that intensive police service seems to enhance citizen assessments of their neighborhood. These positive valuations of neighborhood have been found to be positively correlated with the factors that we have defined as community organization.

These evaluation efforts were particularly good at characterizing police service or policy in all its complexity. They also provided a great deal of information on the process of implementing community policing as well as qualitative contextual information on the communities involved. These studies were also limited in a number of ways that reduce their ability to inform the question of how police arrest policies influence communities.

First, the aspects of community organization that were assessed in these evaluations were very limited relative to those included in the literature on communities and crime. The research on communities and crime (reviewed above in section 2.2) includes extensive information on the persistent patterns of interaction among community residents that constitutes community organization, i.e., neighboring, participation in voluntary associations in and out of the area, shopping activity and other routine chores, as well as explicit questions on the willingness of residents to engage in informal social control. These patterns of interaction are much more extensive than crime control activities and they serve as the infra-structure that allows cooperation on more specific issues of crime control. Evaluation of community policing focused on a much more limited range of interaction more directly tied to policing and social control. For this reason it is difficult to use these evaluations to determine whether police policies affected community organization apart from activities very closely related to crime control.

Second, the analyses done in these evaluations were relatively simple so that many factors other than the nature of police services distinguished communities in the study and could have accounted for the changes observed even in the limited aspects of communities that were observed.

Third, very few communities were included in these evaluations. This limited the range of community contexts that could be taken into account in assessing the effects of police service on community organization. Specific approaches to policing may have very different effects in different types of communities but the types of communities in which the program may be most effective may not be included in the evaluation. The small number communities studied in these evaluations limited the extent to which multi-variate statistics could be used to isolate the effects of arrest on outcomes from all of the other differences among communities.

Fourth, the evaluations took place over a very short period of time that may not have been sufficient to detect the effects on community organization. For all of these reasons, these evaluations which provided very useful information on the success of community policing programs have much less to say about the effects of police policies on community organization.

In sum, we know very little with certainty about the effects of police arrest policies on community organization generally and on collective efficacy specifically.

2.4. Coercion and Communities: Incarceration

Over the past 20 years, the United States has experienced a massive increase in imprisonment (Gilliard and Beck, 1996; Lynch and Sabol, 1997; Blumstein and Beck, 1999). Traditionally, evaluations of incarceration assess its effects in terms of the recidivism of individual offenders or the reductions in aggregate crime rates (Nagin, 1998; Blumstein et al., 1978; Levitt, 1996). More recently the number of people incarcerated and the clustering of that incarceration in inner-city black populations raise the prospect that incarceration may be undermining less coercive institutions of social control such as families and communities (Lynch and Sabol, 1992; Rose and Clear, 1998a, 1998b; Clear, 1996; Moore, 1992; Nightingale and Watts, 1996). To the extent that these less coercive institutions of social control are the first line of defense against crime, then disrupting them may mean that the long run consequences of the massive increases in incarceration of the past fifteen years will be increased crime (Rose and Clear, 1998a).

Traditionally the principal benefit from incarceration, like arrest, is believed to be crime reduction through incapacitation or deterrence. Until very recently this has been reason enough to warrant imprisonment. Beneficial effects of imprisonment were believed to occur because of increases in the certainty and severity of punishment or because the offender was simply removed from society. Nagin (1998), however, while acknowledging the evidence in support of deterrence generally, cautions against over generalizing its applicability. He asserts that the deterrent effect of incarceration may depend upon the social context in which it is applied and specifically the stigmatization that imprisonment brings the offender in his family and community. Absent this stigmatization deterrence will not occur (Zimring and Hawkins, 1973). Nagin's argument is not that imprisonment will bolster less coercive institutions of social control, but that without these less coercive institutions of social control imprisonment may not deter crime. The novelty of Nagin's argument is the linkage of imprisonment to less coercive institutions of social control, rather than having it stand alone as an instrument of crime reduction.

There is virtually no theory or empirical work that associates imprisonment directly with building or supporting less coercive institutions of social control and specifically communities. Most of the beneficial effects of imprisonment on less coercive institutions of social control are expected to occur through crime reduction. So, removing an abusing spouse from the home will improve the functioning of a family or simply presenting the realistic threat of imprisonment for assaulting other family members may be sufficient to stop the behavior and thereby help the family (Sherman, 1995). The improved functioning of the family should provide for socialization and supervision of child and thereby lower crime rates. Similarly, actually removing criminals from communities or plausibly threatening incarceration can reduce crime rates in neighborhoods or the fear of crime. This, in turn, would permit the interaction among neighbors that provides the informal controls that promotes community organization and reduces neighborhood crime. These types of causal processes underlie programs like Weed and Seed (Dunworthy and Mills, 1999). These models have been discussed but not tested fully. The effects of incarceration on crime have been studied extensively but the effects of incarceration on less coercive institutions of social control has not received much attention. Moreover, even the empirical investigation of the relationship between incarceration and crime has been done most often at the state or nation level and not the neighborhood (Nagin, 1998). It is possible that imprisoning residents from a given neighborhood may increase the crime in that neighborhood and reduce it in some other. What would appear to be a negative relationship between coercion and crime at the county level may be quite different at the neighborhood level.

There are various routes and processes by which incarceration can adversely affect less coercive institutions of social control. Lynch and Sabol (1992;1997;1998) speculated that incarceration would reduce the marriageability of men and thereby reduce marriage formation. This, in turn, would increase the number of female-headed households in areas with high incarceration and ultimately

crime rates because of the absence of supervision for young males in these areas (Sampson, 1987). They speculated that the marriageability of men would be reduced by 1) their removal through incarceration and 2) the "taint" that ever being incarceration has in the job market. This simple model is summarized in Figure 1.

Figure 1. Lynch and Sabol Model of Negative Effects of Incarceration on Institutions of Social Control

Supply of Men

Parochial Controls

Incarceration

Family Formation

Crime

Marriageability of Men

Private Control
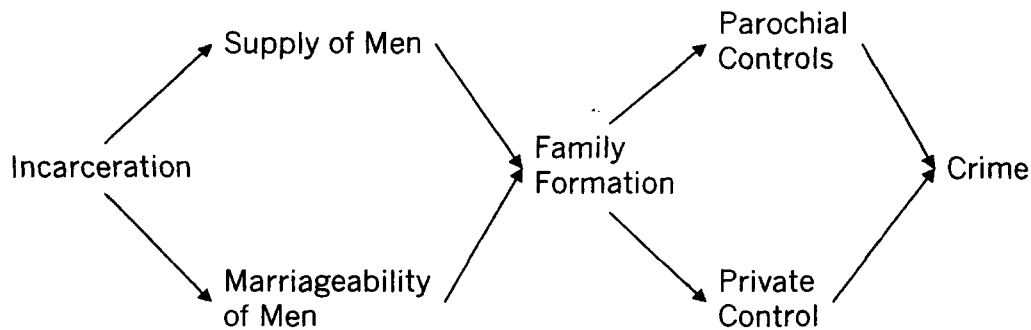
Rose and Clear (1998a) describe a much more elaborate set of processes through which incarceration effects less coercive institutions of social control. They expanded Bursik and Grasmick's (1993) General Systems Model (GSM) to take account of the effects of incarceration. The GSM describes how community disorganization leads to crime. The principal exogenous variables in the model are heterogeneity, mobility and socio-economic status. These variables can facilitate or inhibit interaction in communities that allow residents of that community to set and achieve collective goals. They can enhance private control that takes place in intimate groups as well as "parochial" control that takes place outside of intimate groups but in the neighborhood. Parochial control would include control in the context of neighboring and in voluntary associations. Heterogeneity, mobility and socio-economic status can also affect the amount of public control that occurs in a community by influencing a community's ability to negotiate service with municipal bureaucracies, including the criminal justice system. Bursik and Grasmick's model has the level of private, parochial and public control in a community determining the crime rate. Communities that are stable and homogeneous will have high levels of private and parochial control as well as optimum levels of public control with the result that levels of crime are low relative to other areas.

Rose and Clear (1998a) elaborate this basic model by hypothesizing that incarceration will introduce mobility and heterogeneity into communities and thereby abet the process of disorganization (Figure 2). They focus specifically on certain institutional arrangements and how they will be weakened by incarceration and how this weakness, in turn, will reduce private, parochial and public control in these communities. Incarceration will weaken families by removing men from families and by reducing the supply of marriageable men. This will make families less effective as socializing agents and less able to supervise teenage children. Removal through incarceration will also affect economic institutions in communities by removing people who bring money to families and the community. Political institutions will be affected by removing people from networks that mobilize the community in response to external threats. There will be gaps in the network so that mobilization of the community will be incomplete. Moreover, removing persons from the area will allow those who take up their task less time to be involved in the mobilization process. Rose and Clear (1998a) also hypothesize that massive use of incarceration in communities will lessen the stigma (and hence the effectiveness) of this type of public control for community residents.

