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# From Small Towns to Large Cities: A Comparative Study Looking at the Factors Affecting Homicide Clearance Rates in Two Types of Colorado Geographic Areas

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From Small Towns to Large Cities: A Comparative Study Looking at the Factors  
Affecting Homicide Clearance Rates in Two Types of Colorado Geographic Areas.

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## **Introduction**

Over the last 25 years the number of arrests made in connection to homicides has severely diminished in the United States. This alludes not to a decrease over all in homicide rates, but rather to a decline in clearance rates, or the calculation made by dividing the number of crimes solved but the total number of crimes recorded. Recent research has found that the national clearance rate of homicides from 1961 to 1996 declined from 94% in 1961 to 67% in 1996 (Riedel, 1995; Wellford and Cronin, 1999). In addition, the murder arrest rate was at its lowest level in at least two decades in 2010 (Bureau of Justice Statistics, 2013). Clearance rates are important to consider because in general they are used to indicate the arrest of the most probable suspect of a crime, which in the case of homicide denotes that a murderer is off the street. Also the public's trust in the police lies heavily in how well law enforcement is perceived by the people to be doing their job. A community is less likely to trust the police if their clearance rate of violent cases is very low because that seems to imply that the members of the police aren't adequately doing their job.

Because this is such a new field of study, there is a relatively small body of research on the subject of homicide clearance rates. This means that there is a falling homicide clearance rate, and limited evidence to indicate why. Because of this, the focus of many researchers in the past years has been to try to identify any factors related to a homicide case that could affect the likelihood of clearance.

While clearance rates have dropped nationally, the clearance rates of individual jurisdictions substantially vary (Wellford & Cronin, 1999). The logical

next step for future research is to figure out what is causing the variation in these individual places. Is it the features of the geographic location itself, specific victim/crime characteristics, aspects of a police investigation, or another factor that has yet to have been proposed? This research will attempt to investigate how extralegal characteristics of the victim and crime such as age, sex, race and weapon can influence whether or not a case gets solved. In addition to investigating what individual victim characteristics make a difference when solving a case, I also plan to look at how the population within a specific law enforcement jurisdiction affects the influence of these factors, especially in terms of large cities as compared to smaller geographic areas. In the conclusion section I will talk about the difficult question of why some of these patterns are occurring and what different scholars have offered in terms of explanations. By doing all of this I hope to add to the current body of research and provide a fresh new angle on this frustrating topic.

### **Literature Review**

One of the most important things in the criminal justice system is the arrest of the suspect. Without the arrest, none of society's agreed upon forms of punishment can be applied, and no one will learn anything from their wrongdoings. According to Beccaria's deterrence theory, deterrence "is designed to prevent crime in the general population. Thus, the state's punishment of offenders serves as an example for others in the general population who have not yet participated in criminal events" (Beccaria, 1764/1963). In their article "Decide your time: Testing deterrence theory's certainty and celerity effects on substance-using probationers" O'Connell et al. note that Beccaria was "among the first to suggest that governments

should not only punish crime, but they should also endeavor to prevent it” (O’Connell et al., 2011). The attempt to prevent crime is a fundamental factor involved in the necessity of research on clearance rates. If there were a better-established understanding of why certain crimes go unsolved, further development could be made on how to better approach these cases in the future. Once we get a better idea about what characteristics make a case harder to solve, we may then be able to apply that knowledge to preventing violent crimes. Establishing what makes a crime more difficult to solve, may allow for more inferences to be made about what makes a person more likely to be the victim of a crime. In 1789, twenty years after Beccaria’s publication, Jeremy Bentham went on to further explore deterrence. He suggested that as certainty, severity, and swiftness of punishment increases, crime should decrease. Modern studies have shown that “certainty seems to be the most important in preventing crime” (O’Connell et al., 2011). However, adding to the certainty is very difficult. To this date, there is no easy way to ensure that people are caught for the crimes they have committed. Despite the difficulty mentioned above, several scholars have suggested ways to attempt to increase the certainty. In 1998, for example, David Kennedy suggested that targeted enforcement against specific offenses in distinctly targeted areas might slightly increase the certainty of punishment. He mentions, “It is not a targeted prosecution strategy... Rather it was an attempt to deter and control the particular problem of gang-related violence” (Kennedy, 1998). By focusing on the understanding and appreciation of what makes certain homicides so hard to solve, especially by concentrating on one area as in the

present research, the body of research will hopefully be one step closer to being able to prevent homicides altogether.

Obviously we cannot arrest every suspect; however, a drop in clearance rates suggests that the system as a whole is not fully doing its job (Wellford and Cronin, 1999). This is clearly a problem that affects everyone because we have people that have committed serious crimes living freely among the rest of us. Although this is a widespread problem, the research on unsolved violent crimes is very limited. In fact, recent research has found that the national clearance rate of homicides from 1961 to 1996 declined from 94% in 1961 to 67% in 1996 (Riedel, 1995; Wellford and Cronin, 1999). Further Wellford and Cronin (1999) completed the first systematic approach to homicide clearance research. They were mainly interested in the variables (215 variables), which related to the characteristics of incidents. Their main finding was that the proper allocation of police resources is one of the variables with the greatest effect. Before Wellford and Cronin, however, there were no previous systematic studies done to understand the determinants of clearance rates. The only research that existed were theoretical papers looking at what factors may be related to clearance rates. No quantitative data were ever explored. Yet, 1995 at The International Association of Chiefs of Police Murder Summit, Riedel and Reinhart suggested several reasons for the decline in homicide clearance rates. The reasons they offered can be categorized as follows (Riedel and Reinhart, 1995), and are supplemented by my research of additional scholarship:

*Changes in the nature of homicide:* In the 1960's homicide was considered mostly a crime of passion between family members, intimate partners and close

acquaintances. These social ties made the crimes relatively easy to solve. Recently, however more stranger-to-stranger and drug related homicides have occurred which makes the cases much harder to solve; in turn, causing the clearance rates to decline. Marc Riedel reported that in 1985 14.5% of all homicides were committed by strangers compared to 12.5% in 1979 (Riedel, 1987). He even goes on to suggest “the SHR (supplemental homicide report) substantially underreports the incidence of stranger murder” (Riedel, 1987). Marc Riedel further examined the extent of this problem by comparing the SHR data for 7 large US cities to the actual police data of the respective departments. They found a consistent pattern of underreported stranger murders with the largest disparity in Oakland, California. The Oakland SHR data only reported about 7% of the stranger murders. He suggests that the reason behind this underreporting is because stranger murders take longer to solve (Riedel 1987). Riedel goes on to explain that “because of this time lag, when the SHR were completed by police departments each month, the victim/offender relationship information was not available and the case was recorded as being of unknown relationship. If an arrest was made after this reporting of the offense, the victim/offender relationship was recorded in police records...but not necessarily forwarded to the UCR (Uniform Crime Report)” (1987). These cases are harder to solve because there is nothing to link the suspect to the victim. The social relationships that are present when a victim knows his/her assailant has made it quite easy to identify the suspect in the past (Wellford & Cronin, 1999).

*Changing nature of police resources:* Because of the high level of crime in the US, police resources are stretched thin. If the police departments cannot devote

adequate time and experienced personnel to these investigations, there will most likely be a negative impact on clearance rates. Wellford and Cronin describe four detective variables said to improve the chance of solving a case by 96%. These variables are: three or more detectives assigned to a case, detective arrives at the scene within 30 minutes, detective describes the scene in notes, and the detective follows up on all witness information (1999). These conditions cannot possibly be met if the police department's resources are stretched thin, which may be why so many more cases go cold in the busy 21<sup>st</sup> century. Nicole Garnett points out that "in July 2010, following failed labor negotiations and facing a mounting budget crisis, the Oakland, California, Police Department fired eighty police officers and announced that it would no longer respond to reports of certain crimes" (2012). She goes on to mention that Oakland is not the only city that has had to deal with this. "Cities across the country -small and large, urban and suburban- have been forced to scale back the size of their police forces" (Garnett, 2012). While some have taken a similar approach to Oakland, others have tried to push their existing officers harder in efforts to stretch already thin resources even further (Garnett, 2012). Rick Ruddell and Nicholas Jones also report that "78% of [U.S police] agencies had experienced budget cuts in 2010... Of the responding agencies, almost one-quarter (23%) had reduced officer positions" (Ruddell and Jones, 2013). They also note "more than one-half of responding agencies cut overtime hours, eliminated pay raises or reduced training" (Ruddell and Jones, 2013). By cutting the possibility of overtime pay, police agencies are also reducing the willingness of officers to put in extra time on tough cases. Because a cop's workload is so heavy on a day-to-day

