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How Do Specialized Units Affect the Outputs of Police Organizations?: Investigating the Effect of Community Policing Units on Community Policing Activities in Local Police Departments

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ABSTRACT

A review of modern police history shows the trend of increased division of labor within police agencies. However, police organizations are often criticized for creating specialized police units when they are faced with specific problems or are not effectively tackling local problems. Other challenges from within the profession include potential inter-unit conflicts or indifference of officers from other units that may hinder program implementation by specialized units. The present study looked into the changing characteristics of specialized units within police departments between 2000 and 2007. This research also examined whether creation of specialized community policing units (CP Units) influences the community policing activities performed by police agencies.

The results show that wide variations exist in the operation of specialized police units among police agencies. Specifically, the increase of some specialized units (e.g., cyber-crime, hate crime, missing child, and terrorism units) seems to reflect social changes and police departments' responses to tackle diverse problems arising from such changes. Also, linear panel analysis indicates that police agencies with CP Units were more likely to produce outputs in each element of community policing (i.e., community engagement, problem-solving, and organizational transformation). In other words, the creation of specialized units may lead to the increase of outputs that the units are intended and designed to produce.

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If I wrote down all the people who helped me throughout graduate school and the details of their help, this section would be far longer than my dissertation itself. Also, the paper would be filled with tears, laughter, pains, and blessings rather than *p* values and tables. The whole experience that I had as a graduate student at the Department of Criminology and Criminal Justice at the University of Missouri-St. Louis (UMSL) was not only about learning something new about crime and policing from amazing faculty members. The five-year period was also about realizing how blessed I am.

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My family has been always supportive of my decision to pursue an academic career in a foreign county and leave my old job behind. I always felt guilty for my mom and mother-in-law who had to send their son, daughter, and grandkids across the Pacific Ocean just because of my selfish decision to further my academic degree. The support of my mom and mother-in-law has been enormous, and I have always been sorry that I had to stay away from them. I hope they live long and happy lives so that we can share beautiful memories together.

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Lastly, this dissertation is dedicated to my father, Maengho Namgung, who passed away so early in an unexpected way. I want my sense of humor and optimistic attitudes toward life to resemble his. I hope he is very proud of my small achievement in heaven.

CHAPTER 1. INTRODUCTION

In *The Wealth of Nations*, one of the most influential works of the 18th century, Smith (1902 [1776]) wrote extensively about the concept of division of labor. For example, he demonstrated that productivity measured by the number of pins manufactured per day in a workshop increased 240 times after dividing the process into 18 separate jobs as compared to when a single worker produced pins one at a time.

Smith maintained that significant improvement of productivity through the division of labor is due to three factors: (1) enhancement of dexterity; (2) time savings from not shifting from one stage to another; and (3) use of "proper machinery." First, enhancement of dexterity refers to the increase in sophistication in skills acquired through repetition (i.e., practice). Second, workers can be more effective by eliminating unnecessary processes caused by transferring from one stage to another. Third, use of proper machinery refers to the choice of appropriate tools to achieve organizational goals.

Smith's analysis is based on observations from the manufacturing sector. However, the division of labor principles strategically divides tasks among team members to achieve their goals (Letterer, 1973). Thus, these concepts can also be applied to many organizations—public or private, profit or non-profit, and service- or manufacturing-oriented—including police departments.

The principles of division of labor were later expanded by Weber (1947) as part of his influential work in changing how organizations are structured. Weber (1947:219) argued that in organizations where division of labor is realized, "different persons perform different types of work and that these are combined in the service of common ends, with each other and with the non-human means of production, in the most varied

ways." Therefore, work is divided not only among organizational members but also among various types of technology to achieve a common goal. Division of labor is now one of the core elements of bureaucracy that make it "capable of attaining the highest degree of efficiency" (Weber, 1968:223). Weber believed that division of labor was a key factor of bureaucracy that made it superior to other types of organizations (March and Simon, 1958; Thompson, 1961).

After World War I, division of labor became "a basic principle," with the support from the scientific management approach suggested by Taylor (Etzioni, 1964:22). Taylor (1947) argued that investigation and division of work processes can greatly increase production efficiency in organizational outcomes.

A review of modern police history also shows division of labor within the organizational structure. For instance, the Metropolitan Police Service (MPS), the first modern police organization in the world, was established in London, England in 1829. At that time, the department had about 1,000 officers and was composed of eight divisions (MPS, 2012). Less than two centuries later, the same police agency employs 32,370 sworn officers and 13,970 civilian staff. In addition, the organizational chart of the MPS reveals a high-level of specialization not unlike large private organizations (MPS, 2012).[1]

Organizational complexity is similar throughout police departments in the United States. As an example, the organizational chart of the St. Louis Metropolitan Police Department shows that the Bureau of Community Policing (BOCP) provides patrol

[1] A distinction can be made between division of labor as a general concept and specialization as a particular form of division of labor. Organization theorists as well as policing scholars have used multiple terms when addressing division of labor including "specialization," "division of work," "functional differentiation," or "horizontal differentiation" (e.g., Hall et al., 1967; Letterer, 1973; Mastrofski and Ritti, 2000; Parks, Mastrofski, DeJong, and Gray, 1999; Pfeffer, 1982; Skogan and Frydl, 2004). Because these terms have been used interchangeably in prior research, this dissertation will also treat them as referring to the same concept.

service through nine separate Districts (Figure 1.1). Under the Bureau of Criminal Investigation and Support (BOIS), there are 19 specialized units. The Bureau of Professional Standards (BOPS) has five units, and the Bureau of Auxiliary Service (BOAS) has eight units. Under chief of staff, five separate units are also in operation.

Such a fine-grained degree of police specialization is a relatively new phenomenon. During the late 19th century and early 20th century, police departments did not have as many specialized units as they do now (Reiss, 1992). As will be discussed in more detail later, police departments in the United States have undergone increasing specialization of their organizational structures since the late 19th century (Mastrofski and Willis, 2010).

However, police organizations are often criticized for creating specialized police units when they are faced with specific problems or are not effectively tackling local problems (Moore, 1992). Scholars have tended to regard police departments' dependence on establishing specialized units as a temporary strategy to calm criticisms related to agencies' incompetence in solving local crime problems. That is, creation of specialized units has been considered a transitory response to relieve public attack on police departments, rather than reflecting a result of rational organizational decision-making to increase effectiveness and efficiency (Crank and Langworthy, 1992). For instance, research has shown that police departments set up gang units following pressure from communities and politicians, not from the necessity to proactively tackle gang problems in a more efficacious manner (Katz and Webb, 2004).

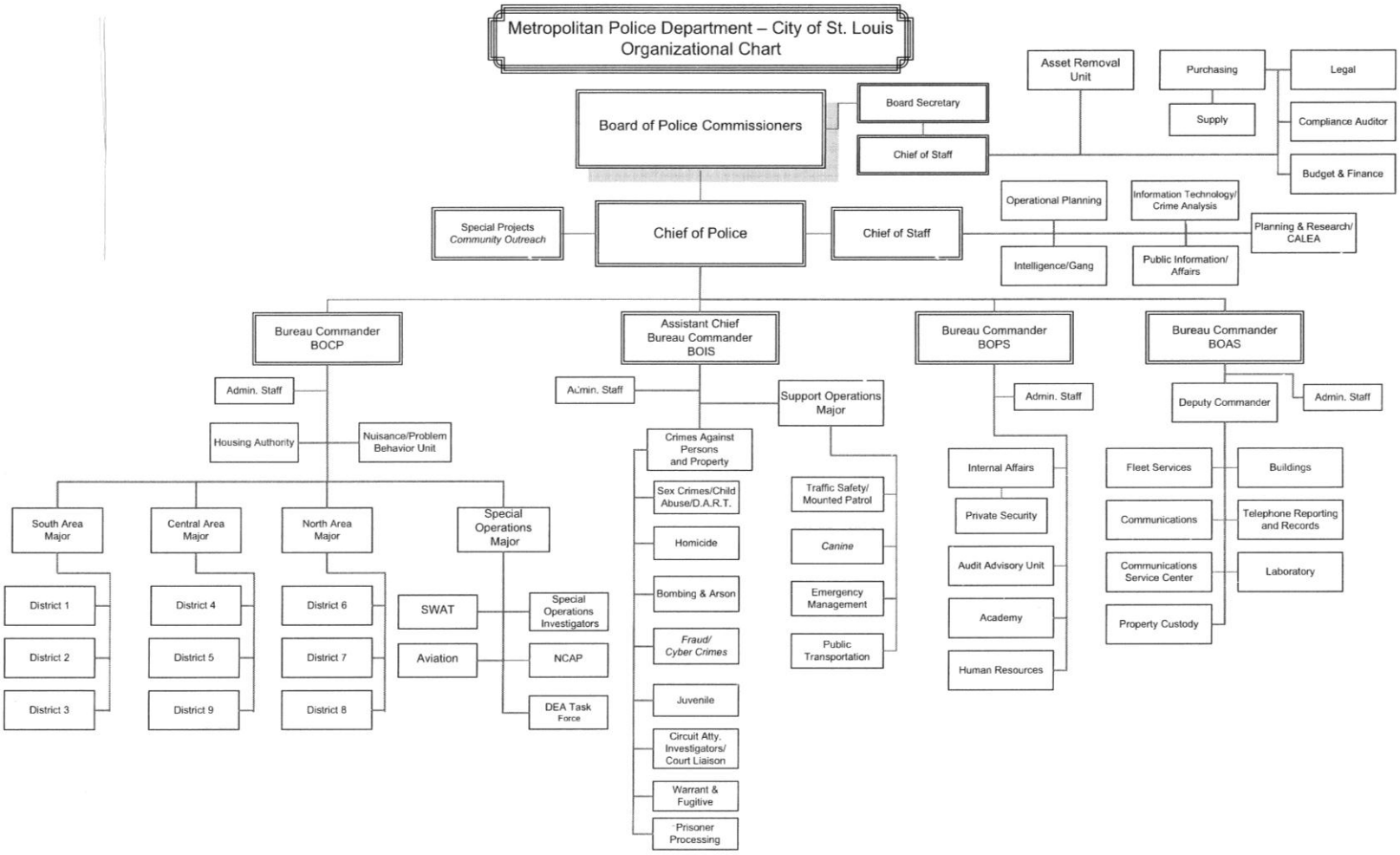
Despite the prevalence of specialized units within police agencies, scholars have devoted little effort to studying the effectiveness of such units. Some researchers have

studied the processes by which police organizations create specialized units (e.g., Katz, 2001), but only a few studies have examined how such units affect the outputs of police departments (e.g., Maguire, 2009). Therefore, there is limited understanding of how specialization affects organizational behavior overall.

Researchers have only recently started to investigate factors that affect the structure of police organizations and the effectiveness of different structural configurations. These discussions tend to be normative or descriptive rather than empirical (Crank and Langworthy, 1992; Maguire and Uchida, 2000), which is not unique to studies on police departments (Scott, 1975). Normative theories can sometimes be useful because researchers can identify factors that describe variations among police agencies (Langworthy, 1986). Yet, in many cases, normative theories are problematic because they do not try to explain variations in police organizations and discuss variations from predetermined criteria as "anomalies" or "suboptimal" (Langworthy, 1986:12).

In addition, when examining change within police organizations, most researchers look to the overall departmental structure. For instance, Langworthy (1986) investigated the determinants of five dimensions of formal organizational structure: administrative overhead, and spatial, occupational, hierarchical, and functional differentiation. Organizational size was found to be correlated with spatial differentiation (i.e., the degree of an agency's geographic dispersion), while technology was significantly related to functional differentiation (i.e., the degree of an agency's task division).

Figure 1.1. Organizational Chart of the St. Louis Metropolitan Police Department



Source: Website of the Metropolitan Police Department, City of St. Louis, MO (http://www.slmpd.org)

Maguire (2003) later expanded upon the study of Langworthy (1986) and extended the work to investigate the causal linkage between context, complexity, and control of police organizations. However, Langworthy (1986) and Maguire (2003) both treated specialization as a dependent variable, not an independent variable. Therefore, while their work is useful for understanding the conceptualization and antecedents of specialization, it is not useful for thinking about the *effects* of specialization.

Some scholars have examined the formation of specialized units within police agencies (e.g., Katz, 2001; Katz, Maguire, and Roncek, 2002). Whether such units produce the intended outputs, however, has not received much scholarly attention, with the exception of Maguire (2009). As Klinger (2004:127) suggested, "Those seeking to make the police more efficient . . . have argued that increasing the occupational and functional complexity of police agencies would allow departments to commit specially trained officers and units to specific problems." Nevertheless, investigation of the causal mechanism between structural changes (i.e., creation of specialized units) and performance change has not satisfactorily drawn a firm conclusion (Klinger, 2004).

The association between the establishment of specialized units and outputs also can be understood in terms of its structure-strategy relationship. In fact, the relationship between structure and strategy is one of the most investigated and controversial issues among organization theorists. To date, however, the causal mechanisms have not been identified between the two variables (e.g., Amburgey and Dacin, 1994; Hall and Saias, 1980). Thus, examining whether specialized units affect organizational outputs of police agencies may provide insight into the causal association between structure and strategy.

More importantly, the recent trend of specialization in police departments needs to be considered in conjunction with the introduction of a new policing approach that has been adopted by police agencies across the country, community policing. Community policing has gained widespread popularity since the 1970s and has dramatically changed the way police agencies operate and structure their organizations. Community policing approaches encourage police to help their communities engage in local policing and to adopt a problem-solving approach in daily job performance. This community-focused perspective encourages departmental restructuring so that every rank-and-file officer can engage in community policing activities. Specifically, community policing proponents advocate despecialization of police organizations (Mastrofski and Willis, 2010). Thus, the popularity of community policing approaches by police organizations contrasts with departments' increasing reliance on specialized units. In other words, conflicting attitudes among scholars and practitioners may exist regarding the appropriate organizational design after the introduction of community policing strategies. Accordingly, investigating how police agencies handle the conflicting challenges and demands between the ideal scenario (i.e., community policing approach) and the current reality (i.e., specialization of the organizations) is critical.

In this context, the present study investigates whether creation of community policing units alters the community policing activities performed by police agencies. More specifically, the goal of this dissertation is to examine how specialized police units affect outputs of police agencies. Therefore, the existence of a community policing unit is a key independent variable in explaining output changes in the area of community policing. Unlike prior research, however, the current study introduces three distinct

elements of community policing to determine whether specialized units play a similar role in each element of community policing program implementation. Another innovation in this study is in the analysis of longitudinal data to examine the *causal* relationship between creating units and their effects on outputs.

This study will expand the understanding of community policing in two novel ways. First, multi-wave data are used to track specialized units within police departments. Prior research has mostly relied on a single wave of data. When multi-wave data have been used, studies tended to *describe* changes (e.g., Maguire, 1997). In contrast, this research looks to *explain* the effect of specialized units on the change of outputs using panel data. That is, this dissertation is more focused on the causal association between the creation of a specialized unit and its outputs. Because cross-sectional data can pose some challenges in identifying causality among variables, longitudinal panel data are used to investigate the relationship.

Second, this dissertation measures the output changes of different community policing elements (i.e., multiple dependent variables) in order to track different functional consequences of community policing. One of the most frequently investigated areas in the policing literature, community policing programs have been extensively studied, but the application of diverse criteria and approaches of different investigators has made it challenging to compare results across studies. The present study attempts to resolve this confusion and increase external validity of its results by using three distinct elements of community policing—community engagement, problem-solving, and organizational transformation—as three separate dependent variables. This approach will determine

whether units devoted to community policing have any effect on the outputs produced by those police agencies.

OUTLINE OF DISSERTATION

The remainder of the dissertation is composed of five chapters. **Chapter 2** provides a review of the literature on specialization of organizations. The chapter begins with an overview of research on organizational specialization and expands to the analysis of policing research on specialized units within police agencies. The discussion includes reasons why specialization is an important issue in examining police organizations.

Chapter 3 discusses the reasons why community policing units and community policing activities were chosen for this study. It is crucial to understand the impact of community policing on American police organizations. Thus, the chapter provides a brief introduction to key elements of community policing. More specifically, it discusses the relationship between community policing approaches and specialization (or despecialization) within police departments.

Chapter 4 describes the data and methods employed in the dissertation. The chapter explains the relative strengths and weaknesses of datasets used in this field research. In addition, it discusses general issues involved in variable construction and defines how the specific dependent and independent variables were constructed for this study. Because my research is on the causal association between the creation of community policing units and outputs from community policing activities, I will perform a linear panel analysis. The rationale for choosing this statistical technique will be elaborated in this chapter.

The results of the analyses will be provided in **Chapter 5**. Descriptive statistics will show how numerous specialized units emerged and changed in the first decade of the 21st century. Further, linear panel analysis results will show the causal relationship between the creation of specialized community policing units and community policing program outputs.

Lastly, a discussion of pragmatic implications will be presented in **Chapter 6**, along with limitations of the present study and a proposed agenda for future research.

CHAPTER 2. SPECIALIZATION OF POLICE ORGANIZATIONS

Specialization has evolved into a key feature of most organizational structures (Mastrofski and Ritti, 2000). Specialization is characterized by the establishment of specialized units, or "specialist units," within police agencies, each devoted to a different aspect of the organization's goals (Mastrofski and Ritti, 2000). Similarly, Maguire (2009:45) defined specialization of police organizations as "the division of work into defined tasks and the assignment of those tasks to functionally distinct organizational units."

As discussed in the previous chapter, police administrators have relied increasingly on the creation of specialized units to address local problems, but researchers have placed less emphasis on the organizational outputs resulting from specialization. That is, specialization has been merely one part in the discussion of police departments (e.g., Langworthy, 1986; Maguire, 2003). Recently, a few researchers have paid more attention to the process by which specialized units are created (e.g., Katz, 2002), but studies have generally overlooked how such specialized police units play a role in producing outputs, with a notable exception of Maguire (2009). Put another way, specialization has been mostly used as a dependent variable, not as an independent variable in explaining organizational outputs. Therefore, although most police departments operate a variety of specialized units, we have a limited understanding of the outputs produced by such units, as well as of the scope of functional specialization.

It is critical to investigate the role of specialized units within police departments for three reasons. First, establishment of specialized units impacts resource allocation. As

such, it can become a source of conflict among different units, which leads to problems of coordination among units (Clift, 1970; March and Simon, 1958; Thompson, 1961). As will be shown later, early policing scholars cautioned that police leaders should not rely on specialized units more than necessary because of the cost involved in the coordination process across units (e.g., Wilson, 1973). Thus, as a first step to examine the role of specialized units, this dissertation will examine whether police departments that establish units to perform specific tasks are more likely to increase outputs.

Second, whether such units play a role in producing outputs related to community policing is not clear. Research has largely ignored the causal relation between the creation of specialized units and the outputs generated by them. Also, as will be discussed later, some studies (e.g., Rutherford, Blevins, and Lord, 2008) have tended to investigate outcomes (e.g., reduction of crime or fear of crime, increase of satisfaction with police, increase of arrest rates, etc.) and their correlates. In contrast, outputs resulting from organizational inputs, however, have not received much scholarly attention. Only a few studies have provided a cross-sectional analysis of a certain type of specialized unit (i.e., gang unit), but the effect of such specialized units on outputs has not been explored (e.g., Langton, 2010).

Finally, research on specialized units can provide insight regarding the association between organizational structure and strategies. For instance, are organizational structures antecedents of strategies, or do strategies follow structure? This question has been fundamental in organization research (see Amburgey and Dacin, 1994; Hall and Saias, 1980) and causal analysis of specialized units and their activities may provide an answer. Research on the effects of specialized units can also provide a better

understanding of how police organizations function. Consequently, police leaders can benefit from this research because the results may have implications for designing the structure of police organizations to produce intended outputs.

This chapter will provide a brief overview of specialization and the reasons for specialization within organizations writ large. In addition, I will discuss several key features of specialization and identify types of specialization. Next, the circumstances under which specialization is a sound response to organizational goals will be suggested and the effect of specialization will be examined. Lastly, I will review policing research that investigates specialization within police departments with special attention paid to the effect of specialized units on organizational outputs.

SPECIALIZATION OF ORGANIZATIONS

As briefly noted in Chapter 1, division of labor within an organization can contribute to a great increase of productivity. Discussion on the division of labor, however, has not been limited to the realm of formal organizations (Filley, House, and Kerr, 1976). Rather, works on division of labor have identified how this process affects society beyond any single organization (Durkheim, 1933).

It is worth noting at this point that the term "specialization" in this study refers to specialization of *task*, not of people. Task specialization, according to Thompson (1961:25), refers to "making activities more specific," while specialization of people means "the adaptation of the individual to the conditions of his existence." Thus, in an organization where tasks are specialized, workers are not necessarily specialized only

because they can perform such specialized tasks, given that workers easily can replace fellow workers.

Classical organization theories propose a basic principle in specializing organizational tasks: organization members need to be grouped together by the purpose, process, clientele, or geographical area of their tasks (Etzioni, 1964). However, Etzioni (1964) argued that organizations often do not necessarily follow these principles and numerous other factors may affect how organizations divide their tasks (e.g., culture, environment, political settings, resources, etc.). Similarly, in analyzing the interactions between organizations and their surrounding environments, Lawrence and Lorsch (1967) proposed that organizations differentially create specialized units to respond to environmental pressure and demands. In other words, not all specialized units have the same structural features. Instead, specialized units are created and function differently depending on the environment and required tasks to perform.