Figure 2. Rose and Clear (1998) Nonrecursive Model of Crime Control, Social Disorder, and Crime
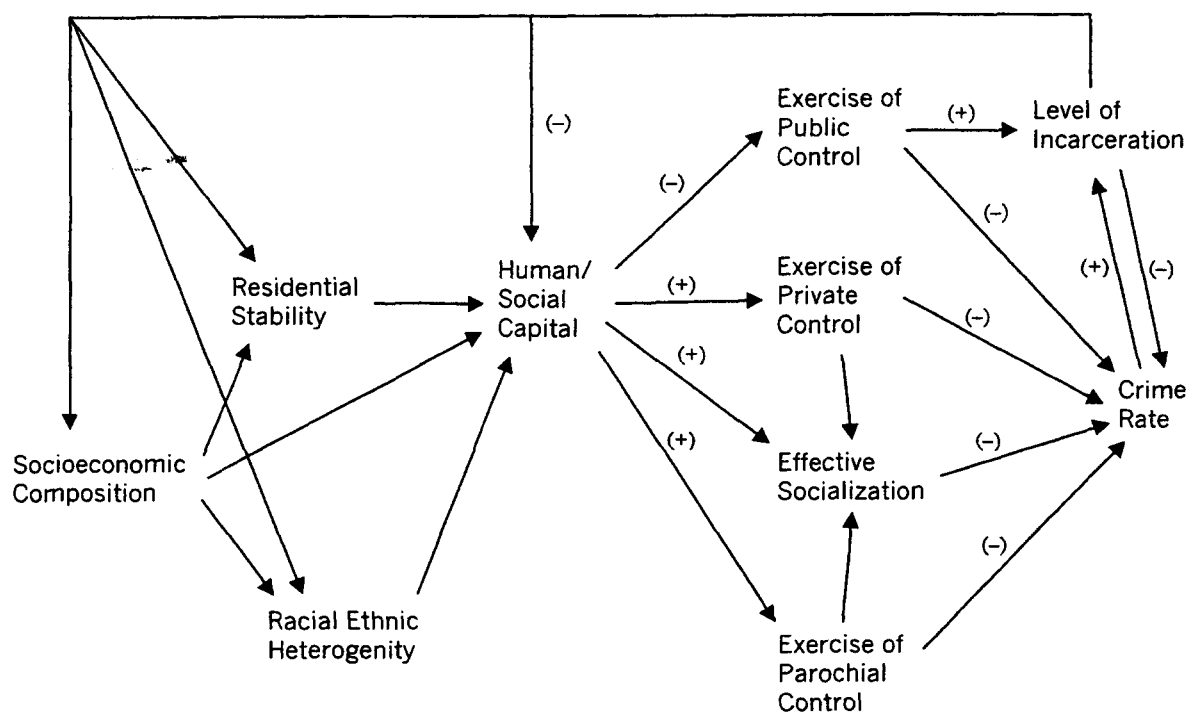
These theories describing how incarceration affects communities have not been tested empirically. Only Rose and Clear have examined the relationship between incarceration rates and crime at the neighborhood level.[4] Their work, however, did not take account of simultaneous equation bias in estimating the effects of incarceration on crime. Moreover, Rose and Clear did not assess the impact of incarceration on community organization *per se*. They were interested in assessing the effects of the geographical concentration of incarceration on perceptions of the legitimacy of the criminal justice system. Community was the context for vicarious experiences with incarceration and not the entity that was being affected by incarceration. Residence in a neighborhood with high incarceration rates meant that your vicarious experience with incarceration or the collateral effects of incarceration would be high. Their work does not address the effects of incarceration on community organization.

While there has been a great deal of speculation on the beneficial and detrimental effects of incarceration on communities, there have been virtually no empirical studies that have assessed the effects of incarceration on community organization and collective efficacy.

2.5. Contributions of this Study

This work builds upon the literatures described in the foregoing sections by directly addressing the question of how aggressive arrest and incarceration policies affect community organization and

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[4] Gottfredson and Taylor (1986) included neighborhood-level incarceration rates in their study of recidivism outcomes. The rates were used to predict successful outcomes and not to assess the effects neighborhood crime rates or the social organization of these areas.

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ultimately the willingness of area residents to engage in informal social control or collective efficacy. Previous studies have assessed the effects of coercion on crime and fear of crime, but not on community organization or collective efficacy. We will not only test the direct effects of arrest and incarceration policies on informal social control but also the effects of these polices on the social organization of the neighborhood that is believed to be a prerequisite to collective efficacy. We will examine not only the alleged beneficial effects of these policies, e.g. crime reduction, but also the possible negative effects that these polices can have on collective efficacy and the social organization of communities.

In addition to these substantive contributions of this work, we are employing data and procedures that should afford a better empirical test of these models than has been done heretofore. The relatively large sample of neighborhoods (30) studied here will allow us to assess the effects of arrest and incarceration across a variety of neighborhoods to see if the effects of coercion differ across type of neighborhood. The relatively large number of neighborhoods and the availability of both area and individual data in these neighborhoods will also allow for holding constant some of the other attributes of neighborhood that could account for the observed effects of incarceration. The data employed here includes a large number of attributes of persons and neighborhoods that have been found to be predictive of other means of participating in the life of communities. By holding these factors constant while we examine the influence of neighborhood arrest or incarceration policy on informal social control should take account of many of the factors that can influence participation in informal social control. We measure change in arrest and incarceration practices and change in the structural attributes of communities over a number of years (five years for arrests and ten years for community structure) which should increase the likelihood that these policies will influence community organization and the willingness to engage in informal social control. Finally we employ statistical techniques that take account of the problems involved in analyzing nested data (data on individuals within communities) and procedures that take account of the simultaneous causality between coercion and crime, i.e. crime affects coercion and coercion affects crime.

3.0. THE DATA

This study uses data previously collected by Ralph Taylor and his colleagues, police arrest data, data on admissions to and releases from state prison and census data. Both neighborhood and individual level information as well as change data are used in multi-variate models of community organization and participation in informal social control.

The data for this study came from four primary sources which are part of a larger study examining crime, coercion and the community. One set was collected by Ralph Taylor in his study of Baltimore neighborhoods to examine the relationship between crime and social organization in communities in 1982 and 1994. The data included aggregate community level information on demographics, socioeconomic attributes and crime rates. In addition they interviewed residents within each community about community attachment, cohesiveness, participation, satisfaction, and experiences with crime and self-protection. Resident surveys were conducted on 66 and 30 communities for 1982 and 1994, respectively. The current study uses data collected from the 30 neighborhoods for 1994. The number of surveys per neighborhood ranged from 18-24 with an average of 23 respondents.

A unique advantage with Taylor's data is the definition of community employed. Many community studies rely on somewhat artificial delineation to define communities. These approximations potential lack the defined community names and shared interactions and values. Taylor's more precise characterization of the community allows for a more accurate assessment of the relationship between neighbor organization and coercion.

The police data describe both the offenses recorded by the police as well arrests made by the police. The data represent incident level offense and arrest data for 1987 and 1992 recorded by the Baltimore Police Department. The offense data includes the type of offense and the address where it occurred. The arrest data includes the type of charge and street address where the arrest was made. For purposes of this study, offenses and charges were grouped into four categories—drugs, violence, property and public order offense. Street address was geo-coded into longitude and latitude coordinates. The neighborhoods were also given latitude and longitude coordinates. The arrest and offense locations were then located within the neighborhood where the incident happened.

The third set of data was provided by the Maryland Department of Public Safety and Corrections (DPSC). These data included all of the admissions to and releases from prison in neighborhoods in Baltimore City and Baltimore County for the years 1982 to 2000. Each record includes the admission date, the release date, the charges for which the person was incarcerated, and the address of their residence at the time of admission or release. As with the arrest data, these addresses were geo-coded and associated with the appropriate neighborhood in Baltimore City.

There are a few validity and reliability issues with these data on coercion. These issues are different for the police and the corrections data. With respect to the police data, not every crime that has occurred is reported to the police so we will have a conservative estimate of the crime rate. Police may also fail to record or deal with an incident both other means besides arrest. This too will deflate the true number of interactions with the police for a given neighborhood and the amount of coercion used there. The second concern is the spatial identification of the arrest. The arrest location may not represent where the crime had occurred. It is not clear how this would impact the measure of arrest since there could be both an influx and outflowing of arrests within a community.

With the correctional data, the major problem is incomplete data on admissions and releases due to missing address data. Corrections Department personnel estimated that almost 50 percent of admissions and releases would not have address information on their residence at the time of admission and release. When the data from DPSC was compared to the county-level data on admissions from the National Corrections Reporting Program (NCRP) for the six-year period 1993 to 1998, on average the data from DPSC was 67 percent of the admissions in the NCRP from Baltimore County. This coverage rate ranged from 87 percent in 1993 to 58 percent in 1998. This would suggest that the admissions and release data used here will underestimate incarceration in neighborhoods by about one-third. There is no reason to believe, however, that this underestimate should differ across communities. Consequently, the relative position of neighborhoods with regard to admissions and releases from prison should be unaffected by this under estimation of the volume of incarceration.

4.0. TESTING THE MODEL OF THE EFFECTS OF ARREST ON COMMUNITY ORGANIZATION AND COLLECTIVE EFFICACY

4.1. Reviewing the Model for Arrest

Our model explains the effects of arrest policies on community organization and ultimately an individual's decision to engage in informal social control (Figure 3). This decision is influenced by both the attributes of the neighborhood and the attributes of the individual. At the individual level the willingness of residents to engage in informal social control is driven by the amount of interaction they engage in with their neighbors and the extent to which they have positive attitudes toward and feel as if they belong to the neighborhood. High levels of interaction among neighbors in the daily activity of the area lays the foundation for the more specific mobilization of these networks for activities such as

informal social control. Neighbors who interact in the Advisory Neighborhood Council (ANC), for example, will find it easier to cooperate on the local school funding drive. Residents who borrow and lend tools to each other are more equipped to cooperate on other endeavors. The precedent is there and if the prior interaction was mutually beneficial additional interactions are likely to follow. This type of positive interaction will lead to an understanding of and a positive attitude toward neighbors and the neighborhood. This understanding and trust will encourage neighbors to engage in informal social control (Hackler, Ho and Urquhart-Ross, 1974). They will intervene in minor disorders because there is a shared belief about appropriate behavior and the fact that this belief is shared encourages residents to engage in informal social control. Neighbors have the expectation that the norm will be observed. Consequently invoking the norm in this context is likely to bring about compliance because the belief is shared (and both parties know that) or because there are others in the area who will support the enforcement of the norms. Without the foundation of persistent patterns of interaction and solidarity, invoking norms can be unproductive and even dangerous. Residents are much less likely to enforce norms when they are not sure that others in the neighborhood will agree and acquiesce to the norm or to lend support in the request made of others.

Figure 3. Individual's Decision to Engage in Informal Social Control
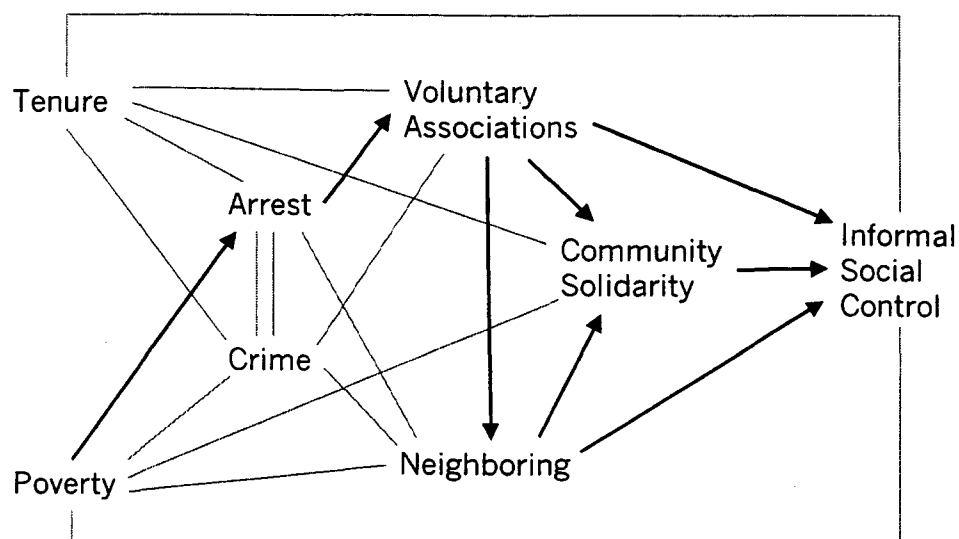
At the neighborhood level, the stability of the area, the amount of crime and the amount of coercion on the part of criminal justice agencies sets the context for informal social control. Stable neighborhoods offer the continuity necessary for interaction between residents. Stability refers to the low rates of residential mobility as well as constancy in the economic status of the neighborhood population. This permanence encourages and provides the opportunity for interaction among neighborhood residents which results in shared norms for appropriate behavior and a greater willingness to enforce these norms through informal social control. Crime in the neighborhood will inhibit interaction and weaken solidarity. The actual risk of crime or the fear of criminal victimization will reduce the level of interaction among neighbors and thereby reduce levels of solidarity and the willingness to engage in informal social control. Aggressive arrest policies will reduce crime or fear and thereby encourage the interaction among neighbors that builds shared norms of appropriate behavior and solidarity and encourages informal social control.