basis, they do not have extra time to spend sorting through cases that require more attention. In addition, if pay raises are cut it may reduce the officers' motivation to go above and beyond. If they do not see any growth-potential in their occupational status, they may do only the bare minimum, which most likely excludes putting the time into working through a cold case. Finally, if training is reduced, officers will be less likely to have the experience and knowledge required to behave adequately during an investigation. If the proper steps are mistaken or neglected entirely during the initial investigation, there is a greater chance the case could remain unsolved. In addition to a lack of training, Ruddell and Jones report that agencies are relying much heavier on their civilian staff and volunteers. While they can be helpful with non-essential duties, the 2010 PERF survey showed that 26% of agencies were using civilian staff members for crime analysis and to free up officer time while 24% of agencies were using volunteers to fill some sworn officer functions (Ruddell and Jones, 2013). These civilian workers and volunteers lack the professional training and experience needed to adequately perform the duties associated with such high-profile positions, which could ultimately and fundamentally sabotage an investigation. While all of these "solutions" seem to be appropriate temporary fixes, I contend that in terms of homicide investigation these efforts are simply a hindrance. It will not benefit a police department in the long run to have undertrained and unmotivated employees, and to rely on civilian volunteers who do not have a criminal justice background.

*Changes in bystander behavior:* In recent years, the public's unwillingness to cooperate with police in certain geographical areas has made it harder for trained

investigators to solve crimes. Flexon, Lurigion and Greenleaf suggest that “citizens who distrust the police are fearful or reluctant to report crimes, to assist law enforcement officers in criminal investigations, to volunteer for police-sponsored neighborhood programs, or to call the police for assistance” (2009). Trust in police has decreased, especially in large urban areas, which makes it more difficult to identify offenders, particularly in stranger-to-stranger incidents. Marian Borg and Karen Parker argue that “without the strong stake in community life that marriage, employment, and long term residence encourage, community crime fighting efforts and police community relations may suffer” (2001).

While this is not a new phenomenon, as distrust in the police has existed for decades, it has received greater attention recently because of its correlation with the ability to solve a crime. Stan Gilmour suggests that trust in police is such a widespread issue that when the government laid out its police reform plan in 2004 there was an entire section devoted to how they plan to increase trust in the police (2007). Gilmour goes on to explain the social nature of trust and how that influences the ability to solve a crime. He states: “trust, by comparison, is based on external factors, on social relationships and social systems. If tactical trust can be replicated it will grow into confidence” (Gilmour, 2007). He further explains how this affects crime solving through example of someone calling the police to report a neighbor. Gilmore describes that the decision to place the call is based on some sort of anonymity, “because the result of having personal details revealed to the offender may provoke direct confrontation” (2007). This decision is mostly based on past experiences with the police and, subsequently, one’s overall trust in them. If the

trust does not exist, the person will not call, and the police will thus miss out on vital information. This is true when solving more violence crimes as well. Without that level of trust, certain critical information possessed by witnesses may never surface, profoundly hampering an investigation.

Another suggestion made by several researchers is that the concept of procedural justice is that aspect of policing which most impacts the levels of trust. “The central argument [of procedural justice] is that if people feel they have been valued and their rights have been properly regarded and their voice heard, they will invest a greater amount of legitimacy in the outcome, even if it is not in their favor” (Gilmour, 2007), which simply put means that people are more likely to trust the police if they believe the police have been fair. Indeed, “Procedural justice findings were originally demonstrated by Thibaut and Walker (1975) in the context of the willingness to accept court decisions. These researchers demonstrated that people were more willing to defer to court decisions when they felt that the court procedures were fair” (Tyler, 2010). Stan Gilmour further explains, “by increasing this form of habitual cooperation, rather than forced coercion, society builds strategic trust in its police” (2007).

Another important consideration to make is of the ways in which extralegal characteristics of individuals or whole communities influence the likelihood that they trust the police. While not all characteristics have been studied, there is a large body of research regarding the effect of age on trust. “Historically, research has shown that younger members of the community are less likely to trust and cooperate with police officers than other members of the community” (Flexon et al.,

2009), as reflected in the way police-youth relationships appear to be more explosive in urban areas with large minority populations. This seems to further suggest that cases in diverse urban areas may be harder to solve because of the lack of trust in the police, which in turn leads to a lack of cooperation. Past studies have developed several correlations concerning trust in younger members of the community including commitment to school, parental relationships, previous contact with the police, as well as race and ethnicity. "Overall, researchers have found that juveniles, who attended public schools in the inner city, where dropout rates are relatively higher, harbored more negative views toward the police than students who attended public schools in the suburbs, where dropout rates are relatively lower" (Flexon et al., 2009). If these students have more negative views toward the police, it is likely that their level of trust is also lower. "Piquero, Fagen, Mulvey, Steinber, and Odgers (2005) suggested that adolescents' attitudes and beliefs about the law are shaped by their views of their families and other adults in the community, which could extend to youths' trust in the police" (Flexon et al., 2009). Flexon, Lurigion and Greenleaf go on to explain, "inner city crime victims are less likely to be involved in cases in which their assailants are arrested than are victims in higher-status and less-populated communities. Thus inner-city minorities are less likely to be trustful of the police than their White, suburban counterparts" (2009). Finally Flexon et al. reported "African Americans are more likely than other racial groups to be victims of crime, to have negative contacts with the police, to be stopped disproportionately by the police, and to report incidents of police harassment and mistreatment" (Flexon et al., 2009). According to the procedural

justice finding, this would suggest that African Americans have a greater belief that the police are being unfair, which then leads to less trust in the police. While there are surely other factors also influence trust in police, present research has confirmed that youth who attend school in the inner-city, youth surrounded by adults that have a negative view of the police, inner-city minorities, and African Americans are more likely to distrust the police.

Although these three categories regarding changing in the nature of homicide, in the nature of police resources, and in bystander behavior are not usually addressed explicitly in newer research, there have been several studies that further explore the findings of the Riedel and Reinhart paper. For example, upon evaluation of witness behaviors, the general consensus is that witness cooperation with the police plays a significant role in homicide clearance (Greenwood et al., 1977; Litwin, 2004; Riedel, 1995; Riedel & Jarvis, 1999; Wellford & Cronin, 1999). In regard to the nature of police resources, there have been many opposing viewpoints. Research suggests that the number of police officers and computers per department significantly affects homicide clearance rates (Wellford & Cronin, 1999), while on the other hand, a detective's workload (Greenwood et al., 1977), skill, experience (Puckett & Lundman, 2003), or training (Greenwood et al., 1977) were all found to have minimal influence on homicide clearance.

Part of the reason we do not have a larger body of quantitative research on this topic is because of the lack of reliable and usable data. This lack of data, as Maxfield has observed, is in part due to problems with the national data on homicide (1989). There are a few databases available such as the UCR and the

supplemental homicide report, which provide useful descriptions of the circumstances of the crime. Conversely, however, they do not provide any details about the status of the case (open or solved) or the clearance process in general. In addition, they rely on the police departments themselves to report their data, which is to say that a great deal of information might never be considered if a police department was too busy to contribute to the SHR in a given year. Also, the data that is available is again a direct product of the police departments themselves. That being said, it is the police department's responsibility to ensure that the information is accurate before it is sent in. Although the data available is very helpful, it is not entirely representative of the whole population and may not always be 100% accurate. As mentioned earlier, there is a major problem with the way police departments report their data and fail to update information: initially they put all of the variables they do not know yet in the UCR as "unknown". This becomes a problem if the case is eventually solved, as the UCR data involving this case will always be recorded "unknown", while in reality the police department has obtained all of the information previously in question. This can be especially problematic when estimating different crime statistics throughout the country. Consider for example, the victim-offender relationship category. It is usually easy to determine if the victim and offender knew each other as people in the victim's social circle will point it out. As previously mentioned, it is quite common for police to initially record variables as "unknown," this relationship category included. That means that much of the "unknown" relationships are between strangers. If however, if the police fail to go back and correct the UCR data once they confirm the offender was in

fact a stranger, the data on stranger homicides in the US will be significantly lower than it should be. Although going back to update data may seem like an unimportant step in the process, it really does have a large-scale effect on the truthfulness of the data.

