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EXAMINING THE RELATIONSHIP BETWEEN LOCAL GOVERNMENTAL PERFORMANCE IN PUBLIC SAFETY AND THE GROWTH IN POPULATION, EMPLOYMENT, AND PER CAPITA INCOME FOR VALLEY CITIES IN ARIZONA

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A dissertation proposal submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at the Wilder School, Virginia Commonwealth University

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This study focuses on the impact of city performance in public safety on a city's growth in population, employment and per capita income. The effectiveness of performance management affects the willingness of governmental agencies to continue using performance management as a tool for day-to-day operations and the improvement of governmental services. The research goal of the study is to discover the relationship between city performance in public safety and the growth of a locality in population, employment and per capita income. The purpose of the study is to determine if there is a relationship between city performance in public safety and the growth of a city among the 11 cities in the Valley (Phoenix Metro Area) in Arizona. It aims to discover whether the performance of a city in public safety (gauged by the performance data of 11 cities in the Valley of Arizona from 2010 to 2019 in the field of public safety (police) has a positive, negative, or no impact on the growth of a locality (gauged by changes in population, unemployment rate and per capita income of the 11 cities in the Valley of Arizona from 2010 to 2019) in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Keywords: City Performance, Performance Management, Population Growth, Employment Growth, Per Capita Income Growth, Public Safety, Police Performance

CHAPTER 1

INTRODUCTION

Problem Statement

Defined by the U.S. Government Accountability Office (2005), performance measurement is continuous monitoring and reporting of program results and accomplishments, especially the progress toward pre-set goals. Performance measurement is a "measurement practice that aims at monitoring and maintaining organizational control and ensures that an organization pursues strategies that lead to the achievement of overall goals and objectives" (Amaratunga & Baldry, 2002, p. 217). A study conducted by the U.S. Government Accountability Office (1993) revealed that lacking the flexibility to tailor a performance management system to departments' needs affects the effectiveness of performance management of federal agencies.

Performance measurement is an assessment of progress in accomplishing preset goals. It includes "information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied), outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives" (Gore, 1993, p. 23). Performance measurement allows elected officials to hold organizations accountable, provide managers with operational data for improving their performance and show citizens and customers how well their government operates (Osborne and Plastrik, 2000).

Performance measurement and performance management are often used interchangeably (Brudan, 2010). However, performance measurement is only one step of performance management. Brudan (2010, p. 109) defines performance management as "a discipline that assists in establishing,

monitoring and achieving individual and organizational goals." Performance management can also be defined as "the process of defining goals, selecting strategies to achieve those goals, allocating decision rights, and measuring and rewarding performance" (Verbeeten, 2008, p. 428). Amaratunga et al. (2001, p. 180) define performance management as the "use of performance management information to affect positive change in organizational culture, systems, and processes by helping to set agreed performance goals, allocating resources, informing managers to either confirm or change current policy or directions to meet those goals and sharing results of performance in pursuing goals." Performance management is a systemwide effort to improve organizational performance via establishing goals, setting performance targets, collecting, analyzing, and reporting on performance data (Shane, 2010). Performance management uses data of performance measurement for allocating resources, developing a governmental budget, conducting long-term planning, and building internal accountability in governmental agencies (Ammons, 1995; Bernstein, 2001; Dupont-Morales & Harris, 1994; Melkers & Willoughby, 2001). Performance measure is a key element of the whole performance management process.

Although government has existed for thousands of years, the concepts of performance measurement and performance management are relatively new. The oldest performance measurement literature dates back to the late nineteenth century, during which Woodrow Wilson expressed his concern for worker accountability (Halachmi and Bouckaert, 1996). In 1907, the New York City Bureau of Municipal Research was considered the origin of "performance and productivity measurement practices" (Williams, 2003, p. 651). In 1938, Ridley and Simon urged local governments to establish performance measures and benchmarks (Fisher, 1996; Hatry, 1996). The research and application of performance measurement in government remained inactive from the 1940s to the 1980s (Fisher, 1996; Hatry, 1996).

The development of performance measures flourished in the late twentieth century (Wilkinson, 2005). During this time, the Government Accounting Standards Board (GASB) encouraged state and local governments to "measure the economy and efficiency of services or program, and data designed to measure the effectiveness and the results of services or programs" (GASB, 2002, p. 5). The International City/County Management Association (ICMA) also developed networks and benchmarks for performance management and comparisons to be used by cities and counties. Nowadays, performance measurement is a required criterion for local governments to receive the *Annual Distinguished Budget Presentation Award* by the Government Finance Officers Association (GFOA). At the federal level, the *Federal Government Performance and Results Act of 1993 (GPRA)* mandates federal agencies to submit performance plans and reports every three years (Groszyk, 2002). GPRA encourages state and local governments to adopt similar performance measurement initiatives (Fisher, 1996).

Performance measures are widely used by local governments in strategic planning, performance management, city budget process, and building an accountable city government. Many studies have been conducted on performance measurement, performance management, and service delivery. Few studies focused on the impact of local government performance on the growth of a locality.

There has been a philosophical debate on whether performance management benefits the public sector. On one hand, there is a view that performance measure does not "do any justice to the nature of activities" performed by the public sector (Bruijn, 2009, p. 28). Different from the production line, public service takes multiple values into account. Performance measures cannot gauge the complexity and multi-dimensional services provided by the public sector. Performance measures cannot gauge the full picture of public service.

Achieving output targets does not tell the quality and professionalism of the public service (Bruijn, 2009). The critics of performance measurement claim that performance measures may "bureaucratize an organization, killing all incentives for professionalism and innovation and causing performance measurement to lead mainly to strategic behavior. Performance measures widen the gap between political decision making and implementation" (Bruijn, 2009, p. 22).

Radin (2009) claimed that performance measurement in government ignores the complexity of the world, equity, and the fragmentation of government. Radin stated that performance management in government exaggerates the reliability and neutrality of data needed for performance assessment. It neglects the political and democratic context of governmental organizations. As a result, performance management paralyzes the government instead of enhancing its operations (Radin, 2009). Scholars also list several conditions where performance information should not be used: 1) Low-quality performance measures (Bouckaert, 1993); 2) Performance information is hard to understand (Poister, 2010); 3) Little flexibility for managers to make a decision and inadequate employee empowerment (Bass and Riggio, 2014); 4) No norms in the organization to publish performance reports (Moynihan, 2004); 5) The imbalance of powers between politicians and administrative managers (Verhoest et al., 2004).

On the other hand, there are benefits of using performance measures in governmental operations to promote accountability and transparency. Performance measurement is a powerful communication tool. It breaks down the complex performance of an organization into its essence and allows the public sector to detect poor performance and correct it in time, as well as reward good performance (Bruijn, 2009). Through examining performance measures of

public and private organizations, Gormley and Weimer (1999, p. 27) discovered that performance measures provide "a form of accountability measure" not only to elected officials but also to local residents. Wholey (1999, p. 292) also noted that applying performance measures to government programs improves "accountability to all stakeholders and support for resources allocation."

Therefore, this study focuses on the impact of city performance in public safety on a city's growth. The effectiveness of performance management affects the willingness of governmental agencies to continue using performance management as a tool for day-to-day operations and the improvement of governmental services. The research goal of the study is to discover the relationship between city performance in public safety and the growth of a locality through hypothesis testing.

This study addresses the research question:

Does the performance of a city in public safety lead to more growth in a municipality?

The purpose of the study is:

To determine if there is a relationship between city performance in public safety and the growth of a city among the 11 cities in the Valley (Phoenix Metro Area) in Arizona. It aims to discover whether the performance of a city in public safety (gauged by the performance data of 11 cities in the Valley of Arizona from 2010 to 2019 in the field of public safety (police) has a positive, negative, or no impact on the growth of a locality (gauged by changes in population, unemployment rate and per capita income of the 11 cities in the Valley of Arizona from 2010 to 2019) in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Importance of This Issue and the Purpose of This Study

Despite the criticism of performance management, there have been many studies in the fields of performance management and city service delivery, performance management and strategic planning, performance management and continuous improvement of city services, as well as performance management and citizen participation. However, few articles have focused on the relationship between city performance and the growth of a locality.

Performance management helps build an accountable public sector in which poorly performing organizations can learn from well-performing professional organizations through benchmarking (Bruijn, 2009). Performance measures are not just used in governmental budgeting, but also in other aspects of governmental operations. A survey discovered that at least half of the surveyed cities reported that performance measures are not just used in budgeting, but also in strategic planning, program evaluation, performance management, and benchmarking (Poister and Streib, 1999). Research findings indicate that "the competence of managers and employees involved in performance measurement, incorporation and use of performance data is important to make effective performance management systems" (Angiola and Bianchi, 2015, p. 535). One can make a case that performance measurement can benefit organizations in the public sector. It may "improve the professionalism of the service rendered, the professional organization's innovative power and the quality of decision-making" (Bruijn, 2009, p. 37).

From the perspective of some practitioners, many local governments establish and track performance measures only because it is mandated by state law or city charter. Many cities

have developed performance measurement and performance management systems simply for fulfilling a city council requirement or a city charter requirement, not to improve governmental operations and service delivery. As a result, there is no operational or day-to-day utilization of the performance management system in these municipalities. Even for those cities that claim they have citywide comprehensive performance programs, performance measures are not used in all programs of city operations (Poister and Streib, 1999).

Therefore, understanding the relationship between city performance in public safety and the growth of a city is key to understanding whether performance management is a useful tool in promoting the growth of a locality. This study will offer insights to not only academic researchers but also policymakers in local government on the effectiveness of the performance management system.

Theoretical Framework

To answer the research problem regarding city performance in public safety and a city's growth, this study builds on the theoretical framework of goal-setting theory, expectancy theory, rational choice theory, and Charles Tiebout's theory of local public expenditures. Pearson's r correlation and multiple linear regression are research methodologies that test the relationship between the performance of a city in public safety and a city's growth. Pearson's r correlation is used to examine the relationship between independent variables and dependent variables. It does not provide the direction of the relationship. By using multiple linear regression, researchers can determine if the changes in an independent variable influence the change of a dependent variable.

Goal-setting theory and expectancy theory claim that through setting up and managing

performance goals of an organization and its employees, as well as improving business processes, cities can motivate employees to improve the efficiency and effectiveness of service delivery and the quality of city services. Goal-setting theory and expectancy theory connect the performance management of a city and the performance of a city. By setting up goals and objectives of departments in the annual budget process and managing the work expectations of employees, a city can enhance its performance in operations and service delivery.

Rational choice theory assumes that when people make a decision, they first evaluate the expected benefits versus anticipated costs and consequences. Their decision is the one that they think will bring them the most benefits (Martinás and Reguly, 2013). Rational choice theory posits that social behavior is an aggregate of the behaviors of individual actors, each of whom makes their individual decisions (Blume and Easley, 2008). Rational choice theory not only applies to individuals, but also to groups of individuals that include "firms, families, social movements, political parties, governments, racial and ethnic groups, churches or scientists, as they all are assumed to optimize their utility functions" (Zafirovski, 1999, p. 48).

Charles Tiebout's theory of local public expenditures claims that "a multiplicity of jurisdictions in the metropolis constitutes a market of governments that fosters the efficient allocation of public goods and widens the service choices available to citizens" (Percy et al., 1995, p.1). A fragmented government will increase competition among governments and thus enhance the efficiency and effectiveness of the government in providing goods and services (Percy, Hawkins, and Maier, 1995).

Goal-Setting Theory

The study aims to discover the relationship between the performance of a city in public

safety and a city's growth. The result of the study may help researchers and government practitioners to better understand the impact of city performance on the growth of a city. This study addresses the research question: *Does city performance in public safety of a city lead to more growth in a municipality?* Goal-setting theory claims that management can boost performance and profit by helping employees set effective goals (Locke & Latham, 1990). Goal-setting theory is supported by multiple studies, which indicate that setting goals is related to performance enhancement (Ivancevich & McMahon, 1982; Latham & Locke, 2006; Umstot, Bell, & Mitchell, 1976). There are four reasons that established goals can motivate people to achieve higher performance. First, goals provide direction for employees. Second, goals energize people to continue working toward achieving them. Third, having a goal is a challenge that people want to achieve. Finally, established goals also urge people to think creatively to realize them through business process improvement and reform (Latham, 2004; Seijts & Latham, 2005).

Expectancy Theory

In answering the research question on city performance in public safety and a city's growth, expectancy theory provides a theoretical framework on why performance management can improve city operations and service delivery. Individual employees' belief in preferred work performance yields the performance results that employee value (Vroom, 1964). Employees have different value factors that motivate them to put in the efforts that are necessary to achieve their organizational goals (Soni & Rawal, 2014). As a result, individual employee' s performance relies on the perceived value of the outcome based on the factors that motivate them (Soni & Rawal, 2014). A good performance management system also motivates all managers and employees to

achieve the preset goals of improving internal operations, business processes, and city service delivery.

Expectancy theory links performance management, from a human resource management perspective to the performance outcomes of an organization (Huff, 2007). It is an approach that managers use to motivate employees using recognition, bonus, empowerment, promotion, etc. (Ozlen & Hasanspahic, 2013). There is a natural connection between expectancy theory and goal-setting theory in performance management. Motivation includes different approaches on what to do to help employees to achieve their performance goals in business operations. The established goals need to be attainable for employees to be motivated to accomplish them (Vroom, 1964).

Expectancy theory establishes a connection between the performance of an employee and the outcome of the employee's behavior. Individuals can be motivated and encouraged by achieving their own goals, together with the performance goals of an organization (Berson, Halevy, Shamir, & Erez, 2015; Vroom, 1964).

From a practitioner's perspective, goal-setting theory and expectancy theory are utilized in performance management programs of local government. City government incorporates goal-setting into its budget process and human resources management process. Through working with departments, a city's Office of Management and Budget or Performance Management Office establishes budget priorities, performance goals, and targets of departments. Budget priorities are established based on a city's strategic plan with detailed performance goals of related departments. A city's Office of Management and Budget or performance management office tracks departmental performance results periodically through performance management meetings and/or regular performance reporting. According to the previous studies of the goal-

setting theory (Locke & Latham, 1990; Pritchard, 1988), a performance management program could improve departmental performance and service delivery, thus enhancing the citizens' overall satisfaction with city services.

Rational Choice Theory

This study also builds on the rational choice theory. It ties the performance of a city with the growth of the city. The rational choice theory states that an individual's behavior is rational. People make rational decisions by maximizing benefits for themselves and their organizations. Rational choice theory links the performance of a city and the growth of a city. As a high-performing city, it has better police protection, faster firefighting and emergency rescue services, better park, library, and recreation services, and well-maintained streets and sidewalks. As a result, more businesses and individuals are willing to relocate and live in these high-performing localities based on the rational choice of maximizing benefits for themselves, their families and their businesses.

Regarding performance management in public safety and a city's growth, research shows that a ten percent increase in crime causes about a one percent decrease in population (Cullen and Levitt, 1999). It is a direct proof of rational choice theory in which high crimes reduce the growth of a locality as residents choose to move to safer communities. Rational choice theory is "a framework for understanding and modeling social and economic behaviors" (Blume and Easley, 2008, p. 3).

Charles Tiebout's Theory of Local Public Expenditures

Charles Tiebout's theory of local public expenditures provides a theoretical foundation on

why cities work to enhance their performance – cities need to improve the efficiency and effectiveness of public goods and services provided to residents, in order to attract and retain more businesses and residents (Percy et al, 1995). The theory is also tied to rational choice theory – the fragmented governments in a region increase the competition among local governments for businesses and individuals as people and organizations make rational decisions on where to locate and relocate based on the quality of city services they received. Charles Tiebout's theory of local public expenditures claims that "a multiplicity of jurisdictions in the metropolis constitutes a market of governments that fosters the efficient allocation of public goods and widens the service choices available to citizens" (Percy et al, 1995, p.1). Scholars argued that "fragmented government enhances the efficiency and responsiveness of the jurisdictions that compete with one another" (Percy, Hawkins, and Maier, 1995, p.1).

Based on Charles Tiebout's theory of local public expenditures and rational choice theory, residents of a fragmented metropolis may locate or relocate to a jurisdiction that can maximize their own preferences on taxes and city services. On the other side, cities want to retain and attract more residents and businesses to grow their tax base, rather than see them leave. As a result, policymakers and city management have an incentive to improve city services and reduce the local tax burden in order to cater to the needs and preferences of local residents (Percy et al, 1995).

Methodology

The methodology of this study will examine the relationship between city performance in public safety and the growth of cities located in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area (Phoenix Metro Area) in the State of Arizona, which includes

Avondale, Goodyear, Surprise Chandler, Gilbert, Glendale, Mesa, Peoria, Phoenix, Scottsdale, and Tempe.

The study uses performance data in public safety of cities collected by the Valley Benchmark Communities Group (VBC) and data on a city's growth, such as demographics, employment, and per capita income to conduct a quantitative study. VBC is a performance management consortium of cities in the Phoenix Metropolitan Area that discusses, develops, and shares performance measures for performance management and regional benchmarking analysis. It also includes the Maricopa Association of Governments (MAG), and the International City/County Management Association's Center for Performance Analytics (ICMA Analytics). All data are entered and analyzed by the Statistical Package for Social Services [SPSS] and the research results will be analyzed and discussed in Chapter 5 – Research Findings.

Limitations

This study focuses on the cities located in the Valley of Arizona (Phoenix Metropolitan Area), not multiple cities across different states in the U.S. The survey technique of random sampling is not used to select cities for the study. Therefore, there is a threat to the external validity of the study as the study results cannot be generalized to cities across the United States. However, the study results can provide information and insights on the relationship of city performance in public safety and a city's growth in one of the largest metropolitan areas of the States.

The goal of VBC is to create performance measures that can truly compare cities located in the Phoenix Metro Area using the same performance measures. However, as each city has different business processes and staffing levels to provide governmental services, the performance data may not fully reflect the same level of service delivery. It may pose a threat to the internal validity of the study.

Overview of the Following Chapters

The following chapters of the dissertation are organized and listed below:

Chapter 2 – Review of the Literature: It is a review of existing articles on this topic and informs the research design, the independent variables, dependent variables, and control variables of the study, and the development of research hypotheses.

Chapter 3 – Research Design and Methodology: This chapter focuses on data sources and data collection, data analysis, as well as the internal and external validity of the study.

Chapter 4 – Hypothesis Testing and Data Analysis: This chapter focuses on testing the hypotheses and analyzing the results.

Chapter 5 – Research Findings: This chapter summarizes research results, discusses the implications from research findings and the limitations of the findings.

Chapter 6 – Policy Recommendations: This chapter discusses the policy recommendations from the research findings on performance management program, local police department and city growth.

Chapter 7 – Summary: This chapter provides a summary of the dissertation.

CHAPTER 2

REVIEW OF THE LITERATURE

The History of Performance Measurement in Government

Performance measurement and performance management were not used by the government in the United States until the early twentieth century (Cope, 1996). The New York City Bureau of Municipal Research is the first municipality in the U.S. that used performance measures in governmental operation in 1907 (Cope, 1996). Ridley and Simon were the first researchers who developed and used performance measures in their research in 1938. In the study, they discussed using yardsticks to measure the efficiency and effectiveness of governmental services. In 1943, Ridley and Simon discussed the need for performance measurement and approaches to monitor government operations in their book titled *Measuring Municipal Activities* (Hatry, 1996; Fischer, 1996). Decades later, studies by Hatry (Hatry and Fisk, 1971; Fisk and Winnie, 1974), as well as Grasso and Epstein (1988) also promoted performance measurement in local government.

In the early 1960s, the Hoover Commission successfully streamlined the federal government and introduced the concept of performance budgeting (Fischer, 1994; Ehrenhalt, 2005; Ammons, 1995). The concept of performance measurement and performance budgeting gained traction in federal, state, and local governments from the 1960s to the 1980s (Wholey, 1997). Some new concepts in performance management emerged, such as Planning Programming Budgeting Systems (PPBS), Management by Objectives (MBO), Zero-Based Budgeting (ZBB), and the Total Quality Movement (TQM) (Rosen, 1993).

In 1993, President Clinton announced a six-month review of the federal government and

asked Vice President Gore to lead the effort to establish the National Performance Review (Fischer, 1994). In the same year, Congress also passed the *Federal Government Performance and Results Act of 1993 (GPRA)*, aiming to improve the performance and accountability of the federal government (Fischer, 1994). The GPRA sets legal mandates for federal agencies by requiring the federal government to establish a logical connection between budgeting and operational performance. It requires federal agencies to conduct strategic planning every three years, as well as provide reports and performance plans of operations (Radin, 2009).

In the 1990s, the Balanced Scorecard and Six-Sigma emerged as new concepts of performance management. Balanced Scorecard focuses on linking the key elements of performance management: mission, vision, strategy, objectives, performance measures, and targets to build a strategic plan of a governmental entity (Yetano, 2009). Six-Sigma is a performance management tool that focuses on performance improvement. It includes five steps: define, measure, analyze, improve, and control. It is a widely used tool by government agencies for process improvement and change management (International Six Sigma Institute).

In 2001, President George W. Bush launched the President Management Agenda (PMA) Initiative, aiming to build a market-based, citizen-focused, and results-driven federal government (Breul and Kamensky, 2008). The goal of the PMA includes: "(a) strategic management of human capital, (b) competitive sourcing and privatization, (c) improved financial performance, (d) expanded electronic government, and (e) budget and performance integration through the GPRA" (Milakovich, 2013, p. 31). Each of the aforementioned five elements of the PMA was further defined by 8 to 10 "standards of success" that were measurable (Breul and Kamensky, 2008, p. 1016). President Bush developed a targeted agenda to "improve agency-level management capacity and program-level performance and results" (Breul and Kamensky, 2008,

p. 1015). The Bush Administration appointed five staffers to the Office of Management and Budget (OMB) and the Office of Personnel Management to implement the President's five PMA initiatives, during which the OMB became the focal point of management improvement initiatives in the executive branch of the federal government (Breul and Kamensky, 2008).

The Bush administration's PMA initiatives enhanced the performance management of the executive branch. The Bush Administration's President Management Agenda:1) Accelerated the preparation of the audited financial statement of federal agencies. 2) Created Performance-budget integration. 3) Conducted Comprehensive assessments of program performance. 4) Established the foundation for e-government services and cross-agency lines of business. 5) Reduced improper payments. 6) Saved $7 billion by competitive sourcing. 7) Implemented performance pay initiatives (Breul and Kamensky, 2008, p. 1019-1020).

Performance Management in Local Government

Out of the three levels of government (federal, state, and local government) in the U.S., local government is the level of government that is closest to its constituents. Its policies and actions affect people's day-to-day life. Key public services, such as police protection, fire and emergency services, street and bridge maintenance, library services, and park and recreation programs are provided by local government. A well-functioning performance management program of local government can not only improve governmental operations but also enhance the efficiency and effectiveness of the day-to-day service delivery (Greener, 2018; Dey, Thommana, & Dock, 2015; Christensen & Gregory, 2010). At the local government level, performance management and government accountability were key parts of the "reinventing government" movement that gained momentum in the 1990s (Kearney and Scavo, 2001, p. 43). Since then, local

elected officials and government managers became interested in performance management, in order to document the expenditures of public funds and improve service delivery (Lindblad, 2004).

In 1993, the National Commission on the State and Local Public Service (commonly known as the Winter Commission named after the Commission Chair William Winter) presented the report *Hard Truths, Tough Choices: An Agenda for State and Local Reform* to President Clinton (Thompson, 1994). The report outlined ten key recommendations on executive leadership, citizen involvement, lean, responsive government, high performing organization to reform state and local government (Thompson, 1994). The Winter Commission is an initiative of the Nelson A. Rockefeller Institute of Government, which included bipartisan representatives from public officials, academics, nonprofit organizations, and private sectors. The Brookings Institute also published a guide in 1993 on recommendations to improve government performance and intergovernmental relations, as well as spur innovation of state and local governments by granting waivers to all state and local governments (Salkin, 1994).

The first real application of performance measures in local governmental operation is CompStat in New York City. In the 1970s, in order to combat crimes in New York City, Jack Maple, the Deputy Police Commissioner for Crime Control Strategies, established the CompStat program. It tracks crimes through pins stuck in maps. CompStat was a huge success to reduce traffic crimes significantly. The CompStat program was later implemented by Commissioner William Bratton in 1994 in all divisions of the New York City Police Department (NYPD). Using biweekly crime data collection, computer-assisted data mapping, and strategical deployment of police resources, CompStat helped the NYPD reduce crimes significantly (Kamensky, 2005). Nowadays, CompStat is widely used by police departments around the nation to strategically allocate resources and fight crimes.

Inspired by CompStat of NYPD, the mayor of Baltimore, Maryland established the CitiStat program in 2000 to improve city services and reduce the cost of governmental operations (Bens, 2005). The CitiStat program was credited with saving the city $43 million in fiscal years 2001 and 2002, as well as improving governmental performance and accountability of city agencies (Bens, 2005). The CitiStat program was quickly replicated in many major cities in the U.S. to improve service delivery and departmental performance.

By the early 1990s, many associations of state and local governments had published policies and guidelines that encouraged state and local governments to use performance measures and performance management in their daily operations. The American Society for Public Administration (ASPA), the Governmental Accounting Standards Board (GASB), the Government Finance Officers Association (GFOA), the International City/County Management Association (ICMA), the National Center for Public Productivity, the National Association of Counties, and the National Academy of Public Administration (NAPA) have all encouraged their members to use performance measures in monitoring governmental budget, auditing, and governmental operations. (Ammons, 1995; Fischer, 1994).

In 1994, the International City/County Manager's Association (ICMA) established the Comparative Performance Measurement Program, of which 44 city and county governments shared performance data of public services they provided (ICMA, 2000). By 2002, the program had grown to 130 localities that provided and shared performance and benchmarking information (ICMA, 2002). The Government Accounting Standards Board also sponsored a project in 1997 that helped local governments use performance measures in budgeting, management, and reporting (GASB, 2002). The American Society for Public Administration also created the Center for Accountability and Performance in 1996 (ASPA, 2002) which focuses on performance management and

government accountability.

Performance measures are more widely used in larger communities. Only 30 percent of cities with populations below 50,000 use performance measures in city operations as compared to over 50 percent of municipalities with populations of 100,000 to 249,999 that use performance measures (Poister and Streib, 1999). For larger jurisdictions with populations over 250,000, 75 percent of them use performance measures (Poister and Streib, 1999). Performance measures are used more widely in the council-manager form of government, rather than in the mayor-council form of government (Palmer, 2009).

Performance measurement is a required element of the budget document for a local government to receive the annual *Distinguished Budget Presentation Award* from the Government Finance Officers Association (GFOA). ICMA also evaluates applications from local governments around the nation for the annual *ICMA Performance Excellence Award*. With the wide use of performance measures and performance management in local government, many municipalities in a region collaborate and establish consortiums to create benchmarks for performance management in cities throughout a region. The goal is to create comparable performance measures of the peer cities in the region. One of the oldest performance management consortiums is the Valley Benchmark Communities group in Arizona.

Established in 2011, the Valley Benchmark Communities Group (VBC) is a consortium of performance management staff from major cities and towns in the Phoenix-Mesa-Scottsdale metropolitan statistical area (Phoenix metro), which includes Chandler, Gilbert, Glendale, Mesa, Peoria, Phoenix, Scottsdale, and Tempe (VBC changed its name from Valley Benchmark Cities Group to Valley Benchmark Communities Group in 2021). Avondale, Goodyear, and Surprise joined in 2013; Queen Creek and Buckeye joined in 2021. The consortium aims to improve local

government performance and service delivery in the Phoenix Metro Area by working collaboratively on creating regional benchmarks and learning the best practices for improving governmental service delivery (Valley Benchmark Communities Group)

Another new development in performance management in the 21st century is the establishment of public-nonprofit partnerships on performance management and performance improvement at the local government level. A good example is the *What Works Cities Initiative*. In 2015, Bloomberg Philanthropies launched the *What Works Cities Initiative* to help cities with a population of more than thirty thousand to improve performance management and service delivery. The *What Works Cities Initiative* is in partnership with the Harvard Kennedy School of Government, the Center for Government Excellence (GovEx) at Johns Hopkins University, Results for America, Sunlight Foundation, and the Behavioral Insights Team (BIT). They provide free technical assistance to selected local governments to improve performance management, data-driven decision-making, and result-based service delivery (What Works Cities). Staff from What Works Cities, GovEx, and BIT work with city staff from selected cities on executing projects for performance enhancement and service improvement, while building the capacity of selected cities for advancing performance management.

The Components of Performance Management in Local Government

Performance measurement is a component of performance management. By definition, performance measurement is a "process of evaluating the progress on achieving preset goals. It includes information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied), outcomes (the results of a program activity compared to its

intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives" (Gore, 1993, p.23). Performance management includes strategic planning, budgeting, performance report, policy analysis, citizen survey, benchmarking, program and performance monitoring, personnel appraisal, contractor monitoring, as well as performance auditing and evaluation (Berstein, 2001). In many localities, governments also incorporate the views of citizens on issues and programs that are important to them in the performance management process (Woolum, 2011).

Strategic Planning

After strategic planning "arrived on the scene" in the mid-1960s, "corporate leaders embraced it as 'the one best way' to devise and implement strategies that would enhance the competitiveness of each business unit" (Mintzberg, 1994, para.1). Henry Mintzberg (1994) thinks strategic planning is not strategic thinking, but analysis and synthesis. "Strategic planning, as it has been practiced, has really been strategic programming, the articulation and elaboration of strategies, or visions, that already exist" (para. 4). Mintzberg (1994) suggested that "Planners should make their greatest contribution around the strategy-making process rather than inside it" (para. 6).

Defined by Glazer (1991), strategic planning is "using an established method for setting organizational priorities with an eye on the future" (p.5). Strategic planning is generally made by the city council of a local government as a blueprint for a city in long-term development. With assistance from consultants and city staff, the city council holds strategic planning sessions to create vision, mission, goals, objectives, and set priorities for a city's long-term development. Performance measures ought to be a key part of the strategic planning process as they help to

establish measurable goals of the objectives of the strategic plan (Willoughby & Melkers, 1998).

The *Government Performance and Results Act of 1993* (GPRA) requires federal agencies to conduct long-range planning for their operations. At the local level, a strategic plan allows local government to assess its achievement against the preset goals as the strategic plan incorporates "a statement of purpose (visions and missions), a statement of direction (goals and strategies), and a statement of impact, including reporting of output and outcome measures to be achieved" (Dupont-Morales & Harris, 1994, p. 231).

Strategic planning is generally the first step in a performance management system. The current performance measures and comparative benchmarks can be used by policymakers to establish a long-term plan for a municipality. For the implementation of strategic planning, performance indicators, measures, and benchmarks need to be developed to monitor the progress and fulfillment of the strategic planning on a quarterly to annual basis. Although strategic planning is an important step of performance management, there are still many governments that do not use strategic planning in governmental operations due to resource constraints and the discretion of city management. A survey conducted by Theodore H. Poister, and Gregory Streib (2005) discovered that 44 percent of local governments have formal strategic planning processes, and among these municipalities, only 48 percent of localities linked performance data to strategic goals in resource allocation and budgetary discussion. Only 49 percent of local governments tracked performance data over time.

Strategic planning is one of the main tools to implement public management in local government. It aims to better understand the driving factors of local governmental performance and build consensus among stakeholders (Albrechts 2004; Bianchi and Tomaselli 2015). Widely used strategic planning is due to increased competition among cities, declining revenues, and attention to

environmental and sustainability issues (Trivellato and Cavenago 2014; Bryson and Roering 1988). Good performance in achieving desired community outcomes can only be accomplished by deploying strategic resources (Bianchi 2016; Bianchi and Tomaselli 2015).

Budget

A budget is a spending plan for a specified period in the future for an organization, which allocates resources in line with policy priorities (Willoughby, 2004). Performance budget or performance-based budgeting is the "allocation of funds based on programmatic results that contribute to organizational goals" (Geraghty, 2017, para. 2). Performance-based budgeting allows state and local governments to enhance their budgetary process by performance results, in order to:

- determine funding allocation;
- build accountability among government agencies;
- achieve state/city/county goals and priorities, rather than departmental specific goals;
- enhance budget transparency and community engagement (Center for Government Excellence, para. 4).

After the *Government Performance and Results Act (GPRA) of 1993* was passed, performance-based budgeting reemerged as a major focus of the government budget process (Jordan and Hackbart, 2014). Since then, 32 states have passed performance-budgeting related legislation (Lu & Willoughby, 2015). Many local governments have also introduced performance budgeting systems (Melkers & Willoughby, 2005; Poister & Streib, 1999).