Blau (1970) suggested that specialization, or functional differentiation, is one of four dimensions of formal organizations. The other three are spatial, occupational, and hierarchical differentiation. Regarding division of labor, Blau (1970:203) argued that:

> The division of labor typifies the improvement in performance attainable through division. The more completely simple tasks are separated from various kinds of complex ones, the easier it is for unskilled employees to perform the routine duties and for skilled employees to acquire the specialized training and experience to perform the different complex ones. Further subdivision of responsibilities occurs among functional divisions, enabling each one to concentrate on certain kinds of work.

In short, from small workshops during the industrial revolution era to very complex modern companies, specialization has become a key feature of many organizations. Specialization has been hailed as an organizational tool that can

dramatically increase efficiency and effectiveness. Specific reasons for such specialization, however, warrant further discussion.

REASONS FOR THE DIVISION OF LABOR

Why do organizations apply the principle of division of labor in their structure? Put simply, why do organizations divide their functions into smaller tasks? Based on the study of 53 employment security agencies in the United States, Blau (1970) found that organizational size was positively correlated with functional differentiation. That is, as the number of employees increased, organizations were likely to have more subdivisions and distinct positions. However, Blau (1970) also maintained that the rate of increase in differentiation slows as the size increases.

Daft and Bradshaw (1980) later claimed that the effect of organization size on specialization is not as straightforward as proposed by Blau (1970). They asserted that organization members make conscious decisions on structural differentiation—horizontal differentiation was their term—for a variety of reasons that are independent of size. For instance, Thompson (1961) posited that "a stable environment and a guarantee of continuity of function" is required for an organization to specialize its tasks.

More specific reasons for the division of work were suggested by Litterer (1973). First of all, the knowledge and specialty that a person can have is necessarily limited. For instance, one person cannot achieve the goal of manufacturing cars. Lots of experts, from engineering to design, need to be involved in the separate stages of making a car. Likewise, a single medical doctor cannot provide numerous medical services ranging from basic treatments to performing complex surgeries. Similarly, it could be extremely

difficult for one police officer to provide patrol, traffic, homicide investigation, and terrorist intelligence gathering within a single department. Thus, each worker can focus on his/her limited scope of tasks by dividing works into smaller components and specializing duties.

Second, as Smith (1902 [1776]) argued, far more output is possible through division of labor. As mentioned above, workers can produce many more pins in a given periods of time when they divide the processes of pin making. Repeating the same tasks, accumulation of knowledge, and training through trial-and-error improve the productivity of output possible for workers and yield products that are more standardized in design and quality.

Lastly, different aspects of tasks can be performed at the same time, which Litterer (1973) described as "concurrent operations." For instance, in making pins, the straightening, pointing, and twisting of wires can be carried out at the same time. Without the division of labor, workers have to start from straightening to twisting wires in an orderly manner. Organizations that have a high degree of specialization, on the other hand, can carry out numerous jobs at the same time, which leads to increased performance efficiency.

HOW TO DIVIDE WORK

Dividing the component steps of a task and allocating these tasks to appropriate staff members is challenging for many organizations, partly because division of labor often requires organizations to invest vast resources, like machinery, personnel, and preparation for operating procedures. Thus, Scott (2003:234) noted that "one of the most

difficult and critical of all decisions facing an organization is how work is to be divided—what tasks are to be assigned to what roles, roles to work units, and units to departments." In fact, as is shown later, the limited research on police specialized units has been focused on this niche issue of the specialization process (e.g., Giblin, 2006; Katz, 2001; Katz, Maguire, Roncek, 2002).

Departmentalization reflects how division of labor is expressed in the structure of complex and formal organizations. Departmentalization is defined as "how jobs may be grouped together into work units in order to meet individual or organizational goals" (Filley, House, and Kerr, 1976). Divisions, bureaus, departments, or units are some examples of these groupings. Examining how organizations departmentalize their functions can reveal how work is divided to achieve the goals.

Filley, House, and Kerr (1976) argued that departmentalization can be divided into two forms: goal-oriented and process-oriented. In goal-oriented departmentalization, organizations form divisions, bureaus, or units based on products or geographic areas to achieve their goals. For instance, units in several different geographic areas can have their own staff to accomplish their organizational goals. Organizations can proactively implement problem-solving activities or provide services to their customers. Also, each unit can function autonomously with its own skills and personnel to achieve goals. A disadvantage, however, is that duplication of resources among units may be inevitable due to replication of the same infrastructure in different units (e.g., administrative assistants, office facilities, etc.).

On the other hand, process-oriented or functional departmentalization focuses on *how* organizations utilize their limited resources more efficiently. Organizations structure

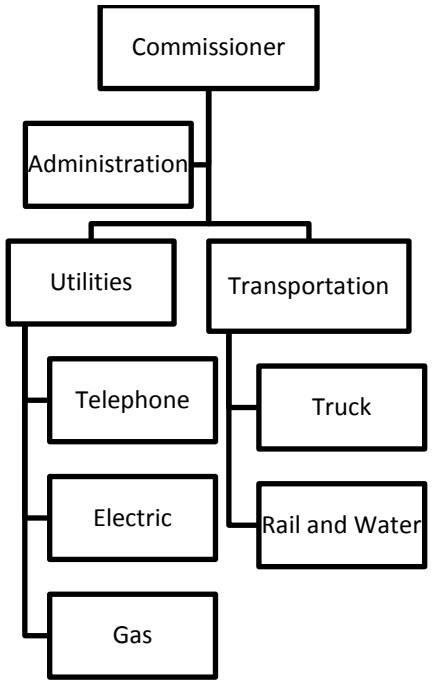
divisions, bureaus, or units based on *processes* to accomplish overall goals. For instance, motor companies structure their organizations by creating sales, engineering, and manufacturing departments. Thus, each department is grouped based on specialty and resources can be maximized.

Examples of goal- and process-oriented types of departmentalization are presented in Figure 2.1. A mixture of both goal-oriented and functional departmentalization is adopted by many organizations (Child, 1984). When organizations focus on the efficient use of resources in a stable environment, functional departmentalization is preferred (Filley, House, and Kerr, 1976).

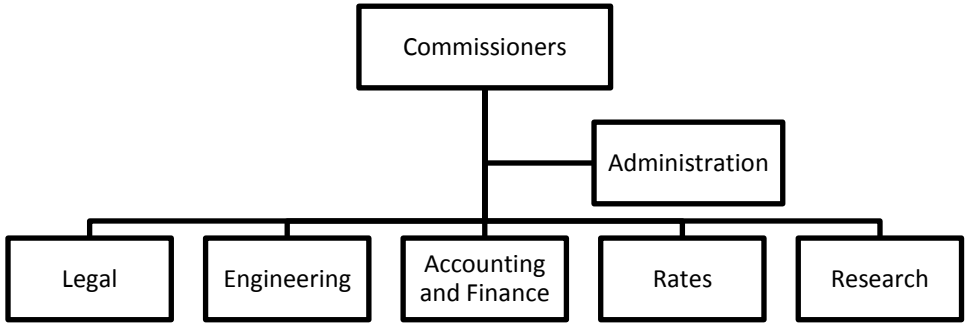
It is worth noting that division of labor is not ideal for every situation (Letterer, 1973). The following factors are necessary for division of labor to be effective in an economic sense. First, a high volume of work is needed. When similar work demand is repeated for a relatively long time, division of labor is recommended. For instance, if customer complaints keep increasing, a department store may want to create a new unit solely responsible for training their personnel to interact skillfully with customers.

Second, stability of volume and demand is an important factor in considering division of work. When there is a temporarily high volume of work, then division of work may not be necessary. In the example of the department store, if the complaints suddenly decrease, then the division of personnel training and evaluation may not be warranted.

Figure 2.1. Goal-Oriented and Process-Oriented Departmentalization



a. Goal Emphasis



b. Process Emphasis

Source: Filley, House, and Kerr (1976:362)

Third, a change in technology or strategy within the organizations may call for specialized staffing. For instance, the introduction of a self-payment system in a retail store may require a specialized unit that can maintain the technological equipment.

EFFECTS OF DIVISION OF LABOR

Research has revealed that increased division of labor within organizations can have several consequences on organizational structure and functions. First, specialization is claimed to decrease the scope of responsibilities performed by units or departments, which leads to ease in carrying out tasks and increased productivity (Blau, 1970; Mintzberg, 1979). However, research also shows mixed results regarding improved performance (Filley, House, and Kerr, 1976).

Second, the division of labor influences the solidarity among division members. Blau (1970:217) argued that increased differentiation, or division of labor, increased "inter-unit heterogeneity." Employees expressed more solidarity among colleagues within the same subunits and had more potential for conflicts and indifference with people outside of the units. In addition, the number and characteristics of interactions among workers can be different depending on the division of labor or work design (Letterer, 1973). Letterer argued that members within the same unit tend to have their own subgoals and social norms, which leads to indifference to the overall organizational goals and cooperation with other units. Diverse social systems can emerge in different units and this diversity can become an obstacle to the fulfillment of overarching organizational goals. Ultimately, division of labor can affect the job satisfaction of employees (Letterer, 1973; Thompson, 1961).

Third, the division of labor leads to the complexity of organizational structure (Blau, 1970). Child (1973) argued that specialization and expertise reflect organizational complexity. Relatedly, structural complexity may lead to conflict among different divisions or departments. Dalton and Watton (1967) asserted that task specialization can lead to conflict as well as collaboration among different units because of (1) access to limited resources; (2) differentiated status (power, prestige, etc.) and role dissatisfactions in organizations; and (3) ambiguities of tasks and inadequate personal skill and traits.

Finally, the division of labor is associated with coordination within organizations. The existence of specialized units may lead to conflicts (Mintzberg, 1979) or interdependencies (March and Simon, 1958) among units. Accordingly, as specialization within an organization increases, the necessity for the coordination and communication among different subunits also increases (Blau, 1970; Mintzberg, 1979; Pfeffer, 1982; Thompson, 1961). In fact, one of the reasons that the rate of structural differentiation of formal organizations decelerates as size increases is the necessity of coordination among different subunits (Blau, 1970).

Similarly, the increased division of labor also leads to the increased need for administrative management and supervision (Blau, 1970; Mintzberg, 1979). In other words, as the number of subunits within an organization increases, the organization needs more structural mechanisms and personnel to take care of the conflicts and coordination among different subunits. Critical administrative tools for coordination and management of conflict among subunits are standardization and documentation of work process and procedures (Child, 1973). That is, to prevent and solve the possible conflicts among subunits, organizations tend to set up a standardized process describing tasks performed

by each subunit. This documentation ultimately leads to the increase of standardization of organizations.

POLICE SPECIALIZED UNITS

Specialization marks one of the most common features of current police organizations. In this section, I present research on specialized units within police organizations, specifically focusing on the *creation* of specialized units because a new addition (i.e., establishment of a separate unit) to organizational structure is a key indicator of the level of police agencies' specialization (Wilson, 1973).

POLICE SPECIALIZED UNITS

Reiss (1992) argued that due to bureaucratization, police departments in the United Sates have undergone dramatic changes since the late 19th to early 20th centuries. First, police departments became separated from the influence of local politicians. Second, police agencies became hierarchical organizations, leading to an increased number of staff officers. Third, police departments introduced merit systems in hiring and promoting personnel. Last, and most closely related to this study, bureaucratization has led to the complexity characterized by the growth of specialized units within police agencies. In fact, Mastrofski and Willis (2010:69) asserted that the bureaucratization of police organizations has led to "increased complexity in the form of the division of labor among growing numbers of specialist units."

Bureaucratization, however, is considered to include specialization. For instance, Weber (1947:330) argued that "a specified sphere of competence" may be one of the key characteristics of bureaucratic organizations:

> This involves (a) a sphere of obligations to perform functions that have been marked off as part of a systematic division of labor. (b) The provision of the incumbent with the necessary authority to carry out these functions. (c) That the necessary means of compulsion are clearly defined and their use is subject to definite conditions. A unit exercising authority which is organized in this way will be called an 'administrative organ.'

Thus, it may be tautological to suggest that bureaucratization led to the specialization of police works. Because the goal of this study is not to dispute such arguments, it may be enough to suggest that the aforementioned works clearly substantiate the case that police departments have realized a high level of division of labor since the late 19th century. Skogan and Frydl (2004:176) described the specialization of police tasks as "one of the hallmarks of the professional or advanced police organization."

In one of the classics in police literature, Wilson (1968) posited that specialized units can play a role in deciding whether police organizations would be likely to follow a watchman, legalistic, or service style. Wilson (1968:155) stated that:

> Having a minimum number of specialized or special-duty squads has an important implication for organizational behavior: *there will be few places to which one can be transferred in the department and few incentives to seek transfer there*. (emphasis original)

In other words, specialized units are an organizational tool that makes police officers behave differently by providing different career opportunities. Rather than riding in a patrol vehicle for a long time, officers would work hard to get a "cushy" job in another unit or division. In contrast, patrol officers do not have a reason to work hard if there are not many career opportunities in specialized units. Wilson (1968:155) also maintained that operation of specialized units can show the styles of police agencies: "an

unspecialized department tends to be a watchman-like department that in turn tends to resist specialization." Walker and Katz (2012) similarly suggested that assignment to specialized units is used by police administrators to give an opportunity to develop officers' careers within their organizations. According to this argument, specialization is merely one of many personnel management tools.

CREATION OF SPECIALIZED UNITS

Why do police departments create specialized units? Is it critical or even necessary for police agencies to have specialized units? Although the answers seem to be obvious, these questions are important in understanding how police organizations structure their agencies and how they function. Specifically, considering the heterogeneity of police departments across the United States (Walker and Katz, 2010), understanding the operational differences of specialized units among departments is essential to paint a clear picture of how police perform their tasks in different surroundings. For instance, Walker and Katz (1995) investigated how police departments address bias crimes. Out of 16 police agencies, only four departments had separate bias crimes units. Six agencies did not have units, while the remaining six departments had specialized personnel or procedures to take care of bias crimes. In other words, agencies take a different approach to tackle similar tasks. Thus, Walker and Katz (1995:33) argued that:

> Perhaps the most important factor related to the effective administration of a bias crime unit is the real extent of a department's commitment to the general problem of bias crime enforcement as perceived by the officers assigned to the unit.

It is also worth noting that earlier texts on police administration provide normative explanations on this issue. That is, the old idea of a police officer as a uniformed generalist suggests that a police officer should be able to address a wide variety of issues rather than referring clients to specialized units in the organization. For instance, Clift (1970:34) noted:

> In evaluating specialization, it can neither be said that it is wholly bad or wholly good. Certainly, some specialization must be carried on, especially when duties can no longer be performed as a routine function. This is to say that we should never specialize when generalization is possible.

Recently, numerous theoretical and empirical approaches have been taken to explain why and how police departments create specialized units within their organizations. One of the most prominent perspectives is rooted in institutional theory. According to this approach, the establishment of specialized units within police departments largely depends upon the availability of resources and willingness of police organizations to portray themselves as crime fighters to satisfy external demands. Thus, technical efficiency and effectiveness sometimes do not constitute the primary motivation for establishing new specialized units (Maguire and King, 2007).

Crank and Langworthy (1992) utilized this perspective to explore the creation of specialized police units. As predicted by institutional theory, police organizations create specialized units to alleviate the pressure of external stakeholders who worry about crime in the community, not from rational decision-making to increase efficiency and effectiveness of organizational outputs. Thus, Crank and Langworthy (1992:344) argued that:

> The specialization itself is perceived by the sovereigns as essential to the "war against crime." That is, because of the influence of these sovereigns,

> organizational structure has elaborated in the direction of specialized crime-fighting units.

There has been some empirical support for this institutional perspective. For instance, Katz (2001) examined how and why police departments established gang units. By testing institutional theory in explaining the establishment of gang units, Katz (2001: 65) argued that "various powerful elements within the community" drive police organizations to set up separate gang units to tackle problems. For instance, the African-American community supports police agencies' decisions to operate gang units to address the gang problems of African-American neighborhoods.

More importantly, Katz (2001) revealed that such gang specialty subunits structured and operated their units based on the expectations of their institutional environment rather than on effectiveness and efficiency. In other words, the activities and structures of gang units follow the beliefs and expectation of members of police organizations and external constituents. For instance, gang units form partnerships with community groups, schools, and other criminal justice agencies, and by doing so, the units maintain their legitimacy and gain support. In short, some specialized police units are created not from rational decision-making by the police organization but as a response to the external pressures to tackle community problems.

Maguire and Gantley (2009a) suggested that the creation of subunits is a metric of an organization's specialization. They proposed three reasons for establishing specialized units (in this case, community policing units): (1) limited time to implement community policing activities; (2) the influence of external funding; and (3) as a symbolic gesture to demonstrate action to outsiders. Though based on observing specialization of community

policing, these arguments can also be applied to other areas of policing. First, as the demand for police attention to specific matters increases (e.g., gang activity, cyber-crime, terrorism, etc.), agencies find that providing appropriate responses is difficult within existing structures. Thus, police leaders decide to create discrete units with separate personnel and resources to address new problems. Second, funding agencies tend to provide financial assistance to agencies with specialized units (Maguire and Gantley, 2009a). Third, creation of a specialized unit sends a strong message to the community that the police department is serious about the problems that the new unit was developed to address.

Another study by Katz, Maguire, and Roncek (2002) examined factors that affected the creation of gang units. This research was based on the assumption that "police gang units represent a new and concentrated form of formal social control exerted predominantly over young gang-aged males, often minorities" (Katz, Maguire, and Roncek, 2002:492). They tested three distinct theories in explaining how and why police agencies establish gang units: contingency, social threat, and resource dependency theory. Their sample included 285 municipal police departments that had 100 or more sworn officers. They found that variables related to contingency theory did not significantly predict gang units (Katz, Maguire, and Roncek, 2002). That is, crime rates were not predictive of the decision to create gang units. The percentage of Hispanics in the population and the level of external funding were significant predictive factors. In short, research shows that police departments create separate gang units from the concerns of social threat in their communities rather than from the rational calculation of criminal problems.

Giblin (2006) also explored the factors that affect the creation of crime analysis units and found supporting evidence for Katz (2001) and Katz, Maguire, and Roncek (2002): police agencies establish crime analysis units due to institutional factors. In Giblin's study, the institutional factor was the pressure of the Commission on Accreditation for Law Enforcement Agencies. He also found that police department size was positively correlated with crime analysis units (Giblin, 2006).

EFFECTS OF POLICE SPECIALIZED UNITS

One area that has not received much attention in the discussion of police specialization is the effect of specialized units on organizational outputs. Researchers have not provided a clear answer as to whether or not specialized police units change the output of police organizations. Therefore, this study specifically focuses on the outputs, not the outcomes, of specialized units.

Policing research has tended to look at outcomes of operations or program implementation. While outputs refer to the completed products of an organization's activities, outcomes are desired goals that such programs intend to achieve. In other words, "*outcomes are not what the program itself did but the consequences of what the program did*" (Hatry, 2006:17, emphasis original). Reduced crime rates or increased arrest rates can be some examples of outcomes resulting from increased foot patrol. In this case, the coverage on foot patrol, amount of time spent on foot patrol, or number of patrolling officers can be examples of outputs.

Again, this study is interested in whether the creation of specialized units affects the outputs, i.e., the causal association between specialization and outputs. Understanding

outputs can show the more direct and detailed consequence of specialized units within police agencies. Simply looking at the outcomes of a program may exclude the possibility that different outputs can lead to the same outcomes. Therefore, though a focus on outputs may not reveal much regarding the achievement of organizational goals (Hatry, 2006), it surely helps us to identify how police agencies are different in program implementation.

Some may take increased outputs for granted once specialized units are in operation. Managers in charge of specialized units may want to produce as many outputs as possible to meet the organizational expectation. Extra personnel or funding may be available to produce multiple outputs. However, as Etzioni (1964:32) stated, "the highest specialization is by no means the most efficient form of division of labor." In other words, specialization does not necessarily lead to the increase of outputs. For instance, Decker (2007:732) suggested that organizational tension may lead to inefficiency in producing intended outputs:

> The challenges that face all specialized units . . . include avoiding isolation, a lack of information sharing, an inability to penetrate community environments, the lack of links to other enforcement and prosecution agencies, and in some cases, the creation of conflict within the police organization and with the community.

Similarly, in one of the classic textbooks on police administration, Wilson (1973) suggested a cautious establishment of specialized units. He argued that "specialized units should be created only when overall departmental capability has significantly increased and should not be created at the expense of reduced control and decreased general interest." Police practitioners have also raised concerns about the diffusion of specialized units in police organizations. For instance, Staft (1980:7) maintained that increasing

specialization can lead to numerous intra-organizational drawbacks, including communication barriers and unnecessary competition:

> As each subunit is created, additional communication problems develop. Subunits are likely to become preoccupied with their own objectives instead of working toward the agency's overall goals, they may fail to volunteer assistance and information to another subunit, or even worse, they may deliberately frustrate efforts of competing subunits.