In regard to the body of research on cold case clearance rates as a whole, I argue it can be broken down into three large categories: research focusing on characteristics of the individual, circumstances surrounding the event, and macro-level data looking at the relationship between characteristics of societies as a whole and clearance rates. It is my objective henceforth to define societal factors such as thing like race distribution throughout different geographic areas, socio-economic status distinctions, and community trust and cooperation with the police, etc. Although there is decidedly little information about each topic, there is enough to start formulating theories surrounding homicide clearance determinants.

The ways in which clearance rates are influenced by the characteristics of individuals has been of great interest to researchers. However, due to the lack of multi-state studies, each conclusion tends to differ from the last because of the natural variation of populations across the U.S. For example, some scholars argue that extralegal victim characteristics like social class and race are of primary importance mostly because of how the police respond to certain cases (Black, 1980), while others argue that homicide detectives work aggressively to clear all homicides irrespective of the places where homicides occur or the extralegal characteristics of victims (Klinger, 1997). One of the most widely reported findings in the research is the greater difficulty of clearing cases involving the elderly and the high likelihood

of clearing cases involving children (Addington, 2006; Cardarelli & Cavanagh, 1992; Puckett & Lundman, 2003; Regoeczi, Kennedy & Silverman, 2000; Reidel & Reinhart, 1996). Addington found that the cases involving children younger than 12 years old were significantly more likely to be solved than cases involving victims 13 and older. Litwin also found a negative relationship between victim's age and clearance. With every increase in year, the likelihood that the case would be solved decreased by a factor of .98. Litwin offers the explanation that younger victims' cases are solved more regularly because the offenders tend to know the victim in some way (2003). Conversely, elderly people are more likely to be killed by a stranger, which makes their cases more difficult to solve. I will discuss this further later in the paper.

Studies that look at race and gender tend to produce mixed results. Some studies find that cases involving non-White victims are more likely to be solved (Mouzos & Muller, 2001; Regoeczi et al., 2000). Other studies find the opposite (Litwin and Xu, 2007). A more recent study suggests that homicide incidents with Hispanic victims had the lowest clearance rate (Roberts & Lyons, 2011). Additionally, Wellford and Cronin found that victim race did not affect homicide clearance rates at all (Wellford & Cronin, 1999). Gender as a variable (Lee, 2005., Regoeczi et al., 2000 & Addington, 2006) was also assessed, and was found to significantly affect homicide clearance. In their respective studies, Lee and Regoeczi both found that there is a higher likelihood of clearance for female victims. Conversely, Litwin and Xu found that cases involving a male victim have a higher chance of clearance (2007). In addition, Addington found that gender did not affect the clearance of the case at all (2006). Overall, there is a lack of consensus regarding

the effects of race and gender on cold case clearance rates, most likely due to the varying characteristics of the geographic locations that were used in each study.

In regard to the circumstances surrounding an incident, there is a general consensus that the homicide circumstances, the location, and the weapon all significantly affect homicide clearance rates. A number of studies found that felony related homicides are much harder to clear than homicides resulting from other circumstances (Cardarelli & Cavanagh, 1992; Mouzos & Muller, 2001; Regoeczi et al., 2000; Riedel and Rinehart, 1996; Rinehart, 1994; Roberts, 2007). One theory as to why that is the case, is because other felonies such as robbery tend to be stranger crimes, and stranger crimes are much harder to solve (Mouzos & Muller, 2001). Marc Riedel reports that 57% of all rapes, robberies, and assaults involve strangers (1987). Because strangers generally commit these particular criminal acts, it makes sense that those cases would then be harder to solve, especially when tied to a homicide. The impact of weapon used creates some dispute within the field. Most agree that homicides committed with weapons that bring the offender and victim in close-contact increase the likelihood of clearing the case. However, the effect of firearms cannot be agreed upon. While Marche (Marche, 2004) finds that the use of firearms increases the chances of clearing the case, many others find the opposite (Litwin, 2004; Litwin & Xu, 2007; Mouzos & Muller, 2001; Regoeczi et al., 2000; Rinehart, 1994). One of the most consistent findings relating to homicide circumstances is that homicide clearance is more likely when the incident occurs in a home (Addington 2006; Litwin and Xu 2007; Mouzos and Muller 2001; Wellford and Cronin 1999).

The final aspect of homicide clearance rates that has been looked at is macro-level data, which looks at the relationship of social characteristics such as trust in the police, socioeconomic status of residents, employment rates, and religion, to clearance rates. Very few studies have looked into this deeply; however, it suggests a very interesting correlation. Borg and Parker looked at city-level data and argued that the social characteristics of the location, such as higher racial inequality in education, employment, and lower residential mobility are positive predictors to homicide clearance (Borg & Parker, 2001). In addition, Matthew Lee and John Bartkowski looked at how religion effects homicide rates in urban areas compared to rural areas. They wanted to test the hypothesis that “religious institutions create a moral ecology fostering community integration and social control while discouraging deviance and criminal activity” (Lee and Bartkowski, 2004). Their main goal with this research was to shift the focus from specific community deficits to cultural resources that communities can use to their collective benefit. Their prediction was that “communities [who have] a substantial population adhering to such denominations would have lower crime rates...because of the strengthening of the local social fabrics engendered by faith-based civic engagement” (Lee and Bartkowski, 2004). They found this to be true; however, only in regard to crimes occurring between family members. They found that civic engagement is beneficial for those who are rooted in social networks, but not for those living on the outside. Thus, they describe the effect of religious ties as a “circumscribed umbrella of protection against some forms of violence, rather than a thoroughgoing canopy of protection of violence writ large” (Lee and Bartkowski, 2004).

This research added to the ongoing conversation about homicide clearance rates because before then no such study had been done wherein multiple cities within one state were compared. Lee and Bartkowski point out that like urban areas, rural communities also show remarkable variation in crime rates; rendering this data equally vital to include in macro-level analyses. They note, “by neglecting rural settings, researchers have ignored important data that may yield new insight into the factors that explain crime rate variations across diverse geographic communities” (Lee and Bartkowski, 2004). They also suggest that the differences in crime rates between rural and urban areas may not be as extreme as previously thought (Lee and Karkowski, 2004). “Criminologists, rural sociologists, and sociologists have traditionally viewed rural communities as places with highly cohesive social relations, law-abiding residents, low tolerance of deviance, and hence lower rates of crime” (Li, 2011). When homicide cases occur in rural areas, the public is generally shocked because it disrupts the image that people have of the peaceful and organized countryside. Despite this public reaction, violent crime does exist in rural areas, even though it has a small presence in recent literature. “The focus on rural crime began in part with the interest of rural sociologists about the various impacts of rapid population and economic growth associated with energy development in small, western towns” (Li, 2011). Slowly, this interest has developed on a more general curiosity about rural crime and the relationship between social change and rural peoples and places. It is important to keep in mind that rural America “does not exist in a vacuum, immune from the greater social forces affecting America’s urban centers” (Li, 2011). Yuh-Yuh Li points out that external

factors may be more important for explaining crime rate variations in rural areas than internal factors. This matters because it means that crime variations may be influenced more by regional than local factors, making it so that there may not be any distinguishable differences between rural communities in the same region (Li, 2011). While there has been literature on the crime and clearance rates in large cities and rural areas respectively, there have yet to be any studies conducted which aim to look at both types of locations within the same state.

Previous research on crime rates in various geographic locations has focused more on macro-level factors that affect crime and clearance without the consideration of specific victim and crime characteristics. While Borg and Parker looked at the difference between rural areas and large cities, they focus on the more theoretical side and looked at “how the likelihood of clearing criminal cases is influenced by the social and economic characteristics of the location where they occur” (2001). The current work focuses on large and small geographic areas within Colorado to determine if any differences arise when considering intra-state factors such as age distribution across varying populations, different racial makeups of large cities and small geographic areas, sex distribution across these locations and the prevalence of certain kinds of weapons depending on where the crime was committed. This will be an advantage to the greater body of research because so much of the analysis that already exists focuses on large cities, such as Wellford and Cronin’s study of 206 large cities across the U.S. This investigative bent toward urban areas is largely symptomatic of that fact that large city data is easier to obtain; however, if my research finds that there are significant differences between small

geographic areas and large cities, either in their overall clearance rates, or the factors that influence whether a homicide is cleared, then it will be evident that future research needs to consider this when making general conclusions about states as a whole.

