Military Surplus and Modern Policing: A Spatial Analysis of Police Usage of the Federal
1033 Program

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AUTHORIZATION TO SUBMIT THESIS

This thesis of Lanny D. McAden, Jr., submitted for the degree of Master of Science with a Major in Geography and titled "Military Surplus and Modern Policing: A Spatial Analysis of Police Usage of the Federal 1033 Program" has been reviewed in final form. Permission, as indicated by the signatures and dates below, is now granted to submit final copies to the College of Graduate Studies for approval.

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ABSTRACT

While there have been long- running concerns over police militarization in the United States, the aggressive police response to the 2014 protests in Ferguson, Missouri heightened public awareness of the issue. As a result, the police acquisition and use of military- style equipment has come under increasing scrutiny, as have the programs which provide police access to such equipment. The 1033 program, which provides military surplus to civilian police, is perhaps the most important and controversial such program, and participation in 1033 is often seen as an indicator of the adoption of military like practices by police. This study is situated to build upon previous geographic work on the police militarization and the 1033 program (Radil, Dezzani, and McAden, 2017) by exploring those contextual influences of place on Law Enforcement Agency (LEA) decision making. This previous research showed that participation in the 1033 program has been highly regionalized and proposed that local and regional contexts have important explanatory value. To build on this, three groupings of contextual elements of place were identified as having the greatest potential to influence LEAs, and consisted of; socioeconomic contexts, measurable political and legal factors, and measures of LEA structure and activity. To deal with the spatial variation present in these local and regional contexts, a geographically weighted regression (GWR) model was used to explore the influence of place on LEA decisions to participate in the 1033 program. The highly regionalized findings in this study deviated from the common global argument for why police become militarized. This deviation supports the need for further spatial research into not only police militarization but policing in general.

Keywords: Policing, Militarization, Political geography, Spatial analysis, Geographically weighted regression

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DEDICATION

I would like to dedicate this thesis to my family: to my wife Elizabeth without who's encouragement, support, and more than generous proofreading, this thesis would have never happened. To my children, Connor, Emily, and Jack I hope my success motivates you to go forward and do great things. To my mother Denise Murrah-Garcia who went back to school as a working mother and earned her bachelor's degree and has always been the driving force behind my desire to return to school. Unfortunately, she lost her long fight with Alzheimer's and was unable to see me finish this thesis.

I would also like to dedicate this thesis to a Soldier who I had the great pleasure of mentoring during our deployment to Afghanistan in 2011-2012. Not only was Susan Massey an exceptional Soldier she was also one of the truly good people who enjoyed life while finding ways to support all of her many friends. Susan constantly pushed her fellow Soldiers and friends to improve themselves especially when it came to education. I truly miss her phone calls asking for my guidance long after I had retired. This bright light was lost too soon along with her sister and fellow Soldier Stephanie Massey, you will both be dearly missed.

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CHAPTER 1

Introduction

In August of 2014, the death of an unarmed African-American teenager at the hands of a white police officer sparked outrage in the primarily African-American neighborhoods of Ferguson, MO. This suburb of St. Louis erupted in violence as the word spread that the teenager was surrendering to the officer with his hands up when he was shot six times. A new rallying cry "Hands Up Don't Shoot" was carried around the world as minority communities felt empowered to push back against the perceived injustices leveled against them at the hands of the police. Local and State law enforcement agencies in Missouri waded into the highly charge atmosphere of the Ferguson neighborhoods in what was seen at the time as a disproportionate response to the unrest (Jackson 2017). The use of heavily armed and armored police to attempt to quell the civil unrest backfired as images of the response flashed around the world through both the conduits of the traditional news media and social media outlets. These images ignited debates and other protests elsewhere concerning the behavior of police in modern America, in particular raising questions about why modern American police would more resemble an occupying army instead of the public servants they were intended to be.

In the months following the Ferguson protests, people increasingly began to ask how civilian police had become so militarized and it didn't take long for the use of military style equipment by police to become the target of that public concern. Police acquisitions of armored vehicles, high power military style weapons, military combat uniforms, and helmets and body armor came under increasing scrutiny as these types of items were seen as possible indicators of the active adoption of a militarized mindset within law enforcement. U.S. President Barrack Obama gave a voice to the public's concern in his 2015 speech on community policing given in Camden, New Jersey:

> We've seen how militarized gear can sometimes give people a feeling like there's an occupying force, as opposed to a force that's part of the community that's protecting them and serving them. It can alienate and intimidate residents and send the wrong

message. So we're going to prohibit some equipment made for the battlefield that is not appropriate for local police departments. (Obama 2015)

In his speech, the President equated the acquisition and use of military style equipment by police with both the cause and consequence of a military mindset within the U.S. civilian law enforcement community. The President was not alone in this assessment, with much of the policy that evolved out of this public outcry over police militarization was centered around on limiting the acquisitions of military style equipment. Montana, for example, enacted new legislation in 2015 that put limitations on specific types of equipment that could be acquired by law enforcement agencies (LEAs) through federal programs including; drones, combat aircraft, grenades and grenade launchers, silencers, and militarized armored vehicles (Mont. Code Ann. § 7-32-401). Montana took this a step further placing more restrictions on the equipment by blocking the use of federal grants to acquire military surplus equipment and additionally requiring LEAs to notify the public of any planned acquisition of military surplus (Mont. Code Ann. § 7-32-401; Mont. Code Ann. § 7-32-402). However, this singular focus on military equipment as the problem may miss out on addressing why police agencies choose to adopt this type of equipment in the first place. It also fails to discern between acquisitions that are a result of across-the-board police militarization and those that are based on place-specific factors such as high crime levels or low law enforcement budgets.

While criminologists like Peter Kraska, Louis Cubellis and a few others have explored police militarization, the majority of their work has focused on the fact that military-style equipment is seen solely as an indicator of the overall level of militarization within a particular police department (Kraska and Cubellis 1997; Kraska and Kappeler 1997). Similar to the government policies that were developed following the events in Ferguson, previous academic research has tended to avoid attempts at identifying the underlying rationale behind equipment acquisitions. This has left an obvious research gap in the understanding of both the overall extent of militarization process as well as the circumstances connected to the acquisition of military equipment by police in different settings.

Outside of the work mentioned above, academic exploration of the militarization of American police has been limited, but there has been a mild increase in interest on the subject of 1033 specifically. Some scholars, mostly economists and political scientists, have drawn connections to the relationships between 1033 and police conduct with an emphasis on race. However, geographers have on the most part have been remarkably quiet on the subject even though the discipline is uniquely suited to study not just police militarization but policing in general. Geographer Nicholas Fyfe (1991) made a compelling case for geographers to take up the study of policing arguing that while the geographic study of crime had a long tradition within the discipline, but that the geographical study of police and policing had largely been ignored. He centered his critique of the lack in critical work on police, by suggesting that previous research into the social control nature of crime geography had failed to recognize the relationships between police, the community they served, and the different spaces which are created by these interactions. It is in understanding the creation of these unique spaces that make the study of police and policing so well suited for geographic study and well within the realm of geographers. Unfortunately, despite ample material for geographers to explore, Fyfe's call to take up the spatial study of police fell largely on deaf ears with little significant research having been conducted in the years preceding his work (Yarwood 2007).

The events in Ferguson and the subsequent concerns over police militarization have reignited interest in the study of policing, however much of that interest as noted has fallen outside the field of geography. The purpose of this research is to take up Fyfe's call and attempt to bring a spatial focus to bear on the underlying factors that have resulted in the militarization of this nation's police forces. This research explores how the uniqueness of place influences police behavior and moves beyond military style equipment as the impetus for militarization among police, and instead uses the acquisitions of this type of equipment as the key measure to examine to what extent police have adopted a military mindset to dealing with their duties and responsibilities with their communities.

In order to explore these issues this thesis is organized into five chapters including this introductory chapter in which the general issue is discussed. Chapter Two presents the literature that holds significance in understanding both the structure of police and the nature of the militarization process. The third chapter provides an in-depth description of the

datasets and the methodology used to explore the spatial nature of police militarization. The results of this thesis are presented in Chapter Four with a focus on answering the research questions. Chapter Five rounds out the thesis with a discussion of the research's findings and moves beyond just academic outcomes and attempts to provide law enforcement executives and leaders with an understanding of how place can affect their decision-making processes.

CHAPTER 2
Relevant Research

Lacking an in-depth body of previous geography research into either police militarization or policing in general, the development of a literature review required a holistic approach to explore the agents and agencies that come together to create a space where police can become militarized. To do this several factors were examined. The first was to more clearly define the term militarization and how it fits spatially in understanding how police may be susceptible to a militarization process. Secondly was the influence of historical events within places which provided a contextual understanding of police reactions and how community mistrust has developed. Next, there was a need to explore the influence of the unique subculture that has developed within the police. Finally, approaches to the develop of the units of analysis and the unique issues of scale in policing were explored.

2.1 Defining Militarization

For such an important and contested public policy issue, what is meant by police militarization is rarely explained. Criminologist Peter Kraska provides possibly the simplest and most straightforward definition, in which he describes police militarization as the process in which police "increasingly draw from and pattern themselves around the tenets of militarism" (2007, 3). While Kraska's definition provides a good entry point for exploring the militarization process, he only provides a cursory examination of militarism which limits the full potential of his definition.

The work of political scientist Cynthia Enloe adds more depth to Kraska's definition. Enloe provides a thorough dissection of the ideals of militarism by identifying seven core ideas: (1) "armed force is the ultimate resolver of ideas;" (2) "human nature is prone to conflict;" (3) "having enemies is a natural condition;" (4) "Hierarchical relations produce effective action;" (5) "a state without a military is naïve, scarcely modern, and barely legitimate;" (6) "in times of crisis those who are feminine need armed protection;" (7) "in times of crisis any man who refuses to engage in armed violent action is jeopardizing his own status as a manly man" (Enloe 2004, 219). These core ideas or tenets hold little weight

within the previous definition of militarization, until one considers the territorial nature of police.

The control of space by police has long been seen as a key aspect of their role in society (Fyfe 1991; Herbert 1997; Yarwood 2007). When police are perceived as failing to control their jurisdictional space (prevent crime), some groups may begin to challenge the authority and legitimacy of police (Fyfe 1991). When challenged in this way, police often respond with the application of coercive force and by behaving in a more militarized fashion, as was seen during the Ferguson MO riots of 2014 (Jackson 2017). This response becomes easier to understand when Enloe's tenets of militarism are considered.

The militarized response to aggressive protestors in Ferguson (see Jackson 2017 for an overview of the protests) can be explained by considering the first three of Enloe's tenets, in which conflict is natural, as is having enemies, and that force is the ultimate solution to conflict. In the case of Ferguson, the protestors due in part to their aggressive actions, became the enemy in the eyes of the police arrayed against them, and increasing force to suppress an enemy became the most logical outcome. The last four tenets had a less visible effect on the police response to the Ferguson riot, but they were no less influential. The idea of the "Thin Blue Line" subculture that has developed among police, in which they feel they are the last line of defense between the community and disorder (Bernstein et al. 1975; Fyfe 1991; Balko 2014; Radil, Dezzani, and McAden 2017), can be in part explained by the last two tenets in which the innocent must be protected by those willing to resort to violence. Tenet four where hierarchical organizations are seen as more effective, may in fact explain the propensity of police to adopt the highly hierarchical military organizational structure (Kraska 2007). Finally, the fifth tenet where a state without a military is seen as weak, has the potential to explain the willingness of police to subtly evolve from a community service organization into an internal military force, as challenges to the authority of the state increase.

Through Enloe's work the militarization processes underway within police departments becomes more transparent and easier to understand, and Kraska's original definition of militarization has considerably more explanatory value once a more in-depth understanding of the ideals of militarism is developed.

2.2 British Militarization Fears and the Development of Modern Policing

While much of the media made the issues around Ferguson out to be something new, fears over the police becoming yet another oppressive military force was a concern even before the foundation of the first modern police force, London's Metropolitan Police (MET) in 1829. In the years prior to the MET, the monarchy had very limited options when it came to maintaining civil order. As the populations of urban centers like London exploded in connection with the Industrial Revolution, civil unrest became more and more of a concern (Stead 1985; Fyfe 1991).

The first option the crown had for maintaining civil order was through the use of the watchman system. This system had several problems when it came to keeping the peace that were most obvious among the wards that make up London. The watch system in London required that all abled bodied men that resided in a ward serve at some point as a watchman (Lee 1901). The duration of these individual's obligation varied between different wards and could last up to a year, but in almost all cases they served without a salary. Perhaps the most damaging failing was that watchmen had very limited authority within the ward they served, and they had no authority outside of their ward (Lee 1901). These failings had a dramatic impact on the system's ability to control any form of civil unrest. As unpaid and forced public servants, watchmen developed a reputation of shirking their duties and actively avoiding confrontation (Lee 1901). Considering this reputation and the lack of authority outside their individual wards, meant that there was very little chance that watchman would be capable of mobilizing in any meaningful way to respond to serious civil disorder.

With the watchman system being of little support to the monarchy in situations where there was considerable civil disorder, the crown used the only other organized and equipped group within their control, the British military. For the monarchy, the use of military to control civil unrest became standard practice up until the early 1800's. This practice came under increasing scrutiny following what has become known as the Peterloo Massacre of 1819. At the time, a cavalry regiment was ordered in to disperse a pro-reform crowd of some 60,000 people had gathered at St. Peter's Field in Manchester England. When the crowds failed to comply with military orders the regiment charged, leaving fifteen dead and hundreds wounded (Stead 1985). This event and the use of the military to control

civil unrest would have a profound effect on the development of the modern police and how the citizens feel about a militarized police force.

In the ten years between the Peterloo Massacre and Sir Robert Peel's establishment of the MET, the British citizenry's fears over the monarchy's use of the military to respond to civil unrest had not diminished. The creation of the MET was seen initially as the creation of a new organization that threatened individual liberty in a manner much like the military (Taylor 1997). In the process of establishing the MET, Peel attempted to address these fears through a combination of strict hiring practices, the creation of a distinctive uniform that was as far removed from that of the military and set strict operational principles. While these practices did have some effect on reducing fears among British citizens, they never fully erased them (Stead 1985; Taylor 1997).

2.3 American Police and the Development of Increasing Racial Tensions

While the conduct of police during the Ferguson protests can be understood by a geographic approach to policing, the racial elements of the shooting that led to the riots are naturally focused on relations between the police and the African-American community, a concern that requires an understanding of the history of the development of policing in America with regard to minority or disadvantaged groups. Indeed, the African-American population has a well-documented history of tension with police (e.g., Brunson 2007; Desmond and Papachristos 2016). As a result, the remainder of this section focuses on the cultural distrust of police that has developed within the African-American community. These issues can be present for other minority groups as well and focusing on this one is simply meant to illustrate a structural understanding of how a cultural bias against police can develop within certain places. The experiences of the African-American community can also serve as a foundation from which the exploration of other minority groups can begin.

Negative interactions with police can be traced back to even before the United States was founded. Slavery in the southern colonies created an environment where a police force operated as a form of social control within expansive rural areas made up of a primarily captive workforce (Travis III and Langworthy 2008). To this aim, landowners would form slave patrols that monitored and controlled the movement and assembly of slaves to prevent slave uprisings (Travis III and Langworthy 2008). Since these patrols received public

funding to carry out their duties of returning runaway slaves and checking that slave owners were properly controlling their slaves, it has been argued that these patrols actually represented the first police force in the U.S. (Travis III and Langworthy 2008; Durr 2015). However, the cruelty used by these patrols up to and through the American Civil War left behind a negative cultural impression of any entities that had the legal authority to use coercive force (Durr 2015).

Unfortunately, in the time following the Civil War, the interactions between the police and the African-American community did not improve. When the Jim Crow laws were enacted following the reconstruction, African-Americans were again relegated to a second-class citizenry, with segregation establishing new boundaries against free movement and spatially separating the white and minority communities. While not as severe as the restrictions placed on slaves, these new laws created spaces where minorities could not go, and movement into these spaces brought conflict with modern police (Durr 2015).

As Jim Crow laws faded, the economic and cultural boundaries that they created remain strongly ingrained in the African-American community. It is a commonplace event today for parents to pass on to their children how to react when confronted by the police, is one example of how the cultural understanding about police is spread from generation to generation. This cultural impression is further reinforced by modern police practices like the investigatory traffic stop, which often targets minority community members in an effort to combat crime, however the frequency at which minorities are stopped is such that they feel that they continue to be treated as second-class citizens (Epp, Maynard-Moody, and Haider-Markel 2014).

2.4 Police and the Influence of the "Thin Blue Line"

Cultural influences are not only limited to the minority or disadvantaged, the police themselves have developed a unique subculture. The police see themselves as separate from the general population due in part to their role in maintaining social order (Fyfe 1991; Herbert 1998; Radil, Dezzani, and McAden 2017). The belief that they represent the only thing preventing chaos within the community has created a "'we/they' mentality" among police (Herbert 1998, 343). Referred to as the Thin Blue Line, this understanding turns the average community member from a customer of police services into a potential threat to

who the police must respond. The mentality created by the constant perceived threat from outside forces results in a highly masculine subculture where action and force are perceived as prized qualities, but a high priority is also given to officer's protection from risks (Radil, Dezzani, and McAden 2017).

The question then becomes how do to balance the use of force by police with the need for an officer's protection. This balancing act helps to explain in part how the 'us-versus-them' mentality was created. By being prepared for every citizen to be a threat, the officer is able to minimize their own risk by being prepared for conflict with every interaction. Unfortunately, with that mindset in place, officers may begin to behave more like warriors than guardians (Balko 2014; Rahr and Rice 2011). From Enloe's (2004) work we can also see that as police adopt a more warrior-like approach, there is an increased willingness to adopt a more militaristic stance, to what is slowly becoming a real war on crime.

2.5 Geographic Studies of Policing

Despite the large volumes of work in other social sciences that are focused on understanding police and policing, it is remarkable that human geographers have been relatively quiet on the subject. That is not to say there has been no work by geographers in this area; but rather, the majority of the spatial understanding of policing has been developed either outside the field of geography (Crawford 2010) or has been focused primarily on understanding crime patterns and distributions (Tita and Radil 2010). However, this gap in understanding of the criminal justice system has not gone unnoticed. In John Lowman's (1986) argument for the replacement of crime geography with the geography of social control, he observed that it is not possible to understand crime without understanding the criminal justice system as well, which would include in-depth research on police and policing. Geographers Nicholas Fyfe (1991) and Richard Yarwood (2007) have also echoed Lowman's observations, calling on geographers to pursue research that helps to fill this gap in the understanding of the criminal justice system and police in particular.

