

MICROPOLITAN VS METROPOLITAN:
AN EXAMINATION OF CITY SIZE AND POLICE FUNDING IN TEXAS

by
WILLIAM “CASEY” HEATH

DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy at
The University of Texas at Arlington
August, 2021

THE UNIVERSITY OF TEXAS AT ARLINGTON

August 2021

Arlington, Texas

Supervising Committee:

Dr. Rod Hissong, Supervising Professor

Dr. Jiwon Suh

Dr. Alejandro Rodriguez

ABSTRACT

MICROPOLITAN VS METROPOLITAN:

AN EXAMINATION OF CITY SIZE AND POLICE FUNDING IN TEXAS

William Casey Heath, Ph.D.

The University of Texas Arlington, 2021

The current investigation seeks to understand if similarities or differences in police funding exist between metropolitan and micropolitan cities in Texas. Little is known about the micropolitan cities and police funding for micro cities. Therefore, the general assumption is that metropolitan and micropolitan cities operate similarly. However, the sizes of the cities vary significantly, where metropolitan cities generally comprise cities with populations over 50,000, and micropolitan cities comprise populations between 10,000 and 49,999. In addition, most research focuses on the enormous cities or the rural towns regarding police funding. Therefore, the investigation attempts to address the wide gap of literature involving police expenditures and the size of the city.

Copyright by
William Casey Heath
2021

ACKNOWLEDGEMENTS

For the past several years, the support from faculty, friends, and family guided me through this new chapter in my life. The dedication and support from you have helped more than I could ever express. Countless amounts of time have been spent working on achieving this goal in my life. I will forever be thankful you have been a part of my life. Thank you to my dissertation committee members Dr. Alejandro Rodriguez, Dr. Jiwon Suh, and a special thanks to my dissertation chair, Dr. Rod Hissong. The countless amount of time Dr. Hissong spent guiding me through the dissertation and coursework are immensely appreciated. Thank you Dr. Rodriguez and Dr. Suh for your help and encouraging words. Many times, achieving this milestone seemed impossible, but with all of your help it has become a reality.

I also wish to thank my colleagues at my place of employment. It is impossible to include everyone from my employment, but a special thank you to Dr. Alex del Carmen, Dr. Rhonda Dobbs, Dr. George Eichenberg, Dr. Brittany Rodriguez, Dr. Eric Morrow, Mr. Matt Welch, and numerous others whom I have the pleasure of knowing and working with, for believing in me and your continued support. Many times you have heard my frustrations, but through encouragement and reinforcement I have achieved an amazing goal in my life. So many of you all have had a significant impact in my life. Thank you very much.

DEDICATION

With out the help and support of my family, I would never have achieved this major goal in my life. Therefore, I wish to dedicate this work to my family and friends. I wish to express gratititude to my daughter RaeLynn, wife Jennifer Heath, father-in-law Walter Lowe, mother-in-law Victoria Shockley, Debbie and Randy Lowe, and my mom Ruth Heath for all that you have done for me. In addition, thank you to the numerous other family memebers and friends for being there for me during the challenging times. Words will never be able to express the appreciation and love I have for you all. Plus, there is not enough space needed to dedicate my gratitude to you. Therefore, thank you to my friends and family for your continued support. Casey.

Table of Contents

Chapter 1, Introduction	1
Chapter 2: Literature Review	15
Micropolitan America	15
Budget Concerns	23
Politics at play	26
Police Expenditures Per Capita	35
Policing Services	41
Chapter 3: Operationalization	55
Economies of Scale	57
Slice of the Pie	59
Incrementalism	68
Chapter 4: Methodology	76
Panel Data	78
Statistical Model	83
Dependent variables	85
Independent variables	89
Police provisions	90
Economic factors	97
Crime related	100
Racial Demographics	103
Control Variables	105
Descriptive Statistics	106
Comparison of Means	112
Chapter 5: Findings	143
Discussion	143
Regression Model 1: Economies of Scale	145
Regression Model 2: ‘Slice of the Pie’	149
Regression Model 3: Incrementalism	152
Chapter 6: Conclusions	155
Hypothesis 1 Economies of Scale	155

Hypothesis 2, ‘Slice of the Pie’	160
Hypothesis 3, Incrementalism	162
Policy Implications	166
Conclusions	168
Limitations	172
Future Research Implications	174
References:	177

List of maps and tables:

Table 1 Operating budget of local police departments, by size of population served, 2003	61
Table 2 Sample of Panel Data Collected	80
Table 3 Metropolitan Cities in Texas.....	109
Table 4 Micropolitan Cities in Texas.....	110
Table 5 Descriptive Statistics.....	111
Table 6 General Fund Expenditures, per capita of city's population	114
Table 7 Police Budget Expenditures, per capita of the city population.....	116
Table 8 Percent of Gen. Budget spent for Police Serv. (Slice of the Pie)	118
Table 9 Percent Change of the Police Budget from Previous Year	120
Table 10 Certified Peace Officers in Texas cities per 1,000 population	122
Table 11 Texas Department of Public Safety Population Estimates	124
Table 12 Traffic Stops Made per 1,000 population	126
Table 13 Crashes Reported per 1,000 population.....	128
Table 14 Uniform Crime Reported Offenses per 1,000 population.....	129
Table 15 Quality of Life Arrests, per 1,000 population.....	131
Table 16 Median Housing Values.....	134
Table 17 Employment Travel Time	136
Table 18 Poverty Level, per 1,000 population.....	137
Table 19 Density per SQ Mile	139
Table 20 Political Party Affiliation.....	141
Table 22 Metropolitan-Micropolitan Random Effects Regression Models- Balanced Set	144
Map 1: Texas Metropolitan and Micropolitan cities' geographical location	108

Chapter 1, Introduction

In the early 1830s, Alexis de'Tocqueville traveled extensively throughout the developing United States with the intent of understanding the 'experiment' government (Tocqueville, 2006). During Tocqueville's travels, he made numerous observations of the 'experiment' of the system of governance and compared, but contrasted, the differences between the European system of governance (Tocqueville, 2006). Tocqueville's (2006) observations of the 1830s experimental government system had survived the test of time with general success and some shortcomings.

Of Tocqueville's numerous observations, he commented on the relationship structure between the cities and the federal government. Tocqueville (2006) noted how different and unique the system of governance occurred in the United States. Unlike European countries with strong federal oversight of cities, the United States federal system left the governance up to the individual states to establish the most appropriate system of managing and organizing the operation of the cities (Tocqueville, 2006). The federal government took a hands-off approach to the governance of the cities. Tocqueville (2006) advocated that a bottom-up analysis of the United States was necessary to understand the phenomenon of the United States.

According to Tocqueville, to understand the system of government, one must begin with the first order or township and then progress to the county and then the state (Tocqueville, 2006). Local communities tended to have more hardships and "encroachments of authority" from higher power structures at the state and federal levels of government (Tocqueville, 2006, p. 61). Tocqueville's (2006) words about hardships and encroachments resonate today with the competition of municipalities within a state. These hardships may impart higher strain levels upon the smaller-sized communities meeting their responsibility of supplying public goods. Before research can appreciate government actions at state and federal levels, Townships face several mandates from the state and federal levels that present more significant challenges on the

city's administration (England et al., 2012). Tocqueville's (2006) superannuated work continues to offer relevancy that extends to contemporary times. However, Tocqueville's (2006) work observed obsolescent practices that no longer adequately describe a city or state operations, the idea of starting small continues to offer a revisit of the practice for more new city operations.

However, Tocqueville's (2006) examination of cities presented a set of challenges for universal comparison due to the variety of governance practices between states. During Tocqueville's (2006) nine-month observation period of the then-defined United States, federal and city governance followed more straightforward practices. It offered fewer amenities than the modern city in the United States. Since states had the flexibility to create local governments and determined the most effective method of governing the municipalities (England et al., 2012), the complexity of creating a baseline of understanding created a challenge. In addition, state laws and constitutions regulating local municipalities varying widely from state to state compound the understanding of city operations on a wide-scale basis.

The research project addressed in the following pages attempted to follow Tocqueville's (2006) advice by examining phenomena occurring at the city level. These words by Tocqueville (2006) resonated in the research project that revolved around city budgets. Although, as explained within subsequent pages, understanding the budget process tended to focus on federal or state budget cycles, city-level understanding of the budget process appeared to examine singular cities. With the obscured understanding of the city-level budgetary process, the question arose, with limited understanding of city-level budget processes, could one understand the state and federal level negotiations. In addition, unanswered questions tended to arise, such as what, if any, differences in city expenditures occurred between categories of city statistical areas.

When researching for evidence of budget operations, most investigators examined the federal government, large metropolitan municipalities, and rural areas. However, a crucial piece of the puzzle was missing from research. Most research overlooked the middle-sized cities and their role in the system of government. For example, when searching for evidence of budget operations, one could find several examples of the budget process in large metropolitan cities. Similarly, an investigator seeking evidence about rural areas funding practices may find evidence of the practice. However, middle-sized cities with populations between 10,000 and 50,000 disappeared from research interest, especially in budget analysis. Using Tocqueville's (2006) concept of examining small and working up, the middle-sized cities offer the missing data to form a complete conversation. Thus, with the gaps of the current literature, middle-sized cities in the United States offered missing evidence to gather a more precise but still incomplete picture of these middle-sized cities in the U.S.

As defined by the OMB Bulletin No. 18-04 (Mulvaney, 2018), metropolitan statistical centers offer the current listing of the United States Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas. As explained in the bulletin and previously discussed, Metropolitan Statistical Areas had at least one urbanized area with a population of 50,000 or more (Mulvaney, 2018). As measured by commuting ties, the areas serve as an economic and social integration hub (Mulvaney, 2018). Micropolitan Statistical Areas had at least one urban cluster with 10,000 but less than 50,000 population, and the core had a high degree of social and economic impact as measured by commuting ties (Mulvaney, 2018).

The definitions of the Metropolitan Statistical Areas may also contain several cities that would qualify as Micropolitan Statistical Areas if the commuter times were further away from the urban center city. As the Federal Register (Sunstein, 2010) defined, the principal

city was the most prominent incorporated place with a minimum population level of 10,000 in core-based statistical areas. Other incorporated places that meet the criteria were considered principal cities (Sunstein, 2010). Other principal cities within a Metropolitan Statistical Area, as outlined in the Federal Register (Sunstein, 2010, p. 37250), include cities that were:

incorporated or census-designated places that have a population of at least 250,000 in which the number of workers is 100,000 or more; (b) places with a population between 50,000 and 250,000 where the number of workers working in the place exceeds the number of working residents; and (c) places with a population between 10,000 and 50,000 where the number of workers working in the place exceeds the number of working residents and are at least one-third the population of the largest principal city.

Based on this definition of principal cities, smaller sized micropolitan cities and smaller sized metropolitan cities located within the Metropolitan Statistical Area may be excluded from the designation as a principal city. Understandably, more substantial metropolitan areas were the subject of interest in many of the published research. The large population size generates greater interest due to economies of scale. The population figures for 2010 estimated the population at 308,745,538 (S. G. Wilson et al., 2012). Of this figure, 289,261,315 people, 83.7 percent of the total population, reside in metropolitan statistical areas (S. G. Wilson et al., 2012). Micropolitan statistical areas contain 30,943,552 persons or 10.0 percent of the total population. Outside of core-based statistical areas reported a population of 19,484,223 residents or 6.3 percent of the population (S. G. Wilson et al., 2012). Approximately one-quarter of the population living in the United States live in one of the nine metro areas with 5 million or more (S. G. Wilson et al., 2012). Wilson et al. (2012) report that one of every ten people lives in the two largest cities, New York or Los Angeles. Wilson et al. (2012) state that about 30 percent of the population lives in the forty-two metro areas, with populations ranging from one million to five million in population.

Cities with 1 million or more populations were primarily located in the Northeast, upper Midwest, Florida, Texas, California, and Washington (S. G. Wilson et al., 2012). The five most populated cities in the United States were New York, Los Angeles, Chicago, Dallas-Fort Worth, and Philadelphia (S. G. Wilson et al., 2012). Cities with populations between two million and five million persons in 2000 experienced the fastest growth rate of 13.6 percent increase between 2000-2010 (S. G. Wilson et al., 2012).

In the United States, approximately 94.3 percent of the population resides in the metro (about 85.8 percent of the population) or micro (about 8.5 percent of the population) statistical areas (Mulvaney, 2018). Metro and micropolitan statistical areas follow the Office of Management and Budget (OMB) 2009 definitions (Sunstein, 2010; S. G. Wilson et al., 2012). The growth rate of micropolitan cities was related to population size (S. G. Wilson et al., 2012). The larger micropolitan statistical areas experienced higher levels of growth versus small population micropolitan statistical areas (S. G. Wilson et al., 2012). Of the five least populous micropolitan cities, two were from Texas, Vernon, with a population of 13,535, and Pecos, with a population of 13,783, two in Alaska, and one in Louisiana (S. G. Wilson et al., 2012).

Each statistical area for metropolitan and micropolitan cities comprised one or more whole counties with a core urban area as defined by the Census Bureau as having a high degree of social and economic integration with the urban core (S. G. Wilson et al., 2012). Metropolitan area qualifications require at least one urban area with 50,000 or more core-based statistical areas (CBSA), while micropolitan statistical areas had at least one urban cluster with a population less than 50,000 but greater than 10,000 (S. G. Wilson et al., 2012). The principal city or multiple cities may qualify as the CBSA, dependent upon population and employment requirement

defines the principal city or cities (S. G. Wilson et al., 2012). Dallas-Fort Worth-Arlington Core Based Statistical Area contains 6,371,773 population.

To qualify as a metropolitan area, the CBSA was considered a geographic entity with at least one core area with a population of 10,000 or more, plus the adjacent territory had “a high degree of social and economic integration with the core as measured by commuting ties” (Sunstein, 2010, p. 37249). Urbanized areas of 50,000 or more were considered metropolitan statistical areas (Sunstein, 2010). Texas had 46 micropolitan statistical areas and 25 metropolitan statistical areas as of 2018 (Mulvaney, 2018).

Overall, the land area inside a core-based statistical area comprises 1,649,928.4 square miles or 46.7 percent of the total land area (S. G. Wilson et al., 2012). Metropolitan statistical areas in the United States occupy 912,992.1 square miles or 25.8 percent of the total land area. Micropolitan statistical areas comprise 736,936.3 square miles or 20.9 percent of the total land area (S. G. Wilson et al., 2012). Areas outside the core-based statistical areas comprise 1,881,977.0 square miles and occupy the remaining percentage of the land area of 53.3 (S. G. Wilson et al., 2012).

Demand for understanding the operation of these large metropolitan areas motivates the need for more research in these areas. Most researchers tended to have a greater interest in areas where the population demands the most attention. As a result of this demand, several topics affecting large metropolitan areas (such as sprawl, taxation incentives, crime, transportation) occupy volumes of journal articles. The articles frequently included in the discussion about metropolitan areas involved examining the budget process concerning the municipal provision of services. Vias (2011) contends that most focus on large metropolitan areas. Bee and Moulton (2015) omitted the micropolitan cities in their research over municipal budgets. Bee and Moulton

(2015) examined municipal budgets with a mean population of 240,797 but excluded cities with populations under 50,000. As such, McCarty, Ren, and Zhao (2012) examined police strength and funding for new officers in cities with populations over 150,000, again omitting micropolitan areas. Oberfield (2019) examined police officers' attitudes from an unidentified sizeable urban city for over ten years. Similarly, Srinivasan, Sorrell, Brooks, Edwards, and McDougle (2013) examined personnel management from a large urban U.S. city with a population of 204,389. Svara (1999) surveyed metropolitan areas with populations over 200,000.

Of interest in this spatial distribution, in 2010, Texas was the only state with a metropolitan statistical area listed in the top five most populous places in the United States, including the Dallas-Fort Worth-Arlington metropolitan statistical area (S. G. Wilson et al., 2012). However, Texas also shared two of the least populous cities in the micropolitan category, Vernon and Pecos (S. G. Wilson et al., 2012). This phenomenon made the State of Texas unique for comparison standards for this project. Other states had a mixture of metropolitan and micropolitan cities, but no other state had a metro area in the top five and a micro area in the bottom five.

Some similarities did exist between metropolitan and micropolitan cities in Texas. All the micropolitan cities offer some level of public services (water and street maintenance). Except for two Texas cities, most provided various levels of public safety (including police provisions). After examining numerous city budgets, the public safety departments consumed large portions of the general budget of all examined cities located in Texas. A competition between fire and police services for the costliest service appeared to follow the regular practice. However, in most cases, police provisions gobbled up most of the expenditures provided by cities. While the fire services were not included in this project, future research in the field may offer a clearer

understanding of the considerable expenses. One unnoticed critical component involved expenditures for police provisions in micropolitan areas. Since this critical provision concerning police was missing from the literature, general assumptions from metropolitan cities filter onto the micropolitan areas.

Of all the expenditures for cities, public safety funding for police and fires services consumed a majority of the general budget (Found, 2012; Walzer, 1976; Zhao et al., 2010). Therefore, understanding what factors contribute to funding for the more contentious of the two public safety services becomes essential in a democratic society. In addition, police services and expenditures typically become the focal point of debate for elected officials and citizens (Bee & Moulton, 2015; Guillamón et al., 2013). In addition, with the supply and demand of qualified persons willing to accept positions in police departments, attempts to entice qualified individuals increased costs for police services (J. M. Wilson, 2012). Cities compete with other cities to attract the individual with benefits and salaries (J. M. Wilson, 2012). Thus, this distinction offered a broad spectrum of analysis for examining police expenditures on a per capita basis within a state to understand better the similarities or differences between spending patterns, especially with the current climate calling for massive reductions in police spending in metropolitan cities.

Given the added complexities of city governance varying from state to state, a baseline of one state government system may provide a more precise starting point for future comparisons. All cities and urban areas within a state were unitary systems of municipal governments in competition to attract residents, but all cities were creatures of state government (England et al., 2012, p. 35). England et al. (2012) reference that municipal governments compete to attract citizens and quality employees to the city. The general assumption was that larger cities benefit

from economies of scale and supply police provisions at a lower cost to citizens. Thus, the examination of micropolitan cities became more important.

As Vias (2012) explained, micropolitan areas received limited attention, primarily in comparison to large metro or rural geographic areas. Vias (2012, p. S24) argued micropolitan areas remained a mystery as there was a “glaring hole” in understanding the evolution of the urban system in the United States. Scholars tended to overlook and had limited knowledge of the problems facing the micropolitan and small urban cities found outside the large metropolis CBSA centers (Mulligan & Vias, 2006; Vias, 2011, 2012). Due to limited research incorporating micropolitan areas, Vias (2011) and Mulligan & Vias (2006) argued that many generalizations involving micropolitan cities frequently took the same assumptions for policy delivery in metropolitan centers.

The misunderstanding of operations between the two categories of cities could create many unfounded assumptions (Vias, 2011). Findings from metropolitan studies juxtaposed upon micropolitan areas did not provide the complete picture of the landscape in the United States. For example, Carruthers and Ulfarsson (2003) examined the effects of urban sprawl in metropolitan areas. Urban sprawl contributed to the cost of provisions offered by the city government, and more compact, high-density cities were preferred (Carruthers & Ulfarsson, 2003). Many Texas urban centers embraced the concept of wide-open spaces and embraced urban sprawl. The research did not necessarily examine the effects of sprawl on micropolitan cities, and future research could address the potential effects of sprawl in micropolitan cities.

Research provided several examples of policy recommendations, supported by evidence of best practices or ineffective policy applications for large metropolitan areas. The discussed research articles in this project offered a microcosm example of research interest in large urban

areas versus medium-sized micropolitan areas. The examples of available literature represented a small sample of the overwhelming abundance of research for metropolitan areas.

In research, omitting medium-sized cities presented a challenge to fully appreciating the function and necessity of micropolitan cities in the United States. This omission created a significant gap in the available literature, as Vias (2011, 2012) advocated. One question worthy of examination involved if similar generalizations of metropolitan cities could be applied to micropolitan cities. The policy implications of the question presented a wide berth of future development regarding the topic. With literature gaps, there were many unknowns regarding micropolitan cities in the United States in general and specifically the metropolitan and micropolitan cities within Texas.

The tendency to believe that micropolitan areas dedicate the same proportion of the city's budget on police provisions as their metropolitan counterparts remained unknown and underreported. The policy implications of understanding the two different sized cities regarding police funding presented a challenging question: which city was paying either too little or too much for the services. By comparing the two categories of cities, one could better understand the police funding phenomenon between metropolitan and micropolitan cities.

In 2016, 15,322 law enforcement agencies employed 701,000 law enforcement officers in the United States. This employment statistic included municipal, county, regional police departments, state, and highway patrol agencies but excludes special-purpose agencies, sheriffs' offices with only jail or court duty, and federal agencies (Hyland & Davis, 2019). Of the 15,322 law enforcement agencies in the U.S., local police departments represent 80 percent (12,261) and employed 67 percent (486,000) full-time police officers. The remaining 20 percent (3,061) were

the other law enforcement agencies not represented as a local police department (Hyland & Davis, 2019).

In the United States, approximately 6.1 percent, 743, of all local police departments serve populations of 50,000 or more (Hyland & Davis, 2019). These agencies serve populations in areas designated by the OMB as metropolitan cities with over 50,000 (Sunstein, 2010). In 2016, there were 429 local police departments for cities with populations between 50,000 to 99,999 in population, 207 local police departments serving populations between 100,000 to 249,000, 57 police departments serving populations between 250,000 and 499,999, 34 local police departments serving populations between 500,000 and 999,999, and 16 local law enforcement serving 1 million or more (Hyland & Davis, 2019). This range of local law enforcement encompasses what was considered by the OMB to be a metropolitan city. A beginning on understanding police expenditures involved the number of personnel working for the department, as the most lavish expenditure of the police budget involved personnel.

However, the challenge to addressing police funding originated from the size of personnel employed in the agency. Therefore, it was necessary to understand the complexity of the situation. For instance, local police departments in the United States comprised 15,322 general law enforcement agencies staffed by an estimated 701,000 law enforcement officers (Hyland & Davis, 2019). Of these agencies, many law enforcement agencies in the United States comprised a large workforce in metropolitan and micropolitan areas (Hyland & Davis, 2019). Services and salaries for employees drive the impact of the size of police budgets (Coe & Wiesel, 2001). Therefore, the number of employed officers significantly impacts understanding how spending occurred for police provisions in metro and micropolitan cities. Economies of scale suggested that increasing officer employment in larger metro cities may have more cost-

effectiveness than in micropolitan cities. However, what remains unknown was how the large workforce, the largest workforce in several cities, impacts police provisions in metro and micro cities. Even though crime rates had declined over the past decades, police expenditures continue to rise, with very few making cuts (Coe & Wiesel, 2001).

It was important to note that Hyland and Davis (2019) did not differ between metropolitan and micropolitan statistical areas. However, Hyland and Davis's (2019) findings represented a difference between the metropolitan and micropolitan local police departments. This examination provided an overview of the importance of understanding the funding process in micropolitan cities. By examining Hyland and Davis's (2019) findings, the smaller, local police agencies serving populations between 10,000 and 49,999 comprise 23 percent of the local police departments by the size of the population in 2016. Populations with 10,000 to 24,999 had 1,910 local law enforcement agencies, and populations between 25,000 to 49,999 were 915, in 2016 (Hyland & Davis, 2019).

Given the limited knowledge about the micropolitan system and the system's operation, factors into the landscape offer paramount importance on how to govern these geographic areas effectively. One could assume the micropolitan areas closely mimic metropolitan areas for public safety funding applications. Therefore, considering the current gaps in the literature, did micropolitan areas more resemble a mini-metro area or a larger rural area. Reimagining the micropolitan landscape may alter the stigma of incorrectly considered rural or mini-metro cities. Many may make the general assumption that geographical distance from a large metropolitan area may lend to the inaccuracy of calling the micropolitan principal city rural or a suburb. Some may consider cities with populations of 10,000 located in an isolated area designates the city as rural.

The current research project followed Vias's (2012) comparisons between micropolitan areas and metropolitan areas in policing services. While comparisons existed between rural and metropolitan areas, few comparisons exist between metropolitan and micropolitan areas. This gap in the literature presented many challenges to understanding our system of governance. Zhao et al. (2010) provided a foundation for this research project by examining the funding of metropolitan cities with a population of over 250,000. Cities with less than 250,000 had little research dedicated to understanding the system, including police provisions.

While these areas may not have had the population, the landmass and services provided by micropolitan cities to feed into the metro areas nonetheless contributed to essential infrastructure needs and concerns. Based on available research, it became tricky to understand if micropolitan cities face similar problems to large metropolitan areas. If any, the question remains what impact large metropolitan areas and urbanization trends had on these small urban and micropolitan centers. Another question to examine did demand for police services differ between metropolitan and micropolitan areas. The purpose of this project was not to advocate for the defunding or abolishment of law enforcement agencies. However, the project did intend to seek if there were differences within micropolitan and metropolitan police budgets. Plus, this project seeks to decide if incrementalism was the predominant factor in the budget process in Texas cities. The widescale defunding of large metropolitan police agencies was a current political conversation, and the benefits or ramifications of such actions were yet unknown.

The purpose of this research project began by examining similarities and differences between micropolitan and metropolitan cities regarding police expenditures, crime rates, economic impacts, and population demographics. To accomplish the research project's goal, similarities, and differences of metro and micro cities by focusing on the principal city for the

combined metro and micro statistical area as defined by the Office of Management and Budget (OMB) (Mulvaney, 2018). These differences may offer the reader a detailed understanding of the uniqueness or lack thereof between principal cities listed as micropolitan statistical areas and a combination of populations served in metropolitan statistical areas in terms of police budgeting by adding compelling evidence to the subject.

General assumptions suggested micropolitan cities did operate differently than metropolitan cities. First, metropolitan cities had more significant economies of scale in comparison to micropolitan cities. With economies of scale present in large metro areas, the cost of police provisions may be less than expenditures in micropolitan cities. Second, crime rates in urban areas showed a decline over the past decade (Vogel & Messner, 2019). However, the overall crime rates per one thousand residents in cities tended to be higher than in suburban and rural areas (Vogel & Messner, 2019).

Moreover, the trend of government increasing in complexity with population growth might reverse. The current climate of some urban trends to defund policing systems in large metropolitan cities created an uncharted territory for researchers, as this was the first significant cut to police provisions. Over the past 50 years, the trend increased spending on police provisions, partially because a “tough on crime” stance was supported by political actors in urban cities (Kraska & Kappeler, 1997). Therefore, for the current research project, the following hypothesis involved examining the police funding budget process.

Chapter 2: Literature Review

Micropolitan America

Cities, in effect, were unitary systems of government that compete for businesses, residents, tax revenues, economic strength (Tiebout, 1956), and the need for qualified employees. Nevertheless, the new designation of micropolitan areas created an opportunity for urban scholars. Whereas most research focused on large metropolitan areas or rural areas (Mulligan & Vias, 2006a), a sizable portion of the middle-sized urban areas tended to linger in a research limbo. Many times, the micropolitan city became categorized as either the metro or rural city. With the general tendency to overlook the value of micropolitan areas, generalizations of micropolitan cities' functions tended to follow similar assumptions used for metropolitan or rural areas. As a result, the research evidence showed the need for continued investigation into the relatively new category of cities known as principal micropolitan areas (Vias, 2011).

With the new classification of micropolitan areas, most research relating to budgetary issues in police agencies focused on the large metropolitan areas or the complexities of resource allocation in rural areas. However, with the micropolitan classification entering into the mix of urban classification, the assumptions of micropolitan areas remain little understood. Based on the available literature, many unknowns surrounding micropolitan police agencies' functioning, including assumptions of metropolitan area police financial provisions operating like micropolitan departments. The discussions presented by earlier research failed to address the cost of police provisions within micropolitan areas. Vias (2011) was one of the leading proponents for understanding the micropolitan phenomenon. In Vias' (2011) estimation, there was a wealth of information regarding metropolitan and rural areas, but research was scarce compared to rural America and micro areas (Vias, 2011). Searching for literature for this project appeared to reinforce Vias' (2011) argument about limited information of micropolitan America.

As Denhardt and Catlaw (2015) suggested, there were more significant differences between large and small cities than public and private sector positions.

While a relatively new category of smaller urban areas, Mulligan and Vias (2006) argue, micropolitan areas remain relatively obscure to urban scholars and policymakers. The most common focus of policymakers and urban scholars involved comparisons between very large metropolitan and small rural areas (Mulligan & Vias, 2006; Vias, 2012). Nevertheless, Micropolitan America differs from metropolitan and rural areas (Oliver & Thomas, 2014).

Most classification systems tended to divide definitions of urban centers into either rural or urban systems. However, the only two categories of spatial areas may complicate problem-solving approaches due to outdated symbolic and social boundaries (Lichter & Ziliak, 2017). Furthermore, funding priorities typically address rural or large urban areas (Lichter & Ziliak, 2017) but overlooked the population centers in the middle. Therefore, as Lichter and Ziliak (2017) believed, a paradigm shift and rethinking should address outdated beliefs and measurement schemes and address the critical but often neglected cities that fall in-between.

Micropolitan areas offer a new way of examining the rural-urban interface in economic and social development (B. A. Weber et al., 2017). In some facets, micropolitan counties show similarities in their function compared to metropolitan areas supporting upward mobility (B. A. Weber et al., 2017). However, the lines between the metropolitan and micropolitan areas give the appearance of having a 'blurred border' between the two urban centers (B. A. Weber et al., 2017). Social capital in micropolitan counties may offer sufficient support for low-income youth than noncore counties or rural areas (B. A. Weber et al., 2017). At the same time, some micropolitan areas serve as core centers for more rural areas (B. A. Weber et al., 2017).

As Lichter and Ziliak (2017) advocated, the symbolic boundaries between rural and urban areas faced significant changes in a global economy. With greater mobility and increasing commuters using the nation's improved highway system, the boundaries between rural and urban were crossed more than probably any other time in history (Lichter & Ziliak, 2017). Since the definition of micropolitan areas was a new construct, the Census Bureau offered no official policy recommendations for the federal government to appropriate federal monies proportionately between large urban, rural, and micropolitan statistical areas (Lang & Dhavale, 2005). Since the micropolitan areas were not, by definition, metropolitan or rural areas, funding impacts with rural housing assistance, plus other governmental services.

To understand the urbanization process in micropolitan America, one must examine the land cover change in micropolitan areas (Oliver & Thomas, 2014). Even though micropolitan areas comprise about 10 percent of the U.S. population, Vias (2012) argued that the new statistical micropolitan areas were dynamic and occupied the space between large metropolitan areas and small rural locales. However, with the current literature gap, researchers had an incomplete understanding of the significance of the micropolitan centers.

Vias (2012) stated that one component of conducting an empirical analysis of micropolitan areas involved the economic structures within the city. The income and poverty, unemployment levels, occupational structures, and trends to economic growth could provide the discussion of the contributions micropolitan areas offer to the structure of the United States (Vias, 2012). Vias (2012) argued that advances in technology tended to find micropolitan areas more desirable due to lower tax rates, lower wage levels, and more affordable housing costs than metropolitan areas. In addition, the natural landscape tended to offer more significant incentives to relocate to metropolitan cities than metropolitan cities (Vias, 2012). Also, suburbanites and

edge city residents appear to find micropolitan areas more attractive than the conditions of suburban life (Vias, 2012).

Vias, Mulligan, and Molin (2002) reported that employment in primary sectors or sectors that convert natural resources to consumable products lost employment, while the service and trade sectors show higher employment trends. Also, micropolitan areas were increasingly diversifying economic bases, similar to other places in the United States (Vias et al., 2002). Nevertheless, manufacturing operations remained an essential factor in micropolitan areas (Vias et al., 2002). Moreover, government sector jobs in micropolitan areas became increasingly less important as employment sources. Vias, Mulligan, and Molin (2002) suggested that government jobs in micropolitan areas were less important than jobs in the service industry.

Micropolitan areas with increasing levels of diversification of jobs tended to develop similar attributes with other micropolitan areas nearby and took the appearance of a mini-metro (Mulligan & Vias, 2006). A sharper focus on diversifying the economic base offered the most economic strength in micropolitan areas. Mulligan and Vias (2006) found that increasing support of the transition towards micropolitan areas increased the number of places offering employment demanding specialized skills and government employment. As the population increases, the government's increased size occurred in the micropolitan areas (Mulligan & Vias, 2006). Micropolitan areas with primary employment fields in the mining industry tended to have declining population growth, but diversified centers show population increases (Mulligan & Vias, 2006).

Micropolitan cities may offer a different understanding of land consumption and population growth (Oliver & Thomas, 2014). The overall trend of growth of micropolitan areas increased in the Southern and Western regions of the United States but showed a gradual decline

in the Northern and Eastern parts (Mulligan & Vias, 2006). Evidence pointing to the increasing vitality of the micropolitan areas in the southern portion of the United States provided a focal point on the benefit of the current research surrounding micropolitan and metropolitan cities in Texas. Oliver and Thomas (2014) found that micropolitan areas offered many similarities and resembled services offered in the larger metropolitan areas when the population increased in micropolitan areas. Oliver and Thomas (2014) supported the concept of examining the land use patterns in micropolitan areas to understand the significance of political and socio-economic trends that affect urbanization. Much of the understanding of metropolitan areas follow the debate of urban sprawl and changes in population sizes (Oliver & Thomas, 2014). In essence, micropolitan areas offered compromises between the life of the metropolitan and rural areas (Oliver & Thomas, 2014; Vias et al., 2002).

Mulligan (2014) examined U.S. micropolitan areas in the southeast region, which overlooks Texas's region. The southeast region offered a unique assessment of micropolitan areas, where job growth was more substantial than other regions of the United States (Mulligan, 2014). However, micropolitan areas in the southeast show a decline in attracting and maintaining revenue-generating, basic employment (Mulligan, 2014). The micropolitan areas closer to metropolitan areas tended to have more successful employment records than those located further away from the central city (Mulligan, 2014). The relative distance to metro centers was essential in understanding the competition facing micropolitan cities. As Tiebout (1956) suggested, consumers, migrate to cities that meet their demands. The same could be assumed by employees seeking well-paying jobs and employers seeking qualified employees. Therefore, one could assume that the micropolitan city faces fierce competition to attract the most qualified employee with surrounding cities and metro centers closer to metropolitan cities.

The Great Plains section of Texas had too little demand for housing but was affordable due to low demand (Lang & Dhavale, 2005). As a result, Lang and Dhavale (2005) pointed out the economy in this area stagnated, and ongoing population losses since the 1990s. In addition, several micropolitan areas in the plains area of Texas and further west had difficulties retaining recent high school and college graduates who relocated to more attractive areas (Lang & Dhavale, 2005). In addition, another primary concern for micropolitan turnover involved the increased risk of employment stagnation and reduced productivity levels (Brown, 2018).

In contrast, Davidsson and Rickman (2011) examined industry composition impacts on micropolitan growth, including the industry type, census division location, and state and local policy variables. Of those variables, Davidsson and Rickman (2011) found areas with farming presented more robust growth in the labor market versus micropolitan areas with forestry, fishing, manufacturing, and mining as a primary employer tended to display adverse effects on the population size. In addition, significant adverse effects of housing prices followed areas with mining and manufacturing industries as a primary economic driver for the micropolitan city (Davidsson & Rickman, 2011). Of the variables, the census division location, as Davidsson and Rickman (2011) reported, shows the average January temperature offered a reliable indicator in the decision to relocate to a micropolitan area. Warmer temperatures tended to have the most significant impact on increasing the size of the micropolitan city.

Of interest, the most significant impact of population growth Davidsson and Rickman (2011) found was the distance from metropolitan areas to micropolitan areas. The distance suggested that micropolitan areas found in the extreme edges from metropolitan areas face a decline in productivity due to the proximity of the metropolitan area. Incremental increases in distance from metropolitan areas with more than 500,000 experienced significantly reduced

housing costs and more pro-growth housing policies than micropolitan areas more closely associated with metropolitan cities (Davidsson & Rickman, 2011). With increasing distance from metropolitan cities, the more isolated micropolitan centers tended to create a question regarding the number of government services available or provisions in these remote, isolated micropolitan areas.