This model of participation in informal social control could differ across communities with different levels of residential and economic stability. In communities with low residential mobility or longer residential tenure, coercive criminal justice policies may disrupt informal social control, while in less stable areas these policies may encourage informal social as described in the foregoing paragraph. In relatively stable areas aggressive arrest practices, for example, may turn ordinary events into "crime" and thereby raise residents' concern about crime and the viability of the neighborhood. When a neighbor breaks up a noisy group of teenagers it is a barely noticed event that blends into many other routine interactions. When the police intervene it becomes a "crime" and an atypical occurrence that raises concern. Alternatively, police intervention (and especially intervention not initiated by a citizen complaint) may undermine informal social control by not allowing it to function. Citizens who may want to handle things themselves are overruled by the police who will make it a formal matter. It is even possible that citizens engaging in informal social control will be seen by the police as engaging in the criminal activity that they wish to stop. A citizen moving drug dealing along, for example, may be confused with dealers or their customers. By these and other processes aggressive criminal justice polices can disrupt neighborhood institutions of informal social control in stable areas where these institutions are robust.

In contrast, communities with highly unstable residential populations may benefit from aggressive policies in that it may reduce crime and fear and thereby increase interaction as noted above. Even if these policies do not reduce crime and fear of crime they may serve as a focal point for community organization efforts. Community residents may mobilize in the face of high crime or high fear that comes with instability. This mobilization would take as one of its goals obtaining more service from the police department and, when that service appears to be forthcoming, it will be seen as a sign that the community is organized and efficacious. This success will encourage further mobilization and interaction among residents which will contribute to an environment conducive to informal social control. The lack of residential stability may reduce the opportunity for parochial controls to form. Therefore, aggressive policing is necessary to handle disputes normally regulated by informal controls. It serves to augment or substitute the low levels of community organization.

Economically unstable areas characterized by relatively large increases in families under the poverty line or the rise in vacant homes can limit the availability of resources needed to participate in parochial control. In addition, the lack of resources may be related to the amount invested in communities. Individuals who are less invested both economically and socially will take less responsibility for that area. On the flip side, areas experiencing revitalization or gentrification may seek state control as a means to augment there current lack social ties. They have investments and are motivated to participate in parochial controls but the opportunities are currently lacking. Therefore, in areas that are making there way out of past depression may find aggressive police practices serve to stabilize the community.

4.2. Operationalizing the Model

The development of the measures for testing the arrest model were derived from both community level census data and from information reported in the residential survey. Census data for 1980 and 1990 were used to develop the measures for the community level. Police record information and census data were used to operationalize coercion. Measures of neighboring, voluntary associations, solidarity, residential length of stay and informal social control were all developed using the individual level survey data. Questions from the survey were combined into scales for each of variables. The items used in each scale and reliability measures for each are shown in Appendix B.

Coercion: Arrest Rates
1987 and 1992 arrest data from the Baltimore Police Department was geo-coded using MapMarker. The software matches the arrest address, number and street name to latitude and

longitude coordinates on a general map of the area of interest, in this case Baltimore and adjoining communities. For 1987 and 1992 we matched approximately 90% of the arrest incidents. Reasons for non-matches were primarily administrative. That is, either spelling errors or missing information such as a street number prevented a confident match.

Arrest rates were then calculated using population information from 1990 census data. Total arrest, violent arrest, property arrest, public order arrest, drug arrest and a drug to violent arrest ratio rates were generated for each of the 30 neighborhoods. A list of the classification scheme for categorizing police charge codes is provided in Appendix B. We then calculate the percent change in the arrest rate from 1987 for each measure, using the 1987 and 1992 data.

These crime specific arrest rates were estimated because they represented different degrees of discretion on the part of the police. Violence involves the least amount of police discretion. When violence complaints are received the police must respond. If an arrest can be made the are under pressure to make it. Drug arrests involve the greatest amount of police discretion because much of drug enforcement is not directly activated by citizen complaint the way violence is. Police target drug dealers and drug users and additional targets are found by putting pressure on the suspects in hand. Citizens have much less control over the invocation of coercion for drugs than they do for violence. Public order offenses were distinguished because much is made in the policing literature of "hard policing of soft crime" (Sampson and Cohen, 1988; Wilson and Kelling, 1982). Getting tough on minor crime sends a message that disorder will not be tolerated and this would prevent the spread of disorder. Total arrest rates were used because some have argued that arrests of any sort have a crime reduction potential even if the crime of arrest is quite different from the one deterred. Consequently, some measure of the total volume of arrest should be in the model.

Crime Rates

Crime was measured using Taylor's data collected between 1980 and 1992. Total crime rates were determined by the total crimes reported to police divided by the 1990 census population counts. We use a change rate from 1987 to 1992 to follow the arrest change rates generated.

Community Poverty Scale

A neighborhood poverty change scale was constructed by summing the percent change in vacant homes and the percent change in households below the poverty level. The reliability of the residential poverty scale was an alpha of .707.

Residential Stability

Residential stability is measured by the time that respondents lived in the neighborhood. This neighborhood level measure of residential stability was calculated by taking the average tenure of the survey respondents within each neighborhood.

Informal Social Control

Informal social control, the principal dependent variable, is defined as the individual's willingness to intervene or react when deviant behavior (i.e., behavior against community norms) occurs. This variable was constructed using four questions asking the individual about potential intervention in neighborhood burglaries and rowdy teens. The specific questions are listed in Appendix B with the results of tests for the scalability of these items.

Community Solidarity

Community solidarity or social cohesion was measured by a series of questions about the respondents' attachment to their block and their neighborhood. These items are described in Appendix B along with the results of inter-item analyses. The responses to the questions were summed to form a community solidarity scale.

Neighboring

A neighboring scale was developed from a number of questions related to interactions among neighbors. Questions addressed the levels of general neighboring and protective or defensive neighboring. General neighboring include behaviors such as visiting, running errands, borrowing tools, or working together to improve the block. Defensive neighboring consists of watching one another's homes, taking in their mail if away for an extended period of time or exchanging household keys. These behaviors describe the level of interaction among neighbors. Answers to the questions were summed to form a neighboring scale. The specific questions asked and the results of tests for the scalability of these items are presented in Appendix B.

Voluntary Associations

The level of participation in voluntary associations was measured by simply adding the number of organizations (0-9) in which an individual claimed membership. The type of organizations asked about included neighborhood associations, church, PTA, youth group, recreation center, political club, block club, social club or other type of community organization.

Individual and Community Controls

Individual controls include gender, race, educational level, children, home ownership, tenure in the area and marital status. These variables were included in the analysis because theory and prior empirical research indicated that these attributes of people would be related to their participation in the community and especially their involvement in informal social control (Sampson and Raudenbush, 1998). Community controls include average household income. Table 1 displays the univariate descriptives for each variable.

Table 1. Summary Statistics

Variable	Min.	Max.	Mean	SD
Community Level Variables				
Crime rate change	–28	139	49.96	31.86
Total arrest rate change	–33.33	169.32	42.48	50.76
Violent arrest rate change	–100.00	225.00	58.57	88.73
Drug arrest rate change	–100.00	540.00	61.38	152.51
Public order arrest rate change	–100.00	500.00	18.20	114.93
% change in poverty scale	–122	1005	117.65	191.29
Median family income	32,100	382,804	144,532	95,040
Average neighborhood tenure	4.71	29.59	18.92	5.41
Individual Level Variables				
Informal social control	0	4	2.01	1.41
Education level	0	1	.81	.39
Community solidarity	4	12	9.08	2.13
Neighboring	0	7	4.49	1.92
Voluntary associations	0	7	.90	1.19
Gender (female)	0	1	.61	.49
Race (African American)	0	1	.33	.47
Children	0	1	.27	.45
Married	0	1	.52	.50
Residential tenure	0	85	18.81	16.26
Homeowner	0	1	.75	.43

4.3. Model Specification

The conceptual model of the effects of arrest on community organization and collective efficacy as presented in Figure 3 is not simple to estimate. First, the model is necessarily complex. Arrest policies can affect collective efficacy and community organizations in a variety of ways, some direct and others indirect through other variables in the model. These direct and indirect effects must be estimated in a system of equations and not simply one equation as is customary in this field. Second, the model is not recursive. Not every variable at one point in the model is a function of variables at prior points in the model. The relationship between crime and coercion is obviously reciprocal—crime affects arrest and arrest affects crime.[5] This reciprocal effect will bias the coefficient describing the effect of coercion on crime. Using an instrumental variable and two stage least squares methods is one way of taking this problem into account, providing that a useful instrument is readily available. Third, the data are nested. The data include information on the individuals living in a neighborhood as well as information on the neighborhoods themselves. Prior research has shown that using OLS regression or the General Linear Model with nested data violates some of the assumptions of these techniques and can underestimate the effects of the neighborhood relative to the individual-level variables (Bryk and Raudenbush, 1992; Taylor, 1997).

In light of these complexities, we will estimate three different types of models. The first will be a single equation OLS model testing the direct effects of community level arrest rates on collective efficacy while holding other variables in the model constant. Direct effects of arrest on collective efficacy are posited in the conceptual model. The second set of models will employ instrumental variables and two stage least squares procedures to estimate the full model presented in Figure 3. This model would permit estimating the sum of direct and indirect effects that variables in the model have on community organization and collective efficacy. The final set of models will be estimated using hierarchical linear models to assess whether the OLS models underestimated the effects of neighborhood-level variables on community organization or collective efficacy.

The specific hypotheses implicit in Figure 3 are listed to Table 2.