Despite these calls, research efforts by geographers that attempted to fill in this gap in what is an "inherently territorial [spatial] activity" (Fyfe 1991, 265) have lacked a coherent focus. This unclear focus may be attributed to the unwillingness of many geographers, outside those studying the geography of crime itself, to adopt or use well-

established theories from disciplines like criminology (Lowman 1986). The work produced by the handful of geographers delving into this area have failed to develop any significant spatial theories that are useful in exploring police and policing. Further dampening interest by geographers in the subject was a significant critique of crime studies that emerged in the 1970s.

The earliest argument against crime geography at the time is found in the work of John Lowman (1986), where he argues that the geography of crime as a potential sub-discipline failed to recognize the larger connections between crime and the criminal justice system (1986). Lowman called for geographers to move away from the geography of crime to what he referred to as the geography of social control. What was unique in his approach was that, unlike Richard Peet (1975), who had previously challenged both the accuracy and the validity of the study of crime, Lowman did not call for the abandonment of crime research in its entirety. Instead, Lowman argued that there can be no understanding of crime without also understanding the methods used to control it. By adopting concepts from criminology like crime displacement theory, where in response to control efforts crime migrates into neighboring areas (e.g., Johnson, Guerette, and Bowers 2014), in this way, Lowman argued that space played a multi-part role, where it could be both a container of crime and control efforts, or a form of control itself. This multi-part idea of what space could represent provided geographers with a framework in which to transition from a focus on crime to the study of both crime and control efforts.

In the research that followed Lowman, space as a concept took center stage in the limited work that ventured away from the geographies of crime. The idea of what crime control meant also transformed from a representation of the multiple elements of the criminal justice system to almost uniformly being replaced by police and policing as the primary representative of the criminal justice system. This is most likely a response to the unique way in which police take on their role as an agent of the state, who is responsible for maintaining control or social order within a legally defined space (Fyfe 1991; Fyfe 1992; Yarwood 2007; Yarwood and Paasche 2015).

2.6 Spatial Units of Analysis in the Study of Policing

The spatial nature of police work has been well established by previous research on the topic (Smith 1986; Fyfe 1991; Fyfe 1992; Fyfe 1995; Herbert 1997; Yarwood 2007; Radil, Dezzani, and McAden 2017). Despite this there has not been a consistent spatial approach to understanding policing, with the majority of previous work on the subject focusing on three groupings of spatial units; the single LEA or individual police beat as a case study, the specialized policing unit, and the neighborhood, while bypassing other options. The very nature of American law enforcement, with each of the over 17,000 LEAs operating independently without being part of a larger national police force (Fyfe 1991; Banks et al. 2016), has made the selection of a consistent spatial unit difficult, and often leaves the researcher with options that are solely limited by the available data.

The use of a single police beat for a case study is perhaps the most common spatial unit used in understanding policing. Steve Herbert's extensive work about the Los Angeles Police Department (LAPD) is an excellent example; he has explored police subculture (1998) and the territoriality of police work (1997) within the spatial context of a single police department. In a similar fashion, Nichols Fyfe (1995) explored the nature of policing in the modern city through the lens of a pair of LEAs (the LAPD and the Minneapolis Police Department). However, the uniqueness of individual cases should be considered in the selection of an LEA or beat as the unit of analysis when considering an issue beyond the local environment. For example, exploring police subculture through a case or two can be problematic as previous research has shown that while police do have a shared culture, it is not nationally homogeneous and can vary from agency to agency and location to location (Herbert 1998) limiting the ability to generalize from any single case.

Another common approach is to study multiple LEAs but limiting observations to those agencies with a particular organizational feature. For police militarization the specialized police unit, typically the Special Weapons and Tactics (SWAT) team, is used as the key for selecting observations for understanding police behavior (Kraska and Cubellis 1997, Balko 2014). The increasing number of SWAT teams in the United States has long been seen as a clear indicator of police militarization (Kraska and Kappeler 1997; Fisher 2010; ACLU Foundation 2014; Balko 2014). The use of this unit of analysis requires the researcher to consider how the modern SWAT team is employed and equipped. However, an

increasing number of these teams are serving as regional or multijurisdictional teams (Kraska 2007), with members and decision making found across multiple different LEAs. Such organizational and spatial complexity makes it more difficult to identify the drivers of militarization within these otherwise spatially-defined jurisdictions. The spaces of control provided by an individual team may not align well with other salient and perhaps explanatory information.

Further, efforts to create an effective unit of analysis from specialized police units are often plagued by a practical problem: a lack of data. Currently, there is no national-level dataset containing a list of all LEAs, beats, or SWAT teams. The creation of such a dataset would be a monumental undertaking, requiring the polling of the estimated 17,000 plus law enforcement agencies within the U.S (Banks et al. 2016). Making this task even more difficult would be the inherent distrust of outsiders found within police subculture (Kraska and Kappeler 1997; Herbert 1998; Balko 2014) which may result in some agencies being unwilling to provide the necessary information. Attempts to contact the National Tactical Officer Association during early work on this research help to attest the closed nature of this part of law enforcement, as even requests for information from a former officer netted no response.

The final approach to the issue of a spatial unit of analysis moves away from the police-centric units to a place-based unit of individual neighborhoods. This approach focuses on how police interact with the communities they serve. For example, Lemanski (2006) used socioeconomic measures to identify individual neighborhoods and focused on the interactions between gated communities and informal settlements in South Africa. He made an argument for the use of neighborhoods of different socioeconomic class as a useful tool for the explorations of human activity. Lemanski highlights how concerns over security in a South Africa suffering from a systemic increase in crime have led to dramatic class-based responses. Increasingly upper-class South Africans are retreating behind the high security of gated communities as a way to separate themselves from what is perceived as the sources of crime located in the social housing neighborhoods of South Africa's poor (Lemanski 2006). This spatial separation of upper and lower socioeconomic classes has significant influence on the behavior of police, as demands for protection from perceived

threats by gated communities often monopolizes police resources. As a result, poorer neighborhoods often don't receive proactive protective services and residents often only see police when a member of the community must be taken into custody, thus creating a sense that police are unfairly persecuting people in these neighborhoods (Carr, Napolitano, and Keating 2007).

Paasche, Yarwood and Sidaway's (2014) research into private policing strategies in Cape Town, South Africa also used a neighborhood-based unit of analysis, defining a neighborhood by the major activities occurring in individual spaces, such as residential, commercial, and industrial areas. Again, the rise in crime in South Africa has created a strong desire for increasing security, however, in this case, the research focus was on how police act to secure commerce rather than public safety. The inherent reactive nature of policing high crime areas in Cape Town has created a void in the proactive security mission of police. In an attempt to fill this void, businesses and local governments are increasingly relying on private security to create spaces where commerce can continue unabated (Paasche, Yarwood, and Sidaway 2014). Unlike the police, who ideally apply their services universally across the community, private security is obligated to protecting very specific spaces and enforcing the desires of the people and organizations that have a stake in those same spaces. Individuals or groups who threaten these spaces, in this case those that have the potential to disrupt capital production, are inevitably excluded from these spaces through the efforts of private security (Paasche, Yarwood, and Sidaway 2014). Once excluded from these spaces attempts to re-enter are often seen as criminal acts (trespassing) to which the police must then respond. This dynamic provides insight into how crime drives the desire for more security and how that desire leads to more areas of exclusion to which entry and reenter may ultimately be controlled by the police.

Neighborhood-based approaches have a valid use in understanding unique social and spatial interactions between the police and the members of the community, they suffer in the same way as the case study approach as insights from individual places are not homogeneous or generalizable across an entire country. Again, it could be argued that the localized uniqueness of American police has created a diverse and fragmented spatial landscape where there is some limitation on just about any unit of analysis. Units like that of

the police jurisdiction suffer in a similar fashion to the specialized police unit in that there is no comprehensive spatial dataset containing jurisdictional information. Similarly, political sub-division like the county also present issues of homogeneity that are not far removed from those of the neighborhood the single agency approaches. Ultimately, it is the availability of data that must drive the choice in the unit of analysis, as the ability to breach the "Thin Blue Line" is not always possible and there are limits to what can be measured (Fyfe 1992).

2.7 1033 investigations

The 1033 program has been a point of growing scholarly interest across different social science literatures since the events of Ferguson in late 2014 and the Presidential Order on 1033 in early 2015. In this section, an overview of the key papers on 1033 that have been published between mid-2015 through 2018 is presented. With one exception, all the papers are from outside geography, mostly from criminology, economics, and political science. Accordingly, many of the papers share an emphasis on statistical modeling as the principle methods used to investigate the program.

Of the new quantitative work on police militarization, Delehanty et al. (2017) presented perhaps the question that best describes the concern over police militarization in the post-Ferguson era. They simply asked if increases in militarization lead police to be more violent and employed statistical regression modeling to answer this question. Delehanty argued that there was an issue of endogeneity within their model due to the potential for simultaneity in which future conflicts between police and civilians would drive police to acquire more equipment and vice versa. To mitigate this causal effect, they developed an alternate dependent variable, number of canines killed by police for their model. Their finding from both models was a statistically significant ($p < 0.1$) and positive relationship between increases in 1033 acquisitions and the killings of civilians by police and alternatively killings of canines by police. The findings of Delehanty et al. appear to support the thesis that increases in police militarization through the adoption of military equipment does indeed positively correlate with increase in aggressive behavior. However, it must be noted that their work was limited spatially to only four states: Connecticut, Maine, Nevada, and New Hampshire.

Delehanty et al.'s reliance on just four states may hamper the usefulness of their findings as there is evidence of considerable spatial variation in acquisitions through the 1033 program (Radil, Dezzani, and McAden 2017). Harris et al. (2017) argues a similar point that police are more violent in their county-level analysis of police militarization. The results from this project yielded results that deviated strongly from the popular narrative concerning police militarization (Harris et al. 2017). The project found that increases in tactical equipment acquisitions correlated with decreases in items like citizen complaints, officer deaths, and a reduction in crime (Harris et al. 2017, Bove and Gavrilova 2017). Harris et al. acknowledged that while their findings were significant, they were most influential when coupled with LEAs that had relatively good access to DLA Depots.

The deviation in the popular narrative highlighted by Harris et al. lends support to the earlier work of Olugbenga Ajilore (2015). Ajilore approached police militarization through the lens of mine-resistant ambush protected (MRAP) vehicle acquisitions in relation to the Minority Threat Hypothesis. Here he argued that at the county level increases in minority population, specifically African American populations, would cause increased pressure on the majority population. This increased pressure would be viewed as a threat by the majority and result in the majority increasing efforts to exert social control (Ajilore 2015). Ajilore used the acquisitions of MRAPs as the primary measure of that social control in relation to the minority population. His expectations for the project were in keeping with earlier work done by the ACLU (2014) and Balko (2014) in which minority communities were the primary targets of militarized police. However, the findings from his research only partially supported the hypothesis. It was found that when counties with relatively high African American populations there was a lower rate of MRAP acquisition. In contrast, Ajilore found that in counties that had higher levels of segregation there was a greater likelihood for LEAs to acquire a MRAP.

Burkhardt and Baker (2019) followed after Ajilore in the exploration of the role of MRAPs play in understanding police militarization. They moved away from using MRAP acquisition as a response to the makeup of the community and instead they focused on describing the type of agency that acquired MRAPs. Burkhard and Baker identified two types of police agencies the warrior and the guardian agency. They used a scale which

included; body armor policies, the presence of specialized units (SWAT) and the number of community policing activities, to identify which category an agency fell into. This status along with agency and community demographics were used as explanatory variables within their analytic process. Burkard and Baker found that MRAPs where most likely to be acquired by warrior-type agencies, in particular those agencies that had special units like SWAT and those agencies that relied heavily on asset forfeiture as a source of revenue (Burkhardt and Baker 2019). A surprising finding in light of this narrative, was that there was a negative relationship between MRAP acquisitions and communities with higher numbers of African American residents (Burkhardt and Baker 2019). Overall, Burkhardt and Baker found that acquisitions of MRAPs were consistent with the general concerns surrounding police militarization.

Johnson and Hansen (2016) recognized the significant media coverage surrounding the events that occurred in Ferguson and the concerns raised about militarized police and weighed in with a discussion of 1033 program participation. Their focus was on how different agency type, size effected participation. Of particular interest, was their spatial consideration of how program participation varied across different geographic regions. Johnson and Hansen identified that the primary user of all types of 1033 equipment were County level LEAs such as County Sheriff's Offices participated at a much higher rate that other types of agencies (Johnson and Hansen 2016). They also identified that when considering agencies that had any type of program participation it was those agencies whose manpower consisted of 10 or fewer officers (Johnson and Hansen 2016). Johnson and Hansen identified eight unique geographic regions; Far West, Great Lakes, Mideast, Northeast, Plains, Rocky Mountains, Southeast, and Southwest. They then explored 1033 program participation in relation to each region. The range of participation between regions was relatively small with over 50% of agencies participating in the 1033 program across all regions except for the Mideast were only 42% of agencies acquired equipment through the 1033 program (Johnson and Hansen 2016). Further they identified that it was small LEAs and non-traditional LEAs (airport police, tribal police, etc.) were most likely to acquire equipment through the 1033 program (Johnson and Hansen 2016).

Johnson and Hansen's work, while outside of geography, was highly spatial in nature and openly recognized the influence of specific places (regions) on agency participation in the 1033 program. Similar observations were made in the sole paper from within geography. Radil, Dezzani and McAden (2017), while working independently from Johnson and Hansen, found similar regional influences on program participation. It was observed that at the county level program participation was highly variable with clustering of both high levels and low levels program participation occurring in specific regional clusters (Radil, Dezzani and McAden 2017). Additionally, this paper highlighted that variables such as population have considerable explanatory value in understanding the variation seen in program participation. For example, high levels of 1033 usage (acquisition value) were initially identified in Southern California and Arizona, however those observations were largely a function of population measures (Radil, Dezzani and McAden 2017). After controlling for population, pockets of counties with higher 1033 program usage became visible in southern states like Alabama and in mountain states like Montana (Radil, Dezzani and McAden 2017). These changes are likely indicators of more localized effects and help support the call from Fyfe to support further spatial research in policing in general.

2.8 Research Questions

The process of identifying research question for this project relied heavily on ideas for future research as laid out in the geographic research of police militarization and the 1033 program by Radil, Dezzani, and McAden (2017). As discussed previously, this research explored the spatial extent of the 1033 program usage by LEAs across the US. In identifying that the program's usage by LEAs was "highly spatially variable," the research highlighted the need for future projects to take on a place-specific approach to understanding the relationships between "LEA decision making" and participation in the 1033 program (Radil, Dezzani, & McAden, 2017, p. 209, 211). In partial response, three interrelated place-based research questions were developed with the intent to provide a deeper understanding of local influences that drive LEA decision-making processes surrounding their participation in the 1033 program. It is worth noting that in the research questions, 'place' refers to counties or county-equivalents.

The first research question is to assess to what extent key measures of the socioeconomic elements of a particular place may correlate with equipment acquisitions through the 1033 program. Geographers have long argued that the concept of place is relevant to understand the spatial variation of any social phenomenon because places constitute the immediate settings in which human agency unfolds as well as partially constituting the social relations and practices under investigation. When considering police militarization, place-to-place differences in variables such as race, educational attainment, and employment rates are part of the localized socioeconomic context in which policing occurs. Therefore, any effort to understand spatial variation in the 1033 program must take in to account the variable socioeconomic context of particular places.

The second research question is to assess to what extent equipment acquisitions through the 1033 program may correlate with geographic proximity to key political and legal factors. In geography, it has long recognized that places do not exist in a vacuum and that interactions between and among places are important as well; human agency can be contingent on factors that are located elsewhere and influenced by the effects of distance on those factors. With regard to police militarization, this could involve proximity to legally defined spaces associated with anti-drug trafficking efforts like the High Intensity Drug Trafficking Areas (HIDTA) designation, or distance from other political features important to the intent or functioning of the 1033 program, such international boundaries or equipment storage locations. Understanding the spatial variation of the 1033 program should also be concerned with a place's relative location to these other factors.

The third research question is to assess to what extent spatially aggregated measures of LEAs may correlate with acquisitions through the 1033 program. Part of the reason that place matters is that important organizations or groups that help to shape those places can also differ from place to place. This is an important recognition for police militarization as law enforcement is a highly localized institution in the U.S. with the majority of LEAs organized and operating at municipal and/or county scales. Although 1033 data limitations prevent using individual LEAs as the primary unit of analysis, aggregated information about the differences among LEAs, such as the number of police officers and

incarcerated people or crime measures, can be considered to address the spatial variation of the institutional contexts within which LEAs operate.

CHAPTER 3
Methodology

3.1 Methodology

Based on the argument that the local and regional contexts of policing can play an important role in shaping the militarization process within LEAs, the statistical model selected for this research had to be able to deal with these spatial variations. Each county can be conceived of as a unique place and while many counties have shared contexts along any single geographic variable (HIDTA designations or along an international boundary, for example), the salient and intersecting sets of issues and characteristics for this investigation are highly variable across geographic space (e.g., Agnew 1987); this variability is referred to as spatial non-stationarity or spatial heterogeneity (Fotheringham 2009). Thus, the unique setting and context of each county makes a single global analytical model an unlikely candidate for explaining the spatial contours of the militarization phenomena at the county level.

Despite the fact that such inherent spatial heterogeneity would mean that a single global analytical model would likely be unsuccessful in explaining the variation seen in the observations, the exploration begins by first developing a global understanding of the issue in order to later spatially disaggregate that model using a geographically weighted regression or GWR. GWR is a spatial analysis technique that takes non-stationary variables into consideration and models the local relationships between these predictors and an outcome of interest. GWR is an outgrowth of ordinary least squares regression (OLS) and allows the relationships between the independent and dependent variables to vary by locality. GWR is useful as an exploratory technique to visualize if/how statistical relationships vary in space. It also accounts for spatial autocorrelation of variables (Fotheringham 2009).

Briefly, GWR constructs a separate OLS equation for every location in the study region. Each model incorporates the dependent and explanatory variables of all locations falling within the 'bandwidth' of each target location. Bandwidths can be differently sized regions to ensure that an identical number of observations are incorporated into each model

when the data is aggregated into unevenly sized geographic areas. This is referred to as an "adaptive" bandwidth, which is recommended in the literature (Fotheringham 2009).