Despite the lack of research involving geographic areas within the same state, the idea of comparing different areas has been very popular in recent work. Past research has looked at how clearance rates differ across time, between states, and between countries. For example, Kenneth Litwin and Yili Xu looked at whether commonly identified factors that influence homicide clearance rates are consistent across three different time periods between 1966 and 1995. They found that the factors significantly varied across time. Specifically, the increasing significance of the victim's race and use of firearms could explain the decrease in homicide clearance over time, even though the overall homicide rate is also decreasing (2007). Similarly, Charles Wellford and James Cronin (1999) looked at the factors affecting homicide clearance rates in the nation's 100 largest cities for the year 1993. They found that "the differences between cities for homicide clearances disappeared for the most part when [they] controlled for characteristics of cases and characteristics of investigations" (Wellford & Cronin, 1999). Some of these characteristics included those of the victim such as race, gender, age etc. They also included characteristics of the crime itself such as the weapon, the relationship between the victim and the offender, and whether another crime was committed at the same time, etc. Finally, Wendy Regoeczi, Leslie Kennedy, and Robert Silverman widened the scope of homicide clearance research by comparing the U.S to Canada.

They found that “the influence of various victim and offense characteristics on whether a homicide is cleared varies both cross-nationally and regionally” (Regoeczi et al., 2000). More specifically they found that being a non-white female under 10 years old in both Canada and the U.S increased the likelihood that the homicide will be cleared (Regoeczi et al., 2000). They found more contrasting results when they compared Ontario to New York State. The only variable that had the same effect in both places was whether or not another criminal act was committed at the time of the homicide. However, they also recognize that “cultural differences may be implicated in this variation” (Regoeczi et al, 2000).

Overall there have been tremendous strides made toward understanding homicide clearance rates considering this is a relatively new field. Researchers have looked at characteristics of the police force, extralegal victim characteristics, and circumstances of the crime, along with many others. However, the biggest problem is that the research is not consistent. For example, Wellford and Cronin found that victim characteristics did not matter at all, while Roberts and Lyons found that race played a notable role. Specifically, they found that homicides with Hispanic victims had the lowest clearance percentage among all other races (Wellford and Cronin, 1999; Roberts and Lyons, 2011). Because the findings are so erratic across the field, the next step should be to look at what is causing these inconsistencies. If we take into account the fact that each study uses a different geographic location to gather their data, it makes sense to then consider location as a factor behind the varying results. The present research aims to continue the identification of factors that matter in homicide clearance, while also considering the effect of location on these

factors.

**Hypotheses:** Despite the lack of consensus regarding the factors that drive homicide clearance, several studies' findings are consistent with the expectations of criminological theory. I would like to address these findings and use them as the basis for my hypotheses. Throughout this paper I would like to speak to six different hypotheses:

*H1: Homicide clearance rates will increase when the victim is between 0-23, but decrease when the victim is 24 or older.*

In 2003 Kenneth J. Litwin found that "the odds of a case with an older victim being cleared decreases by about 1.01 times for each additional year of age" (2003). He suggests that the reason for this is because children are very rarely left alone, compared to adults who can mostly go anywhere they please. Because children are watched closely, and their whereabouts are thus more often known, there is a lesser chance that a stranger will have the opportunity to encounter them alone. Homicides committed by a stranger are much harder to solve; therefore, homicides of children are easier to solve because the offender is usually not a stranger.

*H2: Homicide clearance rates will decrease if the weapon used was a gun.*

In 2003, Kenneth Litwin found that "homicide cases involving a firearm are more than one and a half times less likely to be cleared than cases not involving a firearm" (Litwin, 2003). This is because the physical distance between the offender and the victim can be increased when a firearm is used. If there is more physical distance between the offender and the victim, the

likelihood that there will be witnesses and that there will be physical evidence is decreased. Therefore, when a gun is used there is a lower likelihood that the case will be solved.

*H3: Homicide clearance rates will increase if the victim is female.*

In their study comparing the U.S to Canada, Regoeczi, Kennedy, and Silverman found that the odds of clearing the case were increased if the victim was a female (2000). Schafer, Caetano, and Clark report, “male to female partner violence is more often repeated and is more likely to result in injury and death” (1998). If more women are killed by an intimate partner strangers are therefore not killing them, which makes their cases easier to solve.

*H4: Homicide clearance rates will increase if the victim is white.*

Regoeczi, Jarvis and Riedel observe, “Homicides involving white victims should be cleared more quickly than those involving minorities” because of how the social status of victims affects the investigative efforts of police (2008). White people generally live in more affluent areas where murder is less common and the community ties are stronger meaning that witnesses are more likely to share information with police. Additionally, public pressure to solve homicides that involve more prominent members of the community may cause police to put more time and effort into cases involving a white victim. Therefore, cases involving white victims should be more likely to be solved.

*H5: Homicide clearance rates will be higher in small geographic areas if the victim is white compared to the clearance rates for cases involving a white victim in a large city.*

Robert J. Sampson notes that the economic and family structures of blacks and whites differ considerably, which greatly affects the rate of homicides. “The proportion of female-headed families and the percentage of families below the poverty line, for instance, are much higher among blacks than among whites” (Li, 2011). Because social ties and trust in the police are much lower among non-white citizens, it makes sense that less homicides would be cleared in an area that has a higher population of non-white citizens. Cities tend to be much more diverse places, especially in Colorado. Because it has been established that white people are more likely to cooperate with police and small geographic areas tend to be less diverse and have greater social ties, homicide clearance rates should increase if the victim is white in a small geographic area.

*H6: Homicide clearance rates will be lower in large cities when a gun is used compared to when a gun is used in a small geographic area.*

While drug related violence is becoming more prevalent, small geographic areas are not conducive to the type of street dealing that is done in large cities. In the mid-1980s crack was introduced to the American streets, which led to distribution rates even higher than the previous heroine epidemic (Lee and Bartkowski, 2004). Many researchers assert indisputably that violence and crack are causally connected (Lee and Bartkowski, 2004). Therefore, the

more widespread this epidemic becomes, the more violence ensues. Because small geographic areas do not have as high of a drug market as large cities, the associated violence is lesser. In large cities, the drug markets are often “staffed by young people with few ties to conventional institutions of social mobility and social control, who have ready access to handgun, and who lack fundamental dispute resolution skills and impulse controls” (Lee and Bartkowski, 2004). This would naturally decrease the likelihood of solving a case because there is not a strong link between assailant and victim, in addition to the common use of a gun. When a gun is used there is generally less physical evidence linking the offender to the victim and less witnesses who were able to see the offender. When a gun is used in a small geographic area there is a greater likelihood that someone in the community will provide police with helpful information; however in a large city this is much less likely.

**Methods:** The data in this study is a compilation of data from the FBI’s Supplemental Homicide Report and the Colorado Bureau of Investigation’s Cold Case Database. Both sites are publically available and easily accessible. The SHR “captures only information on criminal homicide incidents known and handled by state and local law enforcement that occur in the United States, including homicides involving victims who were not U.S. residents. Homicides that are classified as negligent or involuntary are also not included in the SHR. In the SHR, the determination that a crime was a homicide is made solely based on police investigation, and is not the result of the decision of a court, medical examiner,

coroner, jury, or other non-law enforcement entity” (Bureau of Justice Statistics, 2011). The Cold Case Database, “features unsolved homicides, missing person, and unidentified person cases to assist law enforcement agencies in the development of information which can lead to the identification or arrest of any person(s) who may have committed any crime” (Colorado Bureau of Investigation, 2010). However, for the purposes of my study I included only the homicide cases. I chose to use both resources because the SHR does not make clear whether the cases with no offender information remained unsolved in the years after the information was entered into the database, whereas if a case is in the CBI’s database, it is definitive that the case is currently unsolved. By using two datasets, I was able to ensure the reliability and validity of the study. I did this by making sure that every case that I had under the “cold” variable was in fact cold. If I had used the SHR data exclusively, some of those cases may have been solved during the 6 years period between the last year I studied and present-day. By ensuring that the cold cases are in fact still unsolved in 2016, I am making it so that someone could use my data in a future study, or try to corroborate my results and get the same findings. If I had used the data from the SHR for my unsolved variable, it would look as though there are more cold cases than there really are because chances are many of the cases listed as unsolved in the SHR have been solved by now. By using the updated CBI data I was able to ensure that I had an accurate number of cold cases included in my dataset.