Budget is a blueprint and an execution plan of governmental operations. Performance

data should be tied to budget development. Without performance data and strategic planning, governmental budget is virtually an incremental increase or decrease of current funding levels over the previous year. Performance data could provide information on output, outcome, efficiency, effectiveness for resource allocation, and decision making during the budget process (Poister & McGowan, 1984; Tigue, 1994; Ammons and Rivenbark, 2008). Building a performance-based budget is a key step to establishing an accountable and result-driven government. In order to truly establish "a government of the people, by the people, for the people" (Lincoln, 1863, para.4), governmental agencies should create their budgets based on performance and operation results.

Although performance measures and performance management have gained popularity among local governments since the 1990s, many cities and counties still have not incorporated the concept into governmental management, especially for small cities and counties. In the U.S., there were less than 40 percent of major cities and counties use performance measures in policy discussion and budgetary deliberation in 2010. Only 22 percent of small cities and 6 percent of smaller counties had done so (Ho, 2011). Many cities, especially small cities still have not used strategic planning and performance management in their daily operations and internal management. Limited staffing and resources preclude small communities from incorporating performance management into the local budgeting process as they generally do not have extra funding to hire performance management staff or take corporate-wide training on performance management.

In terms of the effectiveness of performance-based budgeting in policy discussion and budget deliberation, a survey conducted by Theodore H. Poister and Gregory Streib (2005) discovered that 44 percent of municipalities have formal strategic planning processes, and among them, only 48 percent of localities linked performance data to strategic goals in resource allocation

and budgetary discussion.

Performance Reporting

As a key component of performance management, performance reporting is a tool used by local governments to record performance data and targets of governmental activities delivered by governmental agencies. There are different forms of performance reporting used by local government. Many local governments report their annual performance data as a component of the annual budget document or financial plan. The Government Finance Officers Association (GFOA) lists performance measures and performance data as required elements for the *Distinguished Budget Presentation Award* that many local governments apply for every year (GFOA).

Besides publishing performance data on the budget document, many local governments create a quarterly, mid-year, or annual performance report that tracks the data of each performance measure of governmental operations. The Government Accounting Standards Board supports using the *Service Efforts and Accomplishments* (SEA) report to track governmental performance (GASB, 1994; Wholey and Hatry, 1992). The SEA report is generally created by the auditor's office of a local government. It examines, evaluates, and assesses governmental programs and services annually, which builds governmental accountability and public confidence in local government.

As a part of the SEA report and an element of the performance management system, many local governments conduct citizen satisfaction surveys annually or biennially, in order to gauge the level of satisfaction of citizens with the services local government provides. It is also a tool for city management to evaluate the outcome and service quality of departmental performance, as there is a logical tie between the quality of governmental service provided and the level of satisfaction of citizens that utilize governmental services. A study conducted by ASPA demonstrated that citizen

surveys have a positive impact on improving a city's performance management (Epstein & Olsen, 1996). When a city government conducts citizen surveys and uses survey results to improve city services, it provides better service to its businesses and residents.

Benchmarking

Performance management promotes a learning culture within an organization and among government agencies. Benchmarking is a comparison, which allows performance figures of different professional units to be compared and offers management an opportunity to ask questions about the differences in performance results (Bruijn, 2007). Through comparing against a benchmark, governmental agencies can view their performance over time and make improvements. Benchmarking aims to discover what really happens behind the data and tries to explain why there are performance gaps among different organizations (McAteer & Stephens, 2013).

Benchmarking is "the continuous, systematic process of measuring and assessing products, services, and practices of recognized leaders in the field to determine the extent to which they might be adapted to achieve superior performance" (Treasury Board of Canada, 1996, para. 2). Benchmarking is a comparison of the same or similar performance measures across comparable cities and acknowledges the localities that did better as well as the ones that did worse than certain municipalities. "Benchmarking is the practice of being humble enough to admit that someone else is better at something and wise enough to try and learn how to match and even surpass them at it" (Treasury Board of Canada, 1996, para. 1). Cities use benchmarking to learn from other cities for performance improvement and service enhancement. "It is a continuous process of learning from others and then adapting this knowledge to an organization's own context in order to improve performance" (McAteer & Stephens, 2013, p. 282).

There are four different types of benchmarking: 1) Internal benchmarking [compares the same locality over the years]; 2) External benchmarking [compares the performance of one municipality with other comparative localities in the same year]; 3) Operational benchmarking [the "recent annual or periodic performance" of a locality]; and 4) Strategic benchmarking [long-term performance] (Treasury Board of Canada, 1996, para. 10).

Benchmarking may compare existing performance data with a pre-determined performance target or a pre-established performance standard. Performance comparisons may utilize various types of standards, including:

- Legal Standard: performance mandated by federal, state, or local law;
- Historical Standard: comparing the current performance to past records;
- Strategic Standard: comparing performance to a standard as a part of a strategic plan;
- Best-Practice Standard: comparing performance to those said to be best-in-class within a specific industry or service field (Bruder & Gray, 1994).

While many decision-makers use benchmarking as a tool for performance evaluation and management improvement, opponents claim that benchmarking can lead to mediocrity. Leinwand and Mainardi (2010) suggest that benchmarking is often evidence of lacking strategy. Benchmarking established targets for revenues, expenditures, and other performance matrices without context. Benchmarking can distort the competitive advantages of an organization and result in encouraging complacency, and misallocating resources that could be used more efficiently in other fields (Leinwand and Mainardi, 2010). As a result of such a misapplication, benchmarking may lead to the mediocrity of an organization. Cities need to carefully select their peers and periods of time to benchmark against, in order to avoid drawing wrong conclusions and results.

The most well-known benchmarking tool used by local governments throughout the nation

is the ICMA Open Access Benchmarking created by the International City/County Manager's Association. It allows cities and counties to key in their performance data and utilizes the open database to create benchmarks for the same performance measures. The database has 80 key performance indicators with consistent definitions and more than 17,000 data points, which allows localities to compare with others or create year-over-year trends (ICMA).

Another very active consortium on benchmarking is the Valley Benchmark Communities Group (VBC) in the state of Arizona. It is a consortium of representatives from major cities and towns in the Phoenix Metro Area, who work together to create new performance measures for certain fields of public service.

Performance Monitoring

Performance management not only includes creating performance measures and collecting data for performance measures but also continuous monitoring and improvement. Performance monitoring "periodically measures a program's outputs and (perhaps) its quality-of-service delivery. Such monitoring may include (but goes beyond) a program's costs and activities to cover short-term and midterm outcomes, without necessarily attempting to estimate the extent to which the program caused the observed outcome." (Newcomer, 1996, p. 7). A performance measure establishes trackable goals of a certain service provided by a governmental agency. Without performance monitoring, a local government cannot make adjustments to resources for the agency to achieve performance targets. Performance monitoring also ensures that the performance targets established are realistic and attainable.

Just like the CitiStat program established by Mayor Martin O'Malley of the City of Baltimore, Maryland in the 1990s, many local governments in the U.S. have similar performance

monitor programs in which city management meets with departmental management periodically (weekly, monthly, or quarterly) on discussing departmental performance, service delivery, and internal operations. Performance monitoring focuses on the day-to-day measurement and reporting of performance data. Performance monitoring systems "regularly measure the quality-of-service delivery and the outcomes (results) achieved in public programs—with monitoring being done at least annually but, in many cases, quarterly or even more frequently. They include, but go beyond, the more typical measurements of program costs, services delivered, and numbers served" (Wholey & Hatry, 1992).

Performance monitoring is generally organized by the performance management office in city/county manager's office or a city's office of management and budget. Typically, the performance management office of a locality holds quarterly performance management meetings with departments and publishes the quarterly city performance report that tracks the status and progress of governmental agencies in achieving performance goals and targets. With the development of technology, many municipalities utilize cloud-based performance management software, such as Socrata or OpenGov to track governmental performance. Departmental performance data can be automatically transmitted to the performance management platform after the initial setup. It enables city management and departmental management to monitor agency performance in real-time as the data is automated to feed the performance dashboard.

Performance measurement can be used to implement several key functions in the public sector. Performance measurement enhances the transparency and accountability of governmental organizations. Bruijn (2007) argues that the public sector has few incentives to improve its efficiency and effectiveness. It is easy to develop "red tapes" in an organization, which is formulated in Parkinson's Law: "an increase in employees leads to a reinforced increase in loss of

time because internal, non-productive tasks become more voluminous" (p. 31). One goal of performance management is to reduce the red tape in the public sector and improve the efficiency and effectiveness of governmental agencies. From an external point of view, government, especially local government, provides vital public service related to the quality of life of the residents living in the jurisdiction. Performance management is a way to count and measure the quality and quantity of services provided by governmental agencies. "Measuring performance is an elegant way of calling an organization to account for it." It reduces the complexity of performance management to several figures that are easy to communicate (Bruijn, 2007, p. 26).

Performance management contributes to a learning organization in which improvement can be made through benchmarking. A performance-based appraisal can also be given to individuals and departments to gauge the performance of individuals and organizations. Performance appraisal can also be followed by a positive sanction to reward good performance, or a negative sanction when performance is not satisfactory (Bruijn, 2009).

City Performance in Public Safety and the Growth of a City

Performance management is a systemwide effort to improve organizational performance via establishing goals, setting performance targets, collecting, analyzing, and reporting on performance data (Shane, 2010). Some researchers operationalized performance management by a simple and straightforward way in surveying city management on whether a city uses performance measures in a municipality (Streib and Poister 1999). Cities were surveyed on if performance measures were put into general use, management use, budgeting use, and reporting use (Charbonneau and Bellavance, 2015). In other studies, performance management can also be operationalized by the proportion of municipalities that use performance measures in the decision-making of selected

departments or program areas (Fountain, 1997). Most studies on performance management focused on the impact of performance management on government operations. Few studies have been conducted on the relationship between city performance in public safety and city growth. While performance management can be operationalized as a process of city operations, a well-organized performance management process could yield no results. Therefore, this study focuses on the results of performance management by utilizing the performance data of police departments in Valley cities in the Phoenix metro area to operationalize city performance in public safety.

The study uses *Police Response Time by Second, Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, and Violent Crime Clearance Rate* to operationalize city performance in public safety of the Valley cities in Arizona. The public safety-related performance measures used in this study are required or recommended by the U.S. Department of Justice and ICMA Open Access Benchmarking to measure the performance of police departments nationwide (National Institute of Justice; Davis, 2012; ICMA Performance Management Advisory Committee). Police response time, crime rates in violent crime and property crime, as well as crime clearance rate are measures of police success (Ren et al. 2005). Traditionally, these measures are the indicators of the performance and effectiveness of a police department (Moore 1992; Blumstein 1999; Wells 2007; Davenport, 2007; Gultekin 2009). Recent studies suggest a strong relationship between crime rates and people's perception of police performance. Residents are less satisfied with police performance in high-crime areas (Murty, Roebuck, and Davis, 1990). Police response time significantly affects people's satisfaction with the police (Carter, 1985; Percy, 1980). There is a strong, positive correlation between police response time and police performance (Priest and Carter,1999).

Performance measures and performance data utilized by this research are collected and

published by the Valley Benchmark Communities Consortium (VBC). VBC is a regional network of thirteen cities located in the Phoenix Metro Area. Representatives of member cities meet monthly to review and create performance measures for benchmarking, reporting annual performance data of various city services, and learning from each other on performance improvement. VBC members define performance measures in various public service fields, discuss data collection, and conduct performance analysis, in order to make sure the performance measures developed can be accepted and used by VBC member cities for performance management across the Valley.

Performance measures of police operations are published by VBC and are used to operationalize the performance of a city in public safety. Local government is the level of government that provides key public services to its residents. Local government also has internal agencies such as Human Resources, Finance, Budget, and Information Technology that provide internal support for the operations of city departments. Police services are key public services provided by a local government that are directly related to local residents and have a profound impact on a city's growth.

"Public safety is the first duty of government" (Friedman, 2021, p. 2). It is an essential city service provided by local government to residents and businesses of a jurisdiction. From a practitioner's perspective, public safety funding requests are often prioritized during the annual budget allocation of a local government and shielded from budget reductions. As a key public service, public safety initiatives often receive strong support from the community.

As a law enforcement agency, police department is in charge of preventing, detecting, and investigating crimes. The number of violent crimes, the number of property crimes, crime clearance rate are key performance measures of the Police Department in every city that need to be

reported to the U.S. Department of Justice annually. Police Response Time is also a widely used performance measure in the industry for crime response and crime prevention, which is a key indicator of police performance on the Annual Report of the Police Department of a locality.

Crime-related public safety measures impact a city's growth and affect people's relocation decisions. Marshall (1979)'s research shows that crime rates affect white households' decisions on where to live in a metropolitan area but have no impact on the new households when they move into a metropolitan area. Crimes in central cities have a moderate effect on white households' decisions to move into the suburbs. Ellen and O'Regan's study (2009) discovered that cities can retain households by reducing the number of crimes as people may migrate to the suburbs that have lower crime rates.

Crime has a modest impact on overall city growth (Ellen and O'Regan, 2009). An increase in crime rates leads to a population loss in central cities (Cullen and Levitt, 1999). Crime rates have the greatest influence on people's relocation decisions in a metropolitan area. White households, families, and those who are better educated are sensitive to changes in crime rates (Cullen and Levitt, 1999). Oh (2005) contended that population migration is a result of crime and economic opportunity. Through studying the 55 largest central cities in the U.S. from 1970 to 1980, Sampson and Wooldredge (1986) discovered that crime rate has a negative impact on white and black population growth in central cities.

Through studying 137 cities from 1976 to 1993, Cullen and Levitt (1996) concluded that increasing crime rate in cities is correlated with depopulation in cities. A 10 percent increase in crime rate results in a net population reduction by 1 percent. Crime reduces a city's population by increasing outmigration. Seventy percent of people who left central cities because of crime still live in the metropolitan area. "Households with children are twice as responsive to crime as households

without children" (Cullen and Levitt, 1996, p. 6). Crime-related out-migration also causes a $5,500 decline in the median housing value of cities studied (Cullen and Levitt, 1996).

In terms of crimes and employment growth, Gould, Weinberg, and Mustard's study (2002) concludes that there is a statistically significant relationship between crime and unemployment. The empirical literature found "moderate, but often inconclusive evidence that unemployment rates are positively associated with crime" (Gould et. al, 2002, p. 45). Gould, Weinberg, and Mustard's study (2002, p. 50) proves that "a 3.05% increase in unemployment predicted a 7.1% increase in property crime and a 3.8% increase in violent crime. The unemployment rate of non-college-educated men explains 24% of the total increase in property crime and 8% of the increase in violent crime."

The influence of police service on local growth is obvious. A city cannot grow without increasing its population and expanding its businesses. No one wants to live in an unsafe environment. No company would like to conduct business in a high-crime area. Cullen and Levitt (1999)'s research proves that rising crime rates have a negative impact on a city's growth in population. Using a panel of 137 cities over the period 1976-1993, their study discovered that each additional crime reported is correlated with the reduction of one city resident. Safety and security is the first and foremost requirement of an individual to relocate and live in a city. It is also a key factor when businesses make their decision for growth and expansion in an area.

Theoretical Framework

This study builds on the theoretical framework of goal-setting theory, expectancy theory, as well as rational choice theory, and Charles Tiebout's theory of local public expenditures. Goal setting theory claims that management can boost organizational performance and profit by

setting up performance goals of an organization. Expectancy theory states that employees are motivated to receive a reward after they achieve their own performance goal and the organization's performance goal (Addair, 2019).

Rational choice theory posits that people's decisions are rational. They all make decisions to benefit themselves and their families and minimize risks and costs. Rational choice theory applies not only to individuals but also various organizations (Martinás and Reguly, 2013). Charles Tiebout's theory of local public expenditures claims that multiple local government located in a metropolitan area will increase competition among governments and enhance the efficiency and effectiveness of government in providing goods and services (Percy, Hawkins, and Maier, 1995).

Goal-Setting Theory

Goal-setting theory is based on achievement motivation - working to achieve a standard of excellence (McClelland, Atkinson, Clark, and Lowell, 1953) and is the most important theory of 73 theories rated by organizational behavior scholars (Van der Hoek et al., 2018). It is one of the most tested theories in organizational behavior with more than a thousand studies that support its development in the last forty years (Mitchell and Daniels, 2003).

Goal-setting theory claims that management can boost performance and profit by helping employees set effective goals (Locke & Latham, 1990). Difficult goals drive higher performance than easy goals (Latham & Locke, 2018; Locke & Latham,1990). Goal-setting theory has three underlying premises: "(1) Goals function as immediate determinants of behavior, (2) Specific and difficult goals lead to high levels of absolute performance, and (3) For this to happen, individuals must be motivated by a perceived discrepancy between current performance and the desired goal. Self-evaluation occurs when individuals compare their desired goal state with

current performance levels" (Kanfer, 1990, p.75). "The theory's core premise is that the simplest and most direct motivational explanation of why some people perform better on work tasks than others is because they have different performance goals" (Locke and Latham, 1990, p. 15). Goal-setting theory is not just used by private sector, public sector also utilizes goal-setting theory to improve performance management. Many state and local governments use balanced scorecard (BSC), a strategic planning and management system to develop strategic planning, establish goals and objectives, and set up performance measures to track the progress of an organization to achieve goals and objectives (Balanced Scorecard Institute, 2021). From a practitioner's perspective, local government uses goal-setting theory in the performance management process. During budget discussions, departments set the targets of performance measures for service delivery and internal operations, and implement initiatives and programs to meet or exceed their performance targets.

There are four reasons that established goals can motivate people to achieve higher performance. First, goals provide a direction for employees to work towards. Second, goals energize people to continue working until achieving their goals. Third, having a goal is a challenge that people want to achieve. Finally, established goals also urge people to think creatively to complete them through business process improvement and reform (Latham, 2004; Seijts & Latham, 2005; Shaw, 2004). The relationship between goal and performance is moderated by "goal commitment, feedback regarding progress in achieving goals, task complexity and situational resources" (Locke and Latham, 2002, p.706). Goal-setting theory considers goals as the determinants of an individual's behavior. The established goals motivate individuals to improve their performance and meet the performance target.

Goal-setting theory is supported by multiple studies, which showed that setting goals is related to performance enhancement (Ivancevich & McMahon, 1982; Locke & Latham, 2006; Umstot, Bell, & Mitchell, 1976). The study conducted by Pritchard et al. (1988), for example, estimated that setting performance goals for an organization could improve its performance by at least ten to twenty-five percent. In order to improve performance, goals should be clearly defined, easy to quantify, challenging to complete, and possible to achieve in a given timeframe (Blanchard, Zigarmi, & Zigarmi, 2015).

Logger Study and Goal-Setting Theory

Edwin A. Locke developed the goal-setting theory in 1968 based on 400 laboratory and field studies over 25 years (Locke and Latham, 1990, 2002). Goals are defined as "the object or aim of an action" (Locke and Latham, 2002, p.705). He claimed that "people will be motivated to strive towards goals" (Locke, 1968, p.22). Detailed and challenging goals can result in higher performance of a task than vague, easy, and abstract goals, such as "do your best" goals under the condition that "a person is committed to the goal, has the requisite ability to attain it and does not have conflict goals" (Locke and Latham, 2002, p.265). Because the "do your best" goal is vague and ineffective, a specific goal is ideal for improving performance. There is a "positive linear relationship between goal difficulty and task performance" (Locke and Latham, 2002, p.705).

Latham and Baldes's (1975) classic logger study provides a salient example of how goal setting can be used to enhance performance. The study focused on the performance of the logger team in loading the truck before and after setting a specific goal for performance. In their study, Latham and Baldes observed that the performance results of logging teams indicated that they

had been regularly loading their truck approximately 60 percent full, which was far from the maximum capacity of the truck. Later, management and the union agreed to set the goal of 94 percent of the maximum capacity for the logger team to achieve. Although the loggers received no rewards or punishment for achieving or failing to reach the goal, there was a spike in performance in the month after the 94 percent goal was introduced, in which the truck weight averaged 80 percent of capacity. The performance of loggers continued to climb to just over 90 percent of capacity, where it plateaued for the last six months of the study.

Latham and Baldes (1975) argued that before the performance goal was introduced, the loggers were operating under the "do your best" goal, which was not effective in performance improvement when compared to the challenging and specific goal of 94 percent. Latham and Baldes's study demonstrated that goal setting is an effective method for improving employees' performance.

The established goal draws attention to activities that are related to goals. It also increases the effort and persistence of the individuals to achieve the goal (Heath, Larrick, and Wu, 1999). Latham and Locke (1991) argued that goal setting theory is effective because of "the psychological process of self-regulation, which serves as a mediator between setting goals and performance" (Kanfer and Ackerman, 1989, p.658). Self-regulation is "the modification of thought, affect and behavior" (Karoly, 1993, p.14). Locke and Latham (2002) claimed that the impact of various goals on performance is different. A meta-analysis conducted by Locke and Latham (1990) shows that there is a linear relationship between the level of difficulty of the goal and the performance of individuals: the more challenging the goal is, the higher the performance of the individuals.

The meta-analysis conducted by Locke and Latham (1990) suggested that the performance of individuals can suffer under the "do your best" goal, as compared to the specific and difficult goals. Locke's (1982) meta-analysis also studied the impact of impossible goals. The performance under impossible goals surprisingly improved slightly compared to the performance under difficult goals as "participants shifted the focus from reaching the goal to simply getting close to the goal" (Locke, 1982, p.512). Impossible goals lead to superior performance when compared to "easy and do your best" conditions (Locke, 1982, p.512). Although impossible goals are not much supported by academic study, it is still more effective than not setting a goal.

The goal-setting theory provides individuals and organizations with a measure of excellent performance that they can use to judge their own performance (Latham and Locke, 1991). The theory is found to be effective in many tasks and conditions for individuals, groups, teams, divisions, and organizations (Porter and Latham, 2013; Locke and Latham, 2013). Individuals and organizations can also adjust behaviors to make their performance meet the expectation of the goal (Latham and Locke, 1991). The goal-setting theory "acknowledges that moderators, such as goal importance, self-efficacy, and feedback affect the outcome" (Sorrentino, 2006, p.21). So, setting an appropriate goal, providing support and encouragement to teammates, and having a regular feedback system could improve organizational performance.

The Benefits of the Goal Setting Theory

The benefits of the goal-setting theory are supported by multiple studies, which show that setting goals is positively related to the performance enhancement of an organization (Ivancevich & McMahon, 1982; Latham & Locke, 2006; Umstot, Bell, & Mitchell, 1976). The

study conducted by Pritchard (1988) estimated that setting the performance goals of an organization could improve its performance by at least ten to twenty-five percent. Schmidt (2013) calculated the economic benefits of goal setting based on utility analysis. His studies concluded that given an average output of $50,000 per employee per year, the average boost of an employee's output is $9,200 a year when there is a goal-setting intervention. Locke and Latham (2002) stated that performance can be improved by directly rewarding employees who have achieved their preset goals.

Baum and Locke's (2004) longitudinal study on the performance of small venture entrepreneurs in six years discovered that the future growth of an organization can be predicted by factors, such as growth goals, self-efficacy of the entrepreneurs, and organizational vision. Frayne and Geringer (2000) found in an experimental-control group study of insurance salespeople that the performance of employees can be improved by self-management training on "self-monitoring, goal-setting and relapse prevention components" (p.362). The result was also validated for salespersons on goal setting and the performance of sales (Brett and Van de Walle, 1999). Neal, Wood, and Drolet's (2013) studies on public and private organizations discovered that "challenging goals combined with appropriate strategies produce stronger performance effects than either one alone." Setting goals with the approaches to achieve them helps to greatly improve the performance of an organization rather than just setting a goal itself (p. 960).

Performance and Knowledge of Results as Determinants of Goal Setting

Cummings et. al (1971) studied the relationship between previous performance, knowledge of results, and their influence on goal setting. They found out that simply adding an additional task based on previous performance can "exert a significant positive impact" on the

previously set goals. The knowledge of results ("past performance to use as a standard for appraising knowledge of results in order to set goals") also affects goals significantly (p. 527). "Correct knowledge of results increases goal level significantly above that generated by no knowledge of results" (Cummings et al, 1971, p. 527). In local government operations, the knowledge of results is used to determine the performance target of governmental service. Department directors set their performance targets for various governmental services during the budget discussion. The general knowledge of understanding and acknowledgment of the established performance targets will help departmental management in allocating resources and long-term planning, in order to achieve the performance goals.

The performance management program of a local government is implemented using the goal-setting theory. From many practitioners' perspective, city governments in Richmond, Virginia and Phoenix metro area incorporate goal-setting into their budget process. Goal-setting theory also links to the budget priorities of a local government. The City council establishes the strategic plan of a local government every four to eight years and sets up goals and performance measures for the city to achieve in the next four to eight years. The budget document is a blueprint for a city government to implement the city council's strategic plan on an annual basis. Through working with departments, the Office of Management and Budget or the Performance Management Office establishes budget priorities, goals and performance targets of departments and tracks the performance results regularly. According to the previous studies on goal-setting theory (Latham and Baldes, 1975; Locke and Latham, 1990, 2002; Heath, Larrick and Wu, 1999; Kanfer and Ackerman, 1989), the performance management program could improve departmental performance and service delivery, thus enhancing the citizens' overall satisfaction with city services.

For the cities in the Valley of Arizona, each city set its own performance targets of governmental services, as recommended by the Government Finance Officers Association (GFOA) and listed on the city's annual budget document. City management and department executives often set up performance targets of various governmental services to guide internal management and service delivery. Serving as a regional performance management consortium of cities in Arizona, the Valley Benchmark Communities Group (VBC) publishes annual performance report which gathers performance data of participating cities in key service areas. Although VBC does not set up or publish performance targets in its report, as it is the responsibility of the city management of each city, the comparison of performance data of valley cities in various services provided does give background information for city management to establish their performance targets of services used in cities located in the Valley.

Expectancy Theory

The study addresses the research question: *Does performance in public safety of a city lead to more growth of a municipality?* When a local government establishes its annual performance targets on crime prevention and crime reduction utilizing the goal-setting theory, how to execute them by the police department and achieve the performance targets are directly tied to the expectancy theory. Developed by Vroom in 1964, expectancy theory explains workplace motivation and employee performance. It links performance management to the performance outcomes of an organization from a human resource management perspective (Huff, 2007).

Vroom (1964) claimed that there is a correlation between employee performance and motivation. Vroom indicated that "employees are motivated by their logic of effort equivalent to the reward that the employee is going to perform in a specific manner to receive a perceived

incentive" (Addair, 2019, p. 16). Expectancy theory is based on the concepts of valence (how important is the goal to an individual), expectancy (what is the worth of the goal to that individual) and how much effort an individual would like to put to attain the goal (Lloyd & Mertens, 2018).

Vroom's theory is based on the principle that an employee believes that he/she could receive the desired reward after meeting performance goals through his or her specific degree of effort (Blotnicky, Mann, & Joy, 2015; Hema Malini & Washington, 2014). The theory is based on the concept that the degree of motivation of an individual to act is determined by the strength of expectancy that the act could produce an anticipated outcome or achieve a specific goal (Atkinson, 1964; Ramli & Jusoh, 2015). Previous factors only affect the motivation of individuals in their current conditions (Vroom, 1964; Bourne, Pavlov, Franco-Santos, Lucianetti, and Mura, 2013). Heneman and Schwab (1972) claimed that a motivational behavior driven by valence and expectancy will produce the outcome. Vroom (1964) explained that an individual's action is based on the calculation of the probability of the outcome. The job performance of an individual is determined by his/her motivation and aptitude (Heneman and Schwab, 1972). Expectancy theory bridges the relationship between anticipated results and action. An individual's action is based on the probability of the outcome while considering other factors that are outside of a person's control (Vroom, 1964).

Vroom's expectancy theory has four assumptions (Parijat and Bagga, 2014). The first assumption is that individuals who join the organization have some expectations of their motivations and desires based on previous experience (Parijat and Bagga, 2014). Secondly, an individual's behavior is deliberate and from their own choice. Thirdly, employees can be motivated by different factors, such as job security, promotion, bonus, career development, work-life balance, etc. Lastly, employees think about the improvement of their work on a personal level (Parijat and

Bagga, 2014). These four assumptions of the expectancy theory are important for management to be aware of, in order to motivate their employees.

An individual's behavior is based on his/her analysis of the perceived outcome of the behavior and the expectation of the desired reward from such behavior (Terera, & Ngirande, 2014). Individual employees' belief in preferred work performance yields the performance results that employee values (Vroom, 1964). Employees have different value factors that motivate them to put in the efforts that are necessary to achieve their organizational goals (Soni & Rawal, 2014). As a result, employees' performance relies on the perceived value of the outcome based on the factors that motivate them (Soni & Rawal, 2014). Valence is "the value associated with the outcome of their efforts" (Soni & Rawal, 2014, p. 38). In order to motivate employees, valence needs to be worthwhile for employees to be willing to make their efforts to receive the reward (Purvis, Zagenczyk, & McCray, 2015). Vroom's expectancy theory did not articulate the exact rewards that could motivate employees as the rewards that each employee needs are different. An individual's decision is based on the perceived outcome that they will receive the reward after achieving the performance goal (Purvis et al., 2015). Chiang and Jang's (2008) modified expectancy theory model includes five elements: expectancy, extrinsic instrumentality, intrinsic instrumentality, extrinsic valence, and intrinsic valence. Javiland and Ebrahimabadi's study (2011) discovered that the employee's education level affects extrinsic instrumentality. The higher the education level of the employee, the more bonuses, pay increases, and promotions are expected.

Expectancy theory relates to the research question on the performance management of a city. An effective performance management system establishes specific, measurable, attainable, relevant, time-based (SMART) goals and disseminates the goals across all levels of government (Ozlen & Hasanspahic, 2013). Expectancy theory is important for managers to know on what to

use and how to motivate employees using recognition, bonus, empowerment, promotion, etc. (Ozlen & Hasanspahic, 2013).

There is a natural connection between expectancy theory and goal-setting theory in performance management. Motivation includes different approaches on what to do to guide employees to achieve their performance goals in business operations. The established goals need to be attainable for employees to be motivated to accomplish them (Vroom, 1964). Expectency theory establishes a connection between the performance of an employee and the outcome of the employee's behavior. It means that individuals can be motivated and encouraged by achieving their own goals, together with the performance goals of the organization (Berson, Halevy, Shamir, & Erez, 2015; Vroom, 1964). Employees have the motivation to achieve the goals they set for themselves as there is a link between the outcome and their efforts to accomplish the goal (Berson et al., 2015).

Rational Choice Theory

Rational choice theory is "a framework for understanding and modeling social and economic behaviors" (Blume and Easley, 2008, p.2). Rational choice theory posits that social behavior is an aggregate of the behaviors of individual actors, each of whom makes their individual decisions (Blume and Easley, 2008). This study examines the relationship between the performance of a city in public safety and the growth of a city. Residents and businesses drive a city's growth in a locality. A city grows when more and more residents move into the city. Businesses are established to serve local residents. Businesses and residents all make rational decisions to maximize their interests and benefits when they choose to move into a locality based on rational choice theory. Rational choice theory provides the theoretical

framework for a city's growth.

The History of Rational Choice Theory

Rational choice theory has a long history of development. It stems from the three observations of Aristotle in 350BC: 1) "The same thing is deliberated and chosen; 2) Deliberate not about ends, but about means; and 3) Wish relates rather to the end, the choice to the means" (Aristotle). In 1651, Thomas Hobbes defined the concept of rational choice theory as "all the voluntary actions of men tend to the benefit of themselves; and those actions are most reasonable, that conduce most to their ends" (Hobbes and Malcolm, 1994, p. 121). Hobbes recognized that the rational behaviors of human beings are bound by morality. David Hume (1740) recognized that the decision-making process of humans is influenced by passion and choice. He stated that "reason is a slave of the passions with passions neither reasonable nor unreasonable, but reason is the agent when passions are manifested by choice into action" (Hume, 1740, p. 37). An illustrative example of the rational choice theory is the prisoner's dilemma, in which each prisoner wants to make his/her rational decision in order to maximize their own benefit (Peterson, 2015).

Rational choice theory not only applies to individuals but also to organizations. Buchanan & Tullock (1962) claimed that "they are not glorifying self-interest, but rather observing it, and that insofar as this pursuit of self-interest does take place, it should be taken into account in the organization of the political constitution" (p. 308). They argued that "collective action is composed of individual actions and on the rejection of any organic interpretation of the state." The state is created by individuals and subject to "change and perfection" (Buchanan & Tullock, 1962, p. 308). A city is composed of residents who live in the city. Each resident makes his or her rational

decision. Groups of residents of a city, such as organizations, businesses, and families also take collective actions that benefit the interests of certain groups.