For this project, the dependent variable is the value of all 1033 acquisitions at the county level. The decision to include all acquisitions as the dependent variable was made in part due to the exploratory nature of the project. Additionally, the inclusion of all equipment was done in part to account for counties in which agencies increasingly leaned on the 1033 program for equipment. It is expected that, no matter the type of equipment acquired, familiarization with the program may eventually lead to agencies acquiring more military style equipment. Another factor influencing this decision was more practical, the number of counties which acquired highly military styled equipment such as weapons and MRAPs was relatively small over the study period. Limiting the dependent variable to this relatively small sample size it was feared would mask underlying militarization processes.

The explanatory variables are developed in conjunction with the small literature on 1033 and in accordance with the three research questions described in Chapter 2. Following the guidance on developing a GWR by Fotheringham (2009), an OLS regression model is the first step in the analytic process. The general form of the OLS model is as shown below, where sets of explanatory variables are grouped together by their relationship to each research question.

Equation 3.1: OLS Model

$$y = \beta_0 + \beta_1 x_{Socioeconomic} + \beta_2 x_{LEA} + \beta_3 x_{Political/Legal} + \varepsilon$$

Using this general OLS model as a guide, the project moved forward in a series of additional stages. The first of these was the creation of the national datasets needed for the model. This stage of the research process proved to be the most time and labor intense as no comprehensive spatial dataset was available and to be constructed from scratch. The second stage involved refining the base OLS model through a process of variable selection called stepwise regression and followed by the execution and analysis of the finalized OLS regression model. Stage three consisted of an assessment of spatial autocorrelation in the

OLS results followed by the development of a spatial regression modeling to accommodate the issue. This was the end of the 'global' modeling exercise for the national model. In addition, the same process was executed for a state-level model for a single state (Tennessee) as this was one of the few states where a complete record of crime-related data was available. Following this, a GWR model was developed and assessed. The following discussions present the variables used for the OLS models and describe the various issues connected to the modeling processes that were applied.

3.2 Data

The variables gathered for this research were divided into four main groups and were developed based on the three research questions described in Chapter 2. The first group was made up of the acquisition data from the 1033 program and was used to develop the dependent variable for this research. The second group provided the socioeconomic context needed to explore the spatial nature of equipment acquisitions (research question 1). The third group provides measures of the political and legal influences on the LEAs decision to participate in the 1033 program (research question 2). Finally, the fourth group was developed to provide both measures of LEA operational commitments and the direct influence of the military on LEA participation decisions (research question 3).

3.2.1 Federal 1033 Program Data

The dependent variable was drawn from data that was initially released under directions of the Obama administration after a call for transparency following the events in Ferguson, MO in 2014. This release of information contains a list of equipment acquired by LEAs along with the quantity of the acquired equipment and the original cost incurred by the Department of Defense (DOD) for each item. The data release covered program usage from 2006 through mid-2014. LEA acquisitions in this dataset are aggregated by the county in which the LEA is located and uses specific Federal Information Processing Standards county codes (or FIPS codes for short) as a means of identifying each county. In addition, the item's National Stocking Number (NSN), Federal Supply Code (FSC), nomenclature, and demilitarization codes are also included in this dataset.

Table 3.1 below summarizes two key measures of 1033 activity between 2006 and 2013: the total number of equipment transfers and the total value of those transfers. During

this eight-year period, more than 2,329,000 equipment transfers were recorded. Equipment was distributed to 80 percent of all U.S. counties although the number of transfers per county varied widely. Within counties that received equipment, transfers ranged from a low of 1 over the eight years to a high of more than 177,000. In addition, equipment transfers were highly concentrated in just a few counties: Forty-two counties were the destination of more than 10,000 transfers during the eight-year time period and ten counties alone accounted for 40 percent of the total.

Although LEAs can acquire equipment at no direct cost, the estimated value of each item is recorded, which provides an alternate measure of the program for analysis. The total value of all the equipment transferred was over $1.5 billion (Table 3.1) with a lowest total

Table 3.1: 1033 Program Usage; equipment transfers and value by county 2006 - 2013

	Transfers	Value
Total	2,329,119	$80,021,209
Range	0 - 177,695	$0 - $3,350,268
Average	741	$25,463
Median	15	$11,976

value of $10 and a highest value of over $209 million. Similar to the transfers, just a handful of counties represented a significant portion of the total value: Twenty-five counties received equipment valued at over $100 million during the eight-year time period and the ten counties with the highest cumulative values represented over 27 percent of the total value.

3.2.2 Socioeconomic Measures

The socioeconomic context of place may play a particularly important position in the study of police militarization. Expressions of militarization such as increased SWAT team usage has generally been focused on those communities that are the most disadvantaged (ACLU Foundation 2014). This observation is helpful in establishing the importance of

Total acquisition value, 2006-2013
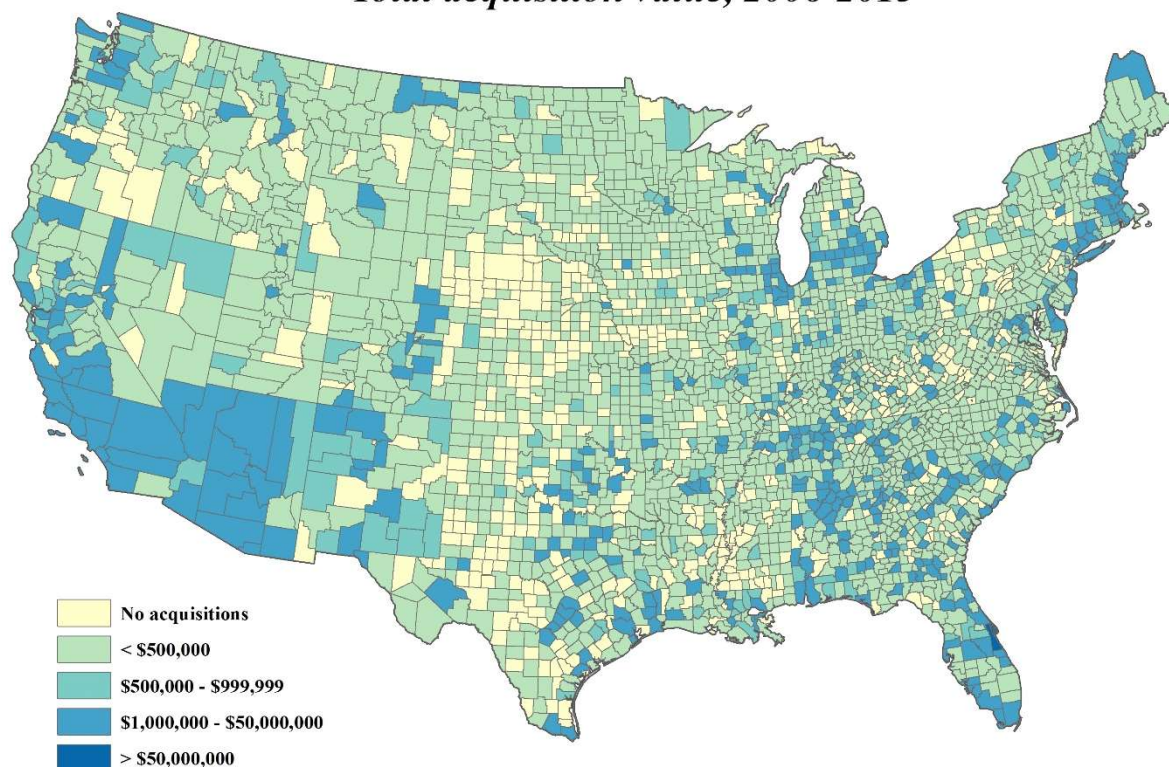
Figure 3.1: Total value of LEA acquisitions of equipment through the 1033 Program 2006-2013.

understanding the socioeconomic influence on the acquisitions of military equipment. To explore this, the following variables were identified, after a review of the U.S. Census Bureau's 2010 Decennial Census and the American Community Survey datasets, as measures of a county's socioeconomic context to assess what influence this has on LEA 1033 acquisitions (Table 2).

Arguably, the most important of the socioeconomic variable is that of race, as the ACLU Foundation (2014) has argued that military-style equipment and tactics are most often used within minority neighborhoods. Ajilore (2015) has argued that there is a strong relationship between police militarization and the racial makeup of a community. He bases this argument on the social control aspect of Hubert Blalock's (1967) Minority Threat Hypothesis. The Minority Threat Hypothesis argued that there is a two-pronged approach used to maintain the status between the majority and minority, one being economic and the other being power related (see also Ferrandino 2015). For this research, the power

component of Blalock's work is of interest, in which he argues that as social competition within a space increases, so too does a majorities' reaction to the perceived threat to their status (Ferrandino 2015). The reaction to this perceived threat is to enact mechanisms of social control (Blalock 1967, Ferrandino 2015). The police's role as the enforcer of state power and of the status quo (Bittner, 1970), which in itself is derived from the majority, fits well within the framework of Blalock's and Ajilore's arguments.

Ajilore's (2015) core argument is that the militarization phenomena underway within police is a strong indicator that racial inequalities persist, and he tests the Minority Threat Hypothesis using a measure of racial segregation called a dissimilarity index to address the differential in power between minority and majority groups. The calculation of the dissimilarity index relies on the comparison of smaller geographies inside of a single larger administrative space, such as a county or census unit (Reardon and Firebaugh 2002; Ajilore 2015). Although the majority of work exploring segregation has been traditionally focused on metropolitan areas (Lichter et al. 2007, Allen and Turner 2012), an approach that could be used reliably at the county level across the U.S. had to be used. James Allen and Eugene Turner (2012) examined Black and Hispanic segregation in U.S. counties which provided the necessary dissimilarity index formula show below.

Equation 3.2: Dissimilarity Index

$$D = \frac{1}{2} \sum_{i=1}^{N} \left| \frac{x_i}{X} - \frac{w_i}{W} \right| * 100$$

Above, D represents the dissimilarity index value, which ranges from 0 to 100, and represents the percentage of either group that would have to move out of the area in question to create a more spatially equal distribution of the two racial groups. Following the 2010 U.S. Census definitions of race, population counts for each county were created for each of the following categories; White, Black, Hispanic, Asian, Indigenous, and Other. An

additional category was created by combining the populations of all the non-White population into a single "All" group. In the equation above, x_i represents the population of the examined racial minority at location i, with X representing the total examined minority population within a county. In a similar fashion, the white population is represented by w_i and W. While it was possible to explore the relationship between any two racial groups for this research, each racial minority group was compared against only the white population of a county which reflects the racialized history of policing in the US.

In addition to race, several other variables were identified to address the economic potential and educational makeup of individual counties. These included total population, high school and college completion percentages, and the level of employment. When combined with the dissimilarity indices, a clearer socioeconomic picture of each county developed.

Table 3.2: Socioeconomic Measures of Place

Variable	Description	Type	Range
Population	2010 county population	Count	1-∞
Dissim_wb	Dissimilarity Index for white-black	Index	0-1.0
Dissim_wh	Dissimilarity Index for white-Hispanic	Index	0-1.0
Dissim_wa	Dissimilarity Index for white-Asian	Index	0-1.0
Dissim_win	Dissimilarity Index for white-indigenous	Index	0-1.0
Dissim_wo	Dissimilarity Index for white-all other races	Index	0-1.0
Dissim_nw	Dissimilarity Index for white-all minority racial groups combined	Index	0-1.0
Employment	Employed portion of a county population	Percentage	0-1.0
College Graduate	Portion of a county population that has a college degree at any level	Percentage	0-1.0
High School Graduate	Portion of a county population that has a high school diploma or its equivalent	Percentage	0-1.0

3.2.3 Political and Legal Factors

Place-specific key political and legal factors (Table 3.3) may have explanatory potential in understanding why police choose to participate in programs like 1033. The first three, HIDTA designation, HIDTA distance, and Border Distance, serve as measures of the influence of the War of Drugs on 1033 program participation. As the 1033 program was created ostensibly to help LEAs execute the War on Drugs (Radil, Dezzani, and McAden 2017), it was expected that the closer a LEA is to a HIDTA designated county, there would be an increase in program participation. Similarly, the closer a LEA is to an international border (and any associated cross-border drug trade), there may be an increase in program participation.

The third factor, Depot Distance, represents a practical issue of financial expediency. 1033 equipment is essentially free to LEAs except for the cost of shipping from one of seventy-eight Defense Logistics Agency (DLA) storage depots across the country. It is expected that there is an inverse relationship between distance to a depot and a LEA's participation in the program, with participation increasing as distance decreases.

Table 3.3: Political and Legal Factors

Variable	Description	Range	Source and Date
HIDTA	HIDTA designated counties	0 or 1	Office of National Drug Control Policy (2016)
HIDTA_Dist	Distance from a given county to the nearest HIDTA designated county	1-∞	Developed during research preparation (2016)
Border_Dis	Distance from a given county to the nearest International Border	1-∞	Developed during research preparation (2016)
Depot_Dist	Distance from a given county to the nearest DLA equipment storage depot	1-∞	Developed during research preparation / www.dla.mil (2017)

These sets of variables were developed during the preliminary work on this research to provide spatial measures of those significant political and legal factors that could affect 1033 program participation. With the original purpose of the 1033 program to provide equipment in support of the "War on Drugs," it was important to find a way to create a measure of the influence the drug war was having on the militarization process. Drug crime was initially considered as the acceptable measure for this purpose. Unfortunately, significant issues with crime reporting by LEAs made this a less desirable and potentially problematic variable. A replacement was found in the High Intensity Drug Trafficking Area (HIDTA) designation that some 497 counties have obtained through the Office of National Drug Control Policy (ONDCP). The HIDTA designation is part of a larger grant program under the same name in which money is provided to LEAs with significant funding to fight the War on Drugs.

The HITDA designation process relies on two elements that when considered together make the designation itself a more robust variable than drug crime alone. The first element is criteria established by Office of National Drug Control Reauthorization Act of 2006 that must be met by individual counties. In order to receive a HIDTA designation, a county must show that there is a significant about amount of illegal drug production, importation, or distribution and that this activity has had a "significant harmful impact" on the community (Office of National Drug Control Policy 2017). In addition to these criteria, LEAs within a county must be committed to aggressively responding to the drug problem and whose efforts would be greatly supported through "significant in allocation of Federal resources" (Office of National Drug Control Policy 2017). This final criterion has the potential to influence 1033 participation most directly, as it is likely that many LEAs in a HIDTA designated county will choose to participate in the 1033 program as it is a central means by which LEAs can access "Federal resources."

Given that HITDA designation criteria provides an additional legal justification for increased federal support of local LEA efforts to combat the War on Drugs, some consideration must be given to the political agents that affect the designation process. Apart from providing basic contextual background information, local governments and LEAs are left almost entirely out of the designation decision-making process. Instead, it is the ONDCP

Director in collaboration with the Attorney General, Secretaries of Treasury and Homeland Security, and the heads of the Drug Control Programs that ultimately serve to decide if the drug problem in a county is worthy of designation (Office of National Drug Control Policy 2017). Strikingly, the only 'local' agent consulted in the designation process is the governor of the state in which the county under consideration falls (Office of National Drug Control Policy 2017). This ultimately leads to situations in which local LEAs can receive federal assistance with little to no interaction required at the local level, further separating the actions and decisions of police from the immediate communities and locations they police (ACLU Foundation 2014; Balko 2014).

Overall the HIDTA designation provides an important context for understanding how police militarization may be influenced by the War on Drugs. However, only 497 out of 3,141 counties have received the designation as of 2016. To supplement this variable, the HIDTA Distance and Border Distance variables were created for all 3,141 U.S. counties. HIDTA Distance was based on the edge distance between HIDTA counties and neighboring counties; non-designated counties directly adjacent to designated counties received a distance measure of 0. This approach allowed for a contextual measure of the potential influence of high drug crime areas on their most closely associated neighbors. The Border Distance variable was developed as, historically, it is across international borders that a large portion of illegal drugs enter the U.S. and along which a large amount of drug-interdiction law enforcement activities occurs (Williams 1998). This variable is based on the distance between the geographic center of each county and the nearest international border. This measurement approach was taken as population centers are not universally located along international borders even in counties lying directly on the border, and this allowed for each county to have a unique distance measure.

Finally, Depot Distance from each county to the nearest DLA surplus storage depot was calculated for each county. This measure was intended to provide information about the influence of acquisition cost on LEAs in their decisions to participate in the 1033 program. Since LEAs acquire equipment from the program at no cost other than the cost to ship the equipment from a depot, it is reasonable to consider the cost of shipping as a direct influence on program participation. Additionally, in the author's personal experience in managing the

use of the 1033 program at a local LEA not closely co-located with a depot, it was shipping cost that weighted most heavily on whether or not to acquire a piece of equipment. In jurisdictions where budgetary issues are of considerable concern, the willingness to use of the 1033 program to obtain equipment by LEAs was tempered by the cost of shipping.

3.2.4 Law enforcement agency measures

To account for differences in the types of LEAs across the US, three sets of measures were gathered (Table 3.4) from the 2010 American Community Survey, an annual demographic survey by the U.S. Census Bureau (U.S. Census Bureau 2009). The first set of variables represents the operational makeup and responsibilities of local LEAs, while the second set represents the operational stressors on police. Finally, the third set of variables represents the military influence on the organizational culture of LEAs that is potentially present in different places.

The first variable in the operational makeup and responsibilities set, Total LEO, addresses differences in LEA size through the number of officers employed as it is expected that as the number of officers rises, the participation in the 1033 program will also increase. The second and third variable of adult and juvenile inmates serve to identify the working load of an LEA and in this study function partially as a surrogate for crime data. Here it is expected that as the number of incarcerated individuals increases acquisitions of equipment will also increase.

The second set of variables represents those stressors which have the potential to drive LEOs to be more aggressive toward community members and may create an environment in which more militarized policies maybe more tolerated by LEA leadership. The first of these is the number of officers killed due to the felonious actions of suspects (totKF in Table 3.4). This number is inclusive of officer deaths while responding to calls but excludes deaths while on duty that were not the result of another person's actions. The second variable in this set represents the total number of assaults on officers while they are on duty (tot_aslt in Table 3.4). It is expected that there was a positive relationship between increases in these two variables and program participation.