In regard to this study, clearance of a homicide refers to those cases in which an offender has been identified. This could involve arresting the offender, putting out a warrant without apprehending the offender, or any other way of solving the

case. Due to the Supplemental Homicide Report's data collection process, there is no follow up information included that indicates whether the offender was actually convicted for the crime. Because of that, and for the purposes of this I define clearance as identifying information about the most likely offender while not specifying any sort of trial or conviction for the offense. For the purposes of this study, only homicide cases between the years of 1991 and 2010 were included. Further, this study employs parallel analyses of large city and small geographic area homicide data in Colorado. Comparative analyses of unsolved homicides in small geographic areas and large Colorado cities allow us to determine whether different variables had an impact on homicide clearance in the two types of geographic location. This comparison should also expose clarifications for the higher unsolved homicide rate in large cities.

The study ended up including 10,479 solved cases and 514 cold cases from large cities and 979 solved cases and 45 cold cases from small geographic areas. Because this study aims to find any differences between cold case clearance rates between large cities and small geographic areas of Colorado, only those specific geographic regions were incorporated. The SHR data were available for download from the Inter-university Consortium for Political and Social Research. I began the research process by downloading SHR data from 1976 to 2010. I then pulled out only the years 1991-2010.

The US census defines a large city as anything with a population over 50,000 (U.S Census Bureau, 2010). I used this cutoff to create my two data sets: large cities and small geographic areas. I pulled all of the towns in Colorado from the SHR data

that had less than 50,000 inhabitants and created my small geographic area data set. I then pulled out all of the large cities that had a population that was greater than 50,000 and that became my large city data set. Once I had my two data sets, I went through and coded both spreadsheets so that I could work with them in SPSS. When I collected and coded all of the solved data for large cities and small geographic areas, I moved on to collecting and coding my cold case data. I went through the database case-by-case and compiled two separate spreadsheets, one for “large cities” and one for “small geographic areas”. Finally, I put all of the “large city” data into one spreadsheet, and all of the “small geographic area” data into another. The four variables that were most important to my study were weapon, sex of victim, race of victim and age of victim. These variables were all compared to the cold versus solved category. A binary logistic regression was used with solved vs. unsolved as the dependent variable, and victim age, sex, race and weapon as the covariates. Finally, those data were compared to see if any differences exist between the large and small geographic areas.

Coding: Because the goal of this research was to determine relationships between the solvability element and other factors, I had to fully code the data so it could be run through SPSS. The weapon category was coded as gun (1) and not gun (0). The reason behind this choice is that the majority of homicides seem to have been committed with a gun, which means that any other weapon would naturally not be significant in the end if it were kept in the initial 16 categories from the SHR. By splitting it into two groups instead of 16 groups, it was clearer whether or not a weapon other than a gun could really affect the clearance. Next I coded the sex of

the victim) male=1, female=0, and unknown=9. Following that I coded the race of the victim as 1=White, 2=Black, 3=American Indian, 4=Asian & Pacific Islander, 5=other and 9=unknown. It is important to note here that the Supplemental Homicide Report data does not have a category for Hispanics; therefore they were included in the “white” category. Because of the large Hispanic population in Colorado, it might be fair to assume that a large portion of this “white” category is actually representative of Hispanics.

Finally, I chose to break the age variable of victim into 3 equal groups labeled 1, 2, and 3, reflecting ages 23 and under, 24-37, and 38 and over, respectively. Both the “large city” and “small geographic area” spreadsheets were coded exactly the same. The collected data was analyzed using a logistic regression because of the dichotomous nature of the dependent variable.

### **Results:**

**Victim Information:** While it is impossible to truly predict who will be victims of crimes, my data seems to suggest some strong patterns. 68.3% of all victims of unsolved cases in Colorado are non-white while 69.5% of solved cases are white. 81.8% of all victims of unsolved Colorado homicides are males and 72.2% of victims in solved cases are male. 39.2% of all victims of unsolved homicides in Colorado are between the ages of 24 and 37 and 34.9% are between 24 and 37 years old in all solved homicide cases in Colorado.

The persons with the highest risk of being victims in small geographic areas are white males who are between 38 and 98 years of age. The victim was male in

62.2% of cases, between 38 and 98 in 35.3% of cases and white in 90.6% of cases.

The persons with the highest risk of being victims in large cities are white males between the ages of 24 and 37. The victim was male in 75.1% of cases, white in 62.6% of cases and between 24 and 37 years old in 35.4% of cases.

The persons most likely to be victims in small cities are white in 60.9% of unsolved cases and 88.7% in solved cases. In small cities males make up 67.4% of the victims in unsolved cases but only 62.2% in solved cases. Also 41.3% of unsolved cases have a victim between the ages of 24 and 37 and 34.8% of victims in solved cases are between the ages of 0 and 23. A summary of these findings can be seen in table 1.

The persons most likely to be victims in large cities are white in 67.7% of unsolved cases and only 31.5% in solved cases. In large cities males make up 73.2% of the victims in unsolved cases and 83.1% in solved cases. In addition 34.8% of unsolved cases have a victim between the ages of 24 and 37 and 38.4% of victims in solved cases are between the ages of 24 and 37. A breakdown of these results can be found in table 2.

Table 1:

| <b>Small City</b> | <b>White</b> | <b>Non-White</b> | <b>Male</b> | <b>Female</b> | <b>0-23</b> | <b>24-37</b> | <b>38-98</b> | <b>Gun</b> | <b>Non-Gun</b> |
|-------------------|--------------|------------------|-------------|---------------|-------------|--------------|--------------|------------|----------------|
| Unsolved          | 60.9%        | 37.0%            | 67.4%       | 32.6%         | 19.6%       | 41.3%        | 39.1%        | 48.7%      | 19.6%          |
| Solved            | 88.7%        | 10.6%            | 62.2%       | 37.8%         | 34.8%       | 29.6%        | 34.4%        | 45.2%      | 48.3%          |

Table 2:

| <b>Big City</b> | <b>White</b> | <b>Non-White</b> | <b>Male</b> | <b>Female</b> | <b>0-23</b> | <b>24-37</b> | <b>38-98</b> | <b>Gun</b> | <b>Non-Gun</b> |
|-----------------|--------------|------------------|-------------|---------------|-------------|--------------|--------------|------------|----------------|
| Unsolved        | 70.5%        | 28.7%            | 83.1%       | 16.7%         | 27.4%       | 38.4%        | 33.0%        | 58.6%      | 33.4%          |
| Solved          | 31.5%        | 67.7%            | 73.2%       | 26.8%         | 33.6%       | 34.8%        | 30.1%        | 56.8%      | 38.3%          |

**Cold case clearance in Colorado:** A logistic regression analysis was first run to determine which factors have an effect on homicide clearance in general in Colorado. A total of 11,749 cases were included in this dataset. Looking specifically at the predictor variables, the findings shown in Table 3 provide general support for the model. All of the variables have a significant effect except for the “gun” variable. The effects of the likelihood of homicide clearance of a crime involving a gun are not statistically significant in comparison to the effect of non-gun weapons. The only variable that increased the odds of a homicide being cleared is if the victim was white, in which cases the odds are increased by a factor of 5.2. Odds ratios below a value of 1.00 for the rest of the variables indicate that for cases involving victims who fall within one of these categories, the odds of clearing the homicide are decreased when controlling for all other variables. These variables include a homicide involving a gun, an unknown weapon, age of the victim, race of the victim and sex of the victim. Victims whose ages fell between 24-37 are 32% (OR=.68) less likely than those between 0-23 to have their case solved. Victims whose ages fell between 38-98 are 48% (OR=.52) less likely to have their case solved compared to those between 0-23. White victims are 5.2 times more likely to have their cases solved than non-white victims. Male victims are 54% (OR=.46) less likely to have their case solved than female victims.