Another factor for the increasing importance of micropolitan cities involved the upward mobility of youth. Micropolitan areas were unique in the relatively short commute times and the relationship between upward mobility in youth (B. A. Weber et al., 2017). The short commute times present more significant resources for those living in micropolitan areas and reap the benefits of both micropolitan and metropolitan areas (B. A. Weber et al., 2017). Lower congestion costs versus costs associated with living in metropolitan areas offered the development of more supportive activities (B. A. Weber et al., 2017). Besides, increasing numbers of residents were commuting from 'more desirable' micropolitan areas to work in the more lucrative metropolitan areas (Vias, 2012). Micropolitan cities tended to offer more significant opportunities for youth to succeed later in life, thus adding attract ability to relocate to the middle-sized cities (B. A. Weber et al., 2017).

Along with the upward mobility of youth living in micropolitan areas, Lang and Dhavale (2005) examined housing prices in western and southern micropolitan areas. The resort towns of the west offer picturesque scenery and delicate ecological resources that drive housing prices up (Lang & Dhavale, 2005). The supply was limited, while the demand remained relatively healthy (Lang & Dhavale, 2005). Many want to see the land developed as tourist destinations versus creating affordability problems for low-wage incomes and high home costs (Lang & Dhavale, 2005). With housing affordability issues, the younger residents may seek residences in cities

with more housing available, and the micropolitan city may lose the skill set of the younger populations.

Nevertheless, Lang and Dhavale (2005) examined the problems facing the southern states, particularly Texas. The premise of Lang and Dhavale's (2005) argument involved a state of limbo micropolitan areas face with federal funding guidelines. As shown in some regions of Texas, the housing problems and retention of the workforce for local micropolitan areas were experiencing a crisis. The more remote micropolitan areas may have more affordable housing and land, but these areas lack economically diverse employment opportunities for skilled workers (Lang & Dhavale, 2005).

However, business turnover in small, medium, and large metropolitan areas significantly increased (Brown, 2018). In contrast, business turnover rates transpired at lower rates in micropolitan areas (Brown, 2018). Metropolitan areas, especially after the 'Great Recession,' business turnover in service sectors declined more than goods-producing services (Brown, 2018). In service-producing sectors, turnover rates in small, medium, and large metros were significantly higher than those found in micropolitan areas. In both metro and micro cities, business turnover decreased from 2000 to 2014 (Brown, 2018). With Brown's (2018) suggestion, micropolitan cities may eventually transition to a major metropolitan center, and the former principal city may wither away to a lesser metropolitan center.

Even though the results show a significant difference in turnover rates between metropolitan and micropolitan areas, the overall results occurred on a small scale (Brown, 2018). Brown (2018) believed small changes in employment trends would significantly impact the future, as the market forces support more strong influences, whereas weaker firms will eventually fail. This phenomenon seems to be reinforced, especially with the COVID-19

pandemic contributing to the attrition of weaker businesses. If the trend continues, micropolitan and smaller metropolitan areas will likely continue to grow, while the medium and large metro areas face decline (Brown, 2018).

Budget Concerns

Ferreira and Gyourko (2009) suggested that the Tiebout effect of the competition was the most crucial factor impacting the city's budget. The intensely competitive nature of the cities within the same metropolitan areas tended to be the driving force for the budget (Ferreira & Gyourko, 2009). Smaller-sized cities may not have the resources to compete with larger urban areas. As Ferreira and Gyourko (2009) speculated, "economic responsibilities such as the provision of basic services and local taxes, not abortion and right to bear arms, were the province of city government."

Therefore, competition between cities for attracting residents may involve intense levels of promotional attractiveness to migrate into the urban areas, including a more potent policing force for the community and improving the safety factor. Tiebout (1956) mentioned that expenditures of government services, including police and fire protection, typically did not involve federal activity. According to Tiebout (1956), in the 1930s, these expenditures marred the decade where federal and local expenditures began to deviate significantly.

Tiebout (1956) suggested that in 1954, federal expenditures, excluding defense expenditures, were about two billion dollars lower than local expenditures. Tiebout (1956) made a great argument where he contended local expenditures were often neglected but significant "when viewed in terms of expenditures on goods and services only, take on even more significance. Therefore, according to Tiebout (1956), the critical question arose on what mechanisms were in place to ensure expenditures on local provisions were at the appropriate level.

Building on Tiebout's (1956) conceptualization of what constituted an appropriate level of spending continued to evade the interest of researchers. Again, Texas cities provided a starting point. When examining the expenditures for police protection between 2000 and 2019, several questions emerge regarding the spending levels in micropolitan Texas cities. The only significant adverse effect originated from state income taxes (Davidsson & Rickman, 2011), which Texas did not have a system of income taxes. Furthermore, it appeared that states with a state income tax tended not to attract new residents (Davidsson & Rickman, 2011). However, Texas took a step in a different direction in taxation policy. Instead of the city's ability to increase taxes, the Texas legislature imparted a law to effectively cap the amount of property taxes a city may increase over time.

Rodriguez and Portugal (2019) conducted a survey of Texas city managers from various population-sized cities. The primary concern involved the state legislature engaged in 'revenue caps' (Rodriguez & Portugal, 2019). With recently passed tax restrictions in the Texas Legislature, a taxation authority may not increase property taxes by 3.5% from the previous year's rate unless holding local elections to override the increase (Garcia, 2019). The fear from city administrators regarding the tax cap involved economic development and how the impact of the tax cap will impact revenue generation (Rodriguez & Portugal, 2019).

Rodriguez and Portugal (2019) found that Texas city managers support economic development through general funds. Also, Rodriguez and Portugal (2019) concluded that cities in Texas without a dedicated road tax were inclined to utilize general funds to pay for street maintenance and improvements. While not explicitly mentioned in the report (Rodriguez & Portugal, 2019), one could assume that most public safety entities in these cities receive funds

from the city's general funding source, too. These funds depended on the local property tax and sales tax to build the city's general fund (Garcia, 2019).

Thus, taxation policy played an essential factor in developing the underlying story of funding practices. Of all the city's expenditures, public safety agencies consumed the most substantial budget portions. Moreover, public safety expenditures contributed to the most onerous financial burdens in municipalities, regardless of size. Of these city public safety departments, law-enforcement expenditures consumed a substantial portion of the allocated public safety finances in metro and micro cities.

Of the expenditures, law enforcement expenditures commonly focused on costs for personnel, including salaries and benefits for the employees. Walzer (1976) explained that the salary was related to the number of officers employed by the agency. Walzer (1976) contended that since salary expenditures in police departments comprised the most substantial portion of the budget, the number of officers was directly correlated to the salary expenditures. Therefore, a way of examining the budget was to look at the number of police officers employed with a city may provide an alternative to examining the budget.

However, all expenditures offered greater importance in understanding the funding of micropolitan and metropolitan cities for this project. Walzer's (1976) dated finding still appeared to contribute a significant factor for examining a police department's expenses. Adding more personnel to a police agency, especially sworn officers, comes at a great expense to the city. An important question arose regarding how municipalities allocated or reallocate funds for police services. Metropolitan centers may find their operations cost less due to economies of scale, and personnel expenditures should cost less in metro areas than those employed in smaller micropolitan cities. The challenge for the agency head was to plead their case successfully to

those who oversee the funds. Incorporating the whole budget versus personnel costs may change the understanding of police expenditures.

Moreover, Walzer (1976) found a significant negative relationship between average cost and scale of population. However, no significant relationships existed between per-capita expenditures and population (Walzer, 1976). Walzer's (1976) main conclusion entailed the uncertainty of economies of scale due to the crucial role played by the scale variable. However, Walzer (1976) used a per capita formula between police officers and the population to uncover if the expenditures remained constant or increased. Thus, incorporating the whole police budget may provide the missing evidence of economies of scale in metropolitan cities.

Cities with high population growth experience increases in budgets (Coe & Wiesel, 2001). Plano, TX, Denton, TX, and Killeen, TX increased police provision spending by over 20 percent between 1996-1998 (Coe & Wiesel, 2001). Denton and Plano fall under the Dallas-Fort Worth-Arlington metropolitan statistical area, and Killeen was part of the Killeen-Temple metropolitan statistical area. Coe and Wiesel (2001) only examined cities with populations over 50,000. Police departments tended to have an 'ace in the hole' to leverage budgets; the 'ace' was crime, as few urban issues were as emotionally charged topics (Coe & Wiesel, 2001). Coe and Wiesel (2001) determined that the success of budget negotiations in police agencies was determined by increasing expenditures for the police department or defending against cuts in times of economic constraint (Coe & Wiesel, 2001).

Politics at play

The antiquated boundaries established by the federal government in the early 1900s fail to incorporate the changing landscape included fluid spatial boundaries and increasing numbers of commuters on the roads (Lichter & Ziliak, 2017). The obsolete spatial rural-urban areas had a new contender to add to the mix for designation purposes with the newly designated

micropolitan areas. Micropolitan urban areas were the middle ground between rural and urban cities (Vias, 2011). The micropolitan areas were unique structures where they were not rural but not metropolitan. With more cost-effective commuting options available, improved transportation systems, and increased mileage of road systems, micropolitan areas in the United States showed increasing growth and attractability for urban residents from large metropolitan cities (Mulligan & Vias, 2006).

Another factor facing cities of all sizes involved local political campaign promises. In Texas, elected officials run on a non-partisan ballot, but the policies they advocate may have partisan positions. More liberal cities supported more extensive governmental operations, whereas conservative cities supported more local control (Mize, 2016). Larger metropolitan cities were exploring austerity cuts for the burgeoning police department budgets to repurpose other alternative services. In addition, popular conservative movements view taxes as inherently wicked, with political campaigns advocating for reductions in property tax and reluctance to increase taxes to improve or increase governmental services (Rodriguez & Portugal, 2019). The trend for local municipal authorities was to function with limited income from property taxes and limited amounts of income from sales taxes (Rodriguez & Portugal, 2019). Mize (2016) expressed the sizeable, metropolitan cities favored more democratic partisan lines than smaller-sized cities.

With different political atmospheres within the state, funding distribution may have different approaches to achieving common goals. Stone (2011) made the case regarding paradoxical issues affecting equity and distribution of provisions. Nevertheless, truly little literature existed to examine if the type of city government or trending political affiliation (that favors more of a liberal or conservative ideology) affected the distribution of police provisions.

The primary challenge facing cities entails the distribution of provisions to the residents of the city. General uniform distributions across various departments arise because people (politicians and constituents) disagree with the relevant characteristics of recipients and items (Stone, 2011). The argument of who gets what and how much became the central issue for budgetary items (Frederickson et al., 2012). Someone holding an end-result of equity tended to support redistribution of provisions more so than someone who had a process-oriented view of equity.

With minimal research on partisan tendencies in urban areas, minimal evidence suggested how political actors participate in the budget process. Ferreira and Gyourko (2009) suggested that political ideologies in cities had minimal impact on the city's division or distribution of funds. The most crucial factor involved the Tiebout competition, where cities competed to design attractiveness to cities by lowering crime rates (Ferreira & Gyourko, 2009). The general concept behind non-partisan city elections sought to remove political divisions from the city but focus more on the city's needs. However, the idea seemed to diminish over time, as policy decisions by councils faced political partisan labeling practices.

In contrast, De Benedictis-Kessner and Warshaw (2016) contend that electing a Democratic mayor tended to increase the expenditures of the city government in cities with populations over \$75,000. Most Democratic mayors only modestly increase taxes, but most expansions occur from increasing debt (De Benedictis-Kessner & Warshaw, 2016). Local partisanship occurred at similar levels as found in the other levels of partisanship in the United States. Democratic mayors spend approximately \$96 more per capita than their Republican counterparts (De Benedictis-Kessner & Warshaw, 2016). Ferreira and Gyourko (2009) attempt to define the partisan nature of the city based on the mayor. However, Texas frequently used the

council-manager system of government, which may minimize the power of the city's mayor ("Local Government in Texas," 2015).

While the political party affiliation, as suggested by De Benedicts-Kessner and Warshaw (2016), may impact the fiscal policies of cities, determining the political party affiliation of mayors in Texas may prove difficult. Since cities in Texas did not use partisan ballots for elections, determining the party affiliation of the mayor to coincide with this project's dataset presents a challenge. De Benedicts-Kessner and Warshaw (2016) used a dataset to decide the party affiliation from the International City/County Management Association's Form of Government surveys. However, this survey was collected every five years. Thus, it did not align with this project's timeframe.

Evidence suggested the mayor-council or council-manager forms of government had more significant impacts on spending (Coate & Knight, 2011). Mayor-council forms of government spent about 16 percent less on a per capita basis than cities with a council-manager form (Coate & Knight, 2011). The form of government equates to approximately \$70 to \$150 in spending per capita per city. Cities with an average population of 24,000 persons tended to follow mayor-council forms of government (Coate & Knight, 2011). Council-manager cities' average population size was about 29,000 residents, as Coate and Knight (2011) described. Mayor-council cities tended to have older, poorer, lower education level residents and a more likely larger black population than the council-manager system. Thus, the council-manager and mayor-council system represented the most considerable evidence of the determination of spending versus whether the city was a home-rule or general law city. Most, if not all, Texas cities include a brief synopsis of the council-manager or mayor-council system in their respective budgets. All cities used in the research project followed a council-manager system.

The council-manager system, as used in all of the cities listed, home-rule governance became essential to understand as a whole topic. Hennessey (2016) proposed that municipal preferences of policy implementation impacted the decision to incorporate home-rule systems through demand driven by the municipalities. States with more heterogeneous or diverse populations were more likely to incorporate home-rule charters for municipalities in the state constitutions' (Hennessey, 2016). The drive for home-rule systems suggested that states cannot effectively govern diverse cities located within the state (Hennessey, 2016).

Moreover, the concept of devolution or directing powers from the federal system to state and local services had prevailed for several years. Returning discretion to state and local governments offered a devolution pattern back to the local authorities (Cole et al., 1999). With a system of devolved powers, gaps in federal funding force the states to supplement the remaining costs of unfunded mandates. Cole, Hissong, and Arvidson (1999) examined the concept of devolution from federal levels to local governments and how devolution impacted the state governments. The Regan administration proclaimed the concept of 'turnback' discretionary powers to state and local governments as a 'devolution revolution' and return control to the people (Cole et al., 1999).

The system of devolution that began in the 1980s had increased the challenges faced by state and local governments that transferred over to the definition of urban and rural definitions. There were no definitions of micropolitan cities during this period, but micro cities fell under the umbrella of metropolitan areas. With this increased blurring of the lines between rural and urban boundaries, new concepts of understanding classification regarding spatial boundaries should begin to permeate discussions (Lichter & Ziliak, 2017).

As a result of the devolved powers, Cole et al. (1999) surveyed city administrators employed in cities with populations over 100,000 and found that most administrators believed there were little or no changes at all. The status quo remained intact. From the city administrators' viewpoints, most reported low satisfaction rates of the federal government's handling of devolution. Cities located in states with more state-imposed rules had lower overall satisfaction levels than those administrators located in cities with fewer state-imposed rules (Cole et al., 1999), such as Texas.

Washington, D.C., provided an example of a home-ruled city that experiences several fiscal and significant urban problems (Myers et al., 1998). Using Washington D.C., as an example, explores the redistributive battles facing many cities in Texas for public funds. Since Washington D.C. was not located within a state and was a unique metropolitan area with the U.S., the Federal Congress functioned as the charter granting authority. Therefore, Congress had the federal authority to revoke the home-rule status for the city (Myers et al., 1998). This precarious political situation created several challenges where the Federal Congress had disagreements with the governing authority governing Washington, D.C., revoked the home-rule status (Myers et al., 1998).

With the inner-city problems experienced in Washington, D.C., many middle-class families had left the city and relocated to surrounding areas (Myers et al., 1998). As a result of this loss of population, the Washington D.C. tax base deteriorated significantly, thus impacting the services provided by the local government (Myers et al., 1998). The proposed answer to respond to the deterioration of the city involved the creation of the Control Board to rescue the city from the fiscal crisis (Myers et al., 1998). The goal of the Control Board was to examine

inefficiencies and practices of mismanagement in the city (Myers et al., 1998). The Board was showing some success in overcoming the crisis (Myers et al., 1998).

However, unlike Washington D.C., cities were creatures of state legislatures that act without federal authorization (England et al., 2012; Myers et al., 1998; Su, 2017). The federal government allows the cities to function at the will of the state, excluding forced mandates attached to federal grants. While the Federal Congress governs Washington D.C., states can control the cities within the state's geographical boundaries. This debate, like Washington D.C., involved political wrangling when city policies deviate from the in-power political party's ideological composition. Proposal for controversial policies enacted within home-rule cities pushed the debate to reexamine the purpose of home-rule to the forefront (Su, 2017). The conflict arose when the cities tended to enact policies that contradict the majority party control ideologies in the state legislature (Mize, 2016).

Home-rule cities enjoy more flexibility to adopt various local policies versus general-law cities that must follow state operation specifications (Mize, 2016). Home rule cannot violate the State Constitution or state laws, but otherwise, the city enjoys a concept of negative liberty, freedom from interference, until the state mandates changes (Mize, 2016). The state governs general-law cities more rigidly and under direct control. The state may define the distributive efforts of cities operating under this system of governance.

Mize (2016) provided an example of a controversial policy enacted by Denton, a home-rule city in Texas. Denton banned any forms of fracking for oil within the city limits that contradicted the mindset of state officials (Mize, 2016). With the increasing roles in governance, home-rule cities engaged in contradicting state policy interpretation priorities, like Denton's ban on using fracking, the process of injecting liquid at high pressure into subterranean rocks,

boreholes, and other underground geological structures to force open existing fissures and extract oil or gas. Su (2017) argued that cities were not using home rule to their advantage in influencing state-level political engagements.

No legislation at the time prevented Denton from deciding to ban fracking; therefore, Denton was legally allowed to enact the policy (Mize, 2016). As Su (2017) proposed, cities should engage in legal battles, not for immediate gains, but long-term interests to overcome political influences, such as the fracking issue in Denton. Nevertheless, the policy decision enacted by Denton faced intense scrutiny and punitive transactional language from political leaders at the state level.

However, the publicity generated from both political parties thrust the concept of home rule back into the arena of public discussion (Mize, 2016). Even though there were only a few general law cities in Texas, the government structure may play an integral role in understanding funding police provisions. Since several cities did not have partisan elections, determining how the residents' preference remained somewhat elusive.

Like the federal government's devolved powers, individual cities were free to enact policies at local levels unless the issue contradicts a politically partisan issue. The devolved powers of cities occasionally become thrust into the spotlight and coerced into revisiting the policy. Cities had fewer restrictions imparted by the state on defining how to distribute resources in the municipality unless specific laws at the state level delegitimize local policies. However, the state legislature occasionally reigns in the city—some of many examples of state intervention involved oil fracking, police defunding, and COVID-19 regulations. Home-rule cities may redistribute funds provided the city follows more flexible state guidelines.

Also, large home-ruled cities' political advantages may provide a sense of push-back on policies that contradict local interests (Su, 2017). However, since cities compete for residents, businesses, tax revenues, and development opportunities, Su (2017) argued that cities did not work in unison to accomplish policy advancements due to the intense competition between the cities. Thus, challenges to home rule may provide the unifying effect necessary to find consensus (Su, 2017).

While home rule allowed the cities to govern themselves unless contradictory policies conflict with state law, the ability to funnel funds as the city determined allowed for the introduction of more partisan debates. In contrast to the concept of partisan debates, Ferreira and Gyourko (2009) found that the political affiliation of the city council and mayors had little impact on determining the allocation of funds. Ferreira and Gyourko (2009) asserted that their research regarding the impact of political parties at the local level was the first attempt to establish partisan influences on spending. To define the political affiliation of the city, Ferreira and Gyourko (2009) used the political party affiliation of the city's mayor based on a new, at the time, panel database of mayoral elections. The mayor's party affiliation determined the political leanings of the city (Ferreira & Gyourko, 2009). The findings enumerated that political affiliation imparted minimal influence on the budget process (Ferreira & Gyourko, 2009). Determining the mayor's party affiliation in Texas remained somewhat elusive unless the arduous task of examining voting records for each mayor if the records existed.

Plus, the chances of the politicians that have limited knowledge of budget negotiations increased with newly elected council members. The administrator provided a crucial role in the budget process. Although, therefore, using performance-based budgets and zero-based budget systems received attention over the years, educating newly elected council members became

overburdensome (Gaines & Worrall, 2012). Most management circles tended not to widely adopt the concepts of these budget processes (Gaines & Worrall, 2012).

Instead, most utilized the traditional line-item budget system due to the simplicity of the process compared to performance-based and zero-based budgets (Gaines & Worrall, 2012). Furthermore, line-item budget processes allow for a more straightforward application of incremental practices to define the upcoming year's budget (Gaines & Worrall, 2012). In addition, the easier administration of the line-item budget allows the departments already overburdened executive leadership to spend less time drafting a proposed budget.

Moreover, using the line-item budget allows elected officials a more expeditious way to cut departments versus cutting programs (Gaines & Worrall, 2012). Line-item cuts in the budget minimize the appearance of dissolving programs. As a result, the elected officials tended to have a more leisurely escape of political ramifications from constituents' vested interests in the programs (Gaines & Worrall, 2012). This factor became especially true when economic downturns severely impacted the amount of revenue available for the city's operating fund, as experienced in 2009 (Gaines & Worrall, 2012) and the economic downturn experienced by COVID economic shut-down 2020.

Police Expenditures Per Capita

Zhao, Ren, and Lovrich (2010) used the annual percentage of budgetary allocation for police departments from 1993, 1996, 2000, and 2003 in large metropolitan cities in the United States. This variable was a ratio of the annual expenditures for police agencies divided by the annual municipal expenditure multiplied by 100 to create a percentage of budgetary allocation Zhao et al. (2010, p. 267) identified police expenditures as “expenditure on police preservation of law and order, protection of persons and property from illegal acts, and the prevention, control, investigation, and reduction of crime.”

Though, staffing issues presented more complex applications than simply increasing officers to respond to crime. As Mas (2006) suggested, productivity levels concerning law enforcement salaries fluctuate dependent upon the perception of a “fair wage.” Salary levels impacted productivity levels when the interpretation of the salary by the officer was considered substandard for the amount of work or requirements placed upon the agency (Mas, 2006). The conventional wisdom involved the concept that productivity levels were proportional to salary levels. With lower salary levels, the productivity level of the officer declines, as well. Mas (2006) examined the arbitration system for increasing perceived ‘fair wage’ levels through union involvement. Mas (2006) believed that as the salary increases, levels of productivity increase, too. Mas (2006) did not individually examine rural areas but more urban or larger agencies with union representation.

However, Mas (2006) contributed relevant research examining the productivity levels of lower wages for police. This research could provide general assumptions of law enforcement officers' perceptions of what constitutes a “fair wage” in micropolitan areas, just absent union representation. Without the collectivization or unionization in smaller, sized police departments, the assumption, as offered by Mas (2006), included police officers in various micropolitan cities with lower pay scales. These officers tended to have lower productivity levels than officers working in agencies that offer a perceived living wage for the job performed (Mas, 2006). Thus, the key to Mas' (2006, p. 783) research was understanding the concept of a “fair wage” needed to accomplish the law enforcement mission.

Mathis and Zech (1985) examined unionization's impact on government sector employees, but special attention focused on the police community. In suburban areas, Mathis and Zech (1985) attempted to identify the public's demand involving the number of police

officers employed for a suburban jurisdiction. The median voter model provided a way to verify public service demand by reflecting voters' preferences in a democratic choice process (Mathis & Zech, 1985). Mathis and Zech (1985) assumed that the median voter of the community might not represent the population in the medium income range.

The challenge presented by Mathis and Zech (1985) and Mas (2006) explored several ways to define the staffing needs for the community. The overall staffing needs of the department remained an elusive figure. The positivist methods typically employed by police departments may fall short and never understand the staffing needs for the community. Since the concept remained elusive, a potential solution may involve incrementalism.

Levitt (1997) examined the elusive efficiency matrix of what constituted law enforcement productivity. Levitt (1997) believed that determining the optimal level of police service was through examining electoral cycles. Using data from fifty-nine cities with populations over 250,000, he finds that the number of officers hired occurred in more exceptional instances during political election cycles. Increases in the police force occur more disproportionately in election years for local-level politicians (Levitt, 1997). Concerning electoral cycles, the implications tended to portray the political aspect of displaying a “get tough on crime” philosophy to establish a sense of security for the public (Levitt, 1997). Levitt (1997) suggested that the political budget cycle identifies the value of public expenditures contributes significantly to the decision to change the police staffing issue. Levitt (1997) connected the mayoral electoral cycle and the police provisions budgetary items making a political tool of increasing staffing incrementally.

The productivity of law enforcement enters the mix by examining the abstract concept of police efficiency. McCarthy, Zhao, and Garland (2007) examine the “crime-to-cop” ratio to examine police officer productivity. While their research did not specifically focus on increasing

the number of police officers, they examined correlates with understanding what factors influenced productivity levels. For example, McCarthy et al. (2007) suggested that the more property and violent crimes investigated per officer, the number of traffic stops will decrease, as the officer will have less time to enforce traffic laws.

Since measuring the efficiency of police services falls on quantitative measurements, including arrests, traffic stops, and other quantifiable measures may elude the actual efficiency of a police department since crime prevented by police was impossible to measure. To overcome the challenge, Wilson and Weiss (Wilson & Weiss, 2014) believed workload measurements provided the most efficient and effective way to address demand and provided alternatives to introduce less costly methods to address workload distributions. Wilson (2012) believed that conducting a workload analysis allows departments with limited resources and problems to meet the community's demands. Hollis and Wilson (2015, p. 835) contend that the workforce analysis provided the most "...efficient and accurate assessment of allocation need based on local circumstances."

McCabe (2013), similar to Hollis and Wilson (2015), advocated for using a workload analysis with the intended purpose to ascertain the optimal staffing levels in policing agencies. Therefore, accurate data collection became crucial for the agency to reflect the demand for staffing times. In addition to the accurate collection, the agency administrator must identify what constitutes a determination of justifying inclusion into the analytical model. Most data were generated from patrol functions, as the patrol was considered the "backbone" of police operations as most police agencies provided patrol functions. Therefore, understanding the staffing allocation of patrol functions accounts for most of the needs assessed for agencies.

McCabe's (2013, p. 60) assessment advocated for the "Rule of 60" concept. The "Rule of 60" advocates for a consistent number of patrol officers versus administration staffing levels (McCabe, 2013, p. 60). Factoring in the necessity of having sufficient staffing 24 hours a day, the "Rule of 60" suggested that 60 percent of the workforce work in a patrol function during peak demand times for police services. Calculating 60 percent of the patrol function examined the agency's overall number of sworn officers and those assigned to street-level patrol duties. During off-peak times, officer staffing levels fluctuate due to historical demand levels (McCabe, 2013).

The other portion of the "Rule of 60" specifies that officers spend no more than 60 percent of the time responding to the service demands of the community (McCabe, 2013, p. 60). Answering threatening emergency calls of service and other discretionary time, including breaks or downtime, occupies the remaining 40 percent of the time (McCabe, 2013). McCabe (2013, p. 14) argues that 40 percent of the officer's time reflects the point where calls for service saturate patrol time. The officer was busy answering calls for service during this period. The rule might provide a quantifiable way to increase staffing if the ratio of time spent answering calls for service increase over the threshold of 60 percent. The higher the percentage of time spent, the less time the officer had to devote to community services.

Interestingly, in conducting a literature search for the "Rule of 60," as McCabe (2013, p. 14) advocated, no articles support or refuted the tool's effectiveness. This rule appeared to be used in very few instances, if any at all, to justify increasing police staffing size or applied to workload analysis. The concept presents some challenges to the researcher to decide how to categorize time considered as service demands. A challenge the agency faces included determining what calls of service garner priority, how many calls of service were answered

during the day, time of day, and community expectations become necessities to establish the conceptual “Rule of 60” necessary to factor into the matrix. For example, during peak times of service, usually during evenings, the ratio will significantly increase, but the ratio will decrease during the early morning hours. The administrator may see the variances fluctuate so drastically, where the foci of the influx of calls for services compromise safety concerns of having minimal staffing during early morning hours. With minimal research, including the “Rule of 60” topic available, the benefits or consequences of application were unknown. More research in this area for those departments that practice the philosophy may add credence as another way to establish staffing levels.

Moreover, the larger metropolitan cities tended to have higher factor specialization operations than smaller micropolitan cities. This concept assumes that the worker in smaller operations performs various production tasks (O’Sullivan, 2012, p. 10). In larger organizations, each person's ability to specialize leads to higher productivity levels (O’Sullivan, 2012). Productivity increases because the worker spends less time switching between tasks and proficiency in specialized skills through experience and learning to improve efficiency (O’Sullivan, 2012). Larger metropolitan cities tended to have several specialized divisions of the department, such as Dallas Police had specialized divisions to investigate narrow divisions of crimes. Whereas smaller, micropolitan cities may increasingly rely on the patrol officer to investigate various criminal activities.

Hypothesis 1: As population sizes increase, police expenditures in metropolitan cities follow economies of scale concepts and cost less than police expenditures in Texas micropolitan cities.

Policing Services

Economies of scale may offer additional support between the similarities or differences between metropolitan and micropolitan cities. O'Sullivan (2012) defined economies of scale existed when the average production costs decrease while the output increases. Based on this rationale, metropolitan statistical areas should have had lower costs than micropolitan cities due to economies of scale. Both statistical areas had indivisible inputs, and both had factor specialization inherent in the organizations (O'Sullivan, 2012, p. 10). Both statistical areas had patrol operations, where the smaller micropolitan statistical and large metro areas differ in the services provided by the front-line officer. These services were difficult, if not impossible, to scaled-down for minor operations. Patrol officers in micropolitan cities tended to perform many more duties than their urban counterparts.

Support for economies of scale came from Carruthers and Ulfarsson (2003) by making the case, development patterns had several impacts on the per capita value spent on public services. Thus, political structures impact expenditure levels within metropolitan areas, with more significant fragmentation associated with lower expenditures (Carruthers & Ulfarsson, 2003). Carruthers and Ulfarsson (2003) found that services decline with increases in density levels; urban sprawl increases service delivery costs. The more compact an urban area, the higher the cost of service delivery (Carruthers & Ulfarsson, 2003).

Similar to other industries, municipal police services experience economies of scale (Walzer, 1976). Walzer (1976) believed larger numbers of citizens demanding better service quality increased pressure on local governments to provide those provisions. As a result, most of the budget expenditures earmarked for personnel wages and salaries occupied a majority, approximately 90 percent, of all expenditures (Walzer, 1976). As Walzer (1976) suggested, this

superior level of expenditures for wages and salaries will result in significant relationships between the per-capita measure and average cost.

However, it seems that Walzer (1976) had overlooked if the number of officers increases or decreases over time. Examining the number of officers employed by an agency over a given timeframe may add support to the consensus that municipalities' budget process takes the form of incrementalism. Mathis and Zech (1985) found that the number of police officers demanded was inversely related to police salaries. As the number of officers in the department increases, the expected salary level demanded by the public should decrease. As Mathis and Zech (1985) explain, the results had relative elasticity. Citizens had a sensitivity to government salaries as viewed by the population as excessive, even salaries paid to those serving in essential services provided by the police (Mathis & Zech, 1985). This sensitivity to salaries contradicted conventional thinking offered by several proponents that tended to subscribe to Mas' (2006) estimation that quality tended to decline when salaries decline. During the 2008 recession period, the trend revealed that staffing levels decreased with about 30,000 unfilled sworn positions in the United States (Wilson & Weiss, 2012). After the recession, this trend reversed course, and staffing levels increased with fewer unfilled positions in police agencies.

According to McCarty, Ren, and Zhao (2012), the number of police officers to population ratio increased from 1990 to 2000. The size of police budgets and populations of minority residents increased in size during this same time frame (McCarty et al., 2012). Therefore, the police budget depended on budgetary resource availability (McCarty et al., 2012). McCarty et al. (2012) suggested that the perception of danger for police officers due to increasing populations of minority residents, specifically Black populations, contributed to increasing police staffing versus danger measures through objective measures such as crime rates. This research

suggested police agencies tended to focus on something other than the crime rates to justify increasing the staffing, hence the overall budget for a municipality. Sharp (2006) suggested that the police force's size depends upon the desire to enforce a level of social control of population versus crime rates. Los Angeles responded to race riots of the 1960s and 1990s by increasing police size by creating the public perception increased numbers of police officers were needed to maintain social control (Sharp, 2006). Sharp (2006) believed this trend occurred regardless of the city's geographic location or political ideology of large metropolitan cities in the U.S.

One thing missing from McCarty et al. (2012) involved the economic stability of the community represented. McCarty et al. (2012) reported that the perception of danger from the community influences increases in police services than the actual crime rate. Zhao et al. (2010) provided several variables that allowed for replication, but with necessary changes to address, such as the expenditures factored into Zhao et al. (2010) dependent variable. Besides, some other independent variables may have had significance to understand better the costs of police expenditures in micro and metropolitan statistical areas principal cities.

On the contrary, Greenberg et al. (1983) sought to establish the effect of police employment and crime. One of Greenberg et al. (1983) key findings suggested the increasing the number of police officers resulted in little, if any, impact on reducing crime. The impossible task of saturating a whole city suggested that regardless of the number of officers placed on the streets, overall crime rates were minimally impacted. Based on Greenberg et al.'s (1983) beliefs, increasing the number of police patrol officers on the streets revealed inefficiencies for the city to contend with, with an oversaturation of patrol officers. The more officers on the street did not offer any higher levels of crime deterrence unless saturation occurred.

Support for more police officers on the street comes from Marvell and Moody (1996). Marvell and Moody (1996) illustrated that increasing the number of police officers on the streets reduced crime. The reduction of crime shows a substantial decrease when more officers work the streets (Marvell & Moody, 1996). Heaton (2010, p. 8) writes, “increases in the number of police exert a statistically significant and practically important effect on several categories of crime.” Using rational choice to justify the increase of staffing directly correlates to criminal activity, particularly violent crimes and property crimes (Heaton, 2010). The ability to measure the effectiveness of police services and provisions was complicated to measure (Walzer, 1976). The sensible thing to measure would be the output or service provided by analyzing the police's tasks (Walzer, 1976).

Currently, research offers a miscarriage of understanding regarding this issue of police provisions in urban areas. In addition, many police departments did not openly publicize statistical information other than state or federally required crime information. Instead, the departments followed Weber's (1969) ideas of tightly controlling the flow of information. Tiebout (1956) proposed that what constituted an appropriate level of expenditures was missing for comparisons, especially between micropolitan and metropolitan cities. The great unknown about the expenditures of police provisions in micropolitan areas involved if these demographic areas were over or underpaying for police provisions in their municipality. While Tiebout (1956) made the argument that cities compete for each other, especially in educational arenas, a similar argument about police provisions could impact the overall attractiveness of the city by using as a method to attract new residents to a low-crime area or qualified employees to a city competing for resources.

While Tiebout's (1956) article was dated, Zhao, Ren, and Lovrich (2010) added a more recent argument suggesting little information about the determinants for police funding, including local political culture, nature of socio-economic issues, and prevalence of incremental budget decision-making processes escape the overall conversation. Texas micropolitan principal cities employed various property tax rates but similar sales taxation rates at 8.5% of the sale ("Local Government in Texas," 2015). Under the home rule system, the cities may incrementally increase the property tax rate each year or adjust the market values of properties. The home rule system added to the conversation as the state legislature allowed cities to modify tax rates to accommodate potential growth. All micropolitan and metropolitan statistical areas in Texas used in this project operate under home rule systems of government. Before 2020, Texas property tax laws allowed up to an 8 percent increase per year before petitions for rollback elections may be held (Garcia, 2019). Rollbacks may begin after January 1, 2020, if the city increases taxes by more than 3.5 percent (Garcia, 2019). The impacts of this policy change had yet to filter into the cities, and the long-term effects were yet unknown.

Donahue and Miller (2006) believed the most substantial impact to pay originated from media exposure from local sources to support property tax increases or the willingness to pay for police services had more positive effects on attitudes about public safety. Television and media reports impacted the public's willingness to pay for public services (Donahue & Miller, 2005). Municipalities had significant interests in the types of reports disseminated to the public to generate increased support for funding opportunities (Donahue & Miller, 2005). The local media reports on police actions and responses had essential impacts on voter support of budgets (Donahue & Miller, 2005).