4.4. Estimating the Direct Effects of Arrest

We used an OLS multi-variate regression models to test the model of an individual's decision to participate in informal social control. The first analysis tests the main model on the entire sample of neighborhoods. The second analysis models informal social control with the sample dichotomized by two measures of community stability. The main models use five measures of arrest: total, violent, drug, public order, and a drug to violent ratio. This was done to see if differences in the discretionary nature of the arrest influenced the effect of arrest policy on informal social control. There were two set of models run on more and less stable neighborhoods. The first set distinguished between those neighborhoods that had high differences in rates of residential mobility, .i.e. changes in vacant houses and home owners, between 1980 and 1990, and the second set distinguished between neighborhoods experiencing change in their socio-economic composition. Standardized and unstandardized regression coefficients, significant levels and r-squares are provided in the tables.

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[5]The endogeneity problem can also effect the relationship between coercion and informal social control. It is not clear immediately whether informal social control is affected by arrest or arrest is affected by informal social. This problem is ameliorated somewhat in this model by the fact that informal social control is measured at the individual level and coercion is measured at the community level. It is less likely that collective and individual characteristics will be due to a common cause than it is that two phenomenon measured at same level would be.

Table 2. Hypothesized Effects of Arrest Rates on Community Organization and Informal Social Control

Direct Effects on Informal Social Control

1. The greater the increase in coercion in a neighborhood, the less likely residents are to engage in informal social control.
2. The greater the increase in coercion for more discretionary crimes such as drugs and public order offenses, the less likely residents are to engage in informal social control.
3. The greater the increase in crime the less likely that a resident will participate in informal social control.
4. The greater the residential mobility in a neighborhood the lower the levels of informal social control.
5. The greater the downward mobility of an area in terms of the socio-economic status of its residents the less likely a residents is to engage in informal social control.
6. The more an individual resident engages in neighboring the more likely he is to participate in informal social control.
7. The greater the solidarity that a resident feels with the community the more likely that the resident will engage in informal social control.
8. The more a resident participates in voluntary organizations within the community the more likely that they will engage in informal social control.

Direct Effects of Coercion on Community Organization

1. The greater the coercion, the greater the participation in voluntary organizations.
2. The greater the coercion, the greater the levels of neighboring.
3. The greater the coercion, the greater the community solidarity.

Indirect Effects of Coercion Through Crime Reduction

1. The greater the coercion, the lower the crime rate, the greater the participation in informal social control.
2. The greater the coercion, the lower the crime rate, the greater the participation in voluntary associations.
3. The greater the coercion, the lower the crime rate, the greater the levels of neighboring.
4. The greater the coercion, the lower the crime rate, the greater the community solidarity.

Second and Higher Order Indirect Effects of Coercion Without Crime Reduction

1. The greater the coercion, the greater the participation in voluntary associations, the greater the participation in informal social control.
2. The greater the coercion, the greater the participation in voluntary associations, the greater the neighboring, greater the participation in informal social control.
3. The greater the coercion, the greater the levels of neighboring, the greater the participation in informal social control.
4. The greater the coercion, the greater the community solidarity, the greater the participation in informal social control.
5. The greater the coercion, the greater the participation in voluntary organizations, the greater the community solidarity, the greater the participation in informal social control.
6. The greater the coercion, the greater the participation in voluntary organizations, the greater the neighboring, the greater the community solidarity, the greater the participation in informal social control.

To examine the effects of arrest by community stability, we dichotomize the poverty scale into a relatively positive and negative change category. Positive poverty change are those communities that experienced a decrease in the aggregate measure of families below the poverty line and the number of vacant homes. The negative category are those who experience relatively large increases in families below the poverty line and vacant homes. Again, this crude categorization is an attempt to identify communities the may be spiraling into more chronic stages of deterioration and those either maintaining their current status or improving. We also developed two categories representing low and high levels of residential mobility. By simply dichotomizing the average residential length of stay in the neighborhood we attempt to capture relative measures of low and high neighbor turnover.

We use the Chow test for equal regression parameters across the dichotomized groups. The null hypothesis is that the regression intercept and slope are both independent, in this case, of change in poverty and residential turnover (Hagan and Dinovitzer, 1999:578 ; Chow, 1960).

A third set of analyses were performed to estimate the effects of coercion on the precursors of collective efficacy and specifically community solidarity and neighboring. This allows for the possibility that coercion will not affect collective efficacy but will affect the social organization of communities.

The regression results for predicting the willingness of an individual to engage in informal social control for each arrest rate are shown in Table 3.

The combined regression model demonstrated that arrests in the neighborhood had a marginally significant positive direct effect on the decision to engage in informal social control. This was the case for total arrests and drug arrests, but not for violent or public order arrests. There was no significant relationship between violent arrests and public order arrests and participation in informal social control.

When the neighborhoods are split into those experiencing less and those experiencing less decline or even increases in the socio-economic composition of the neighborhood, the effect of total arrests on neighboring is positive and significant for neighborhoods experiencing positive changes in the socio-economic composition of the area but insignificant for those areas experiencing more negative changes in the socio-economic status of residents. When the areas are distinguished according to residential stability, increases in arrests are positively related to informal social control in neighborhoods with greater turnover while in more stable communities there is no significant effect of changes in arrest rates on the decision to engage in informal social control.

Table 3. Unstandardized OLS Coefficients: Determinants of Informal Social Control for Arrest Rate Type

Variables	Total	Violent	Drug	Public Order
Community				
Arrest rate	.002 (.001)*	7.74E–4 (.001)	7.69E–4 (.000)*	3.82E–4 (.000)
Crime rate	8.88E–4 (.002)	.002 (.002)	.002 (.002)	.002 (.002)
Income	–3.40E–7 (.000)	–5.24E–7 (.000)	–5.04E–7 (.000)	–4.27E–7 (.000)
Poverty scale	1.67E–4 (.000)	8.97E–5 (.000)	1.41E–4 (.000)	2.22E–5 (.000)
Mobility	.007 (.011)	.009 (.011)	.001 (.012)	.007 (.012)
Individual				
Solidarity	.102 (.030)***	.100 (.030)***	.103 (.030)***	.099 (.030)***
Neighboring	.118 (.033)***	.120 (.033)***	.118 (.033)***	.122 (.033)***
Associations	–.028 (.049)	–.035 (.049)	–.028 (.049)	–.035 (.049)
Gender	–.113 (.112)	–.115 (.112)	–.118 (.112)	–.115 (.112)
Race	.008 (.132)	1.79E–4 (.132)	–.009 (.132)	.005 (.133)
Education	.258 (.148)*	.237 (.147)	.258 (.148)*	.219 (.147)
Married	.070 (.116)	.073 (.116)	.078 (.116)	.072 (.116)
Children	–.096 (.134)	–.085 (.134)	–.092 (.133)	–.080 (.134)
Home owner	–.103 (.136)	–.117 (.136)	–.090 (.137)	–.113 (.136)
Resident tenure	–.005 (.004)	–.005 (.004)	–.005 (.004)	–.005 (.004)
Constant	.376	.404	.507	.488
R2	8.8%	8.6%	8.8%	8.4%

Significance: * p<0.10, ** p<0.05, *** p<0.01
Note: Standard errors are in parentheses.

Table 4. Unstandardized OLS Coefficients: Determinants of Informal Social Control by Community Type for Total Arrest Rate

Variables	Positive Economic Change	Negative Economic Change	High Residential Turnover	Low Residential Turnover
Community				
Arrest rate	.003 (.002)*	.001 (.002)	.005 (.002)**	.002 (.002)
Crime rate	.002 (.003)	−.004 (.004)	.002 (.005)	−6.30E−4 (.003)
Income	1.28E−7 (.000)	−7.17E−7 (.000)	−5.17E−7 (.000)	−6.38E−8 (.000)
Poverty	—	—	1.22E−4 (.000)	.001 (.001)
Mobility	−.022 (.022)	.008 (.015)	—	—
Individual				
Solidarity	.085 (.044)*	.115 (.043)***	.135 (.043)***	.076 (.043)*
Neighboring	.149 (.050)***	.010 (.045)**	.104 (.046)**	.150 (.048)***
Associations	−.078 (.074)	−.005 (.067)	−.082 (.076)	−.019 (.066)
Gender	−.206 (.170)	−.055 (.154)	−.345 (.161)**	.095 (.158)
Race	.297 (.189)	−.235 (.218)	−.132 (.193)	.164 (.198)
Education	.167 (.206)	.426 (.221)*	.119 (.226)	.300 (.197)
Married	.034 (.172)	.083 (.164)	.224 (.168)	−.067 (.166)
Children	−.045 (.189)	−.162 (.196)	.103 (.187)	−.219 (.194)
Home owner	−.093 (.189)	−.008 (.212)	−.199 (.187)	.037 (.202)
Resident tenure	−.004 (.006)	−.005 (.005)	−.004 (.006)	−.006 (.005)
Constant	.712	.566	.359	.335
R2	10.7%	9.2%	11.6%	9.8%

Significance: * p<0.10, ** p<0.05, *** p<0.01
Note: Standard errors are in parentheses.

At the individual level the community solidarity and neighboring had a positive effect on participation in informal social control. The more positive a respondent's view of the neighborhood the more likely they are to engage in informal social control. Similarly, the greater the respondent's involvement in interactions with neighbors the great her willingness to engage in informal social control. The effects of these variables are strong and positive in all of the models.

Some variables are conspicuous in that they had no significant effect on participation in informal social control. Specifically, the respondent's participation in voluntary associations such as churches or civic groups is not significantly related to informal social control in any of the models. Previous studies of social cohesion and even some of the evaluations of the effects of community policing suggest that participation in voluntary associations is an important part of neighborhood infra-structure that facilitates mobilization of residents for specific activities such as informal social control.

There are many other attributes of individuals such as whether they have children under 18, are married, own their home, lived in the area a long time, as well as their race and gender which have little influence on participating in informal social control. Many of these factors have been associated with participation in voluntary associations and with community solidarity but they are not related to participation in informal social control in this analysis. It may be that many of these individual characteristics are traditionally associated with neighborhood participation are simply not associated with the specific act of informal social control. Alternatively, it may be that the effect of these factors is mediated through other variables in the model such as neighboring and community solidarity and when these variables are in the model the effects of these factors is not apparent.