The Theory

Rational choice theory is "a framework for understanding and modeling social and economic behaviors" (Blume and Easley, 2008, p.2). This theory is developed and redeveloped in social sciences by Homans (1961), Coleman (1973), and Becker (1981) (Siebert and Martin, 2014). It tries to explain "how and why individuals act as they do, and the consequences of such action for organizations and societies" (Siebert and Martin, 2014, p.178). Rational choice theory claims that:

> all actions and decisions by individuals are rationally motivated and calculative, even when they appear to be irrational or non-rational, and that it is these rational choices by individuals in their interaction with others that are able to explain complex social phenomena such as effective labor markets, organizational change, and organizational effectiveness. As such, the theory is methodologically individualist and reductionist in attributing all organizational actions and outcomes to individual agency. So, individuals are seen to be motivated by expectations of consequences and to exercise choice rationally by evaluating the consequences for their own and collective aims among a series of consequences (Siebert and Martin, 2014, p. 177).

Social behavior is an aggregate of the behaviors of individual actors, each of whom makes their individual decisions (Blume and Easley, 2008). Rational choice theory not only applies to individuals, but also to groups of individuals that include "firms, families, social movements, political parties, governments, racial and ethnic groups, churches or scientists, as

they all are assumed to optimize their utility functions" (Zafirovski, 1999, p. 48). Rational choice theory applies to social groups, which are "formed by agents who have similar goals or interests [concerning the same topic] and who are mutually believed to be members of the group" with their topic of concern considered to be the group's "ethos" (Peter and Schmid, 2008, p.17).

People make rational decisions by maximizing benefits and minimizing risks and costs for themselves. Rational choice theory links the performance of a city and the growth of a city. No businesses or individuals like to live/stay in a city where it takes hours for police to respond to a 911 call or there is no one to take calls for fire or emergency service. No businesses or individuals want to relocate to a city where the roads and bridges are full of potholes. No one enjoys living in a city that has days of delay in trash collection and snow removal services. No employees or residents would like to live in a city that has sub-standard libraries, parks and recreation services for residents and families. As a result, more individuals and families are willing to move to cities/counties that provide better city services, which drives local growth by increasing local population and tax base.

A business's decision-making process is also rational. Low crime rates, quality of life (such as services provided by local library, park, and recreation facilities), public infrastructure, and quality education services all affect businesses' decision to open a branch or relocate to a locality. As a business expands in a city/county, it promotes the growth of the locality by increasing employment and per capita income of the jurisdiction.

One important reason people relocate to another city or jurisdiction is the availability of job opportunities. Businesses, especially big companies always conduct a comprehensive study before establishing their businesses or a branch in a certain location (Conroy et al., 2016). Quality of life, crime rates, police and fire services, tax burden, demographics, and the quality of local schools are

factors that affect the decision of a business to locate in a city (Conroy et al., 2016). As a high-performing city, the response times of police, fire and emergency service are faster. It has better street maintenance and quality public service. Good appealing cities and neighborhoods attract businesses and residents. As a result, more people and businesses are willing to relocate to these high-performing municipalities to maximize benefits to themselves and their families.

Maximizing Utility or Happiness

Rational choice theory assumes that when people make a decision, they first evaluate the expected benefits versus anticipated costs and consequences. Their decision is the one that they think will bring them the most benefits (Martinás and Reguly, 2013). Early neoclassical economists, like William Stanley Jevons, claimed that individuals make decisions on what to purchase in order to maximize their utility or happiness. It is a consistent ranking of choices and alternatives (Till, 2012). As a rational person, individuals make decisions and choices to maximize benefits or utility to themselves or their families. "Choosing rationality becomes equivalent to maximizing utility which seeks the greatest fulfillment of pre-existing passions" (Allingham, 1999, p. 1). Rational choice "maximizes the satisfaction of preferences by individual actors" (Hindess, 1988, p. 103).

As an application of the rational choice theory, Hanna Nurmi (1998) created the setting of decision theory to describe the decision-making process in a disinterested environment. Nurmi (1998) outlined three conditions for decision-making: certainty, risk, and uncertainty. In an environment with certainty, the decision-maker should know all the information about the environment and the outcome of their choice. So, they will select the choice that can maximize the utility towards their goal (Nurmi, 1998). In a risky environment, decision-makers assess the

probabilities, outcomes and consequences based on the risk and make the decision that has the highest probability to maximize their utility. Under an uncertain environment, the decision-maker does not know the probability of the outcomes and the consequences of their decisions; therefore, the decision-maker cannot make rational decisions to select the choice that can maximize the utility (Nurmi, 1998).

In any of the three aforementioned situations (certainty, risky, or uncertainty), rationality plays a key role in the decision-making process, during which individuals seek to maximize the utility of the decision they make. The decision-maker "chooses between preferred alternatives in their goal to make optimal choices in specified environments" (Nurmi, 1998, p. 67). Simon (1976, p.67) claimed that goal specificity and formalization contribute to the rational behavior of an organization. He disagreed with Taylor's "economic man" assumption. Economic man is used to describe a rational person with full knowledge who wants to maximize his/her own utility or satisfaction (Kenton, 2020). Simon (1976, p.67) proposed the "administrative man" who would like to pursue his/her self-interest. The data and information that an economic man uses to make rational decisions are readily publicly available. The performance data of a municipality is available from the city performance report and/or their annual budget document and is accessible to the public. Other data such as tax rates, crime rates, and school ratings are also readily available on the internet. Individuals and businesses can make decisions in a certain environment that can maximize the utility for themselves and their families. It is a belief that based on the rational choice theory, the higher the performance of a city, the more likely more people and businesses will choose to relocate to the higher-performing city, which will also spur the growth of a locality.

Criticism

Rational choice theory has faced strong criticism and challenges from scholars in social science. Cookson (1994) claimed that human behavior is very complex, and their motives are not transparent. Rationality cannot provide an adequate explanation of all human behaviors. Kelman (1987, p. 121) argued that rational choice theory "contaminates the wellsprings of public behavior by bringing the motivations of the market into human behaviors that can be altruistic." Verba (1996, p. 7) stated that Rational choice theory has strong theoretical grounds but fails to predict "who will participate and how much they will participate." While no single theory can explain the complex motive of human behaviors, rational choice theory helps businesses and individuals better understand the motivation of human actions.

Critics of the rational choice theory claim that people's behaviors are not completely rational, and the rational choice theory cannot explain every behavior of an individual. Simon and Tagliabue (2018, p. 93) claimed that people's behavior is not always rational. "Positive reinforcement and indirect suggestions" can influence people's or group's behavior and decision-making (Simon and Tagliabue. 2018, p. 93).

Criticism of the rational choice theory uses practical and theoretical bases. Practical criticism claims that rational choice theorists "did not ask the right kinds of questions." The theory does not include sufficient "observed phenomena" and test it empirically (Green, 2002, p. 51). Theoretical criticisms of the rational choice theory stated that the assumptions of the rational choice theory are not completely true (Green, 2002). The criticism of rational choice theory also states that the theory fails to recognize the non-rational behavior of humans and the impact of emotion, pathology, and moral on people's behavior (Blau, 1997).

Critics also point out that even when people's behavior is rational, how do performance

measures play into the individual's decision-making process? People generally do not check a city's performance data when they choose a place to live. It is true that regular citizens generally know little about performance measures and performance data of a city. However, the performance of a city is not only reflected by performance data but also by the general perception of the public. People may not know the crime statistics of a city, but they have a general perception of which parts of the city are safe, and which parts of the city they should avoid from what they learned from media reports. There is no doubt that the rising crime rates of New York City in the 1970s had a negative impact on the city's population growth. In 1980, the city lost 10.4 percent of its population, compared to that in 1970, according to the U.S. Census. In 1975, there were 1645 murders in the city. As a comparison, New York City recorded 461 homicides in 2009, a record low since 1963 (Walker, 2010). The continuous low crime rates of the city contribute to the population growth and the growth of the city in the 21st century. It shows that the performance of the police department does affect people's decision to move into or move out of a city.

Charles Tiebout's Theory of Local Public Expenditures

Charles Tiebout's theory of local public expenditures claims that "a multiplicity of jurisdictions in the metropolis constitutes a market of governments that fosters the efficient allocation of public goods and widens the service choices available to citizens" (Percy et al, 1995, p.1). Scholars argued that "fragmented government enhances the efficiency and responsiveness of the jurisdictions that compete with one another". As people can freely move from one city to another, local governments in a region need to improve city services and lower tax rates, in order to be competitive in the region and attract new residents. Residents consider government as the provider of public goods and services. A fragmented government can increase competition among governments and enhance its efficiency and effectiveness in providing public goods and services (Percy, Hawkins, and Maier, 1995, p.1).

There is a direct link between rational choice theory and Charles Tiebout's Theory of Local Public Expenditures. Vincent Ostrom's studies focused on the relationship between rational choice theory and governmental administration in a democratic society (Frederickson and Smith, 2003). He claimed that rational choice theory is not only a means for "understanding bureaucratic behavior and the provision of public services but as a distinct theory of public administration" (Frederickson and Smith, 2003, p 213). Ostrom argued that the rational choice theory of administration "provides a balance and foundation for public administration based on the democratic principles of the U.S. Constitution" (Ostrom, 1974, p. 153). Ostrom stated that there was an increasing involvement of citizens in the policymaking process and dissemination of power. He argued that "a democratic administration has a more heterogeneous, 'bottom, up' character in contrast with ordered, trickle-down hierarchies." Ostrom considered the hierarchical order

accountable to a single center of power, less capable of serving the diverse needs among citizens and coping with diverse conditions, and less cost-efficient than a polycentric administration, in which "many local public authorities each pursues its own aims in a seemingly uncoordinated manner" (Ostrom, 1974, p. 126; Thiel et al., 2019).

Researchers believe that public services and taxes influence people's choice of moving and where to live (Percy, Hawkins, and Maier, 1995). Research conducted by Percy, Hawkins, and Maier (1995) discovered that compared to renters, homeowners were significantly more likely to be aware of taxes, the quality of schools and local public services. Percy et al. (1995)'s study discovered that 43 percent of survey respondents indicated that less crime and greater public safety will influence their decision to relocate to a jurisdiction. 27 percent cited good schools as an attraction. 20 percent of people surveyed indicated that the quality of public service affects their decision to move. 12 percent of people who answered the survey considered lower tax rates as a factor for them to select where to relocate.

Local government is a monopoly of public service in a city/county. Multiple city/county governments located in a region create competition among local governments for businesses and residents. Local governments need to improve the efficiency and effectiveness of internal operations and service delivery, in order to strengthen the tax base by attracting more businesses and residents. Business organizations and individuals make rational decisions to maximize benefits for themselves. They would like to move to a city/county that has quality public service, lower tax rates and better quality of life. Charles Tiebout's theory of local public expenditures and rational choice theory provides a theoretical framework that links the performance of a city in public safety and the growth of a city.

Performance Management and Local Growth

While performance measures and performance management are often seen in public policy and public administration literature, “little attention has been given” to the relationship between city performance and local growth (Kwon and Gonzalez-Gorman, 2014, p. 675). Peterson (1981) claimed that cities have a fundamental interest in local economic development, as it increases local revenues, tax base and the quality of local services. Economic growth is key to the survival, growth, and development of a city in competition with other cities. Performance measures are also developed to track the effectiveness of local economic growth programs and achievements. Performance measures used in economic growth can provide accountability for a city’s economic development programs (Lindblad, 2004). Performance measures can also minimize the political influence on local growth and hold all parties accountable regardless of the form of government (Feiock et al., 2003).

There were few studies on performance measurement and local growth (Lindblad, 2004). Sullivan and Green’s (1999, p. 273) study discovered that “population size, economic development staff size and government as the lead factors in economic development decisions.” Studies also revealed the importance of quality of life in local growth. Quality of life (QOL) is “the degree to which an individual is healthy, comfortable, and able to participate in or enjoy life events” (Britannica, 2016, para. 1). The World Health Organization (WHO) defines QOL as “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (WHO, 2012, p. 11). Quality of life “relates to the shared environment in which people live” (Helburn, 1982, p. 451). It is the “necessary conditions for personal satisfaction and happiness” (McCall, 1975, p. 232).

Quality of life is believed to be vital in promoting economic development and job growth by attracting and retaining investment, businesses, and residents. (Schmenner, 1982; Hall et al., 1987; Bosman and de Smidt, 1993; Johnson and Rasker, 1995). It plays a key factor in the decision-making of businesses and individuals in relocation. Grayson and Young (1994) stated that quality of life is an important factor for new industrial and commercial activities. It is a significant element in the decision-making process for business relocation (Hart and Denison, 1987). Quality of life drives businesses and individuals to relocate to a city/county. Quality of life is a significant drive in the out-migration from cities to counties in the U.S. (Williams and Jobse, 1990). Professionals, skilled workers, and their families moved from urban cities to smaller towns and cities mostly due to quality of life and environmental reasons (Keeble, 1990). By analyzing the migration patterns in the U.S., Williams and Jobse (1990) concluded that quality of life, not economic factors was the key to explaining out-migration from urban cities. Findlay and Rogerson (1993) concluded from interviews that quality of life was important to more than 70 percent of migrants, more important than employment opportunities, living costs, or family ties.

Governmental policies and operations affect the quality of life of a locality by improving public safety, enhancing public education and the quality of public service provided by local government. Performance management can improve governmental operations and service delivery in environmental management and sustainability, public safety, education, public health, public housing, business climate, etc. As a result, the enhanced quality of life could attract businesses and individuals and promote local growth. Therefore, there is a logical tie between performance management and a city's growth.

Measuring the Growth of a City

While there are many articles and discussions on the growth of a city, researchers use different approaches. From the perspective of the U.S. Census, a city's growth is measured by population and the number of housing units. The U.S. Census publishes the *Fastest Growing U.S. Cities* every year, which ranks the growth of cities by the percentage of change of population of a city every year in the U.S. (U.S. Census).

The World Bank and MIT City Form Lab measure urban growth by examining the indicators in six areas: economic, transportation, energy, political, geographic, and demographic determinants (The World Bank, 2012). The **economic determinants** include: Average Household Income, GDP, Gini Coefficient, Crime Rate, Average Household Size, Cost of Living, Land Prices, Total Number of Jobs, and Total Number of Business Establishments. The **transportation determinants** include: Vehicle Miles Traveled, Transit Ridership and Car Ownership. The **energy determinants** include: Average Household Energy Consumption, Material Energy Expenditure and Transportation Energy Expenditure. The **political determinants** include Regulatory Climate and Corruption. The **geographic determinants** include Temperature and Water Resources. The **demographic determinants** include: Total Population, Share of Aging Population and Share of Foreign-Born Population (The World Bank, 2012).

Besides U.S. Census Bureau, *Forbes* magazine also publishes *America's Fastest-Growing Cities* every year. It uses data from Moody's Analytics and ranks the growth of U.S. cities by economic indicators (population growth rate, unemployment rate, wage growth, and median household income), public service indicators (violent crime rates) and public administration indicators (city credit ratings, and debt per household) (Forbes). Scholars use different indicators to

operationalize the growth of a city. A review of literature is to select appropriate measures to operationalize the dependent variable – the growth of a city. A study from the University of Glasgow categorized the indicators for measuring the growth, development and performance of a city as follows:

> (1) population (mortality, fertility, population projections), (2) economic participation (employment, unemployment, vacancies), (3) poverty (access to bank accounts, children poverty, financial hardship, low-income households), (4) health (life expectancy, inability to work), (5) social capital (social inclusion, social networks, trust and reciprocity, civic participation), (6), environment (green environment, open space, air quality, recycling), (7) transport (transport volume, journeys to work and school, traffic accidents, cycling), (8) education (children education, the highest qualification obtained, the qualification of the working population, training of young people), (9) safety of local communities (overall level of crime, antisocial behavior, violence, unintentional injuries), (10) lifestyle, (11) cultural vitality (involvement in sport and cultural events), and (12) mind-set (religion, politics, involvement in the community, trust, national identity) (Mavrič and Bobek, 2015, p. 62).

In his article *Cities, Information and Economic Growth* (1993), Harvard professor Edward L. Glaeser not only discussed the indicators that measure the economic growth of cities, but also the relationship between the indicators. Glaeser (1993) discussed four indicators to measure the economic growth of a city: population, per capita income, unemployment rate and per capita crime rate. Glaeser's study (1993) found there is a positive correlation between city population growth and income growth, city population growth and the percentage of local residents that are college-

educated, city population growth and income growth. There is a negative correlation between income growth and unemployment, a negative relationship between growth in violence and the percentage of college educated.

Glaeser et al. (1995) claimed that population growth is a good key indicator to measure the economic growth of a locality as it represents the extent of a city's attractiveness to people and businesses who are willing to relocate. Income growth reflects a locality's standard of living (Glaeser et al., 1995). Glaeser et al. stated that "high education levels, low unemployment and low exposure to manufacturing industries" are the main factors that contribute to the growth of a city. They believed that high education levels attract technology and business growth, thus stimulating growth in population, employment, and people's income (Glaeser et al., 1995, p. 18).

In addition to population, per capita income is also an important factor to measure city growth. Studies conducted by Kimberly Vachal (2005) considered population and real per capita income as two measures for the economic success of mesopolitan economies (Nonmetropolitan and Agricultural Region Cities). Vachal (2005) thought population is a "crude measure of the economic success of a region." It is an indicator to measure how well a municipality attracts and retains a workforce in a jurisdiction (Vachal, 2005, p. 113). However, population does not reflect the standard of living of the people living in a locality. Per capita income provides insights into the standard of living and welfare of the people living in a region (Vachal, 2005). The increase in population, employment and per capita income enhances the competitiveness of a jurisdiction.

Dudensing (2008) considered growth rates of population, employment, and per capita income as three key outcome indicators of the competitiveness of a jurisdiction. The Upjohn Institute and Kleinhenz & Associates (Eberts et al., 2006) created four indicators of the economic growth of a metropolitan area: 1) Gross regional output is the measure of economic activity of a

region; 2) Employment is used to measure the job opportunities for residents and migrants of a locality; 3) Productivity (output per worker) is used to measure the competitiveness of a jurisdiction; 4) Per capita income is an indicator of the standard of living of a region (Dudensing, 2008).

In summary, below are the factors that are commonly used in academic study and are used in this study to measure the growth of a locality:

Population (Growth Rate of Population): Population is the number of people who live in a jurisdiction for a certain period of time. Population data is obtained from the decennial census and the American Community Survey from the U.S. Census Bureau (U.S. Census). Population growth drives the growth of a locality as more people and businesses are willing to relocate to a municipality. Many studies (e.g., Carlino and Mills, 1987; Carruthers and Mulligan, 2008; and Glaeser et al., 1995) use population growth as a key measure for the growth of a locality, as well as the competitiveness of a locality. Population growth has a positive correlation with per capita income as people relocate to another city/county for better job opportunities that typically offer a higher salary than their current job (Carruthers and Mulligan, 2008; Glaeser et al., 1995).

Employment (Unemployment Rate): Employment is the number of jobs available in a jurisdiction. People choose where to live based on where they can find jobs. This is true for not only college graduates, but people who are already in the workforce and seeking promotion and better job opportunities. According to the Brookings Institution (2021), unemployment rate measures the percentage of people over the age of 16 who aren't working but are available and actively looking for work. In this study, unemployment rate is used to operationalize the employment condition of a locality in the Valley of Arizona. A higher employment rate is positively correlated with higher economic growth of a locality (Glaeser et al., 1995). If people

cannot find jobs in the city/county in which they worked, they may have to apply for outside jobs and move to another locality that can offer him/her a suitable job opportunity. Job-related relocation will reduce local population and local total employment. Employment is an outcome measure of the growth of a locality. Employment data is available on the website of the U.S. Bureau of Labor Statistics (U.S. Bureau of Labor Statistics). In the Carruthers-Mulligan model, "employment and population are also explanatory variables, and they are expected to have positive effects on each other" (Carruthers and Mulligan, 2008, p. 163).

Per Capita Income (Per Capita Income of a City): According to the U.S. Census, "Per capita income is the mean income computed for every man, woman, and child in a particular group including those living in group quarters. It is derived by dividing the aggregate income of a particular group by the total population in that group" (U.S. Census Bureau, para. 1). Per capita income is an indicator that measures the productivity and quality of life of the growth of a locality (Eberts et al., 2006; Glaeser et al., 1995). Per capita income data comes from the decennial census and the American Community Survey (Census Bureau) and the *Comprehensive Annual Financial Report* of every city in the study. Per capita income is negatively related to population growth (potential labor supply) but positively correlated to employment growth (labor demand) (Carruthers and Mulligan, 2008).

Hypotheses

The study answers the research question: *Does the performance of a city in public safety lead to more growth of a municipality?* The independent variable of the hypotheses is the performance of a city in public safety. It is measured by the performance management data in public safety reported by individual cities in the Phoenix Metro Area and collected by the Valley

Benchmark Communities Group (VBC), which includes *Police Response Time by Second, Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, Violent Crime Clearance Rate.* The dependent variable of this study is the growth of a locality. Based on the literature review, the growth of a locality is operationalized by three indicators: *the growth rate of population, unemployment rate and per capita income.* The independent variables and dependent variables are discussed in detail in Chapter 3.

The Concept Map

This study builds on the theoretical framework of goal-setting theory, expectancy theory, as well as rational choice theory and Charles Tiebout's theory of local public expenditures. These theories help to frame the hypotheses. Goal-setting theory claims that management can boost performance and profit by helping employees set effective goals (Locke and Latham, 1990). Expectancy theory establishes a connection between the performance of an employee and the outcome of the employee's behavior. Individuals can be motivated and encouraged by achieving their own goals, together with the performance goals of an organization (Berson, Halevy, Shamir, & Erez, 2015; Vroom, 1964). Performance management of local government is an application of the goal-setting theory in managing an organization. Through establishing the vision, mission, goals, objectives and performance targets of an organization, city departments work to meet or exceed performance goals by improving service delivery, business operations and the quality of services provided to citizens and businesses.

Rational choice theory provides a theoretical basis that quality public service may motivate people and businesses to move to a city/county. Charles Tiebout's theory of local public expenditures claims that local governments in a metropolitan area expand public service choices

available to residents (Percy et al., 1995). As the provider of public services, competition among fragmented governments in a region could enhance the efficiency and effectiveness of local government in providing public services (Percy, Hawkins, and Maier, 1995).

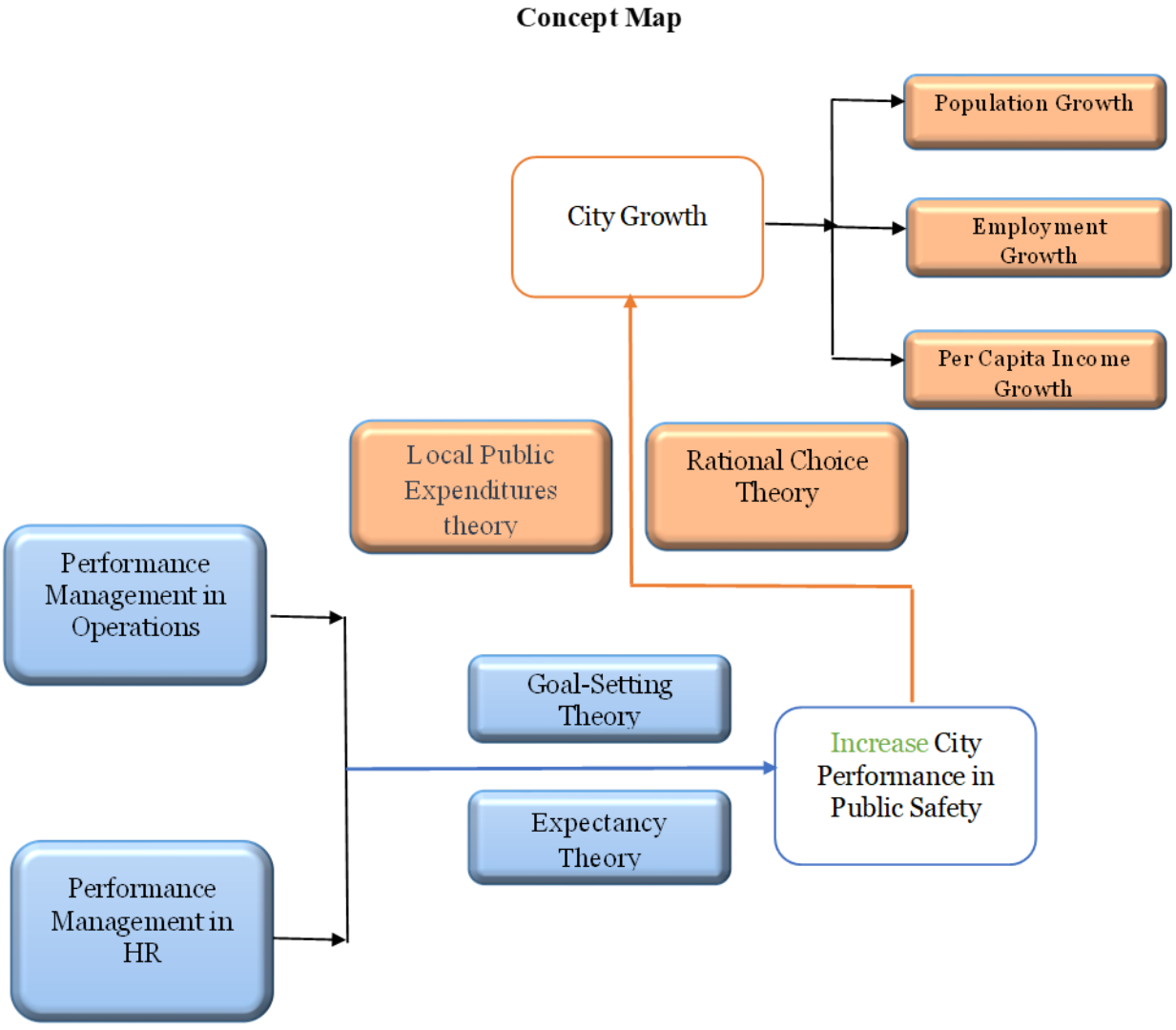
When people look for a place to relocate, they would like to find a place that provides "them [with] their everyday needs and wants: an affordable home, a speedy commute, a good school, a feeling of safety in the streets and satisfaction at work, a place to have fun or meet someone new. Simply put, they want three things: a better life, a safe life, and a connected life" (Siffel, 2018, p.5). Research suggested a link between the performance of the city of residence and the factors that people use to decide where to live and work, such as public safety, affordable housing, transportation, traffic and mobility, quality of life, public education, etc. (Siffel, 2018). 79 percent of survey respondents expect local government to play a role in improving city services and attractiveness (Siffel, 2018). By improving the quality of public service, cities can retain and attract more residents and businesses to relocate to a community, which in turn could promote local growth.

Based on the local public expenditures theory and rational choice theory, residents of a fragmented metropolis may move to a jurisdiction that can maximize their own preferences on taxes and city services. On the other side, cities want to retain and attract more residents and businesses to grow their tax base. As a result, policymakers and city management have an incentive to improve city services and reduce the local tax burden in order to cater to the needs and preferences of local residents (Percy et al, 1995).

The following figure on the next page demonstrates the theories and relationships of various concepts used in this study. It illustrates the relationship between the performance of a city and a city's growth. Goal-setting theory and expectancy theory provide a theoretical

framework of performance management in improving the performance of a city. Rational choice theory and local public expenditure theory link the performance of a city and the growth of a city in population, employment, and per capita income.

Figure 1: The Concept Map



Based on goal-setting theory, expectancy theory, rational choice theory, and Charles Tiebout's theory of local public expenditures, the performance of a city in public safety could have a positive impact on the growth of a locality through residents' and businesses' choices of where to live and where to start a business. These theories guide the development of the hypotheses

that are discussed below.

Based on the theory of rational choice and Charles Tiebout's theory of local public expenditures, it seems reasonable to assume that by improving the performance in public safety, cities can retain and attract more residents and businesses to a community for a safer and more secure place for businesses and families, which could increase the population growth of a locality. Therefore, the following hypotheses can be derived.

Crime Related Public Safety Measures and Population Growth

Research indicates that crime has a modest impact on overall city growth in population (Ellen and O'Regan, 2009). An increase in crime rates leads to a population loss in central cities (Cullen and Levitt, 1999). In 1999, Cullen and Levitt's research proves that rising crime rates had a negative impact on the city's growth in population. Using a panel of 137 cities over the period 1976-1993, their study discovered that each additional crime reported is correlated with a reduction of one city resident. A ten percent increase in the crime rate results in a net population reduction by one percent. (Cullen and Levitt, 1999).

These studies seem to support propositions of rational choice theory and Charles Tiebout's theory of local public expenditures that improving city performance in public safety can retain and attract more businesses and individuals to relocate to the community. Therefore, the evidence leads to this study's hypotheses on the crime-related public safety measures and the population growth of a city:

1. Cities that have a lower *Violent Crime Rate per 1,000 Residents* are more likely to have a higher growth rate of population than those cities that have a higher violent crime rate in the Valley of Arizona.

2. Cities that have a lower *Property Crime Rate per 1,000 Residents* are more likely to have a higher growth rate of population than those cities that have a higher property crime rate in the Valley of Arizona.

Police Response Time and Population Growth

Police response time is defined as the total travel time from a police officer being dispatched to the time of arrival of a police officer to the location of a critical incident (Walker & Katz, 2007). Sherman (1998), and Sherman & Eck (2002) found that fast police response time can increase the ability of police officers to interfere in ongoing criminal activities, reduce harm and deter crimes through arrests. Isaacs (1967)'s study suggests that quick responses from police officers increase the possibility of arrests. Police response time affects the perception of the public on how effectively a police department addresses community concern (Wentz & Schlimgen, 2012). Increasing the police response time by 10 percent could reduce the possibility of the crime clearance rate by 4.7 percent by decreasing the possibility of police in making immediate arrests and the likelihood of a suspect can be identified by a witness or victim (Vidal and Kirchmaier, 2017).

These studies seem to support the propositions of rational choice theory and Charles Tiebout's theory of local public expenditures that improving police response time could increase police performance and public confidence, which in turn could increase the population growth of a locality. Therefore, this evidence leads to the study's hypothesis:

3. Cities that have faster *Police Response Time by Second* are more likely to have a higher growth rate of population than those cities that have a slower response time in the Valley of Arizona.

Crime Clearance Rate and Population Growth

Crime clearance rate is the percentage of crimes that "have been solved, whether through an arrest or some other means" (Black, 1970, p. 734). The data of the study on crime clearance rate uses the Uniform Crime Report from the Federal Bureau of Investigation. Violent crime clearance rate includes data on murder, assault, aggravated assault, rape, and robbery (FBI, 2014). Crime clearance rates are "a clear indicator of police performance and are measured by the number of cases cleared compared to the total number of cases" (Commission for Accreditation for Law Enforcement Agencies, 2003, p. 2). Melinda Rodgers's (2008) study suggests that the outcome of crimes and the clearance of crimes are generally known by the community. Cities that have a high crime rate and a lower crime clearance rate could face an increase in criminal activities based on the broken window effect. As a result, residents are more likely to move to a safer city with fewer crimes. This could lead to a decrease in local tax base, an increase in local tax rates, and lower bond ratings for the city. According to the deterrence theory, a high crime clearance rate may deter criminal activities and reduce the number of crimes as the certainty of punishment is more effective to deter crimes (Becarria, 1764; Bentham, 1879). Tittle and Rowe's (1974) research finds that there is a deterrent relationship between arrest clearance rates and crime rates. Brown (1978) uses crime data in California to demonstrate a deterrent correlation between clearance rates and crime rates. Geerken and Gove (1977) examine the correlation between crime rates and clearance rates by arrests using FBI data in 1970, 1971 and 1973. The results show a deterrent relationship between the crime clearance rate and the number of crimes.

The research seems to support the propositions of rational choice theory and Charles Tiebout's Theory of Local Public Expenditures that the crime clearance rate has a negative

relationship with the number of crimes and may positively impact the growth of the population of a city. Therefore, this evidence leads to this study's hypothesis:

4. Cities that have a higher *Violent Crime Clearance Rate* are more likely to have a higher growth rate of population than those cities that have a lower clearance rate in the Valley of Arizona.

Violent Crime and Population Growth Moderated by Median Home Value

The growth of the population of a community is not only influenced by the quality of public service in public safety provided by local government but the home price of a city. During the COVID-19 pandemic, it is clear that the domestic migration from high home price areas, such as New York and California to low home price areas, such as Texas, Arizona and Florida was driven by housing price and remote work policy. The research tries to discover if the median home value of a city in the Phoenix Metro Area moderates the association between the performance of a city in public safety and the population growth of a city.

In 2019, Peng and Tsai found that the impact of housing prices on migration is statistically positive in the long term. Short-distance relocation is more related to housing prices (Ermisch & Washbrook, 2012; Jones, Leishman, & Watkins, 2004; Peng, Wu, & Kung, 2009; Weinberg, 1979), while long-distance relocation is more related to jobs (Berger & Blomquist, 1992; Gabriel, Shack-Marquez, & Wascher, 1992; Potepan, 1994; Zabel, 2012). Chan (2001, p. 582) argues that "if house prices had not declined, average mobility would have been 24% higher after 3 years and would have been 33% higher after 4 years." Berger and Blomquist (1992) consider the quality of life, wages, and housing prices the most important factors when people choose where to live.