**Small Geographic Area Data:** Next, a logistic regression was run to see how the

data would differ when it only included small geographic area data. A total of 121 cases were included in the regression. A summary of the findings can be found in Table 4. All of the variables have a significant effect except for sex of victim. The effects on the likelihood of homicide clearance if the crime involved a male are not statistically significant in comparison to the average effect of gender on clearance. Once again, the only variable that increased the odds of a homicide being cleared is if the victim was white, in which cases the odds are increased by a factor of 7.9. The data indicates that the rest of the significant variables have a negative relationship with a case being solved. Victims whose ages fall between 24-37 are 82% (OR=.18) less likely to be solved than those victims who are between 0-23. Victims who are between 38-98 are 83% (OR=.17) less likely to be solved than the 0-23 group. Homicides that involved some types of gun were 55% (OR=.45) less likely to be solved than homicides where something other than a gun was used.

**Large City Data:** Finally a logistic regression was run to see how the data would differ when it only included large city data. A total of 11,899 cases were analyzed. All of the variables had a significant effect except for the “gun category”. These results can be seen in Table 5. The effects on the likelihood of homicide clearance of the crime involving a gun are not statistically significant in comparison to the average effect of weapon used. Once again, the only variable that increased the odds of a homicide being cleared was if the victim was white, in which cases the odds are increased by a factor of 5.4. Like the small geographic area results, the rest of the variables have a negative relationship with the case being solved. Cases involving victims who were between 24-37 years old are 28% (OR=.72) less likely to be

solved than those in the 0-23 group. Cases involving victims who were between 38-98 years old are 44% (OR=.56) less likely to be solved compared to those victims who were between 0-23. Male victims are 41% (OR=.59) less likely to have their cases solved than females.

**Comparison of the data:** The data in this study show that the effect of two of the variables (sex and weapon) differed by geographic area, and the effects of the other two (race and age) were the same across different contexts. While sex of the victim had a significant effect in both the general Colorado data and the large city data, it did not matter in small geographic areas. In addition, the weapon had an effect in small geographic areas, but not in large cities or in Colorado as a whole. Other than that, the two other variables (race and age) seem to have a similar effect no matter where the homicide took place. The odds of a case being solved with a white victim increase by between 5-6 times in all three locations as well. Finally, all victims between the ages of 24-37, regardless of the location, were between .18-.72 times less likely to be solved compared to those between the ages of 0-23. In addition, all victims between the ages of 38-98 were between .17-.57 times less likely to be solved than the youngest group.

To confirm the effects I found above, I performed interactions for all four variables (age, sex, race, and weapon) when compared to the dummy variable city size. I computed a new variable for each of the interactions by multiplying each of the four variables by the city size variables. I was left with five new variables: City size X age group 1, City size X age group 2, City size X Sex, City size X Race and City size X Weapon. I then took each of these and added them to the binary logistic

regression equation that I had used above. In this equation Solve/Unsolved was the dependent variable and the covariates were age of victim, sex of victim, race of victim and weapon used. The results of the interactions can be found in Table 6. I found significant interactions between city size and sex; city size and weapon; and city size and age (both 24-37 and 38-98).

Table 3:

| <b>WHOLE CITY REGRESSION</b> | B     | SIG. | EXP (B) |
|------------------------------|-------|------|---------|
| Gun                          | -.07  | .48  | .93     |
| AGE OF VICTIM 24-37          | -.38  | .00  | .69     |
| AGE OF VICTIM 38-98          | -.64  | .00  | .53     |
| White                        | 1.66  | .00  | 5.25    |
| Male                         | -.499 | .00  | .61     |
| Solved (Constant)            | 3.02  | .00  | 20.49   |

Table 4:

| <b>SMALL CITY REGRESSION</b>            | B     | SIG. | EXP (B) |
|---|-------|------|---------|
| Male (female is reference)              | -.36  | .32  | .70     |
| AGE OF VICTIM 24-37 (0-23 is reference) | -1.70 | .00  | .18     |
| AGE OF VICTIM 38-98 (0-23 is reference) | -1.76 | .00  | .17     |
| White (Non-white is reference)          | 2.06  | .00  | 7.89    |
| Gun (Non-Gun is reference)              | -.81  | .05  | .45     |
| Solved (constant)                       | 3.81  | .00  | 45.29   |

Table 5:

| <b>BIG CITY REGRESSION</b>              | B    | SIG. | EXP (B) |
|---|------|------|---------|
| Male (female is reference)              | -.54 | .00  | .59     |
| White (Non-White is reference)          | 1.69 | .00  | 5.42    |
| AGE OF VICTIM 24-37 (0-23 is reference) | -.32 | .00  | .72     |
| AGE OF VICTIM 38-98 (0-23 is reference) | -.58 | .00  | .56     |
| Gun (Non-gun is reference)              | -.00 | .98  | 1.0     |
| Solved (Constant)                       | 2.97 | .00  | 19.40   |

Table 6:

| Interactions             | B    | Significance | Exp B |
|--------------------------|------|--------------|-------|
| City size X Sex*         | -.31 | .00          | .73   |
| City size X Age (24-37)* | -.87 | .00          | .42   |
| City size X Age (38-98)* | -.53 | .05          | .59   |
| City size X Race         | .18  | .08          | 1.2   |
| City size X Weapon*      | .01  | .00          | 1.01  |

A (\*) confirms that the interaction is significant with a p value of  $\leq .05$ .

Table 7:

| Factors Influencing the Probability A Homicide is Cleared |          |           |          |           |           |          |
|---|----------|-----------|----------|-----------|-----------|----------|
|   | Male Vic | White Vic | 0-23 y/o | 24-37 y/o | 38-98 y/o | Gun Used |
| Big City  | Decrease | Increase  | Increase | Decrease  | Decrease  | N.S      |
| Small City  | N.S      | Increase  | Increase | Decrease  | Decrease  | Decrease |
| Colorado  | Decrease | Increase  | Increase | Decrease  | Decrease  | N.S      |

### Discussion and Conclusions:

This study concluded that overall, across both geographic locations there was some variation with certain variables but not all. While it mattered if a gun was used in a small geographic area, and if the victim was a male in Colorado in large cities, race and age did not differ between the three locations. In terms of knowledge gained about clearance rates in general, this study found that every variable is significant in solving a homicide in at least one place in Colorado. In addition, this study also concluded that the effects of race and age did not differ regardless of where in Colorado the victim was. A summary of the results is provided above in Table 7.

*Hypothesis 1: Homicide clearance rates will increase when the victim is between 0-23 but decrease when the victim is between 24-98.* In the present study I found that the chances of clearing a case were significantly greater for victims between the ages of 0-23. This is congruent with both the existing literature and my original hypothesis.

In 2003 Kenneth J. Litwin found that “the odds of a case with an older victim being cleared decreases by about 1.01 times for each additional year of age” (2003). He proposes that this is the case because of the close supervision of children by known adults, which decreases the chance of them being killed by a stranger. It is a known fact that it is much harder to solve a homicide case committed by a stranger to the victim because there are no existing social ties that could link the victim to a suspect (Litwin, 2003). If children were more likely to be killed by someone they know, it makes sense that it would be easier to solve their cases.

*Hypothesis 2: Homicide clearance rates will decrease if the weapon used was a gun.* I found that while the chances of clearing a case were significantly reduced if a gun was used in a small geographic area, the results were insignificant in the other two geographic areas. Therefore, more research would need to be done to investigate this hypothesis further. Kenneth Litwin found that “homicide cases involving a firearm are more than one and a half times less likely to be cleared than cases not involving a firearm” (Litwin, 2003). Again this finding is congruent with the current literature because cases with a firearm increase the physical distance between the offender and the victim. If the offender is farther away from the victim it decreases the chance of evidence being found on the body that connects the offender to the victim and the chance of finding a witness that saw something concrete.

*Hypothesis 3: Homicide clearance rates will increase if the victim is female.* In this study my findings corroborated those of Regoeczi et al. While the results were insignificant for small geographic areas in Colorado, the likelihood of clearing a case with a male victim were decreased in large cities and in Colorado as a whole. In

2000, Regoeczi, Kennedy and Silverman looked at factors that affect clearances in the U.S vs. Canada. They then looked at two major cities within each country, Ontario and New York, and compared them. They found that in all places except Ontario, the odds of clearing the case were increased if the victim was a female (Regoeczi et al., 2000). According to Schafer, Caetano, and Clark “male to female partner violence is more often repeated and is more likely to result in injury and death”(1998). This relates to the sex variable in that if more women are killed in intimate partner violence, then strangers are not responsible, which makes their case easier to solve, especially since intimate partner homicides are generally committed with personal weapons such as stabbing or strangulation (Schafer et al., 1998). Because there is less physical space between the offender and victim when something other than a firearm is used, there is greater likelihood that DNA will be left and the assailant can be identified more quickly.