In the third set of variables the direct influence of the military is measured by two unique variables. The first is the number of military services members that live in any given

county (Mil_Res_Po in Table 3.4). This measure allows for a fair distribution of military influence as many military posts cover multiple counties and the individuals assigned to those posts often live in multiple locations in surrounding areas. Where there are higher concentrations of military service members, it is expected that participation in the 1033 program will also increase. Similarly, in the second variable the population of military veterans (Vet_Pop) is also expected to increase equipment acquisitions as these individuals have transitioned from military service and now take a more active role in the communities, they reside in. This population is also likely to have a strong influence on LEA decisions as veterans often start new careers in law enforcement following their military service (Kraska 2007).

3.2.5 Crime Measures

Despite the use of the jail populations as a surrogate for crime data, it was observed that there had to be some direct consideration of crime in understanding police militarization. Unfortunately, as mentioned before the quality and completeness of crime reporting by LEAs in the U.S. is not spatially complete across the country (Balko 2014). This lack of spatial completeness in reporting at the county level (Maltz and Targonski 2002) makes it difficult to use crime as an explanatory variable in any national examination using statistical modeling (Pridemore 2005). After the examining the County-Level UCR data provided through National Archive of Criminal Justice Data (NACJD), it became evident that there was a way to identify areas of strong reporting by using the coverage indicator (CI) variable in the dataset. The CI represent the proportion of the LEAs in a given county that reported crime data and for how many months they reported for in a given year. After reviewing this variable, it became clear that reporting was so inconsistent across the study period (mean CI percentage of 82 for the study period), that using the crime data for all counties across the U.S. was not feasible. A decision was made to subset the data down to a single state which had the best overall reporting with a large number of counties. In this way, Tennessee with its ninety-six counties was identified as having the most consistent reporting for the study period with an average CI of 99.87 for the state.

A single grand total variable (GRNDTOT in Table 3.4) was created by aggregating the total reported property crime, violent crime, and drug crime from the Tennessee UCR

data. To support further analysis using the TN crime data, a subset of all the other dependent and explanatory variables present within the research was created for the State of Tennessee. It is expected that there was a positive relationship between increases in the crime value and the amount of program participation.

3.3 Variable Selection and OLS Refinement

The use of acquisition value as the dependent variable was selected so as to provide some standardization in the measurement of militarization as the effect of a single piece of

Table 3.4: Measures of LEA Organization and Operations

Variable	Description	Type	Range
Total LEO	Total number of individuals employed as law enforcement officers in a given county	Count	1-∞
Adlt_Cor_F	Number of adults incarcerated within a given county	Count	1-∞
Juv_Cor_Fa	Number of juveniles incarcerated within a given county	Count	1-∞
totKF	Number of LEOs killing feloniously while on duty	Count	1-∞
tot_aslt	Number of LEOs assaulted while on duty	Count	1-∞
Mil_Res_Po	Number of military service members living within a given county	Count	1-∞
Vet_Pop	Number of military veterans living within a given county	Count	1-∞
GRNDTOT	Total of all crimes reported by LEAs in each TN county	Count	1-∞

equipment is not universally the same across counties. To illustrate the point, Table 3.5 shows that while two different counties both participated in the program in the same frequency over the study period, what they acquired was markedly different. Here the value of the acquisitions provides a far better measure of militarization when compared to the frequency of program participation.

Since the intended purpose of this research is to evaluate program participation as an indicator of police militarization, the dependent variable was not just based on the total

value of equipment acquired. Instead, a per capita measure was calculated using population measures from the US Census. This allowed for a meaningful derived value to compare place-specific contexts across each equipment type.

Table 3.5: Example of Varying Program Usage

County	Item Description	QTY (2006-2013)	Value
Grant County, NM	Armored Truck	1	$65,070
Susquehanna County, PA	Construction Plywood	1	$31.91

       To narrow down the explanatory variables to those that provide the greatest influence on the decision to acquire equipment through the 1033 program, a stepwise regression process was used to reduce the original twenty-one independent variables down to those that provided the most statistically significant explanatory value. In this way, the interactions between the three different categories of explanatory variables were explored. This approach allows candidate predictor variables to be evaluated by systematically entering and removing predictors in the OLS model based on p-values. The information about the overall goodness of fit of the model was provided by the R-square and AIC values. R was used to conduct all of the analytic processes and in the case of the stepwise regression process two separate stepwise regression packages were used to insure an un-biased reporting of the significant explanatory variables. Both packages reported nearly identical models with only a single variable difference being noted between the models. The dissimilarity index between White and Asian populations (dissim_wa) and dissimilarity index between White and other racial group populations (dissim_wo) were reported as statistically significant by the respective stepwise regression R packages. Both models returned almost identical statistics with only a slight improvement in both the R-square value (0.0684 vs. 0.0683) and AIC (with a difference of only -0.23 between the models) between model 1 (containing the dissim_wa variable) and model 2 (containing the dissim_wo variable). Based on this slight improvement, model 1 was selected in the following form:

Equation 3.3: General Global Model for OLS and GWR

$$Acquisition\ Value$$
$$= \beta_0 + \beta_1 x_{Total\_Pop} + \beta_2 x_{dissim\_wa} + \beta_3 x_{per\_vet} + \beta_4 x_{Adlt\_Cor\_F}$$
$$+ \beta_5 x_{Juv\_Cor\_Fa} + \beta_6 x_{tot\_aslt} + \beta_7 x_{Depot\_Dist} + \varepsilon$$

This model would serve as the General Global Model (GGM) for the remainder of the research, including the national OLS and GWR models.

From the outset, the use of GWR also required the use of an OLS model as the foundation for the analysis. OLS has several assumptions, including that the relationships between the dependent and explanatory variables are relatively linear and that the explanatory variables are not highly correlated. An examination of the relationships between the dependent variable (acquisition value) and the seven variables in GGM using scatterplots showed that the assumption of linearity was reasonable. Positive linear relationships were seen between the dependent variable and four of the explanatory variables; adult and juvenile inmate populations, assaults on LEOs, and county populations. These relationships were in keeping with the current understanding of the militarization process in which increases in population require an increase in police services which in turn should drive LEAs to increase their usage of the 1033 program. The negative linear relationships observed in the percentage of the veteran population, dissimilarity between the white and Asian population were more surprising as it was expected that as both dissimilarity and veteran population rose so would program usage. The negative relationship seen between acquisition value and distance to a storage depot was as expected, with the only cost passed on to the requesting LEA being that of shipping, agencies nearer to the depots would be more willing to use the program.

In examining the relationships between the selected explanatory variables (Table 3.6) there was a strong positive relationship between county population and both adult and juvenile inmate populations. This same relationship is also seen between number of officers assaulted and county population. A similar but more moderate positive relationship is seen between adult and juvenile inmate populations and assaults on officers. These results are not surprising as it is expected that as population increases so will interactions with police. It is

also important to note, that the three measures of LEA activity; assaults on officers, adult and juvenile inmate populations all had similar positive relationships. Overall the observed relationship between the variable was in keeping with the basic assumptions of OLS and it was decided to forward with the OLS regression process.

Table 3.6: Pearson's R Correlation Matrix

	Total_Pop	Dissim_wa	Per_Vet	Adlt_Cor_Fa	Juv_Cor_Fa	Tot_aslt	Depot_Dist
Total_Pop	--	-0.363	0.187	0.606	0.760	0.770	-0.117
Dissim_wa	-0.363	--	0.110	-0.297	-0.304	-0.279	0.125
Per_Vet	-0.187	0.110	--	-0.114	-0.133	-0.125	0.015
Adlt_Cor_Fa	0.606	-0.297	-0.114	--	0.508	0.509	-0.135
Juv_Cor_Fa	0.760	-0.304	-0.133	0.508	--	0.632	-0.107
Tot_aslt	0.770	-0.279	-0.125	0.509	0.632	--	-0.084
Depot_Dist	-0.117	0.125	0.015	-0.135	-0.107	-0.084	--

Note: Pearson's R results range from -1 (perfect negative linear relationship) to 1 (perfect positive relationship).

3.4 Spatial Analysis and Regression

The residuals from the GGM OLS were evaluated using Moran's *I* test under randomization in the R package spdep to determine if spatial autocorrelation was present (Bivand, Pebesma, and Gomez-Rubio 2013). If it was found that autocorrelation was found, either positive or negative, to be present in the GGM residuals the testing moved forward with the spatial regression process.

The initial step in this process was to establish a neighbors list, this presented a significant issue as the spatial influence of neighboring jurisdictions on the practice and operations of LEAs has not been well studied to date (see Radil, Dezzani, and McAden 2017). In light of this, the author's professional experience as a law enforcement officer again came into play. The issue of direct influence on operations and policy by neighboring LEAs was considered as most likely occur when officers interact on a regular basis. With that in mind, it is most likely that officers will interact across jurisdictional boundaries in cases of information sharing, and mutual aid. If special situations of interaction are

disregarded, such as formal training events and conferences, it becomes more reasonable to expect that distance will have a greater influence on officer interactions. In the author's experience, officer interaction is usually limited to those officers whose agencies are geographically adjacent to each other.

Based on the idea of interactions being limited to neighboring jurisdictions, a nearest neighbor approach was taken to establish the bandwidth of the kernel. Since individual LEA jurisdictions were not available, counties were used as a proxy. First, a queen's case approach was used to determine the average number of adjacent neighboring counties across the U.S. This approach identified that each U.S. county has an average of six neighboring counties, and this was set as weighting criteria for the remainder of the spatial analysis.

With a weighting scheme established, a Lagrange Multiplier test was used to determine which of the two basic spatial regression models, the error or lag model, was the best at eliminating the identified spatial autocorrelation (Anselin 2009). The Lagrange Multiplier test adds a spatial lag variable as either an explanatory variable or as part of the error term to in order to evaluate the changes in autocorrelation present in the residuals. The p-value was used as the determining factor in the statistically significant between the spatial lag model and spatial error models. Once an appropriate spatial regression model was selected, the coefficient estimates would better reflect the true global relationships between the dependent and explanatory variables.

3.5 Geographically Weighted Regression

In order to move beyond the GGM, it was decided to explore program usage at the county level using a geographically weighted regression (GWR) model based on the variables used in the GGM. The GWR method allows for modeling in the presence of spatial heterogeneity by using an estimator that considers parameters at each location in the following form (Fotheringham, Charlton, and Brunsdon 1998; Fotheringham 2009; Öcal and Yildirim 2010):

Equation 3.4: GWR model

$$(Acquisition\ Value)i$$
$$= \beta_{0i} + \beta_{1i}x_{(Total\_Pop)i} + \beta_{2i}x_{(dis\quad wa)i} + \beta_{3i}x_{(per\_vet)i} + \beta_{4i}x_{(Adlt\_Cor\_F)i}$$
$$+ \beta_{5i}x_{(Juv\_Cor\_Fa)i} + \beta_{6i}x_{(tot\_aslt)i} + \beta_{7i}x_{(Depot\_Dist)i} + \varepsilon$$

In the GWR process a matrix of weights for each location is created where locations nearer to location *i* exert a greater influence than those locations further away. In this way parameter estimates are local instead of global (Fotheringham 2009). The process for determining the weighting scheme is discussed further below. This new GWR model can be represented in the follow way. Again, this represents the dependent variable of acquisition value at location *i*. The parameter estimations β now also represent effect the explanatory variables at location *i*.

3.6 Influence of Previous Acquisitions

While the primary methodology used in the project provided a baseline for understanding the influences of place on police acquisition behavior, it did not account for the potential of temporal influences on that behavior. With the original 1033 program data contained information on acquisitions for an eight-year period starting in 2006 and running through 2013 two new datasets were created to evaluate previous acquisitions on program participation. Both datasets were created around the mean value of acquisitions for each county, with the first dataset representing the mean value for the years 2006 to 2009 (AC_Me_69) and the second for 2010 to 2013 (AC_Me_1013). It was expected that higher values in the 2006-2009 period would show a decrease in the values for 2010-2013 period. With this in mind, the GGM was modified in the following way to test for this influence:

Equation 3.5: PRE/POST Model

$$AC\_Me\_1013 = \beta_0 + \beta_1 x_{Tot\ Pop} + \beta_2 x_{dis\ wa} + \beta_3 x_{per_{vet}} + \beta_4 x_{Adlt_{Cor_F}} + \beta_5 x_{Juv_{Cor_Fa}}$$
$$+ \beta_6 x_{to\ aslt} + \beta_7 x_{Depo\ Dist} + \beta_8 x_{AC\_Me\_69} + \varepsilon$$

With this modification in place the same OLS regression and spatial regression processes were repeated.

3.7 Influence of Crime

The influence of crime on the police decision making is well founded, with their foundational mandate being to prevent crime police behavior is directly linked to levels of crime. As such, any study into police behavior must include the inclusion of crime levels as an influencing factor. This project is no exception, with the inclusion of crime statistics being initially considered as a major explanatory variable. Unfortunately, as the research progressed it became evident that the available crime data was not of the quality needed for inclusion in a spatial analysis of police behavior at the county level. The deficiency in crime data quality is discussed in more depth in Chapter Five but is important to note here that crime data is not available consistently for every county across the nation. For this research the State of Tennessee (TN) was identified through the FBI's county level UCR reporting as having the most consistent crime reporting with over 98% of TN agencies reporting each year for all eight years in the study period. Additionally, TN contains ninety-five counties providing a sample size large enough to produce statistically significant results.

With a new study area defined, the national level dataset was modified to include only the data for TN. The GGM was further modified (Equation 3.6) to represent only the counties in TN and included a new explanatory variable for total crime figures. The inclusion of all crimes into the total crime variable was done as it is argued here that a rise in total crime will show a similar rise in acquisitions from 1033 program whereas a rise in crimes like homicides might not drive agencies to the 1033 program for resources.

Equation 3.6: Crime Model (Tennessee only)

$$Acquistion\ Value\ (TN)$$
$$= \beta_0 + \beta_1 x_{Total_{Pop}} + \beta_2 x_{di\ wa} + \beta_3 x_{per_{vet}} + \beta_4 x_{Adlt_{Co\ F}} + \beta_5 x_{Juv_{Cor_{Fa}}}$$
$$+ \beta_6 x_{tot_{aslt}} + \beta_7 x_{De\ Dist} + \beta_8 x_{crime} + \varepsilon$$

As with the influences of previous program participation this new model was subjected to the same testing process (develop a global OLS model, perform a spatial analysis of the residuals, and develop a global spatial regression model).

CHAPTER 4
Results

4.1 Introduction

The methodology described in the previous chapter was applied to understanding the militarization of policing for equipment acquired through the 1033 program. The first step in the modeling process was to use stepwise regression to reduce the pool of candidate variables which could be included in the regression model. The resulting subset of predictor variables used in the final GWR model was determined for the entire US without the introduction of either crime or time data. These predictor variables were then used to comprise a general global model (GGM) which served as the baseline for the remainder of the analysis.

The analysis then followed two different directions. First, the crime variables were added to the GGM and modeled using just the Tennessee dataset (TN Crime). This allowed an exploration of the influence on crime variables on the GGM predictors even though crime data was not available with complete spatial coverage at the county scale nationally. Second, the influence of previous program participation was examined by again modifying the GGM by changing the dependent variable from value of acquisitions for the entire study period to just the values for the years 2010 through 2013. Then an additional explanatory variable was included consisting of the mean of the acquisition values for the years 2006 through 2009. This modified general global model (MGGM) was then run for the full U.S. dataset and then again with the TN dataset (MTN Crime). Finally, the GGM was tested for spatial autocorrelation and a spatial lag model was created to address this issue, which can cause bias in coefficient estimates. The final step involved using a geographically weighted regression (GWR) to examine the localized or regionalized influences on program participation for both the U.S. and TN. This was repeated with the MGGM to examine the effects of previous participation.

4.2 General Global Model

Through the stepwise regression process, the original twenty-one independent variables were paired down to eight that provided the most explanatory value. The following is the model that developed from this exploratory process:

Equation 4.1: Stepwise Regression Model

$$y = \beta_0 + \beta_1 x_{Socioeconomic} + \beta_2 x_{LEA} + \beta_3 x_{Political/Legal} + \varepsilon$$

While this model performed the best out of all the potential models it is worth noting that its overall performance is fairly poor. The model explained less than seven percent of the variation in the dependent variable. Additionally, while there were seven predictor variables fit by the model, only two of them actually met the study's established significance threshold of 99.9%. A summary of the GGM results is found below in Table 4.1

Table 4.1: GGM Results

Variable Type	Variable Name	Est. (SE)
Socioeconomic	Total_pop	0.0144 (5.0329)**
Socioeconomic	dissim_wa	-8.79 (4.96).
Socioeconomic	Per_Vet	73.4 (31.8)*
LEAs	Adlt_Cor_F	0.0009 (0.0005).
LEAs	Juv_Cor_Fa	0.007 (0.0035)*
LEAs	tot_aslt	0.0048 (0.0016)**
Political/Legal	Depot_Dist	-0.0176 (0.0071)*
A-R2		0.0684
F-Statistic		33.96 ***

*Note: The only statistically significant variables at p<0.01 in the GGM were county population and number of assaults on LEOs. Coefficient directions were as expected apart from the measure of dissimilarity between White and Asian populations. (. p < 0.1; * p < 0.05; ** p < 0.01; *** p<0.001)*

Despite its overall poor performance, the GGM did retain the predictor variables necessary to explore each of the three research questions which made it a useful tool to explore the general themes of this project. Within the model three socioeconomic measures of place were fitted, along with a single political and legal factor. The remaining three

explanatory variables fitted were measures of LEA organization and operations. Of the available variables, county population and the number of law enforcement officers (LEOs) assaulted in each county were identified as being the most statistically significant, while the dissimilarity between White and Asian populations and the population of adult correctional facilities were found to be the least significant. While it is important to note the statistical significance of the individual variables, in the GGM model they play a lesser role as the overall performance of the model was found to be superior to all the other model variations using the same pool of variables.