Given the previous studies on the impact of housing price on the growth of the population

of a city, this research tries to discover if the relationship between the performance of a city in public safety and the population growth of a city can be moderated by the Median Home Value of the City. It leads to this study's hypothesis:

5. The Median Home Value of a City moderates the association between the *Violent Crime Rate per 1,000 Residents* and the population growth of a city.

Employment Growth

Employment is a key indicator to measure the growth of a locality as job opportunities are a main reason people choose to live and relocate to a locality. Employment growth is the growth of job opportunities in a jurisdiction. A higher employment rate is positively correlated with the higher economic growth of a locality (Glaeser et al., 1995). The Employment Growth (Growth Rate of Employment) is operationalized by the unemployment rate of a city provided by the U.S. Bureau of Labor Statistics, as there is an inverse relationship between employment growth and unemployment rate. According to the Brookings Institution (2021), the unemployment rate measures the percentage of people over the age of 16 who aren't working but are available and actively looking for work.

Goal-setting theory and expectancy theory claim that through setting up and managing performance goals of an organization and its employees, as well as improving business processes, cities can motivate employees to improve the efficiency and effectiveness of service delivery and the quality of city services. By improving the quality of public service, cities can retain and attract more businesses and residents to a community, which will increase local employment and reduce the local unemployment rate. Performance measures in public safety published by Valley Benchmark Communities Consortium are used to operationalize the

independent variable – the performance of a city in public safety. The unemployment rate is used to operationalize the dependent variable - the growth of a locality.

Charles Tiebout's theory of local public expenditures explains why people move across cities. Supporting evidence from Gramlich and Rubinfeld (1982)'s survey of Michigan households discovered that residents in urban/suburban areas were much more satisfied with public services than residents in rural areas who have fewer towns they can move to. Bishop and Cushing (2008, p. 32) also use data to show that people "vote with their feet" by moving from city to city. This study examines the impact of city performance in public safety on the employment growth of a locality in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area (Valley) of Arizona. Taken together the previous studies conducted by Locke and Latham (1990), Seijts and Lathan(2005), Shaw (2004), Ivancevich and McMahon (1982), Umstot, Bell, and Mitchell (1976), Latham and Baldes(1975), Pritchard (1988), Baum and Locke (2004), Frayne and Geringer (2000), (Cummings, 1971), Vroom (1964), Blotnicky, Mann, and Joy (2015), Hema Malini and Washington (2014), Heneman and Schwab (1972), and Purvis (2015), goal-setting theory and expectancy theory will increase the performance of individuals and organizations. Performance management of a municipal government will improve internal operations and city service delivery. Rational choice theory applies not only to individuals but also to organizations (Peter and Schmid, 2008). Better city services will attract businesses and families to relocate to a city/county based on Charles Tiebout's theory of local public expenditures, thus increasing the employment (decreasing the unemployment rate) of a locality.

Crime Related Public Safety Measures and Employment Growth

In terms of crime-related public safety measures and employment growth, Gould, Weinberg, and Mustard's study (2002) concludes that there is a significant relationship between crime and unemployment. The empirical literature found "moderate, but often inconclusive evidence that unemployment rates are positively associated with crime" (Gould et. al, 2002, p. 45). Gould, Weinberg, and Mustard's study (2002, p. 50) proves that "a 3.05% increase in unemployment predicted a 7.1% increase in property crime and a 3.8% increase in violent crime. The unemployment rate of non-college-educated men explains 24% of the total increase in property crime and 8% of the increase in violent crime."

This research seems to support the propositions of rational choice theory and Charles Tiebout's theory of local public expenditures that improving performance in public safety can positively impact the growth of employment of a locality. Therefore, this evidence leads to the study's hypotheses on the crime-related measures in public safety and employment growth:

6. Cities that have a lower *Violent Crime Rate per 1,000 Residents* are more likely to have a lower unemployment rate than those cities that have a higher rate in the Valley of Arizona.
7. Cities that have a lower *Property Crime Rate per 1,000 Residents* are more likely to have a lower unemployment rate than those cities that have a higher rate in the Valley of Arizona.

Police Response Time and Employment Growth

No business wants to operate or expand in a high-crime area. The quality of police

protection and crime rates not only affect people's decisions to relocate, but also the decisions of businesses to open a new branch and expand in a locality. Isaacs (1967), Vidal and Kirchmaier (2017) and Wentz & Schlimgen (2012)'s studies indicate that faster police response time can increase crime clearance and the possibility of arrests and bring a quick solution to a crime. It can be reasonably assumed that faster police response time could increase the business confidence in operation and expansion in an area and provide consumers a safe environment, which contributes to the employment growth of a locality. The research seems to support the propositions of rational choice theory and Charles Tiebout's theory of local public expenditures that improving police response time could increase business confidence in operations and expansion, which in turn could increase the employment growth and decrease the unemployment rate of a locality. Therefore, this evidence leads to the study's hypothesis:

8. Cities that have faster *Police Response Time by Second* are more likely to have a lower unemployment rate than those cities that have a slower response time in the Valley of Arizona.

Crime Clearance Rate and Employment Growth

Melinda Rodgers's (2008) study discovers that there is a positive correlation between the crime clearance rate and the deterrence of criminal activities. A high crime clearance rate could deter and reduce potential crimes (Becarria, 1764; Bentham, 1879; Tittle and Rowe, 1974; Brown, 1978; Geerken and Gove, 1977). Crime has a negative impact on business confidence and business investment. It is reasonable to assume that an increase in the crime clearance rate could deter future criminal activities and boost business confidence in hiring and expansion. The research seems to support the propositions of the rational choice theory that a higher crime clearance rate could deter

future crimes and attract more businesses to invest and expand in a safer community. Therefore, the evidence leads to this study's hypothesis:

9. Cities that have a higher *Violent Crime Clearance Rate* are more likely to have a lower unemployment rate than those cities that have a lower clearance rate in the Valley of Arizona.

Per Capita Income Growth

Per capita income is "the mean income computed for every man, woman, and child in a particular group including those living in group quarters. It is derived by dividing the aggregate income of a particular group by the total population in that group" (U.S. Census, para.2). Per capita income is an indicator that measures the productivity and the quality of life of the growth of a locality (Eberts et al., 2006; Glaeser et al., 1995). The per capita income data comes from the American Community Survey of the U.S. Census (U.S. Census Bureau).

Several studies discovered that crime-related public safety measures and per capita income are both influenced by economic growth cycles (Acemoglu et al., 2001; Acemoglu & Robinson, 2006). Freeman (1996), Glaeser & Sacerdote (1999), Glaeser, Sacerdote, & Scheinkman (1999), and Zenou (2004) found that there are more crimes in poor neighborhoods than in wealthy areas. They suggest there may be an inverse relationship between the number of crimes and per capita income as the higher the per capita income the wealthier the neighborhood. Hsiang et al. (2013) found a strong inverse relationship between crime and per capita income. Pereira and DeMenezes's (2020) study suggested that "an increase of GDP per capita by 1 percent reduces the municipality homicides by 0.79 percent in total, 0.5 percent directly and 0.3 percent indirectly" (p. 1397).

The research seems to support the propositions of rational choice theory that by improving

the quality of public service, cities can retain and attract more residents and businesses to a community. It seems fair to assume that the competition among businesses for talents could drive up the salary offered in the region, which could increase the per capita income of a community. Therefore, this evidence leads to this study's hypotheses:

10. Cities that have a lower *Violent Crime Rate per 1,000 Residents* are more likely to have a higher per capita income growth rate than those cities that have a higher rate in the Valley of Arizona.
11. Cities that have a lower *Property Crime Rate per 1,000 Residents* are more likely to have a higher per capita income growth rate than those cities that have a higher rate in the Valley of Arizona.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

The research goal of the study is to discover the relationship between city performance in public safety and the growth of a locality through hypothesis testing.

This study addresses the research question:

Does the performance of a city in public safety lead to more growth of a municipality?

The purpose of the study is:

to determine if there is a relationship between city performance in public safety and the growth of a city among the 11 cities in the Valley in Arizona. It aims to discover whether the performance of a city in public safety (gauged by the performance data of 11 cities in the Valley of Arizona from 2010 to 2019 in the field of public safety (police) has a positive, negative, or no impact on the growth of a locality (gauged by changes in population, unemployment rate and per capita income of each of the 11 cities in the Valley of Arizona from 2010 to 2019) in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

The Independent Variables

The independent variable of the hypotheses is the performance of a city in public safety, which is operationalized by the factors discussed below. The performance data of a city in public safety is measured by the performance management data reported by individual cities and collected by the Valley Benchmark Communities Group (VBC). The independent variable is operationalized by the performance measures in public safety developed and collected by VBC.

The Valley Benchmark Communities Group (VBC) was established in 2011. It is a consortium of performance management professionals from major cities in the Phoenix Metro Area, which includes Chandler, Gilbert, Glendale, Mesa, Peoria, Phoenix, Scottsdale, and Tempe. The group currently has thirteen member cities in the Phoenix MSA after Avondale, Goodyear, and Surprise joined in 2013; Queen Creek and Buckeye joined in 2021. VBC also partners with the Maricopa County Association of Governments (MAG) and the International City/County Management Association's Center for Performance Analytics.

The VBC working group convenes every month to discuss city performance measures and performance management, share best practices of governmental operations and analyze performance trends and results. The performance measures used in the study were discussed by the working group of VBC, of which every city agrees to use the same method to collect data for each performance measure. The independent variables use datasets submitted by member cities of VBC. The consensus on performance measures and data collection ensures that the research, analysis, and results come from the comparison, and the research results can be used to quantitatively evaluate the performance of a city.

The independent variables of this study are:

1) *Police Response Time by Second (PRT)*: Police Response Time is "the average length of time it takes for police to arrive after a top priority call is received of a locality" (VBC Report, 2014, p. 10). The eleven cities of VBC agreed on what types of calls are considered top priority calls. Top Priority Police Calls are the "incidents that involve crimes in progress or just occurred. These would be of serious nature or have a high degree of immediate personal danger or harm" (VBC Report, 2014, p. 10).
2) *Violent Crime Rate per 1,000 Residents (VCrimeR)*: The crime statistics and population

data come from the Uniform Crime Reporting (UCR) published by the Federal Bureau of Investigation (FBI). The types of violent crimes include murder and nonnegligent manslaughter, rape, robbery, and aggravated assault (FBI).

3) *Property Crime Rate per 1,000 Residents (PCrimeR)*: Property crimes "impact people but are not intended to cause direct physical harm upon a person" (VBC Report, 2014, p. 14). The crime statistics and population data came from the Uniform Crime Reporting (UCR) published by the Federal Bureau of Investigation (FBI). The types of property crimes include burglary, larceny-theft, and motor vehicle theft (FBI).
4) *Violent Crime Clearance Rate (CrimeClearR)*: Defined by the FBI, the violent crime clearance rate is "collected by calendar year and is calculated by dividing the number of crimes cleared via a charge being assessed by the total number of crimes reported in a given year. Considering the complexity of some cases, some charges will be included outside of the year when the crime occurred" (VBC Report, 2014, p. 15).

In this study, performance data collected and published by the Valley Benchmark Communities Consortium (VBC) are utilized to operationalize the independent variables and dependent variable. VBC is a regional network of member cities located in the Phoenix Metro Area. From 2011 to 2019, it had grown from eleven member cities to thirteen member cities. The representatives of member cities meet monthly on defining performance measures in various public service fields, data collection, and performance analysis. They meet to develop performance measures that can be used by member cities across the region. Member cities also collect performance data and report to VBC annually.

Performance measures in police are published by Valley Benchmark Communities Consortium and are used to operationalize the independent variable. Local government is the level

of government that provides key public services to its residents. Police is a type of public service provided by a local government that is considered essential to local residents and businesses and has a profound impact on a city's growth.

The connection between police service and local growth is obvious: no one wants to live in an unsafe environment. No business would like to be in a high-crime area. Safety and security is the first and foremost requirement of an individual to relocate and live in a city. It is also a key factor when businesses make their decision for growth and expansion in an area. A city cannot grow without increasing its population and expanding its businesses.

This research uses the city's performance in public safety as the independent variable to examine whether city performance in public safety has a positive, negative, or no impact on the growth of a locality. There are different kinds of performance measures: input, output, outcome, efficiency, and quality. When the Valley Benchmark Communities Consortium created the performance measures, the city representatives did not focus on creating performance measures by various types; rather, they focused on the performance results of the resources utilized in different fields. These performance measures are considered outcome or output measures by academic standard. A factor analysis using SPSS is conducted in order to make sure that no two independent variables are highly correlated. The study uses population growth, unemployment rate, and per capita income to operationalize the dependent variable, which is the growth of a locality.

The Dependent Variables

Below are the dependent variables that are used in this study to measure the growth of a locality:

Population (Growth Rate of Population): Population is the number of people who live in

a jurisdiction for a certain period of time. Population data is obtained from the decennial census and the American Community Survey from the U.S. Census Bureau (U.S. Census). Population growth drives the growth of a locality as more people and businesses move to a municipality. Many studies use population growth as a key measure for the growth of a locality, as well as the competitiveness of a locality (Carlino and Mills, 1987; Carruthers and Mulligan, 2008; and Glaeser et al., 1995). Population growth has a positive correlation with per capita income as people often relocate to another city/county for better job opportunities that typically offer a higher salary than their current job (Carruthers and Mulligan, 2008; Glaeser et al., 1995).

Employment (Unemployment Rate): In the study, unemployment rate is used to operationalize the employment condition of a locality in the Valley of Arizona. According to the Brookings Institution (2021), the unemployment rate measures the percentage of people over the age of 16 who aren't working but are available and actively looking for work. People choose where to live based on where they can find jobs. This is true for not only college graduates, but the people who are already in the workforce and seeking promotion and better job opportunities. A higher employment rate is positively correlated with higher economic growth of a locality (Glaeser et al., 1995). If people cannot find jobs in the city/county in which they worked, they may have to apply for outside jobs and move to another locality that can offer suitable job opportunities. As a result, job-related relocation could reduce the local population and the total number of employment opportunities in that city/county. Employment is an outcome measure of the growth of a locality.

Per capita income: According to the U.S. Census, "Per capita income is the mean income computed for every man, woman, and child in a particular group including those living in group quarters. It is derived by dividing the aggregate income of a particular group by the total population in that group." (U.S. Census Bureau). Per capita income is an indicator that measures the

productivity and quality of life of the growth of a locality (Eberts et al., 2006; Glaeser et al., 1995). Per capita income reflects the dynamics of labor supply and demand on wages. Per capita income is negatively related to population growth (potential labor supply) but positively correlated to employment growth (labor demand) (Carruthers and Mulligan, 2008). The study uses per capita income data from 2010 to 2019 on the *Comprehensive Annual Financial Report* of each city.

The Control Variables

Median Household Income (MHI) and *Percent of Population Below the Federal Poverty Level (Poverty)* are two control variables used in the study. Defined by the U.S. Census Bureau, Median Household Income "includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not. For households and families, the median income is based on the distribution of the total number of households and families including those with no income" (U.S. Census Bureau). The median is the income in the middle. Half of the cases fall below the median income and the other half above the median (U.S. Census Bureau).

Percent of Population Below Federal Poverty Level: "A poverty threshold is a specified dollar amount considered to be the minimum level of resources necessary to meet the basic needs of a family unit. Thresholds vary by the number and age of adults and the number of children under age 18 in the family unit, but they are the same for all states" (Population Reference Bureau). The *Percent of Population Below the Federal Poverty Level* calculates the number of residents of a city who are living below the federal poverty threshold by "size of family and number of related children under 18 years" defined by the U.S. Census in a certain calendar year (U.S. Census Current Population Survey, para. 5).

The Moderator Variable

A moderator variable (M) is "a third variable that affects the strength of the relationship between a dependent and independent variable in correlation. In a causal relationship, if x is the predictor variable and y is an outcome variable, then z is the moderator variable that affects the casual relationship between x and y. Most of the moderator variables measure a causal relationship using a regression coefficient. The moderator variable, if found to be significant, can cause an amplifying or weakening effect between x and y" (Statistic Solutions, para. 1).

In testing the relationship between the performance of a city in public safety and the population growth of a city, the study aims to find out if the Median Home Value of a city effectively moderates the relationship between the performance of a city in public safety and the population growth of a city. Median Home Value is the moderator variable. According to the U.S. Census, Median Home Value refers to the "Median Value of Owner-Occupied Housing Units. Value is the respondent's estimate of how much the property (house and lot) would sell for if it were for sale. This tabulation includes only specified owner-occupied housing units--one-family houses on less than 10 acres without a business or medical office on the property. These data exclude mobile homes, houses with a business or medical office, houses on 10 or more acres, and housing units in multi-unit structures. Certain tabulations elsewhere include the value of all owner-occupied housing units and vacant-for-sale housing units. Also available are data on mortgage status and selected monthly owner costs" (U.S. Census, para. 1-3).

It is a basic economic theory that the price of goods and services will affect the demand from consumers. For the eleven cities located in the Phoenix Metro Area, each city's median home value is different in a certain year and the rate of change of the median home value of each city also varies from 2010 to 2019. The study tries to discover if the Median Home Value of a city

effectively moderates the relationship between the performance of a city in public safety and the population growth of a city.

More specifically, the study hypothesizes that the relationship between the performance of a city in public safety and the population growth of a city will be weaker if the Median Home Value is low. According to the U.S Census Bureau, Phoenix was the fastest-growing big city in the U.S from 2010 to 2020, during which it added 163,000 more residents. Two cities in the Phoenix Metro Area, Buckeye, and Goodyear, were also among the 10 fastest-growing cities in the nation during the decade (U.S. News, 2021). The price of a home definitely affects people's decision to relocate to a city and the population growth of that city. The low Median Home Value could have a bigger impact on weakening the relationship between the performance of a city in public safety and the population growth of a city. The high Median Home Value may not affect the relationship between the performance of a city in public safety and the population growth of a city as the impact of high Median Home Value on population growth is much less than low Median Home Value.

Table 1: Research Variables

Variable Type	Variable Name	Coded in SPSS	Dataset Collection	SPSS Level
Dependent Variable	Change of the population of a City	PopulationCh	Arizona Office of Employment and Population Statistics and Maricopa Association of Governments	Scale
	Unemployment Rate	UnemployR	Bureau of Labor Statistics	Scale
	Per Capita Income	PCI	US Census Annual Community Survey	Scale
Independent Variable	Police Response Time by Second	PRT	VBC Annual Report	Scale
	Violent Crime Rate per 1,000 Residents	VCrimeR	VBC Annual Report	Scale
	Property Crime Rate per 1,000 Residents	PCrimeR	VBC Annual Report	Scale
	Violent Crime Clearance Rate	CrimeClearR	VBC Annual Report	Scale
Control Variable	Median Household Income	MHI	US Census Annual Community Survey	Scale
	Percent of Population Below Federal Poverty Level	Poverty	VBC Annual Report	Scale
Moderator Variable	Median Home Value	MHomeV	US Census Annual Community Survey	Scale

The Study Area

This study focuses on the relationship between city performance in public safety and the growth of a city in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area (Phoenix Metro). It is often referred to as the Valley of the Sun, the Salt River Valley, or Metro Phoenix. It is the 11th largest metropolitan area in the nation by population, according to the U.S. Census estimate in 2018. The Valley has a population of 4,857,962 as of July 1, 2018 (U.S. Census).

According to the analysis of the Maricopa County Association of Governments, The Phoenix MSA accounts for 67% of the total population of Arizona, and 73% of the total employment of the state. The median household income of Phoenix MSA is $58,075 in 2018, which is a little bit higher than the national average of $57,600. (Maricopa County Association of Governments).

Table 2: List of Cities with Population Over 50,000 in Phoenix MSA in 2018

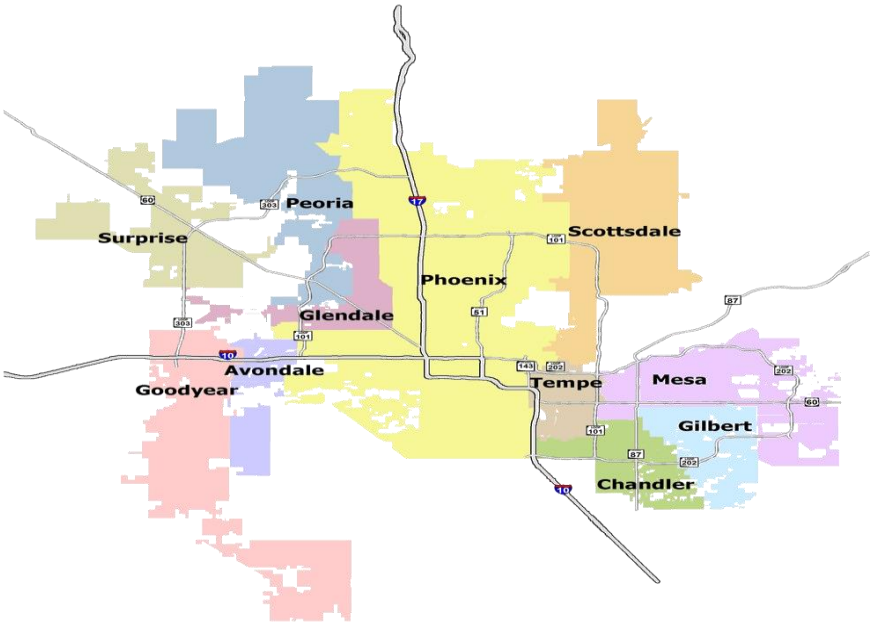
City	**Population**
Phoenix	**1,660,272**
Mesa	**508,958**
Chandler	**257,165**
Scottsdale	**255,310**
Glendale	**250,702**
Gilbert	**248,279**
Tempe	**192,364**
Peoria	**172,259**
Surprise	**138,161**
Avondale	**85,835**
Goodyear	**82,835**
Buckeye	**74,370**
Casa Grande	**57,232**
Maricopa	**50,024**

Source: U.S. Census

This study focuses on eleven cities in the Phoenix MSA, all of which are a member of the

Valley Benchmark Communities Consortium. The eleven cities include Avondale, Chandler, Gilbert, Glendale, Goodyear, Mesa, Peoria, Phoenix, Scottsdale, Surprise, and Tempe. Eleven cities are shown in Figure 2 below.

Figure 2: The Study Area of the Phoenix MSA



Performance Management in Valley Cites

Different from most metropolitan areas in the U.S. that have one urban city and surrounding suburban counties, the Phoenix Metro Area is surrounded by ten major cities with the City of Phoenix as the central urban city. The member cities of the Valley Benchmark Communities Consortium all have a certain level of performance management program in the city. The City of Mesa has a centralized Data and Performance Team to coordinate the citywide performance management program, provide consulting services to departments to improve agency performance, and organize the MesaStat meetings. During MesaStat meetings, city management and department management meet and discuss agency performance status and service delivery. Mesa also uses a

cloud-based performance management dashboard to track 369 performance indicators of all city agencies, establish annual performance targets, and report performance results.

The City of Scottsdale does not have a centralized performance management office. The city uses a Community of Practice (CoP) approach to establish three working groups in performance and data management, process improvement and behavior insights. The three workgroups are composed of staff from various city agencies, and work in a group monthly or bi-weekly on different assignments. An assistant to the city manager oversees the operations of the three working groups and coordinates citywide performance management initiatives. Other cities in the Valley largely follow one of the two models Mesa and Scottsdale adopted to administer their performance management programs. For example, in the City of Phoenix, the staff of the Department of Budget and Research manages the performance initiatives of the city. They publish the City Manager's Performance Dashboard monthly to track citywide performance measures and service delivery.

All major cities in the Valley joined the Valley Benchmark Communities Group for regional collaboration on performance management in 2011. The performance management programs of Valley cities are recognized by International City/County Management Association (ICMA) for incorporating performance management principles into city operations. In 2018, Gilbert and Scottsdale were awarded the ICMA Certificate of Excellence in Performance Management. Mesa and Phoenix were awarded the ICMA Certificate of Distinction in Performance Management for their excellence in performance management.

Data Collection

The study analyzed data provided by the Valley Benchmark Communities Group (VBC).

VBC was established in October 2011 as a consortium of performance management staff from cities and towns located in the Valley of Arizona, or Phoenix Metropolitan Area. VBC includes the eleven largest cities in the Valley: Chandler, Gilbert, Glendale, Mesa, Peoria, Phoenix, Scottsdale, Tempe, Avondale, Goodyear, and Surprise. It also includes the Maricopa County Association of Governments (MAG), and the Center for Performance Analytics of the International City/County Management Association (Valley Benchmark Communities).

The goal of VBC is to enhance performance management across Valley cities by creating performance measures cities can use, reporting and benchmarking with peer cities. Through hosting monthly meetings of member city representatives and the Annual City Managers' Meeting, VBC creates a platform for member cities to learn best practices, share performance information and improve performance management (Valley Benchmark Communities).

Every year, representatives of VBC member cities report performance data to the VBC database. VBC analyst compiles the performance data reported by member cities and creates the *Valley Benchmark Communities Annual Report*. The performance data reported to VBC goes through a vigorous check by city representatives and VBC analysts before being presented to the Annual City Manager's Meeting and released to the public.

The data elements selected for this study are: *Police Response Time By Second, Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, Violent Crime Clearance Rate, Population, Unemployment rate, Per Capita Income, Median Household Income, Percentage of Population Below Federal Poverty Level, and Median Home Value* (Valley Benchmark Communities). Each data point represents the information of each category from 2010 to 2019. The data includes performance data reported by each of the eleven cities in the study to the Valley Benchmark Communities (VBC). The collected data also includes data from the Federal

Bureau of Investigation's (FBI) Uniform Crime Report, Arizona Office of Employment, Maricopa Association of Governments, U.S. Census Bureau, U.S. Bureau of Labor Statistics, and Comprehensive Annual Financial Report of each city in the study (Valley Benchmark Communities).

Secondary Data Analysis

Although primary data collection and analysis is the optimal way to conduct research (Diesing, 1991), it is not always feasible in a social research setting. Researchers like to design and collect first-hand data for their research. However, due to constraints of time and resources, secondary data is often used in social science research. This study aims to discover the relationship between the performance of a city and the growth of the city in Phoenix MSA over ten years from 2010 to 2019. It is infeasible to use primary data collection and analysis tools, such as surveys, interviews, or experiments to collect the historical data of these cities over the years; therefore, using secondary data collection and analysis is an appropriate approach to conduct the study.

Secondary data analysis is "usually applied to inquires where the amount of data is expensive and the cost of collecting the necessary data is prohibitive" (Frankfort-Nachmias and Nachmias, 2000, p. 65). The data used in this study is collected by VBC through annual submission by participating member cities and the U.S. Census.

Advantages of Secondary Data Analysis

Secondary data analysis is a research technique that analyzes data previously collected (Frankfort-Nachmias and Nachmias, 2000). It is a timely and cost-effective way to conduct social science research (Nardi, 2006). In many instances, it is cost-prohibitive and time-consuming to collect the amount of data for conducting a comprehensive analysis. Also, if governmental research

agencies have already collected the related data, it is redundant and costly for individual researchers to collect the data again (Frankfort-Nachmias and Nachmias, 2000). Secondary data can be used to conduct additional studies of the original research based on the collected data (Diesing, 2001), or better understand the situation in one field by using the data collected in another field (Gill and Meier, 2001). Using secondary data is a cost-effective and time-effective way to conduct experimental or exploratory research using the existing dataset (Franfort-Nachmias and Nachmias, 2000). Thus, there is no need for researchers to collect data from scratch. Another advantage of secondary data analysis is that "it allows for replication, especially if utilizing historic data. It has been used by many researchers, such as Durkhiem, Marx and Weber" (Frankfort-Nachmias, 2000).

The purpose of this study is to examine the relationship between the performance management of a city and the growth of a city. The dependent variables of the research are the population, unemployment rate, and per capita income of a city in Phoenix MSA. Performance data of various cities in public safety are independent variables.

Limitations

While there are benefits of secondary data analysis, it certainly has its limitations. Frankfort-Nachmias and Nachmias (2000) list three limitations of using secondary data: inherent limitations, access, and insufficient data. Firstly, as researchers use previously collected secondary data, they will have to accept the limitations and errors from the original data collection, the fallacies of research design, and threats to internal and external validity (Frankfort-Nachmias and Nachmias, 2000). Secondly, as secondary data was collected by other researchers, it is common that only part of the desired dataset is accessible due to confidentiality and privacy requirements. This is especially true when the dataset is available online (Frankfort-Nachmias and Nachmias, 2000). Thirdly, secondary

data may not provide all the desired data for analysis. The previously collected data may only provide part of, not all of the information needed for the study. Researchers need to accept the insufficient data for their research and determine the relationships between variables despite the limitations of the secondary data (Frankfort-Nachmias and Nachmias, 2000).

Statistical Analysis

This study focuses on the relationship between city performance in public safety and the growth of a city. SPSS Statistics software is used to conduct statistical analysis. The primary manners in which data is analyzed are Pearson's correlation and multiple linear regression.

Pearson's correlation: Pearson's correlation is also called Pearson's *r* and is a correlation coefficient used in linear regression. It is used to measure the relationship between two variables (Glen). Pearson's *r* correlation is used to examine the relationship between independent variables (IVs) and the dependent variable (DV) of each hypothesis of this study (Glen). Pearson's *r* correlation coefficient has an r value between -1 and 1. -1 indicates an absolute negative correlation between two variables. 1 indicates an absolute positive correlation. 0 shows there is no relationship between two variables (Glen). A general guideline of r value and correlation is: 1) *r* value = +.70 or higher, very strong positive relationship; 2) *r* value = +.40 to +.69, strong positive relationship; 3) *r* value = +.30 to +.39, moderate positive relationship; 4) *r* value = +.20 to +.29, weak positive relationship; 5) *r* value = +.01 to +.19, no or negligible relationship; 6) *r* value = 0, no relationship; 7) *r* value = -.01 to -.19, no or negligible relationship; 8) *r* value = -.20 to -.29, weak negative relationship; 9) *r* value = -.30 to -.39, moderate negative relationship; 10) *r* value = -.40 to -.69, strong negative relationship; 11) *r* value = -.70 or higher, very strong negative relationship (Glen).

Multiple linear regression: Pearson's r correlation is used to examine the relationship

between independent variables and dependent variables. It does not provide the direction of the relationship. By using multiple linear regression, researchers can determine if the changes in an independent variable influence the change of a dependent variable (Corporate Finance Institute). Multiple linear regression is a statistical technique that predicts the outcome of a dependent variable by using two or more independent variables (Corporate Finance Institute). "The formula of multiple linear regression is

$$\mathbf{Y = \alpha + x_1\beta_1 + x_2\beta_2 + \ldots + x_k\beta_k + \varepsilon}$$

- **Y** is the dependent or predicted variable
- **α** is the y-intercept, i.e., the value of y when both xi and x2 are 0
- **β1** and **β2** are the regression coefficients that represent the change in Y relative to a one-unit change in x1 and x2, respectively
- **βp** is the slope coefficient for each independent variable
- **ϵ** is the model's random error (residual) term" (Corporate Finance Institute).

Multiple linear regression is used to determine if changes in performance data in the fields of public safety affect the population growth, employment growth and per capita income growth of valley cities in Arizona.

Threats to Reliability and Validity (Internal and External)

There are two types of threats to the validity of a study: internal threats and external threats. Internal threats are "experimental procedures, treatments, or experiences of the participants that threaten the ability of this study to draw correct inferences from the data about the population in an experiment" (Creswell, 2014, p 174). Creswell states that "External validity threats arise when experimenters draw incorrect inferences from the sample data to other persons, other settings, past or future situation" (Creswell, 2014, p. 176).

Potential Threats to Internal Validity of This Research

1) **History**: History refers to some unexpected events that happen during the data collection that may affect the results of dependent variables (DVs) (Creswell, 2014). This study uses historic data from 2010 to 2019 collected by the U.S. Census and Valley Benchmark Communities. It is unlikely that any current event could affect the results of the historic data. Historic events from 2010 and 2019 were also examined and found no significant event that could affect the data collection and the results of the dependent variables.

Population data of this study use data collected by the Valley Benchmark Communities Consortium (VBC). VBC utilizes annual population data provided by the Maricopa Association of Governments (MAG) using annual population data of the U.S. Census. In 2017, MAG revised the adopted municipal populations for FY2010-2016 to reflect the 2015 Special Census counts in selected cities (Valley Benchmark Communities Report, 2017). The revision allows for consistency in historical data and comparisons of cities in the Valley (Valley Benchmark Communities Report, 2017).