*Hypothesis 4: Homicide clearance rates will increase if the victim is white.* My findings were consistent with those of Regoeczi in that I found that cases involving a white victim were much more likely to be solved than cases involving a non-white victim in all three geographic locations. However, my white category also consisted of any Hispanics in the data set, so my results may not actually represent what they seem to. Nevertheless my initial hypothesis was accepted. Because so much of the past research has found that police practices and policies are some of the most influential factors in relation to homicide clearance, it is important to consider these variables in my research as well, even though I am not studying them directly. Regoeczi, Jarvis and Riedel note that “homicides involving white victims should be cleared more

quickly than those involving minorities” because of how the social status of victims affects the investigative efforts of police (2008). White people generally live in more affluent areas where murder is less common and witnesses would be more likely to cooperate with police. In addition, because of the correlation between socioeconomic status and race, public pressure to solve a murder involving prominent members of a community may cause police to put more effort into solving a case involving a white victim.

*H5: Homicide clearance rates will be higher in small geographic areas if the victim is white compared to the clearance rates for cases involving a white victim in a large city.* My findings do not support my initial hypothesis. Clearance rates were increased if the victim is white no matter where the homicide took place. Robert J Sampson notes that the economic and family structures of blacks and whites differ considerably, which greatly affects the rate of homicide. Yuh-Yuh Li adds, “The proportion of female-headed families and the percentage of families below the poverty line, for instance, are much higher among blacks than among whites” (2011). Because Colorado is not a very diverse state, the large cities have the highest population of non-white citizens. According to the U.S Census Bureau, a large city like Denver is around 65% white and 11% African American. A small geographic area like Littleton is 91% white and 1% African American (US Census Bureau, 2010). Because social ties and trust in the police are much lower among non-white citizens, it is consistent that fewer homicides would be cleared in an area that has a higher population of non-white citizens. However, because Colorado as a whole is predominately white, it makes sense that cases involving white victims would be

easier to solve no matter the location. In addition, regardless of where the white people live, so long as they live in an affluent community and have strong ties to that community, the majority of its population will be willing to help, and thus the police will have more information to go on. Because non-white people tend to live in areas with lower socioeconomic status, their community ties are lower and witness cooperation is severely reduced, which decreases the likelihood of solving a homicide.

*H6: Homicide clearance rates will be lower in large cities when a gun is used compared to when a gun is used in a small geographic area.* My findings do not corroborate my hypothesis. While I thought that clearance rates would decrease in large cities when a gun was used to commit the homicide, in reality the likelihood of clearing a case involving a gun is decreased in small cities and is not significant in large cities or Colorado as a whole. In large cities, the drug markets are often “staffed by young people with few ties to conventional institutions of social mobility and social control, who have ready access to handgun, and who lack fundamental dispute resolution skills and impulse controls” (Lee and Bartkowski, 2004). This would naturally decrease the likelihood of solving a case because there is not a strong link between offender and victim. Also a gun is generally used, which means that less physical evidence linking the offender to the victim will be present and fewer witnesses who were able to see the offender would be available. While the drug dealing example holds true, I suppose it is also important to consider that there can be many other types of homicides in small geographic areas other than drug related homicides. Just because drug dealing resulting in violence is less common on street

corners in small geographic areas, it does not also mean that the other findings involving guns are not still true. If the offender uses a gun during a homicide in a rural area, there is still less physical evidence available and less of a chance that a witness saw what happened. Also if anything the social ties that exist within a small geographic area may cause witnesses to hold back incriminating information involving people close to them.

While the focus of my research was primarily on crime and victim specific characteristics that affect clearance rates, I believe that each of these characteristics has a specific effect on clearance rates because of its relationship to a macro-level factor. For example, I found that cases involving white victims are more likely to be solved regardless of the geographic location. However, the reason behind this finding is not due to the color of the victims' skin. It instead has more to do with how race affects socioeconomic status, diversity within certain geographic locations, and cooperation with the police. This relationship between victim characteristics and macro-level factors can partly be explained by social disorganization theory and strain theory. Social disorganization theory "assumes that social structure influences social networks and social institutions and how they control the behavior of individuals, therefore, there should be a relationship with crime. Hence, social disorganization theory provides both a theoretical and a methodological framework for an ecological or macro-level study that focuses on such structural features as population size, family structure, socioeconomic status, residential instability, and ethnic heterogeneity" (Li, 2011). The root of this theory goes back to Durkheim in the 1800's. Durkheim believed that social disorganization theory "focuses on those

characteristics that refer to systematic social relationships that strengthen or weaken social control” (Li, 2011). However, it was developed to where it is today by the Chicago School of Sociology where they “assumed that crime was based on a lack of shared values and beliefs among members of a community, and an inability to solve common problems” (Li, 2011). Many of these classic criminological theories would see intrinsic differences between small geographic areas and large cities. However, these older views assume that social disorganization is not a problem in smaller geographic areas because there are more integrated social relationships between people and groups. My data prove that while the effect of some factors does not change depending on the location, the effect of others does have a significant effect. Clearly the assumption that there is more social control and less crime in small geographic areas is becoming less and less true because according to my data, there is crime everywhere and there are factors that significantly effect how crime is dealt with regardless of the location. In line with this, scholars from the Chicago School of Sociology “concluded that different neighborhoods manifest different rates of crime, and that an area’s crime rate changes over time concurrent with changes in its social and economic characteristics” (Li, 2011). It is clear that the fluid macro-level factors that exist in a community have a large effect on the individual level factors that directly influence homicide clearance. Because these factors are always changing and affect every area differently, it makes sense that the location of the crime does matter for certain factors.

The second theory that seems to have an effect on homicide clearance is strain theory. Strain theory, originally produced by Robert Merton, refers to the

pressure that citizens in a society feel while living under certain social structures, which often leads citizens to commit crime. For the purposes of this study, we will refer to strain in relation to socioeconomic disadvantage. From a social disorganization perspective, “socioeconomic disadvantage may undermine community social control, while from a strain perspective it may generate frustration and anomie” (Lee and Bartkowski, 2004). Because so many early theorists had many different ideas about the definition of strain, present models tend to use a multidimensional disadvantage model, which can include things like poverty, unemployment, and female-headed households. Many studies have found that socioeconomic disadvantages and homicide rates are positively associated across macro-level units of analysis. Evidence has suggested that this is true for both large cities and small geographic areas (Lee and Bartkowski, 2004). The example of drug dealers can be used to demonstrate the link between strain theory and the current research. While this can be looked at from a social disorganization model because drug dealers tend to have fewer social ties than most people, in reality many are pushed to sell drugs because of some macro-level strain such as poverty or lack of education. In large cities, these drug dealers (who are often younger in age) turn to the streets to make their money, and often rely on violence to settle their disputes. To keep up with the pressures of society they do what they can to make money and will often do anything they feel is necessary to protect themselves. These kids usually have easy access to deadly weapons and do their business on the streets, where no one knows them. The likelihood of getting caught for committing a violent act is slim because they are in such a large city and have a certain sense of

anonymity. However, while in small geographic areas these strains can cause people to turn to the same lifestyle as those living in large cities, they may not carry it out in the same way. In a small geographic area one cannot successfully execute a drug deal on the street corner because chances of being seen are greater, and the same access to weapons may not be available because of the geographic location. While a similar strain exists in both places, the geographic area can have a large effect on potential clearance because of the manifestation of the reactions to the strain in various areas due to geographical constraints. For example, in a small geographic area the same socioeconomic strain may exist as in a large city; however, because of the lack of availability of firearms there may be fewer homicides involving guns, which could potentially increase clearance rates.