There is another observation that can be made about the GGM that is of particular interest. While all of the directions of the coefficient estimates were all in keeping with the available literature, there was a major exception found in the sole remaining racial measure. Here the results deviated drastically from the expected response. Based on the literature, I hypothesized a positive relationship between segregation between minority groups and white populations and in acquisitions of military equipment. Instead a negative relationship was found. For every eight percent decrease in dissimilarity between the Asian and White populations in the residential locations within a county, there was a corresponding one dollar increase in the value of acquisitions from the 1033 program. This is surprising for two reasons. First, the current literature on the subject has noted that increases in minority populations is a significant driver in militarization among law enforcement (ACLU 2014). Second, except for the work of economist Ajilore (2015), there has been no mention of the Asian community as a driver of militarization. As Ajilore observes, "Asian-American communities are not typically associated with high levels of crime" (2015, 1091). However, the results found in the GGM are not without precedent, as Ajilore (2015) identified a similar effect where he observed increases in Asian-American populations also correlated to an increase in the LEA acquisitions of MRAPs.

4.3 GGM and Crime

When the results of the GGM are compared to the associated TN Crime model it can be observed that TN Crime model's ability to explain the variation seen in the dependent variable is not improved. However, the addition of the crime variable along with the change in scale from the national to the state level did have a dramatic effect on the coefficient

estimates seen in the TN Crime model. Most notably, none of the variables in the TN Crime model met the statistical significance threshold established for this study. Additionally, across the seven common variables, the directions changed from positive to negative in over half of the estimated coefficients when compared the to the GGM. The shift to a negative coefficient is perhaps best seen in the coefficient associated with county population (Total_pop); here for every 298 people decrease in county population, the TN Crime model predicts an increase in program participation rather than a decrease. These results appear to indicate that including crime and/or changing the scale of the investigation may yield very different results from the GGM.

Table 4.2: GWR model comparison between GGM and Crime Model for Tennessee

Variable	GGM Est. (SE)	Crime Model Est. (SE)
Total_pop	0.0144 (5.0329)**	-298 (1.098)
dissim_wa	-8.79 (4.96).	-89.5 (227)
Per_Vet	73.4 (31.8)*	1240 (1140)
Adlt_Cor_F	0.0009 (0.0005).	-0.034 (0.0262)
Juv_Cor_Fa	0.007 (0.0035)*	-0.0914 (0.292)
tot_aslt	0.0048 (0.0016)**	-0.386 (0.201).
Depot_Dist	-0.0176 (0.0071)*	-0191 (0.333)
GRNDTOT		0.0029 (0.0017).
A-R2	0.0684	0.0602
F-Statistic	33.96 ***	1.753.

*Note: No statistically significant variables at $p<0.01$ in either the GGM or Crime models were observed. Coefficient directions were not as expected with the majority of variables showing a negative relationship. (. $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p<0.001$)*

4.4 GGM and the Effects of Pervious Program Usage

To explore the effects of previous program participation on current program usage, a modification on the GGM was required. The dependent variable was switched from the total

value of acquisitions for the entire study period to the mean value for the years 2010 to 2013. Additionally, a new variable containing the mean value of acquisitions for the years 2006 through 2009 (AC_Me_96) was added to the model as a measure of previous 1033 program participation. When this pre/post model was compared with the GGM results, it was evident that at the national level it was a poor replacement for the GGM Model. This poor performance was evident in a number of ways. First, the AIC associated with the pre/post model was much higher than that of the GGM. Second, the pre/post model was only able to explain roughly 4.5% of the variation seen in the dependent variable, compared to the GGM's 6.8%. Finally, as with the TN Crime model, none of the fitted explanatory variables met the significance threshold.

Table 4.3: GWR model comparison between the GGM and the effects of previous acquisitions in the pre/post Model

Variable	GGM Est.(SE)	pre/post Model Est. (SE)
Total_pop	0.0144 (5.0329)**	0.11 (0.044)*
dissim_wa	-8.79 (4.96).	-63.7 (47.2)
Per_Vet	73.4 (31.8)*	692 (303)*
Adlt_Cor_F	0.0009 (0.0005).	0.0049 (0.00497)
Juv_Cor_Fa	0.007 (0.0035)*	0.0721 (0.0329)*
tot_aslt	0.0048 (0.0016)**	0.0282 (0.0151).
Depot_Dist	-0.0176 (0.0071)*	-0.140 (0.068)*
AC_Me_96		0.0818 (0.0346)*
A-R2	0.0684	0.0446
F-Statistic	33.96***	19.33***

*Note: No statistically significant variables at $p<0.01$ were observed in the Pre/Post model. Coefficient directions were as expected with the exception of the previous acquisition variable (AC_Me_96). (. $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p<0.001$).*
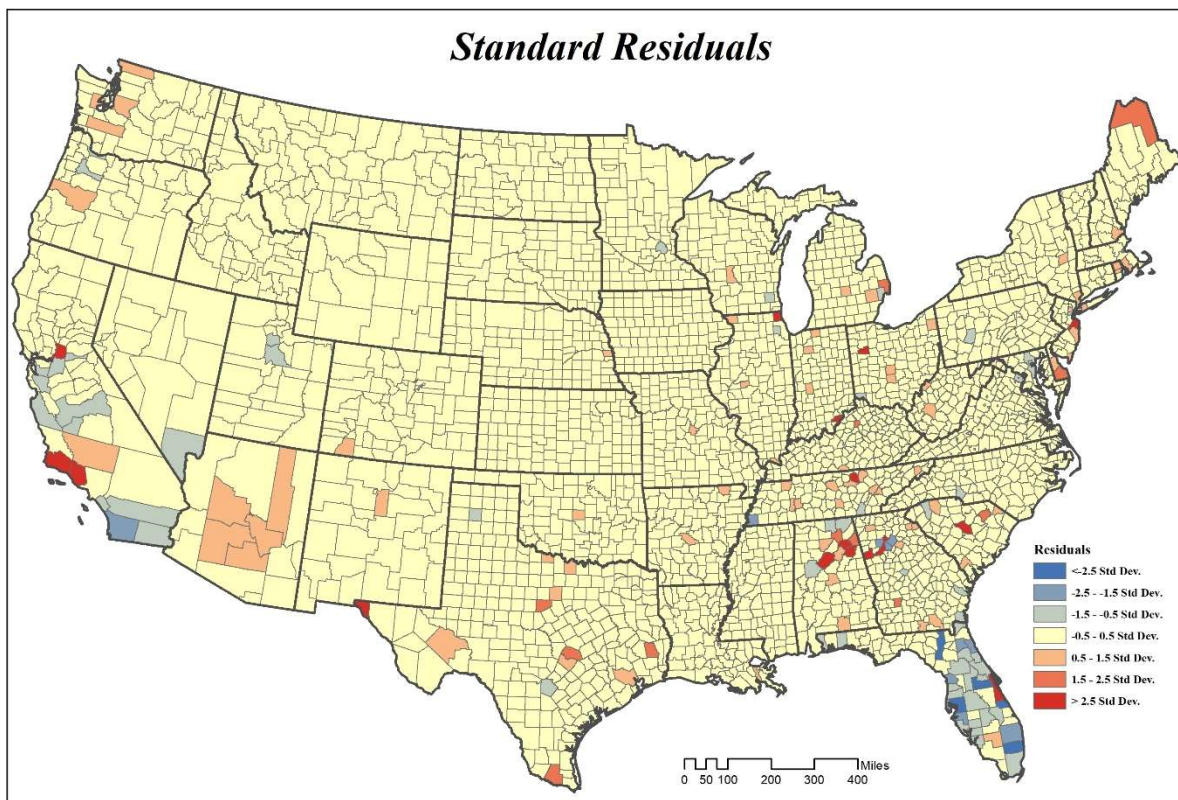
Figure 4.1: The distribution seen in the residuals shows clustering of model under-prediction in Florida and Southern California, along with clustering of over-prediction in the Atlanta area.

However, unlike the TN Crime model there were no shifts in relationships seen in the estimated coefficients. While not statistically significant, overall the estimated coefficients are not remarkably different between the two models, with the exception of the percentage of the county population that are veterans (Per_Vet). Here it was observed that the increase in veteran population is significantly larger in the pre/post model than that seen in the GGM. Overall the pre/post model did not provide any marked improvement over the GGM in understanding of the militarization process.

4.5 GWR

In order to explore the influence on place on police militarization, a geographically weighted regression was performed using the same variables from the GGM. The results of the GWR were a slight improvement over the previous models to include the GGM. The GWR's ability to explain the variation seen in the dependent variable improved from 6.8%
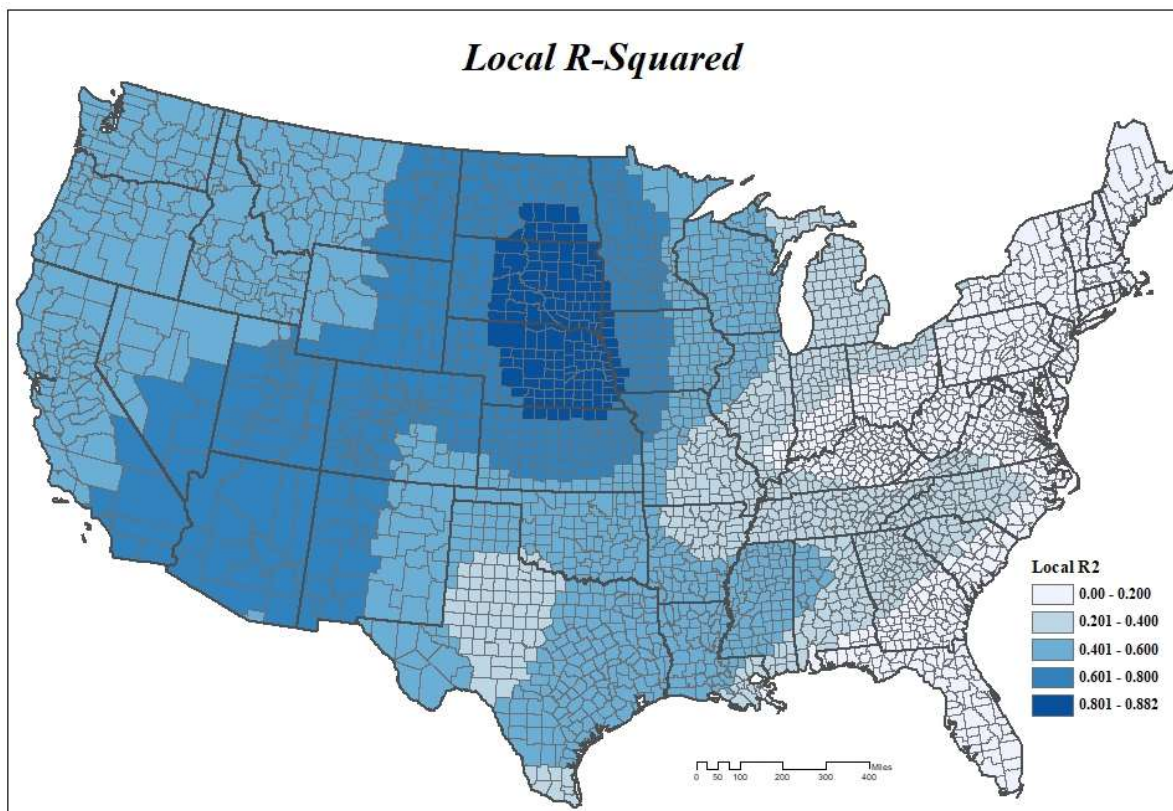
Figure 4.2: R-square values of the local regressions using the GGM conducted for each county. GGM performance was highly regionalized. Among the counties of upper Great Plains, the GGM model was able to explain >75% of the variation seen in the model. While along the eastern seaboard the GGM explained <25% of the variation.

in the GGM to just over 11%. This slight improvement is also visible in the AIC diagnostic with a decrease in value of just over two hundred. Despite only providing a modest improvement over the GGM, it also provides some insight into the presence of some spatial influences on police participation in the 1033 program.

The first indication of these underlying spatial influences can be observed in the standard residuals. While the GWR is a good predictor of participation for the majority of the U.S., there are regional areas where this is not the case. This is most evident in Florida where the GWR model underpredicts program participation in most of the counties. In an opposite fashion, a trend in overprediction can be seen along the Interstate 20 corridor between Birmingham AL and Atlanta, GA. Along the Southwest U.S.-Mexico border from El Paso, TX to Los Angeles, CA, we also see instances of under- and overpredictions.
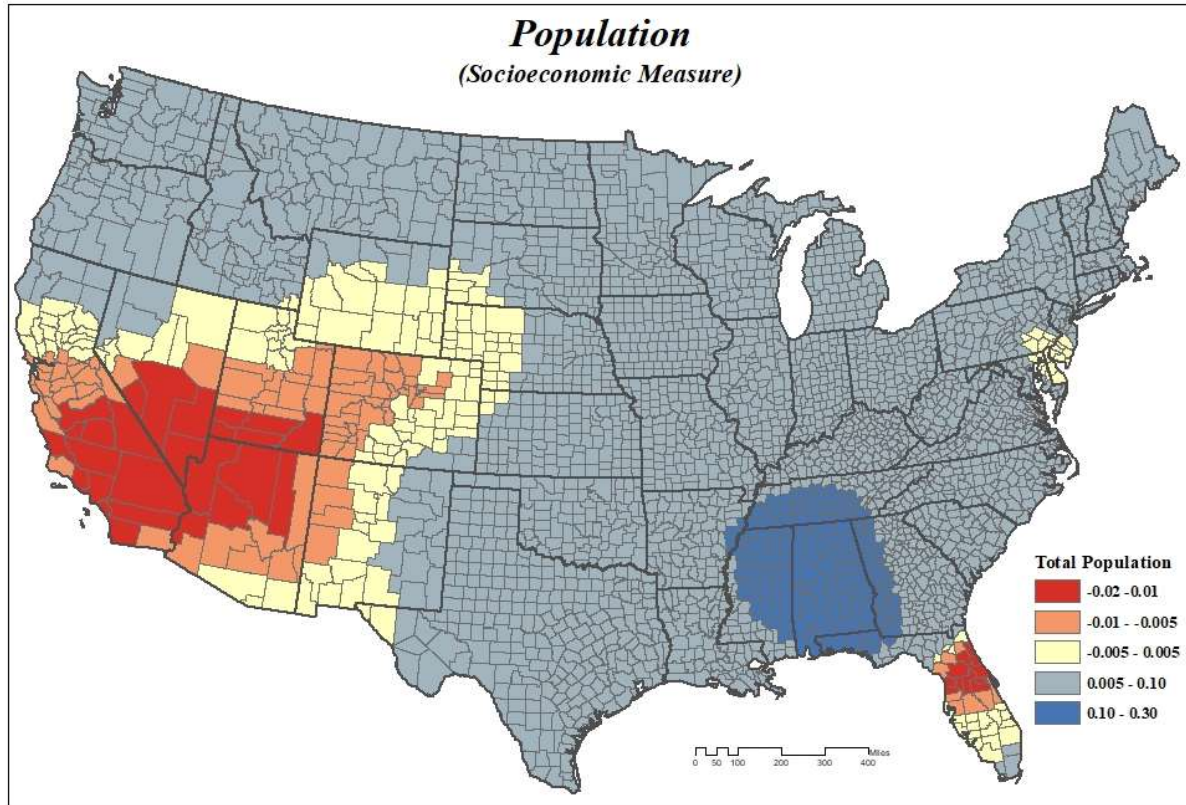
Figure 4.3: Spatial distribution of estimated coefficients of population.

This regionality can also be seen in the ability of the GWR model to explain the variation in the dependent variable locally. Counties where the model is best able to explain this variation greater than 75% of the time can found tightly packed in a single area in the upper Great Plains. On the opposite side of the spectrum, model performance below 25% found in an almost unbroken line along the coast from New Orleans, across Florida, up the eastern seaboard. Similar regional patterns are a recurring theme across all to the GWR results.

Further evidence of the presence of regionalized processes that impact 1033 participation is present in the common patterns seen in the GWR coefficients. While there are clear regional patterns within the coefficients for each of the seven explanatory variables, they are not constantly the same. The coefficients for the two statistically significant variables from the GGM, county population and the number of LEOs assaulted, have regional concentrations of positive values in the Birmingham-Atlanta corridor for population and the Southwest U.S. and in central Florida for officer assaults. The negative coefficients have a similar but inverted regionalized pattern.

In exploring the other variables by category, there are similar regional concentrations in the variable coefficients and those concentrations are not consistently the same. For example, among the socioeconomic variables; county population, percentage of veterans, and the levels of dissimilarity between White and Asian populations, the influence regionally on 1033 participation is quite different between variables. While we see concentrations of positive coefficients around the Birmingham-Atlanta corridor in all three variables, the number of counties involved is dramatically different. In the case of percentage of veterans that difference is quite dramatic, with the concentration of positive coefficients including all of Florida. This positive coefficient in Florida is unusual among the socioeconomic variables as increases in population and levels of segregation in Florida resulted in negative reactions in 1033 participation.
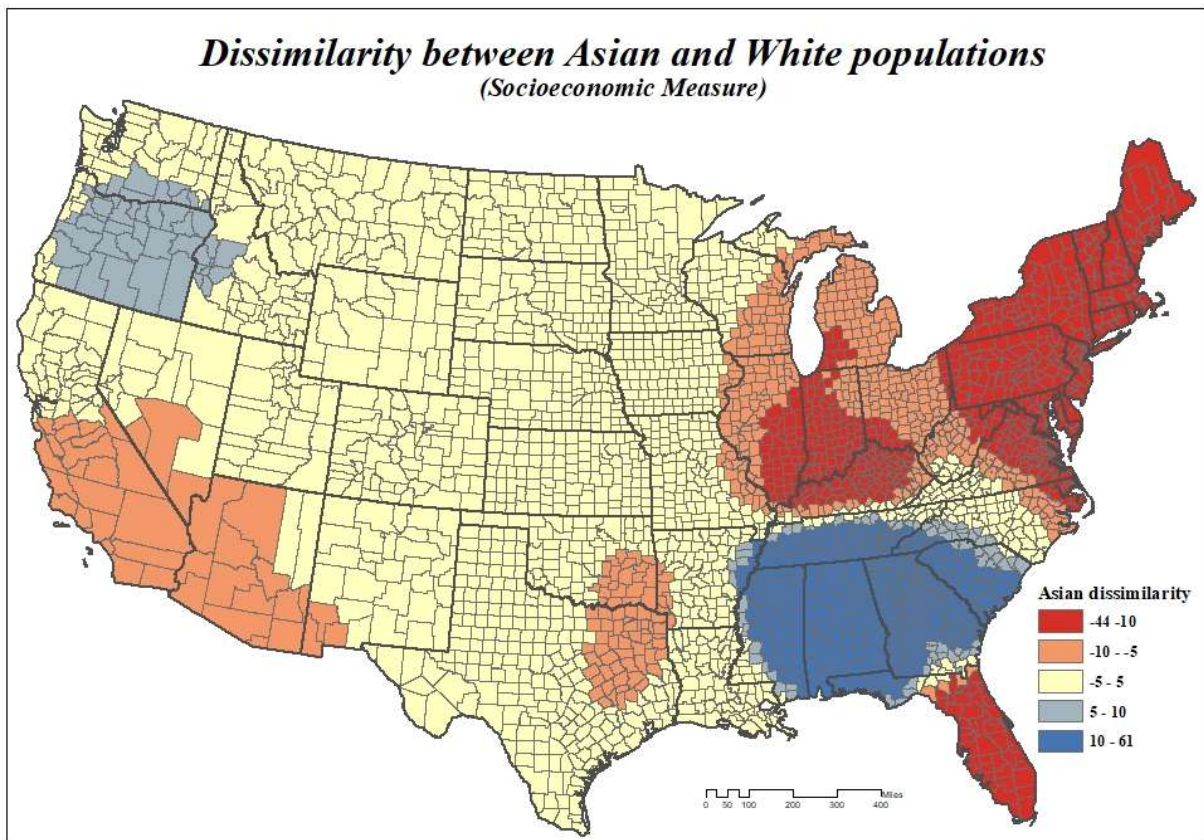
Figure 4.4: Spatial distribution of estimated coefficients of the dissimilarity between Asian and White populations.