Research confirms the possibility that specialization may not necessarily lead to the intended outputs. In a study comparing the work types between "patrol generalists" and "community policing specialists," Parks, Mastrofski, DeJong, and Gray (1999) posited that specialists' encounters with citizens are fewer than generalists' interactions. Based on observations of the two types of officers in Indianapolis and St. Petersburg, Parks et al. argued that officers assigned to community policing spent more time with paperwork and research than interacting with residents. However, the study was not clear about whether community policing specialists were embedded in separate community policing units.

Robinson and Chandek (2000) also examined whether community policing assignment (i.e., specialization) affected the level of interaction between victims of domestic violence and detectives and/or officers (i.e., outputs). Robinson and Chandek (2000) tested the hypothesis that victims of domestic violence are more likely to participate in formal criminal justice procedures (e.g., signing warrants) when the major role of interacting officers is related to community policing. The rationale behind this hypothesis is that victims may have more confidence in police practice when officers were equipped with community policing beliefs. However, their analysis did not find support for the hypothesis. Situational factors (e.g., presence of children, use of weapon,

injury of victim, history of domestic violence complaints by victims, arrest at the scene, etc.) affect the victims' willingness to proceed with their cases formally, but whether or not officers were from community policing units was not a statistically significant factor in victims' decisions to pursue their cases within the criminal justice system. Robinson and Chandek additionally investigated the possibility that officers with community policing obligations behave differently from other officers. The effect of specialized units—in this case, community policing units—was not considered in the research.

A few researchers have examined the association between specialized units and the extent to which the units were developed to achieve goals but not outputs. For instance, Rutherford, Blevins, and Lord (2008) examined the direct effect of a street crime unit on citizens' fear of crime. The Charlotte-Mecklenburg Police Department in North Carolina created a street crimes unit to address increasing robberies and other serious crimes in 2005. Rutherford et al. evaluated the effectiveness of the newly established specialized unit on citizens' fear of crime after six months. They found no statistically significant relationship between the two, but citizens did report perceiving an increased police presence on the street. Rutherford et al. concluded that creation of the street crime unit was not effective.

While examining the major issues involved in community policing implementation, Vito, Walsh, and Kunselman (2005) argued that one obstacle in implementing community policing is the presence of specialized community policing units. Based on a survey of 68 middle managers in 44 police departments across the United States, they revealed that separate units hinder communication among officers from different units and divisions. Thus, philosophy and specific programs in facilitating

community policing are not shared organization-wide but are limited to officers in an "innovation ghetto" (Vito, Walsh, and Kunselman, 2005:502). Key issues surrounding conflict and coordination among specialized units were presented. These authors did not provide any evidence whether specialized community policing units were effective and/or efficient in producing outputs. Rather, their research mostly offered the opinions and perceptions of mid-level supervisors in police departments.

SUMMARY

Police organizations are becoming increasingly specialized. But despite the significance of division of labor, not much research has investigated how police agencies divide their roles and how division of police labor has an effect on police outputs. Some studies explored how and why police organizations set up specialized units. However, the effect that such units have on police outputs has been largely ignored. Researchers have not investigated the association between the creation of specialized units and their *achievement* of intended goals. For instance, does creation of cyber-crime units increase arrests for cyber-crime? Do police organizations arrest more gang member after agencies set up new gang units? Does the creation of internal affairs units increase the detection of problematic officers? Do police departments implement more community policing programs if they operate separate community policing units? These questions remain unanswered in spite of increased empirical attention upon the topic of police specialization.

Researchers interested in studying the structure of police departments have investigated specialization as only one of numerous components of police organizations

(Skogan and Frydl, 2004). That is, the specific effect of specialization has not been disentangled from bureaucracy or other concepts of organizational structure (Langworthy, 1986; Maguire 2003). When researchers have investigated specialized units, the focus often has been on the process by which such units were created. Thus, studies have ignored how the establishment of specialized units directly affects police department activities (i.e., organizational outputs). This argument is summarized in Figure 2.1. Prior research has focused on the links between organizational and environmental factors and the creation of police specialized units (A). However, the association between the establishment of such units and organizational outputs (B) has not been explored.

Figure 2.2. The Proposed Causal Relationship between Police Units and Outputs

In this dissertation, the creation of community policing units and their intended effect on agencies' outputs is a focus of study. More specifically, I will examine whether police organizations' outputs of community policing differ depending on the existence of specialized community policing units. The following chapter provides a brief introduction to community policing, including its core elements and the reason why community policing units have been selected in discussing the effect of specialization within police departments.

CHAPTER 3. COMMUNITY POLICING AND POLICE ORGANIZATION

The issue of specialization has become more complex since police organizations began to embrace the community policing philosophy in the 1970s. Unlike advocates of traditional policing tactics, community policing proponents encourage police organizations to adopt different approaches in terms of structuring organizations, relating to their local communities, and tackling local problems. Specifically, the community policing approach has an important relevance in this research insofar as it calls for less specialization within police departments. I start with a brief introduction of the community policing approach. Next, I discuss key elements of community policing and specialization within the context of community policing. Finally, I posit research questions for this study.

COMMUNITY POLICING IN THE UNITED STATES

Now a major aspect of American policing, community policing developed from the changing relationship between police departments and society. Since the early 20th century, police reformers have attempted to prevent corruption and to control officers' behavior on the street. This "professional model" highlighted reactive strategies that focus on quick response to calls for service and crime fighting on the street (Moore, 1992). Historically, police departments were characterized by homogeneity of organizational structures and strategies. That is, although police agencies faced different problems in diverse contexts, most police departments relied on strategies that

emphasized the importance of catching criminals and, after widespread availability of the telephone in homes, responding to citizens' calls as quickly as possible (Mastrofski and Willis, 2010).

Such efforts, combined with technological developments (specifically, the introduction of motorized patrol), have contributed to the isolation of the police from the public (Greene, 2000). Community cooperation to prevent and solve crime was hard to obtain (Walker and Katz, 2010). Therefore, since the 1970s an increasing number of police departments have adopted the community policing philosophy in an attempt to be more accessible to and in better communication with community members. The establishment of a federal agency—i.e., the Community Oriented Policing Services—has also contributed to the widespread diffusion of this new approach (Mastrofski and Willis, 2010).

This new approach in policing has been hailed as an alternative to traditional policing tactics (Walker and Katz, 2010). In contrast to the traditional approach, the new community policing perspective starts from the premise that because communities have their own unique problems and situations, different strategies need to be developed and implemented accordingly (Moore, 1992). Specifically, community policing demands that police agencies take citizens' concerns and needs into account in their daily policing activities. Thus, community policing considers community as a co-producer of police services as well as a recipient, not as a target of policing tactics (Moore, 1992; Skogan, 2004).

The federal government has poured unprecedented resources into implementing community policing in local police departments across the United States and community

policing has been regarded as "the most widely adopted police innovation" during the 1990s (Weisburd and Eck, 2004: 46). Greene (2000: 301) even argued that community policing "has become the national mantra of the American police." The popularity and prevalence of community policing by police departments has continued to grow in recent years (Cordner, 2004; Eck and Maguire, 2000; Maguire and Mastrofski, 2000).

Community policing can be implemented in different ways in sheriffs' departments and municipal police departments. As briefly mentioned above, local police departments in the United States are characterized by high levels of heterogeneity in terms of operations, personnel management, and priorities in daily policing. Significant differences exist between sheriffs' departments and municipal police departments in leadership formation. For instance, the chiefs of sheriffs' departments are traditionally elected by their residents, whereas the head of municipal police departments are typically appointed by elected officials. Also, the former are directly involved in all facets of the criminal justice system (i.e., police, court, and correction), while municipal tasks are generally limited to policing (Skogan and Frydl, 2004).

Not surprisingly, the way community policing is implemented may not be the same in sheriffs' departments relative to large municipal police departments. LaFrance and Placide (2010) argued that the chiefs in sheriffs' and municipal police departments have different attitudes and relationships with board members in their local governments. While sheriffs demonstrated keen interest in working together with their counterparts in the local governing body, police chiefs in municipal police departments did not. Considering that sheriffs are elected by their residents and police chiefs are appointed by local politicians, this difference may not be surprising. Similarly, Falcone and Wells

(1995) maintained that sheriff's department personnel are not exempt from the concern of their sheriff's re-election. Thus, officers in sheriff's departments may be more sensitive to citizens' interests and satisfaction in community policing programs.

Another key issue in community policing is that policing scholars do not agree upon what the new approach entails in theory and in practice, or even exactly how to classify it. Some regard it as "operational approaches" (e.g., Moore, 1992) or a "new style of policing" (Greene, 2000), while others consider it as "a variety of philosophical and practical approaches" (Community Policing Consortium, 1994).

The lack of consensus regarding what is included in community policing has been problematic for practitioners as well. For instance, as will be discussed below, according to many advocates, one of the key elements in community policing is despecialization (Greene, 2000). That is, there is a strong trend in the community policing movement to argue that police agencies should attempt to make officers generalists so that all officers can engage in community policing activities (see Maguire and Gantley, 2009a). In some cases, however, creation of specialized units has been regarded as part of community policing efforts. For instance, Weisel and Shelley (2004) argued that specialized gang units in the Indianapolis Police and the San Diego Police Departments function as part of community policing and problem-solving approaches. That is, gang units in these two police agencies increased inter- and intra-agency partnership and collaboration with community members to combat gang problems. Also, analysis and provision of gang-related data was critical in tackling gang issues. In short, Weisel and Shelley maintained that gang units can be used as an organizational structure that

complements community policing efforts by providing resources to combat gang problems.

Therefore, critically reviewing the components of community policing is important in understanding the effects of specialized units. Without close examination of community policing activities implemented by police agencies, suggesting that such activities affect numerous outcomes (e.g., reduction of crime, fear of crime, or calls for service) may be misleading (Wilson, 2004). Thus, it has to be kept in mind that community policing activities can include diverse programs even though police agencies promote them under the single banner of community policing. This confusion is one of the key reasons why it is essential to look into the components of community policing.

KEY ELEMENTS OF COMMUNITY POLICING PROGRAMS

A few researchers have attempted to uncover the elements of community policing. However, theoretical and empirical studies on the dimensionality reveal mixed results (see Maguire and Mastrofski, 2000). Still, investigation of key elements of community policing is essential for several reasons. First, investigators have tended to examine different policing tactics as if they are the same, simply because the tactics were implemented under the theme of "community policing" (Moore, 1994). For instance, some police departments may prioritize and promote the organizational aspects of community policing, while other agencies may encourage partnerships within the local communities. If the two distinct activities are branded as simply community policing activities, we lose a lot of information in investigating them as either independent or dependent variables. Thus, community policing can be criticized for being a "hodge-

podge" of desirable programs (Crank and Langworthy, 1996) or a "potpourri" of numerous strategies (Maguire and King, 2004).

Second, empirical studies have used different criteria in evaluating the effectiveness of community policing programs. For instance, Chappell, MacDonald, and Manz (2006) constructed community-oriented policing and problem-oriented policing variables from numerous items. No clear explanation, however, was provided as to their conceptual basis (see also MacDonald, 2002). Such inconsistency and lack of standards hinder our understanding of how community policing programs are executed and what affects the successful implementation of these programs.

Consequently, by separating community policing programs into distinct dimensions or elements, we can better understand the factors that affect their implementation. Therefore, this research relies on the categorization of community policing by Fridell (2004). She suggested three elements or "essential efforts" of community policing: (1) community engagement; (2) problem-solving; and (3) organizational transformation.

Several other policing scholars have proposed similar elements of community policing with slightly different terms. For instance, Walker and Katz (2010) proposed three characteristics of community policing: (1) community engagement; (2) organizational change; and (3) problem-solving. Somewhat similarly, Mastrofski and Willis (2010) also provided three distinct elements: (1) community engagement in making policies and delivering services; (2) embracing problem-oriented policing approaches; and (3) organizational decentralization. Additionally, Maguire and Wells (2009) suggested three dimensions of community policing: (1) problem-solving; (2)

community engagement; and (3) organizational adaptation. I will adopt the three key elements proposed by Fridell (2004)—community engagement, problem-solving, and organizational transformation—and elaborate on them below.

(1) Community Engagement in Policing

Community engagement refers to active participation by citizens and local groups in crime prevention and the development of police strategies. Traditionally, police departments were regarded as the sole provider of policing service. Police organizations had the full responsibility for implementing strategies to tackle local problems (e.g., crime, gangs, and disorder, etc.) and have taken the blame for the failure of keeping their communities safe. However, scholars as well as practitioners now realize that community safety cannot be maintained entirely by police departments (Bayley, 1994).

In addition, police and the public tend to have different priorities in identifying the problems of their communities. Police traditionally have focused on tackling crime, but community members place more emphasis on reducing the fear of crime, keeping peace in public places, and following democratic procedures in enforcing the law (Moore, 1992). Thus, community policing proponents argue that police departments need to develop strategies based on "the public's definition of its own problems" (Skogan 2004:160). To achieve this goal, cooperation and partnership with community members and groups has been strongly encouraged and citizen engagement in developing and implementing policies is central in community policing.

Specifically, Fridell (2004) suggested the following factors as community engagement elements:

(1) increase of "interaction and familiarity" with community members

(2) partnership formation with community groups

First, police can increase interaction with community members in a number of ways. For instance, police agencies can provide foot and bike patrol and hold community meetings to communicate with their constituents. Also, police departments can operate a citizen police academy or other outreach programs, like Police Athletic Leagues and citizen volunteer programs. These special programs enable citizens to become more familiarized with police work as well as provide information on their communities to the police.

Second, police departments strive to form close partnerships with local community groups (public or private). Partnerships with diverse community groups play an important role in the delivery of police service. In fact, a close partnership with community members is "the watchword" in community policing programs (Greene, 2000). Many community problems and concerns raised by citizens (e.g., vacant houses and dirty streets filled with litter) cannot be solved solely by the police. To cooperate and partner with other public agencies is critical in addressing many issues, yet has been also one of the most challenging parts of community policing efforts (Skogan, 2004).

(2) Introduction of the Problem-Solving Approach

The problem-solving approach means that police departments focus on the root causes of crime problems, rather than simply responding to calls for services (Goldstein, 1987). Thus, the problem-solving approach requires police officers to think more

proactively about the issues in their neighborhoods. Officers start to investigate what lies beneath residents' repeated complaints and calls for service. More specifically, Fridell (2004) suggested that the problem-solving approach consists of the following two elements:

(1) implementation of problem-solving tactics; and

(2) support for problem-solving through training, performance measurement, and other tools

First, one of the key elements in community policing is that officers need to take a creative approach in addressing local problems. Rather than repeatedly responding to similar incidents caused by the same underlying conditions, police need to gather data, develop strategies, implement them, and evaluate the tactics (Goldstein, 1987). Specifically, police take the SARA approach in solving local problems: Scanning, Analysis, Response, and Assessment (Walker and Katz, 2010). *Scanning* refers to the observation of local problems by the police. Police then try to figure out the problems and underlying causes in the *Analysis* step. *Response* means a implementation of a program to tackle the identified problems. Finally, police evaluate their program strategy in the *Assessment* stage. By taking this proactive approach, officers can develop creative strategies to deal with local problems.

Second, police departments have to support officers in developing a problem-solving approach. Officers need to be trained in "recognizing patterns of incidents" (Skogan, 2004:161), and their performance needs to be evaluated. Police agencies must

invest more resources in training, performance measures, and evaluation to increase officers' problem-solving capabilities.

(3) Organizational Transformation

Traditionally, police organizations have been reluctant to change. Specifically, studies have found that many field officers are unwilling to be involved in community policing activities (see Maguire and Gantley, 2009b). Community policing officers are sometimes called "empty holster guys" (Skogan, 2004) and are ridiculed by their peers for not doing "real police work." These phrases show that changing the perspective of officers and organizational philosophy can be a daunting task. Put differently, the resistance of officers reveals how important it is for police departments to train officers and thereby change perspectives. Thus, organizational transformation is not just about structural change but also agency-wide support for community policing and the problem-solving approach (Fridell, 2004) through:

(1) development of plans and training that include a community policing philosophy;

(2) reducing the levels of management within police departments; and

(3) physical decentralization of patrol officers and detectives.

First, plans or policies do effectively change the behavior of police, and previous studies also describe the role of official plans in implementing community policing (Skogan, 2006). In fact, many proponents of community policing maintain that the effort should be an agency-wide philosophy rather than newly developed strategies (e.g.,

Maguire, 1997). Also, training for members involved in community policing is critical (Trojanowicz and Bucqueroux, 1998) not only because training can provide relevant skills and tactics necessary to implement the new strategy but also because training sends a signal to the trainees that police managers are serious about the new approach (Skogan and Hartnett, 1997).

Second, police agencies need to change their organizational structure so that field officers are free of bureaucratic hurdles in implementing community policing programs. Community policing supporters claim that traditional organizational management can play a negative role by compromising constructive interactions between police and communities (Greene, 2000). Mid- and upper-level managers are comfortable with the status quo because their authority is already established in the traditional organizational structure (Skogan, 2004). Thus, "pushing power downward in the agency" is another key element of community policing (Fridell, 2004:8). Police agencies need to devolve decision-making powers to line officers so that officers themselves can identify community problems and develop tactics to address such problems (Cordner, 2001; Fridell, 2004; Skolnick and Bayley, 1988).

Last, physical decentralization of officers enables them to interact with community members more closely (Fridell, 2004:8). Police departments can create sub-stations, mini-stations, precinct stations, or store fronts and put officers at such sites. By doing so, police can be more accessible to citizens and officers can be more familiar with the pressing issues and problems of the local area. In short, geographic decentralization of officers "change[s] the working environment, fostering creative thinking, innovation, and strong commitment to solving problems" (Maguire and Gantley, 2009b).

SPECIALIZED COMMUNITY POLICING UNITS

As shown above, the three elements of community policing posit that the new approach needs to be embraced and implemented agency-wide. Thus, creation of specialized community policing units may be ironic in a community policing era. The philosophy of community policing calls for generalized (not specialized) police officers so that every officer can be involved in close interactions with citizens and problem-solving activities. However, the creation of specialized units committed to community policing strategies may signify that officers in the units are mainly responsible for the implementation of diverse community policing programs (Moore, 1992).

If specialized community policing units are loosely coupled with other aspects of organizational structure, such units are likely to experience difficulties in performing diverse community policing programs (Webb and Katz, 2003). Community policing programs demand collaboration among diverse functional units. Therefore, if community policing units are not linked or connected with other organizational configurations, the units can undergo huge challenges due to isolation, lack of interaction with other organizational members, or even indifference and hostility (Webb and Katz, 2003).

Nevertheless, research has been relatively silent on why police leaders decide to establish separate community policing units. In fact, as shown above, a study by Maguire and Gantley (2009a) is one of only a few that has examined the role of community policing units. Investigating community policing activities revealed that 8 out of 12 police departments had specialized community policing units (Maguire and Gantley, 2009a). In addition, variability existed among police organizations regarding the way in

which community policing activities were structured by the individual agencies. Three models were identified: specialized, generalized, and hybrid models.

In the specialized model, police departments perform community policing through separate units specifically devoted to program implementation. As revealed above, police administrators opt for specialized models because of availability of funding, officers' lack of interest, and the symbolic value of specialized units. In contrast, in generalized models, police departments try to implement community policing in an agency-wide manner in which all officers engage in community policing activities. Most community policing supporters think of this model as ideal even though agencies using this approach are often faced with difficulties in adopting the generalized model due in part to the limited understanding of officers and lack of time and resources. Hybrid models are found where police organizations start to move from specialized to generalized models (Maguire and Gantley, 2009a).

In short, the presence of separate community policing units reveals the conflict between the ideal and the reality of a new approach (Weisel and Shelley, 2004). Creation of specialized units to implement community policing is antithetical to the core principles that such units are supposed to keep. Even so, it has become an empirical question to investigate the roles and beneficial effects of specialized community policing units because of their widespread use within contemporary police agencies.

RESEARCH QUESTIONS

As shown above, research generally has ignored the possibility that differences in outputs may exist across agencies with different models, and few researchers have

investigated whether agencies maintain one specific model in implementing community policing programs. Given this context, the goals of this dissertation are twofold: (1) to investigate the conditions under which community policing units are created within police departments; and (2) to study the effect of community policing units on the implementation of community policing programs. Specifically, this research addresses two significant questions:

1. Have police agencies increased (or decreased) community policing units over time?

Specialized community policing units were examined to track whether police agencies change structure over time. That is, what is the scope of specialized police units in the United States? To assess specialization in American policing, the research measured the extent to which specialized community policing units have increased in American police organizations in recent years. By describing changes in separate community policing units, the patterns of specialization within police agencies can be identified.

Structural change was used as a key independent variable in this research. Community policing scholars have maintained that police agencies need to despecialize their organizations. However, not much is known about whether despecialization has actually occurred in police departments. As an important component of community policing, the operation of specialized units will reveal whether police organizations have increased or decreased their division of labor.

2. How does creation of community policing units affect the outputs in community policing program?

Studies measuring organizational success or effectiveness have used rate of crime, disorder, and other law enforcement activities as key dependent variables (e.g., Maguire and Uchida, 2000; Mastrofski and Willis, 2010), but not much research has examined community policing activities as a dependent variable. As shown above, community policing programs are oftentimes used as an explanatory variable to measure their effect on crime or fear of crime. The effect of organizational structures on police activity outcomes has not been extensively studied (Mastrofski and Willis, 2010). That is, the causal mechanism between organizational structure changes and the resulting efficacy of police activities has been largely ignored.