It can be seen in the present research that the influence of various victim characteristics on whether a homicide is solved does matter depending on where in Colorado the homicide took place. In regard to the influence of weapon used and the sex of the victim, it does matter whether the homicide was committed in a large city or a small geographic area. The likelihood of solving a case involving a gun is decreased when it occurs in a small geographic area; however, there were not significant differences in the clearance rates if a gun was used in a large city or in Colorado as a whole. The probability of solving a case involving a male victim was significantly decreased when the homicide occurred in a large city or in Colorado as a whole, but was not significant when it occurred in a small geographic area. These findings can also be confirmed when considering the interactions that were found. There were significant interactions between city size and sex, weapon, and age. This

seems to suggest that the effect of sex, weapon, and age changes depending on where the homicide occurred.

However, in regard to the race of the victim and the age of the victim, location does not seem to make a difference in Colorado. This finding is very important for future research because it seems to suggest some sort of widely applicable pattern regarding victim characteristics that affect homicide clearance rates. Currently, much of the research being done has assumed that fact without having the data to support it. For example, Wellford and Cronin's 1999 study was one of the first studies to really consider the question of what factors affect homicide clearance rates. They took data from 20 large cities in the U.S and came up with a list of 215 variables to consider. At that time, researchers did not address the question of whether looking at only large cities would have limited the potential applications of their research. However, the present research suggests that maybe there is not an issue after all, at least in Colorado. By adding to the body of research in a new and innovative way, the present research is adding new pieces of information to the growing field of homicide clearance research.

While acknowledging the race limitation in the present study regarding Hispanics, I would still like to address the findings regarding race in this study. As I mentioned earlier, I found that if a case involves a white victim, there is a significantly higher chance that it will get solved, regardless of the location. It is my conclusion that this is in part due to the lack of trust in police in neighborhoods with a greater population of racial minorities. In their 2003 paper, Puckett and Lundman argue "successful homicide detecting hinges in part on information from witnesses

to the murder as well as information from other citizens who live where homicides occur and can tell detectives about victims and about potential violators” (2003). They go on to clarify “Scholars have regularly noted that citizens in African American neighborhoods do not trust police because police have long brought a far more heavy-handed and intrusive style of policing to Black as compared to White communities” (Puckett & Lundman, 2003). When citizens do not trust the police enough to feel comfortable relying on valuable information, especially in impersonal cases such as drive-by shootings, the possibility of clearing the case decreases considerably. This seems to correspond with the findings that more cases involving white victims are solved. One of the strongest limitations in this study is the exclusion of “Hispanic” as a separate race. Because I did all of the coding for the cold case data myself, Hispanics could have been placed in a separate “other” category. However, the SHR only collected Hispanic data for 13 of the 50 U.S. states, which did not include Colorado. This means that Hispanics were most likely put into the white category, which discounts my findings regarding the influence of having a white victim on the homicide clearance rate. Because of that I was forced to put all Hispanics into the “white” category to match the SHR coding. Although I found that being white increases the likelihood that a case would be solved in all three geographic locations, if the Hispanic data were taken out of the white category, the data would most likely look very different.

Additionally, another problem I ran into was the actual rate of homicides in small geographic areas in Colorado. While I technically was able to run the comparisons, my data set for the large cities hugely outweighed the data for small

geographic areas. I did find many statistically significant results, yet one can never know how the data may change if a proper sample was used.

A final limitation lies in the very nature of the data. Because the study involves data that is intertwined in the criminal justice system, much of the “ideal data” is unattainable due to confidentiality and legal issues. It would have been ideal to include more variables in this study, but it was not possible due to the lack of public information on cold cases in Colorado. Michael Maxfield described this phenomenon in his 1889 paper citing the limited body of knowledge surrounding the topic of cold case clearance to the lack of usable data (1989). Unfortunately I found this to still be true in 2016.

While this research seems to suggest that there may be less variance in the factors that affect homicide clearance within states, one needs to keep in mind that victim characteristics were the primary variables considered. Previous research such as Regoeczi, Kennedy, and Silverman’s article comparing clearance rates in the U.S to those in Canada and Wellford and Cronin’s multisite analysis seem to suggest that the characteristics of the crime and the individual features of the police force, as well as their investigation, may have a large role in determining homicide clearance (Wellford and Cronin, 1999; Regoeczi et al., 2000). In other words, my study may have added to the literature of what does not affect homicide clearance rates, but there is still much to be done in terms of establishing what does.

In addition, future research would ideally include multiple states. It is impossible to definitively state that the small geographic area vs. large city variable does not make a difference in clearance rates if only one state was looked at.

Preferably this research would be conducted in places that were more research-friendly and willing to share more data than what is publicly available in Colorado. By increasing the number of overall cases and creating diversity in the study by examining several different states, one would be able to make more of a definitive claim regarding what factors truly have a significant effect in different geographical locations.

This current study highlights several variables that clearly need more research, the most obvious being race. I believe a meta-analysis is needed to bring the body of research together. As it is now, every study seems to have a different opinion on race. For example, my study seems to suggest that homicides involving white victims are more likely to be solved. However, in 2001 Mouzos and Muller found that cases in Australia involving non-white victims were most likely to be solved. In addition, Wellford and Cronin found that victim race did not have a significant influence on clearance rates at all when considering several large cities across the U.S (1999). By compiling a large data set including small geographic areas and large cities from many different states that includes detailed information on race, one general conclusion may be reached for the field of homicide clearance, rather than many state-by-state conclusions.

In addition, I think it would be beneficial to consider a socio-economic variable. Because race is considered in the present study, as well as the potential that racial minorities are impeding investigations because of their lack of community involvement, I think it is a logical step to then look at the socio-economic status of the victims. Puckett and Lunman also cite this as a limitation to the current

body of research (2003). While it is easy to connect well research relationships such as the one that exists between minorities and lower socioeconomic status, being able to classify each victim's individual status would provide a stronger argument regarding that relationship and how it affects crime.

As a final note, it is important to remember that cultural differences probably influence other variables not included in this study. Something to consider for future research is how other variables interact with the factors that I found to be significant. For example, socioeconomic status may be another variable that could have a large impact on clearance rates. Because socioeconomic status tends to covary with race, race and clearance may have a spurious relationship, with the driving factor actually being socioeconomic status. In addition, something like the percentage of the population that owns a gun might be something to be considered. Maybe more homicides are committed with guns in small geographic areas because people use guns in small geographic areas more frequently in their everyday lives than those in other locations do. Because there is a general consensus in the literature that cases involving guns might be harder to solve, a finding that small geographic areas have more guns would imply that cold cases may be harder to solve in those locations. When comparing factors in different geographic areas it is important to keep in mind that you have to use the term "causes" very loosely because the locations do vary so much in other factors unrelated to the characteristics of their homicides. While I did not address factors that others have looked into such as police forces, collection and processing of evidence, and circumstances of the crime; it is important not to exclude these from my findings.

Ultimately, everything that goes on during a homicide investigation, including but certainly not limited to victim characteristics, where it took place, and the police department that is working the case, comes together to influence how a case is or is not solved. While I did find several significant results, those findings are part of a bigger pool of research that is being compiled in an effort to get the whole story behind homicide clearance rates. Every new study including the present one gets us one step closer, but we need to give attention to all possible areas in order to determine the actual factors affecting homicide clearance rates.

If the data found in this paper proves to be true outside of Colorado, it suggests several ways to improve clearances rates across the country. First, by adding things that bring citizens closer together to areas of low socioeconomic status like community centers, the community ties may be strengthened and more community policing may arise. What this means is that, as these neighborhoods exist now, every family lives as its own separate unit. If a gunshot is heard outside of a family's window, they may not be inclined to investigate further or even report it because they have no connection to their surrounding community. If facilities and events are put in place that help people get to know their neighbors, they may be more willing to talk to police in the event of a crime. Related to that, the police need to increase the level of trust that the public has for them, particularly in communities that have a large minority population. If the police held events so the community could get to know them better as individuals, they may have more luck getting people to talk during the investigative process.

Additionally, as mentioned before, much of the variation of individual factors affecting clearance rates can be attributed to macro-level factors. Because of that it makes sense that by addressing the macro-level problems, the effect of some of the individual factors on clearance rates would also be changed. I propose that by directing attention to problems within police departments such as pay decreases, shortening or elimination of training programs, relying on volunteers and insufficient numbers of employees, clearance rates could be increased. If there were more adequately trained personnel, cases involving minority victims or lack of witnesses would not have to be placed on the back burner. Equal attention could be paid to all cases and hopefully the effect of individual victim characteristics would be diminished.

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