This countered the media, fueling discussions of the decline of government services, but media exposure tended to increase support (Donahue & Miller, 2006). The media brought to the forefront issues regarding criminal activity; the more they hear about crime, the more vulnerable people may feel (Donahue & Miller, 2006). One could make the case that larger metropolitan areas had at least one local television station, where more micropolitan areas may be limited in media outlets. Thereby the media may have less impact on the police budget process. The influence of more media sources may have significant implications for police funding between metropolitan and micropolitan areas. The more one trusted the service providers, the more likely the individual was willing to pay increased taxes (Donahue & Miller, 2006).

With increased media exposure to criminal activity, the department's primary response increased the number of police officers (Cunningham, 2016). Thus, Cooper (2005) asserted that the search for variables predicting public service salaries presents a significant policy output over the past thirty years. Cooper (2005) believed this research reignites the stagnant subject concerning police salaries. Cooper (2005) believed the ability to pay for services and the extent of municipal services experiences difficulties in establishing the concept of determining a positive relationship between the two (Cooper, 2005). Wealth was considered the city's economic well-being and the city's ability to raise revenue, whereas revenue was the degree where a city extracts economic wealth (Cooper, 2005). This challenge was not an easy task in any case.

Since wealth drives the ability to fund departments, law enforcement agency heads tended to adopt various positivist methods to justify increasing new police officer positions in times of fiscal constraint. Many contend that when crime increases within a given population, the solution was to place more officers in patrol capabilities (Greenberg, Kessler, & Loftin, 1983).

Many police departments argue for more staffing with crime increases to overcome the problems (Greenberg et al., 1983). Political responses to hire more police officers during increasing crime levels in a municipality tended to follow electoral cycles (Levitt, 1997). This perceived increase in crime may provide the agency head, increasing the number of officers discussed in detail in the section involving home rule charters.

Many agencies utilized a ratio between certified officers and citizens served to justify this increase in hiring practices. This simple method used by many agencies involved a ratio of the served population to sworn officers. Many agency heads used this ratio to justify increasing levels of staff, although the practice was no longer recommended by the International Association of Chiefs of Police (IACP) (Ammons & Edwards, 2008).

Some agencies used incrementalist practices to increase the number of sworn officers on the street (Wilson & Weiss, 2012; Zhao et al., 2010). Other agencies evaluate workload per officer to justify increasing patrol officers (Wilson & Weiss, 2014). With these various methods of justification to increase staffing, agency heads frequently used such methods to quantify the addition of police officers.

This ratio tool gained legitimacy, and its use escalated due to a report created with statistical analysis to show the overall officer to population ratios or average. The legitimacy of this practice of using the ratio tool occurred from a report in 2003 from the Bureau of Justice Statistics (Perkins, 2003, p. 3), which mentioned, "Among municipal police departments, the average ratio of full-time officers per 1,000 residents was 2.5." However, the International Association of Chiefs of Police (IACP) did not advocate using such a method due to the many flaws associated with the methodological tool (McCabe, 2013; Wilson & Weiss, 2012). In addition, McCabe (2013) and Wilson and Weiss (2012) mention that the IACP, while not

currently advocating the use of the tool, implies to agency administrators to quantify increasing the number of officers.

While the IACP did not advocate the ratio tool for analytical purposes, agencies routinely base justifications on the population to officer ratio. For example, Perez and Bromley (2015) utilized the ratio of officers per campus population to compare the university setting versus the municipal police agency. Perez and Bromley (2015) purposely excluded faculty, staff, and non-residents from their research because including those groups would “reduce the ratio of officers per resident.” Such exclusions of population demographics demonstrate how the ratio had potentially skewed data to reflect the agency's desires in need. Hollis and Wilson (2015) found that communities with smaller populations had the highest staffing levels. Thus, the ratio comparison made it easy to argue for a growing city to increase its police force.

Cities with populations under 2,500 comprised a range of 2.80 to 20.04 officers per population, and communities with populations of at least 2,500 range from less than 1.0 to 6.5 per thousand (Hollis & Wilson, 2015). Using a simple ratio to justify staffing may not satisfy political entities with authority to make decisions. Of all the methods described, the most advocated and least utilized form of justifying increasing staffing within police agencies uses workload analysis. This method examined several variables to ascertain how an officer allocates time for various duties. A workload analysis system allowed the agency head to examine when the busiest time of day occurred and allocate resources during times of increased workload. This analysis compares days and times to provide a comprehensive understanding to maximize staffing levels.

Hypothesis 2: The percentage of the general budget spent on police services in metropolitan cities consumes more of the general fund than in micropolitan cities.

Influences in budget negotiation

Simon (1997) labels the term as bounded rationality. The human response involved a stimulus-response pattern than choices among alternatives (Simon, 1997). Thus to overcome the limits to rationality, humans practice a system of ‘satisficing’ or a course of action that was ‘good enough’ (Simon, 1997). Satisficing allows the decision-maker to choose without examining alternatives and finding all the alternatives (Simon, 1997). Therefore, satisficing sacrifices maximum utility for efficiency (Simon, 1997). Simon (1997) argues that the decision-maker uses satisficing to quickly achieve policy implementation based on previous experiences or education. Simon (1997) added that decision-making did not adhere to the assumptions outlined by game theories.

With Simon’s (1997) concept of satisficing, Lindblom (1959) suggested policy changes were made in small, incremental steps to minimize the impact of adapting to the policy changes. Incrementalism seeks to maximize utility and increase efficiency, unlike satisficing. Incrementalism achieves this through understanding that only part of their policy achieves its intended consequences (Lindblom, 1959). However, if the policy-maker successively makes changes, they avoid making inevitable mistakes with policy implementation (Lindblom, 1959). One factor Lindblom (1959) observes the practitioner may not use any specific theoretical influence and make decisions based on their version of bounded rationality. The practitioner may not utilize a systematic approach to the decision-making process (Lindblom, 1959).

Anderson and Harbridge (2010) identified two limitations: incrementalism, inconsistency of what constitutes a small change, and inconsistent levels of aggregation or expenditures lumped together. Smallness was not necessarily a factor of every incremental observation, but Anderson and Harbridge (2010) argued that smallness was the most common factor of

incrementalism. Ten percent was generally considered the cutoff of incrementalism (Anderson & Harbridge, 2010; Bailey & O'Connor, 1975). Thus, rejecting the null hypothesis became very difficult (Anderson & Harbridge, 2010). Anderson and Harbridge (2010) employed cutoffs at 1 percent, 5 percent, 10 percent, 20 percent, 30 percent, 40 percent, 50 percent, and 100 percent to show how the size of changes may affect the interpretations of what constitutes incremental budget changes.

Within essential municipal, fire and police, services, Zhao et al. (2010, p. 273) contend incrementalism occurred more frequently within these services versus non-essential services. Zhao et al. (2010, p. 273) described the budgetary process as a “zero-sum trade-off nature of municipal budgetary allocations...”. Available resources determined the trial and error and decision-making processes with an incremental approach instead of examining identifiable criteria, such as demand for service and community expectations (Wilson & Weiss, 2014). Rodriguez and Portugal (2019) tended to support the thriving operation of incrementalism occurring in Texas cities. From their survey, 88 Texas cities employed the line-item budgeting style, with a distant second of thirty-nine cities using a hybrid or more than one format to complete the annual budget process (Rodriguez & Portugal, 2019).

Incrementalism was the driving force behind successful budget negotiation strategies in the departments Coe and Wiesel (2001) examined. Of the surveyed departments, sixty-one percent reported a five-year strategic budget strategy that increased operating expenditures. For a one to two-year period, the average increase of 14 percent, three to four-year increases by 18 percent, and the five-year increase by 61 percent (Coe & Wiesel, 2001). In the fiscal year 1997-1998, Coe and Wiesel (2001) found that twenty-four agencies of 207 surveyed agencies experienced decreased funding. Two of the agencies had no change, 30 agencies had a 0.001-

2.99% increase, 35 agencies had a 3-4.99% increase, 52 agencies had 5-7.99% increase, 22 agencies had an 8-9.99% increase, and 46 agencies reported 10% or more increases in budgets (Coe & Wiesel, 2001).

To get an understanding of police expenditures, the U.S. Department of Justice, Bureau of Justice Statistics (State and local government expenditures on police protection in the U.S., 2000-2017, 2020) released a report outlining police expenditures from the United States' top twenty-five largest cities and how spending had changed over time. The top twenty-five cities in the U.S. spending patterns per capita was \$304.18, in non-inflation adjusted dollars, for local police protection. Overall, there was an 8.6 percent increase in spending for police protection between 2000 and 2017 (State and local government expenditures on police protection in the U.S., 2000-2017, 2020). However, with inflation-adjusted, local police protection spending in the twenty-five largest cities per capita expanded 29 percent (State and local government expenditures on police protection in the U.S., 2000-2017, 2020).

Included in the top twenty-five cities, six Texas cities, Houston, San Antonio, Dallas, Austin, Fort Worth, and El Paso, were on the roster. Texas cities had the most significant increases, with Austin having the most per capita spending and the lowest per capita spending with El Paso of the twenty-five top cities, adjusted for inflation. Austin increased spending on per capita direct expenditures from \$191.50 in 2000 to \$338.82 in 2017 for a 77 percent increase in police protection spending (State and local government expenditures on police protection in the U.S., 2000-2017, 2020). El Paso spends the least amount per capita regarding police protection by spending \$165 in 2000 and \$162 in 2017, a decrease of 1.88 percent of spending thru the evaluation period. Houston shows a 10.25 percent increase, Dallas showed a 26 percent increase, and Fort Worth shows a 20 percent increase of per capita police expenditures on police

protection (State and local government expenditures on police protection in the U.S., 2000-2017, 2020).

These percentage changes from 2000 to 2017 suggested incrementalism budget management practices occur within the largest cities in Texas and the United States. Excluding the most pronounced changes from Austin, which used another strategy for budget negotiations, most large Texas cities appear to have incrementally added to the operating budgets an average of approximately 20 percent over time, excluding the outliers of Austin and El Paso. The current research project used a similar per capita matrix to understand the differences in spending between Texas metropolitan and micropolitan cities.

Governments face many imposing challenges where some problems made a transition from complicated problems to easier to manage, new problems appear, and some transition from easy to complex (Bendor, 2015). Bendor (2015, p.202) made the case officials were facing very complex problems using ‘simplifying heuristics,’ including suggestions by Lindblom’s “Muddling Through” (1959b) where efficient and straightforward rules, trial and error method, and practical actions take precedence. Bendor (2015) suggested that when faced with complex issues, the administrator reverts to what was known from past similar occurrences and implements similar responses. When individuals faced limited information, they resort to incremental practices and learn from the incremental decisions to aid in the future (Lee et al., 2017). The incremental decisions appeared in the beginning rounds of the budget negotiation process (Lee et al., 2017).

While Berry (2019) believed incrementalism means many different things, it means nothing anymore seems to be missing essential ideas about the local level budget process. Unlike the federal government’s global immigration initiatives, it was much easier to relocate

from one area to another within the United States. Therefore, the local cities compete with other cities for population increases for the city's economic growth. Local government spending was determined by the residents' competition and service demand (Jordan, 2003). Zhao et al. (2010) consistently found that police strength predictors depended on the local minority populations. Cities with larger minority populations were more likely to increase police spending (McCarty et al., 2012; Zhao et al., 2010).

However, using Texas as a model may add generalizability to other metropolitan and micropolitan police agencies in other states that used similar budget structures. Most budget structures in Texas involve recycling the previous year's budget by adding or removing funds where appropriate or prioritized, which may support incrementalism. Zero-based or performance-based budgets tended not to be used in municipal operations. Zero-based or performance-based budgets tended to take a massive amount of time and resources to complete on an annual basis (Wildavsky & Caiden, 2004). The complexity of the process would force the executive to focus on the budget and possibly neglect other duties for the executive (Wildavsky & Caiden, 2004). Wildavsky and Caiden (2004, p. 46) argued that the most significant determining factor for the current year's budget was last year's budget.

Moreover, as Wildavsky and Caiden (2004) suggested, it merely appeared that it was nothing more than basing it on historical foundations. Anderson and Harbridge (2010) attempt to address the confusion of the definition of identifying the concept of incrementalism in budget operations. Anderson and Harbridge (2010) attempted to review the concept of how the incremental approach functions in government. Anderson and Harbridge (2010) addressed what incrementalism was and how to identify the application of the incremental approach.

Hypothesis 3: Incrementalism occurred with greater consistency percentage-wise in OMB-defined Texas metropolitan cities than in micropolitan cities.

Chapter 3: Operationalization

Construct validity suggested the measuring instrument matches the general theoretical framework to decide if the instrument was logically and empirically related to the concepts and theoretical assumptions they employ (Frankfort-Nachmias & Nachmias, 2000). In addition, the researcher must show the various kinds and degrees of relationships between the particular and other identified variables (Frankfort-Nachmias & Nachmias, 2000). Therefore, theoretical frameworks assisted in resolving construct validity issues (Frankfort-Nachmias & Nachmias, 2000). Economies of scale and incrementalism tended to have the most explanatory power for municipal budget operations relating to police provisions between micropolitan and metropolitan cities.

The question of validity attempts to answer the question, “do I measure what I intend to measure?” (Frankfort-Nachmias & Nachmias, 2000, p. 149). The intended outcome was to establish a significant difference between micropolitan and metropolitan city expenditures on police provisions. To measure if differences occur between the micro and metro areas located in Texas, budgets from each city meet the definitions of the size incorporated into this project. Therefore, the intended measure was the expenditure of police operating budgets.

Threats to construct validity typically occur when investigators poorly define the terms and measures of variables (Creswell, 2009). External threats to validity involve the interaction of selection and treatment, the interaction of setting and treatment, and the interaction of history and treatment (Creswell, 2009). Interaction of selection and treatment assumes the narrow characteristics of the participants affect generalizability with others who did not have similar characteristics (Creswell, 2009). Interaction of setting and treatment assumes the researcher cannot generalize participants in an experiment to individuals in other settings (Creswell, 2009).

Finally, the interaction of treatment and history assumed results were time-bound, and the generalizability did not have past or future implications (Creswell, 2009).

Addressing the interaction of selection and treatment was one crucial aspect to restrict claims about groups in which findings cannot be generalized (Creswell, 2009). Therefore, the researcher conducts several experiments for groups with different characteristics (Creswell, 2009). For this project, the investigator looks at several assorted sizes of cities in the State of Texas. While there were limitations to generalizability by examining only one state, there were benefits, which added to the generalizability by incorporating several different states into the research project to present the challenge of different funding models and organizational structures of municipal police agencies in different states. Moreover, several states had fewer numbers of metropolitan and micropolitan cities within their geographic boundaries. Therefore, with uniformity offered by examining Texas, the generalizability of the research may offer higher explanatory power for the other locations.

The interaction and relationship between settings and treatments in conducting new investigations into the research question provided a foundation for the same or similar results (Creswell, 2009). For this project, two theories were explored, incrementalism and economies of scale. The research project was expected to have similar findings to previous research on associated topics by examining previous findings from others discussed. The difference between this project and previous research involved the examination of micropolitan and metropolitan cities, versus other investigations, examined metropolitan cities (see Bendor, 2015; Guillamón, Bastida, & Benito, 2013; Jordan, 2003; Ryu, Bowling, Cho, & Wright, 2007; Wildavsky & Caiden, 2004; Zhao, Ren, & Lovrich, 2010).

Economies of Scale

In addition to incrementalism, economies of scale may explain the differences or similarities between micropolitan and metropolitan cities. Walzer (1976) suggested that the concept of economies of scale offered a way of analyzing the effectiveness of cities. Walzer (1976) suggested that measuring police protection was exceedingly difficult, which remains the case today. The community determines the type of police services it desires; thus, putting a universal measurement imparts challenges in discovering police provisions' efficient output. Understanding how protective outcomes and services were provided was elusive (Walzer, 1976). Walzer's (1976) presumption that output of services through an analysis of tasks performed, the police department can study costs as the size of operations increases. This analysis introduces the concept of economies of scale for analyzing municipal police departments. Economies of scale offer the explanatory theoretical power of the differences between metropolitan and micropolitan cities. According to the concept of economies of scale, large metropolitan areas were more efficient in delivering services than smaller micropolitan cities (O'Sullivan, 2012). Small local governments usually have higher production costs than metropolitan cities (O'Sullivan, 2012b).

Holcombe and Williams (2009) examined if economies of scale were present in municipal governments. The findings suggested that diseconomies of scale occur in more extensive municipal operations (Holcombe & Williams, 2009). Holcombe and Williams (2009) utilized data from the Historical Finance Database from the U.S. Census Bureau to evaluate 487 municipalities in the United States. The dataset only included cities with populations over 50,000, excluding the micropolitan demographic (Holcombe & Williams, 2009). The dependent variable for this research was the total per capita expenditures of municipal governments and included population and population squared as independent variables. The regression analysis

tended to show a positive coefficient between the dependent variable and population, suggesting diseconomies of scale (Holcombe & Williams, 2009). Density was included as an independent variable, but the variables shared no significance (Holcombe & Williams, 2009). Education levels of the percent in college showed no relationship with the dependent variable (Holcombe & Williams, 2009).

Nevertheless, research tended to suggest that the larger population municipalities experience diseconomies of scale. As a result, previous research constituted those larger cities pay more for police provisions and receive the same or fewer services than micropolitan areas. Holcombe and Williams (2009) believed there were minimal policy implications with this finding. Their rationale was that municipalities had police departments regardless of city size, as it was an un-avoided cost for the municipality's residents (Holcombe & Williams, 2009).

Southwick (2005) found that economies of scale exist up to a population size of about 22,350. Beyond this number, diseconomies of scale tended to exist (Southwick, 2005). Southwick (2005) also found reduced numbers of police officers per capita in populations up to approximately 36,000, and the number increase beyond this point. Southwick (2005) argued that the most efficient cities had populations between 22,350 and 36,000, in which a cost/crime trade-off occurred. As the population dips below 22,350, crime and costs rise, and as population increases, over 36,000, costs and crime increase (Southwick, 2005). Based on Southwick's (2005) findings, most micropolitan cities in Texas fall within this population range. Therefore, with this assumption, many Texas micropolitan cities experience economies of scale and find cost reductions related to criminal activity. Metropolitan cities would fall under the diseconomies of scale and find higher costs for crime reduction.

Similar to Southwick's (2005) argument, Found (2012) argued that economies of scale were present in cities located in Ontario, Canada. The economies of scale for police services occur in cities with populations of about 50,000 residents (Found, 2012). However, economies of scale occurred for cities with populations of 20,000 for fire services (Found, 2012). Found (2012) reported that the most influential determinate of the cost involved population density and crime rates. In the fire services, costs were affected by the number of calls and average response time (Found, 2012).

In contrast, O'Sullivan (2012b, p. 421) suggested that economies of scale became exhausted by about 100,000 people. Metropolitan governments continuously operated at greater levels of efficiency than micropolitan cities (O'Sullivan, 2012b, p. 421). Smaller cities overcome the issue of provision of services with interlocal and joint service contracts between other cities. The contractual agreements provided a way of providing the services for cities with more significant budgetary constraints. Nevertheless, some restraint for police services must occur, so a standard population was served (J. K. Brueckner, 2011).

Slice of the Pie

Holcombe and Williams (2009) suggested that the expenditures for police services promoted significant diseconomies of scale, even with population density factored. Holcombe and Williams (2009) argued that considering population density and municipal government expenditures reinforced the findings that diseconomies of scale occur in government operations. Holcombe and Williams (2009) found less evidence of diseconomies of scale in municipal government expenditures by dividing municipalities into density groups. When differences in population were factored into the equation, diseconomies of scale tended to disappear (Holcombe & Williams, 2009).

In support of Holcombe and Williams (2009), data outlined in Table 1, the fiscal year 2003 expenditures for police departments varied in cost per citizen and tended to suggest diseconomies of scale operate in police organizations (Hickman & Reaves, 2006). Hickman and Reaves (2006) highlighted that those cities with one million and more spend approximately \$572 million each on the police forces. With the one million, plus populations, the average cost, in 2003, per officer working in the very large-sized metropolitan cities was \$99,900 or \$282 per resident living in the large metro areas (Hickman & Reaves, 2006). Cities with populations of 500,000 - 999,999 spend an average of \$130,913,000 for police operations, with a cost of \$102,300 per sworn officer, and costs the residents \$193. As shown by the table below, the average expenditures for police departments tended to support diseconomies of scale. The very large agencies had the most outstanding officer-to-resident expenditures, while the police agencies with 99,999 cost citizens less than large metropolitan agencies (Hickman & Reaves, 2006).

Table 1 Operating budget of local police departments, by size of population served, 2003					
	Operating budget, 2003				
Population Served	Total	Per Agency	Per Sworn Officer	Per Employee	Per Resident
All sizes	\$43,349,172,000	\$3,425,000	\$93,300	\$71,500	\$200
1,000,000 or more	\$9,731,119,000	\$572,419,000	\$99,900	\$76,100	\$282
500,000-999,999	\$5,105,600,000	\$130,913,000	\$102,300	\$78,600	\$193
250,000-499,999	\$3,378,060,000	\$80,430,000	\$105,100	\$77,700	\$228
100,000-249,999	\$5,351,771,000	\$30,236,000	\$106,200	\$78,300	\$200
50,000-99,999	\$5,195,820,000	\$12,312,000	\$103,400	\$77,200	\$178
25,000-49,999	\$4,853,915,000	\$6,255,000	\$99,000	\$75,000	\$182
10,000-24,999	\$5,196,604,000	\$2,754,000	\$86,700	\$66,800	\$174
2,500-9,999	\$3,444,036,000	\$851,000	\$67,000	\$53,300	\$157
Under 2,500	\$1,092,247,000	\$208,000	\$45,500	\$40,000	\$162
<p>Note: Figures are for the fiscal year ending June 30, 2003, or the most recent fiscal year completed prior to that date. Figures do not include capital expenditures such as equipment purchases or construction costs. Computation of per officer and per employee averages include both full-time and part-time employees, with a weight of .5 assigned to part-time employees. Total and per agency figures are rounded to the nearest \$1,000; per officer and per employee figures, to the nearest \$100.</p> <p>https://bjs.ojp.gov/content/pub/pdf/lpd03.pdf</p>					

Fisher (2007, p. 122) argued that governments were not in the production phase in scale economies. Governments' purpose was to provide a given amount of goods or services versus a good or service (Fisher, 2007). Fegley and Growette-Bostaph (2018) argued that the number of police employed in a community was determined by the wage rate and asset of the community. In Idaho, smaller-sized cities tended to have higher ratios of police officers to the population (Fegley & Growette-Bostaph, 2018). There were blurred lines if competition exists with

municipal police services and if competition affects revenues (Fegley & Growette-Bostaph, 2018). Fegley and Growette-Bostaph (2018) questioned if economies of scale exist in police provisions. Some cities had higher demand for police services, and others may have meager demands for police services (J. K. Brueckner, 2011).

Callanan, Murphy, and Quinlivan (2014) tended to support Fisher's (2007) and Fegley and Growette-Bostaph's (2018) assumptions that economies of scale did not necessarily mean more cost-effective in government operations, mainly in the elusive concept of what constituted efficient operation in policing. Policymakers and interest groups tended to make the concepts for local government reforms, but experience with an amalgamation or uniting services shows exaggerated results (Callanan et al., 2014). Due to the labor-intensive nature of most governmental services, significant cost savings and benefits of surrounding assumptions of economies of scale tended to disappear in government services. Economies of scale tended to have more support in private sector operations (Callanan et al., 2014).

Griffiths, Pollard, and Stamatakis (2015) address police departments' challenges with fiscal constraints, primarily small urban or rural areas presented increasing challenges for funding of services. With increasing pressure to reduce expenditures in the public sector, police agencies share the pains of reducing funding. With this reduction of financing, police agencies had difficult decisions to make on which services to reduce while still providing a level of crime reduction expected by the population served (Griffiths et al., 2015). These decisions to cut services affect the quality of life for the population. Moreover, services once provided by other governmental entities, such as mental health and social workers, face similar governmental cutbacks, and police agencies respond to high-risk and vulnerable populations on an increasing basis (Griffiths et al., 2015).

Griffiths et al. (2015) argued that police services must find ways to continue carrying out functions demanded by the public by finding the most effective and efficient way possible. By using documentation and displaying crime trends, police agencies may identify gaps in resource capacity. The police may avert significant budget reductions or even increase resources by using crime and productivity information to leverage the budgetary authority.

Griffiths et al.'s (2015) research focused on a large Canadian city with an increasing crime rate as a basis for their research. While the flow of information, as suggested by Griffiths et al. (2015), may contribute to increasing resources, rural jurisdictions may not be able to fund additional resources adequately. Increased funding for supplemental resources may apply to a more substantial size city where urbanization was increasing. However, Griffiths et al. (2015) disregarded information regarding micropolitan areas.

Cooper (2005) examined entry-level police salaries from cities with populations greater than 25,000. While this threshold incorporates a partial inclusion of micropolitan areas, Cooper (2005) lumped the micropolitan and metropolitan areas into one category. Cooper (2005) found that the city's level of wealth based on median housing values provided the most influential variable relating to police salaries. Whereas, according to Cooper (2005), median family incomes held little relation with salaries but correlated positively with housing values. Cooper (2005) found that per capita revenue and per capita taxes displayed elevated levels of correlation, but neither had a significant statistical impact.

Taylor (2015) examined relations between property tax caps and citizen perceptions of local government service quality. Tax caps presumably limit the services local governments could provide to enhance the quality of life for the population (Taylor, 2015). These caps typically impact local schools, police, and fire services the greatest, due to these services usually

incur the highest cost for local governments. Taylor (2015) argued that most residents were unaware of the services provided by local law enforcement and fire services due to the limited encounters with these services. Even fewer residents were likely to have two or more contacts with police or fire services within a year (Taylor, 2015). Thus, Taylor (2015) believed that respondents in high tax cap impacted areas would be more likely to foster negative opinions regarding governmental services. Also, Taylor (2015) hypothesized that urban and suburban respondents were more likely to express opposing views regarding changes in governmental functions than rural areas.

Taylor (2015) compared the changes in responses regarding the quality of services from 2008 through 2011. Taylor (2015) reported on the change of government perceptions of service quality over time between areas with high tax caps versus low tax caps. Taylor (2015) compared the results between rural, suburban, and urban areas. Governmental services tended to be more restricted in areas of high tax caps due to lower revenues than areas with low tax caps. Taylor (2015) found that urban area residents with high tax caps in place elicited a more negative view of the service quality regarding public service than within rural areas. Areas with low tax caps, urban areas compared to rural areas, consistently held more positive associations with protective service response (Taylor, 2015). However, regarding school performance, urban and rural areas reported a decline in school quality within areas supporting a high tax cap (Taylor, 2015). Areas with low tax caps, school quality, remained consistent with

Taylor (2015) used an analogy to understand government services regarding road quality compared to other governmental functions. Most adults consistently used roads and streets and public schools, where the conditions of the services were observable on a frequent and consistent basis (Taylor, 2015). This analogy, Taylor (2015), provided an interesting point regarding public

use of roadways and schools versus public safety concerns. This comparison provided a concept of where a population served had little knowledge of the law enforcement quality.

Crime in Cities

In smaller communities, the public confidence in police and feelings of safety tended to display significant impacts on police-public relationships (Nofziger & Williams, 2005). The smaller-sized cities' police force tended to have more positive relationships with the communities served than in larger metropolitan cities. Nofziger and Williams (2005) found the informal ties were much closer, and the focus on the police officer being polite may improve perceptions of the police officer. Nofziger and Williams (2005) suggested that improved confidence in the police service improves community safety feelings. Closer, informal ties had greater meaning and community involvement than the urban counterpart (Nofziger & Williams, 2005).

However, Nofziger and Williams (2005) conducted their survey between October 13, 2001, and October 26, 2001. This timeframe was one-month post-September 11 terror attacks on the World Trade Center (Nofziger & Williams, 2005). Shortly after the September 11 attack, the intense sense of nationalism permeated throughout the United States. To account for this phenomenon, Nofziger and Williams (2005) added a question of the perception of satisfaction with the police service to determine feelings pre-9/11.

Bolger and Bolger (2019) conduct a community survey from a “small city” with approximately 80,000 population in Pennsylvania. Like other research findings, Bolger and Bolger (2019) found that women and minorities were the most fearful of crime. Areas with physical and social disorders expressed significant levels of fear of crime in their respective neighborhood. The neighborhood level may provide more significant insights into how cities respond to the crime problem (Bolger & Bolger, 2019). Bolger and Bolger (2019) found that

younger, less educated persons had more significant fears of crime than older, more educated residents displayed. In neighborhoods with a higher fear of criminal activity, police satisfaction levels were significantly lower than in more stable neighborhoods (Bolger & Bolger, 2019). Bolger and Bolger (2019) suggested that police impact in smaller communities impart more considerable influences to combat fear than in metropolitan cities (Bolger & Bolger, 2019).

According to Bachman (1992), forty-two percent of the violent crime victimizations occur to residents living in central cities. Residing in a central city poses the greatest threat to safety (Bachman, 1992). However, Bachman (1992) suggested that non-metro and rural area residents were just as vulnerable to crime, if not more so. Violent crime in non-metro and rural areas tended to be committed by acquaintances and family members at higher levels than in metro areas. Non-metro residents were more likely to be victims of a crime committed by someone known to the victim (Bachman, 1992). Residents over the age of 65 show increased risk in rural areas (Bachman, 1992).

The overall crime trend since 1978 experienced a steady decline (Nofziger & Williams, 2005). Terrill, Rossler, and Paoline III (2014) investigated the effect of the economic recession and violent crime in large cities. Terrill et al. (2014) found those police officers in economically depressed economies tended to function similarly to other police officers in more economically stable urban cities. The predominant role police serve in large, metropolitan cities involved engaging in police-related activities rather than police-citizen encounters (Terrill et al., 2014). With minimal police-citizen encounters, this may be a distinguishing characteristic between metropolitan and micropolitan cities. Currently, this was unknown whether micropolitan cities perform a similar function of engaging in more calls for service than individual police-citizen

encounters. Cities facing austere measures tended to change the level of response to non-injury crashes, chronic false alarm calls, and other low-level priority calls (Terrill et al., 2014).

Rosenfeld and Wallman (2019) examined the concept of de-policing and the effects on homicide levels. The assumption Rosenfeld and Wallman (2019) introduce involved a phenomenon known as the Ferguson Effect. The idea behind the Ferguson Effect, the assumption that police will reduce the number of arrests and interactions with residents in fear of the negative publicity involved in controversial police-citizen encounters (Rosenfeld & Wallman, 2019). In 2015, the homicide rate in several large cities surged significantly, which shattered the steady decline since the late 1990s (Rosenfeld & Wallman, 2019). Thus, Rosenfeld and Wallman (2019) believe that if de-policing were correct, the number of arrest rates, especially for minor offenses, would have a significant adverse effect on homicide rates. However, little evidence supports the idea that de-policing concepts increased homicide rates in metropolitan areas, with populations over 250,000 (Rosenfeld & Wallman, 2019).

With the events surrounding the tragic death of George Floyd in Minneapolis, Minnesota, several metropolitan cities had entertained the idea of reducing funding for local police entities. However, the defunding policies were significantly different from de-policing actions. De-policing assumes the police officers were intentionally reducing proactive enforcement of laws, whereas defunding was taking the approach of reducing or eliminating police departments in metropolitan cities. These reductions of defunding the urban municipal police departments entered uncharted territory and demanded follow-up research to understand the benefits and consequences of such actions. However, since this was a newly implemented policy of massive reductions of police budgets, future research could provide insights into this new dimension of

city budgets. At this point, research was nonexistent, as the defunding policies had yet to take place.

Incrementalism

Research tended to illustrate incrementalism as a primary guiding force behind the budget design for operations within metropolitan cities (see Wildavsky & Caiden, 2004; Zhao, Ren, & Lovrich, 2010). Incrementalism addressed Creswell's (2009) third issue regarding the external validity of the interaction of history and treatment. By attempting to reexamine similar research on the police budgeting process, the ability to verify if the results tended to replicate previous findings.

With incrementalism, the executive can focus on those items they wish to achieve by making small changes (Denhardt & Catlaw, 2015). For example, instead of an agency head requesting ten additional personnel, which the agency head may not likely receive, the request may have a basis in more realism of requesting two or three additional persons. Over time, the agency may take incremental steps to increase the number of employees.

Incrementalism focused on the decision-making process versus the justification of the decision (Straussman, 1988). The process was designed to simplify an otherwise complex process to aid in the process (Straussman, 1988). The "aids," including satisficing, where experience factored into the decision-making process (Straussman, 1988). The lasting concept of incrementalism did not attempt to predict optimal outcomes, but incrementalism added perspective to patterns of the budget process.

The concept of incrementalism faced challenges to the conceptual use as an explanation of the budget process. Some critics mentioned the problems of specificity of the model to investigate incremental practices (Straussman, 1988). In comparison, other criticisms questioned the continued viability of incrementalism as an explanatory theory of budgeting when austerity

and austerity effects occur (Straussman, 1988). When scarcity threatened incremental growth, norms of reciprocity become violated (Straussman, 1988).

While examining the game's rules was essential in the budgetary process, it seems either one of the primary rules involved incrementalism. Several researchers suggested incrementalism was the primary rule local governmental official practice (Bendor, 2015; Guillamón et al., 2013; Jordan, 2003; Ryu et al., 2007; Zhao et al., 2010). This research project assumed that incrementalism was the preferred operating style of many local municipal budget operations. The most significant factor of this year's budget was the previous year's budget, suggesting that incrementalism was the factor for making changes to the annual budget (Wildavsky & Caiden, 2004). Game theory and New Institutional Economics may have relevance in the budgetary process, and one item appeared to be overlooked. These theories made assumptions that the actor was gaming or using unwritten rules to form a strategy to maximize their utility.

The general theoretical framework commonly applied for the budget process in public administrative organizations uses concepts suggested by Lindblom (1959; Zhao et al., 2010). Lindblom (1959) believed the policy-making process involved many complex and interrelated decisions and calculations with the threat of unknown factors lurking within the organization. This system of rational thought processes was plagued with the impossibilities of predicting future outcomes of the action or inaction of the policy implementation (Lindblom, 1959). Lindblom (1959) argues that the decision-making process was a means-ends relationship, where the means involve policy implementation, and the ends consist of the final result. According to Lindblom (1959), the rational concept was limited as it only considers the important but narrowly defined concepts. Intellectual limits and available information prevent humans from conceiving all aspects of complex problems (Lindblom, 1959).

Bendor (2015) claimed analytical challenges to observe and present a steadfast model to describe incrementalism empirically. While the concept of incrementalism appeared ever-present, using a quantitative scientific model to identify the presence of incrementalism had escaped definition. Bendor (2015) postulated that the science of muddling through was applied theory. The concept of muddling through poses an interesting question on how one defines when incrementalism exists within an agency. Bendor (2015) suggested that incrementalism provided basic levels of clarification of governmental operations but using incrementalism for decision-making or problem-solving creates numerous errors in the application. Incrementalism powerfully prevails over political approaches or socio-economic approaches explaining how the police budgetary process works (Zhao, Ren, & Lovrich, 2010, p. 273). Lindblom (1979) revisited his previous work by introducing incrementalism in politics was not slow-moving. By altering the status quo, policy changes must occur rapidly and be made in small changes (C. E. Lindblom, 1979). Incremental changes “do not rock the boat” or cause significant levels of antagonism for those affected by the policy changes (C. E. Lindblom, 1979). Incremental changes constrained democratic societies, while authoritarian governments made more drastic changes in public policy (C. E. Lindblom, 1979). Policy changes must not upset the balance of fundamental consensus for rules of the game, and other essential values exist (C. E. Lindblom, 1979). Significant steps challenge the basic tenants of the democratic government and make significant changes impossible (C. E. Lindblom, 1979).

Much of the existing research in municipal budget analysis utilizes incrementalism as a theoretical framework. Wildavsky and Caiden (2004, p. 46) contend that incrementalism was the budget process. The battle for budget items focuses on small numbers of items, not the entire budget process (Wildavsky & Caiden, 2004). The budgeting process involved historical

approaches by applying the line-item budgeting process (Wildavsky & Caiden, 2004). The need to revisit each item in the budget became redundant in line-item style. One simply looks at the previous years' budget items and simply adds or subtracts from the figure.

Wildavsky and Caiden (2004) agreed with Simon's (1997) belief that the decision-maker satisfices or enough to 'get by.' By satisficing, the budget process lowers the sights of decision-makers to achieve minimal goals. Enough to get by was the most comfortable form of completing the annual budget process and improving efficiency for the process (Wildavsky & Caiden, 2004). For example, the chief administrator of a police department was placed in a precarious situation where the administrator balances the demands by unions or police organizations tasked with maximizing benefits and pay. Although the confines imparted by the legislative authority constrain the resources available to distribute between the city's departments, through this process of satisficing, many budgets were crafted by cities (Wildavsky & Caiden, 2004).