4.5. Estimating the Total Effects of Arrest

The model presented in Figure 3 not only allows for the direct effects of arrest rates on participation in informal social control, but it also allows arrest rates to affect participation in informal social control through its effects on community organization and specifically participation in voluntary organizations in the community, neighboring and attachments to the community. In order to estimate these indirect effects of arrest, we must estimate a system of simultaneous equations wherein separate equations are used to estimate all of the "endogenous" variables in the model presented in Figure 3. The crime rate in a community, for example, would be modeled using structural characteristics of the area, e.g. poverty, mobility and stability, as well as the arrest rate in the area. Participation in voluntary organizations would be modeled using the structural characteristics of the neighborhood, arrest rates and control variables that are characteristics of the respondent, e.g. gender, race, etc. Ultimately an equation will be estimated for participation in informal social control which will look a great deal like the model presented above. The results of these equations will be combined to estimate all of the paths in the Figure 3.

As noted previously the model presented in Figure 3 includes reciprocal or simultaneous relationships, that is, some variables determine each other simultaneously rather than having one variable clearly occur in time before another and clearly cause the other. This is specifically the case for arrests and crime. Crime affects the arrest rate in an area but the arrest rate also influences the crime rate. Sorting out this simultaneous equation bias requires the use of instrumental variables and two stage least squares.

The instrument employed here is the ratio of drug arrests to total arrests in the area in 1992. This variable was used as an instrument because it fulfills the conditions of a good instrumental variable. It is theoretically and empirically related to arrest but unrelated to crime. Unlike other arrests, drug arrest activity is pro-active, not reactive to citizen complaints. Police seek out drug activity and the harder they seek, the more they will find. High drug arrest rates, then, are independent of other common law crimes but, because they are indicative of aggressive police practices, they will be correlated with arrest rates. We assume that when drug arrest rates are high other arrest rates will also be high. This theoretical argument is consistent with the correlations observed among these variables. The instrument is highly correlated with the arrest rate but not strongly correlated with the change in the crime rate (see Table 5).

Table 5. Correlation Matrix for Change in Crime Rate, Change in Arrest Rate and the Instrumental Variable the Ratio of Drug Arrests to Total Arrests

Variables	Change in Arrests 87 to 92	Change in Crime Rate 87 to 92	Ratio of Drug to Total Arrests 92
Change in Arrests 87 to 92	1.00	−.021	.584***
Change in Crime Rate 87 to 92		1.00	.096*
Ratio of Drug to Total Arrests 92			1.00

Significance: * p<.05, ** p<.01, *** p< .001

If we employ the customary criteria for statistical significance (p=.05) in assessing this system of equations, then change in arrest rates does not have a significant direct effect on participation in informal social control. This is not consistent with the direct effects model where the measure of the arrest rate was used without instrumentation. The only variable that is directly affected by the change in the arrest rate is community solidarity. The greater the change in the arrest rate, the lower the level of community solidarity (beta = −.098). Arrest has a modest indirect effect on informal social control through community solidarity. Increases in arrests leads to lower levels of solidarity which results in less participation in informal social control because higher solidarity is associated with higher levels of informal social control.

There are a number of coefficients in this system of equations that are nearly significant at the .1 level and it is would not be appropriate to ignore these relationships in our discussion. Specifically, there is a direct positive effect of change in arrest on participation in informal social control (beta = .067, p = .12). There is also a negative effect of change in arrest on participation in voluntary organizations in the neighborhood (beta = -.064, p = .13). The greater the increase in arrests, the lower the participation in voluntary associations. As a result change in arrests has an indirect effect on informal social control through participation in voluntary associations and feelings of solidarity. This indirect effect is negative. Increases in arrest rates are associated with lower participation in voluntary organizations which is positively related to neighboring and solidarity which are, in turn positively correlated with informal social control. The sum of these paths are negative. When arrests are high participation in voluntary organizations decreases which reduces neighboring which reduces participation in informal social control. Similarly, high arrests are negatively related to solidarity which decreases participation in informal social control. When the .15 significance level is employed, then, increases in arrest have both positive and negative effects on participation in informal social control and largely negative effects on community organization.

In this model, crime rates have little to do community organization or with informal social control. Communities with large increases in crime rates are no different from those with more modest increases or even decreases in crime with regard to participation in voluntary associations and neighboring or with regard to feelings of solidarity or participation in informal social control. This is a crucial link in the Weed and Seed type theories wherein aggressive intervention by the police will reduce crime and thereby bolster community organization and informal social control. The level of crime in these neighborhoods does not seem to be related to participation in the community, so crime reduction cannot have the beneficial effects on neighborhoods that the Weed and Seed model alleges. Moreover, we did not find a negative relationship between arrest rates and crime. This challenges another aspect of the Weed and Seed model and that is the hypothesis that aggressive arrest policies will be associated with lower levels of crime.

Table 6. System of Simultaneous Equations for the Effects of Arrest on Community Organization and Collective Efficacy

| Predictors | Dependent Variables | | | | | |
	Arrest	Crime	Voluntary Org	Neighboring	Solidarity	Informal Social Ctr
Area Attributes						
Poverty	-.401***	.428***	.14***	-.075+	.050	.021
Tenure	.107 ***	.026	.048	.076+	-.021	.028
Md. Income	-.057	.137***	-.042	.014	.008	-.033
Crime	.245***	—	.013	.033	.149***	.019
Arrest	—	.236 ***	-.064+	.057	-.098 ***	.067+
Individual Attributes						
Solidarity			—	—	—	.158***
Neighbor			—	—	.434***	.162***
Vol. Org.			—	.167***	.204 ***	-.028
Gender			.041	.003	.072 *	-.037
Race			.069	-.162***	.189***	-.010
Education			.154	.189***	-.082**	.071+
Married			.080	.062	-.064+	.033
Kids			.169***	.057	-.027	-.029
Home owner			.064*	.204***	.054	-.026
Tenure			.104**	-.089*	.108 ***	-.059
R2			.113	.172	.324	.087

Significance: * p<.05, ** p<.01, *** p< .001

Figure 4. Significant Effects of Arrest on Informal Social Control

Figure 4. Significant Effects of Arrest on Informal Social Control
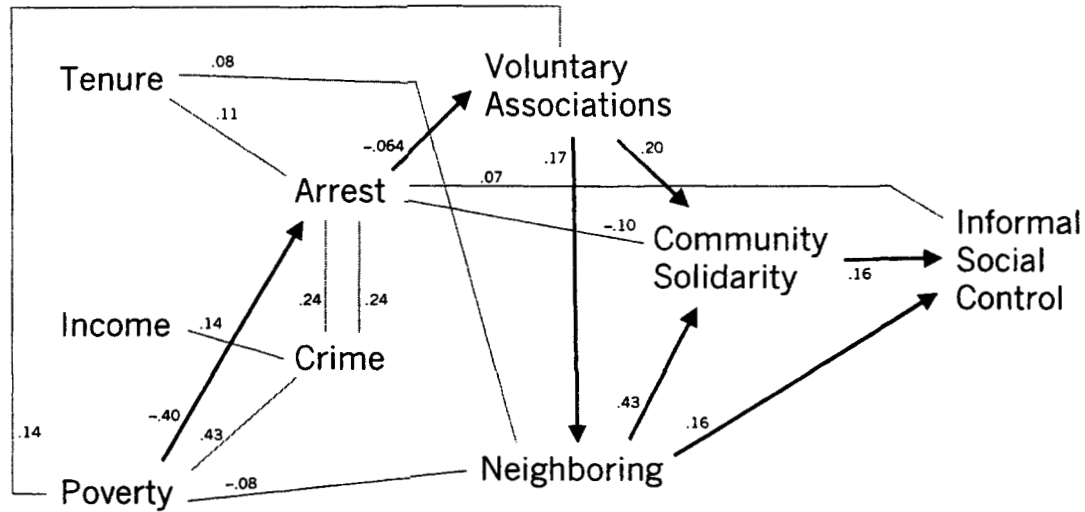
In sum, there is some evidence of a positive effect of high arrest rates on participation in informal social control, these effects are significant in the direct effects models and marginally significant in the structural equation models that take account of simultaneous equation bias. Increases in arrest, however, have negative effects on the social organization of neighborhoods, i.e. community solidarity and participation in voluntary organizations, that is undesirable in its own right and has a modest negative effect on informal social control. Taking these negative indirect effects of arrest into account does not eliminate the positive effect of changes in arrest on participation in informal social control. The positive effects of arrest on participation in informal social control do not operate through reductions in crime as Weed and Seed theories maintain. Aggressive arrest policies may influence resident's behavior through perception or fear rather than be crime reduction *per se*. We did not examine this process here.

The effects of community-level variables such as the neighborhood crime rate or the arrest rates may be understated in the simultaneous equation model presented above. The data employed here are nested, that is, data from different levels of aggregation are included and data from one level , e.g. persons, are located or nested within larger units such s neighborhood. In this case, coefficients from OLS may be biased and standard errors affected in ways that make it more difficult to attain statistical significance for the neighborhood-level variables. For this reason, the foregoing analyses must be considered conservative and possibly under estimates of the effects of neighborhood-level factors. To test for this possibility, we estimated the model using Hierarchical Linear Models (HLM). This procedure produces consistent estimates and robust standard errors that will not artificially inflate standard errors. This should provide a less conservative test of the effects of neighborhood-level variables on community organization and informal social control.

4.6. Taking Account of Nested Data

OLS regression assumes that the value for a given respondent on given variable in a particular community is independent of the value on that variable for another respondent in the same community. It also assumes a constant variance on the variable within communities. If these assumptions are satisfied then OLS will yield coefficients describing the effects of community level variables on the

outcome variable that will be efficient and unbiased. If these conditions are not satisfied then the estimates of the coefficients will be consistent (accurate in large samples) but not efficient. The standard errors for these coefficients, however, will generally be biased even in large samples. Consequently, our determinations of statistically significant relationships in the foregoing OLS analyses could be incorrect. Hierarchical Linear Models (HLM) were developed expressly for the use with nested data (Bryk and Raudenbush, 1992). These methods can produce superior estimates of coefficients and robust standard errors that will be unbiased even when the assumptions required by OLS are violated. For these reasons we, re-estimated the OLS models presented in Table 6 using HLM. The results of these analyses are presented in Table 7.

The negative effects of arrest rates on aspects of community organization observed in the OLS models are also observed in the HLM models, but the coefficients are more significant statistically with the latter method than they are with the former. Respondents living n communities with higher arrest rates participate in voluntary organizations less than those in neighborhoods with lower arrest rates. Higher arrest rates are also associated with lower levels of community solidarity. The HLM models show a marginally significant negative effect of arrest rates on neighboring. The relationship between arrest rates and neighboring was positive but not statistically significant in the OLS models.

The direct effect of arrest on participation in informal social control is not statistically significant in the HLM model, while it was marginally significant in the OLS models.

In general, then, the HLM models confirm the negative effects of arrest rates on aspects of community organization and raise some questions about the robustness of the positive effects of arrest rates on participation in informal social control.