Therefore, this study examined the effect of structural change on the implementation of community policing activities. More specifically, the research tracked whether establishing new community policing units tends to improve the outcomes of community policing activities. Community policing programs were divided into three distinct elements, and these three elements were used as dependent variables.

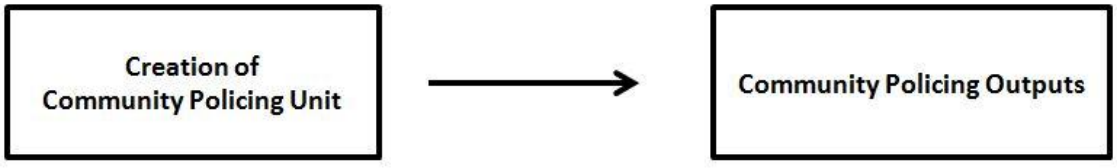
Although only a few studies have empirically tested such dimensionality, elements, or subcategories of community policing activities, different dimensions have been identified by researchers (e.g., Maguire and Mastrofski, 2000). How police departments choose—and, often, mix—their community policing strategies requires further investigation. Specifically, identifying the variation in community policing elements is important for two reasons. First, without investigating the differences in police departments' community policing dimensions, making generalizations becomes

difficult (Cordner, 1995). For instance, two different agencies that claim that they are implementing community policing may actually have two radically different approaches (e.g., one may focus on geographic reallocation of officers while the other may focus on personnel training).

Second, it is worthwhile to test whether organizational and environmental factors have a similar effect on different elements of community policing. Local police departments have obtained enormous external funding to implement community policing, but not many researchers have examined how such financial assistance has been put to use by police agencies (Wilson, 2004). For the funding agencies, it may be imperative to look at the specifics of community policing programs to check the proper management of resources and to ensure financial responsibility (Kennedy, 1993). Therefore, the current study grouped numerous community policing activities into three broader dimensions and treated those dimensions as outcome variables. Organizational and environmental factors were studied to explain the variations in such dimensions.

Moreover, different types of police agencies do not necessarily operate in similar patterns, including implementation of community policing activities. Thus, this dissertation will investigate whether differences in community policing activities exist between sheriffs' departments and municipal police departments. The model is presented in Figure 3.1.

Figure 3.1. The Model of the Current Study



This chapter provided a brief overview of community policing. Key elements or dimensions of community policing were addressed. The chapter concluded by proposing research questions centered on the causal linkage between the creation of community policing units on the implementation of community policing programs and their outputs. The next chapter describes the data, methods, and statistical techniques used to examine these questions.

CHAPTER 4. DATA AND METHODS

Many policing scholars have lamented the lack of longitudinal studies on police organizations (e.g., Mastrofski and Willis, 2010). Few studies have looked into the factors that may play a role in restructuring police organizations over time (Maguire, 2002). To examine the change of outputs and factors affecting such change in police agencies, I used the Law Enforcement Management and Administrative Statistics (LEMAS), which will be described in detail below. Because I used multiple waves of the LEMAS, I will describe how I merged three waves into a single dataset. Also, I will specify how variables included in the analyses were constructed. Elements of community policing activities were selected as dependent variables, and I provide the rationale for variable construction. The presence or absence of a specialized community policing unit is a key independent variable, so I will show how the variable was constructed as well as other control variables.

The merged dataset consists of time series cross-sectional or panel data. Therefore, a linear panel analysis model was used to test the effect of community policing units on police organizations' community policing activities. Finally, this chapter concludes by presenting the method of analysis and the justification for the statistical model employed.

DATA

THE LEMAS

Because this study is focused on police operational processes (i.e., creation of community policing units) and outputs, the unit of analysis is the individual police

agency. Dependent variables and the organizational aspect of independent variables were derived from the Law Enforcement Management and Administrative Statistics (LEMAS). The LEMAS is a sample survey of United States law enforcement agencies and was developed out of the recognition that there was not enough data to study police organizations compared to other elements of the American criminal justice system (Maguire and Uchida, 2000). Thus, the Bureau of Justice Statistics (BJS) developed the LEMAS and administered it for the first time in 1987. Since then, BJS has conducted the LEMAS survey every three or four years: 1990, 1993, 1997, 2000, 2003, and 2007. The LEMAS includes questions about organizational structures, personnel, operations, budgets and pay, technology, and facilities (Bureau of Justice Statistics, 2011).

The LEMAS includes federal, state, and tribal agencies. However, the roles, operations, and organizational characteristics of federal and state police agencies are different from those of municipal and county sheriff's departments (Cordner and Scarborough, 1999). For example, roles and responsibilities of federal agencies are determined by federal legislation and do not include "the ambiguous and difficult order maintenance" tasks and other peace-keeping activities for local residents (Walker and Katz, 2010). Also, the function of state police agencies differs from that of municipal and county sheriff's departments. While the former is generally restricted to highway patrol and support for small police departments' crime investigation, the latter focuses on interactions with residents and responding to calls for services (Walker and Katz, 2010).

Specifically, the discussion of community policing has been focused on local police departments—either municipal police departments or county sheriff's departments—with good reasons. Relative to federal and state police agencies, local

police departments have more room for developing and implementing community policing programs, which is due in part to the proximity to residents and local knowledge (Cordner and Scarborough, 1999).

For this research, only municipal police departments and sheriff departments were selected. Thus, municipal police and sheriff's department that participated in any one of the three waves of LEMAS from 2000 and 2007 were included in the dataset. Table 4.1 shows the number of cases (i.e., municipal and sheriff's departments) before and after data construction. The left side of the table shows the number of police agencies in each wave of the LEMAS. As will be shown below, agencies that participated in all three waves were selected for further analysis to identify changes and factors affecting these changes. Thus, the right side of the Table 4.1 shows the final cases included for the analysis. In total, 641 departments were included in the analyses.[2]

Table 4.1. Samples in the LEMAS and in the Dataset of this Study

LEMAS	Organization Type	Frequency (%)		Dataset	Frequency (%)
2000	Sheriff's Dept.	881 (32.2)			
2000	Municipal Police Dept.	1857 (67.8)			
2003	Sheriff's Dept.	359 (32.2)	⟹	Sheriff's Dept.	198 (30.9)
2003	Municipal Police Dept.	756 (67.8)		Municipal Police Dept.	443 (69.1)
2007	Sheriff's Dept.	348 (32.6)			
2007	Municipal Police Dept.	721 (67.4)			

[2] Data for the two subgroups Sheriff's Departments and Municipal Police Departments were subjected to two separate analyses. I discuss the rationale behind this decision in Method of Analysis section.

PANEL DATA (TIME SERIES CROSS-SECTIONAL DATA)

Three waves of LEMAS data from 2000 to 2007 were merged. Specifically, the dataset compiled from the above process is time series cross-sectional (TSCS) or panel data. That is, local law enforcement agencies (i.e., municipal police and county sheriff's departments) that participated in all three waves of the LEMAS were selected and longitudinal datasets were constructed by assembling three waves of cross-sectional datasets. Therefore, each police organization included in the dataset (n=1, 2, . . . , N) was observed at three periods (t=1, 2, and 3) with several variables (k=1, 2, . . . , K). The TSCS data structure is regarded as the standard format that can then permit more advanced analyses (Menard, 2002).

One of the challenges in the utilization of the LEMAS for longitudinal research is the discrepancy of questions across waves of data. When the same content area was measured, the questions were sometimes asked differently. It may not be surprising to find such inconsistency, considering that the main purpose of the LEMAS survey is to provide a description of U.S. police agencies and not to investigate the organizational changes or causal relationships. In fact, it is not uncommon to face such challenges within longitudinal data, especially collected by government agencies (Menard, 2002).

Despite such variations, many consistencies are maintained across different waves of data. For instance, the number of personnel—sworn officers or civilian personnel—is one of questions that the LEMAS consistently asks police agencies. Fortunately for the purpose of this study, the items included in the community policing section reveal considerable similarities. Thus, it is possible to follow changes in police organizational structure and activities when the same items are included in several waves of data.

Moreover, the LEMAS is a useful source of data to answer the research questions of this study because it includes information both on structure (community policing units) and outputs (community policing program implementation) of police departments.

Furthermore, the factors that may have affected such changes can also be identified using two or more waves of data, as well as other sources of data. In other words, longitudinal analyses are possible once several datasets are matched. However, due to these differences across the LEMAS, using the LEMAS surveys for longitudinal analyses of certain topics must be done cautiously (Menard, 2002).

Due to question overlap in the LEMAS, a few prior studies have set the precedent of merging several LEMAS datasets to examine causal mechanisms between organizational factors and outcomes of police agencies. For instance, Wells and Falcone (2005) merged the LEMAS 1997 and 1999 along with the Uniform Crime Report and other socioeconomic datasets. Also, Roberts and Roberts (2006) used three waves of the LEMAS data to investigate the association between network ties and their effect on innovation by police agencies. This present study also merged three waves of the LEMAS, including the most recent waves of data (i.e., LEMAS 2007). The compiled dataset for the analysis went through several steps; the complete process is shown in Appendix 1.

It is worth noting that the way dependent variables were constructed in this study is not the same for 2000-2003 and 2003-2007 data analyses. As mentioned earlier, items included in community policing sections changed slightly from wave to wave. Therefore, I decided to construct two different sets of dependent variables to keep as much information as possible. In short, I conducted two separate analyses (i.e., Analysis I and

Analysis II). The structure of the merged dataset—pooling or stacking multi-wave data—is shown in Table 4.2. This structure is the most common framework for panel analysis (Finkel, 2008; Menard, 2002).

Table 4.2. Structure of the Dataset

			Variable 1: X_1	Variable 2: X_2	. . .	Variable K: X_K	Dependent Variable Y_1
Analysis I	TIME 1	PD 1	X_{111}	X_{112}		X_{11K}	Y_{11}
	(2000)	PD 2	X_{211}	X_{212}		X_{21K}	Y_{21}
		…					
		PD N	X_{N11}	X_{N12}		X_{N1K}	Y_{N1}
	TIME 2	PD 1	X_{121}	X_{122}		X_{12K}	Y_{12}
	(2003)	PD 2	X_{221}	X_{222}		X_{22K}	Y_{22}
		…					
		PD N	X_{N21}	X_{N22}		X_{N2K}	Y_{N2}
Analysis II	TIME 1	PD 1	X_{121}	X_{122}		X_{12K}	Y_{12}
	(2003)	PD 2	X_{221}	X_{222}		X_{22K}	Y_{22}
		…					
		PD N	X_{N21}	X_{N22}		X_{N2K}	Y_{N2}
	TIME 2	PD 1	X_{131}	X_{132}		X_{13K}	Y_{13}
	(2007)	PD 2	X_{231}	X_{232}		X_{23K}	Y_{23}
		…					
		PD N	X_{N31}	X_{N32}		X_{N3K}	Y_{N3}

Note: Adapted from Menard (2002). *Longitudinal Research, 2nd ed*.

Constructing TSCS data from multiple waves of the LEMAS is beneficial to understand the changes and the cause of changes in police operations, specifically considering the cost involved in conducting longitudinal research. As Menard (2002:80) argued, longitudinal analysis is "ultimately indispensable" in investigating changes across time and the factors attributable to such changes. In fact, prior research has taken a similar approach to examine the change of police outputs and their association with organizational factors. For instance, He, Zhao, and Lovrich (2005) used three waves of longitudinal data gathered by the Division of Governmental Studies and Services at

Washington State University from 1993 to 2000. He et al. compiled the datasets to produce panel data. The approach taken by this research is somewhat similar to that of He et al. (2005). However, the samples in the study by He et al. (2005) were limited to medium to large municipal police agencies, resulting in less than 200 departments. Also, specialization of police agencies was not considered as a factor related to community policing programs. Dependent variables also differ between that study and the present study.

DEPENDENT VARIABLES

Dimensions of Community Policing

The dependent variables are three dimensions or elements of community policing activities, or program implementation (i.e., outputs of community policing). As discussed in Chapter 3, Fridell (2004) asserted that community policing includes three key elements: community engagement, problem-solving, and organizational transformation. Each wave of the LEMAS used in this study has a separate community policing section that includes questions about activities implemented by police departments (i.e., policy, training of personnel, problem-solving activities, partnership formation, and conducting surveys). Most questions in this section reflect one of the dimensions of community policing.

Hence, I took the items of the LEMAS in the community policing section that reflected each element of community policing and grouped them into three dimensions based on the typology by Fridell (2004). If the items were categorical, they were recoded

into binary variables for consistency of data. The following three items were recoded through this dichotomization.

First, in the LEMAS 2000, one question asked, "As of June 30, 2000, did your agency have a community policing plan?" Three different categories—i.e., (1) "Yes, formally written," (2) "Yes, not formally written," and (3) "No"—were presented in the survey. The same question, however, was asked in a slightly different manner in 2003 and 2007. For instance, in the LEMAS 2003, the survey asked whether the agency "maintained or created a *formal, written* community policing plan," and the survey participants were able to mark either "Yes" or "No." Thus, I recoded the (1) "Yes, formally written" group into "Yes." Two other groups (i.e., (2) "Yes, not formally written," and (3) "No") were recoded into "No." Some information may be lost due to this decision, but the recoding is justifiable considering that I kept the consistency of contents across three waves of data.

Second, in the LEMAS 2000 through 2007, items on community policing training for newly-recruited officers asked, " During the 12-month period ending June 30, what proportion of agency personnel received at least eight hours of community policing training (problem-solving, SARA, community partnerships, etc.)?" Four different categories—"all," "half or more," "less than half," and "none"—were presented for the agencies to mark. I recoded this item into a dichotomous variable: training *all* officers or not. If agencies trained all officers, they were recoded as "Yes," and if not, "No."

As noted above, personnel training on community policing is a key factor in changing organization members' attitudes toward community policing. Training sends a strong message to officers and civilian personnel that their departments are serious about

implementing community policing programs. Thus, agencies that train all officers may be different from those that provide training to only a portion of officers. In addition, the composite score can reduce skewness by dichotomizing the item (Osgood, McMorris, and Potenza, 2002). Prior research also used the same coding scheme (e.g., Chappell et al., 2006). Last, the same question on training was asked for in-service personnel and I recoded it into a dichotomous variable for the same reason as mentioned earlier.

After assigning items in each dimension based on the criteria of Fridell (2004), an additive scale of each dimension was calculated by summating dichotomized indicators in the questions to serve as dependent variables. Calculating a composite score from multiple-item data is not uncommon in social science research (Osgood et al., 2002). In fact, in addition to producing a dependent variable suitable for diverse statistical methods, researchers can make the most of information by summating items. Also, summative scaling can reduce the influence of an idiosyncratic score that may only be relevant to a certain item, thus improving the reliability of measures (Osgood et al., 2002).

All items included in each dimension were binary items. Therefore, factor analysis was not appropriate in identifying dimensions of community policing because factor analysis assumes metrical values of binary data (Bartholomew, Steele, Moustaki, and Galbraith, 2008).

As discussed earlier, inconsistencies of survey questions exist across the three datasets. For instance, items on lists of groups that police agencies met with regularly are not the same (e.g., "domestic violence groups" was included only in 2000). In addition, as for the items on police agencies' conducting surveys, the LEMAS 2007 used "conducted or sponsored a survey of citizens on crime, fear of crime, or satisfaction with

police services." However, in the LEMAS 2000 and 2003, the same content was split into three separate items so that police agencies could choose one of three components. More details are discussed in each section of community policing elements. Therefore, decisions were made regarding item selection. How the three elements of community policing were constructed from the items in the LEMAS is described below.

(1) Community Engagement

As Fridell (2004) noted, community engagement elements of community policing activities involve close interaction with community members and groups. Thus, three items in the LEMAS were included in the community engagement element of community policing: (1) Having a citizen police academy program; (2) Training citizens in community policing; and (3) Partnering with local groups to solve crime problems. The exact items included in this element are shown in Table 4.3.

As mentioned above, some discrepancies of questions regarding community engagement exist among the three waves of the LEMAS. First, the citizen police academy item is included in all three waves of the LEMAS from 2000 to 2007. However, citizen training in community policing was not included as an option in the LEMAS 2007. Also, a question on partnership formation in the LEMAS 2000 asks ". . . which of the following groups did your agency meet with regularly (at least once every 3 months) to address crime-related problems?" Following this, ten different types of community groups were listed. In the LEMAS 2003 and 2007, the question was slightly changed into ". . . did your agency have a problem-solving partnership or written agreement with any of the following?" Following this, nine and eight community groups were provided

respectively. Table 4.3 presents the description of community engagement elements of questions included in the LEMAS 2000 through 2007.

Table 4.3. Description of Community Engagement Element in the LEMAS (2000-2007)

2000	2003	2007
Conducting a citizen police academy: Dummy	Conducting a citizen police academy: Dummy	Conducting a citizen police academy: Dummy
Training citizens in community policing (e.g., community mobilization, problem-solving): Dummy	Training citizens in community policing (e.g., community mobilization, problem-solving): Dummy	None
During the 12-month period ending June 30, 2000, which of the following groups did your agency meet with regularly (at least once every 3 months) to address crime-related problems? Mark all that apply.	During the 12-month period ending June 30, 2003, did your agency have a problem-solving partnership or written agreement with any of the following? Mark all that apply.	During the 12-month period ending September 30, 2007, did your agency have a problem-solving partnership or written agreement with any of the following?
▪ Advocacy groups ▪ Business groups ▪ Domestic violence groups ▪ Local public agencies ▪ Neighborhood associations ▪ Religious groups ▪ School groups ▪ Senior citizen groups ▪ Tenants' associations ▪ Youth service organizations ▪ Did not meet with any groups	▪ Advocacy groups ▪ Business groups ▪ Faith-based organizations ▪ Local government agencies (non-law enforcement agencies) ▪ Other local law enforcement agencies ▪ Neighborhood associations ▪ Senior citizen groups ▪ School groups ▪ Youth service organizations ▪ None of the above	▪ Advocacy groups ▪ Business groups ▪ Faith-based organizations ▪ Other local law enforcement agencies ▪ Neighborhood associations ▪ Senior citizen groups ▪ School groups ▪ Youth service organizations

To keep as much information as possible from the LEMAS dataset, I constructed two dependent variables from 2000 and 2003 and two separate dependent variables from 2003 and 2007. That is, I constructed two sets of dependent variables for two separate analyses. For the analysis of 2000 and 2003 data, 10 overlapping items were included: (1)

citizen academy; (2) training citizens; (3) advocacy group; (4) business groups; (5) school groups; (6) senior citizen groups; (7) local public (government) agencies; (8) youth service; (9) neighborhood associations; and (10) religious groups (faith-based organizations).

For the analysis of 2003 and 2007, nine overlapping items were included: (1) citizen academy; (2) advocacy group; (3) business groups; (4) school groups; (5) senior citizen groups; (6) local government agencies; (7) youth service; (8) neighborhood associations; and (9) faith-based organizations.

(2) Problem-Solving Approach

The problem-solving approach requires police agencies to apply different methods in tackling local problems. That is, police departments actively propose and develop the problem-solving approach within their organizations. Also, police agencies communicate directly with community members to find out the problems and concerns from residents' perspective (Fridell, 2004).

The LEMAS 2000 through 2007 included four items on the problem-solving element of community policing suggested by Fridell (2004): (1) encouraging officers to engage in problem-solving projects; (2) forming problem-solving partnerships with community groups; (3) including problem-solving projects in evaluating officers; and (4) surveying citizens. Items included in this dimension are shown in Table 4.4.

As in the case with community engagement variables, however, slight differences were identified. For instance, in the LEMAS 2000, a response option on problem-solving partnership asked "Formed problem-solving partnerships with community groups, public

agencies, or others through specialized contracts or written agreements." In the LEMAS 2003 and 2007, the response option changed into "Partnered with citizen groups and included their feedback in the development of neighborhood or community policing strategies." This research treated the two questions as the same.

Table. 4.4. Description of Problem-Solving Element in the LEMAS (2000-2007)

2000	2003	2007
Actively encouraged patrol officers to engage in SARA-type problem-solving projects on their beats: Yes/No	Actively encouraged patrol officers to engage in SARA-type problem-solving projects on their beats: Yes/No	Actively encouraged patrol officers to engage in SARA-type problem-solving projects on their beats: Yes/No
Formed problem-solving partnerships with community groups, public agencies, or others **through specialized contracts or written agreements**.	Partnered with citizen groups and included their feedback in the development of neighborhood or community policing strategies	Partnered with citizen groups and included their feedback in the development of neighborhood or community policing strategies
Included collaborative problem-solving projects in the evaluation criteria of patrol officers	Included collaborative problem-solving projects in the evaluation criteria of patrol officers	Included collaborative problem-solving projects in the evaluation criteria of patrol officers
During the 12-month period ending June 30, 2000, did your agency conduct or sponsor a survey of citizens on any of the following topics? Mark all that apply. • Public satisfaction with police services • Public perceptions of crime/disorder problems • Personal crime experiences of citizens • Reporting of crimes to law enforcement by citizens • Other – Specify	During the 12-month period ending June 30, 2003, did your agency conduct or sponsor a survey of citizens on any of the following topics? Mark all that apply. • Public satisfaction with police services • Public perception of crime/disorder problems • Personal crime experiences of citizens • Reporting of crimes to law enforcement by citizens • Other (please specify)	Conducted or sponsored a survey of citizens on crime, fear of crime, or satisfaction with police services: Yes/No

Also, in the LEMAS 2000 and 2003, a survey question asked "did your agency conduct or sponsor a survey of citizens on any of the following topics?" The response options provided four different types of surveys. In the LEMAS 2007, however, the question changed into a dichotomous item that included three types of surveys:

"Conducted or sponsored a survey of citizens on crime, fear of crime, or satisfaction with police services." Table 4.4 presents the description of problem-solving approach elements of questions included in the LEMAS 2000 through 2007.