2) **Maturation**: Maturation means that changes in the dependent variable (DV) may be due to the normal development of the city (Creswell, 2014). The study examines the relationship between the performance of a city and the growth of a city. The dependent variables are population, unemployment rate, and per capita income. While it is possible that the change in DVs may be due to the normal development of a city, the SPSS is conducted to discover if there is any statistically significant relationship between DVs and IVs.

3) **Statistical Regression**: Statistical regression means participants with extreme scores are included in the study, which could affect the research results of the study. The eleven cities of the study are not selected based on certain criteria apart from the location. No sampling is conducted. The study includes all the cities that were members of the Valley Benchmark Communities

Consortium in the Phoenix MSA from 2010 to 2019. Therefore, the research does not intentionally avoid the extreme scores of the participating cities.

4) **Instrumentation**: Instrumentation means any change that occurs during the survey and data collection may affect the internal validity (Creswell, 2014). This potential threat does not apply to the study as the data collection occurred before the study from 2010 to 2019.

5) **Compensatory/Resentful demoralization**: Compensatory/resentful demoralization means unequal treatment of different groups of the survey or data collection may reduce the interest of certain groups' participation (Creswell, 2014). This potential threat does not apply to the study as the data collection occurred before the study, which took place between 2010 and 2019.

Threats to the External Validity of This Research

External validity examines the generalization of the study results. In this study, there is no random sampling used for data collection of the study. Eleven cities selected for this study are located in Phoenix MSA, which include all of the eleven-member cities of the Valley Benchmark Communities Consortium. Therefore, the research results cannot be generalized to draw a conclusion that is applicable nationwide. However, the research results can still provide valuable insights to researchers and policymakers on the relationship between the performance of a city and the growth of a city in one of the largest metropolitan areas of the nation.

CHAPTER 4 HYPOTHESIS TESTING AND DATA ANALYSIS

This study focuses on the relationship between the performance of a city in public safety and the growth of that city. It tries to discover whether the cities that perform better in public safety (gauged by the performance data of 11 cities in the Valley (Phoenix Metro) of Arizona from 2010 to 2019 in public safety) actually grow faster than their peers (gauged by the changes in population, unemployment rate and per capita income of each of the 11 cities in the Valley of Arizona from 2010 to 2019) that did not perform well in public safety in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Research Question 1: What is the relationship between **the performance of a city in public safety** and **the population growth** of a city in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area?

Hypotheses and Null Hypotheses

Hypothesis 1A: There is a statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1A: There is No statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 1B: There is a statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1B: There is No statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 1C: There is a statistically significant relationship between the *Police Response Time by Second* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1C: There is No statistically significant relationship between the *Police Response Time by Second* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 1D: There is a statistically significant relationship between the *Violent Crime Clearance Rate* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1D: There is No statistically significant relationship between the *Violent Crime Clearance Rate* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Pearson's r correlation is used to examine the relationships between IVs and DV of the hypotheses. Before using Pearson's r correlation, it is necessary to check if the assumptions are met for Pearson's r correlation. For the dataset used in this study,

1) All the independent variables and dependent variables are Interval or Ratio (scale).
2) Normality:

2.1) Using SPSS, the skewness of the IVs and DV is examined. All variables are generally within the acceptable range of (-1, 1). [See Table 1-1].

2.2) The Kolmogorov-Smirnov test and the Shapiro-Wilk test indicate that the

Change of the Population of a City, Median Household Income, Percent of Population Below Federal Poverty Level, Violent Crime Rate per 1,000 residents, Property Crime Rate per 1,000 Residents, Police Response Time by Second, and *Violent Crime Clearance Rate* are not normally distributed [See Table 1-2]. In this circumstance, researchers can drop a poorly behaved predictor X from the model, transform a predictor X, or transform the response variable Y. For this study, a square root (Sqrt) transform of the dependent variable (the Change of the Population of a City) is conducted.

After the square root (Sqrt) transform, SPSS test results of skewness, Kolmogorov-Smirnov test, Shapiro-Wilk test, and QQ plot indicate that the *Sqrt_Change of the Population of a City* (Sqrt_PopulationChRate) is approximately normally distributed [See 1-Table 3A, 3B, 3C]. A Pearson's r correlation using SPSS was conducted [See Table 1-4]. The test results indicate that there is a statistically significant relationship between:

- *Change of the Population of a City* and *Violent Crime Rate per 1,000 Residents* (r= -.417, $p < 0.001$)
- *Change of the Population of a City* and *Property Crime Rate per 1,000 Residents* (r= -.419, $p<0.001$)
- *Change of the Population of a City* and *Violent Crime Clearance Rate*

  (r= .262, p=0.009)

- *Change of the Population of a City* and *Police Response Time by Second* (r= -.205, p=0.04)

Therefore, we reject the Null Hypotheses 1A, 1B, 1C, and 1D, and accept the Hypotheses 1A, 1B, 1C, and 1D: there is a statistically significant relationship between *the Change of the*

Population of a City and *the Violent Crime Rate per 1,000 residents, the Change of the Population of a City* and *the Property Crime Rate per 1,000 Residents, the Change of the Population of a City* and *the Police Response Time By Second, and the Change of the Population of a City* and *the Violent Crime Clearance Rate*.

Table 1-1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Change of the population of a City	110	-.0013	.0610	.018807	.0126108	.000	1.061	.230
Median Household Income	110	42260	102793	63726.63	14052.190	197464040.1	.470	.230
% of Population Below Federal Poverty Level	110	.045	.263	.12998	.059950	.004	.510	.230
Police Response Time By Second	100	194	600	316.97	78.267	6125.646	.745	.241
Violent Crime Rate per 1,000 Residents	110	.74	7.92	2.9863	1.75399	3.076	.737	.230
Property Crime Rate per 1,000 Residents	110	11.76	64.10	30.2516	12.56769	157.947	.779	.230
Violent Crime Clearance Rate	101	.23	.72	.4602	.11779	.014	.196	.240
Valid N (listwise)	97							

Table 1-2

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Change of the population of a City	.130	97	<.001	.934	97	<.001
Median Household Income	.085	97	.078	.961	97	.005
% of Population Below Federal Poverty Level	.135	97	<.001	.926	97	<.001
Police Response Time By Second	.091	97	.044	.936	97	<.001
Violent Crime Rate per 1,000 Residents	.134	97	<.001	.916	97	<.001
Property Crime Rate per 1,000 Residents	.170	97	<.001	.928	97	<.001
Violent Crime Clearance Rate	.102	97	.014	.971	97	.031

a. Lilliefors Significance Correction

Table 1-3A

Descriptives

			Statistic	Std. Error
Sqrt_PopulationChRate	Mean		.1322	.00421
	95% Confidence Interval for Mean	Lower Bound	.1239	
		Upper Bound	.1406	
	5% Trimmed Mean		.1312	
	Median		.1288	
	Variance		.002	
	Std. Deviation		.04351	
	Minimum		.04	
	Maximum		.25	
	Range		.21	
	Interquartile Range		.06	
	Skewness		.308	.234
	Kurtosis		-.089	.463

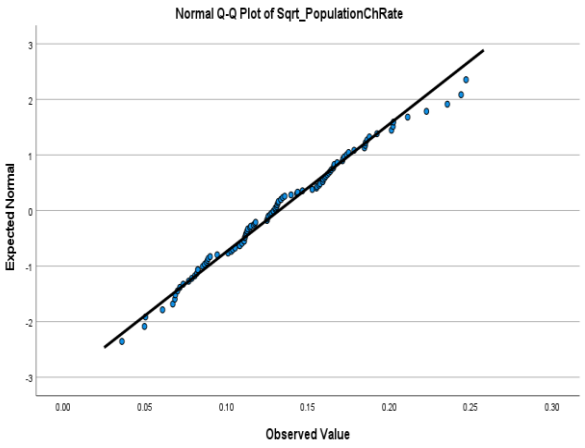
Table 1-3B

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sqrt_PopulationChRate	.078	107	.114	.986	107	.325

a. Lilliefors Significance Correction

Table 1-3C



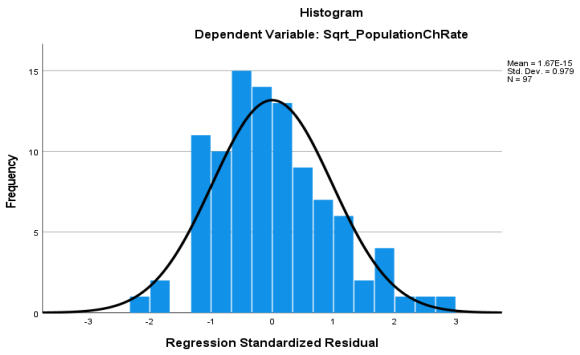


Table 1-4

Correlations

		Sqrt_PopulationChRate	Median Household Income	% of Population Below Federal Poverty Level	Police Response Time By Second	Violent Crime Rate per 1,000 Residents	Property Crime Rate per 1,000 Residents	Violent Crime Clearance Rate
Sqrt_PopulationChRate	Pearson Correlation	1	.446**	-.474**	-.205*	-.417**	-.419**	.262**
	Sig. (2-tailed)		<.001	<.001	.040	<.001	<.001	.009
	N	107	107	107	100	107	107	99
Median Household Income	Pearson Correlation	.446**	1	-.845**	-.060	-.669**	-.709**	.410**
	Sig. (2-tailed)	<.001		<.001	.551	<.001	<.001	<.001
	N	107	110	110	100	110	110	101
% of Population Below Federal Poverty Level	Pearson Correlation	-.474**	-.845**	1	.064	.798**	.839**	-.635**
	Sig. (2-tailed)	<.001	<.001		.530	<.001	<.001	<.001
	N	107	110	110	100	110	110	101
Police Response Time By Second	Pearson Correlation	-.205*	-.060	.064	1	.186	.159	-.130
	Sig. (2-tailed)	.040	.551	.530		.064	.114	.204
	N	100	100	100	100	100	100	97
Violent Crime Rate per 1,000 Residents	Pearson Correlation	-.417**	-.669**	.798**	.186	1	.696**	-.697**
	Sig. (2-tailed)	<.001	<.001	<.001	.064		<.001	<.001
	N	107	110	110	100	110	110	101
Property Crime Rate per 1,000 Residents	Pearson Correlation	-.419**	-.709**	.839**	.159	.696**	1	-.695**
	Sig. (2-tailed)	<.001	<.001	<.001	.114	<.001		<.001
	N	107	110	110	100	110	110	101
Violent Crime Clearance Rate	Pearson Correlation	.262**	.410**	-.635**	-.130	-.697**	-.695**	1
	Sig. (2-tailed)	.009	<.001	<.001	.204	<.001	<.001	
	N	99	101	101	97	101	101	101

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Hypotheses 1E, 1F, 1G, and 1H are based on successful acceptance of the Hypotheses 1A, 1B, 1C, and 1D, as Hypotheses 1E, 1F, 1G, and 1H claim that there is not just a *correlation* between the **Change of the Performance of a City in Public Safety** and the **Change of the Population of a City; t**he **Change of the Performance of a City** *influences* the **Change of the Population of a City** in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 1E: The *Violent Crime Rate per 1,000 Residents* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1E: The *Violent Crime Rate per 1,000 Residents* does not influence the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 1F: The *Property Crime Rate per 1,000 Residents* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1F: The *Property Crime Rate per 1,000 Residents* does not influence the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 1G: The *Police Response Time by Second* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1G: The *Police Response Time by Second* does not influence the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 1H: The *Violent Crime Clearance Rate* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 1H: The *Violent Crime Clearance Rate* does not influence the

Change of the Population of a City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

The analytical technique of multiple linear regression is utilized to test the hypotheses on SPSS. Before conducting the regression test, the study examined whether the assumptions of conducting multiple linear regression are met:

1) There should be at least 20 records for each independent variable. In this study, there are more than 20 records for each independent variable.
2) The dependent variable (DV) needs to be normally distributed. As discussed in the hypothesis testing of 1A, the DV (*the Change of Population of a City*) is not normally distributed. Therefore, a square root (Sqrt) transform of the dependent variable (*the Change of the Population of a City*) was conducted. After the square root transform, the SPSS test results of skewness, Kolmogorov-Smirnov test, and Shapiro-Wilk test, and QQ plot indicate that the *Sqrt_Change of the Population of a City* (Sqrt_PopulationChRate) is approximately normally distributed [See Table 1-3A, 1-3B, 1-3C].
3) Examine the multicollinearity between regressors and remove one of the regressors that has a very strong correlation with the other regressor. The correlation analysis shown in Table 1-7 indicates a very strong correlation ($r > 0.7$ or $r < -0.7$) between:

    - *Median Household Income* and *Percent of Population Below Federal Poverty Level*

      ($r = -0.845$, $p < 0.001$)
    - *Median Household Income* and *Property Crime Rate per 1,000 Residents*

      ($r = -.709$, $p < 0.001$)

- *Percent of Population Below Federal Poverty Level* and *Violent Crime Rate per 1,000 Residents* (r= .798, p < 0.001)

- *Percent of Population Below Federal Poverty Level* and *Property Crime Rate per 1,000 Residents* (r= .839, p < 0.001)

As a result, *Median Household Income* and *Percent of Population Below the Federal Poverty Level* are removed from the analysis of multiple linear regression due to multicollinearity.

Table 1-7

Correlations

		Median Household Income	% of Population Below Federal Poverty Level	Unemployment Rate	Per Capita Income	Police Response Time By Second	Violent Crime Rate per 1,000 Residents	Property Crime Rate per 1,000 Residents	Violent Crime Clearance Rate
Median Household Income	Pearson Correlation	1	-.845**	-.298**	.686**	-.060	-.669**	-.709**	.410**
	Sig. (2-tailed)		<.001	.002	<.001	.551	<.001	<.001	<.001
	N	110	110	110	110	100	110	110	101
% of Population Below Federal Poverty Level	Pearson Correlation	-.845**	1	.288**	-.560**	.064	.798**	.839**	-.635**
	Sig. (2-tailed)	<.001		.002	<.001	.530	<.001	<.001	<.001
	N	110	110	110	110	100	110	110	101
Unemployment Rate	Pearson Correlation	-.298**	.288**	1	-.351**	.088	.200*	.314**	-.261**
	Sig. (2-tailed)	.002	.002		<.001	.384	.036	<.001	.008
	N	110	110	110	110	100	110	110	101
Per Capita Income	Pearson Correlation	.686**	-.560**	-.351**	1	.199*	-.401**	-.473**	.258**
	Sig. (2-tailed)	<.001	<.001	<.001		.047	<.001	<.001	.009
	N	110	110	110	110	100	110	110	101
Police Response Time By Second	Pearson Correlation	-.060	.064	.088	.199*	1	.186	.159	-.130
	Sig. (2-tailed)	.551	.530	.384	.047		.064	.114	.204
	N	100	100	100	100	100	100	100	97
Violent Crime Rate per 1,000 Residents	Pearson Correlation	-.669**	.798**	.200*	-.401**	.186	1	.696**	-.697**
	Sig. (2-tailed)	<.001	<.001	.036	<.001	.064		<.001	<.001
	N	110	110	110	110	100	110	110	101
Property Crime Rate per 1,000 Residents	Pearson Correlation	-.709**	.839**	.314**	-.473**	.159	.696**	1	-.695**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	.114	<.001		<.001
	N	110	110	110	110	100	110	110	101
Violent Crime Clearance Rate	Pearson Correlation	.410**	-.635**	-.261**	.258**	-.130	-.697**	-.695**	1
	Sig. (2-tailed)	<.001	<.001	.008	.009	.204	<.001	<.001	
	N	101	101	101	101	97	101	101	101

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4) There needs to be a linear relationship between IVs and DV. The PP plot is generally along a line. The scatter plot is within the range of (-3, 3). These indicate a linear relationship between IVs and DV [See Table 1-8, 1-9].

Table 1-8

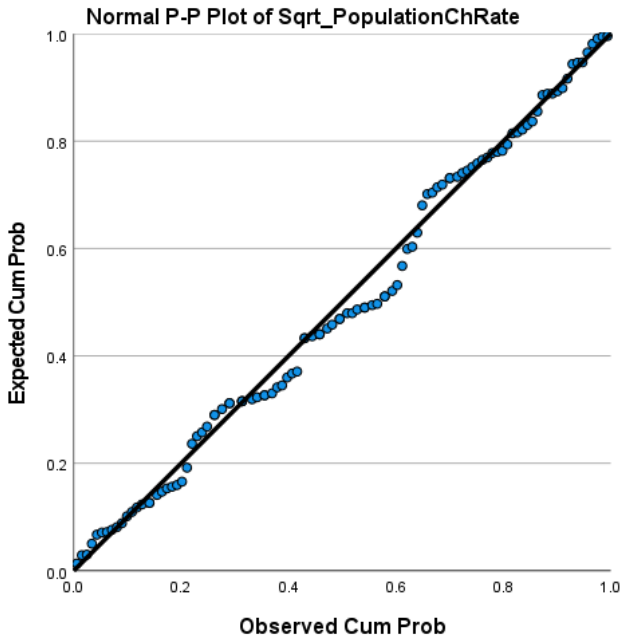
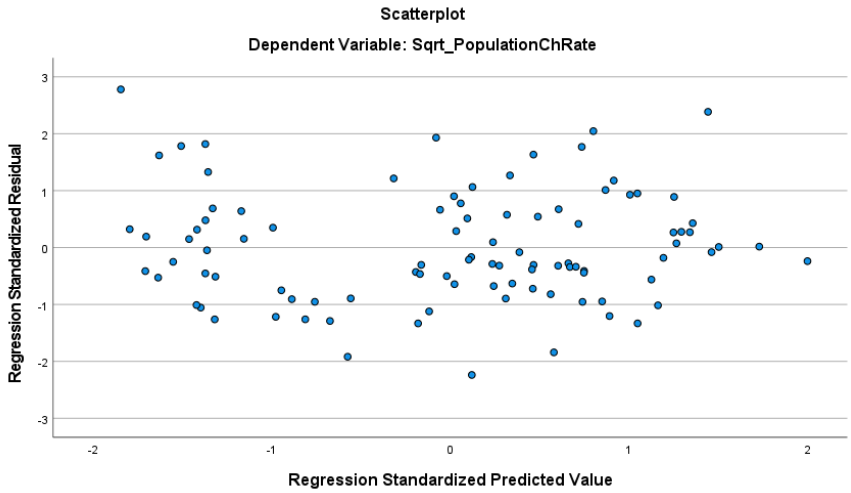


Table 1-9



From the hypothesis testing of 1A, 1B, 1C, and 1D, we learned that the four IVs listed below have statistically significant relationships with the DV (*the Change of the Population of a City*):

- *Change of the Population of a City* and *the Violent Crime Rate per 1,000 Residents (r= -.417, p < 0.001)*
- *Change of the Population of a City* and *the Property Crime Rate per 1,000 Residents (r= -.419, p<0.001)*
- *Change of the Population of a City* and *the Violent Crime Clearance Rate (r= .262, p=0.009)*
- *Change of the Population of a City* and *Police Response Time by Second (r= -.205, p=0.04)*

As the test of multicollinearity removed two control variables (*Median Household Income* and *Percent of Population Below Federal Poverty Level*), the multiple linear regression tests the relationships between the *Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, Violent Crime Clearance Rate, Police Response Time by Second* and *the Change of the Population of a City (DV).*

Tables 1-3A, 1-3B, 1-3C, 1-8, 1-9, and 1-10 indicate that the dependent variable (Sqrt_PopulationChRate) is approximately normally distributed. The VIFs of the independent variables (IVs) are all below 10, which indicates a very small multicollinearity of IVs. The Std. Residuals of variables are within the range of (-3, 3). The Cook's distance is also within the range of (0,1).

Table 1-10

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.221	.038		5.817	<.001					
	Police Response Time By Second	-6.463E-5	.000	-.125	-1.314	.192	-.202	-.136	-.123	.961	1.041
	Violent Crime Rate per 1,000 Residents	-.006	.003	-.241	-1.636	.105	-.375	-.168	-.153	.402	2.488
	Property Crime Rate per 1,000 Residents	-.001	.000	-.295	-2.094	.039	-.392	-.213	-.196	.440	2.273
	Violent Crime Clearance Rate	-.048	.052	-.133	-.921	.359	.259	-.096	-.086	.416	2.405

a. Dependent Variable: Sqrt_PopulationChRate

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.0984	.1679	.1318	.01810	97
Std. Predicted Value	-1.844	2.000	.000	1.000	97
Standard Error of Predicted Value	.004	.016	.008	.002	97
Adjusted Predicted Value	.0746	.1689	.1317	.01862	97
Residual	-.08359	.10384	.00000	.03657	97
Std. Residual	-2.238	2.780	.000	.979	97
Stud. Residual	-2.274	3.082	.000	1.011	97
Deleted Residual	-.08629	.12763	.00004	.03906	97
Stud. Deleted Residual	-2.328	3.237	.003	1.024	97
Mahal. Distance	.265	16.903	3.959	2.927	97
Cook's Distance	.000	.435	.014	.046	97
Centered Leverage Value	.003	.176	.041	.030	97

a. Dependent Variable: Sqrt_PopulationChRate

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Police Response Time By Second	Violent Crime Rate per 1,000 Residents	Property Crime Rate per 1,000 Residents	Violent Crime Clearance Rate
1	1	4.584	1.000	.00	.00	.00	.00	.00
	2	.310	3.849	.00	.01	.16	.02	.03
	3	.054	9.198	.00	.05	.55	.73	.00
	4	.045	10.077	.01	.87	.14	.00	.10
	5	.007	25.632	.99	.07	.14	.25	.87

a. Dependent Variable: Sqrt_PopulationChRate

Using SPSS, the multiple regression analysis [See Table 1-11] revealed that the overall r^2 is .236, wherein the *Violent Crime Rate per 1,000 Residents* accounts for 17.4% of the variability observed *in the Change of the Population of a City* (Sqrt_PopulationChRate) in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. *Violent Crime Rate per 1,000 Residents* is found to be statistically significant as its Sig F Change of each predictor is <.05 (a = .05). *Property Crime Rate per 1,000 Residents, Police Response Time by Second* and *Violent Crime Clearance Rate* were found to be statistically insignificant as the Sig F Change is >.05 (a = .05).

Therefore, the Null Hypothesis 1E is rejected and the Hypothesis 1E is accepted: the *Violent Crime Rate per 1,000 Residents* influences *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. Hypotheses 1F, 1G, and 1H are rejected. The *Property Crime Rate per 1,000 Residents, the Police Response Time by Second* and the *Violent Crime Clearance Rate* do not influence *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Table 1-11

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.417[a]	.174	.165	.03975	.174	20.035	1	95	<.001
2	.454[b]	.206	.189	.03918	.032	3.771	1	94	.055
3	.470[c]	.221	.196	.03901	.015	1.796	1	93	.183
4	.486[d]	.236	.203	.03885	.015	1.806	1	92	.182

a. Predictors: (Constant), Violent Crime Rate per 1,000 Residents

b. Predictors: (Constant), Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents

c. Predictors: (Constant), Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, Police Response Time By Second

d. Predictors: (Constant), Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, Police Response Time By Second, Violent Crime Clearance Rate

e. Dependent Variable: Sqrt_PopulationChRate

Violent Crime and Population Growth Moderated by Median Home Value

The growth of the population of a community is not only influenced by the quality of public service in public safety provided by local government but also the home price of a city. Given the previous studies on the impact of housing price on the population growth of a city (Berger & Blomquist, 1992; Gabriel, Shack-Marquez, & Wascher, 1992; Potepan, 1994; Zabel, 2012; Chan, 2001), this research tries to discover if the relationship between the performance of a city in public safety and the population growth of a city can be moderated by the Median Home Value of the City.

Hypothesis 1J: The *Median Home Value of City* moderates the association between the *Violent Crime Rate per 1,000 Residents* and *the Population Growth of a City*.

- Null Hypothesis 1J: The *Median Home Value of a City* does not moderate the association between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City*.

This research hypothesizes that the relationship between the performance of a city in public safety and the population growth of a city will be weaker if the Median Home Value is low. The price of a home definitely affects people's decision to relocate to a city and the population growth of that city. The low Median Home Value could have a bigger impact on weakening the relationship between the performance of a city in public safety and the population growth of a city. The high Median Home Value may not affect the relationship between the performance of a city in public safety and the population growth of a city as the impact of high Median Home Value on population growth is much less than that of low Median Home Value.

The moderation regression [See Table 1-12] suggests that the Median Home Value of a City statistically significantly moderates the association between the *Violent Crime Rate per 1,000 Residents* and *the Population Growth of a City* (Int_1, P=0.0003). More specifically, in the cities that have a high median home value (MHV=$321,479), the relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City* is not statistically significant (p=0.3708). In the cities that have a mid-level median home value (MHV=$238,106), the relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City* is statistically significant (p=0.0008). There is a negative relationship between the *Violent Crime Rate per 1,000 Residents* and the Population Growth of a City. In the cities that have a low level of median home value (MHV=$154,732), the relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City* is statistically significant (p=0.0000). There is a higher negative relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City*, compared to the relationship with mid-level median home value. Therefore, the null hypothesis IJ is rejected. The relationship between the performance of a city in public safety and the population growth of a city can be moderated by the Median Home Value of

the City.

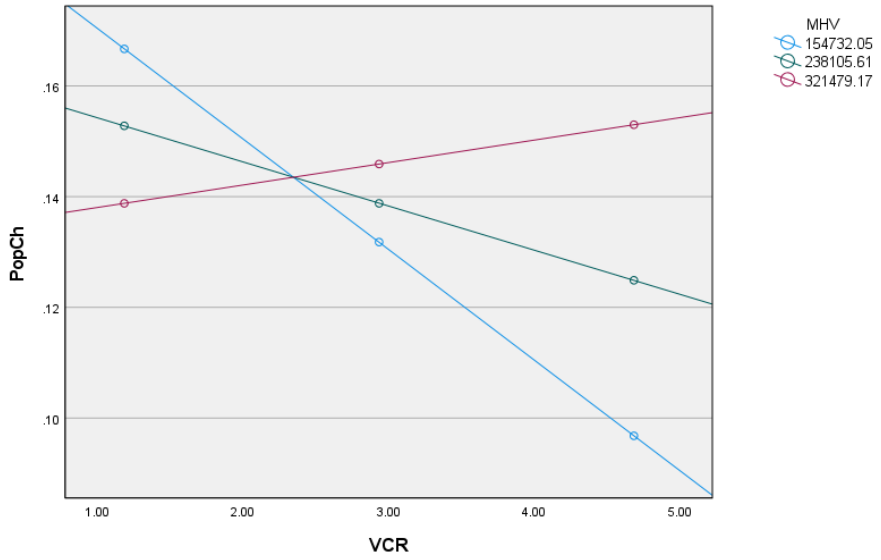


Table 1-12

```
OUTCOME VARIABLE:
 PopCh

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5243      .2749      .0014    13.0177     3.0000   103.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .2427      .0246     9.8538      .0000      .1939      .2916
VCR          -.0423      .0087    -4.8616      .0000     -.0596     -.0250
MHV           .0000      .0000    -3.5226      .0006      .0000      .0000
Int_1         .0000      .0000     3.7521      .0003      .0000      .0000

Product terms key:
 Int_1    :        VCR      x        MHV

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0991    14.0785     1.0000   103.0000      .0003
----------
    Focal predict: VCR      (X)
          Mod var: MHV      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        MHV     Effect         se          t          p       LLCI       ULCI
 154732.050     -.0200      .0033    -6.0413      .0000     -.0266     -.0134
 238105.607     -.0080      .0023    -3.4385      .0008     -.0126     -.0034
 321479.165      .0041      .0045      .8989      .3708     -.0049      .0130

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
 257066.110    69.1589    30.8411
 387299.353    93.4579     6.5421
```

```
Conditional effect of focal predictor at values of the moderator:
        MHV     Effect         se          t          p       LLCI       ULCI
 115400.000     -.0257      .0046    -5.6392      .0000     -.0347     -.0166
 137447.368     -.0225      .0038    -5.8690      .0000     -.0301     -.0149
 159494.737     -.0193      .0032    -6.0808      .0000     -.0256     -.0130
 181542.105     -.0161      .0026    -6.1315      .0000     -.0213     -.0109
 203589.474     -.0129      .0023    -5.6825      .0000     -.0175     -.0084
 225636.842     -.0098      .0022    -4.4123      .0000     -.0142     -.0054
 247684.211     -.0066      .0025    -2.6795      .0086     -.0115     -.0017
 257066.110     -.0052      .0026    -1.9833      .0500     -.0105      .0000
 269731.579     -.0034      .0029    -1.1607      .2484     -.0092      .0024
 291778.947     -.0002      .0036     -.0647      .9485     -.0073      .0068
 313826.316      .0029      .0043      .6932      .4897     -.0055      .0114
 335873.684      .0061      .0050     1.2260      .2230     -.0038      .0160
 357921.053      .0093      .0058     1.6126      .1099     -.0021      .0208
 379968.421      .0125      .0066     1.9026      .0599     -.0005      .0255
 387299.353      .0135      .0068     1.9833      .0500      .0000      .0271
 402015.789      .0157      .0074     2.1266      .0358      .0011      .0303
 424063.158      .0188      .0082     2.3040      .0232      .0026      .0351
 446110.526      .0220      .0090     2.4476      .0161      .0042      .0399
 468157.895      .0252      .0098     2.5660      .0117      .0057      .0447
 490205.263      .0284      .0106     2.6652      .0089      .0073      .0495
 512252.632      .0316      .0115     2.7493      .0071      .0088      .0543
 534300.000      .0347      .0123     2.8216      .0057      .0103      .0592

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   VCR        MHV        PopCh      .
BEGIN DATA.
     1.1841 154732.050      .1667
     2.9340 154732.050      .1318
     4.6839 154732.050      .0968
     1.1841 238105.607      .1528
     2.9340 238105.607      .1388
     4.6839 238105.607      .1249
     1.1841 321479.165      .1388
     2.9340 321479.165      .1459
     4.6839 321479.165      .1530
END DATA.
GRAPH/SCATTERPLOT=
 VCR      WITH     PopCh    BY       MHV      .

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

W values in conditional tables are the mean and +/- SD from the mean.
```

Research Question 2: What is the relationship between **the Performance of a City in Public Safety** and **the Employment Growth of a City** in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area?

Hypotheses and Null Hypotheses

Hypothesis 2A: There is a statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 2A: There is No statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 2B: There is a statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 2B: There is No statistically significant relationship between *the Property Crime Rate per 1,000 Residents* and *the Unemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 2C: There is a statistically significant relationship between the *Police Response Time by Second* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 2C: There is No statistically significant relationship between *the Police Response Time by Second and the Unemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 2D: There is a statistically significant relationship between the *Violent Crime*

Clearance Rate and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 2D: There is No statistically significant relationship between *the Violent Crime Clearance Rate* and *the Unemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Pearson's r correlation on SPSS was utilized to examine the relationship between IVs and DV of the hypotheses. Before using Pearson's r correlation, it is necessary to check if the assumptions are met for Pearson's r correlation. For the dataset used in this study,

1) All the independent variables and dependent variables are Interval or Ratio (scale).
2) Normality:

2.1) Using SPSS, the skewness and kurtosis of the IVs and DV were examined. All variables are generally within the acceptable range of (-1, 1) [See Table 2-1].

2.2) The Kolmogorov-Smirnov test and the Shapiro-Wilk test indicate that *Unemployment Rate, Violent Crime Rate per 1,000 residents, Property Crime Rate per 1,000 Residents, Police Response Time by Second, and Violent Crime Clearance Rate* are not normally distributed [See Table 2-2]. In this circumstance, researchers can drop a poorly behaved predictor X from the model, transform a predictor X, or transform the response variable Y. In this study, an inverse transform of the dependent variable (Unemployment Rate of a City) is conducted after the unsuccessful log10, log2, and square root transforms to create a normally distributed dependent variable.

After the inverse transform, the SPSS test results of skewness, Kolmogorov-Smirnov test, and QQ plot indicate that the *Unemployment_Inv* is approximately normally distributed with the sample size n>100 [See Table 2-3].

A Pearson's r correlation test and a Spearman's rho test were conducted using SPSS [See Table 2-4]. Both test results indicate that there is a statistically significant relationship between:

- *Violent Crime Rate per 1,000 Residents* and *the Unemployment Rate of a City* (p=0.038)
- *Property Crime Rate per 1,000 Residents* and *the Unemployment Rate of a City* (p<0.001)
- *Violent Crime Clearance Rate* and *the Unemployment Rate of a City* (p=0.032)

The relationship between *the Police Response Time by Second* and *the Unemployment Rate of a City* is statistically insignificant as p>.05. Therefore, the null hypotheses 2A, 2B, and 2D are rejected. There are statistically significant relationships between: the Unemployment Rate of a City and the *Violent Crime Rate per 1,000 Residents,* the Unemployment Rate of a City, and *the Property Crime Rate per 1,000 Residents,* the Unemployment Rate of a City and *the Violent Crime Clearance Rate.* The null hypothesis 2C is accepted. There is no statistically significant relationship between *the Unemployment Rate of a City* and the *Police Response Time by Second*.