Table 7. System of Simultaneous Equations for the Effects of Arrest on Community Organization and Collective Efficacy Using HLM: Standardized Coefficients

| Predictors | Dependent Variables | | | |
	Voluntary Org.	Neighboring	Solidarity	Informal Social Ctr
Area Attributes				
Poverty	.000825***	-.00024	.00014	.000029
Tenure	.02 *	.0238	.0425+	.0016
Md. Income	-.000000	.000002**	.00000	-.000000
Crime	.00087	.00675**	.00812**	.0017
Arrest	-.10.47 **	-9.753+	-.20.5**	4.022
Individual Attributes				
Solidarity	—	—	—	.074**
Neighbor	—	—	.4907***	.152***
Vol. Org.	—	.2937***	.3742 ***	-.0242
Gender	.0847	-.0759	.2629 *	-.102
Race	.0499	-.17862***	.4692 +	.064
Education	.3517 ***	1.05***	-.5934**	.3003**
Married	.2129***	.3359**	-.3304**	.06
Kids	.3852***	..263+	-.2242+	-.0547
Intercept	.8849***	4.473***	9.04***	2.01***
R2	.113	.172	.324	.087

Significance: * p<.05, ** p<.01, *** p< .001

Table 8. Standardized OLS Coefficients: Direct Effects Models of Incarceration on Informal Social Control

Variables	Beta	T	Significance
Community			
Change in admissions	.052	1.07	.279
Change in crime	.031	.708	.479
Income	−.015	.708	.479
Poverty scale	.027	.603	.547
Mobility	.034	.723	.47
Individual			
Solidarity	.14	2.99	.003***
Neighboring	.187	3.94	.000***
Associations	−.016	−.368	.713
Gender	−.052	−1.29	.199
Race	.009	.179	.858
Education	.065	1.5	.133
Married	.040	.946	.344
Children	−.45	−1.022	.307
Home owner	−.057	−1.27	.203
Resident tenure	−.038	−.811	.418
R2	9.1%		

Significance: * p<0.10, ** p<0.05, *** p<0.01
Note: Standard errors are in parentheses.

4.7. Conclusion

Prior work on the effects of arrest policies on crime found that arrest rates were negatively related to crime rates in cities, but these studies could not identify the process by which arrest influenced crime. Boland and Wilson (1983) contend that aggressive patrol and arrest practices deter crime by increasing the certainty of punishment, while Sampson and Cohen (1988) allow for an indirect influence of arrest through increases in informal social control. This analysis suggests that aggressive arrest practices may contribute to increases in informal social control at the neighborhoods level, but these practices also have negative effects on the social organization of communities. Increasing arrest rates are associated with declining participation in voluntary associations and attachments to communities. Both of these conditions are important for maintaining organized and viable communities.

This analysis did not find the negative effect of arrest rates on crime observed in city-level studies. This is important in that the popular theories linking coercion to improvements in community do so through crime reduction. Aggressive arrest practices are assumed to result in reductions in crime reduction which, in turn, lead to increases in participation in the community and ultimately to increases in informal social control. Since increasing arrest rates do not produce reductions in crime, then this process will not occur.

This finding means that any effect of arrest polices on community organization will occur through the effects of these policies on the perceptions of citizens, including perhaps reductions in fear. If this were the case, however, we should have seen directs effects of arrest on participation in voluntary associations and neighboring, but this did not occur. It would be useful to test more directly the effects of arrest policies on community organization through fear reduction.

In sum, the results presented here raise questions about the "weed and seed" theories of how coercion, and specifically arrest policies, can help build communities and encourage collective

efficacy. There is no support for the contention that arrests reduce crime and that crime reduction encourages increased participation in communities. There is little support for the theory that arrest rates increase perceptions of safety and thereby encourage participation in communities, although this could be tested more directly. There is support for the argument that increases in arrest have negative effects on the social organization of communities.

It is important here to heed Nagin's (1999) warning about over generalizing results. These findings raise questions about the influence of *increases in arrests* on crime, community organization and collective efficacy. Increases in arrest rates do not reduce crime, but do undermine community organization. This should not be used to suggest that police policies more generally undermine community organization. Very specific arrest policies, patrol strategies or community policing programs may have beneficial effects on community organization and collective efficacy. The effect of these policies must be assessed in their own right.

This analysis only examines the effect of arrest rates on community organization and collective efficacy. "Weed and seed" strategies did not necessarily restrict "weeding" to arrest practices, but also included incarceration. Consequently, in the next section we assess the effects of increases in incarceration rates on community organization and collective efficacy.

5.0. TESTING THE MODEL OF THE EFFECTS OF INCARCERATION ON COMMUNITY ORGANIZATION AND COLLECTIVE EFFICACY

The conceptual model for the effects of incarceration on community organization and collective efficacy is largely the same as that for arrest and need not be repeated at length here. The variables in the model and the manner in which they were measured are largely the same except for the operationalization of the incarceration variable. The model specification is also the same as that presented in the arrest section. First, a direct effects model will be estimated, followed by structural equation models to assess both direct and indirect effects of incarceration and, finally, hierarchical linear models will be estimated. The instrumental variable used in the simultaneous equation models for incarceration is also the same as that used in the arrest model. The appropriateness of this instrument is discussed below.

5.1. Measuring Incarceration

There are a number of ways to measure an incarceration rate depending upon the theory used to link incarceration with crime, community organization and informal social control. According to incapacitation theories incarceration will reduce crime in proportion to the number of offenders removed from an area. This would suggest that an incarceration rate that divided the number of person in prison over the at-risk population would be the best measure of incarceration to use. This would indicate the proportion of potential offenders removed from society and therefore unable to victimize residents of the area or others. Since we do not have the stock population in prison and their address, we were unable to estimate the stock incarceration rate for an area. An admissions rate (the number of persons admitted from a specific neighborhood divided by the at-risk population in the neighborhood) can be constructed from our data and it would indicate the proportion of the potential offender population being removed from the neighborhood in a given year.

Deterrence theories would suggest using measures of the certainty and severity of punishment based on the use of incarceration. Here the ratio of the number of persons admitted to prison for a given offense over the number of persons convicted of that offense or arrested for that offense would be a reasonable measure. Although there are no data on convictions in a given area, the data set does include arrest data. Unfortunately, the use of address of occurrence for the crime data and residence of the offender for the arrest data may complicate the use of the incarceration to arrest ratio in this way.

Very different measures of incarceration could be used if the emphasis was on the socially disruptive effects of imprisonment rather than on the crime reduction effects of incarceration. Sabol and Lynch (2000) argue that it is not simply the number of persons removed from the community to prison on a given day, but the cumulative effect of entry into prison over time. With this measure annual imprisonment rates are not as important as the cumulative number of persons being touched by prison over a five or ten year period. These would be the communities with the greatest proportion of residents tainted by the prison experience. Annual imprisonment rates would be accumulated over time and communities who have the most people "touched by prison" would be the most adversely affected. It is not clear how this measure of incarceration would fit with incapacitation and deterrence theories.

For purposes of this modeling we chose to use the change in admissions rates between 1987 and 1992. Admissions rates are an appropriate indicator of the proportion of the at risk population being removed from the community in a given unit of time. The admissions rates were computed as the ratio of the number of persons admitted in a given year from a neighborhood over the number of persons between 18 and 34 years of age residing in a that neighborhood in 1990. This ratio was multiplied by 1000 and the rate for 1987 was subtracted from the rate for 1992.

The restricted denominator was used because it is a reasonable approximation of the at-risk population, since most admissions to prison are young. Including the total population would have included very young and very old populations that had very little risk of incarceration. It may have been better to have restricted the denominator further to males, but data on the gender of inmates was not available and the gender distribution in population aggregates is not nearly as variable as the age distribution.

5.2. Instrumenting the Incarceration Variable

The ratio of drug arrests to total arrests in the area in 1992 was again employed as an instrumental variable in this analysis. This was done because this variable satisfied the conceptual and empirical requisites for an instrumental variable, that is, being correlated with incarceration rate and independent of the crime rate. Drug arrests should be positively related to incarceration because of the increased attention to drug crimes and high demands for punishing these crimes over this period. Drug violations had become a high priority for prosecution and the object of various sentencing reform efforts, such as mandatory minimum sentences, that would increase the likelihood of a prison sentence upon conviction. All of these factors contribute to the likelihood of a high correlation between drug arrest and incarceration. At the same time, the discretionary nature of drug enforcement that we discussed previously (see section 4.2 above) would make drug arrests independent of the crime rate in the area.

Empirically the ratio of drug arrests to total arrests is correlated both with changes in crime rates and changes in incarceration rates. The correlation with changes in the crime rate are very weak however (r=.09) and the correlations with changes in the incarceration rate are relatively strong (r=.482). While the change in the crime rate is not independent of the ratio of drug arrests total arrests, the relationship between the two variables is weak enough to make this variable an acceptable instrument.

Table 9. Correlation Matrix for Crime Rate, Change in Admissions Rate and the Instrumental Variable the Ratio of Drug Arrests to Total Arrests

Variables	Change in Admissions 87– 92	Crime Rate Change 87 to 92	Ratio of Drug to Total Arrests 92
Change in admissions 87–92	1.00	–.335***	.482***
Crime Rate Change 87 to 92		1.00	.098**
Ratio of Drug to Total Arrests 92			1.00

Significance: *** p< .01; ** p<.05; • P<..1; + P< .15

5.3. Estimating the Direct Effects of Incarceration on Collective Efficacy

The direct effects model of collective efficacy was estimated using OLS regression. When collective efficacy is regressed on all the other variables in the model only three variables have statistically significant effect on participation in informal social control. Both the residents feelings of community solidarity and the extent to which he or she engages in neighboring have a positive and significant effect on her willingness to engage in informal social control. The education attainment of the respondent is positively related to participation in informal social control (beta=.065, p=.13). The higher the educational attainment the great the participation in informal social. The change in the incarceration rate does not have a significant direct effect on a resident's willingness to engage in informal social control.

These results are consistent with the general theories about how community organization affects collective efficacy. Communities in which residents have high levels of interaction and high levels of solidarity are areas in which residents will engage in informal social control. These results do not suggest that removing residents through incarceration is related to greater willingness to engage in informal social control.

This simple direct effects model does not test the effects of coercion on communities in a manner consistent with the theories presented above. The effects of incarceration may operate indirectly by encouraging interaction among residents rather than by directly encouraging residents to engage in informal social control. These indirect effects are better measured in s structural equation model in which both direct and indirect effects of incarceration can be assessed. Moreover, the reciprocal relationship between crime and incarceration may bias the coefficient describing the relationship between incarceration and informal social control. Instrumental variables should be used to take account of the simultaneity between changes in crime and changes in incarceration. For these reasons we estimated structural equation models using instrumental variables and two stage least squares.