Thus, for the analysis of 2000 and 2003, nine items were included to construct dependent variables: (1) encouragement of a problem-solving project; (2) formation of a problem-solving partnership; (3) evaluation of officers' problem-solving; (4) survey on satisfaction with police; (5) survey on perception of crime; (6) survey on experience of crime; and (7) survey on reporting crime. For the analysis of 2003 and 2007 data, however, the item on three types of surveys in the LEMAS 2003 (satisfaction with police, perception of crime, and experience of crime) was recoded into a dichotomous variable to match the variable in the LEMAS 2007.

(3) Organizational Transformation

The organizational transformation element of community policing included seven items: (1) establishment of a formal community policing plan; (2) new officers' community policing training; (3) community policing training on in-service sworn personnel; (4) community policing training on civilian personnel; (5) geographic placement of detectives; (6) geographic accountability for patrol officers; and (7) technological upgrade for community. Table 4.5 presents the description of organizational transformation elements of questions that were included in the LEMAS 2000 through 2007.

Table. 4.5. Description of Organizational Transformation Element in the LEMAS (2000-2007)

2000	2003	2007
As of June 30, 2000, did your agency have a community policing plan? Mark only one.: Yes, formally written/Yes, not formally written/No	Maintained or created a formal, written community policing plan: Yes/No	Maintained an agency mission statement that included a community policing component: Yes/No
During the 12-month period ending June 30, 2000, what proportion of agency personnel received at least eight hours of community policing training (problem-solving, SARA, community partnerships, etc.)? New officer recruits: All/Half or more/Less than half/None In-service sworn personnel: All/Half or more/Less than half/None Civilian personnel: All/Half or more/Less than half/None	During the 12-month period ending June 30, 2003, what proportion of agency personnel received at least eight hours of community policing training (problem-solving, SARA, community partnerships, etc.)? New officer recruits: All/Half or more/Less than half/None In-service sworn personnel: All/Half or more/Less than half/None Civilian personnel: All/Half or more/Less than half/None	During the 12-month period ending September 30, 2007, what proportion of agency personnel received at least eight hours of community policing training (problem-solving, SARA, community partnerships, etc.)? New officer recruits: All/Half or more/Less than half/None In-service sworn personnel: All/Half or more/Less than half/None
Assigned detectives to cases based on geographic areas/beats	None	None
Gave patrol officers responsibility for specific geographic areas/beats	Gave patrol officers responsibility for specific geographic areas/beats	Gave patrol officers responsibility for specific geographic areas/beats
Upgraded technology to support community policing activities	None	Upgraded technology to support the analysis of community problems

Some issues with the dependent variables need to be presented in advance. For instance, differentiating agencies with actively ongoing community policing programs for several years and those that showed short-term interests in community policing is not possible. The issue of "dosage" or "quality" in community policing research has been raised by prior studies (e.g., Maguire and Mastrofski, 2000) and this dissertation may not overcome such issues. However, level of engagement in the community policing activities can be addressed.

Pooling the LEMAS items may also present some concerns, especially regarding content validity. It is critical for instruments to have strong content validity. In fact, Haynes, Richard, and Kubany (1995:240) assert that "Data from an invalid instrument can overrepresent, omit, or underrepresent some facets of the construct and reflect variables outside the construct domain." In other words, items included in each dimension have to be "the most relevant and representative" for assessing each of the community policing elements (Haynes et al., 1995:245).

As will be discussed later, the items included in each dimension of community policing may not represent *every* aspect of community policing. Stated another way, the dependent variables in this study are not necessarily exhaustive measures of community policing activities by all local police departments. Nevertheless, these dependent variables do reveal most of the community policing activities (or outputs) suggested by Fridell (2004). Thus, while caution will be taken in drawing a firm conclusion from the results and generalizing to all police departments, I used as much information as possible from the LEMAS, one of the best data sources available that can identify organizational factors and diverse activities of police departments in the United States (Hickman and Piquero, 2009).

INDEPENDENT VARIABLE

Community Policing Units (CP Units)

The independent variable was dichotomous and defined by whether a police department had a separate community policing unit (Yes=1, No=0). This study, like the LEMAS surveys themselves, relies on police departments self-identifying whether or not

they have specialized units that carry out community policing functions. [3] Establishment of community policing units, however, may not reflect the overall specialization in police organizations. For instance, police organizations can establish CP Units while eliminating other specialized units. In this case, there will be no change in the division of labor.

In fact, measuring specialization is not simple and the complexity of quantifying the degree of specialization present in an organization is not unique to police departments. For instance, when measuring functional differentiation, investigators tend to count the number of departments or supervisors based on organizational charts. This method can be problematic because some specialized units or specialized personnel may not be reflected in official organizational charts (Dewar and Hage, 1978). Another issue related to the independent variable is that even when police agencies have separate community policing units, they may not operate these units in the same manner. In fact, research has found that police organizations apply different functional techniques in specialization unit operation (Maguire and Gantley, 2009a). Moreover, the LEMAS did not provide the precise definition of community policing units and it is not clear whether community policing units have separate supervisors and personnel devoted only to community policing activities within police departments.

Nevertheless, the creation and operation of CP Units is evidence of organizations' strategies to divide policing tasks. First, considering that officers tend to complain about the lack of time and resources to be involved in community policing, community policing activities are expected to be implemented by specialized units (Maguire and Gantley, 2009a). Moreover, as Lawrence and Lorsch (1967) maintained, organizations do not

[3] Prior studies consistently showed that some police agencies "over-respond" in some questions when filling out the LEMAS (e.g., Maguire and Katz, 2002). By using other indicator items in the survey, I corrected 20 cases. See Appendix 2 for details.

respond to environmental demands or pressures in a stereotyped or uniform manner. Rather, different subunits respond to their "subenvironment" in their own ways (Lawrence and Lorsch, 1967), so specialized units tend to focus on their own territory and perform their major tasks. Thus, it may not be wrong to assume that specialized units play a predominant role in carrying out community policing programs and that investigating the role of specialized community policing units could reveal one aspect of organizational specialization.

CONTROL VARIABLES

Police Strength

Police strength was utilized as one of the control variables. Police service is heavily dependent upon personnel within the organization and prior research has examined intraorganizational and external factors that may explain variations of personnel strength among police agencies (see Koper, Maguire and Moore, 2001; Stucky, 2005 for an overview of the studies).

Police strength can influence police outcomes. For instance, police strength can mediate the association between the level of racial dispersion and property crimes (Akins, 2003). Therefore, it may not be surprising that implementation of community policing programs require more personnel resources because community engagement and the problem-solving approach ask officers to engage more with their local residents and problem-solving activities (He et al., 2005). In this research, the number of officers was taken as a measure of police strength. Specifically, police strength was quantified as the number of officers per 100,000 residents rather than the absolute number of full-time

sworn officers. Thus, police strength was measured by dividing the number of full-time sworn police officers by total population served by the police department multiplied by 100,000.

Occupational Differentiation

Occupational differentiation refers to the percentage of civilians within police agencies and is used interchangeably with civilianization rate in this paper (Langworthy, 1985; Maguire, 2003). Skolnick and Bayley (1986) argued that civilianization of police can improve community policing efforts by freeing sworn officers from involvement in numerous administrative tasks and bringing in communities' needs and wants to police agencies. Therefore, civilianization of personnel was introduced as a control variable. It was measured by dividing the number of full-time civilians by the total number of personnel (full-time civilians and sworn police officers).

Operating Budget

The budget of a police agency is another factor that plays an important role in implementing community policing (Skogan and Hartnett, 1997). Police departments with sufficient resources to implement community policing have at their disposal more personnel and facilities. These resources, in turn, can facilitate the agencies' decisions to carry out diverse community policing activities. Resources here are measured by dividing total operating budget by the number of full-time sworn police officers.

Crime Rate

Numerous studies have consistently found that characteristics of communities affect the willingness of residents to cooperate with police in enhancing the quality of living through crime prevention and problem-solving policing (e.g., Greene, 2000). Also, police behavior varies across communities (Klinger, 1997) and crime prevention programs are less effective in criminally active communities (Bursik and Grasmick, 1993). Similarly, crime-stricken areas are less likely to be involved in crime prevention activities implemented by the police (Rosenbaum, Lurigio, and Davis, 1998). Thus, crime rate was also included as one of the control variables.

Data for crime rate were from the Uniform Crime Report Crime 2000, 2003, and 2007. Crime rate was measured by using the following computation: index crime (criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft) / population * 100,000. Descriptive statistics for all variables are presented in Table 4.6 and Table 4.7.

METHODS OF ANALYSIS

Linear panel analysis was chosen to examine the change of three elements of community policing activities across time. This analytic approach was appropriate because data were collected multiple times and I was interested in finding why program implementation (i.e., outputs) of community policing in some police agencies changed more than in other departments (Finkel, 2008).

Table 4.6. Descriptive Statistics of Dependent Variables for Analysis I and II

	Analysis I (LEMAS 2000 & 2003)									
	LEMAS 2000					LEMAS 2003				
	Min	Max.	Mean	S.D.	N	Min.	Max.	Mean	S.D.	n
Community Engagement	0	10	6.29	2.79	638	0	10	5.31	3.20	632
Problem-Solving	0	7	2.76	2.12	638	0	7	2.94	2.16	634
Organizational Transformation	0	5	2.51	1.21	632	0	5	2.24	1.13	590

	Analysis II (LEMAS 2003 & 2007)									
	LEMAS 2003					LEMAS 2007				
	Min.	Max.	Mean	S.D.	n	Min.	Max.	Mean	S.D.	n
Community Engagement	0	9	5.75	2.58	636	0	9	5.99	2.80	628
Problem-Solving	0	4	1.92	1.28	636	0	4	2.09	1.31	631
Organizational Transformation	0	4	2.20	1.07	603	0	4	2.17	1.07	596

Table 4.7. Descriptive Statistics of Independent Variable and Control Variables

	LEMAS 2000					LEMAS 2003					LEMAS 2007				
	Min.	Max.	Mean	S.D.	n	Min.	Max.	Mean	S.D.	n	Min.	Max.	Mean	S.D.	n
CP Units	0	1	0.65	0.48	626	0	1	0.58	0.49	626	0	1	.057	0.50	636
Police Strength	1.33	73.38	18.11	1.00	641	1.36	71.28	17.82	9.78	641	1.22	66.51	18.00	9.80	641
Occupational Differentiation	0.00	75.30	25.04	12.50	641	0.08	40.00	10.12	5.37	640	0.00	85.37	29.37	16.12	641
Operating Budget (logged)	9.80	13.03	11.43	0.41	641	8.68	13.10	11.56	0.48	641	7.92	13.30	11.79	0.53	641
Crime Rate	0.00	0.28	0.05	0.04	641	0.00	0.30	0.05	0.04	641	0.00	0.25	0.05	0.04	641

The dependent variables were continuous outputs calculated from summating numerous community policing indicators, and the data structure was TSCS (Menard, 2002). In short, linear panel analysis is suitable for analyzing "*continuous outcomes* for *multiple units* at *multiple points*" (Finkel, 2008:475, emphasis original). As mentioned above, two separate analyses were based on two-period panel data.

FIXED EFFECTS VERSUS RANDOM EFFECTS MODELS

Linear panel data can be analyzed by two distinct methods: fixed effects and random effects model (Allison, 1994; Finkel, 2008; Menard, 2002). Both models start from the simple principle of Ordinary Least Squares (OLS) and can be expressed as follows:

$$Y_{it} = \alpha_i + \beta_1 X_{1t} + \varepsilon_{it} \qquad \text{(Equation 1)}$$

Where α_i (i=1….n) is the intercept for each police organization and Y_{it} is the dependent variables where i = police department and t = time. X_{1t} is one independent variable and β_1 is the coefficient for that predictor variable. Finally, ε_{it} is the error term for case i at time t. One of the key assumptions of OLS is that the error terms are not correlated.

In a fixed effects model, it is assumed that case i at time t is not correlated with case i at time $t+1$ or $t+2$ in Equation 1 (Finkel, 2008). Accordingly, analysts came up with the idea of the unobservable factor that is unique to case i, or U_i. The unobservables are also assumed to be related to Y. For instance, in this research, the U term may include

culture of police organizations, willingness to implement community policing, or degree of officers' racial composition. Equation 1 can consequently be rewritten as follows:

$$Y_{it} = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots \beta_J X_{ji} + U_i + \varepsilon_i \qquad \text{(Equation 2)}$$

In contrast, a random effects model assumes that the error component, U_i, is not correlated with a dependent variable (Y_{it}) and other explanatory variables (X_{ji}) across all time periods in the equation. This is the key difference between fixed and random effects models (Wooldridge, 2012). Thus, if U_i is not independent of any explanatory variables, then a random effects model will produce biased results. In other words, a fixed effects model should be used when there is a reason to believe that U_i may be correlated with an outcome variable or any independent variable (Finkel, 2008; Wooldridge, 2012).

It should be noted, however, that the random effects approach can be used if theoretical justification exists that error terms are unrelated to explanatory variables in the model. In fact, one of reasons for using panel data is to allow for the correlation(s) between U_i and X_{ji} variables (Finkel, 2008; Wooldridge, 2012). One advantage of using a random effects model is that such an approach can estimate the effect of time-invariant variables. For instance, random effects model can show the effect of type of agencies (i.e., sheriff's departments vs. municipal police departments) on the outcome variable. In a fixed effects model, the time-constant factors are dropped out of the model automatically.

However, as mentioned above, it may be difficult to argue that one of the error terms in Equation 2 (i.e., U_i) is uncorrelated with other independent variables or outcome

variables. That is, the unobserved department-specific effect can be related to other control variables (e.g., crime, size, budget, etc.) in the model used in this study. Therefore, I decided to use the fixed effects model and subdivided the sample into two—sheriff's departments and municipal police departments—rather than using type of agencies as one of the control variables.

FIXED EFFECTS MODEL

Equation 2 shows that each unit has its own intercept, $\alpha + U_i$, where α is the average intercept for the dependent variable and U_i is the unobservable factor that is stable in case i. Thus, U_i makes each intercept move up or down. To solve this problem, dummy variables for n-1 units can be included to control for individual specific effects (Finkel, 2008). This is why the fixed-effects model is also called the least squares dummy variable model. When n is large, however, it is impractical to include all dummy variables. Therefore, more a common way to do the analysis is to calculate unit level means of all observable variables, as is written in Equation 3:

$$\bar{Y}_i = \alpha + \beta_1 \bar{X}_{1i} + \beta_2 \bar{X}_{2i} + \ldots \beta_J \bar{X}_{ji} + \bar{U}_i + \bar{\varepsilon}_i \qquad \text{(Equation 3)}$$

Then Equation 4 can be written by subtracting Equation 3 from Equation 2.

$$Y_{it} - \bar{Y}_i = \beta_1 (X_{1it} - \bar{X}_{1i}) + \beta_2 (X_{2it} - \bar{X}_{2i}) + \ldots \beta_J \left(X_{Jit} - \bar{X}_{ji}\right) + (\varepsilon_{it} - \bar{\varepsilon}_i)$$

(Equation 4)

In Equation 4, $U_i = \overline{U}_i$ because *Ui* is constant over time, so the $(U_i - \overline{U}_i)$ part is removed. Another approach is the so-called first difference model (Equation 5). This model also eliminates the unobservable and unit-specific effect—U_i—by subtracting Equation 2 from one-time period lag equation:

$$Y_{it} - Y_{it-1} = \beta_1(X_{it} - X_{it-1}) + \beta_2(X_{2it} - X_{2it-1}) + \ldots \beta_J\left(X_{Jit} - X_{jit-1}\right) + (\varepsilon_{it} - \varepsilon_{it-1})$$

(Equation 5)

Again, $U_i = U_{it-1}$, so stable unit effects are controlled in Equation 5. In fact, despite the parsimony of the model, Equation 5 is a great method to take into account unobservable differences among subjects (Finkel, 2008). Specifically, it is reasonable to expect that differences of community policing activities may be not only from explanatory variables but also from other factors that are not included in the model but are constant within a unit. Thus, Equation 5 can provide an insight into the effect of change in *X* on the change of *Y*. Equation 4 and Equation 5 produce a consistent result when *T=2* (Finkel, 2008), so this study will investigate the effect of specialization on outputs of community policing programs using both equations.

CHAPTER 5. RESULTS

This chapter examines how specialized units have operationally changed in the first decade of the 21st century. More importantly, I will examine whether the creation of specialized community policing units (CP Units) play a role in producing community policing outputs. Thirteen types of subunits were selected to identify patterns of the change in specialized units. I explored whether police agencies have increased or decreased the operation of specialized community policing units across time. As a first step to investigate the relationship between community policing units and community policing activities, independent sample t-tests were performed. Then linear panel analysis was used to draw causal inferences between community policing units and their program implementation.

CREATION OF SPECIALIZED POLICE UNITS

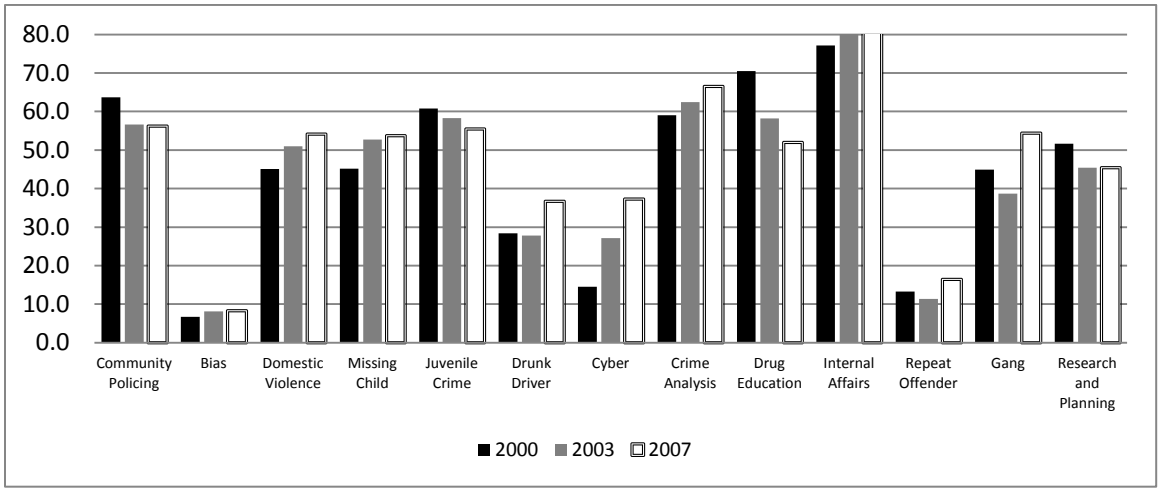
INCREASE OF OPERATION

As discussed before, the longitudinal dataset in this research makes it possible to trace the prevalence of specialized units among police departments in the United States. Figure 5.1 shows the patterns of numerous police subunits from 2000 to 2007. The bar graph includes thirteen different types of specialized units included in the LEMAS between 2000 and 2007. Because these units were included in all three waves of data collection, changes of unit operation could be identified.

As Figure 5.1 shows, the results show interesting patterns. First, the portion of agencies in the sample that had bias crime units continuously increased from 6.7% in 2000 to 8.1% in 2003 and to 8.3% in 2007. The growth of bias crime units can be

understood within the growth in public awareness of bias crime—sometimes referred to as hate crime—in recent years. Sandholtz, Langton, and Planty (2013) found that, although racially motivated crime has decreased, crime motivated by religious reasons has increased since the early 21st century. Bias crime, even if committed to a single person, can be regarded as a threat to whole groups (religious, sexual orientation, ethnicity, etc.). Thus, although the vast majority of police agencies do not have bias crime units, increasing number of police departments seem to feel more pressure from such groups to tackle and prevent such crimes (Bell, 2002).

Figure 5.1. Operation of Specialized Police Units (n=641)



The portion of agencies that contained domestic violence units increased from 45.1% in 2000 to 54.1% in 2007. Like the general crime trend since the 1990s, domestic violence, more frequently called intimate partner violence, also declined continuously during the same period (Catalano, 2012). However, due to the characteristics of this crime—i.e., emotional and physical intimacy between offenders and victims, repeated victimization, direct effect on other family members, etc.—policy makers as well as

scholars have paid much attention to this type of crime. Thus, it is not surprising that police departments have also invested their resources in tackling this issue.