Table 2-1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Unemployment Rate	110	.033	.103	.05766	.019094	.000	.792	.230	-.566	.457
Police Response Time By Second	100	194	600	316.97	78.267	6125.646	.745	.241	1.040	.478
Violent Crime Rate per 1,000 Residents	110	.74	7.92	2.9863	1.75399	3.076	.737	.230	-.245	.457
Property Crime Rate per 1,000 Residents	110	11.76	64.10	30.2516	12.56769	157.947	.779	.230	-.210	.457
Valid N (listwise)	100									

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Violent Crime Clearance Rate	101	.23	.72	.4602	.11779	.014	.196	.240	-.857	.476
Valid N (listwise)	101									

Table 2-2

Tests of Normality

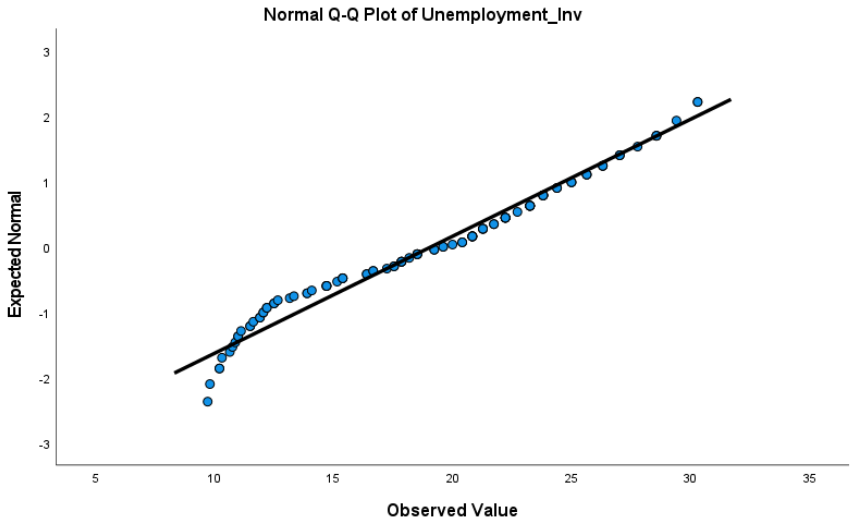
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unemployment Rate	.173	97	<.001	.864	97	<.001
Police Response Time By Second	.091	97	.044	.936	97	<.001
Violent Crime Rate per 1,000 Residents	.134	97	<.001	.916	97	<.001
Property Crime Rate per 1,000 Residents	.170	97	<.001	.928	97	<.001
Violent Crime Clearance Rate	.102	97	.014	.971	97	.031

a. Lilliefors Significance Correction

Table 2-3

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Unemployment_Inv	.085	110	.050

a. Lilliefors Significance Correction


Normal Q-Q Plot of Unemployment_Inv
Expected Normal
Observed Value
3
2
1
0
-1
-2
-3
5
10
15
20
25
30
35

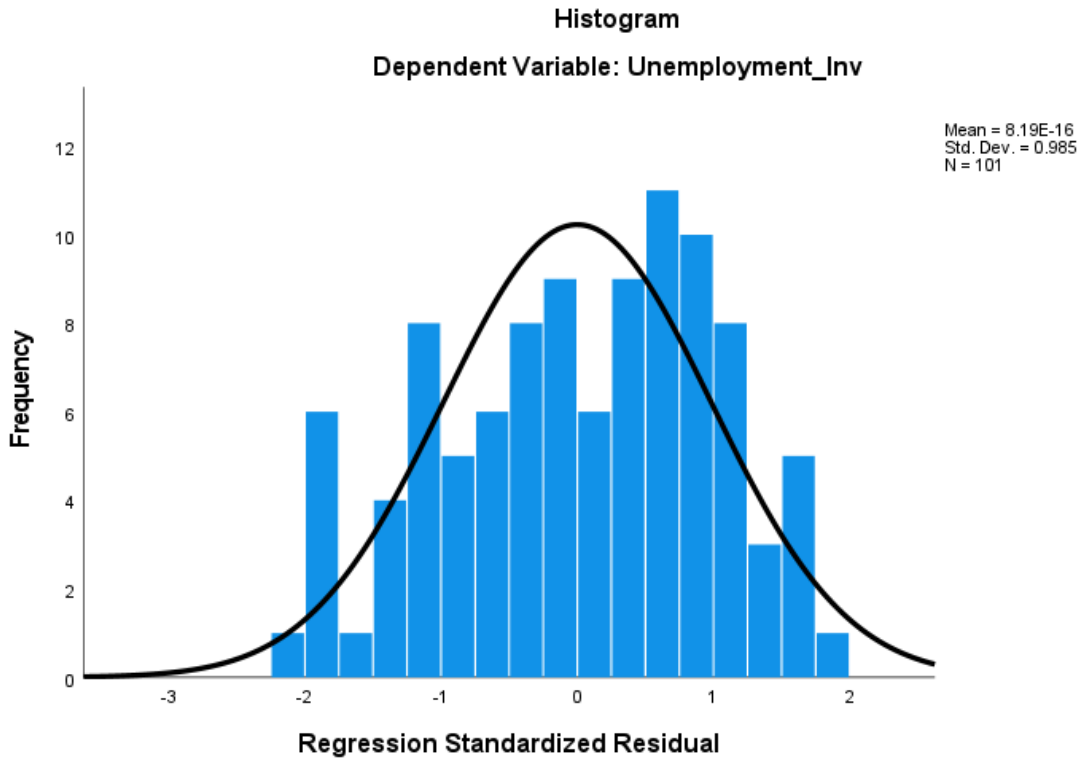

Histogram
Dependent Variable: Unemployment_Inv
Mean = 8.19E-16
Std. Dev. = 0.985
N = 101
Frequency
Regression Standardized Residual
12
10
8
6
4
2
0
-3
-2
-1
0
1
2

Table 2-4

Correlations

		Unemployment_lnv	Violent Crime Rate per 1,000 Residents	Property Crime Rate per 1,000 Residents	Violent Crime Clearance Rate	Police Response Time By Second
Unemployment_lnv	Pearson Correlation	1	-.198*	-.340**	.214*	-.066
	Sig. (2-tailed)		.038	<.001	.032	.514
	N	110	110	110	101	100
Violent Crime Rate per 1,000 Residents	Pearson Correlation	-.198*	1	.696**	-.697**	.186
	Sig. (2-tailed)	.038		<.001	<.001	.064
	N	110	110	110	101	100
Property Crime Rate per 1,000 Residents	Pearson Correlation	-.340**	.696**	1	-.695**	.159
	Sig. (2-tailed)	<.001	<.001		<.001	.114
	N	110	110	110	101	100
Violent Crime Clearance Rate	Pearson Correlation	.214*	-.697**	-.695**	1	-.130
	Sig. (2-tailed)	.032	<.001	<.001		.204
	N	101	101	101	101	97
Police Response Time By Second	Pearson Correlation	-.066	.186	.159	-.130	1
	Sig. (2-tailed)	.514	.064	.114	.204	
	N	100	100	100	97	100

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			Unemployment_lnv	Violent Crime Rate per 1,000 Residents	Property Crime Rate per 1,000 Residents	Violent Crime Clearance Rate	Police Response Time By Second
Spearman's rho	Unemployment_lnv	Correlation Coefficient	1.000	-.194*	-.348**	.201*	-.011
		Sig. (2-tailed)	.	.042	<.001	.044	.913
		N	110	110	110	101	100
	Violent Crime Rate per 1,000 Residents	Correlation Coefficient	-.194*	1.000	.794**	-.727**	.237*
		Sig. (2-tailed)	.042	.	<.001	<.001	.018
		N	110	110	110	101	100
	Property Crime Rate per 1,000 Residents	Correlation Coefficient	-.348**	.794**	1.000	-.720**	.198*
		Sig. (2-tailed)	<.001	<.001	.	<.001	.049
		N	110	110	110	101	100
	Violent Crime Clearance Rate	Correlation Coefficient	.201*	-.727**	-.720**	1.000	-.140
		Sig. (2-tailed)	.044	<.001	<.001	.	.170
		N	101	101	101	101	97
	Police Response Time By Second	Correlation Coefficient	-.011	.237*	.198*	-.140	1.000
		Sig. (2-tailed)	.913	.018	.049	.170	.
		N	100	100	100	97	100

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Hypotheses 2E, 2F, and 2G are based on successful acceptance of the Hypotheses 2A, 2B, and 2D, as Hypotheses 2E, 2F, and 2G claim that there is not just a correlation between **t**he **Performance of a City in Public Safety** and the **Unemployment Rate of a City; the Performance of a City in Public Safety** influences the **Unemployment Rate of a City** in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 2E: The *Violent Crime Rate per 1,000 Residents* influences the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 2E: The *Violent Crime Rate per 1,000 Residents* does not influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 2F: The *Property Crime Rate per 1,000 Residents* influences the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 2F: The *Property Crime Rate per 1,000 Residents* does not influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 2G: The *Violent Crime Clearance Rate* influences the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 2G: The *Violent Crime Clearance Rate* does not influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

The analytical technique of multiple linear regression is utilized to test the hypotheses. Before conducting the regression test, the study examined whether the assumptions of conducting multiple linear regression are met:

1) There should be at least 20 records for each independent variable. In this study, there are more than 20 records for each independent variable.
2) The dependent variable (DV) needs to be normally distributed. As discussed in the hypothesis testing of 2A, the DV (*Unemployment Rate of a City*) is not normally distributed. Therefore, an inverse transform of the DV was conducted. After the inverse transform, the SPSS test results of skewness, Kolmogorov-Smirnov test, and the QQ plot indicate that the *Unemployment_Inv* is approximately normally distributed.
3) Examine the multicollinearity between regressors and remove one regressor that has a strong correlation with another regressor. The correlation analysis shown in Table 2-5 indicates a very strong correlation ($r>0.7$ or $r<-0.7$) between:

- *Median Household Income* and *Percent of Population Below Federal Poverty Level* ($r=-0.845$, $p<0.001$);
- *Median Household Income* and *Property Crime Rate per 1,000 Residents* ($r= -.709$, $p<0.001$);
- *Percent of Population Below Federal Poverty Level* and *Violent Crime Rate per 1,000 Residents* ($r= .798$, $p<0.001$);
- *Percent of Population Below Federal Poverty Level* and *Property Crime Rate per 1,000 Residents* ($r= .839$, $p<0.001$).

As a result, *Median Household Income* and *Percent of the Population Below the Federal Poverty Level* are removed from the analysis of multiple linear regression due to multicollinearity.

4) There should be a linear relationship between IVs and DV. Table 2-6 shows that the PP plot is generally along a line. The scatter plot is between (-2, 2), which is within the range of (-3,

3), the Cook's distance is within the range of (0,1). These charts and data indicate a linear relationship between IVs and DV. [See Table 2-6].

From the hypothesis tests of 2A, 2B, 2C, and 2D, we learned that only the three IVs listed below have statistically significant relationships with the DV (*the Unemployment Rate of a City*):

- *Property Crime Rate per 1,000 Residents*
- *Violent Crime Rate per 1,000 Residents*
- *Violent Crime Clearance Rate*

As the test of multicollinearity removed two control variables (*Median Household Income* and *Percent of Population Below Federal Poverty Level*), the multiple linear regression tests the relationships between *Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, Violent Crime Clearance Rate and the Unemployment Rate of a City* (Unemployment_Inv).

Tables 2-6 indicates that the transformed dependent variable (Unemployment_Inv) is approximately normally distributed. The VIFs of the IVs are all below 10, which shows a very small multicollinearity of IVs. The Std. Residuals of variables are within the range of (-3, 3). The Cook's distance is also within the range of (0,1).

Using SPSS, the multiple regression analysis [See Table 2-7] revealed an overall r^2 of .113, where the *Violent Crime Rate per 1,000 Residents* accounts for 4.6% of the change of the dependent variable (Unemployment_Inv). The *Property Crime Rate per 1,000 Residents* accounts for an additional 6.7% of the change of the dependent variable (Unemployment_Inv). *Violent Crime Rate per 1,000 Residents and Property Crime Rate per 1,000 Residents* were found to be

statistically significant as each Sig F Change of each predictor is <.05 (a = .05). *Violent Crime Clearance Rate* was found to be statistically insignificant as Sig F Change of the predictor is >.05.

Therefore, we reject Null Hypotheses 2E and 2F and accept Hypotheses 2E and 2F, and conclude that the *Violent Crime Rate per 1,000 Residents* and the *Property Crime Rate per 1,000 Residents* do influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. We accept the Null Hypothesis 2G: The *Violent Crime Clearance Rate* does not influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Table 2-5

Correlations

		Unemployment_Inv	Median Household Income	% of Population Below Federal Poverty Level	Violent Crime Rate per 1,000 Residents	Property Crime Rate per 1,000 Residents	Violent Crime Clearance Rate
Unemployment_Inv	Pearson Correlation	1	.380**	-.330**	-.198*	-.340**	.214*
	Sig. (2-tailed)		<.001	<.001	.038	<.001	.032
	N	110	110	110	110	110	101
Median Household Income	Pearson Correlation	.380**	1	-.845**	-.669**	-.709**	.410**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001
	N	110	110	110	110	110	101
% of Population Below Federal Poverty Level	Pearson Correlation	-.330**	-.845**	1	.798**	.839**	-.635**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001
	N	110	110	110	110	110	101
Violent Crime Rate per 1,000 Residents	Pearson Correlation	-.198*	-.669**	.798**	1	.696**	-.697**
	Sig. (2-tailed)	.038	<.001	<.001		<.001	<.001
	N	110	110	110	110	110	101
Property Crime Rate per 1,000 Residents	Pearson Correlation	-.340**	-.709**	.839**	.696**	1	-.695**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001
	N	110	110	110	110	110	101
Violent Crime Clearance Rate	Pearson Correlation	.214*	.410**	-.635**	-.697**	-.695**	1
	Sig. (2-tailed)	.032	<.001	<.001	<.001	<.001	
	N	101	101	101	101	101	101

**. Correlation is significant at the 0.01 level (2-tailed).

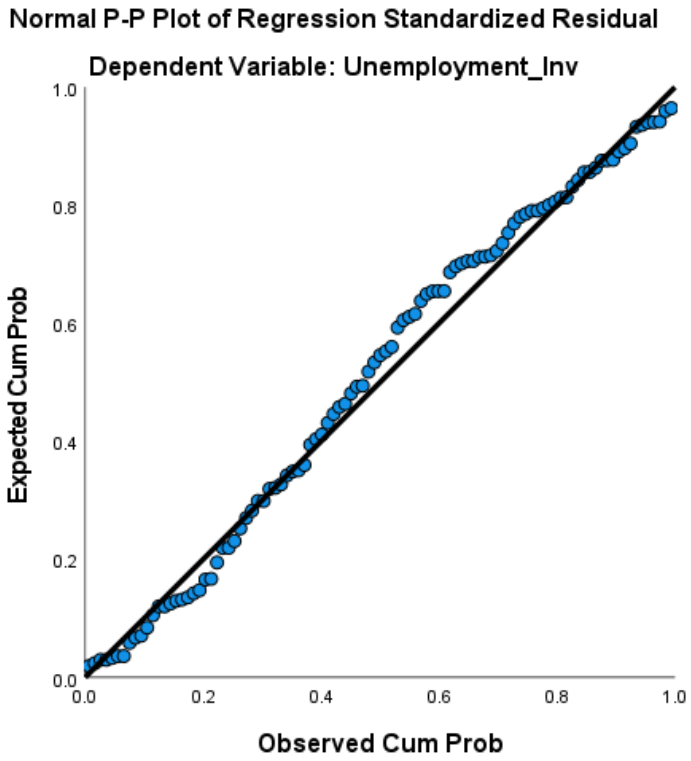
*. Correlation is significant at the 0.05 level (2-tailed).

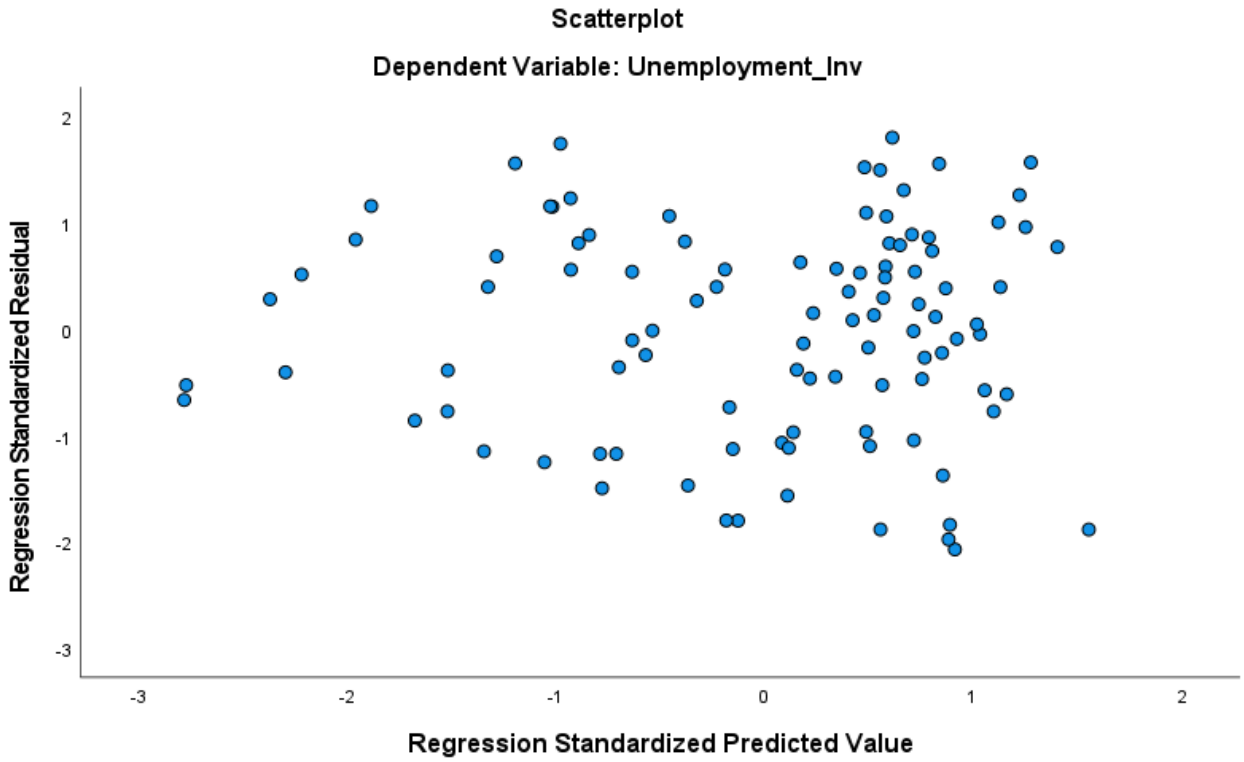
Table 2-6

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	25.006	4.740		5.276	<.001					
	Violent Crime Rate per 1,000 Residents	.040	.451	.013	.089	.929	-.215	.009	.009	.438	2.285
	Property Crime Rate per 1,000 Residents	-.161	.063	-.367	-2.547	.012	-.336	-.250	-.243	.440	2.274
	Violent Crime Clearance Rate	-1.537	6.910	-.033	-.222	.824	.214	-.023	-.021	.424	2.358

a. Dependent Variable: Unemployment_Inv





Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14.4070	22.5030	19.6007	1.86808	101
Std. Predicted Value	-2.780	1.554	.000	1.000	101
Standard Error of Predicted Value	.575	1.907	1.015	.289	101
Adjusted Predicted Value	14.7172	23.3478	19.6374	1.88503	101
Residual	-10.99499	9.55856	.00000	5.22054	101
Std. Residual	-2.074	1.803	.000	.985	101
Stud. Residual	-2.115	1.829	-.003	1.006	101
Deleted Residual	-11.43021	9.83492	-.03666	5.45351	101
Stud. Deleted Residual	-2.154	1.852	-.005	1.013	101
Mahal. Distance	.188	11.955	2.970	2.424	101
Cook's Distance	.000	.105	.011	.018	101
Centered Leverage Value	.002	.120	.030	.024	101

a. Dependent Variable: Unemployment_Inv

Table 2-7

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.215[a]	.046	.037	5.44196	.046	4.812	1	99	.031
2	.336[b]	.113	.095	5.27488	.067	7.371	1	98	.008
3	.337[c]	.114	.086	5.30065	.000	.049	1	97	.824

a. Predictors: (Constant), Violent Crime Rate per 1,000 Residents

b. Predictors: (Constant), Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents

c. Predictors: (Constant), Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents, Violent Crime Clearance Rate

d. Dependent Variable: Unemployment_Inv

Research Question 3: What is the relationship between **the Performance of a City in Public Safety** and **the Per Capita Income** of a city in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area?

Hypotheses and Null Hypotheses

Hypothesis 3A: There is a statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and the *Per Capita Income* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 3A: There is No statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and the *Per Capita Income* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 3B: There is a statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and the *Per Capita Income* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 3B: There is No statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and the *Per Capita Income* in the

Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Pearson's r correlation was used to examine the relationship between the IVs and DV of the hypotheses. Before using Pearson's r correlation, it is necessary to check if the assumptions are met for Pearson's r correlation. For the dataset used in this study,

1) All the independent variables and dependent variable are Interval or Ratio (scale).
2) Normality:

2.1) Using SPSS, the skewness of the IVs and DV was examined. All variables are within the acceptable range of (-1, 1).

2.2) The Kolmogorov-Smirnov test and the Shapiro-Wilk test indicate that *the Per Capita Income of a City, Median Household Income, Percent of Population Below Federal Poverty Level, Violent Crime Rate per 1,000 residents, Property Crime Rate per 1,000 Residents* are not normally distributed [See Table 3-1]. In this circumstance, researchers can drop a poorly behaved predictor X from the model, transform a predictor X, or transform the response variable Y. In this study, an inverse transform of the dependent variable (Per Capita Income of a City) is conducted after the unsuccessful log10, log2, and square root transforms to create a normally distributed variable.

After the inverse transform, the SPSS test results of skewness, Kolmogorov-Smirnov test, Shapiro-Wilk test and QQ plot indicate that the transformed dependent variable (PCI_Inv) is approximately normally distributed. [See Table 3-2A, 3-2B, 3-2C, 3-2D]. A Pearson's r correlation was conducted using SPSS [See Table 3-2A, 3-2B, 3-2C, 3-2D]. The Pearson's r correlation test results [See Table 3-4] indicate that there is a statistically significant relationship between:

- *Per Capita Income of a City* and *Violent Crime Rate per 1,000 Residents* (r=0.427, p<0.001)
- *Per Capita Income of a City* and *Property Crime Rate per 1,000 Residents* (r=0.617, p<0.001)

Therefore, the null hypotheses 3A, and 3B are rejected. There is a statistically significant relationship between *Per Capita Income of a City and Violent Crime Rate per 1,000 Residents*, as well as *Per Capita Income of a city and Property Crime Rate per 1,000 Residents*.

Hypotheses 3C and 3D are based on successful acceptance of the Hypotheses 3A and 3B as Hypotheses 3C and 3D claim that there is not just a correlation between **t**he **Performance of a City in Public Safety** and the **Per Capita Income of a City; the Change of Performance of a City in Public Safety** influences the **Per Capita Income of a City** in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 3C: The *Violent Crime Rate per 1,000 Residents* influences the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 3C: The *Violent Crime Rate per 1,000 Residents* does not influence the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypothesis 3D: The *Property Crime Rate per 1,000 Residents* influences the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

- Null Hypothesis 3D: The *Property Crime Rate per 1,000 Residents* does not influence the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

The analytical technique of multiple linear regression is utilized to test the hypotheses.

Before conducting the regression test, the study examined whether the assumptions of conducting multiple linear regression are met:

1) There should be at least 20 records for each independent variable. In this study, there are more than 20 records for each independent variable.
2) The dependent variable (DV) needs to be normally distributed. As discussed in the hypothesis testing of 3A and 3B, the DV (Per Capita Income of a City) is not normally distributed. Therefore, an inverse transform of the DV was conducted. After the transform, the SPSS test results of skewness, Kolmogorov-Smirnov test, and the QQ plot indicate that the transformed dependent variable *(PCI_Inv)* is approximately normally distributed [See Table 3-2A, 3-2B, 3-2C, 3-2D].
3) Examine the multicollinearity between regressors and remove one regressor that has a strong correlation with another regressor. The correlation analysis shown in table 3-4 indicates a very strong correlation ($r>0.7$ or $r<-0.7$) between:
    - *Median Household Income* and *Percent of Population Below Federal Poverty Level* ($r=-0.845$, $p<0.001$)
    - *Median Household Income* and *Property Crime Rate per 1,000 Residents* ($r= -.709$, $p<0.001$)
    - *Percent of Population Below Federal Poverty Level* and *Violent Crime Rate per 1,000 Residents* ($r= .798$, $p<0.001$)
    - *Percent of Population Below Federal Poverty Level* and *Property Crime Rate per 1,000 Residents* ($r= .839$, $p<0.001$)

As a result, *Median Household Income* and *Percent of the Population Below the Federal Poverty Level* are removed from the analysis of multiple linear regression due to multicollinearity.

4) There should be a linear relationship between IVs and DV. Table 3-5 indicates that the PP plot is generally along a line. The scatter plot is within the range of (-3, 3). These charts and data indicate a linear relationship between IVs and DV. [See Table 3-5].

From the hypothesis testing of 3A and 3B, we learned that the two IVs listed below have statistically significant relationships with the DV (*the Per Capita Income of a City*):

- *Property Crime Rate per 1,000 Residents*
- *Violent Crime Rate per 1,000 Residents*

As the test of multicollinearity removed two control variables (*Median Household Income* and *Percent of Population Below Federal Poverty Level*), the multiple linear regression tests the relationships between *Violent Crime Rate per 1,000 Residents* and *Per Capita Income of a City* (PCI_Inv), as well as *Property Crime Rate per 1,000 Residents* and *Per Capita Income of a City* (PCI_Inv).

Tables 3-5 indicates that the transformed dependent variable (PCI_Inv) is approximately normally distributed. The Std. Residuals of variables are within the range of (-3, 3). The Cook's distance is also within the range of (0,1). Using SPSS, the multiple regression analysis [Table 3-6] revealed an overall r^2 of .381, where *Violent Crime Rate per 1,000 Residents* accounts for 18.2% of change of the dependent variable (PCI_Inv), *Property Crime Rate per 1,000 Residents* accounts for an additional 19.9% of the change of the dependent variable (PCI_Inv). *Violent Crime Rate per 1,000 Residents* and *Property Crime Rate per 1,000 Residents* were found to be statistically significant as each Sig F Change of each predictor is <.05 (a < .001).

Therefore, we reject Null Hypotheses 3C, and 3D and accept Hypotheses 3C, and 3D, and conclude that the *Violent Crime Rate per 1,000 Residents* and the *Property Crime Rate per 1,000 Residents* do influence the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Table 3-1

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Per Capita Income	.187	110	<.001	.820	110	<.001
Violent Crime Rate per 1,000 Residents	.132	110	<.001	.923	110	<.001
Property Crime Rate per 1,000 Residents	.154	110	<.001	.927	110	<.001
Median Household Income	.094	110	.018	.955	110	<.001
% of Population Below Federal Poverty Level	.152	110	<.001	.920	110	<.001

a. Lilliefors Significance Correction

Table 3-2A

Descriptives

			Statistic	Std. Error
PCI_Inv	Mean		.0000	.00000
	95% Confidence Interval for Mean	Lower Bound	.0000	
		Upper Bound	.0000	
	5% Trimmed Mean		.0000	
	Median		.0000	
	Variance		.000	
	Std. Deviation		.00001	
	Minimum		.00	
	Maximum		.00	
	Range		.00	
	Interquartile Range		.00	
	Skewness		-.260	.230
	Kurtosis		-.036	.457

Table 3-2B

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PCI_Inv	.071	110	.200*	.985	110	.270