Since personnel costs drove the budget of police departments, a way of addressing the complex determination of adequate staffing may include incrementalism. Lindblom (1959, p. 86) explained that policymakers understand they will only achieve a portion of their desires, and unintended consequences accompany the decision to allocate the resource. To negate and minimize the unintended consequences, the policymaker "proceeds through a succession of incremental changes and avoided serious lasting mistakes in several ways" (Lindblom, 1959, p. 86). These small but successive changes allow the policymaker to see how the changes affect unintended consequences by applying incremental changes. In addition, incrementalism allowed the policymaker to rescind policy changes without making significant adjustments to upset the organization's status quo. With over exuberant changes of policy, the more challenging it to

adjust for unintended consequences became. However, small changes implemented in a rapid sequence can accomplish more “drastic alterations to the status quo” than minor, infrequent adaptations to policy changes (C. E. Lindblom, 1979).

However, Gaines and Worrall (2012) added the cautionary explanation of incrementalism. Budget outcomes versus agency measures and goals through incremental actions gather the most significant attention during budget negotiations (Gaines & Worrall, 2012). Plus, political actions tended to dominate the budget process. For example, if one department receives a 10 percent increase for the upcoming year, other departments tended to request similar incremental increases regardless of whether the resources were needed to achieve departmental goals (Gaines & Worrall, 2012). According to Gaines and Worrall (2012, p. 426), “sub-optimization of goals detracts from police agency effectiveness” due to older, more established programs receive higher priorities over the newer and more effective programs.

Incrementalism was more of an applied theory versus a descriptive theory (Bendor, 2015). Incrementalism address more practical problems facing the public administrator (Bendor, 2015). The idea of incrementalism applies to how decision-makers think and choose options available, especially in times of “preference conflict” (Bendor, 2015). While incrementalism does not cover “everything in budgeting, but it is a lot” (Good, 2011, p. 50) speaks testaments about the concept used for the budget process. Bendor (Bendor, 2015, p. 201). believed Lindblom’s incremental theory had stood up very well, and no “plausible critique has ever been offered.”

Applied theories may offer more policy implications for the practitioner with the practical implications of constructing operating budgets. For example, Good (2011, p. 45) argued that Wildavsky considered situations requiring significant changes to the operating or planning of the

budget by using “shift points” or restarting at a different point. With a “shift point,” the incremental process begins once again if the economic situation stabilizes. In other instances, Good (2011, p. 45) asserted that the budgeting process was incremental. Moreover, Jones and Baumgartner (2005) made the case that early incrementalists were closer to explaining the process of incrementalism with a model of bounded rationality, where policymakers could not predict environmental influences on current decisions.

Incrementalism depended on increments in the budget distribution process (Schick, 1983). However, defining the level of incrementalism in the budget process can vary, dependent upon the definition, from a two percent to a fifteen percent increase of the budget (Schick, 1983). With the inconsistency of definitions, understanding what was incremental became an elusive challenge of identifying when the action occurred.

However, Schick (1983) argued that incrementalism was more about what budgeting is and not what it is. Under the auspices of incrementalism, budget makers cannot evaluate the items listed in the budget yearly (Schick, 1983). Incrementalism suggested that the budget increases by a fixed percentage. Incremental actions replace rational choices and comprehensive evaluations of the budget (Schick, 1983). Incrementalism fails to address the vital issue of Wildavsky’s (2004) most crucial issue of “who gets what” (Schick, 1983). The challenge was to address what did incrementalism mean in budget negotiations. The term incrementalism means many different things now, the practicality in academic research had lost its meaning (Berry, 2019, p. 193).

When governments face economic decline, as in the late 1970s and early 1980s, and again in 2008-2010, incrementalism beliefs no longer offered explanatory capabilities (Schick, 1983). Schick (1983) suggested that during economic times of strife, budgets transition from

incrementalism to decremental. When budget cuts occur, decremental actions begin (Schick, 1983). Schick (1983, p. 21) commented, “budgeting for less cannot be the same process as budgeting for more.” Decrementalism, or ‘who loses what,’ in contrast to incrementalism, operates by redistribution versus distribution, was less stable, and generated increased conflict levels for limited resources (Schick, 1983, p. 21). Thus, even though Walzer (1976) suggested salaries were directly related to the number of officers employed at an agency, Walzer (1976) failed to examine a time series of data to establish if the number of officers increased or decreased. The agency would request to increase officer positions with incrementalism when revenues increase and reduce positions when revenues decline.

Schick (1983) criticized Wildavsky’s (2004) concept of incrementalism. Economic decline destabilizes the budgetary process and remakes the budget, causing redistributive efforts to overcome the adversity (Schick, 1983). Schick (1983) argues that a five percent cut in the budget may have multiplier effects in generating uncertainty. Whereas Jordan (2003) made the case, punctuated decreases in the budget were more common than increases. Jordan (2003) believed incremental changes could “mask developing needs” for significant improvements until the problem became unavoidable or a ‘ticking time bomb.’ For example, Jordan (2003) alluded to complicated repairs for a deteriorating bridge where the incremental changes in highway expenditures continue until the bridge fails and forces the current administration to address the problem (Jordan, 2003). When government fails, the taxpayer was forced to pay for the shortcomings, as Jordan (2003) would agree.

However, one crucial consideration involved the application of incrementalism in budgeting. Many researchers also applied incrementalism to the federal government as well, but not to municipal governments. Evidence at the federal level appeared to be the most compelling

for incrementalism. While some did address local issues, most of the research examined the federal-level budget process. For example, Wildavsky and Caiden (2004) frequently alluded to the budget process at the federal level and described the incremental practices occurring in the federal government. Second where Schick (1983) examined the federal budget in times of decrementalism. Baumgartner and Jones (2005) found solid trends supporting the ideas of incrementalism at the federal level. Third, Anderson and Harbridge (2010) used a time-series data system obtained from the U.S. federal budget to conduct their research. Finally, Good (2011) asserted that the Canadian federal budget was incremental.

Using incrementalism at the federal level appeared to be a failure because the large-scale changes were a regular part of the budget process (True, 2000). Thus, incrementalism played no part in the national budget process, but an avalanche of change occurred (True, 2000). Moreover, government operates as an extensive, complex system of many interactions and different processes at many levels (True, 2000). With such complexity of government, predicting based on patterns became impossible to discern (True, 2000).

While True (2000) and others had valid points regarding the incremental predictors at the federal level, municipal level predictors should be more accessible. The challenge of understanding the process involved the limited knowledge of incrementalism in municipalities. Maybe as researchers, the tendency of overcomplicating explanations of the budget process in cities was as simple as a version of incrementalism. Of the few instances of research examining state and local governmental operations, Zhao, Ren, and Lovrich (2010) examined the police forces of municipal governments. Zhao et al. (2010) strongly support that incrementalism in the municipal budgetary process was the most customary practice. Police budgets tended to be driven by crime rates, and as crime increases, so did the police budget (Zhao et al., 2010).

Chapter 4: Methodology

To reinforce this research project's reliability, the data's stability and consistency were foundational in the research structure (Hagan, 2012). Attempting to address reliability issues for the data for this research, the statistical data from Texas metropolitan and micropolitan statistical principal cities form the basis for analysis. Babbie (2011, p. 157) addresses reliability as the “quality of measurement methods that suggested that the same data would have been collected each time in repeated observations of the same phenomenon.” To assist in accomplishing the reliability of this research, the entire population of micropolitan and metropolitan cities located in Texas for comparison added to the stability of the dataset. Since the dataset originates from one state, the stability factor significantly increases for this project. The reason the statistical areas of Texas were utilized involved the uniformity of the budget process and taxation restrictions afforded under Texas state law. This population should yield the same result each time the statistical technique was used for the dataset.

Using official data from Texas municipal operating budgets, this research assumed that the agency used all the funding for the specific purpose listed in the budget. There was the possibility that the agency head or the city administrative officer reallocates the funding from one area to another. An example of this may include budget items for overtime expenditures. Projecting the upcoming year's needs provided many complexities and impossible capabilities to predict future needs. A catastrophic event or unforeseen circumstance may force the agency to spend more considerable amounts on the budget item than officially adopted. This reallocation may involve transferring funds from a different account or item to cover the expenses for the delinquency of the overtime allocation.

While this research project assumes the agency will spend all funds allocated during the budget year, the agency will return funds to the general account. Determining if the agency did

return unspent funds to the city may prove difficult to define. Typically, agencies using incremental budget processes attempt to spend all funds at the end of the budget cycle (Wildavsky & Caiden, 2004). This research project assumes that all funds were allocated and consumed by the agency. Nothing was returned to the general fund as a surplus.

The data for this research originated from principal cities found in micropolitan, combined, and metropolitan statistical areas located in the State of Texas as defined by OMB Bulletin No. 18-04 (Mulvaney, 2018). Mulvaney (2018) states that Combined Statistical Areas were complementary to metropolitan and micropolitan cities. However, the combined areas did not supersede the metro or micro areas. These components retain their separate identities (Mulvaney, 2018). The OMB Bulletin No 18-04 (2018) identifies 46 micropolitan statistical areas, 25 metropolitan statistical areas, 13 combined statistical areas, and two metropolitan divisions in Texas. From these statistical areas, the data to be analyzed will originate from the city's most recent city council adopted budget from the operating fiscal years from 2014 to 2019.

Frankfort-Nachmias and Nachmias (2000) mention the concept of using a parallel-forms technique for establishing reliability by using two corresponding measurements. This technique overcomes some limitations associated with a test-retest method (Frankfort-Nachmias & Nachmias, 2000). The parallel-forms technique uses two parallel versions of a measuring instrument. The researcher then administers both forms to the same population group and correlates the two sets of measurements to estimate reliability (Frankfort-Nachmias & Nachmias, 2000). The limitation of this technique depends on the researcher's judgment to ascertain whether the two measurements were parallel.

The budget process exemplifies the stability factor necessary for reliability for the three years included in the examination; cities in Texas could, at a maximum, increase the property tax

rate by 8 percent over the previous year's tax rate (Garcia, 2019). Moreover, the revenue from general funds for Texas cities primarily originates from property tax income ("Local Government in Texas," 2015; Rodriguez & Portugal, 2019). Timeframes for adopting the city's budget in Texas fall under the same guidelines and occur during similar times where the fiscal year begins in October for most, if not all, cities in Texas.

Five years of data from budget cycles for Texas municipalities added to the consistency of the data set. As Hagan (2012) explains, the consistency of the data was one component to ensure the reliability of the research. Using three years of data may establish patterns that show trends over time to support predictability power. One year of data may report significance, but the pattern may be more apparent with five years of data. This consistency may add to the generalizability of this research to support similar findings from other states.

Panel Data

With the complexities offered by this dataset, panel data analysis, otherwise known as longitudinal data, offered the most appropriate system to evaluate the vast amount of data over a series of years. Panel data offer the advantage of examining all data points over a significant amount of time on a single entity (Markus, 1979). Cross-section or time-series data utilize few points of time for comparison purposes. Usually, four points in time provided the base for analysis over many entities (Markus, 1979). Thus, time-series analysis compares two or more entities during one point in time. The method fails to provide analysis of data over several corresponding years.

The primary difference between panel data and time-series data involves the observations. Time-series data observations were taken at a single entity at several points in time (Markus, 1979). In contrast, panel data examines many observations from many entities, but relatively fewer times, usually four or fewer times (Markus, 1979). With time-series data, the

time point became the unit of analysis. However, in panel data methods, the individual became the analysis unit (Markus, 1979).

The dataset included several entities, but all were classified as cities in Texas that were either metropolitan or micropolitan cities. Panel data provided a practical application for policy analysis, particularly program evaluation (Wooldridge, 2013b). Panel data occurred when the same cross-sectional units appeared in each time period (Wooldridge, 2013b). When panel data has the same time periods for each cross-sectional unit, the panel set became a balanced panel (Wooldridge, 2013b).

Organizing panel data for econometric research must consider the way data was sorted and stored. Each city contains multiple entries to correspond to the current year's information. The data should be adjacent (Wooldridge, 2013b). For the dataset comprising a total of ninety-three metropolitan and micropolitan cities, there were 559 entries. Each city has six entries, one for each year beginning in 2014 and ending in 2019. As an example, Table 4 shows a sample of data for one metropolitan and one micropolitan city used in the dataset. Data utilized for the research originated from secondary, public accessible data. The Institutional Review Board (IRB) of University of Texas, Arlington indicated by email the data was publicly available and deidentified, therefore approval from the IRB was unnecessary.

Table 2 Sample of Panel Data Collected								
YEAR	CITY_NAME	NUM_B_CITY	METRO_MICRO	POP_EST	GEN_FUN_D_TOT	GEN_FUND_CAPITA	POLICE_BUDG_TOT	Pct_GB_POL
2014	Abilene	1	0	120686	\$79,332,690	\$657.35	\$23,786,150	30%
2015	Abilene	1	0	121764	\$81,893,250	\$672.56	\$24,388,410	30%
2016	Abilene	1	0	122523	\$87,310,920	\$712.61	\$26,872,610	31%
2017	Abilene	1	0	122981	\$88,912,600	\$722.98	\$27,235,490	31%
2018	Abilene	1	0	122480	\$92,352,000	\$754.02	\$27,672,520	30%
2019	Abilene	1	0	123665	\$98,650,350	\$797.72	\$29,031,050	29%
2014	Alice	2	1	19689	\$12,819,268	\$651.09	\$4,540,210	35%
2015	Alice	2	1	19463	\$16,133,508	\$828.93	\$4,661,519	29%
2016	Alice	2	1	19464	\$17,383,117	\$893.09	\$4,841,493	28%
2017	Alice	2	1	19311	\$11,895,727	\$616.01	\$3,842,118	32%
2018	Alice	2	1	18925	\$11,650,925	\$615.64	\$3,747,869	32%
2019	Alice	2	1	18858	\$12,686,136	\$672.72	\$3,711,212	29%

Table 4 contains a portion of the dataset and multiple data points used for the research project, as Wooldridge (2013b) specifies as a panel data storage model. The sample data in Table 4 provided a representation of the complexities surrounding panel methods. The data set included observations for all ninety-three listed cities. While time was a necessary component of the dataset, the analysis unit was metropolitan or micropolitan cities. Thus, in Table 4, to distinguish between the two classifications of cities, '0' represented metropolitan cities, and '1' represented micropolitan cities in Texas.

Ordinary Least Squares (OLS) assumptions had restrictions for time series data, but OLS and multiple regression were a starting place for panel data analysis (Wooldridge, 2010). Because of temporal correlations in most time-series datasets, assumptions must be made for errors encountered with explanatory variables (Wooldridge, 2010). In addition, due to the nature

of time-series data, many independent variables may exhibit strong relationships with data, as found with the dataset used for this research project.

The estimation method known as Fixed Effects estimation accommodates the correlation to produce unbiased estimates of coefficients of time-varying independent variables. OLS can estimate coefficients of simple serial data. However, Wooldridge observes (2006, p. 445) that unobserved factors unique to a city and was invariant over time excluded OLS as an estimation technique.

First differencing was one of many ways to eliminate the fixed effect, but an alternative method works better with certain assumptions known as the fixed effects estimator (Wooldridge, 2013a). With the Fixed Effects Model, specific individual effects were a random variable but correlated with the explanatory variables (Schmidheiny, 2020). Fixed effect regression models examined the relationship between the independent and dependent variables within an entity, or in this case, a city (Wooldridge, 2013a). Fixed effect models assume the individual heterogeneity or quality of diversity in a specific city or entity may bias the independent variables (Wooldridge, 2013a). In addition, fixed effect models remove the effect of time-invariant characteristics, such as data did not change over the analysis time (Wooldridge, 2013a). An example of this may involve a political party system that did not change over time. Finally, these models made it possible to analyze the independent variable's net effect on the dependent variable (Wooldridge, 2013a).

Two methods were used to estimate unobserved effects in panel data that were at least as typical as first-differencing using assumptions involving cross-sectional equations that differed over time. Fixed effects estimator, similar to first-differencing, utilizes a transformation to remove the unobserved effect before estimating the effect (Wooldridge, 2013a). The random-

effects estimator was helpful if the unobserved effect was uncorrelated with all explanatory variables (Wooldridge, 2013a).

Panel data presents challenges to OLS. Panel data observations were serially correlated within a city's panel and capture unobserved time-invariant effects within cities that vary between cities. Hence, it contains the possibility of unobserved factors at the city level that did not change over time that may correlate with the model's independent variables that do change over time. Relationships among variables from panel data were estimated either by Fixed Effect models or by Random Effects models. Woolridge (2006, p. 503) provided a general representation of a panel data model as:

$$y_{i,t} = \beta_1 x_{it1} + \dots \beta_k x_{itk} + a_i + u_{it}, t = 1 \dots T$$

where the β_i were the parameters to estimate and a_i was the unobserved effect. It was typically assumed that the unobserved effects were time-invariant or fixed over time, which was why a_i has no time subscript and why this model was referred to as a Fixed Effects model.

Panel data offered the ability to understand better causality and control for unobserved individual heterogeneity or differences across individuals that did not change over time and were unobserved by the researcher (Longhi & Nandi, 2015). Estimation techniques for panel data were similar for balanced and unbalanced data panels. However, unbalanced panels typically offer the ability to use much larger observations and increase efficiency (Longhi & Nandi, 2015).

Sometimes the fixed effects regression method cannot be applied if the entity characteristics were correlated with another entity and were not unique to the particular entity (Wooldridge, 2013a). Fixed effects assume each entity was different, and the entity's error term

and the constant term should not correlate with other variables (Wooldridge, 2013a). Should there be differences between the entities that influence the dependent variable, then fixed effects regression should not be used (Wooldridge, 2013a). Random effects models were a better fit for the statistical analysis (Wooldridge, 2013a). Random effects regression assumes any time-invariant characteristics were taken into consideration (Wooldridge, 2013a).

The regression model included a dummy variable that indicated the observation as a micropolitan or a metropolitan city. This dummy variable has the same value over time. Applying FE techniques would eliminate the dummy variable from the model and prevent the estimation of the difference of expenditures per capita between micropolitan and metropolitan cities. With this eventuality, and the presence of other time-invariant control variables, that the model was estimated using Random Effects methods. The typical tests used to evaluate hypotheses of statistical significance of estimated coefficients remain analogous to OLS results.

Alternatively, Random Effects estimation was preferred if one can assume the unobserved factors were not correlated with included independent variables. Another reason to use Random Effects estimation was if the model contains time-invariant independent or control variables. Fixed Effects estimation was based on first differencing, and any variable included in the aforementioned variables were eliminated from the model in the estimation process. Yamano (2009) observed that using Fixed Effects estimation will exclude time-invariant variables such as education and gender. A primary hypothesis in this research was that micropolitan cities spend different amounts per capita than metropolitan cities.

Statistical Model

Due to the minor change over time for analysis, inflation levels increased on a minuscule level not significant enough to impact pricing. As reported by Consumer Price Index (CPI), the project's financial data reflects nominal measures over the time analyzed. The CPI report for all

urban consumers for the southern region provided a baseline of inflation over the years analyzed in this project (Bureau of Labor Statistics, 2021). The report revealed that inflation was minimal during this period of analysis. The CPI for 2015 was -0.2%, increased to 1.1% in 2016, 2.0% in 2017, 2.2% in 2018, 1.5% in 2019, and 1.0% in 2020 (Bureau of Labor Statistics, 2021). The average inflation rate for this period was approximately 1.3%, thus having minimal impact on price changes over the analyzed years. Also, since the research project spanned fiscal years 2014 through 2020, calendar year-based inflation measures were a poor fit. Any attempt to parcel a calendar year inflation index over a fiscal year would be susceptible to error. This complexity and the zero-inflation rate led to the use of nominal measures.

The regression model used a natural logarithm with the base of e , approximately 2.718 (Pampel, 2000, p. 79). According to Pampel, the natural logarithm was helpful in several circumstances for solving derivatives and integrals in calculus. In addition, the natural logarithms help remove ‘right skewness (Suh & Battaglio, 2021). The natural log “has a straightforward percentage interpretation: a change in one logged unit represents a constant percentage increase in the unlogged variable” (Pampel, 2000, p. 80).

$$y_{it} = \beta_1 x_{it1} + \dots + \beta_k x_{itk} + a_i + u_{it} + \varepsilon_{it}, t = 1 \dots T$$

1. Police Expenditures Per Capita log = f (Metropolitan (0) or Micropolitan (1), Population Estimate log, Certified Peace Officers, per 1000 log, Traffic Stops per 1000 pop log, Crashes per 1000 pop log, Part 1 UCR Crimes per 1000 pop log, Drug, Alcohol, Social Crimes per 1000 pop log, Median Housing Value log, Travel Time to Employment log, Persons in Poverty per 1000 log, Population Density log, Political Ideological Trend, Democrat (0), Republican (1))

2. Percent of General Budget Allocated for Police Expenditures = f(Metropolitan (0) or Micropolitan (1), Population Estimate log, Certified Peace Officers, per 1000 log, Traffic Stops per 1000 pop log, Crashes per 1000 pop log, Part 1 UCR Crimes per 1000 pop log, Drug, Alcohol, Social Crimes per 1000 pop log, Median Housing Value log, Travel Time to Employment log, Persons in Poverty per 1000 log, Population Density log, Political Ideological Trend, Democrat (0), Republican (1), Population Black-African American log, Population Hispanic or Latino log)
3. Percent of Change of Police Budget from Previous Year= f(Metropolitan (0) or Micropolitan (1), Population Estimate log, Certified Peace Officers, per 1000 log, Traffic Stops per 1000 pop log, Crashes per 1000 pop log, Part 1 UCR Crimes per 1000 pop log, Drug, Alcohol, Social Crimes per 1000 pop log, Median Housing Value log, Travel Time to Employment log, Persons in Poverty per 1000 log, Population Density log, Political Ideological Trend, Democrat (0), Republican (1))

Dependent variables

The current investigation utilized concepts from Zhao et al.'s (2010) research but modified the dependent variable involved with the city's police department provisions budgeted. Zhao et al.'s (2010) analysis included capital expenditures for replacement police vehicles, contractual services for records management software licensing, building maintenance, and other reoccurring costs unique to the city. While contributing to the overall mission as defined by the U.S. Census Bureau (2000), ancillary items did not capture the cost of the front-line officers and supervisors. Lipsky (2010) coins the term street-level bureaucrat as the group that most influences policy in agencies. The street-level bureaucrats decide the level of discretion regarding who receives what service and how much of the service. Therefore, eliminating the capital and contractual expenditures from the police-operating budget gives a clearer picture of the police provisions offered by micro and metropolitan statistical areas.

For this project, the dependent variable uses a similar approach as outlined by Zhao et al. (2010) by using a ratio of budget expenditures surrounding the costs for personnel, namely sworn personnel budgeted for the fiscal year divided by the overall operating cost for the city and

multiply by one hundred to create a percentage. According to Zhao et al. (2010), the policy implications for using this ratio as a dependent variable tended to equalize the percentage of the budget spent on personnel regardless of the size of the city. Using the technique suggested by Zhao et al. (2010), the percentage compared micropolitan and metropolitan areas. An example may reflect that the micropolitan principal city spends 4 percent of the operating budget on police provisions. In contrast, a metropolitan city may spend 10 percent of the operating budget on police expenditures. This budget process allows for an essential comparison value to analyze police provisions' costs more in-depth.

Most measures of incrementalism examined the outcomes as an essential theoretical output (Anderson & Harbridge, 2010; Bailey & O'Connor, 1975). Incrementalism can produce either large or small outcomes (Anderson & Harbridge, 2010; Bailey & O'Connor, 1975; Lindblom, 1959). Bailey and O'Connor (1975) assign definitions to incremental approaches to budgeting. The definitions fall into incremental, intermediate, and non-incremental budget applications (Bailey & O'Connor, 1975). The incremental category defines budgetary changes between 0 up to 10 percent of change as incremental, changes in the range of 11 to 30 percent were defined as intermediate, and changes over 30 percent were non-incremental changes. (Bailey & O'Connor, 1975). This research seeks to determine if incremental, intermediate, or non-incremental changes portrayed differences between metropolitan and micropolitan cities in Texas, as defined by Bailey and O'Connor (1975).

Lindblom (1959: 1979) addresses the concept of step-by-step and small degrees of changes over time. However, Lindblom (1959:1979) did not explicitly address what constitutes the term "small degrees" into a percentage value. Lindblom (1979) did address the size of steps can vary from small to large. As Lindblom (1979) suggested, the vital factor is that the steps

must not challenge the status quo or fundamental consensus upon which the rules of the game exist or violate other fundamental values. Whereas small steps retain the status quo, the status quo changes with policy changes (C. E. Lindblom, 1979).

For the different classifications of incrementalism, the vital factor may involve a pattern of consistency over time versus examining the smallness of the percentage of the expenditure. As Wildavsky and Caiden (2004) suggested, the current year's budget was based on the previous year's budget. With this rationale, like Bailey and O'Connor's (1975) analysis, categories appeared to miss the spirit of incrementalism as outlined by Lindblom (1959; 1979) of successive changes necessary to implement incrementalism. Lindblom (1959) states that policy-making was a successive approximation process to achieve the desired goals. The policy-maker, in this instance, the budget decision-maker, understands they will only achieve partial results, but through time would eventually achieve the desired goal through successive incremental approaches (Lindblom, 1959).

Dependent variable one measured the police budget per capita, natural log. The variable attempted to capture the police budget per capita of the population reported in the city. Creating the variable involved the police budgets for the reported city and dividing by the estimated population figures provided by the Texas DPS (Texas Department of Public Safety, 2020b). All 93 city's websites contained financial information for the adopted budget for the upcoming fiscal year. The police budget data were obtained by visiting websites for the individual cities and examining each available budget in detail for the fiscal year from 2014 through 2019. Since the variable reported financial figures, the natural log mathematical function was applied to report percent change.

The dependent variable was the natural log of the per capita police budget expenditures of the city. The natural log was used to simplify the estimated coefficients' interpretation, which indicates the percentage change in the dependent variable, given a change in the independent variable. All of the variables except for the metropolitan and micropolitan and political party affiliation variables were log-transformed. As described above, the metropolitan and micropolitan variables and the political party affiliation variables were converted into dummy variables. Their respective coefficients estimate the percent difference in per capita police expenditures between the categories of the dummy variable. The coefficients for log-transformed variables estimate the percent change in the per capita police expenditures given a percent change in the independent variable.

Dependent variable two attempted to measure the percent of the general budget spent for police expenditures per capita. The variable represented the 'slice of the pie' or the percent of the general budget the police department consumed information originated from the general budget and police budgets. The general budget financial totals, similar to the police budgets, originated from the individual city's adopted budget. The adopted budget provided the basis for analysis due to the negotiation and planning for the upcoming year. All cities provided at least three years of adopted budget plans. Few cities included actual expenditures. The limited number of actual expenditures included too few cases for analysis, especially for smaller micropolitan cities. The variable was created by dividing the police budget by the city's general budget and multiplied by 100 to create a percent or 'slice of the pie.' The variable became a relative value based on the relation between the Gen Budget and Police Budget.

Dependent variable three attempted to examine the percent change in the police budget over time. The variable measured the percent change in points of the police budget from the general

fund from the previous year. The intended purpose of the variable attempted to place a measure of incrementalism on the police budget. Creating the variable included the percentage calculated in dependent variable 2, percent of the general budget spent on police expenditures, and subtracting the percentage from year two from year one. For example, the percentage of 'slice of the pie' in 2015 was subtracted from the 'slice of the pie' in 2014. The conversion created a percent change in points versus an overall percentage change. In 2015, the City of Abilene police department consumed 28.89% of the general budget. In 2014, Abilene police consumed more of the general budget at 35.42%. The percentage point change between the two years was -6.52 percentage points. With 2014 as the starting year for the dataset, the values for calculating the percent point change contained missing values. The year 2013 was not included in the dataset to capture the 2014 percent point change.

Independent variables

The treatment variable for this research involved determining if there were differences in metropolitan and micropolitan funding of police provisions on a per-capita basis. Denhardt and Catlaw (2015, p. 81) suggested that comparing private businesses to the government was very similar; however, comparing small organizations versus large organizations displays the most considerable differences. By creating pseudo-variables to designate the population sizes for micropolitan and metropolitan statistical areas. As defined by the U.S. Office of Management and Budget, micropolitan statistical areas had at least one urban population cluster of 10,000 or more but less than 50,000 (Mulvaney, 2018). Metropolitan statistical areas comprise at least one urbanized area with a population of 50,000 or more (Mulvaney, 2018). The principal cities of the statistical areas provided the unit necessary for creating the dummy variables.

For this project, several independent variables provided some explanatory power necessary to determine what factors had the most significant impact on the cost of police

provisions. For example, Zhao et al. (2010) included cities with a mayor-council or council-manager system for one independent variable. In addition, Zhao et al. (2010) included the variable partisan election results. However, municipal elections omit partisan political contests (“Roles and Responsibilities of Officers in General Law Cities,” 2015).

The independent variable of population estimate converted to a natural log measured the population of the city. The variable attempted to measure the estimated population for the city. Data for the variable were obtained from the Texas Department of Public Safety, National Incident-Based Reporting System (NIBRS) (2020b). Official U.S. Census data population calculation occurred in 2010, so the challenge to find a current estimated population figure to measure per capita spending practices created an obstacle. The Texas DPS (2020b) included population estimates reporting per capita criminal offenses when searching crime reports. The idea of using the data compiled by the DPS (2020b) provided an avenue to overcome the initial challenge of calculating per capita expenditures per person for dependent variable one of police budget per capita expenditures.

Police provisions

Ammons and Edwards (2008) reported that many police agencies distorted information by using a ratio of sworn officers per 1,000 residents of the population. This frequently used justification originated as a statistical observation from the average number of officers to population ratio, not a recommendation by federal officials for staffing levels (Ammons & Edwards, 2008). Several policing agencies employed this ratio to justify increasing staffing size (Ammons & Edwards, 2008). Ammons and Edwards (2008) found a consistent 2.3 to 2.4 officers per 1,000 residents between 2001 and 2005. Metropolitan areas with populations over 50,000 had between 1.8 to 3.0 officers per 1,000, whereas micropolitan cities average ranged from 1.8 to 2.0 (Ammons & Edwards, 2008). Cities with populations over 250,000 tended to

have the highest ratio of officers to citizens, and cities between 25,000 to 99,999 had the lowest average of 1.8 (Ammons & Edwards, 2008).

Glazener, Kozlowski, Lynch, and Smith (2020) examined community characteristics and police calls for service. For Glazener et al. (2020), the enforcement rate variable examined the number of misdemeanor enforcement arrests and citations committed by offenders 16 years old and older, multiplied by 1000. Similarly, Glazener et al. (2020) applied similar calculations for felony enforcement rates. The combined misdemeanor and felony rates were totaled for the total enforcement rate (Glazener et al., 2020). Glazener et al. (2020) also include calls for service rates. This rate examined the total calls of service in a given beat for a specific year, and this figure was multiplied by 1,000 to obtain the rate of calls per 1,000 residents.

Research tended to overlook the ratio of calls of service between metropolitan and micropolitan cities. While the level of service provisions may differ from city to city, the calls of service tended to have similar attributes. These attributes or 'index of services may provide critical indicators of the nuances for the size of the city. An example, in smaller, micropolitan cities, officers may respond to more minor or low-priority calls for service. In contrast, large metropolitan areas may devote time to higher priority calls of service. Call loads may provide key distinctions for understanding the complexities of providing police services in micropolitan and metropolitan cities. The challenge for examining the calls of service ratio originates from the difficulty of obtaining the numbers of calls the agency received. Many Texas law enforcement agencies did not openly publish information regarding calls of service. The data were obtainable, but it required contacting individual agencies and explicitly requesting the data via open records requests. An attempt was made to obtain the data, but several agencies were slow to respond to the researcher.

Walzer (1976) desired to measure an 'index of services,' which included the number of offenses cleared, the number of crashes investigated, and miles traveled by police vehicles. Walzer (1976) contended that the use of offenses cleared, accidents investigated, and miles traveled were not comparable activities between police agencies. Therefore, Walzer (1976) weighted the activities by estimating the amount of time on each component and creating a twenty-minute unit based on the estimation of the amount of time each call incurred.

Walzer (1976) used a ratio between police officers to the population as a proxy for the availability of police protection. This ratio measures input but not output (Walzer, 1976). However, Walzer (1976) used this as a proxy for the estimated miles traveled because Walzer (1976) believed this component impacts the service index. The per-capita index may not factor in one officer or two-officer patrol units when factoring in the miles traveled. Two-officer patrol units were more expensive than single patrol units (Walzer, 1976). Walzer (1976) believed the number of officers employed impacted the number of crimes reported. If more officers were employed, one could expect higher instances of reported criminal offenses. The significance of the correlation was not found between police officers to crime clearance rates, according to Walzer (1976). Plus, Walzer (1976) found police officers per capita and the percentage of reported offenses cleared by arrest contained significant positive coefficients. The significance for this correlation due to the composition of police expenditures (Walzer, 1976). While Walzer's (1976) research was dated, the research makes the difficult attempt to establish an index of police services. This concept was scarce in the literature.

Zhao et al. (2010) made a similar attempt to measure police effectiveness by using a different approach. To calculate the socioeconomic impact of police officers, Zhao et al. (2010) introduce four variables. The first Zhao et al. (2010) include involved crime rates to assess the

impact on municipal budgets. The crime measured involved FBI Uniform Crime Rate (UCR) Part 1 Offenses, including murder, rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft (Zhao et al., 2010). Second, unemployment rates were included as a proxy for economic conflict and economic inequality. Third, to measure racial heterogeneity, the percentage of minority residents factored into the equation. The final measurement for socioeconomic capacity included per capita income levels to measure the affluence of residents.

Zhao et al. (2010) included two additional variables: fire department expenditures and annual percentage of park/recreation expenditures. Zhao et al. (2010) believed these variables were essential services, like the essential need of the police department. In addition, these departments were sensitive to financial hardships during budget cuts (Zhao et al., 2010). Therefore, Zhao et al. (2010) argued that these agencies helped identify incremental approaches to the budget process.

Zhao et al. (2010) used four other control variables: a percentage of males, percentage of households concerning homeowners, mayoral election one year before the survey, and level of municipal stress as offered through the U.S. Census. First, the percentage of the male population offered a control variable to account for young males who were more likely to commit crimes than other age or gender groups (Zhao et al., 2010). Second, homeownership portrayed the fiscal stability of the community (Zhao et al., 2010). Third, mayoral election factored into the analysis with the assumption during campaign cycles, and mayoral candidates tended to offer great promises and significant investments in addition to reorganizing the police and fire services (Zhao et al., 2010). Finally, municipal fiscal stress was calculated as a ratio of total expenditures to total revenues (Zhao et al., 2010). Higher scores represented more financial stress facing a

municipality for all expenditures (Zhao et al., 2010). This data was available from the city's official adopted budget.

However, a different approach to measuring the clearance rate and the number of reports from a per capita to the actual numbers may offer a better understanding of police provisions. Texas Department of Public Safety (TX DPS) (*Texas Department of Public Safety: Crime in Texas*, 2018) offered the number of reported crimes and UCR Part 1 crimes and clearances for the State of Texas. This dataset was reported on an annual basis by the Texas DPS since 1999. The Texas DPS data may be adjusted to report the offenses reported during this timeframe by corresponding the data with a city's fiscal budget year.

Using the data from Texas DPS, data from the municipal council adopted budgets, and data from the U.S. Census Bureau provided the basis for quantitative research for this project. The combination of data may add to the consistency of police provision costs in micropolitan and metropolitan cities in Texas. Unlike Zhao et al. (2010), where the authors examined only large metropolitan areas in the United States, this project attempted to establish if generalizations may be made regarding micropolitan and metropolitan social welfare of police provisions. The Texas Department of Public Safety administers a comprehensive list of all Texas law enforcement agencies' arrests and other various comprehensive reports.