Missing child units have consistently increased—from 45.2% of police agencies having the units in 2000 to 52.7% and 53.7% in 2003 and 2007 respectively—even while there has been no concurrent evidence that the number of missing child cases has increased. On the contrary, during the last decades of the 20th century, missing child cases continuously decreased (Hammer, Finkelhor, Sedlak, and Porcellini, 2004). Police agencies with written policy or specialized missing units have been shown to be more aggressive in investigating missing child cases (Speirs, 1998). Thus, the increase of missing child units can be understood in terms of police recognition that even a small number of missing child cases is an important issue to address. Also, political pressure can be a factor in agencies' increased reliance on the missing child units.

The expansion of cyber-crime units has been even more dramatic. In 2000, fewer than 20% of police agencies in the sample had specialized cyber-crime units. Less than a decade later, however, that percentage had increased more than two-fold—close to 40% of agencies were equipped with the units that could tackle crime committed in cyber space.

Cyber-crime is important not only among private parties. This relatively new type of crime poses a challenge to local law enforcement agencies because police organizations need to be equipped with new technology and skills to address diverse issues (Goodman, 1997). Child pornography, identify theft, fraud, and cyber bullying are some examples of cyber-crime. Therefore, though some critics lament the lack of

attention on the crime in the virtual world, police agencies have expanded their field of duty to the virtual space during the last decade (Davis, 2012).

The percentage of crime analysis units also grew in this period. In 2000, just over half of agencies had crime analysis units. The percentage kept increasing, and in 2007, more than 66% of police departments had crime analysis units within their organizations. Increase of crime analysis functionality can be from the recognition that support for crime scene investigation through scientific analysis is essential in catching offenders and proving evidence to courts. The trend identified in Figure 5.1 suggests that police organizations were increasingly spending more resources on this area.

Internal affairs units have also increased. Close to 77% of police departments already had a unit responsible for maintaining the integrity of officers' behavior in 2000. This number increased to 83.5% of the sample in 2007. Addressing misconduct or corruption by a few police officers in an appropriate manner plays a significant role in keeping the integrity and trust of police departments (Office of Community Oriented Policing Services, 2009). Although research has not evaluated the effectiveness of the units (Skogan and Frydl, 2004), police agencies have nonetheless increasingly formed internal affairs units since the early 2000s.

In short, descriptive statistics from 2000 to 2007 show that police agencies responded to social changes and increased public awareness by creating relevant specialized units that are committed to tackle problems in the communities.

DECREASE OF OPERATION

As shown in Figure 5.1, other categories of crime showed the opposite pattern of subunit utilization. For instance, police agencies seemed to decrease the operation of juvenile crime units. In 2000, more than 60% of police agencies had specialized units solely devoted to juvenile crimes. However, the percentage decreased to 58.3% in 2003 and to 55.5% in 2007. Crime committed by juveniles (i.e., aged under 18) and juvenile victimization also decreased since early 1990s (Snyder and Sickmund, 2006), but it is not clear why police organizations decreasingly relied on specialized units specifically for juveniles.

The number of drug education units also decreased in the same period. Police have been involved in numerous school-based educational programs, notably through Drug Abuse Resistance Education and Gang Resistance Education and Training. Research on the effectiveness of such program, however, yielded mixed results (see Ennet, Tobler, Ringwalt, and Flewelling, 1994; Esbensen and Osgood, 1999). The data in this study showed that police agencies relied less on specialized drug education units in 2007 as compared to 2000.

Temporal shifts in the number of drunk driver, repeat offender, and gang units did not seem to follow any particular pattern. For instance, in 2000, 28.4% of local police departments had drunk driver units. The percentage decreased to 27.8% in 2003, but then increased to 36.7% in 2007. Repeat offender units showed a similar pattern. More than 13% of police departments operated repeat offender units in 2000. After a small drop in 2003 (11.4%), however, the percentage increased to more than 16% in 2007. Also, close

to 45% of police agencies ran specialized gang units in 2000. However, the percentage dropped to 38.7% in 2003 before increasing to 54.4% in 2007.

As discussed in Chapter 2, it is not clear whether police agencies set up specialized units from rational decision-making to tackle increasing local problems or from political or media pressures. However, it is clear that police departments have increasingly relied on some subunits (e.g., bias crime units, cyber-crime units, crime analysis units, internal affairs units, etc.), while some other units (e.g., juvenile crime units, drug education units, etc.) have been decreasingly utilized by police organizations.

OPERATION OF COMMUNITY POLICING UNITS

Table 5.1 indicates that police organizations varied in operating community policing units across time. For instance, while 202 agencies (31.5% of sample) maintained community policing units from 2000 to 2007, 105 departments (16.4%) did not have dedicated units responsible for implementing community policing activities. In other words, close to half of police agencies in the sample maintained the same approach to the matter of CP Units throughout the course of the years studied; about 32% always had one and about 16% never did.

For the remaining 52.1% of agencies, however, specialized community policing units came and went during the seven-year period. About 10% of agencies had CP Units in 2000 and 2003, but did not have CP Units in 2007. However, about 9% of agencies had CP Units in 2000, no CP Units in 2003, and CP Units again in 2007. In short, a look at the data disclosed some notable temporal fluctuations among agencies with respect to the presence of specialized CP Units goes.

Table 5.1. Change of Community Policing Units from 2000 to 2007 (n=641)

LEMAS 2000	LEMAS 2003	LEMAS 2007	Frequency
CP Unit	CP Unit	CP Unit	202 (31.5%)
		No Unit	81 (12.6%)
	No Unit	CP Unit	59 (9.2%)
		No Unit	61 (9.5%)
No Unit	CP Unit	CP Unit	57 (8.9%)
		No Unit	34 (5.3%)
	No Unit	CP Unit	42 (6.6%)
		No Unit	105 (16.4%)
n			641 (100%)

I also separately examined Sheriffs' Departments and Municipal Police Departments regarding their operation of CP Units over time. As Table 5.2 shows, similar patterns were identified in both groups. A total of 53 out of 218 sheriffs' departments (26.8%) had CP Units across all three waves of the data collection period. During the same period, 33.6% of municipal police departments consistently had CP Units. There were also some Sheriffs' Department and Municipal Police Departments that did not operate CP Units at any point during the years examined—27.8% and 11.3%, respectively.

Other departments were not consistent where the presence of specialized CP Units was concerned—45.4% of Sheriffs' Departments and 55.1% of Municipal Police Departments. Examining these fluctuations further, 10.1% of Sheriffs' Departments had CP Units in 2000 and 2003, but they did not have the same unit in 2007. Also, 7.2% of Municipal Police Departments did not operate CP Units in 2000, but did in 2003 and 2007.

Table 5.2. Change of Community Policing Units by Type of Agencies (n=641)

LEMAS 2000	LEMAS 2003	LEMAS 2007	Frequency	
			Sheriff's Dept.	Municipal PD
CP Units	CP Units	CP Units	53 (26.8%)	149 (33.6%)
		No Units	20 (10.1%)	61 (13.8%)
	No Units	CP Units	12 (6.1%)	47 (10.6%)
		No Units	24 (12.1%)	37 (8.4%)
No Units	CP Units	CP Units	15 (7.6%)	42 (9.5%)
		No Units	9 (4.5%)	25 (5.6%)
	No Units	CP Units	10 (5.1%)	32 (7.2%)
		No Units	55 (27.8%)	50 (11.3%)
n			198 (100%)	443 (100%)

In short, variations in operating CP Units existed both in Sheriffs' Departments and Municipal Police Departments. While many police agencies kept consistency in management of a subunit for community policing (either through operating or not operating a CP Unit), the majority of agencies altered their operation of CP Units over time.

CROSS-SECTIONAL ANALYSIS

BIVARIATE CORRELATIONS

Table 5.3 reports the bivariate correlations for all variables included in Analysis I (see Table 4.2 for details about Analysis I and Analysis II). As the table shows, the CP Units 2000 variable was significantly correlated with every dependent variable. Also, the CP Units 2003 variable was significantly correlated with all dependent variables in the analysis.

Correlations among variables included in Analysis II are shown in Table 5.4. CP Units 2003 was correlated with half of the dependent variables: Community Engagement 2003, Problem-Solving 2003, and Organizational Transformation 2003 variables. However, CP Units 2007 was significantly correlated with all dependent variables except for the Community Engagement 2003 variable.

INDEPENDENT T-TESTS

Independent t-tests were used to assess whether if the means of each community policing element for two groups (agencies with CP Units vs. agencies without CP Units) were significantly different. In other words, t-tests were performed to find if police departments with CP Units have different community policing activities compared to agencies without such units. This analysis was repeated across three waves of data. Thus, nine separate t-tests were conducted to see whether the means differed across three elements of community policing program implementation.

Table 5.3. Correlation Matrix of Variables in the LEMAS 2000 and the LEMAS 2003

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Unit2000	1															
2. Unit2003	0.26**	1														
3. CE2000	0.15**	0.15**	1													
4. CE2003	0.11**	0.20**	0.27**	1												
5. PS2000	0.12**	0.15**	0.45**	0.19**	1											
6. PS2003	0.09*	0.17**	0.21**	0.41**	0.40**	1										
7. OT2000	0.19**	0.12**	0.36**	0.19**	0.40**	0.27**	1									
8. OT2003	0.11**	0.21**	0.20**	0.31**	0.22**	0.41**	0.20**	1								
9. Strength2000	0.14**	0.16**	0.09*	0.08	0.07	0.04	0.20**	0.12**	1							
10.Strength2003	0.12**	0.17**	0.09*	0.08*	0.07	0.05	0.20**	0.13**	0.98**	1						
11. OD2000	-0.02	-0.04	0.09*	0.13**	0.14**	0.15**	0.04	-0.03	-0.38**	-0.36**	1					
12. OD2003	-0.17	-0.11**	-0.21**	-0.23**	-0.11**	-0.11**	-0.12**	-0.15**	-0.20**	-0.22**	-0.01	1				
13. Budget2000	-0.07	-0.10*	0.01	0.02	0.05	0.03	-0.01	-0.04	-0.42**	-0.42**	0.55**	0.00**	1			
14. Budget2003	-0.04	-0.11**	0.04	0.01	0.08*	0.02	-0.02	-0.06	-0.42**	-0.46**	0.50**	0.12**	0.67**	1		
15. Crime2000	0.13**	0.13**	0.16**	0.09*	0.12**	0.11**	0.23**	0.14**	0.68**	0.68**	-0.16**	-0.26**	-0.31**	-0.33**	1	
16. Crime2003	0.15**	0.12**	0.16**	0.08*	0.16**	0.11**	0.23**	0.15**	0.66**	0.67**	-0.17**	-0.25**	-0.31**	-0.33**	0.93**	1

Notes: CE2000 stands for the community engagement element of community policing in year 2000. PS stands for the problem-solving element. OT stands for organizational transformation. OD stands for occupational differentiation.

Table 5.4. Correlation Matrix of Variables in the LEMAS 2003 and the LEMAS 2007

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. CPUnit2003	1															
2. CPUnit2007	0.28**	1														
3. CE2003	0.16**	0.08	1													
4. CE2007	0.02	0.23**	0.22**	1												
5. PS2003	0.11**	0.09*	0.47**	0.22**	1											
6. PS2007	0.06	0.31**	0.25**	0.46**	0.35**	1										
7. OT2003	0.22**	0.18**	0.18**	0.17**	0.26**	0.28**	1									
8. OT2007	0.05	0.28**	0.18**	0.35**	0.19**	0.49**	0.16**	1								
9. Strength2003	0.17**	0.13**	0.09*	0.09*	0.06	0.10**	0.13**	0.21**	1							
10.Strength2007	0.18**	0.16**	0.07	0.09*	0.08*	0.12**	0.14**	0.21**	0.94**	1						
11. OD2003	-0.10*	-0.09*	-0.21**	-0.20**	-0.11**	-0.13**	-0.14**	-0.18**	-0.22**	-0.19**	1					
12. OD2007	-0.08*	-0.10**	-0.01	-0.02	0.02	-0.03	-0.07	-0.09*	-0.50**	-0.52**	0.05	1				
13. Budget2003	-0.10**	-0.02	0.03	0.04	0.11**	0.08*	-0.04	-0.01	-0.45**	-0.42**	0.09*	0.53**	1			
14. Budget2007	-0.07	-0.04	0.07	0.00	0.10*	0.05	-0.05	0.00	-0.42**	-0.45**	-0.03	0.64**	0.68**	1		
15. Crime2003	0.12**	0.11**	0.15**	0.18**	0.16**	0.14**	0.17**	0.22**	0.67**	0.63**	-0.26**	-0.38**	-0.32**	-0.33**	1	
16. Crime2007	0.15**	0.09*	0.13**	0.14**	0.13**	0.12**	0.17**	0.19**	0.65**	0.65**	-0.23**	-0.40**	-0.36**	-0.37**	0.91**	1

Notes: CE2003 stands for the community engagement element of community policing in year 2003. PS stands for the problem-solving element; OT stands for organizational transformation. OD stands for occupational differentiation.

The LEMAS 2000

A statistically significant difference existed between police agencies with CP Units and those without the units in the community engagement element of community policing activities (t (624)=-3.84, p<.05). Agencies with CP Units had a higher level of the community engagement dimension of community policing activities (M=6.65, SD=2.65) than those without CP Units (M=5.77, SD=2.82).

There was also a significant difference between police agencies with CP Units and those without the units in the problem-solving element of community policing activities (t (624)=-2.92, p<.05). Police organizations with CP Units had a higher level of problem-solving element of community policing activities (M=2.96, SD=2.07) than agencies without CP Units (M=2.44, SD=2.18).

Finally, a statistically significant difference existed between police agencies with CP Units and without the units in the organizational transformation aspect of community policing activities (t (624)=-4.96, p<.05). Like the above two elements, organizational transformation elements of community policing activities were higher in police agencies with CP Units (M=2.68, SD=1.17) than departments without CP Units (M=2.19, SD=1.24).

The LEMAS 2003

A t-test indicated that a statistically significant difference existed between police agencies with CP Units and without the units in the community engagement element of community policing activities (t (620)=-5.01, p<.05). That is, CP Units were associated

with a higher level of the community engagement dimension of community policing activities.

Also, a statistically significant difference existed between police agencies with CP Units and without the units in the problem-solving element of community policing activities (t (622)=-4.41, p<.05). CP Units seem to be associated with a higher level of problem-solving of community policing activities.

Lastly, a t-test showed that a statistically significant difference existed between police agencies with CP Units and without the units in the organizational transformation aspect of community policing activities (t (579)=-5.21, p<.05). Unlike the result from the LEMAS 2000, police departments with CP Units showed a higher level of the organizational transformation elements of community policing activities compared to agencies without CP Units.

The LEMAS 2007

A t-test showed that a statistically significant difference existed between police agencies with CP Units and without the units in the community engagement element of community policing activities (t (628)=-6.02, p<.05). That is, CP Units appear to be associated with a higher level of the community engagement dimension of community policing activities.

Also, a statistically significant difference existed between police agencies with CP Units and without the units in the problem-solving element of community policing activities (t (631)=-8.05, p<.05). Results showed that CP Units seem to be associated with a higher level of the problem-solving element of community policing activities.

Last, a t-test showed that a statistically significant difference existed between police agencies with CP Units with and without the units in the organizational transformation aspect of community policing activities (t (596)=-6.98, p<.05). Unlike the result from the LEMAS 2000, police departments with CP Units showed a higher level of the organizational transformation elements of community policing activities compared to agencies without CP Units.

Summary

Results from three waves of data suggested that specialized community policing units were positively associated with community policing program implementation. Police departments with such specialized units performed more activities that involved the community engagement, problem-solving, and organizational transformation aspects of community policing. In short, the results suggest that the creation of community policing units significantly affects program implementation by police departments.

LINEAR PANEL ANALYSIS

Two separate analyses were conducted to see the change and the effect of change on community policing units: Analysis I for the change of all agencies between 2000 and 2003 and Analysis II for the change between 2003 and 2007. As mentioned earlier, I decided to conduct two separate analyses due to some discrepancies of items included in three waves of the LEMAS survey (see Chapter 4 for details).

Panel analysis results for Sheriffs' Department and Municipal Police Departments between 2000 and 2003 will be presented below, followed by results for 2003 and 2007.

In addition, by examining significant differences between coefficients across two groups, I investigated the interactive effects of different types of agencies (i.e., Sheriffs' Department versus Municipal Police Department) on each element of community policing activities (see below for details). A *z*-test then compared coefficients of independent variables in each group.

ANALYSIS I AND ANALYSIS II FOR ALL DEPARTMENTS

Analysis I

Analysis I employs the LEMAS 2000 and 2003 waves of data that included both Sheriffs' Departments and Municipal Police Departments. Table 5.5 provides the results of linear panel analysis of the association between CP Units and police organizations' implementation of three elements of community policing. In each element, Model 1 included only CP Units as an independent variable, while Model 2 addressed four control variables to investigate the possible mediating effects of police strength, occupational differentiation, operating budget, and crime rate variables.

The presence of CP Units was significantly ($p<0.01$) and positively associated with the community engagement element. In other words, police agencies with CP Units were more likely to implement community policing activities that involve close interaction with residents and other community members and groups.

Model 2 included three intra-organizational factors (i.e., police strength, occupational differentiation, and operating budget (logged)) and crime rate as control variables. In this model, CP Units was still significantly ($p<0.05$) related to the community engagement dimension of community policing. Also, the direction of the

relation was not changed. That is, controlling for the effect of police strength, civilianization, budget, and crime rate, police agencies with CP Units implemented on average 0.52 more community policing programs that involved close interactions with their residents. Thus, the initial relationship did hold even when controlling for four possible spurious factors.

Among control variables, only occupational differentiation was positively associated with the community engagement element. Thus, the data showed that police departments with more civilian personnel were more likely to implement community policing programs that engage their citizens. However, other control variables failed to achieve statistically significant associations with community engagement programs.

The association between CP Units and the problem-solving element of community policing is revealed in the second column of Table 5.5. Results indicate that CP Units were not significantly associated with community policing activities that focus on the adoption of new approaches in solving community problems. Similarly, the analysis disclosed that none of the control variables had a significant relationship with the problem-solving element of community policing.

The third column of Table 5.5 shows the effect of CP Units on the organizational transformation dimension of community policing. Model 1, which included only CP Units as an independent variable, indicated that agencies with specialized community policing units were more likely to implement the organizational transformation aspect of community policing ($p<0.01$) than were their counterparts without such units. When four control variables (i.e., police strength, occupational differentiation, operating budget (logged), and crime rate) were introduced, the significance of CP Units did not disappear.

In other words, the control variables did not mediate the association between CP Units and agencies' activities where the organizational change aspect of community policing was concerned.

Among intra-organizational factors and crime rate, only occupational differentiation was significantly and positively associated with community policing activities that focused on changing organizational priorities. That is, police agencies with more civilians are more likely to focus on the organizational transformation aspects of community policing net of other variables in the model. Also, three control variables—police strength, budget, and crime rate—did not reach significance.

In short, based on data from LEMAS 2000 and 2003, the presence of CP Units was significantly associated with community engagement and organizational transformation aspects of community policing. Agencies with specialized units solely devoted to community policing were more likely to implement programs that involve interactions with residents and reflect a change in organizational priorities.

Analysis II

Analysis II employed the LEMAS 2003 and 2007 waves of data for all types of agencies. Table 5.6 reports the association between CP Units and three different elements of community policing program implementation during 2003 and 2007. The community engagement element of community policing is reported in the first column of Table 5.6. Model 1, which only included CP Units, showed that agencies with specialized community policing units were more likely to perform activities that highlight the close interaction between police organizations and residents than their counterparts without CP

Units. Even when four control variables were introduced in the model as in Model 2, the significance of CP Units remained (p<0.01). It is also worth noting that none of the control variables were significantly associated with the CP Units measure in Model 2. In short, as in Analysis I, police departments with CP Units were more likely to perform community engagement aspects of community policing programs.

The second column of Table 5.6 shows the association between CP Units and police agencies' implementation of the problem-solving element of community policing activities. Again, linear panel analysis revealed that CP Units were significantly (p<0.01) associated with the problem-solving dimension of community policing activities while holding other variables in the model constant. That is, agencies with the specialized units were more likely to have programs that stress the problem-solving approach in tackling local problems net of other factors.

The relationship between CP Units and the organizational transformation dimension of community policing is provided in the third column of Table 5.6. CP Units were significantly (p<0.01) and positively associated with agencies' activities that emphasized organizational investment in officers' training and evaluation in community policing activities. The inclusion of four control variables did not change the relationship between CP Units and the organizational transformation dimensions of community policing program implementation. In other words, controlling for police strength, civilian employees, operating budget, and crime rate, CP Units were positively related to the organizational transformation elements of community policing implementation. An average of 0.38 more organizational transformation programs were implemented in police agencies with CP Units relative to ones without such specialized units.