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 3-2C

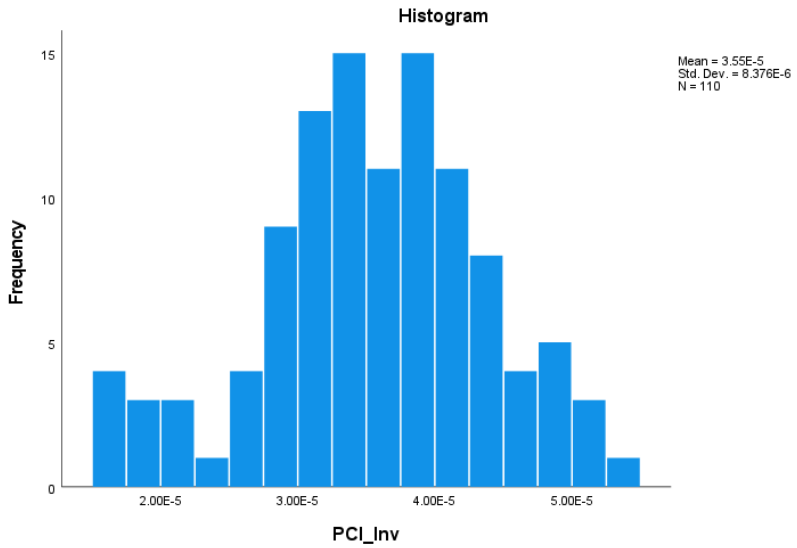


Table 3-2D

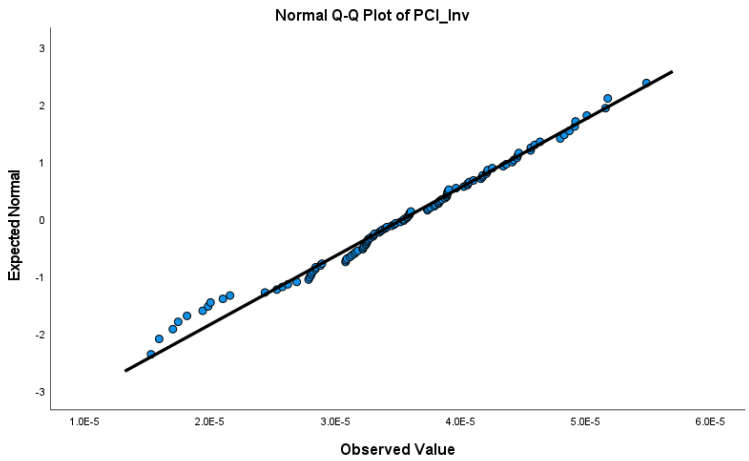


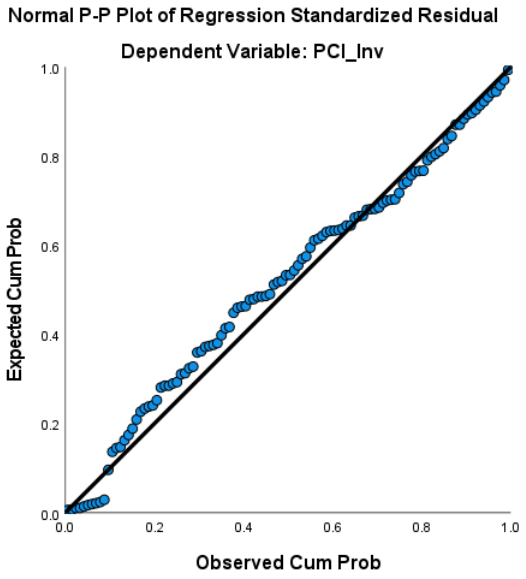
Table 3-4

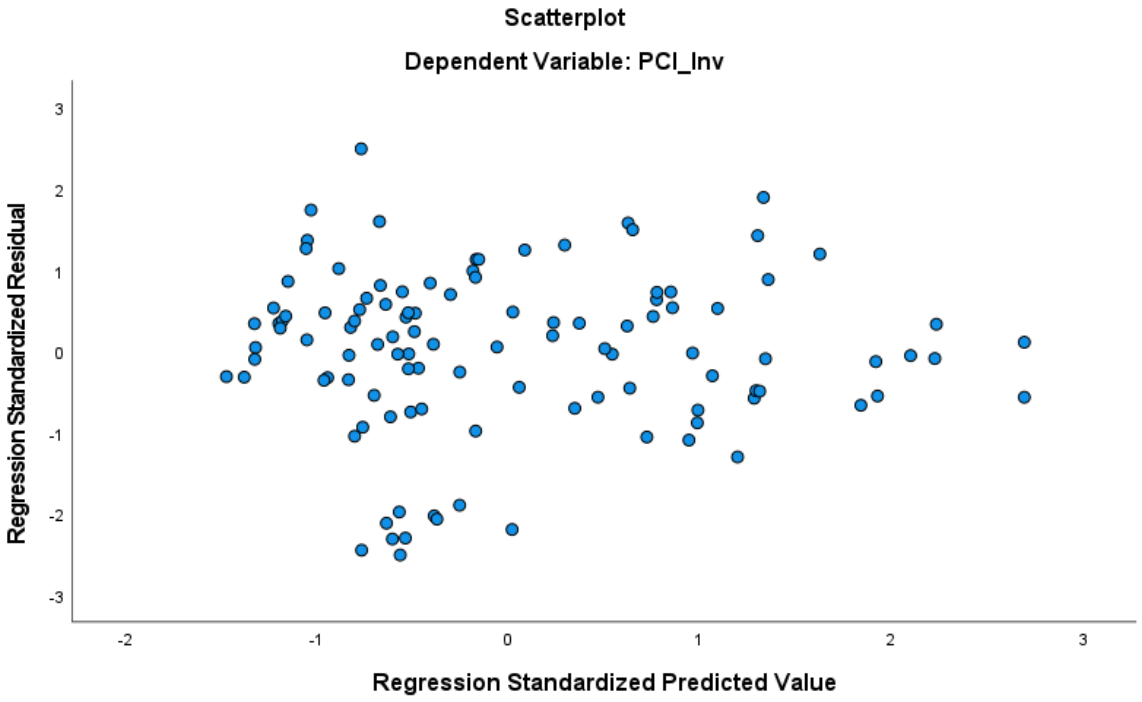
Correlations

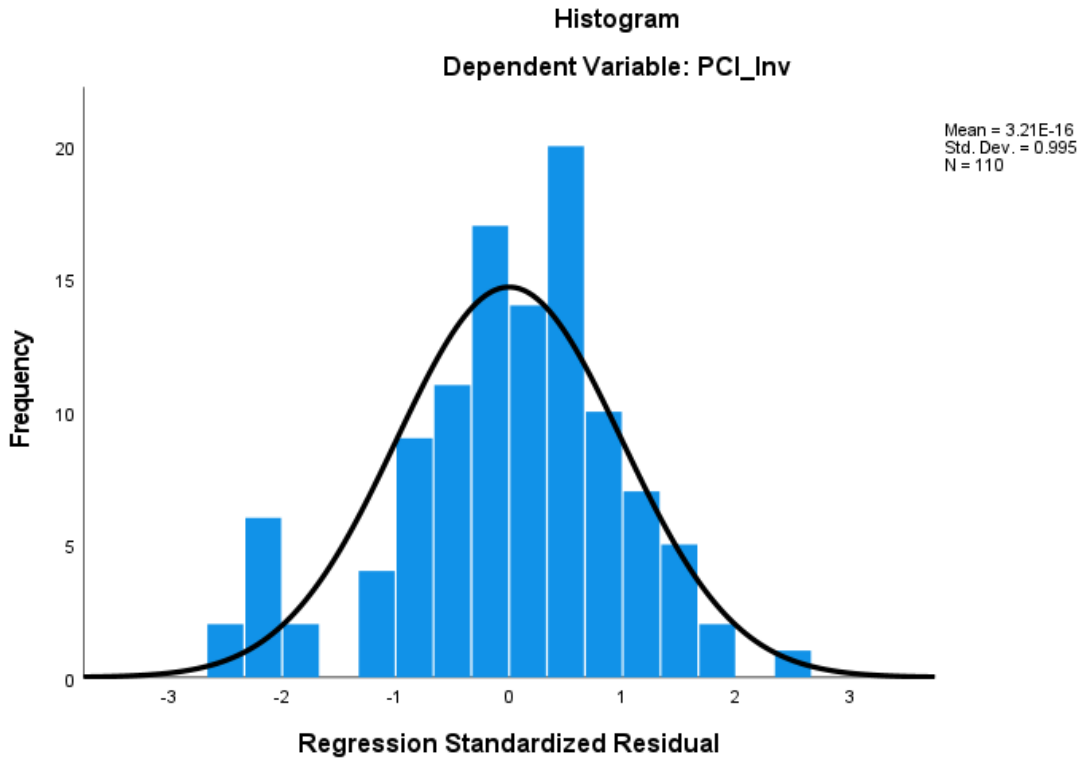
		Median Household Income	% of Population Below Federal Poverty Level	Violent Crime Rate per 1,000 Residents	Property Crime Rate per 1,000 Residents	PCI_Inv
Median Household Income	Pearson Correlation	1	-.845**	-.669**	-.709**	-.763**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	110	110	110	110	110
% of Population Below Federal Poverty Level	Pearson Correlation	-.845**	1	.798**	.839**	.665**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	110	110	110	110	110
Violent Crime Rate per 1,000 Residents	Pearson Correlation	-.669**	.798**	1	.696**	.427**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	110	110	110	110	110
Property Crime Rate per 1,000 Residents	Pearson Correlation	-.709**	.839**	.696**	1	.617**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	110	110	110	110	110
PCI_Inv	Pearson Correlation	-.763**	.665**	.427**	.617**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	110	110	110	110	110

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3-5




Scatterplot
Dependent Variable: PCI_Inv
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-2
-1
0
1
2
3


Histogram
Dependent Variable: PCI_Inv
Mean = 3.21E-16
Std. Dev. = 0.995
N = 110
Frequency
Regression Standardized Residual
20
15
10
5
0
-3
-2
-1
0
1
2
3

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.0000	.0000	.0000	.00001	110
Std. Predicted Value	-1.471	2.693	.000	1.000	110
Standard Error of Predicted Value	.000	.000	.000	.000	110
Adjusted Predicted Value	.0000	.0000	.0000	.00001	110
Residual	-.00002	.00002	.00000	.00001	110
Std. Residual	-2.511	2.490	.000	.995	110
Stud. Residual	-2.526	2.508	.000	1.003	110
Deleted Residual	-.00002	.00002	.00000	.00001	110
Stud. Deleted Residual	-2.592	2.573	-.002	1.014	110
Mahal. Distance	.000	7.254	.991	1.315	110
Cook's Distance	.000	.048	.007	.011	110
Centered Leverage Value	.000	.067	.009	.012	110

a. Dependent Variable: PCI_Inv

Table 3-6

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.427[a]	.182	.175	.00001	.182	24.050	1	108	<.001
2	.617[b]	.381	.369	.00001	.199	34.338	1	107	<.001

a. Predictors: (Constant), Violent Crime Rate per 1,000 Residents

b. Predictors: (Constant), Violent Crime Rate per 1,000 Residents, Property Crime Rate per 1,000 Residents

c. Dependent Variable: PCI_Inv

CHAPTER 5

RESEARCH FINDINGS

Research Results Summarized

This study focuses on the relationship between the performance of a city in public safety and the growth of a city. It tries to discover whether cities that perform better in public safety (gauged by the performance data in public safety of the eleven cities in the Valley (Phoenix Metro Area) of Arizona from 2010 to 2019) actually grow faster than their peers (gauged by the change of population growth, unemployment rate and per capita income of each of the eleven cities in the Valley of Arizona from 2010 to 2019) that did not perform well in public safety in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. More specifically, the study tried to answer three research questions:

Research Question 1: What is the relationship between **the Performance of a City in Public Safety** and **the Population Growth** of a city in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area?

Research Question 2: What is the relationship between **the Performance of a City in Public Safety** and **the Employment Growth of a City** in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area?

Research Question 3: What is the relationship between **the Performance of a City in Public Safety** and **the Per Capita Income Growth** of a city in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area?

By utilizing the performance data collected by Valley Benchmark Communities from 2010 to 2019, statistical analyses were conducted using Pearson's r correlation and multiple linear

regression on SPSS to test the hypotheses and answer the aforementioned three research questions.

The Relationship Between the Performance of a City in Public Safety and the Population Growth of a city

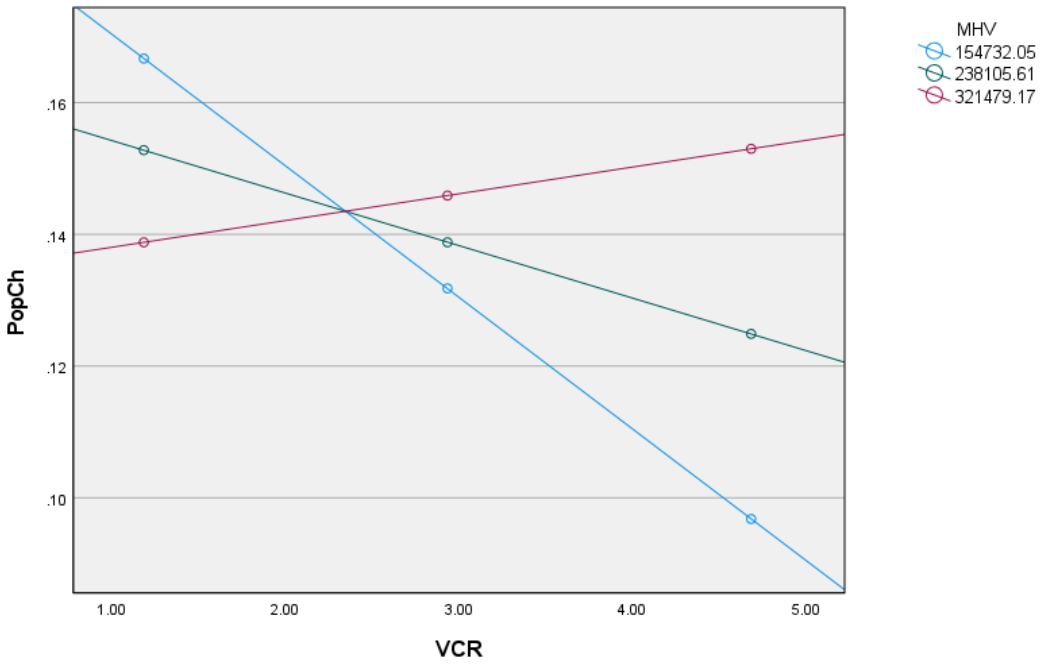
There is a statistically significant relationship between:

- *Violent Crime Rate per 1,000 Residents and Change of the Population of a City (r= -.417, p<0.001);*
- *Property Crime Rate per 1,000 Residents and Change of the Population of a City (r= -.419, p<0.001);*
- *Violent Crime Clearance Rate and Change of the Population of a City (r= .262, p=0.009); and*
- *Police Response Time by Second* and *Change of the Population of a City (r= -.205, p=0.04).*

By utilizing multiple linear regression, the analysis demonstrated that there is not just a correlation between the change of the population of a city and the performance of a city in public safety. The *Violent Crime Rate per 1,000 Residents* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. The *Violent Crime Rate per 1000 Residents* accounts for 17.4 percent of the variability observed in the *Change of the Population of a City***.** The *Property Crime Rate per 1,000 Residents, the Police Response Time by Second* and the *Violent Crime Clearance Rate* do not influence the Change of the Population of a City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area; they were found to be statistically insignificant as the Sig F Change is >.05 (a = .05).

By using Pearson's r correlation analysis, the study discovered that *Violent Crime Rate per 1,000 Residents* (r= -.417, p=0.009) and *Property Crime Rate per 1,000 Residents* (r= -.419, p=0.000) have a moderate negative correlation with the *Change of the Population Growth of a City.* In the cities that have a higher rate of violent crime or property crime, the population growth rate tends to be lower. There is also a low negative correlation between *Police Response Time by Second* and the *Change of the Population of a city* (r= -.205, p=0.04). The *Violent Crime Clearance Rate* has a low positive relationship with the *Change of the Population Growth of a City* (r= .262, p=0.009).

Further research using multiple linear regression discovered that there is not just a correlation between the *Violent Crime Rate per 1,000 Residents* and the *Change of the Population of a City*. *Violent Crime Rate per 1,000 Residents* also influences the change of the population of a locality. The *Violent Crime Rate per 1,000 Residents* accounts for 17.4 percent of the *Change of the Population of a City* in the Phoenix Metro area.



Using the SPSS moderation regression model, the study discovered that the *Median Home Value of a City* has a statistically significant moderation of the association between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City*. In the cities that have high median home value (MHV=$321,479), the relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City* is not statistically significant (p=0.3708). In the cities that have mid-level median home value (MHV=$238,106), the relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City* is statistically significant (p=0.0008). There is a negative relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City*. In the cities that have low-level median home value (MHV=$154,732), the relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City* is statistically significant (p=0.0000). There is a higher negative relationship between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City* compared to the relationship with the citiies that have mid-level median home value.

The Relationship Between the Performance of a City in Public Safety and the Unemployment Rate of a City

In terms of crime-related public safety measures and employment growth, Gould, Weinberg, and Mustard's study (2002) concludes that there is a significant relationship between crime and unemployment. They found that "a 3.05% increase in unemployment predicted a 7.1% increase in property crime and a 3.8% increase in violent crime. The unemployment rate of non-college-educated men explains 24% of the total increase in property crime and 8% of the increase in violent crime" (Gould et al., 2002, p. 50).

On police response time and unemployment rate, Vidal & Kirchmaier (2017) and Wentz &

Schlimgen's (2012) studies indicate that faster police response time can increase the crime clearance rate, the possibility of arrests, and bring a quick solution to a crime. A high crime clearance rate could deter and reduce potential crimes (Becarria, 1764; Bentham, 1879; Tittle and Rowe, 1974; Brown, 1978; Geerken and Gove, 1977). By conducting Pearson's r correlation analysis, the study discovered that there is a statistically significant relationship between:

- *Unemployment Rate of a City* and *Violent Crime Rate per 1,000 Residents* (r= -.198, p=0.038);
- *Unemployment Rate of a City* and *Property Crime Rate per 1,000 Residents* (r= -.34, p<0.001);
- *Unemployment Rate of a City* and *Violent Crime Clearance Rate (*r=.214, p=0.032*).*

There is no statistically significant relationship between the *Unemployment Rate of a City* and the *Police Response Time by Second* (r=-.066, p=.514). By utilizing multiple linear regression, the study finds out that there is not just a correlation between the *Unemployment Rate of a City* and the city's performance in public safety; the performance of a city in public safety influences the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. The *Violent Crime Rate per 1,000 Residents* and the *Property Crime Rate per 1,000 Residents* do influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. *The Violent Crime Rate per 1,000 Residents* accounts for 4.6% of the change of the dependent variable (Unemployment_Inv), while the *Property Crime Rate per 1,000 Residents* accounts for an additional 6.7% of the change of the dependent variable (Unemployment_Inv). The *Violent Crime Clearance Rate* does not influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area as its Sig F Change is >.05.

The Relationship Between the Performance of a City in Public Safety and the Per Capita Income of a City

Freeman (1996), Glaeser & Sacerdote (1999), Glaeser, Sacerdote, & Scheinkman (1999), and Zenou (2004) found out that the number of crimes is higher in poor neighborhoods than in wealthy areas. Hsiang et al. (2013) discovered there may be an inverse relationship between the number of crimes and per capita income as the higher the per capita income the wealthier the neighborhood. The hypothesis testing discovered that there is a statistically significant relationship between:

- *Per Capita Income of a City* and *Violent Crime Rate per 1,000 Residents* ($r=0.427$, $p<0.001$);
- *Per Capita Income of a City* and *Property Crime Rate per 1,000 Residents* ($r=0.617$, $p<0.001$).

By utilizing multiple linear regression, the study found an association between the Per Capita Income of a City and the Performance of a City in Public Safety. The *Violent Crime Rate per 1,000 Residents* and the *Property Crime Rate per 1,000 Residents* may influence the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. The *Violent Crime Rate per 1,000 Residents* accounts for 18.2% of the change of the *Per Capita Income of a City* (PCI_Inv). The *Property Crime Rate per 1,000 Residents* accounts for an additional 19.9% of the change of the *Per Capita Income of a City* (PCI_Inv).

Table 3 Summary of Hypothesis Testing Results

No.	Hypothesis	Significant or Not & Direction	Outcome
Hypothesis 1A	There is a statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Population change is related to Violent Crime Rate per 1,000 Residents in Phoenix Metro.
Hypothesis 1B	There is a statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Population change is related to Property Crime Rate per 1,000 Residents in Phoenix Metro.
Hypothesis 1C	There is a statistically significant relationship between the *Police Response Time by Second* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Population change is related to Police Response Time by Second in Phoenix Metro.
Hypothesis 1D	There is a statistically significant relationship between the *Violent Crime Clearance Rate* and *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Positive	Population change is related to Violent Crime Clearance Rate in Phoenix Metro.
Hypothesis 1E	*The Violent Crime Rate per 1,000 Residents* influences *the Change of the Population of a* City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Violent Crime Rate per 1,000 Residents affects population change in Phoenix Metro.
Hypothesis 1F	The *Property Crime Rate per 1,000 Residents* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	In-significant	Property Crime Rate per 1,000 Residents doesn't affect population change in Phoenix Metro.
Hypothesis 1G	The *Police Response Time by Second* influences *the Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	In-significant	Police Response Time by Second doesn't affect population change in Phoenix Metro.

No.	Hypothesis	Significant or Not & Direction	Outcome
Hypothesis 1H	The *Violent Crime Clearance Rate* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	In-significant	Violent Crime Clearance Rate doesn't affect population change in Phoenix Metro.
Hypothesis 1J	The *Median Home Value of City* moderates the association between the *Violent Crime Rate per 1,000 Residents* and *the Population Growth of a City*.	Significant, Negative	Median Home Value of a City in Phoenix Metro moderates the association between the *Violent Crime Rate per 1,000 Residents* and *the Population Growth of a City*
Hypothesis 2A	There is a statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Positive	Unemployment rate is related to Violent Crime Rate per 1,000 Residents in Phoenix Metro.
Hypothesis 2B	There is a statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area	Significant, Positive	Unemployment rate is related to Property Crime Rate per 1,000 Residents in Phoenix Metro
Hypothesis 2C	There is a statistically significant relationship between the *Police Response Time by Second* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	In-significant	Unemployment rate is not related to Police Response Time by Second in Phoenix Metro
Hypothesis 2D	There is a statistically significant relationship between the *Violent Crime Clearance Rate* and the U*nemployment Rate* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Unemployment rate is related to Violent Crime Clearance Rate in Phoenix Metro
Hypothesis 2E	The *Violent Crime Rate per 1,000 Residents* influences the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Positive	Violent Crime Rate per 1,000 Residents affects the Unemployment Rate of a City in the Phoenix Metro.
Hypothesis 2F	The *Property Crime Rate per 1,000 Residents* influences the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Positive	Property Crime Rate per 1,000 Residents affects the Unemployment Rate of a City in the Phoenix Metro.

No.	Hypothesis	Significant or Not & Direction	Outcome
Hypothesis 2G	The *Violent Crime Clearance Rate* influences the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	In-significant	Violent Crime Clearance Rate doesn't affect the Unemployment Rate of a City in the Phoenix Metro.
Hypothesis 3A	There is a statistically significant relationship between the *Violent Crime Rate per 1,000 Residents* and the *Per Capita Income* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Per Capita Income is related to Violent Crime Per 1,000 Residents in Phoenix Metro.
Hypothesis 3B	There is a statistically significant relationship between the *Property Crime Rate per 1,000 Residents* and the *Per Capita Income* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Per Capita Income is related to Property Crime Per 1,000 Residents in Phoenix Metro.
Hypothesis 3C	The *Violent Crime Rate per 1,000 Residents* influences the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Violent Crime Rate per 1,000 Residents affects the Per Capita Income of a City in the Phoenix Metro.
Hypothesis 3D	The *Property Crime Rate per 1,000 Residents* influences the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.	Significant, Negative	Property Crime Rate per 1,000 Residents affects the Per Capita Income of a City in the Phoenix Metro.

The Implication of Research Findings

While there have been many studies in the fields of performance management and city service delivery, performance management and strategic planning, performance management and continuous improvement of city services, as well as performance management and citizen participation, few scholars have examined the relationship between the performance of a city and the growth of a city. This study revealed that the performance of a city in public safety may influence the population growth, employment growth, and per capita income of a city.

In the practice of local government management, performance management is still a relatively new field. The widespread use of performance management in local governments of the United States only started after 2000, during which many cities modeled after the CitiStat program of the City of Baltimore, Maryland and created their own performance management programs. In many cities, performance management programs are created and disbanded at the discretion of the city manager. While many city managers use performance management programs to track departmental performance and improve service delivery, others think it is just another layer of bureaucracy and has no benefit to city operations. Without the support from city management, the performance management program of a city always faces resistance from department directors and managers in implementation.

This study analyzes performance data to examine the value of city performance in the growth of a municipality. Based on the results of statistical analysis, high-performing cities in public safety are more likely to attract businesses and individuals to locate and relocate to these cities. As a result, a high-performing city in public safety tends to have a higher rate of population

growth and a lower unemployment rate compared to the cities that are not performing well in public safety. High-performing cities in public safety also draw businesses and investment into the city due to quality public service and demands from the increasing population, which could drive up the salary offered through competition among employers for talents, and thus increase the per capita income of a locality. The study indicates that in order to promote the growth of a municipality, cities should establish a robust performance management program for citywide performance improvement and enhanced service delivery. The statistical analyses using SPSS demonstrated that there is not just a correlation between the performance of a city in public safety and the growth of a city; the performance of a city in public safety influences the growth of a city in population, employment, and per capita income. The research findings and implications on the relationships between a city's performance in public safety and a city's growth in population, employment and per capita income are discussed as follows:

City Performance in Public Safety and Population Growth

As discussed in the theoretical framework and the concept map section, based on rational choice theory and Charles Tiebout's theory of local public expenditures, it seems reasonable to assume that by improving the performance in public safety, cities located in the Phoenix Metro Area can retain and attract more residents and businesses to a community for a safer and more secure place for businesses and families, which increases the population growth of a locality. The hypothesis testing discovered that cities that have a lower *Violent Crime Rate per 1,000 Residents* are more likely to have a higher growth rate of population than those cities that have a higher violent crime rate in the Valley of Arizona (Phoenix Metro). However, *Property Crime Rate per*

1,000 Residents, Police Response Time by Second, and Violent Crime Clearance Rate don't affect the population growth of the localities in the Phoenix metro area.

The study discovered that there is a statistically significant relationship between the Performance of a City in Public Safety and the Change of the Population Growth of a City in the Phoenix Metro Area. The Performance of a City in Public Safety influences the Change of the Population Growth of a City in the Phoenix Metro Area. More specifically,

- There is a moderate negative relationship *between the Population Growth of a City* and *the Violent Crime Rate per 1,000 Residents* (r= -.417, p=0.009). In the Phoenix Metro area, cities that have a higher violent crime rate per 1,000 residents tend to have a lower population growth rate. A city that has a higher growth rate of population is more likely to have a lower violent crime rate per 1,000 residents.
- There is a moderate negative correlation between the *Population Growth of a City* and the *Property Crime Rate per 1,000 Residents* (r= -.419, p=0.000). This means that in the Phoenix Metro Area, cities that have a higher growth rate of population tend to have a lower property crime rate per 1,000 Residents. It also indicates that for cities that have a higher property crime rate per 1,000 residents, the population growth rate is more likely to be lower.
- There is a low positive relationship between *the Population Growth of a City* and *the Violent Crime Clearance Rate* (r= .262, p=0.009). This indicates that in the Phoenix Metro Area, cities that have a higher growth rate of population tend to have a higher Violent Crime Clearance Rate. It also means that cities in the Valley that have a lower Violent Crime Clearance Rate are more likely to have a lower growth rate of the city population.

- There is a low negative correlation between the *Population Growth of a City* and the *Police Response Time by Second* (r= -.205, p=0.04). In the Phoenix metro area, cities that have a longer police response time tend to have a lower population growth rate. A city that has a higher growth rate of population is more likely to have a shorter police response time.

The Pearson's r correlation analysis tests if there is a statistically significant relationship between two variables and the strength of the relationship. The analysis indicates that safety is a major concern when people choose where to live. A city with lower crime rates is associated with a higher rate of population growth. A higher crime rate could result in population loss from the community. For example, crime rates in New York City spiked in the 1970s and 1980s (Johnson, 2006), which resulted in a net population loss of over 800,000 residents from 7,894,862 in 1970 to 7,071,639 in 1980 (U.S. Census). The research also discovers a low positive relationship between *the Population Growth of a City and the Violent Crime Clearance Rate* (r= .262, p=0.009). A high crime clearance rate can deter criminals from committing similar crimes and other types of crimes. A higher crime clearance rate can contribute to a safer community (Johnson, 2006). A shorter police response time is also statistically and significantly associated with a higher growth rate of the population as faster police response time also deters crimes.

Further research using multiple linear regression discovered that there is not just a correlation between the *Violent Crime Rate per 1,000 Residents* and the *Population Growth of a City, Violent Crime Rate per 1,000 Residents* but also influences the population growth of a locality. *The Violent Crime Rate per 1000 Residents* accounts for 17.4 percent of *the Change of the Population of a City* in the Phoenix Metro area.

A city's growth relies on a sustainable increase in its population. Population growth drives business investment, economic growth, and local tax base. A key recommendation to local policymakers and city management is to invest in local police departments and reduce violent crimes, in order to promote a city's growth in population. A high violent crime rate will drive local residents out of the city. It could result in an increase in the number of vacant houses and blight of a city, as well as a decrease in the local tax base and economic growth.

City Performance in Public Safety and Employment Growth

As discussed in the theoretical framework and the concept map section, based on the rational choice theory and Charles Tiebout's theory of local public expenditures, improving performance in public safety can positively impact the growth of employment of a locality. The statistical analysis indicates that cities that have a lower *Violent Crime Rate per 1,000 Residents* or a lower *Property Crime Rate per 1,000 Residents* are more likely to have a lower unemployment rate than those cities that have a higher crime rate in the Valley of Arizona. *Police Response Time by Second* and *Violent Crime Clearance Rate* don't impact the unemployment rate of a city in the Phoenix Metro Area.

This study discovered that the Performance of a City in Public Safety influences the Employment Growth of a City in the Phoenix Metro Area. Unemployment rate was used to operationalize the dependent variable to measure the employment growth of a city in the Phoenix Metro area. The hypothesis testing discovered that there is a statistically significant relationship between the Performance of a City in Public Safety and the Employment Growth of a City, more specifically:

- There is a low positive correlation between the *Unemployment Rate of a City* and *the Violent Crime Rate per 1,000 Residents* (There is an inverse relationship between Unemployment Rate and Unemployment_Inv after the inverse transformation of the dependent variable – Unemployment Rate). This means that in the Phoenix Metro Area, cities that have a higher *Violent Crime Rate per 1,000 Residents* tend to have a higher unemployment rate. A city that has a higher *Unemployment Rate* is more likely to have a higher *Violent Crime Rate per 1,000 Residents*.
- There is a moderate positive relationship between *the Unemployment Rate of a City and the Property Crime Rate per 1,000 Residents*. This indicates that in the Phoenix Metro Area, cities that have a higher rate of *Property Crime Rate per 1,000 Residents*, tend to have a higher *Unemployment Rate*. It also means cities in the Valley that have a higher *Unemployment Rate* are more likely to have a higher rate of property crimes per 1,000 residents.
- There is a low negative relationship between the *Unemployment Rate of a City* and *the Violent Crime Clearance Rate.* This means that cities that have a higher Unemployment Rate tend to have a lower *Violent Crime Clearance Rate* in the Phoenix Metro area. It also indicates that in the cities that have a higher *Violent Crime Clearance Rate*, the unemployment rate is more likely to be lower.
- There is no statistically significant relationship between the *Unemployment Rate of a City and* the *Police Response Time by Second.*

Additional hypothesis testing 2E, 2F, and 2G using multiple linear regression analysis on SPSS discovered that there is not just a correlation between the *Violent Crime Rate per 1,000 Residents* and the *Unemployment Rate of a City*, or the *Property Crime Rate per 1,000 Residents*

and the *Unemployment Rate of a City*. *Violent Crime Rate per 1,000 Residents* accounts for 4.6 percent of the change of the unemployment rate. *Property Crime Rate per 1,000 Residents* accounts for an additional 6.7 percent of the change in the unemployment rate.

It is not surprising that violent crime and property crime have a negative impact on the employment growth. In a city with high crime rates, businesses need to spend more on security and loss prevention. As discussed in the population growth section, a city with high crime rates also leads to lower population growth, which will affect the growth of the customer base and the growth of sales. As a result, the employment growth in that area will be slower, which could result in a higher unemployment rate in a city. In order to boost local growth and employment growth, policymakers and city management need to enhance police performance in reducing the number of violent crimes and property crimes in the community.

City Performance in Public Safety and Per Capita Income Growth

As discussed in the theoretical framework and the concept map section, based on the rational choice theory that by improving the quality of public service, cities can retain and attract more residents and businesses to relocate to a community. It seems fair to assume that the competition among businesses for talent could drive up the salary offered in the region, which could increase the per capita income of a community. The results from SPSS analysis show that cities that have a lower *Violent Crime Rate per 1,000 Residents* or a lower *Property Crime Rate per 1,000 Residents* are more likely to have a higher per capita income than those cities that have a higher crime rate in the Valley of Arizona.

The study discovered the Performance of a City in Public Safety influences the Per Capita Income Growth of a City in the Phoenix Metro Area. In this study, per capita income is used to

operationalize the dependent variable. The hypothesis testing 3A and 3B discovered that there is a statistically significant relationship between City Performance in Public Safety and Per Capita Income, more specifically:

- There is a moderate negative relationship between *the Per Capita Income of a City* and *the Violent Crime Rate per 1,000 Residents* (There is an inverse relationship between Per Capita Income and PCI_Inv after the inverse transformation of the dependent variable – Per Capita Income,). This means that in the Phoenix Metro Area, cities that have a higher *Violent Crime Rate per 1,000 Residents* tend to have a lower Per Capita Income. A city that has a higher *Per Capita Income* is more likely to have a lower *Violent Crime Rate per 1,000 Residents* in the Phoenix Metro Area.
- There is a moderate negative relationship between *the Per Capita Income of a City* and the *Property Crime Rate per 1,000 Residents* (There is an inverse relationship between Per Capita Income and PCI_Inv after the inverse transformation of the dependent variable – Per Capita Income). This indicates that in the Phoenix Metro Area, cities that have a higher rate of *Property Crime Rate per 1,000 Residents* are more likely to have a lower *Per Capita Income*. This also means cities in the Valley that have higher *Per Capita Income* tend to have a lower rate of *Property Crimes per 1,000 Residents.*

Additional hypothesis testing 3C and 3D using multiple linear regression analysis discovered that there is not just a correlation between *Violent Crime Rate per 1,000 Residents* and *Per Capita Income,* or *Property Crime Rate per 1,000 Residents* and *Per Capita Income;* the *Violent Crime Rate per 1,000 Residents* and the *Property Crime Rate per 1,000 Residents* do influence the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. The *Violent Crime*

Rate per 1,000 Residents accounts for 18.2 percent of the change of the dependent variable (PCI_Inv). *Property Crime Rate per 1,000 Residents* accounts for an additional 19.9 percent of the change of the dependent variable (PCI_Inv). *Violent Crime Rate per 1,000 Residents and Property Crime Rate per 1,000 Residents* were found to be statistically significant as the Sig F Change of each predictor is <.05 (a < .001).

Per capita income is "the mean income computed for every man, woman, and child in a particular group including those living in group quarters. It is derived by dividing the aggregate income of a particular group by the total population in that group" (U.S. Census, para. 1). Per capita income is an indicator that measures the productivity and quality of life of the growth of a locality (Eberts et al., 2006; Glaeser et al., 1995). The per capita income reflects the dynamics of labor supply and demand on wages (Eberts et al., 2006; Glaeser et al., 1995). There is a statistically positive impact of a city's performance in public safety on the population growth and employment growth of a locality. The growth of employment could drive up the salary offered and thus increase the per capita income of a community. Therefore, in order to increase city growth in population, as well as employment and per capita income, city management and policymakers should improve police performance and reduce the number of violent crimes and property crimes in a municipality.

Theoretical Implications

The Performance of a City in Public Safety and the Population Growth of a city

The research findings are supported by goal setting theory, expectancy theory, as well as rational choice theory and local public expenditure theory. Valley cities in this study all use different levels of performance management in police operations and report performance data on violent crimes rate, property crime rate, police response time and crime clearance rate to VBC

annually. During the annual budget discussion, the Office of Management and Budget or Performance Management Office works with Police Department to establish performance goals of police department for the next fiscal year. Cities also use CitiStat meeting or performance management meeting to check the performance of police department regularly (quarterly). CompStat is widely used by Police Departments of the cities in the Phoenix Metra Area to set performance goals and expectation of each precinct of a city police department. Police chief reviews performance data and crime statistics with the commander and captains in each precinct during CompStat meeting monthly and set the performance goals and expectation for next month. Police commander work to strategically allocate resources based on crime data to reduce violent crimes and property crimes in the precinct.