The independent variable to measure the number of certified police officers reported by the Texas Commission of Law Enforcement converted to natural log attempted to measure the number of police officers working for the agency. Data for the variable were obtained from the Texas Commission of Law Enforcement (TCOLE) official report for 2014 through 2020. The process of obtaining the data from TCOLE offered challenges as well. TCOLE did not readily keep more than three years of data of certified officers. After contacting the TCOLE information

technology department, 2014-2016 retrieved the data after mining their resources. Fortunately, retrieval of the data occurred and entered into the findings of the project. The data for this variable included sworn positions that had resigned, fired, or retired during the evaluation year. Therefore, some departments may report more or fewer officers during the year, dependent on attrition or turn-over. Some years included the number of dispatch employees, but most of the data excluded the non-sworn employees. This number did not include any non-sworn positions that may be employed by the city (non-sworn dispatch, records divisions, civilian positions, or other non-sworn persons). Unfortunately, non-sworn data was difficult to obtain for the number of years analyzed. Many city budgets did not specify the number of employees or authorized positions for the fiscal year. The variable was converted to 1,000 per capita by dividing the certified officers by 1,000 ($X/1,000=Y$).

A proxy measure for productivity levels included the number of traffic stops per one thousand population converted to natural log. Thus, an attempt to measure police productivity included traffic stops per 1000. Another issue arose in attempting to obtain the call of service numbers and data from individual police departments. Initially, the first few cities starting with the letter "A" were contacted variable examined the number of traffic stops conducted by the reporting police agency in Texas. The data was officially reported data from TCOLE for racial profiling statistics (Texas Commission of Law Enforcement, 2020). This data covers the calendar year for the agency versus the fiscal year. The Texas legislature mandated the report for all police departments that conduct traffic enforcement, including all cities used in the research document. TCOLE functioned as the repository for the data for public search. The variable was converted to 1,000 per capita by dividing the reported traffic stops by 1,000 ($X/1,000=Y$). The expected findings for this variable are the metropolitan cities have more traffic

stops per 1000 population than micropolitan cities. The reasoning behind this involves the metropolitan cities tend to have larger traffic enforcement units than micropolitan cities. In addition, the larger cities have more officers conducting traffic stops than in smaller-sized cities, where the police departments may have less specialized units. As a result, the officer may be required to spend more time investigating or answering other calls of service.

The independent variable measuring crashes per one thousand persons were converted to a natural log. Like the traffic stop data, the crash variable attempted to measure a level of officer productivity and obtain an idea of the city's traffic safety. The variable was intended to function as a proxy for officer calls of service. As with traffic stops, crashes were an easily quantifiable figure the agency frequently utilized to measure police effectiveness. The variable was converted to per-capita by dividing the number of crashes by 1,000 ($X/1,000=Y$). The data was based on October to September's fiscal year, from the Texas Department of Transportation website (2021). The search term included the individual city of analysis and the total reported crashes in the city. The variable did not include non-reportable traffic crashes with property damage under \$1,000 and no reported injuries.

As a workaround, the State and the federal November election cycles in even years beginning in 2014 and ending in 2018 provided a proxy for determining the political leaning of the city. The votes for all Democratic and Republican candidates were tallied based on the primary county the city was geographically located. If one party had a simple majority of 51 percent of the county's votes, the determination of either leaning Democratic or Republican was made. The reporting for the regression used a dummy variable of '0' representing Democratic-leaning or '1' for Republican-leaning. A large majority of both metro and micro cities fell within the Republican-leaning category.

Economic factors

Holcombe and Williams (2009) found median housing values and median income levels essential in examining scale economies. The assumption for the significance of housing values and income may reflect the demand for public services (Holcombe & Williams, 2009). Median income shows no statistical significance at the 0.05 level, but housing values tended to show significance at that level (Holcombe & Williams, 2009). Tiebout (1960) suggested that since police provisions were pure public goods, population size appeared unclear or open to several interpretations. Relationships between population and per capita expenditures.

Davidsson and Rickman (2011) incorporate a geographic variable into analyzing metropolitan and micropolitan statistical areas. The geographic variable included distances between the micropolitan area to the nearest metropolitan area (Davidsson & Rickman, 2011). Also, Davidsson and Rickman (2011) include the distances to the most significant metropolitan center with incremental population sizes of 250,000, 500,000, and 1.5 million people. The distance variable revealed metropolitan areas' influence on micropolitan cities (Davidsson & Rickman, 2011).

Carmichael and Kent (2014) examined income inequality in large metropolitan cities with populations over 100,000. In cities with significant gaps in income inequality, police forces tended to have a higher number of officers patrolling the streets (Carmichael & Kent, 2014). Carmichael et al. (2014) applied a natural logarithm of the percentage of African Americans to obtain the 'racial threat' category. The US Census's income inequality factor was obtained from 1980, 1990, 2000, and 2010 U.S. Census. Carmichael et al. (2014) attempt to define the tax base for the cities by examining the median family income.

To evaluate their hypothesis, Fegley and Growette-Bostaph (2018) applied population density, socioeconomic status, population, and police market power. Fegley and Growette-

Bostaph (2018) found that the quantity demanded by police per population decreases as price increases. However, when assets increase, the police per population increases (Fegley & Growette-Bostaph, 2018). Thus, according to Fegley and Growette-Bostaph (2018), the models more easily show the ideal size of Idaho police departments to minimize crime versus the ideal size for minimizing cost.

The Herfindahl-Hirschmann Index (HH) was used to verify market competitiveness and market concentration (*Herfindahl Hirschman Index*, 2018). While it could be argued, police systems in cities operate as a monopoly, which the HH attempts to uncover with 100 percent market share, evidence shows cities compete for employees by offering various levels of incentives, including exceptional salary levels, benefit packages, and promises of increased opportunities while being employed by the city. Therefore, Fegley and Growette-Bostaph (2018) used the HH to determine the market share of a police department. First, the calculation for the HH used the city population protected by a police department, divided it by the total population in the county, and squaring the figure (Fegley & Growette-Bostaph, 2018). This figure included all municipal police departments within the county, including the county sheriff (Fegley & Growette-Bostaph, 2018). Then, by estimating the market power of the city police agencies in each county, all of the figures were added together (Fegley & Growette-Bostaph, 2018).

Fegley and Growette-Bostaph (2018) concluded that crime was a function of the police, density, socioeconomic status, population, and the HH Index. At the same time, the demand for police services was defined as a function of crime, assets, unit cost, population, and HH Index (Fegley & Growette-Bostaph, 2018). The unit cost of police factors the wages of both sworn and non-sworn personnel in a police department (Fegley & Growette-Bostaph, 2018). Assets were taxable property values (Fegley & Growette-Bostaph, 2018). The FBI Index Part 1 Crimes,

including murder, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft, defined the crime variable. (Fegley & Growette-Bostaph, 2018).

Southwick (2005) used the HH of market power, as well, to ascertain the productivity levels of the city. The HH of market power allowed Southwick (2005) to establish the effect of economies of scale by determining whether economies of scale exist in policing. The difference with this research project was examining the differences between the micropolitan and metropolitan police expenditures. While diseconomies of scale may support the literature, the challenge was determining if economies of scale may occur in micropolitan areas. Southwick (2005) suggested that population sizes between approximately 22,000 and 36,000 in population size promote economies of scale. Cities larger than 36,000 tended to support the concept of diseconomies of scale (Southwick, 2005). Fegley and Growette-Bostaph (2018) believe that smaller populations than Southwick's (2005) estimate offer better economies of scale based on population density.

The median value housing value and converted to a natural log originated from the U.S. Census (2020). The U.S. Census median housing value contained an average of 2014 through 2018 (2020). The value from 2018 supplied the figure for 2019. The data were covered to a Natural Log from the US Census data for median values. The data for all years remained the same.

The mean travel time provided an average amount of time it took for one to travel to work (in minutes) for workers aged 16 years and older. The average was calculated for the years 2014 through 2018. The data for the mean travel time was obtained by the U.S. Census QuickFacts (2020).

Poverty levels of the cities included in the models originated from the U.S. Census QuickFacts (2020). The data reported by the Census displayed the 2010 estimated figures and reported as a percent of the population. Therefore, the figures used for the regression models used extrapolated poverty level figures by taking the percentage of the poverty level and multiplying the number by the Texas DPS (2020a) population estimates. The figure was then divided by 1,000 to create a uniform variable of poverty levels per 1,000 persons in the cities reported in the project.

The independent variable measuring density of the population was converted to a natural log. Instead of using the U.S. Census density levels from 2010, the variable for this model examined the city size in square miles from the U.S. Census (2020) and divided by the Texas DPS (2020a) population estimate to provide a more current estimation of population density.

Crime related

Many of the crime-related variables deal with criminal offenses. Several researchers utilized the Uniform Crime Report (UCR) system to obtain crime data points (Loftin & McDowall, 2010). The UCR, as compiled by the FBI, offered insights into crime problems in cities in the United States. For example, Carmichael et al. (2014) employed the UCR as a measurement tool because, in their reasoning, the city managers used the UCR to gauge the city's law enforcement needs.

Rosenfeld and Wallman (2019) examined the homicide rate in 53 large cities in the United States. To examine the homicide rate, Rosenfeld and Wallman (2019) applied the city's arrest rate per 100,000 residents during the same year. The arrest variable was subdivided into several categories. These categories include violent offenses (combined aggravated assault and robbery), property offenses (including burglary, larceny, motor vehicle theft), drug-related offenses, weapon-related offenses, and public disorder crimes (including vandalism,

drunkenness, disorderly conduct, vagrancy, suspicion, curfew, and loitering) (Rosenfeld & Wallman, 2019).

However, using data from the UCR alone did not provide a clearer understanding of the crime occurring within the United States. The UCR captured the most severe offense that may occur in a criminal episode (Pattavina et al., 2017). To overcome this potential shortfall, data from the TX DPS acts as a repository for arrest and other crime-related data for the State of Texas.

The detailed data from the TX DPS was more detailed than Rosenfeld and Wallman's (2019) reported analysis level. However, the TX DPS data similarly fits the categories Rosenfeld and Wallman (2019) used to examine the homicide rates in urban areas. Using a similar pattern as Rosenfeld and Wallman (2019) of analyzing Texas metropolitan and micropolitan cities offered an insight into the similarities and differences. In addition, Rosenfeld and Wallman (2019) categorized the racial composition of the arrested person in their model. Including racial composition in the analysis added additional insight into the comparison between the micro and metro areas. However, since the micropolitan cities had lower population levels, the more appropriate rate comparison may reside with analyzing the number of arrests per 1,000 citizens.

Zhao et al. (2010) should include the clearance rate of criminal offenses defined by the UCR Part 1 Offenses. The UCR Part 1 Offenses include criminal homicide, forcible/legacy rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft, and arson (*Uniform Crime Reporting Statistics*, 2020). Including the clearance rates for these criminal offenses may help decide the city's overall social welfare (Mas, 2006). Mas (2006) used this variable as reported by per capita clearance rates per 100,000 population. Mas (2006) breaks down the clearance rates by categorizing them as violent crime and property crime clearances. Mas (2006)

included the number of reported violent and property crimes per 100,000 population as variables to measure police pay and performance levels. Including these variables may strengthen the understanding of the cost of police provisions. In addition, these variables offer support to justify the overall social well-being of micro or metropolitan statistical area.

For the Uniform Crime Report, Part 1 offenses per one thousand persons were converted to natural log. The UCR PT 1 variable examined the number of Part 1 Uniform Crime Report offenses by the police department for the city used in the research project (Texas Department of Public Safety, 2020a). Part 1 UCR offenses included criminal homicide, murder and nonnegligent manslaughter, justifiable homicide, manslaughter by negligence, forcible rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft, and arson. The variable attempted to measure criminal activity reported within the city. The variable was converted to a per-capita of 1000 persons. The variable was converted by dividing the UCR Part 1 data by 1,000 to obtain a per-capita measurement. The UCR data was commonly used to determine crime rates in cities in the United States. It was replaced with the National Incident-Based Reporting System (NIBRS) system, as NIBRS offered more detailed data than the UCR program. On a per-capita basis, the expected findings between metro and micro cities should not be statistically significant.

The independent variable for arrests to attempt to measure social disorganization of the city used the arrests for drug offenses, family violence offenses, and alcohol-related offenses converted to natural log. The label for the variable was placed into the statistical program to represent the quality of life offenses. The quality-of-life crimes combined several arrest data points to create a proxy for the overall social order within the city. The data included arrests for drug offenses, family violence, alcohol violations, and other violations considered the quality-of-

life arrests defined by the Texas Department of Public Safety (2020b). The data were converted to a per-capita of 1,000 persons. The data conversion involved the number of arrests for offenses considered to be quality of life issues and dividing by 1,000 ($X/1,000=Y$) to create a uniform comparison system.

Racial Demographics

Nofziger and William (2005) used the community to sample a county with less than 63,000 residents. The home-ownership rate of the sampled county was 47.2%, and renter-occupied levels comprise 52.8% of the county. Findings included that those who owned their own home had higher confidence levels in the police services than those renting living quarters (Nofziger & Williams, 2005). In addition, the Black male population sampled in the community tended to have less favorable perceptions of the police in the small community. However, the number of persons sampled contained only 11 responses (Nofziger & Williams, 2005).

However, building on the findings from Nofziger and Williams (2005), several research articles found that Black males tended to have fewer approval ratings for police services. In addition, blacks tended to have more significant concerns about stereotyping of criminal behavior than Whites (Najdowski et al., 2015). According to Najdowski, Bottoms, and Goff (2015), Black males reported hypothetical police encounters induced the stereotypical threat, and nonverbal behaviors translated into Black men acting more “suspiciously” than in encounters with White males. (Najdowski et al., 2015).

Carmichael and Kent (2014) examined the Hispanic presence as a factor of police size in large municipalities. The Hispanic population in major cities was very high and represented the largest minority population in several cities (Carmichael & Kent, 2014). Carmichael and Kent (2014) include percent Hispanic, Black/White segregation, unemployment rate, Black unemployment rate, income inequality, percent divorced, and median family income as variables

in their model to analyze if cities with higher minority populations had increased numbers of police officers.

The population of Black or African-American persons living within the city. The data were reported as a percentage that was uniform for all of the years examined. For example, in 2014, the city had 20% of the population reported as the identified racial composition. The 20% figure remained the same for all subsequent years, 2015-20%, 2016-20%, 2017-20%, 2018-20%, and 2019-20%. The data were converted from a percent to an estimated population number by taking the TX DPS (2020a) reported population variable (POP_EST) and multiplying it by the US Census percentage data. For example, $120686 \text{ (POP_EST)} * 71.6\% \text{ (US Census Data)} = 86411$ Population. The data was then converted to a population per capita of 1,000 population, $86,411 \text{ population} / 1,000 = 86.411$ race per 1,000 population. The variable was converted to assist with the consistency of the data. Data for the population originated from the U.S. Census as a percentage and then converted to a relative value by multiplying by population estimate (Texas Department of Public Safety, 2020a; U.S. Census Bureau, 2020). The data was reported as a percentage that was uniform for all of the years examined.

Again, similar to the Black population variable, the variable POP_HISP_LN represented a measurement of the natural log of the population of Hispanic or Latino population residing in the city. Like the racial demographics for white and black populations, the Hispanic or Latino variable attempted to measure the population residing within the city. The data originated from the United States Census (U.S. Census Bureau, 2020). The data were converted from a percent to an estimated population number by taking the TX DPS (2020a) reported population variable (POP_EST) and multiplying it by the US Census percentage data. As with the other racial data, the variable conversion followed the described example in the white population description.

Control Variables

Several factors based on previous research believed to impact police expenditures provided a guide for the current research project. First, the variables sought to investigate the impact they created upon the dependent variables to measure economies of scale, levels of incrementalism, and discover what variable impacted the police expenditures. Second, the variables examined included several factors that impact police expenditures, including racial and ethnic demographics, crime-related factors, economic stability, and city category.

Control variable designated whether the city was a metropolitan (0) or micropolitan (1) city as represented by a dummy variable. The variable labeled the different cities by designating metropolitan cities from the micropolitan cities (Mulvaney, 2018). The dataset compiled 47 metropolitan cities and 46 micropolitan cities, with each city containing six years of data. The data excluded cities located outside the geography of Texas. A dummy variable created the designation of '0' to represent metropolitan designated cities, and '1' categorized the micropolitan city.

Regarding political affiliation of the city, a dummy variable representing the overall majority political influences of the city created a control variable for political party. The variable attempted to measure the predominant political party ideology of the city. The political leanings of the community presented several challenges for the research project. Since Texas, like many other states, does not have partisan elections at the city level. Therefore, learning the political leanings of the city council or mayor added a daunting task to factor in the variable. As a method to work around the shortcomings of local partisan trends, the Texas Secretary of State (2020) website provided some insight. The initial idea was to look at the county election results, including the county judge, commissioners, sheriff, and other elected county officials' political

affiliations. The thought involved in using the frequency of elected officials at the county level entering office may reflect the partisan trends of the local populace. However, the Secretary of State (2020) did not retain the information at the county level. The Secretary of State (2020) only maintained historical federal election information. Each county election office kept the information.

Descriptive Statistics

This project's dataset originated from open-source information from websites associated with the cities, crime-related data, census data, and political affiliation. One variable that required an open record request from the Texas Commission of Law Enforcement was the official numbers of police officers employed by the cities. Due to the nature of data collection from secondary, open sources, the Institutional Review Board (IRB) for the University of Texas at Arlington replied with an email declaring the described dataset as not meeting the definitions of human subject research and was unnecessary for the dataset used.

The dataset was listed as panel data in that it has cross-section data on 93 Texas cities and time-series data on each of the cities. Panel data differs from independently pooled cross-section data in that panel data follows the same cities over time. Independently pooled cross-section data randomly selects cities for each time period. Thus, panel data, sometimes referred to as longitudinal data, provided us information on the same individuals, in this case, cities, over time. (Wooldridge, 2006).

This research was limited to Texas cities to take advantage of the state's standardization of laws governing the budget process and uniformity of criminal offenses. General budget requirements were the same for all cities in this project, with similar deadlines and implementation dates, as required by the state. With the uniformity of data for comparison

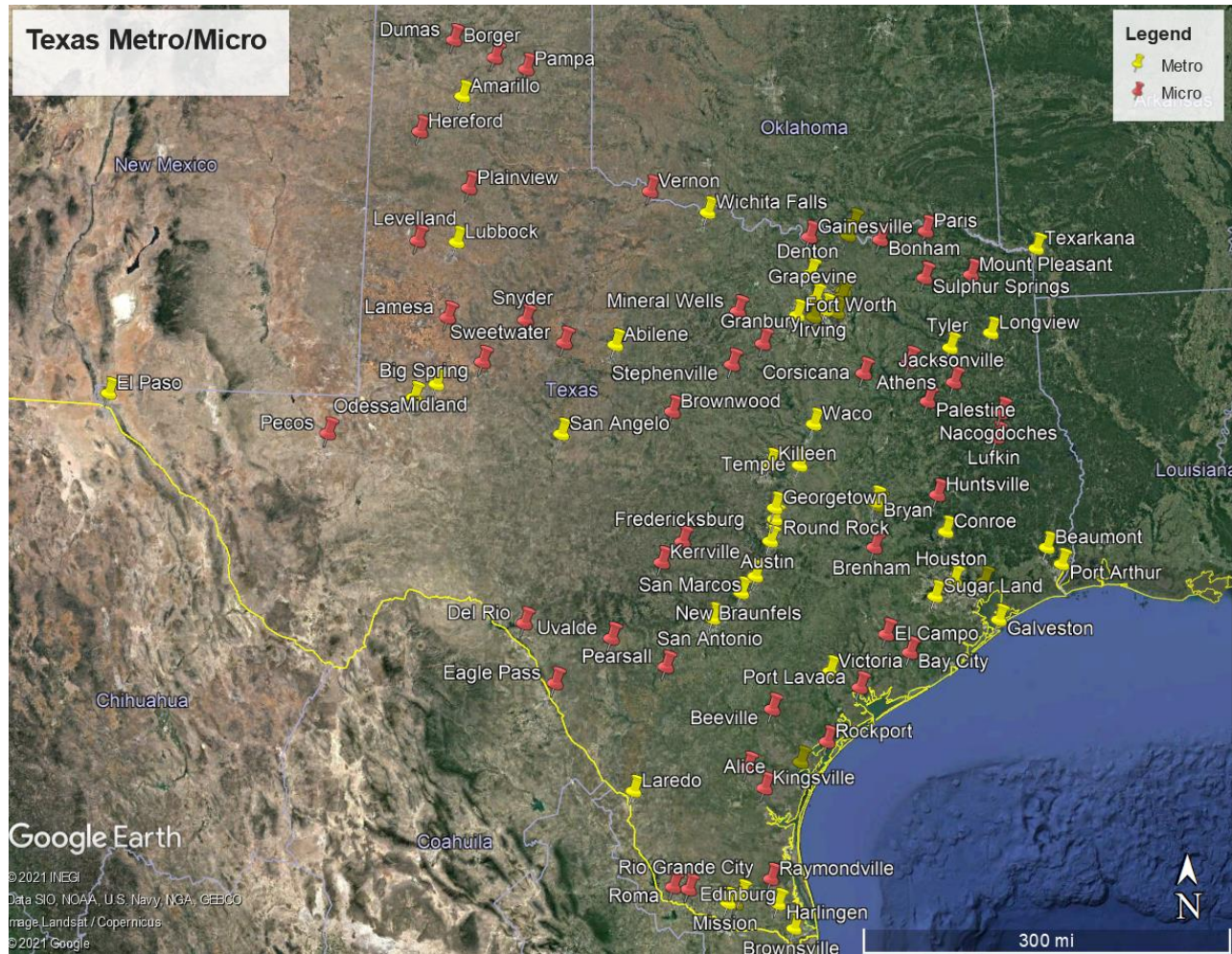
purposes, the differences and similarities may provide future guidance for establishing relationships between other states nationwide.

Since the line-item budget styles predominate many Texas cities, including all the cities used in the current project, it offered an appropriate groundwork for consistent application of the budget process. In addition, the data provided a general baseline for future research applications. The listing of metropolitan and micropolitan cities as defined in the OMB Bulletin 18-04 created a baseline for future policy applications (Mulvaney, 2018, pp. 41–115) to distinguish similarities or differences between metro and micro cities.

All Texas cities outlined as principal cities for metro or micro areas comprised the baseline, excluding Zapata and The Woodlands. Zapata was not an incorporated city in Texas, but the county population meets a micropolitan city's definition by definitional standards. Zapata did not have a city police division nor a city operating budget for analysis. Since the micropolitan area of Zapata was more of an unincorporated community, the county sheriff's department provided law enforcement services for the city and county. This precluded the exclusion of Zapata from the analysis since the unit of analysis was city police budgets.

Another city with a unique structure was The Woodlands. The Woodlands was omitted because the city contracts out law-enforcement services with the Montgomery County Sheriff's Office. The challenge for including The Woodlands as a test case would require countywide data from all of Montgomery County to report on arrests, traffic stops, crashes, and the budget allocation for the contractual services was not entirely defined. Therefore, as the two exclusions fall outside of this research's parameters, the total number of Texas metropolitan and micropolitan principal cities was represented in this research project.

Map 1: Texas Metropolitan and Micropolitan cities' geographical location



Map 1 provided a visual indicator of the location of the metropolitan and micropolitan cities in Texas. The display in Map 1 illustrated the distribution of the cities used for the analysis within the state. Most metropolitan cities follow the I-35 corridor from Fort Worth/Dallas to San Antonio. The map only included cities used for this research project. The yellow pins revealed cities listed as principal metropolitan cities, and the red pins revealed cities classified as micropolitan principal cities (Mulvaney, 2018). The map provided a visualization of the cities and the diversity of the regions represented in the data set. Map 1 identifies the metropolitan and micropolitan cities in Texas used for the research project. The OMB identified 47 principal

metropolitan cities and 46 principal micropolitan cities in Texas (Mulvaney, 2018, pp. 41–115).

As this map in Table 1 depicted, the distribution of the cities represented all significant regions of the state, not just localized near metropolitan cities. With the visualization of the map, one can see the diversity of the cities. Several metropolitan cities fall within the 'Texas Triangle,' which comprised most of the Texas population. The Triangle cities included Houston, San Antonio, and Dallas. However, several cities, comprising both metro and micro definitions, were outside the Triangle's border.

The following two tables, Tables 2 and 3, outline the Texas cities used in the research project. In Table 3, all the Texas metropolitan cities were in alphabetical order, and Table 4 lists all the Texas micropolitan cities listed alphabetically. The population sizes for the cities in Table 1 were over 50,000 in population. According to the OMB, the cities listed in Table 3 were the principal metropolitan cities in Texas (Mulvaney, 2018, pp. 41–115).

Abilene	Amarillo	Arlington	Austin	Baytown	Beaumont
Brownsville	Bryan	College Station	Conroe	Corpus Christi	Dallas
Denison	Denton	Edinburg	El Paso	Fort Worth	Galveston
Georgetown	Grapevine	Harlingen	Houston	Irving	Killeen
Laredo	Longview	Lubbock	McAllen	Midland	Mission
New Braunfels	Odessa	Plano	Port Arthur	Richardson	Round Rock
San Angelo	San Antonio	San Marcos	Sherman	Sugar Land	Temple
Texarkana	Tyler	Victoria	Waco	Wichita Falls	

Table 3 contains forty-seven cities in the State of Texas listed as principal metropolitan cities.

The OMB 18-04 report considered these cities to meet the metropolitan statistical area

(Mulvaney, 2018). In addition, Table 3 contains a complete listing of all principal metropolitan cities located in several metropolitan statistical areas.

Table 4 represents the cities defined by OMB as micropolitan principal cities in Texas (Mulvaney, 2018). The OMB identified forty-six principal micropolitan cities. The location of the cities, like metropolitan cities, represented several geographic regions throughout the state.

Alice	Andrews	Athens	Bay City	Beeville	Big Spring
Bonham	Borger	Brenham	Brownwood	Corsicana	Del Rio
Dumas	Eagle Pass	El Campo	Fredericksburg	Gainesville	Granbury
Hereford	Huntsville	Jacksonville	Kerrville	Kingsville	Lamesa
Levelland	Lufkin	Mineral Wells	Mount Pleasant	Nacogdoches	Palestine
Pampa	Paris	Pearsall	Pecos	Plainview	Port Lavaca
Raymondville	Rio Grande City	Rockport	Roma	Snyder	Stephenville
Sulphur Springs	Sweetwater	Uvalde	Vernon		

Table 4 is a complete listing of all micropolitan principal cities in Texas, excluding The Woodlands and Zapata. In Table 4, the cities follow alphabetical order, not population sorting.

The table, in conjunction with Map 1, indicated the name of the cities and their location within the state.

Table 5 outlines the descriptive statistics for metropolitan and micropolitan cities in Texas. The table represented the different variables utilized in the regression models located in Table 22. The values used in the table reflected the data prior to conversion to a natural log.

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Police Expenditures Per Capita	547	231.46	65.30	111.28	628.29
Percent of General Budget Allocated for Police Expenditures	547	29.29	6.47	9	51.6
Percent of Change of Police Budget from Previous Year	454	-0.001	0.02	-0.13	0.13
Population Variables and Racial Demographics					
Metropolitan (0) or Micropolitan (1)	558	0.50	0.50	0	1
Population Estimate	558	145944.3	335300	8931	2355606
Population Black-African American	558	20257.4	65763.9	0	530011.3
Population Hispanic or Latino	558	106977	513000	861.4	5258049
Police Provisions					
Certified Peace Officers, per 1000	556	0.29	0.74	0.02	5.58
Traffic Stops per 1000 pop	526	21.35	44.68	0.28	373.51
Crashes per 1000 pop	558	3.86	10.08	0	76.29
Political Ideological Trend, Democrat (0), Republican (1)	558	0.76	0.43	0	1
Crime Related					
Part 1 UCR Crimes per 1000 pop	558	5.97	16.68	0.12	127.86
Drug, Alcohol, Social Crimes per 1000 pop	558	4.34	9.03	0.09	67.74
Economic Factors					
Median Housing Value	558	130264.5	58656.9	52500	312300
Travel Time to Employment	558	19.88	4.09	12.3	30.9
Persons in Poverty per 1000	558	27.19	65.60	0.91	485.25
Population Density	558	1869.69	867.67	670.41	4337.99

Comparison of Means

In this section, the data set provided an insight into the world of Texas cities. First, Metropolitan and micropolitan cities were compared and contrasted with uncovering differences, if any existed. Tables 6 through 19 provided evidence of the similarities or differences for the initial data analysis between the two categories of cities.

A comparison of means between metropolitan and micropolitan cities in Texas offered the ability to assess the hypothesis regarding differences between the types of cities. This comparison of means was founded in a panel data format covering the years from 2014 to 2019. There were ninety-three cities used for observation. Of the ninety-three cities, forty-seven were metropolitan cities, and forty-six were micropolitan cities, for a close comparison of the two types of cities. A six-year time frame comprising 558 individual observations for examination provided data for this research project for each city. Because of the panel data format, one city typically contains six years for analysis, from 2014 to 2019. Thus, the means comparisons were conducted each year that provided a general idea of differences between city types over time. The number of observations for the panel data set was 558 (N=558).

Table 6 examined the city's budget allocated to the general fund. The general fund, in all instances, provided exclusively the funds allocated to Texas police agencies. Some agencies received alternative but minimal funding from federal grants. After examining all of the cities' budgets overtime used in this project, the general fund was the sole source for police funding. All the budgets examined for this project used the line-item budget system. Thus, universal consistency was found within the cities' budgets.

The data for the general fund originated from each city used in the research project. The researcher visited each city's website and located the historical repository of the city's budget. The budget was downloaded for each year, starting in 2014 and concluding in 2019. At the time

of the data collection, availability of the 2020 budget varied from city to city, thus reducing reliability. Once the budget was downloaded, the researcher located the budgeted general fund amount for the upcoming fiscal year. The figure did not account for actual expenditures for the year, but the area of interest was the budgeted levels for the general fund for the fiscal year. The figures did not include funds from public utilities, funds allocated explicitly to road maintenance, or other items funding from other sources.

A primary hypothesis in this research was that micropolitan cities spend different amounts per capita than metropolitan cities when providing public goods, in particular police services. To understand and compare funding levels, a per capita of expenditures for the population suggested an alternative viewing city expenditure. Table 6 reflected this alternative view of expenditures per the reported Texas Department of Public Safety (2020a) population levels. The conversion to per capita of city population allowed a comparison based on per person versus the available funding amount.

Table 6 General Fund Expenditures, per capita of city's population					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	42	\$731 *	\$233	\$386	\$1,518
2015	42	\$790	\$329	\$370	\$2,279
2016	43	\$786	\$281	\$389	\$1,858
2017	46	\$776 *	\$257	\$340	\$1,601
2018	46	\$801 *	\$250	\$358	\$1,530
2019	46	\$833 *	\$263	\$396	\$1,566
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	\$813	\$321	\$502	\$2,210
2015	47	\$835	\$331	\$333	\$2,156
2016	47	\$868	\$404	\$346	\$2,345
2017	47	\$866	\$342	\$443	\$2,283
2018	47	\$890	\$339	\$382	\$2,225
2019	47	\$920	\$337	\$386	\$2,287
Means are statistically different: *: $P < 0.10$; **: $P < 0.05$, ***: $P < 0.01$					

Table 6 presents unexpected results. While the findings for micropolitan cities for 2014, 2017, 2018, and 2019 were significant at the 0.10 level, the expenditures per person were more significant in metropolitan cities than in micropolitan cities. The concept of economies of scale suggested that when firms increase in size, the costs for consumers tend to reduce (O'Sullivan, 2012). However, economies of scale were not evident in the findings for the general budget per capita expenditures. The findings for the general budget and economies followed discoveries by Vias and Mulligan (2006) and Found (2012). Found (2012) observed economies of scale for cities cap out at approximately 20,000 population for police services. The findings for the general budget per population findings tend to support Found (2012). The general fund

expenditures comparison was not used in the regression model. However, the general funding played a critical role in determining the police expenditures percentage of the general budget.

The regression model provided the basis for dependent variable 1, examining what predictor (race, economic, or crime variables) impacted the budget. Table 6 represented the expenditures of the police budget based on the city's population size. The variable attempted to capture the estimated dollars for police provisions spent per person. The population estimate originated from the Texas Department of Public Safety (2020a). Each city's budgets for the fiscal years 2014 through 2019 provided data for police expenditures. The expenditures examined the budgeted amount for the upcoming year from the general fund. Expenditures from grants and other sources were excluded from the analysis. The expenditures covered personnel, operating expenses from all divisions, and other items funded by the general funds allocated by the city's adopted budget for the year of analysis. The time-consuming process of examining adopted budgets had excluded some budgetary police expenditure items included in the total.

Some of the micropolitan cities did not list all historical budgets on their respected websites. While the missing data involved very few cities, the number of cases for 2014-2016 was less than the number of cities analyzed for this project. The effect of the missing data remained unknown to the researcher, but one could assume an impact occurred. The relative data depended on total police expenditures, and the Texas DPS estimated population figures created the dependent variable, police budget expenditures, per capita.

Table 7 Police Budget Expenditures, per capita of the city population					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	42	\$209 *	\$77	\$111	\$546
2015	42	\$216 *	\$66	\$113	\$432
2016	43	\$215 **	\$58	\$119	\$388
2017	46	\$217 **	\$59	\$114	\$404
2018	46	\$226 **	\$64	\$120	\$429
2019	46	\$234 *	\$67	\$132	\$451
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	\$227	\$51	\$163	\$358
2015	47	\$235	\$60	\$117	\$378
2016	47	\$244	\$83	\$118	\$628
2017	47	\$242	\$55	\$148	\$398
2018	47	\$250	\$62	\$136	\$414
2019	47	\$256	\$64	\$138	\$423
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

Table 7 presents some exciting findings. The researcher did not expect to find the expenditure difference on a per population basis, while statistically significant at the 0.10 or 0.05 levels, the relative similarities between expenditures. The average cost for police expenditures in micropolitan cities was \$219 per person. Whereas in metropolitan cities, the average cost of police expenditures was \$242. Based on the averages, metropolitan cities spent approximately twenty-three dollars more per person than micropolitan cities. For 2014 and 2015, the number of micropolitan cities examined contained forty-two cases due to the unavailability of four cities no longer including the years on the city's website. In 2016, an additional micropolitan city's information was available to increase forty-three cities for analysis.

The findings in Table 6 for police expenditures per person followed Found's (2012) research, where economies of scale for emergency services existed in cities with populations with approximately 20,000 residents. The findings of this research suggested, micropolitan cities spend less on police services than metropolitan cities. Thus, to explain the findings, the most significant expenditure for the police department budget involves personnel costs (Briggs et al., 2008; Donahue & Miller, 2005, 2006). After examining each city's adopted budget for this project, the most extraordinary expenditures for the police involved salaries and benefits. The data used in the project did not exclusively apply salary levels but the whole expenditure package for the police department. Therefore, inferences of salary levels for comparison purposes presented a follow-up research project.

The variable percent of the general budget comprised the data for dependent variable 2 to examine if economies of scale existed in metropolitan cities. Table 8 contained the percentage of police expenditures taken from the general budget. Table 8 used data from allocated general budget funds for the city and divided by the police expenditures for the budget cycle to analyze if the average share of the general budget for police services expenditures varied between metropolitan and micropolitan cities. The variable examined the percentage of the general fund for the upcoming fiscal year allocated for police budgets. The variable initially offered a way to measure incrementalism by examining the percentage change of expenditures from one year to another.

The change was represented as the starting level's proportion or percentage change (Pampel, 2000). In terms of relative comparisons, a \$100 change at \$1,000 represents a 10% increase, and a \$100 change at \$100,000 represents a 0.1% increase (Pampel, 2000). By using relative change, comparisons as a percentage will reflect a more precise comparison between the

expenditures of micropolitan and metropolitan cities. Relative changes for a system of comparison have added value for examining data through the use of logarithms to provide an effective means of measuring relative changes of variables (Pampel, 2000).