Table 5.5. Linear panel analysis results of the effect of CP Units on three elements of community policing (2000-2003)

	Community Engagement				Problem-Solving				Organizational Transformation			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
CP Unit	**0.67**	**0.25****	**0.52**	**0.25***	0.15	0.16	0.14	0.16	**0.36**	**0.11****	**0.32**	**0.11****
Police Strength			0.07	0.07			-0.01	0.04			0.02	0.03
Occup. Diff.			**0.03**	**0.01****			-0.01	0.00			**0.01**	**0.00****
Budget			-0.67	0.41			-0.27	0.26			-0.16	0.18
Crime Rate			-2.13	10.15			-11.54	6.45			3.44	4.48
n	1244		1244		1246		1246		1203		1203	

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Table 5.6. Linear panel analysis results of the effect of CP Units on three elements of community policing (2003-2007)

	Community Engagement				Problem-Solving				Organizational Transformation			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
CP Unit	**1.08**	**0.22****	**1.03**	**0.23****	**0.48**	**0.10****	**0.49**	**0.10****	**0.38**	**0.10****	**0.38**	**0.10****
Police Strength			0.06	0.04			-0.00	0.02			-0.00	0.02
Occup. Diff.			0.01	0.01			0.00	0.00			-0.00	0.00
Budget			-0.23	0.28			0.08	0.13			0.16	0.12
Crime Rate			-11.80	8.47			1.34	3.76			-2.94	3.83
n	1249		1249		1252		1252		1186		1186	

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

In short, linear panel analyses of the longitudinal data from the LEMAS 2003 and 2007 showed that CP Units were significantly associated with all three elements of community policing activities. That is, the positive effect of specialized units on program implementation was consistent in all three elements of community policing. In summary, agencies with specialized units solely devoted to community policing were more likely to perform three distinctive dimensions of community policing compared to departments without CP Units.

FURTHER ANALYSES

As discussed in Chapter 3, local police departments in the United States are highly heterogeneous in terms of their operations, personnel management, and priorities in daily policing. One notable difference across departments is agency type. Sheriff and police departments typically have notably different sorts of responsibilities and thus different organizational structures from one another. Thus, I subdivided the sample into two subsamples to investigate whether the association between CP Units and three elements of community policing differed depending on the types of local police agencies: Sheriffs' Departments and Municipal Police Departments. After conducting separate analyses for these two groups in 2000-2003 and 2003-2007, I examined whether any observed differences between the two sorts of organizations were statistically significant.

Sheriffs' Department in 2000-2003

The effect of CP Units in Sheriffs' Departments based on the LEMAS 2000 and 2003 data is reported in Table 5.7. The analyses undertaken disclosed no significant

effect of CP Units on any of the three elements of CP programs (p=0.07). Also, inclusion of control variables did not change the impact of CP Units on any of the three different elements of community policing—that is, the effect of CP Units was non-significant in Model 2, which included four control variables.

Moreover, it is interesting that control variables are differentially associated with each element of community policing (i.e., dependent variables). First, in the community engagement dimension, only occupational differentiation achieved statistical significance (p<0.05). That is, Sheriffs' Departments with a high rate of civilian staff were more likely to implement community policing activities that involve close interaction and communication with their citizens. Second, the operating budget variable—measured by total budget divided by the number of sworn officers—was negatively associated with the problem-solving element of community policing (p<0.05). Thus, based on this result, Sheriffs' Departments with more financial capabilities are less likely to implement problem-solving activities. Lastly, crime rate is positively related to the organizational transformation dimension of community policing (p<0.05). In other words, the more Sheriffs' Departments experienced higher crime rates, the more likely the agencies were to adopt innovative organizational approaches to tackle local problems.

Municipal Police Departments in 2000-2003

Table 5.8 reports the association between CP Units in Municipal Police Departments (between 2000 and 2003) and the three elements of community policing activities (i.e., community engagement, problem-solving, and organizational transformation). In short, Model 1 of each analysis, which addressed only the effect of

CP Units, showed that specialized units in Municipal Police Departments were significantly associated with each dimension of program implementation in general.[4] When control variables were introduced in each model (Model 2), the effect of CP Units did not change.

First, holding other control variables in the model constant, the effect of CP Units in Municipal Police departments on the community engagement element of community policing was marginal and positive (b=0.50, p=0.10). For instance, municipal police departments with specialized community policing units were predicted to implement 0.50 more programs that engage community members than their counterparts without such units. Among control variables, the effect of occupational differentiation was statistically significant and positive (b=0.03, p<0.01). Thus, the more municipal police agencies had civilian employees, the more likely it was that they performed activities that focused on the involvement of community members.

Second, CP Units were also associated with the problem-solving element of community policing, even though the statistical significance of Model 2 was marginal (b=0.35, p=0.08). When control variables were introduced, the significance level did not substantively change (b=0.33, p=0.09).

Third, municipal police agencies with CP Units performed considerably more community policing activities of the organizational transformation element (b=0.32, p<0.01). That is, taking all four control variables into account, CP Units in Municipal Police Departments between 2000 and 2003 was positively associated with activities that engage in setting up new organizational priorities.

[4] The only exception is the association between CP Units and the problem-solving element. However, this relationship was also marginal (p=0.08).

Table 5.7. Linear panel analysis results of the effect of CP Units in Sheriffs' Departments (2000-2003)

	Community Engagement				Problem-Solving				Organizational Transformation			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
CP Unit	0.82	0.45	0.50	0.46	-0.34	0.27	-0.33	0.28	0.35	0.19	0.30	0.19
Police Strength			0.12	0.09			-0.08	0.06			-0.03	0.04
Occup. Diff.			**0.02**	**0.01***			-0.01	0.01			0.01	0.00
Budget			-0.46	0.63			**-0.77**	**0.38***			-0.18	0.28
Crime Rate			35.75	48.75			14.71	29.64			**54.35**	**23.93***
n	384		384		384		384		361		361	

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Table 5.8. Linear panel analysis results of the effect of CP Units in Municipal Police Departments (2000-2003)

	Community Engagement				Problem-Solving				Organizational Transformation			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
CP Unit	**0.61**	**0.31***	0.50	0.31	0.35	0.20	0.33	0.20	**0.36**	**0.13****	**0.32**	**0.13***
Police Strength			-0.01	0.11			0.06	0.07			0.07	0.05
Occup. Diff.			**0.03**	**0.01****			-0.01	0.01			**0.01**	**0.00****
Budget			-0.71	0.54			-0.06	0.35			-0.15	0.23
Crime Rate			-3.91	10.69			-12.02	6.84			1.48	4.69
n	860		860		862		862		842		842	

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Moreover, as in the case of the community engagement dimension, occupational differentiation was found to be associated with program implementation that focused on the organizational transformation aspect (b=0.01, p<0.01).

Interactive Effects

As briefly discussed above, the fact that the relationship between any given pair of variables in one subsample is significant and not significant in a second subsample does not necessarily mean that the effect of the predictor is different in the two groups. For instance, the result that CP Units was a significant factor in Sheriff's Departments but not in Municipal Police Department does not necessarily mean that the effect differed across agency types. Therefore, I compared the coefficients of each community policing element for Sheriff's and Municipal Police Departments by using the following formula suggested by Paternoster, Brame, Mazerolle, and Piquero (1998):

$$Z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_2^2}}$$

where b_1 is the slope coefficient for the independent variable for Sheriffs' Departments, b_2 is the slope coefficient for the same variable for Municipal Police Departments, and SEb_1^2 and SEb_2^2 are the coefficient variances for each group. As the formula shows, this formula produces *z* score that will indicate whether or not the difference of coefficients is statistically significant (Paternoster et al., 1998).

As noted above, CP Units had a positive and significant relationship with the community engagement aspect of community policing. Also, occupational differentiation

had a significant association with the same dimension of community policing both for Sheriff's Departments and for Municipal Police Departments. However, there were no significant differences in the magnitude of the effects for any of the independent variables (including CP Units and occupational differentiation) on community engagement across the two types of agencies (see Appendix 3 for all *z* scores in each model).

In addition, with respect to the problem-solving element, no significant differences were found in the magnitude of the effects of independent variables between Sheriff's Departments and Municipal Police Departments.

Last, CP Units and occupational differentiation had a positive and significant relationship with the organizational transformation aspect of community policing only for Municipal Police Departments. However, the magnitude of the relationship was not significantly different between two types of agencies. Crime rate had a positive and significant relationship with the organizational transformation element of community policing only for Sheriff's Departments. Additionally, the magnitude of the effects differed significantly between two types of agencies (z=2.193, p<0.05).

Sheriffs' Department in 2003-2007

The analyses that employed the LEMAS 2003 and 2007 are presented in Table 5.9. First, CP Units were not found to be associated with the community engagement element of community policing, even though the association approached significance (b=0.82, p=0.09). When four control variables were considered in Model 2, the effect of CP Units did not reach a significance level (p=0.14).

Second, the CP Units variable was a statistically significant factor in the association with the problem-solving dimension of community policing activities. Sheriffs' Departments with CP Units are more likely to perform activities that necessitate the introduction of new strategies to solve local crime problems (b=0.66, p<0.01). Also, the relationship was not mediated by control variables in Model 2 (b=0.67, p<0.01).

Last, CP Units were also statistically significantly related to the organizational transformation element of community policing (b=0.45, p<0.05). Even when four control variables were introduced, the association did not change (b=0.52, p<0.01). In other words, controlling for police strength, occupational differentiation, operating budget, and crime rate, Sheriffs' Departments with specialized community policing units are more likely to put programs in place that focus on the organizational priorities toward training and evaluation of community policing.

Municipal Police Departments in 2003-2007

The association between CP Units in Municipal Police Departments and the three distinct elements of community policing between 2003 and 2007 is reported in Table 5.10. Model 1 of each column shows that there were statistically significant relationships between CP Units and each of the three dimensions of community policing activity under study. When control variables were introduced, the results indicate that CP Units was still significantly associated with each community policing element.

First, as Model 2 in the first column shows, net of other variables, CP Units were found to be positively related to the community engagement element of community policing (b=1.14, p<0.01). Municipal Police Departments with CP Units implemented an

average of 1.14 more community policing activities related to the community engagement.

Second, the effect of CP Units also remained significant and positive in Model 2 of the problem-solving element (b=0.45, p<0.01). That is, holding other independent variables constant, Municipal Police Departments that operated with CP Units implemented on average 0.45 more community policing activities that focused on the problem-solving dimension.

Finally, the association between CP Units and organizational transformation activities by Municipal Police Departments was also statistically significant and positive, as was shown in Model 2 (b=0.35, p<0.01). In other words, police departments were more likely to implement programs that involve setting up new priorities toward training and evaluation of community policing between 2003 and 2007 controlling for other variables in the model.

Interactive Effects

Unlike the results of the 2000-2003 data, here CP Units had a significant and positive relationship with all three elements of community policing both for Sheriff's Departments and Municipal Police Departments.[5] The comparison of coefficients between two types of agencies revealed that the magnitude of the effects of CP Units was significantly different from each other only for the problem-solving element of community policing. That is, Sheriff's Departments were significantly more likely to

[5] The only exception was in the case of Sheriff's Department in community engagement element aspect of community policing. However, the effect also approached significance (p=0.07).

implement problem-solving aspects of community policing than are Municipal Police Departments (z=4.020, p<0.05).

Summary

Two separate analyses (2000-2003 and 2003-2007) in Sheriffs' and Municipal Police Departments showed slightly different results from each other. Overall, analysis of the 2000-2003 data showed that the effect of CP Units in Municipal Police Departments on all three elements of community policing considered in this study was statistically significant, while this was not the case among Sheriff's Departments. That is, Municipal Police Departments with CP Units are more likely to implement each dimension of community policing programs. It must be noted, however, that the differences between sheriff and police agencies were not statistically significant.

Regarding results from 2003-2007 data analyses, the change of CP Units had a positive and significant effect on three elements of community policing, both in Sheriff's Departments and Municipal Police Departments. That is, the creation of CP Units affects the increase of all three elements of community policing activities across both types of agencies. In addition, the direct effect of CP Units was not mediated by other control variables. These findings imply that change of CP Units had a direct effect on three elements of community policing program implementations in both types of agencies. In other words, the creation of CP Units affects the increase of all three elements of community policing activities among Sheriff's Departments and Municipal Police Departments.

The comparison of coefficients revealed that the magnitude of the effects of CP Units on the problem-solving dimension of community policing was significantly different between Sheriff's Departments and Municipal Police Departments, while the other two elements (i.e., community engagement and organizational transformation) did not show significant differences between two types of agencies.

This chapter attempted to answer two research questions: (1) descriptions of change of specialized police units; and (2) the effect of such units on the change of community policing program implementation. First, the results indicated that local police agencies in the United States from 2000 to 2007 did not operate CP Units in a similar manner across time and place. While the majority of agencies continued to operate (or not operate) CP Units during the first decade of the 21st century, the remaining police agencies were not firm in their consistent operation of the specialized units.

Second, the effect of CP Units on three elements of community policing revealed somewhat complex patterns. Overall, police agencies with CP Units were more likely to perform each dimension of community policing activities both in 2000-2003 and 2003-2007 periods. However, when samples were subdivided into Sheriffs' Departments and Municipal Police Departments, different patterns were identified in the association between the CP Units and community policing program implementation. CP Units in Municipal Police Departments were positively associated with each element of community policing activities, and this association was constant in both periods.

Table 5.9. Linear panel analysis results of the effect of CP Units in Sheriffs' Departments (2003-2007)

	Community Engagement				Problem-Solving				Organizational Transformation			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
CP Units	0.82	0.48	0.73	0.50	**0.66**	**0.20****	**0.67**	**0.21****	**0.45**	**0.19***	**0.52**	**0.20****
Police Strength			0.06	0.09			0.02	0.04			-0.06	0.04
Occup. Diff.			0.00	0.01			0.00	0.00			0.00	0.00
Budget			-0.40	0.51			0.18	0.21			0.06	0.21
Crime Rate			-30.37	43.82			-26.88	18.43			20.12	20.22
n	385		385		387		387		355		355	

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.0

Table 5.10. Linear panel analysis results of the effect of CP Units in Municipal Police Departments (2003-2007)

	Community Engagement				Problem-Solving				Organizational Transformation			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.	Coefficients	S.E.
CP Units	**1.16**	**0.25****	**1.14**	**0.25****	**0.43**	**0.11****	**0.45**	**0.11****	**0.36**	**0.11****	**0.35**	**0.11****
Police Strength			0.08	0.06			0.03	0.03			0.03	0.03
Occup. Diff.			0.02	0.01			0.01	0.00			-0.00	0.00
Budget			-0.17	0.36			0.03	0.16			0.19	0.16
Crime Rate			-7.80	8.73			3.73	3.94			-3.80	4.04
n	864		864		865		865		831		831	

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

With regard to Sheriffs' Departments, results suggest that the effect of CP Units was not constant over time. Between 2000 and 2003, CP Units failed to show significant association with all three elements of community policing activities. In 2003 and 2007, however, Sheriffs' Departments with CP Units were more likely to implement each dimension of community policing program implementation.

Finally, the comparison of coefficients showed that the effect of CP Units differed between the two types of agencies only for the problem-solving aspect of community policing in the 2003-2007 period. Except for this element, the effect of CP Units on community policing activities was not different across two types of agencies.

CHAPTER 6. DISCUSSION AND CONCLUSIONS

This dissertation examined two related issues: temporal changes in the operation of specialized community policing units (CP Units) by local law enforcement agencies and the effect of such specialized units on the change of three distinct elements of community policing activities in such agencies. In particular, I performed linear panel analysis using three waves of data from the LEMAS to investigate the changes of community policing outputs and the factors that significantly contributed to such changes.

Policing scholars have been critical of the increased creation of diverse specialized units by local police departments, due in part to possible inter-unit conflicts. Specifically, after the widespread introduction of the community policing philosophy, proponents of this approach argued that police organizations need to despecialize their structure—i.e., decrease specialized units—and their personnel (e.g., Goldstein, 1987). This dissertation is one of very few studies to look at the link between the presence of specialized units and organizational outputs.

One of several advances this dissertation made in the study of specialized police units involved the nature of the analyses performed. Previous studies were largely limited to cross-sectional analyses (see Langworthy, 2002). While these studies provided some insight into organizational behavior at one point in time, they were not able to draw conclusions regarding how police organizational structure tends to evolve and change across time. This dissertation was an effort to trace such changes—specifically, changes of outputs in three distinct elements of community policing activities. By using linear

panel techniques to control for time-invariant factors, the analyses yielded useful evidence about how specialized units affected the change in outputs.

Operations of Specialized Units

The results of descriptive and inferential analyses revealed complex pictures of changes and roles of specialized CP Units of the agencies that responded to the LEMAS sample. First, wide variations in the operation of specialized police units among police agencies seemed to exist between 2000 and 2007. Proponents of contingency theory may argue that police departments are more likely to create specialized units to tackle newly emerging social problems in an efficient and effective manner (Lawrence and Lorsch, 1967). In fact, the increase of some specialized units (e.g., cyber-crime, hate crime, missing child, and terrorism units) seems to reflect social changes—in particular ,after the late 1990s—and police departments' responses to tackle diverse problems arising from such changes.

An alternative explanation is that, as some institutional theorists have suggested (e.g., Crank and Langworthy, 1992; Katz, 2001), police agencies may be vulnerable to pressures from powerful actors in their communities, notably local elected officials, media, and special interest groups. As Skogan and Frydl (2004:310) argued:

> Creating a relatively small but highly focused specialist unit to cope with a given problem may do little to reduce that problem, but it does a great deal to alleviate pressure from the community without disrupting many organizational routines.

In fact, as discussed earlier, prior research supports this institutional perspective, but most empirical studies tend to examine a limited type of specialized units—for instance, gang units (Katz, 2001; Katz, Maguire, and Roncek, 2002; Weisel and Shelley, 2004), bias crime units (Walker and Katz, 1995), or crime analysis units (Giblin, 2006).

Further research is necessary to investigate the process underlying the increase (or decrease) of specialized units operated by local police departments.

The decrease of some units can also be interpreted in a similar way. For instance, contingency theorists may argue that police agencies' decreasing reliance on some units (e.g., juvenile crime and drug education) may be a sign of strategic changes in dealing with some social problems and concerns. According to the institutional perspective, if a police department gets rid of a specialized unit, this elimination could be considered as "a symbolic gesture" by local residents that the agency does not think the task performed by the unit is important (Maguire, 1997:570). Thus, decrease of some specialized units among police agencies may mean that the organizations think local communities are willing to accept the agencies' reduced attention to some functions. Further research may look into the different dynamics involved in the increase and decrease of specialized units.

Effect of Specialized Community Policing Units on Community Policing Outputs

Linear panel analysis also showed some interesting effects of CP Units on community policing outputs. Overall, the results showed that police agencies with CP Units were more likely to produce outputs in each element of community policing. When samples were divided into two groups (i.e., Sheriffs' Departments and Municipal Police Departments), however, the results were not consistent in both groups.

First, in Sheriffs' Departments, CP Units were found to be associated with outputs of community policing activities in 2000-2003, but not in the 2003-2007 period. This research cannot provide a conclusive interpretation for this discrepancy. As will be

shown later, some factors not included in this research might play a role in this different association between CP Units and community policing outputs. For instance, considering that the leaders of Sheriff's Departments are directly elected by local residents, it may be the case that the leaders of sheriff's department themselves play an essential role in producing community policing outputs.

Second, results showed that municipal police departments with specialized units were more likely to generate outputs in all three dimensions of community policing. The positive association between CP Units and community policing outputs held over time, even after controlling for numerous other factors that may influence community policing activities. In other words, police agencies with CP Units are more likely to produce more outputs compared to other agencies without such units, independent of intraorganizational factors and crime rate.

Taken all together, what do these results mean? The results show that the creation of community policing units leads to more outputs in all three elements of community policing. In other words, the creation of specialized units may lead to increase of outputs that the units are intended to produce.

Of course, the increased community policing outputs do not necessarily equate to the increase of *positive* outcomes (e.g., satisfaction of police, reduction of crime, etc.) per se. However, potential inter-unit conflicts or indifference of officers from other units may not hinder the community policing program implementation, as has been shown in other studies (e.g., Maguire and Gantley, 2009a). In short, along with a symbolic role played by a specialized unit, the unit can also produce more outputs after it is created.

Limitations

Like any study, this research is not without limitations. First of all, the "dosage" of community policing in each element was not considered. The present study included almost every indicator of community policing activities listed in three waves of the LEMAS, but these dimensions are not necessarily exhaustive indicators of community policing efforts by police agencies. For instance, police agencies having numerous partnership agreements with community groups were not differentiated from agencies with a single partnership contract.

Similarly, this dissertation also assumed the consistency of definitions on survey items across time and place (Maguire and Mastrofski, 2000; Wilson, 2004). In other words, the "quality" of community policing was not controlled in this study. For example, "partnership" with local groups may not mean the same among all police agencies. While some police departments highlight the close interaction with community groups, some others may only hold formal meetings intended to disseminate police information to residents.

Second, I assumed for the purposes of analysis that all specialized units might function in a similar manner. However, in reality, not all community policing units are created equal. CP Units in some police agencies may be equipped with more personnel, resources, and other organizational support. In contrast, other units may be left alone without receiving organizational attention and resources. The assumption that all specialized units with full-time sworn personnel might behave in a similar manner might not hold in some agencies.

Third, the sample in this research included local police agencies that participated in all three waves of data collection. Nevertheless, it is possible that agencies that took part in all three surveys may not be the same as their counterparts that chose not to be involved in the LEMAS data collection efforts. In other words, these results may not be generalizable to all police agencies in the United States, and the arguments based on the results may thus be considered tentative and explorative. Also, this research included only agencies with one hundred or more officers in any wave of data selection. Thus, the results in this research may not be generalizable to small police agencies.