Table 10. System of Simultaneous Equations for the Effects of Incarceration on Community Organization and Collective Efficacy Using 2SLS

Predictors	Prison	Crime	Voluntary Org	Neighboring	Solidarity	Informal Social Ctr
Area Attributes						
Poverty	−.505***	.428***	.113**	−.051	.01	.048
Tenure	.235***	−.037	.065	.061	.005	.01
Md. Income	−.572***	.339***	−.097*	.064	−.077	.025
Crime	.153***	—	.013	.033	.149***	.019
Prison	—	.376 ***	−.102+	.091	−.157 ***	.107+
Individual Attributes						
Solidarity			—	—	—	.158***
Neighbor			—	—	.434***	.162***
Vol. Org.			—	.167***	.204 ***	−.028
Gender			.041	.003	.072 *	−.037
Race			.069	−.162***	.189***	−.010
Education			.154	.189***	−.082**	.071+
Married			.080	.062	−.064+	.033
Kids			.169***	.057	−.027	−.029
Home owner			.064*	.204***	.054	−.026
Tenure			.104**	−.089*	.108 ***	−.059
R2	.678	.211	.113	.172	.329	.087

Significance: * p<.05, ** p<.01, *** p< .001

Table 11. System of Simultaneous Equations for the Effects of Incarceration on Community Organization and Collective Efficacy Using HLM: Standardized Coefficients

	Dependent Variables			
Predictors	Voluntary Org	Neighboring	Solidarity	Informal Social Ctr
Area Attributes				
Poverty	.000555**	-.00049	-.000387	.000396 *
Tenure	.0263**	.0297	.0548*	-.000736
Income	-.000002*	-.000001	-.000002	-.00000
Crime	-.00087	.0067**	.0081**	.001738
Prison	-.0514**	-.0478+	-.1006**	.019736
Individual Attributes				
Solidarity	—	—	—	.0741**
Neighbor	—	—	.4907***	.1516***
Vol. Org.	—	.2934***	.3742***	-.0242
Gender	.084	-.0759	.2629*	-.1026
Race	.049	-.7862***	.4692+	.06472
Education	.354***	.189***	-.5934**	.3003 **
Married	.212**	.062+	-.3304**	.0603
Kids	.38***	.2632 *	-.2242+	-.0547
Intercept	.884***	4.47***	9.04***	2.014***
R2	.113	.172	.329	.087

Significance: * p<.05, ** p<.01, *** p< .001

## 5.4. Estimating Total Effects of Incarceration

The structural equation model presented in Figure 3 was estimated using two stage least squares in estimating the crime equation. The ratio of drug arrests to total arrests in the neighborhood in 1992 was used as an instrument (along with the other exogenous variables in the model) to predict the change in the rate of admissions from 1987 to 1992. This predicted rate was employed as a measure of incarceration in estimating all of the other equations in the model including the crime equation. The coefficients obtained in the various equations are presented in Table 10 and the significant coefficients are presented in a directed graph of the model in Figure 5.

The effects of incarceration on collective efficacy and on aspects of community organization are mixed. Some of the effects are consistent with the "Weed and Seed" model and others are not. Change in the level of incarceration, for example, has a positive and marginally significant effect on participation in informal social control. On the other hand, changes in incarceration rates are not associated with decreases in crime at the neighborhood level. Moreover, increases in incarceration are also associated with decreases in aspects of community organization and specifically participation in voluntary organizations and community solidarity. It appears that increases in neighborhood incarceration rates have both positive and negative effects on neighborhoods.

The level of incarceration has a positive and significant effect on the change in the crime rate in the area. The higher the incarceration rate the higher the crime rate, all other things being equal. This is inconsistent with our expectation from the weed and seed model that posits a negative effects of arrest on crime in an area. The absence of a negative effects of change in arrest on change in crime is inconsistent with previous work done at the city level (Boland and Wilson, 1981; Sampson and Cohen,

1988). This inconsistency may be due to the fact that the incapacitation effect or deterrent effect of incarceration may occur at the city level but not at the neighborhood level. Marvel and Moody (1998) have suggested that the negative effects of incarceration on crime may be suppressed by a free-rider effect in which states with low incarceration rates benefit from the high incarceration rates of their neighbors. This may be operating at the neighborhood level and suppressing the negative effect of incarceration on crime.

Figure 5. Significant Effects of Incarceration on Informal Social Control

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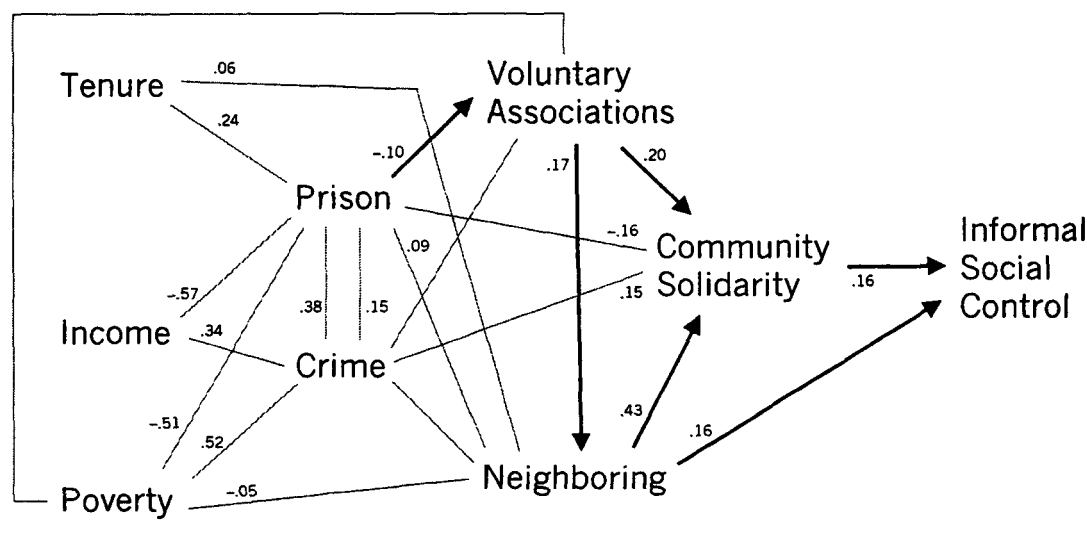
Very often the positive effect of incarceration on crime is attributed to simultaneous equation bias and is seen as a statistical artifact. The fact that this analysis employed instrumental variables and two stage least squares should reduce this artifact. It is always possible that better instrumental variables could be employed and the effect of incarceration on crime would become negative. The instrument used here, however, fulfills the technical requirements of instruments and make conceptual sense. For these reasons, these findings must be considered real and not artifact until better instrumentation suggests otherwise.

The positive effect of incarceration on crime may be due to the reciprocal relationship between incarceration and crime posited by Rose and Clear (2000) and explicated by Sampson and Cohen (1987). Increases in incarceration weaken families and other institutions that supervise young males in communities which results in high rates of crime in those communities. Other relationships between incarceration and community organization in this model support this argument. Increases in incarceration rates reduce participation in voluntary associations and feelings of community solidarity which are crucial for maintaining the viability of communities. These attributes of communities are crucial for mobilizing residents to action on behalf of the community, whether that action is participating directly in informal social control or petitioning city bureaucracies for better service. The positive relationship between changes in crime and changes in incarceration as well as the negative relationship between incarceration and community organization support the allegations of the negative effects of incarceration on neighborhoods made by Rose and Clear and others.

In contrast, the positive direct effects of incarceration on participation in informal social control is somewhat consistent with weed and seed theories of the relationship between coercion and communities. Removing offenders may embolden those who remain to engage in informal social

control. These findings are inconsistent with "weed and seed" theories in that the effects of incarceration on informal social control do not occur through crime reduction. In fact, the only significant relationship between crime and participation in the community is positive. Increases in the police-recorded crime rate are associated with higher levels of community solidarity. Citizens appear to respond to crime with enhanced feelings of attachment to the area.

Nonetheless, the positive relationship between increases in incarceration rates and higher levels of participation in informal social control require explanation. The beneficial effects of incarceration on informal social control in neighborhoods may occur through processes other than crime reduction. Removing certain individuals from the community may reduce the level of incivility or menace in an area that did not become crime *per se*. Removing the menace may give residents the confidence to engage in informal social control. The link between incarceration and informal social control may occur through fear reduction and not through crime.

The apparent contradiction between both positive and negative effects of incarceration requires explanation. We can speculate as to what conditions would allow both effects to occur. It is possible increases in incarceration would reduce the fear or perceived risk of victimization and embolden residents to engage in informal social control. This explanation would seem more appropriate for arrest than for incarceration. To the extent that arrest is made at the scene of a crime, it will send a message to community residents that they can expect support from the police when and if they engage in informal social control. Incarceration occurs much less frequently and some time after a crime event. Unlike arrest, incarceration does remove people from the community and their removal can make those who remain feel safer and thereby encourage them to engage in informal social control.

At the same time, removing residents through incarceration can negatively affect participation in voluntary organizations. Incarcerating persons can reduce participation in voluntary associations by removing members of these associations or by restricting the time of those not in prison. If incarceration removes members of the organization to the point where the organization can not exist or must change fundamentally to survive, then this could reduce participation in these organizations among those who remain. Alternatively, incarcerating members of households can put more pressure on those who remain to perform the functions necessary to sustain the household. With time constrained members of the household opt out of non-essential activities, some of which will involve voluntary organizations. Finally, increases in incarceration can affect participation in voluntary associations by "tainting" neighborhoods to the point that voluntary organizations choose to relocate, thereby making it more difficult for residents to participate. This assumes that increases in the rate of incarceration will taint a neighborhood independent of crime rates, declining property values or other factors that can make areas unattractive to organizations. It is important to sort these processes out.

Increasing incarceration can reduce feelings of attachment to communities in a number of ways. To the extent that imprisonment "taints" a person such that neighborhood residents consider this person less desirable than before, then increasing numbers of persons entering prison could reduce the perceived desirability of the area. When this occurs, feelings of solidarity with the community could diminish. One could envision, for example, a family with teenagers considering a neighborhood less desirable as an increasing number of their son's peers acquire prison records. Feelings of attachment to the community could also decrease because of the decreases in the quality of life brought on by increases in imprisonment. For example, the demise of voluntary organizations as a result of increases in incarceration discussed above could reduce attachment to the area. Indeed, participation in voluntary organizations is positively related to solidarity in the model. The indirect effect of incarceration on solidarity through voluntary organization, however, is modest relative to the direct effects of incarceration on solidarity. This suggests that it is something about incarceration per se that reduces solidarity and not the effect of incarceration on other aspects of community organization.