Table 8 Percent of Gen. Budget spent for Police Serv. (Slice of the Pie)					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	42	29.41%	7.78%	16.00%	52.00%
2015	42	29.00%	7.83%	9.00%	45.00%
2016	43	28.65%	6.68%	11.00%	43.00%
2017	46	29.20%	6.69%	16.00%	45.00%
2018	46	29.20%	6.49%	17.00%	46.00%
2019	46	29.11%	6.45%	16.00%	44.00%
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	29.36%	5.80%	16.00%	42.00%
2015	47	29.64%	6.09%	17.00%	42.00%
2016	47	29.66%	6.07%	16.00%	42.00%
2017	47	29.51%	6.21%	16.00%	44.00%
2018	47	29.49%	5.93%	16.00%	44.00%
2019	47	29.21%	6.32%	17.00%	44.00%
Means are statistically different: *: $P < 0.10$; **: $P < 0.05$, ***: $P < 0.01$					

Evidence in Table 8 completely surprised the researcher. The means between metropolitan and micropolitan cities percent of general budget expenditures for police services followed an identical pattern. Initially, the way used to measure incrementalism, comparing the means generated unexpected findings. The findings illustrated no statistically significant differences between metropolitan and micropolitan percentages of general funds allocated to police expenditures. Even the minimum and maximum values and standard deviations followed a

remarkably similar path with close comparisons. In other words, there were no differences between metropolitan and micropolitan average 'slice of the pie' for police expenditures.

Table 8 results led the researcher to believe the percentage of the police expenditures from the general budget, or police expenditures' slice of the pie' of the total general funds allocated for the city, impacted the budget process more than incrementalism for Texas metropolitan and micropolitan cities. The similarities of the means for metro and micro cities appeared uncoincidental. The very consistent mean of approximately 29% over the six-year time appeared to establish a potential baseline for similarly sized cities in Texas to establish if the police expenditures followed the general rule. The findings in Table 8 led the researcher to rethink the concept of incrementalism in police budgets.

For dependent variable 3, the variable percent change from the previous year created the foundation for the measurement of incrementalism. Table 8 findings reinforced the researcher's findings of the 29% average expenditure from the general budget as more influential than incrementalism. Table 8 examined the percent change of the budget from one year to another. Data for 2014 was absent due to the year as a starting point. Therefore, Table 8 measured police expenditure percent changes from the previous year to the upcoming year's budget. The calculation factored the percent change of 2015's police budget from 2014, 2016's percent change police budget from 2015, 2017's percent change police budget from 2016, 2018's percent change police budget from 2017, and 2019's percent change police budget from 2018's police budget. Thus, Table 9 attempted to operationalize the concept of incrementalism in police budgets.

As a general definition of incrementalism outlined by Anderson and Harbridge (2010), the phenomenon occurs where the smallness of the change contributed to the most common

factor of incrementalism. Ten percent was generally considered the cutoff of incrementalism (Anderson & Harbridge, 2010; Bailey & O'Connor, 1975). As a result, rejecting the null hypothesis became very difficult (Anderson & Harbridge, 2010). Anderson and Harbridge (2010) used cutoffs at 1 percent, 5 percent, 10 percent, 20 percent, 30 percent, 40 percent, 50 percent, and 100 percent to show how the size of changes may affect the interpretations of what constitutes incremental budget changes. The cutoff percentages provided a way of identifying the level of incrementalism occurring since Lindblom (Lindblom, 1959; 1979) suggested that small, successive changes equaled incrementalism. Thus, an operationalization of agreed levels of the practice of incrementalism appeared elusive.

Table 9 Percent Change of the Police Budget from Previous Year					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	42	N/A	N/A	N/A	N/A
2015	42	-0.31%	3.30%	-8.08 %	12.9%
2016	43	-0.58%	2.91%	-13.19%	8.01%
2017	46	0.29%	2.36%	-4.2%	5.78%
2018	46	0.01%	2.46%	-11.39%	6.35%
2019	46	-0.16%	1.81%	-5.14%	2.97%
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	N/A	N/A	N/A	N/A
2015	47	0.23%	1.49%	-4.08%	4.63%
2016	47	0.01%	1.36%	-4.20%	4.26%
2017	47	-0.12%	1.40%	-4.34%	2.62%
2018	47	-0.03%	1.60%	-5.30%	5.57%
2019	47	-0.31%	1.20%	-3.05%	2.70%
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

Evidence in Table 9 displays minor changes in the aggregate budget levels in metropolitan and micropolitan cities. While incrementalism may occur at individual levels, the essential factor worth noting involved the striking similarities between metropolitan and micropolitan cities' yearly changes in the police budget. Neither category of cities provided evidence of statistical significance. Therefore, metropolitan and micropolitan cities were remarkably similar in incremental practices, if they occurred at all. Nevertheless, it did appear that micropolitan cities had more significant increases and decreased in the maximum and minimum categories than found in metropolitan cities.

Based on findings in Table 8 and Table 9, police expenditures did not operate with incrementalism in mind. However, the researcher should revisit the overall general budget to ascertain if incrementalism operated at the overall city level versus the individual departments. With the highly similar means discovered in Table 8, the 'slice of the pie' comparison suggested that metropolitan and micropolitan cities focused more on their budget share than increasing the budget incrementally. Table 9 suggested, if incrementalism occurs in Texas metropolitan and micropolitan cities, it occurred under one percent in metropolitan cities and was typically reduced by approximately one percent in micropolitan cities. Micropolitan cities tended to reduce their budgets, and metropolitan cities tended to have a mixture of reductions or increases, but typically less than one percent of the previous year's police expenditures.

Table 10 displayed the mean number of reported certified police officers per 1,000 population for Texas city police agencies listed as principal metropolitan or micropolitan cities. The data were obtained through an open-records request to the Texas Commission of Law Enforcement (TCOLE). The request sought information on the official number of officers licensed for all Texas law enforcement agencies. The data included the cities listed in this

project, with the number of certified police officers reported to the state commission licensing authority.

One thing the data may not accurately capture was the attrition of officers during the year of analysis. TCOLE did not have the separation data available or the number of newly added officers for the included years. TCOLE informed the researcher that they typically keep only current year data available. Retrieving the data for the project involved a lengthy process requiring the TCOLE technology department to plow through archival data.

Table 10 Certified Peace Officers in Texas cities per 1,000 population					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	44	0.03***	0.01	0.02	0.07
2015	46	0.04***	0.02	0.02	0.09
2016	46	0.04***	0.02	0.02	0.09
2017	46	0.04***	0.02	0.02	0.08
2018	46	0.04***	0.01	0.02	0.08
2019	46	0.04***	0.01	0.02	0.08
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	0.49	0.96	0.05	5.25
2015	47	0.53	1.01	0.05	5.58
2016	47	0.53	1.00	0.05	5.52
2017	47	0.53	1.00	0.05	5.54
2018	47	0.53	1.00	0.05	5.58
2019	47	0.53	0.98	0.05	5.51
Means are statistically different: *: $P < 0.10$; **: $P < 0.05$, ***: $P < 0.01$					

The findings in Table 10 offer little surprises. Metropolitan cities tended to have many more specialized divisions which employed certified peace officers than micropolitan cities. According to Table 10, micropolitan cities employed significantly fewer officers per one

thousand population than metropolitan cities. Therefore, the finding supported data from Table 6 on police expenditures per population. The increased number of officers employed by metropolitan cities may account for the extra average \$23 expenditure per person in metropolitan cities.

Table 11 compared the means between the population sizes of metropolitan and micropolitan cities in Texas (Texas Department of Public Safety, 2020a). It provided an initial distinguishing characteristic between metro and micro cities. The statistic provided average population sizes for the given years. There was no surprise that the metropolitan cities had statistical significance as compared to micropolitan cities. The interpretation of this finding revealed the metropolitan cities were much larger than micropolitan cities—the average size of metropolitan ranged from 259,943 persons in 2014 to 280,374 persons in 2019. Micropolitan cities averaged from 2014, 17456 persons to 17588 persons in 2019 (Texas Department of Public Safety, 2020a). The t Statistic for all years indicated statistical significance.

Table 11 Texas Department of Public Safety Population Estimates					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	17456***	7845.15	8931	40059
2015	46	17544***	7918.70	9321	40866
2016	46	17645***	7959.25	9429	41390
2017	46	17675***	7933.94	9469	41634
2018	46	17563***	7850.29	9183	41651
2019	46	17588***	7865.53	8997	41881
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	259943	421853.5	22838	2219933
2015	47	266198	432459.4	22952	2275221
2016	47	271409	442311.6	23237	2334348
2017	47	274576	445674.2	23814	2338235
2018	47	276973	449116.1	24623	2344966
2019	47	280374	451773.7	25432	2355606
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

However, one interesting observation in Table 11 was that metropolitan cities' average population increased by 20,431. In comparison, the micropolitan city average population increased by 132 persons. In relative terms, the difference in the mean population increased 8.38% during the six years, suggesting metro cities grew faster than micro cities. Therefore, based on population size reported by the Texas Department of Public Safety NIBRS reporting of population sizes, metropolitan and micropolitan cities significantly differ between populations. The findings for population mean did not surprise the researcher and followed general conventions of expectations for size differences.

Calls of service were the traditional way of measuring a police department's productivity. Obtaining this data proved challenging. The researcher attempted to contact several Texas police agencies to collect the data. The response from the agencies contacted varied from very

responsive to some never responding. The search to find a proxy way to measure some levels of productivity ensued. Traffic stop data was used as a proxy for measuring police officer productivity, as displayed by Table 12. With the readily available information, one could assume that a law enforcement agency used the traffic stop data to measure officer productivity. Based on a one-tail test, micropolitan cities displayed significance at the 0.01 level.

As a solution to overcome the problem associated with measuring police productivity levels, an alternative measure was used. Tables 11 through 14 attempted to overcome the problem measure the community's social health by examining other measures of productivity levels. The solution involved a Texas law requiring all law enforcement agencies that conduct traffic stops were required to report racial profiling data. Table 11 attempted to measure the productivity levels of Texas police agencies. Part of the legislatively required data included the number of traffic stops conducted by the reporting agency. The annual report for traffic stops data followed a calendar year versus a fiscal year. The data were obtained from the Texas Commission of Law Enforcement (2020) official racial profiling data covering 2014 to 2019.

Table 12 Traffic Stops Made per 1,000 population					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	44	3.43***	3.96	0.35	25.90
2015	45	3.06***	3.08	0.37	20.03
2016	39	2.96***	2.29	0.28	11.86
2017	42	2.61***	1.90	0.30	7.41
2018	41	5.62***	4.40	0.49	25.43
2019	45	6.16	4.13	0.95	24.43
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	43	40.24	64.21	3.09	373.51
2015	47	34.49	53.68	1.81	316.99
2016	44	31.81	54.84	2.05	325.06
2017	46	32.05	52.24	1.75	312.29
2018	43	41.36	59.21	4.39	355.13
2019	47	46.89	62.76	5.45	322.01
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

Table 12 contains the mean number of traffic stops per thousand conducted by Texas city police departments. As expected, traffic stops in metropolitan cities exceeded those in micropolitan cities every year of the study. Metropolitan agencies employ more certified officers than micropolitan cities. The difference between the means from 2014 displayed those metropolitan cities conducted about thirty-seven more traffic stops than micropolitan cities. The smallest gap was in 2016, with a difference of twenty-seven stops per one thousand more in metropolitan cities, and the widest gap was nearly 41 stops per 1000 in 2019. Comparing means of a one-tailed test revealed statistical significance at the 0.01 level for all years, except for 2019. Thus, it appears, the number of traffic stops conducted in micropolitan cities increased. In 2019, the median number of traffic stops was the most considerable number of stops made during the observation period.

What may cause this significant discrepancy was that metropolitan cities were more likely to have dedicated traffic enforcement units than smaller micropolitan cities. The finding did not mean micropolitan cities were no less dedicated to traffic enforcement, but the finding revealed a level of significant difference between the means. With police officers' presence in metropolitan cities, the specialized officers may spend more time enforcing traffic stops than smaller metropolitan cities. With little doubt, metropolitan cities typically had many more persons using the road systems. With such a large volume of traffic, the possibility of a police encounter increased. The sheer volume of traffic may account for this significant variance of traffic stops. While this project did not specifically address the traffic enforcement units, future research may explain the large discrepancy. Nevertheless, it appears a motorist was more likely to be stopped by police in metropolitan cities than micropolitan cities.

Another matrix to measure officer productivity was the number of crashes reported in metropolitan and micropolitan cities. With the unavailability of the number of calls of service reported by cities, crash rates functioned as an additional proxy for calls. Crashes failed to incorporate other measures of productivity other than responding to a crash. However, reported crashes might explain police expenditures as related to a proxy productivity level. Like the traffic stops, crashes offer a quantifiable statistic easily reportable to the city's governing authority.

Table 13's data originated from the Texas Department of Transportation (Texas Department of Transportation, 2020). The data captured all crashes that required a police report. The findings do not include crashes with minimal damage under \$1,000 and no reported injuries, as many of these crashes do not generate an official report. Minimal damage or non-injury

crashes were challenging to obtain as the Texas Department of Transportation did not keep the statistical information for minor crashes.

Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	0.388***	0.292	0.017	1.398
2015	46	0.389***	0.290	0.012	1.262
2016	45	0.400***	0.297	0.022	1.255
2017	45	0.394***	0.288	0.013	1.290
2018	45	0.391***	0.293	0.013	1.295
2019	45	0.412***	0.304	0.034	1.343
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	6.355	11.795	0.319	64.930
2015	47	7.042	13.270	0.334	73.720
2016	47	7.605	14.144	0.352	75.029
2017	47	7.462	13.737	0.418	72.809
2018	47	7.428	13.544	0.407	73.435
2019	47	7.655	14.118	0.400	76.289
Means are statistically different: *: $P < 0.10$; **: $P < 0.05$, ***: $P < 0.01$					

As Table 13 summarizes, with more vehicle traffic and more traffic stops conducted in metropolitan cities, the expected findings for this variable were unexpected. The expectation was that metropolitan cities had a more considerable difference between the number of crashes. Like traffic stops displaying significant differences, the crashes average to approximately 6.5 crashes more per one thousand in metropolitan cities than micropolitan cities. All years reported statistical significance at the 0.01 level in a one-tailed test.

Either the volume of traffic enforcement in metropolitan cities worked in reducing traffic crashes, or micropolitan cities may examine if more resources were necessary to narrow this gap.

While this was beyond this project's scope, future research may offer a policy recommendation on this subject.

Table 14 displays the number of arrests of Uniform Crime Report (UCR) Offenses, Part 1 per one thousand population. The data originated from the Texas Department of Public Safety (TX DPS) National Incident-Based Management System (Texas Department of Public Safety, 2020a). In the Part 1 category, crimes included murder, rape, robbery, assault, burglary, larceny, and auto theft (Texas Department of Public Safety, 2020a). In addition, the UCR data were adjusted to correspond with the fiscal year reporting system (Texas Department of Public Safety, 2020a).

Table 14 Uniform Crime Reported Offenses per 1,000 population					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	0.699***	0.398	0.142	2.135
2015	46	0.674***	0.383	0.120	1.996
2016	46	0.643***	0.349	0.144	1.651
2017	46	0.572***	0.334	0.157	1.677
2018	46	0.529***	0.302	0.119	1.595
2019	46	0.527***	0.317	0.120	1.719
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	11.855	23.447	0.795	127.859
2015	47	11.373	22.234	0.772	121.831
2016	47	11.510	22.768	0.732	124.090
2017	47	11.292	22.854	0.647	124.212
2018	47	10.529	21.182	0.558	118.277
2019	47	10.708	22.222	0.569	123.585
Means are statistically different: *: $P < 0.10$; **: $P < 0.05$, ***: $P < 0.01$					

Table 14 summarizes that those metropolitan cities had many more UCR Part 1 offenses than micropolitan cities. The data illustrated that those metropolitan cities were more dangerous than micropolitan cities on a per one thousand basis. An average of approximately 10.6 more UCR Part 1 offenses reported per one thousand in metropolitan cities revealed that metro cities were more dangerous for the populace than micropolitan cities. With the finding, one may expect metropolitan cities spend more money per resident than micropolitan cities. Typically, with increased crime rates, spending tends to increase (Guillamón et al., 2013; Johnson, 2012). Thus, metropolitan cities expect to spend significantly more per capita than the safer micropolitan cities with increased crime rates.

Pascarella (1999) suggested that police salaries and social order in a community worked in conjunction with each other, where the upper-class utilized similarly related criminal offenses as a means to ensure social control. The data outlined in Table 15 attempted to measure a level of social control, as suggested by Pascarella (1999). Pascarella (1999) suggested that the police force acted as pawns for control for the upper classes. The data in Table 15 represented various arrests for criminal activity not reported as a Part 1 UCR crime, but the crimes listed in the category tend to suggest the overall stability of the community. Therefore, the data in Table 15 sought to clarify the influence of social control and police expenditures.

Texas DPS defined crimes against society arrests as crimes associated with pornography, prostitution, weapons arrests, animal cruelty, gambling, drunkenness, liquor laws, driving under the influence, sale/manufacturing of controlled or prohibited drugs, possession of controlled or prohibited drugs, and family violence/assaultive offenses (Texas Department of Public Safety, 2020b). The variable attempted to address the varying levels of social disorganization between metropolitan and micropolitan cities.

Table 15 Quality of Life Arrests, per 1,000 population					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	0.768***	0.490	0.231	2.639
2015	46	0.730	0.408	0.270	1.888
2016	46	0.751***	0.462	0.087	1.953
2017	46	0.769	0.523	0.148	2.253
2018	46	0.729	0.469	0.209	2.106
2019	46	0.694	0.441	0.205	2.024
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	8.533	13.175	0.362	67.226
2015	47	7.832	11.397	0.713	56.969
2016	47	8.052	12.342	0.869	67.736
2017	47	7.831	11.573	0.903	59.657
2018	47	7.690	11.515	0.736	56.395
2019	47	7.287	10.424	0.887	45.700
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

Table 15 summarizes that social disorganization or crimes against society occur with a greater frequency in metropolitan cities. The average difference between metropolitan and micropolitan cities, over six years, was that about seven more people per one thousand population in metropolitan cities faced arrests than those residing in micropolitan cities. Vias (2012) briefly addresses the overall quality of life in micropolitan cities offering higher quality levels than metropolitan cities. Only the years 2014 and 2016 displayed statistical significance in the difference between metropolitan and micropolitan cities. It appeared the cause of the significance for the two years involved increased arrests in metropolitan cities, whereas micropolitan cities tend to show similar means for all reported years.

With the findings in Table 15, the differences, while primarily not statistically significant, were substantial. The enormous differences in enforcement action between the two cities may

have revolved around the volume of persons living in metropolitan cities versus micropolitan cities. Moreover, many metropolitan cities might utilize task forces or special response units dedicated to explicitly dealing with criminal actions. Micropolitan cities may have task forces, but the number of certified officers employed in micropolitan cities was fewer than in metropolitan cities, as evidenced in Table 8 certified peace officers.

After observing the differences in traffic stops in Table 12, the differences were not as surprising. With the higher number of traffic contacts in metropolitan cities, the odds of detecting someone in violation of the crimes against society, drug, and alcohol violations increases. While more severe on some levels than crimes against society, family violence arrests may have more extraordinary instances of reporting from the populace due to increasing metropolitan density levels compared to micropolitan cities.

Racial and ethnic demographics provided an insight into the composition of the metropolitan and micropolitan cities. The data for these means comparisons originated from the U.S. Census Quick Facts (2020) and information obtained from the Texas Department of Public Safety (2020a). The U.S. Census posed a challenge for analyzing the data for the research. The reported data from the Census provided percentages of the population based on the 2010 U.S. Census (2020). The percentages were the same for all the years analyzed in the research project. For example, if the U.S. Census reported that 60 percent of the population's racial composition was White, the 60 percent figure provided the basis for the 2014 through 2019 population. Therefore, for all years of analysis, the city's population was factored on the U.S. Census reported percentage of the community's racial composition. The percentage did not change for the reported city.

Using the population information reported in Table 11 and the corresponding variable data obtained from the Texas Department of Public Safety (2020a) created the foundation for analyzing the racial demographics of the cities. As a way of calculating an approximation of the population's racial composition, the variables were converted from the Census percentage figure to an estimated population figure. The conversion involved the population number obtained from the Texas Department of Public Safety (2020a) multiplied by the racial percentage reported by the U.S. Census (2020) Quick Facts information. This data offered an approximation of the racial composition of the city. Since data were not available for such figures, the approximation offered an insight into the city's demographics.

The racial composition of metropolitan and micropolitan cities naturally depicted a larger population of all racial categories and ethnicities resided in metropolitan areas. The vast discrepancies between metropolitan and micropolitan cities were expected, and the comparison of the means reinforced the belief. Since racial and ethnic demographics data overwhelmingly reflected the larger population residing in metropolitan areas, the means comparisons were omitted from the means comparison table list. The purpose for removing the comparison of the means for racial and ethnic populations was to add to the brevity of other means comparison tables. The variables were used in the regression model.

Table 16 examined the median house values between metropolitan and micropolitan cities. The contention that housing values in micropolitan cities stagnated in the southern states offered conventional wisdom (Lang & Dhavale, 2005). However, in contrast to Lang and Dhavale (2005), housing prices in Texas metropolitan and micropolitan cities were similar. Therefore, Lang and Dhavale (2005) assumed that housing demand in the south, especially the Texas plains region, declined.

The US Census QuickFacts (2020) median house values comprise an average of housing prices spanning 2015 through 2019. Reporting by the US Census provided an average amount of value for this time frame. Therefore, the data values were the same throughout the analysis period. In addition, the data for 2014 remained the same for 2019 for this variable. Therefore, no adjustments to the variables occurred for the data. Nevertheless, as discussed previously, panel data examined each year independently, and the housing values play an essential role in the overall understanding of police expenditures.

Table 16 Median Housing Values					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	\$ 102,039	41099	\$ 52,500	\$ 273,500
2015	46	\$ 102,039	41099	\$ 52,500	\$ 273,500
2016	46	\$ 102,039	41099	\$ 52,500	\$ 273,500
2017	46	\$ 102,039	41099	\$ 52,500	\$ 273,500
2018	46	\$ 102,039	41099	\$ 52,500	\$ 273,500
2019	46	\$ 102,039	41099	\$ 52,500	\$ 273,500
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	\$ 157,889	60949	\$ 65,700	\$ 312,300
2015	47	\$ 157,889	60949	\$ 65,700	\$ 312,300
2016	47	\$ 157,889	60949	\$ 65,700	\$ 312,300
2017	47	\$ 157,889	60949	\$ 65,700	\$ 312,300
2018	47	\$ 157,889	60949	\$ 65,700	\$ 312,300
2019	47	\$ 157,889	60949	\$ 65,700	\$ 312,300
Means are statistically different: *: $P < 0.10$; **: $P < 0.05$, ***: $P < 0.01$					

The findings of Table 16 suggested some unexpected results. The researcher expected to find housing prices in micro areas of Texas showing statistical significance or differences than in metro areas. The finding refuted the researcher's expectations. The interesting observation noticed in Table 16 involved the similar housing values between metropolitan and micropolitan

cities. The minimum and maximum values of metropolitan and micropolitan cities' housing values differ but were not as widely varied as expected, at least within Texas. Comparing metropolitan and micropolitan cities indicated that the differences did not vary enough to create statistical significance for the variable. The finding led to the inference that there were a few differences between metro and micro-housing prices.

The data from Table 17 originated from the US Census Quick Facts (2020). Quick Facts reported that the average employment travel time estimate occurred during 2018 (U.S. Census Bureau, 2020). The average travel time created the exact figures for the years of analysis. Like the median housing values in Table 16, the data offered critical insight into the funding of police expenditures for cities. Travel times provided a measure of urban sprawl: the longer the commute time, the increased level of sprawl (Nechyba & Walsh, 2004; Sarzynski et al., 2006). With increased levels of urban sprawl, the longer commute times occurred in metropolitan cities (Nechyba & Walsh, 2004; Sarzynski et al., 2006). Therefore, factoring in urban sprawl may contribute to the impact on police expenditures.

Table 17 Employment Travel Time					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	18.2	3.3	12.3	29.9
2015	46	18.2	3.3	12.3	29.9
2016	46	18.2	3.3	12.3	29.9
2017	46	18.2	3.3	12.3	29.9
2018	46	18.2	3.3	12.3	29.9
2019	46	18.2	3.3	12.3	29.9
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	21.6	4.1	14.5	30.9
2015	47	21.6	4.1	14.5	30.9
2016	47	21.6	4.1	14.5	30.9
2017	47	21.6	4.1	14.5	30.9
2018	47	21.6	4.1	14.5	30.9
2019	47	21.6	4.1	14.5	30.9
Means are statistically different: *: $P < 0.10$; **: $P < 0.05$, ***: $P < 0.01$					

Findings from Table 17 suggest metropolitan and micropolitan cities had similar commute times, based on the US Census Quick Facts (U.S. Census Bureau, 2020). The findings from travel times presented a vital policy application for future urban sprawl research. The travel times were similar. When examining the maximum commute times, micropolitan and metropolitan cities were within one minute of travel time. However, the distance traveled may present differences between the two. Unfortunately, the US Census Quick Facts (2020) did not capture this data. Travel time plus the distance traveled for employment may offer a different understanding of urban sprawl concerns between the two classifications of cities. While a person living in a micropolitan city may spend a similar amount of time traveling, the resident may travel a greater distance for the commute. Whereas a resident of a metropolitan city contends

with increased traffic congestion and travel shorter distances. Understanding the travel times and distance traveled between metropolitan and micropolitan cities may redefine the sprawl phenomenon.

Each city used for this project reported varying levels of percentage of the population living in poverty. As reported by the US Census Quick Facts (2020), poverty levels initially took the form of an average percentage of the population, based on 2010 data. To add to the consistency of the data for this project, the percentage of the city's reported poverty level percentage multiplied by the Texas Department of Public Safety (2020a), then divided by 1,000 to represent persons in poverty per 1,000 population.

Table 18 Poverty Level, per 1,000 population					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	4***	3	1	14
2015	46	4***	3	1	14
2016	46	4***	3	1	14
2017	46	4***	3	1	14
2018	46	4***	3	1	14
2019	46	4***	3	1	14
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	48	84	3	457
2015	47	49	86	3	469
2016	47	50	88	3	481
2017	47	50	88	4	482
2018	47	51	89	4	483
2019	47	51	89	4	485
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

Table 18 reflects the conversion of the percentage into persons living in poverty per 1,000 population. The findings of Table 18 reinforced the many assumptions that more

impoverished persons resided in metropolitan areas. One reason for this finding may involve the levels of support offered by larger cities versus the smaller micropolitan cities. More persons living in poverty resided in metropolitan cities than in micropolitan cities. Metropolitan cities Regardless, the micropolitan cities reported significantly lower numbers of persons living in poverty than in metropolitan cities in Texas. The finding should support increased levels of persons living in impoverished situations, and the larger cities would have more significant per capita spending for police expenditures. Due to the economic prosperity of micropolitan cities located near metropolitan towns, economic growth, and population growth, in contrast with cities located further away from metropolitan cities, face a state of decline (Vias, 2012).

Vias (2012) argued that micropolitan cities offer an escape from the problems facing urban and suburban cities. Thus, in some forms, the micropolitan city was competing for residents to relocate to their town until the ideal size; as Tiebout (1956) addressed with assumption seven, communities seek optimum size and maintain that size. Table 19 provided insight into assumption seven by addressing the optimum size. As displayed in Table 19, the urban density per square mile compared metropolitan and micropolitan cities in Texas. As evidenced by Table 1, the map of the cities listed for observation, the distribution reflects several of the micropolitan cities were regionally located to a metropolitan city.

Table 19 data originated from the US Census Quick Facts (2020) and the Texas Department of Public Safety (2020a) population estimates. The US Census (2020) Quick Facts did contain a variable for density. However, it was figured on 2010 terms and remained constant between 2010 through 2019. As an attempt to provide current information, the data from the US Census (2020) of land in square miles based on 2010 figures divided by the estimated population size reported by the Texas DPS (2020a) created a new set of figures to estimate the changing

density size of the cities. Given that the land size of the cities changed little or none over the observation period, the population estimates from the Texas DPS (2020a) offered a way to examine the fluctuations of the city's density levels over the years.

Table 19 Density per SQ Mile					
Micropolitan					
	n	Mean	Std. Dev.	min	max
2014	46	1494.7***	596.4	680.7	2926.5
2015	46	1506.0	609.4	680.1	3008.7
2016	46	1516.5	616.6	676.9	3054.0
2017	46	1517.5	609.0	684.3	3054.0
2018	46	1511.2	613.9	677.7	3061.5
2019	46	1511.8	612.0	679.1	3115.6
Metropolitan					
	n	Mean	Std. Dev.	min	max
2014	47	2111.3	883.2	704.5	3994.3
2015	47	2173.8	934.7	702.6	4042.2
2016	47	2217.1	952.0	670.4	4095.4
2017	47	2241.1	936.1	722.8	4144.5
2018	47	2268.9	966.6	723.6	4183.5
2019	47	2320.6	998.5	716.3	4338.0
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

Table 19 depicts exciting observations. The mean size in 2014 reported statistical significance, while the other subsequent years did not present statistical significance. The expected findings for this variable were that micropolitan cities would be affected by statistically significant differences in density levels. Thus, the finding may support Tiebout's (1956) assumption regarding city size reaching a balance occurring in Texas. However, a possible contributing factor to the density similarities could involve available land space or urban sprawl.

Table 20 attempted to examine the political party affiliation of Texas city governments. The challenge for measuring the political affiliation involved the non-partisan composure of

Texas city elections. At the state and federal levels, determining partisan affiliation was easy. However, since Texas, like several other states, used the non-partisan city election system, obtaining data surrounding partisan trends appeared impossible. While one could examine policy outcomes from the council, determining the political leanings became muddled. As supported by Ferreira and Gyourko's (2009) evidence, the absence of partisan political influence tends to dominate cities. Crime rates and public spending tended to dominate city governments' discussions and policy derivatives (Ferreira & Gyourko, 2009). The idea of non-partisan elections in cities was to remove the party influence, and the city's needs outweigh political. Ferreira and Gyourko (2009) believed the Tiebout competition effect drove the policy direction.

Unless the political affiliation of the individual council members and the mayor was known, it proved challenging to derive an alternative for measurement. Since Texas county-level elections were partisan, the idea of using the data from the county level may illustrate the partisan preferences of the local voters. The state-level elections were considered as well. The researcher located the data source from the Texas Office of the Secretary of State (2020) for historical election results. The Texas Secretary of State's (2020) historical election repository provided data for the county-level general election results for 2014, 2016, and 2018. The Secretary of State's website did not capture information at the county level election, but the site did provide information regarding state and federal level elections. By examining the representative districts located within the cities, the researcher assumed the voting trends for residents of the cities. In most counties, the micropolitan or metropolitan city was the only district.

Nevertheless, a few metropolitan cities in metropolitan areas were more challenging to discern between state and federal representatives. A way to create a proxy representation of

partisan preference between Democrats or Republicans depended on the political party that won most of the elections for state and federal candidates during the general election cycle. If most of the election results favored Democratic candidates at the state and federal level, a declaration was made for the city's residents' political policy preferences.

Table 20 Political Party Affiliation					
Micropolitan (0 Dem, 1 Rep)					
	n	Mean	Std. Dev.	min	max
2014	46	0.85	0.36	0.00	1.00
2015	46	0.85	0.36	0.00	1.00
2016	46	0.80	0.40	0.00	1.00
2017	46	0.80	0.40	0.00	1.00
2018	46	0.83	0.38	0.00	1.00
2019	46	0.83	0.38	0.00	1.00
Metropolitan (0 Dem, 1 Rep)					
	n	Mean	Std. Dev.	min	max
2014	47	0.74	0.44	0.00	1.00
2015	47	0.74	0.44	0.00	1.00
2016	47	0.66*	0.48	0.00	1.00
2017	47	0.66*	0.48	0.00	1.00
2018	47	0.68*	0.47	0.00	1.00
2019	47	0.68*	0.47	0.00	1.00
Means are statistically different: *: P < 0.10; **: P < 0.05, ***: P < 0.01					

Table 20 reflects the political party trends for metropolitan and micropolitan cities in Texas. Differences between metropolitan and micropolitan cities were not particularly surprising. The data for Table 19 used dummy variables for analysis. The dummy variable of '0' represented Democratic or liberal trending cities for the variable, and '1' represented Republican or conservative values. Thus, in Table 20, the closer the number was to '0' would classify as Democratic-leaning cities, and closer to '1' represented Republican values.

Both means of metro and micro cities in Table 20 displayed that most Texas metropolitan and micropolitan cities tend to follow more conservative ideologies. However, metropolitan cities tend to be more liberal, as illustrated by the statistical significance at the 0.10 level. The finding followed the traditional proverb that more Democratic residents live in metropolitan cities, and the more distant micropolitan cities had conservative leanings.

A factor that may explain the overall reduction of expenditures for police services in micropolitan cities involved the findings for political affiliation as described in Table 20. Based on the conservative platform at the state level, increased levels of taxation equate to problematic spending trends. Since micropolitan cities tend to have higher conservative values, the possibility of reducing overall spending may occur in micropolitan cities by small incremental amounts. Whereas metropolitan cities tend to have less but most conservative ideologies present, one could speculate that police expenditure and increasing taxes may be slightly more welcomed than micropolitan cities.

The explanation of the possible factor of party ideology could offer a different understanding of the revenues for the general budget. Future research should address the potential incremental nature, if present, of increasing the general budget in small, successive amounts. The researcher began to suspect that incrementalism practices occur at greater general budget income levels than individual department spending levels. Based on findings from Table 8, the similar percent of the police expenditures from the general budget's 'slice of the pie' located appeared to have minimal impact. Nevertheless, examining the overall increase of the general budget from year to year may reveal it was the 'slice of the pie' that matters, but how significant 'the pie' or budget increases or decreases. Since the 'pie' tends to fluctuate extraordinarily little, the 'whole pie' may present a better understanding of the budget process.

Chapter 5: Findings

Discussion

The following table, Table 22, represented the three different regression models utilized to examine the evidence of the difference or similarities between metropolitan and micropolitan cities. Model 1 examined if the phenomenon of economies of scale existed as the population increased. Model 2 examined the percent of the general budget dedicated for police expenditures. The final model, Model 3, investigated if incrementalism practices existed at differing levels for metropolitan and micropolitan cities. Table 22 combined the three regression models used to test the hypothesis into one table.

Models one and three omitted the racial and ethnic demographic variables for Black or African American and Hispanic or Latino populations. The rationale for the removal of the variables involved the adjusted R^2 values. When the variables were added to the respected models, the adjusted R^2 values decreased. Thus, the decision was made to remove the variables in lieu of incorporating the overall population variable. In addition, the resulting values for the racial and ethnic populations did not indicate statistical significance at any level. The finding led the investigator to conclude the removal of the variables was necessary.

Model two, the Slice of the Pie variable, included the racial and ethnic demographics. When the variables were included in the model, the adjusted R^2 fluctuated very little. In addition, the African American population variable remained the lone statistical significant variable of the model. Therefore, the decision to include the racial and ethnic variables hinged on the minute movement of the adjusted R^2 and statistical significance for the African American variable.

Table 21 Metropolitan-Micropolitan Random Effects Regression Models- Balanced Set

Police Budget Expenditures Per Capita	Model 1 Economies of Scale (<i>b/SE</i>)	Model 2 Slice of the Pie (<i>b/SE</i>)	Model 3 Incrementalism (<i>b/SE</i>)
Population Variables and Racial Demographics			
Metro or Micro City	-0.3632*** (0.1125)	0.1012 (2.5882)	0.0020 (0.0045)
Population Estimate LN	-0.2349*** (0.0901)	-0.6904 (3.2213)	-0.0023 (0.0058)
Population Black-African American LN		-0.7559* (0.4417)	
Population Hispanic or Latino LN		-0.7278 (0.9118)	
Police Provisions			
Certified Peace Officers, per 1000	1.0486*** (0.2029)	-5.9437 (3.9310)	-0.0016 (0.0099)
Traffic Stops per 1000 pop	0.0651*** (0.0121)	-0.0841 (0.2305)	0.0007 (0.0022)
Crashes per 1000 pop LN	0.2336*** (0.0660)	0.6429 (1.2758)	-0.0063 (0.0067)
Political Ideological Trend	-0.0890*** (0.0238)	-0.7408 (0.6162)	-0.0332 (0.0504)
Crime Related			
Part I UCR Crimes per 1000 pop LN	-0.1805*** (0.0449)	0.6400 (1.0038)	0.0080 (0.0069)
Drug, Alcohol, Social Crimes per 1000 pop LN	0.0564 (0.0348)	0.6323 (0.7925)	-0.0035 (0.0047)
Economic Factors			
Median Housing Value LN	0.2423*** (0.0748)	-0.3587 (2.3576)	0.0049 (0.0039)
Travel Time to Employment LN	-0.1970 (0.1523)	-1.6461 (4.0804)	0.0053 (0.0067)
Persons in Poverty per 1000 LN	-0.1280 (0.0788)	3.1077 (2.3513)	0.0036 (0.0037)
Population Density LN	-0.3306*** (0.0681)	0.1146 (1.6792)	-0.0035 (0.0030)
Constant	8.2903 (1.1047)	50.3411 (25.2621)	0.0020 (0.0045)
Year Random Effect Included	Yes	Yes	Yes
N	511	511	420
R ²	0.3657	0.1012	0.0119

Note. LN= Natural Log of number. Pop=Population

Statistical Significance Indicated at: *: P < 0.10; **: P < 0.05, ***: P < 0.01

Regression Model 1: Economies of Scale

In Model 1, the population variable represented the concept of economies of scale. The variable measured the relationship between population and police expenditures. Economies of scale assume an increasing population level should reduce police expenditures (O'Sullivan, 2012b). Services such as water and sewage followed the concept of economies of scale because the services follow a capital scale (O'Sullivan, 2012b). O'Sullivan (2012b, p. 421) stated that metropolitan cities operated the most efficiently compared to smaller cities. The efficiency occurred because the cost per unit of output decreased as the production increased and defined economies of scale (J. Brueckner, 2011, p. 16).