Figure 4.5: Spatial distribution of estimated coefficients of military veteran population.

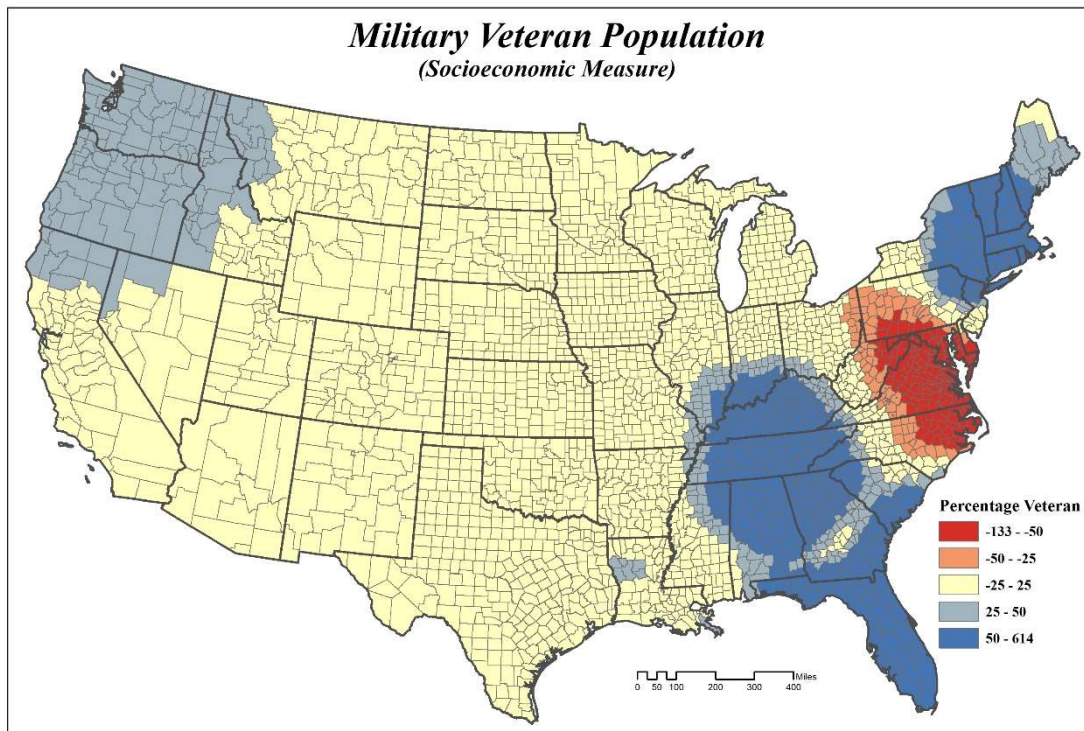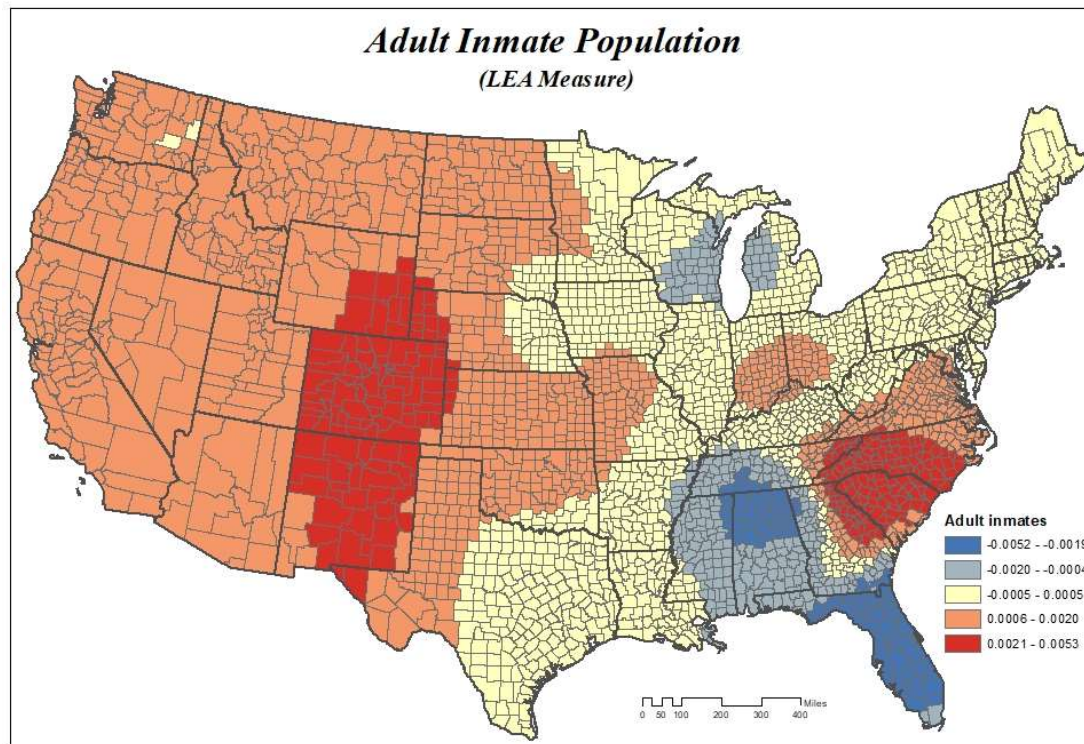*Figure 4.6: Spatial distribution of estimated coefficients of adult inmate populations.*
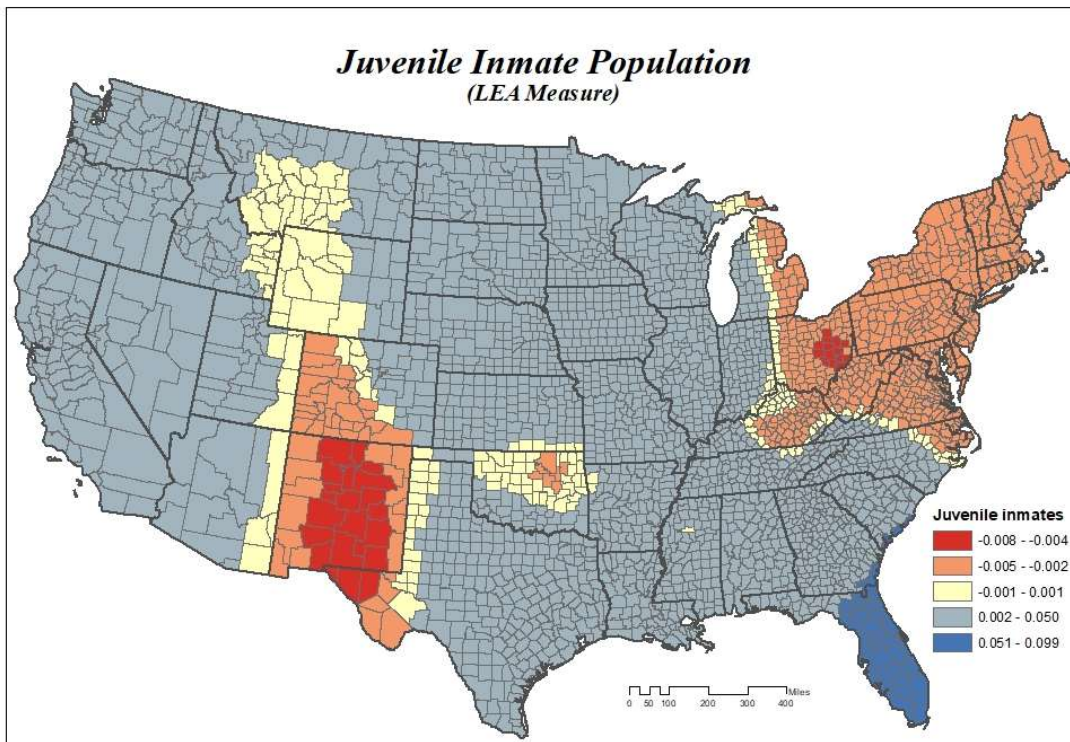
Figure 4.7: Spatial distribution of estimated coefficients of juvenile inmate populations.
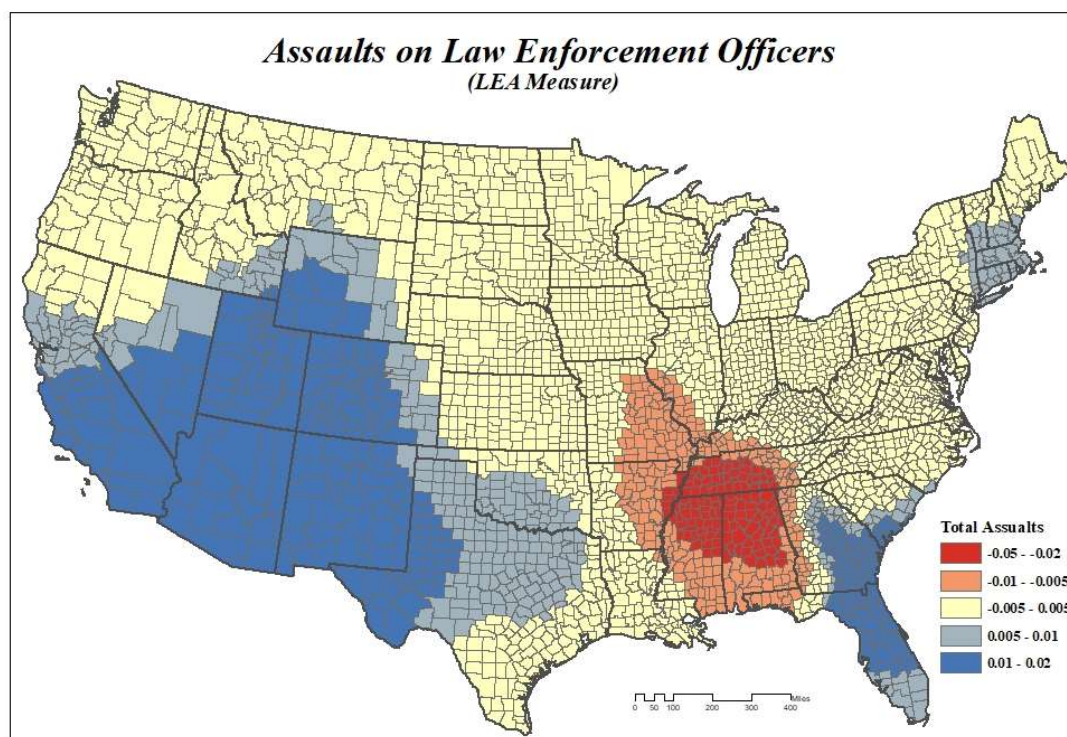
Figure 4.8: Spatial distribution of estimated coefficients of assaults on law enforcement officers.
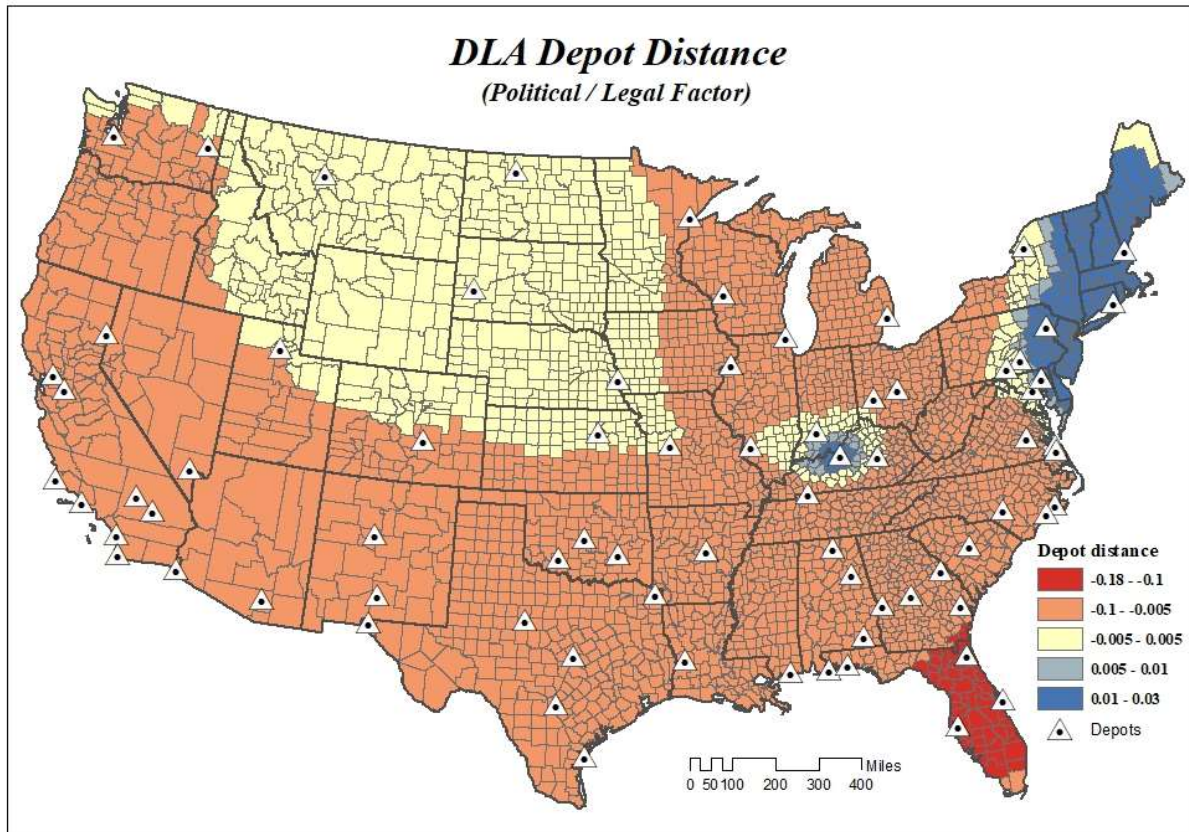
Figure 4.9: Spatial distribution of estimated coefficients of distance to DLA Depot Distance.

Among the other measures of the LEA operations and political and legal measures, the regional patterns continue. Regionally, the coefficients seen among the variables that make up the measures of LEA operations swing between negative and positive relationships with the dependent variable of acquisition value. Of the three variables in this grouping, no two present the same regional makeup. In a similar fashion, the sole political and legal measure, distance to a DLA depot, presents a recognizable regional organization that is quite different from all the other variables in its positive and negative relationship with the dependent variable.

CHAPTER 5

Discussion

5.1 Summary

This research provided a unique opportunity to explore the effects of the county as a factor in the decision-making process of police. While the study was limited to attempting to understand how the unique effects of the county impact the police's decision to adopt a more militarized presence, it also provided a chance to move the spatial understanding of police behavior forward. This was largely accomplished using a comparative analysis of spatial and non-spatial regression models to assess how space mattered and how relationships changed over space. This analysis then provided initial answers to the three proposed research questions for this project and allowed for a direct comparison between the national and local influences of the county on the participation by police in the 1033 program.

In answering question one, to what extent key measures of the socioeconomic elements of a particular county correlate with equipment acquisitions through the 1033 program, it was found that of the socioeconomic measures of a county only population was found to meet the statistical significance established for this study. This finding directly challenges the current understanding that militarized police are partly a function of racial dynamics. For example, numerous studies have asserted that SWAT units, a quintessentially militarized form of policing, are most often deployed in minority communities (ACLU 2014; Balko 2014; Hill and Beger 2017). And yet, typical racial variables were not connected to the participation of the police in the 1033 program consistently across the nation.

For question two, to what extent do equipment acquisitions through the 1033 program correlate with proximity to key political and legal factors, only the distance to the nearest DOD storage depot was found to be significant during the stepwise regression process. This measurement remained consistently influential throughout most of the models, with agencies closer to storage depots being more likely to acquire equipment through the program. The lack of influence from other legal and political factors was surprising, especially with the absence of any statistically significant influence by the 1033 program's

founding purpose to support the War on Drugs. The failure of the HIDTA variable to have any influence on the models developed during this research stands out in strong contrast to the current understanding that police adopt both military equipment and tactics specifically to participate in the ongoing battles of the War on Drugs (ACLU 2014).

For question three, to what extent do aggregated measures of LEAs correlate with acquisitions through the 1033 program, the influence of the characteristics of LEAs played only a small role in why police acquire military equipment. Of the measures of LEAs that were considered, violent assaults on police officers weighed heaviest on an agency's willingness to participate in the 1033 program. This finding is in keeping with the current understanding of police behavior in the context of officer safety. Research has implicated two contrasting understandings of the use of military equipment by police. Police themselves tend to understand 1033 as a tool to protect officers (Jackson 2017) while others can see it as a sign of oppressive power when deployed in the spaces, they police (ACLU 2014). Beyond this observation, the workload created by incarcerated individuals on police participation in the 1033 program showed some signs of influencing police decisions to participate, however this was not consistently statistically significant across the different models developed during this research.