Lastly, the time interval used in the longitudinal analysis may not be short enough to examine the immediate effect of change of CP Units on output production. In two separate analyses, the data had three- and four-year gaps. Many organizational and environmental changes (e.g., change of leadership, federal funding, and local politics, etc.) that are not addressed in this study could have taken place during the period.

FUTURE RESEARCH

This dissertation has shown that specialized units play a role in producing community policing outputs in local police departments. However, researchers may want to consider other factors for a better understanding of the association between specialized units and output production. For instance, future studies should take more intraorganizational factors into account in discussing community policing implementation.

First, a police union variable can be introduced because organizational factors are not limited to size, occupational differentiation, or budget. Rather, line-staff issues are also important in dealing with local police agency operations. For instance, unionized

departments have been shown to affect organizational behavior as well as the pay and benefits of police officers (Reiss, 1992). Also, agencies' collective bargaining power is negatively associated with the percentage of sustained complaints against police use of force (Hickman and Piquero, 2009). Police unions can be a barrier to community policing, not only because more responsibilities can fall on officers, but also because line officers may think that their position in crime prevention is threatened (Skolnick and Bayley, 1988). In fact, unions in police organizations have been regarded as facilitators of officers' salaries and benefits, but also as obstacles to innovative changes in policing (Walker and Katz, 2010).

Second, more socioeconomic variables should be taken into account in future research endeavors to see if other environmental factors mediate the association between CP Units and the implementation of community policing programs. As Maguire and Mastrofski (2000:16) suggested, the new policing philosophy gained popularity among practitioners as well as scholars "not because the ideas of community policing are new or revolutionary, but because the environment is now conducive to the support and nourishment of ideas that earlier fell on barren ground." In other words, police departments situated in different settings are likely to perform community policing in a different manner due to different environmental factors.

The roles and strategies taken by CP Units are shaped depending on their situations. For instance, Skogan and Hartnett (1997) found stronger support for police among Whites than among African-Americans and Hispanics in Chicago. Also, African-American and Hispanic residents in Chicago were more likely than White people to think that Chicago police are impolite, unconcerned, unhelpful, and unfair. Unfavorable

attitudes toward the police by ethnic minorities may decrease the likelihood of their participation in community policing, particularly partnering with law enforcement agencies (Skogan and Hartnett, 1997). Moreover, people who own their own houses and have jobs have a higher probability of attending such community policing activities (Skogan, 2006b). Thus, investigation of the association between CP Units and organizational surroundings may increase our understanding of how specialized units perform in a variety of situations.

Third, the role of influential individuals in implementing diverse community policing programs needs to be taken into consideration (Chaiken, 2001; Eck and Rosenbaum, 1994; Kitzman and Stanard, 1999; Maguire, 1997). Community policing can be implemented in a completely different manner depending on the experiences and personalities of top police officers. Specific programs can also be interrupted or discontinued when confronted with changing leadership in police departments (Skogan and Hartnett, 1997). Lyons (1999: 50) even argued that the major vehicle for community policing in the city is not communities, but rather "reform-conscious police managers."

In addition, political leaders, especially elected officials, can influence the implementation of policing strategies or initiatives. Local politicians have a valid reason to introduce a fresh approach when faced with criticism due to rising crime in their communities. Recently, studies have started to show that local politicians' roles may be an important variable that can determine the implementation of community policing (Chaiken, 2001). For instance, Jacobs (2010: 199) argued that "mayors directly control police chiefs in most cities," which may mean that the role of elected officials cannot be excluded in discussing factors that affect police activities. Thus, more research is

necessary to examine whether influential local leaders moderate the relationship between CP Units and their output.

Fourth, the role of the federal government's intervention in community policing was not included in this research, but has been studied by others in the field (Johnson and Roth, 2003; Skogan and Hartnett, 1997). Since the establishment of the Office of Community Oriented Policing Service (COPS) in 1994 by the federal government, COPS has been the major source of funding for local police agencies in implementing community policing. In fact, in the fiscal year 2000, COPS spent $685.3 million to assist local police departments' community policing activities (COPS, 2011). Thus, it may not be surprising to find that agencies try to focus on specific dimensions of community policing strategies to attain federal grants (Worrall and Zhao, 2003). From the standpoint of funding agencies, how financial resources are spent should be examined in future research.

Lastly, it is worthwhile to look into other types of specialized units. Not much scholarly attention has been paid to the effect of various types of police units—for instance, missing child units, cyber-crime units, and research and planning units. Do police agencies arrest more cyber criminals when they create cyber-crime units? How much faster do police departments process crime scene investigations after they create their own crime analysis units? More research is critical to answer these questions. Examining police specialized units will definitely increase the understanding of organizational behavior and performance by police agencies.

RECOMMENDATIONS FOR THE LEMAS ADMINISTRATION

As noted above, the LEMAS has been a critical tool to comprehend trends across police organizations in the United States and their operations. Since its initiation in 1987, researchers have utilized the dataset from diverse points of view; studies based on the LEMAS have greatly improved the understanding of police organizations. In fact, information collected by the LEMAS is an "extraordinary vehicle" to trace the changes of police organizations and factors associated with such changes (Langworthy, 2002). Nevertheless, despite its common use, the inherent limitations of the data collection method and other issues involved in the LEMAS need to be mentioned (Walker and Katz, 1995). Thus, I will provide a few suggestions for improved administration of the future LEMAS.

First, prior studies showed that false or overstated information was included in the LEMAS (e.g., Maguire and Katz, 2002). As shown above, this research also found that some respondents did not seem to take care when filling out their questionnaire. Therefore, it is critical to develop a tool to guarantee the validity and reliability of data. For instance, randomly selected samples may be contacted to verify whether responses reflect organizational reality. Further, data may be collected and analyzed by "a neutral agency" to decrease respondents' temptation to paint an overstated picture of their organizations (Maguire and Mastrofski, 2000).

Second, consistency of the same survey question items included in the earlier waves of the LEMAS need to be maintained in future data collection. Of course, a survey needs to reflect the change of police organizations and their environment—for instance, introduction of new operations (e.g., terrorism prevention) and equipment (e.g., drones)

to examine how police departments perform their tasks. However, some key structural items (civilian staffs, salary of officers, different types of jobs performed by officers, etc.) and operational items (community policing, operation of specialized units, etc.) need to be continued in the subsequent surveys. By doing so, researchers can examine the temporal patterns of police operations as well as organizational structure. Also, the factors that may contribute to such changes can be identified by merging with other data sources. In short, longitudinal data analysis from multiple waves of the LEMAS will be possible only when data are collected on the same areas of police work.

CONCLUSIONS

Despite some skepticism regarding the specialization of police organizations, the history of American policing shows how division of labor has become the norm in many police departments. The federal government has created special agencies to carry out specially defined tasks when new problems arise (Walker and Katz, 2010). The Federal Bureau of Investigation, Drug Enforcement Agency, and Bureau of Alcohol, Tobacco, Firearms and Explosives are some examples of such specialized federal agencies. Local police departments have also undergone division of labor to deal with new social problems as they arise.

Within this context, this study attempted to show that specialization within the community policing era is indeed a reality in American policing in the 21st century. After widespread introduction of community policing philosophy, policing scholars have highlighted despecialization of organizational structure and personnel. The present

research, however, shows that police agencies have increasingly depended on some specialized units to deal with specifically defined local problems since the early 2000s.

Additionally, this dissertation disclosed that a specialized unit may have more than symbolic value. That is, specialized units can also be tools for police agencies to solve local problems in effective ways. As Smith (1902[1776]:43) argued, "The greatest improvement in the productive powers of labor, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labor." Thus, it is worthwhile to examine how specialization within police agencies contributes to increased effectiveness and/or improved efficiency of organizational performance. This results of this dissertation provide a first contribution to the research literature in this area.

Specialization, or division of labor, may reflect broader social changes rather than simple organizational devices to show off police leaders' temporary interests (Durkheim, 1933). In times when police have to deal with numerous unprecedented challenges within their communities, it is time to think over whether a simple dichotomy—specialization vs. despecialization (or generalization)—is beneficial for police agencies. Namely, it needs to be investigated how community policing and specialization can be compatible in daily policing. Thus, policing scholars and police practitioners need to pay more attention to this relatively new organizational phenomenon and examine its roles and effects on police departments in a more detailed manner.

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APPENDIX 1. MERGING THREE WAVES OF THE LEMAS

The procedure of constructing the dataset for the present study was composed of two stages. First, the LEMAS 2000 and 2003 have the same identifying code that makes it possible to merge the two datasets: Agency ID. Agency ID is a 16-digit code, and merging two datasets is possible by matching the code. Thus, the LEMAS "2000/2003" was produced by merging the two datasets using a variable name *AGENCYID*.

Merging the LEMAS 2007 with the 2000/2003 dataset was more complicated. The LEMAS 2007 does not have the Agency ID code that is available in the LEMAS 2000 and 2003. Rather, it has other ID codes not included in the LEMAS 2000 and 2003. For instance, the LEMAS 2007 contains the Originating Reporting Identification (ORI) code. The ORI code was developed by the Federal Bureau of Investigation to link the Uniform Crime Report (UCR) and other data source (Wells and Falcone, 2005). Also included is a Survey ID that is unique to the each wave of the LEMAS.

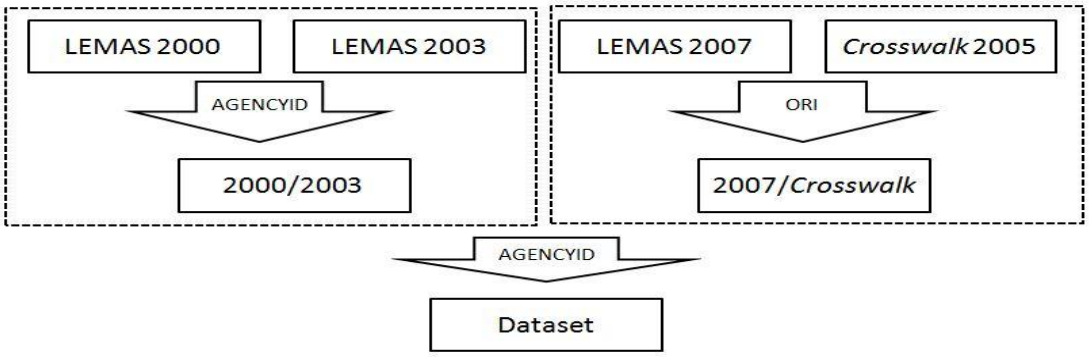
The LEMAS 2000 and 2003 also have other ID codes. For instance, the LEMAS 2000 and 2003 have Federal Information Processing Standards (FIPS) that are five-digit codes. Also included is the six digit numerical Metropolitan Statistical Area (MSA) code. However, the LEMAS 2007 does not have all these codes. Therefore, without any linking tool or dataset, it is not possible to merge the 2000/2003 dataset with the LEMAS 2007.

The Law Enforcement Agency Identifiers Crosswalk File (referred to as *Crosswalk* hereafter) was helpfully developed by the Bureau of Justice Statistics and the National Archive of Criminal Justice Data in 2000 to solve these hurdles in combining several datasets (Lindgren and Zawitz, 2001). Before the introduction of the *Crosswalk*,

matching different datasets in criminal justice areas with other socioeconomic data was limited or challenging. However, the *Crosswalk* makes it possible for researchers to merge diverse datasets to conduct agency-level analyses. For instance, the UCR can be merged with US Census data and LEMAS through ID codes included in the *Crosswalk*. So far, three versions of the *Crosswalk* (1996, 2000, and 2005) have been produced by BJS, and all three are publicly accessible through the Inter-University Consortium for Political and Social Research.

To merge the LEMAS 2000/2003 and 2007 dataset, I chose the most recent *Crosswalk* file—*Crosswalk* 2005. Among ID codes included in the *Crosswalk* 2005 are ORI codes and AGENCY ID codes. The latter codes are the same codes that are used in the LEMAS 2000 and 2007. Thus, by matching the LEMAS 2007 and the *Crosswalk* 2005 using ORI codes, the merged file now included the AGENCY ID variable, which enabled me to merge with the LEMAS 2000/2003. The matching process is shown in Figure 4.1.

Figure 4.1. Procedure for Merging Datasets



APPENDIX 2. RECODING SOME CASES

Prior studies indicated that police agencies "over-respond" to some questions when filling out the LEMAS survey (e.g., Walker and Katz, 1995). That is, even when police departments did not have a specific subunit, some survey respondents tend to answer in a socially desirable way. For instance, when the community policing philosophy has attracted a favorable response from community members and politicians, it is likely that survey respondents may say that their agencies have a community policing unit when, in fact, they do not.

The survey instrument for this item is relatively clear and obvious. The question in the LEMAS asks if the police department "has specialized unit with full-time personnel to address this problem/task," followed by a list of subunits including community policing units. In spite of clarity of the question, it is possible that some agencies did not provide correct information on this item intentionally or unintentionally. It is theoretically possible for researchers to check the reliability of answers by contacting police organizations. Obviously, this verification is costly and time-consuming to check the reliability of all the answers in the dataset. Thus, I decided to use an indicator item in the LEMAS to verify if agencies that answered they had a community policing unit really did have such a unit.

In the early part of the LEMAS survey, it asks police organizations the number of community policing officers, community relations officers, or other sworn personnel who are "specifically designated" to community policing activities. Thus, agencies without such officers are expected not to have community policing units. In other words, agencies

that answered none in the number of community policing officers are supposed to check "No Community Policing Unit." If, however, agencies answered that they had separate community policing units though they did not have any community policing personnel, it is safe to say that the police departments did not provide correct information. There were 20 agencies (15 in the LEMAS 2003 and 5 in the LEMAS 2007) that were identified as having provided misleading data. I recoded these cases as "No CP Unit."

Visual check of the data also revealed some interesting points. For instance, according to the data, the Laredo Police Department in Laredo, Texas, had a CP Unit in 2000 with 205 community policing officers, but did not have a CP unit in 2003 and only reported seven designated officers. In 2007, the number of officers remained the same, but the agency had a CP Unit. Also, Salt Lake City Police Department had a CP Unit in 2003 with eight community policing officers, but in 2007, the department did not report a CP Unit although the number of officers increased to 30. It is possible that agencies eliminated their formal CP Units and subsequently increased the number of officers committed to community policing activities. Also, the creation of CP Units does not necessarily mean that such agencies increase number of personnel in implementing the tasks. Therefore, I assumed the data to be true in these cases. Recoded cases are shown in Table A.1.

Thus, I matched the item with other indicator of community policing units in the survey. The LEMAS survey from 2000 to 2007 included a question asking the number of community policing officers or other officers who were "specifically designated to engage in community policing activities." Therefore, if a police department answered "0" on the number of community policing officers, but answered "Yes" on the item of

community policing unit, the mismatch represents an error (intentional or unintentional). When I checked this issue, I uncovered 20 cases (or police agencies) that did not answer consistently.

Table A.1. Recoded Police Agencies (n=20)

NUM2000	NUM2003	NUM2007	CP Units2000	CP Units2003	CP Units07	NAME OF AGENCY	CITY/COUNTY	STATE
20	0	20	YES	NO*	NO	OFFICE OF THE SHERIFF	Martinez	CA
0	0	0	NO	NO*	NO	MONTEREY COUNTY	Salinas	CA
101	0	0	NO	NO	NO*	GARDEN GROVE POLICE DEPARTMENT	Garden Grove	CA
432	0	40	NO	NO*	YES	SACRAMENTO POLICE DEPARTMENT	Sacramento	CA
19	0	6	YES	NO*	YES	SAN BERNARDINO COUNTY SHERIFFS	San Bernardino	CA
10	0	10	YES	NO*	YES	SAN BERNARDINO POLICE DEPARTMENT	San Bernardino	CA
11	12	0	NO	YES	NO*	DANBURY POLICE DEPARTMENT	Danbury	CT
6	0	248	YES	NO*	NO	MACOMB COUNTY SHERIFFS OFFICE	Mount Clemens	MI
2	0	0	NO	NO*	NO	OAKLAND COUNTRY SHERIFFS OFFICE	Pontiac	MI
151	6	0	YES	YES	NO*	DETROIT POLICE DEPARTMENT	Detroit	MI
3	0	3	YES	NO*	YES	BLOOMINGTON POLICE DEPARTMENT	Bloomington	MN
18	21	0	YES	YES	NO*	GULFPORT POLICE DEPARTMENT	Gulfport	MS
11	0	8	YES	NO*	NO	JACKSON POLICE DEPARTMENT	Jackson	MS
99	0	12	YES	NO*	NO	GUILFORD COUNTY SHERIFFS OFFICE	Greensboro	NC
35	0	250	YES	NO*	NO	PROVIDENCE POLICE DEPARTMENT	Providence	RI
319	0	4	YES	NO*	NO	CHATTANOOGA POLICE DEPARTMENT	Chattanooga	TN
36	28	0	YES	YES	NO*	HARRIS COUNTY SHERIFF'S OFFICE	Houston	TX
5	0	1	NO	NO*	YES	CLARK COUNTY SHERIFFS OFFICE	Vancouver	WA
0	0	4	NO	NO*	YES	VANCOUVER POLICE DEPARTMENT	Vancouver	WA
8	0	111	NO	NO*	NO	FEDERAL WAY POLICE DEPARTMENT	Federal Way	WA

NOTE: NUM2000 denotes the number of community policing officers in 2000.
* denotes recoded cases from YES to NO due to inconsistent answers in the data.

APPENDIX 3. *Z* SCORES FROM COMPARISONS OF COEFFICIENTS

Table A.3.1. Comparison of coefficients between Sheriff's Departments and Municipal Police Departments in 2000-2003 (Community Engagement)

	Sheriffs' Department		Municipal Police Department		
	Coefficients	S.E.	Coefficients	S.E.	*z* score
CP Units	0.50	0.46	0.50	0.31	-0.002
Police Strength	0.12	0.09	-0.01	0.11	0.861
Occup. Diff.	**0.02**	**0.01***	**0.03**	**0.01****	-0.751
Budget	-0.46	0.63	-0.71	0.54	0.385
Crime Rate	35.75	48.75	-3.91	10.69	0.795
n	384		860		

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Table A.3.2. Comparison of coefficients between Sheriff's Departments and Municipal Police Departments in 2000-2003 (Problem-Solving)

	Sheriffs' Department		Municipal Police Department		
	Coefficients	S.E.	Coefficients	S.E.	*z* score
CP Units	-0.33	0.28	0.33	0.20	-1.929
Police Strength	-0.08	0.06	0.06	0.07	-1.596
Occup. Diff.	-0.01	0.01	-0.01	0.01	0.284
Budget	**-0.77**	**0.38***	-0.06	0.35	-1.354
Crime Rate	14.71	29.64	-12.02	6.84	0.877
n	384		862		

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Table A.3.3. Comparison of coefficients between Sheriff's Departments and Municipal Police Departments in 2000-2003 (Organizational Transformation)

	Sheriffs' Department		Municipal Police Department		
	Coefficients	S.E.	Coefficients	S.E.	*z* score
CP Units	0.30	0.19	**0.32**	**0.13***	-0.093
Police Strength	-0.03	0.04	0.07	0.05	-1.509
Occup. Diff.	0.01	0.00	**0.01**	**0.00****	1.341
Budget	-0.18	0.28	-0.15	0.23	-0.059
Crime Rate	**54.35**	**23.93***	1.48	4.69	2.193
n	361		842		

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Table A.3.4. Comparison of coefficients between Sheriff's Departments and Municipal Police Departments in 2003-2007 (Community Engagement)

	Sheriffs' Department		Municipal Police Department		
	Coefficients	S.E.	Coefficients	S.E.	z score
CP Units	0.73	0.50	**1.14**	**0.25****	-0.739
Police Strength	0.06	0.09	0.08	0.06	0.121
Occup. Diff.	0.00	0.01	0.02	0.01	-1.113
Budget	-0.40	0.51	-0.17	0.36	-3.504
Crime Rate	-30.37	43.82	-7.80	8.73	-0.505
n	385		864		

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Table A.3.5. Comparison of coefficients between Sheriff's Departments and Municipal Police Departments in 2003-2007 (Problem-Solving)

	Sheriffs' Department		Municipal Police Department		
	Coefficients	S.E.	Coefficients	S.E.	*z* score
CP Units	**0.67**	**0.21****	**0.45**	**0.11****	4.020
Police Strength	0.02	0.04	0.03	0.03	-0.189
Occup. Diff.	0.00	0.00	0.01	0.00	1.178
Budget	0.18	0.21	0.03	0.16	0.577
Crime Rate	-26.88	18.43	3.73	3.94	-1.624
n	387		865		

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01

Table A.3.6. Comparison of coefficients between Sheriff's Departments and Municipal Police Departments in 2003-2007 (Organizational Transformation)

	Sheriffs' Department		Municipal Police Department		
	Coefficients	S.E.	Coefficients	S.E.	*z* score
CP Units	**0.52**	**0.20****	**0.35**	**0.11****	0.748
Police Strength	-0.06	0.04	0.03	0.03	-1.592
Occup. Diff.	0.00	0.00	-0.00	0.00	0.514
Budget	0.06	0.21	0.19	0.16	-0.775
Crime Rate	20.12	20.22	-3.80	4.04	1.160
n	355		831		

NOTE: CP Unit=Community policing unit; Occup. Diff.=Occupational differentiation; Budget=Logged operating budget. *p<0.05, **p<0.01