Thus, the socially optimal level of police expenditures per capita represented the output that benefited the city's population (J. K. Brueckner, 2011, p. 160). Therefore, Model 1 assumed the city's residents found police expenditures of the city a socially optimal level of service. However, the investigator recognized inequities that occurred within the city for mobility-challenged persons. Fisher (2007, p. 122) argued that governments were not in the production phase in scale economies. The government's sole purpose was to provide a given amount of goods or services instead of a specific good or service (Fisher, 2007). Therefore, local governments operated in systems where private markets fail (O'Sullivan, 2012c).

Model 1 found that per capita police budgeted expenditures in micropolitan cities were 0.36% less than metropolitan cities. It was significant at the 0.01 level. Even though the variable indicated statistical significance, the substantive findings for the variable remained very minimal. There was a difference between metropolitan and micropolitan cities, but only about a 0.36 percent difference in the budget. The results indicated police expenditures in micropolitan cities spent a little less than residents living in metropolitan cities. To adjust for heteroskedasticity, the regression model used a robust conversion.

Costs per person for police services in micropolitan cities entailed significant but minimally substantive differences. Police expenditures per capita were more cost-effective as compared to metropolitan cities. The result supported similar evidence that micropolitan or smaller cities typically spent less on police expenditures than metropolitan cities.

The metropolitan and micropolitan variable suggested that the diverse levels of services offered by the cities may impact police expenditures. Micropolitan cities frequently relied on intragovernmental agreements to fulfill the population's needs (O'Sullivan, 2012b). The intragovernmental agreements allowed the smaller-sized city to provide similar services to metropolitan cities as cooperative arrangements. Therefore, the agreements may account for the metropolitan and micropolitan variable results, where micro cities tend to spend less per capita on police provisions.

The population variable presented the best indicator for examining whether economies of scale operated as the population increased. The population-level showed significance at the 0.01 level. If the population increased by one percent, the resulting figure indicated the budget would decrease by 0.23 percent. For example, for an increase of 10% of people moving into the city, the budget decreased 2.3 percent. Thus, evidence of increasing population reducing the police expenditures indicated economies of scale do exist with increasing populations.

Therefore, since micropolitan and some smaller metropolitan cities have smaller populations than huge metropolitan cities in Texas, huge metropolitan cities operated under economies of scale for police expenditures. Thus, as a city becomes larger, percentage-wise, any benefits economies of scale offered to increase. Essentially, providing police services in increasing populations costs the per-resident amount to decrease. Thus, while population numbers indicated a level of statistical significance, the amount of change was minuscule in

relative terms. The findings contradict previous research suggesting diseconomies of scale operated in large cities for police services (Found, 2012; Holcombe & Williams, 2009; Mulligan & Vias, 2006; Walzer, 1976).

The percent change in the number of certified peace officers per 1,000 population displayed the most significant value of the variables. A one percent increase in certified police officers per 1,000 population increased the police budget by 1.04 percent. Thus, the funding for certified police officers supported Walzer's (1976) conclusion regarding the police officer contributing to the department's most significant expenditure. Furthermore, as history indicated, this finding supports that the certified officers' salaries and benefits drove the budget.

One of the productivity proxy variables attempted to measure the police department's number of traffic stops. Model 1 outcomes implied statistical significance at the 0.01 level. Thus, similar to the population estimate, the variable indicated statistical significance, but the substantive values indicated minimal changes. For instance, with a one percent increase in traffic stops per 1000, the budget increased by .07 percent.

Like the measurement of traffic stops, the variable measuring traffic crashes attempted to measure productivity. In addition to traffic stops, traffic crashes allowed the chief administrator to quantify the department's productivity and overall safety of driving habits within the city. Traffic crashes indicated significance at the 0.01 level, where a one percent increase of traffic crashes per 1000 reported would increase the budget by 0.23 percent. The number of crashes per 1000 showed a less substantive impact on the budget.

Crime levels indicated unexpected results, where a one percent increase in crime per 1000 population would decrease the police expenditures by 0.18 percent. Typically, the conventional thinking of crime suggested that as crime increased, the cost to provide increased

police protection should increase (Bee & Moulton, 2015; Coe & Wiesel, 2001; Evans & Owens, 2007; McCarty et al., 2012a). However, evidence from the current research project indicated the inverse. Given the evidence for UCR crime rates, the statistical significance indicated an interaction between crime and police expenditures, but the substantive level of decrease rendered the finding a minimal policy implication.

Median housing values demonstrated a significant impact on police expenditures. With a one percent increase in housing values, the police expenditures increased by 0.24 percent. If housing prices increase in value by 10 percent, the budget increased by 24 percent. Increases in housing values displayed potential evidence of the Tiebout (1956) Effect regarding the abundance of cities that allowed consumers to reside in communities that satisfy their public safety needs and support their preferences for higher valued housing.

In contrast, a one percent increase in poverty levels per thousand population decreased the budget by 0.12 percent. Cities with higher poverty levels could reduce the market values of the city, thus reducing the amount of property and sales taxes generated. In conjunction with median housing values, the poverty level declines the property values (Brush, 2007; Marvell & Moody, 1996). With declining property values and increased poverty, vital funding sources have less to generate funds necessary to provide police services and balance other needed city services.

Density levels added to the statistical importance. For example, with a one percent increase in density, police expenditures per capita decreased by 0.33 percent. Thus, the consequences of density suggest that cities with higher density and less sprawl may provide more cost-effective police services per capita (Carruthers & Ulfarsson, 2003). Reducing urban sprawl in metropolitan and micropolitan cities may save residents unnecessary costs for police services,

like Lambert, Srinivasan, and Katirai (2012) found for fire services. However, cities in Texas appeared to disregard urban sprawl issues and embrace outward growth practices. Political influences may impact the concept of the 'wide open spaces' mentality of sprawl in Texas.

The political affiliation variable used a dummy variable of '0' for Democratic-leaning and '1' for Republican-leaning voting trends. Evidence indicated that the more a city gravitated toward the Republican-leaning ideology, police expenditures per person decreased by 0.08 percent. Therefore, the evidence indicated a more Republican ideological populace favored slight budget reductions.

The variables intended to capture the racial and ethnic demographics of the population failed to provide statistical significance. One of the analytical models completed but not included in this document did not display significant values for the demographic variables at any statistical level. Comparable results regarding demographics failed to display significance with any of the three dependent variables. Therefore, to reduce the possibility of multicollinearity, the racial and ethnic variables were omitted to include the population values. As a result, population values increased the R-Square value more than racial and ethnic population estimates.

Regression Model 2: 'Slice of the Pie'

Model 2 attempted to examine the percent of the general budget allocated to the police budget. Another way of referring to the variable involved the term 'slice of the pie.' Thus, the term referenced the percent of the general budget funneled for police services. The purpose of Model 2 was to examine if differences existed between metropolitan and metropolitan cities concerning police funding.

Model 2 examined if differences between metropolitan and micropolitan existed regarding the percent of the general budget allocated for police expenditures. Based on findings from Model 2, there appeared to be no statistical differences in the proportion of the general

budget allocated to police expenditures. Essentially, the two categories of cities allocated about the same proportion of the general budget for police expenditures. Therefore, hypothesis H2 was rejected. Since the two categories of cities allocated similar amounts, the assumption that metropolitan cities allocated more of the budget for police services was false. Evidence indicated that the two types of cities consume about the same proportion of the general budget for police expenditures.

In addition, research suggested that increasing populations of the Black or African American community increased police expenditures by adding police officers (Carmichael & Kent, 2014; Sharp, 2006). In addition, Model 2 results included minority populations of U.S. Census-defined categories of Black or African American and ethnicity of Hispanic or Latino origin impact the portion of the general budget that police expenditures consume. Consequently, the investigator expected to find substantial evidence that increasing population sizes of racial and ethnic minorities would substantially impact police expenditures. However, unlike Regression Model 1, the African American community had a significant impact but minimally substantial result.

As a part of all the regression models, the investigator discovered that the Black or African American population impacted police expenditures in Texas. Therefore, Model 2 did report one statistically significant variable, the Black population. For example, Carmichael and Kent's (2014) investigation of police strength depended on the African American population. Evidence in Model 2, racial demographics, Black or African American populations impacted the budget by for every one percent increase, the percent of the general budget allocated for police expenditures decreased by 0.76 percent. Other US Census-defined racial categories were excluded from the model except for Hispanic or Latino ethnicity due to statistical insignificance.

Zhao, Ren, and Lovrich (2010a) indicated that race played a major contributing factor in percent allocations for police budgets. The current investigation appeared to support the findings that Black populations impacted the percentage of the budget allocated to police expenditures. However, Zhao, Ren, and Lovrich (2010) lumped all the racial categories into one unit, making it impossible to distinguish which racial demographic contributed to the most significant impact on police expenditures. Zhao, Ren, and Lovrich (2010) reported a low R-Square of eight percent. The current investigation fared slightly better with an adjusted R-Square of approximately ten percent.

However, one redeeming value of Model 2 involved the metro and micropolitan city variables. In conjunction with evidence of the comparison of means located in Table 7 in a previous section of the chapter. The similarities between metropolitan and micropolitan cities' 'slice of the pie' indicated that the portion of the general budget allocated to police expenditures shared almost the same mean measured in the hundredths. After examining Model 2, the lack of statistical significance indicated that metropolitan and micropolitan cities in Texas universally allocated on average the same 'slice of the pie.'

Regression Model 2 presented some disappointing results. Based on the R-Square values, some unknown variable was missing from the model. In addition, the variable(s) that contribute explanatory power eluded the investigator from the second regression model. Several models using the dependent variable were analyzed. First, the investigator removed some of the variables by category. For example, crime variables were removed. Next, rerunning the model examined if something created multicollinearity issues. After checking several combinations of the independent variables, the results continued to produce relatively low R-Squared values, leading the investigator to believe the absence of some unknown factor or combination of factors

would impact the percent of the general budget allocated for police expenditures. Based on Model 2's findings, the investigator suspected incrementalism occurred at a level superior to the departments.

The variance of the model was below 1 percent of explanation power. With such minimal values for the R-Square, the overall model does not necessarily indicate the addition of the variables adequately explained the 'slice of the pie.' The exclusion of other variables reduced the model to have the overall insignificant ability to state poverty, and Black or African American populations had the level of influence over the percent of the general budget allocated to police expenditures. The necessary variables eluded the investigation.

In the future, the investigator intends to include other departments in the city to complete a better comparison to see if the 'slice of the pie' remained consistent across several different departments. Adding other departments may provide more unambiguous evidence that a general rule of the budget negotiations follows consistent patterns. The investigator suspected the 'slice of the pie' might follow the consistent patterns as alluded to by the police expenditures.

In addition, the investigator should examine the general budget to investigate if evidence of incrementalism occurred at the city level and changed with tax appraisal or market values prices. The investigator began to ponder if the incrementalism theories would better be applied to the city's market value or tax appraisal values versus individual city departments. Moreover, factors including if turnover impacted the city manager or police chief during the analyzed years might influence budgetary decisions.

Regression Model 3: Incrementalism

Regression Model 3, Incrementalism's purpose was to determine if incrementalism occurred with increasing population sizes. The idea entailed, as the city's population increased, evidence of incrementalism should follow suit. The model had fewer observations than the other

two regression models. The reasoning for fewer observations involved the lagging of the independent variables to coincide with the upcoming budget. For example, the independent variable data for 2014 was moved to coincide with the percentage change figure of 2015.

Therefore, data for the most current year of the model, 2019, was not included in model 3.

Since incrementalism depended on minor changes, the rationale for lagging the variables involved a concept introduced by Wildavsky and Caiden (2004) that last year's budget was this year's budget. Thus, the lagged variables offered an alternative method to investigating incrementalism. The investigator conducted a regression model with the variables not lagged, but the R-Square offered infinitesimal results than the current model included.

The crafting of Model 3 intended to capture levels of incrementalism. Model 3 indicated that none of the included variables impacted the percentage point change of the police budget from year to year. Several combinations of variables, including race and ethnicity variables, failed to improve the R-Square values to approach a 1 percent level of variance explanation remotely. However, evidence of incrementalism between metropolitan and micropolitan cities failed to indicate statistical significance. Without the support of Model 3, the concept of incrementalism or decrementalism did not meet the definitional, statistical value.

The investigator expected to find a negative value for the coefficient for the metropolitan and micropolitan variables. However, the value represented no significance, leading the investigator to assume that incrementalism did not exist between either city category. In addition, the percentage point changes between years offered minuscule values that did not impact the model.

Similar to Model 2, the results for Model 3 were rather disappointing. No other variable in Model 3 indicated statistical significance. With such low R-Square values, the investigation

into the percent point change to measure incrementalism overlooked some variable(s) that may or may not add support to the model. The data for the third model used lagged figures for the dependent variables. By lagging the dependent variables, the idea entailed last year's budget sought the increase of funds. At the beginning of the current research project, the investigator believed the budget process definitively used incrementalism, but it appeared that some other theory might provide better explanatory power for the municipal budget process. However, after running the model, no statistical significance emerged from the results.

Due to the negligible findings from Model 3, future investigation into the percentage point change of the police budget should be compared with other city-provided services to determine if a pattern or behavior becomes noticeable. In addition, the dependent variable possibly has interactive effects that could impact the variable. Instead of using multiple years, as the model did, examining the percent change over time versus percent point change from year to year and using the OLS model may add to incrementalism.

Chapter 6: Conclusions

Hypothesis 1 Economies of Scale

With increasing population sizes, police expenditures in cities were expected to exhibit economies of scale and improve levels of efficiency where the cost for optimal social service costs less per capita than police expenditures in Texas cities with smaller populations. Therefore, the first hypothesis of the research project sought to investigate economies of scale for police expenditures for increasing sizes of the population in cities. Walzer (1976) suggested that the concept of economies of scale offered a way of analyzing the effectiveness of cities. O'Sullivan (2012) defined economies of scale existed when the average production costs decrease while the output increases. Brueckner (2011, p. 17) used similar terminology to define economies of scale, but Brueckner added the socially optimal measurement for non-market service delivery.

Therefore, the hypothesis attempted to determine if the same logic of socially optimal service levels would transfer to police expenditures between metropolitan and micropolitan-sized cities. Based on this rationale, metropolitan areas should have lower costs regarding police provisions than micropolitan cities due to economies of scale, especially since metropolitan cities operated efficiently compared to smaller-sized cities (O'Sullivan, 2012b). Consequently, the larger city should produce more police services than the smaller micropolitan city.

Walzer (1976) suggested that measuring police protection was exceedingly difficult, which remained in the current research project. However, Walzer's (1976) presumption that output of services through an analysis of tasks performed, the police department can study costs as the size of operations increases. Thus, the research project introduced economies of scale for analyzing municipal police departments using the socially optimal level of police expenditures as a measurement.

The analysis attempted to determine if police services cost the resident more in smaller urban centers. The basis behind the idea was intended to determine if differences or similarities existed in metropolitan and micropolitan cities. Examining the differences or similarities could provide the policymaker an additional tool for determining the level of funding or a comparison tool for police expenditures.

Given the nature of metropolitan and micropolitan cities, the population, crime levels, racial and ethnic populations, density, and other variables used in the model have natural tendencies to have more substantial estimates, some surprising results occurred. The means comparison models indicated that the average police expenditures per capita of a city's population for micropolitan cities was \$219 and metropolitan cities averaged \$242 over six years. The comparison reported a difference of \$23. On average, the costs per resident living in metropolitan cities pay approximately \$23 more dollars per year than those living in a micropolitan city. While the result indicated statistical significance, the substantial impact appeared to have a minimal effect.

General fund expenditures per capita for micropolitan cities equated to an average of \$786. On the other hand, general fund expenditures per capita for metropolitan cities were an average of \$865. Hence, the difference in general fund expenditures between metropolitan and micropolitan cities averaged approximately \$79. Thus, in relative terms, living in a metropolitan city costs the resident about \$79 more a year than living in a micropolitan city.

However, Holcombe and Williams (2009) examined if economies of scale were present in municipal governments. The results suggested that diseconomies of scale occur in more extensive municipal operations (Holcombe & Williams, 2009). Holcombe and Williams' (2009) concluded that police services promoted diseconomies of scale. In addition, Southwick (2005)

found that economies of scale exist up to a population size of about 22,350. Beyond this number, diseconomies of scale tended to exist (Southwick, 2005). Southwick (2005) argued that the most efficient cities had populations between 22,350 and 36,000, in which a cost/crime trade-off occurred. As the population dips below 22,350, crime and costs rise, and as population increases, over 36,000, costs and crime increase (Southwick, 2005). The results suggest that economies of scale may be exhibited in police services even if not in general municipal services found by others.

Evidence in the current investigation suggested economies of scale existed in large metropolitan cities. For example, as the population increased by one percent, police expenditures decreased by 0.23 percent. A ten percent increase in population would decrease police expenditures per capita by 2.3 percent. As the population increases, police expenditures decrease, costing the individual resident less for police expenditures in larger cities than smaller-sized cities. Evidence from this research supported the general findings of market failure regarding economies of scale.

Interestingly, the coefficient for traffic stops conducted per 1,000 population indicated statistical significance. Thus, the focus of metropolitan and micropolitan cities may find increased support for budget increases by elevating the importance of traffic enforcement. In addition, Makowsky and Stratmann (2011) discovered that traffic tickets were an effective reducer of collisions and related injuries. Thus, leading to a plausible argument that increasing traffic stops improves public safety.

Hummel (2015) suggested that cities increased traffic enforcement to supplement the department's budget counter to the argument of safety issues. In addition, Makowsky and Stratmann (2011) also found cash strapped cities increased the general budget revenues by

increasing the number of traffic citations issued. The variable for the regression model included traffic stops with and without citations issued. Texas law allowed for 20 percent of the municipality's revenue for the preceding fiscal year from all sources excluding federal funds and bonds of the traffic fine to return to the city for street enhancement or fund traffic enforcement (Transportation Code Section 542.402, 2020). Therefore, increasing traffic enforcement might provide a supplemental boost for the police expenditures or an incentive to write citations.

However, another unidentified factor that may impact the police budget regarding traffic enforcement involved the revenue generated from citation issuance. Texas law allowed a percentage of the fines to filter back to the cities for infrastructure improvements or traffic enforcement. Hummel (2015) suggested that traffic citation revenue was a budget supplement to reinforce shortfalls from other revenue sources. Future research should include the amount of money collected from traffic fines and returned to the general budget as a supplement.

Another variable with a significant impact on the budget and related to traffic enforcement involved traffic collisions. Increasing traffic collisions in the city per 1,000 crashes increased the police expenditures per capita marginal amount. Coe and Wiesel (2001) suggested using crime and workload data judiciously to achieve departmental goals. The findings of the traffic crashes might indicate that the police department utilized judicious data reporting systems to increase police expenditures. In addition, decreased enforcement of traffic violations led to increased injuries and fatal crashes (DeAngelo & Hansen, 2014). Thus, the case could be made to refocus resources to address the problem. The reaction and rational thought process to solve the problem of traffic crashes might entail spending more to reduce crashes.

Unlike Holcombe and Williams' (2009) results, density did factor into the police expenditures per population. As density levels increased, the cost of police expenditures per

population decreased by 0.33 percent of the police budget per capita. The results suggested reducing police expenditures per capita for cities in Texas and re-addressing land-use policies. As one example, if a city wished to reduce overall expenditures for police services, the city could focus on practices to increase urban density levels.

One possible problem with increasing urban density in Texas non-landlocked cities involved the trend of urban sprawl. Except for a few cities used in the investigation, such as Dallas and Arlington, most Texas metropolitan and almost all micropolitan cities had room to spread their borders. While the relationship between police expenditures and urban sprawl continued to have many unknowns, Carruthers and Ulfarsson (2003) indicated that urban sprawl contributed to increased expenditures in public services. Deducing a similar conclusion for police expenditures appeared to follow similar practices. Therefore, increasing a city's geographic borders may create potentially unplanned or incur hidden costs that may confound the policymaker's bounded rationality planning needs later.

The conventional wisdom of increasing crime rates appeared to follow the concept of increasing funding to overcome the problem. The policymaker or politician frequently proclaimed increasing police funding and hiring more officers to combat the increased crime rates. Levitt (1997) alluded that during times of mayoral electoral years, police hiring trends increased during the electoral cycle. Thus, during these periods, one would expect to find increasing budgets for police expenditures. Usually, one would imply a rational thought that as crime increased, the general expectation would assume the budget would increase to address the issues.

Furthermore, Zhao, Ren, and Lovrich (2010) contributed to research regarding the overall decline of criminal activity and decreased police expenditures. In contrast to the conventional

wisdom, and similar to Zhao, Ren, and Lovrich's (2010) research findings, in the current investigation, increasing crime factors decreased the police expenditures per capita of the city. Thus, it appeared that the general increase of serious, criminal offenses impacted budget expenditures by decreasing the expenditures per capita.

The phenomenon of increased crime and reduced police expenditures might have many attributes. For example, if a city experiences increased crime levels, Tiebout's (1956) assumption of a mobile resident sought a new place that met their preferences, in this instance of lower crime rates. Thus, the relocating, mobile residents leaving the population center created a system of homogeneity of an impoverished population unable to relocate. The resulting condition of the city may have higher crime rates but reduced property and sales tax rates.

In addition, the diminishing availability of new officers could impact cities with higher crime rates. Wilson (2012) included decreased applicant pools, changing generational preferences, increased competition, expanded skill requirements, uncompetitive benefits, and organizational characteristics to reduce applicants for police positions. Attrition from a police department could result in instances where the department might never fill the authorized positions for new recruits. Possibly, the larger the city, the more significant problem attrition or lack of quality applicants created reduced police expenditures per capita for cities with increasing crime rates.

Hypothesis 2, 'Slice of the Pie'

Model 2 intended to examine the 'Slice of the Pie' allocated for police expenditures differences between metropolitan and micropolitan cities. Unfortunately, the outcomes from the model yielded few statistically significant results to state there were differences between metropolitan and micropolitan cities. Nevertheless, the comparison of the mean foreshadowed the expected consequences of regression model 2.

Regression Model 2 ‘Slice of the Pie’ yielded results that failed to indicate which variable contributed to the percent of general budget consumed for police expenditures. The investigator expected to find that crime, racial and ethnic minority populations, and poverty levels would impact police expenditures from the general budget.

Racial ‘threats’ in a community guided one of the strongest predictors of the number of sworn officers employed by a municipal police department (Carmichael & Kent, 2014). Given the rationale from Carmichael and Kent (2014) and support from the current project, the number of police officers contributed to a sizable portion of the police expenditures. Therefore, based on the logic, racial ‘threats’ in a community should create a driving force of increasing the police expenditures for a level of social control—the current investigation expected to find equivalent results with the ‘slice of the pie’ model.

However, after factoring in racial demographics for cities, the findings yielded minimal statistical significance. In addition, values for racial and ethnic demographic populations in earlier regression models found less statistical significance than simply the population variable. Hence, the data analysis indicated to the investigator that race and ethnicity levels in the city had a minimal impact on the percent of the budget allocated to police expenditures. Consequently, the investigator rejected the hypothesis that Texas metropolitan population racial composition is the most significant predictor for the amount of general fund allocated to police expenditures than crashes, traffic stops, criminal activity, economic conditions, or political partisanship trends.

Of the variables included in regression model 2, ‘slice of the pie,’ the only variable with statistical impact indicated poverty levels played a role in the model. As poverty levels increased, so did the percent of the general budget allocated for police expenditures. However, concluding the poverty levels impacting the allocation of the general budget for police

expenditures may have little credibility with the low value for the R-Square. Something was missing from the model to help explain what impacted the allocation of resources.

One interesting result for the variable involved the comparison of the mean for the dependent variable. Micropolitan cities averaged 29.09 percent of the general budget allocated for police expenditures. On the other hand, metropolitan cities averaged 29.48 percent of the general budget reserved for police expenditures. Surprisingly, the difference between the two classifications measured only 0.39 percent. The highly unexpected result suggested that the two categories of cities allocated about the same amount of the general budget to police expenditures. The possibility of coincidence of similar funding patterns may indicate a general rule of allocating approximately 29 percent of the general budget for police expenditures.

After reviewing the results and viewing the unexpected findings of the comparison of means and regression model, the investigator believed some other force affected the percentage spent on police services. One factor that may impact, but not included, involved the vulnerability of the police department's chief. In addition, the rules of the institution behaviors may be the missing component for the model. Wildavsky and Caiden's (2004, pp. 47–52) made the case that the budget processing included practices to ensure a base and fair share for parties involved, consensual, historical, simplified, repetitive, sequential, and practiced satisficing. Based on the regression outcomes and comparison of means, the investigator concluded there are no differences between metropolitan and micropolitan 'slice of the pie' allocated to police expenditures.

Hypothesis 3, Incrementalism

Anderson and Harbridge (2010) utilized measurements provided by Bailey and O'Connor (1975) to gauge the level of incrementalism at the federal levels. Anderson and Harbridge (2010) alluded to evidence of incrementalism in federal appropriations packages. The federal

budget often included grid locking and instability due to political power structures (Anderson & Harbridge, 2010).

The importance of Anderson and Harbridge (2010) included the definitions of incrementalism outlined by Bailey and O'Connor (1975) by reestablishing a way of measuring the elusive definition of incrementalism. Bailey and O'Connor (1975) defined incrementalism as adjustments of 0-10 percent adjustments as incremental, 11-30 percent adjustments as intermediate, and over 30 percent as non-incremental. Bailey and O'Connor (1975) examined most cases within the intermediate range at the state and federal levels but excluded city budgets. Zhao, Ren, and Lovrich (2010) concluded that the budget process for police services primarily followed incrementalism.

Evidence from the current research project found levels of incrementalism at minuscule levels, with averages in metropolitan and micropolitan cities measuring under one percent increase or decrease from year to year. While technically within the definition of incrementalism, as the averages measured in the 0-10 percent category (Bailey & O'Connor, 1975), the level of change indicated minute overall changes. Given the microscopic changes, stating incrementalism thrived in either metropolitan, micropolitan, or both as a whole escaped the defining moment. Remarkably, both categories of cities appeared to mimic each other regarding percentage point changes from year to year.

The means comparison model for the percent change of the police budget from the previous year provided fascinating results. Even though by definitional standards, the practice of incrementalism or decrementalism happened on minimal terms. For micropolitan cities, the average hovered around -0.26 percentage point change. Metropolitan cities averaged a -0.08

percentage point change. The investigator observed the minuscule percentage point change and deduced definitive evidence of incrementalism eluded the research project.

While definitionally, incrementalism or decrementalism occurred in both city types, Wildavsky's (2004) assessment, including incremental practices under five percent changes, appeared to reign supreme in the cities examined. Wildavsky (2004) focused primarily on the federal budget, but the ideas appeared to filter to city levels, as well. The statement "Last year's budget is this year's budget" offered the most compelling statement of summarizing the findings for the incremental hypothesis (Wildavsky & Caiden, 2004, p. 47).

The description provided by Wildavsky and Caiden (2004) concisely summarized the general findings of the current research project, albeit with minimal support for incremental practices. Though the findings indicated a level of incremental or decremental practices throughout the cities examined, the results offered minimal substantive impact on the overall topic. The investigator expected to discover average changes extending from one percent to five percent, in either direction, with the expectation of higher levels of incrementalism occurring in metro areas. However, evidence from the current project indicated the inverse transpired. Statistically speaking, no differences occurred between the two categories of cities. With this finding, the investigator deduced that the hypothesis of incrementalism predominance in metropolitan cities over micropolitan cities failed to indicate that the practice thrived in one category over the other.

In addition, when comparing variables to determine the impact of various social and economic elements, none indicated a statistical relationship with the percentage point change of the budget. In contrast to previous findings and surprising to the investigator, crime factors and racial and ethnic populations failed to impact the police expenditure change of budget percentage

points from one year to the other. Variables examining racial and ethnic population sized provided no extraordinary evidence. Other research projects suggested crime levels impacted the budget and contributed to increases in the police size (Bee & Moulton, 2015; Coe & Wiesel, 2001; Evans & Owens, 2007; McCarty et al., 2012a).

After examining regression models 2 and 3, the investigator concluded that other hidden factors influenced the budget other than incrementalism or racial components. At the beginning of the research, the investigator anticipated incrementalism to play a significant role in the budget negotiation process. However, after conducting the investigation, there are other factors at play. The overwhelming evidence in this project indicated that the 'slice of the pie' played a critical role. Both metropolitan and micropolitan cities eerily followed similar percentages of police expenditures from the general budget. The comparison of the mean indicated approximately 29 percent of the police expenditures consumed of the general budget for both categories of cities and all years examined. Even more compelling evidence emanated from the regression Model 2, where the evidence indicated no statistical significance occurred. In other words, the regression model pointed to the idea, metro and micro cities allocate the same portion of the budget to police expenditures. The finding led the investigator to conclude that incrementalistic practices, on average, had no substantial influence on police expenditures when comparing metro and micro cities.

Therefore, institutional factors play a more significant role in budget negotiations than the practice of incrementalism. Even though the police budgets did increase over time, the increase remained within plus or minus one percentage point from the previous year. The force to consider and investigate further may evaluate the general budget changes and city market values. Based on the lack of evidence supporting noticeable incremental changes, the

investigator suspected the incrementalism factor might occur as a whole versus individual departments. The departments' budget fluctuated more on incremental changes in the city's overall appraisal values and income from other taxes contributing to the general fund. Therefore, the hypothesis of incrementalism, as defined by Bailey and O'Connor (1975) and used by Anderson and Harbridge (2010), occurred with greater consistency percentage-wise in OMB-defined Texas metropolitan cities than in micropolitan cities (Mulvaney, 2018) was rejected. Individual cities in isolated instances may very well use the practice of incrementalism.

Policy Implications

The policy implications of police expenditures for metro or micro provided individual cities to evaluate funding levels for police services. Moreover, the investigation created a different system for individual cities to examine if the city is under or overspending for police services based on the size of the city. In addition, with evidence supporting the certified police officer cost contributing the most substantial factor for police expenditures per capita, the police department could evaluate the expenditures to examine if police salaries, training, and other associated costs fall within similar guidelines of comparably sized cities. For example, suppose spending levels for police expenditures fall below the average findings outlined in the comparison of means tables. In that case, the city may use the percentage adjustment described in Regression Model 1 to establish a similar spending pattern for similarly-sized cities.

Of all the variables compared with the police expenditures per capita, the certified officer variable indicated the most significant factor impacting the police budget. The conclusion of the variable reiterated that the expenditures for police personnel contributed the most impact on the budget. From a policy standpoint, the decision-makers for the city have a statistical figure to determine the level of impact created by increasing the number of police personnel per 1,000 persons. The result offered little surprises to the investigator regarding the certified officers per

1000 persons. The resulting discoveries could replace the obsolete method of using a simple ratio of officers to population figures (Ammons & Edwards, 2008).

In addition, when comparing the cities, the 'slice of the pie' results offered a similar tool for comparison. As a result, a city can now examine the findings presented in this project to determine if spending levels for police expenditures in Texas cities follow the average 'slice of the pie.' For example, if a city consistently spent as little as fifteen percent or a maximum of forty-five percent of the general budget for police expenditures, the city would know they may be spending either too much or too little on police expenditures. The finding may help the decisionmaker proclaim general reductions or refocus on police services in their respective communities.

Finally, the concept of incrementalism for negotiating upcoming police budgets probably occurred in some cities. The research findings do not suggest incrementalism was not excluded from the decision-making process. Therefore, the investigator has no conclusive evidence to say incrementalism should or should not be used as a negotiation tool from a policy standpoint. Nevertheless, the policy implication from the finding on incrementalism allowed the decision-maker to examine the broad range of increases or decreases of police expenditures from year to year. The comparison of means showed micropolitan cities average maximum changes were 39 percent change from year to year, and minimum values averaged -29 percent fluctuation. Whereas metropolitan cities had a lower range of maximum and minimum figures of 14 percent maximum and 14 percent minimum fluctuations in percentage point change from previous years. Both estimates represented extreme values, but the decision-makers of the cities could focus on the fluctuations.

Conclusions

The initial general research question sought to determine if significant differences existed between metropolitan and micropolitan principal cities in Texas regarding police funding. The investigation revealed several similarities and differences existed between the urban designations. The evidence presented in the investigation added to the conversation the need for understanding the category of micropolitan principal cities. Vias (2012) advocated for the large gaps in the literature regarding micropolitan cities. The current investigation significantly adds to the literature about micropolitan cities. Researchers and educators now have an additional tool and evidence necessary for the enlightenment of the subject. The “middle ground” urban (Oliver & Thomas, 2014, p. 85) cities have additional evidence to advocate for the greater needs and complexities facing the micropolitan urban cities.

In addition, the evidence presented in this investigation provided the micropolitan and metropolitan cities a different way of examining the police staffing and funding needs for the city. Funding for police and the recent call for defunding the police created a political minefield where some cities have drastically reduced police funding. What this investigation contributed to the conversation was a city has an additional tool to understand the average percent of the general budget allocated to police expenditures or Slice of the Pie. The discovery of the average of 29 percent allocated to police expenditures from the general budget offered the city a reference point to determine if over or under average consumption of the general budget was allocated for police expenditures.

Moreover, while incrementalism may drive the initial budget negotiation process, the evidence uncovered in the current investigation suggested the percent of the general budget allocated for police expenditures created a better understanding of the budget negotiation process. Micropolitan cities have a valuable reference point to analyze the police expenditures

of the city. The investigation discovered several findings regarding police funding between metro and micro cities. First, after examining the comparison of the means, there were glaring differences between metropolitan and micropolitan cities. By definition, averages of population size, traffic stops, crashes, racial and ethnic populations, crime levels, poverty levels, and density levels due to the volume of persons living or traveling through the metropolitan cities. In addition, metropolitan cities have higher activity levels because of their size (Mulligan & Vias, 2006). Therefore, the investigation expected to find more significant levels of activity in metropolitan cities.

On the other hand, Micropolitan cities did not represent a system of suburbia but an independent and distinctive stand-alone feature of the American landscape (Vias, 2012). Thus, the findings for micropolitan cities presented some curious results regarding police expenditures. Analyzing the means for the dependent variable police budget expenditures per capita yielded information about expenditures between metropolitan and micropolitan cities. The results pointed out that while the T-Test designated statistical significance, the average expenditures per capita indicated a trivial difference between the two cities. For example, the mean for 2014 micropolitan cities was \$209, and in 2019 the average increased to \$234 per capita. Metropolitan cities averaged \$227 in 2014 and \$256 in 2019 of police expenditures per capita. Based on the comparison of means, the differences in expenditures. While statistically significant, the results offered minimal substantive impact.

Contrary to previous research outlined in the literature review suggesting diseconomies of scale existed with increasing population sizes, the investigator discovered that with increasing population sizes, police expenditures decreased the average costs for the services compared to smaller sized populations. Second, results from data analysis suggested smaller population-sized

cities spend more per capita than larger cities. Third, the results suggested that the city allocated fewer funds for police expenditures as the conservative ideology levels increase. Finally, evidence of economies of scale existed in the model, suggesting that increases in the size of city populations did achieve a level of cost-effectiveness compared to smaller cities.