Individuals and businesses want to move to municipalities that have low crime rates, especially low violent crime rates. As individuals and businesses are free to move from one city to another in a metropolitan area, the cities that have lower violent crime rates tend to have a higher growth rate of the population compared to the cities that have a higher violent crime rate. Based on the local public expenditures theory, cities need to establish performance goals of lower crime rates and motivate police officers to achieve the performance goals. A high-performing police department can enhance the population growth of a city.

The Performance of a City in Public Safety and the Unemployment Rate of a City

The findings can be associated with goal setting theory, expectancy theory, as well as rational choice theory and local public expenditure theory. Valley cities in this study all use different levels of performance management in police operations and report performance data on

violent crimes rate, property crime rate, police response time and crime clearance rate to VBC annually. Police chief reviews performance data and crime statistics with the commander and captains in each precinct during CompStat meeting monthly and set performance goals and expectation for next month. Police commander work to strategically allocate resources based on crime data to reduce violent crimes and property crimes in the precinct.

High crime rates reduce the population growth of a city. As a result, it will reduce the rate of business growth and employee recruitment due to the basic economic theory of supply and demand. Improving performance in public safety can positively impact the growth of employment of a locality. So, in the cities that have high crime rates, the unemployment rate in that city tends to be higher. In order to lower the unemployment rate, cities need to set up clear goals for the police department and motivate police officers to reduce crimes in that city.

The Performance of a City in Public Safety and the Per Capita Income of a City

These findings are in concert with goal setting theory, expectancy theory, as well as rational choice theory and local public expenditure theory. Valley cities in this study all use different levels of performance management in police operations and report performance data to VBC annually. Using CompStat, Police chief reviews performance data and crime statistics with the commander and captains in each precinct during the monthly meeting and set performance goals and expectation for next month.

By improving the quality of public service and lower crimes, cities can retain and attract more residents and businesses to relocate to a community. The competition among businesses for talent could drive up the salary offered, thus increasing the per capita income of a community. As

businesses are free to move from one area to another in a metropolitan area, cities that have lower crime rates tend to have a higher per capita income.

The Limitations of Findings

Every study has its limitations. Recognizing the limitations of a study allows the researcher to interpret findings with appropriate parameters. Some limitations of the study are described below:

The study uses secondary data to conduct analysis. The performance data were collected by the local government of each member city in the Phoenix Metro Area and were reported annually to the Valley Benchmark Communities Consortium. The study also used data from the U.S. Census. No first-hand data are collected and used in this study.

There are three limitations of performing secondary data analysis: 1) Insufficient or missing data, 2) Error from the initial data collection, and 3) Using data that are not fit for the research project (Frankfort-Nachmias and Nachmias, 2000). As the secondary data is not collected by the researcher, researchers must rely on the agencies that collected the data. The reliability and validity of the data and the study rely on the accuracy of the data collected.

The study focuses on the valley cities located in the Phoenix Metro Area. There is no random sampling of the cities in which the study was conducted. Therefore, the study results only apply to the cities in the Phoenix Metro Area and cannot be generalized to other cities or regions. However, the study results can offer insights into the relationships between the performance of a city in public safety and the growth of a city in population, employment and per capita income.

The study tries to discover the relationship between public safety measures and the growth of a city in the Phoenix Metro Area. The study didn't drill down on some of the confounding

variables and their relationships with public safety performance measures and a city's growth, such as variations in the composition of the population, particularly youth concentration, population density, degree of urbanization, home vacancy rate, revenue growth rate of a municipality (FBI, 2012). Future research can focus on these confounding variables and their relationship with crime and growth.

CHAPTER 6

POLICY RECOMMENDATIONS

As a government practitioner who has been working in the performance management field since 2009, I conducted this research not only for academic studies, but also for government practitioners and policymakers. As a local government performance management professional, I led the performance management program of Kansas City – *A City that Works Program* for the then Mayor Mark Funkhouser of the City of Kansas City, Missouri from 2009 to 2011. Currently, I serve as the Vice-Chair of Valley Benchmark Communities Group (On April 14, 2022, the Valley Benchmark Cities Group changed its name to Valley Benchmark Communities Group (VBC) after Maricopa County joined the organization. According to the U.S. Census, Maricopa County is the fastest-growing county in the U.S. from 2010 to 2020 with a population of 5.1 million people). VBC is the performance management consortium of all major cities in the Phoenix Metropolitan Area with a population of about 5 million people. With my knowledge, skills, and experience in performance management, I do want to share my policy recommendations based on the research with not only academic researchers, but also policymakers and government practitioners on what I learned from this study.

Performance Management Programs

The study results demonstrate the value of performance management in a city's growth. As random sampling was not utilized in this study, the research results cannot be generalized and applied to other regions. However, the study results still offer insights into one of the largest and fastest-growing metropolitan areas in the nation. In order to promote local growth in population, employment and per capita income, local policymakers and city managers should incorporate

performance management programs into their city management and daily operations to build a high-performing organization.

The logger study and goal-setting theory may explain why performance management programs can improve city performance. During the budget discussion for the new fiscal year, the performance management office or the budget office establishes performance goals of departmental operations through working with city agencies. City management also review the performance goals with department directors regularly through monthly or quarterly CitiStat meetings or performance management meetings to ensure departments are on track to achieve their performance goals. Police departments also use CompStat programs as a performance management tool to track crime data and deploy police resources in order to fight and reduce violent crimes and property crimes.

In local government practice, the implementation of a citywide performance management program is at the discretion of the city manager. Nowadays, many city managers still choose not to implement performance management in their cities despite the recommendations from industrial organizations in using performance management in governmental strategic planning, budgeting, auditing, evaluations, and daily operations. In the U.S., there were less than 40 percent of major cities and counties that used performance measures in policy discussion and budgetary deliberation in 2010. Only 22 percent of small cities and 6 percent of smaller counties had done so (Ho, 2011).

This quantitative study suggests that there is not just a statistically significant relationship between the performance of a city in public safety and the city's growth in population, employment, and per capita income in the Phoenix Metro Area; the performance of a city in public safety actually influences the growth of population, employment and per capita income of a city in

the Phoenix metro area. Generally speaking, cities with lower crime rates per 1,000 residents, tend to have a faster growth rate of population, a lower unemployment rate, and a higher per capita income.

All of the eleven cities included in the study are member cities of the Valley Benchmark Communities Group, which is the performance management consortium of the cities located in the Phoenix Metro Area. All eleven cities use performance management in their daily operations. Through statistical analysis of the performance data in public safety as well as city growth data in population, unemployment rate and per capita income, the study demonstrates the value of performance management in promoting a city's growth in population, employment, and per capita income.

Local Police Departments

If policymakers and city management want to promote the growth of their locality in population, employment, and per capita income, an effective way is to strengthen the police department and improve police performance in reducing violent crimes and property crimes. Disbanding police department or cutting police budget will negatively affect the police performance in fighting crimes, which could result in lower growth of population, employment and per capita income of a community.

During the time this dissertation is written, the nation is in a heated debate on the role of the police department in society following the tragedy of George Floyd. In June 2020, the Minneapolis city council announced that it planned to dissolve its police department. Although the plan was finally abandoned, there was a national movement to "Defund the Police". In Austin, Texas, funds from the police department were reappropriated to buy a hotel to house the homeless. The Los

Angeles school board voted to cut one-third of the police officers from schools on February 16, 2021 (Bates, 2021).

While the author has no intention or qualification to discuss the political side of the "Defund the Police" movement, the author does want to address the importance of police departments from the perspective of governmental performance and a city's growth. As one of the most important, if not the most important public service agency of a city government, police departments are in charge of "maintaining public order and safety, enforcing the law, and preventing, detecting, and investigating criminal activities" (Bordeur, para. 1). Police officers work to protect public safety and reduce crimes. CompStat is widely used by local police departments to manage police performance and reduce crimes by proactively allocating resources based on crime analytics.

The statistical analysis of this study suggests that crime-related public safety measures are generally related to the growth of a municipality. In a city with lower crime rates per 1,000 residents, the growth rate in population and per capita income are generally higher, while unemployment rate is lower. Additionally, the multiple linear regression also suggests that crime-related public safety measures influence the growth of a community in population, employment and per capita income. Cities that have lower crime rates per 1,000 residents tend to have a higher growth rate of population, lower unemployment rate and higher per capita income. The performance of police departments in reducing the number of violent crimes and property crimes has a direct impact on the growth of a locality.

Based on my conversations with police chiefs in the Valley, recent media rhetoric toward police departments had generated negative public opinions against local police departments and negatively affected the morale of the police officers. In the Phoenix Metro Area, there has been an

increase of the number of police officers retired from local law enforcement agencies. Police departments in the Valley have experienced difficulties in recruiting new police officers. The staff shortage and declining employee morale of local police departments also negatively affect the performance of police departments in fighting and reducing crimes. As a result, many cities has experienced an increase of crime incidents in the last three years. According to the analysis by the Council on Criminal Justice (CCJ), there is a 5 percent increase in homicides in 2021 from 2020 in major U.S. cities. The number of homicides surged 44 percent from 2019 to 2020 (Sganga, 2022).

Building a high-performing police department not only ensures the safety and security of the community, but also promotes the growth of the city in population, attracts new businesses and jobs, as well as increases the per capita income of the community. While some interest groups promote the idea of "Defund the Police", the solution for a city may be setting goals and a roadmap to build a high-performing police department that works for all.

City Growth

Instead of using taxpayers' money to enrich a business' bottom line, this study offers another approach to promote local growth. The statistical analysis suggests that enhancing police performance in reducing violent crimes and property crimes could promote local growth in population, employment, and per capita income. For local policymakers and city management, investing and enhancing the operations and performance of public services could retain, attract, and increase the number of businesses and individuals in the community. In order to promote city growth, local government should return to its basic responsibilities by providing quality and timely public services through building a high-performing organization.

The study offers insights into a city's growth. A healthy growing city should see a gradual increase in its city population. Demands from local residents draw business investment and jobs that lower the unemployment rate. As booming businesses expand and compete for talents, the heated job market could drive up the salary offered to employees, thus increasing the per capita income of a city. The increasing number of businesses and individuals could also strengthen the local tax base and increase the revenues of local government. Increased city revenues could be redirected to enhance and expand various public services like public safety.

On the contrary, a declining city keeps losing businesses and residents to other communities. As a result, the city government has to either increase taxes and fees from local businesses and residents for providing the same level of public service or reduce the level of public services to cut costs. The higher taxes and fees, as well as deteriorating public service, will drive more businesses and individuals to leave the city.

To promote local growth and economic development, many policymakers and government administrators like to offer tax incentives to attract businesses to relocate or establish a branch in their city. Bartik (2019) estimated that state and local governments spent $46 billion annually on tax incentives, which has tripled since the 1990s. Slattery and Zidar (2020)'s study discovered that while there is some evidence of direct employment increases from attracted firms using tax incentives, there is no strong evidence to support broad economic growth at the state and local levels. The localities using tax incentives to attract new companies also experienced a 4 percent decrease in housing prices (Slattery and Zidar, 2020).

Local government needs to focus on improving the performance of basic services provided by municipalities, in order to promote local growth in population, employment and per capita income.

CHAPTER 7

SUMMARY

The last chapter of the article brings a summary and conclusion of the research. This research can be positioned for future studies on large-scale performance management and its impact on the growth of a locality. The main focus of the study is to discover the relationship between a city's performance in public safety and the growth of a locality. More specifically, the study reveals the relationships between the public safety-related performance of a city in the Phoenix Metro Area and population growth, employment growth, and per capita income growth of a city.

Research Findings

The study uses performance data collected by Valley Benchmark Consortium from 2010 to 2019. Pearson's r correlation and multiple linear regression were utilized to test the hypotheses using SPSS. The results of hypothesis testing answer the research questions on the performance of a city in public safety and the growth of a city in the Phoenix Metro area.

Table 4 Summary of Hypotheses Supported/Not Supported

Hypotheses Supported
The Performance of a City in Public Safety and the Change of the Population of a City
1E: The Violent Crime Rate per 1,000 Residents has a negative influence on the Change of the Population of a City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.
1J: The Median Home Value of City moderates the association between the Violent Crime Rate per 1,000 Residents and the Population Growth of a City.

The Performance of a City in Public Safety and the Employment Growth of a City

2E: The *Violent Crime Rate per 1,000 Residents* has a positive influence on the *Unemployment Rate* of *a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

2F: The *Property Crime Rate per 1,000 Residents* has a positive influence on the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

The Performance of a City in Public Safety and the Per Capita Income of a City

3C: The *Violent Crime Rate per 1,000 Residents* has a negative influence on the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

3D: The *Property Crime Rate per 1,000 Residents* has a negative influence on the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

Hypotheses Not Supported

The Performance of a City in Public Safety and the Change of the Population of a City

1F: The Property Crime Rate per 1,000 Residents does not influence the Change of the Population of a City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

1G: The Police Response Time by Second does not influence the Change of the Population of a City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

1H: The Violent Crime Clearance Rate does not influence the Change of the Population of a City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

The Performance of a City in Public Safety and the Employment Growth of a City

2G: The *Violent Crime Clearance Rate* does not influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area.

The Performance of a City in Public Safety and the Per Capita Income of a City

The Relationship Between the Performance of a City in Public Safety and the Population Growth of a city

There is a statistically significant relationship between the Change of the Population of a City (DV) and the independent variables: *Violent Crime Rate per 1,000 Residents* (r= -.417, p<0.001), *the Property Crime Rate per 1,000 Residents* (r= -.419, p<0.001), *the Violent Crime Clearance Rate* (r= .262, p=0.009) *and Police Response Time by Second* (r= -.205, p=0.04).

The *Violent Crime Rate per 1,000 Residents* influences the *Change of the Population of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. *Violent Crime Rate per 1000 Residents* accounts for 17.4% of the variability observed in the population change rate. The Median Home Value of a City is statistically significant in the association of the *Violent Crime Rate per 1,000 Residents* and the population growth of a city. The *Property Crime Rate per 1,000 Residents, the Police Response Time by Second* and the *Violent Crime Clearance Rate* do not influence the Change of the Population of a City in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. They were found to be statistically insignificant as the Sig F Change is >.05 (a = .05).

The Relationship Between the Performance of a City in Public Safety and the Unemployment Rate of a City

There is a statistically significant relationship between the Unemployment Rate of a City and *Violent Crime Rate per 1,000 Residents* (r= -.198, p=0.038), *Property Crime Rate per 1,000 Residents* (r= -.34, p<0.001) and *Violent Crime Clearance Rate* (r=.214, p=0.32). There is no statistically significant relationship between the *Unemployment Rate of a City* and *Police Response Time by Second* (r=-.066, p=.514).

The Performance of a City in Public Safety influences the Unemployment Rate of a city in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. *Violent Crime Rate per 1,000 Residents* and *Property Crime Rate per 1,000 Residents* do influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. *Violent Crime Rate per 1,000 Residents* accounts for 4.6% of the change of the dependent variable (Unemployment_Inv), while *Property Crime Rate per 1,000 Residents* accounts for an additional 6.7% of the change of the dependent variable (Unemployment_Inv). *Violent Crime Clearance Rate* does not influence the *Unemployment Rate of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area as its Sig F Change is >.05.

The Relationship Between the Performance of a City in Public Safety and the Per Capita Income Growth of a City

The hypothesis testing discovered that there is a statistically significant relationship between Per Capita Income of a City and *Violent Crime Rate per 1,000 Residents* ($r=0.427$, $p<0.001$). There is a statistically significant relationship between Per Capita Income of a City and *Property Crime Rate per 1,000 Residents* ($r=0.617$, $p<0.001$). *Violent Crime Rate per 1,000 Residents* and *Property Crime Rate per 1,000 Residents* do influence the *Per Capita Income of a City* in the Phoenix-Mesa-Scottsdale Metropolitan Statistical Area. *Violent Crime Rate per 1,000 Residents* accounts for 18.2% of the change in the *Per Capita Income of a City* (PCI_Inv). *Property Crime Rate per 1,000 Residents* accounts for an additional 19.9% of the change in the *Per Capita Income of a City* (PCI_Inv). Violent Crime Rate per 1,000 Residents and Property Crime Rate per 1,000 Residents were found to be statistically significant as each Sig F Change of each predictor is <.05 ($a < .001$).

Future Research

The study uses performance data to study the relationship between the performance of a city in public safety and the growth of a locality in the Phoenix Metro Area. Although the study results demonstrate the findings on city performance in public safety and a city's growth, the research results cannot be generalized to other cities or regions, as there is no random sampling of the cities used for the study. Further research can use random sampling to study the cities on a nationwide scale. Thus, the research results can provide generalizable information on the relationship between the performance of a city and the growth of a locality.

Future research can also expand the independent variables and dependent variables for the study on the performance of a city and the growth of a locality. The study uses four performance measures in the field of public safety as independent variables. A large-scale study could include more performance measures in every field of public service, in order to investigate the relationship and impact of each independent variable on dependent variables.

For the dependent variable, the research use population, per capita income, and the unemployment rate to operationalize the growth of a city. Future studies can also expand the dependent variables and include the indicators of a city's growth for the study in six different areas: economic, transportation, energy, political, geographic, and demographic determinants (The World Bank, 2012). The World Bank and MIT City Form Lab provide a comprehensive list of indicators to measure urban growth. It includes the **economic determinants** include: Average Household Income, GDP, Gini Coefficient, Crime Rate, Average Household Size, Cost of Living, Land Prices, Total Number of Jobs, and Total Number of Business Establishments. The **transportation determinants** include Vehicle Miles Traveled, Transit Ridership and Car Ownership. The **energy determinants**

include Average Household Energy Consumption, Material Energy Expenditure and Transportation Energy Expenditure. The **political determinants** include Regulatory Climate and Corruption. The **geographic determinants** include Temperature and Water Resources. The **demographic determinants** include Total Population, Share of Aging Population and Share of Foreign-Born Population (The World Bank, 2012).

Conclusion

Since the 1990s, performance management has gained popularity in the local government of the United States after the successful implementation of the CompStat program in the New York City Police Department and the CitiStat program in Baltimore, Maryland. However, there are still many policymakers and city managers who think performance measures and performance management programs are just another layer of the bureaucracy of local government that adds no value to the city's growth.

Using performance data collected by Valley Benchmark Consortium from 2010 and 2019, the researcher uses Pearson's r correlation and multiple linear regression to test the hypotheses. Using SPSS, the study results reveal that the performance of a city in public safety does have a positive impact on the growth of a locality. The better a city performs in public safety, the faster the growth of a locality.

More specifically, the change of the performance in public safety of a city has a statistically significant impact on the growth of a locality. In a city that has a lower violent crime rate and a lower property crime rate, the population growth tends to be faster. The performance of a city also casts a statistically significant impact on the economic growth of a city measured by the unemployment rate. In a city that has a lower property crime rate and a lower violent crime rate, the unemployment rate

tends to be lower. Violent crime rate and property crime rate also impact the per capita income of a locality. In a city that has a lower violent crime rate and property crime rate, the per capita income of the city tends to be higher.

The research result is useful not only to academic scholars, but also to the practitioners who work in government, such as policymakers and government bureaucrats, to understand the impact of governmental performance on local growth.

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Appendix

Population

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Phoenix	1,450,206	1,455,565	1,462,368	1,473,639	1,491,300	1,511,600	1,536,000	1,560,000	1,579,300	1,597,700	1,617,300
Mesa	439,639	441,711	443,875	447,002	453,300	459,000	466,500	473,800	481,300	488,900	497,400
Chandler	229,531	233,509	237,456	241,096	240,900	242,200	245,200	251,400	257,900	262,300	266,800
Gilbert	195,046	201,742	208,850	215,683	222,400	228,400	233,900	240,300	246,400	253,000	259,400
Scottsdale	218,770	219,311	219,867	221,283	223,400	227,100	233,500	239,500	242,500	245,400	247,900
Glendale	229,687	229,611	229,331	230,047	231,900	233,600	236,200	238,300	239,900	241,800	243,300
Tempe	164,147	163,928	164,139	164,742	166,700	170,800	173,900	179,000	179,800	185,300	188,600
Peoria	148,702	151,770	154,566	157,152	157,300	159,000	162,100	167,000	171,600	176,100	180,200
Surprise	103,767	110,097	115,007	118,784	122,100	124,200	126,300	128,400	130,100	132,900	136,200
Goodyear	57,869	61,313	64,714	67,536	70,800	72,900	75,600	78,700	81,400	84,700	88,900
Avondale	70,274	73,148	75,298	76,872	77,900	78,500	79,500	80,600	81,600	82,600	84,600

Source: Arizona Office of Employment and Population Statistics and Maricopa Association of Governments.

Median Household Income

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gilbert	$68,797	$71,207	$79,916	$81,589	$84,153	$86,045	$91,576	$84,699	$99,866	$102,793
Scottsdale	$68,824	$65,020	$72,102	$69,690	$73,387	$75,346	$81,381	$88,407	$88,071	$86,097
Goodyear	$71,030	$52,194	$73,022	$72,219	$69,883	$73,164	$73,960	$87,481	$89,959	$85,147
Chandler	$67,648	$69,260	$70,122	$71,545	$73,062	$75,562	$75,369	$76,860	$85,527	$83,709
Peoria	$53,848	$64,864	$61,880	$59,377	$66,371	$66,308	$68,882	$72,142	$72,050	$77,368
Surprise	$57,114	$51,892	$59,553	$55,857	$58,923	$65,688	$60,521	$65,898	$70,280	$76,405
Avondale	$61,369	$51,363	$51,237	$51,206	$55,664	$54,686	$58,404	$55,468	$63,242	$71,296
Tempe	$45,151	$45,518	$45,009	$48,565	$47,118	$51,688	$56,365	$51,986	$60,330	$66,297
Mesa	$44,747	$44,527	$47,256	$47,561	$47,675	$49,177	$52,393	$55,014	$58,247	$63,836
Phoenix	$42,260	$43,960	$44,153	$46,601	$47,929	$48,452	$52,062	$53,468	$57,957	$60,931
Glendale	$45,699	$48,079	$45,765	$41,037	$46,453	$45,812	$51,022	$53,753	$54,789	$57,137

Source: United States Census Bureau, American Community Survey, 1-Year estimates.

Poverty Rate

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Glendale	20.2%	19.2%	22.6%	26.3%	21.0%	22.5%	16.4%	16.7%	16.6%	18.9%
Tempe	26.1%	21.2%	23.6%	21.5%	23.3%	20.0%	20.3%	22.1%	17.4%	17.2%
Phoenix	22.5%	22.9%	24.1%	23.6%	23.3%	22.3%	20.3%	16.8%	15.6%	15.6%
Mesa	15.1%	16.9%	17.6%	16.6%	15.1%	17.2%	16.8%	15.0%	13.9%	11.6%
Avondale	14.4%	21.9%	18.1%	19.1%	19.3%	16.2%	14.4%	13.5%	11.5%	10.1%
Peoria	10.3%	11.1%	9.0%	11.5%	9.2%	7.0%	7.7%	6.6%	6.7%	8.8%
Goodyear	9.2%	8.3%	7.3%	10.8%	12.1%	9.0%	4.5%	9.0%	6.6%	8.3%
Surprise	10.8%	10.6%	10.9%	10.5%	12.2%	7.3%	9.7%	6.7%	5.4%	7.3%
Chandler	8.2%	10.5%	9.3%	10.4%	10.4%	9.2%	7.1%	8.1%	7.9%	6.7%
Scottsdale	7.9%	8.9%	9.4%	9.3%	9.1%	11.0%	8.0%	7.8%	5.8%	6.0%
Gilbert	6.9%	7.1%	6.9%	5.9%	6.8%	6.0%	5.0%	5.6%	5.2%	4.6%

Source: United States Census Bureau, American Community Survey, 1-Year estimates.

Unemployment Rate

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Tempe	8.0%	8.2%	6.8%	7.5%	6.8%	5.9%	4.3%	3.9%	4.1%	9.8%
Phoenix	9.1%	8.4%	8.3%	7.6%	6.6%	5.8%	5.0%	4.7%	4.9%	10.3%
Glendale	9.2%	8.6%	7.6%	6.6%	5.6%	5.6%	4.9%	4.3%	4.8%	10.2%
Mesa	9.0%	7.5%	7.2%	6.5%	5.4%	5.3%	4.5%	4.3%	4.6%	9.7%
Avondale	8.4%	9.1%	7.9%	7.0%	6.0%	5.2%	4.6%	4.5%	4.5%	5.8%
Goodyear	9.8%	8.2%	8.3%	7.2%	5.7%	5.5%	4.4%	4.2%	4.8%	9.4%
Chandler	6.6%	6.1%	6.0%	5.5%	4.7%	4.5%	3.9%	3.6%	4.0%	8.7%
Scottsdale	6.5%	6.8%	5.7%	5.4%	4.7%	4.2%	3.8%	3.5%	3.5%	3.4%
Surprise	6.5%	4.3%	5.0%	5.4%	9.8%	9.4%	4.5%	4.6%	3.7%	5.4%
Peoria	8.7%	7.1%	6.8%	6.0%	5.0%	4.9%	4.2%	4.0%	4.3%	9.3%
Gilbert	5.1%	5.4%	5.7%	5.2%	4.3%	4.2%	3.7%	3.5%	3.8%	8.0%

Source: City's Comprehensive Annual Financial Report

Median Home Value

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Phoenix	158,600	137,500	140,500	162,300	178,800	200,800	213,300	231,000	249,100	266,600
Mesa	154,600	136,200	129,400	155,300	171,400	188,100	209,000	224,700	242,500	259,300
Chandler	229,200	189,300	201,400	233,000	249,000	273,600	275,400	292,800	318,300	342,200
Gilbert	229,600	193,900	209,300	239,400	208,100	284,800	307,000	320,000	349,800	372,500
Scottsdale	389,300	341,600	355,200	382,300	413,100	434,700	439,300	473,300	491,600	534,300
Glendale	153,900	122,800	124,800	142,600	168,100	181,000	200,900	220,600	228,100	241,100
Tempe	207,600	184,500	174,200	203,000	216,100	246,200	252,400	266,900	287,800	323,600
Peoria	181,300	164,700	162,900	188,200	217,500	223,000	248,700	255,800	280,200	307,800
Surprise	165,100	160,400	160,400	192,000	192,700	213,900	225,700	231,900	260,500	269,900
Avondale	117,600	115,400	117,600	139,900	163,700	181,200	204,300	207,300	228,900	244,200
Goodyear	182,100	160,600	178,300	208,000	243,000	254,600	262,600	298,900	291,800	330,500

Source: United States Census Bureau, American Community Survey, 1-Year estimates.

Per Capita Income

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Phoenix	22,429	22,389	22,594	23,703	24,563	25,222	26,308	27,999	29,310	30,686
Mesa	21,918	22,653	23,731	23,771	24,365	25,711	26,713	27,808	28,709	32,448
Chandler	30,486	30,825	30,728	31,602	31,926	35,421	35,893	37,148	39,486	41,025
Gilbert	29,731	28,413	31,436	31,726	30,639	32,418	34,565	35,777	38,154	38,800
Scottsdale	47,582	46,329	50,419	49,932	51,545	55,114	57,346	58,773	62,815	65,480
Glendale	19,959	21,921	21,570	20,326	21,766	22,462	24,658	25,672	24,831	25,636
Tempe	23,948	23,940	25,659	26,143	25,696	27,962	30,292	28,808	30,233	31,063
Peoria	25,794	28,179	27,864	28,975	30,176	29,615	30,789	34,703	35,183	35,583
Surprise	23,503	20,842	24,017	25,593	26,767	26,062	26,588	32,319	30,959	32,076
Avondale	19,314	18,224	20,702	19,380	20,351	20,530	22,906	23,029	26,377	26,137
Goodyear	24,638	25,965	27,746	28,195	27,818	29,849	29,413	35,638	35,205	31,028

Source: City’s Comprehensive Annual Financial Report

Violent Crime Rate per 1,000 Residents

Violent Crime Rate per 1,000 Residents										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Phoenix	5.52	6.37	6.32	6.37	5.88	6.03	6.86	7.92	7.58	7.3
Tempe	4.80	5.29	4.93	4.98	4.67	4.15	5.11	4.91	4.93	4.71
Mesa	4.13	4.00	3.96	3.98	4.62	4.23	4.33	4.25	3.76	3.75
Glendale	4.84	4.91	3.87	3.91	4.17	3.99	5.05	5.06	4.83	3.55
Avondale	3.18	2.97	2.98	2.59	3.48	3.51	2.89	3.15	3.46	2.97
Peoria	1.93	1.87	1.57	1.61	1.5	1.75	2.1	2.41	2.2	2.26
Chandler	2.84	2.59	2.31	2.39	1.96	2.01	2.22	2.51	2.31	2.22
Goodyear	1.63	1.54	1.32	1.33	1.53	1.89	3.94	2.68	2.4	1.93
Scottsdale	1.81	1.47	1.49	1.51	1.62	1.86	1.54	1.63	1.72	1.67
Surprise	1.10	1.34	1.22	1.23	1.59	1.33	1.05	1.01	1	1.01
Gilbert	0.84	0.96	0.86	0.87	0.92	0.76	0.83	0.84	0.92	0.94

Source: FBI Uniform Crime Reporting (UCR) crime data

Property Crime Rate per 1,000 Residents

Property Crime Rate per 1,000 Residents										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Tempe	54.47	47.12	46.74	47.52	47.35	43.94	46.12*	42.65	42.1	39.34
Avondale	50.69	46.99	47.3	46.96	38.6	38.94	40.47	41.02	33.16	36.58
Phoenix	43.98	40.91	40	40.29	38.67	35.45	37.53	38.22	36.13	34.61
Glendale	64.1	64.1	58.23	58.76	57.27	54.85	53.73	43.64	42.34	33.22
Goodyear	28.1	26.46	24.15	24.23	21.74	23.6	26.21	28.11	24.57	23
Scottsdale	30.5	27.06	25.57	25.81	23.75	22.84	23.67	22.65	23.16	20.63
Chandler	30.97	27.07	23.72	24.49	23.99	21.99	24.47	22.52	20.7	20.17
Mesa	33.95	31.33	28.31	28.49	28.39	25.52	23.67	22.21	20.5	19.8
Peoria	30.55	29.51	23.69	24.35	20.3	20.78	22.28	19.77	18.4	18.16
Surprise	21.8	20.6	17.31	17.36	22.23	17.28	19.38	17.04	15.65	15.29
Gilbert	18.23	15.8	15.42	15.61	15.21	13.97	14.02	13.62	12.93	11.76

Source: FBI Uniform Crime Reporting (UCR) crime data

Violent Crime Clearance Rate

Violent Crime Clearance Rates (%)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peoria	23%	37%	46%	62%	60%	57%	57%	55%	59%	60%
Surprise	39%	69%	70%	72%	58%	65%	64%	52%	54%	53%
Goodyear	NA	NA	NA	49%	44%	55%	54%	43%	49%	48%
Tempe	NA	NA	NA	39%	32%	38%	35%	36%	36%	46%
Avondale	32%	30%	48%	54%	38%	35%	42%	38%	36%	45%
Mesa	51%	52%	51%	48%	48%	50%	48%	51%	47%	43%
Gilbert	70%	60%	59%	69%	61%	59%	62%	56%	48%	42%
Chandler	NA	NA	NA	42%	39%	46%	48%	38%*	43%	38%
Scottsdale	57%	55%	61%	61%	58%	52%	51%	44%	46%	38%
Phoenix	33%	35%	35%	36%	33%	29%	27%	27%	32%	30%
Glendale	30%	29%	30%	38%	38%	30%	34%	32%	33%	28%

Source: Self-reported by participating Valley Cities.

Police Response Time

Police Response Times										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peoria	NA	6:01	6:33	6:26	6:41	7:01	6:38	7:22	7:22	7:03
Phoenix	5:23	5:14	5:19	5:32	5:50	6:12	6:26	6:29	6:29	6:25
Glendale	NA	NA	NA	4:42	6:32	5:53	6:14	6:47	6:47	6:23
Tempe	NA	NA	NA	6:23	6:19	6:32	6:22	6:36	6:36	6:14
Scottsdale	7:51	6:16	10:00	5:25	5:12	5:11	4:52	5:11	5:11	5:29
Surprise	4:01	3:36	3:49	4:44	4:36	5:03	4:59	5:08	5:08	5:00
Chandler	5:33	5:55	6:21	6:15	6:21	6:09	6:06	6:01	6:01	4:28
Goodyear	NA	NA	NA	4:05	3:30	3:15	4:28	4:45	4:45	4:24
Gilbert	4:16	4:06	4:07	4:18	4:22	4:11	4:29	4:13	4:13	3:59
Mesa	6:15	6:15	6:03	3:48	4:00	3:36	3:28	4:12	4:12	3:45
Avondale	9:28	3:53	3:14	4:32	3:42	3:30	3:44	3:34	3:34	3:38

Source: Self-reported by participating Valley Cities.