The relatively poor overall performance of the global model may be connected to a mismatch between the scale of this analysis (county) and the scale of the decision-making process about 1033 (the LEA). For example, some LEAs encompass multi-county regions, others only have jurisdiction over small, localized areas. There may have also been other variables that would have more explanatory power (income inequality, etc.). Additionally, the highly polarized nature of this topic may have also influenced the performance of the model and the lack on variables such as voting patterns and relative conservative and liberal make of the counties may have hampered the model's performance. Excluding variable selection, the assumed linearity in the variables may have masked relationship that would have been visible through other non-linear methodologies. In combination, these issues may have limited the performance of the models in general.

5.2 Conclusions

With the creation and expansion of groups like "Black Lives Matter" and others following the events in Ferguson, MO how does the exploration of spatial patterns in police militarization help police improve their relationships within the communities they serve? Contemporary research into police militarization has focused on identifying the signs of and the response to police militarization, without little regard for what drives the process. This approach has created a homogenized picture of police. Kraska's four-dimensional military model highlights this idea that police are singularly militarized, with all police falling somewhere on a continuum of low to high militarization (2007). My research attempts to move away from identifying the signs of police militarization and focuses instead on what drives police to adopt military practices. The operational mandate of police to maintain control of certain defined geographic jurisdictions, means that they are tightly connected to the communities they serve. The understanding of this spatial connection is the basis of this research, with the acquisition of military equipment serving as a quantitative measure of the weight a community brings to bear on police decision making.

On the whole academic work on police behavior and practices has fallen into two broad categories. The first is an exploration of the police as a homogenized group that are the same whether they patrol the streets of Los Angeles or the back-country roads of a rural Texas county. The second are studies where individual departments are analyzed, with the resulting findings being represented as a window into the inner workings of all police regardless of location. While there is a defined subculture within police across the nation (Herbert 1998), this "Thin Blue Line" is not spatially the same across the ground with different priorities creating subtle differences between police agencies. The results of the statistical and spatial modeling from this exploration of militarism provides a view of the variety within police.

There is no argument formed in this research that attempts to disavow the existence of a unique police sub-culture in U.S. and in fact this idea is embraced as an important factor in understanding police behavior. The "Thin Blue Line" culture developed through shared experiences allows for police to interact as peers regardless of where they patrol geographically. This brotherly/sisterly bond is not limited to just interactions between U.S.

police officers, with the creation of groups like the International Association of Police Chiefs and International Police Association adding credence to the idea that police a universally the same regardless of geographic location. This idea starts to fall apart as a deeper examination of police organization and mission shows how different agencies and the officers who work for them can be. Perhaps the best indication of this difference is a comparison of workload between a rural sheriff's office and a metropolitan police department. The high call volume in the police department means that they solve issues quickly and decisively in order to move on to the next call these officers are often operate with the knowledge that back up officers are only minutes away. In contrast rural Sheriff's deputies operating under lower call volumes and under an elected official often take greater time at each call using de-escalation techniques to calm the parties. As I have found from experience in a rural Sheriff's Office supporting officers were often greater that thirty minutes away requiring greater reliance on verbal tactics.

This variation in officer behavior can serve as an indication of the markedly different mission and operational structures of the various LEAs. The observations from the GWR using the GGM appear to support the idea that while police do have a unique subculture their operational behavior and decisions may not be universally driven by it. If you use the decision to acquire 1033 equipment as a measure of spatially homogeneous decision making among police, then the results of this research's GWR shows that police behavior varies greatly across the nation. Perhaps the greatest indication of the variation is the dramatic differences seen in the influence of the explanatory variables in the GGM as explored in the GWR. Population has repeatedly been statistically significant in both the OLS regression using both the GGM and TN Crime model, however in the GWR its influence varies greatly spatially. Regional concentrations of different levels of influence provided by population are visible throughout the GWR results, with positive correlations between increased population and increased program participation seen across the majority of the U.S. This is not universal with the Southwest U.S. and Middle Florida showing a negative correlation where police participation in the program drops in response to increases in population. This was a surprising observation as the areas of negative correlation included major and fast-growing population centers of Los Angeles, San Diego, Las Vegas, Phoenix, Orlando, and Tampa Bay. This finding helps to illustrate that police do vary spatially.

When the Walla Walla County, Washington Sheriff Mark Crider decided to acquire a new MRAP armored vehicle through the 1033 program this summer (Thornton 2019) his primary justification was financial. The discussions of financial benefits of using the 1033 program it is often stated that the equipment is free, however this is not an accurate assessment of the program. While there is no cost for the equipment, the agency acquiring the equipment is responsible for the cost of shipping associated with the acquired equipment. Spatially, agencies that are located nearer to DOD storage depots should incur a lower fee for acquiring military equipment than their more distant counterparts. The results of the modeling show there is some evidence to indicate that program usage does increase among agencies that are nearer to the depots. In the case of Sheriff Crider's acquisition, the cost of shipping was a large part of the decision whether or not to acquire the vehicle. In his case local businessmen stepped in and funded the shipping cost for the vehicle ultimately creating a true no cost acquisition.

Perhaps the most used justification for the adoption of military equipment more so than cost is that of officer and community safety. While the message from the law enforcement community has morphed since Ferguson from officer safety to one of community safety the intent is still the same, police continue to want this equipment for protection. Whether it's for de-escalation as Sheriff Crider suggested or to support backcountry rescues in Bonner County, Idaho (Bateman 2019) protection is the primary justification provided by law enforcement. The justification for police agencies immediately following the events in Ferguson centered around officer safety and that was the focus of this research. With assaults on officers as the measure there appears to be a strong indicator of the 1033 program usage and in return supports the safety justification provide by agencies. However, this is not universal and the positive relationship between increased officer assaults and increased 1033 usage varies greatly across regions indicating that officer safety by itself does not explain the adoption of militarized equipment.

Given the spatial difference among police, factors such as financial means of individual departments begin to take on a new level of interest in understanding why police adopt militarized processes.

5.3 Significance of the Research

With the operational mandate for police to maintain control of certain defined geographic jurisdictions it's hard to ignore that the county has a major role in police policy. However, law enforcement executives often ignore or fail to understand the importance the structure of a community has on their decision-making process. Throughout this project, the community unrest about policing in Ferguson and elsewhere served as the backdrop for this research. For the police executive considering the need for military style equipment in the wake of Ferguson this research provides an analytical look at the influences that have affected other agencies across the nation. It should serve as a tool for agency leaders to improve their understanding of and communication with the communities they serve. For academic researches the project provides a starting point from which to begin further research. This project was intended to be a starting point from which geographers could take up Fyfe's (1991) call for quantitative research on policing. It should also serve as a tool to show the value of spatial methods for understanding social interactions beyond just policing.

5.4 Limitations and Future Research

This project was created to fill a void in the spatial understanding of police behavior, through the lens of the ongoing militarization of American police. This project delved into a quantitative area in geography that has for the most part been relatively unexplored, however the project relied on conventional spatial and statistical analytic processes. With that in mind, there are three major limitations in this study that could be addressed in future research on the topic. The first and perhaps the most interesting in the terms of future research was the lack of previous spatial quantitative research on police behavior. The second possess the most issues in regard to continued research on the police militarization is access to high quality data. Finally, the influence of cultural and personal bias on the selection of variables and the interpretation of the resulting analytical processes.

5.4.1 Lack of Foundational Research

As discussed in the literature review, regular spatial research into policing issues has for the most part revolved around the crime analysis with little attention being given to understanding how geography effects police behavior. Fyfe (1991) makes a compelling

argument that geographers should be heavily invested in the study of police, which unfortunately failed to draw in those researchers that could have greatly improved the understanding of police behavior. As mentioned before this lack of past research created a void in understanding that this project was intended to begin to fill.

However, the lack of previous spatial research on the topic meant that this project was limited in that there were no previous research frameworks to start from. The lack of tested analytical processes from which to begin the spatial study of police required the identification of not only useable datasets but also statistical and spatial processes that would provide interpretable results. While this limited the dept of this research it opens an exciting opportunity for future research. Hopefully, this project can serve as the basis for future quantitative research to go beyond just the study of police militarization.

5.4.2 Limitation in Available Data

Data quality was an extremely limiting factor in the results of this research. Both the dependent and explanatory variables. The most dramatic of the data issues was seen in the 1033 program datasets, with a number of issues being identified as the research progressed. The second data related limitation surrounded the lack of usable crime data that is consistent across the nation.

5.4.2.1 LESO Program Data

Following the events in Ferguson, MO, President Obama mandated the release of information on law enforcement usage of the 1033 program. In response the Defense Logistics Agency (DLA) through the Law Enforcement Support Office (LESO) made available two datasets containing usage information on the 1033 program. The first dataset was produced directly in response to this presidential requirement for public visibility. The second dataset produced by DLA was a quarterly update of program usage from 1990 through the quarter in which it is published. These two datasets while similar do have some significant differences that make their use in evaluating not only the overall usefulness of this controversial government program difficult.

The first dataset was made public via National Public Radio (NPR) following the outcry over the police response to the civil disturbances in Ferguson, MO. This dataset

contains a list of equipment acquired by law enforcement agencies (LEAs) along with the quantity of the acquired equipment and the original cost incurred by the Department of Defense (DOD) for each item. It covers a limited time, only containing program usage information from 2006 through mid-2014. LEA acquisitions in this dataset are aggregated by the county in which the LEA is located and uses specific Federal Information Processing Standards county codes (FIPS codes) as a means of identifying each county. In addition, the item's National Stocking Number (NSN), Federal Supply Code (FSC), nomenclature, and demilitarization codes are also included in this dataset.

The second dataset set contains the same NSN, FSC, nomenclature, demilitarization codes, quantity, and original cost information as the first dataset, however it is based on an entirely different time scale. This dataset is updated quarterly and contains usage data dating back to 1990. No aggregation process is undertaken in this dataset, instead the LEA that acquired the items is listed for every transaction between LEA and the 1033 program. Since no aggregation process was completed there is no location information beyond the state in which the LEA is located.

While both 1033 program datasets have unique issues that make both program and policing analysis difficult, there are also larger DOD and DLA processes that affect both the published datasets. This first issue that effects these datasets is the naming convention used by the DOD to describe equipment. This system attempts to break down an item's name so that its basic form comes first, followed by descriptive information. Under this naming convention a 4-inch-wide paint brush would be listed by the DOD as a "brush, paint 4 inch." When used to describe items that are familiar to most people this system is not difficult to understand and in fact allows the user to quickly organize like items together without being burdened with item descriptors. However, when a non-military user is faced with military specific items the descriptive ability of this system breaks down. For example, in the first dataset a LEA was issued a "mount, vehicle, M16/M14," from this description it can be surmised that this item is a mount used to hold a M16 or M14 service rifle for use on a vehicle. To a non-military researcher this description might bring up images of soldiers manning weapons systems on top of military vehicles and lead to the impression that the item is used to mount weapons to the top of a vehicle. However, this piece of equipment is

far more mundane, since neither the M16 nor the M14 service rifles are designed to be mounted weapon systems this item cannot be used to employ these weapons from a vehicle. In fact, this item is a simple holder used store these weapons, so soldiers are not encumbered while operating a military vehicle. This naming convention is used in both datasets without the benefit of any further description being provided for the issued items. Researchers not familiar with the military might find this naming convention hampers their efforts to discern which items are of importance for their research.

The larger and more severe problem for both datasets and the program in general is the DLA's system for tracking 1033 program usage. This is a system so plagued with inconsistencies that the only constant in the system is the inconsistencies. How issued items are tracked may be the best example of how inconsistent DLA practices are, with only certain major items such as; aircraft, watercraft, vehicles, weapons, and night-vision equipment being tracked permanently. All other items such as uniforms, batons, and office equipment are only tracked by DLA for roughly one year from the date issued. However, it is not uncommon to find these non-major items in the datasets listed for periods greater than one year before being deleted. To make matters worse DLA provides no clearly defined list of what items are to be tracked long term. DLA instead provides vague guidance on what is to be accounted for and leaves the process of accounting for issued equipment to the 50 plus state and territorial coordinators. This means that datasets produced by DLA are based on 50 plus different accountability standards, for example, DLA requires that all weapons are permanently tracked, but in some states individual weapons components like firing pins are also tracked long term, while in other states only the weapons themselves are tracked. Since DLA relies on these state level reports for accountability, the datasets created by DLA contain information that artificially inflates or deflates the amount of program usage by LEAs.

Beyond these larger program issues the two datasets have their own inherent problems. For the first dataset, the most glaring of the issue is that it is no longer available or maintained through the DLA, however it is still available through the NPR website. Other issues with this dataset are a result of the county level aggregation process that was used, in which items were listed by county where the receiving LEA was based. This

process makes it impossible to discern a number of items of interest to researchers. The first is that identifying which LEAs receive which piece of equipment is impossible without contacting each agency individually. The second issue revolves around LEAs whose jurisdiction extends beyond a single county boundary; here we see artificially inflated usage values in counties where these LEAs are headquartered. This is most often seen with state agencies where their headquarters is located in the same county as the state capital. This causes a spatial mismatch where all items issued to state agencies appear to be located in a single county when in fact, they may be located in agency offices throughout the state. This issue is not unique to state agencies and appears in smaller agencies where their jurisdiction crosses county lines like; transit and school district LEAs. At the federal level a similar phenomenon occurs as all acquired equipment is listed as being located at the major field offices. Here again items are listed in the county in which the field office is located regardless of where the item physically is.

The second dataset avoids the problems of the first by accounting for items by the agency that requested them however, this dataset is not without its own issues. The first issue is closely related to the overall accountability process of the 1033 program. With each quarterly update of this dataset items are both added and removed based on DLA's accountability process. Looking at any single quarterly update provides only a snapshot in time in which one county may show a large number of acquisitions while another county may only show a few acquisitions. Since many items are no longer tracked after a year the program usage between these two counties may in fact be completely opposite of what it appears in the report. Another related issue is that of equipment transfers and returns, LEAs are allowed through the program to transfer equipment to other agencies and in some cases, they do return equipment to DLA. These transfers and returns are not visible in any single quarterly update as in the case of transfers the equipment is simply listed as belonging to the LEA that received it with no connection to the agency that transferred the item, for returns the item simply no longer exists regardless of how long an agency used it. The final issue with this dataset is a spatial one, with the only location information on the individual LEAs being the state in which they operate. This limits any spatial analysis of the information to the state level. With well over 20,000 LEAs across the United States manually connecting

individual LEAs to their specific jurisdiction or county would be an extremely labor-intensive operation.

5.4.2.2 1033 Program Data Management Solutions

While both the program and the two datasets have issues that affect research into either police militarization or policing in general there are ways to mitigate these effects. Dealing with poor 1033 program accountability is more difficult to mitigate since DLA is operating within the guidelines set by the DOD. Addressing the DOD naming convention issue is much simpler with the use of the available NSN and FSC, here the user can quickly subset the DLA data into categories that are easier to understand. Take for example FSC 1005 "Guns, through 30mm," this sub-category would contain all weapons and related equipment that are 30mm or smaller to include the M16 and M14. This leaves only a few items that do not have either an NSN or FSC to manually assign to FSC sub-categories.

Addressing the individual dataset issues is a different matter entirely. The first dataset is effectively a single temporal and spatial snapshot of the program from 2006 to mid-2014. Since the data was aggregated to the county level and there is no reasonable way to disaggregate the data to the agency level this dataset has become a fixed point. The first datasets issues are unfortunately not reasonably corrected and so must be acknowledged in any research developing from its use. Mitigation of the issues found the in second dataset while difficult, are more feasible. Addressing the lack of spatial information is possible through the connection of the individual LEA with their Originating Agency Identifier (ORI) this is a number unique to every LEA in the U.S. and used across law enforcement and are used to identify agencies in both FBI Uniform Crime Reports (UCR) and the records maintained in the National Crime Information Center (NCIC). The Law Enforcement Agency Identifiers Crosswalk (2012) produced by the Inter-University Consortium for Political and Social Research provides the information need to directly connect the LEA name to the county in which they are located. The crosswalk directly connects ORI to individual LEAs along with their agency name and location information including the associated FIPS code. Connecting the ORI to the agency name in the quarterly report is not a simple process as the quarterly DLA datasets do not contain the ORI however the creation of an automated name comparison process would allow for the connection between agency

name and location through comparison with the crosswalk and dataset agency names. This process would not be limited to the exploration of DLA information, having a larger application in areas of data mining surrounding other policing activities. Addressing the item accountability issue is far more straight-forward, since no single quarterly update provides a clear picture of program usage each update must be compared against the previous update to identify changes in agency participation. Here again an automated comparison process is appropriate, again using ORI as the key identifier to compare the list of assigned items for each agency between each quarterly period. In this way analysis of 1033 program usage over time becomes possible.

Perhaps the most striking of the issues with either dataset, is accessibility. While the first dataset is still readily available through the NPR website (https://www.npr.org/2014/09/02/342494225/mraps-and-bayonets-what-we-know-about-the-pentagons-1033-program) and through the MPM Project's website (mpm_project.org), the second dataset is no longer publicly accessible through the DLA or LESO websites. These changes require all future research into the subject to use the currently available data or rely on access to new data through the Freedom of Information Act. This lack of access compounds the already problematic issue of accountability in the current datasets. Without the ability to compare quarterly datasets, the movement of items within the program is almost impossible to track. This greatly weakens the explanatory value of the 1033 usage data.

5.4.2.3 Crime Data

Police behavior is and has always been closely tied to the level of crime within their jurisdictions, and this makes the inclusion crime statistics an almost mandatory item in any study of police behavior. Within the US, the FBI's Uniform Crime Report (UCR) is the primary source of this crime data. While the UCR provides a wealth of information, it does present significant issues for researchers who want to use it in any spatial analysis process. The FBI receives crime data from individual law enforcement agencies on an annual basis. This data is then made available to general public at only five geographic scales the nation, state, county, metropolitan statistical areas, and agency jurisdiction. While on the surface

this is a comprehensive list, it is unfortunately misleading, with the quality of the data and the process by which the data is aggregated greatly limiting its use in spatial research.

UCR data quality is perhaps the most damning issue surrounding its use in research. The crime data used in the UCR reports is self-reported by the agencies who responded to the individual crimes. The problem arises from this in that there is not true obligation for agencies to report. Additionally, the FBI has no way to punish those agencies who fail to report and instead leaves the management of reporting to the individual states. This requires researchers to make certain assumptions about the UCR data; one that crime data was consistently reported during the study period and two that the crime reporting was assessed and assembled the same way by all the reporting agencies within the study area.