Even though the population increase revealed evidence of economies of scale, the findings offered minimal substantive impact. Results from Model 1, Regression for Police Expenditures, Per Capita, uncovered that as the population increased by one percent, the police expenditures per capita decreased by 0.23 percent. A ten percent increase in the population would decrease the police expenditures per capita by 2.3 percent. Since definitional standards of economies of scale indicated production increased, costs decreased (O'Sullivan, 2012b). Therefore, the researcher failed to reject hypothesis H1: As population sizes increase, police expenditures in metropolitan cities follow economies of scale concepts and cost less than police expenditures in Texas micropolitan cities.

The second hypothesis, which investigated the 'slice of the pie,' or the percentage of police expenditures taken from the general budget in metropolitan and micropolitan cities, was not statistically significant. The Regression Model 2 'Slice of the Pie' yielded inconclusive results regarding which variable impacted the 'Slice of the Pie'. The level of variance explained for Regression Model 2 indicated that some other factor might provide better explanatory power than the variables included in the model.

However, the results, or lack thereof, from the comparison of means and the regression Model 2 offered substantial evidence that the portion of the general budget allocated for police expenditures was the same. Initially, the investigator did not expect to find such results. Instead, the investigator expected to find substantial differences where smaller population cities would

allocate more expenditures for police services. Nevertheless, discovering the eerily similar proportion of the general budget allocated for police expenditures comparison of means of approximately 29 percent for both metropolitan and micropolitan cities led the investigator to suspect some other phenomenon occurred. The results indicated 0.39 a percent difference between the two categories of cities. Thus, the outcomes for the comparison of means might hold the missing key for future research.

However, the findings failed to support the initial hypothesis of the investigator. Therefore, the researcher rejected hypothesis H2: The percentage of the general budget spent on police services in metropolitan cities consumes more of the general fund than in micropolitan cities. Instead, the results indicated that the portion of the police expenditures per capita consumed similar percentages of the general budget.

Third, the comparison of means, similar to the 'Slice of the Pie' variable, displayed strikingly similar figures, as well. The average percentage point decrease was -0.26 percent for micropolitan cities and -0.08 percent for metropolitan cities with the years combined. Like the 'Slice of the Pie' variable, the investigator suspected the similarities between metropolitan and micropolitan cities in percentage point change of the police budget from the previous year extended a potential clue regarding the statistical insignificance of Model 3, Incrementalism, worthy of continued investigation.

The hypothesis suggesting incrementalism or decrementalism contributed to the percentage point change in the police budget in metropolitan and micropolitan cities. Nevertheless, statistical evidence failed to support the hypothesis. The investigator expected to find at a minimum a consistent one percentage point change in either direction. Overall, the findings failed to support incrementalism in the results. However, the results supported that last

year's budget became the upcoming year's budget (Wildavsky & Caiden, 2004). Thus, a bold statement that incrementalism played no part or played a significant role escaped the results of the current research project. However, evidence suggested incrementalism played a minimal role with the final budget product. Therefore, the rejection of hypothesis H3: Incrementalism, as defined by Bailey and O'Connor (1975) and Anderson & Harbridge (2010), occurred with greater consistency percentage-wise in OMB-defined Texas metropolitan cities than in micropolitan cities (Mulvaney, 2018).

Overall, based on evidence discovered in the current research project, other than the noticeable differences in population, crime, density, poverty, and other variables, the differences between metropolitan cities and micropolitan cities in Texas were remarkably similar concerning the police expenditures, other than the minimally substantive results indicating economies of scale with increasing population sizes. Therefore, the investigator suggested the police expenditures for metropolitan and micropolitan cities follow similar practices. Therefore, the findings of this investigation appear to support the concept that micropolitan cities behave similarly with metropolitan cities on police expenditure issues. The current research project's ultimate conclusion suggested that there were no substantive differences between metropolitan and micropolitan cities in Texas.

Limitations

As with other social science research, several limitations compound the findings of the research project. Possibly, the most glaring limitation involved the years analyzed for the research project. The years 2014-2019 offered the basis for the investigation. During the timeframe, relative economic stability appeared to increase financial backing for cities. However, once the COVID-19 pandemic occurred, the cities' operating funds became questionable. Lost revenue from sales and property taxes created a level of uncertainty and forced cities to

reevaluate critical services and prioritize funding. In addition, the lockdowns and reduction of officer productivity during the pandemic may impact future results, should similar models include the pandemic year.

Moreover, with the civil unrest resulting from the tragic deaths of George Floyd and Breonna Taylor that dominated the summer months of 2020, public outcry for de-funding police services in many major metropolitan cities dominated headlines. In Texas, Austin gathered many headlines of following through with the defund project. The Texas legislature's decision to pass a punitive bill for cities that defund police services, such as Austin. Unfortunately, the full effects of the practice did not factor into the current research project.

Another limitation of the research involved only examining cities in Texas. For a preliminary investigation into the differences, the strength of using one state led to weaknesses. Comparing metro and micro cities from two different regions might support the hypotheses examined in the investigation and provide the missing variable for the project. In addition, comparisons with other regions would provide a clearer picture of decision-makers' challenges in metropolitan and micropolitan cities.

One missing but possibly critical piece of information regarding the breakdown of calls for service evaded the data analysis. Nevertheless, the investigator attempted to gather the missing data, as presumably, decision-makers rely on the quantitative figure for budget planning. Unfortunately, the overwhelming challenge to capturing the data involved obtaining the data from the individual cities. Some cities provided timely information, but most sample cities starting with 'A's' and 'B's,' claimed the data collection either were unobtainable, or the cities complicated the request for data. In addition, a few of the cities failed to respond to the open records request.

The workaround for the calls-of-service problem led to the following limitation. The number of crashes and traffic stops functioned as a proxy to calls-of-service. Though many other factors face contemporary police officers other than traffic problems, the proxy only measured a minor portion of a police officer's daily duties. In addition, traffic crashes varied in range from minor fender-benders to fatal crashes. The varying severity of crashes could impact police expenditures, where a city with higher numbers of fatal crashes may dedicate increased funds to combat the problem.

The measurement for political party affiliation data provided challenges. The investigator expected to find election information at the county level. Evaluating the political affiliation at the county level would reflect a clearer picture of the partisan preferences of residents in the city. The challenge encountered for the current research project involved the data retained by a central voting repository for Texas. The Secretary of State historical voting site did not collect the information, but the investigator would need to contact individual counties to obtain voting results for the counties.

Finally, the problem of bounded rationality played a factor in contemplating the variables used for measurement purposes. Predominantly present in regression models 2 and 3, the absence of a critical variable(s) escaped the investigation. Moreover, the possibility of some variable that eluded the researcher's thought process remained a high probability. The researcher suspected that the percentage of the dependent variables used in models 2 and 3 contributed to the issues discovered in the low values of the overall R-Square. However, the issue remained unknown to the investigator until future research may shed light on the missing variables.

Future Research Implications

As Tocqueville's (2006) words started the research project, the future of understanding the phenomenon occurring in our cities starts at the local level. The project started that idea by

examining the cities in the middle. They are not rural, but not metropolitan either. Therefore, the continuance of research over the topic shall thrive for years to follow. Research of metropolitan and micropolitan cities remained a subject with a wealth of information waiting for discovery. Many unknowns remain about the subject. The current research project offered only a glimpse of the wealth of research ‘gold’ available for future analysis.

In continuation of research over the metro micro topic, the general budget and incorporating other city departments, such as fire services, would reveal additional discoveries waiting to happen. Including other departments’ financial data into the model allows a more in-depth comparison to see if similar patterns existed across several cities. Revealing similarities or differences of ‘slice of the pie’ for different departments may suggest that some form of institutional norm or behavior existed between the cities. Theories involving the expectations or rules of the game could offer better explanatory power than incrementalism.

Moreover, future research into police expenditures should include times of recession to see how economic downturns affect the police budget. Unfortunately, data for 2020 were not available at the time of the research project, but financial data for 2020 and subsequent years could offer a different lens of the phenomenon involving police expenditures. Including times of fiscal strife might affect expenditure patterns. An essential but missing component worthy of continued research included factoring in the economic downturn occurrences, such as the political trend of defunding the police. The full effects of the defund movement and the financial burden shared by cities from the COVID 19 pandemic were not fully known at the time of this project. Future projects should incorporate budget activities that occurred within the time frame.

Padgett (1980) introduced a Theory of Serial Judgement to offer an alternative to the federal-level budget decision-making process. Serial judgment operates in Simon’s (1957)

bounded rationality concept, but this theory allows greater flexibility than bounded rationality's linear application (Padgett, 1980). Like incrementalism, the decision-maker begins with a fixed starting point based on previous budget estimates (Padgett, 1980). The decision-maker may search for alternatives from the starting point if the budget increases or decreases (Padgett, 1980). Serial judgment asserted that the decision-maker begins to cycle through alternatives encountered with the given situation by either adding or removing budgeted items in discrete terms (Padgett, 1980). The process continues until an acceptable solution arises (Padgett, 1980). After the findings from the current research investigation, the belief that Padgett (1980) offered a plausible assumption of acceptable solutions may provide the pathway forward.

References:

- Ammons, D. N., & Edwards, J. S. (2008). Practitioner's Corner: Misrepresentation of staffing standards for police. *State & Local Government Review*, 40(3), 186–194.
<http://www.jstor.org.ezproxy.uta.edu/stable/25469793>
- Anderson, S., & Harbridge, L. (2010). Incrementalism in appropriations: Small aggregation, big changes. *Public Administration Review*, 70(3), 464–474. <https://doi.org/10.1111/j.1540-6210.2010.02160.x>
- Babbie, E. (2011). Conceptualization, operationalization, and measurement. In *The Basics of Social Research* (5th ed., pp. 156–160). Wadsworth/Cengage Learning.
- Bachman, R. (1992). Crime in nonmetropolitan America: A national accounting of trends, incidence rates, and idiosyncratic vulnerabilities. *Rural Sociology*, 57(4), 546–560.
- Bailey, J. J., & O'Connor, R. J. (1975). Operationalizing Incrementalism: Measuring the Muddles. *Public Administration Review*, 35(1), 60. <https://doi.org/10.2307/975202>
- Bee, C. A., & Moulton, S. R. (2015). Political budget cycles in U.S. municipalities. *Economics of Governance*, 16(4), 379–403. <https://doi.org/10.1007/s10101-015-0171-z>
- Bendor, J. (2015). Incrementalism: Dead yet flourishing. *Public Administration Review*, 75(2), 194–205. <https://doi.org/10.1111/puar.12333>
- Berry, W. D. (2019). The confusing case of budgetary incrementalism : Too many meanings for a single concept. *The Journal of Politics*, 52(1), 167–196.

Bolger, M. A., & Bolger, P. C. (2019). Predicting fear of crime: Results from a community survey of a small city. *American Journal of Criminal Justice, 44*(2), 334–351.

<https://doi.org/10.1007/s12103-018-9450-x>

Briggs, S. J., Zhao, J. ‘Solomon,’ Wilson, S., & Ren, L. (2008). The effect of collective bargaining on large police agency supplemental compensation policies: 1990–2000. *Police Practice and Research, 9*(3), 227–238. <https://doi.org/10.1080/15614260701797496>

Brown, J. (2018). The Widening Divide in business turnover between large and small urban areas. *The Federal Reserve Bank of Kansas City Economic Review, 5*–26.

<https://doi.org/10.18651/er/3q18brown>

Brueckner, J. (2011). Why cities exist. In *Lectures on Urban Economics* (pp. 2–21). MIT Press.

Brueckner, J. K. (2011). Local public goods and services. In *Lectures on Urban Economics* (pp. 160–184). MIT Press.

Brush, J. (2007). Does income inequality lead to more crime? A comparison of cross-sectional and time-series analyses of United States counties. *Economics Letters, 96*(2), 264–268.

<https://doi.org/10.1016/j.econlet.2007.01.012>

Bureau of Labor Statistics. (2021). *Consumer Price Index, South Region*. Consumer Price Index.

<https://beta.bls.gov/dataViewer/view/timeseries/CUUR0300SA0>

Callanan, M., Murphy, R., & Quinlivan, A. (2014). The risks of intuition: Size, costs, and, economies of scale in local government. *Economic and Social Review, 45*(3), 371–403.

- Carmichael, J. T., & Kent, S. L. (2014). The persistent significance of racial and Economic Inequality on the size of municipal police forces in the United States, 1980–2010. *Social Problems*, *61*(2), 259–282. <https://doi.org/10.1525/sp.2014.12213>
- Carruthers, J. I., & Ulfarsson, G. F. (2003). Urban sprawl and the cost of public services. *Environment and Planning B: Planning and Design*, *30*(4), 503–522. <https://doi.org/10.1068/b12847>
- Coate, S., & Knight, B. (2011). Government form and public spending: Theory and evidence from US municipalities. *American Economic Journal: Economic Policy*, *3*(3), 82–112. <https://doi.org/10.1257/pol.3.3.82>
- Coe, C. K., & Wiesel, D. L. (2001). Police budgeting: Winning strategies. *Public Administration Review*, *61*(6), 718–727. <https://doi.org/10.1111/0033-3352.00142>
- Cole, R. L., Hissong, R. V., & Arvidson, E. (1999). Devolution: Where's the Revolution? *Publius*, *29*(4), 99–112. <https://doi.org/10.2307/3330910>
- Cooper, M. (2005). Urban decision making and police salaries. *State and Local Government Review*, *37*(2), 103–115. <https://doi.org/10.1177/0160323X0503700202>
- Creswell, J. (2009). Quantitative Methods. In *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed., pp. 160–168). Sage Publications.
- Cunningham, J. P. (2016). An evaluation of the Federal Legal Services Program: Evidence from crime rates and property values. *Journal of Urban Economics*, *92*, 76–90. <https://doi.org/10.1016/j.jue.2015.11.008>

- Davidsson, M., & Rickman, D. S. (2011). U.S. Micropolitan Area growth: A spatial equilibrium growth analysis. *Review of Regional Studies*, *41*(2–3), 179–203.
<http://journal.srsa.org/ojs/index.php/RRS/issue/archive>
- De Benedictis-Kessner, J., & Warshaw, C. (2016). Mayoral partisanship and municipal fiscal policy. *Journal of Politics*, *78*(4), 1124–1138. <https://doi.org/10.1086/686308>
- DeAngelo, G., & Hansen, B. (2014). Life and death in the fast lane: Police enforcement and traffic fatalities. *American Economic Journal: Economic Policy*, *6*(2), 231–257.
<https://doi.org/10.1257/pol.6.2.231>
- Denhardt, R. B., & Catlaw, T. J. (2015). The rational model of administration. In *Theories of Public Organization* (7th ed., pp. 80–85). Cengage Learning.
- Donahue, A. K., & Miller, J. M. (2005). Citizen preferences and paying for police. *Journal of Urban Affairs*, *27*(4), 419–435. <https://doi.org/10.1111/j.0735-2166.2005.00244.x>
- Donahue, A. K., & Miller, J. M. (2006). Experience, attitudes, and willingness to pay for public safety. *The American Review of Public Administration*, *36*(4), 395–418.
<https://doi.org/10.1177/0275074005285666>
- England, R. E., Pelissero, J. P., & Morgan, D. R. (2012). Urban political structure. In *Managing urban America* (7th ed., p. 83). CQ Press.
- Evans, W. N., & Owens, E. G. (2007). COPS and crime. *Journal of Public Economics*, *91*(1–2), 181–201. <https://doi.org/10.1016/j.jpubeco.2006.05.014>
- Fegley, T., & Growette-Bostaph, L. (2018). Is bigger better? An analysis of economies of scale and market power in police departments. *Policing*, *41*(5), 578–592.

<https://doi.org/10.1108/PIJPSM-08-2016-0135>

- Ferreira, F., & Gyourko, J. (2009). Do political parties matter? Evidence from U.S. cities. *The Quarterly Journal of Economics*, 124(1), 399–422. <https://www-jstor-org.ezproxy.uta.edu/stable/40506232>
- Fisher, R. (2007). Organization of subnational government. In *State and Local Public Finance* (3rd ed., pp. 122–125). Thompson Higher Education.
- Found, A. (2012). Economies of Scale in fire and police services in Ontario. In *IMFG Papers on Municipal Finance and Governance* (Vol. 12).
- Frankfort-Nachmias, C., & Nachmias, D. (2000). Measurement. In *Research Methods in the Social Sciences* (6th ed., pp. 113–136). Worth Publishing.
- Frederickson, H. G., Smith, K., Larimer, C., & Licari, M. (2012). *The Public Administration Theory Primer* (2nd ed.). Westview Press.
- Gaines, L., & Worrall, J. (2012). Planning, programming, and budgeting. In *Police Administration* (3rd ed., p. 425). Delmar, Cengage Learning.
- Garcia, M. (2019). Rolling back property taxes in Texas: A critique of the arguments brought forth by various organizations against lowering the property tax rollback rate in the Lone Star State. *Texas Review of Law & Politics*, 23(3), 489–540.
<https://login.ezproxy.uta.edu/login?url=https://search-proquest-com.ezproxy.uta.edu/docview/2265599026?accountid=7117>
- Glazener, E. M., Kozlowski, M. M., Lynch, J. P., & Smith, J. S. (2020). Understanding misdemeanor enforcement: The roles of calls for service and community characteristics.

Journal of Community Psychology, 48(1), 13–35. <https://doi.org/10.1002/jcop.22285>

Good, D. A. (2011). Still budgeting by muddling through: Why disjointed incrementalism lasts.

Policy and Society, 30(1), 41–51. <https://doi.org/10.1016/j.polsoc.2010.12.005>

Greenberg, D. F., Kessler, R. C., & Loftin, C. (1983). The effect of police employment on crime.

Criminology, 21(3), 375–394.

<http://search.ebscohost.com/login.aspx?direct=true&db=i3h&AN=16359908&site=ehost-live>

Griffiths, C. T., Pollard, N., & Stamatakis, T. (2015). Assessing the effectiveness and efficiency

of a police service: the analytics of operational reviews. *Police Practice and Research*,

16(2), 175–187. <https://doi.org/10.1080/15614263.2014.972621>

Guillamón, M. D., Bastida, F., & Benito, B. (2013). The electoral budget cycle on municipal

police expenditure. *European Journal of Law and Economics*, 36(3), 447–469.

<https://doi.org/10.1007/s10657-011-9271-6>

Hagan, F. E. (2012). Validity, reliability, and triangulated strategies. In *Essentials of Research*

Methods in Criminal Justice and Criminology (3rd ed., pp. 278–294). Pearson Higher

Education.

Heaton, P. (2010). Hidden in plain sight: What cost-of-crime research can tell us about investing

in police. *RAND Corporation Occasional Paper-Center on Quality Policing*.

http://www.rand.org/pubs/occasional_papers/OP279.html

Hennessey, J. (2016). The adoption of Constitutional Home Rule: A test of endogenous policy decentralization. *Eastern Economic Journal*, 42(3), 441–463.

<https://doi.org/10.1057/ej.2014.58>

Herfindahl Hirschman Index. (2018). U.S Department of Justice.

<https://www.justice.gov/atr/herfindahl-hirschman-index>

Hickman, M., & Reaves, B. (2006). Local police departments, 2003. In *Bureau of Justice Statistics: Law Enforcement Management and Administrative Statistics*.

Holcombe, R., & Williams, D. (2009). Are there economies of scale in municipal government expenditures? *Public Finance and Management*, 9(3), 416.

Hollis, M. E., & Wilson, J. (2015). Police staffing levels: disaggregating the variation. *Policing: An International Journal of Police Strategies & Management*, 38(4), 820–839.

Hummel, D. (2015). Traffic tickets: Public safety concerns or budget building tools.

Administration & Society, 47(3), 298–319. <https://doi.org/10.1177/0095399714528178>

Hyland, S. S., & Davis, E. (2019). *Local police departments , 2016 : Personnel* (Issue October).

Jones, B. D., & Baumgartner, F. R. (2005). A model of choice for public policy. *Journal of Public Administration Research and Theory*, 15(3), 325–351.

<https://doi.org/10.1093/jopart/mui018>

Jordan, M. M. (2003). Punctuations and agendas: A new look at local government budget expenditures. *Journal of Policy Analysis and Management*, 22(3), 345–360.

<https://doi.org/10.1002/pam.10136>

- Lang, R. E., & Dhavale, D. M. (2005). Micropolitan Areas and housing values. *Appraisal Journal*, 73(4), 413–421.
<https://search.ebscohost.com/login.aspx?direct=true&db=bft&AN=510475317&site=ehost-live>
- Lee, M. J., Moon, M. J., & Kim, J. (2017). Insights from experiments with duopoly games: Rational incremental decision-making. *Public Management Review*, 19(9), 1328–1351.
<http://10.0.4.56/14719037.2017.1282002>
- Levitt, S. D. (1997). Using electoral cycles in police hiring to estimate the effect of police on crime. *The American Economic Review*, 87(3), 270–290.
<http://www.jstor.org.ezproxy.uta.edu/stable/2951346>
- Lichter, D. T., & Ziliak, J. P. (2017). The Rural-Urban Interface: New patterns of spatial interdependence and inequality in America. *Annals of the American Academy of Political and Social Science*, 672(1), 6–25. <https://doi.org/10.1177/0002716217714180>
- Lindblom, C. (1959a). The science of muddling through. *Public Administration Review*, 19(2), 79–88. <https://doi.org/10.2307/973677>
- Lindblom, C. (1959b). The science of ‘muddling through.’ *Public Administration Review*, 19(2), 79–88.
- Lindblom, C. E. (1979). Still muddling, not yet through. *Public Administration Review*, 39(6), 517–526. <https://doi.org/10.2307/976178>
- Lipsky, M. (2010). *Street-level Bureaucracy: Dilemmas of the Individual in Public Services* (30th Anniv). Russel Sage Foundation.

- Local Government in Texas. (2015). In *Handbook for Mayors and Councilmembers (2015 Edition)*. [http://www.tml.org/p/2015 Councilmembers and Mayor Handbook - 01.pdf](http://www.tml.org/p/2015_Councilmembers_and_Mayor_Handbook_-_01.pdf)
- Loftin, C., & McDowall, D. (2010). The use of official records to measure crime and delinquency. *Journal of Quantitative Criminology*, 26(4), 527–532.
<https://doi.org/10.1007/s10940-010-9120-8>
- Longhi, S., & Nandi, A. (2015). *A Practical Guide to Using Panel Data*. Sage Publications.
- Makowsky, M. D., & Stratmann, T. (2011). More tickets, fewer accidents: How cash-strapped towns make for safer roads. *Journal of Law and Economics*, 54(4), 863–888.
<https://doi.org/10.1086/659260>
- Markus, G. B. (1979). *Analyzing Panel Data*. Sage Publications.
- Marvell, T. A., & Moody, C. E. (1996). Specification problems, police levels, and crime rates. *Criminology*, 34(4), 609–646.
<https://login.ezproxy.uta.edu/login?url=http://search.proquest.com/docview/220703566?accountid=7117>
- Mas, A. (2006). Pay, reference points, and police performance. *The Quarterly Journal of Economics*, 121(3), 783–821.
- Mathis, E., & Zech, C. (1985). The community demand for police officers: Relative to the maximum base salary, citizen wants tend to be elastic. *The American Journal of Economics and Sociology*, 44(4), 401–410. <http://www.jstor.org.ezproxy.uta.edu/stable/3486869>
- McCabe, J. (2013). *An analysis of police department staffing : How many officers do you really need ?*

- McCarty, W. P., Ren, L., & Zhao, J. (2012a). Determinants of police strength in large U.S. cities during the 1990s: A Fixed-Effects Panel Analysis. *Crime and Delinquency*, 58(3), 397–424. <https://doi.org/10.1177/0011128709336942>
- McCarty, W. P., Ren, L., & Zhao, J. “Solomon.” (2012b). Determinants of police strength in large U.S. cities during the 1990s. *Crime & Delinquency*, 58(3), 397–424. <https://doi.org/10.1177/0011128709336942>
- Mize, G. (2016). Big cities in a bigger state: A review of home rule in Texas and the cities that push the boundaries of local control. *SouthTexas Law Review*, 57(3), 311–344.
- Mulligan, G. F. (2014). Employment change in micropolitan America: 1980-2000. *Southeastern Geographer*, 54(4), 348–365. <https://doi.org/10.1353/sgo.2014.0033>
- Mulligan, G. F., & Vias, A. C. (2006). Growth and change in U.S. micropolitan areas. *Annals of Regional Science*, 40(2), 203–228. <https://doi.org/10.1007/s00168-005-0034-6>
- Mulvaney, M. (2018). *Revised delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and guidance on uses of the delineations of these areas.*
- Myers, W. C., Chan, H. C., Vo, E. J., Lazarou, E., Marshall, W. L., & Yates, P. (1998). Democracy or Distrust? Restoring Home Rule for the District of Columbia in the Post-Control Board Era. *Harvard Law Review*, 111(7), 2045. <https://doi.org/10.2307/1342489>
- Najdowski, C. J., Bottoms, B. L., & Goff, P. A. (2015). Stereotype threat and racial differences in citizens’ experiences of police encounters. *Law and Human Behavior*, 39(5), 463–477. <https://doi.org/10.1037/lhb0000140>

Nechyba, T. J., & Walsh, R. P. (2004). Urban Sprawl. *Journal of Economic Perspectives*, 18(4), 177–200. <https://doi.org/10.1257/0895330042632681>

Nofziger, S., & Williams, L. S. (2005). Perceptions of Police and Safety in a Small Town. *Police Quarterly*, 8(2), 248–270. <https://doi.org/10.1177/1098611103258959>

O’Sullivan, A. (2012a). Introduction and axioms of urban economics. In *Urban Economics* (8th ed., pp. 1–15). McGraw Hill Irwin.

O’Sullivan, A. (2012b). The role of local government. In *Urban Economics* (8th ed., pp. 419–425). McGraw Hill Irwin.

O’Sullivan, A. (2012c). Tools of Microeconomics. In *Urban Economics* (8th ed., pp. 455–467). McGraw Hill Irwin.

O’Sullivan, A. (2012d). Why do firms cluster? In *Urban Economics* (8th ed., pp. 45–66). McGraw Hill Irwin.

Oliver, R. D., & Thomas, V. A. (2014). Micropolitan areas: Exploring the linkages between demography and land-cover change in the United States cities. *Cities*, 38, 84–94. <https://doi.org/10.1016/j.cities.2014.01.002>

Pampel, F. C. (2000). *Logistic regression: A primer*. Sage Publications.

Pascarella, J. E. (1999). Municipal Police Salaries as a Function of Community Home Values, Household Incomes, and Physical Housing Characteristics. *Justice Research and Policy*, 11(2), 89–110.

Pattavina, A., Carlin, D. M., & Tracy, P. E. (2017). Assessing the representativeness of NIBRS arrest data. *Crime and Delinquency*, 63(12), 1626–1652.

<https://doi.org/10.1177/0011128717724298>

Perez, N. M., & Bromley, M. (2015). Comparing campus and city police human resource and select community outreach policies and practices. *Policing: An International Journal of Police Strategies & Management*, 38(4), 664–674. <https://doi.org/10.1108/PIJPSM-07-2015-0084>

Perkins, C. (2003). *Bureau of Justice Statistics Special Report*. 1–12.

Rodriguez, A., & Portugal, J. (2019). *The State of the State survey on municipal governance in Texas :*

Roles and responsibilities of officers in general law cities. (2015). In *Handbook for Mayors and Councilmembers (2015 Edition)*. [http://www.tml.org/p/2015 Councilmembers and Mayor Handbook - 02.pdf](http://www.tml.org/p/2015_Councilmembers_and_Mayor_Handbook_-_02.pdf)

Rosenfeld, R., & Wallman, J. (2019). Did de-policing cause the increase in homicide rates? *Criminology and Public Policy*, 18(1), 51–75. <https://doi.org/10.1111/1745-9133.12414>

Ryu, J. E., Bowling, C. J., Cho, C.-L., & Wright, D. S. (2007). Effects of Administrators' Aspirations, Political Principals' Priorities, and Interest Groups' Influence on State Agency Budget Requests. *Public Budgeting & Finance*, 27(2), 22–49.

<https://doi.org/10.1111/j.1540-5850.2007.00873.x>

- Sarzynski, A., Wolman, H., Galster, G., & Hanson, R. (2006). Testing the conventional wisdom about land use and traffic congestion: the more we sprawl, the less we move? *Urban Studies*, 43(3), 601–626. <https://doi.org/10.1080/00420980500452441>
- Schick, A. (1983). Incremental budgeting in a decremental age. *Policy Sciences*, 16, 1–25.
- Schmidheiny, K. (2020). *Panel data: Fixed and Random Effects*. Short Guide to Microeconomics. <https://www.schmidheiny.name/teaching/panel2up.pdf>
- Sharp, E. B. (2006). Policing urban America: A new look at the Politics of agency size. *Social Science Quarterly*, 87(2), 291–307. <https://doi.org/10.1111/j.1540-6237.2006.00381.x>
- Simon, H. (1997). *Administrative behavior: A study of decision-making processes in administrative organizations* (4th ed.). Free Press.
- Southwick, L. (2005). Economies of scale and market power in policing. *Managerial and Decision Economics*, 26(8), 461–473. <https://doi.org/10.1002/mde.1230>
- Stone, D. (2011). Policy Paradox. In *Policy Paradox: The Art of Political Decision Making* (3rd ed., pp. 39–60). W. W. Norton & Company.
- Straussman, J. D. (1988). Rights based budgeting. In I. Rubin (Ed.), *New Directions in Budget Theory* (pp. 100–121). State University of New York.
- Su, R. (2017). Have cities abandoned Home Rule. In *The Fordham Urban Law Journal* (Vol. 44, Issue 1).

Suh, J., & Battaglio, P. (2021). Assessing the Mediating Effect of Internal Communication on Strategic Human Resource Management and Perceived Performance: An Intersectoral Comparison. *Review of Public Personnel Administration*.

<https://doi.org/10.1177/0734371X21994185>

Sunstein, C. R. (2010). 2010 standards for delineating metropolitan and micropolitan statistical areas. In *Federal Register* (Vol. 75, Issue 123).

Taylor, C. D. (2015). Property tax caps and citizen perceptions of local government service quality: Evidence from the Hoosier Survey. *American Review of Public Administration*, 45(5), 525–541. <https://doi.org/10.1177/0275074013516670>

Terrill, W., Rossler, M. T., & Paoline III, E. A. (2014). Police service delivery and responsiveness in a period of economic instability. *Police Practice and Research*, 15(6), 490–504. <https://doi.org/10.1080/15614263.2013.829606>

Texas Commission of Law Enforcement. (2020). *Racial profiling reports: Texas Commission of Law Enforcement*. Racial Profiling Reports. <https://www.tcole.texas.gov/content/racial-profiling-reports>

Texas Department of Public Safety: *Crime in Texas*. (2018). Texas Crime Report for 2018. https://www.dps.texas.gov/administration/crime_records/pages/crimestatistics.htm

Texas Department of Public Safety. (2020a). *Crime in Texas online- Index crimes report*. NIBRS.

Texas Department of Public Safety. (2020b). *Crime in Texas online-Arrestee summary*. NIBRS. <https://txucr.nibrs.com/SRSReport/ArresteeSummary>

Texas Department of Transportation. (2020). *CRIS Query*. Crash Records Information System.

<https://cris.dot.state.tx.us/public/Query/app/public/query/wizard?stepId=1>

Texas Department of Transportation. (2021). *C.R.I.S. Query*. Crash Records Information System.

<https://cris.dot.state.tx.us/public/Query/>

Texas Office of the Secretary of State. (2020). *Historical Elections-Official Results*. 1992-

Current Election History. <https://elections.sos.state.tx.us/index.htm>

Transportation code section 542.402, Pub. L. No. 542.402 (2020).

Tiebout, C. (1956). A pure theory of local expenditures. *The Journal of Political Economy*,

64(5), 416–424. <https://doi.org/10.1086/257839>

Tiebout, C. M. (1960). Economies of Scale and Metropolitan Governments. *The Review of*

Economics and Statistics, 42(4), 442–444.

Tocqueville, A. (2006). The need to study what happens in the United States before discussing

the Government of the Union. In J. P. Mayer (Ed.), *Democracy in America* (Translated, pp.

61–75). Harper Perennial Modern Classics.

True, J. L. (2000). Avalanches and Incrementalism: Making Policy and Budgets in the United

States. *The American Review of Public Administration*, 30(1), 3–18.

<https://doi.org/10.1177/02750740022064524>

U.S. Census Bureau. (2020). *US Census Bureau QuickFacts-Texas*. QuickFacts- Texas.

<https://www.census.gov/quickfacts/fact/dashboard/TX/PST045219>

Uniform crime reporting statistics. (2020). Department of Justice, FBI UCR.

<https://www.ucrdatatool.gov/offenses.cfm>

- Vias, A. C. (2011). Micropolitan areas and urbanization processes in the US. *Spaces and Flows: An International Conference on Urban and ExtraUrban Studies*, 1(3).
<https://doi.org/10.1016/j.cities.2011.12.005>
- Vias, A. C. (2012). Micropolitan areas and urbanization processes in the US. *Cities*, 29(SUPPL. 1), S24–S28. <https://doi.org/10.1016/j.cities.2011.12.005>
- Vias, A. C., Mulligan, G. F., & Molin, A. (2002). Economic structure and socioeconomic change in America's micropolitan areas, 1970-1997. *Social Science Journal*, 39(3), 399–417.
[https://doi.org/10.1016/S0362-3319\(02\)00204-5](https://doi.org/10.1016/S0362-3319(02)00204-5)
- Walzer, N. (1976). Economies of scale and municipal police services: The Illinois experience. In L. McPheters & W. Stronge (Eds.), *The Economics of Crime and Law Enforcement* (pp. 313–329). Charles C Thomas.
- Weber, B. A., Fannin, J. M., Cordes, S. M., & Johnson, T. G. (2017). Upward Mobility of Low-Income Youth in Metropolitan, Micropolitan, and Rural America. *Annals of the American Academy of Political and Social Science*, 672(1), 103–122.
<https://doi.org/10.1177/0002716217713477>
- Weber, M. (1969). Bureaucracy. In H. Gerth & C. Mills (Eds.), *From Max Weber: Essays in sociology* (pp. 197–244). Oxford University Press.
- Wildavsky, A., & Caiden, N. (2004). Incremental Budgeting. In D. F. Kettl (Ed.), *The New Politics of the Budgetary Process* (5th ed., pp. 46–50). Pearson Longman.

- Wilson, J. M. (2012). Articulating the dynamic police staffing challenge. *Policing: An International Journal of Police Strategies & Management*, 35(2), 327–355.
<https://doi.org/10.1108/13639511211230084>
- Wilson, J. M., & Weiss, A. (2012). *A performance-based approach to police staffing an allocation*. http://a-capp.msu.edu/sites/default/files/files/041218461_Performance_Based_Approach_Police_Staffing_FINAL100112.pdf
- Wilson, J. M., & Weiss, A. (2014). Police staffing allocation and managing workload demand: A critical assessment of existing practices. *Policing (Oxford)*, 8(2), 96–108.
<https://doi.org/10.1093/police/pau002>
- Wilson, S. G., Plane, D. a, Mackun, P. J., Fischetti, T. R., Goworowska, J., Cohen, D. T., Perry, M. J., & Hatchard, G. W. (2012). Patterns of metropolitan and micropolitan population change: 2000 to 2010. *2010 Census Special Reports, September*, 1–102.
<https://doi.org/C2010SR-01>
- Wooldridge, J. (2010). Basic linear unobserved effects panel data models. In *Econometric Analysis of Cross Section and Panel Data* (2nd ed., pp. 281–334). The MIT Press.
- Wooldridge, J. (2013a). Advanced panel data methods. In *Introductory Econometrics A Modern Approach2* (5th ed., pp. 484–509). Cengage Learning.
- Wooldridge, J. (2013b). Pooling cross sections across time: Simple panel data methods. In *Introductory Econometrics A Modern Approach2* (5th ed., pp. 447–481). Cengage Learning.

Yamano, T. (2009). *Unobserved effects and panel analysis* (pp. 1–11).

Zhao, J., Ren, L., & Lovrich, N. P. (2010). Budgetary support for police services in U.S. municipalities: Comparing political culture, socioeconomic characteristics and incrementalism as rival explanations for budget share allocation to police. *Journal of Criminal Justice*, 38(3), 266–275. <https://doi.org/10.1016/j.jcrimjus.2010.03.003>