The apparent contradiction between positive effects on participation in informal social control and negative effects on participation in voluntary organizations and on solidarity may not be

incompatible after all. If incarceration removes persons who make residents fearful, then removing those persons could encourage greater participation in informal social control or collective efficacy. Residents are less fearful that their involvement in informal social control could turn out badly. At the same, time removing residents can weaken the organizational life of the community, either by having organizations fail, change or relocate or by constricting the time of household experiencing imprisonment to the point where participation in these organizations is not possible. Incarcerating an increasing number of neighborhood residents may "taint" the area in the eyes of the residents who remain, such that their attachment to the area attenuates. Coercion may solve one problem in the short term but create others in the longer term.

5.5. Taking Account of Nested Data

The results from the HLM analysis for the effects of incarceration are similar to those observed for arrest. The negative effects of increases in the incarceration rate on aspects of community organization become more significant in the HLM while the positive effect of incarceration on participation in informal social control become less significant. The negative effects of increases in incarceration on participation in voluntary association is negative in the HLM and more statistically significant than it had been in the OLS models. The same is the case for the effects of incarceration on community solidarity. The HLM models show a negative and marginally significant effect of incarceration on participation in informal social control. In the OLS models, the effect of incarceration was positive but insignificant. It is not clear why the sign should change when HLM is employed. This casts doubt on our earlier findings of the positive effect of incarceration on participation in informal social control.

5.6. Conclusion

The effects of incarceration on the social organization of communities and specifically collective efficacy are very similar to those observed for arrest. Incarceration rates have a negative effect on aspects of community organization. The evidence for a positive effect of incarceration on collective efficacy is not as strong as the evidence in the arrest models. While there is a marginally positive effect of incarceration in the structural equation models using OLS, these effects disappear when HLM is used.

6.0. CONCLUSIONS AND IMPLICATIONS

There has been a great deal of rhetoric about the importance of communities in crime control. A substantial body of research has accumulated that contributes to our understanding of exactly how communities can and do achieve and maintain low crime rates. The amount of rhetoric on the importance of state coercion in maintaining viable communities is also voluminous, both by those advocating coercion and those opposing it. This rhetoric has not been matched by the volume of research on this topic at the neighborhood level. This report is one of a very few studies of the effects of coercion, that is, arrest and incarceration policies on communities. As such it was intended to inform the basic assumptions of crime control strategies designed to bolster communities and, thereby, reduce crime. It addressed the basic question of whether or not increasing coercion increased participation in communities and specifically participation in informal social control. The answers provided are necessarily narrow and tentative. More work must be done to replicate and elaborate the

work done here. Understanding the role of coercion on communities is too important to rest upon one or two isolated investigations.

Does increasing arrests or incarceration in a neighbored increase participation in the community and specifically participation in informal social control?

The answer is yes and no. Arrest rates in neighborhoods have positive effects on participation in informal social control by residents. Increases in arrest rates are associated with higher levels of participation in informal social control. The evidence for a positive effect of incarceration on community organization and informal social control is more equivocal. A positive effect on informal social control is observed in one model by not observed in others.

These increases in informal social control are not associated with decreases in crime. Arrest and incarceration are not associated with decreases in neighborhood crime rates. Increases in arrest and incarceration may affect participation through decreases in fear, decreases in the perceived risk of victimization, or other factors not related to the actual level of crime in an area.

Both arrest and incarceration have negative effects on other aspects of participation in communities, however. Increases in arrest or incarceration are associated with lower levels of participation in voluntary organization and lower levels of attachment to communities. This type of participation in communities is essential for maintaining organized and viable communities. Voluntary associations serve as a means of facilitating and broadening interaction among residents that is crucial for mobilizing communities. It strengthens and complements more incidental interaction such as neighboring and fosters solidarity. If interaction provides the means to community mobilization, then solidarity provides the motivation. Positive attachments to an area will encourage neighborhood residents to participate in the setting and achieving of collective goals such as obtaining better schools or better service from the police.

Increases in arrest then, appear to encourage participation in informal social control while decreasing participation in other beneficial aspects of community organization. It is not clear that increases in incarceration have the same effect on informal social control, but the negative effects of incarceration on community organization are clear.

What are the implications of these findings?

These findings provide some support for both sides of the community and coercion debate. They provide evidence that aggressive arrest and incarceration policies in neighborhoods do encourage participation in informal social control, although the process by which this occurs is not completely understood. These findings also support the contention that aggressive arrest and incarceration policies have adverse effects on the social organization of neighborhoods. These data are not sufficient to "net out" the costs and benefits of coercion for neighborhoods. If the goal is simply encouraging participation in informal social control, then the positive effects of arrest outweigh the negative effects. If the goal is to strengthen communities more generally, then the effects negative effects of high arrest and incarceration rates would outweigh the positive effects.

The analyses presented here can be used to inform the consideration of general strategies for using coercion to bolster neighborhoods. They can not be used to prescribe or proscribe specific programs. These results indicate that in considering the effect of coercion on communities, we must consider both positive and negative effects because both occur. This is important largely because the debate about coercion and community has to this point been in absolutes. Coercion was either uni-dimensionally beneficial or uni-dimensionally detrimental to communities and collective efficacy. These findings suggest that the process is more complex. Coercion has both positive and negative effects on communities. More work must be done to understand specifically how coercion has its positive and negative effects on communities before programs can be prescribed.

What more do we need to know?

It is important to know that the results obtained here are reliable and can be generalized. The relationships among coercion, community organization and informal social control in this analysis are not particularly strong. More analyses of these data should be done to test the resilience of the findings. They may change with different measures of the concepts and different specifications of the models. Given the importance of the use of coercion in the lives of citizens and communities, this kind of care seems warranted. Replicating this work in other neighborhoods would also increase our confidence in these results. This work was done in Baltimore and it is important to know that what is observed in Baltimore is applicable elsewhere. These replications should, if at all possible, provide for larger samples within the neighborhoods and a larger number of neighborhoods.

Once we are confident in the results observed in this study , the processes by which coercion affects communities should be defined in greater detail. First of all, the definition of coercion should be refined. Arrest rates are simply one aspect of police policy in a community. Aggressive patrol activity that does not result arrest can also be an effective form of coercion. Different types of patrol strategies such as foot patrol as opposed to using police car can also make a difference. The same is true for the definition of coercion in correctional policies. Admissions and releases from correctional institutions is one aspect of correctional policy that can influence communities, but probation and parole policies can affect the level of coercion in a community. A parole office that employs a very stringent drug testing and parole revocation policy may be more coercive than a court that simply incarcerating residents.

Second, the various models describing the link between coercion and community presented here should be modified in light of these findings. Specifically, if coercion does not seem to be related to beneficial outcomes for communities through crime reduction, then other processes must be identified that link coercion to these outcomes. The community policing literature would suggest that coercion can encourage interaction within the community directly through fear reduction or perceived reductions in risk rather than through actual reductions in crime. It is important that the theory behind various control programs and strategies be specified as clearly as possible so that these strategies can be assessed both logically and empirically.

Finally, more thought must be given to the desired outcome of applying coercion to communities so that we may be able to think of these policy decisions in a cost/benefit terms. In this analysis, we emphasized community organization and informal social control as important community outcomes. These outcomes were chosen because they have been shown to affect the quality of life and the personal safety of community residents (Sampson and Raudenbush, 1998). Other neighborhood-level outcomes could be chosen. For example, minimizing the negative and maximizing the positive social structural conditions of the neighborhood could be the desired outcome of coercion. Maintaining high property values in the area or minimizing the number of vacant houses, for example, could be considered more important than community organization or informal social control. The social organization of the community and the physical and social structural aspects of community are related, but not perfectly. In a given time period, coercion policies may have very different effects on these two classes of outcomes. If we are to discuss in cost/benefit terms the use of aggressive arrest and incarceration to bolster communities, then we must be clearer about what the desired benefits are in terms of neighborhoods. It is also important to give weights to the desired benefits. In this analysis, coercion had a positive effect on informal social control but negative effects on other aspects of community organization. If we are to make a choice between these competing benefits then some consideration must be given to the relative importance of these benefits.

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APPENDIX A. OFFENSE CLASSIFICATION SCHEME FOR ARREST RATES

Violent Crime
    Rape
    Sexual Assault
    Murder
    Manslaughter
    Robbery
    Aggravated Assault
    Simple Assault
    Child Abuse
    Kidnapping
    Harassment
    Reckless
    Resisting Arrest
    Weapon Charges

Property Crime
    Burglary
    Embezzlement
    Fraud
    Larceny
    Larceny, auto
    Vandalism
    Vehicle Theft

Drug Crime
    Drug, conspiracy
    Drug, general
    Drug, com nuisance
    Drug, distribution
    Drug, possession
    Drug, supply

Other
    Public order
    Morals
    Bribery
    Contempt
    Extortion
    Failure to Appear
    Obstruction
    Gambling
    Animal Abuse
    Miscellaneous
    Other Felony
    Other Misdemeanor
    Trespassing

APPENDIX B. SCALE CONSTRUCTION AND FACTOR LOADINGS

1. Informal social control (individual)   (α =.673)
      Would neighbors try to stop a B&E?
      Would neighbors get help to stop a B&E?
      Would neighbors stop teenagers from shouting at night?
      Would neighbors get help to stop teenagers?

2. Community solidarity (individual)   (α =.754)
      Feel part of the neighborhood?
      Do you feel a sense of the community?
      Are you feel an attachment to the block?
      Do you feel a sense of community on your block?

3. Neighboring (individual)   (α =.729)
      Past year did you run an errand for a neighbor?
      Past year did you visit a neighbor?
      Past year did you borrow tools or household items?
      Past year did you work together to improve block?
      Watch neighbor's home
      Take-in neighbor's mail
      Give keys to neighbor

4. Poverty Scale   (α =.702)
      % change from 1980 to 1990 of % under poverty line
      % change from 1980 to 1990 of % of vacant homes

APPENDIX C. VARIABLES

Community

	Time frame
arrest rate (total, violent, drug)	Change 1987–1992
crime rate (total, violent, drug)	Change 1987–1992
average household income	1990
% poverty	Change 1980–1990
% vacant homes	Change 1980–1990
average residential tenure	Average survey response for 1994

Individual (all 1994 survey)

community solidarity
neighboring
voluntary associations
gender
race
education
married
kids under 18
residential tenure (1994 minus year moved into neighborhood)
home owner

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