The data aggregation process is also problematic for spatial research involving crime data at a scale below of the individual state. This issue revolves around the jurisdictional boundaries of different types of agencies. While data is reported by individual agencies within a state, the process of aggregating that data to smaller scales such as a county means that any agency with a jurisdiction that crosses the establish spatial scale must be either accounted for or eliminated from the dataset. The process used to manage this issue, as listed in the Department of Justice's UCR Handbook, is to have agencies like the State Police to report UCR crimes to the sheriff or police department in which jurisdiction the crime occurred. However, this process is contradicted in the UCR Program Data [United States]: County-Level Detailed Arrest and Offense Data codebooks which lays out that while some states follow the handbook process, others either have the state police data excluded from the report or they aggregate multi-jurisdictional agencies data to a unique county code that is not connected to any real location.

The inconsistency creates a possible false picture of the spatial nature of crime across a study area. Take for example crime data at the county level for Texas, in particular crime data reported by the Texas Department of Public Safety (TXDPS). This agency's jurisdiction is the entire state and they are often the responding agency for crimes that occur in rural areas of the state. In terms of UCR reporting if that data is ignored it gives a false indication of the levels of crime in rural areas of the state. This is of considerable concern

for this research as the 1033 program was founded to support the war on drugs and agencies like the TXDPS are the primary drug interdiction forces in many states.

An additional issue with UCR crime data is far less observable, as there is no requirement for reporting there is also no requirement or standard for how UCR data is assembled at the agency level. The majority of law enforcement agencies have adopted electronic record management systems (RMS) to maintain the massive amounts of information generated in the course of their daily activities. These systems have been immensely helpful in improving the access to information be it for criminal investigations or for research, however there is an inherent issue with RMSs when it comes to the production of UCR style statistics. Many of the RMS software programs automate the UCR process leaving the operator to simply request the UCR report from the software and wait for the results. The issue for researchers becomes how do these systems calculate the results and how do police administrators interpret those same results.

For this project the recognition of these issues limited the use of crime data as an explanatory variable within the development of the models. The quality of available crime data was such that only one state could be used and that was limited to a sub-model within the larger project. This limited the sample size to only ninety-five counties and limited its usefulness in explaining the highly regionalized variation that was seen at the national scale in the models without the crime data.

5.4.3 "Thin Blue Line" Bias

From the earliest days of the police academy, recruits are instilled with the idea that they must protect each other on the streets. As one of my academy instructors stated; "if an officer gets into trouble it will rain police." There was no discussion if the officer in trouble was in the right or wrong, only that they are fellow officer and needed help. While comical in its delivery, it does show that there is an under lying "us-versus-them" attitude among police that is developed very early on in an officer's career. Once an officer has left the academy and finds themselves in life and death situations with other officers on a daily basis this attitude is reinforced. This attitude does not simply disappear when an officer leaves the badge behind and changes professions. For an officer entering the academic area, this us-

versus-them attitude has the potential to manifest itself as a "Thin Blue Line" bias in which the researcher looks for and finds only the positives in the police.

This bias has the potential to severely damage any research done by former/current officers into matters involving police policies or practices. As a current officer, I was not immune from this form of bias and several steps were taken to prevent its effects on this project. The first of these was to establish an analytical process that limited the influence of this bias. The stepwise regression process was chosen as the model selection tool for just this reason. The variables included for selection in the stepwise process were developed from recognized academic research as being either influential in the militarization process or on police behavior in general.

The second approach for limiting the influence of "Thin Blue Line" bias was my personal approach to assessing the model findings. There is considerable evidence to support the assessment that police are in fact becoming more militarized. With that in mind, this project moved forward with the intent of finding the spatial factors that influenced police militarization. The purpose of this process was to develop insight into the militarization process that could be used by law enforcement leaders to either mitigate the process or better explain the need to the communities they serve.

5.4.4 Future Research

As this project is only an initial foray into the study of police militarization by geographers the potential for future spatial research on both this topic and policing policy is almost unlimited. The large amount of available data that describes both the communities and the police supports significant future quantitative research. However, the lack of spatially consistent crime data limits future research. In taking this research forward a focus on the improved inclusion of crime data into the model development process should be a priority. Without the inclusion its influence on police behavior any research into spatial influences on militarization will always be limited. In a similar fashion, the closed off nature of police make qualitative research limited. It should be argued that future geographic research into policing should endeavor to adopt a mixed methods approach in which in-depth ethnographic work is combined with spatial analytical methodology. There are already several voices calling for this type mixed method research within the fields of criminal

justice (Brent and Kraska, 2010) and it should be expected that geographers interested in the spatial nature of policing should also consider these approaches. For this project specifically, improved qualitative models that address the mentioned limitations of this research should be undertaken. This should include the testing of the models against the findings of interviews with police leadership from an area that includes a variety of types of agencies.

REFERENCES

ACLU Foundation. 2014. "War Comes Home: The Excessive Militarization of American Policing."

Agnew, John A. 1987. *Place and politics: the geographical mediation of state and society*. Boston: Allen & Unwin..

Ajilore, Olugbenga. 2015. "The Militarization of Local Law Enforcement : Is Race a Factor ?" *Applied Economics Letters* 22 (13): 1089–93.

Allen, James P., and Eugene Turner. 2012. "Black-White and Hispanic-White Segregation in U.S. Counties." *Professional Geographer* 64 (4): 503–20. https://doi.org/10.1080/00330124.2011.611426.

Anselin, Luc. 2009. Spatial regression. In *The SAGE Handbook of Spatial Analysis.* A. S.Fotheringham and P. A. Rogerson, editors., 255–275. SAGE Publications: Los Angeles.

Balko, Radley. 2014. *Rise of the Warrior Cop, The Militarization of America's Police Forces*. 1st ed. New York: Public Affairs.

Banks, Duren, Joshua Hendrix, Matthew Hickman, and Tracey Kyckelhahn. 2016. "National Sources of Law Enforcement Employment Data." https://www.bjs.gov/content/pub/pdf/nsleed.pdf.

Bateman, Mandi. 2019. "SHERIFF'S HUMVEE HELPS COMMUNITY IN MANY WAYS." *Bonner's Ferry Herald*, https://www.bonnersferryherald.com/local_news/20190801/sheriffs_humvee_helps_community_in_many_ways.

Bernstein, Susie, Lynn Cooper, Elliott Currie, Jon Frappier, Sidney Harring, Tony Platt, Pat Poyner, Gerda Ray, Joy Scruggs, and Larry Trujillo. 1975. *The Iron Fist and the Velvet Glove: An Analysis of the US Police*. Berkeley, CA: Center for Research on Criminal Justice. http://bit.ly/2BviPXD.

Bidanset, B Y Paul E, and John R Lombard. 2014. "The Effect of Kernel and Bandwidth Specification in Geographically Weighted Regression Models on the Accuracy and Uniformity of Mass Real Estate Appraisal." *Property Tax and Assessment Administration* 10 (3): 5–14.

Bittner, E.. 1970, The Functions of the Police in Modern Society, National Institute of Mental Health, Center for Studies of Crime and Delinquency, Rockville, MD.

Bivand RS, Pebesma E, Gomez-Rubio V. 2013, *Applied spatial data analysis with R, Second edition*. Springer, NY. http://www.asdar-book.org/.

Blalock, Herbert. 1967. Toward a Theory of Minority-Group Relations. New York: John Wiley.

Bove, Vincenzo, and Evelina Gavrilova. "Police Officer on the Frontline or a Soldier? The Effect of Police Militarization on Crime." *American Economic Journal. Economic Policy* 9.3 (2017): 1-18.

Brent, J.J. & Kraska, P.B., 2010. Moving Beyond our Methodological Default: A Case for Mixed Methods. *Journal of Criminal Justice Education*, 21(4), pp.412–430.

Brunsdon, Chris, Stewart Fotheringham, and Martin Charlton. 1998. "Geographically Weighted RegressionÐmodelling Spatial Non-Stationarity," *The Statistician* 47:431–443.

Brunson, Rod K. 2007. "'Police Don't like Black People': African-American Young Men's Accumulated Police Experiences." *Criminology & Public Policy* 6 (1): 71–101. https://doi.org/10.1111/j.1745-9133.2007.00423.x.

Burkhardt, Brett C, and Keith Baker. 2019 "Agency Correlates of Police Militarization: The Case of MRAPs." *Police Quarterly* 22.2: 161-91.

Carr, Patrick J., Laura Napolitano, and Jessica Keating. 2007. "We Never Call the Cops and Here Is Why: A Qualitative Examination of Legal Cynicism in Three Philadelphia Neighborhoods." *Criminology* 45 (2): 445–80. doi:10.1111/j.1745-9125.2007.00084.x.

Crawford, Charles E., ed. 2010. *Spatial Policing: The Influence of Time, Space, and Geography on Law Enforcement Practices*. Durham, NC: Carolina Academici Press.

Delehanty, Casey, Jack Mewhirter, Ryan Welch, Jason Wilks, Major Howard, Bunny Colvin, and The Wire. 2017. "Militarization and Police Violence : The Case of the 1033 Program" 13688. https://doi.org/10.1177/2053168017712885.

Desmond, M., Papachristos, A.V. and Kirk, D.S., 2016. Police violence and citizen crime reporting in the black community. *American Sociological Review*, *81*(5), pp.857-876.

Drug EnforcementAdministration. 2017. "DEA Mission Statement." https://www.dea.gov/about/mission.shtml.

Durr, Marlese. 2015. "What Is the Difference between Slave Patrols and Modern Day Policing? Institutional Violence in a Community of Color." *Critical Sociology* 41 (6): 873–79. doi:10.1177/0896920515594766.

Enloe, Cynthia. 2004. *The Curious Feminist, Searching for Women in a New Age of Empire*. Berkeley, CA: University of California Press.

Epp, Charles R., Steven Maynard-Moody, and Donald Haider-Markel. 2014. *Pulled Over, How Police Stops Define Race and Citizenship*. Chicago: University of Chicago Press.

Ferrandino, J., 2015. Minority Threat Hypothesis and NYPD Stop and Frisk Policy. *Criminal Justice Review*, 40(2), pp.209–229.

Fisher, Jim. 2010. *SWAT Madness and the Militarization of the American Police*. Santa Barbara, CA: Praeger.

Fotheringham, A. S., M. E. Charlton, and C. Brunsdon. 1998. "Geographically Weighted Regression: A Natural Evolution of the Expansion Method for Spatial Data Analysis." *Environment and Planning A* 30 (11): 1905–27. doi:10.1068/a301905.

Fotheringham, A Stewart, and Peter A. Rogerson, eds. 2009. "Geographically Weighted Regression." In *The SAGE Handbook of Spatial Analysis*, 243–54. http://dx.doi.org/10.4135/9780857020130.n13.

Fyfe, N. R. 1991. "The Police, Space and Society : The Geography of Policing." *Progress in Human Geography* 15 (3): 249–67. doi:10.1177/030913259101500301.

———. 1992. "Space, Time, and Policing: Towards a Contextual Understanding of Police Work." *Environment and Planning D: Society and Space* 10 (4): 469–81. doi:10.1068/d100469.

———. 1995. "Policing the City." *Urban Studies (Routledge)* 32 (4/5): 759–78. doi:10.1080/00420989550012870.

Harris, Park, Bruce, and Murray. "Peacekeeping Force: Effects of Providing Tactical Equipment to Local Law Enforcement." *American Economic Journal. Economic Policy* 9.3 (2017): 291-313. Web.

Herbert, Steve. 1997. "Territoriality and the Police." *The Proffesional Geographer* 49 (1): 86–94. doi:10.1111/0033-0124.00059.

———. 1998. "Police Subculture Reconsidered." *Criminology* 36 (2): 343–70. doi:10.1111/j.1745-9125.1998.tb01251.x.

Hill, Stephen, Randall Beger, Stephen Hill, and Randall Beger. 2017. "A Paramilitary Policing Juggernaut" 36 (1): 25–40.

Jackson, Thomas. 2017. *Policing Ferguson, Policing America: What Really Happened—and What the Country Can Learn from It*. New York: Skyhorse.

Johnson, Thomas C., and J. Andrew Hansen. 2016. "Law Enforcement Agencies' Participation in the Military Surplus Equipment Program." *Policing* 39 (4): 791–806. https://doi.org/10.1108/PIJPSM-03-2016-0035.

Johnson, Shane D., Rob T. Guerette, and Kate Bowers. 2014. "Crime Displacement: What We Know, What We Don???t Know, and What It Means for Crime Reduction." *Journal of Experimental Criminology* 10 (4): 549–71. doi:10.1007/s11292-014-9209-4.

Koslicki, Wendy M, and Dale Willits. 2018. "The Iron Fist in the Velvet Glove? Testing the Militarization/community Policing Paradox." *International Journal of Police Science & Management* 20.2, 143-54.

Kraska, Peter B. 2007. "Militarization and Policing—Its Relevance to 21st Century Police." *Policing*, 1–13. doi:10.1093/police/pam065.

Kraska, Peter B., and Louis J. Cubellis. 1997. "Militarizing Mayberry and Beyond: Making Sense of American Paramilitary Policing." *Justice Quarterly* 14 (4): 607–29. doi:10.1525/sp.2007.54.1.23.

Kraska, Peter B., and Victor E. Kappeler. 1997. "Militarizing American Police: The Rise and Normalization of Paramilitary Units." *Social Problems* 44 (1): 1–18. doi:10.1525/sp.1997.44.1.03x0209a.

Lee, W.L.M. 1901. *A History of Police in England*. London: Methuen & CO.

Lemanski, C. 2006. "Spaces of Exclusivity or Connection? Linkages between a Gated Community and Its Poorer Neighbour in a Cape Town Master Plan Development." *Urban Studies* 43 (2): 397–420. doi:10.1080/00420980500495937.

Lichter, D. T., Parisi, D., Grice, S. M., & Taquino, M. C. 2007. National Estimates of Racial Segregation in Rural and Small-Town America. *Demography*, *44*(3), 563–581. Retrieved from http://muse.jhu.edu/journals/demography/v044/44.3lichter.html

Lowman, John. 1986. "Conceptual Issues in the Geography of Crime : Toward a Geography of Social Control" 76 (1): 81–94.

Maltz, M., & Targonski, D. 2002. A Note on the Use of County-Level UCR Data. *Journal of Quantitative Criminology*, *18*(3), 297–318. https://doi.org/10.1023/A:1016060020848

Marston, Sallie a. 2010. "WHO'S POLICING WHAT SPACE? CRITICAL SILENCES IN STEVE HERBERT'S *POLICING SPACE*." *Urban Geography* 18 (March 2015): 385–88. doi:10.2747/0272-3638.18.5.385.

Mont. Code Ann. § 7-32-401 (2015), http://leg.mt.gov/bills/mca/title_0070/chapter_0320/part_0040/section_0010/0070-0320-0040-0010.html

Mont. Code Ann. § 7-32-402 (2015),
    http://leg.mt.gov/bills/mca/title_0070/chapter_0320/part_0040/section_0020/0070-
    0320-0040-0020.html

Moule, Richard K, et al. "The Long Shadow of Ferguson: Legitimacy, Legal Cynicism, and
    Public Perceptions of Police Militarization." *Crime & Delinquency*, vol. 65, no. 2,
    2019, pp. 151–182.

Obama, Barrack. 2015. "Community Policing Speech."
    https://obamawhitehouse.archives.gov/the-press-office/2015/05/18/remarks-president-
    community-policing.

Öcal, Nadir, and Jülide Yildirim. 2010. "Regional Effects of Terrorism on Economic
    Growth in Turkey: A Geographically Weighted Regression Approach." *Journal of
    Peace Research* 47 (4): 477–89. doi:10.1177/0022343310364576.

"Office of National Drug Control Policy." 2017. https://www.whitehouse.gov/ondcp.

Paasche, T. F., R. Yarwood, and J. D. Sidaway. 2014. "Territorial Tactics: The Socio-Spatial
    Significance of Private Policing Strategies in Cape Town." *Urban Studies* 51 (8):
    1559–75. doi:10.1177/0042098013499084.

Pridemore, William Alex. 2005. "A Cautionary Note on Using County-Level Crime" 9 (3):
    256–68. https://doi.org/10.1177/1088767905277202.

Peet, Richard. 1975. "The Geography of Crime: A Political Critique." *The Professional
    Geographer* 27 (3): 277–80.

Radil, S.M., R.J. Dezzani, and L.D. McAden. 2017. "Geographies of U.S. Police
    Militarization and the Role of the 1033 Program." *Professional Geographer* 69 (2).
    doi:10.1080/00330124.2016.1212666.

Rahr, Sue, and Stephen k. Rice. 2011. "From Warriors to Guardians: Recommitting
    American Police Culture to Democratic Ideals." *New Perspective in Policing* March
    (2010): 1–20.

Reardon, S. F., & Firebaugh, G. 2002. Measures of multigroup segregation. Sociological Methodology, 32(1), 33–67. doi:10.1111/1467-9531.00110

Smith, Douglas A. 1986. "The Neighborhood Context of Police Behavior." *Crime and Justice* 8 (1986): 313–41. doi:10.1086/449126.

Stead, Philip John. 1985. *The Police of Britain*. New York: Macmillan.

Taylor, David. 1997. *The New Police in Nineteenth-Century England: Crime, Conflict and Control*. Manchester, UK.

Tita, G.E. and Radil, S.M., 2010. Making space for theory: the challenges of theorizing space and place for spatial analysis in criminology. *Journal of Quantitative Criminology*, *26*(4), pp.467-479.

Travis III, Lawrence F., and Robert H. Langworthy. 2008. *Policing in America, A Balance of Forces*. Upper Saddle River, NJ: Pearson/Prentice Hall.

U.S. Census Bureau 2009. *Design and Methodology, American Community Survey*. U.S. Government Printing Office, Washington, DC.

U.S. Census Bureau. 2017. "Geographic Terms and Concepts - Census Tract." https://www.census.gov/geo/reference/gtc/gtc_ct.html.

Williams, Phil. 1998. "The Nature of Drug-Trafficking Networks." *Current History* 97:154–59.

Yarwood, R. 2007. "The Geographies of Policing." *Progress in Human Geography* 31 (4): 447–65. doi:10.1177/0309132507079500.

Yarwood, Richard, and Till Paasche. 2015. "The Relational Geographies of Policing and Security." *Geography Compass* 9 (6): 362–70. doi:10.1111/gec3.12216.